SSL Decryption: Benefits, Configuration and Best Practices

Websense Support Webinar January 2013

TRITON™

- Web security
- Email security
- Data security
- Mobile security

Presenter

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  - Backline Support
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  - 16 years experience
  - ISP and security background

Goals And Objectives

- Why enable SSL decryption?
- Enabling SSL
- SSL Decryption Bypass
- Subordinate CA/self-signed certificates
  - Why should my organisation install a certificate?
  - Installing a Subordinate CA
  - Installing a self-signed Root certificate
- Handling SSL Incidents

Why enable SSL decryption?

- Organisations without SSL decryption typically Allow all or Block all SSL traffic
- SSL decryption improves adherence to organisational policies
  - Access control
  - Monitoring
  - Reporting
- Improves organisational and user security
  - Reduced risk of interception
  - Adds the ability to control hosts and the Categories users can browse
- Clients see Block Page when browsing disallowed hosts
  - Shows reason/Category
  - Increases awareness of organisation policies
  - Can allow access subject to specific criteria (e.g. time, confirmation)
- Comparison of connection logs with and without SSL decryption enabled
  - An extended.log example **without** SSL decryption:

10.5.144.32 - [12/Jan/2013:15:43:51 -0000] "CONNECT www.cia.gov:443/ HTTP/1.0" 200 127 200 0 0 0 383 127 542 76 0

Why enable SSL decryption? (Cont'd)

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– An extended.log example **with** SSL decryption:

10.5.144.32 - [12/Jan/2013:15:43:51 -0000] "CONNECT www.cia.gov:443/ HTTP/1.0" 200 127 200 0 0 0 383 127 542 76 0

10.5.144.32 - - [12/Jan/2013:15:43:52 -0000] "GET http://www.cia.gov/javascript/register_function-cachekey1018.js HTTP/1.1" 200 52663 200 52663 0 0 840 297 829 287 0

10.5.144.32 - - [12/Jan/2013:15:43:53 -0000] "GET http://www.cia.gov/css/IEFixes.css HTTP/1.1" 200 3642 200 3642 0 0 810 279 799 269 0

10.5.144.32 - - [12/Jan/2013:15:43:53 -0000] "GET http://www.cia.gov/css/ciatheme-index.css HTTP/1.1" 200 10657 200 10657 0 0 818 281 807 271 0

10.5.144.32 - - [12/Jan/2013:15:43:53 -0000] "GET http://www.cia.gov/css/base-cachekey6837.css HTTP/1.1" 200 59571 200 59571 0 0 821 281 810 271 0

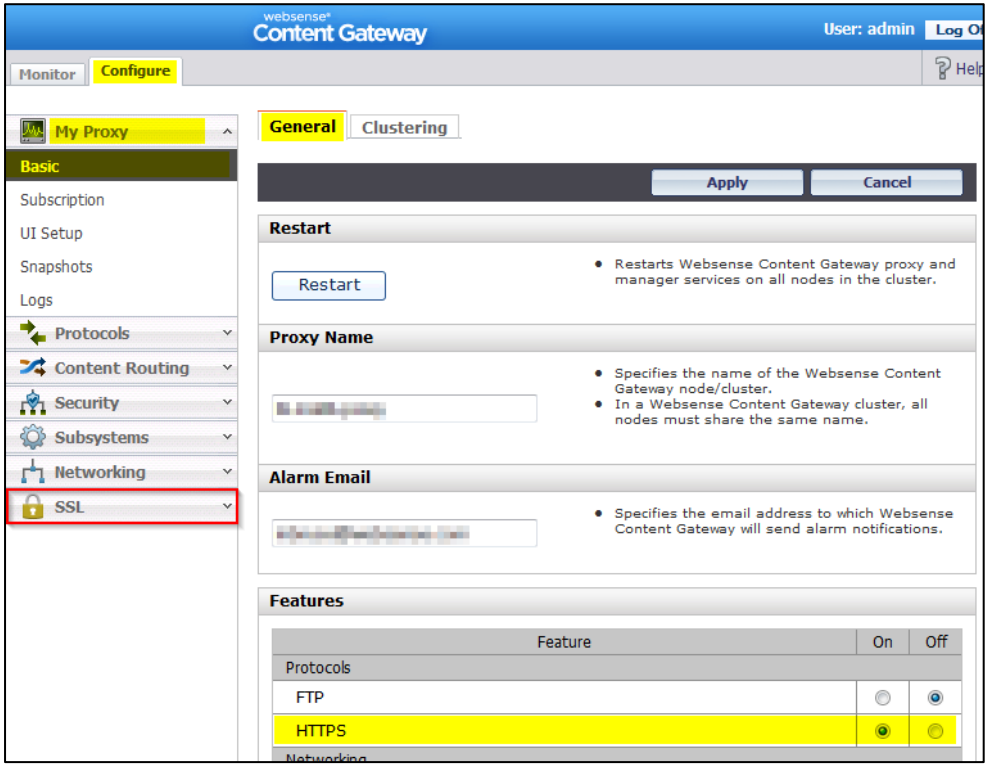
10.5.144.32 - - [12/Jan/2013:15:43:53 -0000] "GET http://www.cia.gov/javascript/javascript.js HTTP/1.1" 200 6092 200 6092 0 0 820 296 809 286 0

