Integrating the ProxySG and ProxyAV Appliances

For SGOS 6.5 and later and AVOS 3.5 and later

BLUE COAT

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Table of Contents

1 Introduction

Stated Purpose

The Blue Coat ProxyAV and ProxySG appliances work in conjunction to provide a cohesive threat protection solution. This document provides conceptual information about malware threats, deployment guidelines and configuration steps for getting the ProxyAV and ProxySG to communicate with each another. It also includes best practices to consider when deploying this integrated solution.

This integration guide supplements existing product-specific guides. For details and instructions on each product, use the context-sensitive online help or refer to the following guides:

- *Blue Coat ProxyAV Configuration and Management Guide* (version 3.5.1.x or later)
- *Blue Coat SGOS Administration Guide* (version 6.5 or later)
- The product's installation or quick start guide

You can download these manuals from BlueTouch Online at:

https://support.bluecoat.com/documentation

Audience

The intended audience for this document is current and potential customers seeking to understand Blue Coat's threat protection solution; it provides configuration information to help integrate the ProxySG and ProxyAV in your network.

This document assumes you are knowledgeable with basic network concepts and terminology. Basic familiarity with Blue Coat products is also recommended but not a prerequisite.

Supported Blue Coat Devices and Operating Systems

As of the production of this document, the integration guide covers the following Blue Coat products and software releases.

Hardware Platforms

ProxySG models: SG300, SG600, SG900, SG9000
ProxyAV models: AV510, AV1200, AV1400, AV2400

Software Versions

This guide assumes that the software versions installed on the ProxySG is SGOS 6.5 and later and ProxyAV is AVOS 3.5 and later versions. Some of the features such as ICAP monitoring and using the built-in threat protection and ICAP mirroring policy on the ProxySG are not available in earlier versions. If you are consulting this document and your software is more current than the ones listed above, review the release notes for that release to learn about any new features not yet implemented in this document.

If a concept or feature is not compatible with a specific AVOS or SGOS release, it is so noted in the document.

Chapter Reference

This document is structured to be read in its entirety before implementing the AV solution. Deployments not requiring redundancy can skip chapters 7 and 8.

This document contains the following chapters:

Chapter 1: Introduction

Chapter 2: Benefits of the Blue Coat Anti-Malware Solution

Chapter 3: Deployment Topologies

Chapter 4: Configuring the ProxySG and ProxyAV Appliances

Chapter 5: Monitoring ICAP Scanning

Chapter 6: Additional Configuration

Chapter 7: Load Balancing Between Multiple ProxyAV Appliances

Chapter 8: Configuring ProxyAV Failover

Chapter 9: Configuration Best Practices

Chapter 10: Troubleshooting

2 Benefits of Integrating the ProxySG and the ProxyAV

This chapter includes conceptual information about malware and describes benefits of using the integrated Blue Coat threat protection solution. The following topics are included:

About Web Malware

Although the AV in ProxyAV is an acronym for anti-virus, the ProxyAV does a lot more than scan for viruses. These appliances offer advanced malware detection at the gateway. By detecting and blocking viruses, worms, trojans, and spyware, the ProxyAV secures rogue channels that threaten the enterprise network. The majority of malware comes from two vectors: hidden downloads in popular and trusted Web sites, and malware distribution through social networking, peer-to-peer (P2P), and Web mail. When the ProxyAV is integrated with the ProxySG, the Blue Coat solution provides a layered malware defense. You have the ProxyAV with its malware threat detection and the ProxySG with its extensive Web content controls. In addition, you have two appliances that have been designed, tested, and manufactured for compatibility.

How big of a problem is malware? In 2011 alone, malware has increased fivefold, with 90 percent coming from trusted sites. A recent Google study on the prevalence of Web-based malware found 10 percent of the URLs examined successfully launched automatic installation of malware binaries. Hackers are constantly creating new attacks. These nefarious techniques use Web and secure Web access because they are typically permitted for legitimate business purposes. Malicious Web outbreaks cost enterprises millions of dollars per year in terms of repairing networks and lost productivity.

Types of Malware

Malware is defined as software designed to infiltrate or damage a computer system without the owner's informed consent. It can be downloaded from Web pages without a user's knowledge, often piggybacking on a user's trust of a known domain.

The following table lists common types of malware.

Malware	Description
Adware	Software that automatically displays advertisements on a computer
Backdoor	A method of bypassing normal authentication, securing remote access to a computer, obtaining access to plaintext, and so on, while attempting to remain undetected
Downloader	A program that downloads and installs malicious software
MMC	Mobile malicious code. Software obtained from remote systems, transferred across a network, and then downloaded and executed on a local system without the user's explicit installation. It can be delivered via visits to a Web site, Web e-mail, or e-mail with attachments. Examples of MMC include: Scripts, Java applets, ActiveX, flash animations, Shockwave movies, and macros embedded within Microsoft Office documents.
Ransomware	Software that encrypts data in an unreadable format and then demands payment in exchange for the decryption key (the ransom)
Rootkit	A program designed to take fundamental control of a computer system, without authorization of the system's owners and legitimate managers. Root comes from the UNIX term "root" access, which is equivalent to administrator access in Windows.

