Configuration Guide
F5 BIG-IP Local Traffic Manager and Websense® Web Security Gateway
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Configuration Guide

Introduction

This guide provides step-by-step procedures for configuring F5 BIG-IP Local Traffic Manager (LTM) devices with Websense® Web Security Gateway.

Web Security Gateway provides the defenses you need to defend against advanced attacks: real-time threat analysis at web gateways, plus forensic reporting. Combined with BIG-IP LTM, a security gateway infrastructure gains the capability to be:

- Easily scaled to meet the demands for high traffic levels common to eEnterprise deployments.
- Expanded to accommodate new Web Security Gateway cluster members with a simple menu-driven configuration update.
- Monitored closely for any conditions that might affect the availability of the eEnterprise gateway, ensuring continuous traffic flow.
- Used for any configurable authentication mechanism (NTLM and Kerberos) transparently.
- Deployed easily in both transparent and explicit proxy modes.

New to BIG-IP version 11, F5 iApp is a powerful new set of features in the BIG-IP system that provides a new way to architect application delivery in the data center, and it includes a holistic, application-centric view of how applications are managed and delivered inside, outside, and beyond the data center. The iApp templates for Websense applications act as the single-point interface for building, managing, and monitoring these servers.


For more information on Websense Web Security Gateway, see http://www.websense.com/.

For more information on the F5 devices described in this guide, see http://www.f5.com/products/big-ip/.
Prerequisites and configuration notes

Some components need to be downloaded in order to assist you in configuring your environment.

**Websense Content Gateway Assistant iApp.**

This component will allow you to configure an integrated environment for explicit and transparent proxy in combination with a Websense appliance (e.g., Websense V10000™ appliance). Use this if you want to route traffic through your Websense appliance directly, or if you are managing the traffic configuration of a cluster of Websense appliances.


**Generic forward proxy with the Websense Filtering iApp**

This app is for configuring a simple, anonymous HTTP or SOCKS4/5 proxy that uses the Websense Filtering Service for blocking threats and enforcing policy. Use this iApp if you want to create a simple blocking proxy without routing traffic through the Websense appliance directly. This functionality is good for providing basic proxy filtering for guest networks.


**Requirements**

**F5 LTM**

*Software*

BIG-IP LTM must be running version 11.2.x or later. We recommend using version 11.3.x or later in order to be compatible with both Websense iApps.

- Websense Content Gateway Assistant iApp: Supported beginning with version 11.3.x
- Generic forward proxy with Websense Filtering iApp: Supported beginning with version 11.2.x
Hardware

There are no specific hardware recommendations; these configuration iApps are compatible with all hardware appliances known to run the recommended BIG-IP Traffic Management Operating System (TMOS) versions, including Virtual Edition.

Websense

Software

We recommend using Websense software that is version 7.7.3 or greater. This version contains special health monitoring tools that we can utilize to check the proper operation of your proxy instance that previous versions do not contain.

- **Websense Content Gateway Assistant iApp**: Version 7.7 or above is recommended. For extended health monitoring capabilities, version 7.7.3 or greater is highly desired.

- **Generic forward proxy with Websense Filtering iApp**: Version 7.6 or above is recommended. In order to use extended health monitoring capabilities, version 7.7.3 or greater is highly desired.

Hardware

There are no specific hardware recommendations.

General

The following items are generally recommended before starting your deployment:

- You should have a thorough understanding of your Websense configuration and its relation to your desired network topology before beginning your deployment. In particular, carefully consider your network’s traffic routing; it is likely that you will need to make one or more changes in order to complete your task.

- This guide is not intended to replace Websense documentation or best practices, merely to supplement them with enough information to enable you to easily configure this particular integration. You should not begin a new Websense deployment using this document. Refer to [http://www.websense.com/content/support/library/deployctr/v77/first.aspx](http://www.websense.com/content/support/library/deployctr/v77/first.aspx) for up-to-date information about your Websense deployment.

- If you use user authentication with your Websense installation, ensure that you pay attention to the configuration instructions related to configuration changes needed on the Websense platform to prevent repeated authentication.

