FORCEPOINT

Content Gateway Manager Help

Forcepoint™ Web Security

8.5.x

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1 Overview

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Content Gateway is the web proxy component of Forcepoint™ Web Security.

Content Gateway performs advanced content analysis precisely when it is needed—as the content flows through the proxy. The results of analysis are used by Forcepoint Web Security to protect you from malicious content and apply your Acceptable Use Policy (AUP). This on-demand analysis protects users and networks at the same time that it makes rapidly changing websites safe for your organization and users. Advanced analysis may be applied to HTTP, HTTPS, and FTP channels.

The precise application of advanced analysis is configured by the administrator for each Forcepoint Web Security deployment.

Content Gateway can also be configured to function as a high-performance web proxy cache that caches frequently accessed information at the edge of the network. This brings content physically closer to end users for faster delivery and reduced bandwidth usage.

Content Gateway can also be deployed as the web proxy component of Forcepoint DLP (absent Web Security). A core version of Content Gateway is included in Forcepoint DLP Network licenses. Known as Forcepoint DLP Web Content Gateway, this core version is managed through Content Gateway and Forcepoint DLP managers, and allows Content Gateway to block traffic that matches the Forcepoint DLP web policies. Note that some features of Content Gateway are available only when Content Gateway is deployed with Forcepoint Web Security, and not in a standalone deployment with Forcepoint DLP Network. Those features are marked accordingly.

Content Gateway can be deployed as described in *Content Gateway deployment options*, page 2.

Content Gateway can also be configured to:

- Ensure that clients are authenticated before they access content. Content Gateway supports Integrated Windows Authentication, legacy NTLM (NTLMSSP), LDAP, and RADIUS. See, *Content Gateway user authentication*, page 177.
- Control client access to the proxy. See, *Controlling client access to the proxy*, page 163.
- Use different DNS servers, depending on whether the proxy needs to resolve host names located inside or outside a firewall. This enables you to keep your internal

network configuration secure while providing transparent access to external sites on the Internet. See, *Using the Split DNS option*, page 176.

- Use the co-located Data policy engine or the ICAP interface to enable sites using Forcepoint DLP to examine outbound material such as web postings, and block or allow based on company policy. See *Working With Web DLP*, page 119.
- Control access to the Content Gateway manager using:
  - SSL (Secure Sockets Layer) protection for encrypted, authenticated access
  - User accounts that define which users can access the manager and which activities they can perform (for example, view statistics only or view statistics and configure Content Gateway).
- Integrate into your firewall and control traffic through a SOCKS server.

  See *Content Gateway Security*, page 163.

Related topics:

- *Content Gateway deployment options*, page 2
- *Content Gateway components*, page 4
- *Proxy traffic analysis features*, page 7
- *Technical Support*, page 8

Content Gateway deployment options

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SSL inspection

When the HTTPS option is enabled, HTTPS traffic is decrypted, inspected, and re-encrypted as it travels to and from the client and origin server.

Content Gateway does not cache HTTPS content.

Content Gateway includes a complete set of certificate-handling capabilities. See *Working With Encrypted Data*, page 129.

Important

Even when HTTPS is **not** enabled, Content Gateway still performs a URL lookup for HTTPS requests and applies policy accordingly.

In explicit proxy mode, when HTTPS is disabled, Content Gateway performs URL filtering based on the hostname in the request. If the site is blocked, Content Gateway serves a block page. Note that some browsers do not support display of the block page. To disable this feature, configure clients to not send HTTPS requests to the proxy.

In transparent proxy mode, when HTTPS is disabled, if there is an SNI in the request, Content Gateway gets the hostname from the SNI and performs URL filtering based on the hostname. Otherwise, Content Gateway uses the Common Name in the certificate of the destination server. However, if the Common Name contains a wildcard (*), the lookup is performed on the destination IP address. If the site is blocked, the connection with the client is dropped; no block page is served. To disable this feature when used with WCCP, do not create a service group for HTTPS.

Web proxy cache

When Content Gateway is deployed as a web proxy cache, user requests for web content pass through Content Gateway on their way to the destination web server (origin server). If the Content Gateway cache contains the requested content, Content Gateway serves the content directly. If the Content Gateway cache does not have the requested content, Content Gateway acts as a proxy, fetching the content from the origin server on the user's behalf, while keeping a copy to satisfy future requests.

Content Gateway is typically deployed to receive client requests in one of the 2 following ways:

- As an *explicit proxy* in which the user's browser or client software is configured to send requests directly to Content Gateway. See *Explicit Proxy*, page 39.
- As a *transparent proxy* in which user requests are transparently routed to Content Gateway on their way to the destination server. The user's client software (typically a browser) is unaware that it is communicating with a proxy. See *Transparent Proxy and ARM*, page 47.

Cache hierarchy

Content Gateway can participate in flexible cache hierarchies, where Internet requests not fulfilled in one cache can be routed to other regional caches, taking advantage of their contents and proximity. In a hierarchy of proxy servers, Content Gateway can act either as a parent or child, either to other Content Gateway servers or to other caching products. See *Hierarchical Caching*, page 93.

Managed cluster

Content Gateway scales from a single node to multiple nodes, with a maximum recommended limit of 16. This forms a managed cluster that improves system capacity, performance, and reliability.

- A managed cluster detects the addition and removal of nodes.
- Cluster nodes automatically share configuration information, allowing members of the cluster to all be administered at the same time.

If the virtual IP failover option is enabled, Content Gateway maintains a pool of virtual IP addresses that it assigns to the nodes of the cluster. Content Gateway can detect node failures (such as power supply or CPU failures) and reassign IP addresses of the failed node to the operational nodes. See *Virtual IP failover*, page 90, for details.

If Content Gateway is configured as a transparent proxy with WCCP, failover is handled by WCCP and virtual IP failover should not be used. See *WCCP load distribution*, page 54.

For complete information, see *Clusters*, page 85.

DNS proxy cache

As a DNS proxy cache, Content Gateway can resolve DNS requests for clients. This offloads remote DNS servers and reduces response times for DNS lookups. See *DNS Proxy Caching*, page 103.

Content Gateway components

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Cache

The *cache* consists of a high-speed object database called the object store. The object store indexes objects according to URLs and associated headers. The object store can cache alternate versions of the same object, varying on spoken language or encoding type, and can store small and large documents, minimizing wasted space. When the

cache is full, the proxy removes stale data, ensuring that frequently requested objects are fresh.

Content Gateway tolerates disk failure on any cache disk. If the disk fails completely, Content Gateway marks the disk as corrupt and continues using the remaining disks. If all cache disks fail, Content Gateway goes into proxy-only mode.

You can partition the cache to reserve disk space for storing data for specific protocols and origin servers. See *Configuring the Cache*, page 95.

RAM cache

Content Gateway maintains a small RAM memory cache of extremely popular objects. This RAM cache serves the most popular objects quickly and reduces load on disks, especially during traffic peaks. You can configure the RAM cache size. See *Changing the size of the RAM cache*, page 100.

Adaptive Redirection Module

The Adaptive Redirection Module (ARM) provides several essential functions. One is to send device notifications for cluster communication interface failover. Another is to inspect incoming packets before a routing decision is made and redirect the packets to Content Gateway for processing.

The ARM:

- Is always active.
- Uses iptables, policy routing, and transparent sockets which are configured during product installation.

  The installation program also creates redirection rules to intercept packets.
- Supports automatic bypass of sites that do not transit properly through a proxy.
- Prevents client request overloads.

  When there are more client connections than the specified limit, the ARM forwards incoming requests directly to the origin server. See *Connection load shedding*, page 74.

Host database

The host database stores the Domain Name Server (DNS) entries of origin servers to which the proxy connects. Among other information, the host database tracks:

- DNS information (for fast conversion of host names to IP addresses)
- The HTTP version of each host (so advanced protocol features can be used with hosts running modern servers)
- Host reliability and availability information (to avoid waits for non-functional servers)

DNS resolver

For transparent proxy deployments, the proxy includes an asynchronous DNS resolver to streamline conversion of host names to IP addresses. Content Gateway implements the DNS resolver natively, directly issuing DNS command packets, rather than relying on resolver libraries. Many DNS queries can be issued in parallel and a fast DNS cache maintains popular bindings in memory, reducing DNS traffic.

Important

Should the Linux system DNS server configuration change (/etc/resolv.conf), you must restart Content Gateway.

Content Gateway processes

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Content Gateway has 4 primary processes:

Process name	Description
content_gateway	Accepts connections, processes protocol requests, and serves documents from the cache or origin server.
content_manager	Launches, monitors, and reconfigures the **content_gateway** process. The **content_manager** process is also responsible for the Content Gateway manager user interface, the proxy auto-configuration port, the statistics interface, cluster administration, and virtual IP failover. If the **content_manager** process detects a **content_gateway** process failure, it restarts the process and also maintains a connection queue of all incoming requests. Incoming connections that arrive in the several seconds before server restart are saved in the connection queue and processed in sequence. This connection queuing shields users from server restart downtime.
content_cop	Monitors the health of **content_gateway** and **content_manager**. The **content_cop** process periodically (several times each minute) queries **content_gateway** and **content_manager** by issuing heartbeat requests to fetch synthetic Web pages. If no response is received within the timeout interval or if an incorrect response is received, **content_cop** restarts **content_manager** and **content_gateway.** The **content_cop** process uses the port defined by proxy.config.admin.heartbeat_port.
analytics_server	Manages the requests made and processes spawned for analytics.

Content Gateway administration tools

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The primary Content Gateway configuration and administration tool is the web-based graphical user interface that is accessible through your browser. The Content Gateway manager offers password-protected, SSL-encrypted, single-point administration for an entire Content Gateway cluster. The Content Gateway manager provides graphs and statistical displays for monitoring Content Gateway performance and network traffic, and options for configuring and fine-tuning the proxy.

Sometimes it is convenient or necessary to use the Content Gateway command-line interface. You can execute individual commands or script a series of commands in a shell. This facility is not available when Content Gateway is hosted on a Forcepoint appliance. Instead, use the Content Gateway manager and see your Forcepoint appliance documentation.

Like the command line interface, it is sometimes convenient or necessary to make configuration changes in Content Gateway configuration files. They support administration through a file-editing and signal-handling interface. Any changes you make through the Content Gateway manager or command-line interface are automatically made to the configuration files.

See:

- *Accessing the Content Gateway manager*, page 9
- *Using the command-line interface*, page 17

Proxy traffic analysis features

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Content Gateway provides options for network traffic analysis and monitoring:

- *Manager statistics and graphs* show network traffic information. View graphs and statistics from the Content Gateway manager, or collect and process statistics using the command-line interface.
- A variety of *Performance* graphs show historical information about virtual memory usage, client connections, document hit rates, and so on. View Performance graphs in the Content Gateway manager.
- *Manager alarms* are presented in the Content Gateway manager. Content Gateway signals an alarm for any detected failure condition. You can configure Content Gateway to send email or page support personnel when an alarm occurs.

  Content Gateway also sends select alarms to the Forcepoint Security Manager, where they are referred to as **alerts**. Summary alert messages are displayed on the **Web > Status > Dashboard > System** page. The full alert message is displayed on the **Status > Alerts** page. Web Security administrators can configure which

Content Gateway conditions cause alert messages to be sent, and which methods (email or SNMP) are used to send the alert.

- *Transaction logging* lets you record information in a log file about every request the proxy receives and every error it detects. Use the logs to determine how many people use the proxy, how much information each person requested, and which pages are most popular. You can see why a transaction was in error and see the state of the proxy cache at a particular time. For example, you can see that Content Gateway was restarted or that cluster communication timed out.

  Content Gateway supports several standard log file formats, such as Squid and Netscape, and its own custom format. You can analyze the standard format log files with off-the-shelf analysis packages. To help with log file analysis, separate log files so that they contain information specific to protocol or hosts.

For traffic analysis options, see *Monitoring Traffic*, page 111. For logging options, see *Working With Log Files*, page 235.

Technical Support

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Technical information about Forcepoint products is available 24 hours a day at:

https://support.forcepoint.com

In the Support site you will find:

- Tips
- Customer Forums
- Latest release information
- Searchable Knowledge Base
- Latest hotfixes and patches
- Show-Me tutorials and videos
- Product documents
- Answers to frequently asked questions
- In-depth technical papers
- Monthly Support Webinars
- Technical Alerts
- Most Popular Solutions

The Support site offers access to all technical resources, including opening a case through the Service Request portal.

2 Getting Started with Content Gateway

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After you have installed Content Gateway on a system or on all of the nodes in your cluster, the proxy is ready for use.

You can configure Content Gateway via its web-based user interface: the Content Gateway manager.

To get started, see:

- *Accessing the Content Gateway manager*, page 9
- *Entering your subscription key*, page 15
- *Verifying that the proxy is processing Internet requests*, page 16
- *Using the command-line interface*, page 17
- *Starting and stopping Content Gateway on the command line*, page 18

Accessing the Content Gateway manager

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Content Gateway has a browser-based management console: the Content Gateway manager.

- See the Certified Product Matrix for a list of browsers that the console supports. Use of other browsers and versions may result in unexpected behavior.
- Java and JavaScript must be enabled in your browser. See your browser documentation for instructions.

There are 2 ways to access the Content Gateway manager:

- From the Forcepoint Security Manager, using single sign-on (SSO)

> **Note**
> When SSO (not available with Forcepoint DLP Web Content Gateway) is used, the browser must be configured to allow pop-ups on the Content Gateway IP address.

- When two-factor authentication is enabled, this is the only method that can be used. See *Configuring Content Gateway for two-factor authentication*, page 11.
- For SSO configuration instructions, see the Forcepoint Web Security Administrator Help.
- If you log on to Content Gateway manager using SSO, when you log off of Content Gateway manager your session is closed.

- By entering the IP address and port of the Content Gateway host system in your browser:

  1. In the browser address bar, enter:

     ```
     https://<nodename>:<port>
     ```

     Here, <*nodename*> is the IP address of Content Gateway and <*port*> is the port number assigned to the Content Gateway manager (8081, by default).
  2. On the logon page, enter your administrator ID (admin, by default) and password.
     - The Content Gateway manager password is set during installation.
     - You can change the ID and password, as well as create and modify user accounts. See *Controlling access to the Content Gateway manager*, page 164.

  When you on to Content Gateway manager directly, when you click **Log Off**, your session is not closed until you close all open browser windows.

On launch, the Content Gateway manager displays the **Monitor > My Proxy > Summary** page. This page provides information on the features of your subscription and details of your Content Gateway system.

- For information about the Monitor tab, see *Viewing statistics in the Content Gateway manager*, page 111.
- Click the **Configure** tab to display the available configuration options.
  - This document provides instructions for the many tasks that can be performed via the options on the Configure tab.
  - A list describing all of the options available on the Configure tab appears in *Configuration Options*.

Security certificate alerts

An SSL connection is used for secure, browser-based communication with the Content Gateway manager. This connection uses a security certificate issued by Forcepoint LLC. Because the supported browsers do not recognize Forcepoint LLC as a known Certificate Authority, a certificate error displays the first time you launch the Content Gateway manager from a new browser. To avoid seeing this error, install or

permanently accept the certificate within the browser. See your browser documentation for details.

> **Note**
> If you are using Internet Explorer, the certificate error will still be present after you accept the certificate. Close and reopen your browser to remove the error message.

Windows 7 considerations

If you are using Windows 7, you may need to run the browser as administrator for it to allow ActiveX controls.

1. Right-click the browser application and select **Run as administrator**.
2. Log on to the Content Gateway manager and accept the security certificate as described above.

Configuring Content Gateway for two-factor authentication

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Two-factor (certificate) authentication (not available with Forcepoint DLP Web Content Gateway):

- Is configured for and applies to the Forcepoint Security Manager only.
- Requires administrators to provide 2 forms of identification to log on.
- Can be made to apply to the Content Gateway manager by forcing administrators to log on to the Forcepoint Security Manager before accessing the Content Gateway manager.
- Requires single sign-on to be configured for administrators allowed access to the Content Gateway manager.
- **Requires that the password logon capability be disabled on Content Gateway** (see below), preventing administrators not configured for single sign-on from accessing the Content Gateway manager. If Content Gateway is deployed on an appliance, password access is disabled using an appliance command. See your Forcepoint appliance documentation.

For more information about configuring two-factor authentication, see “Configuring Certificate Authentication” in Forcepoint Security Manager Help.

Disabling and enabling Content Gateway password logon

The Content Gateway manager password logon can be disabled to allow two-factor authentication only, or single sign-on access from the Forcepoint Security Manager.

> **Important**
> If Content Gateway is installed on an appliance, see your appliance documentation for details.

To disable password logon:

1. Make sure members of the Super Administrators group in the Web module of the Forcepoint Security Manager have Content Gateway Direct Access (single sign-on) permissions.
2. If two-factor authentication will be used, set up two-factor authentication in the Security Manager.
3. Log on to the Content Gateway host system and acquire root privileges.
4. Change directory to "/etc" and check to see if there is a "websense" subdirectory. If not, create one ("mkdir websense").
5. Change directory to "websense" (path is now "/etc/websense") and check to see if the file "password-logon.conf" exists.
6. If not, create it ("touch password-logon.conf".
7. Edit "password-logon.conf".
8. Add the line, or modify the existing line to:

   ```
   password-logon=disabled
   ```
9. Write and exit the file.

The change takes effect immediately. There is no need to restart Content Gateway.

To re-enable password logon for all administrators:

1. Log on to the Content Gateway host system and acquire root privileges.
2. Navigate to the **/etc/websense** directory.
3. Edit **password-logon.conf** and change:

   ```
   password-logon=disabled
   ```

   to:

   ```
   password-logon=enabled
   ```
4. Write and exit the file.

The change takes effect immediately. There is no need to restart Content Gateway.

Accessing the Content Gateway manager if you forget the master administrator password

Help | Content Gateway | v8.5.x

> **Note**
> The following procedure applies to Content Gateway software installations.
>
> If Content Gateway is running on an appliance, see your Forcepoint appliance documentation.

During installation, you specify an administrator password. The installer automatically encrypts the password and stores the encrypted password in the **records.config** file. Each time you change passwords in the Content Gateway manager, Content Gateway updates the **records.config** file.

If you forget the administrator password and cannot access the Content Gateway manager, you can clear the current password in the **records.config** file (set the value of the configuration variable to NULL) and then enter a new password in the Content Gateway manager. You cannot set passwords in the **records.config** file because the password variables can contain only password encryptions or the value NULL.

1. Open the **records.config** file in **/opt/WCG/config**.
2. Set the variable **proxy.config.admin.admin_password** to NULL to leave the password blank.

   > **Note**
   > Ensure that there are no trailing spaces after the word NULL.

3. Save and close the file.
4. From the Content Gateway **bin** directory (/opt/WCG/bin), run the following command to apply the changes:

   ```
   ./content_line -x
   ```

5. Log on to the Content Gateway manager. When prompted for the user name and password, enter the administrator ID. For the password, enter:

   ```
   Gateway#123
   ```

   An alarm will display telling you that you are using the default password and reminding you to reset it.
6. Navigate to the **Configure > My Proxy > UI Setup > Login** tab.
7. In the **Administrator** section, enter Gateway#123 in the Old Password field. Enter the **New Password** field, and then repeat it in the **New Password (Retype)** field.

   Passwords must be 8 to 15 characters and include at least one:

- Uppercase character
- Lowercase character
- Number
- Special character

  Supported characters include:

  ! # % & ' ( ) * + , - . / ; < = > ? @ [ ] ^ _ { | } ~

  The following special characters are not supported:

  Space $: ` \ "

8. Click **Apply**.

   The next time you access the Content Gateway manager, you must use the new password.

Content Gateway online Help

Help | Content Gateway | v8.5.x

Click on **Get Help!** on any page in the Content Gateway manager to get detailed information about using the product.

Important

Default Internet Explorer settings may block operation of the Help system. If a security alert appears, select **Allow Blocked Content** to display Help.

If your organization's security standards permit, you can permanently disable the warning message on the Advanced tab of the **Tools** > **Internet Options** interface. (Mark **Allow active content to run in files on My Computer** under Security options.)

To access a PDF version of online help, or to access Release Notes, installation and deployment information, FAQs, tips, and other technical information, go to the Documentation Library.

Entering your subscription key

Help | Content Gateway | v8.5.x

Related topic:

- *Providing system information*, page 15

When Content Gateway is deployed with Forcepoint Web Security, there is no need to enter a subscription key in the Content Gateway manager. The Forcepoint Web Security key is automatically shared with Content Gateway.

Note

A key is associated with a Policy Server instance. If you have multiple keys, make sure that Content Gateway is connected to the correct Policy Server instance on the **More Details** view of the **Monitor > My Proxy > Summary** page.

To change which Policy Server instance Content Gateway uses:

- (Appliance) See your Forcepoint appliance documentation.
- (Software) Edit the **/opt/WCG/websense.ini** file to set the value of **PolicyServerIP**. After making the change, stop and start Content Gateway processes:

```
/opt/WCG/WCGAdmin stop
/opt/WCG/WCGAdmin start
```

When Content Gateway is deployed with only Forcepoint DLP, you will need to enter your subscription key manually.

1. Go to the **Configure > My Proxy > Subscription > Subscription Management** page of the Content Gateway manager.
2. Enter your key in the field provided.
3. Click **Apply**.
4. Click **Restart** on the **Configure > My Proxy > Basic > General** page.

Providing system information

Help | Content Gateway | v8.5.x

Content Gateway communicates with Filtering Service to apply policies to web requests. You can configure the timeout period used to determine whether Content

Gateway can connect to Filtering Service, and define what Content Gateway does when communication is interrupted.

To do this:

1. Log on to the Content Gateway manager.
2. Go to the **Configure > My Proxy > Subscription > Scanning** tab and note the Filtering Service IP address and port**. This is information that you** entered when you installed Content Gateway.
3. Review the **Communication Timeout** setting. This is the time, in milliseconds, that Content Gateway waits on communication with Policy Server or Filtering Service before timing out and triggering the **Action for Communication Errors** setting.

   The default timeout value is 5000 ms (5 seconds). If you change the value, you must restart Content Gateway.
4. In the **Action for Communication Errors** section, specify whether to permit or block traffic if a communication timeout condition occurs. When a timeout occurs, Content Gateway applies the setting and regularly polls the services to detect their renewed availability.
5. Use the **Scanning Data Files Update** section to configure how long to wait after downloading security analytic data files before they are put into use. Select a **Delay time** from the drop-down list.

   Keep in mind that the longer the delay, the higher the security risk. The **Suspend updates** option is not recommended for extended use. Selecting it will prompt an alarm as a reminder that downloads have been suspended. It is recommended that you not clear the alarm until **Delay time** has been reset.

   When a delay time is in place, there may be up to 2 sets of data files present on the Content Gateway machine.

   - The current set of data files that are being used by the analytics.
   - The set of data files whose complete download is being delayed.

   Once the delay period is met, the delayed database is moved to the current set of files and the delay period is applied to next download.

   This feature is typically used for a backup system.
6. When you have finished making changes, click **Apply**.

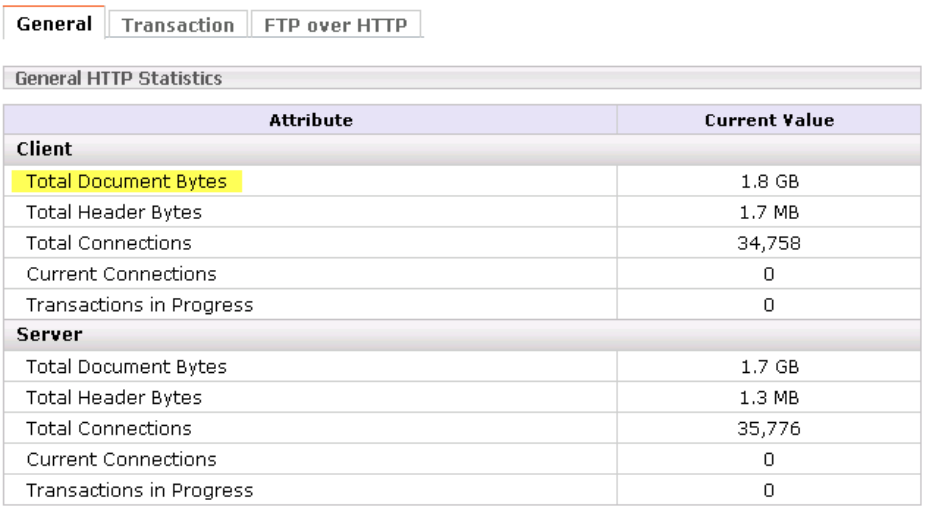
Verifying that the proxy is processing Internet requests

Help | Content Gateway | v8.5.x

After you have installed the proxy, verify that it is processing requests for web content.

1. Log on to the Content Gateway manager.

2. Go to the **Monitor > My Proxy > Summary** page to view subscription detail, scanning data file status, and node details, including the number of objects served, the hit rate, and other basic proxy service information.
3. Navigate to **Monitor > Protocol > HTTP > General** to display the General HTTP Statistics table.
4. Note the current **Total Document Bytes** statistic in the **Client** section of the table.



General | Transaction | FTP over HTTP

General HTTP Statistics

Attribute	Current Value
Client	
Total Document Bytes	1.8 GB
Total Header Bytes	1.7 MB
Total Connections	34,758
Current Connections	0
Transactions in Progress	0
Server	
Total Document Bytes	1.7 GB
Total Header Bytes	1.3 MB
Total Connections	35,776
Current Connections	0
Transactions in Progress	0

5. Set your browser to the proxy port.
6. Browse the Internet.
7. Recheck the **Total Document Bytes** statistic.

   This value increases as the proxy processes HTTP requests.

Using the command-line interface

Help | Content Gateway | v8.5.x

The command-line interface provides a quick way to view proxy statistics and configure Content Gateway if you do not have access to a browser or if you prefer to use a UNIX shell-like command interface.

> **Note**
> This facility is not available when Content Gateway is hosted on a Forcepoint appliance. Instead, use the Content Gateway manager and see your appliance documentation.

You can execute individual commands or script multiple commands in a shell. See *Content Gateway commands*, page 287.

1. Become root:

```
su
```

2. Change to the Content Gateway **bin** directory (/opt/WCG/bin). Run Content Gateway commands from this directory.
   - Commands take the form:

     ```
     content_line -<command_argument>
     ```
   - To view a configuration setting, enter the following command:

     ```
     content_line -r <var>
     ```

     Here, <*var*> is the variable associated with the configuration option (for a list of the variables, refer to *Configuration variables*, page 414).
   - To change the value of a configuration setting, enter the following command:

     ```
     content_line -s <var> -v <value>
     ```

     Here, <*var*> is the variable associated with the configuration option and <*value*> is the value you want to use.
3. For a list of **content_line** commands, enter:

   ```
   content_line -h
   ```

> **Note**
> If the Content Gateway **bin** directory is not in your path, prepend the command with "./".
>
> For example:
>
> ```
> ./content_line -h
> ```

Starting and stopping Content Gateway on the command line

Help | Content Gateway | v8.5.x

To stop or start Content Gateway from the command line:

1. Become root:

   ```
   su
   ```
2. Change to the Content Gateway installation directory (/opt/WCG).
3. Do one of the following:
   - To start the proxy:

     ```
     ./WCGAdmin start
     ```
   - To stop the proxy:

     ```
     ./WCGAdmin stop
     ```
   - To restart the proxy:

     ```
     ./WCGAdmin restart
     ```
   - To see which Content Gateway services are running:

```
./WCGAdmin status
```

The no_cop file

The presence of the **/opt/WCG/config/internal/no_cop** file acts as an administrative control that instructs the **content_cop** process to exit immediately without starting **content_manager** or performing any health checks. The **no_cop** file prevents the proxy from starting automatically when it has been stopped with the **./WCGAdmin stop** command.

Without such a static control, Content Gateway would restart automatically upon system reboot. The **no_cop** control keeps Content Gateway off until it is restarted with the **./WCGAdmin start** command.

When the **no_cop** file prevents Content Gateway from starting, the following message is recorded in the system log file:

```
content_cop[16056]: encountered "config/internal/no_cop"
file...exiting
```

3 Web Proxy Caching

Help | Content Gateway | v8.5.x

Web proxy caching stores copies of frequently accessed web objects (such as documents, images, and articles) close to users and serves this information to them. Internet users get their information faster, and Internet bandwidth is freed for other tasks.

Internet users direct their requests to web servers all over the Internet. For a caching server to serve these requests, it must act as a web proxy server. A web proxy server receives user requests for web objects and either serves the requests or forwards them to the **origin server** (the web server that contains the original copy of the requested information).

Content Gateway supports both **transparent proxy deployment**, in which the user's client software (typically a browser) is unaware that it is communicating with a proxy, and **explicit proxy deployment**, in which the user's client software is configured to send requests directly to the proxy.

Cache requests

Related topics:

- *Scheduling updates to local cache content*, page 27
- *Pinning content in the cache*, page 29
- *To cache or not to cache?*, page 29
- *Caching HTTP objects*, page 30
- *Forcing object caching*, page 35
- *Caching HTTP alternates*, page 35
- *Caching FTP objects*, page 37

Content Gateway serves a user request as follows:

1. Content Gateway receives a user request for a web object.

2. Using the web address, the proxy tries to locate the requested object in its object store (cache).
3. If the object is in the cache, the proxy checks to see if the object is fresh enough to serve (see *Ensuring cached object freshness*, page 22). If the object is fresh, the proxy serves it to the user as a **cache hit**.
4. If the data in the cache is stale, the proxy connects to the origin server and asks if the object is still fresh (a revalidation). If the object is still fresh, the proxy sends the cached copy to the user.
5. If the object is not in the cache (a cache miss) or the server indicates that the cached copy is no longer valid, the proxy obtains the object from the origin server, simultaneously streaming it to the user and the cache. Subsequent requests for the object will be served faster because the object will come directly from the cache.

Content Gateway can store and serve **Java applets**, **JavaScript** programs, **VBScripts**, and other executable objects from its cache according to the freshness and cacheability rules for HTTP objects. Content Gateway does not execute the applets, scripts, or programs. These objects run only when the client system that sent the request loads them.

Content Gateway does not store partial documents in the cache. Should a client disconnect while an HTTP or FTP download is underway, Content Gateway continues the download for up to 10 seconds after the disconnect. If the transfer completes successfully, Content Gateway stores the object in the cache. If the download does not complete, Content Gateway disconnects from the origin server and deletes the object from the cache.

Ensuring cached object freshness

Help | Content Gateway | v8.5.x

When Content Gateway receives a request for a web object, it tries to locate the requested object in its cache. If the object is in the cache, the proxy checks to see if the object is fresh enough to serve.

The protocol determines how the proxy handles object freshness in the cache:

- HTTP objects support author-specified expiration dates. The proxy adheres to these expiration dates; otherwise, it picks an expiration date based on how frequently the object is changing and on administrator-chosen freshness guidelines. In addition, objects can be revalidated, checking with the origin server if an object is still fresh. See *HTTP object freshness*, page 23.
- FTP objects stay in the cache for a specified time period. See *FTP object freshness*, page 26.

HTTP object freshness

Help | Content Gateway | v8.5.x

Content Gateway determines whether an HTTP object in the cache is fresh by:

- Checking the **Expires** or **max-age** header

  Some HTTP objects contain **Expires** headers or **max-age** headers that define how long the object can be cached. Comparing the current time with the expiration time tells the proxy whether or not the object is fresh.

- Checking the **Last-Modified** / **Date** headers

  If an HTTP object has no **Expires** header or **max-age** header, the proxy can calculate a freshness limit using the following formula:

  ```
  freshness_limit =(date - last_modified) * 0.10
  ```

  Here, *date* is the date in the object's server response header, and *last_modified* is the date in the **Last-Modified** header. If there is no **Last-Modified** header, the proxy uses the date that the object was written to cache. You can increase or reduce the value 0.10 (10 percent). See *Modifying the aging factor for freshness computations*, page 23.

  The computed freshness limit is bound by minimum and maximum boundaries. See *Setting an absolute freshness limit*, page 24.

- Checking the absolute freshness limit

  For HTTP objects that do not have **Expires** headers or do not have both **Last-Modified** and **Date** headers, the proxy uses a maximum and minimum freshness limit. See *Setting an absolute freshness limit*, page 24.

- Checking revalidate rules in the **cache.config** file

  Revalidate rules apply freshness limits to specific HTTP objects. You can set freshness limits for objects originating from particular domains or IP addresses, objects with URLs that contain specified regular expressions, and objects requested by particular clients, for example. See *cache.config*, page 391.

Modifying the aging factor for freshness computations

Help | Content Gateway | v8.5.x

If an object does not contain any expiration information, Content Gateway can estimate its freshness from the **Last-Modified** and **Date** headers. By default, the proxy stores an object for 10% of the time that elapsed since it last changed. You can increase or reduce the percentage.

1. Open the **records.config** file located in the Content Gateway **config** directory.
2. Edit the **proxy.config.http.cache.heuristic_lm_factor** variable to specify the aging factor for freshness computations.

   The default value is 0.10 (10 percent).
3. Save and close the file.
4. To apply the changes, run the following command from the Content Gateway **bin** directory:

```
content_line -x
```

Setting an absolute freshness limit

Help | Content Gateway | v8.5.x

Some objects do not have **Expires** headers or do not have both **Last-Modified** and **Date** headers. You can control how long these objects are considered fresh in the cache by specifying an absolute freshness limit. A longer lifetime means objects are kept in the cache longer. Performance can improve if pages are taken from the cache rather than going out to the network.

1. Navigate to the **Configure > Protocols > HTTP > Cacheability** tab.
2. In the **Minimum Heuristic Lifetime** area of the **Freshness** section, specify the minimum amount of time that HTTP objects without an expiration date can remain fresh in the cache before being considered stale. The default value is 3600 seconds (1 hour).
3. In the **Maximum Heuristic Lifetime** field, specify the maximum amount of time that HTTP objects without an expiration date can remain fresh in the cache before being considered stale. The default value is 86400 seconds (1 day).
4. Click **Apply**.

Specifying header requirements

Help | Content Gateway | v8.5.x

To ensure freshness of the objects in the cache, configure Content Gateway to cache only objects with specific headers.

Warning

By default, the proxy caches all objects (including objects with no headers). As a bet practice, change the default setting only for specialized proxy situations. If you configure the proxy to cache only HTTP objects with **Expires** or **max-age** headers, the cache hit rate will be seriously reduced (very few objects have explicit expiration information).

1. Navigate to the **Configure > Protocols > HTTP > Cacheability** tab.
2. Under **Behavior > Required Headers**, select one of the following:
   - **An Explicit Lifetime Header** to cache only HTTP objects with Expires or Cache-Control headers.
   - **A Last-Modified Header** to cache only HTTP objects with Expires or Last-Modified headers.
   - **No Required Headers** to cache all HTTP objects (no specific headers are required). This is the default.
3. Click **Apply**.

Cache-Control headers

Help | Content Gateway | v8.5.x

Even though an object might be fresh in the cache, clients or servers might have constraints that prevent them from retrieving the object from the cache. For example, a client might request that a object not come from a cache, or if it does, it cannot have been cached for more than 10 minutes.

Content Gateway bases the servability of a cached object on **Cache-Control** headers. **Cache-Control** headers can appear in both client requests and server responses.

The following **Cache-Control** headers affect whether objects are served from the cache:

- The **no-cache** header, sent by clients, tells the proxy to serve *no* objects directly from the cache; always obtain the object from the origin server. You can configure the proxy to ignore client **no-cache** headers (see *Configuring the proxy to ignore client no-cache headers*, page 31).
- The **max-age** header, sent by servers, is compared to the object age; if the age is less than **max-age**, the object is fresh and can be served.
- The **min-fresh** header, sent by clients, is an *acceptable freshness tolerance*. The client wants the object to be at least this fresh. If a cached object does not remain fresh at least this long in the future, it is revalidated.
- The **max-stale** header, sent by clients, permits the proxy to serve stale objects provided they are not too old. Some browsers might be willing to take slightly old objects in exchange for improved performance, especially during periods of poor Internet availability.

The proxy applies Cache-Control servability criteria *after* HTTP freshness criteria. For example, an object might be considered fresh, but if its age is greater than its `max-age`, it is not served.

Revalidating HTTP objects

Help | Content Gateway | v8.5.x

When a client requests an HTTP object that is stale in the cache, Content Gateway revalidates the object, querying the origin server to check if the object is unchanged. Revalidation results in one of the following:

- If the object is still fresh, the proxy resets its freshness limit and serves the object.
- If a new copy of the object is available, the proxy caches the new object, replacing the stale copy, and serves the object to the user simultaneously.
- If the object no longer exists on the origin server, the proxy does not serve the cached copy.
- If the origin server does not respond to the revalidation query, the proxy does not perform any validation; it serves the stale object from the cache.

By default, the proxy revalidates a requested HTTP object in the cache if it considers the object to be stale. The proxy evaluates object freshness as described in *HTTP*

object freshness, page 23. You can configure how often you want the proxy to revalidate an HTTP object.

1. Navigate to the **Configure > Protocols > HTTP > Cacheability** tab.
2. In the **When to Revalidate** area of the **Behavior** section, select:
   - **Never Revalidate** to never verify the freshness of a requested HTTP object with the origin server.
   - **Always Revalidate** to always verify the freshness of a requested HTTP object with the origin server.
   - **Revalidate if Heuristic Expiration** to verify the freshness of a requested HTTP object with the origin server if the object contains no **Expires** or **Cache-Control** headers. Content Gateway considers all HTTP objects without **Expires** or **Cache-Control** headers to be stale.
   - **Use Cache Directive or Heuristic** to verify the freshness of a requested HTTP object with the origin server when Content Gateway considers the object in the cache to be stale. This is the default.
3. Click **Apply**.

Note
You can also set specific revalidation rules in the **cache.config** file. See *cache.config*, page 391.

FTP object freshness

Help | Content Gateway | v8.5.x

FTP objects carry no time stamp or date information and remain fresh in the cache for the period of time you specify (from 15 minutes to 2 weeks), after which they are considered stale.

FTP objects can be requested from either an HTTP client (such as a browser) or an FTP client (such as WS_FTP). Content Gateway caches only the FTP objects requested from HTTP clients.

FTP objects requested by HTTP clients

You can set an absolute freshness limit for FTP objects requested by HTTP clients (FTP over HTTP objects).

Note
In addition to setting an absolute freshness limit for all FTP objects requested by HTTP clients, you can set freshness rules for specific FTP objects in the **cache.config** file (see *cache.config*, page 391).

1. Navigate to the **Configure > Protocols > HTTP > Cacheability** tab.

2. In the **FTP Document Lifetime** area of the **Freshness** section, enter the amount of time that FTP objects requested by HTTP clients can remain fresh in the cache before being considered stale. The default value is 259200 seconds (3 days).
3. Click **Apply**.

Scheduling updates to local cache content

Help | Content Gateway | v8.5.x

To further increase performance and to ensure that HTTP and FTP objects (requested from HTTP clients) are fresh in the cache, you can use the Scheduled Update option to configure the proxy to load specific objects into the cache at scheduled times.

To use the Scheduled Update option:

- Specify the list of URLs that contain the objects you want to schedule for update, the time the update should take place, and the recursion depth for the URL.
- Enable the Scheduled Update option and configure optional retry settings.

See *Configuring the Scheduled Update option*, page 27, for more information.

Content Gateway uses the information you specify to determine the URLs for which it is responsible and, for each URL, derives all recursive URLs if applicable. It then generates a unique URL list. Using this list, the proxy initiates an HTTP GET for each unaccessed URL, ensuring that it remains within the user-defined limits for HTTP concurrency at any given time.

Note

The system logs the completion of all HTTP GET operations, enabling you to monitor the performance of this feature.

The Force Immediate Update option that enables you to update URLs without waiting for the specified update time to occur. You can use this option to test your scheduled update configuration. See *Forcing an immediate update*, page 28.

Configuring the Scheduled Update option

Help | Content Gateway | v8.5.x

1. Navigate to **Configure > Protocols > HTTP Scheduled Update > Update URLs**.
2. In the **Scheduled Object Update** area, click **Edit File** to open the configuration file editor for the **update.config** file.
3. Enter the following information:
   - In the **URL** field, enter the URL you want to schedule for update.

- (*Optional*) In the **Request Headers** field, enter the semicolon-separated list of headers passed in each GET request. You can define any request header that conforms to the HTTP specification.
- In the **Offset Hour** field, enter the base hour used to derive the update periods. You can specify a value in the range 00 to 23.
- In the **Interval** field, enter the interval (in seconds) at which updates occur, starting at the offset hour.
- In the **Recursion Depth** field, enter the depth to which referenced URLs are recursively updated, starting at the given URL. For example, a recursion depth of 1 updates the given URL, as well as all URLs immediately referenced by links from the original URL.

4. Click **Add**, and then click **Apply**.
5. Click **Close**.
6. Click the **General** tab.
7. Enable **Scheduled Update**.
8. In the **Maximum Concurrent Updates** field, enter the maximum number of simultaneous update requests allowed at any time to prevent the scheduled update process from overburdening the host. The default is 100.
9. In the **Count** field of the **Retry on Update Error** section, enter the number of times you want to retry the scheduled update of a URL in the event of failure. The default value is 10.
10. In the **Interval** field of the **Retry on Update Error** section, enter the delay in seconds between each scheduled update retry for a URL in the event of failure. The default value is 2.
11. Click **Apply**.

Forcing an immediate update

Help | Content Gateway | v8.5.x

The Force Immediate Update option lets you verify the URLs listed in the **update.config** file immediately. This option disregards the offset hour and interval set in the **update.config** file and updates the URLs listed.

Important
When you enable the Force Immediate Update option, the proxy continually updates the URLs specified in the **update.config** file until you disable the option.

1. Navigate to **Configure > Protocols > HTTP Scheduled Update > General**.
2. Ensure that **Scheduled Update** is enabled.
3. Click the **Update URLs** tab.
4. Enable **Force Immediate Update**.
5. Click **Apply**.

Pinning content in the cache

Help | Content Gateway | v8.5.x

The cache pinning option configures Content Gateway to keep certain HTTP objects (and FTP objects requested from HTTP clients) in the cache for a specified time. Use this option to ensure that the most popular objects are in the cache when needed and that the proxy does not delete important objects from the cache.

> **Note**
>
> The proxy observes Cache-Control headers and pins an object in the cache only if it is cacheable.

To use cache pinning:

1. In the Content Gateway manager, navigate to the **Configure > Protocols > HTTP > Cacheability** tab.
2. Click **Edit File** at the end of the page to display the configuration file editor for the **cache.config** file.
3. In the fields provided, supply the following information:
   a. From the Rule Type drop-down box, select **pin-in-cache**.
   b. From the Primary Destination Type drop-down box, select **url_regex**.
   c. In the Primary Destination Value field, specify the URL you want to pin in the cache.
   d. In the Time Period field, specify the amount of time that the proxy pins the object in the cache.

      In addition, you can add secondary specifiers (such as Prefix and Suffix) to the rule. All the fields are described under *HTTP*, page 306.
4. Click **Add** to add the rule to the list, and then click **Apply**.
5. Click **Close**.
6. On the **Configure > Subsystems > Cache > General** tab, enable **Allow Pinning**.
7. Click **Apply**.

To cache or not to cache?

Help | Content Gateway | v8.5.x

When Content Gateway receives a request for a web object that is not in the cache, it retrieves the object from the origin server and serves it to the client. At the same time, the proxy checks if the object is cacheable before storing it in its cache to serve future requests.

Content Gateway determines if an object is cacheable based on protocol:

- For HTTP objects, the proxy responds to caching directives from clients and origin servers. In addition, you can configure the proxy not to cache certain objects. See *Caching HTTP objects*, page 30.
- For FTP objects, the proxy responds to caching directives you specify through configuration options and files. See *Caching FTP objects*, page 37.

Caching HTTP objects

Help | Content Gateway | v8.5.x

Content Gateway responds to caching directives from clients and origin servers, as well as directives you specify through configuration options and files.

This section discusses the following topics:

- *Client directives*, page 30
- *Origin server directives*, page 32
- *Configuration directives*, page 33

Client directives

Help | Content Gateway | v8.5.x

By default, Content Gateway does *not* cache objects with the following request headers:

- Cache-Control: no-store
- Cache-Control: no-cache

> **Note**
> You can configure the proxy to ignore the **Cache-Control: no-cache** header. See *Configuring the proxy to ignore client no-cache headers*, page 31.

- Cookie: (for text objects)

  By default, the proxy caches objects served in response to requests that contain cookies unless the object is text. You can configure the proxy to *not* cache cookied content of any type, cache all cookied content, or cache cookied content that is of image type only. See *Caching cookied objects*, page 34.

- Authorization:

> **Note**
> FTP objects requested from HTTP clients can also contain **Cache-Control: no-store, Cache-Control: no-cache**, or **Authorization** headers. If an FTP object requested from an HTTP client contains such a header, the proxy does not cache it unless explicitly configured to do so.

Configuring the proxy to ignore client no-cache headers

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By default, Content Gateway observes client **Cache Control:no-cache** directives. If a requested object contains a **no-cache** header, the proxy forwards the request to the origin server even if it has a fresh copy in the cache.

You can configure the proxy to ignore client **no-cache** directives. In this case, the proxy ignores **no-cache** headers from client requests and serves the object from its cache.

> **Important**
> The default behavior of observing **no-cache** directives is appropriate in most cases. Configure Content Gateway to ignore client **no-cache** directives only if you are knowledgeable about HTTP 1.1.

1. Navigate to the **Configure > Protocols > HTTP > Cacheability** tab.
2. In the **Behavior** section, enable the **Ignore "no-cache" in Client Requests** option.
3. Click **Apply**.

> **Note**
> Certain versions of Microsoft Internet Explorer do not request cache reloads from transparent caches when the user presses the browser **Refresh** button. This can prevent content from being loaded directly from the origin server. You can configure Content Gateway to treat Microsoft Internet Explorer requests more conservatively, providing fresher content at the cost of serving fewer documents from the cache. You can configure the proxy to add **no-cache** headers to requests from Microsoft Internet Explorer in the Content Gateway manager (in the **Behavior** section of the **Configure > Protocols > HTTP > Cacheability** tab).

Origin server directives

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By default, Content Gateway does not cache objects with the following response headers:

- Cache-Control: no-store
- Cache-Control: private
- WWW-Authenticate:

> **Note**
> You can configure the proxy to ignore **WWW-Authenticate** headers. See *Configuring the proxy to ignore WWW-Authenticate headers*, page 33.

- Set-Cookie:
- Cache-Control: no-cache

> **Note**
> You can configure the proxy to ignore **no-cache** headers. See *Configuring the proxy to ignore server no-cache headers*, page 32.

- Expires: header with value of 0 (zero) or a past date

Configuring the proxy to ignore server no-cache headers

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By default, Content Gateway observes **Cache-Control:no-cache** directives. A response from an origin server with a no-cache header is not stored in the cache, and any previous copy of the object in the cache is removed.

> **Important**
> If you configure the proxy to ignore no-cache headers, it also ignores no-store headers.

> **Important**
> The default behavior of observing no-cache directives is appropriate in most cases. Configure the proxy to ignore origin server no-cache headers only if you are knowledgeable about HTTP 1.1.

To configure the proxy to ignore origin server no-cache headers.:

1. Open the **records.config** file in the Content Gateway **config** directory.
2. Edit the **proxy.config.http.cache.ignore_server_no_cache** variable to **1** to ignore server directives to bypass the cache.
3. Save and close the file.
4. To apply the changes, run the following command from the Content Gateway **bin** directory:

   ```
   content_line -x
   ```

Configuring the proxy to ignore WWW-Authenticate headers

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By default, Content Gateway does not cache objects that contain **WWW-Authenticate** response headers. The WWW-Authenticate header contains authentication parameters that the client uses when preparing the authentication challenge response to an origin server.

> **Important**
> The default behavior of not caching objects with WWW-Authenticate headers is appropriate in most cases. Configure the proxy to ignore server WWW-Authenticate headers only if you are knowledgeable about HTTP 1.1.

You can configure the proxy to ignore origin server WWW-Authenticate headers, in which case, objects with WWW-Authenticate headers are stored in the cache for future requests.

To do this:

1. Open the **records.config** file located in the Content Gateway **config** directory.
2. Edit the **proxy.config.http.cache.ignore_authentication** variable to **1** to cache objects with WWW-Authenticate headers.
3. Save and close the file.
4. To apply the changes, run the following command from the Content Gateway **bin** directory:

   ```
   content_line -x
   ```

Configuration directives

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In addition to client and origin server directives, Content Gateway responds to directives you specify through configuration options and files.

You can configure the proxy to:

- *Not* cache any HTTP objects. See *Disabling HTTP object caching*, page 34.

- Cache dynamic content (objects with URLs that contain a question mark (?), a semicolon (;), or cgi, or that end in .asp). See *Caching dynamic content*, page 34.
- Cache objects served in response to the **Cookie:** header. See *Caching cookied objects*, page 34.
- Observe never-cache rules in the **cache.config** file. See *cache.config*, page 391.

Disabling HTTP object caching

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By default, Content Gateway caches all HTTP objects except those for which you have set never cache rules in the **cache.config** file. You can disable HTTP object caching so that all HTTP objects are served from the origin server and never cached.

1. Navigate to the **Configure** > **Protocols** > **HTTP > Cacheability** tab.
2. Disable **HTTP Caching**.
3. Click **Apply**.

Caching dynamic content

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A URL is considered dynamic if it contains a question mark (?), a semicolon (;), or cgi, or if it ends in .asp. By default, Content Gateway does *not* cache dynamic content. However, you can configure the proxy to cache this content.

Warning
It is recommended that you configure the proxy to cache dynamic content for specialized proxy situations only.

1. Navigate to the **Configure > Protocols > HTTP > Cacheability** tab.
2. In the **Dynamic Caching** section, enable **Caching Documents with Dynamic URLs**.
3. Click **Apply**.

Caching cookied objects

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By default, Content Gateway caches objects served in response to requests that contain cookies *unless* the object is text. The proxy does not cache cookied text content, because object headers are stored as well as the object, and personalized cookie header values could be saved with the object.

With non-text objects, personalized headers are unlikely to be delivered or used.

1. Navigate to the **Configure > Protocols > HTTP > Cacheability** tab.

2. Under **Dynamic Caching > Caching Response to Cookies**, select a caching option:
   - Select **Cache All but Text** to cache all cookied content except content that is text (this is the default setting).
   - Select **Cache Only Image Types** to cache cookied content that is an image.
   - Select **Cache Any Content Type** to cache cookied content of all types.
   - Select **No Cache on Cookies** to *not* cache cookied content of any type.
3. Click **Apply**.

Forcing object caching

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You can force Content Gateway to cache specific URLs (including dynamic URLs) for a specified duration regardless of **Cache-Control** response headers.

1. Navigate to the **Configure > Protocols > HTTP > Cacheability** tab.
2. Click **Edit File** at the end of the page to display the configuration file editor for the **cache.config** file.
3. In the fields provided, supply the following information:
   a. From the Rule Type drop-down box, select **ttl-in-cache**.
   b. From the Primary Destination Type drop-down box, select **url_regex**.
   c. In the Primary Destination Value field, specify the URL you want to force cache.
   d. In the Time Period field, specify the amount of time that the proxy can serve the URL from the cache.

      In addition, you can add secondary specifiers (such as Prefix and Suffix) to the rule. All the fields are described in *HTTP*, page 306.
4. Click **Add**, and then click **Apply**.
5. Click **Close**.

Caching HTTP alternates

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Some origin servers answer requests to the same URL with a variety of objects. The content of these objects can vary, according to whether a server delivers content for different languages, targets different browsers with different presentation styles, or provides different document formats (HTML, PDF). Different versions of the same object are termed *alternates* and are cached by Content Gateway based on **Vary** response headers.

Configuring how Content Gateway caches alternates

You can specify additional request and response headers for specific content types that the proxy will identify as alternates for caching.

1. Navigate to the **Configure > Protocols > HTTP > Cacheability** tab.
2. In the **Vary Based on Content Type** section, click **Enabled** to cache alternate versions of HTTP documents that do not contain the **Vary** header.
3. Specify additional request and response headers for the proxy server to identify:
   - In the **Vary by Default on Text** field, enter the HTTP header field on which you want to vary if the request is for text (for example, an HTML document).
   - In the **Vary by Default on Images** field, enter the HTTP header field on which you want to vary if the request is for images (for example, a **.gif** file).
   - In the **Vary by Default on Other Document Types** field, enter the HTTP header field on which you want to vary if the request is for anything other than text or images.

   Note

   If you specify **Cookie** as the header field on which to vary in the above fields, make sure that the appropriate option is enabled under Dynamic Caching > Caching Response to Cookies.

   For example, if you enable Caching Response to Cookies > Cache Only Image Types you enable Vary Based on Content Type > Vary by Default on Text, alternates by cookie will not apply to text.

4. Click **Apply**.

Limiting the number of alternates for an object

You can limit the number of alternates Content Gateway can cache per object. The default number of alternates is 3.

Note

Large numbers of alternates can affect proxy performance because all alternates have the same URL. Although Content Gateway can look up the URL in the index very quickly, it must scan sequentially through available alternates in the object store.

1. Navigate to the **Configure > Protocols > HTTP > Cacheability** tab.
2. In the **Maximum Alternates** field, enter the maximum number of alternate versions of an object you want the proxy to cache. The default value is 3.

3. Click **Apply**.

Caching FTP objects

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FTP objects can be requested from either an HTTP client (such as a browser) or an FTP client (such as WS_FTP).

For FTP objects requested from HTTP clients (FTP over HTTP), perform the following configuration to determine what the proxy stores in the cache:

- Disable FTP over HTTP caching so that the proxy does not cache any FTP objects requested from HTTP clients (see *Disabling FTP over HTTP caching*, page 37).
- Set never cache rules in the **cache.config** file (see *cache.config*, page 391).
- Configure the proxy to ignore client **Cache-Control: no-store** or **Cache-Control: no-cache** headers (see *Configuring the proxy to ignore client no-cache headers*, page 31).

Caching is not supported for FTP objects requested from FTP clients.

Disabling FTP over HTTP caching

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You can configure Content Gateway not to cache any FTP objects that are requested from HTTP clients by disabling the FTP over HTTP option. The proxy processes the requests by forwarding them to the FTP server but does not cache any requested objects.

1. Navigate to the **Configure > Protocols > HTTP > Cacheability** tab.
2. In the **Caching** section, disable **FTP over HTTP Caching**.
3. Click **Apply**.

4 Explicit Proxy

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If Internet requests are not transparently routed to Content Gateway via a Layer 4 switch or router (see *Transparent Proxy and ARM*, page 47), traffic must be **explicitly** routed to Content Gateway by configuring the client's Internet browser. (This is sometimes referred to as an *explicit proxy deployment*.)

Clients can configure their web browsers in 1 of 3 ways:

- By directly configuring their browsers to send requests directly to the proxy. See *Manual browser configuration*, page 39.
- By configuring their browsers to download proxy configuration instructions from a proxy auto-config (PAC) file. See *Using a PAC file*, page 40.
- By using Web Proxy Auto-Discovery Protocol (WPAD) to download proxy configuration instructions from a WPAD server (Microsoft Internet Explorer only). See *Using WPAD*, page 42.

In addition, if Content Gateway is configured to proxy FTP traffic, FTP client applications, such as FileZilla or WS_FTP, must be configured to explicitly send requests to the proxy. See *Configuring FTP clients in an explicit proxy environment*, page 44.

Manual browser configuration

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To configure a browser to send requests to Content Gateway, clients must provide the following information for each protocol they want the proxy to serve to their browsers:

- The proxy's hostname or IP address.

  Important
  If Integrated Windows Authentication is configured for user authentication, the Fully Qualified Domain Name must be used. Specifying the IP address will result in authentication failure. See *Integrated Windows Authentication*, page 189.

- The proxy server port. The Content Gateway default proxy server port is 8080.

  Important
  Do not set up the IP address of the Content Gateway proxy to be a virtual IP address.

  Although the Content Gateway manager does not prohibit the entry of a virtual IP address, the proxy does not function properly if a VIP is used.

In addition, clients can specify not to use the proxy for certain sites. Requests to the listed sites go directly to the origin server.

For Microsoft Internet Explorer, proxy configuration settings are in **Tools > Internet Options > Connections > LAN Settings**. By default, Microsoft Internet Explorer sets all protocols to the same proxy server. To configure each protocol separately, click **Advanced** in the **LAN Settings** section. See the browser documentation for complete proxy configuration instructions.

For Mozilla Firefox, proxy configuration settings are in **Tools > Options > Advanced > Network > Settings > Connection Settings > Manual Proxy Configuration**. By default, you must configure each protocol separately. However, you can set all protocols to the same proxy server by selecting **Use this proxy server for all protocols.**

You do not have to set configuration options on the proxy to accept requests from manually configured browsers.

Using a PAC file

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A PAC file is a JavaScript function definition that a browser calls to determine how requests are handled. Clients must specify in their browser settings the URL from which the PAC file is loaded.

You can store a PAC file on the proxy and provide the URL for this file to your clients.

> **Note**
> The PAC file can reside on any server in your network. Small networks may store the file on the proxy itself, but large, enterprise-class networks should use a separate server for storing the PAC file.
>
> If the HTTPS protocol option is enabled, see *Enabling SSL support*, page 131, for information about a PAC file to use with HTTPS traffic.

1. If you have an existing **proxy.pac** file, replace the **proxy.pac** file located in the Content Gateway **config** directory with your existing file.
2. Navigate to the **Configure** > **Content Routing** > **Browser Auto-Config > PAC** tab.
3. In the **Auto-Configuration Port** field, specify the port that Content Gateway uses to serve the PAC file. The default port is 8083.
4. The PAC Settings area displays the **proxy.pac** file:
   - If you copied an existing PAC file into the Content Gateway **config** directory, the **proxy.pac** file contains your proxy configuration settings. Check the settings and make changes if necessary.
   - If you did not copy an existing PAC file into the Content Gateway **config** directory, the PAC Settings area is empty. Enter the script that provides the proxy server configuration settings. A sample script is provided in *Sample PAC file*, page 42. See, also, the article titled “PAC File Best Practices” in the Documentation Library.
5. Click **Apply**.
6. Go to the **Configure > My Proxy > Basic > General** tab and click **Restart**.
7. Inform your users to set their browsers to point to this PAC file.

   For example, if the PAC file is located on the proxy server with the hostname **proxy1** and Content Gateway uses the default port 8083 to serve the file, users must specify the following URL in the proxy configuration settings:

   ```
   http://proxy1.company.com:8083/proxy.pac
   ```

The procedures for specifying the PAC file location vary among browsers.

For Microsoft Internet Explorer:

1. Go to **Tools > Internet Options > Connections > LAN Settings**.
2. Select **Use automatic configuration script**.
3. In the Address field, enter:

   ```
   http://<proxy_host>:8083/proxy.pac
   ```
4. Click **OK**.

For Mozilla Firefox:

1. Go to **Tools > Options > Advanced > Network > Connection > Settings**.
2. Select **Automatic proxy configuration URL** field, and enter

   ```
   http://<proxy_host>:8083/proxy.pac
   ```
3. Click **Reload**, and then click **OK**.

See the documentation for your browser for details.

Sample PAC file

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The following sample PAC file instructs browsers to connect directly to all hosts without a fully qualified domain name and to all hosts in the local domain. All other requests go to the proxy server called **myproxy.company.com**.

```
function FindProxyForURL(url, host)
{
if (isPlainHostName(host) || dnsDomainIs(host,
".company.com"))
return "DIRECT";
else
return "PROXY myproxy.company.com:8080; DIRECT";
}
```

Using WPAD

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WPAD allows Internet Explorer to automatically detect a server that can supply it with proxy server configuration settings. Clients do not have to configure their browsers to send requests to a proxy server: a single server provides the settings to all clients on the network.

Note
WPAD is incompatible with transparent proxy deployments.

When an Internet Explorer browser starts up, it searches for a WPAD server. It prepends the hostname WPAD to the current fully qualified domain name. For example, a client in **x.y.company.com** searches for a WPAD server at **wpad.x.y.company.com**. If unsuccessful, the browser removes the bottommost domain and tries again; for example, it tries **wpad.y.company.com**. The browser stops searching when it detects a WPAD server or reaches the third-level domain,

wpad.company.com. The algorithm stops at the third level so that the browser does not search outside the current network.

> **Note**
> By default, Microsoft Internet Explorer are set to automatically detect WPAD servers. However, browser users can disable this setting.

To configure Content Gateway to be a WPAD server:

1. If you have an existing **wpad.dat** file, replace the **wpad.dat** file located in the Content Gateway **config** directory with your existing file.
2. Log on to the Content Gateway manager and go to **Configure** > **Content Routing** > **Browser Auto-Config > WPAD** to display the **wpad.dat** file**.**
3. The WPAD Settings area displays the **wpad.dat** file:
   - If you copied an existing **wpad.dat** file into the Content Gateway **config** directory, the file contains your proxy configuration settings. Check the settings and make changes if necessary.
   - If you did not copy an existing **wpad.dat** file into the Content Gateway **config** directory (/opt/WCG/config), the WPAD Settings area is empty. Enter a script that will provide the proxy server configuration settings. A sample script is provided in *Sample PAC file*, page 42 (a **wpad.dat** file can contain the same script as a **proxy.pac** file).
4. Click **Apply**.
5. Navigate to **Configure** > **Networking > ARM**.
6. In the **Redirection Rules** section, click **Edit File** to add a special remap rule to the **ipnat.conf** file.
7. Enter information in the fields provided, and then click **Add**:
   a. Enter the **Ethernet Interface** that receives browser WPAD requests (for example hme0 or eth0).
   b. From the Connection Type drop-down list, select **tcp**.
   c. In the Destination IP field, enter the IP address of the Content Gateway server that will be resolved to the WPAD server name by the local name servers.
   d. (*Optional*) In the Destination CIDR field, enter the CIDR mask value.

      If the Destination IP is in IPv4 format, enter 32. Enter 128 for an IPv6 Destination IP.
   e. In the Destination Port field, enter **80**.
   f. In the Redirected Destination IP field enter the same IP address you entered in the Destination IP field.
   g. In the Redirected Destination Port field, enter **8083**.
   h. (*Optional*) In the User Protocol field, select **dns**.
8. Click **Add**.
9. Use the arrow keys on the left to move the new rule to the first line in the file.

10. Click **Apply**, and then click **Close**.
11. Go to the **Configure > My Proxy > Basic > General** tab and click **Restart**.

Configuring FTP clients in an explicit proxy environment

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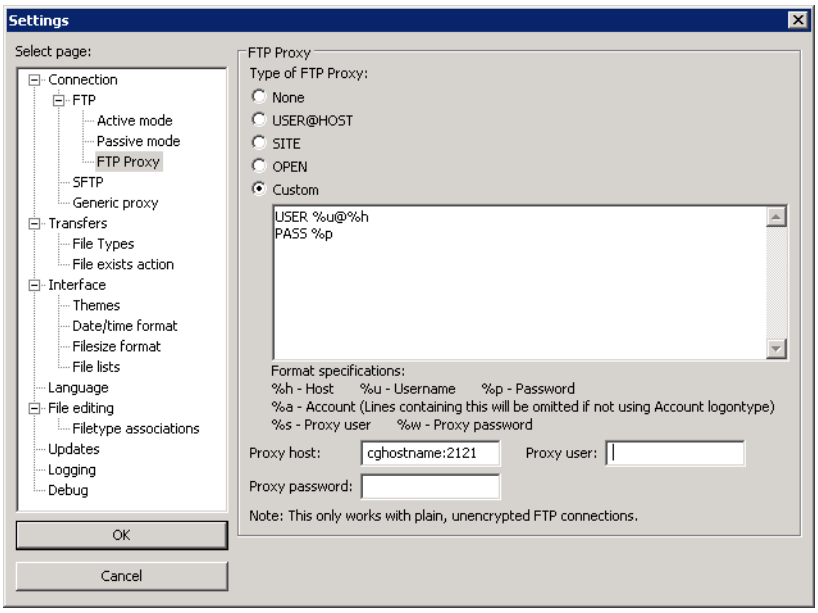
When Content Gateway is configured to proxy FTP traffic (see *FTP*, page 319), also configure FTP client applications, such as FileZilla or WS_FTP, to send FTP requests to the proxy. After the initial configuration, users work with the FTP client application as if no proxy were present.

To connect to an FTP server, 4 pieces of information are usually needed. These pieces of information are mapped as follows:

From:	To:
FTP server hostname	FTP ***proxy*** hostname
FTP server port number	FTP ***proxy*** port number (default is 2121)
FTP server username	FTP_server_username@FTP_server_hostname For example: anon@ftp.abc.com
FTP server password	FTP server password

Some FTP client applications have a configuration page for specifying FTP proxy information. Update those settings to point to the Content Gateway FTP proxy. See your FTP client application documentation.

Here is an example configuration using a recent version of FileZilla.



In the **FTP Proxy** area:

1. Set **FTP Proxy** to **Custom** and enter the following definitions:

   ```
   USER %u@%h
   PASS %p
   ```

2. Set **Proxy host** to the Content Gateway FTP proxy hostname and port number.
3. Click **OK**.

The user then enters FTP connection information in the usual way, as if no proxy were present. For example:

Host: ftp.example.com

Username: anon

Password: 123abc

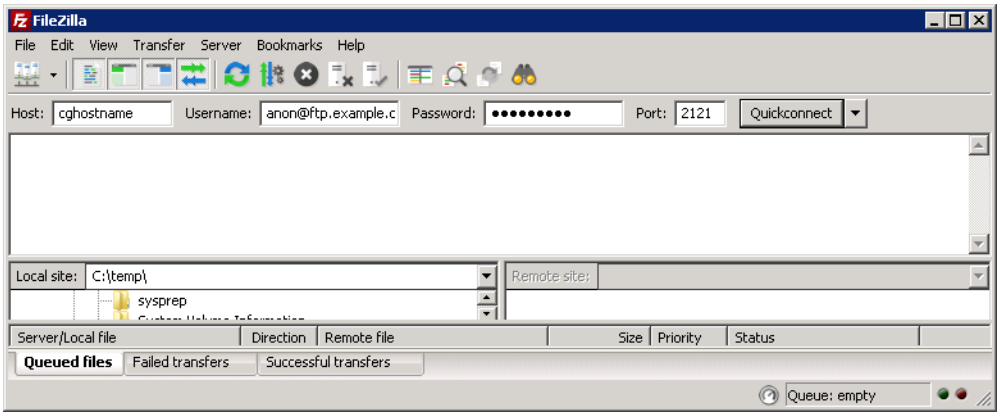
If the FTP client application is **not** configured, the user must enter FTP requests as shown below.

Host: Content Gateway proxy hostname

Username: anon@ftp.example.com

Password: 123abc

Port: 2121


FileZilla
File Edit View Transfer Server Bookmarks Help
Host: cghostname
Username: anon@ftp.example.c
Password: ••••••••••
Port: 2121
Quickconnect
Local site: C:\temp\
sysprep
Remote site:
Server/Local file
Direction
Remote file
Size
Priority
Status
Queued files
Failed transfers
Successful transfers
Queue: empty

5 Transparent Proxy and ARM

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The transparent proxy option enables Content Gateway to respond to client Internet requests without requiring users to reconfigure their browsers. It does this by redirecting the request flow to the proxy after the traffic has been intercepted, typically by a Layer 4 (L4) switch or router.

In a transparent proxy deployment:

1. The proxy intercepts client requests to origin servers via a switch or router. See *Transparent interception strategies*, page 49.
2. The Adaptive Redirection Module (ARM) intercepts incoming packets and redirects them to the proxy. (The ARM is always enabled.)
3. The proxy receives and begins processing the intercepted client requests. If a request is a cache hit, the proxy serves the requested object. If a request is a miss, the proxy retrieves the object from the origin server and serves it to the client.

Important

For transparent proxy configurations with multiple interfaces or gateways, Content Gateway must have proper routes to clients and the Internet in the operating system's routing table.

For HTTP, the proxy can identify problem clients and servers, and the ARM can disable interception for those clients and servers, passing their traffic directly to the origin server. You can also create ARM static bypass rules to exempt clients and

servers from being redirected to the proxy. See *Interception bypass*, page 71.

Related topics:

- *Transparent interception strategies*, page 49
- *Interception bypass*, page 71
- *Connection load shedding*, page 74
- *Reducing DNS lookups*, page 75
- *Content Gateway IP spoofing*, page 77
- *Content Gateway support for IPv6*, page 82

The Content Gateway ARM

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The ARM inspects incoming packets before a routing decision is made and redirects the packets to Content Gateway for processing.

The ARM uses iptables, policy routing, and transparent sockets configured during product installation. The installation process also creates redirection rules to intercept packets. The ARM is always active.

To ensure that the proxy can serve HTTP, HTTPS, FTP, and DNS requests transparently, verify the redirection rules in the **ipnat.conf** file and edit them if necessary.

- If you are using WCCP for transparent interception, there must be a redirection rule for every port in every active service group.
- Rules for standard ports are included by default.

To review and edit the ARM redirection rules:

1. Log on to the Content Gateway manager and go to the **Configure > Networking > ARM > General** tab.
2. Verify the **Redirection Rules** (taken from the ipnat.conf file) and make any needed changes. To change a redirection rule:
   a. Click **Edit File** to open the configuration file editor for the **ipnat.conf** file.
   b. Select the rule you want to edit and modify the appropriate fields.
   c. Click **Set** and then click **Apply** to apply your changes.
   d. Click **Close** to exit the configuration file editor.

   All fields are described in *ARM*, page 356.
3. If you have made any changes, go to the **Configure > My Proxy > Basic > General** tab and click **Restart**.

Configuring a firewall with ARM

The ARM module uses a firewall. To facilitate traffic interception and redirection:

- IPTables rules are configured during Content Gateway installation and upgrade.
  - Forcepoint IPTables chains are inserted.
  - Forcepoint IPTables rules are inserted into existing chains.
  - Forcepoint chains and rules use “NC_” as a prefix for identification purposes.
- IPTables rules configured outside of the Content Gateway manager must:
  - Be inserted *after* most Forcepoint rules.

    Customized rules should, however, be added *before* the NC_RESERVED_FWD_DEF rule. This Forcepoint rule was added to the forward chain so that traffic that is not specifically handled by the proxy is dropped and not forwarded. This rule should always be the last rule in the forward chain
  - Never be added to Forcepoint chains.
  - Never be modified on Appliance platforms.
- Forcepoint chains and rules should never be edited.
- If customized chains or rules impact the Forcepoint configuration, navigate to the Content Gateway **bin** directory (/opt/WCG/bin) and run the following command:

  ```
  netcontrol.sh -r
  ```

  This re-establishes the Forcepoint IPTables chains and rules.

Transparent interception strategies

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Content Gateway supports the following transparent interception solutions:

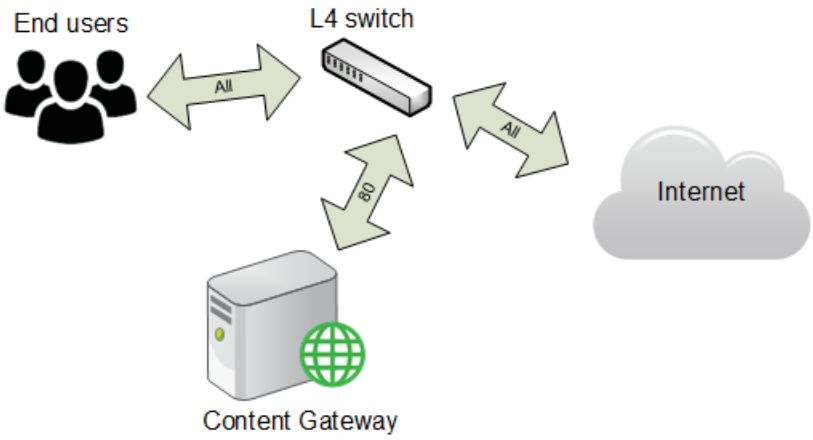
- A Layer 4 switch. See *Transparent interception with a Layer 4 switch*, page 50.
- A router or switch that supports WCCP v2. Cisco IOS-based routers are the most common. See *Transparent interception with WCCP v2 devices*, page 51.
- Policy-based routing. See *Transparent interception and multicast mode*, page 67.
- Software routing. See *Transparent interception with software-based routing*, page 69.

Exactly how client requests reach the proxy depends on network topology. In a complex network, you must decide which clients are to be served transparently and make sure that network devices and the proxy are positioned to intercept their requests. Content Gateway, or routers or switches feeding Content Gateway, are often deployed at a major artery or aggregation pipe to the Internet.

To configure Content Gateway to serve only transparent traffic, see *Configuring Content Gateway to serve only transparent requests*, page 70.

Transparent interception with a Layer 4 switch

Layer 4 switches can redirect supported protocols to the proxy, while passing all other Internet traffic directly to its destination, as shown below for HTTP.



Layer 4 switches offer the following features, depending on the particular switch:

- A Layer 4 switch that can sense downed hosts on the network and redirect traffic adds reliability.
- If a single Layer 4 switch feeds several proxy servers, the switch handles load balancing among the Content Gateway nodes. Different switches might use different load-balancing methods, such as round-robin or hashing. If a node becomes unavailable, the switch redistributes the load. When the node returns to service, some switches return the node to its previous workload, so that the node cache need not be repopulated; this feature is called *cache affinity*.

> **Note**
> It is recommended that you do **not** enable Content Gateway virtual IP failover when a switch is providing load balancing in a cluster configuration.

Transparent interception with WCCP v2 devices

Related topics:

- *WCCP v2 setup outline*, page 52
- *WCCP v2 supported features*, page 53
- *ARM bypass and WCCP*, page 53
- *WCCP load distribution*, page 54
- *Configuring WCCP v2 routers*, page 55
- *Enabling WCCP v2 in Content Gateway*, page 60
- *ARM bypass and WCCP*, page 53

Content Gateway supports transparent interception with WCCP v2-enabled routers and switches.

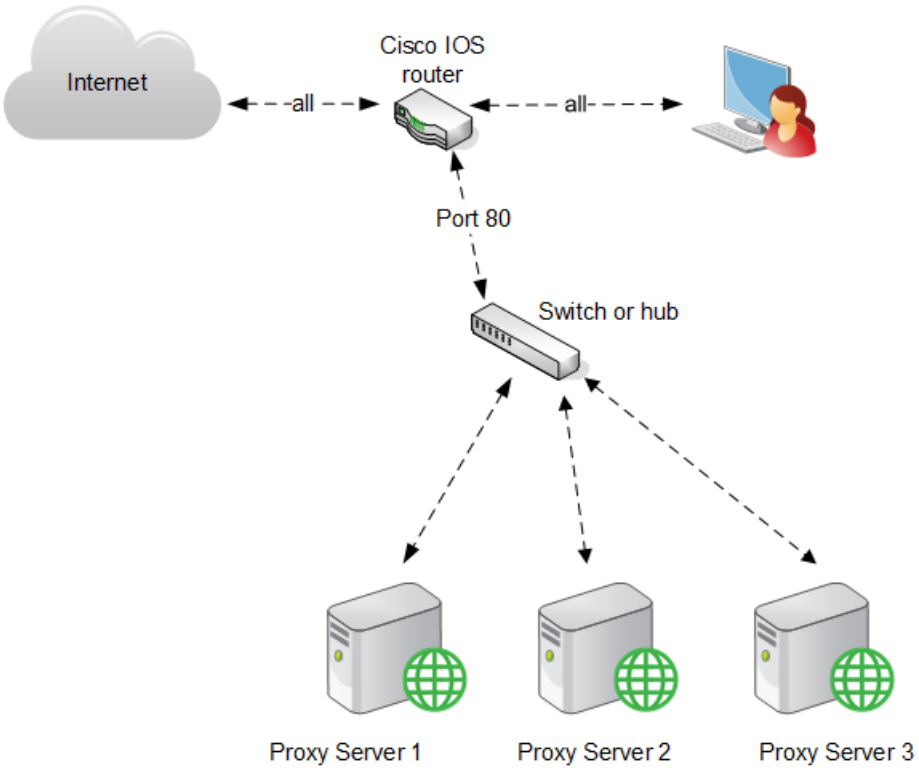
HTTP, HTTPS, FTP, and DNS protocols are supported. Default ARM redirection rules are included for HTTP, HTTPS, and FTP communicating on standard ports.

Important
The network clients, Content Gateway proxy servers, and destination web servers (default gateway) must reside on separate subnets.

WCCP v2 interception works as follows:

1. WCCP v2 devices send HTTP, HTTPS, FTP, and DNS traffic, per the configuration of the service group, to the proxy server or cluster of servers.
2. The ARM redirects traffic. For example, HTTP traffic on port 80 is redirected to Content Gateway port 8080.
3. The proxy processes the request as usual, sending the response back to the client.

4. The ARM redirects packets to the client. As a result, the user sees the response as if it had been sent directly from the origin server.



WCCP v2 setup outline

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1. Install and configure your WCCP v2 devices.

   On each WCCP v2 device:

   - Configure the service groups.
   - Configure password security, if needed.
   - Configure multicast communication, if needed.

   See *Configuring WCCP v2 routers*, page 55.

2. Configure Content Gateway to work with your WCCP devices.
   - Define matching service groups.

     In addition to network interface, protocols, ports, authentication (if used), and multicast communication (if used), also configure:

     - The IP addresses of the WCCP v2 devices.
     - The Packet Forward Method and Packet Return Method.
     - If Content Gateway is deployed in a cluster, **assignment method** load distribution, if desired.
   - Create ARM redirect rules for non-standard ports.

See *Enabling WCCP v2 in Content Gateway*, page 60, and *The Content Gateway ARM*, page 48.

3. Validate the configuration with test traffic.

WCCP v2 supported features

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Content Gateway supports the following WCCP v2 features:

- Multiple routers in a proxy cluster
- Multiple ports per service group
- Multiple service groups per protocol. Sometimes it is necessary or convenient to have different service groups for different WCCP devices. For example, for Cisco ASA firewall, different service groups are required for each WCCP device in the network.
- Dynamic load distribution in a cluster through **assignment method** HASH or MASK. See *WCCP load distribution*, page 54.
- Packet Return Method and Packet Forward Method negotiation
- MD5 password security per service group
- Multicast mode

In a Content Gateway cluster, it is recommended that you **not** enable virtual IP failover in WCCP environments. WCCP v2 and the Content Gateway configuration handles node failures and restarts. (See *WCCP load distribution*, page 54, and *Virtual IP failover*, page 90.) However, if a Content Gateway cluster uses WCCP exclusively, virtual IP failover can be used if no user authentication features are used. Note that the WCCP assignment method — not virtual IP failover — is the recommended method for managing load distribution. If a Content Gateway cluster receives requests both explicitly and transparently (the networks must be separate; this type of deployment is not recommended), virtual IP failover can be used on the explicit proxy network segment.

Content Gateway also supports cache affinity. If a node becomes unavailable and then recovers, the node's cache does not need to be repopulated.

ARM bypass and WCCP

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If Content Gateway has an ARM bypass rule (discussed in *Interception bypass*, page 71), Content Gateway forwards particular client requests directly to the origin server, bypassing the proxy.

Bypassed requests are unchanged by the ARM.

With WCCP v2, you can exclude certain router interfaces from redirection. **Content Gateway ARM bypass rules work only if you exclude the router interface that Content Gateway is connected to from WCCP redirection.** You do this on the router by selecting the interface connected to Content Gateway and issuing the router

configuration command **ip wccp redirect exclude in**. This causes the router to exclude traffic inbound on the specified interface from all redirection rules.

WCCP load distribution

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The WCCP protocol provides the **assignment method** for dynamic symmetric and asymmetric load distribution in a cluster. WCCP detects node failures and performs redistribution based on the configuration communicated to it by Content Gateway.

- Load distribution is configured in Content Gateway Manager and is pushed to the WCCP devices.
- Load distribution is configured **per service group**.

  For each service group:

  - Participating cluster members must be registered to the service group. (The WCCP device makes no decisions about load balancing.)
  - The HASH or MASK assignment method is selected. HASH is typically used with the GRE forward/return method, and MASK with the L2 forward/return method.

    Important

    MASK was developed specifically for the Cisco Catalyst series switches, and is one of the key characteristics that enable WCCP interception to be performed completely in hardware on these platforms. It should be used only with devices for which there is documented support.

  - One or more **distribution attributes** are selected. Typically the destination IP address is used.
  - If load is to be distributed to different cluster members in different proportions, a **weight** value is set on each cluster member. These values determine the proportion of requests each will receive relative to other members of the cluster. This option is only useful if the **Synchronize in the Cluster** option is disabled. See *Configuring service groups in the Content Gateway manager*, page 61.

    Asymmetric load distribution using the **weight** value is helpful when:

    - There are multiple Content Gateway servers with different performance capabilities.
    - The Internet traffic profile doesn't lend itself to even distribution due to preferences for specific origin servers (and therefore destination IP addresses).

How dynamic redistribution works

Dynamic redistribution is accomplished when the WCCP device detects that a cluster member is offline. It then automatically redistributes the load to the remaining cluster

members based on the load distribution configuration. When a cluster member returns to service and is detected by the WCCP device, load distribution is, again, automatically adjusted based on the configuration.

For configuration steps, see *Configuring service groups in the Content Gateway manager*, page 61.

How the weight value supports asymmetric load distribution

Important

Weight is only useful if the **Synchronize in the Cluster** option is disabled. See *Configuring service groups in the Content Gateway manager*, page 61.

The weight value is unique to each service group and node. The weight value does not propagate around the cluster and must be set individually on every node in the cluster.

The value of weight, relative to the settings on other cluster members, determines the proportion of traffic that WCCP directs to the node.

By default, weight is set to 0, which results in equal distribution to all cluster members.

To achieve asymmetric distribution, weight is set relative to other members of the cluster. For example, assume a cluster of 3 nodes:

Node	Weight value	Load distribution
Node1	50	50%
Node2	25	25%
Node3	25	25%

If Node1 goes offline, Node2 and Node3 will get an equal amount of traffic. If Node3 goes offline, Node1 will get two thirds of the traffic and Node2 will get one third of the traffic.

Because the weight value is relative to the settings on other cluster nodes, the same distribution as above can be achieved with weight values of 10, 5, 5. (The valid range of weight is 0-255.)

If weight is changed from its default value of 0, it should be configured on all nodes in the cluster.

Configuring WCCP v2 routers

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Consult the documentation for your WCCP v2 device, as well as the manufacturer's support site, for device configuration and performance information.

Most devices should be configured to take best advantage of hardware-based redirection.

With Cisco devices, the most recent version of IOS is usually the best.

To prepare WCCP v2 devices for use with the proxy:

1. Configure one or more service groups for the protocols you intend to use. A service group can handle one or multiple protocols. See *Configuring service groups on the WCCP device*, page 56.
2. Configure the router to enable WCCP processing for these service groups. See *Enabling WCCP processing for a service group*, page 57.
3. Optionally, enable router security. Router security must also be enabled for the service group in Content Gateway. See *Enabling WCCP v2 security on the router*, page 60.

> **Note**
> For instructions on configuring your specific router, please refer to the documentation provided by your hardware vendor. For Cisco routers, see http://www.cisco.com/cisco/web/psa/default.html?mode=prod and search for your IOS and device version, for example, IOS 12.4.

4. When you are done configuring the router, you must also configure and enable WCCP in the Content Gateway manager. See *Enabling WCCP v2 in Content Gateway*, page 60.

Configuring service groups on the WCCP device

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WCCP uses **service groups** to specify the traffic that is redirected to Content Gateway (and other devices).

- A service group can intercept one or more protocols on one or more ports.
- Service groups are assigned a unique integer identifier (ID) from 0 to 255.
- Service groups IDs are user defined; they do not have a default port or traffic type.

The following table illustrates a set of service group definitions that are often found in networks. If you are configuring for IP spoofing, see the table in *Content Gateway IP spoofing*, page 77, for common reverse service group IDs.

Service ID	Port	Traffic Type
0	80	HTTP
5	21	FTP
70	443	HTTPS (when HTTPS support is enabled)

Service groups must be configured on the router and in Content Gateway.

The best practice is to configure the routers first and Content Gateway second.

Follow the instructions in your router documentation for specifics, but in general:

1. To see what has been configured on the router for WCCP, enter:

   ```
   show running-config | include wccp
   ```

2. To enable WCCP v2, enter:

   ```
   ip wccp version 2
   ```

3. If you used another proxy cache with your router prior to Content Gateway, disable the service ID that was previously used. For example, if you have a Cisco router, disable the service ID web-cache as follows:

   ```
   no ip wccp web-cache
   ```

4. Specify the service group IDs you will use with Content Gateway. For the specific commands to use, see your router documentation.

   You must configure each service group supported by the router individually. You cannot configure a router globally.

Enabling WCCP processing for a service group

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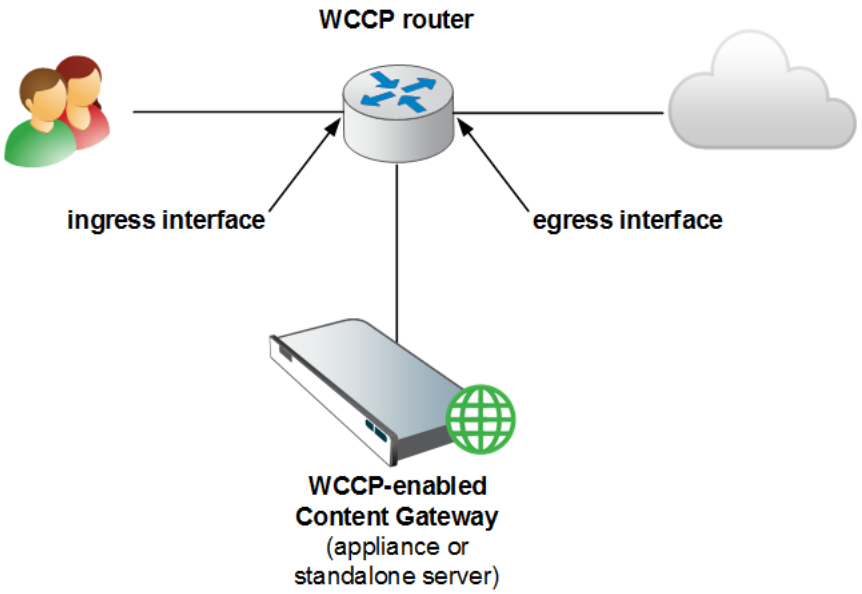
For each WCCP v2 service group that you configure, you must enable WCCP processing.

WCCP v2 routers contain multiple network interfaces, including:

- one or more interfaces that receive inbound (ingress) client traffic
- one or more interfaces connected to Content Gateway
- an interface dedicated to outbound (egress) traffic that is aimed at the Internet



Following are some guidelines for enabling WCCP processing for a service group on a router. Consult the procedures in your router documentation for specifics.

1. Turn on the WCCP feature:

   ```
   ip wccp <service group ID> password [0-7] <passwd>
   ```

2. On the router or switch interface, enable redirection for incoming (ingress) packets or outgoing (egress) packets.

   Note

   Where your hardware and network topology support it, it is recommended that redirection be performed on the ingress interface (using the “redirect in” commands).

   The following are examples. Be sure to substitute the service group IDs that you have established on your router(s).

   First, select the interface to configure:

   ```
   interface <type> <number>
   ```

   Second, establish your redirection rules:

   ```
   ip wccp <service group ID> redirect in
   ```

   Examples for inbound redirection:

   Run these commands for each protocol that you want to support, but only on the interfaces dedicated to **inbound (ingress)** traffic.

   For example, to turn on redirection of HTTP destination port traffic, enter:

   ```
   ip wccp 0 redirect in
   ```

   To turn on redirection of HTTPS destination port traffic:

   ```
   ip wccp 70 redirect in
   ```

   To turn on redirection of FTP destination port traffic enter:

   ```
   ip wccp 5 redirect in
   ```

   To turn on redirection of HTTP source port traffic, which is required for IP spoofing, enter:

   ```
   ip wccp 20 redirect in
   ```

   Examples for outbound redirection:

   Run these commands for each protocol that you want to support, but only on the interfaces dedicated to **outbound (egress)** traffic.

   First, select the interface to configure:

   ```
   interface <type> <number>
   ```

   Second, establish your redirection rules:

   ```
   ip wccp <service group ID> redirect out
   ```

   For example, to turn on redirection for HTTP, enter:

   ```
   ip wccp 0 redirect out
   ```

   To turn on redirection for HTTPS:

   ```
   ip wccp 70 redirect out
   ```

To turn on redirection for FTP enter:

```
ip wccp 5 redirect out
```

3. **IMPORTANT: When ARM dynamic or static bypass is enabled, or IP spoofing is enabled, *and* redirection is on the *outbound* (egress) interface**, exclude redirection of Content Gateway outbound packets on the router interface that handles Content Gateway's egress traffic. See the illustration, below.