Malware	Description
Spyware	Computer software that is installed surreptitiously on a personal computer to intercept or take partial control over the user's interaction with the computer, without the user's consent
Trojan horse	Software that appears to perform a desirable function but in fact performs undisclosed malicious functions. A computer worm or virus may be a Trojan horse.
Virus	A computer program that attaches itself to an existing program and can copy itself and infect a computer without a user's permission or knowledge
Worm	A self-replicating computer program that uses a network to send copies of itself to other nodes, without any user intervention. Unlike a virus, it does not need to attach itself to an existing program.

The Blue Coat Threat Protection Solution

The Blue Coat threat protection solution provides the intelligence and control required to manage Web traffic, inbound (response) and outbound (request) communications, in your network. The solution uses an enhanced ICAP+ version that offers improved performance, reliability, and integrated error/exception handling and reporting.

The solution leverages the benefit of a proxy/cache device (ProxySG) integrated with a powerful scanning server (ProxyAV) that analyzes Web content for viruses, malware, and spyware before it is cached, thus preventing malware from entering your network.

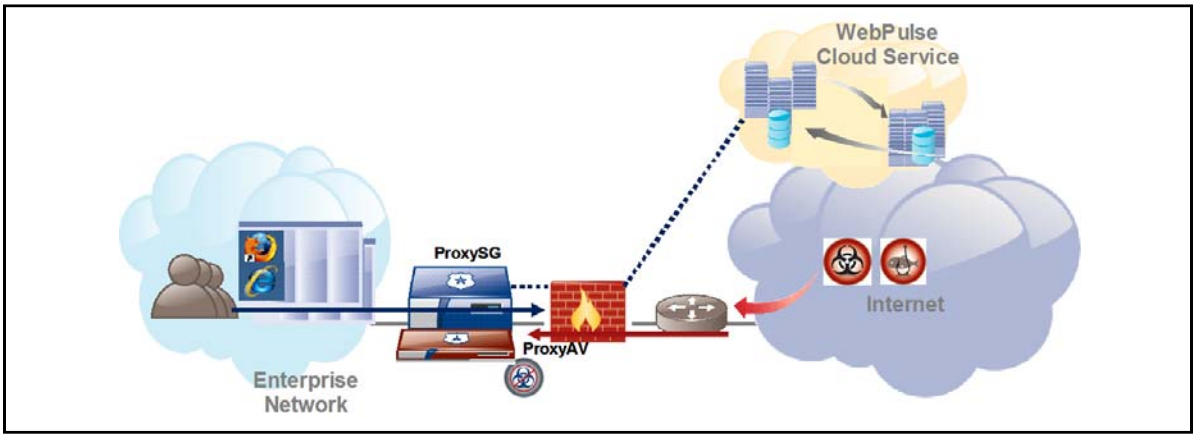


Figure 2-1 ProxySG integrated with a ProxyAV for threat protection

The ProxyAV provides in-path threat detection, and the ProxySG provides the Blue Coat WebFilter and the WebPulse service, which constitute a URL filtering database and a Web-based community watch service that detects hidden malware and provides Web content analysis in real time.

With the integrated appliances, your network is also protected from emerging malware threats. Because the ProxyAV is designed to work with the ProxySG architecture, the ProxySG monitors the results of a ProxyAV scan and proactively notifies the WebPulse service when a new virus or malware is detected. This notification triggers an update to the Blue Coat WebFilter database and helps protect your enterprise and all members in the cloud from the emerging threat.

Furthermore, the ProxySG provides a built-in malware scanning policy that offers immediate, out-of-the-box protection. This policy is invoked when you integrate the appliances and enable malware scanning. If you prefer to supplement or implement custom policy rules to enforce compliance to the security policies relevant to your enterprise, you can use the policy engine on the ProxySG to create granular policy to control content, users, applications and protocols in your network.

The following diagram illustrates, at a high level, the data flow in the Blue Coat solution.