Product versions and revision history
Product and versions tested for this guide:

<table>
<thead>
<tr>
<th>Product Tested</th>
<th>Version Tested</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIG-IP LTM</td>
<td>11.2.x, 11.3.x</td>
</tr>
<tr>
<td>Websense</td>
<td>7.6, 7.7, 7.7.x (applicable to generic proxy iApp)</td>
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Revision history for this document:

<table>
<thead>
<tr>
<th>Version</th>
<th>Comment</th>
<th>Author</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>Initial release</td>
<td>JM</td>
</tr>
</tbody>
</table>

Configuration examples

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Before continuing, you should select the type of integrated deployment that suits your environment. BIG-IP supports several deployment modes for Websense integration.

Explicit Proxy - Websense

This mode allows you to configure your network’s web browser clients to use the BIG-IP Virtual Server as a direct HTTP proxy, or to define the created virtual address within a proxy auto-configuration that is distributed via DNS or DHCP.

If you use this particular mode, you must ensure that your browser clients are either manually configured or that you have correctly set up an auto-configuration mechanism that will serve them.

This explicit proxy configuration will route traffic through the Websense appliance. To begin, turn to the “Configuring using Websense Content Gateway Assistant” configuration section of this document.
Transparent Proxy - Websense

This mode allows you to redirect select traffic from your network’s web browser clients transparently through the Websense appliance cluster.

This mode ensures that you do not need to distribute any configuration changes to your clients, but may require routing changes to your network. To begin, turn to the “Configuring using Websense Content Gateway Assistant” configuration section of this document.

Explicit (or SOCKS) Proxy - BIG-IP

This mode allows you to configure your network’s web browser clients to use the BIG-IP Virtual Server as an HTTP proxy, or to define the created virtual address within a proxy auto-configuration that is distributed via DNS or DHCP.

If you use this particular mode, you must ensure that your browser clients are either manually configured or that you have correctly set up an auto-configuration mechanism that will serve them.

This explicit proxy configuration will route traffic through the BIG-IP, but will ask the Websense appliance for blocking decisions. To begin, turn to the “Configuring using generic proxy with Websense Support” configuration section of this document.
Configuring using Websense Content Gateway Assistant

Refer to the following for guidance on how to configure the BIG-IP system for the modes described by Figures 1 and 2 in the section “Configuration examples” using the iApp template described on page 1 of this document.

Getting started with the iApp

To begin using the Websense Content Gateway Assistant iApp, you must import it and then create an application from the template.

1. Unpack the template file from the Zip archive that you downloaded as part of the requirements section. The template file will be named: 
f5.websense_cg_assistant_<version>_<date>.tmpl
2. Log on to the BIG-IP system.
3. On the Main tab, expand iApp, and then click Templates.
4. Click the Import… button at the top of the main window.
5. Click Browse… and select the template file from your file system in the window provided. If you have previously imported an earlier version of the iApp template, you may also check the box next to Overwrite Existing Templates to ensure that the newest version of the template is imported over the old one.
6. Once the template is imported, you can begin using it to create applications. On the main tab, click Application Services under the iApp tab.
7. Click Create. The template selection page will open.
8. In the Name box, type in the name you wish to use to describe this deployment (i.e., “websense_datacenter”).
9. From the Template list, select f5.websense_content_gateway.

Advanced options

If you select Advanced from the Template Selection list, you see Sync and Failover options for the application. This feature, new to v11, is a part of the Device Management configuration. This functionality extends the existing High Availability infrastructure and allows for clustering, granular control of configuration synchronization, and granular control of failover. For more information on Device Management, see the Online Help or product documentation.

1. Configure Sync/Failover?
   If you want to configure the Application for Sync or failover groups, select Yes from the list.
   a. Device Group
If you select Yes from the question above, the Device Group and Traffic Group options appear. If necessary, uncheck the Device Group box and then select the appropriate Device Group from the list.

b. **Traffic Group**

If necessary, uncheck the Traffic Group box and then select the appropriate Traffic Group from the list.

**Explicit Proxy Options**

The next section allows you to select whether you wish to configure the explicit proxy mode for your Websense deployment. This mode creates a set of virtual servers with which your browser clients will interact for Internet access. A virtual server is a traffic-management object on the BIG-IP system that is represented by an IP address and a service. Clients can send application traffic to a virtual server, which then directs the traffic according to your configuration instructions.