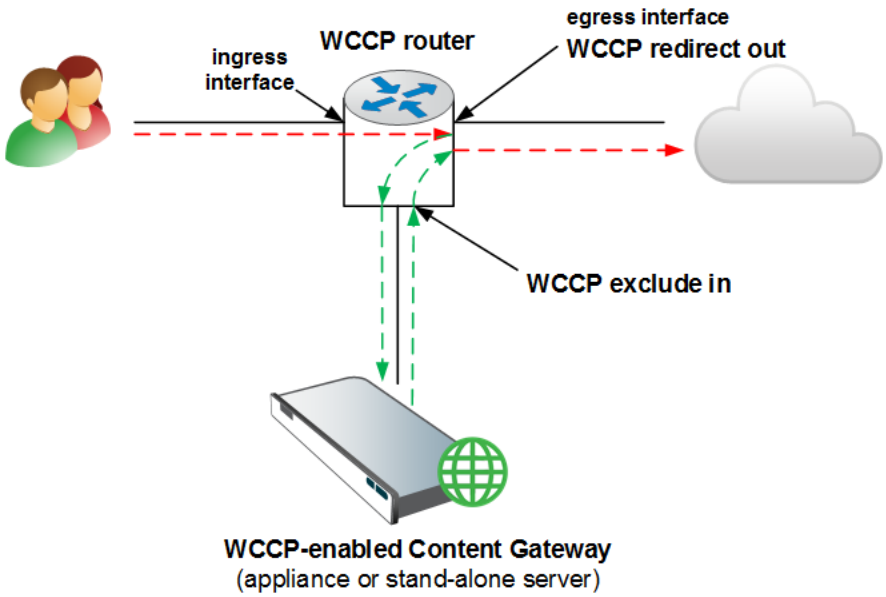
   a. Select the interface that handles Content Gateway egress traffic:

   ```
   interface <type> <number>
   ```

   b. Exclude Content Gateway outbound traffic on the interface from all redirection rules on the router:

   ```
   ip wccp redirect exclude in
   ```

   When ARM bypass occurs, or IP spoofing is enabled, the proxy sends traffic to the Internet with the original source IP address. The "redirect exclude in" command prevents the router from looping the traffic back to Content Gateway.



Disabling WCCP processing for a service group

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If you need to disable WCCP processing for any reason, issue this command to turn off the WCCP feature:

```
no ip wccp <service group ID> password [0-7] <passwd>
```

Enabling WCCP v2 security on the router

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If you are running WCCP v2, you can enable security on the Content Gateway node so that the proxy and your routers can authenticate each other. You must individually enable security for each service group that the router supports. You cannot configure a router globally as you would Content Gateway.

You enable the security option and provide the authentication password in the Content Gateway manager.

The authentication password you specify must match the authentication password configured on the router for each service group being intercepted. The following procedure provides an example of how to set an authentication password for different service groups.

1. Telnet to the router and switch to **Enable** mode.
2. At the prompt, enter the following command to configure the router from the terminal:

   ```
   configure terminal
   ```
3. If you defined a password when you enabled WCCP on the router, skip to step 4. Otherwise, enter the following command for each service group that the router intercepts:

   ```
   <hostname>(config)# ip wccp <service_group> password <pwd>
   ```

   Here, <*hostname*> is the host name of the router you are configuring, <*service_group*> is the service group ID (for example, 0 for HTTP), and <*pwd*> is the password you want to use to authenticate Content Gateway. This password must match the password you specify in the Content Gateway configuration for this service group.
4. Exit and save the router configuration.

Enabling WCCP v2 in Content Gateway

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Related topics:

- *Configuring WCCP v2 routers*, page 55
- *Configuring service groups on the WCCP device*
- *Enabling WCCP processing for a service group*
- *Enabling WCCP v2 security on the router*, page 60

After you have configured your WCCP v2 routers, these steps remain:

1. Enabling WCCP in the Content Gateway Manager:
   a. Go to the **Configure** > **My Proxy > Basic > General** tab.

b. Under **Features > Networking**, locate **WCCP** and click **On**, then **Apply**. Do **not** restart Content Gateway.

2. *Configuring service groups in the Content Gateway manager*.
3. Restarting Content Gateway.

> **Important**
> Before you restart Content Gateway, make sure that your configuration meets the following requirements:
>
> - Cisco IOS devices are running a very recent version of IOS with all appropriate patches applied.
> - WCCP routers are programmed with the correct service groups and other features.

Configuring service groups in the Content Gateway manager

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Every WCCP service group that redirects traffic to a Content Gateway proxy must have a corresponding service group defined for it in the Content Gateway server or cluster.

To define service groups:

1. Go to the **Configure** > **Networking** > **WCCP** page.
2. Review the existing entries in the **Service Groups** table and click **Edit File** to add, modify, delete, or reorder service groups.
   - Entries are stored in the **wccp.config** file.
   - Click **Refresh** to prompt the Content Gateway manager to reread the wccp.config file and update the table.
   - Detailed instructions can be found in *Configuring a service group (editing wccp.config)*, page 62.
3. If Content Gateway is configured in a cluster, under **Synchronize in the Cluster**, Select **Enabled** (default) or **Disabled**. (The value of this option is always synchronized in the cluster.)
   - When this option is enabled, the WCCP configuration (stored in **wccp.config**) is synchronized in the cluster and configuration changes can be made on any node in the cluster.
   - When this option is disabled, the WCCP configuration is not synchronized in the cluster and changes to the WCCP configuration must be made individually on each node. A common use case for this is to control which service groups are enabled/disabled on each node, and/or to use proportional load distribution using **weight**.
   - If this option is disabled, and then later enabled, the configuration on the node on which the administrator enables the option is used to initially synchronize the cluster.

Caution: When **Synchronize in the Cluster** is **disabled**, you must visit each node in the cluster to examine and maintain your WCCP configuration. This can also make WCCP troubleshooting more difficult.

Configuring a service group (editing wccp.config)

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Open the file and define the service group

1. On the **Configure** > **Networking** > **WCCP** page, click **Edit File** to open **wccp.config** in the editor.
   - Defined service groups are summarized at the top of the page.
   - Click an entry in the list to view its complete details, modify, or reposition it.
   - When an entry is selected, the down and up arrows to the left of the list reposition the entry in the list.
   - Click **X** to delete a selected entry.
2. For each service group, enter the following information:
   a. To enable a service group, set **Service Group Status** to **Enabled**. A service group can be defined but not active.
   b. Specify a unique **Service Group Name**. The service group name is an aid to administration.
   c. Specify a WCCP **Service Group ID** from 0-255. This ID must match a corresponding service group ID configured on the router. See *Configuring service groups on the WCCP device*.
   d. Specify the network **Protocol** applicable to the service group (TCP or UDP).
   e. Specify the **Ports** that this service group will use.

      Select **Specify ports** to enter up to 8 ports in a comma-separated list.

      Select **All ports** to redirect traffic from all ports.

      Important
      Every port in the service group must have a corresponding ARM redirection rule to redirect the traffic to Content Gateway. See *The Content Gateway ARM*.

   f. From the drop down list, select the **Network Interface** on the Content Gateway host system that this service group will use.

      Note
      When the FTP protocol is enabled, select eth0. Client machines must be reachable via the eth0 interface.

Configure mode negotiation

- The **Packet Forward Method** determines how traffic is transmitted from the WCCP router to the proxy.
- The **Packet Return Method** specifies the method used to return traffic back to the WCCP router.

> **Important**
> If you change the forward/return method configuration while there is an active connection with the WCCP device, in order to re-negotiated the method you must force the current connection to terminate. Typically, this means turning off the service group on the WCCP device for 60 seconds. See the documentation for your WCCP device.

> **Important**
> If multiple proxies are installed in your environment, each with WCCP enabled, but configured with different **Packet Forward** and **Packet Return Methods**, traffic may not be processed. Some routers support only a single **Packet Forward Method** within a group and may forward packets to the other proxies using a method they do not support.

Typically the router supports only one method, and the forward and return methods match.

1. If traffic is routed to the proxy by a Cisco ASA firewall, in the **Special Device Profile** drop down box select **ASA Firewall**. When this option is selected, **GRE** is automatically selected for both Packet Forward Method and Packet Return Method. These settings cannot be changed.
2. If traffic is routed to the proxy by a router or switch, select the **Packet Forward Method** (L2 or GRE) and **Packet Return Method** that matches the capabilities and position of your router or switch.

   If Content Gateway is configured with a Forward/Return method that the router does not support, the proxy negotiates the method supported by the router.

   - If L2 is selected, L2 is automatically selected as the return method (GRE is not an option).

   > **Important**
   > Selecting L2 requires that the router or switch be Layer 2-adjacent (in the same subnet) as Content Gateway.

- **If GRE is selected**, for each router in the service group a unique Content Gateway tunnel endpoint IP address must be specified in the **WCCP Routers** section (see the "Provide router information" step, below).

Important
GRE cannot be used with WCCP multicast mode.

Important
GRE return, as documented by Cisco (see this site), is fully functional in all deployments. GRE enhanced tunnel return, in which the proxy forwards traffic back to the router, is *only available on an appliance*. Contact Technical Support for information on how to enable the functionality.

Configure advanced settings

1. Use **Assignment Method** to specify the parameters used to distribute intercepted traffic among multiple nodes in a cluster. For a description of the WCCP load distribution feature, see *WCCP load distribution*, page 54.

   HASH applies a hash operation to the selected distribution attributes.

   - With HASH, more than one distribution attribute can be selected.
   - The result of the hash operation determines the cluster member that receives the traffic.

   MASK applies a mask operation to the selected distribution attribute.

   - Only one distribution attribute can be selected, typically the destination IP address.
   - The result of the mask operation determines the cluster member that receives the traffic.
   - The following distribution attributes can be selected:
   - Destination IP address
   - Destination Port
   - Source IP address
   - Source Port

   The MASK value is applied up to 6 significant bits (in a cluster, a total of 64 buckets are created). See your WCCP documentation for more information about assignment method HASH and MASK operations. Use the value recommended in the manufacturer's documentation for your device.

2. For proportional load distribution, specify a **weight** value from 0-255. The value determines the proportional distribution of load among servers in a cluster.

   Weight is only useful when **Synchronize in the Cluster** is disabled.

   - All cluster members have a value of 0 by default, which results in a balanced distribution of traffic.

- If weight is set to 1 or higher, the value guides proportional distribution among the nodes.

  For example, if there are 3 nodes in a cluster and Proxy1 has a weight of 20, Proxy2 has a weight of 10, and Proxy3 has a weight of 10, Proxy1 will get one half of the traffic, Proxy2 will get one-quarter of the traffic, and Proxy3 will get one-quarter of the traffic.

> **Important**
> When the value of **weight** is greater than 0 on any member of the cluster, any member of the cluster with a weight of 0 receives **no** traffic. If you plan to use weight, be sure to set a weight on every member of the cluster.

For more information about load distribution, see *WCCP load distribution*, page 54.

3. Specify a **Reverse Service Group ID** for IP spoofing.

   When IP spoofing is enabled, you must define a reverse service group for each HTTP and HTTPS forward service group.

> **Note**
> Only HTTP and HTTPS are supported for IP Spoofing.

Using the specified ID, Content Gateway creates a reverse service group that is a mirror of the forward service group. For example, if the forward service group has assignment method based on destination IP address, the reverse service has an assignment method based on the source IP address.

> **Note**
> IP spoofing is not supported with service groups that use a hashing assignment method with both destination and source attributes. If IP spoofing is enabled on such a service group, an alarm is raised and IP spoofing is disabled.

Provide router information

> **Note**
> It may take up to a minute for the router to report that a new proxy server has joined a service group.

1. To use optional WCCP authentication, under Security, select **Enabled** and enter the same password used for service group authentication on the router. See *Enabling WCCP v2 security on the router*, page 60.

2. To run in multicast mode, under Multicast, select **Enabled** and enter the multicast IP address. The multicast IP address must match the multicast IP address specified on the router. See *Transparent interception and multicast mode*, page 67.

   Important
   GRE packet Forward/Return method cannot be used with multicast mode.

3. Under WCCP Routers, specify up to 10 **Router IP Addresses**. These routers must be configured with a corresponding service group.

   If ASA_Firewall was selected as the **Service Device Profile**, enter both the router IP Address and the WCCP router ID, separated by /, in the **Router IP Address** column.

   If **GRE** is selected for Packet Forward Method, also specify a unique **Local GRE Tunnel Endpoint IP address** for each router (not required for ASA firewall), and optionally, a **GRE Tunnel Next Hop Router IP Address**.

   The Local GRE Tunnel Endpoint IP address is the Content Gateway tunnel endpoint for the associated Router IP Address.

   The Local GRE Tunnel Endpoint IP Address:

   - Must be unique and not assigned to any device
   - Must be a routable IP address
   - Should reside on the same subnet as the proxy. If it is not, you must define a route for it.
   - Is not intended to be a client-facing proxy IP address
   - Is bound to the physical interface specified for the service group (on Forcepoint appliances use the CLI command “show interface info” to view the logical name to physical interface bindings)

   When GRE Packet Return Method is configured and Content Gateway does not have a route back to the WCCP router, specify a **GRE Tunnel Next Hop Router IP Address**. The IP address must be in IPv4 format.

   You can use “ping” to test connectivity to the router.

   - From Content Gateway, ping each router defined in the service group (in the Router IP Address field).

- If ping doesn't return a response, you need to define a GRE Tunnel Next Hop to that router. Intervening routers must have a route to the WCCP router, or a next hop.

> **Note**
> WCCP routers that have multiple interfaces assign the Router ID to the interface with the highest numeric value IP address. Content Gateway must be able to connect to the router ID to negotiate the method. To ensure connectivity and that the router ID doesn't change unexpectedly, it is a best practice to make the router loopback address the highest IP address. This also ensures that traffic and statistics reported on the **Monitor > Networking > WCCP** page are reported against a known router ID.

Save your configuration changes

1. Click **Add** to add a new entry, or click **Set** to save changes to the selected entry.
2. Click **Apply** and then **Close** to close the editor. Navigating away from the page before clicking **Apply** results in the loss of all changes.
3. Restart the proxy to cause the changes to take effect. Navigate to the **Configure** > **My Proxy > Basic > General** tab and click **Restart**.

> **Note**
> To check that the router is sending traffic to the proxy, examine the statistics in the Content Gateway manager **Monitor** pane. For example, check that the **Objects Served** statistic in the **My Proxy > Summary** section increases.

Transparent interception and multicast mode

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To configure Content Gateway to run in multicast mode, you must enable multicast mode and specify the multicast IP address in the Content Gateway manager.

> **Important**
> GRE packet Forward/Return method cannot be used with multicast mode.

In addition, you must set the multicast address on your routers for each service group being intercepted (HTTP, FTP, DNS, and SOCKS). The following procedure provides an example of how to set the multicast address for different service groups on a WCCP v2-enabled router.

1. Telnet to the router and switch to Enable mode.
2. At the prompt, enter the following command to configure the router from the terminal:

   ```
   configure terminal
   ```

3. At the prompt, enter the following command for each service group that the router intercepts:

   ```
   <hostname>(config)# ip wccp <service_group> group-address
   <multicast_address>
   ```

   Here, <*hostname*> is the hostname of the router you are configuring, <*service_group*> is the service group ID (for example, 0 for HTTP), and <*multicast_address*> is the IP multicast address.

4. At the prompt, enter the following command to configure the network interface:

   ```
   interface <interface_name>
   ```

   Here, <*interface_name*> is the network interface on the router that is being intercepted and redirected.

5. At the prompt, enter the following command for each service group that the router intercepts:

   ```
   <hostname>(config-if)# ip wccp <service_group> group-
   listen
   ```

6. Exit and save the router configuration.

Transparent interception with policy-based routing

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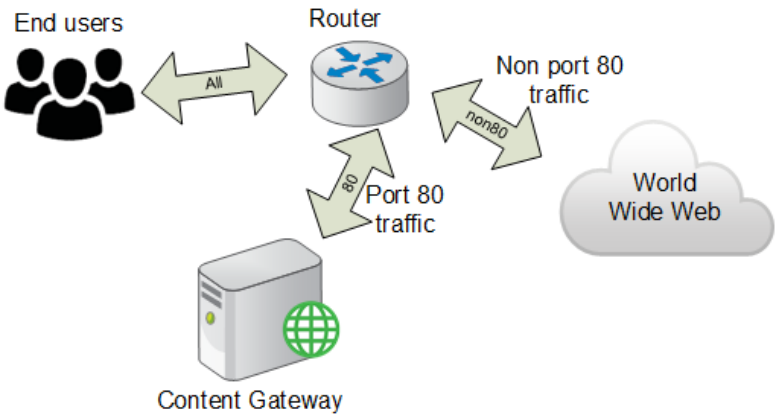
Instead of the WCCP protocol, you can use the policy routing capabilities of a router to send traffic to Content Gateway. WCCP or a Layer 4 switch are generally preferable to this configuration because policy-based routing has a performance impact on the router, and policy-based routing does not support load balancing or heartbeat messaging.

- All client Internet traffic is sent to a router that feeds Content Gateway.
- The router sends port 80 (HTTP) traffic to the proxy and sends the remaining traffic to the next hop router.
- The ARM redirects intercepted requests to Content Gateway.
- Web objects to be served transparently are redirected by the ARM on the return path to the client, so that the documents appear to have come from the origin server.

A Content Gateway cluster with virtual IP failover adds reliability; if one node fails, another node can take up its transparency requests. See *Virtual IP failover*, page 90.



Transparent interception with software-based routing

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You can deploy Content Gateway without adding routers or switches by using routing software on the Content Gateway node. In this case, Content Gateway is a software router and directs all traffic through the proxy machine. This solution can be useful in low-traffic situations, where the performance cost of using the proxy machine as a router is not high.

On Linux systems, you can use the routed and gated daemons as a software-based routing solution.

- The **routed** daemon is a bundled part of all normal Linux distributions.
- The **gated** daemon is an extensible commercial software package from the Merit GateD Consortium.

When you use routing software with Content Gateway:

- All Internet traffic goes through Content Gateway from machines behind it in the network.
- The routing software routes all non-transparent requests to the Internet; it routes port 80 HTTP requests to the proxy cache.
- The ARM redirects intercepted requests into proxy requests.

- Web objects to be served transparently are redirected by the ARM on the return path to the client, so that the objects appear to have come from the origin server.

> **Note**
> Although Content Gateway machines can function as routers, they are not expressly designed to be routers. For reliability, you can use a Content Gateway cluster with the virtual IP failover option. If one node fails, another cluster node takes over. (See *Virtual IP failover*, page 90.) The Content Gateway cluster failover mechanism is similar to the Hot Standby Router Protocol (HSRP).

Configuring Content Gateway to serve only transparent requests

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You can configure Content Gateway to serve only transparent requests and prevent explicit proxy requests from being served in the following ways:

- You can control client access to Content Gateway by specifying ranges of IP addresses that are allowed to connect to the proxy. If Content Gateway receives a request from an IP address not listed in a specified range, it discards the request. See *Controlling client access to the proxy*, page 163.
- If you do not know the ranges of client IP addresses allowed to access Content Gateway, you can add rules to the **ipnat.conf** file on the Configure > Networking > ARM > General tab in the Content Gateway manager so that only requests that have been redirected by your Layer 4 switch or WCCP router reach the proxy port.

  To make a transparent-only Content Gateway server, add rules in the **ipnat.conf** file before the normal redirect service rule to redirect explicit proxy traffic to a port on which no service is listening.

  For example, if you want Content Gateway to ignore explicit HTTP requests, add rules above the normal HTTP redirect rule in the **ipnat.conf** file as shown below:

  ```
  rdr hme0 <ipaddress> port 80 -> <ipaddress> port
  <port_number> tcp
  rdr hme0 <ipaddress> port 8080 -> <ipaddress> port
  <port_number> tcp
  rdr hme0 0.0.0.0/0 port 80 -> <ipaddress> port 8080 tcp
  ```

  Here, *<ipaddress>* is the IP address of your Content Gateway system and *<port_number>* is a port number on which no service is listening.

  Add equivalent rules to the **ipnat.conf** file for each protocol service port or separate network interface to be served. After you make changes to the **ipnat.conf** file, you must restart the proxy.
- If your Content Gateway system has multiple network interfaces or if you configure the Content Gateway operating system to use virtual IP addresses, you can give Content Gateway 2 IP addresses. One address must be the real address that the proxy uses to communicate with origin servers and the other a private IP

address (for example 10.0.0.1) for WCCP or switch redirection. After you configure the IP addresses, you must add the following variables to the end of the **records.config** file. Replace <*private_ipaddress*> with the private IP address used for WCCP or switch redirection and <*real_ipaddress*> with the IP address the proxy uses to communicate with origin servers.

```
LOCAL proxy.local.incoming_ip_to_bind STRING
<private_ipaddress>
LOCAL proxy.local.outgoing_ip_to_bind STRING
<real_ipaddress>
```

Interception bypass

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A small number of clients and servers do not work correctly with web proxies. Some reasons include:

- Client software irregularities (customized, non-commercial browsers)
- Server software irregularities
- Applications that send non-HTTP traffic over HTTP ports as a way of defeating security restrictions
- Server IP address authentication (the origin server limits access to a few client IP addresses, but the Content Gateway IP address is different, so it cannot get access)

  This is not in frequent use because many ISPs dynamically allocate client IP dial-up addresses, and more secure cryptographic protocols are now more often used.

Web proxies are very common in corporate and Internet use, so interoperability problems are rare. Nonetheless, Content Gateway contains an adaptive learning module that recognizes interoperability problems caused by transparent proxy processing and automatically bypasses the traffic around the proxy server without operator intervention.

Content Gateway follows 2 types of bypass rules:

- *Dynamic* (also called adaptive) bypass rules are generated dynamically if you configure Content Gateway to bypass the cache when it detects non-HTTP traffic on port 80 or when it encounters certain HTTP errors. See *Dynamic bypass rules*, page 72.

- *Static* bypass rules must be manually configured in the **bypass.config** file. See *Static bypass rules*, page 73.

> **Note**
> Do not confuse ARM bypass rules with client access control lists. Bypass rules are created in response to interoperability problems. Client access control is simply restriction of the client IP addresses that can access the proxy, as described in *Controlling client access to the proxy*, page 163.

Dynamic bypass rules

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The proxy can be configured to watch for the following protocol interoperability errors and configure the ARM to bypass the proxy for the clients and servers causing the errors.

Error code	Description
N/A	Non-HTTP traffic on port 80
400	Bad Request
401	Unauthorized
403	Forbidden (authentication failed)
405	Method Not Allowed
406	Not Acceptable (access)
408	Request Timeout
500	Internal Server Error

In this way, the small number of clients or servers that do not operate correctly through proxies are auto-detected and routed around the proxy caching server so that they can continue to function (but without caching).

For example:

- When Content Gateway is configured to bypass on authentication failure (**403 Forbidden**), if any request to an origin server returns a 403 error, Content Gateway generates a destination bypass rule for the origin server's IP address. All requests to that origin server are bypassed until you restart the proxy.
- If the ARM detects that a client is sending a non-HTTP request on port 80 to a particular origin server, Content Gateway generates a source/destination rule. All requests from that particular client to the origin server are bypassed; requests from other clients are not bypassed.

To enable dynamic bypass rules:

1. In the Content Gateway manager, navigate to the **Configure > Networking > ARM > Dynamic Bypass** tab.
2. Under Dynamic Bypass, select **Enabled**.
3. Under Behavior, enable each dynamic bypass rule you want to use.
4. Click **Apply**.
5. Navigate to the **Configure** > **My Proxy > Basic > General** tab and click **Restart**.

Bypass rules that are generated dynamically are purged after a Content Gateway restart. If you want to preserve dynamically generated rules, you can save a snapshot of the current set of bypass rules. See *Viewing the current set of bypass rules*, page 74.

To prevent Content Gateway from bypassing certain IP addresses dynamically, you can set dynamic deny bypass rules in the **bypass.config** file. Deny bypass rules can prevent the proxy from bypassing itself. For information about setting dynamic deny bypass rules, see *bypass.config*, page 389.

Content Gateway tallies bypassed requests for each type of dynamic bypass trigger (for example, requests bypassed in response to a 401 error). View these statistics on the **Monitor** > **Networking** > **ARM** page of the Content Gateway manager, under **HTTP Bypass Statistics**.

Static bypass rules

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You can configure bypass rules to direct requests from certain clients or to particular origin servers around the proxy. Unlike dynamic bypass rules that are purged when you restart the proxy, these static bypass rules are saved in a configuration file.

You can configure 3 types of static bypass rules:

- Source bypass, in which Content Gateway bypasses a particular source IP address or range of IP addresses. For example, you can use this solution to bypass clients who want to opt out of a caching solution.
- Destination bypass, in which Content Gateway bypasses a particular destination IP address or range of IP addresses. For example, these could be origin servers that use IP authentication based on the client's real IP address. Destination bypass rules prevent Content Gateway from caching an entire site. You will experience hit rate impacts if the site you bypass is popular.
- Source/destination pair bypass, in which Content Gateway bypasses requests that originate from the specified source to the specified destination. For example, you could route around specific client-server pairs that experience broken IP authentication or out of band HTTP traffic problems.

  Source/destination bypass rules might be preferable to destination rules because they block a destination server only for those particular users that experience problems.

To configure static bypass rules, edit the **bypass.config** file (See *bypass.config*, page 389).

> **Note**
> When Content Gateway bypass is enabled on the **Web > Settings > Scanning > Bypass Settings** page of the Forcepoint Security Manager, appropriate rules are added to bypass.config.

Viewing the current set of bypass rules

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The ARM has a supporting utility called **netcontrol** that allows you to view the current dynamic and static bypass rules.

To view all current dynamic and static bypass rules:

1. Log on to a Content Gateway node and then change directory to the Content Gateway **bin** directory (/opt/WCG/bin).
2. Enter the following command at the prompt and press **Return**:

   ```
   ./netcontrol.sh -B
   ```

   All current static and dynamic bypass rules are displayed on screen. The rules are sorted by IP address. You can direct the output of **netcontrol** to a file and save it.

Connection load shedding

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The load shedding feature prevents client request overloads. When there are more client connections than the specified limit, the ARM forwards incoming requests directly to the origin server. The default client connection limit is 1 million connections.

1. In the Content Gateway manager, navigate to the **Configure** > **Networking** > **Connection Management > Load Shedding** page.
2. In the **Maximum Connections** field, specify the maximum number of client connections allowed before the ARM starts forwarding requests directly to the origin server.
3. Click **Apply**.
4. Navigate to the **Configure** > **My Proxy > Basic > General** tab and click **Restart**.

Reducing DNS lookups

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If you are running Content Gateway in transparent proxy mode, you can enable the **Always Query Destination** option to reduce the number of DNS lookups and improve response time. When enabled, the Always Query Destination option configures the proxy to always obtain the original destination IP address of incoming requests from the ARM. Content Gateway then uses that IP address to determine the origin server instead of doing a DNS lookup on the hostname of the request. Because the client already performed a DNS lookup, Content Gateway does not have to.

When Always Query Destination is enabled, the value defined for the variable proxy.config.arm.use_hostname_for_wisp_and_reporting determines whether IP address or hostname is captured for reporting purposes.

Important

It is recommended that you do not enable the Always Query Destination option if Content Gateway is running in both explicit and transparent proxy mode. In explicit proxy mode, the client does not perform a DNS lookup on the hostname of the origin server, so the proxy must perform a DNS lookup.

Also, the category lookup is performed based on the IP address, which is not always as accurate as a URL-based lookup.

In addition, do not enable the Always Query Destination option if you want domain names, rather than IP addresses, in Forcepoint Web Security transaction logs.

To enable Always Query Destination:

1. Navigate to the Content Gateway **config** directory (/opt/WCG/config) and open the **records.config** file in a text editor.
2. Set the **proxy.config.arm.always_query_dest** variable to **1**. This means that IP addresses are captured; domain names are not.

   If you later need to disable Always Query Destination, change this setting to **0**. In this case, domain names are captured.
3. Save and close the file.
4. To apply the changes, run the following command from the Content Gateway **bin** directory:

   ```
   content_line -x
   ```

6 Additional Proxy Configuration

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Explicit and transparent proxy deployments can be used with:

- IP spoofing

  Ordinarily, when Content Gateway proxies requests for clients it communicates with origin servers using its own IP address in place of the client's IP address. This is the standard operation of forward proxies.

  IP spoofing configures the proxy to use one of the following when communicating with the origin server:

  - The IP address of the client (basic IP spoofing)
  - A specified IP address (range-based IP spoofing)

  For more information, see *Content Gateway IP spoofing*, page 77.

  For configuration details, see *Configuring IP spoofing*, page 80.
- IPv6 dual-stack networks

  See *Content Gateway support for IPv6*, page 82.

Content Gateway IP spoofing

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IP spoofing is sometimes used to support upstream activities that require the client IP address or a specific IP address. It also results in origin servers seeing the client or specified IP address instead of the proxy IP address (although the proxy IP address can be a specified IP address; more below).

Content Gateway IP spoofing support has the following features and restrictions:

- IP spoofing is supported for HTTP and HTTPS traffic only.
- When IP spoofing is enabled, it is applied to both HTTP and HTTPS. It cannot be configured for only one protocol.
- HTTPS traffic is spoofed whether SSL support is enabled or not.
- IP spoofing relies on the ARM.

- In transparent proxy deployments using WCCP and IP spoofing, with GRE or L2 mode negotiation, neither HASH nor MASK are supported on the source port or source port/source IP address.
- IP spoofing is **not** supported with edge devices such as a Cisco ASA or PIX firewall. When this is attempted, requests made by Content Gateway using the client IP address are looped back to Content Gateway.
- IP spoofing requires all IP addresses in the same routing path use the same format. That is, all IP addresses must be either IPv6 or IPv4. A combination of IPv6 and IPv4 addresses is not supported.

Warning

Deploying IP spoofing requires precise control of the routing paths on your network, overriding the normal routing process for traffic running on TCP port 80 and 443. When configured with either transparent or explicit proxy, return traffic must be routed back to the proxy.

For assistance, please contact your network equipment vendor or Technical Support.

With IP spoofing enabled, traditional debugging tools such as **traceroute** and **ping** have limited utility.

Important

For a discussion of how the proxy kernel routing table impacts transparent proxy deployment, see the Solution Center article titled, Web sites in the Static or Dynamic bypass list fail to connect.

Range-based IP spoofing

Range-based IP spoofing supports groupings of clients (IP addresses and IP address ranges) that are mapped to specified IP addresses.

Among other uses, range-based IP spoofing facilitates:

- The delivery of web-hosted services when the identification is by source IP address. For example, to receive a web-hosted service, an organization might be required to identify membership to the service via a known IP address.
- IP address-based authentication with an external service when a unique IP address represents a group of users.
- A way to configure traditional IP spoofing for some clients (source IP addresses that don't match any group are spoofed with their own IP address), range-based IP

spoofing for some clients, and standard proxy IP address substitution for some clients. The latter is done by creating a group that specifies the proxy IP address.

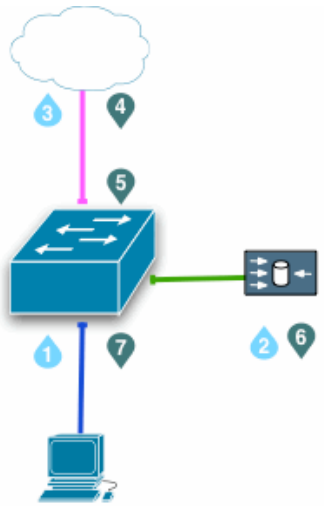
Important

Range-based IP Spoofing is not supported on many older versions of Cisco IOS firmware. To avoid problems, update your Cisco device to the latest firmware.

IP Spoofing is supported for IPv6. However, range-based IP Spoofing is not supported for IPv6.

IP spoofing and the flow of traffic

When IP spoofing is used with WCCP, HTTP and HTTPS traffic flows as follows. The numbers in the diagram correspond to the actions described in the numbered list. (Note that policy-based routing can be implemented to achieve the same results.)



1. A client request arrives at a routed port or Switched Virtual Interface (SVI) looking for traffic with a destination port of HTTP (80) or HTTPS (443).
2. The switch redirects the client request to Content Gateway.

   If needed, the proxy creates a connection to the origin server using the client IP address or specified IP address (range-based IP spoofing).
3. The request is sent to the origin server through the switch, NAT and/or firewall.
4. When the origin server response is returned, the IP packet has the substituted IP address as the destination (client or specified IP address).
5. The origin server response arrives at a routed port or Switched Virtual Interface (SVI) looking for traffic with a source port of HTTP (80) or HTTPS (443). See the note below.
6. The switch redirects the origin server response to the proxy, completing the proxy-to-origin server TCP connection.

7. A proxy response to the client is generated and returned to the client on the proxy-to-client TCP connection.

> **Note**
> When IP spoofing is enabled, the proxy advertises a reverse service group for each enabled WCCP service. The reverse service group must be applied along the return path of the proxy.

WCCP service group IDs are user defined and must be programmed on the WCCP devices and in Content Gateway (see *Configuring service groups on the WCCP device* and *Configuring service groups in the Content Gateway manager*).

The following definitions are suggested.

Service ID	Port	Traffic Type
0	destination port 80	HTTP
20	source port 80	HTTP
70	destination port 443	HTTPS (HTTPS support must be enabled)
90	source port 443	HTTPS

Policy-based routing (PBR) uses access control lists (ACL) to identify and redirect flows. In a PBR deployment, all of the configuration is done on the router and there is no corresponding Content Gateway configuration. PBR deployments have to redirect traffic returning from origin servers from port 80 and 443 to Content Gateway.

Configuring IP spoofing

- To configure the proxy to use the IP address of the client for IP spoofing, see *Configure basic IP spoofing*, page 80.
- To configure the proxy to use a specified IP address for IP spoofing, see *Configure range-based IP spoofing*, page 81.
- For a list of features and restrictions for IP spoofing support, see *Content Gateway IP spoofing*, page 77.

Configure basic IP spoofing

In the Content Gateway manager:

1. Go to the **Configure > Networking > ARM > General** tab.
2. Under IP Spoofing, select **Enabled**.
3. Click **Apply**.
4. Go to the **Configure > My Proxy > Basic > General** tab and click **Restart**.
5. Configure your network to ensure web traffic will be redirected back to the proxy.

Contact your network equipment vendor or Technical Support for any needed assistance.

> **Warning**
> The ARM is a critical component of Content Gateway that should never be disabled. If it is disabled while IP spoofing is enabled, client requests receive a "Cannot display Web page" error and an error message is recorded in the /var/log/messages directory.

For information about configuring WCCP routers, see *Configuring WCCP v2 routers*, page 55.

Configure range-based IP spoofing

> **Important**
> Range-based IP spoofing is **not** supported for IPv6.

When the proxy is configured to use range-based IP spoofing:

- Client IP address ranges and their corresponding spoofed IP address are specified in a table.
- The table is traversed top-down. The first match is applied.
- Requests from clients that do not match an IP address in the table are spoofed with their own IP address (basic IP spoofing).
- To create an entry that causes a set of IP addresses to appear to be coming from the proxy (as in ordinary forward proxy request handling), specify the desired client IP address range and then use the **Spoofed IP Address** field to specify the proxy's Internet-facing IP address.
- Create the smallest list that meets your needs. The list is traversed for every connection request. A very large list could contribute to latency. Use the Content Gateway manager performance charts (Monitor > Performance) to monitor proxy performance.

To create the range-based IP spoofing table:

1. Go to the **Configure** > **Networking** > **ARM > General** page.
2. Under IP Spoofing, select **Enabled**. Basic IP spoofing must be enabled to enable range-based IP spoofing.
3. Under **Range Based IP Spoofing**, select **Enabled**.
4. In the **Client IP Addresses** field, enter a comma separated list of individual IP addresses and/or IP address ranges.
   - In a range, the first IP address is separated from last with a hyphen. For example: 10.100.100.0-10.100.100.254
   - CIDR notation is allowed. Do not use spaces.

- The Client IP Address list supports a maximum of:
  - 64 IPv4 addresses
  - 32 IPv4 address ranges

5. In the **Specified IP Address** field, enter a single IP address.
6. Click **Apply** to add the entry to the table.

> **Warning**
> If any of the formatting is invalid, all of the data in that row is cleared.

7. To add a new row to the table, click **Add Row**.
8. To put new entries into effect, click **Apply** and then restart Content Gateway.
9. Configure your network to ensure web traffic will be redirected back to the proxy.

   Contact your network equipment vendor or Technical Support for any needed assistance.

To remove an entry from the IP spoofing table:

1. Clear all the values in the row to be removed.
2. Click **Apply**.
3. To put the changes into effect, restart Content Gateway.

Content Gateway support for IPv6

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Forcepoint security solutions, including Content Gateway, provide support for IPv6.

> **Important**
> In transparent proxy deployments, support requires WCCP v2.01. If you use a Cisco router, it must be version 15.4(1) or later.

Content Gateway support for IPv6 includes:

- IPv6 on dual IP stack Ethernet interfaces
- Support for these protocols: HTTP, HTTPS, FTP, DNS
- IPv6 traffic to the Internet, clients, and PAC file servers
- IPv6 virtual IP addresses (vaddrs.config)
- Authentication rules by client IPv6 address ranges
- Client IPv6 addresses and address ranges to allow or restrict access to the proxy (ip_allow.config)

- Client IPv6 addresses and address ranges to allow or restrict access to the Content Gateway manager (mgmt_allow.config)
- IPv6 Primary Destination value and Source IP values in proxy filtering rules (filter.config), cache rules (cache.config), and parent proxy servers in a chain (parent.config)
- IPv6 addresses in the SSL Incident List
- SNMP traps and counters for IPv6 data

Limits and restrictions:

- IPv6-only internal networks are not supported
- IPv4 must be used to communicate among all Forcepoint components, including other members of a Content Gateway cluster (multicast address)
- With all user authentication, the domain controllers must be reachable on an IPv4 address
- Range-based IP Spoofing is not available for IPv6.
- SOCKS proxy is not supported
- IPv6 support is not available for FTP passive mode with the transparent proxy.
- IPv6 only clients do not display a block page correctly. The user is blocked from the site as expected but will receive a browser error rather than a block page. Dual-stack IPv6 clients receive the normal block page.

IPv6 proxy statistics:

Content Gateway tracks IPv6 traffic. View statistics on the **Monitor > Networking > System** page.

Effect of IPv6 on Event logs:

When IPv6 is enabled, Event log entries are normalized to IPv6 format. For example, “10.10.41.200” is logged as “::ffff:10.10.41.200”.

To filter on a client at “10.10.41.200” in a custom log, requires the following filter:

```
<LogFilter>
   <Name = "IPv6_Test_Machine"/>
   <Condition = "chi MATCH ::ffff:10.10.41.200"/>
   <Action = "ACCEPT"/>
</LogFilter>
```

IPv6 configuration summary

IPv6 support is disabled by default.

If Content Gateway is deployed on an appliance, first enable IPv6 on the appliance, then enable it for Content Gateway. See your Forcepoint appliance documentation.

To enable IPv6 support:

1. Log on to the Content Gateway manager.

2. Navigate to the **Configure > My Proxy > Basic > General** tab.
3. Under Networking, locate the IPv6 row and select **On**.

Once IPv6 support is enabled, in any field that accepts an IPv6 address, the address can be entered in any format that conforms to the standard. For example:

- Leading zeros within a 16-bit value may be omitted
- One group of consecutive zeros may be replaced with a double colon

When IPv6 is disabled, IPv6 entry fields are hidden from view and IPv6 values are deleted from configuration files.

When the **DNS Resolver** is used, go to the **Configure > Networking > DNS Resolver** page to set an IPv4 or IPv6 preference. IPv4 is the default.

7 Clusters

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Related topics:

- *Changing clustering configuration*, page 86
- *Adding nodes to a cluster*, page 88
- *Deleting nodes from a cluster* , page 89
- *Virtual IP failover*, page 90

Content Gateway scales from a single node to a cluster of 2 or more nodes, with a maximum recommended limit of 16. This allows you to quickly increase capacity and improve system performance and reliability.

Note
For assistance with scaling your deployment, contact your Forcepoint account representative.

- Content Gateway detects the addition and deletion of nodes in the cluster and can detect when a node is down.
- You can add or delete a node from a cluster at any time.
- When you remove a node from the cluster, Content Gateway removes all references to the missing node.
- Restarting a node in the cluster causes all nodes in the cluster to restart.
- When the *Virtual IP failover* feature is enabled, the live nodes in a cluster can assume a failed node's traffic.
- Nodes in a cluster automatically share configuration information **except** for the following:
  - Filtering Service and Policy Service IP addresses are not propagated around the cluster.
  - In transparent proxy deployments with WCCP, the service group enabled/disabled state and weight settings are not propagated. See *Transparent interception with WCCP v2 devices*, page 51.

- When SSL support is enabled, the Dynamic Incident List is not propagated around the cluster.

Content Gateway uses a proprietary protocol for clustering, which is multicast for node discovery and heartbeat, and unicast for all data exchange within the cluster.

Important
It is recommended that a dedicated network interface be used for Content Gateway cluster communication, **except** when the host is a Forcepoint appliance, in which case the P1 interface is recommended.

Important
In a proxy hierarchy, the nodes in the cluster cannot be a mixture of HTTP parents and children.

Management clustering

In management clustering mode you can administer all Content Gateway nodes at the same time because cluster nodes share configuration information.

- Content Gateway uses a multicast management protocol to maintain a single system image of all nodes in the cluster.
- Information about cluster membership, configuration, and exceptions is shared across all nodes.
- The **content_manager** process propagates configuration changes to cluster nodes.
- When the HTTPS option is enabled (SSL support), its settings also propagate around the cluster, except for the Dynamic Incident List.

Changing clustering configuration

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Clustering is usually configured when you install the proxy. You can, however, configure clustering afterward, or at any time, in the Content Gateway manager.

1. Go to the **Configure > My Proxy > Basic > Clustering** tab.
2. Under Cluster > Type:
   - Select **Management Clustering** to include this proxy in a cluster.
   - Select **Single Node** if this node is not part of a cluster.
3. Under Interface, enter the name of the network interface. This is the interface used by Content Gateway to communicate with other nodes in the cluster.

- It is recommended that you use a dedicated secondary interface.
- Node configuration information is multicast, in plain text, to other Content Gateway nodes on the same subnet. Therefore, as a best practice, clients should be located on a separate subnet from Content Gateway nodes (multicast communications for clustering are not routed).
- On Forcepoint appliances, P1 is the recommended interface. You may also use P2, however, if you are not using it for Internet egress traffic and want to isolate cluster management traffic.

4. In the Cluster Multicast Group Address area, enter the multicast group address that all members of the cluster share (224.0.1.37 by default).

Warning

Ensure that the multicast IP address does not conflict with the address used by any other application or service.

If there is a conflict and the Content Gateway node is allowed to restart, it will fail to initialize the interface and the Content Gateway instance will shut down. You can verify the condition by examining **/var/log/messages** and looking for a message similar to:

```
[LocalManager::initCCom] Unable to find
network interface eth2.#011 Exiting
```

To correct the problem, identify a unique multicast IP address that will work for all members of the cluster and do one of the following:

- If Content Gateway is on an appliance, see the Forcepoint Appliances CLI Guide.
- If Content Gateway is installed on a Linux server:
  1. Log on to the server and go to **/opt/WCG/config**.
  2. Edit (vi) **records.config**.
  3. Find **proxy.config.cluster.mc_group_addr** and assign it the value of the multicast IP address.
  4. Save and close the file.
  5. Check each member of the cluster to ensure that they are all using the same multicast IP address.
  6. Restart the node.

7. Click **Apply**.

8. Select the **General** tab and click **Restart**.

> **Important**
> Content Gateway does not apply the clustering mode change to all of the nodes in the cluster. You must change the clustering mode on each node individually.

Adding nodes to a cluster

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Content Gateway detects new Content Gateway nodes on your network and adds them to the cluster, propagating the latest configuration information to the newcomer. This provides a convenient way to bootstrap new machines.

To connect a node to a Content Gateway cluster, you need only install Content Gateway software on the new node, making sure during the process that the cluster name and port assignments are the same as those of the existing cluster. In this way, Content Gateway automatically recognizes the new node.

> **Important**
> The nodes in a cluster must be homogeneous; each node must be on the same hardware platform, each must be on the same operating system version, and Content Gateway must be installed in the same directory (/opt/WCG).

1. Install the appropriate hardware and connect it to your network.
2. Install the Content Gateway software using the appropriate procedure for installing a cluster node. See the Forcepoint Web Security Installation Guide
3. During the installation procedure, make sure that the following is true:
   - The cluster name that you assign to the new node is the same as the cluster name for the existing nodes.
   - The port assignments for the new node are the same as the port assignments used by the other nodes.
   - You have added multicast addresses and multicast route settings.
4. Restart Content Gateway (**/opt/WCG/WCGAdmin restart**).

To add an existing Content Gateway installation to the cluster:

1. In the Content Gateway manager, go to the **Configure > My Proxy > Basic > General** tab and set **Proxy Name** to the name of the cluster.
2. Select the **Clustering** tab.
3. Set **Interface** to the interface used by the cluster. All members must use the same interface.

4. Set the **Multicast Group Address** to the address being used by the cluster.
5. In the **Type** area, select **Management Clustering**.
6. Click **Apply**.
7. Go back to the **General** tab and click **Restart**.

You can also add a node by editing variable values in the **record.config** file of the node to be added.

1. On the node you want to add to the cluster, open the **records.config** file located in **/opt/WCG/config**.
2. Edit the following variables:

Variable	Description
proxy.local.cluster.type	Specify the clustering mode: 2 = management mode 3 = no clustering
proxy.config.proxy_name	Specify the name of the Content Gateway cluster. All nodes in a cluster must use the same name.
proxy.config.cluster.mc_group_addr	Specify the multicast address for cluster communications. All nodes in a cluster must use the same multicast address.
proxy.config.cluster.rsport	Specify the reliable service port. The reliable service port is used to send data between the nodes in the cluster. All nodes in a cluster must use the same reliable service port. The default value is 8087.
proxy.config.cluster.mcport	Specify the multicast port. The multicast port is used for node identification. All nodes in a cluster must use the same multicast port. The default port is 8088.
proxy.config.cluster.ethernet_interface	Specify the network interface for cluster traffic. All nodes in a cluster must use the same network interface.

3. Save and close the file.
4. Restart Content Gateway (**/opt/WCG/WCGAdmin restart**).

Deleting nodes from a cluster

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On the node you want to remove from the cluster:

1. Log on to the Content Gateway manager and go to the **Configure > My Proxy > Basic > Clustering** tab.

2. Under Cluster Type, select **Single Node**.
3. Click **Apply**.
4. If you are permanently removing the node from the cluster, it is a best practice to change the proxy name to a name other than the cluster name.

   Select the **General** tab and change the **Proxy Name** to the system hostname or another meaningful value.
5. Restart the proxy.

Virtual IP failover

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When virtual IP failover is enabled, Content Gateway maintains a pool of virtual IP addresses that it assigns to the nodes in the cluster as necessary (see *What are virtual IP addresses?*, page 91, for more information.) These addresses are virtual only in the sense that they are not tied to a specific machine; Content Gateway can assign them to any of its nodes. To the outside world, these virtual IP addresses are the addresses of Content Gateway servers.

Virtual IP failover assures that if a node in the cluster fails, other nodes can assume the failed node's responsibilities. Content Gateway handles virtual IP failover in the following ways:

- The **content_manager** process maintains cluster communication. Nodes automatically exchange statistics and configuration information through multicast communication. If multicast heartbeats are not received from one of the cluster nodes, the other nodes recognize it as unavailable.
- The **content_manager** process reassigns the IP addresses of the failed node to the remaining operational nodes within approximately 30 seconds, so that service can continue without interruption.
- The IP addresses are assigned to new network interfaces, and the new assignment is broadcast to the local network. The IP address reassignment is done through a process called **ARP rebinding**.

Enabling or disabling virtual IP addressing

1. In the Content Gateway manager, navigate to the **Configure > My Proxy > Basic > General** tab.
2. Under Features > Networking, select **On** or **Off** for **Virtual IP** to enable or disable virtual IP addressing.
3. Click **Apply**.

This enables the Virtual IP page, used to add and edit virtual IP addresses.

Adding or editing virtual IP addresses

Virtual IP addresses must be pre-reserved, like all IP addresses, before they can be assigned to Content Gateway.

> **Warning**
> Incorrect IP addressing can disable your system. Make sure you understand how virtual IP addresses work before changing them.

1. In the Content Gateway manager, go to the **Configure** > **Networking** > **Virtual IP** page.
   - The page is available only after you have enabled the Virtual IP option.
   - The Virtual IP Addresses area displays the virtual IP addresses managed by Content Gateway.
2. Click **Edit File** to add new or edit existing virtual IP addresses.
   - To edit a virtual IP address, select it from the table at the top of the page, edit the fields provided, and then click **Set**.
   - To delete the selected IP address, click **Clear Fields**.
   - To add a virtual IP address, specify the virtual IP address, the Ethernet interface, and the Subinterface in the fields provided, and then click **Add**.
3. Click **Apply**, and then **Close**.

What are virtual IP addresses?

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Virtual IP addresses are IP addresses that are not tethered to particular machines. Thus, they can rotate among nodes in a Content Gateway cluster.

It is common for a single machine to represent multiple IP addresses on the same subnet. This machine would have a primary or real IP address bound to its interface card and also serve many more virtual addresses.

You can set up your user base to use a DNS round-robin pointing at virtual IP addresses, as opposed to using the real IP addresses of the Content Gateway machines.

Because virtual IP addresses are not bound to machines, a Content Gateway cluster can take addresses from inactive nodes and distribute those addresses among the remaining live nodes.

Using a proprietary management protocol, Content Gateway nodes communicate their status with their peers. If a node fails, its peers notice the failure and negotiate which of the remaining nodes will mask the fault by taking over the failed node's virtual interface.

8 Hierarchical Caching

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Content Gateway can participate in HTTP cache hierarchies, in which requests not fulfilled in one cache can be routed to other regional caches, taking advantage of the contents and proximity of nearby caches.

A cache hierarchy consists of levels of caches that communicate with each other. Content Gateway supports several types of cache hierarchies. All cache hierarchies recognize the concept of *parent* and *child*. A parent cache is a cache higher up in the hierarchy, to which the proxy can forward requests. A child cache is a cache for which the proxy is a parent.

For more information, see:

- *HTTP cache hierarchies*, page 93
- *Configuring Content Gateway to use an HTTP parent cache*, page 94

HTTP cache hierarchies

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In an HTTP cache hierarchy, if a Content Gateway node cannot find a requested object in its cache, it can search a parent cache—which itself can search other caches—before resorting to retrieving the object from the origin server. See *Configuring Content Gateway to use an HTTP parent cache*.

- You can configure a Content Gateway node to use one or more HTTP parent caches, so that if one parent is unavailable, another parent can service requests. This is called parent failover and is described below.
- If you do not want all requests to go to the parent cache, you can configure the proxy to route certain requests directly to the origin server (for example, requests that contain specific URLs) by setting parent proxy rules in the **parent.config** configuration file (described in *parent.config*, page 409).
- If the request is a cache miss on the parent, the parent retrieves the content from the origin server (or from another cache, depending on the parent's configuration). The parent caches the content and then sends a copy to the proxy (its child), where it is cached and served to the client.

Parent failover

When you configure the proxy to use more than one parent cache, the proxy detects when a parent is not available and sends missed requests to another parent cache. If you specify more than two parent caches, the order in which the parent caches are queried depends upon the parent proxy rules configured in the parent configuration file described in *parent.config*, page 409. By default, the parent caches are queried in the order in which they are listed in the configuration file.

Configuring Content Gateway to use an HTTP parent cache

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1. In the Content Gateway manager, navigate to the **Configure > Content Routing > Hierarchies** page.
2. The Parent Proxy option is **Enabled** by default.
3. Click **Edit File** to open the configuration file editor for the *parent.config* file.
4. Enter information in the fields provided, and then click **Add**. All the fields are described in *Hierarchies*, page 321.
5. Click **Apply**, and then click **Close**.
6. On the **Parenting** tab, click **Apply** to save your configuration.

Important

Perform this procedure on the *child* proxy. Do not make any changes on the parent.

9 Configuring the Cache

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The cache consists of a high-speed object database called the **object store**. The object store indexes objects according to URLs and associated headers, enabling Content Gateway to store, retrieve, and serve web pages and parts of web pages, providing optimum bandwidth savings. Using object management, the object store can cache alternate versions of the same object, varying on language or encoding type, and can store small and large documents, minimizing wasted space. When the cache is full, Content Gateway removes stale data.

Fault tolerance

Content Gateway can tolerate disk failures on cache disks. If a disk drive fails five successive I/O operations, Content Gateway marks the disk as down, removes the drive from the cache, and sends an alarm message to the Content Gateway manager, indicating which disk failed. Normal cache operation continues on the remaining cache disks. If all cache disks fail, Content Gateway goes into proxy-only mode.

You can perform the following cache configuration tasks:

- Change the total amount of disk space allocated to the cache. See *Changing cache capacity*, page 96.
- Partition the cache by reserving cache disk space for specific protocols and origin servers and domains. See *Partitioning the cache*, page 98.
- Specify a size limit for objects allows in the cache. See *Configuring cache object size limit*, page 99
- Delete all data in the cache. See *Clearing the cache*, page 100.
- Change the size of the RAM cache. See *Changing the size of the RAM cache*, page 100.

RAM cache

Content Gateway maintains a small RAM cache of popular objects. This RAM cache serves the most popular objects as fast as possible and reduces load on disks, especially during temporary traffic peaks. You can configure the RAM cache size. See *Changing the size of the RAM cache*, page 100.

Changing cache capacity

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Related topics:

- *Increasing cache capacity*, page 96
- *Reducing cache capacity*, page 97

The maximum aggregate disk cache size is limited to 147 GB. This size makes best use of system resources, while also providing an excellent end-user experience.

The minimum disk cache size is 2 GB.

Querying cache size

To view the configured aggregate cache size, open the Content Gateway manager and go to the **Monitor > Subsystems > Cache** page. Look for the **General > Cache Size** line, and check its current value (in bytes).

Alternatively, run the following command-line option from the Content Gateway **bin** directory (/opt/WCG/bin, by default).

```
content_line -r proxy.process.cache.bytes_total
```

Increasing cache capacity

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To increase the total disk space allocated to the cache on existing disks, or to add new disks to a Content Gateway node:

1. Stop Content Gateway. See *Starting and stopping Content Gateway on the command line*, page 18.
2. Add hardware, if necessary.
   a. Set up the raw device and modify the permissions. For example:

      ```
      mknod /etc/udev/devices/raw c 162 0
      chmod 600 /etc/udev/devices/raw
      ```

   b. Identify the physical device name and note the size in bytes (used later). For example:

      ```
      fdisk -l | grep "^Disk"
      Disk /dev/cciss/c0d1: 146.7 GB, 146778685440 bytes
      ```

   c. For each real disk, create a node, change the owner of the node, and map that raw node to a physical disk. Note that the final argument increments by 1 for each disk added.

      To create a node:

```
mknod /etc/udev/devices/raw_c0d1 c 162 1
```

You can change the device name to the name that is returned from the **fdisk -l** command in step b.

To change the owner:

```
chown <install user> /etc/udev/devices/raw_c0d1
```

The owner is the installation user. Use the device name used in the mknod statement.

To map the raw node to a physical disk:

```
/usr/bin/raw /etc/udev/devices/raw_c0d1 /dev/cciss/c0d1
```

Use the device name used in the mknod statement.

d. Add the same /usr/bin/raw commands to the **/etc/init.d/content_gateway** file to make the changes effective on reboot. For example, at line 6 add:

```
...
case "$1" in
'start')
/usr/bin/raw /etc/udev/devices/raw_c0d1 /dev/cciss/c0d1
```

3. Edit the **storage.config** file in the Content Gateway **config** directory (/opt/WCG/config, by default) to increase the amount of disk space allocated to the cache on existing disks or add the new disk devices. See *storage.config*, page 486.
4. Restart Content Gateway.

Reducing cache capacity

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You can reduce the total amount of disk space allocated to the cache on an existing disk or remove disks from a Content Gateway node.

1. Stop Content Gateway.
2. Remove hardware, if necessary.
3. Edit the **storage.config** file to reduce the amount of disk space allocated to the cache on existing disks or to delete the reference to the hardware you are removing. See *storage.config*, page 486.
4. If you remove a disk, you must edit the **/etc/rc.d/init.d/content_gateway** file to remove the raw disk binding for the disk.
5. Restart Content Gateway.

Important

In the **storage.config** file, a formatted or raw disk must be at least 2 GB.

Partitioning the cache

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You can manage your cache space more efficiently and restrict disk usage by creating cache partitions of different sizes for specific protocols. You can further configure these partitions to store data from specific origin servers and domains. See *Partitioning the cache according to origin server or domain*, page 98.

Important

The partition configuration must be the same on all nodes in a cluster.

HTTP is the only protocol supported.

Making changes to partition sizes and protocols

After you have configured your cache partitions based on protocol, you can make changes to the configuration at any time. Before making changes, note the following:

- You must stop Content Gateway before you change the cache partition size and protocol assignment.
- When you increase the size of a partition, the contents of the partition are **not** deleted. However, when you reduce the size of a partition, the contents of the partition **are** deleted.
- When you change the partition number, the partition is deleted and then re-created, even if the size and protocol type remain the same.
- When you add new disks to your Content Gateway node, the partition sizes specified in percentages increase proportionately.
- A lot of changes to the partition sizes might result in disk fragmentation, which affects performance and hit rate. It is recommended that you clear the cache (see *Clearing the cache*, page 100) before making many changes to cache partition sizes.

Partitioning the cache according to origin server or domain

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After you have partitioned the cache according to size and protocol, you can assign the partitions you created to specific origin servers and domains.

You can assign a partition to a single origin server or multiple origin servers. However, if a partition is assigned to multiple origin servers, there is no guarantee on the space available in the partition for each origin server. Content is stored in the partition according to popularity.

In addition to assigning partitions to specific origin servers and domains, you must assign a generic partition to store content from all origin servers and domains that are not listed. This generic partition is also used if the partitions for a particular origin server or domain become corrupt.

Important
If you do not assign a generic partition, Content Gateway runs in proxy-only mode.

Note
You do **not** need to stop Content Gateway before you assign partitions to particular hosts or domains. However, this type of configuration can cause a spike in memory usage and is time consuming. It is recommended that you configure partition assignment during periods of low traffic.

You can partition the cache according to host name and domain in the Content Gateway manager.

In the Content Gateway manager:

1. Configure the cache partitions according to size and protocol, as described in *partition.config*, page 412.

   Create a separate partition based on protocol (HTTP only) for each host and domain, and an additional generic partition to use for content that does not belong to these origin servers or domains. For example, if you want to separate content from two different origin servers, you must have at least three separate partitions: one HTTP-based partition for each origin server and a generic partition for all other origin servers not listed (the partitions do not have to be the same size).
2. Go to the **Configure > Subsystems > Cache** page.
3. Click the **Hosting** tab, then **Edit File** under Cache Hosting to open the configuration file editor for the **hosting.config** file.
4. Enter information in the fields provided, and then click **Add**. All the fields are described in *Cache*, page 348.
5. Click **Apply**, and then click **Close**.

Configuring cache object size limit

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By default, Content Gateway allows objects of any size in the cache. You can change the default behavior and specify a size limit for objects in the cache.

1. In the Content Gateway manager, go to the **Configure** > **Subsystems** > **Cache** > **General** tab.
2. In the **Maximum Object Size** field, enter the maximum size allowed (in bytes) for objects in the cache. Enter 0 (zero) if you do not want to have a size limit.
3. Click **Apply**.

When an object exceeds the size limit, the following message is entered in the system log file.

```
WARNING: Maximum document size exceeded
```

Clearing the cache

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When you clear the cache, you remove all data from the entire cache, which includes the data in the host database. Clear the cache before performing certain cache configuration tasks, such as partitioning.

Note
You cannot clear the cache when Content Gateway is running.

1. Stop Content Gateway. See *Starting and stopping Content Gateway on the command line*, page 18.
2. From the Content Gateway **bin** directory (/opt/WCG/bin), enter the following command to clear the cache:

   ```
   content_gateway -Cclear
   ```

   Warning
   The clear command deletes all data in the object store and the host database. Content Gateway does **not** prompt you to confirm the deletion.

3. Restart Content Gateway.

Changing the size of the RAM cache

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Content Gateway provides a dedicated RAM cache for fast retrieval of popular small objects. The default RAM cache size is calculated based on the number and size of the

cache partitions you have configured. You can increase the RAM cache size for better cache hit performance.

Warning

If you increase the size of the RAM cache and observe a decrease in Content Gateway performance (such as increased latencies), the operating system might require more memory for network resources. Return the RAM cache size to its previous value.

Note

If you have partitioned your cache according to protocol or hosts, the size of the RAM cache for each partition is proportional to the size of that partition.

1. In the Content Gateway manager, go to the **Configure** > **Subsystems** > **Cache** > **General** tab.
2. In the **Ram Cache Size** field, enter the amount of space (in bytes) you want to allocate to the RAM cache. Although the user interface will accept larger values, **do not exceed 512 MB**.

   The default size is 104857600 (100 MB).

Note

A value of "-1" directs Content Gateway to automatically size the RAM cache to be approximately 1 MB per 1 GB of disk cache.

3. Click **Apply**.
4. Go to the **Configure > My Proxy > Basic > General** tab and click **Restart**.

10 DNS Proxy Caching

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Typically, clients send DNS requests to a DNS server to resolve hostnames. However, DNS servers are frequently overloaded or not located close to the client; therefore DNS lookups can be slow and can be a bottleneck to fulfilling requests.

The DNS proxy caching option allows Content Gateway to resolve DNS requests on behalf of clients. This option off-loads remote DNS servers and reduces response times for DNS lookups. See *Configuring DNS proxy caching*, page 104.

> **Important**
> You can use the DNS proxy caching option only with a layer 4 switch or a Cisco router running WCCP v2.

The following overview illustrates how Content Gateway serves a DNS request.

1. A client sends a DNS request. The request is intercepted by a router or L4 switch that is configured to redirect all DNS traffic on port 53 to Content Gateway.
2. The ARM examines the DNS packet. If the DNS request is **type A** (answer), the ARM forwards the request to Content Gateway. The ARM forwards all DNS requests that are not **type A** to the DNS server.
3. For **type A** requests, Content Gateway checks its DNS cache to see if it has the hostname to IP address mapping for the DNS request. If the mapping is in the DNS cache, Content Gateway sends the IP address to the client. If the mapping is not in the cache, Content Gateway contacts the DNS server to resolve the hostname. When Content Gateway receives the response from the DNS server, it caches the hostname to IP address mapping and sends the IP address to the client. If round-robin is used, Content Gateway sends the entire list of IP address mappings to the client and the round-robin order is strictly followed.

> **Note**
> If the hostname to IP address mapping is not in the DNS cache, Content Gateway contacts the DNS server specified in the **/etc/resolv.conf** file. Only the first entry in resolv.conf is used. This might not be the same DNS server for which the DNS request was originally intended.

The DNS cache is held in memory and backed up on disk. Content Gateway updates the data on disk every 60 seconds. The TTL (time-to-live) is strictly followed with every hostname to IP address mapping.

Configuring DNS proxy caching

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To configure Content Gateway as a DNS proxy cache:

- Add a remap rule in the **ipnat.conf** file.
- Enable the DNS proxy option and specify the port that Content Gateway will use for DNS proxy traffic.
- Configure your layer 4 switch or WCCP router to send DNS traffic on port 53 to Content Gateway.

Important
You can use the DNS proxy caching option only with a layer 4 switch or a Cisco router running WCCP v2.

In the Content Gateway manager:

1. Go to the **Configure > Networking > ARM > General** tab.
2. Under Redirection Rules, click **Edit File** to open the file editor for the **ipnat.conf** file.
3. Enter the following information:
   a. Enter the Content Gateway **Ethernet Interface** to which client DNS requests are routed. For example, eth0.
   b. In the Connection Type drop-down list, select **udp**.
   c. In the Destination IP field, enter **0.0.0.0** to accept DNS requests from all clients.
   d. (*Optional*) In the Destination CIDR field, enter the CIDR mask value. If you have specified 0.0.0.0 in the Destination IP field, enter **0** here.
   e. In the Destination Port field, enter the port on which DNS requests are sent to Content Gateway (53, by default).
   f. In the Redirected Destination IP field, enter the IP address of Content Gateway.
   g. In the Redirected Destination Port field, enter the port that Content Gateway uses to communicate with the DNS server (5353, by default).
   h. In the User Protocol drop-down list, select **dns**.
4. Click **Add**, then click **Apply**, and then click **Close**. Postpone the prompted restart until step 8.
5. Go to the **My Proxy > Basic** page.

6. Under Features > Networking, enable **DNS Proxy** and click **Apply**. Postpone the prompted restart until step 8.
7. Go to the **Networking > DNS Proxy** page.
8. Enter the **DNS Proxy Port** (5353, by default).
9. Click **Apply** and restart Content Gateway.
10. Configure your layer 4 switch or WCCP v2 router to send DNS traffic to the Content Gateway DNS port (53, by default).

11 Saving and Restoring Configurations

Help | Content Gateway | v8.5.x

The configuration snapshot feature lets you save all current configuration settings and restore them if needed. Content Gateway can store configuration snapshots on the node where they are taken, on an FTP server, and on portable media. Content Gateway restores a configuration snapshot on all the nodes in the cluster.

> **Note**
> It is recommended that you take a configuration snapshot before performing system maintenance or attempting to tune system performance. Taking a configuration snapshot takes only a few seconds.

This section describes how to perform the following tasks:

- Take a snapshot of the current configuration. See *Taking configuration snapshots*, page 107.
- Restore previously taken configuration snapshots. See *Restoring configuration snapshots*, page 108.
- Delete configuration snapshots stored on the Content Gateway node. See *Deleting configuration snapshots*, page 109.

Taking configuration snapshots

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You can save all of the current Content Gateway configuration settings via the Content Gateway manager.

Save a snapshot on the local system

1. Go to the **Configure > My Proxy > Snapshots > File System** tab.
2. Use the **Change Snapshot Directory** field to find or edit the local directory for storing configuration snapshots (config/snapshots, by default).

Relative paths are created in the Content Gateway config directory. To create a snapshot directory in another location, use the full path.

3. In the **Save Snapshot** field, type the name you want to use for the current configuration.
4. Click **Apply**.

Save a snapshot on an FTP server

1. Go to the **Configure > Snapshots > FTP Server** tab.
2. In the fields provided, enter the FTP server name, login, and password, and the remote directory where the FTP server stores configuration snapshots.
3. Click **Apply**.

   After you have successfully logged on to the FTP server, the FTP Server page displays additional fields.
4. In the Save Snapshot to FTP Server field, enter a name for the configuration snapshot.
5. Click **Apply**.

Restoring configuration snapshots

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Restore a saved configuration from the Content Gateway manager. If you are running a cluster of Content Gateway servers, the configuration is restored to all the nodes in the cluster.

Restore a configuration snapshot from the local system

1. Go to the **Configure > Snapshots > File System** tab.
2. Use the **Restore/Delete Snapshot** drop-down list to select the configuration snapshot that you want to restore.
3. Mark the **Restore Snapshot from "directory_name" Directory** box.
4. Click **Apply**.

The Content Gateway system or cluster uses the restored configuration.

Restore a configuration snapshot from an FTP server

1. Go to the **Configure > Snapshots > FTP Server** tab.
2. In the fields provided, enter the FTP server name, login, and password, and the remote directory in which the FTP server stores configuration snapshots.
3. Click **Apply**.

After you have successfully logged on to the FTP server, the **FTP Server** tab displays additional fields.

4. Use the **Restore Snapshot** drop-down list to select the configuration snapshot that you want to restore.
5. Click **Apply**.

The Content Gateway system or cluster uses the restored configuration.

Deleting configuration snapshots

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1. In the Content Gateway manager, go to the **Configure > Snapshots > File System** tab.
2. From the **Restore > Delete a Snapshot** drop-down list, select the configuration snapshot you want to delete.
3. Mark the **Delete Snapshot from "directory_name" directory** box.
4. Click **Apply**.

The configuration snapshot is deleted.

12 Monitoring Traffic

Help | Content Gateway | v8.5.x

Content Gateway provides the following tools to monitor system performance and analyze network traffic:

- Statistics that show Content Gateway performance and network traffic information, available from the Content Gateway manager or the command line. See:
  - *Viewing statistics in the Content Gateway manager*, page 111
  - *Viewing statistics from the command line*, page 112.
- Alarms that signal detected failure conditions. See *Working with alarms*, page 112.
- Performance graphs that show historical Content Gateway performance and network traffic information. See *Using Performance graphs*, page 115.
- Reports for SSL traffic. See *Creating SSL certificate authorities reports*, page 117, and *Creating an SSL incidents report*, page 117.

Viewing statistics in the Content Gateway manager

Help | Content Gateway | v8.5.x

Use the options on the Monitor tab of the Content Gateway manager to collect and interpret statistics about Content Gateway performance and web traffic.

Statistics are available regarding:

- My Proxy (the current Content Gateway instance, or nodes in the same cluster)

  See *My Proxy*, page 261, and *Working with alarms*, page 112, for details.
- Protocols (HTTP and FTP)

  See *Protocols*, page 267, for details.
- Security (LDAP, NTLM, and IWA proxy authentication and SOCKS server connections)

  See *Security*, page 270, for details.
- Subsystems (cache, clustering, and logging)

See *Subsystems*, page 275, for details.

- Networking (general network configuration, ARM, WCCP, DNS, virtual IP addressing, and client connections)

  See *Networking*, page 277, for details.

- Performance

  See *Performance*, page 282, and *Using Performance graphs*, page 115, for details.

- SSL

  See *SSL*, page 284, *Creating SSL certificate authorities reports*, page 117, and *Creating an SSL incidents report*, page 117,for details.

Viewing statistics from the command line

Help | Content Gateway | v8.5.x

You can use the command-line interface to view statistics about Content Gateway performance and web traffic.

To view specific information about a Content Gateway node or cluster, specify the variable that corresponds to the desired statistic.

1. Become root:

   ```
   su
   ```

2. Log on to a Content Gateway node.
3. From the Content Gateway **bin** directory (/opt/WCG/bin), enter the following command:

   ```
   ./content_line -r <variable>
   ```

   Here, <*variable*> is the variable that holds the information you want. For a list of the variables you can specify, see *Content Gateway variables*, page 289.

   For example, the following command displays the document hit rate for the node:

   ```
   content_line -r proxy.node.http.cache_hit_ratio
   ```

Working with alarms

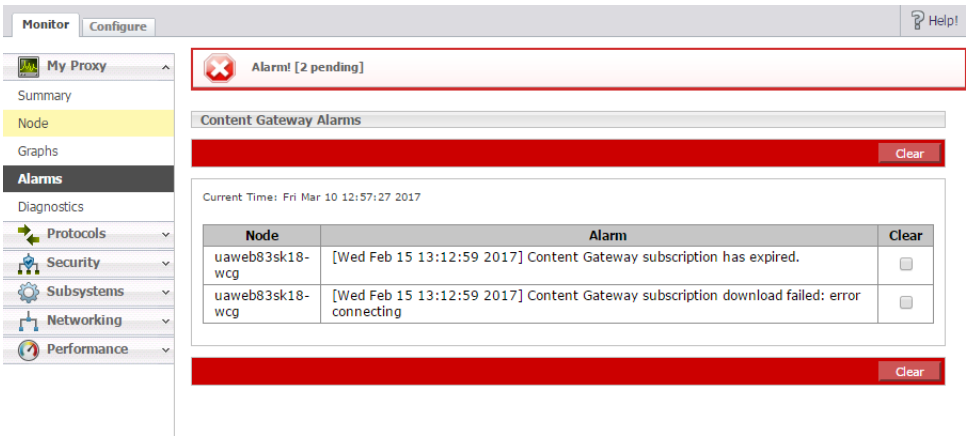
Help | Content Gateway | v8.5.x

Content Gateway signals an alarm when it detects a problem, for example if the space allocated to event logs is full, or if it cannot write to a configuration file. A general alarm message is displayed at the top of the content pane in the Content Gateway manager.

Not all alarms are critical. Some alarms report transient conditions. For example, a "Content Gateway subscription download failed: error connecting" alarm can be generated by a temporary disruption in Internet connectivity.

Content Gateway alarm messages, page 493, provides a description of some of the alarm messages that Content Gateway generates.

Use the **Monitor > My Proxy > Alarms** page to see a listing of current alarms, as shown below.



Note

Content Gateway also sends select alarms to the Web module of the Forcepoint Security Manager, where they are referred to as **alerts**. Summary alert messages are displayed on the System tab of the Web > Status > Dashboard page. Security Manager administrators can also configure SNMP and email alert notifications for Content Gateway alarms on the Settings > Alerts pages.

Clearing alarms

After you have addressed an alarm issue, click **Clear** in the alarm message window to dismiss the alarm.

Important

Clicking **Clear** only dismisses alarm messages; it does not resolve the cause of the alarms.

If the same alarm condition occurs a second time, it will not be logged if the first alarm has not been cleared.

Configuring Content Gateway to email alarm messages

1. In the Content Gateway manager, navigate to the **Configure > My Proxy > Basic > General** tab.
2. In the **Alarm Email** field, enter the email address to which you want to send alarms. Be sure to use the full mail address including @ notation, for example:

   ```
   receivername@example.com
   ```
3. Click **Apply**.

Using a script file for alarms

Alarm messages are built into Content Gateway; you cannot change them. However, you can write a script file to execute certain actions when an alarm is signaled.

A sample script file named **example_alarm_bin.sh** is provided in **/opt/WCG/bin**. You can modify this file.

Configuring SNMP alerting on Content Gateway (software)

Before configuring SNMP to monitor and report on Content Gateway processes, make sure you have installed Net-SNMP and performed a basic SNMP configuration.

1. Add the process names and MAX/MIN process values to the “Process checks” section of snmpd.conf. You also need to add the v2 trap specification.
2. Edit **/etc/snmp/snmpd.conf** and add the following lines in the “Process checks” area:

   ```
   proc content_cop 1 1
   proc content_gateway 1 1
   proc content_manager 1 1
   proc DownloadService 1 1
   proc microdasys 2 1
   proc microdasysws 1 1
   # send v2 traps
   trap2sink IP_address_of_SNMP_Manager:162
   informsink IP_address_of_SNMP_Manager: 162
   rwuser all
   agentSecName all
   defaultMonitors yes
   ```

If Filtering Service is also running on the Content Gateway machine and you want to monitor it, add:

```
proc EIMServer 1 1
```

To verify that SNMP Agent is sending trap messages:

1. On the SNMP Agent/Content Gateway machine, start a network packet analyzer and terminate the DownloadService process.

2. In the packet capture data, look for an SNMPv2-Trap message for DownloadService going to the SNMP Manager. The trap message might be similar to:

   ```
   Value: STRING: Too few DownloadService running (# = 0)
   ```

To verify that SNMP Manager is receiving trap messages:

1. On the SNMP Agent/Content Gateway machine, terminate the DownloadService process. Note that it may take several minutes from the time the trap occurs until the trap is sent to the SNMP Manager.
2. On the SNMP Manager machine, check the SNMP trap log for an entry for DownloadService. The name and location of the log file is specified in the snmptrapd startup command (example provided above). Here is one way to find the message if it is being logged in /var/log/messages:

   ```
   cat /var/log/messages | grep DownloadService
   ```

An entry might look like:

```
Nov 25 15:09:42 localhost snmptrapd[11980]: 10.10.10.10]:
Trap,
DISPAN-EV = STRING , DISMAN-EVENT-MIB::mteHotOID = OID ,
DISMAN-EVENT-IB::prErrMessage.4 = STRING: Too few
DownloadService
running (# = 0)
```

Grep for “snmptrapd” to see all log entries related to snmptrapd.

Use **nc** (netcat) to test basic UDP connectivity between the Agent and the Manager. For example, this command could be run on either side of the connection to test the designated UDP ports.

```
[root]# nc -u -v -z -w2 10.228.85.10 161-162
```

Here, “-u” indicates UPD, “-v” indicates verbose output, “-z” means to scan for listening daemons, and “-w2” indicates to wait 2 seconds before timing out.

Sample results:

```
10.228.85.10: inverse host lookup failed: Unknown host
(UNKNOWN) [10.228.85.10] 161 (snmp) open
```

Using Performance graphs

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The Performance graphing tool (Multi Router Traffic Grapher [MRTG]) allows you to monitor Content Gateway performance and analyze network traffic. Performance graphs show information about virtual memory usage, client connections, cache hit and miss rates, and so on. The information provided is recorded from the time that Content Gateway was started. Statistics are gathered at 5-minute intervals.

Use the **Monitor > Performance** page in the Content Gateway manager to access performance graphs.

> **Important**
> To run MRTG, you must have Perl v5.005 or later installed on your Content Gateway system.

1. If your Content Gateway node is in a cluster, select the node whose statistics you want to view from the **Monitor > My Proxy > Summary** page.
2. Go to the **Performance > Monitor** page.
3. Select an option:
   - Click **Overview** to see a subset of available graphs.
   - Click **Daily** to see statistics for the current day.
   - Click **Weekly** to see statistics for the current week.
   - Click **Monthly** to see statistics for the current month.
   - Click **Yearly** to see statistics for the current year.
4. Wait at least 15 minutes after starting Content Gateway before looking at the graphs. It takes several 5-minute sample intervals for the tool to initialize statistics.

If MRTG has not been configured, the system displays a message indicating that it is not available. To configure the tool:

1. Make sure Perl 5.005 is installed on your system.
2. To ensure that the perl binary is in your PATH, open a command shell, navigate to the bin directory (/opt/WCG/bin), and enter the following command:

   ```
   perl ./pathfix.pl `which perl`
   ```

3. In the bin directory, use the following command to modify the MRTG update interval:

   ```
   ./update_mrtg;sleep 5;./update_mrtg;sleep 5;
   ```

   By default, an MRTG update interval is set to 15 minutes. This command sets the update to 5 minutes.
4. In the bin directory, start the MRTG cron updates:

   ```
   ./mrtgcron start
   ```

5. Wait about 15 minutes before accessing the performance graphs from the Content Gateway manager.

> **Note**
> To stop MRTG cron updates, use the following command:
>
> ```
> ./mrtgcron stop
> ```

Creating SSL certificate authorities reports

Help | Content Gateway | v8.5.x

In the Content Gateway manager:

1. Navigate to the **Monitor > SSL > Reports > Certificate Authorities** tab.
2. Select the format of the report: HTML or CSV (comma-separated values)

   If you select CSV, the report is created as an Excel spreadsheet.
3. Specify the time period the report will cover. The default is all records in the log.
4. Indicate the sort order for the report.
   - List authorities by date
   - List OCSP good responses first
   - List OCSP bad responses first

   See *Keeping revocation information up to date*, page 149.
5. Click **Generate Report**. It may take several seconds for the report to be created.
   - HTML output is displayed in the content pane of the browser.
   - CSV output opens in Microsoft Excel, if it is present on the system.

> **Note**
> To delete the collected SSL log data, click **Reset all collected data**.

Creating an SSL incidents report

Help | Content Gateway | v8.5.x

In the Content Gateway manager:

1. Navigate to the **Monitor > SSL > Reports > Incidents** tab.
2. Select the format of the report: HTML or CSV (comma-separated values)

   If you select CSV, the report is created as an Excel spreadsheet.
3. Specify the time period the report should cover. You can specify a number of days or a date range, or all records since SSL support was enabled.
4. Indicate the sort order for the report.
   - List incidents by date
   - List incidents by URL
   - List the number of times each incident occurred

   See *Managing HTTPS website access*, page 152.

5. Click **Generate Report**. It may take several seconds for the report to be created.

Note

To delete the collected SSL log data, click **Reset all collected data**.

13 Working With Web DLP

Help | Content Gateway | v8.5.x

Related topics:

- *Deploying Content Gateway to work with Forcepoint DLP*, page 120
- *Registering Content Gateway with Forcepoint DLP*, page 121
- *Configuring the ICAP client*, page 125
- *ICAP failover and load balancing*, page 126

When Forcepoint Web Security is deployed with the DLP Module:

- Organizations are protected from data loss over web channels (HTTP, HTTPS, FTP, and FTP over HTTP).

  A full Forcepoint DLP deployment can extend data loss prevention to include channels such as mobile devices, removable media, and printers.
- Forensics data appears in the Threats dashboard.
- Content Gateway records DLP Module transaction statistics.

To start using the DLP Module:

1. Install Forcepoint Web Security with the DLP Module, as described in the Installation Guide.
2. Configure Content Gateway to work with DLP Module components.

How the Forcepoint Web Security DLP Module works

When the DLP Module is enabled:

1. Content Gateway intercepts outbound content and provides that content to Forcepoint DLP.
2. Forcepoint DLP analyzes the content to determine if the web posting or FTP upload is allowed or blocked, based on the Web DLP policy.
   - Transactions over HTTP, HTTPS, FTP, and FTP over HTTP can be examined.

- The disposition is communicated to the proxy.
- Forcepoint DLP logs the transaction.

3. The proxy acts on the Forcepoint DLP determination.
   - If the content is blocked, it is not transmitted to the remote host and Forcepoint DLP returns a block page to the sender.
   - If the content is allowed, it is forwarded to its destination.

> **Note**
> When a request is blocked and the DLP server sends a block page in response:
>
> - Content Gateway forwards the block page to the sender in a 403 Forbidden message.
> - The block page must be larger than 512 bytes or some browsers will substitute a generic error message.

In addition to applying Web DLP policies, the DLP Module can be used to enable data theft analysis for outbound traffic. Configure outbound security options in the Web Security module of the Forcepoint Security Manager on the **Scanning > Scanning Options** page.

Deploying Content Gateway to work with Forcepoint DLP

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Content Gateway supports 2 methods of working with Forcepoint DLP:

- (*Preferred*) Some components are installed with Content Gateway.
- Over ICAP using Forcepoint DLP components located on a separate host.

Only one method can be used at a time.

Forcepoint DLP components on the Content Gateway machine

When Forcepoint Web Security is deployed with the DLP Module or Forcepoint DLP, a small number of Forcepoint DLP components are typically installed on the Content Gateway machine. Content Gateway registers with Forcepoint DLP components when it's first configured and then checks the registration status whenever it's restarted, automatically re-registering if necessary.

For more information about Forcepoint DLP registration, see *Registering Content Gateway with Forcepoint DLP*, page 121.

Forcepoint DLP over ICAP

When the Web DLP policy engine is located on a separate host, Content Gateway can communicate with Forcepoint DLP over ICAP v1.0. For configuration details, see *Configuring the ICAP client*, page 125. Note that integration with on-box components is the preferred deployment.

Registering Content Gateway with Forcepoint DLP

Help | Content Gateway | v8.5.x

Related topics:

- *Working With Web DLP*, page 119
- *Registering Content Gateway with Forcepoint DLP manually*, page 123
- *Web DLP configuration options for Content Gateway*, page 123
- *Stopping and starting Forcepoint DLP processes*, page 124

Content Gateway registers with on-box DLP Module components automatically once an administrator enables Web DLP integration.

Note
Automatic registration is not available with Forcepoint DLP Web Content Gateway. See *Registering Content Gateway with Forcepoint DLP manually*.

To enable Web DLP integration:

1. Make sure that:
   a. The Forcepoint management server is running and accessible.
   b. The Forcepoint management server includes both Forcepoint Web Security and Forcepoint DLP management components.
   c. That the system clock on the Forcepoint management server and the Content Gateway machine are synchronized.
2. Go to the **Configure > My Proxy > Basic > General** tab in the Content Gateway manager.
3. Set **Integration** to **On**, then select the **Web DLP (integrated on-box)** option.

Note
To later disable the integration and unregister Content Gateway and Forcepoint DLP components, turn the Integration option to **Off** and restart Content Gateway.

4. Restart Content Gateway.

Once the integration is enabled, Content Gateway registers with the Forcepoint management server, and Content Gateway queries the Forcepoint Security Manager for the presence of Forcepoint DLP.

Registration is tested and retried, if needed, every time Content Gateway is started. To perform registration, Content Gateway queries the Policy Broker for needed information, including IP address and cluster ID.

- Use the **Monitor > Summary** page in the Content Gateway manager to view registration status information. Click **More Detail**, then check the list at the bottom of the Subscription Details section.
- Registration success and failure information is logged in the /opt/WCG/logs/dss_registration.log file.

If registration succeeds:

- Configure DLP Module integration on the Configure > Security > Web DLP page in the Content Gateway manager. See *Web DLP configuration options for Content Gateway*, page 123.
- Content Gateway uses the Forcepoint DLP policy engine for malware detection.
- Forensic reporting data for the Threats dashboard is collected automatically.
- DLP Module transaction statistics are displayed on the Monitor > Security > Web DLP page in the Content Gateway manager. For a complete list of statistics, see *Web DLP*, page 274.

If registration fails, an alarm displays. If this occurs, make sure that:

- Forcepoint Web Security and Forcepoint DLP management components reside on the same management server.
- The Content Gateway and management server system times are synchronized to within a few minutes.
- The ports used for communication between Forcepoint DLP components and Content Gateway are open in IPTables. See Forcepoint Ports and Configuring IPTables for Content Gateway.
- The server hosting software-based (non-appliance) instances of Content Gateway has an IPv4 address assigned to the **eth0** network interface.

  After registration, the IP address may move to another network interface on the system, but the IP address must remain available as long as the two modules are registered. The IP address is used for Web DLP policy configuration and deployment.

Registering Content Gateway with Forcepoint DLP manually

Help | Content Gateway | v8.5.x

Related topics:

- *Working With Web DLP*, page 119
- *Registering Content Gateway with Forcepoint DLP*, page 121
- *Web DLP configuration options for Content Gateway*, page 123
- *Stopping and starting Forcepoint DLP processes*, page 124

If automatic registration between Content Gateway and Forcepoint DLP fails, administrators can attempt the following manual registration steps:

1. Ensure that the Content Gateway and Forcepoint management server systems are running and accessible, and that their system clocks are synchronized within a few minutes.
2. Ensure that **Web DLP (integrated on-box)** option is enabled on the Configure > My Proxy > Basic > General tab in the Content Gateway manager.
3. Next to Web DLP (integrated on-box), click the **Not registered** link to open the Configure > Security > Web DLP registration screen.
4. Enter the IP address of the management server.
5. Enter a user name and password for logging onto the Forcepoint Security Manager. The user must be an administrator with Data Security module Deploy Settings privileges.
6. Click **Register**. If registration is successful, a message confirms the result and prompts you to restart Content Gateway.

   If registration fails, an error message indicates the cause of failure. Correct the problem and perform the registration process again.

Web DLP configuration options for Content Gateway

Help | Content Gateway | v8.5.x

Related topics:

- *Working With Web DLP*, page 119
- *Registering Content Gateway with Forcepoint DLP*, page 121

Once Content Gateway has registered with Forcepoint DLP, use the **Configure > Security > Web DLP** page in the Content Gateway manager to configure the following options:

1. If Content Gateway is configured to proxy FTP traffic, select **Analyze FTP Uploads** to send FTP uploads to Forcepoint DLP for analysis and policy enforcement.

2. If Content Gateway is configured to proxy HTTPS traffic, select **Analyze HTTPS Content** to send decrypted HTTPS posts to Forcepoint DLP for analysis and policy enforcement.
3. Click **Apply** to save your settings.
4. Go to the **Configure > My Proxy > Basic > General** tab and restart Content Gateway.
5. Go to the Data Security module of the Forcepoint Security Manager to configure the Content Gateway module. See “Configuring the Web Content Gateway module” in Forcepoint DLP Help.

Note

A Content Gateway manager alarm is generated if:

- Web DLP is enabled but not registered.
- Web DLP is enabled and registered but not configured in the Data Security module of the Forcepoint Security Manager.

Stopping and starting Forcepoint DLP processes

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Related topics:

- *Working With Web DLP*, page 119
- *Registering Content Gateway with Forcepoint DLP*, page 121

When Content Gateway is registered with Forcepoint DLP and the Forcepoint DLP policy engine is running on the Content Gateway machine, 3 daemon processes are active on the Content Gateway machine:

- **PolicyEngine** handles transaction and data analysis.
- **PAFPREP** manages the Forcepoint DLP fingerprint repository.
- **mgmtd** handles configuration storage and replication.

These processes start automatically whenever the computer is started.

You must have root privileges to stop or start the processes.

To stop or start **all** policy engine processes, on the command line enter:

```
/opt/websense/PolicyEngine/managePolicyEngine -command
[stop|start]
```

To stop or start individual processes, on the command line enter:

```
service <service_name> [start|stop|restart]
```

Configuring the ICAP client

Help | Content Gateway | v8.5.x

ICAP can be used with any version of Forcepoint DLP. **The direct interface is recommended**, however, when the policy engine is on the Content Gateway machine. See *Registering Content Gateway with Forcepoint DLP*, page 121.

> **Note**
> A secondary ICAP server can be specified as a failover should the primary server fail.
>
> The primary and secondary can also be configured to perform load balancing.
>
> See *ICAP failover and load balancing*, below.

To configure integration with ICAP:

1. Go to the **Configure > My Proxy > Basic > General** tab in the Content Gateway manager.
2. Under Networking > Integration, change **Integration** to **On**, then select **ICAP**.
3. Click **Apply**, and then click **Restart**.
4. Navigate to the **Configure > Networking > ICAP > General** tab.
5. In the **ICAP Service URI** field, enter the Uniform Resource Identifier (URI) for the primary ICAP service, followed by a comma (no space) and the URI of the secondary ICAP service. A secondary ICAP service is optional.

   Enter the URI in the following format:

   ```
   icap://<hostname>:<port>/<path>
   ```

   - <*hostname*> is the IP address or hostname of the Forcepoint DLP Protector appliance.
   - The default ICAP port is 1344.
   - <*path*> is the path of the ICAP service on the host machine.

   For example:

   ```
   icap://protector_app:1344/reqmod
   ```

   You do not need to specify the port if you are using the default ICAP port.
6. Under **Analyze HTTPS Content**, indicate if decrypted traffic should be sent to Forcepoint DLP for analysis or sent directly to the destination. The HTTPS protocol option must be enabled to send HTTPS traffic to Forcepoint DLP. See *Working With Encrypted Data*, page 129.
7. Under **Analyze FTP Uploads**, select whether to send FTP upload requests to Forcepoint DLP for analysis. The FTP proxy feature must be enabled to send FTP traffic to Forcepoint DLP. See *FTP*, page 319.