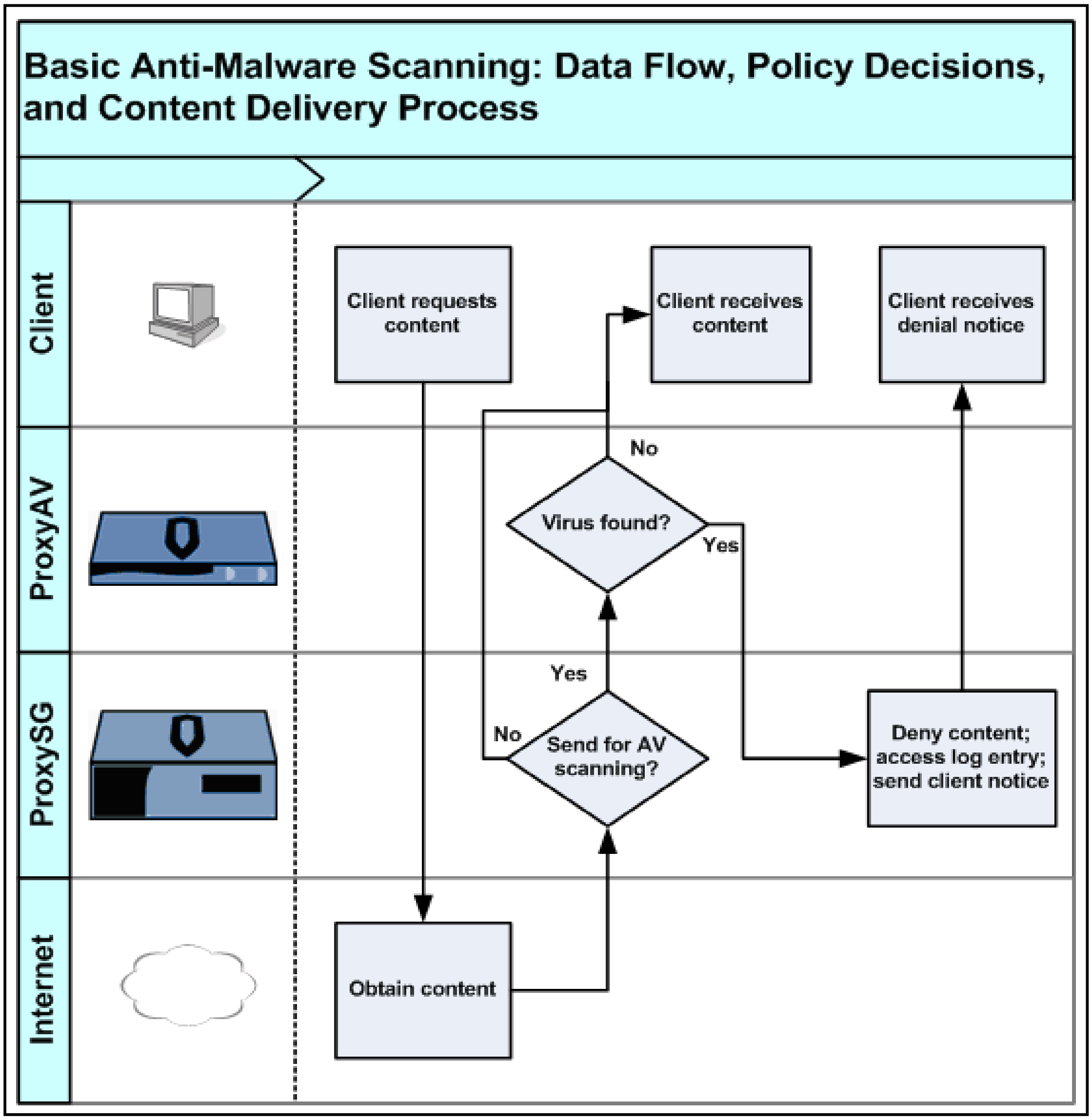

Basic Anti-Malware Scanning: Data Flow, Policy Decisions, and Content Delivery Process
Client
ProxyAV
ProxySG
Internet
Client requests content
Client receives content
Client receives denial notice
No
Virus found?
Yes
Yes
No
Send for AV scanning?
Deny content; access log entry; send client notice
Obtain content

Figure 2-2 **Data flow and content delivery process for inbound Web traffic**

Supported Malware Scanning Engines

You can select one of the following malware scanning engines supported on the ProxyAV:

- Kaspersky
- McAfee
- Sophos
- Symantec (introduced in AVOS 3.4.1.1)
- Trend Micro (introduced in AVOS 3.3.1.1)
- Panda

When your vendor engine license is about to expire, Blue Coat provides the option to renew it or obtain an engine license from a different vendor.

Communication Between the ProxySG and the ProxyAV

Blue Coat's ProxySG and ProxyAV appliances communicate using *Internet Content Adaptation Protocol* (ICAP). ICAP is an open standard protocol that allows content engines to send HTTP based content to an ICAP server for performing value-added services such as virus scanning.

The ProxySG is the *ICAP client*, and the ProxyAV is the *ICAP server*. The ProxySG forwards Web content that needs to be scanned to the ProxyAV. The ProxyAV filters and adapts the content and returns it to the ProxySG. The scanned content is then served to the user who requested the content and cached on the ProxySG.

Once an object is cached, it is not scanned again until either the object contents change or the AV database changes. The *AV database* is a pattern file that allows anti-virus software to identify viruses. Whenever the database changes, the ProxyAV needs to rescan any requested objects that are in the cache, because the new database might contain updates on emerging malware threats.

For a non-cacheable object, the ProxyAV scans the object and creates a *fingerprint* — a secure hash of the file's contents. The ProxyAV compares the file's fingerprint against a database of fingerprints that is constructed as a result of scanning objects. The object will not be scanned again unless either its fingerprint changes (indicating the content has changed) or the AV database changes.

For frequently accessed Web content, this integrated solution eliminates network threats and reduces bandwidth usage and latency by serving objects from the cache.

About Content Scanning Modes

The ProxyAV can scan content in two modes: response modification and request modification.