![Explicit Proxy Options](image)

Figure 4: Explicit proxy options

If you do not wish to configure this functionality answer No to the first question in this section, and proceed to the section “Transparent Proxy Options.”

1. **IP Address Configuration:** This is the address clients use to access this explicit proxy (or a FQDN will resolve to this address). You need an available IP address to use here.

2. **Port Configuration:** You can configure the explicit proxy to listen on different ports for certain services. Under normal conditions, most services will be available on the port assigned to HTTP; however, you may find it convenient to assign alternate ports per service (for HTTPS and FTP, for example).

3. **Routing Configuration:** If the Websense servers do not have a route back for clients through the BIG-IP, i.e., if they do not use the BIG-IP as the default gateway, the BIG-IP uses Secure Network Address Translation (SNAT) Automap...
to translate the client’s source address to an address configured on the BIG-IP. The Websense servers then use this new source address as the destination address when responding to traffic originating through the BIG-IP.

If you indicate the servers do have a route back to the clients through the BIG-IP, the BIG-IP does not translate the client’s source address; in this case, you must make sure the BIG-IP is configured as the gateway to the client networks (usually the default gateway) on the servers. Please ensure that Websense Web Security Gateway has routes back to the clients via this BIG-IP system. If your proxy is on a Websense appliance, configure these routes on the Configuration > Routing page of the Websense appliance manager.

We recommend choosing **No** from the list because it is secure and does not require you to configure routing manually.

4. **Large-Scale Connections (Routing Configuration):** If you have selected **No** to the option to translate the source of the connection using SNAT, then you have the option to configure for supporting larger connection pools if you need to do so. If you do not expect more than 64,000 simultaneous connections, leave this answer set to **No** and continue with #5. If you have a large deployment and expect more than 64,000 connections at one time, the iApp creates a SNAT Pool instead of using SNAT Automap. With a SNAT Pool, you need one IP address for each 64,000 connections you expect.

Select **Yes** from the list. A new row appears with an IP address field. In the **Address** box, type an IP address and then click **Add**. Repeat for any additional IP addresses.

5. **Kerberos Authentication:** If Websense Web Security Gateway is configured to authenticate users using Kerberos, you must apply a special configuration to your gateway cluster so that it can be seen with a common name to your authentication server infrastructure. If you need this configuration, you should contact Websense Support for assistance.

**Transparent proxy options**

This section allows you to select whether you wish to configure transparent proxy mode for your Websense deployment. This mode creates a set of “wildcard” virtual servers that will take traffic that comes into a specified VLAN and redirect it to
Websense transparently. Clients do not need to be configured to connect directly to the proxy in this scenario.

If you do not wish to configure this functionality answer **No** to the first question in this section, and proceed to the section “Websense Server Pool, Load Balancing, and Service Monitor.”

1. **Port Configuration**: You can configure the transparent proxy to listen on different ports for certain services. We recommend this not be changed from the default settings for each listed service (80 for HTTP, 443 for HTTPS). However, if you wish to support outgoing connections on alternate ports, you may change these here.

2. **Large-Scale Connections (Routing Configuration)**: If you have selected **No** to the option to translate the source of the connection using SNAT, then you have the option to configure for supporting larger connection pools if you need to do so. If you do not expect more than 64,000 simultaneous connections, leave this answer set to **No**, and continue with #5. If you have a large deployment and expect more than 64,000 connections at one time, the iApp creates a SNAT Pool instead of using SNAT Automap. With a SNAT Pool, you need one IP address for each 64,000 connections you expect.
   Select **Yes** from the list. A new row appears with an IP address field. In the Address box, type an IP address and then click **Add**. Repeat for any additional IP addresses.

3. **Kerberos Authentication**: If Websense Web Security Gateway is configured to authenticate users using Kerberos, clients must be able to connect to the gateway using their configured hostnames. If necessary, select **Yes** to create the individual virtual servers.