8. Under **Action for Communication Errors**, select whether to permit traffic or send a block page if Content Gateway encounters an error while communicating with your data protection solution.
9. Under **Action for Large Files**, select whether to permit traffic or send a block page if a file larger than the size limit specified in your data protection solution is sent. The default size limit for Forcepoint DLP is 50 MB.
10. Click **Apply**.

Note

If you change the URI, you must restart Content Gateway. Other changes do not require a restart.

ICAP failover and load balancing

Help | Content Gateway | v8.5.x

Content Gateway can be configured to failover to a backup ICAP server if the active ICAP server fails. The proxy detects the failure condition and sends traffic to the secondary server. If the secondary becomes unresponsive, the proxy uses the primary. If no ICAP servers are available, the proxy fails open.

Load balancing between 2 ICAP servers is also an option.

Time to failover

Content Gateway may experience temporary request-processing latency between the time the real failure occurs and the time the proxy marks the failed server as down. After the failed server is marked down, all new requests are sent to the second ICAP server. The time to failover is primarily limited by the connection timeout configuration.

Failure conditions

The following failure conditions lead to failover

- ICAP request failed due to layer-3 failure (twice for the same request)
- Failure to connect to a port within a given timeout
- Failure to send request (server resetting connection, and similar)

Content Gateway does not consider missing, invalid, or slow responses as failures.

Content Gateway does, however, verify that the ICAP server is valid at startup by verifying the response to the ICAP OPTIONS request.

Recovery conditions and actions

After the failed server is marked down, new requests are sent to the second server. No new ICAP requests are sent to the failed server until that server is detected to be active again, based on the recovery conditions below.

Content Gateway tests for the following recovery conditions for each down ICAP server at a specified interval:

- TCP connection success
- Successfully sent OPTIONS request
- Successfully received valid response to OPTIONS request

Upon server recovery (server comes back online and is marked as up):

- Load balancing ON: Requests start being distributed to the newly up server (round-robin)
- Load balancing OFF: If the primary server recovers, all requests start being sent to the primary. If the secondary server recovers, traffic continues to be sent to the primary, until the primary goes down.

Fail open

If all ICAP servers are down, a configuration option allows fail open or fail closed behavior. When all ICAP servers are down, the background thread continuously attempts to reestablish a new connection with each server.

Configuration settings

These ICAP failover parameters are set in the *records.config* file (defaults shown):

Configuration Variable	Data Type	Default Value	Description
proxy.config.icap.ICAPUri	STRING	(empty)	A comma-separated list of ICAP URIs. For example: icap://1.2.3.4:1344/reqmod, icap://4.3.2.1:1344/reqmod
proxy.config.icap.ActiveTimeout	INT	5	The read/response timeout in seconds. The activity is considered a failure if the timeout is exceeded.
proxy.config.icap.RetryTime	INT	5	The recovery interval, in seconds, to test whether a down server is back up
proxy.config.icap.FailOpen	INT	1	Set to: • 1 to allow traffic when the ICAP servers are down • 0 to send a block page if the ICAP servers are down
proxy.config.icap.LoadBalance	INT	1	Set to: • 1 to distribute requests to all available servers • 0 to distribute requests to only the primary server

14 Working With Encrypted Data

Help | Content Gateway | v8.5.x

Related topics:

- *Initial SSL configuration tasks*, page 132
- *Enabling SSL support*, page 131
- *Certificates*, page 133
- *Internal Root CA*, page 133
- *Managing certificates*, page 141
- *SSL configuration settings for inbound traffic*, page 144
- *SSL configuration settings for outbound traffic*, page 145
- *Validating certificates*, page 146
- *Managing HTTPS website access*, page 152
- *Enabling SSL support*, page 131
- *Client certificates*, page 157
- *Customizing SSL connection failure messages*, page 159
- *Custom certificate key*, page 160
- *SSL decryption port mirroring (appliance deployments)*, page 161

Secure Sockets Layer (SSL) and Transport Layer Security (TLS) are the industry standards for secure transmission of data on the Internet. They rely on data encryption and a system of trusted certificates issued by certificate authorities (CA) that are recognized by clients and servers. SSL/TLS requests made in a browser are easily identified by the “https” string that leads the URL.

In the topics that follow, for convenience and simplicity, SSL/TLS is referred to simply as SSL.

To establish an SSL connection, the client sends an SSL connection request to the server. If the server consents, the client and server use a standard handshake to negotiate an SSL connection.

Content Gateway offers 2 types of support for HTTPS traffic. Only one can be used at a time.

- Simple connection management in which Content Gateway performs URL filtering and then allows the client to make the connection with the server.

  Important

  Even when HTTPS support is **not** enabled and HTTPS is not decrypted, Content Gateway performs a URL lookup and applies policy. In these circumstances:

  - In explicit proxy mode, Content Gateway performs URL filtering based on the hostname in the request. If the site is blocked, Content Gateway serves a block page. Some browsers do not support display of the block page.

    To prevent this URL filtering, configure clients to not send HTTPS requests to the proxy.
  - In transparent proxy mode, if there is an SNI in the request, Content Gateway gets the hostname from the SNI and performs URL filtering based on the hostname. Otherwise, Content Gateway uses the Common Name in the certificate of the destination server. If the Common Name contains a wildcard (*), the lookup is performed on the destination IP address. If the site is blocked, the connection with the client is dropped; no block page is served.

    To prevent this URL filtering with WCCP, do not create a service group for HTTPS.

- Advanced connection management in which Content Gateway:
  - Proxies requests
  - Decrypts content and performs real-time content and security analysis
  - Re-encrypts content for delivery to the client or origin server

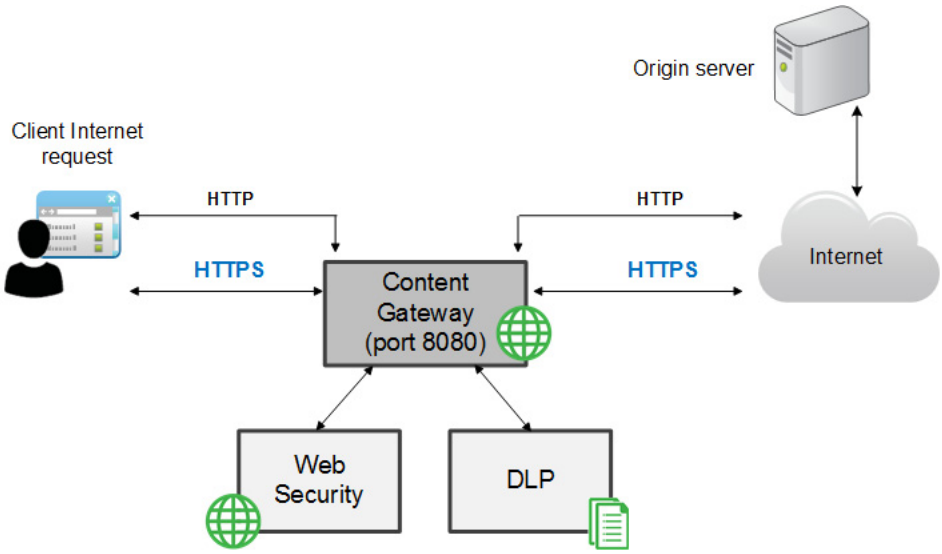
  Note

  Content Gateway does not cache HTTPS content.

When advanced connection management (HTTPS support *or* SSL support) is enabled, each HTTPS request consists of two separate sessions:

- One from the client browser to Content Gateway. This is the **inbound** connection.
- Another from Content Gateway to the origin server that will receive the secure data. This is the **outbound** connection.

Different certificates are required for each session.



Enabling SSL support

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1. In the Content Gateway manager, go to the **Configure > My Proxy > Basic > General** tab.
2. Under Features > Protocols, set HTTPS to **On**.

> **Note**
> If you are deployed with the DLP Module and it is configured to inspect HTTPS traffic, you must enable HTTPS.

3. Click **Apply** and then **Restart**.
4. Enter the name of the SSL certificate file. See *Creating a subordinate certificate authority*, page 136.
5. Go to the **Configure > Protocols > HTTPS** page.
6. Specify the **HTTPS Proxy Server Port** used for client to Content Gateway connections (8080, by default).

   If traffic is transparent on 443, a default ARM redirection rule redirects the requests to 8080. See Configure > Networking > ARM > Redirection Rules.

7. To tunnel HTTPS requests when the SSL handshake results in an unknown protocol error, set Tunnel Unknown Protocols to **Enabled**.

Note

By default, Content Gateway does not try to tunnel non-SSL traffic. To change this, update the records.config file (in /opt/WCG/config, by default) as follows:

```
CONFIG proxy.config.ssl_decryption_bypas
s.tunnel_non-ssl_traffic INT 1
```

Restart Content Gateway to implement the change.

Set the value to **0** to turn off tunneling of non-SSL traffic.

Warning

Tunneled connections are not decrypted or inspected.

When tunneling is enabled, Forcepoint Web Security behavior varies based on the type of proxy deployment.

- When Content Gateway is an **explicit proxy**, a URL lookup is performed and policy is applied before the SSL connection request is made. Transactions are logged as usual.
- When Content Gateway is a **transparent proxy**, if there is an SNI in the request, Content Gateway gets the hostname from the SNI and performs URL filtering based on the hostname. Otherwise, when Content Gateway sends the connect to the server, the unknown protocol error causes the request to be tunneled without the proxy being aware of it, and no transaction is logged.

Tunneling of WebSocket traffic over HTTPS (secure mode) is enabled by default.

Note

Client authentication may not work correctly for WebSocket traffic. To avoid the issue, it is recommended that a filtering rule be added for each WebSocket Primary Destination Type so client requests to those destinations are not authenticated. See *Configure > Security > Access Control > Filtering*, page 329,for instructions.

Initial SSL configuration tasks

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For inbound (client to Content Gateway) traffic, perform these steps to prepare for supporting HTTPS traffic through Content Gateway:

1. Create an internal root CA (certificate authority). In order to sign SSL traffic, Content Gateway requires an internal SSL Certificate Authority that has the ability to sign SSL certificates. This is for traffic between the browser and Content Gateway. See *Internal Root CA*, page 133.
2. Add this CA to the certificate tree. Servers, such as destination servers, check this tree to ensure that they can trust users because they have certificates from an authority listed here. The certificates listed on the certificate tree are certificate authorities you empower (trust) to verify the validity of individual websites. Any site signed by a certificate authority in the certificate tree with the "allow" status is allowed through Content Gateway. See *Managing certificates*, page 141
3. Customize pages that browser users will see. See *Customizing SSL connection failure messages*, page 159. Among the pages that can be customized are a connect failure and certificate verification failure page.

Certificates

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HTTPS security revolves around certificates. A certificate must meet 3 criteria:

- It must be current (not expired or revoked). See *Validating certificates*, page 146.
- It must be issued by a trusted CA (certificate authority). See *Managing certificates*, page 141
- The URL and the certificate owner must match. See *Configuring validation settings*, page 147.

HTTPS connections between the client browser and Content Gateway require a certificate issued by an internal CA. See *Internal Root CA*, page 133.

Connections between Content Gateway and the origin server require a certificate signed by one of the certificate signing authorities listed in the Certificate Authority Tree on the **Configure > SSL > Certificates > Certificate Authorities** tab. See *Managing certificates*, page 141.

Internal Root CA

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The internal Root CA dynamically generates all certificates used between the client browser and Content Gateway.

- You must have an internal Root CA to complete an inbound connection.
- Only one internal Root CA can be active at a time.

- The internal Root CA is stored in the SSL configuration database.

> **Important**
> The default internal Root CA that is included with Content Gateway is not unique and should not be used in a production environment.
>
> Replace the default internal Root CA with your organization's Root CA or create a new one.

There are three options for creating an internal Root CA:

- Leverage your organization's existing CA and import it into Content Gateway. See *Importing your Root CA*, page 134.
- Create a new Root CA and make that CA available to browsers. See *Creating a new Root CA*, page 135.
- Create a subordinate CA that leverages an existing CA, but can also be revoked by that CA. See *Creating a subordinate certificate authority*, page 136.

> **Important**
> Back up the existing internal Root CA before importing or creating a new one. This enables you to return to an earlier version, if necessary. See *Backing up your internal Root CA*, page 140, for details.

Importing your Root CA

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If your organization already has a Root CA, or if you have created a certificate as described elsewhere in this document, you can import it into Content Gateway. The certificate must be trusted by all browsers in your organization.

Be sure to back up any new internal Root CA that you import. See *Backing up your internal Root CA*, page 140, for details.

To import your Root CA:

1. In the Content Gateway manager, go to the **Configure > SSL > Internal Root CA** > **Import Root CA** tab.
2. Click **Choose File** and browse to select the certificate. The certificate must be in X.509 format and base64-encoded.
3. Click **Choose File** and browse to select the private key. It must correspond to the certificate you selected in Step 2.
   - The certificate and private key format must match.
   - The private key format must match the format required by the importing node (unencrypted or encrypted).

To verify the certificate and private key format, view the files in a text editor. Use **Backup Root CA** to export the CA from the database.

Note

For information about converting the private key format, see:

- Preparing an Internal Root CA for importing into a FIPS 140-2 enabled node
- Converting an RSA key type to a PKCS#8 key type
- Converting an encrypted private key to an RSA key

4. Enter and confirm the **Passphrase**.
5. Click **Import Root CA**. The imported CA is stored in the SSL configuration database.
6. Restart Content Gateway.

Creating a new Root CA

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Related topic:

- *Creating a subordinate certificate authority*, page 136

If you do not already have a Root CA, you can use the Content Gateway manager to create one. The process uses **openssl pkcs#8**.

Be sure to back up any new Root CAs that you create. See *Backing up your internal Root CA*, page 140, for details.

1. In the Content Gateway manager, go to the **Configure > SSL > Internal Root CA > Create Root CA** tab.
2. Provide requested information in the fields, particularly noting the following:
   - The fields Organization, Organizational unit, and Common name comprise a distinguished name.
     - For **Organization**, enter the name of your company.
     - Optionally provide an **Organizational Unit** (for example, division, section, or department) name.
     - For **Common Name**, enter the name of your company certificate authority.
   - The comment becomes part of the certificate. The first line you enter can be seen by end users.
   - Enter, and then confirm, the passphrase. (A passphrase is similar to a password. Usually, however, it is longer to provide greater security. It is recommended that you use a strong passphrase, with a combination of numbers, characters, and upper- and lower-case letters.)

3. Click **Generate and Deploy Certificate** to deploy the certificate to the Content Gateway server.

Creating a subordinate certificate authority

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Creating a subordinate certificate authority (sub CA) enables you to take advantage of all the information already existing for your Root CA. However, the Root CA can revoke the sub CA at any time.

Follow these steps to generate a sub CA using OpenSSL and the certificate services in Microsoft Windows.

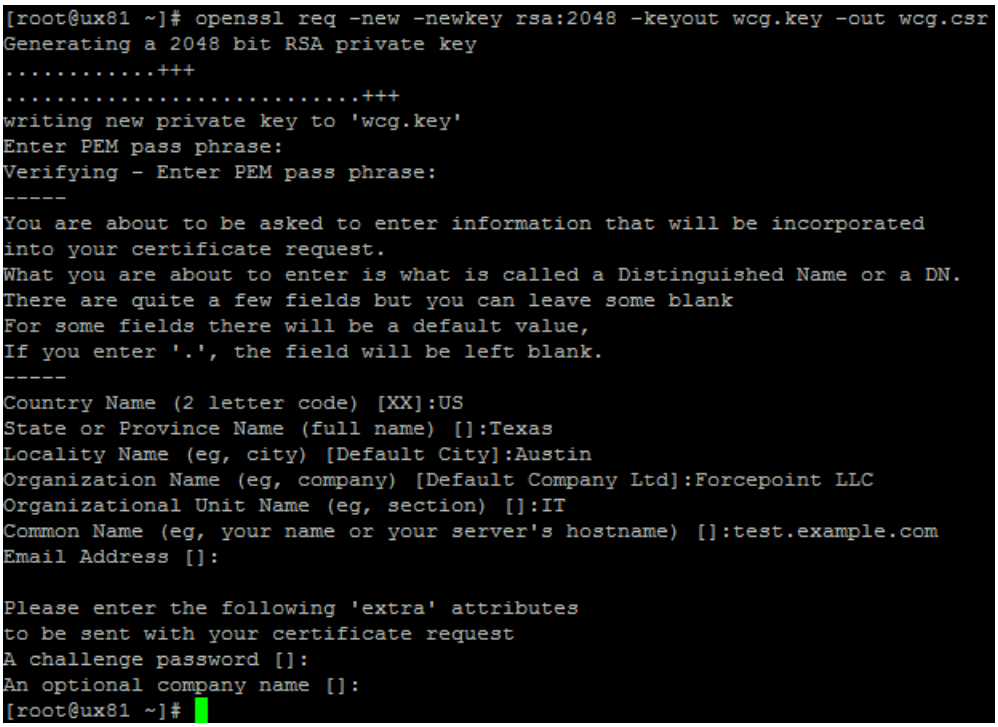
Preparation

- **If you are not the Enterprise domain administrator, you will need to work with that person to get the correct domain permissions to generate a sub CA**.
- Install the **OpenSSL** toolkit (www.openssl.org) on a Windows or Linux machine.

Creating a Certificate Signing Request (CSR)

1. Log on to the Windows or Linux machines with root or Administrator permissions.
2. Open a Command Prompt or command shell.
3. Enter the following **openssl** command:

```
openssl req - sha256 -new -newkey rsa:2048 -keyout wcg.key -
out wcg.csr
```



4. There will be a series of questions. Answer each question and make note of the challenge password; it will be needed later in the process.

   The openssl command generates 2 files:

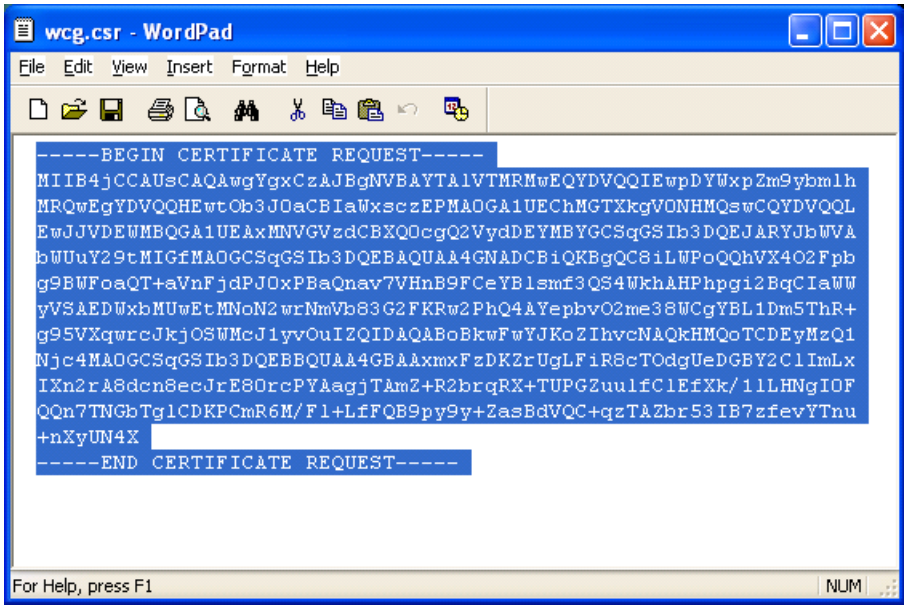
   - **wcg.csr** is the CSR that will be signed by the Certificate Authority to create the final certificate.
   - **wcg.key** is the private key.

5. If you created the CSR on a Linux system, copy it to your Windows host with WinSCP or some other file transfer utility.

Signing the request

To use Microsoft Certificate Services to sign the request:

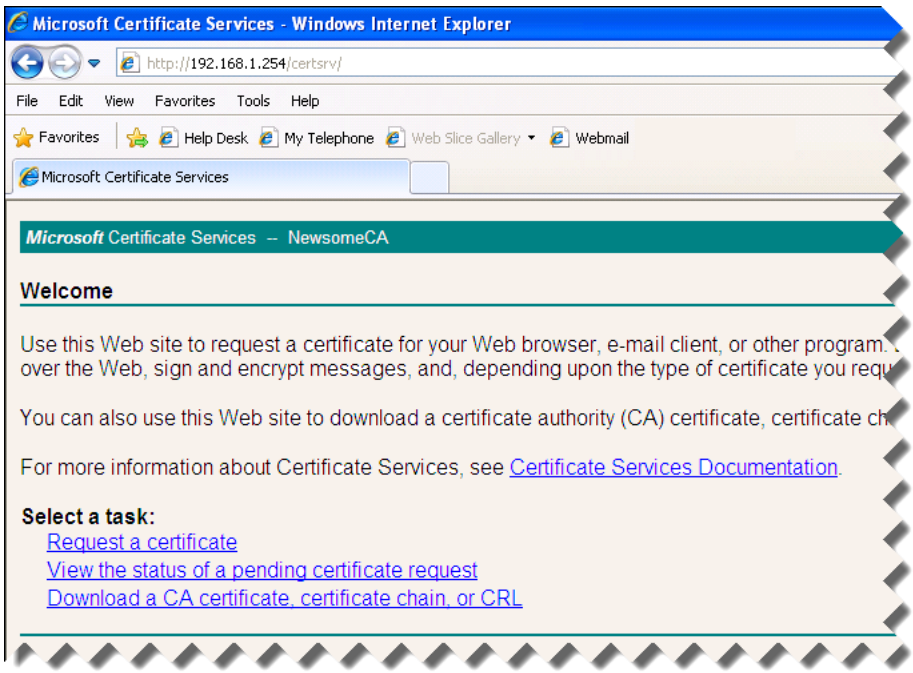
1. Open **wcg.csr** with **WordPad** (to preserve the formatting) and copy the contents onto the clipboard (Edit > Select all; Edit > Copy).



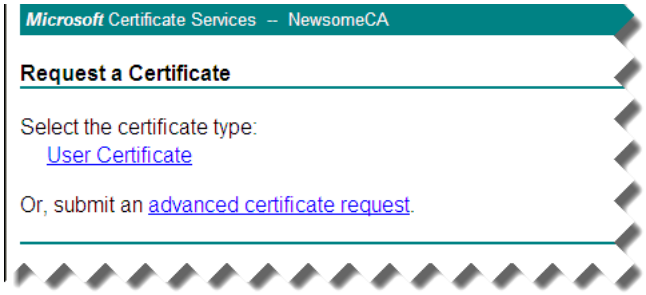
2. In Internet Explorer, enter the following URL to go to the Microsoft CA server:

   `http://<CA_server_IP_address>/certsrv/`

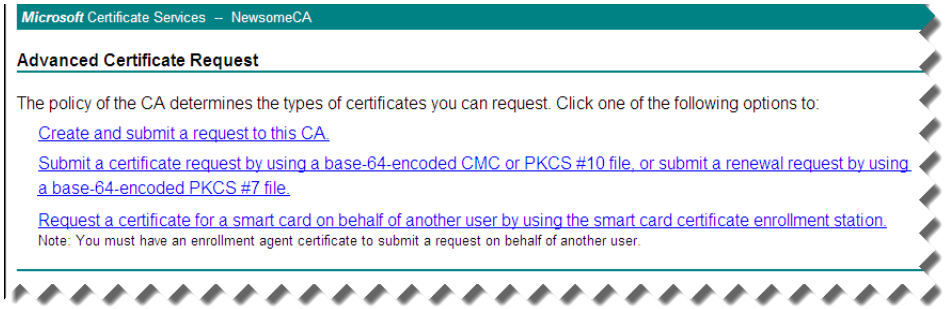
   The **Certificate Services** applet starts.



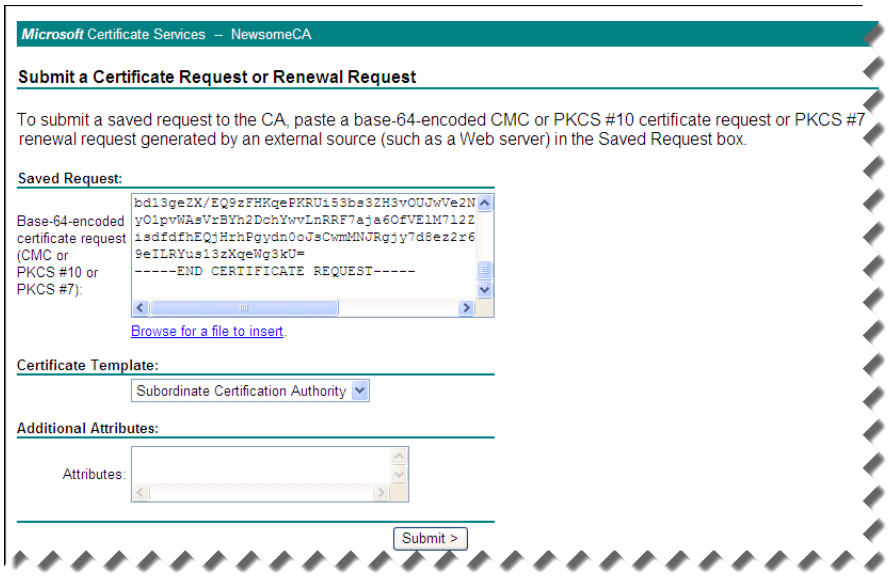
3. Under Select a task, click **Request a certificate**.



4. On the Request a Certificate page, click the link to submit an **advanced certificate request**.

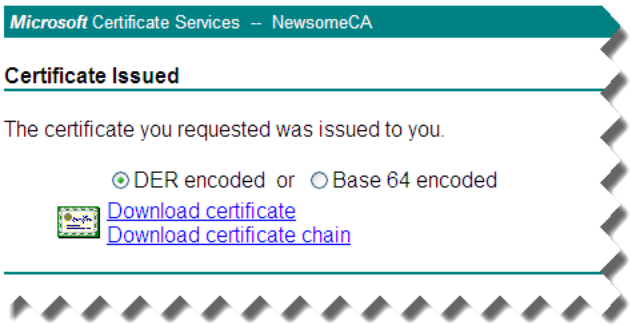


5. On the Advanced Certificate Request screen, select the **Submit a certificate request by using a base-64-encoded CMC...** link.



6. On the Submit a Certificate Request or Renewal Request screen, paste the content of the **wcg.csr** file (previously placed on the clipboard) in the field provided and click **Submit**.
7. The certificate is issued and the Certificate Issued screen displays.

If, instead, the Certificate Pending screen displays, you do not have sufficient privileges to create a sub CA. Contact your Enterprise domain administrator to complete the certificate creation process before proceeding.



8. Select the **Base 64 encoded** radio button, and then select **Download certificate**.
9. Save the certificate to your desktop. Later you will import it into Content Gateway.

With the base 64 encoded certificate on your desktop, along with the private key created during the CSR generating process, you are ready to import both into Content Gateway. See *Importing your Root CA*, page 134, for instructions.

Backing up your internal Root CA

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Always back up the public and private keys of your internal Root CAs before importing or creating new ones. This enables you to return to an earlier version of the certificate, if necessary. In addition, back up any new Root CAs that you import or create.

1. In the Content Gateway manager, go to **Configure > SSL > Internal Root CA > Backup Root CA** tab.
2. Click **Save Public CA Key** to view or save the public CA key.
3. Click **Save Private CA Key** to view or save the private CA key.

Depending on your browser settings, you may be prompted to open or save each key file, or the keys may automatically be saved to the browser's default downloads directory.

Managing certificates

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Related topics:

- *Adding new certificate authorities*, page 142
- *Backing up certificates*, page 142
- *Restoring certificates*, page 142
- *Automatic certificate updates*, page 143

Content Gateway initially populates its trusted certificate store, the Certificate Authority Tree (CA tree) with the list qualified by Mozilla for Firefox (see mozilla.org), by Microsoft for Internet Explorer, and by Apple for Safari. The CA tree appears on the **Configure > SSL > Certificates > Certificate Authorities** tab in the Content Gateway manager. Content Gateway trusts origin servers that offer these certificates.

In the CA tree, a small "i" appears before the names of certificates that can be validated via certificate revocation lists (CRL) or online certification status protocol (OCSP). Content Gateway checks the revocation status of certificates used for both inbound and outbound traffic. See *Keeping revocation information up to date*, page 149, for information about checking the revocation status of a certificate.

To view, delete, or change the allow/deny status of a certificate:

1. In the Content Gateway manager, go to the **Configure > SSL > Certificates** > **Certificate Authorities** tab.
2. Select the name of an authority to open a small pop-up window with information about that authority.
3. Do one of the following:
   - To open or download the certificate for review, select **Click to view certificate**.

     Depending on your browser settings, you may be prompted to open or save the certificate file, or the file may automatically be saved to the browser's default downloads directory.
   - To delete a certificate, select **Click to delete certificate**, then confirm your choice.

     After deleting the certificate, verify that it no longer appears on the Certificate Authorities tab.
   - To allow or deny the certificate, select the **Click to change status to** option. Depending on the status of the certificate, your choice is **allow** or **deny**.
     - If you change the status to deny, a red X appears next to the name of the certificate authority in the certificate authority tree.
     - If you change the status to allow, a green circle appears next to the name of the certificate authority.

Adding new certificate authorities

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Use the **Configure > SSL > Certificates > Add Root CA** tab to manually import additional certificate authorities. Certificates that you import manually have a default status of **allow**.

> **Important**
> Back up your current certificates before making any changes, such as adding or deleting certificates. See *Backing up certificates*, page 142. If you want to back up your entire Content Gateway configuration, see *Saving and Restoring Configurations*, page 107.

1. Browse to the certificate location. Look for files that have a ".cer" extension. The certificate must be in X.509 format and base64-encoded.
2. Click **Add Certificate Authority**.
3. If the import was successful, check that the new certificate is listed on **Configure > SSL > Certificates** > **Certificate Authorities**.

New CAs are also added when users visit a site signed by that authority. These certificates may be allowed or denied.

Backing up certificates

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As a precaution, it is recommended that you back up the database containing the CA certificates whenever you make changes, such as adding or deleting a certificate. They can then be restored at a later date.

1. In the Content Gateway manager, go to the **Configure > SSL > Certificates** > **Backup Certificates** tab.
2. Click **Back Up Configuration to Database**.

To back up your entire Content Gateway configuration, see *Saving and Restoring Configurations*, page 107.

Restoring certificates

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To restore saved certificate configuration information:

1. In the Content Gateway manager, go to the **Configure > SSL > Certificates** > **Restore Certificates** tab.
2. Browse to the location of the backup certificate database.

3. Click **Restore**. You receive a message telling you that the restore was successful and indicating where the previous certificate database was backed up.

The certificate database is propagated around the cluster.

If you are running multiple proxies, use this restore feature to ensure that all the proxies have the same configuration.

Automatic certificate updates

The information in the CA tree is automatically updated on a regular basis as well as each time Content Gateway is restarted. Updating the CA tree avoids the potential for using a root CA that has expired, is no longer a root CA, or if the certificate revocation list URL of the root CA has changed.

The update process inserts new trusted CAs and updates existing CAs that have updated certificate revocation lists, and at the same time removes expired CAs, any CA that is no longer a root CA, and non-trusted CAs.

> **Note**
> The update process maintains only Public certificates. Customers are responsible for maintaining Private certificates.

Enabled by default, the feature can be disabled by editing records.config using this command:

```
CONFIG proxy.config.ssl.catree_update INT 0
```

Restart Content Gateway after making this change.

Reset the value to 1 to re-enable the updates.

To avoid file corruption, checks are in place to confirm the availability and health of each new update. Update attempts that fail generate an informational alarm. The existing set of certificates continues to be used until the next successful download.

This feature:

- Requires SSL decryption to be enabled.
- Does not check existing certificate revocation lists during the update process.
- Does not re-add CAs explicitly removed by a customer.
- When an update is in progress, provides a warning on the **Configure > SSL > Certificates** pages that changes made when the update is running are lost. The same message appears when a backup or restore is attempted

Decryption and Encryption

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Use the **Configure > SSL > Decryption / Encryption** page in the Content Gateway manager to configure SSL and TLS settings and ciphers for inbound and outbound traffic. For outbound traffic, also configure session cache settings (removed in v8.5.4).

For instructions, see:

- *SSL configuration settings for inbound traffic*, page 144
- *SSL configuration settings for outbound traffic*, page 145

SSL configuration settings for inbound traffic

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Related topics:

- *SSL configuration settings for outbound traffic*, page 145

To configure SSL and TLS settings and ciphers for inbound traffic:

1. In the Content Gateway manager, go to the **Configure > SSL > Decryption / Encryption** > **Inbound** tab.
2. Under Protocol Settings, mark the check box next to each protocol that you want Content Gateway to support. Supported protocols are:
   - SSLv2 (removed in v8.5.4)
   - SSLv3
   - TLSv1
   - TLSv1.1 (enabled by default)
   - TLSv1.2 (enabled by default)

   Select the protocols that your organization's security policy has adopted and that your browsers support.
   - You must select at least one protocol.
   - These settings override the settings for these protocols in the users' browsers.
   - You can select different protocols for outbound traffic.
3. Under Cipher Settings, select the appropriate **Cipherlist** for your deployment. The cipher list describes available algorithms and level of encryption between the client and Content Gateway.

   The Content Gateway **DEFAULT** cipher list matches the OpenSSL Default list, excluding those that Forcepoint experts believe provide the least security or encryption strength.
   - ADH
   - RC4

- EXP
- DES

Edit the variables defined in the **records.config** file to change the default list. See *SSL Decryption*.

The strongest cipher (providing the highest level of encryption) is applied first. This can be set to a different level of encryption than for outbound traffic.

Additional cipher settings are:

- **HIGH** encryption cipher suites are those with key lengths larger than 128 bits, and some cipher suites with 128-bit keys.
- **MEDIUM** encryption cipher suites are the high cipher list plus additional cipher suites that use 128-bit encryption algorithms.

For inbound requests (clients connections to Content Gateway), consider using MEDIUM encryption to improve performance.

Regardless of the selected setting, specific insecure ciphers are disabled by default. Control this list via the **proxy.config.ssl.server.cipherlist_suffix** variable in the records.config file. See the information provided in the *SSL Decryption* section of *Content Gateway Configuration Files* for more information.

For more information about ciphers, refer to www.openssl.org/docs.

4. Click **Apply**.
5. Go to the **Configure > My Proxy > Basic > General** tab and click **Restart**.

SSL configuration settings for outbound traffic

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Use **Configure > SSL > Decryption / Encryption** > **Outbound** to configure SSL and TLS settings, session cache (removed in v8.5.4), and ciphers for outbound traffic (Content Gateway to the origin server).

1. Under **Protocol Settings**, indicate which protocols you want Content Gateway to support. Supported protocols are:
   - SSLv2 (removed in v8.5.4)
   - SSLv3
   - TLSv1
   - TLSv1.1 (enabled by default)
   - TLSv1.2 (enabled by default)

   Select the protocols that your organization's security policy has adopted.
   - You must select at least one protocol.
   - You can select different protocols for inbound traffic.
2. Select **Use session cache** in the Session Cache section (removed in v8.5.4) if you want to cache keys until the time specified in the Session cache timeout field expires. If keys are not cached, each request is negotiated again.

3. Use the **Session cache timeout** field to specify how long (in seconds) keys should be kept in the cache. The default is 300 seconds (5 minutes).

   To disable session caching, set the session cache timeout to **0** (zero).

4. Under Cipher Settings, select the appropriate **Cipherlist** for your deployment. The cipher list describes available algorithms and level of encryption between the client and Content Gateway.

   The Content Gateway **DEFAULT** cipher list matches the OpenSSL Default list, excluding those that Forcepoint experts believe provide the least security or encryption strength.

   The strongest cipher (providing the highest level of encryption) is applied first. This can be set to a different level of encryption than for inbound traffic.

   Additional cipher settings are:

   - **HIGH** encryption cipher suites are those with key lengths larger than 128 bits, and some cipher suites with 128-bit keys.
   - **MEDIUM** encryption cipher suites include the high cipher list plus additional cipher suites that use 128-bit encryption algorithms.

   For outbound requests, consider using HIGH to improve security.

   Note that regardless of the selected setting, specific insecure ciphers are disabled by default. Control this list via the **proxy.config.ssl.client.cipherlist_suffix** variable in the records.config file. See the information provided in the *SSL Decryption* section of *Content Gateway Configuration Files* for more information.

   For more information about ciphers and cipher lists, refer to www.openssl.org/docs.

5. Click **Apply**.
6. Go to the **Configure > My Proxy > Basic > General** tab and click **Restart**.

Validating certificates

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Related topics:

- *Bypassing verification*, page 149
- *Keeping revocation information up to date*, page 149

SSL certificate verification is an important component of SSL security. Through certificate exchange and verification, the client (Content Gateway) and the origin server verify that each is who it says it is.

Content Gateway performs this task with the certificate verification engine (CVE).

- Use the tabs on the **Configure > My Proxy > SSL > Validation** page to enable and configure the CVE.

- For information about options when verification fails and you prefer to trust the site, see *Bypassing verification*, page 149.
- For a comprehensive discussion of the use and best practices of the CVE, see SSL Certificate Verification Engine.

Configuring validation settings

1. In the Content Gateway manager, go to the **Configure > SSL > Validation > General** tab.
2. If it is not already selected, mark the **Enable the certificate verification engine** check box.
   - Certificate verification is enabled by default.
   - If this option is not selected, certificate validation does not occur.
3. Indicate whether or not to **Deny certificates where the common name does not match the URL**. When this option is selected, 2 checks are made:
   - The certificate's Common Name is checked for an exact match of the destination URL.
   - If the first check fails, the certificate's Subject Alternative Name (SAN) list is checked for an exact match of the destination URL.

   Checks are case **insensitive**.

   Because an exact match is required, there may be instances when a legitimate variation in the Common Name, or the absence of a matching variation in the SAN, may result in a block.

   For example, using "https://cia.gov" to access "https://www.cia.gov" may result in a block. Additionally, a block may occur when users attempt to access a site by IP address.
4. If you have enabled the Deny certificates option, indicate whether or not to **Allow wildcard certificates**. When selected, this option allows matches with Common Names that include the "*" (wildcard) character in the name.

   Some HTTPS servers use a wildcard in the Common Name so that a single certificate can cover an entire domain. For example, "*.example.com" could cover "email.example.com" and "stream.example.com", among others.
   - Use of the wildcard means that individual servers within the domain are not verified; they are included as a result of the wildcard.
   - Allowing wildcard certificates eases the strict matching burden when a Common Name match is required. It is also helpful for domains that have multiple subdomains like google.com or yahoo.com. It also introduces some risk that a fraudulent or undesirable variation of a domain may go unblocked.
5. Select the **No expired or not yet valid certificates** option to deny access to sites that offer an expired or not yet valid certificate. This is a basic check that is important because many malicious sites operate with expired certificates.

   If this option is not selected, access to those sites is permitted.

6. Indicate whether or not to **Deny self-signed certificates**. By default, the option is enabled, and self-signed certificates (certificates without an official certificate authority) are considered invalid.
7. Indicate whether or not to **Verify entire certificate chain**. By default, this option is enabled, and Content Gateway verifies expiration and revocation status of all certificates between the site certificate and the root Certificate Authority as specified in the certification path of the certificate. This is an important check.
8. Indicate whether or not to **Check certificate revocation by CRL**. Certificate revocation lists (CRLs) are used to check a certificate's revocation status. CRLs list certificates that have been issued and subsequently revoked by the CA.

   Verifying the revocation status is a basic check that is very important because certificates are revoked when they are improperly issued, have been compromised, have a false identity, or violate policies specified by the CA.

   - If this option is enabled, verify that the daily CRL update feature is enabled on the **Revocation Settings** tab under **CRL Settings**.
   - If this option is **not** used, disable the daily CRL update feature on the **Revocation Settings** tab under **CRL Settings**.
9. Indicate whether or not to **Check certificate revocation by OCSP**. Online Certificate Status Protocol (OCSP) is an alternate way to check a certificate's revocation status. While OCSP is beneficial, it is not used as widely as CRLs and therefore is not as reliable. Also, it is a real-time, Internet-hosted check that can introduce some request handling latency.

   Note

   It is recommended that you use OCSP in addition to, rather than instead of, CRLs. See *Keeping revocation information up to date*, page 149, for more information about CRLs and OCSP.

10. If you are using OCSP revocation checking, use the **Block certificates with Unknown OCSP state** option to determine whether to block certificates that return the "Unknown" status.
11. If both CRL and OCSP revocation checking are enabled, indicate your **Preferred method for revocation check**. The selected method (CRL, by default), is applied first.
12. If you have enabled CRL or OCSP checking (or both), use the **Block certificates with no CRL URI and with no OCSP URI** option to block certificates that do not have the expected, associated URIs. For example, if only CRL checking is enabled and the certificate doesn't have a CRL URI, if this option is enabled the connection is blocked. When both CRL and OCSP checking are enabled, the block occurs only if both CRL and OCSP lack a URI.

    - You can view URI information in the certificate when you select to view the certificate in your browser. See *Managing certificates*, page 141, for details.

- Because many certificates do not include CRL or OCSP information, this option can result in a high number of verification failures. Often the failures are reported as “Unknown revocation state” errors.

  This can result in a highly restrictive security policy, with many access denials.
- As with all verification failures, you can allow for exceptions using the Incident List. See *Managing HTTPS website access*, page 152.

Bypassing verification

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When verification bypass is enabled, users are allowed to access a website after they have been informed that the site has an invalid certificate.

It is recommended that organizations deploy initially with verification bypass enabled. Then, as the incident rate changes, administrators can use the Incident List to enforce policy. See *Managing HTTPS website access*, page 152.

Use the **Configure > SSL > Validation** > **Verification Bypass** tab in the Content Gateway manager to configure verification bypass settings.

1. Select **Permit users to visit sites with certificate failure after confirmation** to enable verification bypass (default). If this check box is not selected, users do not have the option to browse to sites with an invalid certificate.
2. If verification bypass is enabled, use the **Time before the user is notified again for the site** field to specify a period of time, in minutes, that the user is allowed to visit a particular site without having to click through the warning again. The default is 6 minutes.
3. Select **Enable the SSL session cache for bypassed certificates** to store information about bypassed certificates in cache and reuse the connections.
   - If this option is selected, not all users are notified that they are trying to access a site where verification has failed.
   - If this option is not selected, all users are notified about sites that do not have valid certificates.
4. Click **Apply**.

Keeping revocation information up to date

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As a best practice, configure Content Gateway to check the status of any certificate before accepting it, to ensure that the certificate has not been revoked. There are 2 methods of doing this: through CRLs (see *Certificate revocation lists*, page 150) and through OCSP (see *Online certification status protocol*, page 150).

- CRLs may include information about thousands of certificates, and may therefore take some time to download and process.
- OCSP operates on a request/response basis for individual certificates, which may improve performance, but not all CAs provide OCSP responses.

Certificate revocation lists

Use the **Configure > SSL > Validation > Revocation Settings** tab to configure how Content Gateway keeps revocation information current, and to perform an immediate CRL update when needed.

By default, Content Gateway performs CRL downloads on a daily basis.

To configure a time for daily CRL downloads:

1. Select **Download the CRL at**, then select a time.
2. Click **Apply**.

To perform an immediate CRL update:

1. Click **Update CRL Now** to initiate the CRL download.

Note

Downloading CRL files can take some time and consume CPU resources. Download CRL updates at a time when Internet traffic on your system is light.

2. Because the update process may take some time, click **View CRL Update Progress** to see the status of the update.

For more information about certificate revocation lists, see RFC 3280.

Online certification status protocol

With OCSP, when a site wants to verify the revocation status of a certificate, it sends a request to the CA about the status of the certificate. The CA then responds, confirming the validity (or revocation) of the certificate.

Because not all CAs provide responses, CRLs can provide information about the status of more certificates.

Content Gateway enables you to cache OCSP responses about the revocation state of a certificate. Caching responses may be useful in environments with high amounts of SSL traffic and where saving bandwidth is important.

Use the **Configure > SSL > Validation > Revocation Settings** tab to configure how Content Gateway keeps revocation information current.

1. Specify, in days, how long OCSP data should be cached. If you do not want to cache OCSP data, enter **0**. The maximum is 1000 days.

2. Click **Apply**.

For more information about OCSP, see RFC 2560.

Directing SSL traffic to Content Gateway via explicit proxy

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Use an existing PAC file or create a new one to direct HTTPS traffic to Content Gateway.

Step 5, below, provides a script that can be used a basis for building a custom PAC file.

To configure Content Gateway to serve a PAC file:

1. In the Content Gateway manager, go to the **Configure > My Proxy > Basic > General** tab.
2. Under Features > Protocols, make sure that, ensure that HTTPS is **On**.

   If HTTPS is disabled, set it to **On**, click **Apply**, and then click **Restart**.
3. Go to the **Configure > Content Routing > Browser Auto-Config > PAC** tab.
4. Specify an **Auto-Configuration Port** for the proxy to use to serve the PAC file (8083, by default).
5. Use the **PAC Settings** area to review or create the PAC file:
   - If an administrator has copied an existing PAC file into the Content Gateway **config** directory (as described in *Using a PAC file*, page 40), the contents of the file are displayed. Review and update the file as needed.
   - If no PAC file has been configured, the PAC Settings field is empty. To start creating a PAC file, copy and paste the following template into the PAC Settings field. Replace <*host*> with the IP address or hostname of the Content Gateway machine.

```
function FindProxyForURL(url, host)
{
  url = url.toLowerCase();
  host = host.toLowerCase();
  if(url.substring(0, 5) == "http:"){
    return "PROXY <host>:8080";
  }
  else if(url.substring(0, 4) == "ftp:"){
    return "PROXY <host>:2121";
  }
  else if(url.substring(0, 6) == "https:"){
    return "PROXY <host>:8080";
  }
```

```
  else{
    return "DIRECT";
  }
}
```

The template is for basic testing only. Administrators should modify the file as needed to suit their organization's needs.

6. Click **Apply**.
7. Go to the **Configure > My Proxy > Basic > General** tab and click **Restart**.

Once the new PAC file is in place, configure users' browsers to use the PAC file. For example, if the PAC file is located on the proxy server with the hostname "proxy1" and Content Gateway uses the default port 8083 to serve the file, users' browsers must be configured to include the following URL in their proxy configuration settings:

```
http://proxy1.company.com:8083/proxy.pac
```

The procedures for specifying the PAC file location vary among browsers. See *Using a PAC file*, page 40, for more information.

Managing HTTPS website access

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Related topics:

- *Viewing incidents*, page 153
- *Changing the status of an incident*, page 154
- *Deleting an incident*, page 155
- *Changing the text of a message*, page 155
- *Viewing incident details*, page 155
- *Adding websites to the Incident List*, page 156

Use the **Configure > SSL > Incident List** and **Add Website** tabs to manage access to websites and troubleshoot website access issues.

- When an end user receives an access denial message because a website does not comply with the organization's security policy, Content Gateway generates an incident. See *Viewing incidents*, page 153.
- To specify how Content Gateway treats a particular site, add it to the Incident List. See *Adding websites to the Incident List*, page 156.

Additional troubleshooting information can be found in SSL Certificate Verification Engine.

Viewing incidents

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Use the **Configure > SSL > Incidents** > **Incident List** tab to see a report of those times when clients received an access denial message.

Every node in a cluster has its own incident list.

- Incidents that are added or modified by the administrator are copied around the cluster (synchronized).
- Unexpected incidents that result in an access denial message are not synchronized in the cluster.

Use the fields in this report to specify how Content Gateway treats requested access to a site in the future.

- To view a specific incident in the local list, enter the ID number or URL and click **Search Node**.

  If the node is part of a cluster and you want see all instances of the ID or URL, in all lists, click **Search Cluster**.
- After performing a search, to restore the complete local list, click **Show All in Node**.

  When the list is very large, **Show All** displays only the first 2,500-3,000 records. Use the scroll bar to scroll through the list. Use the “>” and “<” buttons to view the next or previous page.

The incident report

To sort on any column, click the small triangle next to the column heading.

The incident report contains these fields:

Field	Description
Node	The name of the Content Gateway node on which the list entry is located.
ID	The incident ID number assigned by the system, also called the Ticket ID. Help Desk can ask the user for the Ticket ID in the error message and quickly retrieve it from the Incident List. The end user sees the Ticket ID and a denial message.

Field	Description
Status	Determines how Content Gateway will treat this website in the future. Four conditions are possible: • Allow Users can access the site even if the certificate is not valid. Traffic is decrypted, and certificate checking is disabled. • Blacklisted The site is completely blocked. Users cannot access this site even if the Verification Bypass is configured. • Block If certificate verification fails, access to the website is blocked, unless Verification Bypass is configured, in which case the block page includes a "Visit site anyway" button. See *Bypassing verification*, page 149. • Tunnel The site is tunneled. Traffic is not decrypted and Content Gateway does not check the certificate. Tunneling can be used to bypass inspection of trusted sites and improve performance. **Note:** Tunnel by URL does not work with all transparent proxy traffic. See *Adding websites to the Incident List*, page 156. Use the drop-down list in the Action column to change the status of a site.
Type	Indicates whether the site was added based on its URL or its certificate. It is recommended that administrators add sites to the Incident List by certificate. See *Adding websites to the Incident List*, page 156.
URL	The URL of a site whose certificate could not be validated.
Message	Offers the option to edit the error message. See *Changing the text of a message*, page 155, for information about customizing error messages. The pencil and the magnifying glass icon are both links. See *Viewing incident details*, page 155, for details.
Action	Offers the option to change the status of an incident and to delete the incident. See *Deleting an incident*, page 155.

Changing the status of an incident

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When an administrator changes the status of an incident, that changes how Content Gateway treats the listed URL in the future.

1. In the Content Gateway manager, go to the **Configure > SSL > Incidents** > **Incident List** tab.
2. Identify the incident to update.
3. Select one of the following from the drop-down list in the Actions column. (See *The incident report*, page 153, for an explanation of these options.)
   - Tunnel
   - Block
   - Blacklist

- Allow

4. Click **OK**. The icon in the Status column changes to reflect the new status.

Deleting an incident

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1. In the Content Gateway manager, go to the **Configure > SSL > Incidents** > **Incident List** tab.
2. Select the incident to delete. If the incident is not visible, you can search by ID. See *Viewing incidents*, page 153.
3. In the Action column, select **Delete** from the Action drop-down list, and then click **OK**.

If it is necessary or convenient, the entire Incident List can be deleted using a sqlite3 command:

```
sqlite3 /opt/WCG/config/new_scip3.db "delete from
certificate_acl;"
```

Changing the text of a message

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1. In the Content Gateway manager, go to the **Configure > SSL > Incidents** > **Incident List** tab.
2. Identify the incident to update. See *Viewing incidents*, page 153.
3. Click the pencil icon to open a text editor window, then update the message. For example, an administrator could add more detail to an error message.
4. Click **Submit** to save the changes, or **Close Window** to close the text editor without saving.

Viewing incident details

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1. In the Content Gateway manager, go to the **Configure > SSL > Incidents** > **Incident List** tab.
2. Locate an incident to examine more closely. See *Viewing incidents*, page 153.
3. Click the magnifying glass icon to see additional details about the incident, such as:
   - The **Description** text that appears in the incident message.
   - The time the incident was **Created**.
   - The time the incident was **modified**.
   - The number of **Access attempts** (how many times users have attempted to access this site).

Adding websites to the Incident List

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Use the **Configure > SSL > Incidents** > **Add Website** tab to specify sites that you want to allow, blacklist, or tunnel. Sites that are added manually are assigned chronological Ticket IDs. These appear on the Incident List. See *Viewing incidents*, page 153.

1. Enter the **URL** of the site to add to the Incident List.

   Note
   When specifying an IPv6 address, enclose the address in square brackets ([]).

2. Select either **By Certificate** or **By URL**.
   - **By Certificate** provides greater security. When a site is added by certificate:
     - Clients cannot bypass the policy by using the IP address rather than the URL.
     - Content Gateway retrieves the server certificate and adds the site to the Incident List.

     If sites are blocked by certificates, wildcard certificates are not accepted, even if the common name is recognized.
   - Select **By URL** to tunnel, allow, or blacklist the site.
3. In the Action drop-down list, specify if the site should be added with **Tunnel**, **Allow**, or **Blacklist** status.
   - **Tunnel**: (Valid for **By URL** only) The site is tunneled. Traffic is not decrypted and Content Gateway does not check the certificate.

     Important
     Tunnel by URL does not work for all transparent proxy requests.

     It works under these conditions:

     - When the client application uses TLS and includes an SNI (server name indication), Content Gateway checks the Incident list for the hostname in the SNI.
     - When there is no SNI, Content Gateway connects to the origin server to retrieve the certificate. If the Common Name is a unique FQDN, Content Gateway looks it up in the Incident list. If the Common Name contains a "*" (wildcard), or is not a unique FQDN, Content Gateway looks for the IP address in the Incident list.

     Alternatively, use ARM *Static bypass rules*.

- **Allow**: Users can access the site even if the certificate is not valid. Traffic is decrypted, and certificate checking is disabled.
- **Blacklist**: The site is completely blocked. Users cannot access this site even if the Verification Bypass is configured.

4. Click **Apply**.

As a best practice, administrators should manually add sites to the Incident List after monitoring network traffic for a period of time with the CVE disabled. (See *Configuring validation settings*, page 147.) This enables administrators to improve performance by tunneling trusted sites and blocking those they know should not be accessed.

Client certificates

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Related topics:

- *Importing client certificates*, page 158
- *When a client certificate is always required: the Hostlist*, page 158
- *Deleting client certificates*, page 159

For security, the destination server may request a client certificate.

Responding to client certificate requests

Use the **Configure > SSL > Client Certificates > General** tab in the Content Gateway manager to configure how Content Gateway responds when the server requests a client certificate:

1. Under Action When Client Certificate Is Created:
   - Select **Tunnel** to always permit the request and provide the client certificate to the server.
   - Select **Create incident** to specify how Content Gateway should handle that certificate and site. This is the only way to specify a disposition other than tunnel. See *The incident report*, page 153, for a list of possible dispositions.
2. Click **Apply**.

Importing client certificates

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Related topics:

- *Client certificates*, page 157
- *When a client certificate is always required: the Hostlist*, page 158
- *Deleting client certificates*, page 159

Use the **Configure > SSL > Client Certificates** > **Import** tab in the Content Gateway Manager to import certificates from the organization represented by the client.

Note that a network administrator may need to provide the key and passphrase information needed to complete this configuration.

Important
Use only X.509-formatted, base64-encoded certificates.

1. Enter the name of the client certificate.
2. Browse to the public key for the certificate.
3. Browse to the private key for the certificate.
4. Enter, and then confirm, the passphrase. Use a strong passphrase, with a combination of numbers, characters, and upper- and lower-case letters.
5. Click **Import**.

When a client certificate is always required: the Hostlist

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Related topics:

- *Client certificates*, page 157
- *Deleting client certificates*, page 159

Use the **Configure > SSL > Client Certificates** > **Hostlist** tab in the Content Gateway manager to list destination servers that always require a client certificate.

Be sure to import the certificate before adding it to the Hostlist (see *Importing client certificates*, page 158).

1. Enter the IP address or hostname of the destination server that requires the client certificate.
2. In the **Client Certificate** drop-down list, select the name of the client certificate. Only certificates you have already imported appear in this list.

3. Click **Add**.

> **Important**
> For browsers that don't send a Server Name Indicator (SNI), such as Internet Explorer version 8 and earlier, create an entry for both the destination IP address and the hostname.

Deleting client certificates

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Related topics:
- *Client certificates*, page 157
- *Importing client certificates*, page 158

Use **Configure > SSL > Client Certificates > Manage Certificates** tab in the Content Gateway manager to delete imported client certificates.

1. Select the certificate you want to delete.
2. Click **Delete**.

Customizing SSL connection failure messages

Help | Content Gateway | v8.5.x

Administrators can use the tabs of the **Configure > SSL > Customization** page in the Content Gateway manager as follows:

- **Certificate Failure**: customize the message users receive when they are trying to connect to a site that has an invalid certificate.
- **Connect Error**: customize the message users receive when Content Gateway is unable to connect to the destination web server.

The following variables may optionally be included in the message templates.

%P	Protocol (HTTP or HTTPS)
%o	The IP address of the host of the proxy that generated the message
%H	Remote hostname of the request
%t	Time
%s	Name of the Content Gateway server
%u	Complete URL

$$DETAILS	Detailed error message
$$TICKETID	The ID number of the incident.

To customize the message:

1. Select the appropriate tab (**Certificate Failure** or **Connect Error**).
2. Edit the HTML code in the window as needed.
3. Click **Preview** to see the changes.

> **Note**
> There is a known problem in Internet Explorer 10 that sometimes results in the wrong block page being displayed in the Preview pane. To work around the problem, click **Preview** repeatedly until the correct page is displayed, or disable TLS 1.0.

4. Repeat steps 1 and 2 until all changes have been made.
5. Click **Apply** to save the changes or **Cancel** to return to the original message.

Custom certificate key

(Added in v8.5.3) Use the **Configure > SSL > Custom Certificate Key** options to specify your own base64-encoded key pair that Content Gateway will use, in place of a predefined pair, to generate the dynamic certificate that is sent to clients.

In environments with multiple clusters using the same load balancer, it is best to use the same custom certificate key. Use the backup option from in one cluster, and import the same key to other clusters. Optionally, import the same key to each cluster.

> **Note**
> The key format must be PKCS#8. See this article for information about converting to a PKCS#8 key type.

Importing a custom certificate key

If you have created a custom certificate key pair and a new passphrase, open the **Import Custom Certificate Key** tab provided from **Configure > SSL > Custom Certificate Key.**.

1. Use **Choose File** to browse and locate the key to be imported.

   The key must be in PKCS#8 format, be base-64 encoded, and 2048 or 4096 bits in length.
2. Enter a **Passphrase** and then **Confirm Passphrase**.

The passphrase and confirm passphrase entries must match and be the passphrase used when the key was created.

3. Click **Import Custom Certificate Key**.

Creating a custom certificate key

If you do not have a customer certificate key pair, use the options on the **Configure > SSL > Custom Certificate Key > Create Custom Certificate Key** tab.

1. Enter the **Key length**.

   Valid vales are 2048 or 4096.

2. Enter a **Passphrase** and then **Confirm Passphrase**.

   Enter a phrase that is 4-40 characters in length. The passphrase and confirm passphrase entries must match.

3. Click **Generate and Deploy Custom Certificate Key**.

   Be sure to click this option only once. The process may take several seconds.

Content Gateway must be restarted in order to use this new customer key.

Backing up a custom certificate key

Always back up your custom certificate key before importing or creating a new one. This allows you to return to an older key, if necessary.

To back up the current key:

1. Navigate to **Configure > SSL > Custom Certificate Key > Back up Custom Certificate Key**.
2. Click **Save Custom Certificate Key** to create a backup of the current custom key.

SSL decryption port mirroring (appliance deployments)

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The Content Gateway proxy can be configured to decrypt HTTPS traffic for analysis. Port mirroring delivers all decrypted HTTPS traffic to a physical network interface. This allows a trusted service device to inspect and analyze the decrypted data for its own purpose. The trusted device, however, cannot modify the decrypted traffic and inject it back into the data stream.

SSL decryption port mirroring is available only when the proxy is hosted on a Forcepoint appliance. The feature can be enabled and configured using CLI commands.

Important
The mirror port interface should not be connected to a live network.

This feature is supported:

- If SSL decryption is enabled
- Using one of the interfaces on the Content Gateway appliance
- For both IPv4 and IPv6
- For both transparent and explicit proxy deployments

Only decrypted HTTPS traffic is delivered to the mirrored interface. The following SSL traffic is not delivered:

- Traffic that is set to bypass decryption
- Blocked traffic
- Tunneled traffic

See the Forcepoint Appliances CLI Guide for information about configuring port mirroring.

15 Content Gateway Security

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Content Gateway allows administrators to establish secure communication between the proxy and other computers on the network. Administrators can:

- Control which clients are allowed to access the proxy. See *Controlling client access to the proxy*, page 163.
- Control access to the Content Gateway manager using:
  - Administrator accounts (see *Setting the administrator ID and password*, page 165 and *Creating a list of user accounts*, page 165).
  - SSL (Secure Sockets Layer) protection for encrypted, authenticated access (see *Using SSL for secure administration*, page 167).
- Create filtering rules to control access to the Internet, specify special authentication requirements, and control other traffic transiting the proxy. See *Content Gateway filtering rules*, page 168.
- Configure Content Gateway integration into your firewall and control traffic through one or more SOCKS servers. See *Configuring SOCKS firewall integration*, page 173.
- Configure Content Gateway to use multiple DNS servers to match your site's security configuration. See *Using the Split DNS option*, page 176.
- Configure Content Gateway to perform user authentication. The proxy supports Integrated Windows Authentication (with Kerberos), legacy NTLM (NTLMSSP), LDAP, and RADIUS user authentication. There is also support for multiple authentication methods with multiple authentication realms. See *Content Gateway user authentication*, page 177.

Controlling client access to the proxy

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Administrators can configure Content Gateway to allow only certain clients to use the proxy.

- When this configuration is in place, only clients whose IP address is included in the **ip_allow.config** file can access the proxy.

- By default, clients from any IP address (0.0.0.0 - 255.255.255.255 and ::-ffff:ffff:ffff:ffff:ffff:ffff:ffff:ffff) can access the proxy.

To restrict client access to the proxy:

1. In the Content Gateway manager, go to the **Configure > Security > Connection Control** page.
2. Click **Edit File** to open the configuration file editor for the **ip_allow.config** file.
3. To add a new rule:
   a. Use the **IP Action** drop-down list to indicate whether to allow (ip_allow) or deny (ip_deny) requests from the specified IP address or range.
   b. Enter a **Source IP** address or range.
   c. Click **Add**.
4. To edit an existing rule:
   a. Select a rule in the list at the top of the page.
   b. Make changes as needed.
   c. Click **Set**.
5. Click **Apply** to save the information, and then click **Close**.

Note

If an unauthorized client tries to access Content Gateway, a message is displayed in their browser, indicating that the requested content cannot be obtained.

Controlling access to the Content Gateway manager

Help | Content Gateway | v8.5.x

Administrators can restrict access to the Content Gateway manager to ensure that only authenticated users can change configuration options and view performance and network traffic statistics.

Administrators can:

- Set the master administrator ID and password. A user who logs on to the Content Gateway manager with the administrator ID has access to all Content Gateway manager activities. See *Setting the administrator ID and password*, page 165.
- Create and maintain a list of user accounts that determines who can log on to the Content Gateway manager and which activities they can perform. See *Creating a list of user accounts*, page 165.
- Create an access control list of IP addresses that defines which machines can access the Content Gateway manager. See *Controlling host access to the Content Gateway manager*, page 166.
- Use SSL for secure administration. See *Using SSL for secure administration*, page 167.

- Require administrators to log on to the Forcepoint Security Manager, with or without two-factor authentication, and then use the Content Gateway Access page in the Security Manager to log on to the Content Gateway manager. See, *Accessing the Content Gateway manager*, page 9

Setting the administrator ID and password

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The administrator who installs Content Gateway sets a password that controls administrative access to the Content Gateway manager. A user who logs on to the Content Gateway manager using the correct ID and password can view all the statistics on the Monitor tab and change any configuration options on the Configure tab.

To change the administrator ID and password in the Content Gateway manager:

1. Navigate to the **Configure > My Proxy > UI Setup > Login** tab.
2. To change the current administrator ID, under Administrator > Login, type a new ID.
3. To change the current password, type the current password in the Old Password field. Type the new password in the New Password field, and then retype the new password in the New Password (Retype) field.

   Passwords must be 8 to 15 characters and include at least one:

   - Uppercase character
   - Lowercase character
   - Number
   - Special character

     Supported characters include:

     ! # % & ' ( ) * + , - . / ; < = > ? @ [ ] ^ _ { | } ~

     The following special characters are not supported:

     Space $: ` \ "

   If you have forgotten the current administrator password, see *Accessing the Content Gateway manager if you forget the master administrator password*, page 13.
4. Click **Apply**.

Creating a list of user accounts

Help | Content Gateway | v8.5.x

If a single administrator ID and password for the Content Gateway manager is not sufficient, an administrator can create a list of user accounts that define who has access to the Content Gateway manager and which activities they can perform.

1. In the Content Gateway manager, go to the **Configure > My Proxy > UI Setup > Login** tab.

2. Under Add New User, enter the name of the user allowed to access the Content Gateway manager.
3. Enter the password for the user, and then enter the password again in the **New Password (Retype)** field.

   Passwords must be 8 to 15 characters and include at least one:

   - Uppercase character
   - Lowercase character
   - Number
   - Special character

     Supported characters include:

     ! # % & ' ( ) * + , - . / ; < = > ? @ [ ] ^ _ { | } ~

     The following special characters are not supported:

     Space $: ` \ "
4. Click **Apply**.
5. In the **Access** drop-down list of the user table, select which Content Gateway manager activities the user can perform:
   - Select **No Access** to disable Content Gateway manager access for the user.
   - Select **Monitor Only** to allow the user to view statistics from the Monitor tab only.
   - Select **Monitor and View Configuration** to allow the user to view statistics from the Monitor tab and to view configuration options from the Configure tab.
   - Select **Monitor and Modify Configuration** to allow the user to view statistics from the **Monitor** tab and to change configuration options from the Configure tab.
6. Click **Apply**.
7. Repeat this procedure for each user allowed to access the Content Gateway manager.

Controlling host access to the Content Gateway manager

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In addition to using an administrator ID and user accounts, it is possible to control which hosts have access to the Content Gateway manager.

1. In the Content Gateway manager, go to the **Configure > My Proxy > UI Setup > Access** page.
2. In the Access Control area, click **Edit File** to open the configuration file editor for the **mgmt_allow.config** file.
3. Enter information in the fields provided, and then click **Add**. All the fields are described in *UI Setup*, page 299.
4. Click **Apply**, and then click **Close**.

Using SSL for secure administration

Help | Content Gateway | v8.5.x

Forcepoint Web Security uses the Secure Sockets Layer protocol (SSL) to protect administrator communication with the Content Gateway manager. SSL security provides authentication of both ends of a network connection using certificates, and provides privacy using encryption.

Administrators can optionally replace the Forcepoint-provided certificate with a custom certificate.

To do this:

1. Obtain an SSL certificate from a recognized certificate authority (for example, VeriSign) or, if you use Active Directory Certificate Services, generate a certificate using Certificate Services and a script provided with your Content Gateway software. (See Creating an SSL Certificate for Content Gateway manager with Active Directory Certificate Services.)
2. Install the certificate in the Content Gateway **config** directory (/opt/WCG/bin).

   Either rename the certificate to the default filename (private_key.pem), or specify the name of the certificate in the Content Gateway manager.
3. If you have used a name other than the default, log on to the Content Gateway manager and navigate to the **Configure > My Proxy > UI Setup > General** tab.

   The **HTTPS** option is enabled by default.
4. In the Certificate File field, specify the filename of the SSL certificate.
5. Click **Apply**.

FIPS 140-2 Mode

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FIPS (Federal Information Processing Standard) 140-2 is a U.S. government security standard for hardware and software cryptography modules. Modules validated against the standard assure government and other users that the cryptography in the system meets the standard.

The cryptographic libraries used in Forcepoint Web Security, including the Content Gateway component, have passed FIPS 140-2 Level 1 validation. For details on the cryptographic modules used and their FIPS certificates, see FIPS 140-2 with Forcepoint Appliances and Web Security.

By default, Content Gateway does not operate in FIPS 140-2 mode. Content Gateway still uses the FIPS-validated libraries, but it also allows cryptographic algorithms that are not supported by the FIPS 140-2 standard.

Administrators can configure Content Gateway to enforce FIPS 140-2 on HTTPS connections.

When FIPS is enabled:

- HTTPS connections use TLSv1.1 and TLSv1.2.
- HTTPS connections use FIPS 140-2 approved algorithms
- Content Gateway generates SHA-256 certificates in response to origin server certificate requests

Warning

Once the FIPS 140-2 option is enabled, it cannot be disabled without completely reinstalling Content Gateway. If Content Gateway is on an appliance, the appliance must be reimaged.

Important

FIPS 140-2 is not used for:

- Traffic that flows through the cloud (Hybrid Module).
- Traffic forwarded to Forcepoint Advanced Malware Detection.
- Forcepoint Mobile Security.
- IWA fallback to NTLM or Legacy NTLM user authentication.

To enable FIPS 140-2 on HTTPS connections:

1. In the Content Gateway manager go to the **Configure > Security > FIPS Security** page.
2. Review the warning.
3. Select **Enabled**, then click **Apply**.
4. To enable FIPS, restart Content Gateway. Otherwise, select **Disable** and click **Apply**.

Important

After FIPS is enabled, you must re-install any hotfixes previously installed for the current version of Content Gateway.

Content Gateway filtering rules

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Content Gateway supports the ability to create rules that inspect requests for certain parameters and, when matched, apply a specified action. Rules can be created to:

- Deny or allow URL requests
- Insert custom headers
- Allow specified applications, or requests to specified websites to bypass user authentication
- Keep or strip header information from client requests
- Prevent specified applications from transiting the proxy

> **Note**
> To create rules for IWA, NTLM, and LDAP user authentication, see *Rule-Based Authentication*, page 203. To get started with Content Gateway user authentication options, see *Content Gateway user authentication*, page 177.

Use the **Configure** > **Security** > **Access Control > Filtering** tab to create and modify filtering rules. Rules are stored in the **filter.config** file.

- Rules are applied in the order listed, top to bottom. Only the first match is applied. If no rule matches, the request proceeds.
- Secondary specifiers are optional. More than one secondary specifier can be used in a rule. You cannot, however, repeat a secondary specifier.
- Three filtering rules are configured by default. The first denies traffic on port 25 to all destinations. The second and third bypass user authentication for connections to 2 Forcepoint Advanced Malware Detection destinations.
- When Authentication bypass is enabled on the **Web > Settings > Scanning > Bypass Settings** page of the Forcepoint Security Manager, appropriate rules are added to filter.config.

After adding, deleting, or modifying a rule, restart Content Gateway.

See *filter.config* for information about the structure of stored rules.

Creating filtering rules

1. In the Content Gateway manager, go to the **Configure** > **Security** > **Access Control > Filtering** tab.
2. Click **Edit File** to open *filter.config* in the file editor.
3. Select a **Rule Type** from the drop down list. The Rule Type specifies the action the rule will apply. The supported options are:

   allow: allows particular URL requests to bypass authentication; the proxy caches and serves the requested content.

   deny: denies requests for objects from specific destinations. When a request is denied, the client receives an access denied message.

   keep_hdr: specifies which client request header information to keep.

   strip_hdr: specifies which client request header information to strip.

add_hdr: causes a custom header-value pair to be inserted. Requires that **Custom Header** and **Header Value** are specified. Provides support for destination hosts that require a specific header-value pair. For an example, see *Creating an add_hdr rule to allow Google enterprise gmail*, below.

> **Note**
> The "radius" rule type is **not** supported.

4. Select a **Primary Destination Type** and then enter a corresponding value in the **Primary Destination Value** field. Primary Destination Types include:

   dest_domain: a requested domain name. The value is a domain name.

   dest_host: a requested hostname. The value is a hostname.

   dest_ip: a requested IP address. The value is an IP address.

   url_regex: a regular expression to be found in a URL. The value is a regular expression.

5. If the Primary Destination Type is **keep_hdr** or **strip_hdr**, select the type of information to keep or strip from the **Header Type** drop down list. Options include:
   - date
   - host
   - cookie
   - client_ip
6. If the rule applies to only inbound traffic on a specific port, enter a value for **Proxy Port**.
7. If the rule type is **add_hdr**, specify the **Custom Header** and **Header Value**. The **Custom Header** and **Header Value** must be values that the destination host expects. See the example for Google Business Gmail below.
8. Provide values for any required or desired **Secondary Specifiers**. They include:

   Time: specifies a time range, such as 08:00-14:00.

   Prefix: specifies a prefix in the path part of a URL.

   Suffix: specifies a file suffix in the URL.

   Source IP address: specifies a single client IP address, or an IP address range of clients.

   Port: specifies the port in a requested URL.

   Method: specifies a request URL method:
   - get
   - post
   - put
   - trace

   Scheme: specifies the protocol of a requested URL. Options are:
   - HTTP

- HTTPS
- FTP (for FTP over HTTP only)

User-Agent: specifies a request header User-Agent value. This is a regular expression (regex).

You can use the User-Agent field to create application filtering rules that:

- Allow applications that don't properly handle authentication challenges to bypass authentication
- Block particular client-based applications from accessing the Internet

See the knowledge base article titled "When authentication prevents devices, browsers, and custom applications from working with the proxy" for more information and several examples.

9. When you have finished defining the rule, click **Add** to add the rule and then **Apply** to save the rule.
10. When you are done adding rules, click **Apply** to save all the changes and then click **Close** to close the edit window.

Editing a rule

1. In the Content Gateway manager, go to the **Configure** > **Security** > **Access Control > Filtering** tab.
2. Click **Edit File** to open *filter.config* in the file editor.
3. In the list, select the rule to be modified and change the values as desired.
4. Click **Set** to update the rule and click **Apply** to save the rule.
5. Click **Close** to close the edit window.

Creating an add_hdr rule to allow Google enterprise gmail

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Google provides a mechanism in the form of a custom header in the request, that allows Google to recognize and allow or block access to enterprise gmail and other Google Apps for Business.

To make Google's solution work for enterprise gmail:

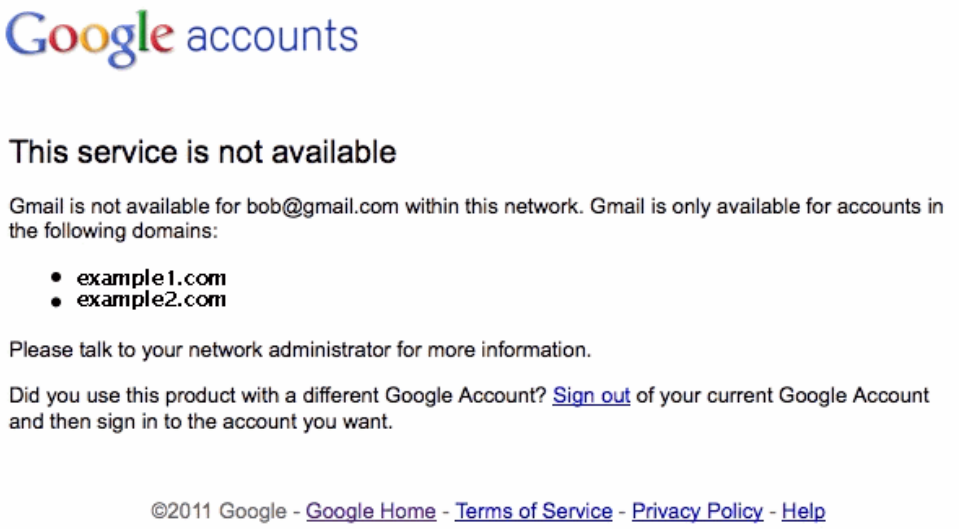
1. In the Web Security module of the Forcepoint Security Manager, **permit** the category **Internet Communication > General Email**.
2. In the Content Gateway manager enable **HTTPS** (SSL decryption). If your site does not already use SSL support, acquaint yourself with the feature before enabling it.

3. In the Content Gateway manager, on the **Configure > Security > Access Control** page, open **filter.config** and create an **add_hdr** rule.

   Note
   The **add_hdr** rule type can be used with any site that uses a custom header-value pair to accomplish special handling.

   a. Select **add_hdr**.
   b. For **Primary Destination Type** select **dest_domain**.
   c. For **Primary Destination Value** specify “mail.google.com”.
   d. In the **Custom Header** field, specify “X-GoogApps-Allowed-Domains”.
   e. In the **Header Value** field, specify your domain, or a list of domains separated by commas. For example: www.example1.com,www.example2.com
   f. Optionally, in the **Source IP** field specify the source IP address or address range to which this rule will be applied. For example: 10.10.20.30 or 10.10.1.1-10.30.40.50.
   g. Click **Add** to add the rule.
   h. Click **Apply** to save all the changes, and then click **Close** to close the edit window.

When a user attempts to access Google services from an unauthorized account, Google displays a block page similar to this:



For Google’s description of the filtering solution, see the article Block access to consumer accounts and services while allowing access to Google Apps for your organization.

Configuring SOCKS firewall integration

Related topics:

- *Configuring SOCKS servers*, page 174
- *Setting SOCKS proxy options*, page 175
- *Setting SOCKS server bypass*, page 176

SOCKS is commonly used as a network firewall, allowing hosts behind a SOCKS server to gain full access to the Internet while preventing unauthorized access from the Internet to hosts inside the firewall.

When Content Gateway receives a request for content that is not in the cache, it must request the content from the origin server. In a SOCKS configuration, instead of accessing the origin server directly, the proxy goes through a SOCKS server. The SOCKS server authorizes communication between the proxy and the origin server and relays the data to the origin server. The origin server then sends the content back to the proxy through the SOCKS server. If caching is enabled, Content Gateway caches the content before sending it to the client.

- Content Gateway can act as a SOCKS client, where it receives and serves HTTP or FTP requests as usual.
- Content Gateway can act as a SOCKS proxy, relaying requests to and from the SOCKS server (usually on port 1080).
- When Content Gateway is installed on an appliance it can act as a SOCKS server, providing all of the services of a SOCKS server. (When Content Gateway is **not** installed on an appliance, it cannot act as a SOCKS server.)

Note

Content Gateway does not perform authentication with the client. However, Content Gateway can perform user name and password authentication with a SOCKS server running SOCKS version 5.

Configuring SOCKS servers

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Content Gateway can be configured to work with one or more SOCKS servers in your network. When Content Gateway is installed on an appliance, a SOCKS server is included with the module.

> **Note**
> When Content Gateway is **not** installed on an appliance, no SOCKS server is provided with Content Gateway.

To configure SOCKS servers:

1. Enable the SOCKS feature.
   a. Navigate to **Configure > My Proxy > Basic > General**.
   b. In the **Security** section of the **Features** table, click **SOCKS On**, and click **Apply**.
   c. Restart Content Gateway.
2. Specify the SOCKS version.
   a. Go to **Configure > Security > SOCKS > General**.
   b. Select the SOCKS version running on your SOCKS servers and click **Apply**.
3. To configure the on-appliance SOCKS server:
   a. Select the **Server** tab.
   b. In the **On-Appliance SOCKS Server** area, select **Enabled** and click **Apply**.

      An entry for the server is created in the **socks_server.config** file.
   c. To change the default entry, in the **SOCKS Server** area click **Edit File**. In the editor, select the **On-Appliance-SOCKS-Server** rule.

      You can change the port, whether it will be the default SOCKS server, and whether server authentication is applied.

      You cannot change the server name or the IP address, which is always the loopback address.

      After you make the needed changes, click **Set**.
4. To configure use of other SOCKS servers in your network:
   a. Select the **Server** tab and in the **SOCKS Server** area click **Edit File**.
   b. Enter a SOCKS server name.
   c. Enter the SOCKS server IP address or a domain name that is resolvable by the DNS server inside your network.
   d. Select whether it will be the default SOCKS server.
   e. If authentication will be used, provide a SOCKS user name and password.
   f. Click **Set** to add the server to the list.

You can always return to the editor, select the rule, make changes, and click **Set** to save them.

5. If there are multiple SOCKS servers, after they have been added, or while they are being added, you can arrange them in precedence-order by selecting an entry and moving it up or down the list with the up and down arrows.
6. Click **Apply** to accept your changes, and **Close** to close the editor.
7. In the **SOCKS Server Rules** area you can create rules for specific routing and bypass by destination IP address. See, *Setting SOCKS server bypass*, page 176.
8. To review configuration options that apply to all SOCKS servers, select the **Options** tab.
   a. Review and adjust the **Server Connection Timeout** value. It specifies how many seconds Content Gateway waits attempting to connect to a SOCKS server before timing out.
   b. Review and adjust the **Connection Attempts Per Server** value. It specifies how many times Content Gateway attempts to connect to a given SOCKS server before marking the server as unavailable.
   c. Review and adjust the **Server Pool Connection Attempts** value. It specifies how many times Content Gateway attempts to connect to a given SOCKS server in the pool before giving up.
9. When SOCKS server configuration is complete, click **Apply** and then go to **Configure > My Proxy > General** and restart Content Gateway.

To remove a server from the list:

1. In the **SOCKS Server** area click **Edit File**.
2. In the list, select the entry you want to delete and click **X**, to the left of the list.
3. Click **Apply** and then **Close**, when you're ready to exit the editor.
4. When configuration is complete, go to **Configure > My Proxy > General** and restart Content Gateway.

Setting SOCKS proxy options

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To configure Content Gateway as a SOCKS proxy, you must enable the SOCKS proxy option and specify the port on which Content Gateway accepts SOCKS traffic from SOCKS clients.

As a SOCKS proxy, Content Gateway can receive SOCKS packets (usually on port 1080) from the client and forward requests directly to the SOCKS server.

Note

You must set SOCKS proxy options in addition to enabling the SOCKS option and specifying SOCKS server information described in *Configuring SOCKS servers*, page 174.

1. Navigate to **Configure** > **Security** > **SOCKS > Proxy**.
2. Enable **SOCKS Proxy**.
3. Specify the port on which Content Gateway accepts SOCKS traffic. The default is port 1080.
4. Click **Apply**.
5. Click **Restart** on **Configure > My Proxy > Basic > General**.

Setting SOCKS server bypass

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You can configure Content Gateway to bypass SOCKS servers and access certain origin servers directly.

1. Navigate to **Configure > Security > SOCKS > Server**. In the **SOCKS Server Rules** area click **Edit File** to open **socks.config**.
2. To modify an existing rule, select it from the list, make your changes, and click **Set**.
3. To create a new rule, specify the parameters and click **Add**.
   a. Select a **Rule Type**:

      Route through SOCKS server

      Do not route through SOCKS server

   b. Specify a destination IP address or range of addresses. Never specify the all networks broadcast address: 255.255.255.255
   c. Select the SOCKS servers to be used for the traffic.
   d. Select whether the traffic will be distributed to the specified SOCKS servers in round robin fashion.
   e. Click **Add** to add the rule.
4. Click **Apply** and then **Close**.
5. Click **Restart** on **Configure > My Proxy > Basic > General**.

Using the Split DNS option

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You can configure Content Gateway to use multiple DNS servers, depending on your security requirements. For example, you can configure Content Gateway to look to one set of DNS servers to resolve host names on your internal network, while allowing DNS servers outside the firewall to resolve hosts on the Internet. This maintains the security of your intranet, while continuing to provide direct access to sites outside your organization.

To configure Split DNS, you must perform the following tasks:

- Specify the rules for performing DNS server selection based on the destination domain, the destination host, or a URL regular expression.
- Enable the Split DNS option.

In the Content Gateway manager:

1. Go to the **Configure > Networking > DNS Resolver > Split DNS** tab.
2. Enable the **Split DNS** option.
3. In the **Default Domain** field, enter the default domain for split DNS requests. Content Gateway appends this value automatically to a host name that does not include a domain before determining which DNS server to use.
4. In the **DNS Servers Specification** area, click **Edit File** to open the configuration file editor for the *splitdns.config* file.
5. Enter information in the fields provided, and then click **Add**. All the fields are described in *splitdns.config*.
6. Click **Apply**, and then click **Close**.
7. On the **Split DNS** tab, click **Apply** to save your configuration.
8. Click **Restart** on **Configure > My Proxy > Basic > General**.

Content Gateway user authentication

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Related topics:

- *Browser limitations*, page 180
- *Global authentication options*, page 181
- *Integrated Windows Authentication*, page 189
- *Legacy NTLM authentication*, page 195
- *LDAP authentication*, page 197
- *RADIUS authentication*, page 200
- *Rule-Based Authentication*, page 203
- *Mac and iPhone/iPad authentication*, page 229

Content Gateway supports several methods of authenticating users before their requests are allowed to proceed. These methods can be used together with Forcepoint Web Security user identification features to provide fallback should user authentication fail or become unavailable.

Important

Use the directory service used by Web Security. (For v8.5.3)

In both explicit and transparent proxy modes, Content Gateway supports user authentication with:

- *Integrated Windows Authentication* (Kerberos with SPNEGO to NTLM)
- *Legacy NTLM authentication* (NTLMSSP)
- *LDAP authentication*
- *RADIUS authentication*

Content Gateway also supports combinations of Integrated Windows Authentication (IWA), Legacy NTLM, and LDAP using:

- *Rule-Based Authentication*, page 203

Rule-Based Authentication summary

Rule-Based Authentication is an ordered list of authentication rules. When a request is processed, the list is traversed top to bottom and the first match is applied.

Rules specify:

1. How to match a client.

   By:

   - IP address
   - Inbound proxy port (explicit proxy only; do not use port 80)
   - User-Agent value
   - A combination of the above
2. The domain or ordered list of domains to authenticate against. With a list, the first successful authentication is remembered and used in subsequent authentications for that user.
3. Whether a customizable web portal page should be used for authentication.

Multiple Realm Networks: Rule-Based Authentication supports multiple realm network structures in which Windows Active Directory domains do not have mutual trust relationships and therefore require that each domain's members be authenticated by a domain controller within their domain. In this environment rules are created that specify:

1. Members of the realm (untrusted domain) by IP address or proxy port
2. The realm (domain) they belong to

Authenticating when domain membership is unknown: Some organizations do not always know what domain a user belongs to. For example, this can happen when organizations are rapidly acquiring new businesses. The unknown domain membership problem can be handled in rule-based authentication by creating a rule (or rules) for IP address lists or ranges that also specifies an ordered list of domains to attempt to authenticate against. The first successful authentication is remembered and used in later authentications.

Authentication based on User-Agent value: One or more User-Agent values can be specified in an authentication rule. Often this is a list of browsers. When the

User-Agent value matches a rule, authentication is performed against the specified domain(s). If the User-Agent value doesn't match any rule, and no rule matches based on other values, no authentication is performed (this is always true; if no rule matches, no authentication is performed).

Selecting the authentication method

The authentication method is selected in the **Authentication** section of the **Configure > My Proxy > Basic** page. Configuring authentication for rule-based authentication begins with selecting **Rule-Based Authentication**.

Supported domain controllers and directories

- Windows NT domain controllers
- Windows 2008, 2008 R2, 2012, 2012 R2 Active Directory
- Novell eDirectory 8.5.1 or later (LDAP only)
- Oracle DSEE 11g (LDAP only)

Best practices when using Windows Active Directory

If you have only one Active Directory domain, or if all of your Active Directory domains share inbound and outbound trust relationships, the best option is to deploy Integrated Windows Authentication. However, if you want to control authentication based on User-Agent values, you must use Rule-Based Authentication.

If you have multiple domains or realms and user authentication is a requirement, you must use Rule-Based Authentication. For details, see *Rule-Based Authentication*, page 203.

If user identification is sufficient, you can use one of the Forcepoint Web Security user identification options. See the "User Identification" section of the Forcepoint Web Security Administrator Help.

Backup domain controllers

For Integrated Windows Authentication and Legacy NTLM, Content Gateway supports the specification of backup domain controllers for failover. If the primary domain controller (DC) does not respond to proxy requests, Content Gateway contacts the next DC in the list (the backup domain controller). For the next request, the proxy tries to contact the primary DC again and then contacts the backup DC if the connection fails.

Transparent user authentication

Content Gateway supports both transparent (Single Sign-On) and interactive (prompted) authentication. Transparent authentication is supported with Integrated Windows Authentication and Legacy NTLM. Some browsers provide only limited

support. See *Browser limitations*, page 180.

On Windows networks, Single Sign-On allows users to sign on only once so that they can transparently access all authorized network resources. Therefore, if a user has already logged on to the Windows network successfully, the credentials specified during Windows logon are used for proxy authentication and the user is not prompted again for a username and password.

Interactive authentication is supported in networks that are not configured for Single Sign-On and for use with browsers that don't support Single Sign-On. With interactive authentication, users are prompted for credentials before they can access content through Content Gateway.

Browser limitations

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Not all web browsers support transparent user authentication.

> **Note**
> Please see the Certified Product Matrix for the most up-to-date information.

The following table indicates how a browser responds to an authentication request when Integrated Windows Authentication (IWA) is configured.

Browser/ Operating System	Internet Explorer (v10 and 11 tested)	Firefox	Chrome	Opera	Safari
Windows	Performs transparent authentication (v11 tested)	Performs transparent authentication (v53 tested)	Performs transparent authentication (v58 tested)	Performs transparent authentication	Falls back to NTLM and prompts for credentials
Mac OS X	Not applicable	Performs transparent authentication (v54 tested)	Falls back to NTLM and prompts for credentials (v55.0 tested)	Falls back to NTLM and prompts for credentials (v46 tested)	Performs transparent authentication (v10 tested)
Red Hat Enterprise Linux, update 6	Not applicable	Performs transparent authentication (v45 tested)	Browser issue prevents IWA from working	Not tested.	Not applicable

Note
Each time Internet Explorer is accessed, authentication information is requested even if Integrated Windows Authentication (IWA) has been configured.

Global authentication options

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Use the **Configuration > Security > Access Control > Global Authentication Options** page to configure:

- User authentication *Fail Open*/fail closed behavior
- *Credential Caching* options
- The *Redirect Options* (required for transparent proxy deployments)

  (Note that this section was called Redirect Hostname prior to v8.5.4.)
- *Cookie Sharing* options

These settings apply to all proxy user authentication configurations, within the parameters stated for each option below.