Most Web malware deployments involve the use of a *response modification service (*RESPMOD). A response modification service analyzes inbound client requests. That is, the response that is fetched from the origin content server is scanned for malicious content before it is delivered to the user who requested the content. If the content is verified as clean (and also allowable by corporate policy), the client receives the

Web objects (that comprise Web pages). If malware scanning detects malicious content, the response is quarantined, the objects are not cached, the event is logged, and the client receives a message indicating that a virus was found.

A *request modification service* (REQMOD) is typically used to scan outbound Web requests or Web mail attachments before users post them to file servers such as Gmail and HotMail servers. A request modification service mainly prevents data leak in an enterprise.

3 Deployment

This chapter illustrates several deployment topologies for incorporating one or more ProxySG and ProxyAV appliances in your network.

Note: The ProxySG can be deployed in explicit or transparent mode. In explicit mode, each client Web browser is explicitly configured to use the ProxySG as a proxy server. In transparent mode, the client Web browser does not know the traffic is being processed by a machine other than the origin content server. Transparent proxy requires that you use a bridge, a Layer-4 switch, or Web Cache Communication Protocol (WCCP) to redirect traffic to the ProxySG.

Also included in this chapter are high-level guidelines and workflows for physically installing the appliances into your network, and it includes the following topics:

ProxySG/ProxyAV With Direct Internet Access

In most enterprises, the ProxySG and ProxyAV are deployed with direct access to the Internet. You can deploy the appliances in different combinations: one ProxySG to one ProxyAV; one ProxySG to multiple ProxyAV appliances; multiple ProxySG appliances to one ProxyAV; or multiple ProxySG appliances to multiple ProxyAV appliances. The ProxySG has the capability to load balance Web scanning between multiple ProxyAV appliances or to designate a sequence of ProxyAV appliances as failover devices should the primary ProxyAV go offline.

Work with a Blue Coat sales engineer to determine the appropriate sizing for your enterprises.

The following diagram illustrates the ProxySG with ProxyAV architecture.

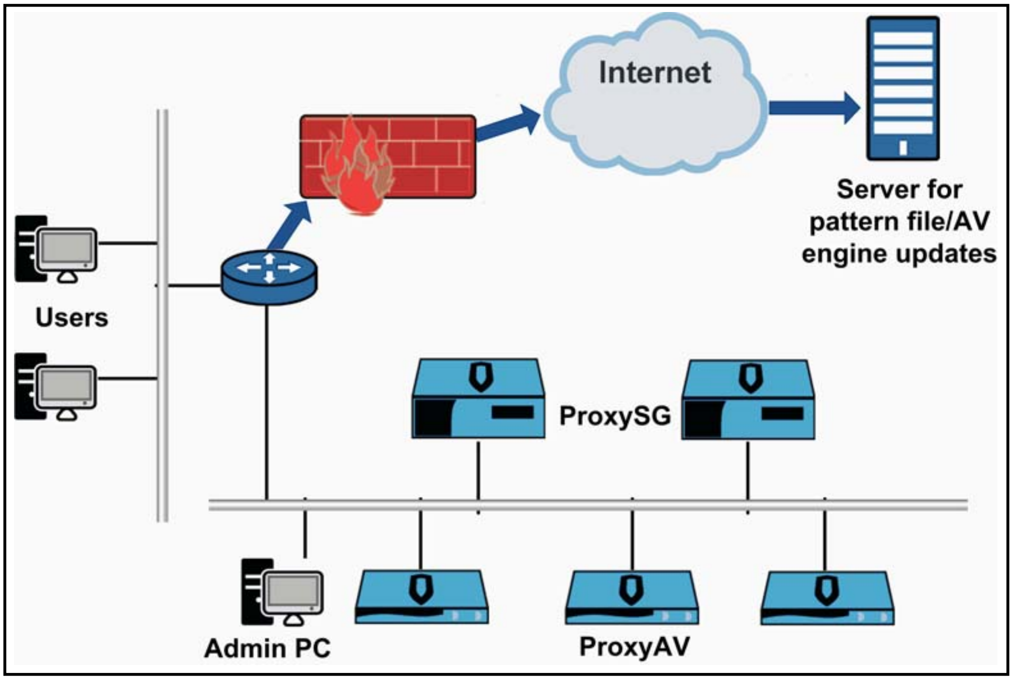
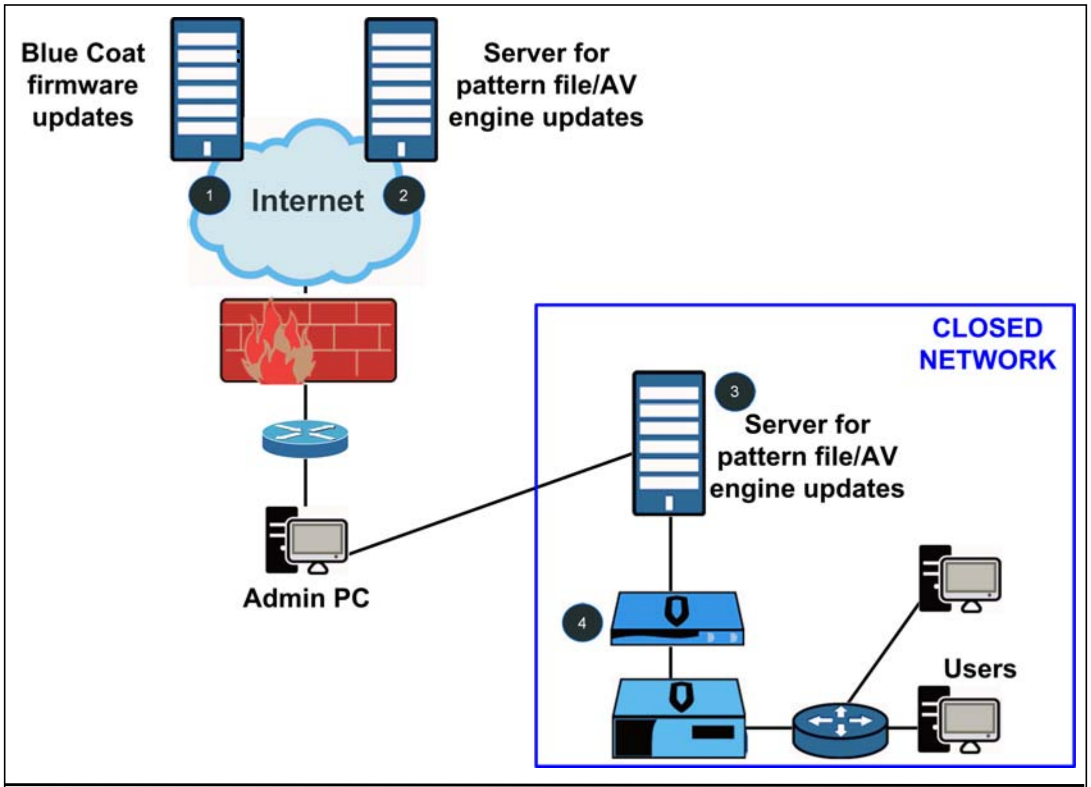