- SSL decryption uses the Man In The Middle (MitM) method
- For more information on the extended.log file format, see:

  http://www.websense.com/content/support/library/web/v77/wcg_help/nscape.aspx
- Where to find extended.log file:
  - WCG Manager: Configure > My Proxy > Logs > Access > Log File
  - Software: /opt/WCG/logs/extended.log

Enabling SSL

- Enable the HTTPS protocol in Features
  - Adds new SSL menu to the left



SSL Decryption Bypass

- Allows selective and controlled use of SSL decryption and bypass
- Easy to use exclusion from SSL decryption
- Exclusion options:
  - Category selection similar to Category Filters
    - Privacy Categories: Simple selection of Categories most organisations prefer to bypass
  - Client: Source IP addresses/ranges
  - Destination: Destination hosts, URLs, or IP addresses/ranges
- Demonstration: SSL Decryption Bypass options

SSL Decryption Bypass (Cont'd)

- Comparing SSL Decryption Bypass logs
  - Example SSL Bypass by Category:

(wtg_txn_url) [7613] URL: **https://www.hsbc.co.uk**

(wtg_txn_wisp) [7613] WispClient (tid=59104): Doing http lookup with 0 dynamic category and 0 TFT, src ip: 10.5.146.50

(wtg_txn) [7613] EIM(Out/Hdr) returned category 68, allowed

(wtg_txn_ssl) **IsCategorySSLDecryptBypassed**: **category=68** matched with: 68

(wtg_txn_ssl) [7613] **Bypassing SSL Decryption (not blocked)**

(wtg_txn_result) [7613] 10.5.146.50->91.214.6.98 User[] ReqMethod[CONNECT] **Category[Financial Data and Services]** Disposition[CATEGORY_NOT_BLOCKED] ContentType[] Reason[] DynCat[0] RecBit[0] Bytes[Sent=83 Rcvd=0]

SSL Decryption Bypass (Cont'd)

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- Example SSL Bypass by Client IP:

(wtg_txn_url) [7625] URL: **https://www.hsbc.co.uk**

(wtg_txn_wisp) [7625] WispClient (tid=59104): Doing http lookup with 0 dynamic category and 0 TFT, src ip: 10.5.146.50

(wtg_txn) [7625] EIM(Out/Hdr) returned category 68, allowed

(wtg_txn_ssl) **IsClientSSLDecryptBypassed**: srcIP=10.5.146.50 matched with: first= 10.5.146.50 last= 10.5.146.50