Whenever changes are made to any of these settings, click **Apply** to save your changes and then restart the proxy to put the changes into effect.

Fail Open

Fail Open specifies whether requests are allowed to proceed for processing when user authentication fails.

When Fail Open is enabled and a Forcepoint Web Security transparent identification agent is configured, if authentication fails and the client is identified by the agent, user-based policy is applied. If the user cannot be identified and a policy is assigned to the client's IP address, that policy is applied. Otherwise, the Default policy is applied.

Important
The Fail Open setting does not apply when IWA is the authentication method and the client fails to retrieve a kerberos ticket from the domain controller (DC) because the DC is down.

The Fail Open setting does apply with IWA when IWA falls back to NTLM.

The Fail Open setting does not apply when using LDAP in explicit proxy mode.

Options include:

- **Disabled** – specifies that requests do not proceed when authentication failures occur.
- **Enabled only for critical service failures** (default) – specifies that requests proceed if authentication fails due to:
  - No response from the domain controller
  - The client is sending badly formatted messages
- **Enabled for all authentication failures, including incorrect password** – specifies that requests proceed for all authentication failures, including password failures.

Important

When user authentication is rule-based with a domain list:

- If **Enabled only for critical service failures** is selected, when a critical service failure occurs fail open is **not** applied. An error always results in fail closed.
- If **Enabled for all authentication failures, including incorrect password** is selected, after trying basic credentials with every domain in the list, fail open is applied.

Credential Caching

Credential Caching options include:

- Credential Caching selections
- Caching Method
- Cache Time-To-Live (TTL), in minutes
- Cookie Expiration (added in v8.5.3)
- LDAP Specific Settings

Credential caching settings apply to all clients whether Content Gateway is in transparent or explicit mode. In explicit mode, caching exceptions can be configured.

Credential caching applies to:

- All authentication methods when Content Gateway is a transparent proxy
- When Content Gateway is an explicit proxy:
  - Integrated Windows Authentication (IWA)
  - Legacy NTLM

When IWA authenticates with Kerberos, Kerberos handles ticket (credential) caching.

Credential Caching selections

Cache all authentication credentials -- specifies that user credentials should be cached for all requests. This selection applies to both transparent and explicit proxy.

Cache all authentication credentials except from the specified IP addresses-- specifies that authentication credentials should not be cached when requests are made from the IP addresses added to the list provided. Exceptions listed here apply only when Content Gateway is in explicit proxy mode.

In the box provided, enter the IP addresses for which you do not want authentication information cached. Specify a comma separated list of IP addresses or IP address ranges that host multiple users.

> **Note**
> This feature should be used for clients for whom IP or cookie cache is not available, such as NATed IP addresses or IP addresses used for clients behind a terminal server. Since all requests from the clients listed are authenticated, performance may be impacted.

Caching Method options

Cache using IP address only – specifies that all credentials are cached with IP address surrogates. This is the recommended method when all clients have unique IP addresses.

Cache using Cookies only – specifies that all credentials are cached with cookie surrogates. This is recommended when all clients share IP addresses, as with multi-host servers such as Citrix servers, or when traffic is NATed by a device that is forwarding traffic to Content Gateway.

Cache using both IP addresses and Cookies – specifies to use cookie surrogates for the IP addresses listed in the cookie caching list, and to use IP address surrogates for all other IP addresses. This is recommended when the network has a mix of clients, some with unique IP addresses and some using multi-user hosts or that are subject to NATing.

The cookie caching list is a comma separated list that can contain up to:

- 64 IPv4 addresses
- 32 IPv4 address ranges
- 24 IPv6 addresses
- 12 IPv6 address ranges

For a description of surrogate credentials, see *Surrogate credentials*.

Important

Cookie mode caching:

- Cookie mode caching does not work with applications that do not support cookies, or with browsers in which cookie support has been disabled.
- When the browser is Internet Explorer, the full proxy hostname in the form “http://host.domain.com” must be added to the Local intranet zone.
- When the browser is Chrome, it must be configured to allow third-party cookies or configured for an exception to allow cookies from the proxy hostname in the form “host.domain.com”.
- When the IP address is set for cookie mode and the request method is CONNECT, no caching is performed.
- Cookie mode caching is not performed for FTP requests.
- Cookie mode caching is supported by Captive Portal and client certificate authentication.
- For explicit proxy, cookie-based authentication is not supported for HTTPS. IP-address authentication is used.

Note

The user interface setting to disable the NTLM cache for explicit proxy has been removed. Although not recommended, the cache can be disabled for explicit proxy traffic in records.config by setting the value of **proxy.config.ntlm.cache.enabled** to **0** (zero).

Cache Time-To-Live

Cache Time-To-Live (TTL) specifies the duration, in minutes, that an entry in the cache is retained. When the TTL expires, the entry is removed and the next time that the user submits a request, the user is authenticated. If the authentication succeeds, an entry is placed in the cache.

The default TTL is 15 minutes. The range of valid values is 5 to 1440 minutes.

Cookie Expiration (added in v8.5.3)

Cookie caching allows a user to re-access the system without authentication until the cookie is no longer valid. Select **Delete cookies upon logout** to force cookies expire when the user ends a session.

This feature is recommended in deployments where multiple users share a machine.

LDAP Specific Settings

When enabled, **Purge LDAP cache on authentication failure** causes the proxy to delete the authorization record for the client from the LDAP cache when an LDAP user authentication failure occurs.

Redirect Options

(Prior to v8.5.4, this section was labeled Redirect Hostname.).

Redirect Options include:

- **Redirect Hostname** specifies an alternate hostname for the proxy.

By default, authenticating clients are redirected to the hostname of the Content Gateway machine. If clients are unable to resolve that hostname through DNS, or if an alternate DNS name for the proxy is defined, that hostname should be specified in the **Redirect Hostname** field.

Redirect Options

(Prior to v8.5.4, this section was labeled Redirect Hostname.).

Redirect Options include:

- **Redirect Hostname** specifies an alternate hostname for the proxy.

By default, authenticating clients are redirected to the hostname of the Content Gateway machine. If clients are unable to resolve that hostname through DNS, or if an

alternate DNS name for the proxy is defined, that hostname should be specified in the **Redirect Hostname** field.

> **Note**
> To ensure that user authentication for transparent proxy occurs transparently (without prompting the user for credentials), the browser must be configured so that the Redirect Hostname is in its **Intranet Zone**. Typically, this is achieved by ensuring that the Redirect Hostname is in the same domain as the computer on which the browser is running. For example, if the client is **workstation.example.com** and the Redirect Hostname is **proxyhostname.example.com**, the browser allows authentication to occur transparently. Consult your browser documentation.

> **Note**
> Content Gateway supports transparent authentication in proxy clusters that use WCCP load distribution. However, the **assignment method distribution attribute** must be the source IP address. For more information see *WCCP load distribution*, page 54.

- **Redirect for HTTPS Authentication** (available only with v8.5.4) enables authentication of HTTPS requests over HTTPS, using port 8443.

By default, all authentication for HTTPS requests is done over HTTP, using port 8080. Click **Enabled** to direct all HTTPS requests to authenticate over HTTPS.

> **Note**
> To ensure that user authentication for transparent proxy occurs transparently (without prompting the user for credentials), the browser must be configured so that the Redirect Hostname is in its **Intranet Zone**. Typically, this is achieved by ensuring that the Redirect Hostname is in the same domain as the computer on which the browser is running. For example, if the client is **workstation.example.com** and the Redirect Hostname is **proxyhostname.example.com**, the browser allows authentication to occur transparently. Consult your browser documentation.

> **Note**
> Content Gateway supports transparent authentication in proxy clusters that use WCCP load distribution. However, the **assignment method distribution attribute** must be the source IP address. For more information see *WCCP load distribution*, page 54.

- **Redirect for HTTPS Authentication** (available only with v8.5.4) enables authentication of HTTPS requests over HTTPS, using port 8443.

  By default, all authentication for HTTPS requests is done over HTTP, using port 8080. Click **Enabled** to direct all HTTPS requests to authenticate over HTTPS.

Cookie Sharing

Authentication credentials cached with cookie surrogates can be shared across all nodes in a cluster.

When cookie mode caching is enabled, after a user is authenticated the cookie for that user is used for subsequent authentication attempts by any of the proxies that are clustered with the proxy that did the initial authentication. This feature is especially useful in load balanced environments.

When either **Cache using Cookies only** or **Cache using both IP addresses and Cookies** is enabled, the Cookie Sharing option is automatically enabled.

> **Note**
> All proxies in the cluster must use the same caching method when cookie sharing is enabled.

- Select **Choose File** for both Public and Private keys to import your own keys for use with this feature. Browse to the file you want to use and select it. Files must be in PEM format.

  The same keys must be imported for each proxy in the cluster.

- After selecting each file, click **Import Keys** to import custom keys (recommended) and store them in the default location.

  Note that default keys are provided and are added when the product is installed or upgraded. The default files are:

  /opt/WCG/config/cookie_auth_public.pem

  /opt/WCG/config/cookie_auth_private.pem

  Select the files you wish to import. The custom keys are automatically copied to this folder and renamed to the default names.

  Important

  When custom keys are imported, the default files provided by Forcepoint are overwritten. You should backup the default keys prior to importing. See **Save Public Key** and **Save Private Key** below.

  Keys must be PKCS#1 RSA public keys and are RSA 1024/2048/4096 bit public and private key pairs without a passphrase. Use the following commands to generate keys:

  openssl genrsa -out cookie_auth_private.pem 1024

  openssl rsa -in cookie_auth_private.pem -RSAPublicKey_out -out cookie_auth_public.pem

  Change 1024 to 2048 or 4096 to generate 2048 or 4096 bit keys.

- Select **Save Public Key** and **Save Private Key** to make a backup of the files.

  Select the location and filenames to use for the backup copy, keeping in mind that the default names are always used for the active keys.

  Key files should be backed up prior to importing new keys.

When load balancing has been configured, all proxies must use the same setting for **Redirect Hostname**. The value must be the fully qualified domain name (FQDN) of the load balancer.

Important

Cookie sharing has the following limitations:

- Cookie caching limitations also apply to cookie sharing. Therefore, since cookie caching is not supported for CONNECT requests, cookie sharing is not supported.
- Custom keys must be imported manually. Custom Keys are not synchronized across the cluster.
- Cookie sharing is not supported with client certificate authentication.

Surrogate credentials

Surrogate credentials are entries placed in the credential cache after initial successful authentications.

- An IP address surrogate ties a credential to an IP address and assumes that the IP address is used by only one user at any given time.
- A cookie surrogate is tied to a cookie placed on the client's system and depends on client application support for cookies. This method is required when a client IP address is shared by more than one user at a time, as with multi-user hosts such as Citrix servers.

After the initial successful authentication, Content Gateway uses the surrogate credential to respond to subsequent authentication requests on behalf of the user, thus reducing latency and the load on domain controllers and directory services. Credential surrogate entries are deleted when the Time-To-Live expires.

Integrated Windows Authentication

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Integrated Windows Authentication (IWA) is a robust method of authenticating users who belong to shared-trust Windows domains (one or many).

Integrated Windows Authentication:

- Uses Kerberos and SPNEGO
- Supports NTLM in both explicit and transparent proxy modes
- Supports NTLMv2 and NTLMv1 with Session Security
- Supports Windows Active Directory. (See this article for a list of supported versions.)

- Can be used with Rule-Based Authentication and, with v8.5.4, Captive Portal Authentication.
- Supports Internet Explorer, Firefox, Google Chrome, Windows Safari, Safari on iPad iOS4, and Opera
- Supports UTF-8 user names
- Supports fall back to prompted authentication

Requires that:

- Clients be joined to the domain
- Client browsers specify the Fully Qualified Domain Name (FQDN) of Content Gateway as an intranet site or trusted site (HTTP://FQDN)
- When **Redirect for HTTPSS Authentication** (new in v8.5.4) is enabled on the **Configure > Security > Access Control > Global Authentication** page, Content Gateway will redirect over HTTPS. To avoid user prompts, HTTPS://FQDN must also be specified as an intranet or trusted site in client browsers.

Note

Microsoft Edge does not support trusted sties. Intranet sites are required for clients using Edge.

- In explicit proxy deployments, browsers must specify the FQDN of Content Gateway

If you are using IWA with rule-based authentication, see *Rule-Based Authentication*, page 203, for configuration steps.

Integrated Windows Authentication: Configuration summary

Follow these steps to configure IWA as the user authentication method for your Content Gateway deployment:

- In the Content Gateway manager, enable **Integrated Windows Authentication** on the **Configure > My Proxy > Basic** page and click **Apply**.
- Configure *Global authentication options*.
- Join Content Gateway to the Windows domain. See *Configuring Integrated Windows Authentication* for a list of required conditions.

Configuring Integrated Windows Authentication

1. Go to **Configure > My Proxy > Basic > General**. In the **Authentication** section, click Integrated Windows Authentication **On**, and click **Apply**.
2. Configure the *Global authentication options*.
3. Join the Windows domain.

   To join the domain:

   - Content Gateway must be able to resolve the domain name.

- Content Gateway system time must be synchronized with the domain controller's time, plus or minus 1 minute.
- The correct domain Administrator name and password must be specified.
- There must be TCP/UDP connectivity to the domain controller(s) (ports 88, 389, 445).
- If backup domain controllers are configured, they and their Kerberos Distribution Center (KDC) services must be reachable by Content Gateway on the network.

a. In the **Domain Name** field, enter the fully qualified domain name.

b. In the **Administrator Name** field enter the Windows Administrator user name.

c. In the **Administrator Password** field enter the Windows Administrator password.

   The name and password are used only during the join and are not stored.

d. Select how to locate the domain controller:

   - **Auto-detect using DNS**
   - **DC name or IP address**

     If the domain controller is specified by name or IP address, you can also specify backup domain controllers in a comma separated list, no spaces.

e. In the **Content Gateway Hostname** field, confirm that the hostname is the correct hostname and that it is no more than 15 characters (no more than 11 characters on appliances). If it is longer, it must be shortened if IWA is to be used. The length restriction results from the 15 character limit on NetBIOS hostnames.

Warning

Do not change the hostname after the domain is joined. If the hostname is changed, IWA immediately stops working and will not work again until the domain is unjoined and then re-joined with the new hostname.

f. Click **Join Domain**. If there is an error, ensure that the conditions outlined above are met and then see *Failure to join the domain*.

Important

All clients subject to authentication must be joined to the domain.

Browsers and other proxy clients must be configured to specify the FQDN of Content Gateway as an intranet site or trusted site.

g. Restart Content Gateway and run some test traffic through the proxy to verify that authentication is working as expected. If there is a problem, see *Troubleshooting Integrated Windows Authentication*.

To unjoin the current domain and join a new domain

1. Navigate to the **Configure > Security > Access Control > Integrated Windows Authentication** tab and click **Unjoin**.
2. To join a new domain, in the **Domain Name** field, enter the fully qualified domain name.
3. In the **Administrator Name** field enter the Windows Administrator user name.
4. In the **Administrator Password** field enter the Windows Administrator password. The name and password are used only during the join and are not stored.
5. Select how to locate the domain controller:
   - **Auto-detect using DNS**
   - **DC name or IP address**

     If the domain controller is specified by name or IP address, you can also specify backup domain controllers in a comma separated list, no spaces.
6. Click **Join Domain**.

To change the way the domain controller is found

1. Navigate to the **Configure > Security > Access Control > Integrated Windows Authentication** tab.
2. In the **Domain Controller** section, select how to locate the domain controller:
   - **Auto-detect using DNS**
   - **DC name or IP address**

     If the domain controller is specified by name or IP address, you can also specify backup domain controllers in a comma separated list, no spaces.
3. Click **Apply**.

Configuring Integrated Windows Authentication with a load balancer

Integrated Windows Authentication (IWA) with a load balancer is supported.

Important

After upgrade, check and, if necessary, rejoin IWA domains.

Transparent proxy deployments do not require any special configuration.

Explicit proxy deployments that are behind a load balancer require a custom configuration

With Content Gateway, IWA uses the Kerberos protocol, with NTLM fallback.

In a load-balanced environment:

- Clients explicitly point to the Content Gateway cluster via the FQDN, which, when a load balancer is used, must resolve to the load balancer's VIP.
- Kerberos then returns a ticket for the load balancer's VIP, which the client then sends to Content Gateway.
- Because the ticket is not issued for the proxy's IP address, but rather for the load balancer's VIP, Content Gateway cannot decrypt the ticket and authentication fails.

To restate the problem, it's not possible to configure clients to request Content Gateway's Kerberos ticket because the client's operating system handles the ticket request based on the FQDN of the proxy, which resolves to the VIP of the load balancer.

Normally, Content Gateway would be configured to share the hostname of the load balancer, but this is not possible when the load balancer requires hostname resolution (as with DNS-based load balancing).

Because it's not possible to stop clients from sending a load-balancer's Kerberos ticket to Content Gateway, the proxies must be configured to accept the load-balancer's ticket, making the Content Gateway nodes appear as the load-balancer within the scope of Kerberos.

Please contact this article for detailed, step-by-step configuration instructions.

Troubleshooting Integrated Windows Authentication

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This section covers 2 common problems:

- *Failure to join the domain*
- *Failure to authenticate clients*

Failure to join the domain

These conditions are required for Content Gateway to join a domain:

- Content Gateway must be able to resolve the domain name.
- Content Gateway system time must be synchronized with the domain controller's time, plus or minus 1 minute.
- The correct domain Administrator name and password must be specified.
- There must be TCP/UDP connectivity to the domain controller(s) (ports 88, 389, 445).
- If backup domain controllers are configured, they and their Kerberos Distribution Center (KDC) services, must be reachable by Content Gateway on the network.
- If the Active Directory is configured with multiple Sites, ensure that the subnet that Content Gateway is on is added to one of them.

Troubleshooting:

- Errors encountered in the join action are reported at the top of the screen (the Integrated Windows Authentication tab).
- The error message usually includes a link to the failure log where you can get more details.
- Join failures are logged to **/opt/WCG/logs/smbadmin.join.log**
- In most cases, the failure message in the log is a standard Samba and Kerberos error message that is easily found with an Internet search.

Failure to authenticate clients

These conditions are required to authenticate clients:

- Content Gateway clients must be a member of the same domain as that joined by Content Gateway.
- Client system time must be in sync with the domain controller and Content Gateway to plus or minus 1 minute.
- Explicit proxy clients must **not** be configured to send requests to the IP address of Content Gateway. Clients must use the Fully Qualified Domain Name (FQDN) of Content Gateway. If the IP address is used, NTLM authentication is always performed.
- The Content Gateway FQDN must be in DNS and resolvable by all proxy clients.
- Browsers and other client applications must specify the FQDN of Content Gateway as an intranet site or trusted site.
- When the Active Directory is configured with multiple Sites, the subnet that Content Gateway is on must be added to one of them. If it's not, the following alarm may be generated when Content Gateway is restarted:

  ```
  Windows domain [domain name] unreachable or bad membership
  status
  ```

Troubleshooting:

In the Content Gateway manager, use the **Diagnostic Test** function on the **Monitor > Security > Integrated Windows Authentication** tab. This Monitor page displays authentication request statistics and provides the diagnostic test function.

The **Diagnostic Test** function performs connectivity and authentication testing and reports errors. It also shows domain controller TCP port connectivity and latency.

Errors and messages are logged to:

- /var/log/messages
- content_gateway.out
- /opt/WCG/logs/smbadmin.log
- /opt/WCG/logs/smbadmin.join.log

Performance issues:

- **IWA (Kerberos):** Authentication performance is bound by CPU. There is no communication to the domain controllers for Kerberos authentication.

- **NTLM and Basic:** Domain controller responsiveness effects performance. The **Monitor > Security > Integrated Windows Authentication** page shows average response time.

Legacy NTLM authentication

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Content Gateway supports the NTLM (NT LAN Manager) authentication protocol as a method of ensuring that users in a Windows network are authenticated before they access the Internet.

Important

This implementation of NTLM support (Legacy NTLM) relies solely on the NTLMSSP protocol. Although it performs reliably as documented in this section, it is highly recommended that the *Integrated Windows Authentication* mode be used instead. It provides more robust and secure support for NTLM.

Important

If rule-based authentication will be used, configure Legacy NTLM authentication through the *Rule-Based Authentication* option.

However, read this section to become familiar with Legacy NTLM features and restrictions.

When the Legacy NTLM option is enabled, the proxy challenges users who request content for proof of their credentials. The proxy then sends the proof of the user's credentials directly to the Windows domain controller to be validated. If the credentials are valid, the proxy serves the requested content and stores the credentials in the NTLM cache for future use. If the credentials are not valid, the proxy sends an *authentication failed* message.

Restrictions:

1. **WINS resolution** is not supported. Domain controllers must have host names that can be resolved by a DNS server.
2. **Extended security** is not supported and cannot be enabled on the domain controller.
3. **NTLM2 session security** is not supported and cannot be enabled on clients. In the Security Settings area of the Windows operating system, inspect the **Network Security: Minimum session security** settings.
4. **NTLMv2** is not supported with Active Directory 2008. The required **Network Security: LAN Manager Authentication** setting is described in step 5 of *Configuring NTLM proxy authentication*, below.

5. Not all browsers support transparent NTLM authentication. See *Browser limitations*, page 180.

If you are using Legacy NTLM with rule-based authentication, see *Rule-Based Authentication*, page 203, for configuration steps.

Configuring Legacy NTLM authentication

1. Go to **Configure > My Proxy > Basic > General**.
2. In the **Authentication** section, click Legacy NTLM **On**, and click **Apply**.
3. Configure the *Global authentication options*.
4. Go to **Configure > Security > Access Control > Legacy NTLM**.
5. In the **Domain Controller Hostnames** field, enter the hostname of the primary domain controller, followed, optionally, by a comma separated list of backup domain controllers. The format of the hostname must be:

   ```
   host_name[:port][%netbios_name]
   ```

   or

   ```
   IP_address[:port][%netbios_name]
   ```

   Note
   If you are using Active Directory 2008, you must include the netbios_name or use SMB port 445. If you **do not** use port 445, you must ensure that the Windows Network File Sharing service is running on the Active Directory server. See your Windows Server 2008 documentation for details.

   Note
   If you are using Active Directory 2008, in the Windows **Network Security** configuration, **LAN Manager Authentication level** must be set to **Send NTLM response only**. See your Windows Server 2008 documentation for details.

6. Enable **Load Balancing** if you want the proxy to balance the load when sending authentication requests to multiple domain controllers.

   Note
   When multiple domain controllers are specified, even if load balancing is disabled, when the load on the primary domain controller reaches the maximum number of connections allowed, new requests are sent to a secondary domain controller as a short-term failover provision, until such time that the primary domain controller can accept new connections.

7. Click **Apply** and restart Content Gateway (**Configure > My Proxy > Basic > General)**.

Optionally, you can configure Content Gateway to allow certain clients to access specific sites on the Internet without being authenticated by the NTLM server; See *Access Control*, page 328).

LDAP authentication

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Content Gateway supports the LDAP option to ensure that users are authenticated with an LDAP server before accessing content through the proxy.

> **Important**
> If rule-based authentication will be used, configure LDAP authentication through the *Rule-Based Authentication* option. However, read this section to become familiar with LDAP features and restrictions.

When LDAP is enabled:

- Content Gateway acts as an LDAP client and directly challenges users who request content for a username and password.
- After receiving the username and password, Content Gateway contacts the LDAP server to check that the credentials are correct.
- If the LDAP server accepts the username and password, the proxy serves the client the requested content and stores the username and password in the credential cache.
- Future authentication requests for that user are served from the cache until the cache entry expires (Time-To-Live value).
- If the LDAP server rejects the username and password, the user's browser displays a message indicating that authorization failed and prompts again for a username and password.

LDAP authentication supports both simple and anonymous bind.

LDAP user authentication can support passwords containing special characters. Configuration is made directly in the **records.config** file. The following parameter must be enabled, and the correct encoding name to which the special characters belong must be configured. Add these entries to **records.config**. Note that the default setting is 0 (feature disabled).

```
// To enable the feature specify 1.
CONFIG proxy.config.ldap.proc.encode_convert  INT <1 or 0>
// Specify an encoding name here. For example,
// for German specify "ISO-8859-1".
CONFIG proxy.config.ldap.proc.encode_name  STRING <encoding
name>
```

Configuring Content Gateway to be an LDAP client

1. Go to **Configure > My Proxy > Basic > General**.
2. In the **Authentication** section, click LDAP **On**, and then click **Apply**.
3. Configure the *Global authentication options*.
4. Go to **Configure > Security > Access Control > LDAP**.
5. Enter the hostname of the LDAP server.
6. Enter the port on which Content Gateway communicates with the LDAP server. The default is port 389.

> **Note**
> When the LDAP directory service is Active Directory, requests from users located outside the global catalog's base domain will fail to authenticate. This is because the default port for LDAP is 389 and requests sent to 389 search for objects only within the global catalog's base domain. To authenticate users from outside the base domain, change the LDAP port to 3268. Requests sent to 3268 search for objects in the entire forest.

7. Enable **Secure LDAP** if you want the proxy to use secure communication with the LDAP server. Secure communication is performed on port 636 or 3269. Change the port value in the previous field, if necessary.
8. Select the type of directory service to set the filter for searching.
   - **Microsoft Active Directory** (**sAMAccountName**) sets the type to sAMAccountName (default).
   - **Microsoft Active Directory** (**userPrincipalName**) sets the type to userPrincipalName.
   - **Other** sets the type to **uid** for eDirectory or other directory services.
9. Enter the **Bind Distinguished Name** (fully qualified name) of a user in the LDAP-based directory service. For example:

   ```
   CN=John Smith,CN=USERS,DC=MYCOMPANY,DC=COM
   ```

   Enter a maximum of 128 characters in this field.

   If no value is specified for this field, the proxy attempts to bind anonymously.
10. Enter a password for the user specified in the previous step.
11. Enter the **Base Distinguished Name** (DN). Obtain this value from your LDAP administrator.
12. Click **Apply**.
13. Click **Restart** on **Configure > My Proxy > Basic > General**.

As optional steps, you can:

- Change LDAP cache options. See *Setting LDAP cache options*, page 199.

- Configure Content Gateway to allow certain clients to access specific sites on the Internet without being authenticated by the LDAP server. See *Access Control*, page 328).

Setting LDAP cache options

By default, the LDAP cache is configured to store 5000 entries and each entry is considered fresh for 3000 minutes. Change these options by editing the **records.config** file.

1. Open the **records.config** file located in **/opt/WCG/config**.
2. Edit the following variables:

Variable	Description
`proxy.config.ldap.cache.size`	Specify the number of entries allowed in the LDAP cache. The default value is 5000. The minimum value is 256.
`proxy.config.ldap.auth.ttl_value`	Specify the number of minutes that Content Gateway can store username and password entries in the LDAP cache.
`proxy.config.ldap.cache.storage_size`	Specify the maximum amount of space (in bytes) that the LDAP cache can occupy on disk. When modifying this value, you must update the value of **proxy.config.ldap.cache.size** proportionally. For example, if you double the storage size, also double the cache size. Modifying this variable without modifying **proxy.config.ldap.cache.size** causes the LDAP subsystem to stop functioning.

3. Save and close the file.
4. From the Content Gateway **bin** directory (**/opt/WCG/bin**), run **content_line -L** to restart the proxy on the local node or **content_line -M** to restart the proxy on all the nodes in a cluster.

Configuring secure LDAP

By default, LDAP traffic is transmitted unsecured. You can make LDAP traffic confidential and secure by using Secure Sockets Layer (SSL) / Transport Layer Security (TLS) technology. You can enable LDAP over SSL (LDAPS) by installing a

properly formatted certificate from either a Microsoft certification authority (CA) or a non-Microsoft CA.

To use LDAPS with Content Gateway:

1. Open the **records.config** file located in **/opt/WCG/config**.
2. Add following entry to **records.config**:

   ```
   CONFIG proxy.config.ldap.secure.bind.enabled INT 1
   ```

3. Navigate to **Configure > Security > Access Control > LDAP** and change the port to 3269.

> **Note**
> The Directory Service must be configured to support LDAPS authentication. See to the documentation provided by the directory provider for instructions.

RADIUS authentication

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Content Gateway supports the RADIUS option to ensure that users are authenticated with a RADIUS server before accessing content through the proxy.

When the RADIUS option is enabled:

- Content Gateway acts as a RADIUS client and directly challenges users who request content for a username and password.
- After receiving the username and password, Content Gateway contacts the RADIUS server to check that the credentials are correct.
- If the RADIUS server accepts the username and password, the proxy serves the client with the requested content and stores the username and password entry in the RADIUS cache; all future authentication requests for that user are served from the RADIUS cache until the entry expires.
- If the RADIUS server rejects the username and password, the user's browser displays a message indicating that authorization failed and prompts again for a username and password.

Content Gateway supports a primary RADIUS server and a secondary RADIUS server for failover. If the primary server does not respond to the proxy request within the specified timeout (60 seconds by default), Content Gateway tries to check the username and password again. If a response from the primary RADIUS server is not received after the maximum number of retries (10 by default), the proxy contacts the secondary RADIUS server. If Content Gateway cannot contact the secondary RADIUS server, the user is prompted again for a username and password.

The RADIUS cache is held in memory and stored on disk. Content Gateway updates the data on disk every 60 seconds. In addition, Content Gateway stores username and password entries in the RADIUS cache for 60 minutes. If a password and username

entry is expired in the RADIUS cache, Content Gateway contacts the RADIUS server to accept or reject the username and password.

To configure Content Gateway to be a RADIUS client:

- Enable the RADIUS option.
- Specify the hostname or IP address of the primary and secondary (optional) RADIUS servers, and the port and shared key that Content Gateway uses to communicate with the RADIUS servers.

See *Configuring Content Gateway to be a RADIUS client*, page 201.

Configuring Content Gateway to be a RADIUS client

1. Go to **Configure > My Proxy > Basic > General**.
2. In the Authentication section, click Radius **On**, and then click **Apply**.
3. Navigate to **Configure > Security > Access Control > Radius**.
4. Enter the hostname of your primary RADIUS server.
5. Enter the port number through which Content Gateway communicates with the primary RADIUS server.
6. Enter the key used for encoding.
7. If you are using a secondary RADIUS server, enter the hostname, port, and shared key in the appropriate fields of the **Secondary Radius Server (Optional)** area.
8. Click **Apply**.
9. Click **Restart** on **Configure > My Proxy > Basic > General**.

Note
In addition to performing these procedures, you must add the Content Gateway machine as a trusted client on the primary and secondary RADIUS servers and provide the shared key you want to use for the Content Gateway machine (the shared key must be the same one you specify in the procedure below). See your RADIUS server documentation.

Setting RADIUS cache and server timeout options

By default, the RADIUS cache and RADIUS server timeout options are configured as follows:

- The RADIUS cache is configured to store 1,000 entries and each entry is considered fresh for 60 minutes.
- Content Gateway can try to re-establish a connection to the RADIUS server if the connection remains idle for 10 seconds and can retry the connection a maximum of 10 times.

Change these default values by editing the **records.config** file.

1. Open the **records.config** file located in **/opt/WCG/config**.
2. Edit the following variables:

Variable	Description
`proxy.config.radius.auth.min_timeout`	Specify the amount of time in seconds that the Content Gateway connection to the RADIUS server remains idle before Content Gateway closes the connection.
`proxy.config.radius.auth.max_retries`	Specify the maximum number of times Content Gateway tries to connect to the RADIUS server.
`proxy.config.radius.cache.size`	Specify the number of entries allowed in the RADIUS cache. The minimum value is 256 entries. If you enter a value lower than 256, Content Gateway signals a SEGV.
`proxy.config.radius.auth.ttl_value`	Specify the number of minutes that Content Gateway can store username and password entries in the RADIUS cache.
`proxy.config.radius.cache.storage_size`	Specify the maximum amount of space that the RADIUS cache can occupy on disk. This value must be at least 100 times the number of entries. It is recommended that you provide the maximum amount of disk space possible.

3. Save and close the file.
4. From the Content Gateway **bin** directory (**/opt/WCG/bin**), run **content_line -L** to restart Content Gateway on the local node or **content_line -M** to restart WCG on all the nodes in a cluster.

Rule-Based Authentication

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Related topics:

- *Global authentication options*, page 181
- *Rule-based authentication Domain list*, page 208
- *Creating an authentication rule*, page 213
- *Working with existing authentication rules*, page 216
- *Rule-based authentication use cases*, page 217
- *Authentication based on User-Agent*, page 220
- *Authentication using Captive Portal*
- *Client certificate authentication*, page 225
- *Troubleshooting authentication rules*, page 226

Using an ordered list of authentication rules, rule-based authentication provides support for multiple realm, multiple domain, and other special authentication requirements. When a request is processed, the rule list is traversed top to bottom, and the first match is applied.

Authentication rules specify:

1. How to match a user.

   By:

   - IP address
   - Inbound proxy port (explicit proxy only)
   - User-Agent value
   - A combination of the above
2. The domain or ordered list of domains to authenticate against.

   With a list of domains, the first successful authentication is cached and used in subsequent authentications. If IP address caching is configured, the IP address is cached. If Cookie Mode is configured, the cookie (user) is cached.
3. Whether a customizable web portal page should be used for authentication.

In rule-based authentication, only the first matching rule is tried. If authentication is unsuccessful, no further authentication is attempted.

Rule-based authentication is designed to meet these special requirements:

- **Multiple realm networks:** Rule-based authentication supports multiple realm networks in which domains do not share trust relationships and therefore require that each domain's members be authenticated by a domain controller within their domain. In this environment rules are created that specify:
  - Members of the realm (untrusted domain) by IP address or proxy port

- The realm (domain) they belong to

- **Authentication when domain membership is unknown:** Some organizations do not always know what domain a user belongs to. For example, this can happen when organizations acquire new businesses and directory services are not mapped or consolidated. The unknown domain membership problem can be handled in rule-based authentication by creating a rule for IP address lists or ranges that specifies an ordered list of domains to attempt to authenticate against. The first successful authentication is remembered and used in later authentications. If authentication is not successful or the browser times out, no authentication is performed.
- **Authentication based on User-Agent value:** One or more User-Agent value can be specified in an authentication rule. Often this is a list of browsers. When the User-Agent value matches a rule, authentication is performed against the specified domain(s). If the User-Agent value doesn't match any rule and no rule matches based on other values, no authentication is performed (this is always true in rule-based authentication; if no rule matches, no authentication is performed).

For use case examples see *Rule-based authentication use cases*, page 217.

Note

If all the users in your network can be authenticated by domain controllers that share trust relationships, you probably don't need rule-based authentication.

However, the option is well suited to single domain environments that may benefit from multiple rules based on IP addresses, inbound proxy port (explicit proxy), and/or User-Agent values.

Rule-based authentication structure and logic

Structure:

- A list of domains is created and maintained.

  When a domain is added to the list, the authentication method is specified: IWA, Legacy NTLM, or LDAP. RADIUS is not supported.

  Only domains on the domain list can be specified in authentication rules.

  The domain list is created and maintained on the **Configure > Security > Access Control > Domains** tab. The domain list is stored in the **auth_domains.config** file.
- Authentication rules identify users (clients) by IP address, inbound proxy port (explicit proxy only), and/or User-Agent values, and attempt to authenticate the user against a specified domain or list of domains.

Authentication rules are defined on the **Configure > Security > Access Control > Authentication Rules** tab. Rules are stored in the **auth_rules.config** file.

Note

Credential caching configuration is performed on the **Configure > Security > Access Control > Global Configuration Options** tab. On that page you specify IP address caching, cookie caching, or both. The setting applies to both transparent proxy and explicit proxy traffic. When both IP address caching and cookie caching are specified, the IP addresses that cookie caching is applied to must be specified.

See *Credential Caching* for more information.

Logic:

- One or more rules are defined for clients and domains (**Configure > Security > Access Control > Authentication Rules**).
- When a request for web content is received:
  - A top-down rule list traversal begins
  - The first match is applied
  - If the rule includes a list of domains, authentication proceeds as follows:
    - The proxy attempts to authenticate with the first domain using the method configured for that domain. For example, if the first domain is IWA, Content Gateway transparently negotiates with the browser for credentials (407 or 401).
    - If authentication fails and Content Gateway hasn't already challenged (prompted) for credentials, it then prompts for credentials.

      Exception: When Content Gateway is an explicit proxy, the first and second domains are IWA, and the client has a ticket from the authentication domain, there is no prompt for basic credentials. Instead, Content Gateway uses the Kerberos ticket provided by the client to attempt to authenticate with the second domain. If the attempt fails and the fallback to NTLM authentication fails, the user is prompted for credentials.

      When Content Gateway is a transparent proxy the standard behavior applies. This is because when the user is not a member of the first domain, the request for a Kerberos ticket fails because the client does not trust the FQDN sent with the request. The fallback to NTLM authentication also fails and the user is prompted for credentials.
    - Content Gateway then uses the basic credentials with each domain, starting with the second, proceeding sequentially until authentication succeeds or the list is exhausted.
    - Content Gateway then uses the basic credentials to attempt, again, to authenticate with the first domain.

- If authentication fails with all domains and the **Fail Open** (**Configuration > Security > Access Control > Global Authentication Options**) setting is:

  Enabled only for critical service failures, the proxy assumes that the user mis-entered their credentials, prompts again for basic credentials, and attempts, again, to authenticate sequentially against the list.

  Enabled for all authentication failures, including incorrect password, fail open is applied.

- If no rule matches, no authentication is attempted

- Transactions are logged with the user name used by Filtering Service.
- Proxy authentication statistics are collected and reported individually for each authentication method. See *Security*, page 270 (in the Statistics section).

Important

Content Gateway must be configured with a DNS server that can resolve the fully qualified domain name (FQDN) of Content Gateway for every realm used by IWA. If this isn't done, IWA fails to work. How to configure the DNS server is up to the network administrator. One option is to configure a DNS transfer zone (Sub Zone) between the primary DNS server of Content Gateway and the DNS server of each authentication realm (isolated domain).

Rule-based authentication configuration summary

1. If Content Gateway is an explicit proxy and you want to bring traffic in on multiple ports, specify the ports on the **Configure > Protocol > HTTP** tab.

   Important

   You must also configure your clients to use the correct port.

2. Configure *Global authentication options*, page 181 (**Configure > Security > Access Control > Global Authentication Options**).
3. Create a domain list (**Configure > Security > Access Control > Domains**).
   - To specify a domain in a rule, it must be a member of the **Domain List**.
   - Active Directory domains used with IWA must be joined.

Handling of unknown users:

Important

In rule-based authentication, Content Gateway may authenticate users that are outside the User Service primary domain. In these cases, Content Gateway can be configured to send an "alias" user name that User Service knows about. Or, you can send no name, in which case standard Filtering Service precedence is applied to determine the correct policy. (See Enforcement order in Administrator Help for the Web module.) This specification is made for each domain in the Domain list.

For more information, see *Unknown users and the 'alias' option*, below.

4. Create authentication rules (**Configure > Security > Access Control > Authentication Rules**).
5. Restart Content Gateway to make the new rules take effect.

Rule-based authentication best practices

- If you don't need rules, don't use rule-based authentication. Deploying a single authentication method should provide the best performance.
- Use the fewest number of rules needed to satisfy your requirements.
- Do not use a domain list in a rule if it's not needed.

When a domain list is used

- If there is an IWA or NTLM domain, make it first in the list.
- If there is more than one IWA or NTLM domain, place the domain with the most active members first in the list. In other words, make the first domain the one that will most often authenticate users.
- Note that if an IWA domain is first in the list and the user is not joined to that domain, the user will be prompted for credentials.
- Note that if the first domain in the list is LDAP, every user who matches the rule will be prompted for credentials. The credentials provided will be offered to each successive domain.
- If the domain list includes an IWA domain, the Captive Portal option is disabled.

  With v8.5.4, the Captive Portal option is enabled.
- If client certificate authentication is enabled with **Use the next selected authentication method if Client Certificate authentication fails** option selected, the domain list cannot be empty.

Unknown users and the ‘alias’ option

In rule-based authentication it’s possible for Content Gateway to authenticate a user who is not recognized by User Service because the name is not in the User Service directory.

When an authenticated user name is not found by User Service, standard Filtering Service precedence is used to determine correct policy. There are several ways to address this:

- Change the User Services configuration so that it can discover and add the names to its directory.
- Add the unrecognized names to the primary domain. The names must match exactly. Define policies for the new names.
- For users who match a particular authentication rule, pass an alias name and add the alias name to the primary domain. The names must match exactly. Define a policy for the alias name.
- Do nothing, or select to use a blank (empty) alias. This causes standard Filtering Service precedence to be applied to determine the correct policy. See Enforcement order in Administrator Help for the Web module.

For some illustrative use cases, see *Rule-based authentication use cases*.

Rule-based authentication Domain list

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To use rule-based authentication, you create and maintain a **Domain List**. There must be at least one domain on the list before an authentication rule can be defined.

When a domain is added to the list, the authentication method is specified.

When a rule is defined, the domain or domains are selected from the domain list.

Supported domain types include:

- Active Directory (AD) domains to be used with IWA. These domains must be joined by Content Gateway, as well as by its members (users).
- Domain Controllers (DC) to be used with Legacy NTLM
- AD and uid domain controllers and directory servers to be used with LDAP

Domain specification configuration summary:

1. Rule-based authentication must be enabled (**Configure > My Proxy > General**).
2. On **Configure > Security > Access Control > Domains**, click **New Domain**.
3. Select the authentication method.
4. Specify a unique name that will help you recognize the domain and its purpose.
5. Optionally, configure the **Aliasing** option.
6. Specify the domain settings. These vary by authentication method.

See:

- *Adding an Active Directory domain for use with IWA*
- *Adding an NTLM domain controller for use with Legacy NTLM*
- *Adding a domain (directory service) for use with LDAP*

Adding an Active Directory domain for use with IWA

Active Directory (AD) domains to be used with IWA must be joined by both Content Gateway and directory members (clients).

If you are using IWA for the first time, see *Integrated Windows Authentication*, page 189, for a complete description of support and use.

To join a domain:

- Content Gateway must be able to resolve the domain name.
- Content Gateway system time must be synchronized with the domain controller's time, plus or minus 1 minute.
- The correct domain Administrator name and password must be specified.
- There must be TCP/UDP connectivity to the domain controller(s) (ports 88, 389, 445).
- If backup domain controllers are configured, they and their Kerberos Distribution Center (KDC) services, must be reachable by Content Gateway on the network.

To specify and join a domain:

1. Go to **Configure > Security > Access Control > Domains** and click **New Domain**.
2. Select **Integrated Windows Authentication** from the **Authentication Method** drop down box.
3. In the **Domain Identifier** field, enter a unique name that will help you recognize the domain and its purpose.
4. Optionally, configure the **Aliasing** option. For information, see *Unknown users and the 'alias' option*, page 208.
5. In the **Domain Name** field, enter the fully qualified domain name. For example, ad1.example.com.
6. In the **Administrator Name** field enter the Windows Administrator user name.
7. In the **Administrator Password** field enter the Windows Administrator password.

   The name and password are used only during the join and are not stored.
8. Select how to locate the **domain controller**:
   - **Auto-detect using DNS**
   - **DC name or IP address**

     If the domain controller is specified by name or IP address, you can also specify backup domain controllers in a comma separated list, no spaces.

9. Confirm the **Content Gateway Hostname**.

> **Warning**
> Do not change the hostname after the domain is joined. If it is changed, IWA immediately stops working and will not work again until the domain is unjoined and then re-joined with the new hostname.

10. Click **Join Domain**.

The **Joined Domain Connections** section of the **Monitor > Security > Integrated Windows Authentication** page displays a list of joined domains and connections, and provides a diagnostic test function.

For troubleshooting tips, see *Failure to join the domain*.

To change the way the domain controller is found, and other attributes

1. On the **Domains** page, in the list select the domain you want to change and click **Edit**.
2. In the **IWA Domain Details** section, select how to locate the domain controller:
   - **Auto-detect using DNS**
   - **DC name or IP address**

     If the domain controller is specified by name or IP address, you can also specify backup domain controllers in a comma separated list, no spaces.
3. You can also change the **Aliasing** setting. See *Unknown users and the 'alias' option*, page 208.
4. Click **Apply**.

Adding an NTLM domain controller for use with Legacy NTLM

Support for Legacy NTLM has these restrictions:

- **WINS resolution** is not supported. Domain controllers must have hostnames that can be resolved by a DNS server.
- **Extended security** is not supported and cannot be enabled on the domain controller.
- **NTLM2 session security** is not supported and cannot be enabled on clients. In the Security Settings area of the Windows operating system, inspect the **Network Security: Minimum session security** settings.
- **NTLMv2** is not supported with Active Directory 2008.
- Not all browsers support transparent NTLM authentication. See *Browser limitations*, page 180.

For a complete description of support for Legacy NTLM, see *Legacy NTLM authentication*, page 195.

To add an NTLM domain for use in rule-based authentication:

1. Go to **Configure > Security > Access Control > Domains** and click **New Domain**.
2. Select **Legacy NTLM** from the **Authentication Method** drop down box.
3. In the **Domain Identifier** field, enter a unique name that will help you recognize the domain and its purpose. After the domain is added, the name cannot be changed.
4. Optionally, configure the **Aliasing** option. For information see: *Unknown users and the 'alias' option*, page 208.
5. In the **Legacy NTLM Domain Details** section:
   a. In the **Domain Controller** entry field enter the IP address and port number of the primary domain controller. If no port is specified, Content Gateway uses port 139.

      You can also specify secondary domain controllers in a comma-separated list. The supported formats are:

      host_name[:port][%netbios_name]

      IP_address[:port][%netbios_name]

      The **netbios_name** is required with Active Directory 2008.

   b. Specify whether load balancing should be applied among multiple DCs.

> **Note**
> Even if load balancing is **not** selected, if multiple domain controllers are specified and the load on the primary domain controller reaches the maximum number of connections allowed, new requests are sent to a secondary domain controller as a short-term fail over provision, until such time that the primary domain controller can accept new connections.

6. Click **Add Domain**.

Adding a domain (directory service) for use with LDAP

When LDAP is used:

- Content Gateway acts as an LDAP client and directly challenges users who request content for a username and password.
- After receiving the username and password, Content Gateway contacts the LDAP server to check that the credentials are correct.
- If the LDAP server accepts the username and password, the proxy serves the client the requested content and stores the username and password in the credential cache.
- Future authentication requests for that user are served from the cache until the cache entry expires (Time-To-Live value).

- If the LDAP server rejects the username and password, the user's browser displays a message indicating that authorization failed and prompts again for a username and password.

LDAP authentication supports both simple and anonymous bind.

To add an LDAP domain to the Domains list:

1. Go to **Configure > Security > Access Control > Domains** and click **New Domain**.
2. Select **LDAP** from the **Authentication Method** drop down list.
3. In the **Domain Identifier** field, enter a unique name that will help you recognize the domain and its purpose. After the domain is added, the name cannot be changed.
4. Optionally, configure the **Aliasing** option. For information see: *Unknown users and the 'alias' option*, page 208.
5. In the **LDAP Domain Details** section:
   a. In the **LDAP Server Name** field, enter the fully qualified domain name or IP address of the LDAP server.
   b. If the LDAP server port is other than the default (389), in the **LDAP Server Port** field, enter the LDAP server port.
   c. Enter the **LDAP Base Distinguished Name**. Obtain this value from your LDAP administrator.
   d. Select the **LDAP Server Type** from the drop down list.
      - Select **sAMAccountName (MS AD)** for Active Directory.
      - Select **userPrincipalName (MS AD)** for Active Directory.
      - Select **uid (Other LDAP)** for other directory services.
   e. In the **Bind Domain Name** field, enter the bind distinguished name. This must be a Full Distinguished Name of a user in the LDAP directory service. For example:

      CN=John Smith,CN=USERS,DC=MYCOMPANY,DC=COM

   f. In the **Bind Password** field, enter the password for the name given in the **Bind Domain Name** field.
   g. Enable **Secure LDAP** if you want Content Gateway to use secure communication with the LDAP server. If enabled, set the LDAP port to 636 or 3269.
6. Click **Add Domain**.

To unjoin or remove a domain from the Domain List

On the **Domains** page, select the domain from the list and click **Unjoin** or **Delete**.

A confirmation dialogue displays. Confirm that you want to remove the domain from the list.

> **Warning**
> When a domain is removed, it is also removed from any authentication rules that specify it.
>
> If it is the only domain specified in a rule, when the domain is removed the rule is made invalid and, therefore, the rule is removed.

Creating an authentication rule

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Before you create an authentication rule you must:

- Enable **Rule-Based Authentication** on **Configure > My Proxy > Basic > General**.
- Configure *Global authentication options*, page 181
- Create a *Rule-based authentication Domain list*, page 208

You must also know:

- The name of the domain(s) to be specified in the rule. This is the unique name that was specified when the domain was added to the Domains list.
- How to match users.

  By:
  - IP address – individual addresses or address ranges can be specified
  - Inbound proxy port (explicit proxy only)
  - User-Agent values
  - A combination of the above

To create a rule:

> **Note**
> In the Rule editor, after entering all specifiers, click **Add** before clicking **Apply**. If Apply is clicked first, or the edit window is closed, all entry fields are cleared.
>
> The size of a rule cannot exceed 2048 characters.

1. Go to **Configure > Security > Access Control** and review and adjust the **Global Authentication Options** and **Domains** list.
2. If AD domains are used with IWA, go to **Monitor > Security > Integrated Windows Authentication** and confirm that the IWA domains are joined and that connections are established.

3. Go to **Configure > Security > Access Control > Authentication Rules**. A list of existing authentication rules is displayed at the top of the page.
4. Click **Edit File** to open the rule editor.
5. If some rules have already been defined, note the order of the rules in the list at the top of the page.

> **Important**
> Rule order matters. The rule match traversal is performed top-to-bottom. Only the first match is applied.

6. Select **Enabled** next to Status if you want the rule to be active after the rule is added and Content Gateway is restarted.
7. Enter a unique **Rule Name** (required). A short, descriptive name will help you recognize the rule and its purpose. It is recommended that the name not exceed 50 characters.
8. If the rule applies to specific IP addresses, in the **Source IP** field, enter a comma-separated list of individual IP addresses and/or IP address ranges. Do not use spaces. For example:

   10.4.1.1,10.12.1.1-10.12.254.254

   The list can contain up to:

   - 64 IPv4 addresses
   - 32 IPv4 address ranges
   - 24 IPv6 addresses
   - 12 IPv6 address ranges

   Source IP address ranges can overlap. Overlapping ranges may be useful as a quick way of identifying sub-groups in a large pool. In overlapping ranges, the first match is used.

   If this field is empty (undefined), all IP addresses match.
9. If the rule applies to inbound traffic on a specific port, select the **Proxy Port** from the drop down list. This option is valid with explicit proxy only.

   Inbound ports are specified on the **Configure > My Proxy > Protocols > HTTP > General** page in the **Secondary HTTP Proxy Server Ports** field. Client applications must be configured to send requests to the desired port.

   If undefined, all ports match. Transparent proxy deployments should leave the field undefined.
10. To apply the rule to specific **User-Agent** values, enter POSIX-compliant regular expressions (regex) to match the desired values. To specify a common browser type, select a **Predefined** regex from the drop down list and click **Include**.

    If undefined, all User-Agents match.

    You can edit the field directly.

    Use the "|" character (logical 'or') to separate regexes.

    The "^" regex operator is not supported.

The regex is validated when the rule is committed to the configuration file, which happens after clicking **Add** or **Set** and then **Apply**. **If the regex is not valid, the rule is deleted and must be recreated with a valid regex.**

For an extended description and examples, see *Authentication based on User-Agent*, page 220.

11. Click **Enabled** next to Client Certificate to enable client certificate authentication. Click **Disabled** to disable the feature.
    a. In the drop-down box next to **Enabled**, select a Client Certificate Authentication profile. See *Client certificate authentication profiles*, page 226.

       Only one profile is allowed.

    b. Check the box next to **Use the next selected authentication method if Client Certificate authentication fails** to use one of the other authentication methods if certificate authentication fails for a user.

       If this option is not selected, no further authentication is attempted for users who fail certificate authentication.

       If the fallback option is enabled,

       - The **Domain Sequence** list cannot be empty.
       - **Enable HTTP Authentication Page** for Captive Portal is not supported and the option is disabled when the fallback option is selected.

12. Specify the domain(s) to authenticate against.
    a. From the **Domains** drop down list, select the applicable domain and click **Include**. Only domains that have been added to the **Domains** list are available (**Configure > Security > Access Control > Domains**).

    b. If an ordered list of domains will be used, select each domain one at a time and click **Include**. Then select domains in the list and use the up and down arrows to achieve the desired order.

Important

The *Fail Open*/fail closed setting is applied after every domain in the list is tried.

13. Next to **Captive Portal**, click:
    - **Enabled for HTTPS Authentication page** to redirect users to a customizable web portal page for authentication.

      When this selection is enabled, the page will display using HTTPS.

      When HTTPS is used, a server certification is generated based on the internal root CA. To use this feature, you must import the internal root CA to ensure there is no certificate error. See *Importing your Root CA* for details.

    - **Enabled for HTTP Authentication page** to redirect users to a customizable web portal page for authentication.

      With this selection, the page is displayed using the HTTP protocol.

Note that if client certificate authentication is enabled with **Use the next selected authentication method if Client Certificate authentication fails** option selected, this option is disabled.

This option is disabled if an IWA domain is included in the domains list.

If this option is enabled and an IWA domain is added to the domains list, an error message will display.

Note that when Content Gateway receives an unauthenticated POST request from a user who matches a Captive Portal rule, it redirects the user to the web portal authentication page and does not record the POST data. After successful authentication, the original POST data must be input again.

See *Authentication using Captive Portal* for additional details.

14. Click **Add** to add the rule.
15. At the top of the page, check and adjust the position of the rule in the rule list. The first rule matched is applied.
16. Click **Apply** and then restart Content Gateway to put the rule into effect.

Warning

If a rule has invalid values, a warning message displays that identifies the invalid rule. The rule in not written to the file.

Working with existing authentication rules

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Use the rule editor in the Content Gateway manager. Do not directly edit auth_rules.config.

Editing a rule

1. Go to **Configure > Security > Access Control > Authentication Rules** and click **Edit File**.
2. In the table of rules, click on the rule to be changed. Its values populate the fields in the definition area.
3. Make the desired changes, click **Set** and then click **Apply**.

Important

If a field value is not valid, the rule is not commit ed and the rule entry is discarded. To avoid difficulty in recreating a rule, separately record the field values so that it is easy to correct the bad field value and recreate the rule.

4. Click **Close** to return to the **Authentication Rules** tab and click **Refresh** to see the updated list.
5. **Restart** Content Gateway to put the changes into effect.

Reordering the list of rules

Authentication rules are matched top-down in the list. Only the first match is applied.

1. Go to **Configure > Security > Access Control > Authentication Rules** and click **Edit File**.
2. In the table of rules, click on the rule that you want to reposition and then click the down or up arrow on the left to reposition the rule.
3. When the rules are in the desired order, click **Apply**.
4. Click **Close** to return to the **Authentication Rules** tab and click **Refresh** to see the updated list.
5. **Restart** Content Gateway to put the changes into effect.

Deleting a rule

1. Go to **Configure > Security > Access Control > Authentication Rules** and click **Edit File**.
2. In the table of rules, click on the rule to be deleted and click the "X" button on the left.
3. When you are done deleting rules, click **Apply**.
4. Click **Close** to return to the **Authentication Rules** tab and click **Refresh** to see the updated list.
5. **Restart** Content Gateway to put the changes into effect.

Rule-based authentication use cases

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Multiple realm use case 1: Domain acquired; explicit proxy, page 217

Multiple realm use case 2: Internal domain added; explicit proxy, page 218

Multiple realm use case 3: Temporary domain added; transparent proxy, page 219

Authentication based on User-Agent, page 220

Multiple realm use case 1: Domain acquired; explicit proxy

This describes a common case in which a second domain is added to an existing, single-domain environment.Content Gateway is an explicit proxy; clients use a PAC file.

An organization—let's call them Quality Corp—uses a software installation of Content Gateway. They have one domain (QCORP), and one domain controller. They use NTLM to authenticate users.

Quality Corp acquires New Corp who has their own domain (NCORP) and domain controller. They use LDAP to authenticate users.

Quality Corp would like to manage the combined employees in a single domain, but they aren't ready to make the infrastructure changes. Until they are, they would like to

have a separate use policy for New Corp users (i.e., not use the “default” user on the QCORP domain).

Rule-based authentication makes this possible.

To configure the solution, Quality Corp would:

1. Enable Rule-Based Authentication.
2. Add a second, non-default HTTP port (**Configure > Protocols > HTTP > General**). This port will be used by all members of NCORP.
3. Create a PAC file for members of NCORP that causes them to connect to Content Gateway on the new, second port.
4. Create authentication rules, one each for the QCORP and NCORP domains:
    a. On **Configure > Security > Access Control > Domains**, add the QCORP and NCORP domains to the Domains list.
        ○ When adding NCORP, use the **Aliasing** option to specify “NCorpUser” for use in policy determination.
    b. On **Configure > Security > Access Control > Authentication Rules**, create an NCORP rule for connections on the second port. You must know the IP addresses/ranges of New Corp users, and specify the NCORP domain.
    c. Define the QCORP rule to handle all other connections.
5. In the Web module of the Forcepoint Security Manager, add “NCorpUser” to the QCORP domain as a valid user and create policy for that user.

At this point, everyone connecting to Content Gateway from NCORP is authenticated against the NCORP domain controller and gets the group policy associated with NCorpUser. Note that no individual user-based policy or features, such as quota time, are possible in this scenario. Transactions are logged as NCorpUser. This is all performed with no effect on the authentication, policy, or logging of users on the QCORP domain.

Multiple realm use case 2: Internal domain added; explicit proxy

This describes a common case in which a second domain is added to an existing, single-domain environment. Content Gateway is an explicit proxy; clients use a PAC file.

An organization—let’s call it BigStars—uses a software installation of Content Gateway. They have one domain (BIG), and one domain controller. They use NTLM to authenticate users.

A group in the company converts to Apple computers, which can’t be authenticated with NTLM. The IT group installs an LDAP server and creates a new domain—BIGAPL—for the Apple users.

Because this group of users previously existed and was managed on the primary domain (BIG), the IT department expects that both user-based policy and logging still apply.

The Rule-Based Authentication feature makes this possible.

To configure the solution, BigStars would:

1. Verify that every user in BIGAPL is also in BIG with the exact same user name.
2. Enable Rule-Based Authentication.
3. Add a second, non-default HTTP port (**Configure > Protocols > HTTP**). This port will be used by all members of BIGAPL.
4. Create a PAC file for members of BIGAPL that causes them to connect to Content Gateway on the new, second port.
5. Create authentication rules, one each for the BIGAPL and BIG domains.
    a. On **Configure > Security > Access Control > Domains**, add the BIGAPL and BIG domains to the Domains list.
    b. On **Configure > Security > Access Control > Authentication Rules**, create a BIGAPL rule for connections on the second port.
    c. Define the BIG rule to handle all other connections.

At this point, all members of BIGAPL are authenticated with LDAP, but maintain their individual policy as specified by their existing NTLM identities. Logs and reports also refer to that same user.

Multiple realm use case 3: Temporary domain added; transparent proxy

This describes a common case in which a second, special-purpose domain is added to an existing, single-domain environment. Content Gateway is a transparent proxy using WCCP v2.

An organization—let's call it Creative Corp—uses a software installation of Content Gateway. They have one domain (CCORP), and one domain controller. They use NTLM to authenticate users.

Creative Corp is about to launch a new product and wants to make a big splash. They decide to have an open house complete with kiosks, demonstrations, and presenters. The kiosks only need the default Internet policy to properly demonstrate the new product. The IT manager wants to keep the kiosk network as walled off from the corporate intranet as possible. In this scenario, logging individual users isn't a requirement.

The Rule-Based Authentication feature makes this possible.

To configure the solution, Creative Corp would:

1. Build a new, temporary network complete with its own domain controller. Let's call this domain CTEMP.
2. Add one or more users to CTEMP. They can either match one-to-one with existing users on the primary domain, or be one or more generic users for use by the presenters.
3. Redirect Internet traffic on CTEMP to Content Gateway with WCCP v2.
4. Enable Rule-Based Authentication.
5. Create authentication rules, one each for the CTEMP and CCORP domains:

a. On **Configure > Security > Access Control > Domains**, add the CTEMP domain, enable Aliasing and leave the name field blank. This will have the result of applying the Default policy to all users of CTEMP.

b. Add the CCORP domain to the Domains list.

c. On **Configure > Security > Access Control > Authentication Rules**, create a CTEMP rule to apply to all connections coming from the IP address range assigned to the CTEMP domain.

d. Define the CCORP rule to handle all other connections.

At this point, anyone using the Internet on one of the kiosks is authenticated against the CTEMP network and has the Default policy applied to their requests.

Authentication based on User-Agent

In an authentication rule, a Request header User-Agent value can be used to determine if user authentication will be performed. This is useful when you want to authenticate users using a known set of client applications, usually browsers, and allow other applications, often a set of applications that don't support authentication, to proceed without authentication. Such rules can also specify IP addresses and, if Content Gateway is an explicit proxy, inbound proxy port.

As with all authentication rules, the first matching rule is applied. (For a complete description of rule-based authentication, see *Rule-Based Authentication*, page 203.)

When the User-Agent field is used, the critical element is the regular expression (regex) that preforms the match.

- The regex must be POSIX-compliant.
  - The "^" regex operator is not supported.
- Predefined regexes are provided for the most common browsers.
- When the field is empty, all User-Agent values match.
- You can create a custom regex by directly editing the field.
- Multiple regexes are allowed. They must be separated by a "|" ('or' operator).

When you click **Apply** (after Add or Set), the regex is parsed and validated. **If the regex is not valid, the rule is deleted and must be recreated with a valid regex.**

Following are a few examples of custom regexes.

Microsoft Internet Explorer 7, 8, or 9:

```
MSIE ([7-9]{1}[\.0-9]{0})
```

Example User-Agent string:

```
Mozilla/5.0 (Windows; U; MSIE 9.0; Windows NT 9.0; en-US)
```

Microsoft Edge

```
Edge ([1]{1}[\.0-9]{0})
```

Example User-Agent string:

```
Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/
537.36 (KHTML, like Gecko) Chrome/46.0.2486.0 Safari/
537.36 Edge/13.10586
```

Microsoft Internet Explorer Mobile, all versions:

```
IEMobile
```

Example User-Agent string:

```
Mozilla/5.0 (compatible; MSIE 9.0; Windows Phone OS 7.5;
Trident/5.0; IEMobile/9.0)
```

Apple iPhone, all versions:

```
(iPhone) OS (\d+)_(\d+)(?:_(\d+))?
```

Example User-Agent string:

```
Mozilla/5.0 (iPod; U; CPU iPhone OS 4_3_3 like Mac OS X;
ja-jp) AppleWebKit/533.17.9 (KHTML, like Gecko) Version/
5.0.2 Mobile/8J2 Safari/6533.18.5
```

Apple iPad, all versions:

```
(iPad).+ OS (\d+)_(\d+)(?:_(\d+))?
```

Example User-Agent string:

```
Mozilla/5.0 (iPad; CPU OS 6_0 like Mac OS X) AppleWebKit/
536.26 (KHTML, like Gecko) Version/6.0 Mobile/10A5355d
Safari/8536.25
```

Search the Internet for lists of User-Agent strings, example regular expressions, regex checkers, and related resources.

Use case:

This describes a case in which an organization with a single domain wants to authenticate requests from 2 common web browsers. They also want to bypass authentication for web applications that do not support authentication.

An organization—let's call it Best Corp—uses Content Gateway. They have one domain (BCORP), and one domain controller. They use IWA to authenticate users.

Best Corp wants to ensure that:

- Requests from common web browsers are authenticated. They control which web browsers are allowed on their computers.
- Web applications that don't support authentication bypass authentication.

The User-Agent feature of rule-based authentication makes this possible.

To configure the solution, Best Corp:

1. Enables Rule-Based Authentication.
2. Adds the BCORP domain to the Domains list.
3. Creates an IWA rule that:
    a. Optionally, specifies the supported client IP address ranges.

b. Specifies, by User-Agent value, the web browsers to authenticate.

In the **User-Agent** field, they use the **Predefined** drop down list to select and **Add** Internet Explorer and Firefox. The regex looks like:

```
MSIE.*|Firefox.*
```

That's it. With this configuration, all requests from Internet Explorer and Firefox, the only 2 browsers that can be installed on their computers, are subject to user authentication. All other requests, most particularly web applications, bypass authentication. To further customize the approach, Best Corp could create other authentication rules and/or add proxy filtering rules (filter.config) to deny or bypass specific applications by User-Agent value.

Authentication using Captive Portal

Content Gateway provides a Captive Portal option when adding an authentication rule. Captive Portal may be especially helpful in handling mobile and other personal devices brought in to your Forcepoint Web Security networks.

This feature:

- Redirects users to a web portal page for authentication.
- Supports captive, interactive (prompted) user authentication of IP addresses (users) that match the Captive Portal rule.
- Can be used with LDAP, Legacy NTLM, and IWA (v8.5.4 only); RADIUS is not supported.
- Handles credential caching and expiration per the global configuration; cookie authentication and caching are also supported.

  Note that most applications on mobile devices do not share cookies. For those applications, IP-based identification will be required. See the Credential Cashing section of *Global authentication options* for more information.

  Also, for web applications that use Ajax, where Ajax is configured to prevent cookies, cookie-mode cannot support sites that include cross-origin requests (CORS) that rely on Ajax.
- Allows the authentication form (web portal page) to be customized to suit your needs.
- Supports only basic authentication.
- Provides the option to display the authentication page using either HTTP or HTTPS.

When adding an authentication rule (see *Creating an authentication rule*), an option is provided. Navigate to **Configure > Security > Access Control > Authentication Rules** and click **Enabled for HTTPS/HTTP Authentication page** next to Captive Portal to select the feature. Users who match the rule are redirected to the web portal authentication page.

With 8.5 and 8.5.3:

- This option is disabled if an IWA domain is included in the Auth Sequence list.

- When this option is enabled, an error message will display if an IWA domain is selected for inclusion in the Auth Sequence list.

Note that when Content Gateway receives an unauthenticated POST request from a user who matches a Captive Portal rule, it redirects the user to the web portal authentication page and does not record the POST data. After successful authentication, the original POST data must be input again.

> **Note**
> If the requested URL is configured for tunneling or bypass, no user authentication is performed.

When a rule is added with the Captive Portal option enabled, users are reminded that they can customize the pre-defined web portal page. Go to the new Captive Portal Page Customization tab of **Configure > Security > Access Control**. Edit the text and HTML to suit your needs. For example, you may want to include your company logo in place of the default logo.

Customizing the web portal page

The web portal page is an HTML form that is presented to the user for interactive authentication.

Default contents are provided on the Captive Portal Page Customization tab of **Configure > Security > Access Control**. It is recommended that you customize the form to convey to users who see it that this logon portal is part of your network and organization. For example, you might:

- Replace the default logo with your organization's logo. To do that:
  - Edit the src tag and replace the png file name with your company logo file.
  - Copy your png file to /opt/WCG/config/ui_files/images.
- Include text to explain why the user is seeing this page

The form must be a valid HTML document, defined with valid HTML syntax.

The following variables are used in the document to ensure that it is delivered to the users properly. It is recommended that you do not change their placement or usage.

- %P is replaced with the protocol of the current transaction
- %h is replaced with "redirect_host:8080"
- %u is replaced with the URL request for the portal page
- $$DOMAIN is replaced with the basic authentication domain defined in the configuration variable proxy.config.proxy.authenticate.basic.realm. (See *Authentication basic realm* for more information.)

When you have entered all of the syntax, click **Preview** to preview the page you have created. When you are happy with the way the portal page looks, click **Apply** to save the content to a file. If you want to return to the default, pre-defined portal page syntax, click **Restore to Default Page**.

The customized Captive Portal page is saved to **auth_form.html**, which is stored in **/opt/WCG/config**. In addition, css and image files can be used to define the portal page. CSS files must be stored in **/opt/WCG/config/ui_files** and image files must be store in /**opt/WCG/config/ui_files/images**, by default.

Note

The css and image files also reside in /opt/WCG/ui/configure/auth_form and /opt/WCG/ui/configure/auth_form/images, respectively, for use by the **Preview** feature. Copy any new files to those directories to use **Preview**.

Add a variable to records.config to use a different name for the saved Captive Portal page or store the css and image files in a different directory.

Configuration Variable	Data Type	Default Value	Description
proxy.config.auth.form_filename	STRING	auth_form.html	Specifies the file that defines the Captive Portal authentication page. Changing this filename is not recommended.
proxy.config.internal.file.path	STRING	/config/ui_files	Specifies the location of any css and image files used to define the Captive Portal authentication page. The full default path is /opt/WCG/config/ui_files. Image files are located in an /images sub-directory.

Using a custom certificate with Captive Portal

(Required for v8.5.4 only)

Upload the custom certificate and its key to the Content Gateway machine and update the following variable in records.config to force a custom certificate to work with Captive Portal.

```
CONFIG proxy.config.ssl.use_custom_cert_for_captive_portal
```

On the Content Gateway machine.

1. Copy the custom certificate and its key to the /opt/WCG/config directory
2. Make a backup of the /opt/WCG/config/ssl_multicert.config file
3. Open /opt/WCG/config/ssl_multicert.config with a text editor and make and:.
   a. Comment out the default entry
   b. Add a new entry specifying the custom certificate and its key.

For example:

```
name=auth_server dest_ip=* ssl_cert_name=custom_cert.crt
ssl_key_name=custom_key.key
```

Note that ssl_multicert.config file can only have one entry. It does not support multiple entries.

4. Make a backup of records.config. (Default location: /opt/WCG/config)
5. Run the following command to check the current value of the parameter. By default, the value is 0.

   ```
   /opt/WCG/bin/content_line -r
   proxy.config.ssl.use_custom_cert_for_captive_portal
   ```

6. Run the following command to enable the feature and make the custom certificate work with captive portal.

   ```
   /opt/WCG/bin/content_line -s
   proxy.config.ssl.use_custom_cert_for_captive_portal -v 1
   ```

7. Restart Content Gateway.

Important

Enable this parameter only if you have a custom certificate to be uploaded to the proxy. If the parameter is enabled but no custom certificate is entered in ssl_multicert.confg, the proxy can run into unexpected issues.

Client certificate authentication

Certificate authentication is available for use with mobile and other personal devices.

When client certificate authentication is enabled, unauthenticated users are redirected to an HTTPS page where they are prompted to select the certificate to send to Content Gateway. The user is considered authenticated if the certificate is signed by a trusted Certificate Authority (CA). The user name is extracted from the appropriate certificate field.

Client certificate authentication can also be configured to fall back to the domains list and Captive Portal for authentication. Users who cannot be authenticated using a certificate will then be authenticated using a different method.

Used with rule-based authentication, this feature is configured for each proxy and:

- Supports basic, LDAP, NTLM, and IWA authentication.

  If the fallback option is enabled, however, and Captive Portal is enabled for fallback, the Captive Portal limitations apply. See *Authentication using Captive Portal*, page 222.
- Supports credential and cookie caching.
- Requires a Client Certification Authentication Profile that explains where to extract user names from the certificates and includes a list of the CA Certificates valid for use by clients.

- Requires enabling SSL decryption.

  Access to HTTPS sites are not authenticated if **HTTPS** is not enabled on the **Configure > My Proxy > Basic** page.

Client certificate authentication profiles

When client certificate authentication is enabled, a client certificate authentication profile must be selected. Configure client certificate authentication profiles on the **Client Cert Auth Profile** tab of the **Configure > Security > Access Control** page.

NOTE: You can have only one profile.

On the Client Certificate Authentication Profile page:

1. Enter a **Profile Name**. This name will appear in the drop-down list on the Authentication Rules page.
2. Select an entry from the **User Name Mapping** drop-down.

   Valid selections are Common Name (CN), Distinguished Name, or Email. This entry tells the authentication process how to extract the user name from the certificate.
3. In the **Certificate Authorities** section, add, view, or delete certificates.

   The certificates used for authentication are manipulated the same way that SSL certificates are manipulated on the **Configure > SSL > Certificates** pages. Refer to the *Adding new certificate authorities*, page 142 for assistance.
4. Click **Apply** to save your profile.

Troubleshooting authentication rules

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In rule-based authentication, problems often present as:

- Users are *not* challenged for credentials when a challenge is expected
- Users *are* challenged for credentials when no challenge is expected
- User authentication is performed against the wrong domain

These problems occur in one of the following phases of user authentication processing:

- General user authentication logic (outlined below)
- Rule definition and matching
- User authentication protocol processing (IWA, NTLM, LDAP; for IWA troubleshooting, see *Troubleshooting Integrated Windows Authentication*.)

Rule-based authentication logic

Rule-based authentication applies the following logic:

1. The rules in **filter.config** are checked and applied. This action occurs first in every type of Content Gateway user authentication. If a filtering rule is matched, the rule is applied and user authentication processing stops. See *Content Gateway filtering rules*, page 168.
2. If no filtering rule matches, user authentication rule matching is performed.
   a. The requestor's IP address is checked, top-down, against the rule set.
   b. If the IP address matches a rule, the source port is checked.
   c. If the IP address matches a rule, the User-Agent value is checked.
   d. The first rule matched is applied. **If no rule matches, no authentication is attempted.**
3. If a rule is matched, the specified authentication protocol is applied against the specified domain. All rule configuration details are applied.
4. If the user is authenticated, the request proceeds or is denied per the assigned policy.
5. The transaction is logged.

To see how the logic is applied in a running environment, you can temporarily enable user authentication debug output. Among other details, the debug output shows the parsing of rules and matching. See *Enabling and disabling user authentication debug output*.

Troubleshooting

When rule-based authentication doesn't produce the expected results, it is recommended that you troubleshoot the problem in the following order:

1. **Check Redirection Rules**

   Confirm that there is no unexpected entries. In the Content Gateway manager, go to **Configure > Networking > ARM > General** and examine the **Redirection Rules**.
2. **Check the rules in filter.config**

   Confirm that there is no unexpected matching of a **filter.config** rule. Among other purposes, filter.config rules can be used to bypass user authentication. See *Content Gateway filtering rules*.
3. **Check rule matching**

   Using the IP address of a user who is or is not being challenged as expected, walk through each rule, top to bottom, examining the settings to find the first match. Be meticulous in your analysis. A common problem is that the IP address falls within a too-broad IP address range.

   If the rule uses an alias, confirm that the alias is present in the User Service of the primary domain controller.

   For explicit clients configured to send traffic to a specific port, check both the rule and the configuration of the client's browser.
4. **Check the domain**

If you are getting the match you expect, verify that the domain is reachable and that the user is a member of the domain. If yes, troubleshoot the problem at the authentication protocol level. For IWA, see *Troubleshooting Integrated Windows Authentication*.

5. **When Content Gateway is in a proxy chain**

   If Content Gateway is a member of a proxy chain, verify that X-Forwarded-For headers are sent by the downstream proxy and read by Content Gateway.

   - Use a packet sniffer to inspect inbound packets from the downstream proxy. Look for properly formed X-Forwarded-For headers.
   - In the Content Gateway manager, go to **Configure > My Proxy > Basic**, scroll to the bottom of the page and verify that **Read authentication from child proxy** is enabled. If it's not, select **On**, click **Apply**, and then restart Content Gateway.

Enabling and disabling user authentication debug output

Warning

Debug output should not be left enabled. Debug output slows proxy performance and can fill the file system with log output.

Debug log information is written to: **/opt/WCG/logs/content_gateway.out**

To enable user authentication debug information, edit: **/opt/WCG/config/records.config**

```
(root)# vi /opt/WCG/config/records.config
```

Find and modify the following parameters and assign values as shown:

```
CONFIG proxy.config.diags.debug.enabled INT 1
CONFIG proxy.config.diags.debug.tags STRING
   http_xauth.* | auth_* | winauth.* | ldap.* | ntlm.*
```

Save and close the file. Force Content Gateway to reread the file with the command:

```
(root)# /opt/WCG/bin/content_line -x
```

Follow the flow of debug information with the **tail -f** command:

```
(root)# tail -f /opt/WCG/logs/content_gateway.out
```

Use **Ctrl+C** to terminate the command.

When you have collected the debug output you want (after one or several user authentication processes is complete), disable debug output by editing **records.config** and modifying the parameter value as shown.

```
(root)# CONFIG proxy.config.diags.debug.enabled INT 0
```

Save and close the file. Force Content Gateway to reread the file with the command:

```
(root)# /opt/WCG/bin/content_line -x
```

Mac and iPhone/iPad authentication

Forcepoint Web Security solutions can be used to authenticate or identify Mac and iPhone/iPad users for user- or group-based filtering.

For Mac computers, see:

- *Authentication for Mac computers*
  - *Enabling transparent identification of Mac users with DC Agent*
  - *Authenticating Mac users with Content Gateway*
    - *Typical steps for joining a Mac to an Active Directory domain*

For iPhones/iPads, see:

- *Authentication for iPhones and iPads*

For a list of Frequently Asked Questions regarding Mac and iPhone/iPad authentication, see this article.

Authentication for Mac computers

Forcepoint Web Security solutions can be used to authenticate or identify Mac users for user- or group-based filtering. These restriction apply:

- Authentication and identification require that users belong to an Active Directory.
- Protocol block messages cannot be displayed on Macs.

If your organization uses DC Agent for transparent user identification, see *Enabling transparent identification of Mac users with DC Agent*.

If your organization uses Logon Agent for transparent user identification, see Deploying the logon application for Mac clients.

If your organization uses Content Gateway to authenticate users, see *Authenticating Mac users with Content Gateway*.

Manual (prompted) authentication can also be used to enable user and group-based filtering of Mac users.

Enabling transparent identification of Mac users with DC Agent

In order for DC Agent to identify the user on a Mac workstation, the Mac must mount a file share on the domain controller. This can be done by configuring the Mac to use a file share on the domain controller machine as the user's home directory, or by mounting another share with the domain controller.

> **Note**
> If the Mac only logs to the domain without mounting a file share, it will not be visible to DC Agent.

Configuration summary:

- Ensure that each participating Mac user is a member of a common Active Directory. See your Active Directory documentation.
- Create a home folder for each Mac user, and make sure that it is accessible to the user. See the first paragraph of this section.

When the user logs on to the properly configured Mac OS X system, the Mac mounts a network directory as the user's home directory, the DC Agent user map is populated, and user and group-based policies can be applied to user requests. When requests are blocked, browser-based block pages are displayed normally.

Authenticating Mac users with Content Gateway

Using the Integrated Windows Authentication (IWA) feature of Content Gateway, Mac users can be transparently authenticated when the user is a member of an Active Directory domain and the Mac computer is joined to the Active Directory domain. For more information see *Integrated Windows Authentication*.

Configuration summary:

- Ensure that each Mac computer is joined to the Active Directory domain. See *Typical steps for joining a Mac to an Active Directory domain*.
- Ensure that each participating Mac user is a member of a common Active Directory. See your Active Directory documentation.
- Ensure that Content Gateway is joined to the Active Directory domain.
  - If Content Gateway is not configured for IWA, see *Integrated Windows Authentication* and apply the configuration instructions.
  - If Content Gateway is already configured for IWA and your Mac users belong to the currently joined domain, there is nothing to do.
  - If Content Gateway is already configured for IWA and your Mac users belong to a different Active Directory domain, use the Rule-Based Authentication feature. See *Rule-Based Authentication* and follow the configuration instructions.
- When Content Gateway is an explicit proxy, configure participating Mac systems and browsers to send HTTP, HTTPS, and FTP requests to the Fully Qualified Domain Name (FQDN) of Content Gateway. Alternatively, specify the IP address of Content Gateway if NTLM is adequate.

If Content Gateway is a transparent proxy, no additional Mac system or browser configuration is required.

Important

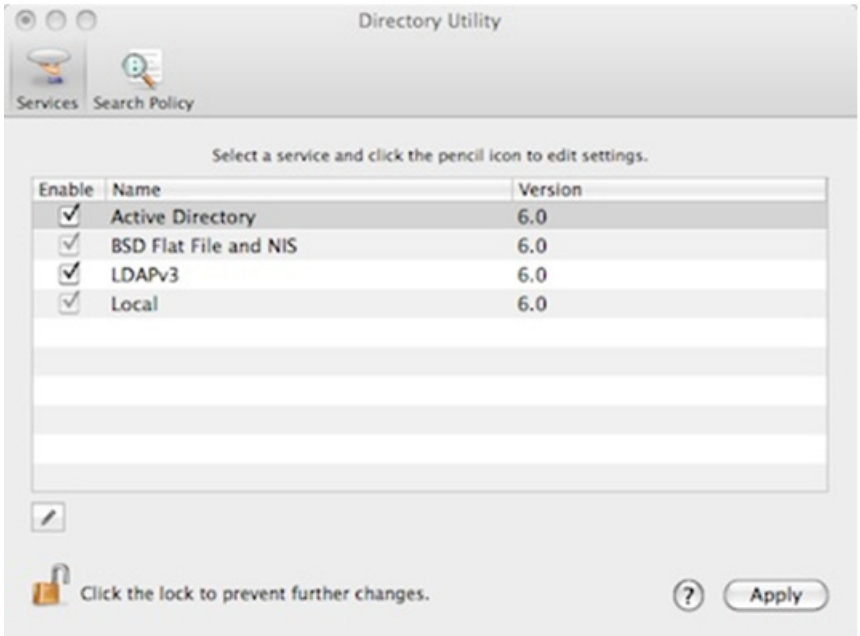
Safari users may be prompted for credentials the first time they open a browser. The user should enter their credentials and check the "Remember password in keychain" check box.

Firefox users may receive an "Proxy Authentication Required" error message. This is a known issue in FireFox (http://support.mozilla.org/en-US/questions/926378) and is easily corrected by changing the browser configuration. In **About:Config** set the following options to **false**:

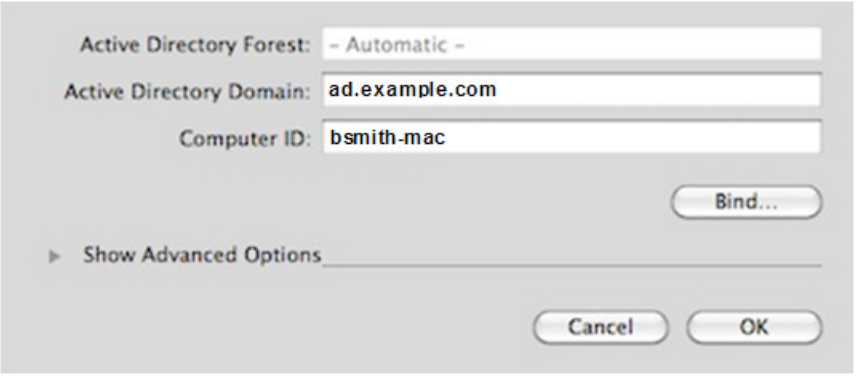
- network.automatic-ntlm-auth.allow-proxies
- network.negotiate-auth.allow-proxies

Typical steps for joining a Mac to an Active Directory domain

1. Using an account with Administrator privileges, log on to the Mac computer that you want to join to an Active Directory domain.
2. Open the **Directory Utility**. On OS X 10.6 (Snow Leopard), go to:
3. /System/Library/CoreServices
4. If necessary, click the padlock icon and enter your password to unlock the Directory Utility.
5. Select the box next to **Active Directory** to enable Active Directory support.



6. Highlight Active Directory and click on the Pencil icon to configure the Active Directory connection.
7. Under **Domain**, enter the Fully Qualified Domain Name (FQDN).
8. Under **Computer ID**, enter the computer name.



9. Click Bind. You are prompted for network credentials and a computer OU. Enter your OU admin account and password, and the computer OU location. For example:

   ```
   ou=computers,ou=orgunits,dc=ad,dc=example,dc=com
   ```

   Your machine will be bound to the specified Active Directory.
10. Click **Apply** in the Directory Utility to save your changes and restart the machine.

Authentication for iPhones and iPads

Proxy-based user authentication is supported by the Content Gateway (proxy) component of Forcepoint Web Security, resulting in user- or group-based filtering.

User identification via DC Agent is not supported and, therefore, there is no user- or group-based filtering solution with Web Filter & Security or Forcepoint Web Security. Filtering can be provided to those devices based on IP address or network range.

Content Gateway user authentication has the following features and restrictions:

- Works with the authentication method configured in Content Gateway. Users must belong to the associated user directory.
- Supports the Safari browser. Other browsers may not work as expected.
- Transparent authentication is not supported. The user is always prompted for credentials.
- Works in transparent and explicit Content Gateway deployments.
- Many iPhone and iPad apps do not work well with Content Gateway (or any Web proxy) because they are not well programmed to handle proxy user authentication.

Explicit proxy settings can be configured in the iOS Network settings area.

16 Working With Log Files

Related topics:

- *Event log files*, page 236
- *Managing event log files*, page 237
- *Event log file formats*, page 239
- *Rolling event log files*, page 245
- *Splitting event log files*, page 248
- *Collating event log files*, page 250
- *Viewing logging statistics*, page 253
- *Viewing log files*, page 254
- *Example event log file entries*, page 255

Content Gateway keeps 3 types of log files:

- *System log files* record system information, which includes messages about the state of Content Gateway and any errors or warnings that it produces. This information might include a note that event log files were rolled, a warning that cluster communication timed out, or an error indicating that Content Gateway was restarted. (Content Gateway posts alarms for error conditions in the Content Gateway manager; see *Working with alarms*, page 112, for details.)

  All system information messages are logged with the system-wide logging facility **syslog** under the daemon facility. The **syslog.conf** configuration file (stored in the **/etc** directory) specifies where these messages are logged. A typical location is **/var/log/messages**.

  The **syslog** process works on a system-wide basis, so it is the single repository for messages from all Content Gateway processes, including **content_gateway**, **content_manager**, and **content_cop**.

  Each log entry in the log contains information about the date and time the error was logged, the hostname of the proxy server that reported the error, and a description of the error or warning.

  See *Content Gateway Error Messages*, page 491, for a list of the system information messages that Content Gateway logs.

- *Error log files* record information about why a transaction was in error.
- *Event log files* (also called *access log files*) record information about the state of each transaction that Content Gateway processes.

Content Gateway creates both error and event log files and records system information in system log files. You can disable event logging and/or error logging. It is recommended that you log errors only or disable logging during peak usage hours.

On the **Configure > Subsystems > Logging** tab, select one of the following options: **Log Transactions and Errors**, **Log Transactions Only**, **Log Errors Only**, or **Disabled**.

Event log files

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Event log files record information about every request that Content Gateway processes. By analyzing the log files, you can determine how many people use the proxy, how much information each person requested, what pages are most popular, and so on.

Content Gateway supports several standard log file formats, such as Squid and Netscape, and user-defined custom formats. You can analyze the standard format log files with off-the-shelf analysis packages. To help with log file analysis, you can separate log files so that they contain information specific to protocol or hosts. You can also configure Content Gateway to roll log files automatically at specific intervals during the day.

The following sections describe how to:

- Manage your event log files

  You can choose a central location for storing log files, set how much disk space to use for log files, and set how and when to roll log files. See *Managing event log files*, page 237.
- Choose different event log file formats

  You can choose which standard log file formats you want to use for traffic analysis (for example, Squid or Netscape). Alternatively, you can use the Content Gateway custom format, which is XML-based and enables you to institute more control over the type of information recorded in log files. See *Event log file formats*, page 239.
- Roll event log files automatically

  You can configure Content Gateway to roll event log files at specific intervals during the day so that you can identify and manipulate log files that are no longer active. See *Rolling event log files*, page 245.
- Separate log files according to hosts

  You can configure the proxy to create separate log files for different protocols based on the host. See *Splitting event log files*, page 248.

- Collate log files from different nodes

  You can designate one or more nodes on the network to serve as log collation servers. These servers, which might either be stand-alone or part of Content Gateway, enable you to keep all logged information in well-defined locations. See *Collating event log files*, page 250.

- View statistics about the logging system

  Content Gateway provides statistics about the logging system. You can access the statistics through the Content Gateway manager or through the command line interface. See *Viewing logging statistics*, page 253.

- View log files

  You can view the system, event, and error log files that Content Gateway creates. You can view an entire log file, a specified last number of lines in the log file, or all lines that contain a specified string.

- Interpret log file entries for the standard log file formats. See *Example event log file entries*, page 255.

Managing event log files

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You can manage your event log files and control where they are located, how much space they can consume, and how low disk space in the logging directory is handled.

Choosing the logging directory

By default, Content Gateway writes all event log files in the **/opt/WCG/logs** directory, which is a subdirectory of the directory where you installed Content Gateway. To use a different directory, see *Setting log file management options*, page 238.

Controlling logging space

You can control the amount of disk space that the logging directory can consume. This allows the system to operate smoothly within a specified space window for a long period of time.

After you establish a space limit, Content Gateway continues to monitor the space in the logging directory. When the free space dwindles to the headroom limit (see *Setting log file management options*, page 238), Content Gateway enters a low space state and takes the following actions:

- If the autodelete option (discussed in *Rolling event log files*, page 245) is *enabled*, Content Gateway identifies previously rolled log files (log files with a **.old** extension) and starts deleting files one by one—beginning with the oldest file—until it emerges from the low state. Content Gateway logs a record of all files it deletes in the system error log.

- If the autodelete option is *disabled* or there are not enough old log files to delete for the system to emerge from its low space state, Content Gateway issues a warning and continues logging until space is exhausted. Content Gateway resumes event logging when enough space becomes available for it to exit its low space state. You can make space available by removing files from the logging directory or by increasing the logging space limit.