Figure 3-1 Blue Coat appliances deployed with direct Internet access for updates

The admin PC is used to perform configuration and policy changes on any Blue Coat appliance.

ProxySG/ProxyAV in a Closed Network

For heightened security, some network architectures (particularly in government or military environments) prevent devices from having direct Internet access. The following diagram illustrates a closed network topography.


Blue Coat firmware updates
Server for pattern file/AV engine updates
1
Internet
2
CLOSED NETWORK
3
Server for pattern file/AV engine updates
Admin PC
4
Users

Legend:

1: Retrieve the latest AV appliance firmware update file.

2: Retrieve the latest AV vendor pattern files. Use a script to prepare the files (remove absolute links, for example).

3: Copy the files to an internal server connected to the AV appliance.

4: Configure the AV appliance to retrieve the update files from the server (HTTP/URL).

Figure 3-2 Blue Coat appliances deployed in a closed network

Deployment Guidelines

When planning the installation of your Blue Coat appliances, consider the following deployment guidelines:

- Blue Coat recommends that all ProxySG appliances reside on the same subnet as the ProxyAV appliances, even in cases where multiple ProxySG appliances are load balanced with multiple ProxyAV appliances. Although you can put the ProxyAV in California and the ProxySG in New York, performance will suffer. For optimal performance, the ProxyAV and the ProxySG must be physically and logically close to each other; Blue Coat recommends that the ProxyAV be on the next-hop VLAN.

- Before installing the ProxyAV, install the ProxySG in your network and verify that it is intercepting traffic in your network.

- The ProxyAV must have access to the Internet for system and pattern file updates. In a closed network, you'll need to download these files from a system that has Internet access and then copy these files to an internal server connected to the AV appliance; the ProxyAV must be configured to retrieve the update files from this server. For the closed network topography, see "ProxySG/ProxyAV in a Closed Network" on page 3-11.
  If a closed network, the ProxyAV can use the ProxySG for downloading pattern file and firmware updates. To use the ProxySG as a proxy for downloading pattern file and firmware updates, make sure to add the IP address of the ProxySG is added to the **Network > Proxy Servers for Updates** link on the ProxyAV Management Console.

One ProxySG to One ProxyAV

This basic deployment has one ProxySG and one ProxyAV and is suitable for a small enterprise or network segment.

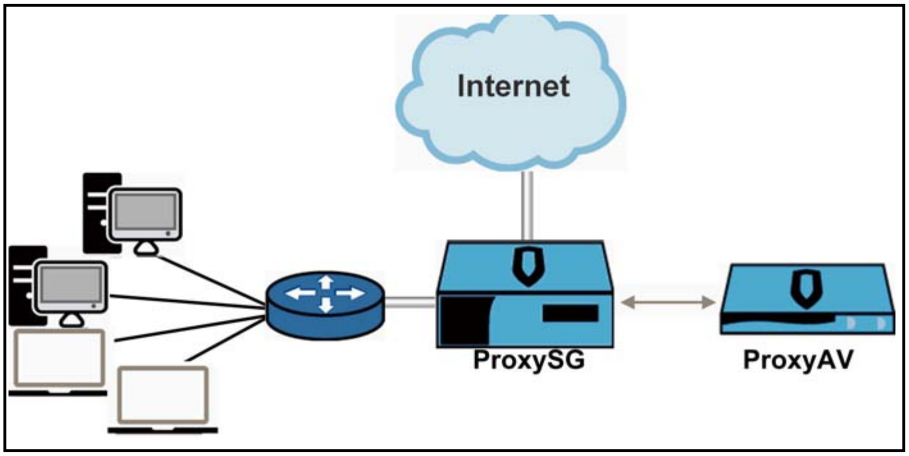


Figure 3-3 One ProxySG to one ProxyAV

This deployment is the easiest to configure and is the least expensive to deploy because it does not require redundant appliances to be purchased. However, due to its lack of redundancy, this deployment has the following limitations:

- No Web malware scanning if the ProxyAV goes down. Depending on the policy you implement on the ProxySG, when the ProxyAV fails, users either receive unscanned content or exception pages noting that the content cannot be delivered.
- No load balancing for ICAP scanning if the ProxyAV gets overwhelmed with ICAP requests.
- No failover if the ProxySG goes down.

Redundant Appliance Topologies

Larger enterprises may require redundancy in the network: multiple ProxySG and/or multiple ProxyAV appliances. Redundant appliances address the limitations of the single-ProxyAV/single-ProxySG deployment. The ProxySG can load balance Web scanning between multiple ProxyAV appliances or designate a sequence of ProxyAV appliances as failover devices should the primary ProxyAV go offline. Similarly, secondary ProxySG appliances can be configured as failover devices should the primary ProxySG go down or can provide further proxy support in the network.

The options for redundant topologies are:

- Multiple ProxyAV appliances with a single ProxySG. This is the most common type of redundant topology in a Blue Coat integrated deployment. For configuration details, see "Load Balancing Between Multiple ProxyAV Appliances" on page 7-67 and "Configuring ProxyAV Failover" on page 8-75.
- Multiple ProxySG appliances to one ProxyAV.
- Multiple ProxySG appliances to multiple ProxyAV appliances.

Diagrams for Redundant Topologies

The ProxySG and ProxyAV appliances are available in different capacities. Blue Coat provides sizing information to assist you with determining the correct combination of appliances to deploy.

The following images represent the redundant topology options listed above.

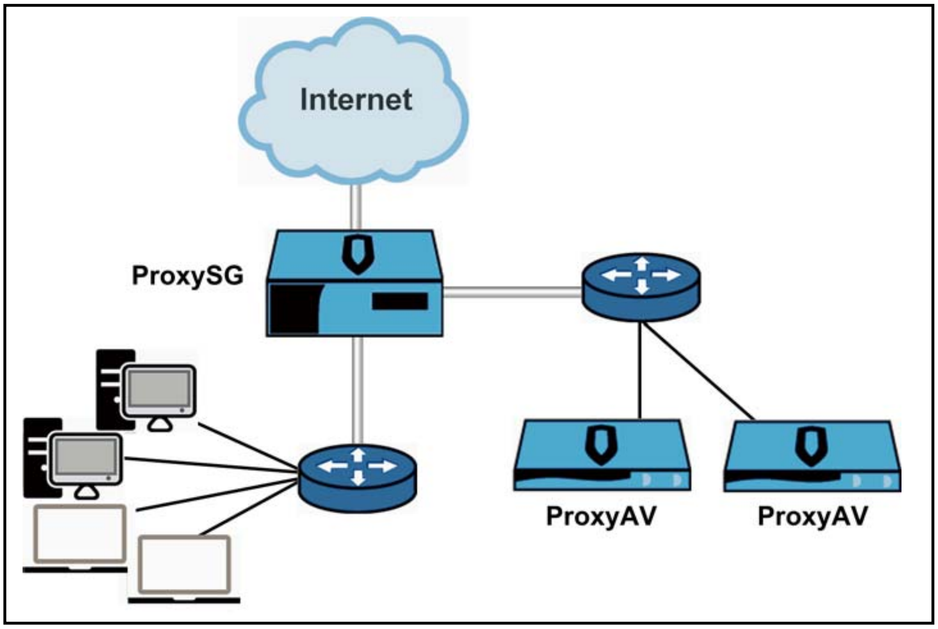


Figure 3-4 One ProxySG to multiple ProxyAV appliances

Enterprises that need ProxySG failover, without redundant ProxyAV appliances, might use the following type of topology.