**Websense server pool, load balancing, and service monitor**

In this section, we will configure the Websense Web Security Gateway cluster pool that the BIG-IP will manage, as well as define how we determine server health and distribute the load across the cluster.
Please note that the default settings are the **Recommended** settings for a Websense Web Security Gateway server deployment. If you wish to change from the default settings, please ensure that the matching configuration exists in your Websense server configuration before you apply it.

1. **Load Balancing:** While you can choose any of the load balancing methods BIG-IP supports from the list, we recommend the default, Predictive (node). Note that although all methods are available, any method that is not “node” based may result in higher server workload if transparent mode proxy is selected.

2. **Pool Configuration:** Type in the IP address and port configuration for each Websense server. The default port configuration is:
   - a. **HTTP** port 8080
   - b. **HTTPS** port 8070
   - c. **FTP** port 2121

   Please note that these are Websense defaults and should not be changed unless your Websense configuration has been customized.

   By default, we do not configure a connection limit for any pool member (by default, the connection limit is “0”, which means this functionality is disabled). You can specify a connection limit for this pool member if you wish. Enter the number of concurrent connections to which you wish to limit the individual pool member. If you choose to use TCP request queuing features (below), you must set a connection limit for each pool member.

3. **TCP Request Queuing:** TCP request queuing provides the ability to queue connection requests that exceed the capacity of connections for a pool as determined by the connection limit. Consequently, instead of dropping connection requests that exceed the capacity of a pool, TCP request queuing enables those connection requests to reside within a queue in accordance with defined conditions until capacity becomes available. For more information on TCP request queuing, see the “New Features Guide for BIG-IP Version 11,” available on Ask F5, the F5 knowledge base.
By default, TCP request queuing is disabled. If you want the BIG-IP to queue TCP requests, select Yes from the list. Additional options appear.

   a. Type a queue length in the box. Leave the default of 0 for unlimited.
   b. Type a number of milliseconds for the timeout value.

4. **Health Monitor**: Each Websense Content Gateway will be monitored by a custom health monitor on a scheduled basis. To configure this monitoring, select the version of Websense Content Gateway software that your cluster members are running from the list.

   Although it is not recommended, if you do not want to use the preconfigured monitors, then select Custom or Use Monitor… from the dropdown and choose the monitor you want to employ.

5. **Monitor Interval**: Enter the number of Seconds that will elapse between each check of a single Websense cluster member. We recommend a default of no greater than 30 seconds.

**Protocol Optimization**

In this last section, we will configure the communication between the browser client and the BIG-IP so that it will be fully optimized for the network it serves.

Select either **WAN** or **LAN** from the dropdown menu. If most of your browser clients are accessing via a LAN, then configuring this will apply special optimizations that will make the connection work better over a shorter network distance. If your network involves any longer-distance routing, choose **WAN**.

When you click **Finished**, the iApp will then build your configuration as seen in Figure 8.
Configuring using generic proxy with Websense Support

Refer to the following for guidance on how to configure the BIG-IP system for the modes described by Figures 1 and 2 in the section “Configuration examples” using the iApp template described on page 1 of this document.

Features

This iApp implements a simple anonymous HTTP (CONNECT) or SOCKS 4/4a/5 forward proxy virtual server, and has the following features:

- Support for Websense Web Security and Web Filtering
- Menu-driven proxy autoconfiguration file generation
- Simple network-based restriction of proxy use
- Control of allowed ports-per-protocol
- Support for dynamic FTP PASV (passive move) mapping
- Simple name resolution caching from a pool of configured DNS resolvers
- Informative error pages
- Extended enforcement of SSL blocking through confirmation of Server Name Indication

Limitations

This implementation of a forward proxy uses a set of iRules to create a proxy directly on the BIG-IP LTM. There are some limitations to this particular proxy implementation that you should understand before configuring it.

- This proxy does not support user authentication at this time. All proxy operations (HTTP or SOCKS) are anonymous in nature.
- The SOCKS proxy does not support user datagram protocol (UDP) association mode.
- This proxy is intended for limited use (i.e., limited guest access requiring filtering, test lab functionality, development environments).

Getting started with the iApp

To begin using the Websense Content Gateway Assistant iApp, you must import it and then create an application using the iApp template.