You can run a **cron** script in conjunction with Content Gateway to automatically remove old log files from the logging directory (before Content Gateway enters the low space state) and relocate them to a temporary partition. Once the files are relocated, you can run log analysis scripts on them, and then you can compress the logs and move them to an archive location or delete them.

Setting log file management options

1. In the Content Gateway manager, go to the **Configure > Subsystems > Logging > General** tab.
2. In the **Log Directory** field, enter the path to the directory in which you want to store event log files. The default directory is **/opt/WCG/logs**, a subdirectory of the Content Gateway installation directory.

   Note

   The log directory you specify must already exist and must be /opt/WCG/logs or a subdirectory of it.

   The user must have read/write permissions for the directory storing the log files.

3. In the **Limit** field of the **Log Space** area, enter the maximum amount of space you want to allocate to the logging directory.

   When Content Gateway is on an appliance, the size is set to 5120 (5 GB) and cannot be changed.

   When Content Gateway is installed on a stand-alone server, the default size is 20480 (20 GB) and the size is configurable.

   Note

   All files in the logging directory contribute to the space used, even if they are not log files.

4. In the **Headroom** field, enter the tolerance for the log space limit. The default value is 100 MB.

   If the **Auto-Delete Rolled Files** option is enabled in the **Log Rolling** section, autodeletion is triggered when the amount of free space available in the logging directory is less than the headroom. For information about log file rolling, see *Rolling event log files*, page 245.
5. Click **Apply**.

Event log file formats

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Content Gateway supports the following log file formats:

- *Standard formats*, such as Squid or Netscape (see *Using standard formats*, page 239)
- the Content Gateway *custom format* (see *Custom format*, page 240)

In addition to the standard and custom log file format, you must choose whether to save log files in *binary* or *ASCII*. See *Choosing binary or ASCII*, page 243.

Important

Event log files consume a large amount of disk space. Creating log entries in multiple formats at the same time can consume disk resources very quickly and affect proxy performance.

Important

When IPv6 is enabled, Event log entries are normalized to IPv6 format.

For example, “10.10.41.200” is logged as “::ffff:10.10.41.200”.

To filter on a client at “10.10.41.200” in a custom log, use:

```
<LogFilter>
   <Name = "IPv6_Test_Machine"/>
   <Condition =
       "chi MATCH ::ffff:10.10.41.200"/>
   <Action = "ACCEPT"/>
</LogFilter>
```

Using standard formats

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The standard log formats include Squid, Netscape Common, Netscape Extended, and Netscape Extended-2.

The standard log file formats can be analyzed with a wide variety of off-the-shelf log-analysis packages. You should use one of the standard event log formats unless you need information that these formats do not provide. See *Custom format*, page 240.

By default, Content Gateway is configured to use the Netscape Extended log file format only.

Setting standard log file format options

1. Navigate to **Configure > Subsystems > Logging > Formats**.
2. Enable the format you want to use.
3. Select the log file type (**ASCII** or **binary**).
4. In the **Filename** field, enter the name you want to use for your event log files.
5. In the **Header** field, enter a text header that appears at the top of the event log files. Leave this field blank if you do not want to use a text header.
6. Click **Apply**.
7. Click **Restart** on **Configure > My Proxy > Basic > General**.

Custom format

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The XML-based custom log format is more flexible than the standard log file formats, giving you more control over the type of information in your log files. Create a custom log format if you need data for analysis that is not available in the standard formats. You can decide what information to record for each Content Gateway transaction and create filters to define which transactions to log.

The heart of the custom logging feature is an XML-based logging configuration file (**logs_xml.config**) that enables you to create modular descriptions of logging objects. The **logs_xml.config** file uses three types of objects to create custom log files:

- The **LogFormat** defines the content of the log file using printf-style format strings.
- The **LogFilter** defines a filter so that you include or exclude certain information from the log file.
- The **LogObject** specifies all the information needed to produce a log file. For example:
  - The name of the log file (required).
  - The format to be used (required). This can be a standard format (Squid or Netscape) or a previously defined custom format (a previously defined **LogFormat** object).
  - The file mode (ASCII, Binary, or ASCII_PIPE). The default is ASCII.

    The ASCII_PIPE mode writes log entries to a UNIX named pipe (a buffer in memory). Other processes can then read the data using standard I/O functions. The advantage of using this option is that Content Gateway does not have to write to disk, freeing disk space and bandwidth for other tasks.

Note

When the buffer is full, Content Gateway drops log entries and issues an error message indicating how many entries were dropped. Content Gateway writes only complete log entries to the pipe; therefore, only full records are dropped.

- Any filters you want to use (previously defined **LogFilter** objects).
- The collation servers that are to receive the log files.
- The protocols you want to log (if the protocols tag is used, Content Gateway logs only transactions from the protocols listed; otherwise, all transactions for all protocols are logged).
- The origin servers you want to log (if the servers tag is used, Content Gateway logs only transactions for the origin servers listed; otherwise, transactions for all origin servers are logged).
- The header text you want the log files to contain. The header text appears at the beginning of the log file, just before the first record.
- The log file rolling options.

> **Note**
> To generate a custom log format, you must specify at least one **LogObject** definition. One log file is produced for each **LogObject** definition. You can create a custom log format in the Content Gateway manager or by editing a configuration file.

1. In the Content Gateway manager, go to the **Configure** > **Subsystems** > **Logging** > **Custom** tab.
2. Enable the **Custom Logging** option.
3. The **Custom Log File Definitions** area displays the **logs_xml.config** file. Add **LogFormat**, **LogFilter**, and **LogObject** specifications to the configuration file.

   For detailed information about the **logs_xml.config** file and associated object specifications, see *logs_xml.config*, page 402.
4. Click **Apply**.

Creating summary log files

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Content Gateway performs several hundred operations per second; therefore, event log files can grow quite large. Using SQL-like aggregate operators, you can configure Content Gateway to create summary log files that summarize a set of log entries over a specified period of time. This can reduce the size of the log files generated.

You generate a summary log file by creating a **LogFormat** object in the XML-based logging configuration file (**logs_xml.config**) using the following SQL-like aggregate operators:

- **COUNT**
- **SUM**
- **AVERAGE**
- **FIRST**
- **LAST**

You can apply each of these operators to specific fields, requesting it to operate over a specified interval.

Summary log files represent a trade-off between convenience and information granularity. Since you must specify a time interval during which only a single record is generated, you can lose information. If you want the convenience of summary logs and need the detail of a conventional log file, consider creating and enabling two custom log formats—one using aggregate operators and the other not using aggregate operators.

To create a summary log file format:

1. In the Content Gateway manager, go to the **Configure** > **Subsystems** > **Logging** > **Custom** tab to display the **logs_xml.config** file.
2. Define the format of the log file as follows:

```
<LogFormat>
   <Name = "summary"/>
   <Format = "%<operator(field)> : %<operator(field)>"/>
   <Interval = "n"/>
</LogFormat>
```

   Here:

   - "operator" is one of the five aggregate operators (COUNT, SUM, AVERAGE, FIRST, LAST). You can specify more than one operator in the format line.
   - "field" is the logging field that you want to aggregate.
   - "n" is the interval in seconds between summary log entries.

   For more information, see *logs_xml.config*, page 402.

   For example, the following format generates one entry every 10 seconds, with each entry summarizing the time stamp of the last entry of the interval, a count of the number of entries seen within that 10-second interval, and the sum of all bytes sent to the client:

```
<LogFormat>
   <Name = "summary"/>
   <Format = "%<LAST(cqts)> : %<COUNT(*)> :
   %<SUM(psql)>"/>
   <Interval = "10"/>
</LogFormat>
```

   Important

   You cannot create a format specification that contains both aggregate operators and regular fields. For example, the following specification would be invalid:

```
<Format = "%<LAST(cqts)> : %<COUNT(*)> :
%<SUM(psql)> : %<cqu>"/>
```

3. Define a **LogObject** that uses this format.

4. Click **Apply**.

Applying logs_xml.config file changes to all nodes in a cluster

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After modifying the **logs_xml.config** file on one Content Gateway node, enter the following command from the Content Gateway **bin** directory (**/opt/WCG/bin)**:

```
content_line -x
```

Content Gateway applies the changes to all nodes in the cluster. The changes take effect immediately.

Choosing binary or ASCII

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You can configure Content Gateway to create event log files in either of the following:

- **ASCII**: these files can be processed using standard, off-the-shelf log-analysis tools. However, Content Gateway must perform additional processing to create the files in ASCII, resulting in an increase in overhead. Also, ASCII files tend to be larger than the equivalent binary files. ASCII log files have a **.log** filename extension by default.
- **Binary**: these files generate lower system overhead, as well as generally occupying less space on the disk, depending on the type of information being logged. You must, however, use a converter application before you can read or analyze these files using standard tools. Binary log files use a **.blog** filename extension by default.

While binary log files typically require less disk space, this is not always the case. For example, the value 0 (zero) requires only one byte to store in ASCII but requires four bytes when stored as a binary integer. If you define a custom format that logs IP addresses, a binary log file would require only four bytes of storage per 32-bit address. However, the same IP address stored in dot notation would require around 15 characters (bytes) in an ASCII log file.

For standard log formats, you select **Binary** or **ASCII** on the **Configure > Subsystems > Logging > Formats** tab in the Content Gateway manager. See *Setting standard log file format options*, page 240. For the custom log format, you specify

ASCII or Binary mode in the **LogObject**. Refer to *Custom format*, page 240.

> **Note**
> For custom log files, in addition to the ASCII and Binary options, you can also write log entries to a UNIX named pipe (a buffer in memory). Other processes can then read the data using standard I/O functions. The advantage of using this option is that Content Gateway does not have to write to disk, freeing disk space and bandwidth for other tasks. In addition, writing to a pipe does not stop when logging space is exhausted because the pipe does not use disk space. See *logs_xml.config*, page 402, for more information about the ASCII_PIPE option.

Before selecting ASCII versus binary for your log files, consider the type of data that will be logged. Try logging for one day using ASCII and then one day using binary. Assuming that the number of requests is roughly the same for both days, you can calculate a rough metric comparing the two formats.

Using logcat to convert binary logs to ASCII

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You must convert a binary log file to ASCII before you can analyze it using standard tools.

1. Change to the directory containing the binary log file.
2. Make sure that the **logcat** utility is in your path.
3. Enter the following command:

```
logcat <options> <input_filename>
```

The command-line options are:

Option	Description
-o output_file	Specifies where the command output is directed.

-a	Automatically generates the output filename based on the input filename. If the input is from **stdin**, this option is ignored.
	For example:
	`logcat -a squid-1.blog squid-2.blog squid-3.blog`
	generates:
	`squid-1.log, squid-2.log, squid-3.log`

-S	Attempts to transform the input to Squid format, if possible.
-C	Attempts to transform the input to Netscape Common format, if possible.
-E	Attempts to transform the input to Netscape Extended format, if possible.
-2	Attempt to transform the input to Netscape Extended-2 format, if possible.

Note
Use only one of the following options at any given time: **-S**, **-C**, **-E**, or **-2**.

If no input files are specified, **logcat** reads from the standard input (**stdin**). If you do not specify an output file, **logcat** writes to the standard output (**stdout**).

For example, to convert a binary log file to an ASCII file, you can use the **logcat** command with either of the following options:

```
logcat binary_file > ascii_file
logcat -o ascii_file binary_file
```

The binary log file is not modified by this command.

Rolling event log files

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Content Gateway provides automatic log file rolling. This means that at specific intervals during the day, Content Gateway closes its current set of log files and opens new log files.

Log file rolling offers the following benefits:

- It defines an interval over which log analysis can be performed.

- It keeps any single log file from becoming too large and assists in keeping the logging system within the specified space limits.
- It provides an easy way to identify files that are no longer being used so that an automated script can clean the logging directory and run log analysis programs.

You should roll log files several times a day. Rolling every six hours is a good guideline to follow.

Rolled log filename format

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Content Gateway provides a consistent name format for rolled log files that allows you to identify log files.

When Content Gateway rolls a log file, it saves and closes the old file and starts a new file. Content Gateway renames the old file to include the following information:

- The format of the file (for example, **squid.log**).
- The hostname of the Content Gateway server that generated the log file.
- Two timestamps separated by a hyphen (**-**). The first time stamp is a lower bound for the time stamp of the first record in the log file. The lower bound is the time when the new buffer for log records is created. Under low load, the first time stamp in the filename can be different from the timestamp of the first entry. Under normal load, the first time stamp in the filename and the time stamp of the first entry are similar.

  The second time stamp is an upper bound for the time stamp of the last record in the log file (this is normally the rolling time).
- The suffix **.old**, which makes it easy for automated scripts to find rolled log files.

The timestamps have the following format:

```
%Y%M%D.%Hh%Mm%Ss-%Y%M%D.%Hh%Mm%Ss
```

The following table describes the format:

Code	Definition	Example
%Y	The year in four-digit format	2000
%M	The month in two-digit format, from 01-12	07
%D	The day in two-digit format, from 01-31	19
%H	The hour in two-digit format, from 00-23	21
%M	The minute in two-digit format, from 00-59	52
%S	The second in two-digit format, from 00-59	36

The following is an example of a rolled log filename:

```
squid.log.mymachine.20000912.12h00m00s-
20000913.12h00m00s.old
```

In this example, the file is squid log format and the host machine is mymachine. The first time stamp indicates a date and time of year 2000, month September, and day 12 at 12:00 noon. The second time stamp indicates a date and time of year 2000, month September, and day 13 at 12:00 noon. At the end, the file has a .old suffix.

The logging system buffers log records before writing them to disk. When a log file is rolled, the log buffer might be partially full. If so, the first entry in the new log file will have a time stamp earlier than the time of rolling. When the new log file is rolled, its first time stamp will be a lower bound for the time stamp of the first entry. For example, suppose logs are rolled every three hours, and the first rolled log file is:

```
squid.log.mymachine.19980912.12h00m00s-
19980912.03h00m00s.old
```

If the lower bound for the first entry in the log buffer at 3:00:00 is 2:59:47, the next log file, when rolled, will have the following time stamp:

```
squid.log.mymachine.19980912.02h59m47s-
19980912.06h00m00s.old
```

The contents of a log file are always between the two timestamps. Log files do not contain overlapping entries, even if successive timestamps appear to overlap.

Rolling intervals

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Log files are rolled at specific intervals relative to a given hour of the day. Two options control when log files are rolled:

- The offset hour, which is an hour between 0 (midnight) and 23
- The rolling interval

Both the offset hour and the rolling interval determine when log file rolling starts. Rolling occurs every rolling interval *and* at the offset hour.

For example, if the rolling interval is six hours and the offset hour is 0 (midnight), the logs roll at midnight (00:00), 06:00, 12:00, and 18:00 each day. If the rolling interval is 12 hours and the offset hour is 3, logs roll at 03:00 and 15:00 each day.

Setting log file rolling options

1. In the Content Gateway manager, go to the **Configure** > **Subsystems** > **Logging > General** tab.
2. In the **Log Rolling** section, ensure the **Log Rolling** option is enabled (the default).
3. In the **Offset Hour** field, enter a specific time each day you want log file rolling to take place. Content Gateway forces the log file to be rolled at the offset hour each day.

   You can enter any hour in the range 0 (midnight) to 23.

4. In the **Interval** field, enter the amount of time Content Gateway enters data in the log files before rotation takes place.

   The minimum value is 300 seconds (five minutes). The maximum value is 86400 seconds (one day).

   Note
   If you start Content Gateway within a few minutes of the next rolling time, rolling may not occur until the following rolling time.

5. Ensure the **Auto-Delete Rolled Files** option is enabled (the default). This enables auto deletion of rolled log files when available space in the log directory is low.

   Auto deletion is triggered when the amount of free space available in the log directory is less than the headroom.

6. Click **Apply**.

   Note
   You can fine tune log file rolling settings for a custom log file in the **LogObject** specification in the **logs_xml.config** file. The custom log file uses the rolling settings in its **LogObject**, which override the default settings you specify in the Content Gateway manager or the **records.config** file described above.

Splitting event log files

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By default, Content Gateway uses standard log formats and generates log files that contain HTTP and FTP transactions in the same file. However, you can enable host log splitting if you prefer to log transactions for different origin servers in separate log files.

HTTP host log splitting

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HTTP host log splitting enables you to record HTTP and FTP transactions for different origin servers in separate log files. When HTTP host log splitting is enabled, Content Gateway creates a separate log file for each origin server listed in the **log_hosts.config** file (see *Editing the log_hosts.config file*, page 250).

When HTTP host log splitting is enabled, Content Gateway generates separate log files for HTTP/FTP transactions, based on the origin server.

For example, if the **log_hosts.config** file contains the two origin servers **uni.edu** and **company.com**, and the Squid format is enabled, Content Gateway generates the following log files:

Log Filename	Description
squid-uni.edu.log	All HTTP and FTP transactions for **uni.edu**
squid-company.com.log	All HTTP and FTP transactions for **company.com**
squid.log	All HTTP and FTP transactions for other hosts

Content Gateway also enables you to create XML-based custom log formats that offer even greater control over log file generation based on protocol and host name. See *Custom format*, page 240.

Setting log splitting options

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1. In the Content Gateway manager, go to the **Configure** > **Subsystems** > **Logging > Splitting** tab.
2. Enable the **Split Host Logs** option to record all HTTP and FTP transactions for each origin server listed in the **log_hosts.config** file in a separate log file. Disable the **Split Host Logs** option to record all HTTP and FTP transactions for each origin server listed in the **log_hosts.config** file in the same log file.
3. Click **Apply**.

Editing the log_hosts.config file

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The default **log_hosts.config** file is located in **/opt/WCG/config**. To record HTTP and FTP transactions for different origin servers in separate log files, you must specify each origin server's hostname on a separate line in the file.

> **Note**
> You can specify keywords in the **log_hosts.config** file to record in a separate log file all transactions from origin servers that contain the specified keyword in their names. For example, if you specify the keyword **sports**, Content Gateway records all HTTP and FTP transactions from **sports.yahoo.com** and **www.foxsports.com** in a log file called **squid-sports.log** (if the Squid format is enabled).

> **Note**
> If Content Gateway is clustered and if you enable log file collation, it is recommended that you use the same **log_hosts.config** file on every node in the cluster.

1. Open the **log_hosts.config** file located in **/opt/WCG/config**.
2. Enter the hostname of each origin server on a separate line in the file. For example:

   ```
   webserver1
   webserver2
   webserver3
   ```

3. Save and close the file.
4. To apply the changes, run the following command from the Content Gateway **bin** directory (**/opt/WCG/bin**):

   ```
   ./content_line -x
   ```

Collating event log files

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You can use the log file collation feature to keep all logged information in one place. This allows you to analyze Content Gateway as a whole rather than as individual nodes and to use a large disk that might only be located on one of the nodes in a cluster.

Content Gateway collates log files by using one or more nodes as log collation servers and all remaining nodes as log collation clients. When a node generates a buffer of

event log entries, it determines whether it is the collation server or a collation client. The collation server node simply writes all log buffers to its local disk, just as it would if log collation were not enabled.

The collation client nodes prepare their log buffers for transfer across the network and send the buffers to the log collation server. When the log collation server receives a log buffer from a client, it writes it to its own log file as if it were generated locally.

If log clients cannot contact their log collation server, they write their log buffers to their local disks, into *orphan* log files. Orphan log files require manual collation.

Log collation servers can be stand-alone or they can be part of a node running Content Gateway.

Note
Log collation can have an impact on network performance. Because all nodes are forwarding their log data buffers to the single collation server, a bottleneck might occur in the network, where the amount of data being sent to a single node in the network exceeds the node's ability to process it quickly.

Note
Collated log files contain time-stamp information for each entry, but entries do not appear in the files in strict chronological order. You can sort collated log files before doing analysis.

Configuring Content Gateway to be a collation server

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1. In the Content Gateway manager, go to the **Configure > Subsystems > Logging > Collation** page.
2. In the **Collation Mode** section, enable the **Be A Collation Server** option.
3. In the **Log Collation Port** field, enter the port number used for communication with collation clients. The default port number is 8085.
4. In the **Log Collation Secret** field, enter the password used to validate logging data and prevent the exchange of arbitrary information.

Note
All collation clients must use this same secret.

5. Click **Apply**.

> **Important**
> If you modify the collation port or secret after connections between the collation server and collation clients have been established, you must restart Content Gateway.

Configuring Content Gateway to be a collation client

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1. In the Content Gateway manager, go to the **Configure** > **Subsystems** > **Logging > Collation** tab.
2. In the **Collation Mode** section, enable the **Be a Collation Client** option to set the Content Gateway node as a collation client and send the active standard formatted log entries (such as Squid and Netscape) to the log collation server.

> **Note**
> To send custom XML-based formatted log entries to the collation server, you must add a log object specification to the **logs_xml.config** file. See *Custom format*, page 240.

3. In the **To Collation Server** field, enter the hostname of the collation server. This could be the Content Gateway collation server or a stand-alone collation server.
4. In the **Log Collation Port** field, enter the port number used for communication with the collation server. The default port number is 8085.
5. In the **Log Collation Secret** field, enter the password used to validate logging data and prevent the exchange of arbitrary information. This must be the same secret you set on the collation server.
6. Enable the **Log Collation Host Tagged** option if you want to preserve the origin of log entries in the collated log files.
7. In the **Log Collation Orphan Space** field, enter the maximum amount of space (in megabytes) you want to allocate to the logging directory on the collation client for storing orphan log files. (Orphan log files are created when the log collation server cannot be contacted). The default value is 25 MB.
8. Click **Apply**.

> **Important**
> If you modify the collation port or secret after connections between the collation clients and collation server have been established, you must restart Content Gateway.

Using a stand-alone collator

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If you do not want the log collation server to be a Content Gateway node, you can install and configure a stand-alone collator (SAC) which can dedicate more of its power to collecting, processing, and writing log files.

> **Note**
> The stand-alone collator is currently available for the Linux platform only.

1. Configure your Content Gateway nodes as log collation clients. See *Configuring Content Gateway to be a collation client*, page 252.
2. Copy the **sac** binary from the Content Gateway **bin** directory (/opt/WCG/bin) to the machine serving as the stand-alone collator.
3. Create a directory called **config** in the directory that contains the **sac** binary.
4. Create a directory called **internal** in the **config** directory you created in Step 3. This directory will be used internally by the stand-alone collator to store lock files.
5. Copy the **records.config** file (/opt/WCG/config) from a Content Gateway node configured to be a log collation client to the **config** directory you created in Step 3 on the stand-alone collator.

   The **records.config** file contains the log collation secret and port you specified when configuring nodes to be collation clients. The collation port and secret must be the same for all collation clients and servers.
6. Open the **records.config** file on the stand-alone collator and edit the **proxy.config.log2.logfile_dir** variable to specify the directory where you want to store log files.
   - You can specify an absolute path to the directory or a path relative to the directory from which the **sac** binary is executed.
   - The directory must already exist on the machine serving as the stand-alone collator.
7. Save and close the file.
8. Enter the following command:

   ```
   sac -c config
   ```

Viewing logging statistics

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Content Gateway generates statistics about the logging system that help you see the following information:

- How many log files (formats) are currently being written.
- The current amount of space being used by the logging directory, which contains all of the event and error logs.
- The number of access events that have been written to log files since Content Gateway installation. This counter represents one entry in one file. If multiple formats are being written, a single event will create multiple event log entries.
- The number of access events skipped (because they were filtered out) since Content Gateway installation.
- The number of access events that have been written to the event error log since Content Gateway installation.

You can view the statistics from the Monitor tab in the Content Gateway manager or retrieve them through the command-line interface. See *Monitoring Traffic*, page 111.

Viewing log files

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Related topics:

- *Squid format*, page 256
- *Netscape examples*, page 257

You can view the system, event, and error log files that Content Gateway creates from the Content Gateway manager. You can view an entire log file, a specified last number of lines in the log file, or all lines that contain a specified string.

You can also delete a log file or copy it to your local system.

Note
You must have the correct user permissions to copy and delete log files.

Note
Content Gateway displays only the first 1 MB of data in the log file. If the log file you select is larger than 1 MB, Content Gateway truncates the file and displays a warning message indicating that the file is too big.

You can now access log files through the Content Gateway manager.

1. Navigate to the **Configure** > **My Proxy > Logs > System** tab.
2. To view, copy, or delete a system log file, go to Step 3.

To view, copy, or delete an event or error log file, select the **Access** tab.

3. In the **Log File** drop-down list, select the log file you want to view, copy, or delete.

   Content Gateway lists the system log files logged with the system-wide logging facility **syslog** under the daemon facility.

   Content Gateway lists the event log files located in the directory specified in the **Logging Directory** field in the **Configure > Subsystems > Logging > General** tab or by the configuration variable **proxy.config.log2.logfile_dir** in the **records.config** file. The default directory is **logs** in the Content Gateway installation directory.

4. In the **Action** area, select one of the following options:
   - **Display the selected log file** to view the entire log file. If the file is larger than 1 MB, only the first MB of data is displayed.
   - **Display last lines of the selected file** to view the last lines of the log file. Enter the number of lines you want to view in the field provided.
   - **Display lines that match in the selected log file** to view all the lines in the log file that match a particular string. Enter the string in the field provided.
   - **Remove the selected log file** to delete the selected log file from the Content Gateway system.
   - **Save the selected log file in local filesystem** to save a copy of the selected log file on your local system.

5. Click **Apply**.

   If you selected to view the log file, Content Gateway displays the file at the end of the page.

   If you selected to delete the log file, Content Gateway deletes the file. You are not prompted to confirm the deletion.

   If you selected to save the log file, you are prompted for the location where you want to save the file on your local system.

Example event log file entries

This section shows examples of a log file entry in each of the standard log formats supported by Content Gateway:

- *Squid format*, page 256
- *Netscape examples*, page 257
- *Netscape Extended format*, page 257
- *Netscape Extended-2 format*, page 257

Squid format

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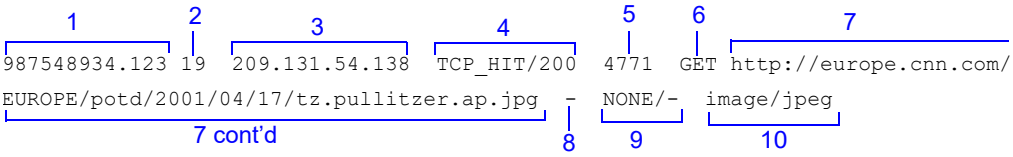
The following figure shows a sample log entry in a **squid.log** file. The table below describes each field.



Field	Description
1	The client request time stamp in Squid format; the time of the client request in seconds since January 1, 1970 UTC (with millisecond resolution).
2	The time the proxy spent processing the client request; the number of milliseconds between the time that the client established the connection with the proxy and the time that the proxy sent the last byte of the response back to the client.
3	The IP address of the client's host machine.
4	The cache result code; how the cache responded to the request: HIT, MISS, and so on. Cache result codes are described in *Cache result codes in Squid- and Netscape-format log files*, page 259. The proxy response status code (the HTTP response status code from Content Gateway to client).
5	The length of the Content Gateway response to the client in bytes, including headers and content.
6	The client request method: GET, POST, and so on.
7	The client request canonical URL; blanks and other characters that might not be parsed by log analysis tools are replaced by escape sequences. The escape sequence is a percentage sign followed by the ASCII code number of the replaced character in hex.
8	The authenticated client's user name. A hyphen (-) means that no authentication was required.
9	The proxy hierarchy route; the route Content Gateway used to retrieve the object. The proxy request server name; the name of the server that fulfilled the request. If the request was a cache hit, this field contains a hyphen (-).
10	The proxy response content type; the object content type taken from the Content Gateway response header.

Netscape examples

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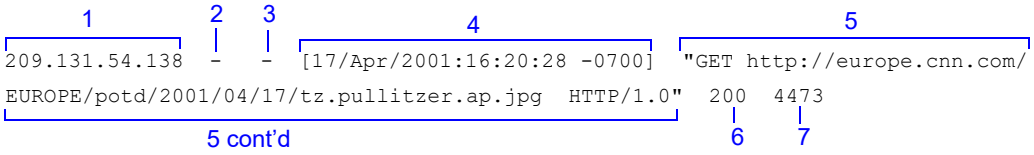
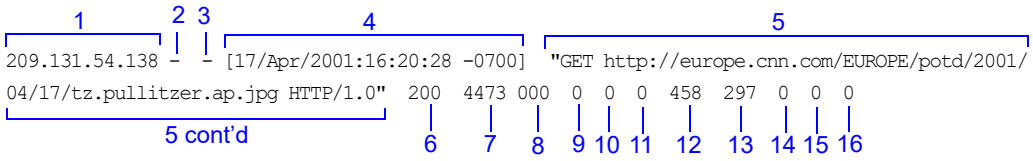
Netscape Common format

The following figure shows a sample log entry in a **common.log** file. The table below describes each field.



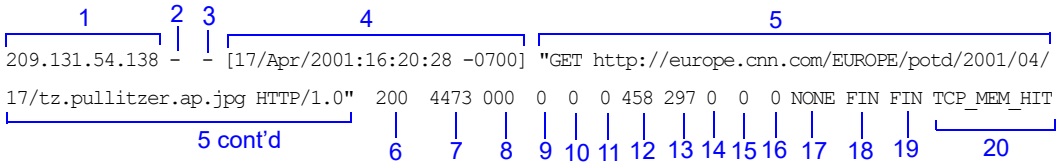
Netscape Extended format

The following figure shows a sample log entry in an **extended.log** file. The table below describes each field.



Netscape Extended-2 format

The following figure shows a sample log entry in an **extended2.log** file. The table below describes each field.



Field	Description
	Netscape Common
1	The IP address of the client's host machine.
2	This hyphen (-) is always present in Netscape log entries.
3	The authenticated client user name. A hyphen (-) means no authentication was required.
4	The date and time of the client's request, enclosed in brackets.

Field	Description
5	The request line, enclosed in quotes.
6	The proxy response status code (HTTP reply code).
7	The length of the Content Gateway response to the client in bytes.
	Netscape Extended
8	The origin server's response status code.
9	The server response transfer length; the body length in the origin server's response to the proxy, in bytes.
10	The client request transfer length; the body length in the client's request to the proxy, in bytes.
11	The proxy request transfer length; the body length in the proxy request to the origin server.
12	The client request header length; the header length in the client's request to the proxy.
13	The proxy response header length; the header length in the proxy response to the client.
14	The proxy request header length; the header length in the proxy request to the origin server.
15	The server response header length; the header length in the origin server's response to the proxy.
16	The time Content Gateway spent processing the client request; the number of seconds between the time that the client established the connection with the proxy and the time that the proxy sent the last byte of the response back to the client.
	Netscape Extended-2
17	The proxy hierarchy route; the route Content Gateway used to retrieve the object.
18	The client finish status code: FIN if the client request completed successfully or INTR if the client request was interrupted.
19	The proxy finish status code: FIN if the Content Gateway request to the origin server completed successfully or INTR if the request was interrupted.
20	The cache result code; how the Content Gateway cache responded to the request: HIT, MISS, and so on. Cache result codes are described in *Cache result codes in Squid- and Netscape-format log files*, page 259.

Cache result codes in Squid- and Netscape-format log files

Cache result codes in the Squid and Netscape log files:

Cache Result Code	Description
TCP_HIT	Indicates that a valid copy of the requested object was in the cache and that the proxy sent the object to the client.
TCP_MISS	Indicates that the requested object was not in the cache and that the proxy retrieved the object from the origin server or from a parent proxy and sent it to the client.
TCP_REFRESH_HIT	Indicates that the object was in the cache but was stale. Content Gateway made an if-modified-since request to the origin server and the origin server sent a 304 not-modified response. The proxy sent the cached object to the client.
TCP_REF_FAIL_HIT	Indicates that the object was in the cache but was stale. Content Gateway made an if-modified-since request to the origin server but the server did not respond. The proxy sent the cached object to the client.
TCP_REFRESH_MISS	Indicates that the object was in the cache but was stale. Content Gateway made an if-modified-since request to the origin server and the server returned a new object. The proxy served the new object to the client.
TCP_CLIENT_REFRESH	Indicates that the client issued a request with a no-cache header. The proxy obtained the requested object from the origin server and sent a copy to the client. Content Gateway refreshes any previous copy of the object in the cache.
TCP_IMS_HIT	Indicates that the client issued an if-modified-since request and the object was in the cache and fresher than the IMS date, or an if-modified-since to the origin server found that the cache object was fresh. The proxy served the cached object to the client.
TCP_IMS_MISS	Indicates that the client issued an if-modified-since request and the object was either not in cache or was stale in cache. The proxy sent an if-modified-since request to the origin server and received the new object. The proxy sent the updated object to the client.
TCP_SWAPFAIL	Indicates that the object was in the cache but could not be accessed. The client did not receive the object.
ERR_CLIENT_ABORT	Indicates that the client disconnected before the complete object was sent.

Cache Result Code	Description
ERR_CONNECT_FAIL	Indicates that Content Gateway could not reach the origin server.
ERR_DNS_FAIL	Indicates that the Domain Name Server could not resolve the origin server name, or that no Domain Name Server could be reached.
ERR_INVALID_REQ	Indicates that the client HTTP request was invalid. Content Gateway forwards requests with unknown methods to the origin server.
ERR_READ_TIMEOUT	Indicates that the origin server did not respond to the Content Gateway request within the timeout interval.
ERR_PROXY_DENIED	Indicates that client service was denied by access control configuration.
ERR_UNKNOWN	Indicates that the client connected but subsequently disconnected without sending a request.

A Statistics

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This section describes the following statistics accessed on the Content Gateway manager **Monitor** tab:

- *My Proxy*, page 261
- *Protocols*, page 267
- *Security*, page 270
- *Subsystems*, page 275
- *Networking*, page 277
- *Performance*, page 282
- *SSL*, page 284

My Proxy

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My Proxy statistics are divided into the following categories:

- *Summary*, page 262
- *Node*, page 263
- *Graphs*, page 264
- *Alarms*, page 265
- *Diagnostics*, page 265

Summary

Statistic/Field	Description
	Subscription Details
Feature	Lists available features, such as analytic options, threat detection, and the file sandbox.
Purchased Status	Indicates if a feature has been purchased.
Expiration Date	If a feature has been purchased, displays the expiration date of the subscription.
	More Detail
Subscription key	Displays the subscription key. See *Entering your subscription key*, page 15.
Last successful subscription download time	Displays the time of the last successful validation of the subscription key. The check is made once a day.
Connection status	Displays the Content Gateway connection status to Policy Server, Policy Broker, and Filtering Service.
Registration status	Displays the Content Gateway registration status with the Forensics Repository.
	Scanning Data Files
Engine Name	Displays the name of each scanning engine.
Engine Version	Displays the version number of the scanning engine.
Data File Version	Displays the version number of the data file currently in use by the scanning engine.
Last update	Displays the time and date when Content Gateway last successfully loaded that analytics data files, settings, and policies.
Last time Content Gateway loaded data	Displays the time and date when Content Gateway last successfully loaded databases, settings, and policies.
Last time Content Gateway checked for updates	Displays the time and date when Content Gateway last successfully communicated with the download server to check for data file updates.
	Node Details
Node	Name of the Content Gateway node or cluster.
On/Off	Indicates if the proxy and manager services are running.
Objects Served	The total number of objects served by the node.
Ops/Sec	The number of operations per second processed by the node.
Hit Rate	The percentage of HTTP requests served from the cache, averaged over the past 10 seconds.

Statistic/Field	Description
Throughput (Mbit/sec)	The number of megabits per second passing through the node (and cluster). The proxy updates the throughput statistic after it transfers an entire object. For larger files, the byte count increases sharply at the end of a transfer. The complete number of bytes transferred is attributed to the last 10-second interval, although it can take several minutes to transfer the object. This transient inaccuracy is more noticeable with a light load.
HTTP Hit (ms)	The amount of time it takes for an HTTP object that is fresh in the cache to be served to the client.
HTTP Miss (ms)	The amount of time it takes for an HTTP object that is not in the cache or is stale to be served to the client.
	More Detail
cache hit rate	The percentage of HTTP requests served from the cache, averaged over the past 10 seconds. This value is refreshed every 10 seconds.
errors	The percentage of requests that end in early hangups.
aborts	The percentage of aborted requests.
active clients	The current number of open client connections.
active servers	The current number of open origin server connections.
node IP address	The IP address assigned to the node. If virtual IP addressing is enabled, several virtual IP addresses could be assigned to this node.
cache free space	The amount of free space in the cache.
HostDB hit rate	The ratio of host database hits to total host database lookups, averaged over a 10-second period.

Node

Browser limitations require configuring a specific port in order for these graphs to display properly. The Node and Graphs options are disabled until a port is specified in records.config (in /opt/WCG/config, by default).

1. Update this variable to enable the Node and Graphs pages:

   ```
   proxy.config.admin.overseer_port INT ##
   ```

   where ## is a valid port number.
2. Restart Content Gateway.

If the node is part of a cluster, two sets of statistics are shown:

- Information about the single node and

- Information showing an average value for all nodes in the cluster.

Click the name of a statistic to display the information in graphical format.

Statistic	Description
	Node Summary
Status	Indicates if Content Gateway is running on this node (active or inactive).
Up Since	Date and time Content Gateway was started.
Clustering	Indicates if clustering is on or off on this node.
	Cache
Document Hit Rate	Ratio of cache hits to total cache requests, averaged over 10 seconds. This value is refreshed every 10 seconds.
Bandwidth Savings	Ratio of bytes served from the cache to total requested bytes, averaged over 10 seconds. This value is refreshed every 10 seconds.
Cache Percent Free	Ratio of cache free space to total cache space.
	In Progress
Open Server Connections	Number of currently open origin server connections.
Open Client Connections	Number of currently open client connections.
Cache Transfers in Progress	Number of cache transfers (cache reads and writes) in progress.
	Network
Client Throughput (Mbit/Sec)	Number of megabits per second passing through the node (and cluster).
Transactions per Second	Number of HTTP transactions per second.
	Name Resolution
Host Database Hit Rate	Ratio of host database hits to total host database lookups, averaged over 10 seconds. This value is refreshed every 10 seconds.
DNS Lookups per Second	Number of DNS lookups per second.

Graphs

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Browser limitations require configuring a specific port in order for these graphs to display properly. The Node and Graphs options are disabled until a port is specified in records.config (in /opt/WCG/config, by default).

1. Update this variable to enable the Node and Graphs pages:

   ```
   proxy.config.admin.overseer_port INT ##
   ```

   where ## is a valid port number.
2. Restart Content Gateway.

The Graphs page displays the same statistics listed on the *Node* page (cache performance, current connections and transfers, network, and name resolution) but in graphical format. You can choose the statistics you want to present in a graph. See *Viewing statistics in the Content Gateway manager*, page 111.

Important

The graph is displayed in your browser using a Java applet. You should have the latest version of Java installed on your PC (at least version 1.7). To validate your access to Content Gateway statistics, you will be prompted for Content Gateway logon credentials.

Alarms

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Content Gateway signals an alarm when it detects a problem (for example, if the space allocated to event logs is full or if Content Gateway cannot write to a configuration file) and displays a description of the alarm in the alarm message window. In addition, the **Alarm! [pending]** bar at the top of the Content Gateway manager display indicates when alarms are detected and how many alarms exist.

After you have read an alarm message, click **Clear** in the alarm message window to dismiss the alarm. Clicking **Clear** only dismisses alarm messages; it does not actually resolve the cause of the alarms.

For information about working with alarms, see *Working with alarms*, page 112.

Diagnostics

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Use the tools provided to help diagnose communication or connection issues, trace network packets, or capture network packets.

- *Automatic diagnostic tests*, page 265
- *Manual diagnostic tests*, page 266

Automatic diagnostic tests

By default, the page opens to the **Automatic** tab. Click **Run Diagnostics** to execute all of the tests listed in the table. Connectivity is tested from the Content Gateway host machine to each of the servers listed under **Test**. In addition, the availability of the DNS servers is confirmed.

- The IPv4 default gateway
- The IPv6 default gateway
- Your primary DNS server
- Your secondary DNS server
- download.forcepoint.com (a download server)
- ddsdom.websense.com (a download server)
- ddsint.websense.com (a download server)
- my.websense.com (customer account portal)

Once the diagnostics are run, additional information is provided:

- **Result** indicates whether the test is running, passed, failed, or could not complete.
- **Latency** provides the round-trip latency of the Ping command used to test the connection. The value, reported in milliseconds, is the amount of time between the command being sent and the response being received from the server.

  An empty latency value does not necessarily indicate a problem. Rather, it indicates either (a) that the test passed, but the packet that holds the value was banned by something in the network, or (b) that the test failed, and thus no latency value could be obtained.

  If the value seems high (a full 10 seconds, for example) when compared to other latency values, it may indicate a problem in the network.
- **Details** offers additional information for any test that failed or could not complete.

Below the table, the Last update information reflects the date and time the connections were last tested. Each time you access the page, the results of the last test will display.

Manual diagnostic tests

The **Manual** tab offers 4 commands typically run from the Linux command line.

- **Ping**, used to determine if a remote device can be reached across the network.
- **Traceroute**, used to determine the path network packets take and measure delays across the network.
- **NSlookup**, used to obtain domain name or IP address mapping.
- **TCPDump**, used to analyze network packets.

Click the radio button next to the command you want to execute and enter parameters for the command in the entry field provided.

- Enter a server name or IP address for **Ping** or **Traceroute**.
- Enter a server name for **NSlookup**.
- Enter valid parameters for **TCPDump**. For additional information about using TCPDump with Content Gateway, see this article.

Click the **Run** button next to your selected command to execute the test. The results for Ping, Traceroute, and NSlookup display in the **Test Results** section at the bottom of the pane.

Test results for TCPDump are typically too long to easily display and review in the Test Results window. When TCPDump is run, the Test Results window simply indicates the success or failure of the command.

As TCPDump runs, output is written to /opt/WCG/logs/tcpdump.pcap. This file is overwritten each time TCPDump is executed. When a test is successful, a link is provided so that you can download and view or save a copy of the most recent file.

To avoid disk space problems, tcpdump.pcap is limited to 10,000 packets. Once that limit is reached, no additional output is written to the file.

Important

TCPDump uses a lot of system resources. Try to avoid using it during peak hours when the system is busy.

As each command executes, the **Run** button becomes a **Stop** button. Click **Stop** to abort the command.

Protocols

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Protocol statistics are divided into the following categories:

- *HTTP*, page 267
- *FTP*, page 269

For *SSL* statistics, click the SSL button at the bottom of the Monitor tab.

HTTP

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Statistic	Description
	General
Client	
Total Document Bytes	Total amount of HTTP data served to clients since installation.
Total Header Bytes	Total amount of HTTP header data served to clients since installation.
Total Connections	Total number of HTTP client connections since installation.
Current Connections	Current number of HTTP client connections
Transactions in Progress	Total number of HTTP client transactions in progress.

Statistic	Description
Server	
Total Document Bytes	Total amount of HTTP data received from origin servers since installation.
Total Header Bytes	Total amount of HTTP header data received from origin servers since installation.
Total Connections	Total number of HTTP server connections since installation.
Current Connections	Current number of HTTP server connections
Transactions in Progress	Total number of HTTP server connections currently in progress.
	Transaction
Hits	
Fresh	Percentage of hits that are fresh and their average transaction times.
Stale Revalidated	Percentage of hits that are stale and revalidated and turn out to be still fresh and served, and their average transaction times.
Misses	
Now Cached	Percentage of requests for documents that were not in the cache (but are now) and their average transaction times.
Server No Cache	Percentage of requests for HTTP objects that were not in the cache, but have server no-cache headers (cannot be cached); and their average transaction times.
Stale Reloaded	Percentage of misses that are revalidated and turn out to be changed, reloaded, and served, and their average transaction times.
Client No Cache	Percentage of misses with client no-cache headers and their average transaction times.
Errors	
Connection Failures	Percentage of connect errors and their average transaction times.
Other Errors	Percentage of other errors and their average transaction times.
Aborted Transactions	
Client Aborts	Percentage of client-aborted transactions and their average transaction times.
Questionable Client Aborts	Percentage of transactions that could possibly be client aborted and their average transaction times.
Partial Request Hangups	Percentage of early hangups (after partial requests) and their average transaction times.

Statistic	Description
Pre-Request Hangups	Percentage of pre-request hangups and their average transaction times.
Pre-Connect Hangups	Percentage of pre-connect hangups and their average transaction times.
Other Transactions	
Unclassified	Percentage of unclassified transactions and their average transaction times.
	FTP over HTTP
Connections	
Open Server Connections	Number of open connections to the FTP server.
Successful PASV Connections	Number of successful PASV connections since installation.
Failed PASV Connections	Number of failed PASV connections since installation.
Successful PORT Connections	Number of successful PORT connections since installation.
Failed PORT Connections	Number of failed PORT connections since installation.
Cache Statistics	
Hits	Number of HTTP requests for FTP objects served from the cache.
Misses	Number of HTTP requests for FTP objects forwarded directly to the origin server because the object is not in the cache or is stale.
Lookups	Number of times Content Gateway looked up an HTTP request for an FTP object in the cache.

FTP

Statistic	Description
	Client
Open Connections	Number of client connections currently open.
Bytes Read	Number of client request bytes read since installation.
Bytes Written	Number of client request bytes written since installation.
	Server
Open Connections	Number of FTP server connections currently open.

Statistic	Description
Bytes Read	The number of bytes read from FTP servers since installation.
Bytes Written	Number of bytes written to the cache since installation.

Security

Help | Content Gateway | v8.5.x

Security statistics are divided into the following categories:

- *Integrated Windows Authentication*, page 270
- *LDAP* , page 272
- *Legacy NTLM* , page 273
- *SOCKS*, page 274
- *Web DLP*, page 274

Note
Even when multiple authentication rules are used, Content Gateway reports authentication statistics discreetly for each authentication method (IWA, LDAP, Legacy NTLM).

Integrated Windows Authentication

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Statistic	Description
	Diagnostic Test This function runs diagnostic tests on the Kerberos connection to the selected domain. Results are displayed on screen and written to /opt/WCG/logs/content_gateway.out and /opt/WCG/logs/smbadmin.log.
Domain drop down box	Select a joined domain. Unless Rule-Based Authentication is configured, there will only be 1 joined domain.
Run Test button	Click to initiate a test.
	Active Directory Joined Domains list Lists all joined AD domains. The **Content Gateway Hostname DNS** is the name that clients must specify in their browser proxy settings for Kerberos authentication to occur.

Statistic	Description
	Kerberos request counters
Total Kerberos requests	The total number of Kerberos authentication requests.
Authentication succeeded	The number of Kerberos authentication requests that resulted in successful authentication.
Authentication failed	The number of Kerberos authentication requests that resulted in authentication failure.
Kerberos errors	The number of Kerberos process errors.
	NTLM request counters
Total NTLM requests	The total number of NTLM authentication requests.
Authentication succeeded	The number of NTLM authentication requests that resulted in successful authentication.
Authentication failed	The number of NTLM authentication requests that resulted in authentication failure.
NTLM request errors	The number of NTLM process errors.
NTLM within negotiate requests	The number of NTLM requests encapsulated in Negotiate requests.
	Basic authentication request counters
Total basic authentication requests	The total number of basic authentication requests.
Authentication succeeded	The number of basic authentication requests that resulted in successful authentication.
Authentication failed.	The number of basic authentication requests that resulted in authentication failure.
Basic authentication request errors	The number of basic authentication process errors.
	Performance counters
Kerberos - Average time per transaction	The average time, in milliseconds, to complete a Kerberos transaction.
NTLM - Average time per transaction	The average time, in milliseconds, to complete a NTLM transaction.
Basic - Average time per transaction	The average time, in milliseconds, to complete a basic transaction.
Average helper latency per transaction	The average time for Samba to process an authentication request.

Statistic	Description
Time authentication spent offline	The time, in seconds, that Content Gateway was unable to perform NTLM authentication due to service or connectivity failures. (This measure does not apply to Kerberos because no communication with the DC is needed.) If the Fail Open option is enabled (*Global authentication options*), proxy requests may proceed without authentication. The counter is incremented when connectivity is reestablished after a failure.
Number of times authentication servers or services went offline	The number of times that connectivity with authentication servers or services has been lost.
	Top lists counters These user authentication lists provide a view into which User-Agent values and client IP addresses are most active. Four counters tally the top 20 User-Agent and client IP addresses that are passing or failing user authentication.
Button: Reset Top Lists to Zero	Resets all Top Lists counters to zero.
Top User-Agents passing authentication	Lists the top 20 User-Agent matches by number of authentication attempts that pass authentication.
Top User-Agents failing authentication	Lists the top 20 User-Agent matches by number of authentication attempts that fail authentication.
Top Client IP addresses passing authentication	Lists the top 20 client IP addresses by number of authentication attempts that pass authentication.
Top Client IP addresses failing authentication	Lists the top 20 client IP addresses by number of authentication attempts that fail authentication.

LDAP

Help | Content Gateway | v8.5.x

Statistic	Description
	Cache
Hits	Number of hits in the LDAP cache.
Misses	Number of misses in the LDAP cache.
	Errors
Server	Number of LDAP server errors.
	Successful Authentications
Authentication Succeeded	Number of times authentication was successful.

Statistic	Description
	Unsuccessful Authentications
Authentication Denied	Number of times the LDAP Server denied authentication.
Authentication Timeouts	Number of times authentication timed out.
Authentication Cancelled	Number of times authentication was terminated after LDAP authentication was started and before it was completed. **Note:** This does **not** count the number of times that an authentication request was cancelled by the client by clicking “Cancel” in the dialog box that prompts for credentials.

Legacy NTLM

Help | Content Gateway | v8.5.x

Statistic	Description
	Cache
Hits	Number of hits in the NTLM cache.
Misses	Number of misses in the NTLM cache.
	Errors
Server	Number of NTLM server errors.
	Successful Authentications
Authentication Succeeded	Number of times authentication was successful.
	Unsuccessful Authentications
Authentication Denied	Number of times the NTLM server denied authentication.
Authentication Cancelled	Number of times authentication was cancelled.
Authentication Rejected	Number of times authentication failed because the queue was full.
	Queue Size
Authentication Queued	Number of requests that are currently queued because all of the domain controllers are busy.

SOCKS

Help | Content Gateway | v8.5.x

Statistic	Description
On-Appliance SOCKS Server (when Content Gateway is on an appliance)	Indicates whether the on-appliance SOCKS server is on (enabled) or off (disabled).
Unsuccessful Connections	Number of unsuccessful connections to the SOCKS server since Content Gateway was started.
Successful Connections	Number of successful connections to the SOCKS server since Content Gateway was started.
Connections in Progress	Number of connections to the SOCKS server currently in progress.

Web DLP

Help | Content Gateway | v8.5.x

Statistic	Description
Total Posts	Total number of posts sent to Web DLP.
Total Analyzed	Total number of posts analyzed by Web DLP.
FTP Analyzed	Total number of FTP requests analyzed by DLP.
Blocked Requests	Total number of requests blocked after analysis and policy enforcement.
Allowed Requests	Total number of requests allowed after analysis and policy enforcement.
Failed Requests	Total number of posts sent to Web DLP that timed out or otherwise failed to complete.
Huge Requests	Total number of requests that exceeded the maximum transaction size.
Tiny Requests	Total number of requests that were smaller than the minimum transaction size.
Decrypted Requests	Total number of SSL requests decrypted and sent to Web DLP.
Total Bytes Scanned	Total number of bytes scanned by Web DLP.
Average Response Time	Average time needed to by Web DLP to complete a scan since the last time Content Gateway was started.

Subsystems

Subsystems statistics are divided into the following categories:

- *Cache* , page 275
- *Clustering*, page 276
- *Logging*, page 276

Cache

> **Note**
> Cache statistics may be non-zero even if all content sent to Content Gateway is not cacheable. Content Gateway performs a cache-read even if the client sends a no-cache control header.

Statistic	Description
	General
Bytes Used	Number of bytes currently used by the cache.
Cache Size	Number of bytes allocated to the cache.
	Ram Cache
Bytes	Total size of the RAM cache, in bytes.
Hits	Number of document hits from the RAM cache.
Misses	Number of document misses from the RAM cache. The documents may be hits from the cache disk.
	Reads
In Progress	Number of cache reads in progress (HTTP and FTP).
Hits	Number of cache reads completed since Content Gateway was started (HTTP and FTP).
Misses	Number of cache read misses since Content Gateway was started (HTTP and FTP).
	Writes
In Progress	Number of cache writes in progress (HTTP and FTP).
Successes	Number of successful cache writes since Content Gateway was started (HTTP and FTP).

Statistic	Description
Failures	Number of failed cache writes since Content Gateway was started (HTTP and FTP).
	Updates
In Progress	Number of HTTP document updates in progress. An update occurs when the Content Gateway revalidates an object, finds it to be fresh, and updates the object header.
Successes	Number of successful cache HTTP updates completed since Content Gateway was started.
Failures	Number of cache HTTP update failures since Content Gateway was started.
	Removes
In Progress	Number of document removes in progress. A remove occurs when the Content Gateway revalidates a document, finds it to be deleted on the origin server, and deletes it from the cache (includes HTTP and FTP removes).
Successes	Number of successful cache removes completed since Content Gateway was started (includes HTTP and FTP removes).
Failures	Number of cache remove failures since Content Gateway was started (includes HTTP and FTP removes).

Clustering

Help | Content Gateway | v8.5.x

Statistic	Description
Clustering Nodes	Number of clustering nodes.

Logging

Help | Content Gateway | v8.5.x

Statistic	Description
Currently Open Log Files	Number of event log files (formats) that are currently being written.
Space Used for Log Files	Current amount of space being used by the logging directory, which contains all of the event and error logs.
Number of Access Events Logged	Number of access events that have been written to log files since Content Gateway installation. This counter represents one entry in one file. If multiple formats are being written, a single access creates multiple event log entries.

Statistic	Description
Number of Access Events Skipped	Number of access events skipped (because they were filtered out) since Content Gateway installation.
Number of Error Events Logged	Number of access events that have been written to the event error log since Content Gateway installation.

Networking

Networking statistics are divided into the following categories:

- *System*, page 277
- *ARM*, page 278
- *ICAP*, page 279
- *WCCP*, page 279
- *DNS Resolver*, page 281
- *Virtual IP*, page 281

System

Statistic/Field	Description
	General
Hostname	The hostname assigned to this Content Gateway machine.
Search Domain	Search domain that this Content Gateway machine uses.
IPv4 or IPv6	
Default Gateway	IP address of the default gateway used to forward packets from this Content Gateway machine to other networks or subnets.
Primary DNS	IP address of the primary DNS server that this Content Gateway machine uses to resolve host names.
Secondary DNS	Secondary DNS server that this Content Gateway machine uses to resolve host names.
Tertiary DNS	Third DNS server that this Content Gateway machine uses to resolve host names.
	NIC *<interface_name>*
Status	Indicates whether the NIC is up or down.
Start on Boot	Indicates whether the NIC is configured to start on boot.
IPv4 or IPv6	

Statistic/Field	Description
IP address	The assigned IP address of the NIC.
Netmask	The netmask that goes with the IP address.
Gateway	The configured default gateway IP address for the NIC.

ARM

Statistic	Description
	Network Address Translation (NAT) Statistics
Client Connections Natted	Number of client connections redirected transparently by the ARM.
Client Connections in Progress	Number of client connections currently in progress with the ARM.
Total Packets Natted	Number of packets translated by the ARM.
DNS Packets Natted	Number of DNS packets translated by the ARM.
	Bypass Statistics
Total Packets Bypassed	Total number of packets bypassed by the ARM.
Packets Dynamically Bypassed	Total number of packets dynamically bypassed. See *Dynamic bypass rules*, page 72.
DNS Packets Bypassed	Number of DNS packets bypassed by the ARM.
Packets Shed	Total number of packets shed.
	HTTP Bypass Statistics
Bypass on Bad Client Request	Number of requests forwarded directly to the origin server because Content Gateway encountered non-HTTP traffic on port 80.
Bypass on 400	Number of requests forwarded directly to the origin server because an origin server returned a 400 error.
Bypass on 401	Number of requests forwarded directly to the origin server because an origin server returned a 401 error.
Bypass on 403	Number of requests forwarded directly to the origin server because an origin server returned a 403 error.
Bypass on 405	Number of requests forwarded directly to the origin server because an origin server returned a 405 error.
Bypass on 406	Number of requests forwarded directly to the origin server because an origin server returned a 406 error.

Statistic	Description
Bypass on 408	Number of requests forwarded directly to the origin server because an origin server returned a 408 error.
Bypass on 500	Number of requests forwarded directly to the origin server because an origin server returned a 500 error.

ICAP

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Statistic	Description
Total Posts	Total number of posts sent to Forcepoint DLP.
Total Analyzed	Total number of posts analyzed by Forcepoint DLP.
FTP Analyzed	Total number of FTP requests analyzed by Forcepoint DLP.
Blocked Requests	Total number of requests blocked after analysis and policy enforcement.
Allowed Requests	Total number of requests allowed after analysis and policy enforcement.
Failed Requests	Total number of posts sent to Forcepoint DLP that timed out or otherwise failed to complete.
Huge Requests	Total number of requests that exceeded the maximum transaction size.
Decrypted Requests	Total number of SSL requests decrypted and sent to Forcepoint DLP.

WCCP

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WCCP v2 statistics are displayed only if WCCP version v2 is enabled.

Statistic/Field	Description
	WCCP v2.0 Statistics
WCCP Fragmentation	
Total Fragments	Total number of WCCP fragments.
Fragmentation Table Entries	Number of entries in the fragmentation table.
Out of Order Fragments	Number of fragments out of order.
Matches	Number of fragments that match a fragment in the fragmentation table.

Statistic/Field	Description
Service group name	
Service Group ID	Service Group ID for the protocol being serviced.
Configured mode	The forward, return and assignment settings.
IP Address	IP address to which the router is sending traffic.
Leader's IP Address	IP address of the leader in the WCCP cache farm.
Number of Buckets Assigned	Number of buckets assigned to this Content Gateway node. Determined by the value of Weight and the current active nodes.
Number of Caches	The number of caches in the WCCP cache farm.
Number of Routers	The number of routers sending traffic to this Content Gateway node.
Router IP Address	IP address of the WCCP router sending traffic to Content Gateway. **Note:** If the WCCP router is configured with multiple IP addresses, as for example when the router is configured to support multiple VLANs, the IP address reported in **Monitor > Networking > WCCP** statistics, and in packet captures, may differ from the IP address configured here. This is because the router always reports traffic on the highest active IP address. One way to get the router to always report the same IP address is to set the router's loopback address to a value higher than the router's highest IP address, then the loopback address is always reported as the router's IP address. This is the recommended configuration.
Router ID Received	The number of times that Content Gateway has received WCCP protocol messages from the router(s).
Router Negotiated mode	The return, forward, and assignment modes negotiated with the router.

DNS Proxy

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Statistic	Description
Total Requests	Total number of DNS requests received from clients.
Hits	Number of DNS cache hits.
Misses	Number of DNS cache misses.

DNS Resolver

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Statistic	Description
	DNS Resolver
Total Lookups	Total number of DNS lookups (queries to name servers) since installation.
Successes	Total number of successful DNS lookups since installation.
Average Lookup Time (ms)	Average DNS lookup time.
	Host Database
Total Lookups	Total number of lookups in the Content Gateway host database since installation.
Total Hits	Total number of host database lookup hits since installation.
Average TTL (min)	Average time to live in minutes.

Virtual IP

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The Virtual IP table displays the virtual IP addresses that are managed by the proxies in the cluster.

Client Connection Status

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Statistic	Description
	Clients Connections
Current Unique Clients Connected	
Total Unique Clients that have Connected	Total since Content Gateway last started.
Total Clients that have Exceeded the Limits	Total clients that exceeded the connection limits since Content Gateway last started. See Configure > Connection Management > Client Connection Control.
Total Clients for which Connections were Closed	Total since Content Gateway last started.

Performance

Performance graphs allow you to monitor Content Gateway performance and analyze network traffic. Performance graphs also provide information about virtual memory usage, client connections, document hit rates, hit and miss rates, and so on. Performance graphs are created by the Multi Router Traffic Grapher tool (MRTG). MRTG uses 5-minute intervals to accumulate statistics.

Performance graphs provide the following information.

Statistic	Description
Overview	Displays a subset of the graphs available.
Daily	Displays graphs that provide historical information for the current day.
Weekly	Displays graphs that provide historical information for the current week.
Monthly	Displays graphs that provide historical information for the current month.
Yearly	Displays graphs that provide historical information for the current year.

Important

To run the Multi Router Traffic Grapher tool in Linux, you must have Perl version 5.005 or later installed on your Content Gateway system.

A description is given adjacent to each graph. Click on a graph to get the daily, weekly, monthly, and yearly on a single screen.

These graphs are available (sorted alphabetically):

- Active Client Connections
- Active Native FTP Client Connections
- Active Origin Server Connections
- Active Parent Proxy Connections
- Analytic Response Latency
- Bandwidth Savings
- Cache Read
- Cache Reads Per Second
- Cache Writes

- Cache Writes Per Second
- Completed Client Transactions Per Second
- Content Gateway Manager Memory Usage
- Content Gateway Uptime
- CPU Available
- CPU Busy
- Web DLP Module Memory Usage
- Disk Cache Usage
- DNS Cache Usage
- DNS Lookup Latency
- HTTP Abort Latency
- HTTP and HTTPS Transactions Per Second
- HTTP Cache Hit Latency
- HTTP Cache Miss Latency
- HTTP Connection Errors & Aborts (Count)
- HTTP Connection Errors & Aborts (Percentage)
- HTTP Document Hit Rate
- HTTP Error Latency
- HTTP Hits & Misses (Count)
- HTTP Hits & Misses (Percentage)
- HTTP POST and FTP PUT Transactions Per Second
- IWA Basic & NTLM Latency
- IWA Negotiate Latency
- Microsoft Internet Explorer Browser Requests (Percentage)
- MRTG Runtime
- Network Reads
- Network Writes
- Origin Server Connection Latency
- Outbound Analysis Latency
- RAM Cache Read I/O Hit Rate
- RAM Cache Usage
- System Memory
- TCP CLOSE_WAIT Connections
- TCP Connect Rate
- TCP ESTABLISHED Connections
- TCP FIN_WAIT_1 Connections
- TCP FIN_WAIT_2 Connections
- TCP LAST_ACK Connections

- TCP Segments Transmitted
- TCP Throughput
- TCP TIME_WAIT Connections
- Throughput in Bytes
- Throughput in Error and Dropped Packets
- Throughput in Packets
- Transaction Buffer Memory Usage
- URL Policy Lookup Latency
- WCCP Exceptional Input Fragments
- WCCP Fragment Table Size
- WCCP Input Fragments
- Scanned Transactions (Percentage)
- Slow Scanned Transactions
- Slow Transactions
- Content Gateway Memory Usage

SSL

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The following tabs monitor and report on SSL traffic.

SSL Key Data, page 284

CRL Statistics, page 285

Reports, page 286

SSL Key Data

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These fields provide information about SSL connections and activity.

Statistic/Field	Description
	SSL Inbound Key Data
Is alive	Online indicates that SSL support is enabled.
Current SSL connections	The number of active inbound SSL requests (browser to Content Gateway).
Total SSL server connections	The number of browser requests.
Total finished SSL server connections	The number of browser requests that resulted in decryption.

Statistic/Field	Description
Total SSL renegotiation requests sent by Content Gateway as a server	The number of browser requests renegotiated due to handshake failures or invalid certificates between the browser and Content Gateway.
	SSL Outbound Key Data
Is alive	Online indicates that SSL support is enabled.
Current SSL connections	The number of active outbound SSL requests (Content Gateway to origin server).
Total SSL client connections	The number of Content Gateway requests to origin servers.
Total finished SSL client connections	The number of requests where data went from Content Gateway to the origin server.
Total SSL renegotiation requests sent by Content Gateway as a client	The number of requests that were renegotiated due to handshake failures or invalid certificates between Content Gateway and the origin server
Total SSL session cache hits	The number of times that a request was validated by a key in the session cache.
Total SSL session cache misses	The number of times that a request could not be validated by a key in the session cache.
Total SSL session cache timeouts	The number of times that keys were removed from the session cache because the timeout period expired.

CRL Statistics

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These fields provide information about certificate status.

Statistic/Field	Description
	CRL Statistics
CRL list count	The number of certificates on the Certificate Revocation List. This list is downloaded every night. See *Keeping revocation information up to date*, page 149.
	OCSP Statistics
OCSP good count	The number of responses that certificates are valid.
OCSP unknown count	The number of OCSP responses where the certificate cannot be verified.
OCSP revoked count	The number of certificates found to have been revoked.

Reports

See *Creating SSL certificate authorities reports*, page 117, and *Creating an SSL incidents report*, page 117, for information about creating reports on certificate authorities or incidents.

B Commands and Variables

Content Gateway commands

Use the command line to execute individual commands and when scripting multiple commands in a shell.

Run commands as ‘root’.

Execute Content Gateway commands from the Content Gateway **bin** directory.

> **Note**
> If the Content Gateway **bin** directory is not in your path, prepend the command with:
>
> `./`
>
> For example:
>
> `./content_line -p`

Command	Description
`WCGAdmin start`	Starts the Content Gateway service
`WCGAdmin stop`	Stops the Content Gateway service
`WCGAdmin restart`	Stops the Content Gateway service and then starts it again
`WCGAdmin status`	Displays the status (running or not running) of the Content Gateway services: Content Cop, Content Gateway, Content Gateway Manager, and Analytics Server.
`WCGAdmin help`	Displays a list of the WCGAdmin commands
`content_line -h`	Displays the list of Content Gateway commands.

Command	Description
`content_line -p socket_path`	Specifies the location (directory and path) of the file used for Content Gateway command line and Content Gateway manager communication. The default path is **install_dir/config/cli**
`content_line -r variable`	Displays specific performance statistics or a current configuration setting. For a list of the variables you can specify, see *Content Gateway variables*, page 289.
`content_line -s variable -v value`	Sets configuration variables. *variable* is the configuration variable you want to change and *value* is the value you want to set. See *records.config*, page 413, for a list of the configuration variables you can specify.
`content_line -x`	Initiates a Content Gateway configuration file reread. Executing this command is similar to clicking **Apply** in the Content Gateway manager.
`content_line -y`	Clears Forcepoint dynamically signed certificates from the cache and the SSL sqlite database.
`content_line db_clear -y`	Clears Forcepoint dynamically signed certificates from the SSL sqlite database.
`content_line -M`	Restarts the **content_manager** process and the **content_gateway** process on all the nodes in a cluster.
`content_line -L`	Restarts the **content_manager** process and the **content_gateway** process on the local node.
`content_line -S`	Shuts down Content Gateway on the local node.
`content_line -U`	Starts Content Gateway on the local node.
`content_line -B`	Bounces Content Gateway cluster-wide. Bouncing Content Gateway shuts down and immediately restarts the proxy node-by-node.
`content_line -b`	Bounces Content Gateway on the local node. Bouncing Content Gateway shuts down and immediately restarts the proxy on the local node.
`content_line -W`	Enables WCCP router communication.
`content_line -w`	Disables WCCP router communication. After changing the Content Gateway WCCP configuration, or the router WCCP configuration, force WCCP communication down for 60 seconds to force WCCP to negotiate a new connection.
`content_line -N snapshot_name`	Perform a Content Gateway snapshot (backup). See *Taking configuration snapshots*, page 107.
`content_line -n snapshot_name`	Restore a Content Gateway snapshot. See *Restoring configuration snapshots*, page 108.

Content Gateway variables

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You can change the value of a specific configuration variable on the command line with the **content_line -s** command. The variables that can be set are described in *records.config*, page 413.

You can view statistics related to specific variables on the command line with the **content_line -r** command. See below for a list of variables.

See, also, *Viewing statistics from the command line*, page 112, and *Using the command-line interface*, page 17.

Statistics

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The following table lists the variables you can specify on the command line to view individual statistics. See *Statistics*, page 261 for additional information.

To view a statistic, at the prompt enter:

```
content_line -r <variable>
```

Statistic	Variable
	Summary
Node name	`proxy.node.hostname`
Objects served	`proxy.node.user_agents_total_documents_served`
Transactions per second	`proxy.node.user_agent_xacts_per_second`
	Node
Document hit rate	`proxy.node.cache_hit_ratio_avg_10s` `proxy.cluster.cache_hit_ratio_avg_10s`
Bandwidth savings	`proxy.node.bandwidth_hit_ratio_avg_10s` `proxy.cluster.bandwidth_hit_ratio_avg_10s`
Cache percent free	`proxy.node.cache.percent_free` `proxy.cluster.cache.percent_free`
Open origin server connections	`proxy.node.current_server_connections` `proxy.cluster.current_server_connections`
Open client connections	`proxy.node.current_client_connections` `proxy.cluster.current_client_connections`
Cache transfers in progress	`proxy.node.current_cache_connections` `proxy.cluster.current_cache_connections`
Client throughput (Mbits/sec)	`proxy.node.client_throughput_out` `proxy.cluster.client_throughput_out`

Statistic	Variable
Transactions per second	`proxy.node.http.user_agent_xacts_per_second` `proxy.cluster.http.user_agent_xacts_per_second`
DNS lookups per second	`proxy.node.dns.lookups_per_second` `proxy.cluster.dns.lookups_per_second`
Host database hit rate	`proxy.node.hostdb.hit_ratio_avg_10s` `proxy.cluster.hostdb.hit_ratio_avg_10s`
	HTTP
Total document bytes from client	`proxy.process.http.user_agent_response_document_total_size`
Total header bytes from client	`proxy.process.http.user_agent_response_header_total_size`
Total response header bytes to client from cache	`proxy.process.http.user_agent_response_from_cache_header_total_size`
Total response document bytes to client from cache	`proxy.process.http.user_agent_response_from_cache_document_total_size`
Total connections to client	`proxy.process.http.current_client_connections`
Current unique clients connected	`proxy.process.http.client.unique_clients.active`
Total unique clients that have connected	`proxy.process.http.client.unique_clients.total`
Total clients that exceeded limit	`proxy.process.http.client.exceeding_limit`
Total clients for which connections were closed	`proxy.process.http.client.closed_connections`
Open HTTP client connections	`proxy.process.http.current_active_http_client_connections`
Open HTTPS client connections	`proxy.node.process.http.current_active_https_client_connections`
Client Requests (IPv4 +IPv6)	`proxy.process.http.real_client_requests`
Client IPv6 Requests	`proxy.process.http.real_client_ipv6_requests`
Client transactions in progress	`proxy.process.http.current_client_transactions`
Total document bytes from origin server	`proxy.process.http.origin_server_response_document_total_size`
Total header bytes from origin server	`proxy.process.http.origin_server_response_header_total_size`
Total connections to origin server	`proxy.process.http.current_server_connections`

Statistic	Variable
Origin server transactions in progress	`proxy.process.http.current_server_transactions`
	FTP
Currently open FTP connections	`proxy.process.ftp.connections_currently_open`
Successful PASV connections	`proxy.process.ftp.connections_successful_pasv`
Unsuccessful PASV connections	`proxy.process.ftp.connections_failed_pasv`
Successful PORT connections	`proxy.process.ftp.connections_successful_port`
Unsuccessful PORT connections	`proxy.process.ftp.connections_failed_port`
	WCCP
Enabled	`proxy.config.wccp.enabled`
WCCP interface	`proxy.local.wccp2.ethernet_interface`
	Cache
Bytes used	`proxy.process.cache.bytes_used`
Cache size	`proxy.process.cache.bytes_total`
Lookups in progress	`proxy.process.cache.lookup.active`
Lookups completed	`proxy.process.cache.lookup.success`
Lookup misses	`proxy.process.cache.lookup.failure`
Reads in progress	`proxy.process.cache.read.active`
Reads completed	`proxy.process.cache.read.success`
Read misses	`proxy.process.cache.read.failure`
Writes in progress	`proxy.process.cache.write.active`
Writes completed	`proxy.process.cache.write.success`
Write failures	`proxy.process.cache.write.failure`
Updates in progress	`proxy.process.cache.update.active`
Updates completed	`proxy.process.cache.update.success`
Update failures	`proxy.process.cache.update.failure`
Removes in progress	`proxy.process.cache.remove.active`
Remove successes	`proxy.process.cache.remove.success`
Remove failures	`proxy.process.cache.remove.failure`
	Host DB
Total lookups	`proxy.process.hostdb.total_lookups`
Total hits	`proxy.process.hostdb.total_hits`

Statistic	Variable
Time TTL (min)	`proxy.process.hostdb.ttl`
	DNS
DNS total lookups	`proxy.process.dns.total_dns_lookups`
Average lookup time (ms)	`proxy.process.dns.lookup_avg_time`
DNS successes	`proxy.process.dns.lookup_successes`
	Cluster
Bytes read	`proxy.process.cluster.read_bytes`
Bytes written	`proxy.process.cluster.write_bytes`
Connections open	`proxy.process.cluster.connections_open`
Total operations	`proxy.process.cluster.connections_opened`
Network backups	`proxy.process.cluster.net_backup`
Clustering nodes	`proxy.process.cluster.nodes`
	SOCKS
Unsuccessful connections	`proxy.process.socks.connections_unsuccessful`
Successful connections	`proxy.process.socks.connections_successful`
Connections in progress	`proxy.process.socks.connections_currently_open`
	Logging
Currently open log files	`proxy.process.log2.log_files_open`
Space used for log files	`proxy.process.log2.log_files_space_used`
Number of access events logged	`proxy.process.log2.event_log_access`
Number of access events skipped	`proxy.process.log2.event_log_access_skip`
Number of error events logged	`proxy.process.log2.event_log_error`

C Configuration Options

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Options are grouped as follows on the left side of the Configure pane:

My Proxy, page 293

Protocols, page 306

Content Routing, page 320

Security, page 325

Subsystems, page 348

Networking, page 354

My Proxy

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The My Proxy options are:

Basic, page 294

Subscription, page 298

UI Setup, page 299

Snapshots, page 303

Logs, page 305

Basic

Configure > My Proxy > Basic > General

Restart	Restarts the proxy and manager services (the **content_gateway** and **content_manager** processes). You must restart the proxy and manager services after modifying certain configuration options. A message is displayed in the manager when a restart is required. **IMPORTANT:** In a cluster configuration, the **Restart** button restarts the proxy and manager services on all nodes in the cluster.
Proxy Name	Specifies the name of your Content Gateway node. By default, this is the hostname of the machine running Content Gateway. If this node is part of a cluster, this option specifies the name of the Content Gateway cluster. In a cluster, all nodes must share the same name. Valid characters for Proxy Name are: A-Z, a-z,0-9 and - .
Alarm email	Specifies the email address to which Content Gateway sends alarm notifications.
Features	
Protocols: FTP	When this option is enabled, Content Gateway accepts FTP requests from FTP clients. If this option is changed you must restart Content Gateway.
Protocols: HTTPS	Enables/disables Content Gateway HTTPS traffic management and security analysis. After selecting HTTPS **On**, you must provide additional information about the **Configure > Protocols > HTTPS** page and on the **Configure > SSL** pages. See *Working With Encrypted Data*, page 129.
Networking: WCCP	Enable this option to use a WCCP v2-enabled router for transparent redirection to Content Gateway. WCCP v1 is **not** supported. See *Transparent interception with WCCP v2 devices*, page 51. If you change this option, you must restart Content Gateway.
Networking: DNS Proxy	When this option is enabled, Content Gateway resolves DNS requests on behalf of clients. This option offloads remote DNS servers and reduces response time for DNS lookups. See *DNS Proxy Caching*, page 103.

Networking: Virtual IP	When this option is enabled, Content Gateway maintains a pool of virtual IP addresses that it assigns to the nodes in a cluster as necessary. See *Virtual IP failover*, page 90.
Networking: IPv6	When this option is enabled, Content Gateway provides support for IPv6. IPv6 addresses can be used on any dual stack Ethernet interface that services client and/or Internet traffic. IPv4 addresses must be used to communicate with all Forcepoint components. To see a complete description of the feature and an important list of restrictions, see *Content Gateway support for IPv6*, page 82.
Networking: Web DLP	Enables a connection to Forcepoint DLP. There are 2 options: ● Automatic registration through the Forcepoint management server ● ICAP communication to a remote Forcepoint DLP deployment (not recommended) See *Working With Web DLP*, page 119. If you change this option, you must restart Content Gateway.
Networking: Integration > Web DLP (integrated on-box)	Enables registration with the on-box Web DLP components and the Forcepoint management server. See *Registering Content Gateway with Forcepoint DLP*, page 121.
Networking: Web DLP: ICAP	Enables ICAP for use with Forcepoint DLP. See *Configuring the ICAP client*, page 125.
Security: SOCKS	When SOCKS is enabled, Content Gateway communicates with your SOCKS servers. See *Configuring SOCKS firewall integration*, page 173. If you change this option, you must restart Content Gateway.
Authentication: None	Content Gateway supports several types of user authentication. When this option is selected, the proxy does not perform user authentication. This is the default setting.
Authentication: Integrated Windows Authentication	When Integrated Windows Authentication (IWA) is enabled, users are authenticated by IWA before they are allowed access to content. See *Integrated Windows Authentication*, page 189. If you change this option, you must restart Content Gateway.
Authentication: LDAP	When LDAP is enabled, users are authenticated by an LDAP server before they are allowed access to content.See *LDAP authentication*, page 197. If you change this option, you must restart Content Gateway.

Authentication: Radius	When RADIUS is enabled, users are authenticated by a RADIUS server before they are allowed access to content. See *RADIUS authentication*, page 200. If you change this option, you must restart Content Gateway.
Authentication: Legacy NTLM	When legacy NTLM (NTLMSSP) is enabled, users in a Windows network are authenticated by a Domain Controller before they are allowed access to content. See *Legacy NTLM authentication*, page 195. If you change this option, you must restart Content Gateway.
Authentication: Rule-Based Authentication	When Rule-Based Authentication is enabled, users are authenticated based on the parameters of the rule that they match. Rule-based authentication supports multiple realm, multiple domain, and other user authentication scenarios. See *Rule-Based Authentication*, page 203. If you change this option, you must restart Content Gateway.
Authentication: Read authentication from child proxy	Enables or disables the reading of X-Authenticated-User and X-Forwarded-For header values in incoming requests. This option is disabled by default. Enable this option when Content Gateway is the parent (upstream) proxy in a chain and the child (downstream) proxy is sending X-Authenticated-User and X-Forwarded-For header values to facilitate authentication.
Authentication: Send authentication to parent proxy	Enables or disables the insertion of X-Authenticated-User header values in outgoing requests. This option is disabled by default. Enable this option when Content Gateway is the child (downstream) proxy in a chain and the parent (upstream) proxy wants X-Authenticated-User values to facilitate authentication. If this option is enabled, the user name will be sent only to a configured parent proxy. To send user names to all outbound requests, enable proxy.config.http.insert_xua_to_external.

Configure > My Proxy > Basic > Clustering

Cluster: Type	Specifies the clustering mode: Select **Single Node** to run this Content Gateway server as a single node. This node will not be part of a cluster. Select **Management Clustering** to activate management clustering mode. The nodes in the cluster share configuration information and you can administer all the nodes at the same time. For complete information about clustering, see *Clusters*, page 85. If you change this option, you must restart Content Gateway.
Cluster: Interface	Specifies the interface on which Content Gateway communicates with other nodes in the cluster. For example, **eth1**. It is recommended that you use a dedicated secondary interface. Node configuration information is multicast, in plain text, to other Content Gateway nodes on the same subnet. Therefore, as a best practice, clients should be located on a separate subnet from Content Gateway nodes (multicast communications for clustering are not routed). On appliances, P1 is the recommended interface. However, you may also use P2 if you are not using it for Internet egress traffic and want to isolate cluster management traffic. See *Changing clustering configuration*, page 86. If you change this option, you must restart Content Gateway.
Cluster: Multicast Group Address	Specifies the multicast group address on which Content Gateway communicates with its cluster peers. See *Changing clustering configuration*, page 86.

Subscription

Configure > My Proxy > Subscription > Subscription Management

Subscription Key	Displays the subscription key you received from Forcepoint LLC. If Content Gateway is used with Forcepoint Web Security, this is the subscription key you entered in the Web Security module of the Forcepoint Security Manager. If Content Gateway is deployed with only Forcepoint DLP, you must enter your Content Gateway subscription key in this field.

Configure > My Proxy > Subscription > Scanning

Policy Server	
IP address	The IP address of the Policy Server. This value is specified when Content Gateway is installed.
Port	The port used by Policy Server. The default port is 55806.
Filtering Service	
IP address	Specify the IP address of the Filtering Service. This value is specified when Content Gateway is installed.
Port	Specify the port used by Filtering Service. The default port is 15868.
Communication Timeout	Specifies the timeout, in milliseconds, in which Policy Server and Filtering Service must respond before a communication timeout condition occurs and the **Action for Communication Errors** setting is applied. The default value is 5000 ms (5 seconds).
Action for Communication Errors	
Permit traffic	Permits all traffic if communication with Policy Server or Filtering Service fails.
Block traffic	Blocks all traffic if communication with Policy Server or Filtering Service fails.

Scanning Data Files Update	
Delay time	Specifies the length of time scanning data file downloads are delayed. The default value is No delay. See the Scanning Data Files Update section of *Providing system information*.

UI Setup

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Configure > My Proxy > UI Setup > General

UI Port	Specifies the port on which browsers can connect to the Content Gateway manager. The default port is 8081. If you change this setting, you must restart Content Gateway.
HTTPS: Enable/Disable	Enables or disables support for SSL connections to the Content Gateway manager (enabled by default). SSL provides protection for remote administrative monitoring and configuration. To use SSL for Content Gateway manager connections, you must install an SSL certificate on the Content Gateway server machine. For more information, see *Using SSL for secure administration*, page 167.
HTTPS: Certificate File	Specifies the name of the SSL certificate file used to authenticate users who want to access the Content Gateway manager.
Monitor Refresh Rate	Specifies how often Content Gateway manager refreshes the statistics on the **Monitor** pane. The default value is 30 seconds.
Default Help Language	Specifies the language that Content Gateway Manager Help displays by default. If a page is not available in the default language, another language may be substituted.

Configure > My Proxy > UI Setup > Login

Administrator: Login	Specifies the administrator login. The default is ‘admin’. The administrator login is the master login that has access to both Configure and Monitor mode in the Content Gateway manager.

Administrator: Password	Lets you change the administrator password that controls access to the Content Gateway manager. Enter the current password in the **Old Password** field. Enter the new password in the **New Password** field, re-enter it in the **New Password (Retype)** field, and then click **Apply**. Passwords must be 8 to 15 characters and include at least one: ● Uppercase character ● Lowercase character ● Number ● Special character Supported characters include: ! # % & ' ( ) * + , - . / ; < = > ? @ [ ] ^ _ { | } ~ The following special characters are not supported: Space $: ` \ " During installation, you select the administrator password. The installer automatically encrypts the password and stores the encryptions in the **records.config** file so that no one can read them. Each time you change the password in the Content Gateway manager, Content Gateway updates the **records.config** file. If you forget the administrator password and cannot access the Content Gateway manager, see *Accessing the Content Gateway manager if you forget the master administrator password*, page 13.

Additional Users	Lists the current user accounts and lets you add new user accounts. User accounts determine who has access the Content Gateway manager and which activities they can perform. You can create a list of user accounts if a single administrator login and password is not sufficient security for your needs. To create a new account, enter the user login in the **New User** field, and then enter the user password in the **New Password** field. Retype the user password in the **New Password (Retype)** field, and then click **Apply**. Passwords must be 8 to 15 characters and include at least one: ● Uppercase character ● Lowercase character ● Number ● Special character Supported characters include: ! # % & ' ( ) * + , - . / ; < = > ? @ [ ] ^ _ { | } ~ The following special characters are not supported: Space $: ` \ " Information for the new user is displayed in the table. From the **Access** drop-down list in the table, select the activities that the new user can perform (**Monitor**, **Monitor and View Configuration**, or **Monitor and Modify Configuration**). For more information about user accounts, see *Creating a list of user accounts*, page 165.

Configure > My Proxy > UI Setup > Access

Access Control	Displays a table listing the rules in the *mgmt_allow.config* file. Rules specify the remote hosts allowed to access the Content Gateway manager. The entries in this file ensure that only authenticated users can change configuration options and view performance and network traffic statistics. Note: By default, all remote hosts are allowed to access the Content Gateway manager.
Refresh	Updates the table to display the most up-to-date rules in the **mgmt_allow.config** file.
Edit File	Opens the configuration file editor so that you can edit and add rules to the **mgmt_allow.config** file.

	mgmt_allow.config Configuration File Editor
rule display box	Lists the **mgmt_allow.config** file rules. Select a rule to edit it. The buttons on the left of the box allow you to delete or move the selected rule up or down in the list. Content Gateway applies the rules in the order listed, starting from the top.
Add	Adds a new rule to the rule display box at the top of the configuration file editor page.
Set	Updates the rule display box at the top of the configuration file editor page.
IP Action	Lists the type of rules you can add. An **ip_allow** rule allows the remote hosts specified in the **Source IP** field to access the Content Gateway manager. An **ip_deny** rule denies the remote hosts specified in the **Source IP** field access to the Content Gateway manager.
Source IP	Specifies the IP addresses that are allowed or denied access to the Content Gateway manager. You can enter a single IP address (111.111.11.1) or a range of IP addresses (0.0.0.0-255.255.255.255).
Apply	Applies the configuration changes.
Close	Exits the configuration file editor. Click **Apply** before you click **Close**; otherwise, all configuration changes will be lost.

Snapshots

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Configure > My Proxy > Snapshots > File System

Change Snapshot Directory	Specifies the directory in which snapshots are stored on this Content Gateway node.
Snapshots: Save Snapshot	Specifies the name of the configuration snapshot you want to take. Click **Apply** to save the configuration on the local node. Content Gateway saves the configuration snapshot in the directory specified in the **Change Snapshot Directory** field. It is recommended that you take a snapshot before performing system maintenance or attempting to tune system performance. Taking a snapshot takes only a few seconds and can save you hours of correcting configuration mistakes.

Snapshots: Restore/Delete Snapshot	Lists the snapshots that are stored on this node. Select the snapshot that you want to restore or delete from the drop-down list.
Snapshots: Restore Snapshot from “directory_name” Directory	Restores the snapshot selected in the **Restore/ Delete Snapshot** drop-down box. In a cluster configuration, snapshots are restored on all nodes in the cluster.
Snapshots: Delete Snapshot from “directory_name” Directory	Deletes the snapshot selected in the **Restore/ Delete Snapshot** drop-down box.

Configure > My Proxy > Snapshots > FTP server

FTP Server	Specifies the name of the FTP server from which you want to restore a configuration snapshot or to which you want to save a configuration snapshot.
Login	Specifies the login needed to access the FTP server.
Password	Specifies the password needed to access the FTP server.
Remote Directory	Specifies the directory on the FTP server from which you want restore, or in which you want to save a configuration snapshot.
Restore Snapshot	Lists the configuration snapshots on the FTP server that you can restore. This field appears after you have logged on to the FTP server successfully.
Save Snapshot to FTP Server	Specifies the name of the configuration snapshot you want to take and save on the FTP server. This field appears after you have logged on to the FTP server successfully.

Logs

Configure > My Proxy > Logs > System

Log File	Lists the system log files you can view, delete or copy to your local system. Content Gateway lists the system log files logged with the system-wide logging facility **syslog** under the daemon facility.
Action: Display the selected log file	When this option is enabled, Content Gateway displays the first MB of the system log file selected in the **Log File** drop-down list. To view the entire file, select "Save the selected log file in local filesystem" and view the file with a local viewer.
Action: Display last lines of the selected file	When this option is enabled, Content Gateway displays the last specified number of lines in the selected system log file.
Action: Display lines that match in the selected log file	When this option is enabled, Content Gateway displays all the lines in the selected system log file that match the specified string.
Action: Remove the selected log file	When this option is enabled, Content Gateway deletes the selected log file.
Action: Save the selected log file in local filesystem	When this option is enabled, Content Gateway saves the selected log file on the local system in a location you specify.

Configure > My Proxy > Logs > Access

Log File	Lists the event or error log files you can view, delete, or copy to your local system. Content Gateway lists the event log files located in the directory specified in the **Logging Directory** field under **Subsystems/Logging** and by the configuration variable **proxy.config.log2.logfile_dir** in the **records.config** file. The default directory is **logs** in the Content Gateway installation directory.
Action: Display the selected log file	When this option is enabled, Content Gateway displays the first MB of the event or error log file selected in the **Log File** drop-down list. To view the entire file, select "Save the selected log file in local filesystem" and view the file with a local viewer.

Action: Display last lines of the selected file	When this option is enabled, Content Gateway displays the last specified number of lines in the event or error log file selected from the **Log File** drop-down list.
Action: Display lines that match in the selected log file	When this option is enabled, Content Gateway displays all the lines in the selected event or error log file that match the specified string.
Remove the selected log file	When this option is enabled, Content Gateway deletes the selected log file.
Action: Save the selected log file in local filesystem	When this option is enabled, Content Gateway saves the selected log file on the local system in a location you specify.