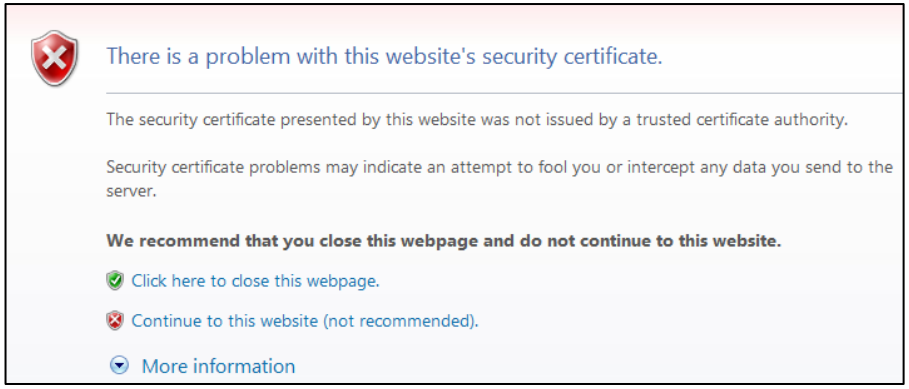
(wtg_txn_ssl) [7625] **Bypassing SSL Decryption (not blocked)**

(wtg_txn_result) [7625] 10.5.146.50->91.214.6.98 User[] ReqMethod[CONNECT] **Category[Financial Data and Services**] Disposition[CATEGORY_NOT_BLOCKED] ContentType[] Reason[] DynCat[0] RecBit[0] Bytes[Sent=83 Rcvd=0]

- Visible in the content_gateway.out log file:
  - WCG Manager: Configure > My Proxy > Logs > System
  - Software: /opt/WCG/logs/content_gateway.out

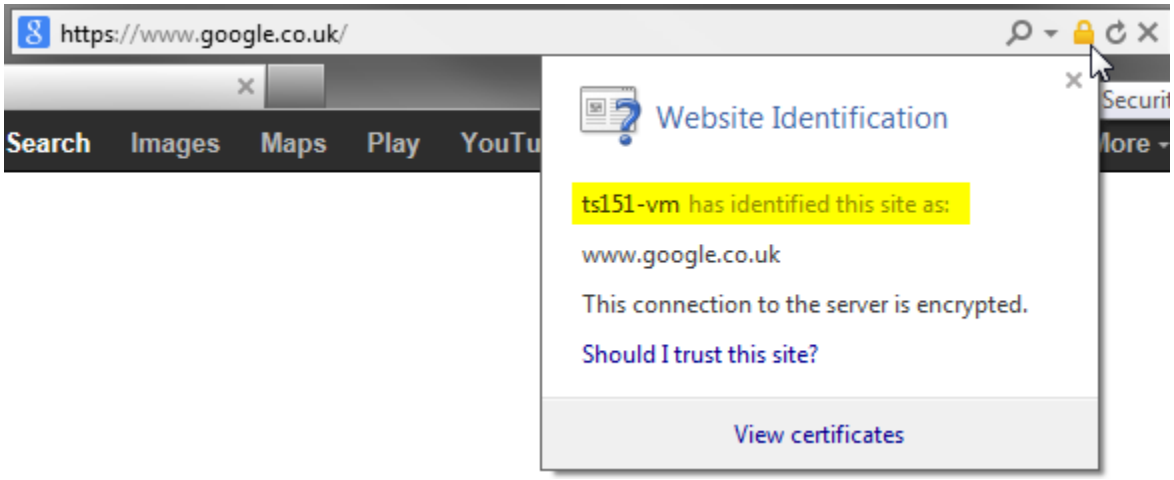
Why should we install a certificate?

- Enabling SSL decryption gives certificate errors when browsing HTTPS sites
  - Client unable to verify integrity of self-signed certificates
  - Installing a certificate takes care of this
- Allows clients to browse without seeing a certificate warning for every HTTPS host
  - Reduces user confusion and related helpdesk calls
  - Browsing HTTPS host without certificate installed