1. Unpack the template file from the Zip archive that you downloaded as part of the requirements section. The template file will be named: 
   f5.forward_proxy_<version>_<date>.tmpl
2. Log onto the BIG-IP system.
3. On the Main tab, expand iApp, and then click Templates.
4. Click the Import… button at the top of the main window.
5. Click Browse… and select the template file from your file system in the window provided. If you have previously imported an earlier version of the iApp template, you may also check the box next to Overwrite Existing Templates to ensure that the newest version of the template is imported over the old one.
6. Once the template is imported, you can begin using it to create applications. On the main tab, click Application Services under the iApp tab.
7. Click Create. The template selection page will open.
8. In the Name box, type in the name you wish to use to describe this deployment (i.e., “websense_datacenter”).
9. From the Template list, select f5.forward_proxy.
Advanced options

If you select Advanced from the Template Selection list, you see Sync and Failover options for the application. This feature, new to v11, is a part of the Device Management configuration. This functionality extends the existing High Availability infrastructure and allows for clustering, granular control of configuration synchronization, and granular control of failover. For more information on Device Management, see the Online Help or product documentation.

1. Configure Sync/Failover?

If you want to configure the Application for Sync or failover groups, select Yes from the list.
   a. Device Group

If you select Yes from the question above, the Device Group and Traffic Group options appear. If necessary, uncheck the Device Group box and then select the appropriate Device Group from the list.

b. Traffic Group

If necessary, uncheck the Traffic Group box and then select the appropriate Traffic Group from the list.

Inside the iApp, you can also enable advanced options specific to the proxy deployment. If you wish to do so, select Yes to the Advanced Options question below the iApp description. This will show the following optional features:

- Large Proxy Population Support (SNAT Pool)
- Proxy Debug Logging

Proxy configuration

In this section, you will configure your BIG-IP proxy’s type, address, and ports.

![Proxy Configuration](image)

Figure 9: Main proxy configuration options

You will need to select the type of proxy you wish to deploy – SOCKS or CONNECT (HTTP). You can configure both simultaneously should you wish to accommodate both types of clients on your network.
1. **Virtual Server IP Address**: This is the address clients use to access this explicit proxy (or a FQDN will resolve to this address). You need an available IP address to use here.

2. **Proxy Type**: If you wish to enable both HTTP and SOCKS proxies, select **CONNECT+SOCKS** from the dropdown menu. Otherwise, you can select **CONNECT Only** or **SOCKS Only** for a single-type configuration.

3. **Port Configuration**: You can configure the explicit proxy to listen on different ports for each type of proxy being performed. If you’ve selected **CONNECT+SOCKS** in the above step, then you can configure one port per proxy type. By default, CONNECT proxy traffic will use port 80 and SOCKS proxy traffic will use port 1080. You may assign different ports if you wish.

4. **DNS Resolvers**: Because explicit proxies are typically deployed in environments with little or no access to resolve names external to the network, we must resolve all hostnames that are sent to the proxy. To do this, we will create a pool of external-facing resolvers and send all hostname lookups to them. Enter a DNS Server IP address in the box; if multiple resolvers are desired, click **Add** and enter another IP address in the resulting box. Continue until you’ve added the desired number of resolvers.

5. **Large Proxy Population Support (Advanced Mode Only)**: The BIG-IP uses Secure Network Address Translation (SNAT) Automap to translate the client’s source address to an address configured on the BIG-IP when sending the connection to an external network.

   If you do not expect more than 64,000 simultaneous connections, leave this answer set to No and continue with #6. If you have a large deployment and expect more than 64,000 connections at one time, the iApp creates a SNAT Pool instead of using SNAT Automap. With a SNAT Pool, you need one IP address for each 64,000 connections you expect.

   Select **Yes** from the list. A new row appears with an IP address field. In the **Address** box, type an IP address and then click **Add**. Repeat for any additional IP addresses.

6. **Proxy DNS Cache Lifetime (Advanced Mode Only)**: By default, the BIG-IP iApp proxy will cache hostname lookup results for a short amount of time (30 seconds) to reduce the number of lookups that need to go to the DNS resolvers. You may modify this setting if you wish, although this is not recommended.