Protocols

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The Protocol configuration options are divided into the following categories:

HTTP, page 306

HTTP Responses, page 316

HTTP Scheduled Update, page 317

HTTPS, page 319

FTP, page 319

HTTP

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Configure > Protocols > HTTP > General

HTTP Proxy Server Port	Specifies the port that Content Gateway uses when acting as a Web proxy server for HTTP traffic or when serving HTTP requests transparently. The default port is 8080. If you change this option, you must restart Content Gateway.
Secondary HTTP Proxy Server Ports	**For explicit proxy configurations only**, specifies additional ports on which Content Gateway listens for HTTP traffic. **Transparent proxy configurations always send all HTTP traffic to port 8080.**

Unqualified Domain Name Expansion	Enables or disables **.com** name expansion. When this option is enabled, Content Gateway attempts to resolve unqualified hostnames by redirecting them to the expanded address, prepended with **www.** and appended with **.com**. For example, if a client makes a request to *company*, Content Gateway redirects the request to **www.company.com**. If local domain expansion is enabled (see *DNS Resolver*, page 368), Content Gateway attempts local domain expansion before **.com** domain expansion; Content Gateway tries **.com** domain expansion only if local domain expansion fails.
Send HTTP 1.1 by Default	Enables the sending of HTTP 1.1 as the first request to the origin server (the default). If the origin server replies with HTTP 1.0, Content Gateway switches to HTTP 1.0 (most origin servers use HTTP 1.1). When disabled, HTTP 1.0 is used in the first request to the origin server. If the origin server replies with HTTP 1.1, Content Gateway switches to HTTP 1.1.
Reverse DNS	Enables reverse DNS lookup when the URL has an IP address (instead of a hostname) and there are rules in **filter.config**, **cache.config**, or **parent.config**. This is necessary when rules are based on destination hostname and domain name.
Tunnel Ports	Specifies the ports on which Content Gateway allows tunneling. This is a space separated list that also accepts port ranges (e.g. 1-65535). When SSL is not enabled, all traffic destined for the specified ports is allowed to tunnel to an origin server. When SSL is enabled, traffic to any port that is also listed in the **HTTPS ports** field is not tunneled, but is decrypted and filtering policy is applied.
HTTPS ports	When SSL support is enabled, specifies ports on which HTTPS traffic is decrypted and policy is applied. Note that Content Gateway receives HTTPS traffic on the port specified in **Configure > Protocols > HTTPS > HTTPS Proxy: Server Port**. When SSL support is disabled, traffic to these ports is not decrypted. However, filtering policy is applied based on: ● Explicit proxy: the server hostname in the CONNECT request. ● Transparent proxy: the SNI hostname or the server hostname in the server's certificate. If the hostname in the server's certificate includes a wildcard (*), the lookup is performed on the destination IP address.

FTP over HTTP: Anonymous Password	Specifies the anonymous password Content Gateway must use for FTP server connections that require a password. This option affects FTP requests from HTTP clients.
FTP over HTTP: Data Connection Mode	An FTP transfer requires two connections: a control connection to inform the FTP server of a request for data and a data connection to send the data. Content Gateway always initiates the control connection. FTP mode determines whether Content Gateway or the FTP server initiates the data connection. Select **PASV then PORT** for Content Gateway to attempt PASV connection mode first. If PASV mode fails, Content Gateway tries PORT mode and initiates the data connection. If successful, the FTP server accepts the data connection. Select **PASV only** for Content Gateway to initiate the data connection to the FTP server. This mode is firewall friendly, but some FTP servers do not support it. Select **PORT only** for the FTP server to initiate the data connection and for Content Gateway to accept the connection. The default value is **PASV then PORT**.

Configure > Protocols > HTTP > Cacheability

Caching: HTTP Caching	Enables or disables HTTP caching. When this option is enabled, Content Gateway serves HTTP requests from the cache. When this option is disabled, Content Gateway acts as a proxy server and forwards all HTTP requests directly to the origin server. Note: HTTPS content is never cached.
Caching: FTP over HTTP Caching	Enables or disables FTP over HTTP caching. When this option is enabled, Content Gateway serves FTP requests from HTTP clients from the cache. When this option is disabled, Content Gateway acts as a proxy server and forwards all FTP requests from HTTP clients directly to the FTP server.

Behavior: Required Headers	Specifies the minimum header information required for an HTTP object to be cacheable. Select **An Explicit Lifetime Header** to cache only HTTP objects with **Expires or max-age** headers. Select **A Last-Modified Header** to cache only HTTP objects with **lastmodified** headers. Select **No Required Headers** to cache HTTP objects that do not have **Expires**, **max-age**, or **last-modified** headers. This is the default option. **Caution:** By default, Content Gateway caches all objects (including objects with no headers). It is recommended that you change the default setting only for specialized proxy situations. If you configure Content Gateway to cache only HTTP objects with **Expires** or **max-age** headers, the cache hit rate is reduced (very few objects have explicit expiration information).
Behavior: When to Revalidate	Specifies how Content Gateway evaluates HTTP object freshness in the cache: Select **Never Revalidate** to never revalidate HTTP objects in the cache with the origin server (Content Gateway considers all HTTP objects in the cache to be fresh). Select **Always Revalidate** to always revalidate HTTP objects in the cache with the origin server (Content Gateway considers all HTTP objects in the cache to be stale). Select **Revalidate if Heuristic Expiration** to verify the freshness of an HTTP object with the origin server if the object contains no **Expires** or **Cache-Control** headers; Content Gateway considers all HTTP objects without **Expires** or **Cache-Control** headers to be stale. Select **Use Cache Directive or Heuristic** to verify the freshness of an HTTP object with the origin server when Content Gateway considers the object in the cache to be stale according to object headers, absolute freshness limit, and/or rules in the **cache.config** file. This is the default option. For more information about revalidation, see *Revalidating HTTP objects*, page 25.

Behavior: Add “no-cache” to MSIE Requests	Specifies when Content Gateway adds **no-cache** headers to requests from Microsoft Internet Explorer. Certain versions of Microsoft Internet Explorer do not request cache reloads from transparent caches when the user presses the browser **Refresh** button. This can prevent content from being loaded directly from the origin servers. You can configure Content Gateway to treat Microsoft Internet Explorer requests more conservatively, providing fresher content at the cost of serving fewer documents from cache. Select **To All MSIE Requests** to always add **no-cache** headers to all requests from Microsoft Internet Explorer. Select **To IMS MSIE Requests** to add **no-cache** headers to IMS (If Modified Since) Microsoft Internet Explorer requests. Select Not to Any MSIE Requests to never add **no-cache** headers to requests from Microsoft Internet Explorer.
Behavior: Ignore “no-cache” in Client Requests	When this option is enabled, Content Gateway ignores **no-cache** headers in client requests and serves the requests from the cache. When this option is disabled, Content Gateway does not serve requests with **no-cache** headers from the cache but forwards them to the origin server.
Freshness: Minimum Heuristic Lifetime	Specifies the minimum amount of time that an HTTP object can be considered fresh in the cache.
Freshness: Maximum Heuristic Lifetime	Specifies the maximum amount of time that an HTTP object can be considered fresh in the cache.
Freshness: FTP Document Lifetime	Specifies the maximum amount of time that an FTP file can stay in the cache. This option affects FTP requests from HTTP clients only.
Maximum Alternates	Specifies the maximum number of alternate versions of HTTP objects Content Gateway can cache. **Caution:** If you enter 0 (zero), there is no limit to the number of alternates cached. If a popular URL has thousands of alternates, you might observe increased cache hit latencies (transaction times) as Content Gateway searches over the thousands of alternates for each request. In particular, some URLs can have large numbers of alternates due to cookies. If Content Gateway is set to vary on cookies, you might encounter this problem.
Vary Based on Content Type: Enable/ Disable	Enables or disables caching of alternate versions of HTTP documents that do not contain the **Vary** header. If no **Vary** header is present, Content Gateway varies on the headers specified below, depending on the document’s content type.
Vary by Default on Text	Specifies the header field on which Content Gateway varies for text documents.

Vary by Default on Images	Specifies the header field on which Content Gateway varies for images.
Vary by Default on Other Document Types	Specifies the header field on which Content Gateway varies for anything other than text and images.
Dynamic Caching: Caching Documents with Dynamic URLs	When this option is enabled, Content Gateway attempts to cache dynamic content. Content is considered dynamic if it contains a question mark (?), a semicolon (;), **cgi**, or if it ends in **.asp**. **Caution:** It is recommended that you configure Content Gateway to cache dynamic content for specialized proxy situations only.
Dynamic Caching: Caching Response to Cookies	Specifies how responses to requests that contain cookies are cached: Select **Cache All but Text** to cache cookies that contain any type of content except text. This is the default. Select **Cache Only Image Types** to cache cookies that contain images only. Select **Cache Any Content-Type** to cache cookies that contain any type of content. Select **No Cache on Cookies** to not cache cookies at all.
Caching Policy/Forcing Document Caching	Displays a table listing the rules in the **cache.config** file that specify how a particular group of URLs should be cached. This file also lets you force caching of certain URLs for a specific amount of time.
Refresh	Updates the table to display the most up-to-date rules in the **cache.config** file. Click **Refresh** after you have added or modified rules with the configuration file editor.
Edit File	Opens the configuration file editor so that you can edit and add rules to the **cache.config** file.
	cache.config Configuration File Editor
Rule display box	Lists the **cache.config** file rules. Select a rule to edit it. The buttons on the left of the box allow you to delete or move the selected rule up or down in the list.
Add	Adds a new rule to the rule display box at the top of the configuration file editor page.
Set	Updates the rule display box at the top of the configuration file editor page.

Rule Type	Lists the type of rules you can add to the **cache.config** file: A **never-cache** rule configures Content Gateway to never cache specified objects. An **ignore-no-cache** rule configures Content Gateway to ignore all **Cache-Control: no-cache** headers. An **ignore-client-no-cache** rule configures Content Gateway to ignore **Cache-Control: no-cache** headers from client requests. An **ignore-server-no-cache** rule configures Content Gateway to ignore **Cache-Control: no-cache** headers from origin server responses. A **pin-in-cache** rule configures Content Gateway to keep objects in the cache for a specified time. A **revalidate** rule configures Content Gateway to consider objects fresh in the cache for a specified time. A **ttl-in-cache** rule configures Content Gateway to serve certain HTTP objects from the cache for the amount of time specified in the **Time Period** field regardless of certain caching directives in the HTTP request and response headers.
Primary Destination Type	Lists the primary destination types: **dest_domain** is a requested domain name. **dest_host** is a requested hostname. **dest_ip** is a requested IP address. **url_regex** is a regular expression to be found in a URL.
Primary Destination Value	Specifies the value of the primary destination type. For example, if the Primary Destination Type is **dest_ip**, the value for this field can be 123.456.78.9.
Additional Specifier: Time Period	Specifies the amount of time that applies to the **revalidate**, **pin-in-cache**, and **ttl-in-cache** rule types. The following time formats are allowed: **d** for days (for example 2d) **h** for hours (for example, 10h) **m** for minutes (for example, 5m) **s** for seconds (for example, 20s) mixed units (for example, 1h15m20s)
Secondary Specifiers: Time	Specifies a time range, such as 08:00-14:00.
Secondary Specifiers: Prefix	Specifies a prefix in the path part of a URL.
Secondary Specifiers: Suffix	Specifies a file suffix in the URL.
Secondary Specifiers: Source IP	Specifies the IP address of the client.
Secondary Specifiers: Port	Specifies the port in a requested URL.

Secondary Specifiers: Method	Specifies a request URL method.
Secondary Specifiers: Scheme	Specifies the protocol of a requested URL.
Secondary Specifiers: User-Agent	Specifies a request header User-Agent value.
Apply	Applies the configuration changes.
Close	Exits the configuration file editor. Click **Apply** before you click **Close**; otherwise, all configuration changes will be lost.

Configure > Protocols > HTTP > Privacy

Insert Headers: Client-IP	When enabled, Content Gateway inserts the **Client-IP** header into outgoing requests to retain the client's IP address. This option is mutually exclusive with the **Remove Headers: Client-IP** option. When Insert Headers: Client-IP is enabled the Remove Headers: Client-IP option is automatically disabled. Insert Headers: Client-IP and Remove Headers: Client-IP can both be disabled.
Insert Headers: Via	When enabled, Content Gateway inserts a **Via** header into the outgoing request. The Via header informs the destination server of proxies through which the request was sent.
Insert Headers: X-Forwarded-For	When enabled, Content Gateway inserts an **X-Forwarded-For** header into the outgoing request. The X-Forwarded-For value contains the originating IP address. If enabled, header information is sent only to a configured parent proxy. To send header values for all outbound requests, enable proxy.config.http.insert_xff_to_external.
Remove Headers: Client-IP	When this option is enabled, Content Gateway removes the **Client-IP** header from outgoing requests to protect the privacy of your users. This option is mutually exclusive with the **Insert Headers: Client-IP** option. When Remove Headers: Client-IP is enabled the Insert Headers: Client-IP option is automatically disabled. Remove Headers: Client-IP and Insert Headers: Client-IP can both be disabled.
Remove Headers: Cookie	When this option is enabled, Content Gateway removes the **Cookie** header from outgoing requests to protect the privacy of your users. The **Cookie** header often identifies the user that makes a request.

Remove Headers: From	When this option is enabled, Content Gateway removes the **From** header from outgoing requests to protect the privacy of your users. The **From** header identifies the client's email address.
Remove Headers: Referer	When this option is enabled, Content Gateway removes the **Referer** header from outgoing requests to protect the privacy of your users. The **Referer** header identifies the Web link that the client selects.
Remove Headers: User-Agent	When this option is enabled, Content Gateway removes the **User-Agent** header from outgoing requests to protect the privacy of your users. The **User-Agent** header identifies the agent that is making the request, usually a browser.
Remove Headers: Remove Others	Specifies headers other than **From**, **Referer**, **User-Agent**, and **Cookie**, that you want to remove from outgoing requests to protect the privacy of your users. Use a comma separated list for multiple entries.

Configure > Protocols > HTTP > Timeouts

See this knowledge base article for a discussion of HTTP timeout options.

Keep-Alive Timeouts: Client	Specifies (in seconds) how long Content Gateway keeps connections to clients open for a subsequent request after a transaction ends. Each time Content Gateway opens a connection to accept a client request, it handles the request and then keeps the connection alive for the specified timeout period. If the client does not make another request before the timeout expires, Content Gateway closes the connection. If the client does make another request, the timeout period starts again. The client can close the connection at any time.
Keep-Alive Timeouts: Origin Server	Specifies (in seconds) how long Content Gateway keeps connections to origin servers open for a subsequent transfer of data after a transaction ends. Each time Content Gateway opens a connection to download data from an origin server, it downloads the data and then keeps the connection alive for the specified timeout period. If Content Gateway does not need to make a subsequent request for data before the timeout expires, it closes the connection. If it does, the timeout period starts again. The origin server can close the connection at any time.
Inactivity Timeouts: Client	Specifies how long Content Gateway keeps connections to clients open if a transaction stalls. If Content Gateway stops receiving data from a client or the client stops reading the data, Content Gateway closes the connection when this timeout expires. The client can close the connection at any time.

Inactivity Timeouts: Origin Server	Specifies how long Content Gateway keeps connections to origin servers open if the transaction stalls. If Content Gateway stops receiving data from an origin server, it does not close the connection until this timeout has expired. The origin server can close the connection at any time.
Active Timeouts: Client	Specifies how long Content Gateway remains connected to a client. If the client does not finish making a request (reading and writing data) before this timeout expires, Content Gateway closes the connection. The default value of 0 (zero) specifies that there is no timeout. The client can close the connection at any time.
Active Timeouts: Origin Server Request	Specifies how long Content Gateway waits for fulfillment of a connection request to an origin server. If Content Gateway does not establish connection to an origin server before the timeout expires, Content Gateway terminates the connection request. The default value of 0 (zero) specifies that there is no timeout. The origin server can close the connection at any time.
Active Timeouts: Origin Server Response	Specifies how long Content Gateway waits for a response from the origin server.
FTP Control Connection Timeout	Specifies how long Content Gateway waits for a response from an FTP server. If the FTP server does not respond within the specified time, Content Gateway abandons the client's request for data. This option affects FTP requests from HTTP clients only. The default value is 300.

HTTP Responses

Configure > Protocols > HTTP Responses > General

Response Suppression Mode	If Content Gateway detects an HTTP problem with a particular client transaction (such as unavailable origin servers, authentication requirements, and protocol errors), it sends an HTML response to the client browser. Content Gateway has a set of hard-coded default response pages that explain each HTTP error in detail to the client. Select **Always Suppressed** if you do not want to send HTTP responses to clients. Select **Intercepted Traffic Only** if you want to send HTTP responses to nontransparent traffic only. (This option is useful when Content Gateway is running transparently and you do not want to indicate the presence of a cache.) Select **Never Suppressed** if you want to send HTTP responses to all clients. If you change this option, you must restart Content Gateway.

Configure > Protocols > HTTP Responses > Custom

Custom Responses	You can customize the responses Content Gateway sends to clients. By default, the responses you can customize are located in the Content Gateway **config/body_factory/default** directory. Select **Enabled Language-Targeted Response** to send your custom responses to clients in the language specified in the `Accept-Language` header. Select **Enabled in "default" Directory Only** to send the custom responses located in the default directory to clients. Select **Disabled** to disable the custom responses. If **Never Suppressed** or **Intercepted Traffic Only** is selected for the **Response Suppression Mode** option, Content Gateway sends the hard-coded default responses. If you change this option, you must restart Content Gateway.
Custom Response Logging	When enabled, Content Gateway sends a message to the error log each time custom responses are used or modified. If you change this option, you must restart Content Gateway.
Custom Response Template Directory	Specifies the directory where the custom responses are located. The default location is the Content Gateway **config/body_factory** directory. If you change this option, you must restart Content Gateway.

Incorporating images, animated gifs, and Java applets on the response page

Content Gateway can respond to clients with only a single text or HTML document.

However, you can provide references on your custom response pages to images, animated gifs, Java applets, or objects other than text that are located on a Web server.

Add links in the **body_factory** template files in the same way you would for any image in an HTML document, with the full URL in the SRC attribute.

It is recommended that you do not run the Web server and Content Gateway on the same system, to prevent both programs from trying to serve documents on the same port number.

HTTP Scheduled Update

Configure > Protocols > HTTP Scheduled Updates > General

Scheduled Update	Enables or disables the scheduled update option. When this option is enabled, Content Gateway can automatically update certain objects in the local cache at a specified time.
Maximum Concurrent Updates	Specifies the maximum number of simultaneous update requests allowed at any point. This option enables you to prevent the scheduled update process from overburdening the host. The default value is 100.
Retry on Update Error: Count	Specifies the number of times Content Gateway retries the scheduled update of a URL in the event of failure. The default value is 10 times.
Retry on Update Error: Interval	Specifies the delay in seconds between each scheduled update retry for a URL in the event of failure. The default value is 2 seconds.

Configure > Protocols > HTTP Scheduled Updates > Update URLs

Force Immediate Update	When enabled, Content Gateway overrides the scheduling expiration time for all scheduled update entries and initiates updates every 25 seconds.
Scheduled Object Update	Displays a table listing the rules in the *update.config* file that control how Content Gateway performs a scheduled update of specific local cache content.
Refresh	Updates the table to display the most up-to-date rules in the **update.config** file.
Edit File	Opens the configuration file editor so that you can edit and add rules to the **update.config** file.
	update.config Configuration File Editor
rule display box	Lists the **update.config** file rules. Select a rule to edit it. The buttons on the left of the box allow you to delete or move the selected rule up or down in the list.
Add	Adds a new rule to the rule display box at the top of the configuration file editor page.
Set	Updates the rule display box at the top of the configuration file editor page.
URL	Specifies the URL to be updated.
Request Headers (Optional)	Specifies the list of headers (separated by semi-colons) passed in each **GET** request. You can define any request header that conforms to the HTTP specification. The default is no request header.
Offset Hour	Specifies the base hour used to derive the update periods. The range is 00-23 hours.
Interval	The interval, in seconds, at which updates should occur, starting at Offset Hour.
Recursion Depth	The depth to which referenced URLs are recursively updated, starting at the given URL. For example, a recursion depth of 1 will update the given URL, as well as all URLs immediately referenced by links from the original URL.

HTTPS

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Configure > Protocols > HTTPS

This page is displayed only when HTTPS is enabled on **Configure > My Proxy > Basic > General**

HTTPS Proxy Server Port	Specifies the port that Content Gateway uses when acting as a Web proxy server for HTTPS traffic. The default value is 8080. See also, *Configure > Protocols > HTTP > General*: **HTTPS Ports**.
Tunnel Unknown Protocols	Enables and disables tunneling of HTTPS requests when the SSL handshake results in an unknown protocol error. **Tunneled connections are not decrypted or inspected.** When Content Gateway is an explicit proxy, a URL lookup is performed and policy is applied before the SSL connection request is made with the server. Therefore, tunneled transactions appear in the Forcepoint Web Security transaction log. When Content Gateway is a transparent proxy, if there is an SNI a URL lookup is done on the hostname in the SNI. Otherwise no URL lookup is possible and tunneled transactions are not logged. This is because an initial connection with the server is required to get the Common Name from the SSL certificate. It is used for the URL lookup. If the connection handshake fails and this option is enabled, the connection is tunneled without the proxy being aware of it. **Important:** This setting persists after the HTTPS feature is disabled (on **Configure > My Proxy > Basic > General)**. Therefore, disable this option before disabling HTTPS support.

FTP

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Note

The FTP configuration options appear on the Configure pane only if you have enabled FTP processing in the Features table on the **Configure > My Proxy > Basic > General** tab.

Configure > Protocols > FTP > General

FTP Proxy Server Port	Specifies the port that Content Gateway uses to accept FTP requests. The default port is 2121.
Listening Port Configuration	Specifies how FTP opens a listening port for a data transfer. Select **Default Settings** to let the operating system choose an available port. Content Gateway sends 0 and retrieves the new port number if the listen succeeds. Select **Specify Range** if you want the listening port to be determined by the range of ports specified in the **Listening Port (Max)** and **Listening Port (Min)** fields.
Default Data Connection Method	Specifies the default method used to set up data connections with the FTP server. Select **Proxy Sends PASV** to send a PASV to the FTP server and let the FTP server open a listening port. Select **Proxy Sends PORT** to set up a listening port on the Content Gateway side of the connection first.
Shared Server Connections	When enabled, server control connections can be shared between multiple anonymous FTP clients.

Configure > Protocols > FTP > Timeouts

Keep-Alive Timeout: Server Control	Specifies the timeout value when the FTP server control connection is not used by any FTP clients. The default value is 90 seconds.
Inactivity Timeouts: Client Control	Specifies how long FTP client control connections can remain idle. The default value is 900 seconds.
Inactivity Timeouts: Server Control	Specifies how long the FTP server control connection can remain idle. The default value is 120 seconds.
Active Timeouts: Client Control	Specifies the how long FTP client control connections can remain open. The default value is 14400 seconds.
Active Timeouts: Server Control	Specifies how long the FTP server control connection can remain open. The default value is 14400 seconds.

Content Routing

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The Content Routing configuration options are divided into the following categories:

Hierarchies, page 321

Mapping and Redirection, page 323

Browser Auto-Config, page 325

Hierarchies

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Configure > Content Routing > Hierarchies

Parent Proxy	Enables or disables the HTTP parent caching option. When this option is enabled, Content Gateway can participate in an HTTP cache hierarchy. You can point your Content Gateway server at a parent network cache (either another Content Gateway server or a different caching product) to form a cache hierarchy where a child cache relies upon a parent cache in fulfilling client requests.) See *HTTP cache hierarchies*, page 93. This setting must be enabled when Protected Cloud Apps is enabled and configured in the Forcepoint Security Manager.
No DNS and Just Forward to Parent	When enabled, and if HTTP parent caching is enabled, Content Gateway does no DNS lookups on requested hostnames. If rules in the **parent.config** file are set so that only selected requests are sent to a parent proxy, Content Gateway skips name resolution only for requests that are going to the parent proxy. Name resolution is performed as usual for requests that are not sent to a parent proxy. If the parent proxy is down and the child proxy can go directly to origin servers, the child performs DNS resolution.
Uncacheable Requests Bypass Parent	When enabled, and if parent caching is enabled, Content Gateway bypasses the parent proxy for uncacheable requests.
HTTPS Requests Bypass Parent	When enabled, Content Gateway bypasses the parent proxy for HTTPS requests.
Tunnel Requests Bypass Parent	When enabled, Content Gateway bypasses parent proxy for non-HTTPS tunnel requests.
Parent Proxy Cache Rules	Displays a table listing the rules in the *parent.config* file that identify the HTTP parent proxies used in an HTTP cache hierarchy and configure selected URL requests to bypass parent proxies. Rules are applied from the list top-down; the first match is applied.
Refresh	Updates the table to display the most up-to-date rules in the **parent.config** file.
Edit File	Opens the configuration file editor so that you can edit and add rules to the **parent.config** file.

	parent.config Configuration File Editor
rule display box	Lists the *parent.config* file rules. Select a rule to edit it. The buttons on the left of the box allow you to delete or move the selected rule up or down in the list.
Add	Adds a new rule to the rule display box at the top of the configuration file editor page.
Set	Updates the rule display box at the top of the configuration file editor page.
Primary Destination Type	Lists the primary destination types: **dest_domain** is a requested domain name. **dest_host** is a requested hostname. **dest_ip** is a requested IP address. **url_regex** is a regular expression to be found in a URL.
Primary Destination Value	Specifies the value of the primary destination type. For example: If the primary destination is **dest_domain**, a value for this field can be yahoo.com If the primary destination type is **dest_ip**, the value for this field can be 123.456.78.9. If the primary destination is **url_regex**, a value for this field can be politics.
Parent Proxies	Specifies the IP addresses or hostnames of the parent proxies and the port numbers used for communication. Parent proxies are queried in the order specified in the list. If the request cannot be handled by the last parent server in the list, it is routed to the origin server. Separate each entry with a semicolon; for example: **parent1:8080**; **parent2:8080**
Round Robin	Select **true** for the proxy to go through the parent cache list in a round-robin based on client IP address. Select **strict** for the proxy to serve requests strictly in turn. For example, machine proxy1 serves the first request, proxy2 serves the second request, and so on. Select **false** if you do not want round-robin selection to occur.
Go direct	Select **true** for requests to bypass parent hierarchies and go directly to the origin server. Select **false** if you do not want requests to bypass parent hierarchies.
Secondary Specifiers: Time	Specifies a time range, using a 24-hour clock, such as 08:00-14:00. If the range crosses midnight, enter this as two comma-separated ranges. For example, if a range extends from 6:00 in the evening until 8:00 in the morning, enter the following: `18:00 - 23:59, 0:00 - 8:00`
Secondary Specifiers: Prefix	Specifies a prefix in the path part of a URL.

Secondary Specifiers: Suffix	Specifies a file suffix in the URL, such as .htm or .gif.
Secondary Specifiers: Source IP	Specifies the IP address or range of IP addresses of the clients.
Secondary Specifiers: Port	Specifies the port in a requested URL.

Secondary Specifiers: Method	Specifies a request URL method. For example:
	`get`
	`post`
	`put`
	`trace`

Secondary Specifiers: Scheme	Specifies the protocol of a requested URL. This must be either HTTP or FTP.
Secondary Specifiers: User-Agent	Specifies a request header User-Agent value.

Mapping and Redirection

Configure > Content Routing > Mapping and Redirection

Serve Mapped Hosts Only	Select **Required** if you want the proxy to serve requests only to origin servers listed in the mapping rules of the **remap.config** file. If a request does not match a rule in the **remap.config** file, the browser receives an error. This option provides added security for your Content Gateway system.
Retain Client Host Header	When this option is enabled, Content Gateway retains the client host header in a request (it does not include the client host header in the mapping translation).
Redirect No-Host Header to URL	Specifies the alternate URL to which to direct incoming requests from older clients that do not provide a `Host:` header. It is recommended that you set this option to a page that explains the situation to the user and advises a browser upgrade or provides a link directly to the origin server, bypassing the proxy. Alternatively, you can specify a map rule that maps requests without **Host:** headers to a particular server.
URL Remapping Rules	Displays a table listing the mapping rules in the **remap.config** file so that you can redirect HTTP requests permanently or temporarily without the proxy having to contact any origin servers. **Note:** Mapping a URL to another URL in the same domain requires that a "/" be specified in **From Path Prefix** field. See the example following this table.

Refresh	Updates the table to display the most up-to-date rules in the **remap.config** file.
Edit File	Opens the configuration file editor so that you can edit and add rules to the **remap.config** file.
	remap.config Configuration File Editor
rule display box	Lists the **remap.config** file rules. Select a rule to edit it. The buttons on the left of the box allow you to delete or move the selected rule up or down in the list.
Add	Adds a new rule to the rule display box at the top of the configuration file editor page.
Set	Updates the rule display box at the top of the configuration file editor page.
Rule Type	Lists the type of rules you can add to the remap.config file: **map** provides the same function as redirect. Use of redirect is recommended. **redirect** redirects HTTP requests permanently without having to contact the origin server. Permanent redirects notify the browser of the URL change (by returning an HTTP status code 301) so that the browser can update bookmarks. **redirect_temporary** redirects HTTP requests temporarily without having to contact the origin server. Temporary redirects notify the browser of the URL change for the current request only (by returning an HTTP status code 307). **reverse_map** is not supported.
From Scheme	Specifies the protocol of the mapping rule. **rtsp** and **mms** are not supported. **Note:** Mapping a URL of one protocol (scheme) to a different protocol (scheme) is not supported.
From Host	Specifies the hostname of the URL to map from.
From Port (Optional)	Specifies the port number in the URL to map from.
From Path Prefix (Optional)	Specifies the path prefix of the URL to map from. Sometimes it is desirable to redirect a URL to a sub-page in the same domain. For example, to redirect "www.cnn.com" to "www.cnn.com/tech". To make this rule work you must specify "/" in the From Path Prefix field. If it is not specified, the redirection results in a URL that recursively adds the page specifier to the URL. For example, "www.example.com/tech" becomes "www.example.com/tech/tech/tech/tech/tech/tech/tech/tech/..."
From Query (Optional)	Specifies the query of the URL to map from.
To Scheme	Must match **From Scheme**.
To Host	Specifies the hostname of the URL to map to.
To Port (Optional)	Specifies the port number of the URL to map to.

To Path Prefix (Optional)	Specifies the path prefix of the URL to map to.
To Query (Optional)	Specifies the query of the URL to map to.
{undefined}	Specifies the media protocol type of the mapping rule. Not supported.

Browser Auto-Config

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Configure > Content Routing > Browser Auto-Config > PAC

Auto-Configuration Port	Specifies the port Content Gateway uses to download the auto-configuration file to browsers. The port cannot be assigned to any other process. The default port is 8083. If you change this option, you must restart Content Gateway.
PAC Settings	Lets you edit the PAC file (**proxy.pac**). See *Using a PAC file*, page 40.

Configure > Content Routing > Browser Auto-Config > WPAD

WPAD Settings	Lets you edit the **wpad.dat** file. See *Using WPAD*, page 42.

Security

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The Security configuration options are divided into the following categories:

Connection Control, page 326

FIPS Security, page 327

Web DLP, page 328

Access Control, page 328

SOCKS, page 345

Connection Control

Configure > Security > Connection Control

Option	Description
	Proxy Access
Access Control	Displays the rules in the *ip_allow.config* file that control which clients can access Content Gateway. By default, all remote hosts are allowed to access the proxy.
Refresh	Updates the table to display the most up-to-date rules in the **ip_allow.config** file.
Edit File	Opens the configuration file editor for to the **ip_allow.config** file.
	ip_allow.config Configuration File Editor
rule display box	Lists the *ip_allow.config* file rules. Select a rule to edit it. The buttons on the left of the box allow you to delete or move the selected rule up or down in the list.
Add	Adds a new rule to the rule display box at the top of the configuration file editor page.
Set	Updates the rule display box at the top of the configuration file editor page.
IP Action	Lists the type of rules you can add. An **ip_allow** rule allows the clients listed in the Source IP field to access the proxy. An **ip_deny** rule denies the clients listed in the Source IP field access to the proxy.
Source IP	Specifies the IP address or range of IP addresses of the clients.
Apply	Applies the configuration changes.
Close	Exits the configuration file editor. Click **Apply** before you click **Close**; otherwise, all configuration changes will be lost.

FIPS Security

Configure > Security > FIPS

> **Important**
> After FIPS is enabled, you must re-install any hotfixes previously installed for the current version of Content Gateway.

When FIPS mode is enabled:

- HTTPS connections use only TLSv1 or higher
- HTTPS connections use FIPS 140-2 approved algorithms
- Content Gateway generates SHA-256 certificates in response to origin server certificate requests

> **Warning**
> Once enabled, FIPS 140-2 mode cannot be disabled without reinstalling Content Gateway. If Content Gateway is on an appliance, the appliance must be reimaged.

> **Important**
> Due to a system limitation, FIPS 140-2 mode cannot be used with NTLM user authentication (IWA fallback to NTLM or Legacy NTLM).

For complete information, see *FIPS 140-2 Mode*, page 167.

Option	Description
FIPS Enable/Disable radio buttons	By default, Content Gateway is installed in non-FIPS 140-2 mode. To switch to FIPS 140-2 mode, select the **Enabled** radio button, click **Apply**, and restart Content Gateway. **Warning:** Once enabled, FIPS 140-2 mode cannot be disabled without reinstalling Content Gateway. For appliance installations, reinstallation requires reimaging the system.

Web DLP

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> **Note**
> The Web DLP configuration options appear on the Configure menu only if you have enabled **Web DLP (integrated on-box)** on the **Configure > My Proxy > Basic > General** tab and selected **Integration > Web DLP (integrated on-box)** in the **Features** table.

Configure > Security > Web DLP

Option	Description
Forcepoint management server IP address	Specifies the IP address of the Forcepoint management server. Configure Web DLP policy in the Data Security module of the Forcepoint Security Manager.
Analyze HTTPS Content	Specifies whether decrypted traffic should be sent to Forcepoint DLP for analysis, or sent directly to the destination.
Analyze FTP Uploads	Specifies whether to send FTP upload requests to Forcepoint DLP for analysis. The FTP proxy feature must be enabled. See *FTP*, page 319.

Registration screen fields:

Option	Description
Forcepoint management server IP	Specifies the IP address of the Forcepoint management server. This is where data security policy configuration and management is performed.
Administrator user name	Specifies the account name of a Forcepoint DLP administrator. The administrator must have Deploy Settings privileges.
Administrator password	Specifies the password of the Forcepoint DLP administrator.
Register button	Initiate the registration action. This button is enabled only after data is entered in all of the fields.

Access Control

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Use the **Access Control** tabs to:

- Create custom filtering rules

- Configure proxy user authentication

The *Filtering* tab is always available on the **Access Control** page.

Other tabs are dynamic based on the authentication method selected in the **Authentication** section of **Configure > My Proxy > Basic**.

If an authentication method is enabled, the *Global Configuration Options* tab is always displayed.

If **Integrated Windows Authentication** is selected, these tabs display:

- *Integrated Windows Authentication*
- *Global Configuration Options*

If **LDAP** is selected, these tabs display:

- *LDAP*
- *Global Configuration Options*

If **Radius** is selected, these tabs display:

- *Radius*
- *Global Configuration Options*

If **NTLM** is selected, these tabs display:

- *NTLM*
- *Global Configuration Options*

If **Rule-Based Authentication** is selected, these tabs display:

- *Domains*
- *Authentication Rules*
- *Global Configuration Options*

The tables below describe the purpose of each field on each tab. Use your browser's Search feature to find the field that you're looking for.

For a complete description of Content Gateway user authentication features, see *Content Gateway user authentication*, page 177.

Configure > Security > Access Control > Filtering

Filtering rules can be used to:

- Deny or allow URL requests
- Insert custom headers
- Allow specified applications, or requests to specified websites to bypass user authentication
- Keep or strip header information from client requests
- Prevent specified applications from transiting the proxy

Rules are ordered checked prior to user authentication (if configured). Rules are applied based on first match in a top-down traversal of the list. If no rule matches, the request is allowed to proceed.

Rules are stored in *filter.config*.

After adding, deleting, or modifying a rule, restart Content Gateway.

For complete information about filtering rules, see *Content Gateway filtering rules*, page 168.

Filtering	Displays an ordered list of filtering rules. Three filtering rules are configured by default. The first denies traffic on port 25 to all destinations. The second and third bypass user authentication for connections to 2 file sandbox destinations.
Refresh	Updates the table to display the most up-to-date rules in the **filter.config** file.
Edit File	Opens the configuration file editor for the **filter.config** file.
	filter.config Configuration File Editor
rule display box	Lists the rules currently stored in *filter.config*. Select a rule to edit it. The buttons on the left of the box allow you to delete or move the selected rule up or down in the list.
Add	Adds a new rule to the rule display box at the top of the configuration file editor page. Click Add after selecting or entering values for the rule.
Set	Updates the rule display box at the top of the configuration file editor page.
Rule Type	Specifies the rule type: Select **allow** to allow particular URL requests to bypass authentication. Select **deny** to deny requests for objects from specific destinations. When a request is denied, the client receives an access denied message. Select **keep_hdr** to specify which client request header information you want to keep. Select **strip_hdr** to specify which client request header information you want to strip. Select **add_hdr** to cause a custom header to be added to the request. This rule type requires that values be defined for **Custom Header** and **Header Value**. Add custom headers to satisfy specific requirements of a destination domain. See *Content Gateway filtering rules*, page 168. The **radius** rule type is not supported.

Primary Destination Type	Lists the primary destination types: **dest_domain** is a requested domain name. **dest_host** is a requested host name. **dest_ip** is a requested IP address. **url_regex** is a regular expression to be found in a URL.
Primary Destination Value	Specifies the value of the Primary Destination Type. For example, if the Primary Destination Type is **dest_ip**, the value for this field might be 123.456.78.9.
Additional Specifiers: Header Type	Specifies the client request header information that you want to keep or strip. This option applies to only **keep_hdr** or **strip_hdr** rule types.
Additional Specifiers: Realm (optional)	Not supported.
Additional Specifiers: Proxy Port (optional)	Specifies the proxy port to match for this rule.
Additional Specifiers: Custom Header (optional)	For use when the rule type is **add_hdr**. Specifies the custom header name that the destination domain expects to find in the request.
Additional Specifiers: Header Value (optional)	For use when the rule type is **add_hdr**. Specifies the custom header value that the destination domain expects to be paired with the custom header.
Secondary Specifiers: Time	Specifies a time range, such as 08:00-14:00.
Secondary Specifiers: Prefix	Specifies a prefix in the path part of a URL.
Secondary Specifiers: Suffix	Specifies a file suffix in the URL.
Secondary Specifiers: Source IP	Specifies the IP address of the client.
Secondary Specifiers: Port	Specifies the port in a requested URL.
Secondary Specifiers: Method	Specifies a request URL method: ■ **get** ■ **post** ■ **put** ■ **trace**
Secondary Specifiers: Scheme	Specifies the protocol of a requested URL. Options are: ■ **HTTP** ■ **HTTPS** ■ **FTP** (for FTP over HTTP only) **rtsp** and **mms** are **not** supported.

Secondary Specifiers: User-Agent	Specifies the Request header User-Agent value. Use this field to create application filtering rules that: ● Allow applications that don't properly handle authentication challenges to bypass authentication ● Block specified client-based applications from accessing the Internet
Apply	Applies the configuration changes.
Close	Exits the configuration file editor. Click **Apply** before you click **Close**; otherwise, all configuration changes will be lost.

Configure > Security > Access Control > Global Configuration Options

Use this page to specify global options for:

- The fail open/fail closed action to take when user authentication fails
- Credential caching
- For transparent proxy, an alternate hostname for the proxy that all clients on the network can resolve. Required.
- Cookie sharing

For more information, see *Global authentication options*, page 181.

Note

The user interface setting to disable the NTLM cache for explicit proxy has been removed. Although not recommended, the cache can be disabled for explicit proxy traffic in records.config by setting the value of **proxy.config.ntlm.cache.enabled** to **0** (zero).

Global Configuration Options	
Fail Open	**Disabled** – Prevents requests from proceeding to the Internet when an authentication failure occurs. **Enabled only for critical service failures** (default) – Allows requests to proceed if authentication fails because there is no response from the domain controller or because the client is sending badly formatted messages. **Enabled for all authentication failures** – Allows requests to proceed for all authentication failures, including password failures. When a fail open setting is enabled, if a Forcepoint Web Security transparent user identification agent is configured an attempt is made to identify the requester and apply user-based policy. Otherwise, if a policy has been assigned to the client's IP address, that policy is applied. Otherwise, the Default policy is applied. **Important:** When user authentication is rule-based with a domain list: ● If **Enabled only for critical service failures** is selected, when a critical service failure occurs fail open is not applied. An error always results in fail closed. ● If **Enabled for all authentication failures, including incorrect password** is selected, after trying basic credentials with every domain in the list, fail open is applied. **Important:** The Fail Open setting does not apply when IWA is the authentication method and the client fails to retrieve a kerberos ticket from the domain controller (DC) because the DC is down. The Fail Open setting does apply with IWA when IWA falls back to NTLM and authentication fails.

Credential Caching: Caching Method	**Cache using IP address only** – specifies that all credentials are cached with IP address surrogates. This is the recommended method when all clients have unique IP addresses. **Cache using Cookies only** – specifies that all credentials are cached with cookie surrogates. This is recommended when all clients share IP addresses, as with multi-host servers such as Citrix servers, or when traffic is NATed by a device that is forwarding traffic to Content Gateway. **Cache using both IP addresses and Cookies** – specifies to use cookie surrogates for the IP addresses listed in the cookie caching list, and to use IP address surrogates for all other IP addresses. This is recommended when the network has a mix of clients, some with unique IP addresses and some using multi-user hosts or that are subject to NATing. The cookie caching list is a comma separated list that can contain up to: ■ 64 IPv4 addresses ■ 32 IPv4 address ranges ■ 24 IPv6 addresses ■ 12 IPv6 address ranges For a description of surrogate credentials, see *Surrogate credentials*. **Important:** ● Cookie mode caching does not work with applications that do not support cookies, or with browsers in which cookie support has been disabled. ● When the browser is Internet Explorer, the full proxy hostname in the form "http://host.domain.com" must be added to the Local intranet zone. ● When the browser is Chrome, it must be configured to allow third-party cookies or configured for an exception to allow cookies from the proxy hostname in the form "host.domain.com". ● When the IP address is set for cookie mode and the request method is CONNECT, no caching is performed. ● Cookie mode caching is not performed for FTP requests. ● Cookie mode caching is supported with Captive Portal and client certificate authentication. ● For explicit proxy, cookie-based authentication is not supported for HTTPS. IP-address authentication is used.

Credential Caching: Time-To-Live	Specifies the duration, in minutes, that an entry in the cache is retained. When the TTL expires, the entry is removed and the next time that the user submits a request, the user is authenticated. If the authentication succeeds, an entry is placed in the cache.
Cookie Expiration (added in v8.5.3)	Specifies whether a user is allowed to re-access the system without authentication until the cookie is no longer valid. When enabled, cookies expire when the user ends a session
Purge LDAP cache on authentication failure	Specifies that when an LDAP user authentication failure occurs, Content Gateway will delete the authorization record for that client from the LDAP cache.
Redirect Hostname	For transparent proxy, specifies an alternate hostname for the proxy that all clients on the network can resolve. Required. Valid characters for Redirect HostName are: A-Z, a-z,0-9 and - . For complete information see *Redirect Options*, page 185.
Cookie Sharing	When cookie caching is enabled, cookie surrogates can be shared across all nodes in a cluster. Select and import both private and public keys and then make a backup of them. Used with load balancing, the entry in Redirect Hostname must be the FQDN of the load balancer. Note: ● Cookie caching limitations also apply to cookie sharing. Therefore, since cookie caching is not supported for CONNECT requests, cookie sharing is not supported. ● Custom keys must be imported manually. Custom Keys are not synchronized across the cluster. ● Cookie sharing is not supported with client certificate authentication. ● Keys must be PKCS#1 RSA public keys. For more information, see *Cookie Sharing*, page 187.

Configure > Security > Access Control > IWA

The Integrated Windows Authentication (IWA) page appears only if you have enabled IWA in the Features table on the **Configure > My Proxy > Basic > General** tab.

Use this page to join or unjoin the Windows domain. When a domain has been joined, the page provides a summary of the domain attributes and an Unjoin button.

For a complete description, see *Integrated Windows Authentication*, page 189.

Integrated Windows Authentication	
Domain Name	Specifies the fully qualified Windows domain name.
Administrator Name	Specifies the Windows Administrator user name.
Administrator Password	Specifies the Windows Administrator password. **Note:** The name and password are used only during the join and are not stored.
Domain Controller	Specifies how to locate the domain controller: ● Auto-detect using DNS ● DC name or IP address If the domain controller is specified by name or IP address, you can also specify backup domain controllers in a comma separated list.
Content Gateway Hostname	Specifies the Content Gateway hostname. Because IWA uses the hostname as a NetBIOS name when registering with Kerberos, the hostname cannot exceed 15 characters in length (a NetBIOS restriction), or 11 characters on Forcepoint appliances (which add 4 characters to the hostname to ensure that the hostname is unique across modules (Doms). **IMPORTANT:** Once the domain is joined the hostname cannot be changed. If it is, IWA will immediately stop working until the domain is unjoined and then rejoined with the new hostname.
Join Domain	Click Join Domain to join the domain.

Configure > Security > Access Control > LDAP

The LDAP configuration options appear on the Configure pane only if you have enabled LDAP in the Features table on the **Configure > My Proxy > Basic > General** tab.

For more information about configuring LDAP see *LDAP authentication*, page 197.

LDAP	
LDAP Server: Hostname	Specifies the hostname of the LDAP server. If you change this option, you must restart Content Gateway.

LDAP Server: Port	Specifies the port used for LDAP communication. The default port number is 389. To use the default Global Catalog server port, specify port 3268. If Secure LDAP is enabled, set the port to 636 or 3269 (the secure LDAP ports). If you change this option, you must restart Content Gateway.
LDAP Server: Secure LDAP	Specifies whether Content Gateway will use secure communication with the LDAP server. If enabled, set the LDAP Port field (above) to 636 or 3269 (the secure LDAP ports).
LDAP Server: Server Type	Specifies the search filter. Select either a Microsoft Active Directory option or other directory services.
LDAP Server: Bind Distinguished Name	Specifies the Full Distinguished Name (fully qualified name) of a user in the LDAP-based directory service. For example: `CN=John Smith,CN=USERS,DC=MYCOMPANY,DC=COM` Enter a maximum of 128 characters in this field. If you do not specify a value for this field, the proxy attempts to bind anonymously.
LDAP Server: Password	Specifies a password for the user identified in the **Bind_DN** field.
LDAP Server: Base Distinguished Name	Specifies the base Distinguished Name (DN). You can obtain this value from your LDAP administrator. You must specify a correct base DN; otherwise LDAP authentication will fail to operate. If you change this option, you must restart Content Gateway.

Configure > Security > Access Control > Radius

The Radius configuration options appear on the Configure pane only if you have enabled Radius in the Features table on the **Configure > My Proxy > Basic > General** tab.

For more information about configuring Radius, see *RADIUS authentication*, page 200.

Radius	
Primary Radius Server: Hostname	Specifies the hostname or IP address of the primary RADIUS authentication server. If you change this option, you must restart Content Gateway.

Primary Radius Server: Port	Specifies the port that Content Gateway uses to communicate with the primary RADIUS authentication server. The default port is 1812. If you change this option, you must restart Content Gateway.
Primary Radius Server: Shared Key	Specifies the key to use for encoding. If you change this option, you must restart Content Gateway.
Secondary Radius Server (optional): Hostname	Specifies the hostname or IP address of the secondary RADIUS authentication server. If you change this option, you must restart Content Gateway.
Secondary Radius Server (optional): Port	Specifies the port that Content Gateway uses to communicate with the secondary RADIUS authentication server. The default port is 1812. If you change this option, you must restart Content Gateway.
Secondary Radius Server (optional): Shared Key	Specifies the key to use for encoding. If you change this option, you must restart Content Gateway.

Configure > Security > Access Control > NTLM

The NTLM configuration options appear on the Configure pane only if you have enabled NTLM in the Features table on the **Configure > My Proxy > Basic > General** tab.

For more information about configuring NTLM, see *Legacy NTLM authentication*, page 195.

NTLM

Domain Controller Hostnames	Specifies the hostnames of the domain controllers in a comma separated list. The format is:
	`host_name[:port][%netbios_name]`
	or
	`IP_address[:port][%netbios_name]`
	If you are using Active Directory 2008, you must include the `netbios_name` or use SMB port 445.
	If you change this option, you must restart Content Gateway.

Load Balancing	Enables or disables load balancing. When enabled, Content Gateway balances the load when sending authentication requests to the domain controllers. **Note:** When multiple domain controllers are specified, even if load balancing is disabled, when the load on the primary domain controller reaches the maximum number of connections allowed, new requests are sent to a secondary domain controller as a short-term failover provision, until such time that the primary domain controller can accept new connections. If you change this option, you must restart Content Gateway.

Configure > Security > Access Control > Domains

The Domains tab appears in the Access Control list only if you have enabled **Rule-Based Authentication** in the Features table on **Configure > My Proxy > Basic > General**.

Use this tab to create and maintain a list of domains that can be specified in authentication rules. Use the Authentication Rules tab to define authentication rules.

Be sure to set the *Global authentication options*, page 181.

Important

You must configure the Domains list before you configure authentication rules.

If you have never configured rule-based authentication, see *Rule-Based Authentication*, page 203, for complete information.

Domains	
Domain List	An unordered list of domains that have been identified for use in authentication rules. Use the **Edit** button to change some attributes associated with the domain. Use the **Delete** or **Unjoin** button to remove a domain from the list. The domain list is stored in auth_domains.config.
Domain list: New Domain button	Use the **New Domain** button to add a domain to the Domains list. The screen is expanded to allow for specification of the domain.
	New Domain action
Domain Details: Domain Identifier	Specify a unique name for the domain. The name is used only by Content Gateway; it does not change any attribute of the actual domain or directory. **Important:** You cannot change the domain identifier after it has been added to the list. To change the name, delete the entry from the list and re-add it with the new name.
Domain Details: Authentication Method	Specify the authentication method: IWA, Legacy NTLM, or LDAP. Radius is not supported. When you select an authentication method, configuration options specific to that method are added to the page. **Important:** You cannot change the authentication method after you add the domain to the list. To change the authentication method, delete the entry from the list and re-add the domain specifying the new authentication method.
Domain Details: Aliasing	Specify an alias to send to the filtering service for all users who match this rule (optional). The alias must be static. It can be empty (blank). The alias must exist in the primary domain controller (the DC visible to the filtering service). See *Unknown users and the 'alias' option*, page 208.
IWA Domain Details	These options are presented when IWA is specified as the authentication method.

Domain Name	Specify the fully qualified domain name. For example: corp-domain.example.com
Administrator Name	Specify a Windows Active Directory domain administrator user name.
Administrator Password	Specify the corresponding domain administrator password. **Note:** The name and password are used only during the join and are not stored.
Domain Controller	Specify how to locate the domain controller: ● Auto-detect using DNS ● DC name or IP address If the domain controller is specified by name or IP address, you can also specify backup domain controllers in a comma separated list.
Content Gateway Hostname	Specify the Content Gateway hostname. Because IWA uses the hostname as a NetBIOS name when registering with Kerberos, the hostname cannot exceed 15 characters in length (a NetBIOS restriction), or 11 characters on Forcepoint appliances (which add 4 characters to the hostname to ensure that the hostname is unique across modules (Doms). **Warning:** Once the domain is joined the hostname cannot be changed. If it is, IWA will immediately stop working until the domain is unjoined and then rejoined with the new hostname.
Join Domain	Click Join Domain to join the domain.
Legacy NTLM Domain Details	
Domain Controller	Specify the IP address and port number of the primary domain controller (if no port is specified, Content Gateway uses port 139), followed by a comma separated list of secondary domain controllers to be used for load balancing and failover.
Load Balance	Select the check box to balance the load across multiple NTLM DCs. **Note:** When multiple domain controllers are specified, even if load balancing is disabled, when the load on the primary domain controller reaches the maximum number of connections allowed, new requests are sent to a secondary domain controller as a short-term failover provision, until such time that the primary domain controller can accept new connections.
LDAP Domain Details	
LDAP Server Name	Specify the LDAP server name.
LDAP Server Port	Specify the LDAP Server Port (optional) The default is 389.
LDAP Base Distinguished Name	Specify the LDAP Base Distinguished Name.

LDAP Server Type	Set the search filter to “sAMAccountName (MS AD)” or “userPrincipalName (MS AD)” for Active Directory, or “uid” for other directory services.
Bind Domain Name	Specify the LDAP bind account distinguished name. For example: CN=John Smith,CN=USERS,DC=MYCOMPANY, DC=COM The field length is limited to 128 characters. If no value is specified, Content Gateway attempts to bind anonymously.
Bind Password	Specify the LDAP bind account password.
Secure LDAP	Specify whether Content Gateway will use secure communication with the LDAP server. If enabled, you must set the LDAP port to one of the secure ports: 636 or 3269.

Configure > Security > Access Control > Authentication Rules

The Authentication Rules tab appears in the Access Control list only if you have enabled **Rule-Based Authentication** in the Features table on the **Configure > My Proxy > Basic > General** tab.

Use this tab to create and maintain authentication rules. Use the **Domains** tab to build and maintain a list of domains that can be used in authentication rules. You must configure the Domains list before you define authentication rules.

Be sure to set the *Global authentication options*, page 181.

Important

If you have never configured rule-based authentication, see *Rule-Based Authentication*, page 203, for complete information.

Authentication Rules	
Authentication Rule List	Displays a table of the ordered list of rules defined for user authentication. Rules are defined for sets of clients to be authenticated against one or more IWA, LDAP and NTLM domains. See *Rule-Based Authentication*, page 203.
Refresh	Updates the table to display the current rules in the **auth_rules.config** file.
Edit File	Opens the authentication rule editor. **Warning:** Do not edit rules directly in the configuration file.

	auth_rules.config Configuration File Editor
rule display box	Lists, in order, the current rule set. When user authentication is performed, the list is traversed, top-down and the first match is applied. Select a rule to edit it. The arrows to the left of the box allow you to move the selected rule up or down in the list. The “X” button deletes the selected rule. Rules cannot be more than 2048 characters.
Add	Adds a new rule.
Set	Updates the selected rule with the current values.
Status	Specifies whether the rule is enabled (active) or disabled after the rule is saved and Content Gateway is restarted. You can create a rule and not enable it until other elements of your network are ready to support it.
Rule Name	Specifies a unique, descriptive name for the rule. It is recommended that the name not exceed 50 characters.
Source IP	Specifies IP addresses or IP address ranges for this rule (must be entered without any spaces). Example: 10.1.1.1 or 0.0.0.0-255.255.255.255 or 10.1.1.1,20.2.2.2,3.0.0.0-3.255.255.255 The comma separated list can contain up to: ■ 64 IPv4 addresses ■ 32 IPv4 address ranges ■ 24 IPv6 addresses ■ 12 IPv6 address ranges
Proxy Port	Specifies the inbound port for traffic when Content Gateway is deployed as an explicit proxy. If undefined, all ports match, as configured on **Configure > Protocols > HTTP > General**. Transparent proxy deployment should leave this field undefined.
User-Agent	Specifies 1 or more regular expressions used to match text in the User-Agent string, for example to match common browsers. Regexes must be POSIX-compliant. The “^” operator is not supported. When the field is empty, all User-Agent values match. You can edit the field directly. To insert a predefined regex for a common browser, select it from the drop down list and click **Add**. Multiple regexes can be specified. Use the “|” character to separate entries (logical ‘or’). For more information, including regex examples, see *Authentication based on User-Agent*, page 220.

Client Certificate	Click **Enabled** to enable client certificate authentication. Select **Use the next selected authentication method if Client Certificate authentication fails** to use one of the other authentication methods if certificate authentication fails for a user. See *Client certificate authentication* for details.
Auth Sequence	Specifies 1 or more domains to use for authentication. Select a domain from the Domains drop down list (populated from the Domains List), and click **Include** to add it to the list. If you add more than one domain, you can set the order by selecting an entry and using the up and down arrows. You can delete a selected domain with the "X" button. **Best practice:** If you know what domain a set of users belongs to, create a rule just for that group. **Best practice:** Place the rule with the largest number of users authenticating with known domain membership at the top of the list. These are the fastest authentications. **Best practice:** If you don't know what domain a set of users belongs to, specify the fewest number of domains needed to authenticate the users in the set. **Best practice:** It is always better to create targeted rules because attempting to authenticate against a large set of domains can introduce noticeable latency. **Important:** When user authentication is rule-based with a domain list: • For each user, the first successful authentication is cached and used in subsequent authentications. If IP address caching is configured, an IP address surrogate is cached. If Cookie Mode is configured, a cookie surrogate is cached. For **Fail Open**: • If **Enabled only for critical service failures** is selected, the fail open setting is not applied. The user continues to be prompted for credentials until there is a timeout. • If **Enabled for all authentication failures, including incorrect password** is selected, after trying basic credentials with every domain in the list, fail open is applied.
Captive Portal	Click **Enabled for HTTPS/HTTP Authentication page** to redirect users to a customizable web portal page for authentication. See *Authentication using Captive Portal* for details.

Apply	Applies the configuration changes. **Important:** If the rule specifies a regex for User-Agent, the regex is validated when **Apply** is clicked. If the regex is not valid, the rule is deleted and must be recreated.
Close	Exits the configuration file editor. Click **Apply** before you click **Close**; otherwise, all configuration changes will be lost.

SOCKS

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For more information about Content Gateway support for SOCKS, see *Configuring SOCKS firewall integration*, page 173.

> **Note**
> The SOCKS configuration options appear on the Configure pane only if you have enabled SOCKS in the Features table on the **Configure > My Proxy > Basic > General** tab.

Configure > Security > SOCKS > General

SOCKS Version	Specifies the version of SOCKS used on your SOCKS server. Content Gateway supports SOCKS version 4 and version 5. If you change this option, you must restart Content Gateway.

Configure > Security > SOCKS > Proxy

SOCKS Proxy	Enables or disables the SOCKS Proxy option. As a SOCKS proxy, Content Gateway can receive SOCKS packets (usually on port 1080) from the client, and forward requests directly to the SOCKS server. For more information about the SOCKS Proxy option, see *Configuring SOCKS firewall integration*, page 173. If you change this option, you must restart Content Gateway.
SOCKS Proxy Port	Specifies the port on which Content Gateway accepts SOCKS traffic. This is usually port 1080. If you change this option, you must restart Content Gateway.

Configure > Security > SOCKS > Server

On-Appliance SOCKS server	Displays only when Content Gateway is on an appliance. Enables or disables the on-appliance SOCKS server. The SOCKS proxy option must be enabled to route client requests through the SOCKS server. You can configure Content Gateway to use other SOCKS servers in your network by editing **socks_server.config**. See the next entry.
Socks Servers table	Displays a table of configured SOCKS servers. For information about adding and configuring SOCKS servers, see *Configuring SOCKS servers*, page 174.
Refresh	Updates the table to display the current entries in **socks_server.config**.
Edit File	Opens the configuration file editor for **socks_server.config**.
	socks_server.config Configuration File Editor
entry display box	Lists the SOCKS servers that have been configured for use with Content Gateway. Select a rule to edit it. The buttons on the left of the box allow you to delete or move the selected entry up or down in the list.
Add	Adds an entry to the server list.
Set	Updates the selected entry. Select a server from the list; modify the settings; click **Set** to update the entry.
Clear Fields	Clears all fields for the selected server.
SOCKS Server Name	Specify a name that helps distinguish this SOCKS server from other SOCKS servers.
SOCKS Server Host	Specify the SOCKS server IP address, or a hostname that is resolvable by your internal DNS service.
SOCKS Port	Specify the port on which the SOCKS server listens.
Default SOCKS Server	Select this option to make this SOCKS server the default SOCKS server.
SOCKS User Name	When SOCKS authentication is used, specify the SOCKS user name with which to authenticate.
SOCKS Password	When SOCKS authentication is used, specify the password that goes with the specified user.
Apply	Applies the configuration changes.
Close	Exits the configuration file editor. Click **Apply** before you click **Close**; otherwise, all configuration changes are lost.

Socks Server Rules	Displays a table listing the rules in the **socks.config** file that specify the SOCKS servers that Content Gateway must go through to access specific origin servers, and the order in which Content Gateway goes through the SOCKS server list. You can also specify the origin servers that you want the proxy to access directly, without going through a SOCKS server. D**o not route through SOCKS server** Rule Type does not support non-HTTP traffic.
Refresh	Updates the table to display the current rules in the **socks.config** file.
Edit File	Opens the configuration file editor for the **socks.config** file.
	socks.config Configuration File Editor
rule display box	Lists the *socks.config* file rules. Select a rule to edit it. The buttons on the left of the box allow you to delete or move the selected rule up or down in the list.
Add	Adds a new rule to the rule display box at the top of the configuration file editor page.
Set	Updates the rule display box at the top of the configuration file editor page.
Rule Type	Select **Route through SOCKS server** to specify the origin servers that you want the proxy to route through a SOCKS server. Select **Do not route through SOCKS server** to specify the origin servers that you want the proxy to access directly, bypassing the SOCKS server(s). D**o not route through SOCKS server** Rule Type does not support non-HTTP traffic.
Destination IP	For **Route through SOCKS server**, specify either a single IP address *or* a range of IP addresses of origin servers for which Content Gateway must use the SOCKS servers specified in the **SOCKS Servers** field below. For **Do not route through SOCKS server**, specify the IP addresses of the origin servers that you want the proxy to access directly (without going through the SOCKS server). You can enter a single IP address, a range of IP addresses, or a list of IP addresses. Separate each entry in the list with a comma. Do not specify the all networks broadcast address: 255.255.255.255.
SOCKS Server	For a **Route through SOCKS server rule**, select the SOCKS server(s) through which to route requests.
Round Robin	Specifies how strictly Content Gateway will follow round robin. You can select **strict**, or **false**.
Apply	Applies the configuration changes.
Close	Exits the configuration file editor. Click **Apply** before you click **Close**; otherwise, all configuration changes will be lost.

Configure > Security > SOCKS > Options

Server Connection Timeout	Specifies how many seconds Content Gateway waits attempting to connect to a SOCKS server before timing out.
Connection Attempts Per Server	Specifies how many times Content Gateway attempts to connect to a given SOCKS server before marking the server as unavailable.
Server Pool Connection Attempts	Specifies how many times Content Gateway attempts to connect to a given SOCKS server in the pool before giving up.

Subsystems

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The Subsystems configuration options are divided into the following categories:

Cache, page 348

Logging, page 350

Networking, page 354

Cache

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Configure > Subsystems > Cache > General

Allow Pinning	Enables or disables the cache pinning option, which lets you keep objects in the cache for a specified time. Set cache pinning rules in the *cache.config* file.
Ram Cache Size	Specifies the size of the RAM cache, in bytes. The default size is 104857600 (100 MB). A value of "-1" directs Content Gateway to automatically size the RAM cache to approximately 1 MB per 1 GB of disk cache. If you change this option, you must restart Content Gateway.
Maximum Object Size	Specifies the maximum size allowed for objects in the cache. A value of 0 (zero) means that there is no size restriction.

Configure > Subsystems > Cache > Hosting

Cache Hosting	Displays a table listing the rules in the **hosting.config** file that controls which cache partitions are assigned to specific origin servers and domains.
Refresh	Updates the table to display the most up-to-date rules in the **hosting.config** file.
Edit File	Opens the configuration file editor for the **hosting.config** file. The configuration file editor page is described below.
	hosting.config Configuration File Editor
rule display box	Lists the **hosting.config** file rules. Select a rule to edit it. The buttons on the left of the box allow you to delete or move the selected rule up or down in the list.
Add	Adds a new rule to the rule display box at the top of the configuration file editor page.
Set	Updates the rule display box at the top of the configuration file editor page.
Primary Destination Type	Specifies the primary destination rule type: Select **domain** if you want to partition the cache according to domain. Select **hostname** if you want to partition the cache according to hostname
Primary Destination Value	Specifies the domain or origin server's hostname whose content you want to store on a particular partition.
Partitions	Specifies a comma-separated list of the partitions on which you want to store the content that belongs to the origin server or domain specified.
Apply	Applies the configuration changes.
Close	Exits the configuration file editor. Click **Apply** before you click **Close**; otherwise, all configuration changes will be lost.

Logging

Configure > Subsystems > Logging > General

Logging	Enables or disables event logging so that transactions are recorded into event log files and/or error log files. Select **Log Transactions and Errors** to log transactions into your selected event log files and errors in the error log files. Select **Log Transactions Only** to log transactions into your selected event log files only. Content Gateway does not log errors in the error log files. Select **Log Errors Only** to log errors in the error log files only. Content Gateway does not log transactions into your selected event log files. Select **Disabled** to turn off logging.
Log Directory	Specifies the path of the directory in which Content Gateway stores event logs. The path of this directory must be the same on every node in the Content Gateway cluster failover group. The default is: /opt/WCG/logs
Log Space: Limit	Specifies the maximum amount of space (in megabytes) allocated to the logging directory for the log files. When Content Gateway is on an appliance, the size is set to 5120 (5 GB) and cannot be changed. When Content Gateway is installed on a stand-alone server, the default size is 20480 (20 GB) and the size is configurable. **Note:** Transaction logs can consume a lot of space. Make sure that this limit is smaller than the actual space available on the partition that contains the logging directory.
Log Space: Headroom	Specifies the tolerance for the log space limit. If the **Auto-Delete Rolled Files** option is enabled, autodeletion is triggered when the amount of free space available in the logging directory is less than the headroom.
Log Rolling: Enable/ Disable	Enables or disables log file rolling. To keep log files down to manageable sizes, you can roll them at regular intervals. See *Rolling event log files*, page 245.
Log Rolling: Offset Hour	Specifies the hour when log rolling takes place. You can set a time of the day in the range 0 to 23. For example, if the offset hour is 0 (midnight) and the roll interval is 6, the log files are rolled at 00:00, 06:00, noon, and 18:00.

Log Rolling: Interval	Specifies the amount of time Content Gateway enters data in log files before rolling them to **.old** files. The minimum value is 300 seconds (five minutes). The default value is 21600 seconds (6 hours). The maximum value is 86400 (1 day).
Log Rolling: Auto-Delete Rolled Files	Enables autodeletion of rolled log files when available space in the log directory is low. Autodeletion is triggered when the amount of free space available in the log directory is less than the **Log Space Headroom**.
Reverse DNS lookup for Threat Tracking	Enables or disables reverse DNS lookups to facilitate inclusion of the client host name in the Threats dashboard in the Web Security module of the Forcepoint Security Manager, and in logs and reports. **Caution:** To achieve the expected results and avoid unexpected network behaviors, before enabling this option be sure that reverse DNS is configured in your network.

Configure > Subsystems > Logging > Formats

Squid Format: Enable/ Disable	Enables or disables the Squid log format.
Squid Format: ASCII/ Binary	Select **ASCII** or **Binary** as the type of log files to be created.
Squid Format: Filename	Specifies the name used for Squid log files. The default filename is **squid.log**.
Squid Format: Header	Specifies the text header you want Squid log files to contain.
Netscape Common Format: Enable/ Disable	Enables or disables the Netscape Common log format.
Netscape Common Format: ASCII/ Binary	Select **ASCII** or **Binary** as the type of log file to be created.
Netscape Common Format: Filename	Specifies the name used for Netscape Common log files. The default filename is **common.log**.
Netscape Common Format: Header	Specifies the text header you want Netscape Common log files to contain.
Netscape Extended Format: Enable/ Disable	Enables or disables the Netscape Extended log format.
Netscape Extended Format: ASCII/ Binary	Select **ASCII** or **Binary** as the type of log file to be created.
Netscape Extended Format: Filename	Specifies the name used for Netscape Extended log files. The default filename is **extended.log**.
Netscape Extended Format: Header	Specifies the text header you want Netscape Extended log files to contain.
Netscape Extended 2 Format: Enable/Disable	Enables or disables the Netscape Extended-2 log format.

Netscape Extended 2 Format: ASCII/Binary	Select **ASCII** or **Binary** as the type of log file to be created.
Netscape Extended 2 Format: Filename	Specifies the name used for Netscape Extended-2 log files. The default filename is **extended2.log**.
Netscape Extended 2 Format: Header	Specifies the text header you want Netscape Extended-2 log files to contain.

Configure > Subsystems > Logging > Splitting

Split ICP Logs	When enabled, Content Gateway records ICP transactions in a separate log file. When disabled, Content Gateway records ICP transactions in the same log file with HTTP and FTP entries.
Split Host Logs	When enabled, Content Gateway creates a separate log file for each of the hosts listed in the log_hosts.config file. When disabled, Content Gateway records transactions for all hosts in the same log file.

Configure > Subsystems > Logging > Collation

Collation Mode	Specifies the log collation mode for this Content Gateway node. You can use the log file collation feature to keep all logged information in one place. For more information about log file collation, see *Collating event log files*, page 250. Select **Collation Disabled** to disable log collation on this Content Gateway node. Select **Be a Collation Server** to configure this Content Gateway node to be the collation server. Select **Be a Collation Client** to configure this Content Gateway server to be a collation client. A Content Gateway server configured as a collation client sends only the active standard log files, such as Squid, Netscape Common, and so on, to the collation server. If you select this option, enter the hostname of the collation server for your cluster in the **Log Collation Server** field. Note: When logs are collated, the source of the log entry—its node of origin—is lost unless you turn on the **Log collation host tagged** option (described below). Log collation consumes cluster bandwidth in sending all log entries to a single node. It can therefore affect the performance of the cluster. If you want Content Gateway as a collation client to send custom (XML-based) log files, you must specify a `LogObject` in the **logs_xml.config** file.
Log Collation Server	Specifies the hostname of the log collation server to which you want to send log files.
Log Collation Port	Specifies the port used for communication between the collation server and client. You must specify a port number in all cases, except when log collation is inactive. The default port number is 8085. Note: Do not change the port number unless there is a conflict with another service already using the port.
Log Collation Secret	Specifies the password for the log collation server and the other nodes in the cluster. This password is used to validate logging data and prevent the exchange of arbitrary information.
Log Collation Host Tagged	When this option is enabled, Content Gateway adds the hostname of the node that generated the log entry to end of the entry in the collated log file.
Log Collation Orphan Space	Specifies the maximum amount of space (in megabytes) allocated to the logging directory for storing orphan log files on the Content Gateway node. Content Gateway creates orphan log entries when it cannot contact the log collation server.

Configure > Subsystems > Logging > Custom

Custom Logging	Enables or disables custom logging.
Custom Log File Definitions	Displays the *logs_xml.config* file so that you can configure custom (XML-based) logging options.

Networking

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The Networking configuration options are divided into the following categories:

Connection Management, page 354

ARM, page 356

WCCP, page 363

DNS Proxy, page 367

DNS Resolver, page 368

ICAP, page 372

Virtual IP, page 373

Health Check URLs, page 374

Connection Management

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The options on the Connection Management pages allow you to tune several important properties of proxy behavior, including connection throttling and load shedding, and individual client connection limits and rates.

By default, Content Gateway accepts 60,000 connections. A connection throttle event occurs when client or origin server connections reach 90% of half the configured limit (27,000 by default). When a connection throttle event occurs, Content Gateway continues processing all existing connections and queues new client connection requests until the connection count falls below the limit.

If you think that Content Gateway is hitting the connection limits, you should monitor the Performance graphs to get an accurate reading of connection activity. In particular, check the **Active Client Connections** and **TCP ESTABLISHED Connections** graphs. You can also check error messages in the system log file, error log file, or event log files.

Configure > Networking > Connection Management > Throttling

Throttling Net Connections	Specifies the maximum number of network connections that Content Gateway accepts. The default value is 60,000. Setting a Content Gateway throttle limit helps to prevent system overload when traffic bottlenecks develop. When network connections reach this limit, Content Gateway queues new connections until existing connections close. Do not set this variable below the minimum value of 100.

Configure > Networking > Connection Management > Load Shedding

Maximum Connections	Specifies the maximum number of client connections allowed before the ARM starts forwarding incoming requests directly to the origin server. The default value is 1 million connections. If you change this option, you must restart Content Gateway.

Configure > Networking > Connection Management > Client Connection Control

Specifies:

- Client concurrent connection limits
- Client connection rate limits
- Proxy response when a limit is exceeded
- A list of clients excepted from the limits

Concurrent Connection Limit: Maximum concurrent connections	Specifies the maximum number of concurrent HTTP/HTTPS connections a client is allowed. The default is 1000. The supported range is: 1 - 45000
Concurrent Connection Limit: Alert when limit exceeded	When enabled, causes Content Gateway to generate an alert when a client exceeds the maximum concurrent connection limit. In addition to displaying the alert in the Content Gateway manager, it is also logged in /var/log/messages and content_gateway.out.
Concurrent Connection Limit: Close excessive connections when limit exceeded	When enabled, causes Content Gateway to close excessive connections when the limit is exceeded.

Connection Rate Limit: Maximum connection rate	Specifies the maximum connections per second, averaged over a minute, that a client can make. The default is 100. The supported range is: 1 - 1000
Connection Rate Limit: Alert when limit exceeded	When enabled, causes Content Gateway to generate an alert when a client exceeds the maximum connection rate limit. In addition to displaying the alert in the Content Gateway manager, it is also logged in /var/log/messages and content_gateway.out.
Connection Rate Limit: Close excessive connections when limit exceeded	When enabled, causes Content Gateway to close excessive connections when the limit is exceeded.
Exceptions	Specifies IP addresses and/or IP address ranges to which connection limits are **not** applied. IP addresses can be IPv4 or IPv6 (IPv6 support must be enabled). Multiple addresses or ranges can be specified in a comma-separated list that can contain up to: ■ 64 IPv4 addresses ■ 32 IPv4 address ranges ■ 24 IPv6 addresses ■ 12 IPv6 address ranges

ARM

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The Adaptive Redirection Module (ARM) performs several essential functions including sending device notifications for cluster communication interface failover and inspection of incoming packets before a routing decision is made and redirecting the packets to Content Gateway for processing.

The ARM is always active. For more information, see *The Content Gateway ARM*, page 48.

Configure > Networking > ARM > General

Redirection Rules	Displays the redirection rules in the *ipnat.conf* file that specify how incoming packets are redirected when the proxy is serving traffic transparently. During installation, Content Gateway creates a small number of default rules. These rules can be added to and modified. IPv4 and IPv6 addresses are supported. During operation, Content Gateway traverses the list top down and applies the first matching rule.
Refresh	Updates the table to display the most up-to-date rules in the **ipnat.conf** file.
Edit File	Opens the configuration file editor for the **ipnat.conf** file.

	ipnat.conf Configuration File Editor
rule display box	Lists the *ipnat.conf* file rules. Select a rule to edit it. The buttons on the left of the box allow you to delete or move the selected rule up or down in the list.
Add	Adds a new rule to the rule display box at the top of the configuration file editor page.
Set	Updates the rule display box at the top of the configuration file editor page.
Ethernet Interface	Specifies the Ethernet interface that traffic will use to access the Content Gateway machine: for example, `eth0` on Linux.
Connection Type	Specifies the connection type that applies for the rule: TCP or UDP.
Destination IP	Specifies the IP address from which traffic is sent. 0.0.0.0 or :: match all IP addresses.
Destination CIDR	Specifies the IP address in CIDR (Classless Inter-Domain Routing) format, such as 1.1.1.0/24. Entering a value in this field is optional.
Destination Port	Specifies the traffic destination port: for example, 80 for HTTP traffic.
Redirected Destination IP	Specifies the IP address of your Content Gateway server.
Redirected Destination Port	Specifies the proxy port: for example, 8080 for HTTP traffic.
User Protocol (Optional)	When **dns** is selected, the ARM redirects DNS traffic to Content Gateway: otherwise, DNS traffic is bypassed.
Apply	Applies the configuration changes.
Close	Exits the configuration file editor. Click **Apply** before you click **Close**; otherwise, all configuration changes are discarded.
IP Spoofing: Enabled/ Disabled	Enables or disables the IP spoofing option, which configures Content Gateway to establish connections to origin servers with the client IP address instead of the Content Gateway IP address. For more information, see *Content Gateway IP spoofing*, page 77. **WARNING:** IP spoofing requires precise control of the routing paths on your network, overriding the normal routing process for traffic running on TCP port 80 and 443.

	ipnat.conf Configuration File Editor
rule display box	Lists the *ipnat.conf* file rules. Select a rule to edit it. The buttons on the left of the box allow you to delete or move the selected rule up or down in the list.
Add	Adds a new rule to the rule display box at the top of the configuration file editor page.
Set	Updates the rule display box at the top of the configuration file editor page.
Ethernet Interface	Specifies the Ethernet interface that traffic will use to access the Content Gateway machine: for example, `eth0` on Linux.
Connection Type	Specifies the connection type that applies for the rule: TCP or UDP.
Destination IP	Specifies the IP address from which traffic is sent. 0.0.0.0 or :: match all IP addresses.
Destination CIDR	Specifies the IP address in CIDR (Classless Inter-Domain Routing) format, such as 1.1.1.0/24. Entering a value in this field is optional.
Destination Port	Specifies the traffic destination port: for example, 80 for HTTP traffic.
Redirected Destination IP	Specifies the IP address of your Content Gateway server.
Redirected Destination Port	Specifies the proxy port: for example, 8080 for HTTP traffic.
User Protocol (Optional)	When **dns** is selected, the ARM redirects DNS traffic to Content Gateway: otherwise, DNS traffic is bypassed.
Apply	Applies the configuration changes.
Close	Exits the configuration file editor. Click **Apply** before you click **Close**; otherwise, all configuration changes are discarded.
IP Spoofing: Enabled/ Disabled	Enables or disables the IP spoofing option, which configures Content Gateway to establish connections to origin servers with the client IP address instead of the Content Gateway IP address. For more information, see *Content Gateway IP spoofing*, page 77. **WARNING:** IP spoofing requires precise control of the routing paths on your network, overriding the normal routing process for traffic running on TCP port 80 and 443.

Range Based IP Spoofing: Enabled/ Disabled	Enables or disables the range-based IP spoofing extension. This extension supports the specification of IP addresses and ranges of addresses that are mapped to specified IP addresses for spoofing. Many groups can be specified. However, use this feature judiciously because list traversal adds overhead to every connection request. The larger the list, the more overhead. The list is traversed in order (as displayed). The first match is applied. Clients that don't match a grouping are spoofed with their own IP address (basic IP spoofing). For more information, see *Content Gateway IP spoofing*, page 77.
Range Based IP Spoofing: Address table	In the **Client IP Addresses** field, enter a comma separated list of individual IP addresses and/or IP address ranges. Do not use spaces. You can use: ● A simple IP address, such as 123.45.67.8 ● CIDR (Classless Inter-Domain Routing) format, such as 1.1.1.0/24. ● A range separated by a dash, such as 1.1.1.1-2.2.2.2 ● Any combination of the above, separated by commas, such as: 1.1.1.0/24,25.25.25.25,123.1.23.1-123.1.23.123 ● A maximum of 64 IPv4 addresses or 32 IPv4 address ranges. In the **Spoofed IP Address** field, enter the IP address to use with matching clients. This is the spoofed IP address. To add a row to the table, click **Add Row**. To remove a row from the table, delete the contents of the cells. When you click **Apply** the empty row(s) is removed The table always has a minimum of 5 rows. Restart Content Gateway to put changes into effect.

Configure > Networking > ARM > Static Bypass

Static bypass rules route requests around the proxy (bypass). Rules can be defined for clients (sources), origin servers (destinations), or both (pairs). See *Static bypass rules*,

page 73.

Important

This feature is for transparent proxy deployments only.

Static Bypass table	Lists the configured static bypass rules. When Content Gateway is serving transparent traffic, the proxy uses these rules to determine whether to bypass incoming client requests or attempt to serve them transparently. Rules are stored in *bypass.config*
Refresh	Updates the table to display the most up-to-date rules in the **bypass.config** file.
Edit File	Opens the configuration file editor for the **bypass.config** file.
	bypass.config Configuration File Editor
rule display box	Lists the *bypass.config* file rules. Select a rule to edit it. The buttons on the left of the box allow you to delete or move the selected rule up or down in the list.
Add	Adds a new rule to the rule display box at the top of the configuration file editor page.
Set	Updates the rule display box at the top of the configuration file editor page.
Rule Type	Specifies the rule type: A **bypass** rule bypasses specified incoming requests. A **deny_dyn_bypass** rule prevents the proxy from bypassing specified incoming client requests dynamically (a deny bypass rule can prevent Content Gateway from bypassing itself).
Source IP	Specifies the source IP address in incoming requests that the proxy must bypass or deny bypass. The IP address can be one of the following: A simple IP address, such as 123.45.67.8 In CIDR (Classless Inter-Domain Routing) format, such as 1.1.1.0/24. A range separated by a dash, such as 1.1.1.1-2.2.2.2 Any combination of the above, separated by commas, such as 1.1.1.0/24, 25.25.25.25, 123.1.23.1-123.1.23.123

Destination IP	Specifies the destination IP address of incoming requests that the proxy must bypass or deny bypass. The IP address can be one of the following: A simple IP address, such as 123.45.67.8 In CIDR (Classless Inter-Domain Routing) format, such as 1.1.1.0/24 A range separated by a dash, such as 1.1.1.1-2.2.2.2 Any combination of the above, separated by commas, such as 1.1.1.0/24, 25.25.25.25, 123.1.23.1-123.1.23.123
Apply	Applies the configuration changes.
Close	Exits the configuration file editor. Click **Apply** before you click **Close**; otherwise, all configuration changes will be lost.

Configure > Networking > ARM > Dynamic Bypass

Dynamic Bypass	Enables or disables the dynamic bypass option to bypass the proxy and go directly to the origin server when clients or servers cause problems. Dynamic bypass rules are deleted when you stop Content Gateway.
Behavior: Non-HTTP, Port 80	Select **Enabled** to enable dynamic bypass when Content Gateway encounters non-HTTP traffic on port 80. Select **Disabled** to disable dynamic bypass when Content Gateway encounters non-HTTP traffic on port 80. Select **Source-Destination** to enable dynamic source/destination bypass when Content Gateway encounters non-HTTP traffic on port 80. Select **Destination Only** to enable dynamic destination bypass when Content Gateway encounters non-HTTP traffic on port 80.
Behavior: HTTP 400	Select **Enabled** to enable dynamic bypass when an origin server returns a 400 error. Select **Disabled** to disable dynamic bypass when an origin server returns a 400 error. Select **Source-Destination** to enable dynamic source/destination bypass when an origin server returns a 400 error. Select **Destination Only** to enable dynamic destination bypass when an origin server returns a 400 error.
Behavior: HTTP 401	Select **Enabled** to enable dynamic bypass when an origin server returns a 401 error. Select **Disabled** to disable dynamic bypass when an origin server returns a 401 error. Select **Source-Destination** to enable dynamic source/destination bypass when an origin server returns a 401 error. Select **Destination Only** to enable dynamic destination bypass when an origin server returns a 401 error.

Behavior: HTTP 403	Select **Enabled** to enable dynamic bypass when an origin server returns a 403 error. Select **Disabled** to disable dynamic bypass when an origin server returns a 403 error. Select **Source-Destination** to enable dynamic source/ destination bypass when an origin server returns a 403 error. Select **Destination Only** to enable dynamic destination bypass when an origin server returns a 403 error.
Behavior: HTTP 405	Select **Enabled** to enable dynamic bypass when an origin server returns a 405 error. Select **Disabled** to disable dynamic bypass when an origin server returns a 405 error. Select **Source-Destination** to enable dynamic source/ destination bypass when an origin server returns a 405 error. Select **Destination Only** to enable dynamic destination bypass when an origin server returns a 405 error.
Behavior: HTTP 406	Select **Enabled** to enable dynamic bypass when an origin server returns a 406 error. Select **Disabled** to disable dynamic bypass when an origin server returns a 406 error. Select **Source-Destination** to enable dynamic source/ destination bypass when an origin server returns a 406 error. Select **Destination Only** to enable dynamic destination bypass when an origin server returns a 406 error.
Behavior: HTTP 408	Select **Enabled** to enable dynamic bypass when an origin server returns a 408 error. Select **Disabled** to disable dynamic bypass when an origin server returns a 408 error. Select **Source-Destination** to enable dynamic source/ destination bypass when an origin server returns a 408 error. Select **Destination Only** to enable dynamic destination bypass when an origin server returns a 408 error.
Behavior: HTTP 500	Select **Enabled** to enable dynamic bypass when an origin server returns a 500 error. Select **Disabled** to disable dynamic bypass when an origin server returns a 500 error. Select **Source-Destination** to enable dynamic source/ destination bypass when an origin server returns a 500 error. Select **Destination Only** to enable dynamic destination bypass when an origin server returns a 500 error.

WCCP

> **Note**
> The WCCP configuration options appear on the Configure pane only if you have enabled WCCP in the Features table on the **Configure > My Proxy > Basic > General** tab.

The options defined in the **wccp.config** configuration file control the use of WCCP with Content Gateway. Entries should be defined and maintained using the editor provided on **Configure > Networking > WCCP**.

Administrators should have a good working knowledge of WCCP.

Only WCCP v2 is supported.

It is recommended that you consult the documentation and the manufacturer's support site for information regarding optimal configuration and performance of your WCCP v2 device. Most devices should be configured to take best advantage of hardware-based redirection. With Cisco devices, the most recent version of IOS is usually best.

For every active WCCP service group, there must be a corresponding ARM redirection rule. See *ARM*, page 356.

For a complete description of Content Gateway support for WCCP v2, see *Transparent interception with WCCP v2 devices*, page 51.

Option	Description
WCCP Service Groups	Displays a table of the service groups defined in the **wccp.config** file. WCCP service group configuration defines WCCP behavior. Column fields are explained in the Configuration Editor entries below.
Refresh	Refreshes the table to display the current definitions in the **wccp.config** file.
Edit File	Opens **wccp.config** in the configuration file editor.

Option	Description
Synchronize in the Cluster	When there are several Content Gateway nodes in a cluster: Enable this option to cause the WCCP configuration (**wccp.config**) to be synchronized in the cluster. This allows configuration changes to be made on any node in the cluster. Disable this option to cause the WCCP configuration to **not** be synchronized in the cluster. This requires that changes to the WCCP configuration be made individually on each node. A common use case for this is to control which service groups are enabled/ disabled on each node, and to use proportional load distribution with **weight**. If after being disabled this option is enabled, the configuration on the node on which the option is enabled is used to initially synchronize the cluster.
	wccp.config Configuration File Editor
Service group display box	Lists the WCCP service group definitions. Select an entry in the list to edit it. Use the "X" button to delete the selection. List order has no meaning; therefore, the up and down arrows can be ignored.
Add	Adds a new service group definition. After Add is clicked, the new definition is displayed in the box at the top of the page.
Set	Accepts modifications to the selected service group definition, displaying the new values in the box at the top of the page.
	Service Group Information
Service Group Status	Enables or disables the service group. If you change this option, you must restart Content Gateway.
Service Group Name	Specifies a unique service group name. This is as an aid to administration.
Service Group ID	Specifies a service group ID between 0-255. This ID must also be configured on the router(s). If the specified number is already in use, an error is displayed when Add or Set is clicked.
Protocol	Specifies the protocol, TCP or UDP, that applies to this service group.
Ports	Specifies the ports the service group will use. **Specify ports** can be used to list up to 8 ports in a comma-separated list. **All ports** can be selected to redirect traffic from all ports.

Option	Description
Network Interface	Specifies the Ethernet interface on this Content Gateway host system to use with this service group. On Forcepoint appliances, use the CLI command 'show interface info' to view the logical name to physical interface bindings.
	Mode Negotiation
Special Device Profile	Select **ASA Firewall** to specify that traffic is routed to the proxy by a Cisco ASA firewall. When this option is selected, GRE is automatically selected as the Packet Forward Method and Packet Return Method. These settings are required and cannot be changed.
Packet Forward Method	Specifies the preferred encapsulation method used by the WCCP router to transmit intercepted traffic to the proxy. If the router supports GRE and L2, the method specified here is used. **Important:** GRE and Multicast are incompatible. **Important:** If you change the forward or return method configuration while there is an active connection with the WCCP device, in order to re-negotiated the method you must force the current connection to terminate. Typically, this means turning off the service group on the WCCP device for 60 seconds. See the documentation for your WCCP device.
Packet Return Method	Specifies the preferred packet encapsulation method used to return rejected or declined traffic to the WCCP router. **Note**: If Content Gateway is configured with a Forward/Return method that the router does not support, the proxy attempts to negotiate a method supported by the router. **Note**: Selecting L2 requires that the router or switch be Layer 2-adjacent (in the same subnet) as Content Gateway.
	Advanced Settings
Assignment Method	Specifies the method that the router will use to distribute intercepted traffic across multiple proxy servers. Choices are **HASH** and **MASK**. The MASK value is applied up to 6 significant bits (in a cluster, a total of 64 buckets are created). See your WCCP documentation for more information about assignment method. Use the value recommended in the manufacturer's documentation for your device.

Option	Description
Distribution attribute(s)	Specifies the attribute that the assignment method uses to determine which requests are distributed to which proxy servers. If the assignment method is HASH, select one or more distribution attributes. If the assignment method is MASK, select one distribution attribute.
Weight	This option is only useful when **Synchronize in the Cluster** is **disabled**. Specifies the distribution of requests to servers in a cluster by proportional weighting. Set **weight** to a value that is the desired proportion of the total flow of traffic. When all cluster members have a value of 0 (the default), distribution is equal. If any member has a non-zero value, distribution is proportional, relative to the weight values of other members. Members that continue to have a value of zero, receive no traffic. See *WCCP load distribution*, page 54.
Reverse Service Group ID	For use when IP spoofing is enabled. When IP spoofing is enabled, the proxy advertises a reverse service group for each enabled WCCP forward service group. **The reverse service group must be applied along the return path of origin server responses to the proxy.**
	Router Information
Security (optional)	Enables or disables security so that the router and Content Gateway can authenticate each other. If you enable security in Content Gateway, you must also enable security on the router. See your router documentation. If you change this option, you must restart Content Gateway.
Security:Password	Specifies the password used for authentication. The password must be the same password as that configured on the router for the associated service group ID and can be a maximum of eight characters long. If you change this option, you must restart Content Gateway.
Multicast (optional)	Enables or disables WCCP multicast mode. **Important:** Cannot be used with GRE packet Forward/Return method. If you change this option, you must restart Content Gateway.
Multicast: IP Address	Specifies the multicast IP address. If you change this option, you must restart Content Gateway.