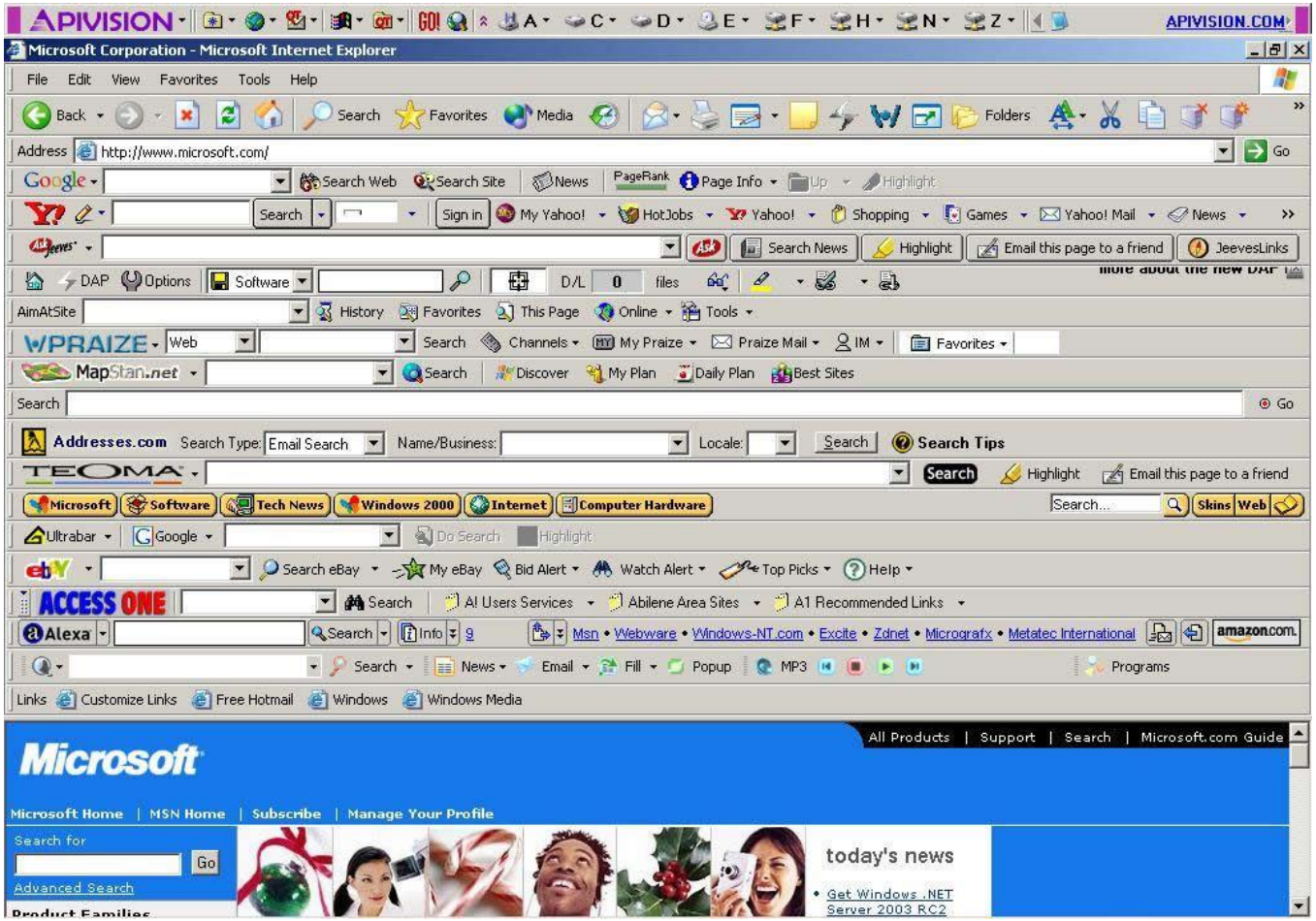
Why should we install a certificate? (Cont'd)

– Browsing HTTPS host with certificate installed



Why should we install a certificate? (Cont'd)

- Browser toolbar collector, or "Why is my Internet so slow?"