7. **Debug Logging (Advanced Mode Only)**: If you are experiencing any issues with a particular website through the BIG-IP iApp proxy, you can enable debug logging to get additional details for community support purposes. Do NOT enable this debug logging in a busy environment, as it will quickly fill up the local BIG-IP log.

### Security and access control

This section allows you to configure the networks that can access the proxy and the ports that the explicit proxy will allow through for each supported service.
1. **Network Access Control**: If you wish to define the networks allowed to use this proxy instance, then select Yes from the dropdown list.

2. Under **Networks to Allow**, enter the network and CIDR netmask of each network that can use the proxy instance. If you need more than one, click **Add** and enter an additional network; repeat if needed.

3. **Port Access Control**: An explicit proxy may find that browser clients need to handle non-standard ports for certain protocols. For example, although most Web sites use port 80 for data, there are some websites that use alternate ports like 8000 or 8080. Alternate ports are somewhat uncommon; if you want to support them, please note that there may be security implications to your decision.

You can configure your proxy instance to allow alternate ports for each supported service. Simply click **Add** under the port entry for the service, and fill in a new port number; repeat if multiple entries are desired.

Each supported service (HTTP/HTTPS/FTP) can have an alternate port list.

**URL filtering and inspection**

This section allows you to configure a group of Websense Web Security servers that are able to make blocking decisions for your BIG-IP iApp proxy instance. It is not necessary for these Websense hosts to be running Websense Web Security Gateway; they simply need to be running the Filter Service. Consult your Websense documentation to see if this is the case for your deployment.
If you wish to enable this feature, select **Yes** from the dropdown list, and then enter the IP address of your servers running a Websense Filter Service instance. If you need more than one, click **Add** and enter an additional address; repeat if needed.

**Proxy autoconfiguration support**

In this final section, you can configure your BIG-IP proxy instance to host a proxy autoconfiguration file (also known as a PAC file). The iApp will construct your PAC file based on your instructions and attach it to the virtual IP you configured earlier.

![Proxy autoconfiguration Support](image)

**Figure 12: Proxy autoconfiguration support**

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**Important**

Incorrectly configuring a proxy autoconfiguration file can cause outages for browser clients! Be careful when configuring this section, and always check the generated PAC file before deploying it to your production environment.

---

The generated PAC file will always be available using two distinct filenames from the main proxy virtual server IP address. You can find it at:

```
http://<proxyipaddress>/proxy.pac
```

or

```
http://<proxyipaddress>/wpad.dat
```

The latter name is used when supplying an autoconfiguration file via DNS or DHCP’s WPAD (Web Proxy Autodiscovery Protocol). See [http://findproxyforurl.com/deploying-wpad/](http://findproxyforurl.com/deploying-wpad/) for more information on configuring WPAD.
1. If you wish to use a proxy autoconfiguration file generated locally to this proxy instance, select Yes from the dropdown menu for Do you want to respond to proxy autoconfiguration requests.

2. **Unqualified Host Bypass**: Consider the hosts you wish to connect via your proxy. If your browser clients access any internal sites using unqualified domain names (or “shortnames”), you may want to allow these hosts to bypass the proxy. Select Yes from the dropdown list to inform browser clients that these types of sites should not be forwarded to the proxy.

3. **URI Scheme Bypass**: You can configure your generated autoconfiguration file to allow certain wildcard matches against the entire uniform resource identifier (URI) to bypass the proxy. This is useful in cases where you either want to allow an entire protocol to bypass:

   ftp://*

   Or you want to allow all connections on any protocol to bypass if they’re found to include an internal IP address:

   *://10.*

   Or you want to specifically allow connections to localhost from the browser client to bypass the proxy (this is actually recommended and included by default):

   *://127.0.0.1

4. **Hostname Bypass**: You can configure your generated autoconfiguration file to bypass a list of configured FQDN hostnames. This is useful when you want to bypass specific hosts in favor of internally resolved hosts (i.e., “localhost,” “specific.host.com,” “internal.portal.com”).

When you have completed the configuration of all the sections above, click Finished at the bottom of the screen. The iApp will then build your configuration as seen in Figure 13.
Figure 13: A completed generic proxy with Websense Support configuration