Option	Description
WCCP Routers: Router IP Address	Specifies the IP addresses of up to 10 WCCP v2-enabled routers. If ASA_Firewall was selected as the Service Device Profile, entries should include both the router IP Address and the WCCP router ID, separated by /. A total of 24 WCCP routers across all service groups is supported (with v8.5.3) if the Packet Forward Method or Packet Return Method is GRE. An IP address for the local GRE tunnel endpoint for each router must also be provided. If you change this option, you must restart Content Gateway.
WCCP Routers: Local GRE Tunnel Endpoint IP Address	If GRE is selected for Packet Return Method, also specify Local GRE Tunnel Endpoint IP Addresses, **except** when the device is an ASA firewall. These are Content Gateway tunnel endpoints for the associated Router IP Addresses. A Local GRE Tunnel Endpoint IP Address: ● Must be unique for every router in the table ● Must not be assigned to any other device ● Must be a routable IP address ● Should reside on the same subnet as the proxy. If it is not, you must define a route for it. ● Is not intended to be a client-facing proxy IP address ● Is bound to the physical interface specified for the service group (on Forcepoint appliances, use the CLI command 'show interface info' to view the logical name to physical interface bindings.
WCCP Routers: GRE Tunnel Next Hop Router IP Address	Specify a GRE Tunnel Next Hop Router IP Address (must be in IPv4 format) when GRE Packet Return Method is configured and Content Gateway does not have a route back to the WCCP router. You can use "ping" to test connectivity to the router.

DNS Proxy

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Note

The DNS Proxy configuration options appear on the Configure pane only if you have enabled DNS Proxy in the Features table on the **Configure > My Proxy > Basic > General** tab.

Configure > Networking > DNS Proxy

DNS Proxy Port	Specifies the port that Content Gateway uses for DNS traffic. The default port is 5353.

DNS Resolver

Configure > Networking > DNS Resolver > Resolver

Local Domain Expansion	Enables or disables local domain expansion so that Content Gateway can attempt to resolve unqualified hostnames by expanding to the local domain. For example, if a client makes a request to an unqualified host named `hostx`, and if the WCG local domain is **y.com**, Content Gateway expands the hostname to **hostx.y.com**.
DNS Preference	Specifies the IP version preference when IPv6 support is enabled in Content Gateway and a web server supports both IPv4 and IPv6. Select IPv4 to cause the proxy to prefer IPv4. Select IPv6 to cause the proxy to prefer IPv6. The DNS Preference is not applied to FTP requests made in transparent proxy mode. The proxy uses the IP address sent with the request.
DNS Preference Exceptions	List IPv4 / IPv6 preference rules for specific origin servers.
Refresh	Updates the table to display the most up-to-date rules. Click this button after you have added or modified rules with the configuration file editor.
Edit File	Opens the configuration file editor.
	dns_prefer_exception.config File Editor
rule display box	Displays an ordered list of the **dns_prefer_exception.config** file rules. Select a rule to edit it. The buttons on the left of the box allow you to delete or move the selected rule up or down in the list.
Add	Adds a new rule to the rule display box. Enter information in the fields provided before clicking this button.
Set	Updates the selected rule with the values in the entry fields.
Name	Specify a unique name to aid in administering rules.
Destination Host	Specify the destination hostname.

Preferred Format	Specify the preferred IP version, IPv4 or IPv6.
Apply	Applies the configuration changes.
Close	Exits the configuration file editor. Click **Apply** before you click **Close**; otherwise, all configuration changes are lost.

Configure > Networking > DNS Resolver > Host Database

These setting pertain to all DNS name resolution performed by Content Gateway, including DNS Proxy.

DNS Lookup Timeout	Specifies the maximum number of seconds the proxy can wait for a lookup response from the DNS server. Specifies how long, in seconds, the proxy will wait before making a second DNS request if there is no response to the first request. The value is stored in "proxy.config.hostdb.lookup_timeout". The default value is 120 seconds. **Important:** This setting is not used. Instead the records.config entry "proxy.config.dns.lookup_timeout" is used. The default value is 20 seconds. **proxy.config.dns.lookup_timeout** specifies how long the proxy will wait for the DNS response after sending the request.

Foreground Timeout	Specifies how long DNS entries remain in the host database before they are flagged as stale. This setting is used only when “proxy.config.hostdb.ttl_mode” is not zero (the default value is 0, which means use the time-to-live (ttl) value set by the DNS server. See *HostDB*, page 458. For example, if this timeout is 24 hours and a client requests an entry that has been in the database for 24 hours or longer, the proxy refreshes the entry before serving it. The default is 86400 seconds (144 minutes). **Caution:** Setting the foreground timeout too low might slow response time. Setting it too high risks accumulation of incorrect information.
Failed DNS Timeout	Specifies how long, in seconds, that a hostname is retained in the failed DNS lookup cache (default = 60). When the timeout expires, the hostname is removed from the cache and the next request for that hostname is sent to the DNS server. A DNS lookup failure is considered to have occurred when: ● There is no DNS response ● There is a DNS response error code, including NXDOMAIN ● There is an error parsing the DNS response code (there is a malformed response). Zero (0) is not a legal value.

Configure > Networking > DNS Resolver > Split DNS

Split DNS	Enables or disables the Split DNS option. When enabled, Content Gateway can use multiple DNS servers, depending on your security requirements. For example, you can configure the proxy to look to one set of DNS servers to resolve hostnames on your internal network, while allowing DNS servers outside the firewall to resolve hosts on the Internet. For information about using Split DNS, see *Using the Split DNS option*, page 176.
Default Domain	Specifies the default domain used for split DNS requests. If a hostname does not include a domain, Content Gateway appends the default domain name to the hostname before choosing which DNS server to use.
DNS Servers Specification	Displays a table listing the rules in the *splitdns.config* file that control which DNS server the proxy uses for resolving hosts under specific conditions.

Refresh	Updates the table to display the most up-to-date rules in the **splitdns.config** file. Click this button after you have added or modified rules with the configuration file editor.
Edit File	Opens the configuration file editor so that you can edit and add rules to the **splitdns.config** file. The configuration file editor page is described below.
	splitdns.config Configuration File Editor
rule display box	Lists the *splitdns.config* file rules. Select a rule to edit it. The buttons on the left of the box allow you to delete or move the selected rule up or down in the list.
Add	Adds a new rule to the rule display box at the top of the configuration file editor page. Enter information in the fields provided before you click this button.
Set	Updates the rule display box at the top of the configuration file editor page. Select a rule and change its properties before you click this button.
Primary Destination Type	Specifies that DNS server selection is based on the destination domain (**dest_domain**), destination host (**dest_host**), or on a regular expression (**url_regex**).
Primary Destination Value	Specifies the value of the primary destination. Place the symbol "!" at the beginning of the value to specify the NOT logical operator. The NOT logical operator applies only if the number of rules does not exceed the value set in proxy.config.dns.splitdns.file_match.count defined in **records.config**.
DNS Server IP	Specifies the DNS server to use with the primary destination specifier. You can specify a port using a colon (`:`). If you do not specify a port, 53 is used. You can specify multiple DNS servers separated by spaces or by semicolons (`;`).
Default Domain Name (Optional)	Specifies the default domain name to use for resolving hosts. Only one entry is allowed. If you do not provide the default domain, the system determines its value from **/etc/resolv.conf**.
Domain Search List (Optional)	Specifies the domain search order. You can specify multiple domains separated by spaces or by semicolons (`;`). If you do not provide the search list, the system determines the value from **/etc/resolv.conf**.
Apply	Applies the configuration changes.
Close	Exits the configuration file editor. Click **Apply** before you click **Close**; otherwise, all configuration changes are lost.

ICAP

> **Note**
> The ICAP configuration option appears on the Configure pane only if you have enabled **ICAP** in the **Features** table on the **Configure > My Proxy > Basic > General** tab.

ICAP provides an alternate interface to Forcepoint DLP, and other data security services that are ICAP-conversant. A primary and backup URI can be specified, and failover and load balancing can be configured. See *Configuring the ICAP client*, page 125 and the subsection for *ICAP failover and load balancing*, page 126.

Configure > Networking > ICAP

ICAP Service URI	Specifies the Uniform Resource Identifier for the ICAP service. The format is:
	`icap://hostname:port/path`
	For example:
	`icap://ICAP_machine:1344/reqmod`
	The default ICAP port is 1344. If you are using the default port, you need not specify it in the URI.
	An optional secondary URI service can be specified immediately after the first by adding a comma and the URI of the second service, no spaces.

Analyze HTTPS Content	Select whether decrypted traffic should be sent to the data protection software for analysis or sent directly to the destination.
Analyze FTP Uploads	Select whether to send FTP upload requests to the data protection software for analysis. The FTP proxy feature must be enabled. See *FTP*, page 319.
Action for Communication Errors	Select whether to allow traffic or send a block page if Content Gateway receives an error while communication with the data protection software.
Action for Large files	Select whether to allow traffic or send a block page if a file larger than the size limit specified in the data protection software is sent. The default size limit in Forcepoint DLP is 50 MB.

Virtual IP

Note

The Virtual IP configuration options appear on the Configure pane only if you have enabled Virtual IP in the Features table on the **Configure > My Proxy > Basic > General** tab.

Configure > Networking > Virtual IP

Virtual IP Addresses	Displays a table listing the virtual IP addresses managed by Content Gateway.
Refresh	Updates the table to display the most up-to-date list of virtual IP addresses. Click this button after you have added to or modified the list of virtual IP addresses with the configuration file editor.
Edit File	Opens the configuration file editor so that you can edit and add to the list of virtual IP addresses.
	vaddrs.config Configuration File Editor
rule display box	Lists the virtual IP addresses. Select a virtual IP address to edit it. The buttons on the left of the box allow you to delete or move the selected virtual IP address up or down in the list.
Add	Adds a new virtual IP address to the rule display box at the top of the configuration file editor page.
Set	Updates the rule display box at the top of the configuration file editor page.
Virtual IP Address	Specifies the virtual IP address managed by Content Gateway.
Ethernet Interface	Specifies the network interface assigned to the virtual IP address.
Sub-Interface	Specifies the subinterface ID. This is a number between 1 and 255 that the interface uses for the address.
Apply	Applies the configuration changes.
Close	Exits the configuration file editor. Click **Apply** before you click **Close**; otherwise, all configuration changes will be lost.

Health Check URLs

Content Gateway includes 3 URLs that return proxy health and performance information in the HTTP response. These URLs are designed to help load balancers optimize performance by acquiring and adjusting for real-time state information of each proxy node.

The default port for health check URLs is 8083. The value can be changed in records.config by assigning the desired value to **proxy.config.admin.autoconf_port**

Configure > Networking > Health Check URLs

Force Health Checks to Report Proxy Down	
Enable/Disable	When enabled, all health check URLs sent to this proxy report WSDOWN. The URL response will be similar to: HTTP/1.0 503 Service Unavailable Server: Content Gateway Manager 7.7.0 Date: Thu, 26 Jul 2012 20:26:14 GMT Cache-Control: no-store Pragma: no-cache Content-type: text/plain Content-length: 6 WSDOWN
Health Check URLs	The load balancer should consider the service down if the URL request fails for the following reasons: ● No TCP connection -- proxy down ● Response too slow -- proxy deadlocked or not responsive ● Invalid response
http://[Content Gateway IP address]:8083/health.basic	Checks connectivity with Content Gateway and responds with WSUP or WSDOWN.

http://[Content Gateway IP address]:8083/health.app.filtering	Checks the health of Filtering Service responses to Content Gateway requests and reports WSUP or WSDOWN.
http://[Content Gateway IP address]:8083/health.load	If the health.basic URL reports WSDOWN, this URL also reports WSDOWN. Otherwise, health.load returns: ● CPU usage (operating system load average) ● Connection usage (number of open connections) ● Bandwidth usage How these values are calculated and how they can be customized is described below. The default response will look similar to: HTTP/1.0 200 OK Server: Content Gateway Manager 7.7.0 Date: Thu, 26 Jul 2012 20:26:14 GMT Cache-Control: no-store Pragma: no-cache Content-type: text/plain Content-length: xx Load=2253 Conns=5150 Mbps=6.42

A format file, **/opt/WCG/config/health.load.template**, allows for customization of the response format.

Format specifiers are:

%L = Load (integer)

%C = Connections integer)

%B = Bandwidth in Mbps (double)

%% = %

The default **health.load.template** file is:

Load=%L

Conns=%C

Mbps=%B

Here is **health.load.template** modified to respond with an xml-like format:

<load>

<item name="Load" value="%L" />

<item name="Conns" value="%C" />

<item name="Mbps" value="%B" />

</load>

How the values are calculated:

The **Load** value, **%L**, is derived from the LINUX system load average. To make the value comparable across machines with varying numbers of cores, the number is divided by the number of cores on the system.

The calculation is:

```
// load avg values are 0.00 precision
double avgs[3];
// get load averages for 1, 5, and 15 minutes
getloadavg(avgs, 3);
// 5 minute_load_average * 10000 / number_of_cores
Load = avgs[1] * 10000 / get_nprocs();
```

The **Connection** value, **%C**, is the sum of proxy.process.http.current_server_connections and proxy.process.http.current_client_connections.

The **Bandwidth** value, **%B**, is the value of proxy.node.client_throughput_out.

Note
HTTP connection and bandwidth information can be viewed in the Content Gateway manager on the **Monitor > Protocols > HTTP** page.

SSL

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The SSL configuration options are divided into the following categories:

- Certificates (see *Managing certificates*, page 141)
- Decryption/Encryption (see *SSL configuration settings for inbound traffic*, page 144 and *SSL configuration settings for outbound traffic*, page 145)
- Validation (see *Validating certificates*, page 146)
- Incidents (see *Managing HTTPS website access*, page 152)
- Client certificates (see *Client certificates*, page 157)
- Customization (see *Customizing SSL connection failure messages*, page 159)
- Internal Root CA (see *Internal Root CA*, page 133)

D Event Logging Formats

Custom logging fields

Related topic:

- *Logging format cross-reference*, page 381

%<field symbol>	Description
{HTTP header field}cqh	Logs the information in the requested field of the client request HTTP header; for example, to log the Accept-Language field in client request headers, use: `%<{Accept-Language}cqh>` This field cannot be used in custom log filters.
{HTTP header field}cqhua	Logs the information in the requested field of the client request HTTP header; for example, to log the User-Agent field in client request headers, use: `%<{User-Agent}cqhua>`
{HTTP header field}pqh	Logs the information in the requested field of the proxy request HTTP header; for example, to log the Authorization field in proxy request headers, use: `%<{Authorization}pqh>` This field cannot be used in custom log filters.
{HTTP header field}psh	Logs the information in the requested field of the proxy response HTTP header; for example, to log the Retry-After field in proxy response headers, use: `%<{Retry-After}psh>` This field cannot be used in custom log filters.

%<field symbol>	Description
{HTTP header field}ssh	Logs the information in the requested field of the server response HTTP header; for example, to log the Age field in server response headers, use: `%<{Age}ssh>` This field cannot be used in custom log filters.
caun	The client authenticated user name; result of the RFC931/ident lookup of the client user name.
cfsc	The client finish status code; specifies whether the client request to the proxy was successfully completed (FIN) or interrupted (INTR).
chi	The client host IP; the IP address of the client's host machine.
cqbl	The client request transfer length; the body length in the client's request to Content Gateway in bytes.
cqhl	The client request header length; the header length in the client's request to Content Gateway.
cqhm	The HTTP method in the client request to Content Gateway: GET, POST, and so on (subset of cqtx).
cqhv	The client request HTTP version.
cqtd	The client request time stamp; specifies the date of the client request in the format **yyyy-mm-dd**, where yyyy is the 4-digit year, mm is the 2-digit month, and dd is the 2-digit day.
cqtn	The client request time stamp; date and time of the client's request (in the Netscape time stamp format).
cqtq	The client request time stamp with millisecond resolution.
cqts	The client request time stamp in Squid format; the time of the client request in seconds since January 1, 1970.
cqtt	The client request time stamp; the time of the client request in the format **hh:mm:ss**, where hh is the 2-digit hour in 24-hour format, mm is the 2-digit minutes, and ss is the 2-digit seconds. For example, 16:01:19.
cqtx	The full HTTP client request text, minus headers. For example: GET http://www.company.com HTTP/1.0
cqu	The client request URI; universal resource identifier (URI) of the request from client to Content Gateway (subset of cqtx).
cquc	The client request canonical URL; differs from cqu in that blanks (and other characters that might not be parsed by log analysis tools) are replaced by escape sequences. The escape sequence is a percentage sign followed by the ASCII code number in hex.
cqup	The client request URL path; specifies the argument portion of the URL (everything after the host). For example, if the URL is http://www.company.com/images/x.gif, this field displays /images/x.gif.

%<field symbol>	Description
cqus	The client request URL scheme (HTTP, FTP, etc.).
crc	The cache result code; specifies how the cache responded to the request (HIT, MISS, and so on).
pfsc	The proxy finish status code; specifies whether the Content Gateway request to the origin server was successfully completed (FIN) or interrupted (INTR).
phn	The host name of the Content Gateway server that generated the log entry in collated log files.
phr	The proxy hierarchy route; the route that Content Gateway used to retrieve the object.
pqbl	The proxy request transfer length; the body length in the Content Gateway request to the origin server.
pqhl	The proxy request header length; the header length in the Content Gateway request to the origin server.
pqsi	The proxy request server IP address (0 on cache hits and parent-ip for requests to parent proxies).
pqsn	The proxy request server name; the name of the server that fulfilled the request.
pscl	The proxy response transfer length; the length of the Content Gateway response to the client in bytes.
psct	The proxy response content type; content type of the document (for example, img/gif) from server response header.
pshl	The proxy response header length; the header length in the Content Gateway response to the client.
psql	The proxy response transfer length in Squid format (includes header and content length).
pssc	The proxy response status code; the HTTP response status code from Content Gateway to the client.
shi	The IP address resolved from the DNS name lookup of the host in the request. For hosts with multiple IP addresses, this field records the IP address resolved from that particular DNS lookup. This can be misleading for cached documents. For example, if the first request was a cache miss and came from IP1 for server S and the second request for server S resolved to IP2 but came from the cache, the log entry for the second request will show IP2.
shn	The host name of the origin server.
sscl	The server response transfer length; response length, in bytes, from origin server to Content Gateway.
sshl	The server response header length; the header length in the origin server's response to Content Gateway in bytes.
sshv	The server response HTTP version (1.0, 1.1, and so on).

%<field symbol>	Description
sssc	The server response status code; the HTTP response status code from origin server to Content Gateway.
ttms	The time Content Gateway spends processing the client request; the number of milliseconds between the time that the client establishes the connection with Content Gateway and the time that Content Gateway sends the last byte of the response back to the client.
ttmsf	The time Content Gateway spends processing the client request as a fractional number of seconds; specifies the time in millisecond resolution, but instead of formatting the output as an integer (as with ttms), the display is formatted as a floating-point number representing a fractional number of seconds. For example, if the time is 1500 milliseconds, this field displays 1.5 while the ttms field displays 1500 and the tts field displays 1.
tts	The time Content Gateway spends processing the client request; the number of seconds between the time that the client establishes the connection with the proxy and the time that the proxy sends the last byte of the response back to the client.
wc	The predefined or custom category of the URL for the data being scanned. For example, “News and Media”.
wct	The content type of the web page. For example, “text/html; charset=UTF-8”.
wsds	The scan disposition string. For example: CATEGORY_BLOCKED, PERMIT_ALL, FILTERED_AND_PASSED.
wsr	The scan recommended bit (“true” or “false”). The URL database identifies and recommends data that should be analyzed further. Depending on the policy used, the data may or may not be analyzed further.
wstms	The scan time in milliseconds that it took to scan a downloaded file or page.
wui	The authenticated user’s ID used to select the policy for scanning data of the client request.

Logging format cross-reference

The following sections illustrate the correspondence between Content Gateway logging fields and standard logging fields for the Squid and Netscape formats.

Squid logging formats

Squid	Content Gateway
time	cqts
elapsed	ttms
client	chi
action/code	crc/pssc
size	psql

Squid	Content Gateway
method	cqhm
url	cquc
ident	caun
hierarchy/from	phr/pqsn
content	psct

For example, if you want to create a custom format called **short_sq** based on the first three Squid fields, enter a line in the **logs.config** file as follows:

```
format:enabled:1:short_sq:%<cqts> %<ttms>
%<chi>:short_sq:ASCII:none
```

See *Custom format*, page 240, for more information about defining custom log files.

Netscape Common logging formats

Netscape Common	Content Gateway
host	chi
usr	caun
[time]	[cqtn]
“req”	“cqtx”
s1	pssc
c1	pscl

Netscape Extended logging formats

Netscape Extended	Content Gateway
host	chi
usr	caun
[time]	[cqtn]
“req”	“cqtx”
s1	pssc
c1	pscl
s2	sssc
c2	sscl

Netscape Extended	Content Gateway
b1	cqbl
b2	pqbl
h1	cqhl
h2	pshl
h3	pqhl
h4	sshl
xt	tts

Netscape Extended-2 logging formats

Netscape Extended-2	Content Gateway
host	chi
usr	caun
[time]	[cqtn]
“req”	“cqtx”
s1	pssc
c1	pscl
s2	sssc
c2	sscl
b1	cqbl
b2	pqbl

Netscape Extended-2	Content Gateway
h1	cqhl
h2	pshl
h3	pqhl
h4	sshl
xt	tts
route	phr
pfs	cfsc
ss	pfsc
crc	crc

E Content Gateway Configuration Files

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Content Gateway contains the following configuration files that you can edit to customize the proxy.

- *auth_domains.config*, page 384
- *auth_rules.config*, page 387
- *bypass.config*, page 389
- *cache.config*, page 391
- *filter.config*, page 394
- *hosting.config*, page 397
- *ip_allow.config*, page 399
- *ipnat.conf*, page 400
- *log_hosts.config*, page 401
- *logs_xml.config*, page 402
- *mgmt_allow.config*, page 408
- *parent.config*, page 409
- *partition.config*, page 412
- *records.config*, page 413
- *remap.config* , page 480
- *socks.config*, page 482
- *socks_server.config*, page 483
- *splitdns.config*, page 484
- *storage.config*, page 486
- *update.config*, page 487
- *wccp.config*, page 489

Specifying URL regular expressions (url_regex)

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Entries of type **url_regex** within the configuration files use regular expressions to perform a match.

The following table offers examples to illustrate how to create a valid **url_regex**.

Value	Description
x	Matches the character x.
.	Match any character.
^	Specifies beginning of line.
$	Specifies end of line.

Value	Description
[xyz]	A *character class*. In this case, the pattern matches either x, y, or z.
[abj-oZ]	A *character class* with a range. This pattern matches a, b, any letter from j through o, or Z.
[^A-Z]	A *negated character class*. For example, this pattern matches any character except those in the class.
r*	Zero or more r's, where r is any regular expression.
r+	One or more r's, where r is any regular expression.
r?	Zero or one r, where r is any regular expression.
r{2,5}	From two to five r's, where r is any regular expression.
r{2,}	Two or more r's, where r is any regular expression.
r{4}	Exactly 4 r's, where r is any regular expression.
"[xyz]\"images"	The literal string [xyz]"images"
\X	If X is a, b, f, n, r, t, or v, then the ANSI-C interpretation of \x; Otherwise, a literal X. This is used to escape operators such as *.
\0	A NULL character.
\123	The character with octal value 123.
\x2a	The character with hexadecimal value 2a.
(r)	Matches an r; where r is any regular expression. You can use parentheses to override precedence.
rs	The regular expression r, followed by the regular expression s.
r|s	Either an r or an s.
#<n>#	Inserts an *end* node causing regular expression matching to stop when reached. The value n is returned.

Examples

To match any host in *mydomain.com*, specify:

```
dest_domain=mydomain.com
```

Likewise, to match any request, you can specify:

```
dest_domain=.
```

auth_domains.config

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The **auth_domains.config** file stores the list of domains that have been identified for use with *Rule-Based Authentication*, page 203.

Domains must be identified (added to this file) using the interface in the Content Gateway manager on the **Configure > Security > Access Control > Domains** tab. Do not edit this configuration file.

Format

Each line in **auth_domains.config** consists of a set of tags; each tag is followed by its value. For example:

type=<auth_method> name=<unique_name> use_alias=<0 or 1> <additional tags>

The set of tags varies depending on the selected authentication method.

The following table lists all of the tags.

Tag	Allowed value
type	Specifies the authentication method: IWA, NTLM, LDAP
name	Specifies a unique name for the domain. This is not the actual domain name, but rather a name that is unique to the proxy and rule-based authentication.
use_alias	Specifies the user name sent to filtering service if authentication is successful. ● 0 = send actual authenticated user name (default). ● 1 = send a blank username ● 2 = send the string specified in auth_name_string
alias	Only active if use_alias=2. Specifies the static string to send as the user name for all successful authentications using this rule.

The following table lists the additional tags used with IWA domains.

IWA Tag	Allowed Value
winauth_realm	Specifies the joined Windows domain to use with the rule. Content Gateway must be joined and active in that domain.

The following table lists the additional tags used with NTLM domains.

NTLM Tag	Allowed Value
dc_list	Takes the IP address and port number of the primary domain controller (if no port is specified, Content Gateway uses port 139), followed by a comma separated list of secondary domain controllers to be used for load balancing and failover.
dc_load_balance (optional)	Specifies whether load balancing is used: ● 0 = disabled ● 1 = enabled **Note:** When multiple domain controllers are specified, even if load balancing is disabled, when the load on the primary domain controller reaches the maximum number of connections allowed, new requests are sent to a secondary domain controller as a short-term failover provision, until such time that the primary domain controller can accept new connections.

The following table lists the additional tags used with LDAP domains.

LDAP Tag	Allowed Value
server_name	Specifies the fully qualified domain name of the LDAP server.
server_port (optional)	Specifies the LDAP server port. The default is 389. To use the default Global Catalog server port, specify port 3268. If Secure LDAP is enabled, set the port to 636 or 3269 (the secure LDAP ports).
base_dn (optional)	Specifies the LDAP base distinguished name.
uid_filter (optional)	Specifies the type of service, if different from that configured on the LDAP tab. Enter **sAMAccountName (MS AD)** or **userPrincipalName (MS AD)** for Active Directory, or **uid** for any other service.
bind_dn (optional)	Specifies the bind distinguished name. This must be a Full Distinguished Name of a user in the LDAP directory service. For example: CN=John Smith,CN=USERS,DC=MYCOMPANY, DC=COM

LDAP Tag	Allowed Value
bind_pwd (optional)	Specifies the password for the bind distinguished name.
sec_bind	Specifies whether Content Gateway will use secure communication with the LDAP server. ● 0 = disabled ● 1 = enabled If enabled, set the LDAP port to 636 or 3269 (secure LDAP ports).

auth_rules.config

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The **auth_rules.config** file stores rules that direct specified IP addresses and IP address ranges, and/or traffic on specified inbound ports (explicit proxy only), and/or matching Request header User-Agent values to authenticate with distinct domain controllers. One or more domain controllers can be specified in an ordered list. This feature is called *Rule-Based Authentication*, page 203.

Rule-based authentication rules must be defined in the Content Gateway manager on the **Configure > Security > Access Control > Authentication Rules** tab. Do not edit this configuration file.

- Rule-based authentication is supported for Integrated Windows Authentication (IWA), legacy NTLM, and LDAP authentication only.
- Each authentication rule can specify source IP addresses, inbound port (explicit proxy only), and/or a User-Agent regex
- Each authentication rule can specify one or more domains in an ordered list. Domains are identified on the **Configure > Security > Access Control > Authentication Rules** tab. That process includes specifying the authentication method (IWA, Legacy NTLM, LDAP).
- When a rule matches, authentication is performed against one or more domains in the ordered list. The first successful authentication ends domain list traversal and the authenticating domain is cached for later use.

- Authentication rules are applied from the list top-down; only the first match is applied. If no rule matches, no user authentication is performed.

> **Note**
>
> If all the users in your network can be authenticated by domain controllers that share trust relationships, you probably don't need rule-based authentication.
>
> However, rule-based authentication can be useful in any deployment that needs to perform special authentication handling based on IP address, inbound proxy port (explicit proxy), and/or User-Agent values.

Format

Each line in **auth_rules.config** contains an authentication rule that consists of a set of tags, each followed by its value. Authentication rules have the format:

rule_name=<name> src_ip=<IP addresses> user_agent=<regex> <additional tags>

The following table lists all of the tags.

Tags	Allowed value
rule_name	A short, unique name.
enabled	Specifies whether the rule will be active: • 0 = disabled • 1 = enabled
src_ip	Takes a comma separated list of IP addresses and IP address ranges. No spaces. If this field is empty, all IP addresses match. The list can contain up to: ▪ 64 IPv4 addresses ▪ 32 IPv4 address ranges ▪ 24 IPv6 addresses ▪ 12 IPv6 address ranges
user_agent (optional)	Takes a regular expression that is applied to the user-agent string. See *Specifying URL regular expressions (url_regex)* for information about using regular expressions.
proxy_port (optional)	Takes a port number. Valid with explicit proxy only. Client applications must be configured to send requests to the correct port.
domain_list	An ordered, comma separated list of domains the Content Gateway will attempt to authenticate a matching user with.

Tags	Allowed value
use_captive_portal	Specifies whether Captive Portal is used. ● 0 = disabled ● 1 = enabled using HTTP ● 2 = enabled using HTTPS
use_clientcert_auth	Specifies whether Client Certificate Authentication is used. ● 0 = disabled ● 1 = enabled
clientcert_profile	Takes a text string. The name of the Client Certificate Authentication profile to be used with the authentication rule.
clientcert_fallback	Specifies whether the next selected authentication method should be used if Client Certificate Authentication fails. ● 0 = disabled ● 1 = enabled

bypass.config

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The **bypass.config** file contains *static* bypass rules that Content Gateway uses in transparent proxy mode. Static bypass rules instruct Content Gateway to bypass certain incoming client requests so that they are served by the origin server.

The **bypass.config** file also accepts *dynamic* deny bypass rules. See *Dynamic deny bypass rules*, page 390.

You can configure three types of static bypass rules:

- *Source bypass* rules configure the proxy to bypass a particular source IP address or range of IP addresses. For example, you can bypass clients that do not want to use caching.
- *Destination bypass* rules configure the proxy to bypass a particular destination IP address or range of IP addresses. For example, you can bypass origin servers that use IP authentication based on the client's real IP address.

> **Important**
> Destination bypass rules prevent the proxy from caching an entire site. You will experience hit rate impacts if the site you bypass is popular.

- *Source/destination pair* bypass rules configure the proxy to bypass requests that originate from the specified source to the specified destination. For example, you can route around specific client-server pairs that experience broken IP

authentication or out-of-band HTTP traffic problems when cached. Source/destination bypass rules can be preferable to destination rules because they block a destination server only for users that experience problems.

Format

Bypass rules have the following format:

```
bypass src ipaddress | dst ipaddress | src ipaddress AND dst ipaddress
```

Option	Description
src *ipaddress*	Specifies the source (client) IP address in incoming requests that the proxy must bypass. *ipaddress* can be one of the following: A simple IP address, such as 123.45.67.8 • In CIDR (Classless Inter-Domain Routing) format, such as 1.1.1.0/24 • A range separated by a dash, such as 1.1.1.1-2.2.2.2 • Any combination of the above, separated by commas, such as 1.1.1.0/24, 25.25.25.25, 123.1.23.1-123.1.23.123
dst *ipaddress*	Specifies the destination (origin server) IP address in incoming requests that the proxy must bypass. *ipaddress* can be one of the following: A simple IP address, such as 123.45.67.8 • In CIDR (Classless Inter-Domain Routing) format, such as 1.1.1.0/24 • A range separated by a dash, such as 1.1.1.1-2.2.2.2 • Any combination of the above, separated by commas, such as 1.1.1.0/24, 25.25.25.25, 123.1.23.1-123.1.23.123
src *ipaddress* AND dst *ipaddress*	Specifies the source and destination IP address pair that the proxy must bypass. *ipaddress* can be a single IP address, an IP address range, or a combination of both separated by commas

Dynamic deny bypass rules

In addition to static bypass rules, the **bypass.config** file also accepts *dynamic deny* bypass rules.

Deny bypass rules prevent the proxy from bypassing certain incoming client requests dynamically (a deny bypass rule can prevent the proxy from bypassing itself). Dynamic deny bypass rules can be source, destination, or source/destination and have the following format:

```
deny_dyn_bypass src ipaddress | dst ipaddress | src
ipaddress AND dst ipaddress
```

For a description of the options, see the table in *Format*, page 390.

Note

For the dynamic deny bypass rules to work, you must either:

- Enable the **Dynamic Bypass** option in the Content Gateway manager.
- Set **proxy.config.arm.bypass_dynamic_enabled** to **1** in the **records.config** file.

Important

Static bypass rules overwrite dynamic deny bypass rules. Therefore, if a static bypass rule and a dynamic bypass rule contain the same IP address, the dynamic deny bypass rule is ignored.

Examples

The following example shows source, destination, and source/destination *bypass* rules:

```
bypass src 1.1.1.0/24, 25.25.25.25, 128.252.11.11-128.252.
11.255
bypass dst 24.24.24.0/24
bypass src 25.25.25.25 AND dst 24.24.24.0
```

The following example shows source, destination, and source/destination *dynamic deny bypass* rules:

```
deny_dyn_bypass src 128.252.11.11-128.252.11.255
deny_dyn_bypass dst 111.111.11.1
deny_dyn_bypass src 111.11.11.1 AND dst 111.11.1.1
```

cache.config

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The **cache.config** file defines how the proxy caches web objects. You can add caching rules to specify the following configuration:

- Not to cache objects from specific IP addresses
- How long to pin particular objects in the cache

- How long to consider cached objects as fresh
- Whether to ignore no-cache directives from the server

Important

After you modify this file, run the following command to apply the changes:

```
/opt/WCG/bin/content_line -x
```

When you apply the changes to a node in a cluster, Content Gateway applies the changes to all nodes in the cluster.

Format

Each line in the **cache.config** file contains a caching rule. Content Gateway recognizes three space-delimited tags:

```
primary_destination=value secondary_specifier=value
action=value
```

The following table lists the possible primary destinations and their allowed values.

Primary Destination	Allowed Value
dest_domain	A requested domain name
dest_host	A requested hostname
dest_ip	A requested IP address
url_regex	A regular expression to be found in a URL. See *Specifying URL regular expressions (url_regex)* for information about using regular expressions.

Secondary specifiers are optional in the **cache.config** file. The following table lists the possible secondary specifiers and their allowed values.

Note

You can use more than one secondary specifier in a rule. However, you cannot repeat a secondary specifier.

Secondary Specifier	Allowed Value
port	A requested URL port
scheme	A request URL protocol; one of the following: • HTTP • FTP

Secondary Specifier	Allowed Value
prefix	A prefix in the path part of a URL
suffix	A file suffix in the URL
method	A request URL method; one of the following: ● get ● put ● trace
time	A time range, such as 08:00-14:00
src_ip	A client IP address.
user_agent	A request header User-Agent value. Takes a regular expression that is applied to the user-agent string. See*Specifying URL regular expressions (url_regex)* for information about using regular expressions.

The following table lists the possible actions and their allowed values.

Action	Value
action	One of the following values: ● never-cache configures the proxy to never cache specified objects. ● ignore-no-cache configures the proxy to ignore all Cache-Control: no-cache headers. ● ignore-client-no-cache configures the proxy to ignore Cache-Control: no-cache headers from client requests. ● ignore-server-no-cache configures the proxy to ignore Cache-Control: no-cache headers from origin server responses.
pin-in-cache	The amount of time you want to keep the objects in the cache. The following time formats are allowed: ● d for days (for example 2d) ● h for hours (for example, 10h) ● m for minutes (for example, 5m) ● s for seconds (for example, 20s) ● mixed units (for example, 1h15m20s)
revalidate	The amount of time you want to consider the object(s) fresh. Use the same time formats as pin-in-cache.
ttl-in-cache	The amount of time you want to keep objects in the cache regardless of Cache-Control response headers. Use the same time formats as pin-in-cache and revalidate.

Examples

The following example configures the proxy to never cache FTP documents requested from the IP address 112.12.12.12:

```
dest_ip=112.12.12.12 scheme=ftp action=never-cache
```

The following example configures the proxy to keep documents with URLs that contain the regular expression “politics” and the path **prefix/viewpoint** in the cache for 12 hours:

```
url_regex=politics prefix=/viewpoint pin-in-cache=12h
```

The following example configures the proxy to revalidate `gif` and `jpeg` objects in the domain mydomain.com every 6 hours and all other objects in mydomain.com every hour:

```
dest_domain=mydomain.com suffix=gif revalidate=6h
dest_domain=mydomain.com suffix=jpeg revalidate=6h
dest_domain=mydomain.com revalidate=1h
```

Note
The rules are applied in the order listed.

filter.config

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Filtering rules stored in **filter.config** allow you to:

- Deny or allow URL requests
- Keep or strip header information from client requests
- Insert custom headers
- Allow specified applications or requests to specified web sites to bypass authentication
- Prevent specified applications from transiting the proxy

Filtering rules should be defined in the Content Gateway manager on the **Configure > Security > Access Control > Filtering** tab. See *Creating filtering rules*, page 169.

Important
After you modify this file, run the following command to apply the changes:

```
/opt/WCG/bin/content_line -x
```

When you apply the changes to a node in a cluster, Content Gateway applies the changes to all nodes in the cluster.

Three filtering rules are configured by default. The first denies traffic on port 25 to all destinations. The second and third bypass user authentication for connections to 2 file sandbox destinations.

Format

Each line in **filter.config** is a filtering rule. Content Gateway applies the rules in the order listed, starting at the top of the file. If no rule matches, the request is allowed to proceed.

Content Gateway recognizes three space-delimited tags:

```
primary_destination=value secondary_specifier=value
action=value
```

The following table lists the possible primary destination types.

Primary Destination Type	Allowed Value
dest_domain	A requested domain name
dest_host	A requested hostname
dest_ip	A requested IP address
url_regex	A regular expression to be found in a URL. See *Specifying URL regular expressions (url_regex)* for information about using regular expressions.

Secondary specifiers are optional. The following table lists the possible secondary specifiers and their purpose.

> **Note**
> You can use more than one secondary specifier in a rule. However, you cannot repeat a secondary specifier.

Secondary Specifier	Allowed Value
time	A time range, such as 08:00-14:00
prefix	A prefix in the path part of a URL
suffix	A file suffix in the URL
src_ip	A single client IP address, or a client IP address range.
port	A requested URL port

Secondary Specifier	Allowed Value
method	A request URL method; one of the following: • get • post • put • trace
scheme	A request URL protocol. You can specify one of the following: • HTTP • HTTPS • FTP (for FTP over HTTP only)
user_agent	A request header User-Agent value. Takes a regular expression that is applied to the user-agent string. See*Specifying URL regular expressions (url_regex)* for information about using regular expressions.

The following table lists the possible actions and their allowed values.

Action	Allowed Value
action	Specify one of the following: • **allow** - to allow particular URL requests to bypass authentication. The proxy caches and serves the requested content. • **deny** - to deny requests for HTTP or FTP objects from specific destinations. When a request is denied, the client receives an access denied message. • **radius** - not supported.
keep_hdr	The client request header information that you want to keep. You can specify the following options: • date • host • cookie • client_ip
strip_hdr	The client request header information that you want to strip. You can specify the same options as with **keep_hdr**.
add_hdr	The custom header value you want to add. Requires specification of the custom header and a header value. For example: `add_hdr="header_name:header_value"`

Examples

The following example configures Content Gateway to deny all FTP document requests to the IP address 112.12.12.12:

```
dest_ip=112.12.12.12 scheme=ftp action=deny
```

The following example configures Content Gateway to keep the client IP address header for URL requests that contain the regular expression politics and whose path prefix is
/viewpoint:

```
url_regex=politics prefix=/viewpoint keep_hdr=client_ip
```

The following example configures Content Gateway to strip all cookies from client requests destined for the origin server **www.server1.com**:

```
dest_host=www.server1.com strip_hdr=cookie
```

The following example configures Content Gateway to disallow **puts** to the origin server **www.server2.com**:

```
dest_host=www.server2.com method=put action=deny
```

Content Gateway applies the rules in the order listed in the file. For example, the following sample **filter.config** file configures Content Gateway to do the following:

- Allow all users (except those trying to access internal.com) to access server1.com
- Deny all users access to notthatsite.com

```
dest_host=server1.com action=allow
dest_host=notthatsite.com action=deny
```

hosting.config

The **hosting.config** file lets you assign cache partitions to specific origin servers and domains so that you can manage your cache space more efficiently and restrict disk usage.

For step-by-step instructions on partitioning the cache according to origin servers and domains, see *Partitioning the cache according to origin server or domain*, page 98.

Note

Before you can assign cache partitions to specific origin servers and domains, you must partition your cache according to size and protocol in the **partition.config** file. For more about cache partitioning, see *Partitioning the cache*, page 98. For a description of the **partition.config** file, see *partition.config*, page 412.

After you modify the **hosting.config** file, run **content_line -x** from the Content Gateway **bin** directory to apply the changes. When you apply the changes to a node in

a cluster, Content Gateway automatically applies the changes to all nodes in the cluster.

> **Important**
> The partition configuration must be the same on all nodes in a cluster.

Format

Each line in the **hosting.config** file must have one of the following formats:

```
hostname=hostname partition=partition_numbers
domain=domain_name partition=partition_numbers
```

where:

hostname is the fully qualified hostname of the origin server whose content you want to store on a particular partition (for example, www.myhost.com).

domain_name is the domain whose content you want to store on a particular partition (for example, mydomain.com).

partition_numbers is a comma-separated list of the partitions on which you want to store the content that belongs to the origin server or domain listed. The partition numbers must be valid numbers listed in the **partition.config** file (see *partition.config*, page 412).

> **Note**
> If you want to allocate more than one partition to an origin server or domain, enter the partitions in a comma-separated list on one line. The **hosting.config** file cannot contain multiple entries for the same origin server or domain.

Generic Partition

When configuring the **hosting.config** file, you must assign a generic partition to use for content that does not belong to any of the origin servers or domains listed. If all partitions for a particular origin server become corrupt, Content Gateway uses the generic partition to store content for that origin server.

The generic partition must have the following format:

```
hostname=* partition=partition_numbers
```

where **partition_numbers** is a comma-separated list of generic partitions.

Examples

The following example configures the proxy to store content from the domain **mydomain.com** in partition 1 and content from **www.myhost.com** in partition 2. The proxy stores content from all origin servers in partitions 3 and 4.

```
domain=mydomain.com partition=1
hostname=www.myhost.com partition=2
hostname=* partition=3,4
```

ip_allow.config

The **ip_allow.config** file controls client access to the proxy. You can specify ranges of IP addresses that are allowed to use Content Gateway.

Important

After you modify this file, run the following command to apply the changes:

```
/opt/WCG/bin/content_line -x
```

When you apply the changes to a node in a cluster, Content Gateway applies the changes to all nodes in the cluster.

Format

Each line in the **ip_allow.config** file must have the following format:

```
src_ip=ipaddress action=ip_allow | ip_deny
```

where *ipaddress* is the IP address or range of IP addresses of the clients allowed to access the proxy.

The action ip_allow allows the specified clients to access the proxy.

The action ip_deny denies the specified clients to access the proxy.

By default, the **ip_allow.config** file contains the following line, which allows all clients to access the proxy. Comment out or delete this line before adding rules to restrict access.

```
src_ip=0.0.0.0-255.255.255.255 action=ip_allow
```

Examples

The following example allows all clients to access the proxy:

```
src_ip=0.0.0.0-255.255.255.255 action=ip_allow
```

The following example allows all clients on a specific subnet to access the proxy:

```
src_ip=123.12.3.000-123.12.3.123 action=ip_allow
```

The following example denies all clients on a specific subnet to access the proxy:

```
src_ip=123.45.6.0-123.45.6.123 action=ip_deny
```

ipnat.conf

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The **ipnat.conf** file contains redirection rules that specify how incoming packets are readdressed when the proxy is serving traffic transparently. Content Gateway creates the redirection rules during installation. You can modify these rules.

Important
After you modify this file, you must restart the proxy.

Format

Each line in the **ipnat.conf** file must have the following format:

```
rdr interface 0.0.0.0/0 port dest -> ipaddress port proxy
tcp|udp
```

where:

interface is the Ethernet interface that traffic will use to access the Content Gateway machine (for example, eth0 on Linux).

dest is the traffic destination port (for example, 80 for HTTP traffic).

ipaddress is the IP address of your Content Gateway server.

proxy is the Content Gateway proxy port (usually 8080 for HTTP traffic).

Examples

The following example configures the ARM to redirect all incoming HTTP traffic to the Content Gateway IP address (111.111.11.1) on the Content Gateway proxy port 8080:

```
rdr hme0 0.0.0.0/0 port 80 -> 111.111.11.1 port 8080 tcp
```

log_hosts.config

To record HTTP/FTP transactions for different origin servers in separate log files, you must list each origin server's hostname in the **log_hosts.config** file. In addition, you must enable the HTTP host splitting option (see *HTTP host log splitting*, page 248).

> **Note**
> It is recommended that you use the same **log_hosts.config** file on every Content Gateway node in your cluster.

> **Important**
> After you modify this file, run the following command to apply the changes:
>
> ```
> /opt/WCG/bin/content_line -x
> ```
>
> When you apply the changes to a node in a cluster, Content Gateway applies the changes to all nodes in the cluster.

Format

Each line in the **log_hosts.config** file has the following format:

```
hostname
```

where *hostname* is the hostname of the origin server.

> **Note**
> You can specify keywords in the **log_hosts.config** file to record all transactions from origin servers with the specified keyword in their names in a separate log file. See the example below.

Examples

The following example configures Content Gateway to create separate log files containing all HTTP/ FTP transactions for the origin servers webserver1, webserver2, and webserver3.

```
webserver1
webserver2
webserver3
```

The following example records all HTTP and FTP transactions from origin servers that contain sports in their names (for example, sports.yahoo.com and www.foxsports.com) in a log file called **squid-sport.log** (the Squid format is enabled):

```
sports
```

logs_xml.config

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The **logs_xml.config** file defines the custom log file formats, filters, and processing options. The format of this file is modeled after XML, the Extensible Markup Language.

Format

The **logs_xml.config** file contains the following specifications:

- LogFormat specifies the fields to be gathered from each protocol event access. See *LogFormat*, page 403.
- LogFilter specifies the filters that are used to include or exclude certain entries being logged based on the value of a field within that entry. See *LogFilter*, page 404.
- LogObject specifies an object that contains a particular format, a local filename, filters, and collation servers. See *LogObject*, page 405.

> **Note**
> The **logs_xml.config** file ignores extra white space, blank lines, and all comments.

LogFormat

The following table lists the LogFormat specifications.

Field	Allowed Inputs
<Name = "valid_format_name"/>	Required. Valid format names include any name except squid, common, extended, or extended2, which are predefined formats. There is no default for this tag.
<Format = "valid_format_specification"/>	Required. A valid format specification is a printf-style string describing each log entry when formatted for ASCII output. Use "%<field>" as placeholders for valid field names. For more information, see *Custom logging fields*, page 377. The specified field can be of two types: Simple: for example, %<cqu> A field within a container, such as an HTTP header or a Content Gateway statistic. Fields of this type have the following syntax: `%<{field}container>`
<Interval = "aggregate_interval_secs"/>	Use this tag when the format contains aggregate operators. The value "aggregate_interval_secs" represents the number of seconds between individual aggregate values being produced. The valid set of aggregate operators are: ● COUNT ● SUM ● AVG ● FIRST ● LAST

LogFilter

The following table lists the LogFilter specifications.

Field	Allowed Inputs
<Name = "valid_filter_name"/>	Required. All filters must be uniquely named.
<Condition = "valid_log_field valid_ operator valid_comparison_value"/>	Required. This field contains the following elements: ● valid_log_field is the field that will be compared against the given value. For more information, see *Logging format cross-reference*, page 381. ● valid_operator_field is any one of the following: MATCH, CASE_ INSENSITIVE_MATCH, CONTAIN, CASE_INSENSITIVE_CONTAIN. MATCH is true if the field and value are identical (case sensitive). CASE_ INSENSITIVE_MATCH is similar to MATCH, only case insensitive. CONTAIN is true if the field contains the value (the value is a substring of the field). CASE_INSENSITIVE_ CONTAIN is a case-insensitive version of CONTAIN. ● valid_comparison_value - any string or integer matching the field type. For integer values, all of the operators are equivalent and mean that the field must be equal to the specified value. **Note:** There are no negative comparison operators. If you want to specify a negative condition, use the **Action** field to REJECT the record.
<Action = "valid_action_field"/>	Required. ACCEPT or REJECT. This instructs Content Gateway to either accept or reject records satisfying the condition of the filter.

LogObject

The following table lists the **LogObject** specifications.

Field	Allowed Inputs
<Format = "valid_format_name"/>	Required. Valid format names include the predefined logging formats: squid, common, extended, and extended2, as well as any previously-defined custom log formats. There is no default for this tag.
<Filename = "file_name"/>	Required. The filename to which the given log file is written. No local log file will be created if you fail to specify this tag. All filenames are relative to the default logging directory. If the name does not contain an extension (for example, “squid”), an extension is added: .log for ASCII logs or .blog for binary logs. (See <Mode = “valid_logging_mode”/> below.) If you do not want an extension to be added, end the filename with a single dot (.).
<Mode = "valid_logging_mode"/>	Valid logging modes include ascii, binary, and ascii_pipe. The default is ascii. ● Use ascii to create event log files in human-readable form (plain ASCII). ● Use binary to create event log files in binary format. Binary log files generate lower system overhead and occupy less space on the disk (depending on the information being logged). You must use the logcat utility to translate binary log files to ASCII format before you can read them. ● Use ascii_pipe to write log entries to a UNIX named pipe (a buffer in memory). Other processes can then read the data using standard I/O functions. Content Gateway does not have to write to disk, freeing disk space and bandwidth for other tasks. In addition, writing to a pipe does not stop when logging space is exhausted because the pipe does not use disk space. **Note:** If you are using a collation server, the log is written to a pipe on the collation server. A local pipe is created even before a transaction is processed so that you can see the pipe right after Content Gateway starts. However, pipes on a collation server *are* created when Content Gateway starts.
<Filters = "list_of_valid_filter_names"/>	A comma-separated list of names of any previously defined log filters. If more than one filter is specified, all filters must accept a record for the record to be logged.

Field	Allowed Inputs
<Protocols = "list_of_valid_ protocols"/>	A comma-separated list of the protocols this object should log. Valid protocol names include HTTP.
<ServerHosts = "list_of_valid_ servers"/>	A comma-separated list of valid hostnames.This tag indicates that only entries from the named servers will be included in the file.
<CollationHosts = "list_of_valid_ hostnames"/>	A comma-separated list of collation servers to which all log entries (for this object) are forwarded. Collation servers can be specified by name or IP address. Specify the collation port with a colon after the name (for example, host:port).
<Header = "header"/>	The header text you want the log files to contain. The header text appears at the beginning of the log file, just before the first record.
<RollingEnabled = "truth value"/>	Enables or disables log file rolling for the LogObject. This setting overrides the value for the configuration setting Log Rolling: Enabled/ Disabled in the Content Gateway manager or proxy.config.log2.rolling_enabled in the records. config file. Set “truth value” to 1 or true to enable rolling; set it to 0 or false to disable rolling for this particular LogObject.
<RollingIntervalSec = "seconds"/>	Specifies the seconds between log file rolling for the LogObject. This setting overrides the value for the configuration setting Log Rolling: Interval in the Content Gateway manager or proxy.config. log2.rolling_interval_sec in the records.config file. This option allows you to specify different rolling intervals for different LogObjects.
<RollingOffsetHr = "hour"/>	Specifies an hour (from 0 to 23) at which rolling is guaranteed to align. Rolling may start before then, but a rolled file will be produced only at that time. The impact of this setting is only noticeable if the rolling interval is larger than one hour. This setting overrides the configuration setting Log Rolling: Offset Hour in the Content Gateway manager or proxy.config.log2.rolling_offset_hr in the records. config file.

Examples

The following is an example of a LogFormat specification collecting information using three common fields:

```
<LogFormat>
   <Name = "minimal"/>
   <Format = "%<chi> : %<cqu> : %<pssc>"/>
</LogFormat>
```

The following is an example of a LogFormat specification using aggregate operators:

```
<LogFormat>
   <Name = "summary"/>
   <Format = "%<LAST(cqts)> : %<COUNT(*)> : %<SUM(psql)>"/>
   <Interval = "10"/>
</LogFormat>
```

The following is an example of a LogFilter that will cause only REFRESH_HIT entries to be logged:

```
<LogFilter>
   <Name = "only_refresh_hits"/>
   <Action = "ACCEPT"/>
   <Condition = "%<pssc> MATCH REFRESH_HIT"/>
</LogFilter>
```

Note

When specifying the field in the filter condition, you can omit the %<>. This means that the following filter is equivalent to the example directly above:

```
<LogFilter>
   <Name = "only_refresh_hits"/>
   <Action = "ACCEPT"/>
   <Condition = "pssc MATCH REFRESH_HIT"/>
</LogFilter>
```

The following is an example of a LogObject specification that creates a local log file for the minimal format defined earlier. The log filename will be minimal.log because this is an ASCII log file (the default).

```
<LogObject>
   <Format = "minimal"/>
   <Filename = "minimal"/>
</LogObject>
```

The following is an example of a LogObject specification that includes only HTTP requests served by hosts in the domain company.com or by the specific server server. somewhere.com. Log entries are sent to collation host logs.company.com on port 4000 and to collation host 209.131.52.129 on port 5000.

```
<LogObject>
   <Format = "minimal"/>
   <Filename = "minimal"/>
   <ServerHosts = "company.com,server.somewhere.com"/>
   <Protocols = "http"/>
```

```
   <CollationHosts = "logs.company.com:4000,209.131.52.
129:5000"/>
</LogObject>
```

WebTrends Enhanced Log Format (WELF)

Content Gateway supports WELF so that you can analyze Content Gateway log files with WebTrends reporting tools. A predefined <LogFormat> that is compatible with WELF is provided at the end of the logs.config file (shown below). To create a WELF format log file, create a <LogObject> that uses this predefined format.

```
<LogFormat>
   <Name = "welf"/>
   <Format = "id=firewall time=\"%<cqtd> %<cqtt>\" fw=%<phn>
pri=6 proto=%<cqus> duration=%<ttmsf> sent=%<psql>
rcvd=%<cqhl> src=%<chi> dst=%<shi> dstname=%<shn>
user=%<caun> op=%<cqhm> arg=\"%<cqup>\" result=%<pssc>
ref=\"%<{Referer}cqh>\" agent=\"%<{user-agent}cqh>\"
cache=%<crc>"/>
</LogFormat>
```

mgmt_allow.config

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The **mgmt_allow.config** file specifies the IP addresses of remote hosts allowed access or denied access to the Content Gateway manager.

> **Important**
> After you modify this file, run the following command to apply the changes:
>
> ```
> /opt/WCG/bin/content_line -x
> ```
>
> When you apply the changes to a node in a cluster, Content Gateway applies the changes to all nodes in the cluster.

Format

Each line in the **mgmt_allow.config** file has the following format:

```
src_ip=<ipaddress> action=<ip_allow|ip_deny>
```

Here, <ipaddress> is the IP address or range of IP addresses allowed to access the Content Gateway manager.

Use “action” to specify either ip_allow (grant access to the Content Gateway manager) or ip_deny (block access).

By default, the **mgmt_allow.config** file contains the following line, which allows all remote hosts to access the Content Gateway manager. Comment out or delete this line before adding rules to restrict access.

```
src_ip=0.0.0.0-255.255.255.255 action=ip_allow
```

Examples

The following example configures Content Gateway to allow only one user to access the Content Gateway manager:

```
src_ip=123.12.3.123 action=ip_allow
```

The following example configures Content Gateway to allow a range of IP addresses to access the Content Gateway manager:

```
src_ip=123.12.3.000-123.12.3.123 action=ip_allow
```

The following example configures Content Gateway to deny one IP address access to the Content Gateway manager:

```
src_ip=123.45.67.8 action=ip_deny
```

parent.config

The **parent.config** file identifies the HTTP parent proxies used in an HTTP cache hierarchy. Use this file to perform the following configuration:

- Set up parent cache hierarchies, with multiple parents and parent failover
- Configure selected URL requests to bypass parent proxies

Rules are applied from the list top-down; the first match is applied. Bypass rules are usually placed above parent proxy designation rules.

Content Gateway uses the **parent.config** file only when the HTTP parent caching option is enabled. See *Configuring Content Gateway to use an HTTP parent cache*, page 94.

Important

After you modify this file, run the following command to apply the changes:

```
/opt/WCG/bin/content_line -x
```

When you apply the changes to a node in a cluster, Content Gateway applies the changes to all nodes in the cluster.

Format

Each line in the **parent.config** file must contain a parent caching rule. Content Gateway recognizes three space-delimited tags:

```
primary_destination=value secondary_specifier=value
action=value
```

The following table lists the possible primary destinations and their allowed values.

Primary Destination	Allowed Value
dest_domain	A requested domain name
dest_host	A requested hostname
dest_ip	A requested IP address or range of IP addresses separated by a dash (-).
url_regex	A regular expression to be found in a URL. See *Specifying URL regular expressions (url_regex)* for information about using regular expressions.

Secondary specifiers are optional in the parent.config file. The following table lists the possible secondary specifiers and their allowed values.

Secondary Specifier	Allowed Value
time	A time range, such as 08:00-14:00, during which the parent cache is used to serve requests
prefix	A prefix in the path part of a URL
suffix	A file suffix in the URL
src_ip	A client IP address.
port	A requested URL port
scheme	A request URL protocol; one of the following: • HTTP • FTP
method	A request URL method; one of the following: • get • post • put • trace
user_agent	A request header User-Agent value. Takes a regular expression that is applied to the user-agent string. See*Specifying URL regular expressions (url_regex)* for information about using regular expressions.

The following table lists the possible actions and their allowed values.

Action	Allowed Value
parent	An ordered list of parent servers. If the request cannot be handled by the last parent server in the list, it will be routed to the origin server. You can specify either a hostname or an IP address. You must specify the port number.
round_robin	One of the following values: • true - Content Gateway goes through the parent cache list in a round-robin based on client IP address. • strict - Content Gateway machines serve requests strictly in turn. For example, machine proxy1 serves the first request, proxy2 serves the second request, and so on. • false - round-robin selection does not occur.
go_direct	One of the following values: • true - requests bypass parent hierarchies and go directly to the origin server. • false - requests do not bypass parent hierarchies.

Examples

The following rule configures a parent cache hierarchy consisting of Content Gateway (which is the child) and two parents, p1.x.com and p2.x.com. The proxy forwards the requests it cannot serve to the parent servers p1.x.com and p2.x.com in a round-robin fashion because round_robin=true.

```
dest_domain=. method=get parent="p1.x.com:8080; p2.y.
com:8080" round_robin=true
```

The following rule configures Content Gateway to route all requests containing the regular expression **politics** and the path **/viewpoint** directly to the origin server (bypassing any parent hierarchies):

```
url_regex=politics prefix=/viewpoint go_direct=true
```

The following rule is a typical destination bypass rule:

```
dest_domain=example.com go_direct=true
```

Important

Every line in the parent.config file must contain **either** a parent= or go_direct= directive.

A bypass rule that includes parent= **and** go_direct=true, causes the specified dest_domain to be sent to the parent while all other domains are bypassed (the opposite of the usual intended action).

partition.config

The **partition.config** file lets you manage your cache space more efficiently by creating cache partitions of different sizes. You can further configure these partitions to store data from certain origin servers and domains in the *hosting.config* file. This allows you to take better advantage of caching of frequently visited sites where the content changes infrequently.

> **Important**
> The partition configuration must be the same on all nodes in a cluster.

You must stop Content Gateway before you change the cache partition size.

Format

For each partition you want to create, enter a line with the following format:

```
partition=<partition_number> scheme=http size=<partition_
size>
```

Here:

- *<partition_number>* is a number between 1 and 255 (the maximum number of partitions is 255).
- *<partition_size>* is the amount of cache space allocated to the partition. This value can be either a percentage of the total cache space or an absolute value. The absolute value must be a multiple of 128 MB, where 128 MB is the smallest value. If you specify a percentage, the size is rounded down to the closest multiple of 128 MB. Each partition is striped across several disks to achieve parallel I/O. For example, if there are four disks, a 1 GB partition will have 256 MB on each disk (assuming each disk has enough free space available).

> **Note**
> If you do not allocate all the disk space in the cache, the extra disk space is not used. You can use the extra space later to create new partitions without deleting and clearing the existing partitions.

Examples

The following example partitions the cache evenly:

```
partition=1 scheme=http size=50%
partition=2 scheme=http size=50%
```

records.config

The **records.config** file is a list of configurable variables used by Content Gateway.

Most values are set using controls in the Content Gateway manager. Some options can be set only by editing variables in the records.config file.

Warning

Do not change the records.config variables unless you are certain of the effect. Many variables are coupled, meaning that they interact with other variables. Changing a single variable in isolation can cause Content Gateway to fail. **Whenever possible, use the Content Gateway manager to configure Content Gateway.**

Important

After you modify this file, run the following command to apply the changes:

```
/opt/WCG/bin/content_line -x
```

When you apply the changes to a node in a cluster, Content Gateway applies the changes to all nodes in the cluster.

Format

Each variable has the following format:

```
CONFIG <variable_name> <DATATYPE> <variable_value>
```

Here, <*DATATYPE*> is one of the following:

- INT (an integer)
- STRING (a string)
- FLOAT (a floating point)

Examples

In the following example, the variable **proxy.config.proxy_name** is of datatype **STRING** and its value is **contentserver1**. This means that the name of the Content Gateway proxy is **contentserver1**.

```
CONFIG proxy.config.proxy_name STRING contentserver1
```

In the following example, the variable **proxy.config.winauth.enabled** is a yes/no flag. A value of 0 (zero) disables the option. A value of 1 enables the option.

```
CONFIG proxy.config.winauth.enabled INT 0
```

In the following example, the variable sets the cluster startup timeout to 10 seconds.

```
CONFIG proxy.config.cluster.startup_timeout INT 10
```

Configuration variables

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The following tables describe the configuration variables listed in the **records.config** file.

System variables	*Local manager*
Virtual IP manager	*Alarm configuration*
ARM	*Load shedding configuration (ARM)*
Authentication basic realm	*LDAP*
RADIUS authentication	*NTLM*
Integrated Windows Authentication	*Transparent authentication*
HTTP engine	*Parent proxy configuration*
Cache control	*Heuristic expiration*
Dynamic content and content negotiation	*Anonymous FTP password*
Cached FTP document lifetime	*FTP transfer mode*
FTP engine	*Customizable user response pages*
SOCKS processor	*Net subsystem*
Cluster subsystem	*Cache*
DNS	*DNS proxy*
HostDB	*Logging configuration*
URL remap rules	*Scheduled update configuration*
WCCP configuration	*SSL Decryption*
ICAP	*Connectivity, analysis, and boundary conditions*

System variables

Variable	Data Type	Description
proxy.config.proxy_name	STRING	Default: (none) The name of the Content Gateway node.
proxy.config.bin_path	STRING	Default: bin The location in which the Content Gateway binary files are placed by the installer.
proxy.config.proxy_binary	STRING	Default: content_gateway The name of the executable that runs the **content_gateway** process.
proxy.config.proxy_binary_opts	STRING	Default: -M The command-line options for starting content_gateway.
proxy.config.manager_binary	STRING	Default: content_manager The name of the executable that runs the **content_manager** process.
proxy.config.cli_binary	STRING	Default: content_line The name of the executable that runs the **content_line** interface.
proxy.config.watch_script	STRING	Default: content_cop The name of the executable that runs the **content_cop** process.
proxy.config.env_prep	STRING	Default: example_prep.sh The script that is executed before the **content_manager** process spawns the **content_gateway** process.
proxy.config.config_dir	STRING	Default: config The directory, relative to bin_path (above), that contains the Content Gateway configuration files.
proxy.config.temp_dir	STRING	Default: /tmp The directory used for Content Gateway temporary files
proxy.config.alarm_email	STRING	Default: <install user> The email address to which Content Gateway sends alarm messages. During installation, you can specify the email address; otherwise, Content Gateway uses the Content Gateway user account name as the default value.

Variable	Data Type	Description
proxy.config.syslog_facility	STRING	Default: LOG_DAEMON The facility used to record system log files. See *Working With Log Files*, page 235.
proxy.config.cop.core_ signal	INT	Default: 3 The signal sent by **content_cop** to its managed processes – **content_manager** and **content_ gateway** – to stop them. **Note: Do not change the value of this variable.**
proxy.config.cop.sleep_ time	INT	Default: 45 The interval, in seconds, between heartbeat tests performed by **content_cop** to test the health of the **content_manager** and **content_ gateway** processes. **Note: Do not change the value of this variable.**
proxy.config.cop.linux_ min_swapfree_kb	INT	Default: 10240 This variable is not used.
proxy.config.cop.linux_ min_memfree_kb	INT	Default: 10240 This variable is not used.
proxy.config.output.logfile	STRING	Default: content_gateway_out The name and location of the file that contains warnings, status messages, and error messages produced by the Content Gateway processes. If no path is specified, Content Gateway creates the file in its logging directory.
proxy.config.output.logfile. log_dir_usage_percent	INT	Default: 35 The percentage of space allocated by **proxy. config.log2.max_space_mb_for_logs**, that can be used for logs in /opt/WCG/logs/ **except** for **content_gateway.out**. Content_gateway. out can use up to the log directory limit.
proxy.config.snapshot_dir	STRING	Default: snapshots The directory in which Content Gateway stores configuration snapshots on the local system. Unless you specify an absolute path, this directory is located in the Content Gateway **config** directory.

Variable	Data Type	Description
proxy.config.attach_ debugger_script	STRING	Default: NULL This variable should be used only on the direction of Technical Support. If set, when the content_gateway process resets, a debug script (in /opt/WCG/bin) is run.
proxy.config.healthcheck_ force_offline	INT	Default: 0 When enabled (1), forces URL health checks to report proxy down. See, *Health Check URLs*, page 374.

Local manager

Configuration Variable	Data Type	Description
proxy.config.lm.sem_id	INT	Default: 11452 Specifies the semaphore ID for the local manager. **Note: Do not change the value of this variable.**
proxy.local.cluster.type	INT	Default: 3 Sets the clustering mode: ● 2 = management-only mode ● 3 = no clustering
proxy.config.cluster.rsport	INT	Default: 8087 Specifies the reliable service port. The reliable service port is used to send configuration information between the nodes in a cluster. All nodes in a cluster must use the same reliable service port.
proxy.config.cluster.mcport	INT	Default: 8088 Specifies the multicast port. The multicast port is used for node identification. All nodes in a cluster must use the same multicast port.
proxy.config.cluster.mc_ group_addr	STRING	Default: 224.0.1.37 Specifies the multicast address for cluster communications. All nodes in a cluster must use the same multicast address.
proxy.config.cluster.mc_ttl	INT	Default: 1 Specifies the multicast Time-To-Live for cluster communications.

Configuration Variable	Data Type	Description
proxy.config.cluster.log_ bogus_mc_msgs	INT	Default: 1 Enables (1) or disables (0) logging of invalid multicast messages.
proxy.config.admin.html_ doc_root	STRING	Default: ui Specifies the document root for the Content Gateway manager.
proxy.config.admin.web_ interface_port	INT	Default: 8081 Specifies the Content Gateway manager port.
proxy.config.admin. autoconf_port	INT	Default: 8083 Specifies the autoconfiguration port.
proxy.config.admin. autoconf_port_timeout	INT	Default: 5 (Added with v8.5.3) Specifies a timeout, in seconds, for port 8083 when a connection has been established with that port but no data is sent. Valid values are 1 - 300 seconds.
proxy.config.admin. overseer_port	INT	Default: 0 Specifies the port used for retrieving and setting statistics and configuration variables. Java applets, which are not supported on all browsers, are required to display statistics. This port is disabled by default.
proxy.config.admin.admin_ user	STRING	Default: admin Specifies the administrator ID that controls access to the Content Gateway manager.
proxy.config.admin. heartbeat_ port	INT	Default: 8079 Specifies the port used by the **content_cop** process to send heartbeat requests to Content Gateway manager for a system health check.
proxy.config.admin.admin_ password	STRING	Default (none) Specifies the encrypted administrator password that controls access to the Content Gateway manager. You cannot edit the password; however, you can specify a value of NULL to clear the password. See *Accessing the Content Gateway manager if you forget the master administrator password*, page 13.
proxy.config.admin.use_ssl	INT	Default: 1 Enables the Content Gateway manager SSL option for secure communication between a remote host and the Content Gateway manager.

Configuration Variable	Data Type	Description
proxy.config.admin.ssl_ cert_file	STRING	Default: server.pem Specifies the filename of the SSL certificate installed on the Content Gateway system for secure communication between a remote host and the Content Gateway manager. Note that the contents of this file must not be password protected.
proxy.config.admin. number_config_bak	INT	Default: 3 Specifies the maximum number of copies of rolled configuration files to keep.
proxy.config.admin.user_id	STRING	Default: root Specifies the non-privileged user account designated to Content Gateway.
proxy.config.admin.ui_ refresh_rate	INT	Default: 30 Specifies the refresh rate for the display of statistics in the Monitor pages of the Content Gateway manager.
proxy.config.admin.log_ mgmt_access	INT	Default: 0 Enables (1) or disables (0) logging of all Content Gateway manager transactions to the **lm.log** file.
proxy.config.admin.log_ resolve_hostname	INT	Default: 1 When enabled (1), the hostname of the client connecting to the Content Gateway manager is recorded in the **lm.log** file. When disabled (0), the IP address of the client connecting to the Content Gateway manager is recorded in the **lm.log** file.
proxy.config.admin. subscription	STRING	Default: NULL Not used.
proxy.config.admin. supported_cipher_list	STRING	Default: AES128-SHA, DHE-RSA-AES128-SHA, DHE-DSS-AES128-SHA, DES-CBC3-SHA, EDH-RSA-DES-CBC3-SHA, EDH-DSS-DES-CBC3-SHA A comma-separated list, no spaces, of ciphers supported by Content Gateway. No validation is performed on the string.
proxy.config.lm.display_ reset_alarm	INT	Default: 0 When enabled (1), email is sent to the administrator (**proxy.config.alarm_email**) whenever Content Gateway resets.
proxy.local.install.type	INT	Default: 1 Indicates that Content Gateway is installed as a component of Forcepoint Web Security (1) or Forcepoint DLP without Forcepoint Web Security (2)

Process manager

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Configuration Variable	Data Type	Description
proxy.config.process_manager.mgmt_port	INT	Default: 8084 Specifies the port used for internal communication between the **content_manager** process and the **content_gateway** process.

Virtual IP manager

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Configuration Variable	Data Type	Description
proxy.config.vmap.enabled	INT	Default: 0 Enables (1) or disables (0) the virtual IP option.

Alarm configuration

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Configuration Variable	Data Type	Description
proxy.config.alarm.bin	STRING	Default: example_alarm_bin.sh Specifies the name of the script file that can execute certain actions when an alarm is signaled. Edit the example script to suit your needs.
proxy.config.alarm.abs_path	STRING	Default: NULL Specifies the full path to the script file specified by **proxy.config.alarm.bin** (prior entry).

ARM

Configuration Variable	Data Type	Description
proxy.config.arm.enabled	INT	Default: 1 Specifies that the ARM is enabled or disabled. Warning: Do not disable the ARM. In all deployments, it must be running to support proper proxy function.
proxy.config.arm.ignore_ifp	INT	Default: 1 When redirection rules are applied, configures Content Gateway to use any available interface when sending packets back to the client, rather than the one that triggered the redirection rule.
proxy.config.arm.always_ query_dest	INT	Default: 0 When enabled (1), Content Gateway always asks the ARM for the original destination IP address of incoming requests. This is done instead of doing a DNS lookup on the hostname of the request. When enabled, domain names are logged, instead of IP addresses, unless proxy. config.arm.use_hostname_for_wisp_and_ reporting (see below) is disabled. When disabled, domain names are logged. See *Reducing DNS lookups*, page 75, for additional information. It is recommended that you do not enable this variable if Content Gateway is running in *both* explicit proxy and transparent proxy modes. In explicit proxy mode, the client does not perform a DNS lookup on the hostname of the origin server, so Content Gateway must do it.
proxy.config.arm.use_ hostname_for_wisp_and_ reporting	INT	Default: 1 Enables (1) or disables (0) the ability to capture hostname (instead of IP address) when Always Query Destination is enabled for transparent proxy deployments. See preceding entry. Note: This variable must be manually added to the config file.

Configuration Variable	Data Type	Description
proxy.config.http.outgoing_ip_spoofing_enabled	INT	Default: 0 Enables (1) or disables (0) the IP spoofing option that allows Content Gateway to establish connections to origin servers with the client IP address instead of the Content Gateway IP address. See *Content Gateway IP spoofing*, page 77.
proxy.config.arm.bypass_dynamic_enabled	INT	Default: 0 Enables (1) or disables (0) the adaptive bypass option to bypass the proxy and go directly to the origin server when clients or servers cause problems. See *Dynamic bypass rules*, page 72.
proxy.config.arm.bypass_use_and_rules_bad_client_request	INT	Default: 0 Enables (1) or disables (0) dynamic source/destination bypass in the event of non-HTTP traffic on port 80. Note: The variable **proxy.config.arm.bypass_on_bad_client_request** must also be enabled for this option to work.
proxy.config.arm.bypass_use_and_rules_400	INT	Default: 0 Enables (1) or disables (0) dynamic generation of source/destination bypass rules when an origin server returns a 400 error. Note: The variable **proxy.config.arm.bypass_on_400** must also be enabled for this option to work.
proxy.config.arm.bypass_use_and_rules_401	INT	Default: 0 Enables (1) or disables (0) dynamic generation of source/destination bypass rules when an origin server returns a 401 error. Note: The variable **proxy.config.arm.bypass_on_401** must also be enabled for this option to work.
proxy.config.arm.bypass_use_and_rules_403	INT	Default: 0 Enables (1) or disables (0) dynamic generation of source/destination bypass rules when an origin server returns a 403 error. Note: The variable **proxy.config.arm.bypass_on_403** must also be enabled for this option to work.

Configuration Variable	Data Type	Description
proxy.config.arm.bypass_use_and_rules_405	INT	Default: 0 Enables (1) or disables (0) dynamic generation of source/destination bypass rules when an origin server returns a 405 error. Note: The variable **proxy.config.arm.bypass_on_405** must also be enabled for this option to work.
proxy.config.arm.bypass_use_and_rules_406	INT	Default: 0 Enables (1) or disables (0) dynamic generation of source/destination bypass rules when an origin server returns a 406 error. Note: The variable **proxy.config.arm.bypass_on_406** must also be enabled for this option to work.
proxy.config.arm.bypass_use_and_rules_408	INT	Default: 0 Enables (1) or disables (0) dynamic generation of source/destination bypass rules when an origin server returns a 408 error. Note: The variable **proxy.config.arm.bypass_on_408** must also be enabled for this option to work.
proxy.config.arm.bypass_use_and_rules_500	INT	Default: 0 Enables (1) or disables (0) dynamic generation of source/destination bypass rules when an origin server returns a 500 error. Note: The variable **proxy.config.arm.bypass_on_500** must also be enabled for this option to work.
proxy.config.arm.bypass_on_bad_client_request	INT	Default: 0 Enables (1) or disables (0) dynamic destination bypass in the event of non-HTTP traffic on port 80.
proxy.config.arm.bypass_on_400	INT	Default: 0 Enables (1) or disables (0) dynamic generation of destination bypass rules when an origin server returns a 400 error.
proxy.config.arm.bypass_on_401	INT	Default: 0 Enables (1) or disables (0) dynamic generation of destination bypass rules when an origin server returns a 401 error.

Configuration Variable	Data Type	Description
proxy.config.arm.bypass_on_403	INT	Default: 0 Enables (1) or disables (0) dynamic generation of destination bypass rules when an origin server returns a 403 error.
proxy.config.arm.bypass_on_405	INT	Default: 0 Enables (1) or disables (0) dynamic generation of destination bypass rules when an origin server returns a 405 error.
proxy.config.arm.bypass_on_406	INT	Default: 0 Enables (1) or disables (0) dynamic generation of destination bypass rules when an origin server returns a 406 error.
proxy.config.arm.bypass_on_408	INT	Default: 0 Enables (1) or disables (0) dynamic generation of destination bypass rules when an origin server returns a 408 error.
proxy.config.arm.bypass_on_500	INT	Default: 0 Enables (1) or disables (0) dynamic generation of destination bypass rules when an origin server returns a 500 error.
proxy.config.arm.forward_unwanted_traffic	INT	Default: 0 Enables (1) or disables (0) the forwarding of traffic that is neither HTTP, HTTPS, nor FTP.

Load shedding configuration (ARM)

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Configuration Variable	Data Type	Description
proxy.config.arm.loadshedding.max_connections	INT	Default: 1000000 Specifies the maximum number of client connections allowed before the proxy starts forwarding incoming requests directly to the origin server.
proxy.config.http.client.connection_control.enabled	INT	Default: 1 Disables (0) or enables (1) the ability to limit the number of connections from a single computer.
proxy.config.http.client.concurrent_connection_control.close.enabled	INT	Default: 1 Disables (0) or enables (1) closing connections on reaching the concurrent connection limit.

Configuration Variable	Data Type	Description
proxy.config.http.client.concurrent_connection_control.alert.enabled	INT	Default: 0 Disables (0) or enables (1) alerting on violation of the concurrent connection limit.
proxy.config.http.client.concurrent_connection_control.max_connections	INT	Default: 1000 Configures the maximum number of concurrent connections allowed from one client IP address.
proxy.config.http.client.connection_rate_control.close.enabled	INT	Default: 0 Disables (0) or enables (1) closing connections on reaching the connection rate limit.
proxy.config.http.client.connection_rate_control.alert.enabled	INT	Default: 1 Disables (0) or enables (1) alerting on exceeding the connection rate limit.
proxy.config.http.client.connection_rate_control.second	INT	Default: 100 Configures the maximum connections per second allowed from one client IP.
proxy.config.http.client.connection_control.exceptions	STRING	Default: NULL Specifies a comma separated list of IP addresses for which the connection limits do not apply.

Authentication basic realm

Configuration Variable	Data Type	Description
proxy.config.proxy.authenticate.basic.realm	STRING	Default: NULL Specifies the authentication realm name. If the default of **NULL** is specified, **Content Gateway** is used.
proxy.config.auth_type	INT	Default: 0 Specifies the type of client authentication. ● 0 = None ● 1 = LDAP ● 2 = RADIUS ● 3 = Legacy NTLM ● 4 = Integrated Window Authentication ● 5 = Rule-Based Authentication

Configuration Variable	Data Type	Description
proxy.config.multiauth.enabled	INT	Default: 0 Enables (1) or disables (0) rule-based authentication. Tells Content Gateway to use the auth_rules.config file.
proxy.config.multiauth.domain.max	INT	Default: 50 Specifies the maximum number of domains that can be added or joined on **Configure > Security > Access Control > Domains**
proxy.config.auth.form_filename	STRING	Default: auth_form.html Specifies the file that defines the Captive Portal authentication page. This variable must be added manually. Changing this filename is not recommended.
proxy.config.internal.file.path	STRING	Default: /opt/WCG/config/ui_files Specifies the location of any css and image files used to define the Captive Portal authentication page. The full default path is /opt/WCG/config/ui_files. Image files are located in an /images sub-directory. This variable must be added manually.
proxy.config.ssl.auth_server_port	INT	Default: 4443 Specifies the local port used for the HTTPS Captive Portal page.
proxy.config.ssl.use_custom_cert_for_captve_portal	INT	Default: 0 (Added with v8.5.4) Enables (1) or disables (0) the use of a custom certificate with Captive Portal.
proxy.config.auth.sharecookie	INT	Default:0 Enables (1) or disables (0) authentication cookie sharing. This is automatically enabled when cookie cashing is enabled.
proxy.config.auth.reauth_for_null_user	INT	Default: 0 Enabled (1) or disables (0) re-authentication with a NULL user is used with a valid password. This variable must be added manually and is only valid for LDAP authentication..

Configuration Variable	Data Type	Description
proxy.config.auth_user_ip_sess_timeout	INT	Default: 60 (Added in v8.5.3) Specifies the number of seconds a device IP address and a user are associated. Content Gateway will associate an IPv4 address with the same user name for this length of time. This variable works with proxy.config.auth_user_ip_max_num and must be manually added.
proxy.config.auth_user_ip_max_num	INT	Default: 1 (Added in v8.5.3) Specifies the number of devices from which a single user can access the Internet for the number of seconds configured by proxy.config.auth_user_ip_sess_timeout. This variable must be manually added.
proxy.config.auth.ssl_auth_url	INT	Default: 0 (v8.5.4) Default: 1 (v8.5.5) (Added in v8.5.4) Disables (0) or enables (1) authentication of HTTPS requests over HTTPS, using port 8443. When disabled, authentication for HTTPS requests is done over HTTP, using port 8080.
proxy.config.auth.sync_auth_config	INT	Default: 0 (Added in v8.5.4) Disables (0) or enables (1) the control of the syncing of auth_rules.config files across the cluster. Note that, to avoid invalid rules, the domain identifier needs to be the same across the cluster.

LDAP

Configuration Variable	Data Type	Description
proxy.config.ldap.auth.enabled	INT	Default: 0 Enables (1) or disables (0) LDAP proxy authentication. See *LDAP authentication*, page 197.
proxy.config.ldap.cache.size	INT	Default: 5000 The maximum number of entries allowed in the LDAP cache. If this value is modified, you must update the value of **proxy.config.ldap.cache.storage_size** proportionally. For example, if you double the cache size, also double the cache storage size.
proxy.config.ldap.cache.storage_size	INT	Default: 24582912 The size of the LDAP cache in bytes. This is directly related to the number of entries in the cache. If this value is modified, you must update the value of **proxy.config.ldap.cache.size** proportionally. For example, if you double the storage size, also double the cache size. Modifying this variable without modifying **proxy.config.ldap.cache.size** can cause the LDAP subsystem to stop functioning.
proxy.config.ldap.auth.ttl_value	INT	Default: 3000 The amount of time (in minutes) that entries in the cache remain valid.
proxy.config.ldap.auth.purge_cache_on_auth_fail	INT	Default: 1 When enabled (1), configures Content Gateway to delete the authorization entry for the client in the LDAP cache if authorization fails.
proxy.config.ldap.proc.ldap.server.name	STRING	Default: NULL The LDAP server name.
proxy.config.ldap.proc.ldap.server.port	INT	Default: 398 The LDAP server port.
proxy.config.ldap.proc.ldap.base.dn	STRING	Default: NULL The LDAP Base Distinguished Name (DN). Obtain this value from your LDAP administrator.

Configuration Variable	Data Type	Description
proxy.config.ldap.proc.ldap.uid_filter	STRING	Default: sAMAccountName The LDAP login name/ID. Use this as a filter to search the full DN database. userPrincipalName is also valid for Microsoft Active Directory. For eDirectory or other directory services, enter **uid** in this field.
proxy.config.ldap.secure.bind.enabled	INT	Default: 0 When enabled (1), configures the proxy to use secure LDAP (LDAPS) to communicate with the LDAP server. Secure communication is usually performed on port 636 or 3269.
proxy.config.ldap.proc.ldap.server.bind_dn	STRING	Default: NULL The Full Distinguished Name (fully qualified name) of a user in the LDAP-based directory service. For example: `CN=John Smith,CN=USERS, DC=MYCOMPANY,DC=COM` Enter a maximum of 128 characters in this field. If no value is specified for this field, the proxy attempts to bind anonymously.
proxy.config.ldap.proc.ldap.server.bind_pwd	STRING	Default: NULL Specifies a password for the user identified by the **proxy.config.ldap.proc.ldap.server.bind_dn** variable.
proxy.config.ldap.proc.encode_convert	INT	Default: 0 Enables (1) or disables (0) the support of passwords with special characters. The variable proxy.config.ldap.proc.encode_name is required when this variable is enabled. This variable must be added manually. See this page for additional information.
proxy.config.ldap.proc.encode_name	STRING	Default: NULL The encoding name to be used when proxy.config.ldap.proc.encode_convert is enabled. This variable must be added manually.

RADIUS authentication

Configuration Variable	Data Type	Description
proxy.config.radius.auth.enabled	INT	Default: 0 Enables (1) or disables (0) RADIUS proxy authentication.
proxy.config.radius.proc.radius.primary_server.name	STRING	Default: NULL The hostname or IP address of the primary RADIUS authentication server.
proxy.config.radius.proc.radius.primary_server.auth_port	INT	Default: 1812 The RADIUS server port that Content Gateway uses to communicate with the RADIUS server.
proxy.config.radius.proc.radius.primary_server.shared_key	STRING	Default: NULL The key used for encoding with the first RADIUS authentication server.
proxy.config.radius.proc.radius.secondary_server.name	STRING	Default: NULL The hostname or IP address of the secondary RADIUS authentication server.
proxy.config.radius.proc.radius.secondary_server.auth_port	INT	Default: 1812 The port that the proxy uses to communicate with the secondary RADIUS authentication server.
proxy.config.radius.proc.radius.secondary_server.shared_key	STRING	Default: NULL The key used for encoding with the secondary RADIUS authentication server.
proxy.config.radius.auth.min_timeout	INT	Default: 10 The amount of time the connection to the RADIUS server can remain idle before Content Gateway closes the connection.
proxy.config.radius.auth.max_retries	INT	Default: 10 The maximum number of times Content Gateway tries to connect to the RADIUS server.
proxy.config.radius.cache.size	INT	Default: 1000 The number of entries allowed in the RADIUS cache. The minimum value is 256 entries.

Configuration Variable	Data Type	Description
proxy.config.radius.cache.storage_size	INT	Default: 15728640 The maximum amount of space that the RADIUS cache can occupy on disk. This value must be at least one hundred times the number of entries. It is recommended that you provide the maximum amount of disk space possible.
proxy.config.radius.auth.ttl_value	INT	Default: 60 The number of minutes that Content Gateway stores username and password entries in the RADIUS cache.

NTLM

Configuration Variable	Data Type	Description
proxy.config.ntlm.auth.enabled	INT	Default: 0 Enables (1) or disables (0) NTLM proxy authentication.

proxy.config.ntlm.dc.list	STRING	Default: NULL
		A comma-separated list of domain controller hostnames. The format is:
		`host_name[:port] [%netbios_name]`
		or
		`IP_address[:port] [%netbios_name]`
		If you are using Active Directory 2008, you must include the **netbios_name** or use SMB port 445.

proxy.config.ntlm.dc.load_balance	INT	Default: 0 Enables (1) or disables (0) load balancing. When enabled, Content Gateway balances the load when sending authentication requests to the domain controllers. **Note:** When multiple domain controllers are specified, even if load balancing is disabled, when the load on the primary domain controller reaches the maximum number of connections allowed, new requests are sent to a secondary domain controller as a short-term failover provision, until such time that the primary domain controller can accept new connections.

Configuration Variable	Data Type	Description
proxy.config.ntlm.dc.max_ connections	INT	Default: 10 Specifies the maximum number of connections Content Gateway can have open to the domain controller.
proxy.config.ntlm.cache.enabled	INT	Default: 1 Enables (1) or disables (0) the NTLM cache. Applies only when Content Gateway is an explicit proxy. When disabled, Content Gateway does not store any credentials in the NTLM cache for future use. Content Gateway always sends the credentials to the domain server to be validated.
proxy.config.ntlm.cache.ttl_ value	INT	Default: 900 Specifies the number of seconds that Content Gateway stores entries in the NTLM cache. The supported range of values is 300 to 86400 seconds.
proxy.config.ntlm.cache.size	INT	Default: 5000 Specifies the number of entries allowed in the NTLM cache.
proxy.config.ntlm.cache. storage_size	INT	Default: 15728640 Specifies the maximum amount of space that the NTLM cache can occupy on disk. This value should be proportionate to number of entries in the NTLM cache. For example, if each entry in the NTLM cache is approximately 128 bytes and the number of entries allowed in the NTLM cache is 5000, the cache storage size should be at least 64000 bytes.
proxy.config.ntlm.cache_ 0exception.list	STRING	Default: NULL Holds the list of IP addresses and IP address ranges that will not be cached. This variable gets its value from the Content Gateway manager NTLM Multi-Host IP addresses field. The exception list is a comma separated list that can contain up to: ● 64 IPv4 addresses ● 32 IPv4 address ranges ● 24 IPv6 addresses ● 12 IPv6 address ranges

Configuration Variable	Data Type	Description
proxy.config.ntlm.fail_open	INT	Default: 1 Enables (1) or disables (0) whether client requests are allowed to proceed when authentication fails due to: ● no response from the domain controller ● badly formed messages from the client ● invalid SMB responses **Note:** Password authentication failures are always failures.
proxy.config.ntlm.check_ account_passwd	INT	Default: 0 Enables (1) or disables (0) whether Content Gateway will create a log file entry when users are locked out after multiple failed password errors. Filter. config can be edited for user agents causing the lockout. NOTE: This variable must be added to the config file and should only be used for debugging purposes and then disabled.