Source: scapegoatmedia.com

Installing a Subordinate CA

- For environments with Microsoft Certificate Server
- Uses existing organisational Root CA
- Basic steps:
  1. Use OpenSSL 0.9.8x (Windows or Linux) to create Certificate Signing Request (CSR) and private key

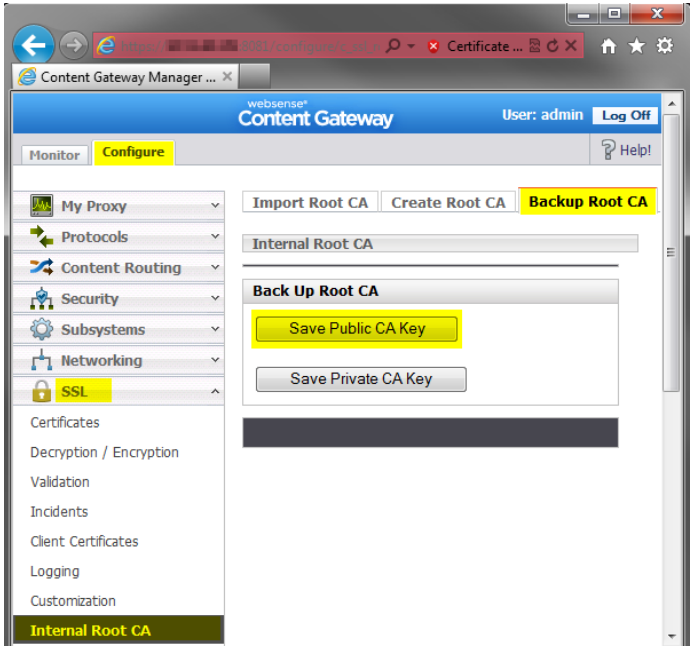
     ```
     # openssl req -new -newkey rsa:2048 -keyout wcg.key -out wcg.csr
     ```
  2. Sign CSR with Microsoft Certificate Services to create and export Subordinate CA
  3. Import certificate and private key into Content Gateway
  4. Restart Content Gateway
- Detailed procedure and further information:

  http://www.websense.com/content/support/library/web/v77/wcg_help/ssl_sub_ca.aspx
- Windows version of OpenSSL 0.9.8x:

  http://www.websense.com/support/article/kbarticle/How-to-use-OpenSSL-and-Microsoft-Certification-Authority
- Demonstration: Installing a Sub CA

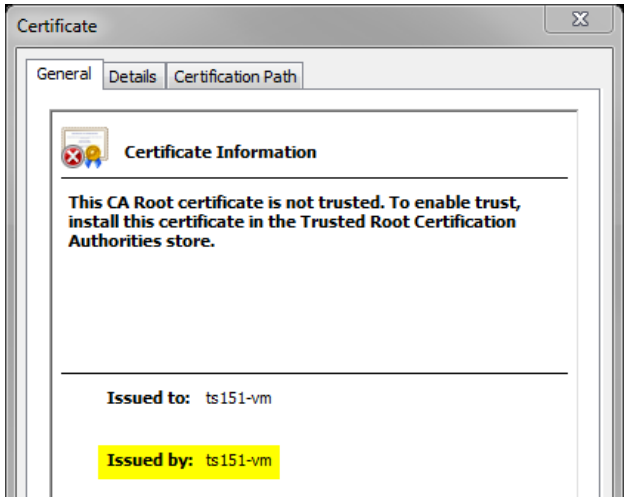
Installing a self-signed certificate

- For environments without a Certificate Server
- Deployment options
  - Locally on each client via manual import
  - Centrally via AD Trusted Certificate Store
- Steps to install self-signed certificate from Content Gateway to an IE9 client
  1. Export Public CA Key from Content Gateway

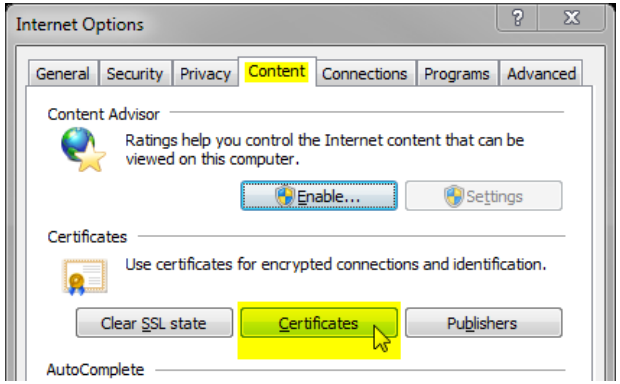


Installing a self-signed certificate (Cont'd)