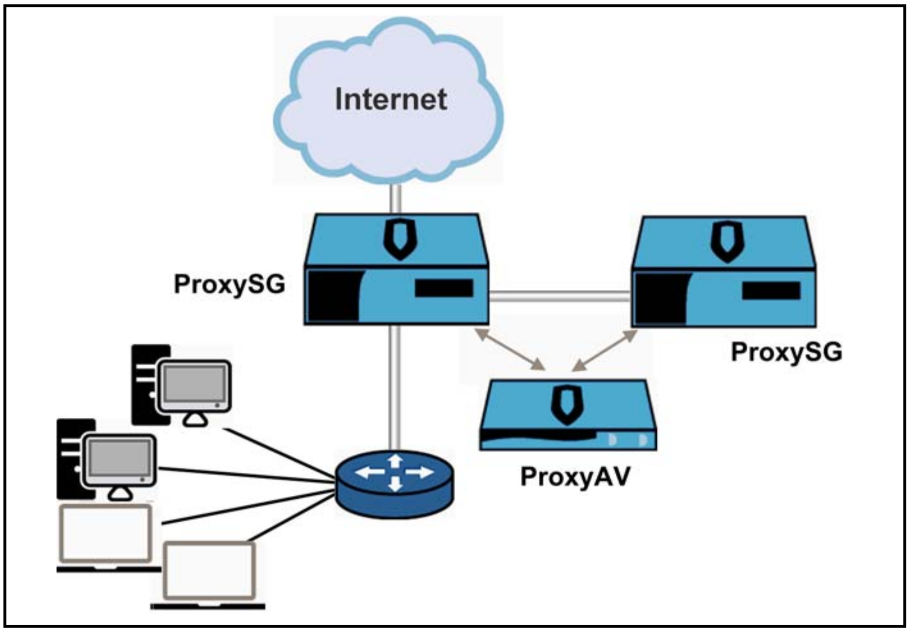


Figure 3-5 Multiple ProxySG appliances to one ProxyAV

Enterprises with hundreds to thousands of users require the processing power of multiple ProxySG and ProxyAV devices, which work together to provide efficient scanning power plus failover capability.

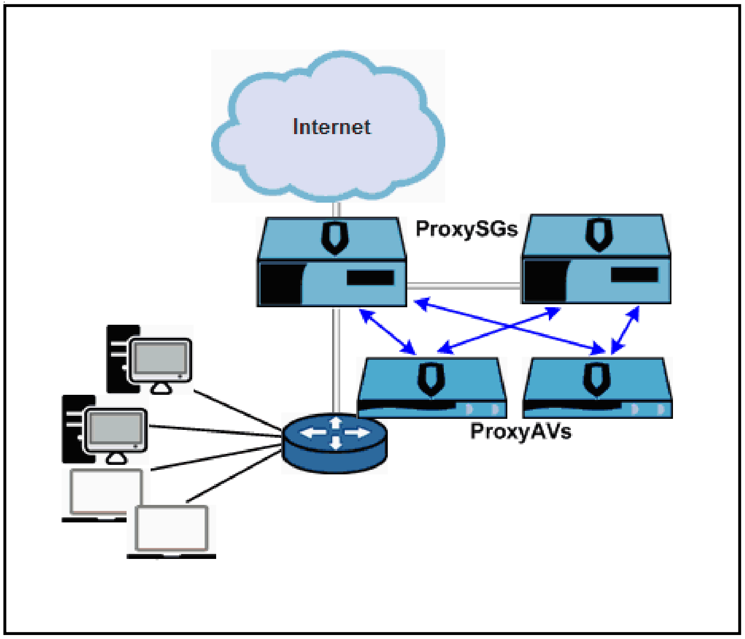


Figure 3-6 Multiple ProxySG appliances to multiple ProxyAV appliances.

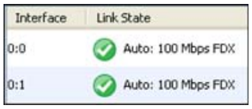
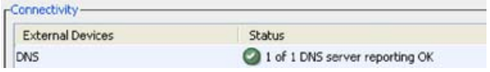
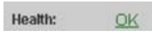
For information on configuring failover on the ProxySG, refer to the *SGOS Administration Guide (Configuring Failover)*.

Deployment Workflow

This section describes the high level steps to install and perform basic configuration on the ProxySG and the ProxyAV appliances. Before you proceed with installing the ProxyAV, install the ProxySG in the network and verify that it is functioning as a secure Web gateway. For detailed information, refer to the Quick Start Guide for your hardware platform.

Configuring and Installing the ProxySG

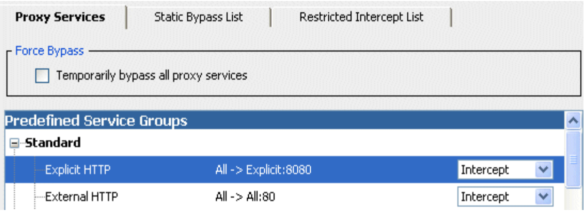
The following procedure provides high-level steps for performing the initial configuration and physical installation of the ProxySG.

Configure and Install the ProxySG		
Step 1	Rack mount the ProxySG and connect the appliance to the network.	Refer to the *ProxySG Quick Start Guide* for specific steps.
Step 2	Configure the ProxySG with basic network settings.	With a serial console connection, run the initial setup wizard. Refer to the *ProxySG Quick Start Guide* for specific steps.
Step 3	Register and license the ProxySG. Your ProxySG ships with a temporary (60-day) license. You can register your appliance at any time during that period.	To register and license your ProxySG: a. Open a Web browser and navigate to: https://support.bluecoat.com/licensing b. Enter your BlueTouch Online credentials. c. Follow the instructions to register your appliance and download a license.
Step 4	Log in to the ProxySG Management Console.	a. Open a Web browser. b. Enter the IP address you assigned to the ProxySG followed by port number 8082. For example: https://192.0.2.2:8082
Step 5	Verify a successful configuration.	In the Management Console: a. Select **Statistics > Summary > Efficiency**. Verify that each configured interface is up.  Interface Link State 0:0 ✓ Auto: 100 Mbps FDX 0:1 ✓ Auto: 100 Mbps FDX b. Click the **Device** tab. Verify connectivity to the DNS server and other external devices.  Connectivity External Devices Status DNS ✓ 1 of 1 DNS server reporting OK c. Make sure the ProxySG health status is green (OK).  Health: OK

Configure and Install the ProxySG

Step 6 Set the service to intercept, and add a rule in the Web access layer to allow this traffic.
This example intercepts explicit HTTP traffic on port 8080 and creates a rule to allows this traffic.

a. Select **Configuration > Services > Proxy Services**.