Integrated Windows Authentication

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Configuration Variable	Data Type	Description
proxy.config.winauth.enabled	INT	Default: 0 Enables (1) or disables (0) Integrated Windows Authentication (Kerberos).
proxy.config.winauth.basic_ auth_disable	INT	Default: 0 (Added with 8.5.5.) Disables (1) or enables (0) basic authentication.
proxy.config.winauth.realm	STRING	Default: NULL The name of the Windows Active Directory domain. By entering "*", all domain controllers found in the DNS SRV records will be used.
proxy.config.winauth.dc.list	STRING	Default: NULL A comma separated list of domain controllers.
proxy.config.winauth.log_ denied_requests	INT	Default: 1 Enables (1) or disables (0) logging of denied authentication requests.

Transparent authentication

Configuration Variable	Data Type	Description
proxy.config.http.transparent_auth_hostname	STRING	Default: NULL An alternate hostname for the proxy that can be resolved for all clients via DNS. This is needed if the regular hostname of the Content Gateway machine cannot be resolved for all users via DNS. When Cookie Sharing is enabled, this value must be the FQDN of the load balancer and must be the same value for all proxies in the cluster.
proxy.config.http.transparent_auth_type	INT	Default: 1 ● 0 associates a session ID with the username after the user session is authenticated. Use this setting to uniquely identify users who share a single IP address, such as in proxy-chaining. ● 1 associates a client IP address with a username after the user session is authenticated. In either mode, the length of time before a client must re-authenticate is determined by the value of **proxy.config.http.transparent_auth_session_time**.
proxy.config.http.transparent_auth_session_time	INT	Default: 15 The length of time (in minutes) before the browser must re-authenticate. This value is used in both IP and cookie modes.

HTTP engine

Configuration Variable	Data Type	**Description**
proxy.config.http.server_port	INT	Default: 8080 The port that Content Gateway uses when acting as a proxy server for web traffic or when serving web traffic transparently.

proxy.config.http.server_port_attr	STRING	Default: X
		Specifies the server port options. You can specify one of the following:
		`C=SERVER_PORT_COMPRESSED`
		`X=SERVER_PORT_DEFAULT`
		`T=SERVER_PORT_BLIND_TUNNEL`

proxy.config.http.server_other_ports	STRING	Default: NULL Specifies the ports other than the port specified by the variable **proxy.config.http.server_port** to bind for incoming HTTP requests.
proxy.config.http.ssl_ports	STRING	Default: 443 563 8081 8071 9443 9444 8443 9447 The ports used for tunneling.This is a space-separated list that can also include ranges of ports, e.g. 1-65535. Content Gateway allows tunnels only to the specified ports.
proxy.config.http.insert_request_via_str	INT	Default: 1 ● 0 = no extra information is added to the string. ● 1 = all extra information is added. ● 2 = some extra information is added.
proxy.config.http.insert_response_via_str	INT	Default: 1 ● 0 = no extra information is added to the string. ● 1 = all extra information is added. ● 2 = some extra information is added.
proxy.config.http.enable_url_expandomatic	INT	Default: 1 Enables (1) or disables (0) **.com** domain expansion, which configures Content Gateway to attempt to resolve unqualified hostnames by redirecting them to the expanded address, prepended with **www.** and appended with **.com**; for example, if a client makes a request to **host**, Content Gateway redirects the request to www.host.com.

Configuration Variable	Data Type	**Description**
proxy.config.http.no_dns_just_forward_to_parent	INT	Default: 0 When enabled (1), and if HTTP parent caching is enabled, Content Gateway does no DNS lookups on request hostnames.
proxy.config.http.uncacheable_requests_bypass_parent	INT	Default: 0 When enabled (1), Content Gateway bypasses the parent proxy for a request that is not cacheable.
proxy.config.http.keep_alive_enabled	INT	Default: 1 Enables (1) or disables (0) the use of keep-alive connections to either origin servers or clients.
proxy.config.http.chunking_enabled	INT	Default: 1 Specifies whether Content Gateway will generate a chunked response: ● 0 = Never ● 1 = Always
proxy.config.http.send_http11_requests	INT	Default: 3 Configures Content Gateway to use HTTP Version 1.1 when communicating with origin servers. You can specify one of the following values: ● 0 = Never use HTTP 1.1 when communicating with origin servers. ● 1 = Always use HTTP 1.1 when communicating with origin servers. ● 2 = Use HTTP 1.1 if the origin server has previously used HTTP 1.1. ● 3 = Use HTTP 1.1 if the client request is HTTP 1.1 and the origin server has previously used HTTP 1.1. Note: If HTTP 1.1 is used, Content Gateway can use keep-alive connections with pipelining to origin servers. If HTTP 0.9 is used, Content Gateway does not use keep-alive connections to origin servers. If HTTP 1.0 is used, a Content Gateway can use keep-alive connections without pipelining to origin servers.
proxy.config.http.send_http11_asfirstrequest	INT	Default: 1 When enabled (1), specifies that Content Gateway send HTTP 1.1 in the first request to server. Otherwise, the default behavior is specified by **proxy.config.http.send_http11_requests**.

Configuration Variable	Data Type	**Description**
proxy.config.http.share_server_ sessions	INT	Default: 1 Enables (1) or disables (0) the re-use of server sessions. Note: When IP spoofing is enabled, Content Gateway automatically disables this variable.
proxy.config.http.share_server_ sessions_max	INT	Default: 2500 The maximum number of server sessions that can be reused.
proxy.config.http.ftp_enabled	INT	Default: 1 Enables (1) or disables (0) Content Gateway from serving FTP requests sent via HTTP.
proxy.config.http.record_ heartbeat	INT	Default: 0 Enables (1) or disables (0) **content_cop** heartbeat logging.
proxy.config.http.large_file_ support	INT	Default: 1 When enabled (1), Content Gateway supports downloading of files larger than 2 GB.

Parent proxy configuration

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Configuration Variable	**Data Type**	**Description**
proxy.config.http.parent_proxy_ routing_enable	INT	Default: 1 Enables (1) or disables (0) the HTTP parent caching option. See *Hierarchical Caching*, page 93.
proxy.config.http.parent_proxy. retry_time	INT	Default: 300 The amount of time allowed between connection retries to a parent cache that is unavailable.
proxy.config.http.parent_proxy. fail_threshold	INT	Default: 10 The number of times the connection to the parent cache can fail before Content Gateway considers the parent unavailable.

Configuration Variable	Data Type	Description
proxy.config.http.parent_proxy.total_connect_attempts	INT	Default: 4 The total number of connection attempts allowed to a parent cache before Content Gateway bypasses the parent or fails the request (depending on the **go_direct** option in the **bypass.config** file).
proxy.config.http.parent_proxy.per_parent_connect_attempts	INT	Default: 2 The total number of connection attempts allowed per parent if multiple parents are used.
proxy.config.http.parent_proxy.connect_attempts_timeout	INT	Default: 30 The timeout value, in seconds, for parent cache connection attempts.
proxy.config.http.forward.proxy_auth_to_parent	INT	Default: 0 When enabled (1), the Proxy-Authorization header is *not* stripped from requests sent to a parent proxy. Enable this when Content Gateway is a child proxy and the parent proxy performs authentication.
proxy.config.http.child_proxy.read_auth_from_header	INT	Default: 0 When Content Gateway is the parent proxy, read X-Authenticated-User and X-Forwarded-For fields from incoming request headers. 1 = enabled 0 = disabled
proxy.local.http.parent_proxy.disable_ssl_connect_tunneling	INT	Default: 0 When enabled (1), HTTPS requests bypass the parent proxy.
proxy.local.http.parent_proxy.disable_unknown_connect_tunneling	INT	Default: 0 When enabled (1), non-HTTPS tunnel requests bypass the parent proxy.

HTTP connection timeouts (secs)

Configuration Variable	Data Type	Description
proxy.config.http.keep_alive_no_activity_timeout_in	INT	Default: 60 How long Content Gateway keeps connections to clients open for a subsequent request after a transaction ends.
proxy.config.http.keep_alive_no_activity_timeout_out	INT	Default: 60 How long Content Gateway keeps connections to origin servers open for a subsequent transfer of data after a transaction ends.
proxy.config.http.transaction_no_activity_timeout_in	INT	Default: 120 How long Content Gateway keeps connections to clients open if a transaction stalls.
proxy.config.http.transaction_no_activity_timeout_out	INT	Default: 120 How long Content Gateway keeps connections to origin servers open if the transaction stalls.
proxy.config.http.transaction_active_timeout_in	INT	Default: 0 How long Content Gateway remains connected to a client. If the transfer to the client is not complete before this timeout expires, Content Gateway closes the connection. The default value of 0 specifies that there is no timeout.
proxy.config.http.transaction_active_timeout_out	INT	Default: 0 How long Content Gateway waits for fulfillment of a connection request to an origin server. If Content Gateway does not complete the transfer to the origin server before this timeout expires, the connection request is terminated. The default value of 0 specifies that there is no timeout.
proxy.config.http.accept_no_activity_timeout	INT	Default: 120 The timeout interval in seconds before Content Gateway closes a connection that has no activity.

Configuration Variable	Data Type	Description
proxy.config.http.background_ fill_active_timeout	INT	Default: 60 How long Content Gateway continues a background fill before giving up and dropping the origin server connection.
proxy.config.http.background_ fill_completed_threshold	FLOAT	Default: 0.50000 The proportion of total document size already transferred when a client aborts at which the proxy continues fetching the document from the origin server to get it into the cache (a *background fill*).

Origin server connection attempts

Configuration Variable	Data Type	Description
proxy.config.http.connect_ attempts_max_retries	INT	Default: 1 The maximum number of connection retries Content Gateway makes when the origin server is not responding.
proxy.config.http.connect_ attempts_max_retries_dead_ server	INT	Default: 1 The maximum number of connection retries Content Gateway makes when the origin server is unavailable.
proxy.config.http.connect_ attempts_rr_retries	INT	Default: 2 The maximum number of failed connection attempts allowed before a round-robin entry is marked as down if a server has round-robin DNS entries.
proxy.config.http.connect_ attempts_timeout	INT	Default: 60 The timeout value in seconds for an origin server connection.
proxy.config.http.streaming_ connect_attempts_timeout	INT	Default: 1800 The timeout value in seconds for a streaming content connection.

Configuration Variable	Data Type	Description
proxy.config.http.down_server.cache_time	INT	Default: 30 How long in seconds Content Gateway remembers that an origin server was unreachable.
proxy.config.http.down_server.abort_threshold	INT	Default: 10 The number of seconds before Content Gateway marks an origin server as unavailable when a client abandons a request because the origin server was too slow in sending the response header.

Negative response caching

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Configuration Variable	Data Type	Description
proxy.config.http.negative_caching_enabled	INT	Default: 0 When enabled (1), Content Gateway caches negative responses, such as *404 Not Found*, if a requested page does not exist. The next time a client requests the same page, Content Gateway serves the negative response from the cache. Content Gateway caches the following negative responses: 204 No Content 305 Use Proxy 400 Bad Request 403 Forbidden 404 Not Found 405 Method Not Allowed 500 Internal Server Error 501 Not Implemented 502 Bad Gateway 503 Service Unavailable 504 Gateway Timeout
proxy.config.http.negative_caching_lifetime	INT	Default: 1800 Specifies how long Content Gateway keeps the negative responses as valid in cache.

Proxy users variables

Configuration Variable	Data Type	Description
proxy.config.http.anonymize_ remove_from	INT	Default: 0 When enabled (1), Content Gateway removes the **From** header that accompanies transactions to protect the privacy of your users.
proxy.config.http.anonymize_ remove_referer	INT	Default: 0 When enabled (1), Content Gateway removes the **Referer** header that accompanies transactions to protect the privacy of your site and users.
proxy.config.http.anonymize_ remove_user_agent	INT	Default: 0 When enabled (1), Content Gateway removes the **User-Agent** header that accompanies transactions to protect the privacy of your site and users.
proxy.config.http.anonymize_ remove_cookie	INT	Default: 0 When enabled (1), Content Gateway removes the **Cookie** header that accompanies transactions to protect the privacy of your site and users.
proxy.config.http.anonymize_ remove_client_ip	INT	Default: 1 When enabled (1), Content Gateway removes **Client-IP** headers for more privacy.
proxy.config.http.anonymize_ insert_client_ip	INT	Default: 0 When enabled (1), Content Gateway inserts **Client-IP** headers to retain the client's IP address.
proxy.config.http.anonymize_ other_header_list	STRING	Default: NULL Specifies the headers that Content Gateway will remove from outgoing requests. Can be specified in a comma separated list.
proxy.config.http.snarf_ username_from_authorization	INT	Default: 0 When enabled (1), Content Gateway takes the username and password from the authorization header for LDAP if the authorization scheme is *Basic*.

Configuration Variable	Data Type	Description
proxy.config.http.insert_squid_x_forwarded_for	INT	Default: 0 When enabled (1), Content Gateway adds the client IP address to the **X-Forwarded-For** header when the outbound request is sent to a configured parent proxy.
proxy.config.http.insert_xff_to_external	INT	Default: 0 When enabled (1), Content Gateway adds the client IP address to the **X-Forwarded-For** header to outbound requests sent to the Internet. Note: This variable must be manually added to the config file.
proxy.config.http.insert_x_authenticateduser	INT	Default: 0 When enabled (1), Content Gateway inserts the **X-Authenticated-User** header to advertise the proxy authenticated user. When enabled, the user name will be sent only to a configured parent proxy.
proxy.config.http.insert_xua_to_external	INT	Default: 0 When enabled (1), Content Gateway inserts the **X-Authenticated-User** header to advertise the proxy authenticated user to all outbound requests. Note: This variable must be manually added to the config file.

Security

Configuration Variable	Data Type	Description
proxy.config.http.push_method_enabled	INT	Default: 0 When enabled (1), **filter.config** rules can be used to push content directly into the cache without a user request. You must add a filtering rule with the PUSH action to ensure that only known source IP addresses implement PUSH requests to the cache. This variable must be enabled before PUSH is available in the Method drop down list in the configuration file editor.

Cache control

Configuration Variable	Data Type	Description
proxy.config.http.cache.http	INT	Default: 1 Enables (1) or disables (0) caching of HTTP requests.
proxy.config.http.cache.ftp	INT	Default: 1 Enables (1) or disables (0) caching of FTP requests sent via HTTP.
proxy.config.http.cache.ignore_client_no_cache	INT	Default: 0 When enabled (1), Content Gateway ignores client requests to bypass the cache.
proxy.config.http.cache.ims_on_client_no_cache	INT	Default: 0 When enabled (1), Content Gateway issues a conditional request to the origin server if an incoming request has a **no-cache** header.
proxy.config.http.cache.ignore_server_no_cache	INT	Default: 0 When enabled (1), Content Gateway ignores origin server requests to bypass the cache.
proxy.config.http.cache.cache_responses_to_cookies	INT	Default: 3 How cookies are cached: ● 0 = do not cache any responses to cookies ● 1 = cache for any content-type ● 2 = cache only for image types ● 3 = cache for all but text content-types
proxy.config.http.cache.ignore_authentication	INT	Default: 0 When enabled (1), Content Gateway ignores **WWW-Authentication** headers in responses. **WWW-Authentication** headers are removed and not cached.
proxy.config.http.cache.cache_urls_that_look_dynamic	INT	Default: 0 Enables (1) or disables (0) caching of URLs that look dynamic.
proxy.config.http.cache.enable_default_vary_headers	INT	Default: 0 Enables (1) or disables (0) caching of alternate versions of HTTP objects that do not contain the **Vary** header.

Configuration Variable	Data Type	Description
proxy.config.http.cache.when_to_revalidate	INT	Default: 0 When to revalidate content: ● 0 = Use cache directives or heuristic (the default value). ● 1 = Stale if heuristic. ● 2 = Always stale (always revalidate). ● 3 = Never stale. ● 4 = Use cache directives or heuristic (0) unless the request has an **If-Modified-Since** header. If the request has an **If-Modified-Since** header, Content Gateway always revalidates the cached content and uses the client's **If-Modified-Since** header for the proxy request.
proxy.config.http.cache.when_to_add_no_cache_to_msie_requests	INT	Default: 0 When to add **no-cache** directives to Microsoft Internet Explorer requests. You can specify the following: ● 0 = **no-cache** not added to MSIE requests. ● 1 = **no-cache** added to IMS MSIE requests. ● 2 = **no-cache** added to all MSIE requests.
proxy.config.http.cache.required_headers	INT	Default: 0 The type of headers required in a request for the request to be cacheable. ● 0 = no required headers to make document cacheable. ● 1 = at least **Last-Modified** header required. ● 2 = explicit lifetime required, **Expires** or **Cache-Control**.
proxy.config.http.cache.max_stale_age	INT	Default: 604800 The maximum age allowed for a stale response before it cannot be cached.
proxy.config.http.cache.range.lookup	INT	Default: 1 When enabled (1), Content Gateway looks up range requests in the cache.
proxy.config.http.cache.cache_301_responses	INT	Default: 0 Enables (1) or disables (0) caching of "301" response pages.

Heuristic expiration

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Configuration Variable	Data Type	Description
proxy.config.http.cache.heuristic_min_lifetime	INT	Default: 3600 The minimum amount of time that a document in the cache can be considered fresh.
proxy.config.http.cache.heuristic_max_lifetime	INT	Default: 86400 The maximum amount of time that a document in the cache can be considered fresh.
proxy.config.http.cache.heuristic_lm_factor	FLOAT	Default: 0.10000 The aging factor for freshness computations.
proxy.config.http.cache.fuzz.time	INT	Default: 240 The interval in seconds before the document stale time that the proxy checks for an early refresh.
proxy.config.http.cache.fuzz.probability	FLOAT	Default: 0.00500 The probability that a refresh is made on a document during the specified fuzz time.

Dynamic content and content negotiation

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Configuration Variable	Data Type	Description
proxy.config.http.cache.vary_default_text	STRING	Default: NULL The header on which Content Gateway varies for text documents; for example, if you specify **user-agent**, the proxy caches all the different user-agent versions of documents it encounters.
proxy.config.http.cache.vary_default_images	STRING	Default: NULL The header on which Content Gateway varies for images.
proxy.config.http.cache.vary_default_other	STRING	Default: NULL The header on which Content Gateway varies for anything other than text and images.

Anonymous FTP password

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Configuration Variable	Data Type	Description
proxy.config.http.ftp. anonymous_passwd	STRING	Default: the administrator email address supplied during installation The anonymous password for FTP servers that require a password for access. Content Gateway uses the Content Gateway user account name as the default value for this variable.

Cached FTP document lifetime

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Configuration Variable	Data Type	Description
proxy.config.http.ftp.cache. document_lifetime	INT	Default: 259200 The maximum amount of time that an FTP document can stay in the cache.

FTP transfer mode

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Configuration Variable	Data Type	Description
proxy.config.http.ftp.binary_ transfer_only	INT	Default: 0 When enabled (1), all FTP documents requested from HTTP clients are transferred in binary mode only. When disabled (0), FTP documents requested from HTTP clients are transferred in ASCII or binary mode, depending on the document type.

Customizable user response pages

Configuration Variable	Data Type	Description
proxy.config.body_factory. enable_customizations	INT	Default: 0 Specifies whether customizable response pages are enabled or disabled and which response pages are used: ● 0 = disable customizable user response pages ● 1 = enable customizable user response pages in the default directory only ● 2 = enable language-targeted user response pages
proxy.config.body_factory. enable_logging	INT	Default: 0 Enables (1) or disables (0) logging for customizable response pages. When enabled, Content Gateway records a message in the error log each time a customized response page is used or modified.
proxy.config.body_factory. template_sets_dir	STRING	Default: config/body_factory Specifies the customizable response page default directory.
proxy.config.body_factory. response_suppression_mode	INT	Default: 0 Specifies when Content Gateway suppresses generated response pages: ● 0 = never suppress generated response pages ● 1 = always suppress generated response pages ● 2 = suppress response pages only for intercepted traffic

FTP engine

Configuration Variable	Data Type	Description
FTP over HTTP		
proxy.config.ftp.data_ connection_mode	INT	Default: 1 Specifies the FTP connection mode: ● 1 = PASV then PORT ● 2 = PORT only ● 3 = PASV only
proxy.config.ftp.control_ connection_timeout	INT	Default: 300 Specifies how long Content Gateway waits for a response from the FTP server.
proxy.config.ftp.rc_to_switch_ to_PORT	STRING	Default: NULL Specifies the response codes for which Content Gateway automatically fails over to the PORT command when PASV fails if the configuration variable **proxy.config. ftp.data_connection_mode** is set to 1. This variable is used for FTP requests from HTTP clients only.
FTP Proxy		
proxy.config.ftp.ftp_enabled	INT	Default: 0 Enables (1) or disables (0) processing of FTP requests from FTP clients.
proxy.config.ftp.cache_enabled	INT	Default: 0 Enables (1) or disables (0) caching of FTP objects. When this option is disabled, Content Gateway always serves FTP objects from the FTP server.
proxy.config.ftp.file_fresh_ mdtm_checking_enabled	INT	Default: 0 Only applies when FTP caching is enabled. When Enabled (1), Content Gateway sends an 'MDTM' command before the 'RETR' command to get the last modified time of file(s). If the file is in cache and the last_contact time is the same as 'MDTM' response, the proxy serves the cache file to the client.
proxy.config.ftp.logging_ enabled	INT	Default: 1 Enables (1) or disables (0) logging of FTP transactions.

Configuration Variable	Data Type	Description
proxy.config.ftp.proxy_server_port	INT	Default: 2121 Specifies the port used for FTP connections.
proxy.config.ftp.open_lisn_port_mode	INT	Default: 1 Specifies how FTP opens a listening port for a data transfer: ● 1 = The operating system chooses an available port. Content Gateway sends 0 and retrieves the new port number if the listen succeeds. ● 2 = The listening port is determined by the range of ports specified by the Content Gateway variables **proxy.config.ftp.min_lisn_port** and **proxy.config.ftp.max_lisn_port**, described below.
proxy.config.ftp.min_lisn_port	INT	Default: 32768 Specifies the lowest port in the range of listening ports used by Content Gateway for data connections when the FTP client sends a PASV or Content Gateway sends a PORT to the FTP server.
proxy.config.ftp.max_lisn_port	INT	Default: 65535 Specifies the highest port in the range of listening ports used by Content Gateway for data connections when the FTP client sends a PASV or Content Gateway sends a PORT to the FTP server.
proxy.config.ftp.server_data_default_pasv	INT	Default: 1 Specifies the default method used to set up server side data connections: ● 1 = Content Gateway sends a PASV to the FTP server and lets the FTP server open a listening port. ● 0 = Content Gateway tries PORT first (sets up a listening port on the proxy side of the connection).

Configuration Variable	Data Type	Description
proxy.config.ftp.different_ client_port_ip_allowed	INT	Default: 0 When enabled (1), Content Gateway can connect to a machine other than the one on which the FTP client is running to establish a data connection. The FTP client uses PORT to set up a listening port on its side and allows Content Gateway to connect to that port to establish the data connection (used to transfer files). When setting up the listening port, an FTP client specifies the IP address and port number for the listening port. If this variable is set to 0 (zero), Content Gateway cannot connect to the FTP client if the IP address sent by the client is different from the IP address of the machine running the FTP client.
proxy.config.ftp.try_pasv_times	INT	Default: 1024 Specifies the number of times Content Gateway can try to open a listening port when the FTP client sends a PASV.
proxy.config.ftp.try_port_times	INT	Default: 1024 Specifies the maximum number of times Content Gateway can try to open a listening port when sending a PORT to the FTP server.
proxy.config.ftp.try_server_ctrl_ connect_times	INT	Default: 6 Specifies the maximum number of times Content Gateway can try to connect to the FTP server's control listening port.
proxy.config.ftp.try_server_ data_connect_times	INT	Default: 3 Specifies the maximum number of times Content Gateway can try to connect to the FTP server's data listening port when it sends a PASV to the FTP server and gets the IP/listening port information.
proxy.config.ftp.try_client_ data_connect_times	INT	Default: 3 Specifies the maximum number of times Content Gateway can try to connect to the FTP client's data listening port when the FTP client sends a PORT with the IP/ listening port information.
proxy.config.ftp.client_ctrl_no_ activity_timeout	INT	Default: 900 Specifies the inactivity timeout, in seconds, for the FTP client control connection.

Configuration Variable	Data Type	Description
proxy.config.ftp.client_ctrl_ active_timeout	INT	Default: 14400 Specifies the active timeout, in seconds, for the FTP client control connection.
proxy.config.ftp.server_ctrl_no_ activity_timeout	INT	Default: 120 Specifies the inactivity timeout, in seconds, for the FTP server control connection.
proxy.config.ftp.server_ctrl_ active_timeout	INT	Default: 14400 Specifies the active timeout, in seconds, for the FTP server control connection.
proxy.config.ftp.client_data_no_ activity_timeout	INT	Default: 120 Specifies the maximum time, in seconds, that a client FTP data transfer connection can be idle before it is aborted.
proxy.config.ftp.client_data_ active_timeout	INT	Default: 14400 Specifies the maximum time, in seconds, of an FTP data transfer connection from a client.
proxy.config.ftp.server_data_ no_activity_timeout	INT	Default: 120 Specifies the maximum time, in seconds, that a server FTP data transfer connection can be idle before it is aborted.
proxy.config.ftp.server_data_ active_timeout	INT	Default: 14400 Specifies the maximum time, in seconds, of an FTP data transfer connection from a server.
proxy.config.ftp.pasv_accept_ timeout	INT	Default: 120 Specifies the timeout value for a listening data port in Content Gateway (for PASV, the client data connection).
proxy.config.ftp.port_accept_ timeout	INT	Default: 120 Specifies the timeout value for a listening data port in Content Gateway (for PORT, the server data connection).
proxy.config.ftp.share_ftp_ server_ctrl_enabled	INT	Default: 1 Enables (1) or disables (0) sharing the server control connections among multiple anonymous FTP clients.

Configuration Variable	Data Type	Description
proxy.config.ftp.share_only_ after_session_end	INT	Default: 1 How an FTP server control connection is shared between different FTP client sessions: ● 1 = the FTP server control connection can be used by another FTP client session *only* when the FTP client session is complete (typically, when the FTP client sends out a QUIT command). ● 0 = the FTP server control connection can be used by another FTP client session *only* if the FTP client session is not actively using the FTP server connection: for example, if the request is a cache hit or during an idle session.
proxy.config.ftp.server_ctrl_ keep_alive_no_activity_timeout	INT	The timeout value when the FTP server control connection is not used by any FTP clients.
proxy.config.ftp.reverse_ftp_ enabled	INT	Default: 0 Not supported.
proxy.config.ftp.login_info_ fresh_in_cache_time	INT	Default: 604800 How long the 220/230 responses (login messages) can stay fresh in the cache.
proxy.config.ftp.data_source_ port_20_enabled	INT	Default: 0 When enabled (1), bind to source port 20 for outgoing data transfer connections to Active mode FTP clients.
proxy.config.ftp.directory_ listing_fresh_in_cache_time	INT	Default: 86400 How long directory listings can stay fresh in the cache.
proxy.config.ftp.file_fresh_in_ cache_time	INT	Default: 259200 How long FTP files can stay fresh in the cache.
proxy.config.ftp.simple_ directory_listing_cache_enabled	INT	Default: 1 Enables (1) or disables (0) caching of directory listings without arguments (for example, ‘dir’ or ‘ls’).
proxy.config.ftp.full_directory_ listing_cache_enabled	INT	Default: 1 Enables (1) or disables (0) caching of directory listings with arguments (for example, ‘ls -al’ or ‘ls *.txt’).

SOCKS processor

Configuration Variable	Data Type	Description
proxy.config.socks.socks_needed	INT	Default: 0 Enables (1) or disables (0) the SOCKS option. See *Configuring SOCKS firewall integration*, page 173.
proxy.config.socks.socks_version	INT	Default: 4 The SOCKS version.
proxy.config.socks.default_servers	STRING	Default: s1.example.com:1080;socks2:4080 The names and ports of the SOCKS servers with which Content Gateway communicates.
proxy.config.socks.accept_enabled	INT	Default: 0 Enables (1) or disables (0) the SOCKS proxy option. As a SOCKS proxy, Content Gateway receives SOCKS traffic (usually on port 1080) and forwards all requests directly to the SOCKS server.
proxy.config.socks.accept_port	INT	Default: 1080 The port on which Content Gateway accepts SOCKS traffic.
proxy.config.socks.socks_server_enabled	INT	Default: 0 Note: Configure only if Content Gateway is installed on an appliance.
proxy.config.socks.socks_server_port	INT	Default: 61080 Note: Configure only if Content Gateway is installed on an appliance.

Net subsystem

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Configuration Variable	Data Type	Description
proxy.config.net.connections_ throttle	INT	Default: 45000 The maximum number of connections that Content Gateway can handle. If Content Gateway receives additional client requests, they are queued until existing requests are served. Do not set this variable below 100.

Cluster subsystem

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Configuration Variable	Data Type	Description
proxy.config.cluster.cluster_port	INT	Default: 8086 The port used for cluster communication.
proxy.config.cluster.ethernet_ interface	STRING	Default: your_interface The network interface used for cluster traffic. All nodes in a cluster must use the same network interface.

Cache

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Configuration Variable	Data Type	Description
proxy.config.cache.permit. pinning	INT	Default: 0 Enables (1) or disables (0) the cache pinning option, which lets you keep objects in the cache for a specified time. You set cache pinning rules in the **cache. config** file (see *cache.config*, page 391).
proxy.config.cache.ram_cache. size	INT	Default: -1 The size of the RAM cache, in bytes. -1 means that the RAM cache is automatically sized at approximately 41 MB per GB of disk.

Configuration Variable	Data Type	Description
proxy.config.cache.limits.http.max_alts	INT	Default: 3 The maximum number of HTTP alternates that Content Gateway can cache.
proxy.config.cache.max_doc_size	INT	Default: 0 The maximum size of documents in the cache (in bytes): 0 = there is no size limit.

DNS

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Configuration Variable	Data Type	Description
proxy.config.dns.search_default_domains	INT	Default: 1 Enables (1) or disables (0) local domain expansion so that Content Gateway can attempt to resolve unqualified hostnames by expanding to the local domain; for example, if a client makes a request to an unqualified host named **host_x**, and if the Content Gateway local domain is **y.com**, Content Gateway expands the hostname to **host_x.y.com**.
proxy.config.dns.splitDNS.enabled	INT	Default: 0 Enables (1) or disables (0) DNS server selection. When enabled, Content Gateway refers to the **splitdns.config** file for the selection specification. See *Using the Split DNS option*, page 176
proxy.config.dns.splitdns.def_domain	STRING	Default: NULL The default domain for split DNS requests. This value is appended automatically to the hostname if it does not include a domain before split DNS determines which DNS server to use.
proxy.config.dns.splitdns.fast_match.count	INT	Default: 4 The maximum number of rules that can exist in order for the NOT logical operator (!) to be applied to any of the rules.

Configuration Variable	Data Type	Description
proxy.config.dns.url_expansions	STRING	Default: NULL A list of extensions automatically added to the hostname after a failed lookup; for example, if you want Content Gateway to add the hostname extension **.org**, specify **org** as the value for this variable (Content Gateway automatically adds the dot (.) before the extension.) Note: If **proxy.config.http.enable_url_expandomatic** is set to 1 (default), you do not have to add **www.** and **.com** to this list; Content Gateway tries **www.** and **.com** automatically after trying the values you specify.
proxy.config.dns.lookup_ timeout	INT	Default: 20 The DNS lookup timeout duration in seconds. When the timeout period expires, the lookup attempt is terminated. The default value is lower than proxy. config.hostdb.lookup_timeout and, therefore, takes precedence.
proxy.config.dns.retries	INT	Default: 1 The number of times a DNS lookup is retried before giving up.
proxy.config.dns.prefer_ipv4	INT	Default: 1 When a name resolves to both IPv4 and IPv6 addresses, specifies the preferred address type.
proxy.config.ipv6.ipv6_enabled	INT	Default: 0 Used to enable (1) or disable (0) support for IPv6.

DNS proxy

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Configuration Variable Data Type	Data Type	Description
proxy.config.dns.proxy.enabled	INT	Default: 0 Enables (1) or disables (0) the DNS proxy caching option that lets you resolve DNS requests on behalf of clients. This option off-loads remote DNS servers and reduces response time for DNS lookups. See *DNS Proxy Caching*, page 103.
proxy.config.dns.proxy_port	INT	Default: 5353 The port that Content Gateway uses for DNS traffic.

HostDB

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Configuration Variable	Data Type	Description
proxy.config.hostdb.size	INT	Default: 200000 The maximum number of entries allowed in the host database.
proxy.config.hostdb.ttl_mode	INT	Default: 0 The host database time to live (ttl) mode. 0 = obey the ttl values set by the name servers 1 = ignore the ttl values set by name servers and use the value set by the Content Gateway configuration variable **proxy.config.hostdb.timeout**. 2 = use the lower of the two values (the one set by the name server or the one set by Content Gateway) 3 = use the higher of the two values (the one set by the name server or the one set by Content Gateway)
proxy.config.hostdb.timeout	INT	Default: 86400 The foreground timeout, in seconds.

Configuration Variable	Data Type	Description
proxy.config.hostdb.fail.timeout	INT	Default: 60 The time for which a failed DNS will be cached in seconds.
proxy.config.hostdb.strict_ round_robin	INT	Default: 0 When disabled (0), Content Gateway always uses the same origin server for the same client as long as the origin server is available.

Logging configuration

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Configuration Variable	Data Type	Description
proxy.config.log2.logging_ enabled	INT	Default: 1 Enables and disables event logging: ● 0 = logging disabled ● 1 = log errors only ● 2 = log transactions only ● 3 = full logging (errors + transactions) See *Working With Log Files*, page 235.
proxy.config.log2.max_secs_ per_buffer	INT	Default: 5 Specifies the maximum amount of time before data in the buffer is flushed to disk.
proxy.config.log2.max_space_ mb_for_logs	INT	Default: 5120 *or* 20480 The amount of space allocated to the logging directory, in megabytes. When Content Gateway is on an appliance, the size is 5120 (5 GB) and cannot be changed. When Content Gateway is installed on a standalone server, the default size is 20480 (20 GB) and the size is configurable.
proxy.config.log2.max_space_ mb_for_orphan_logs	INT	Default: 25 The amount of space allocated to the logging directory, in megabytes, if this node is acting as a collation client.

Configuration Variable	Data Type	Description
proxy.config.log2.max_space_mb_headroom	INT	Default: 100 The tolerance for the log space limit in bytes. If the variable **proxy.config.log2.auto_delete_rolled_file** is set to 1 (enabled), auto-deletion of log files is triggered when the amount of free space available in the logging directory is less than the value specified here.
proxy.config.log2.hostname	STRING	Default: localhost The hostname of the machine running Content Gateway.
proxy.config.log2.logfile_dir	STRING	Default: /opt/WCG/logs The full path to the logging directory.
proxy.config.log2.logfile_perm	STRING	Default: rw-r--r-- Specifies the log file permissions. The standard UNIX file permissions are used (owner, group, other). Valid values are: ● - = no permission ● r = read permission ● w = write permission ● x = execute permission Permissions are subject to the umask settings for the Content Gateway process. This means that a umask setting of 002 will not allow write permission for others, even if specified in the configuration file. Permissions for existing log files are not changed when the configuration is changed. Linux only.
proxy.config.log2.custom_logs_enabled	INT	Default: 0 When enabled (1), supports the definition and generation of custom log files according to the specifications in **logs_xml.config**. See *logs_xml.config*, page 402.
proxy.config.log2.xml_logs_config	INT	Default: 1 Specifies the size, in MB, which when reached causes the log files to roll. See *Rolling event log files*, page 245.
proxy.config.log2.squid_log_enabled	INT	Default: 0 Enables (1) or disables (0) the squid log file format.

Configuration Variable	Data Type	Description
proxy.config.log2.squid_log_is_ascii	INT	Default: 1 The squid log file type: ● 1 = ASCII ● 0 = binary
proxy.config.log2.squid_log_name	STRING	Default: squid Specifies the squid log filename.
proxy.config.log2.squid_log_header	STRING	Default: NULL The squid log file header text.
proxy.config.log2.common_log_enabled	INT	Default: 0 Enables (1) or disables (0) the Netscape common log file format.
proxy.config.log2.common_log_is_ascii	INT	Default: 1 The Netscape common log file type: ● 1 = ASCII ● 0 = binary
proxy.config.log2.common_log_name	STRING	Default: common The Netscape common log filename.
proxy.config.log2.common_log_header	STRING	Default: NULL The Netscape common log file header text.
proxy.config.log2.extended_log_enabled	INT	Default: 1 Enables (1) or disables (0) the Netscape extended log file format.
proxy.confg.log2.extended_log_is_ascii	INT	Default: 1 The Netscape extended log file type: ● 1 = ASCII ● 0 = binary
proxy.config.log2.extended_log_name	STRING	Default: extended Specifies the Netscape extended log filename.
proxy.config.log2.extended_log_header	STRING	Default: NULL Specifies the Netscape extended log file header text.
proxy.config.log2.extended2_log_enabled	INT	Default: 0 Enables (1) or disables (0) the Netscape Extended-2 log file format.
proxy.config.log2.extended2_log_is_ascii	INT	Default: 1 The Netscape Extended-2 log file type: ● 1 = ASCII ● 0 = binary

Configuration Variable	Data Type	Description
proxy.config.log2.extended2_ log_name	STRING	Default: extended2 The Netscape Extended-2 log filename.
proxy.config.log2.extended2_ log_header	STRING	Default: NULL The Netscape Extended-2 log file header text.
proxy.config.log2.separate_ host_logs	INT	Default: 0 When enabled (1), configures Content Gateway to create a separate log file for HTTP/FTP transactions for each origin server listed in the **log_hosts.config** file (see *HTTP host log splitting*, page 248).
proxy.local.log2.collation_mode	INT	Default: 0 The log collation mode: ● 0 = Collation disabled. ● 1 = This host is a log collation server. ● 2 = This host is a collation client and sends entries using standard formats to the collation server. For information about sending XML-based custom formats to the collation server, see *logs_xml.config*, page 402.
proxy.confg.log2.collation_host	STRING	Default: NULL The hostname of the log collation server.
proxy.config.log2.collation_port	INT	Default: 8085 The port used for communication between the collation server and client.
proxy.config.log2.collation_ secret	STRING	Default: foobar The password used to validate logging data and prevent the exchange of unauthorized information when a collation server is being used.
proxy.config.log2.collation_ host_tagged	INT	Default: 0 When enabled (1), configures Content Gateway to include the hostname of the collation client that generated the log entry in each entry.
proxy.config.log2.collation_ retry_sec	INT	Default: 5 The number of seconds between collation server connection retries.
proxy.config.log2.rolling_ enabled	INT	Default: 1 Enables (1) or disables (0) log file rolling. See *Rolling event log files*, page 245.

Configuration Variable	Data Type	Description
proxy.config.log2.rolling_ interval_sec	INT	Default: 21600 The log file rolling interval, in seconds. The minimum value is 300 (5 minutes). The maximum value is 86400 seconds (one day).
proxy.config.log2.rolling_ offset_hr	INT	Default: 0 The file rolling offset hour. The hour of the day that starts the log rolling period.
proxy.config.log2.rolling_size_ mb	INT	Default: 10 The size, in megabytes, which when reached causes the current file to be closed and a new file to be created.
proxy.config.log2.auto_delete_ rolled_files	INT	Default: 1 Enables (1) or disables (0) automatic deletion of rolled files.
proxy.config.log2.sampling_ frequency	INT	Default: 1 Configures Content Gateway to log only a sample of transactions rather than every transaction. You can specify the following values: ● 1 = log every transaction ● 2 = log every second transaction ● 3 = log every third transaction and so on...

URL remap rules

Configuration Variable	Data Type	Description
proxy.config.url_remap.default_to_server_pac	INT	Default: 0 Enables (1) or disables (0) requests for a PAC file on the proxy service port (8080 by default) to be redirected to the PAC port. For this type of redirection to work, proxy.config.reverse_proxy.enabled must be set to 1.
proxy.config.url_remap.default_to_server_pac_port	INT	Default: -1 PAC requests made to the Content Gateway proxy service port are redirected to this port. **-1** sets the PAC port to the autoconfiguration port (default 8083). This variable can be used with **proxy.config.url_remap.default_to_server_pac** to get a PAC file from a different port. You must create and run a process that serves a PAC file on this port; for example, if you create a Perl script that listens on port 9000 and writes a PAC file in response to any request, you can set this variable to 9000, and browsers that request the PAC file from a proxy server on port 8080 will get the PAC file served by the Perl script.
proxy.config.url_remap.remap_required	INT	Default: 0 Set this variable to 1 if you want Content Gateway to serve requests only from origin servers listed in the mapping rules of the remap.config file. If a request does not match, the browser receives an error.
proxy.config.url_remap.pristine_host_hdr	INT	Default: 0 Set this variable to 1 if you want to retain the client host header in a request during remapping.

Scheduled update configuration

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Configuration Variable	Data Type	Description
proxy.config.update.enabled	INT	Default: 0 Enables (1) or disables (0) the Scheduled Update option.
proxy.config.update.force	INT	Default: 0 Enables (1) or disables (0) a force immediate update. When enabled, Content Gateway overrides the scheduling expiration time for all scheduled update entries and initiates updates until this option is disabled.
proxy.config.update.retry_count	INT	Default: 10 The number of times Content Gateway retries the scheduled update of a URL in the event of failure.
proxy.config.update.retry_ interval	INT	Default: 2 The delay in seconds between each scheduled update retry for a URL in the event of failure.
proxy.config.update.concurrent_ updates	INT	Default: 100 The maximum simultaneous update requests allowed at any time. This option prevents the scheduled update process from overburdening the host.

SNMP configuration

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Configuration Variable	Data Type	Default Value
proxy.config.snmp.master_agent_enabled	INT	0
proxy.config.snmp_encap_enabled	INT	0

Plug-in configuration

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Configuration Variable	Data Type	Description
proxy.config.plugin.plugin_dir	STRING	Default: config/plugins The directory in which plugins are located.

WCCP configuration

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Configuration Variable	Data Type	Description
proxy.config.wccp.enabled	INT	Default: 0 Enables (1) or disables (0) WCCP.

FIPS (Security Configuration)

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Configuration Variable	Data Type	Description
proxy.config.fips.security_ enabled	INT	Default: 0 Warning: Do not enable FIPS mode in records.config. Use the Content Gateway manager: **Configure > Security > FIPS Security**. FIPS mode cannot be disabled without reinstalling Content Gateway.
proxy.config.fips.security_ enabled_ui	INT	Default: 0 Warning: Do not enable FIPS mode in records.config. Use the Content Gateway manager: **Configure > Security > FIPS Security**. FIPS mode cannot be disabled without reinstalling Content Gateway.

SSL Decryption

Configuration Variable	Data Type	Description
proxy.config.ssl.enabled	INT	Default: 1 When enabled (1), Content Gateway accepts SSL connections and performs URL filtering before establishing a connection with the origin server. See **proxy.config.ssl_decryption.use_decryption** to enable SSL decryption.
proxy.config.ssl_decryption.use_decryption	INT	Default: 0 When enabled (1), Content Gateway accepts and decrypts SSL traffic. See *Working With Encrypted Data*, page 129.
proxy.config.ssl_decryption_ports	INT	Default: 443 The HTTPS ports. Content Gateway allows SSL decryption and policy lookup only to the specified ports.
proxy.config.ssl_decryption.tunnel_TLSv13	INT	Default: 1 (Added in v8.5.3.) When enabled (1), allows for tunneling of TLSV1.3-only connections (SSL connections that offer TLSv1.3, and no other protocols, as their “client hello”).
proxy.config.ssl_server_port	INT	Default: 8080 The port on which Content Gateway listens for client SSL traffic.
proxy.config.administrator_id	STRING	Default: NULL Do not change. Holds the encrypted administrator ID.
proxy.config.ssl_decryption.tunnel_unknown_protocols	INT	Default: 0 Enables (1) or disables the tunneling of unrecognized protocols using SSL ports.
proxy.config.ssl_decryption.tunnel_unknown_protocols_timeout	INT	Default: 10 Specifies the time in seconds that Content Gateway waits for the “client hello” response before tunneling the request as an unknown protocol.

Configuration Variable	Data Type	Description
proxy.config.ssl_decryption. mirror_enabled	INT	Default: 0 Enables (1) or disables SSL Decryption for Port Mirroring. Note that this feature is only available when SSL decryption is enabled and when Content Gateway is installed on an appliance. This variable should be edited only by using the appliance CLI.
proxy.config. ssl_decryption. mirror_interface	STRING	Default: NULL The appliance interface that will be used to mirror decrypted SSL traffic. This variable should be edited only by using the appliance CLI.
proxy.config. ssl_decryption. custom_request_header	STRING	Default: X-Proxy-HTTPS:1 The custom header name and value that Port Mirroring inserts into each HTTP request header sent to the monitor network interface. This variable should be edited only by using the appliance CLI.
proxy.config.ssl.server.SSLv2 (Removed n v8.5.4)	INT	Default: 0 When enabled (1), Content Gateway accepts SSLv2 connections from clients. (In this case, “server” refers to Content Gateway’s role as server to the client.)
proxy.config.ssl.server.SSLv3	INT	Default: 0 When enabled (1), Content Gateway accepts SSLv3 connections from clients. (In this case, “server” refers to Content Gateway’s role as server to the client.)
proxy.config.ssl.server.TLSv1	INT	Default: 0 When enabled (1), Content Gateway accepts TLSv1 connections from clients. (In this case, “server” refers to Content Gateway’s role as server to the client.)
proxy.config.ssl.server.TLSv11	INT	Default: 1 When enabled (1), Content Gateway accepts TLSv1.1 connections from clients. (In this case, “server” refers to Content Gateway’s role as server to the client.)
proxy.config.ssl.server.TLSv12	INT	Default: 1 When enabled (1), Content Gateway accepts TLSv1.2 connections from clients. (In this case, “server” refers to Content Gateway’s role as server to the client.)

Configuration Variable	Data Type	Description
proxy.config.ssl.client.SSLv2 (Removed in v8.5.4)	INT	Default: 0 When enabled (1), Content Gateway accepts SSLv2 connections from origin servers. (In this case, “client” refers to Content Gateway’s role as client to the origin server.)
proxy.config.ssl.client.SSLv3	INT	Default: 0 When enabled (1), Content Gateway accepts SSLv3 connections from origin servers. (In this case, “client” refers to Content Gateway’s role as client to the origin server.)
proxy.config.ssl.client.TLSv1	INT	Default: 0 When enabled (1), Content Gateway accepts TLSv1 connections from origin servers. (In this case, “client” refers to Content Gateway’s role as client to the origin server.)
proxy.config.ssl.client.TLSv11	INT	Default: 1 When enabled (1), Content Gateway accepts TLSv1.1 connections from origin servers. (In this case, “client” refers to Content Gateway’s role as client to the origin server.)
proxy.config.ssl.client.TLSv12	INT	Default: 1 When enabled (1), Content Gateway accepts TLSv1.2 connections from origin servers. (In this case, “client” refers to Content Gateway’s role as client to the origin server.)
proxy.config.ssl.client.TLS_ padding	INT	Default: 1 When enabled (1), Content Gateway will add padding to ensure a “client hello” does not hang the connection
proxy.config.ssl.server. cipherlist_option	STRING	Default: DEFAULT Specifies the client-to-proxy cipher setting. Values are: DEAULT HIGH MEDIUM:HIGH These entries must be in uppercase. See *SSL configuration settings for inbound traffic*, page 144.

Configuration Variable	Data Type	Description
proxy.config.ssl.server. cipherlist_suffix	STRING	Default: :!ADH:!RC4:!EXP:!DES:@STRENGTH v8.5.4 Default: :!ADH:!RC4:!3DES:!EXP:!DES:!IDEA-CBC-SHA:@STRENGTH List of ciphers not allowed for use in client-to-proxy (inbound) communication. The cipher list is determined by combining the corresponding cipherlist_ option with this list. Note these entries are case-sensitive and require the leading colon (:).
proxy.config.ssl.client. cipherlist_option	STRING	Default: DEFAULT Specifies the proxy-to-server cipher setting. Values are: DEFAULT HIGH MEDIUM:HIGH These entries must be in uppercase. See *SSL configuration settings for outbound traffic*, page 145.
proxy.config.ssl.client. cipherlist_suffix	STRING	Default: :!ADH:!RC4:!EXP:!DES:@STRENGTH v8.5.4 Default: :!ADH:!RC4:!3DES:!EXP:!DES:!IDEA-CBC-SHA:@STRENGTH List of ciphers not allowed for use in proxy-to-server (outbound) communication. The cipher list is determined by combining the corresponding cipherlist_ option with this list. Note these entries are case-sensitive and require the leading colon (:).
proxy.config.ssl.server.session_ cache (Removed in v8.5.4)	INT	Default: 1 Enables (1) or disables the SSL server session cache.
proxy.config.ssl.server.session_ cache_timeout (Removed in v8.5.4)	INT	Default: 300 The SSL server session cache timeout period. The default is 300 seconds (5 minutes).
proxy.config.ssl.client.session_ cache (Removed in v8.5.4)	INT	Default: 1 Enables (1) or disables the SSL client session cache.

Configuration Variable	Data Type	Description
proxy.config.ssl.client.session_cache_timeout (Removed in v8.5.4)	INT	Default: 300 The SSL client session cache timeout period. The default is 300 seconds (5 minutes).
proxy.config.ssl.client.certification_level	INT	Default: 0 Whether client certificates are not needed, optional, or required. certification level should be: 0 = no client certificates 1 = client certificates optional 2 = client certificates required
proxy.config.ssl.client.set_sni	IINT	Default: 1 Enables (1) or disables (0) a feature that forces the proxy to add an outbound SNI (server name indication) when requesting a server certificate be added to the Incident List.
proxy.config.ssl_skip_dns_on_sni	INT	Default: 0 Enables (0) or disables (1) a DNS lookup for the CONNECT hostname when X-Server-IP is present in the header
proxy.config.ssl.server.cert.filename	STRING	Default: server.crt.pem The server certificate filename.
proxy.config.ssl.server.private_key.filename	STRING	Default: Domainkey.pem The private key for the server certificate.
proxy.config.ssl.server.private_key.path	STRING	Default: /config The private key path for the server certificate.
proxy.config.ssl.CA.cert.filename	STRING	Default: NULL Te name of the file containing the list of CAs that Content Gateway will accept from a client. When the connection is from the client to Content Gateway and the value of proxy.config.ssl.client.certification_level is 1 or 2, Content Gateway sends the CA list to client.
proxy.config.ssl.CA.cert.path	STRING	Default: NULL The path to the CA list files. See the preceding entry.
proxy.config.ssl.catree_update	INT	Default: 1 Enables (1) or disables (0) automatic updates of the Certificate Authority tree. See *Automatic certificate updates*, page 143.

Configuration Variable	Data Type	Description
proxy.config.ssl.client.cert.policy	INT	For SSL certificate incidents, specifies whether to tunnel an incident (0), or block the request and create an entry in the incident list (1).
proxy.config.ssl.client.verify.server	INT	Enables (1) or disables the Certificate Verification Engine (CVE). See *Validating certificates*, page 146.
proxy.config.ssl.cert.verify.denycnmismatch	INT	Default: 0 Enables (1) or disables the CVE check: "Deny certificates where the common name does not match the URL" The setting applies only when the CVE is enabled.
proxy.config.ssl.cert.verify.add_cert_to_database	INT	Default: 1 (Added in v8.5.3) Enables (1) or disables the automatic adding of new certificates to the certificate database.
proxy.config.ssl.cert.verify.allowcnwild	INT	Default: 0 Enables (1) or disables the CVE check: "Allow wildcard certificates" The setting applies only when the CVE is enabled.
proxy.config.ssl.cert.verify.denyexpired	INT	Default: 0 Enables (1) or disables the CVE check: "No expired or not yet valid certificates" The setting applies only when the CVE is enabled.
proxy.config.ssl.cert.verify.denyselfsigned	INT	Default: 1 Enables (1) or disables the CVE check: "Deny self-signed certificates" This setting applies only when the CVE is enabled
proxy.config.ssl.cert.verify.denysha1cert	INT	Default: 1 (Added in v8.5.3.) Enables (1) or disables a feature that invalidates SHA-1 intermediate certificates for HTTPS traffic. A block page is served if a SHA-1 certificate is encountered.
proxy.config.ssl.cert.verify.certchain	INT	Default: 1 Enables (1) or disables the CVE check: "Verify entire certificate chain" The setting applies only when the CVE is enabled.

Configuration Variable	Data Type	Description
proxy.config.ssl.cert.verify.checkcrl	INT	Default: 0 Enables (1) or disables the CVE check: “Check certificate revocation by CRL” The setting applies only when the CVE is enabled.
proxy.config.ssl.cert.verify.checkocsp	INT	Default: 0 Enables (1) or disables the CVE check: “Check certificate revocation by OCSP” The setting applies only when the CVE is enabled.
proxy.config.ssl.cert.verify.blockunknownocsp	INT	Default: 0 Enables (1) or disables the CVE check: “Block certificates with Unknown OCSP state” The setting applies only when the CVE is enabled.
proxy.config.ssl.cert.verify.denymd5cert	INT	Default: 0 Enables (1) denial of certificates that use an MD5 signiture.
proxy.config.ssl.cert.verify.revprefer	INT	Default: 1 The preferred method for the certificate revocation check. 1 = CRL 2 = OCSP
proxy.config.ssl.cert.verify.blocknouri	INT	Default: 0 Enables (1) or disables the CVE check: “Block certificates with no CRL URI and with no OCSP URI”
proxy.config.ssl.cert.verify.bypassfail INT 0	INT	Default: 1 Enables (1) the certificate check failure bypass option that allows users to proceed to a site after the certificate check has failed.
proxy.config.ssl.cert.verify.bypasscache	INT	Default: 1 Enables (1) the verification timeout cache.
proxy.config.ssl.cert.verify.bypasscachetimeout	INT	Default: 6 The time, in seconds, that an entry in verification bypass cache times out and is purged.
proxy.config.ssl_decryption_bypass.tunnel_non-ssl_traffic	INT	Default: 0 Enables (1) or disables (0) tunneling of non-ssl traffic. This variable must be added manually.

ICAP

Configuration Variable	Data Type	Description
proxy.config.icap.enabled	INT	Default: 0 Enables (1) or disables (0) ICAP support with Data Security Suite (DSS). See *Working With Web DLP*, page 119.

proxy.config.icap.ICAPUri	STRING	Default: NULL
		The Uniform Resource Identifier for the ICAP service.
		A backup server can be specified in a comma-separated list.
		Obtain the identifier from your Forcepoint DLP administrator. Enter the URI in the following format:
		`icap://hostname:port/path`
		<hostname> is the IP address or hostname of the Protector appliance.
		<port> is 1344 by default.
		<path> is the path of the ICAP service on the host machine.
		For example:
		`icap://ICAP_machine:1344/opt/icap_services`
		You do not need to specify the port if you are using the default ICAP port 1344.

proxy.config.icap.FailOpen	INT	Default: 1 ● 1 allows traffic when the ICAP servers are down ● 0 sends a block page if the ICAP servers are down
proxy.config.icap.BlockHugeContent	INT	Default: 0 ● 0 sends a block page if a file larger than the Forcepoint DLP size limit (default 50 MB) is sent. ● 1 allows traffic
proxy.config.icap.AnalyzeSecureContent	INT	Default: 1 ● 0 sends decrypted traffic directly to its destination. ● 1 sends decrypted traffic to Forcepoint DLP for analysis.
proxy.config.icap.AnalyzeFTP	INT	Default: 1 When enabled (1), send native FTP upload file transfers to ICAP server for analysis.

Configuration Variable	Data Type	Description
proxy.config.icap. ActiveTimeout	INT	Default: 5 The read/response timeout in seconds. The activity is considered a failure if the timeout is exceeded.
proxy.config.icap.RetryTime	INT	Default: 5 The recovery interval, in seconds, to test whether a down server is back up.
proxy.config.icap.LoadBalance	INT	Default: 1 When to ICAP servers are specified: ● 1 distributes requests to all available servers ● 0 sends requests to only the primary server.
proxy.config.icap. MaxConnection	INT	Default: 5 When the ICAP server does not specify the maximum number of connections that the ICAP client can have, this value is used. Valid values are 1 - 100.

Web DLP

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Configuration Variable	Data Type	Description
proxy.config.dss.enabled	INT	Default: 0 Enables (1) or disables (0) support for on-box Web DLP. See *Working With Web DLP*, page 119.
proxy.config.dss.AnalyzeFTP	INT	Default: 1 When enabled (1), send native FTP upload file transfers to the on-box Web DLP policy engine for analysis.
proxy.config.dss. AnalyzeSecureContent	INT	Default: 1 ● 0 sends decrypted traffic directly to its destination. ● 1 sends decrypted traffic to Forcepoint DLP for analysis.
proxy.config.dss.analysis_ timeout	INT	Default: 10000 The maximum length of time, in milliseconds, that a single file analysis can take before analysis is aborted.

Configuration Variable	Data Type	Description
proxy.config.dss.UsingLoginID	INT	Default: 0 Enables (1) or disables (0) sending Login ID rather than full user name to Forcepoint DLP. This variable must be added manually.
proxy.config.dss.domain_user_format	INT	Default: 0 (Added in v8.5.3.) When proxy.config.dss.UsingLoginID is enabled, enables (1) or disables (0) the domain/user format. This variable must be added manually.
proxy.config.dss.large_file_threshold	INT	Default: 5 (MB) Determines how large a file should be before a longer period of time than the current default of 10 seconds is given for analysis time. Files that exceed this size are give the time set in proxy.config.dss.analysis_timeout_for_large_file.
proxy.config.dss.analysis_timeout_for_large_file	INT	Default: 20 (seconds) Determines the period of time given for file analysis to files that exceed the size set in proxy.config.dss.large_file_threshold.
proxy.config.dss_and_icap.enabled	INT	Default: 0 Enables (1) the selection of both ICAP and Web DLP as integration options when Content Gateway is deployed with the DLP Module. Only one option can be selected when disabled (0).

Connectivity, analysis, and boundary conditions

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Configuration Variable	Data Type	Description
wtg.config.subscription_key	STRING	Default: NULL The Forcepoint Web Security subscription key value.
wtg.config.download_server_ip	STRING	Default: download.forcepoint.com The hostname or IP address of the download server.
wtg.config.download_server_port	INT	Default: 443 The port number of the download server. Download also does a license check.
wtg.config.policy_server_ip	STRING	The IP address of the Policy Server.

Configuration Variable	Data Type	Description
wtg.config.policy_server_port	INT	Default: 55806 The port number of the Policy Server.
wtg.config.wse_server_ip	STRING	The IP address of the Filtering Service.
wtg.config.wse_server_port	INT	Default: 15868 The port number of the Filtering Service WISP interface.
wtg.config.wse_server_timeout	INT	Default: 5000 The maximum timeout period, in milliseconds, for communication with Filtering Service.
wtg.config.ssl_bypassed_ categories	STRING	Default: NULL A list of category identifiers that will bypass SSL decryption. **Do not change the value of this variable.** It is included strictly as a troubleshooting aid. Use the Web Security module of the Forcepoint Security Manager to specify categories to bypass SSL decryption.
wtg.config.ssl_decryption_ bypass_ip_based	INT	Default: 0 Whether the SSL category bypass process uses only the IP address (not the hostname) when performing a category lookup. 0 = disabled 1 = enabled
wtg.config.ssl_fail_open	INT	Default: 0 Whether SSL sites are decrypted if Filtering Service becomes unreachable. 0 = all SSL sites are decrypted when Filtering Service is unreachable. 1 = **no** SSL sites are decrypted when Filtering Service is unreachable
wtg.config.fail_open	INT	Default: 1 Whether Content Gateway permits or blocks requests when Filtering Service is unavailable. ● 0 sends a block page ● 1 permits the request

Configuration Variable	Data Type	Description
wtg.config.fail_open_analytic_scan	INT	Default: 1 Specifies how Content Gateway behaves should analytic scanning become non-functional or exceeds the maximum scan time. Set to: ● 0 to block traffic ● 1 to perform a lookup in the URL database and apply policy **Note:** An alarm is raised whenever analytics scanning becomes non-functional.
wtg.config.fail_open_analytic_scan_size_exceeded	INT	Default: 0 How Content Gateway handles files that are not fully scanned because they exceed the Scan Size Limit set in the Forcepoint Security Manager. ● 0 blocks access to the file ● 1 permits access to the file
wtg.config.archive_depth	INT	Default: 5 The maximum depth of analysis performed on archive files.
wtg.config.max_decompressions	INT	Default: 10 The maximum number of total decompressions to be performed on archive files (per transaction). The value should not exceed 25.
wtg.config.max_subsamples	INT	Default: 10000 The maximum number of discrete files within an archive file that Content Gateway may decompress and analyze to classify a given transaction.
wtg.config.zipbomb_action	INT	Default: 1 For internal use. Indicates zip bomb analysis status. **Do not change the value of this variable.**
wtg.config.rdnsclients	INT	Default: 0 Enables (1) or disables (0) logging of clients' hostnames in the log records via reverse DNS.

Configuration Variable	Data Type	Description
wtg.config.ip_ranges_not_to_scan	STRING	Default: 10.0.0.0-10.255.255.255,172.16.0.0-172.31.255.255,192.168.0.0-192.168.255.255 Internal IP address ranges not to scan. By default, the list is the standard private non-routable IP addresses. Address ranges are hyphenated with each range separated by a comma. This is especially helpful in explicit proxy deployments in which a PAC file is not used and you want to exclude the standard internal IP addresses from being scanned.
wtg.config.scan_ip_ranges	INT	Default: 1 Enables (1) or disables (0) bypass of the internal IP address ranges specified in wtg.config. ip_ranges_not_to_scan. See above.
wtg.config.feedback.enabled	INT	Default: 1 Enables (1) or disables (0) analytic/category feedback to Forcepoint. Set at install time.
wtg.config.scan_uncat_block	INT	Default: 1 Enables (1) or disables (0) the scanning of blocked, uncategorized URLs.
wtg.config.filter_unknown_file	INT	Default: 0 When enabled (1), **unknown** is sent as a valid file type to Filtering Service.
wtg.config.respond_with_303_on_redirect	INT	Default: 0 When enabled (1), user requests that are not GET or POST are blocked as expected when scanning is enabled, regardless of the User-agent in use.

remap.config

The **remap.config** file contains mapping rules that Content Gateway uses to redirect HTTP requests permanently or temporarily without Content Gateway having to contact any origin server:

Important

After you modify this file, restart the proxy or run the following command from the Content Gateway **bin** directory (/opt/WCG/bin) to apply the changes:

```
content_line -x
```

When you apply the changes to a node in a cluster, Content Gateway applies the changes to all nodes in the cluster.

Format

Each line in the **remap.config** file must contain a mapping rule. Content Gateway recognizes three space-delimited fields: type, target, and replacement. The following table describes the format of each field.

Field	Description
type	Enter one of the following: • **map** provides the same function as **redirect**. Use **redirect** instead. • **redirect**: redirects HTTP requests permanently without having to contact the origin server. Permanent redirects notify the browser of the URL change (by returning an HTTP status code 301) so that the browser can update bookmarks. • **redirect_temporary**: redirects HTTP requests temporarily without having to contact the origin server. Temporary redirects notify the browser of the URL change for the current request only (by returning an HTTP status code 307). Note: **reverse_map** is not supported.
target	Enter the origin or *from* URL. You can enter up to four components: `scheme://host:port/path_prefix` <scheme> can be http, https, or ftp.
strict URL matching flag	Enable **Match URL Exactly** to force matching to be exact against the entire requested URL. Without this option, the URL is compared up to the end of the target (**From Path Prefix**). If there is a match, the redirect is applied. This can cause unwanted matching, when the redirect URL includes the base URL. See *Mapping and Redirection*, page 323.
replacement	Enter the destination or *to* URL. You can enter up to four components: `scheme://host:port/path_prefix` <scheme> can be http, https, or ftp.

Note
The scheme type (HTTP, HTTPS, FTP) of the target and replacement must match.

Examples

The following rule **permanently** redirects all HTTP requests for www.company.com to www.company2.com:

```
redirect http://www.company.com http://www.company2.com
```

The following rule **temporarily** redirects all HTTP requests for www.company1.com to www.company2.com:

```
redirect_temporary http://www.company1.com http://www.
company2.com
```

socks.config

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The **socks.config** file specifies:

- SOCKS servers that the proxy must use to access specific origin servers, and the order in which the proxy goes through the SOCKS server list.
- Origin servers that Content Gateway accesses directly, *without* going through a SOCKS server.

> **Note**
> It is recommended that all SOCKS configuration be performed in the Content Gateway manager.

> **Important**
> After you modify this file, you must restart the proxy.

Traffic that does not match a manually configured rule is handled via a default rule. A default rule is constructed for each SOCKS server with the **default** option enabled in the **Socks Servers** table. Default rules are created automatically and displayed on the SOCKS Server page. Default rules are not written in the **socks.config** file. The destination IP address is "All."

Format

To specify SOCKS servers that the proxy must use to reach specific origin servers, add rules to the **socks.config** file in the following format:

```
dest_ip=<ipaddress> socksparent="<alias1>" [round_
robin=<value>]
```

Here:

<*ipaddress*> is the origin server IP address or range of IP addresses separated by - or /.

<*alias1*> is the alias name of the SOCKS server named in the SOCKS Servers list.

<*value*> is either **strict** if you want Content Gateway to try the SOCKS servers one by one, or **false** if you do not want round-robin selection to occur.

To specify origin servers that you want Content Gateway to access directly, *without* going through the SOCKS servers, enter a rule in **socks.config** in the following format:

```
no_socks <ipaddress>
```

Here, <*ipaddress*> is a comma-separated list of the IP addresses or IP address ranges associated with the origin servers that you want Content Gateway to access directly. Do not specify the all networks broadcast address: 255.255.255.255.

> **Note**
> Each rule in **socks.config** can consist of a maximum of 400 characters. The order of the rules in the **socks.config** file is not significant.

Examples

The following example configures the proxy to send requests to the origin servers associated with the range of IP addresses 123.15.17.1 - 123.14.17.4 through the SOCKS server aliases “alias1” and “alias2.” Because the optional specifier **round_robin** is set to **strict**, the proxy sends the first request to alias1, the second request to alias2, the third request to alias1, and so on.

```
dest_ip=123.14.15.1 - 123.14.17.4
socksparent="alias; alias2" round_robin=strict
```

The following example configures the proxy to access the origin server associated with the IP address 11.11.11.1 directly, without going through the SOCKS server:

```
no_socks 11.11.11.1
```

The following example configures Content Gateway to access the origin servers associated with the range of IP addresses 123.14.15.1 - 123.14.17.4 and the IP address 113.14.18.2 directly, without going through the SOCKS server:

```
no_socks 123.14.15.1 - 123.14.17.4, 113.14.18.2
```

socks_server.config

The **socks_server.config** file specifies the SOCKS servers available to Content Gateway.

Format

To specify SOCKS servers use the following format:

```
alias=<name> host=<IP_address|domain_name> port=<port>
[username=<user_name> password=<password>]
default=true|false
```

Here:

<*name*> is the name of a SOCKS server.

<*IP_address* | *domain_name*> is an IP address or a domain name that can be resolved by your DNS service.

<*port_number*> is the port on which the SOCKS server is listening.

<*username*> and <*password*> are the username/password pair for SOCKS 5 authentication. The password is encrypted.

Set default to **true** to make the specified server a default SOCKS server. When the default server option is on, the SOCKS server is used when no SOCKS rule matches.

If no SOCKS server is designated a default server, traffic that doesn't match a rule is not routed through a SOCKS server.

Examples:

This example adds the SOCKS server "default1" at 127.0.0.1 on port 61080. It is designated a default SOCKS server.

```
alias=default1 host=127.0.0.1 port=61080 default=true
```

This example adds a SOCKS server that uses authentication. Note that the password ("465751475058") is not the real password. It is encrypted.

```
alias=test1 host=socks5.example.com port=1080 username=test
password=465751475058 default=false
```

If this file is modified, you must restart Content Gateway.

Note
Each rule in **socks_server.config** cannot exceed 400 characters.

splitdns.config

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The **splitdns.config** file enables you to specify the DNS server that Content Gateway should use for resolving hosts under specific conditions.

To specify a DNS server, you must supply the following information in each active line within the file:

- A primary destination specifier in the form of a destination domain, a destination host, or a URL regular expression
- A set of server directives, listing one or more DNS servers with corresponding port numbers

You can also include the following optional information with each DNS server specification:

- A default domain for resolving hosts
- A search list specifying the domain search order when multiple domains are specified

For more information, see *Using the Split DNS option*, page 176.

Important

After you modify this file, restart the proxy or run the following command from the Content Gateway **bin** directory (/opt/WCG/bin) to apply the changes:

```
content_line -x
```

When you apply the changes to a node in a cluster, Content Gateway applies the changes to all nodes in the cluster.

Format

Each line in the **splitdns.config** file uses one of the following formats:

```
dest_domain=dest_domain | dest_host | url_regex named=dns_
server
def_domain=def_domain search_list=search_list
```

The following table describes each field.

Field	Allowed Value
dest_domain	A valid domain name. This specifies that the DNS server selection be based on the destination domain. You can prefix the domain with an exclamation mark (!) to indicate the NOT logical operator.
dest_host	A valid hostname. This specifies that the DNS server selection be based on the destination host. You can prefix the host with an exclamation mark (!) to indicate the NOT logical operator.
url_regex	A valid URL regular expression. This specifies that the DNS server selection be based on a regular expression. See *Specifying URL regular expressions (url_regex)* for information about using regular expressions.

Field	Allowed Value
dns_server	This is a required directive. It identifies the DNS server for Content Gateway to use with the destination specifier. You can specify a port using a colon (:). If you do not specify a port, 53 is used. You can specify multiple DNS servers separated by spaces or by semicolons (;). You must specify the domains using IP addresses in dot notation.
def_domain	A valid domain name. This optional directive specifies the default domain name to use for resolving hosts. Only one entry is allowed. If you do not provide the default domain, the system determines its value from **/etc/resolv.conf**.
search_list	A list of domains separated by spaces or semicolons (;). This specifies the domain search order. If you do not provide the search list, the system determines the value from **/etc/resolv.conf**.

Examples

Consider the following DNS server selection specifications:

```
dest_domain=internal.company.com named=255.255.255.255:212
255.255.255.254 def_domain=company.com search_list=company.
com company1.com
dest_domain=!internal.company.com named=255.255.255.253
```

Now consider the following two requests:

```
http://minstar.internal.company.com
```

This request matches the first line and select DNS server 255.255.255.255 on port 212. All resolver requests will use **company.com** as the default domain, and **company.com** and **company1.com** as the set of domains to search first.

```
http://www.microsoft.com
```

This request will match the second line. Therefore, Content Gateway selects DNS server 255.255.255.253. No **def_domain** or **search_list** was supplied, so Content Gateway retrieves this information from **/etc/resolv.conf**.

storage.config

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The **storage.config** file lists all the files, directories, or hard disk partitions that make up the cache.

Important
After you modify this file, you must restart the proxy.

Format

The format of the **storage.config** file is:

```
<pathname> <size>
```

Here, < *pathname*> is the name of a partition, directory, or file, and <*size*> is the size of the named partition, directory, or file, in bytes. You must specify a size for directories or files. For raw partitions, size specification is optional.

You can use any partition of any size. For best performance, the following guidelines are recommended:

- Use raw disk partitions.
- For each disk, make all partitions the same size.
- For each node, use the same number of partitions on all disks.

Specify pathnames according to your operating system requirements. See the following examples.

Important

In the **storage.config** file, a formatted or raw disk must be at least 2 GB. The recommended disk cache size is 147 GB.

update.config

The **update.config** file controls how Content Gateway performs a scheduled update of specific local cache content. The file contains a list of URLs specifying objects that you want to schedule for update.

A scheduled update performs a local HTTP GET on the objects at the specific time or interval. You can control the following parameters for each specified object:

- The URL
- URL-specific request headers, which overrides the default
- The update time and interval

- The recursion depth

> **Important**
> After you modify this file, restart the proxy or run the following command from the Content Gateway **bin** directory (/opt/WCG/bin) to apply the changes:
>
> ```
> content_line -x
> ```
>
> When you apply the changes to a node in a cluster, Content Gateway applies the changes to all nodes in the cluster.

Scheduled update supports the following tag/attribute pairs when performing recursive URL updates:

- <a href=“ ”>
- <img href=“ ”>
- <frame src=“ ”>
- <fig src=“ ”>
- <applet code=“ ”>
- <embed src=“ ”>
- <area href=“ ”>
- <meta content=“ ”>
- <img src=“ ”>
- <body background=“ ”>
- <iframe src=“ ”>
- <overlay src=“ ”>
- <script src=“ ”>
- <bgsound src=“ ”>
- <base href=“ ”>

Scheduled update is designed to operate on URL sets consisting of hundreds of input URLs (expanded to thousands when recursive URLs are included); it is *not* intended to operate on massively large URL sets, such as those used by Internet crawlers.

Format

Each line in the update.config file uses the following format:

```
URL\request_headers\offset_hour\interval\recursion_depth\
```

The following table describes each field.

Field	Allowed Inputs
URL	HTTP and FTP-based URLs.
request_headers	(*Optional*.) A list of headers (separated by semi-colons) passed in each GET request. You can define any request header that conforms to the HTTP specification. The default is no request header.
offset_hour	The base hour used to derive the update periods. The range is 00-23 hours.

Field	Allowed Inputs
interval	The interval, in seconds, at which updates should occur, starting at offset hour.
recursion_depth	The depth to which referenced URLs are recursively updated, starting at the given URL.

Examples

The following example illustrates an HTTP scheduled update:

```
http://www.company.com\User-Agent: noname user
agent\13\3600\5\
```

This example specifies the URL and request headers, an offset hour of 13 (1 p.m.), an interval of one hour, and a recursion depth of 5. This would result in updates at 13:00, 14:00, 15:00, and so on. To schedule for an update to occur only once a day, use an interval value of 24 hours x 60 minutes x 60 seconds = 86400.

The following example illustrates an FTP scheduled update:

```
ftp://anonymous@ftp.company.com/pub/misc/test_file.
cc\\18\120\0\
```

This example specifies the FTP request, an offset hour of 18 (6 p.m.), and an interval of every two minutes. The user must be **anonymous** and the password must be specified by **proxy.config.http.ftp.anonymous_passwd** in the records.config file.

wccp.config

The **wccp.config** file stores the WCCP configuration information and service group settings. When WCCP is enabled on the **Configure > MyProxy > Basic** page, WCCP service group settings can be configured on the **Configure > Networking > WCCP** page. Service groups must be defined if WCCP is to be used for transparent redirection to Content Gateway.

For more information, see *Transparent interception with WCCP v2 devices*, page 51.

F Content Gateway Error Messages

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Error messages in log files

The following table lists messages that can appear in system log files. This list is not exhaustive; it describes warning messages that can occur and might require your attention. For information about warning messages not included in the list below, go to www.forcepoint.com and then navigate to Support and Knowledge Base.

Process fatal errors

Message	Description
Accept port is not between 1 and 65535. Please check configuration.	The port specified in the records.config file that accepts incoming HTTP requests is not valid.
Ftp accept port is not between 1 and 65535.	The port specified in the records.config file that accepts incoming FTP requests is not valid.
Self loop is detected in parent proxy configuration.	The name and port of the parent proxy are the same as that of Content Gateway. This creates a loop when Content Gateway attempts to send requests to the parent proxy.
Could not open the ARM device	The ARM failed to load. The most common reason for this is that the host system has an incompatible system kernel. To see if the ARM is loaded, run: `/sbin/lsmod | grep arm`
content_manager failed to set cluster IP address	The content_manager process could not set the cluster IP address. Check the cluster IP address. Make sure that it is not already used by another device in the network.
Unable to initialize storage. (Re)Configuration required.	Cache initialization failed during startup. The cache configuration should be checked and configured or reconfigured.

Warnings

Message	Description
Logfile error: *error_number*	Generic logging error.
Bad cluster major version range *version1-version2* for node *IP address* connect failed	Incompatible software versions causing a problem.
can't open config file *filename* for reading custom formats	Custom logging is enabled, but Content Gateway cannot find the **logs.config** file.
connect by disallowed client *IP address*, closing connection	The specified client is not allowed to connect to Content Gateway. The client IP address is not listed in the **ip_allow.config** file.
Could not rename log *filename* to *rolled filename*	System error when renaming log file during roll.
Did *this_amount* of backup still to do *remaining_amount*	Congestion is approaching.
Different clustering minor versions *version 1, version 2* for node *IP address* continuing	Incompatible software versions causing a problem.
log format symbol *symbol_name* not found	Custom log format references a field symbol that does not exist. See *Event Logging Formats*, page 377.
missing field for field marker	Error reading a log buffer.
Unable to accept cluster connections on port: *cluster_port_number*	Contact Technical Support. Go to support.forcepoint.com for Technical Support contact information
Unable to open log file *filename*, errno=*error_number*	Cannot open the log file.
Error accessing disk *disk_name*	Content Gateway might have a cache read problem. You might have to replace the disk.
Too many errors accessing disk *disk_name:* declaring disk bad	Content Gateway is not using the cache disk because it encountered too many errors. The disk might be corrupt and might have to be replaced.
No cache disks specified in **storage.config** file: cache disabled	The Content Gateway **storage.config** file does not list any cache disks. Content Gateway is running in proxy-only mode. You must add the disks you want to use for the cache to the **storage.config** file (see *storage.config*, page 486).
All disks are bad, cache disabled	There is a problem with the cache disk(s) and caching has been disabled. Please verify that the cache disks are working and have been properly formatted for caching. See *Configuring the Cache*, page 95.
Missing DC parameter <missing_param> on auth.profile line	A required parameter was not specified. Please provide a value for the missing parameter.

Message	Description
Bad DC parameter <bad_param> - <dc_name>	A specified Domain Controller parameter is invalid. Please enter a valid value for the cited parameter.
[ParentSelection] <error_description> for default parent proxy	Proxy chaining is not working due to misconfiguration of the parent proxy in the child proxy. Please check the chaining configuration of parent proxy values in the child proxy.
WCCP2: Cannot find Interface name. Please check that the variable proxy.local.wccp2. ethernet_interface is set correctly	No value is specified for the WCCP interface. In the Content Gateway manager, check **Configure > Networking > WCCP > General**, or assign a value to proxy.local.wccp2.ethernet_interface in **records.config**.
ARMManager: Unable to read network interface configuration	There is a format or configuration error in **ipnat.conf**. In the Content Gateway manager, go to **Configure > Networking > ARM > General** and click **Edit File** to view and correct **ipnat.conf**.

Content Gateway alarm messages

The following table describes alarm messages that you may see in the Content Gateway manager.

Message	Description/Solution
The Content Gateway subscription has expired.	Please refer to the Knowledge base article 33797.
Content Gateway subscription download failed.	Content Gateway was unable to connect to the download server to verify the subscription information. Please check your connection to the download server.
After several attempts, Content Gateway failed to connect to the Database Download Service. Please troubleshoot the connection.	Verify that Content Gateway is able to access the Internet. Check firewall and upstream proxy server settings that might prevent Content Gateway from connecting to the download server.
After several attempts, Content Gateway failed to connect to the Policy Server. Please troubleshoot the connection.	Verify that there is network connectivity between Content Gateway and the Policy Server machine. Sometimes firewall settings block connectivity. Also confirm that Policy Server is running.
After several attempts, Content Gateway failed to connect to the Policy Broker. Please troubleshoot the connection.	Verify that there is network connectivity between Content Gateway and Policy Broker. Sometimes firewall settings block connectivity. Also confirm that Policy Broker is running.

Message	Description/Solution
After several attempts, Content Gateway failed to connect to Filtering Service. Please troubleshoot the connection. Please refer to the Knowledge base article 41457.	Verify that there is network connectivity between Content Gateway and the Filtering Service machine. Sometimes firewall settings block connectivity. Also confirm that Filtering Service is running.
Communication with the analytics engine has failed. Please restart Content Gateway.	Restart Content Gateway.
SSL decryption has been disabled due to an internal error, please restart Content Gateway.	There was a fatal error in SSL Support. Please restart Content Gateway.
[Rollback::Rollback] Config file is read-only: *filename*	Go to the Content Gateway **config** directory (default location is **/opt/WCG/config**) and check the indicated file permissions; change them if necessary.
[Rollback::Rollback] Unable to read or write config file *filename*	Go to the Content Gateway **config** directory and make sure the indicated file exists. Check its permissions and change them if necessary.
[Content Gateway Manager] Configuration File Update Failed *error_number*	Go to the Content Gateway **config** directory and check the indicated file permissions; change them if necessary.
Access logging suspended - configured space allocation exhausted.	The space allocated to the event log files is full. You must either increase the space or delete some log files to enable access logging to continue. To prevent this from happening, consider rolling log files more frequently and enabling the autodelete feature. See *Rolling event log files*, page 245.
Access logging suspended - no more space on the logging partition.	The entire partition containing the event logs is full. You must delete or move some log files to enable access logging to continue. To prevent this from happening, consider rolling log files more frequently and enabling the autodelete feature. See *Rolling event log files*, page 245.
Created zero length place holder for config file *filename*	Go to the Content Gateway **config** directory and check the indicated file. If it is indeed zero in length, use a backup copy of the configuration file.
Content Gateway can't open *filename* for reading custom formats	Make sure that the *proxy.config.log2.config_file* variable in the **records.config** file contains the correct path to the custom log configuration file (the default is **logging/logs.config**).
Content Gateway could not open logfile *filename*	Check permissions for the indicated file and the logging directory.
Content Gateway failed to parse line *line_number* of the logging config file *filename*	Check your custom log configuration file. There may be syntax errors. See *Custom logging fields*, page 377, for correct custom log format fields.

Message	Description/Solution
vip_config binary is not setuid root, manager will be unable to enable virtual ip addresses	The **content_manager** process is not able to set virtual IP addresses. You must setuid root for the **vip_config** file in the Content Gateway **bin** directory.
Content Gateway cannot parse the ICAP URI. Please ensure that the URI is entered correctly in Content Gateway Manager or in the *proxy.config.icap.ICAPUri* configuration variable.	The Universal Resource Identifier (URI) is not in the correct format. Enter the URI as follows: `icap://hostname:port/path` See *Working With Web DLP*, page 119 for additional details on the format of the URI.
The specified ICAP server does not have a DNS entry. Please ensure that a valid DSS hostname is entered correctly in Content Gateway Manager or in the *proxy.config.icap.ICAPUri* configuration variable.	The hostname in the **records.config** file does not match any entries in the DNS. Ensure that the name of a valid Forcepoint DLP server is entered correctly in the Content Gateway manager. See *Working With Web DLP*, page 119 for information about the format of the URI.
Content Gateway is not able to communicate with the DSS server. Please try again.	Ensure that the Forcepoint management server is up and running, and accepting connections on the port specified in the *proxy.config.icap.ICAPUri* variable. Contact your Forcepoint DLP administrator if this message persists.
Domain controller *domain_controller_name:port* is down.	The named NTLM domain controller is not responding to requests and has been marked as down. Investigation the status of the domain controller.
Windows domain [domain name] unreachable or bad membership status	This alarm can indicate any of the following: 1. The Active Directory is unreachable. The AD server is either down or there is a network connectivity problem. 2. The AD is reachable, but there is a configuration problem that prevents it from communicating with Content Gateway. For example, the alarm is generated if the AD has multiple Sites and the subnet that Content Gateway resides on has not been added to one of them.
The Scanning Data Files Update option (My Proxy > Subscription) is set to 'suspend updates'. To get the best protection, set it to 'no delay', or, on a backup system, use a time-based option.	This alarm is a reminder that downloads of the security scanning data files used by Content Gateway analysis has been suspended. It is recommended that you not clear this alarm until the delay time has been reset.
Port Mirroring cannot work unless SSL decryption is enabled also. Please enable SSL decryption (HTTPS) if you want to use the Port Mirroring feature.	(Appliance deployments only) Ensure the SSL decryption (HTTPS) is enabled before attempting to use Port Mirroring.

Message	Description/Solution
The mirror interface <int> cannot be connected for Port Mirroring. Please check the interface configuration or edit the interface value.	(Appliance deployments only) The interface configured for Port Mirroring is not valid, is not active, or requires configuration.
An unexpected error has occurred with the Office365 Bypass feature. Please refer to the Knowledge base article 36961.	A processing error has occurred and requests to Office 365 products may not be bypassing authentication or the proxy. Technical Support assistance is required to correct the problem.
An error message has occurred when you exceeded the 1000 concurrent connection limit	Please refer to the Knowledge base article 41458.

Content Gateway HTML messages sent to clients

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Content Gateway returns detailed error messages to browser clients when there are problems with the HTTP transactions requested by the browser. These response messages correspond to standard HTTP response codes, but provide more information. A list of the more frequently encountered HTTP response codes is provided in *Content Gateway standard HTTP response messages*, page 499. You can customize the response messages.

The following table lists the Content Gateway hard-coded HTTP messages, their corresponding HTTP response codes, and their corresponding customizable files.

HTTP Code and Title	Description	Customizable Filename
403 Access Denied	You are not allowed to access the document at location URL.	access#denied
400 Bad HTTP request for FTP Object	Bad HTTP request for FTP object.	ftp#bad_request
500 Cache Read Error	Error reading from cache. Please retry request.	cache#read_error
504 Connection Timed Out	Server has not sent any data for too long a time.	timeout#inactivity
400 Content Length Required	Could not process this request because no Content-Length was specified.	request#no_content_length
400 Cycle Detected	Your request is prohibited because it would cause an HTTP proxy cycle.	request#cycle_detected

HTTP Code and Title	Description	Customizable Filename
403 Forbidden	port_number is not an allowed port for SSL connections. (You have made a request for a secure SSL connection to a forbidden port number.)	access#ssl_forbidden
401 FTP Authentication Required	You need to specify a correct user name and password to access the requested FTP document URL.	ftp#auth_required
502 FTP Connection Failed	Could not connect to the server server_name.	connect#failed_connect
502 FTP Error	The FTP server server_name returned an error. The request for document URL failed.	ftp#error
400 Host Header Required	An attempt was made to transparently proxy your request, but this attempt failed because your browser did not send an HTTP Host header. Manually configure your browser to use the following URL as an HTTP proxy: https:// proxy_name:proxy_port See your browser's documentation for details. Alternatively, end users can upgrade to a browser that supports the HTTP Host header field.	interception#no_host
400 Host Header Required	Your browser did not send a Host HTTP header field and therefore the virtual host being requested could not be determined. To access this website, upgrade to a browser that supports the HTTP Host header field.	request#no_host
505 HTTP Version Not Supported	The origin server server_name is using an unsupported version of the HTTP protocol.	response#bad_version
400 Invalid HTTP Request	Could not process this client_request HTTP method request for URL.	request#syntax_error
502 Invalid HTTP Response	The host server_name did not return the document URL correctly.	response#bad_response
502 Malformed Server Response	The host server_name did not return the document URL correctly.	response#bad_response

HTTP Code and Title	Description	Customizable Filename
502 Malformed Server Response Status	The host server_name did not return the document URL correctly.	response#bad_response
504 Maximum Transaction Time exceeded	Too much time has passed transmitting document URL.	timeout#activity
502 No Response Header From Server	The host server_name did not return the document URL correctly.	response#bad_response
504 Not Cached	This document was not available in the cache, and you (the client) accept cached copies only.	cache#not_in_cache
404 Not Found on Accelerator	The request for URL on host server_name was not found. Check the location and try again.	urlrouting#no_mapping
502 NULL	The host hostname did not return the document URL correctly.	response#bad_response
407 Proxy Authentication Required	Please log in with user name and password.	access#proxy_auth_required
502 Server Hangup	The server hostname closed the connection before the transaction was completed.	connect#hangup
302 Temporarily Moved	The document you requested, URL, has moved to a new location. The new location is new_URL.	redirect#moved_temporarily
406 Transcoding Not Available	Unable to provide the document URL in the format requested by your browser.	transcoding#unsupported
502 Tunnel Connection Failed	Could not connect to the server hostname.	connect#failed_connect
502 Unknown Error	The host hostname did not return the document URL correctly.	response#bad_response

HTTP Code and Title	Description	Customizable Filename
500 Unknown Host	Unable to locate the server named hostname. The server does not have a DNS entry. Perhaps there is a misspelling in the server name or the server no longer exists. Double-check the name and try again.	connect#dns_failed
400 Unsupported URL Scheme	Cannot perform your request for the document URL because the protocol scheme is unknown.	request#scheme_unsupported

Content Gateway standard HTTP response messages

The following standard HTTP response messages are provided for your information. For a more complete list, see the *Hypertext Transfer Protocol — HTTP/1.1 Specification*.

Message	Description
200	OK
202	Accepted
204	No Content
206	Partial Content
300	Multiple Choices
301	Moved Permanently
302	Found
303	See Other
304	Not Modified
400	Bad Request
401	Unauthorized; retry
403	Forbidden
404	Not Found
405	Method Not Allowed
406	Not acceptable
408	Request Timeout
500	Internal server error
501	Not Implemented

Message	Description
502	Bad Gateway
504	Gateway Timeout