2. Open exported certificate file to view its details

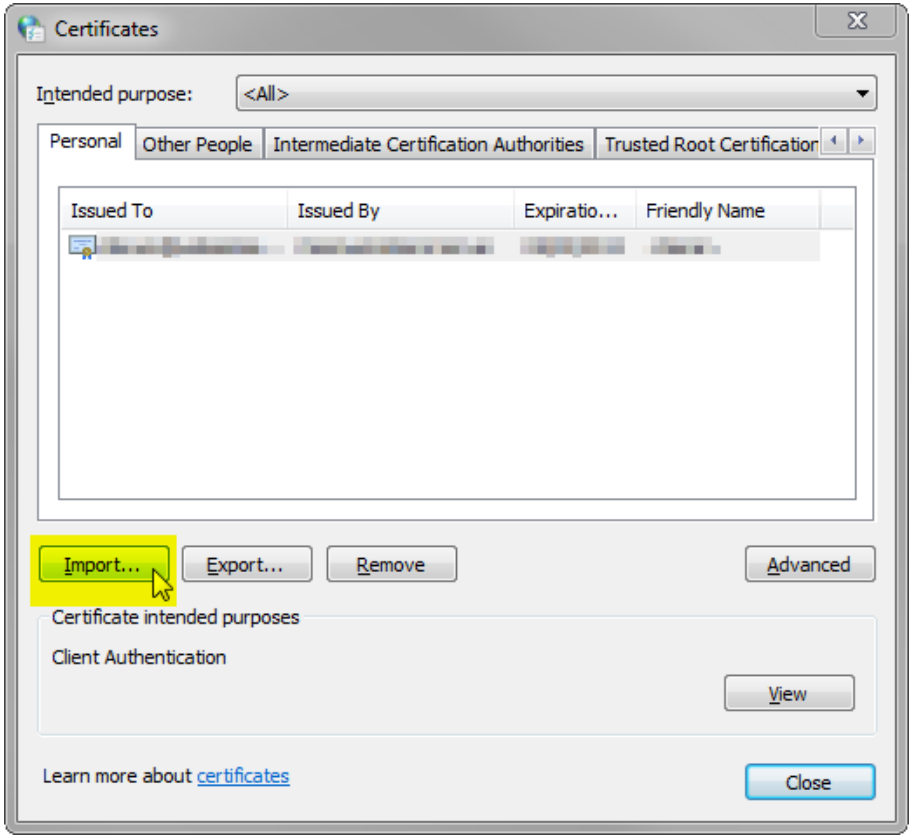


3. Open Internet Options on client and view installed certificates



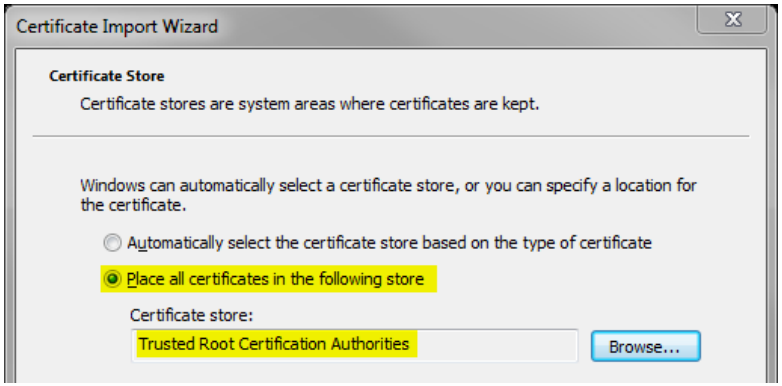
Installing a self-signed certificate (Cont'd)

4. Click Import to start Certificate Import Wizard

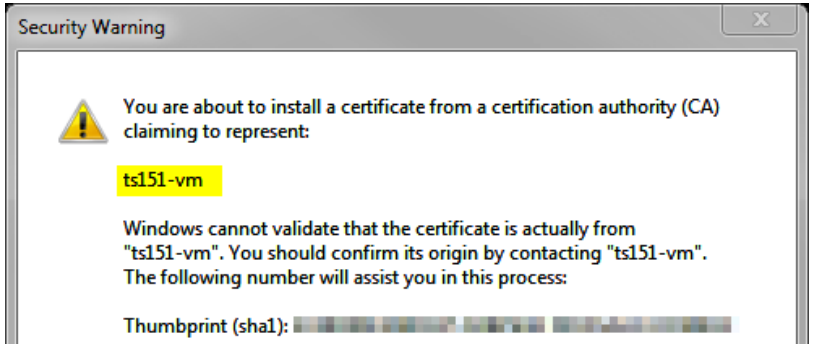


Installing a self-signed certificate (Cont'd)

5. Import the certificate into the "Trusted Root Certification Authorities" certificate store



6. A warning that the root certificate being imported cannot be validated may appear; select Yes to import it



Installing a self-signed certificate (Cont'd)

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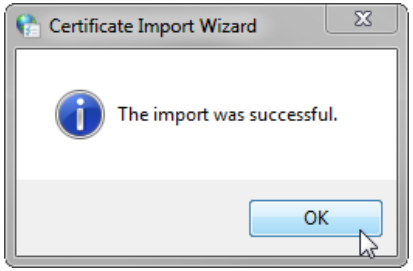
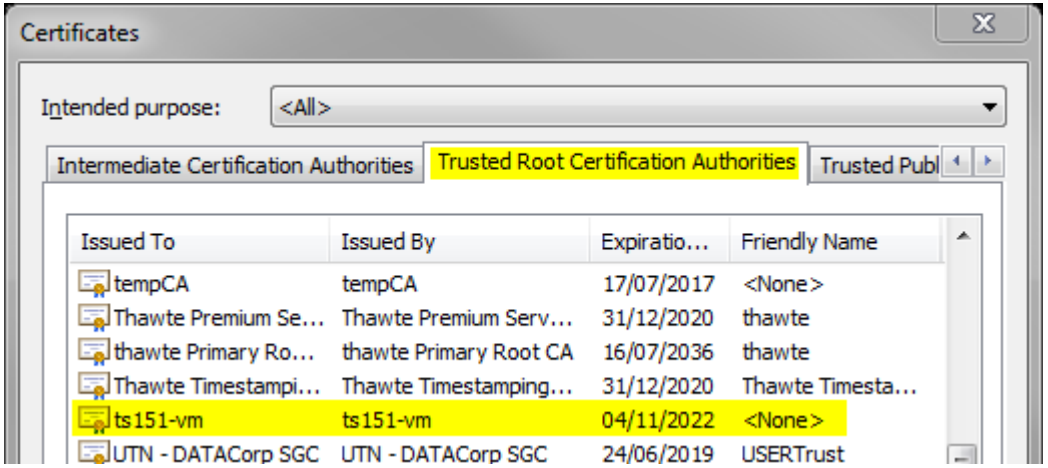
7. Certificate Import Wizard shows a popup on successful completion



8. Verify the certificate is in the correct location



Installing a self-signed certificate (Cont'd)

- Comparison of certificate information

Direct (no proxy)

Self-signed certificate

Certificate Verification Engine (CVE)

- Verifies the integrity of certificates
  - Provides gateway-level ability to perform certificate checks
  - Supplements modern client certificate checks
- Required when SSL decryption is enabled
- Uses revocation lists to maintain current list
- Customisable to allow fine-tuning
  - Individual options can be enabled or disabled as needed
- More information:

  http://www.websense.com/content/support/library/web/v77/wcg_ssl_cve/Certificate%20Verification%20Engine%20v77.pdf

  http://www.websense.com/content/support/library/web/v77/wcg_ssl_cve/cve_options.aspx

  http://www.websense.com/content/support/library/web/v77/wcg_help/c_valid.aspx

Handling SSL Incidents

- Incidents automatically generated when client receives an “access denied” message due to:
  - Hosts requiring client certificates
  - Validation via the Certificate Verification Engine (CVE) fails
- Administrators can choose what happens when client visits a site in Incident list:
  - **Allow**: Client can access website even if certificate is invalid
  - **Blacklist**: Client cannot access website at all
  - **Block**: Client cannot access website, unless Verification Bypass is enabled (system presents "Visit site anyway" button on denial page)

Best Practices & Troubleshooting

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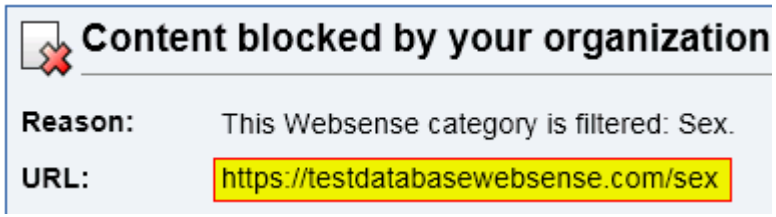
- Enable Certificate Verification Engine (CVE)
  - Needs to be enabled when SSL decryption is used
  - Provides a layer of certificate checking over entire network
- Enable Verification Bypass if required
  - Lets users to bypass sites automatically-added to SSL Incidents
  - Depends upon organisation's priorities and requirements
- SSL can be configured to use syslog
  - Allows centralised logging for analysis or processing
- Customise, brand or translate SSL error messages
  - "Certificate Failure" and "Connect Error" pages
- Periodically examine the SSL Incident List
  - CVE automatically adds entries to the Incident List
  - Treat like a quarantine mailbox by checking and verifying the entries there.

Best Practices & Troubleshooting (Cont'd)

- Testing Categories with HTTPS using the Websense Master Database Test Pages
  - Test Blocked category or real-time content

    https://testdatabasewebsense.com/sex

    https://testdatabasewebsense.com/realtime/SexAndAdult.html



  - Test Allowed category

    https://testdatabasewebsense.com/news

Best Practices & Troubleshooting (Cont'd)

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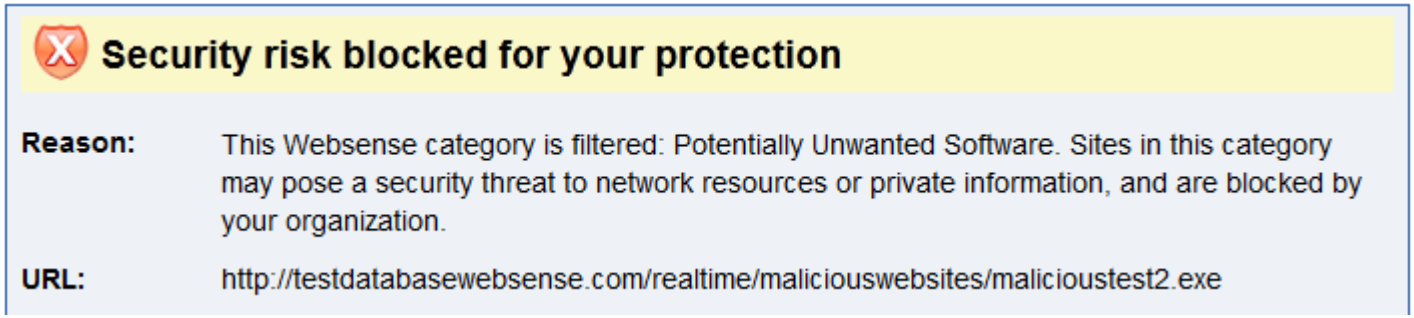
– Test malicious file download (safe):

https://testdatabasewebsense.com/realtime/maliciouswebsites/malicioustest2.exe



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- Search or browse the knowledge base for documentation, downloads, top knowledge base articles, and solutions specific to your product.

Support Forums

- Share questions, offer solutions and suggestions with experienced Websense Customers regarding product Best Practices, Deployment, Installation, Configuration, and other product topics.

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Title:

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Date:

February 20, 2013

Time:

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