Proxy Services | Static Bypass List | Restricted Intercept List

Force Bypass

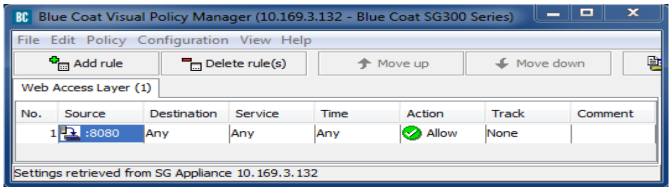
□ Temporarily bypass all proxy services

Predefined Service Groups

⊟ Standard

Explicit HTTP	All -> Explicit:8080	Intercept
External HTTP	All -> All:80	Intercept

b. Open the Visual Policy Manager (**Configuration > Policy > Visual Policy Manager > Launch**) and create a Web access layer rule that allows traffic received on the Explicit HTTP service port..



Blue Coat Visual Policy Manager (10.169.3.132 - Blue Coat SG300 Series)

No.	Source	Destination	Service	Time	Action	Track	Comment
1	:8080	Any	Any	Any	✓ Allow	None	

Settings retrieved from SG Appliance 10.169.3.132

c. Install the policy.

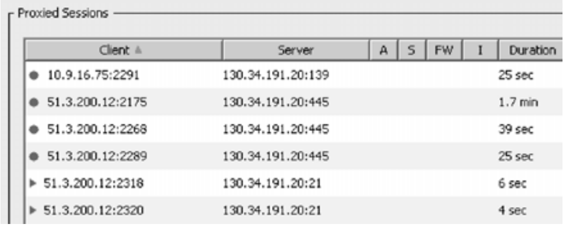
Step 7 Verify that the ProxySG is seeing network traffic.

a. Make sure there are clients running traffic.

Note: The browser must be explicitly or transparently redirected to the ProxySG appliance.

b. Select **Statistics > Sessions > Active Sessions**.

c. Click **Show**. The Proxied Sessions table should list the active sessions of current traffic.



Proxied Sessions

Client	Server	A	S	FW	I	Duration
● 10.9.16.75:2291	130.34.191.20:139					25 sec
● 51.3.200.12:2175	130.34.191.20:445					1.7 min
● 51.3.200.12:2268	130.34.191.20:445					39 sec
● 51.3.200.12:2289	130.34.191.20:445					25 sec
▸ 51.3.200.12:2318	130.34.191.20:21					6 sec
▸ 51.3.200.12:2320	130.34.191.20:21					4 sec

Step 8 If necessary, upgrade to SGOS 6.5 or later.

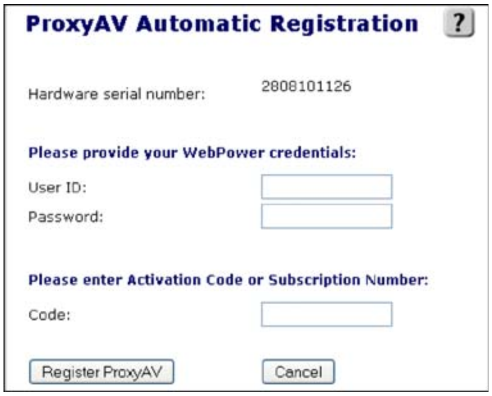
This *Integration Guide* assumes the ProxySG is running SGOS 6.5 or later.

Select **Maintenance > Upgrade**.

For details, refer to the *SGOS Administration Guide (Maintaining the ProxySG).*

Configuring and Installing the ProxyAV

The following procedure provides high-level steps for performing the initial configuration and physical installation of the ProxyAV. The ProxyAV installation should be done *after* the ProxySG installation.

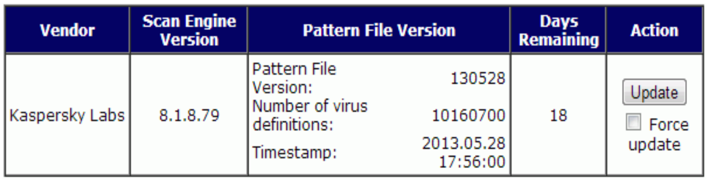
Configure and Install the ProxyAV		
Step 1	Rack mount the ProxyAV, insert the disk drive(s) if applicable for your model, connect the appliance to the network, and power on the ProxyAV.	Refer to the *ProxyAV Quick Start Guide* for specific steps.
Step 2	Configure the ProxyAV with basic network settings.	Use a serial console connection or the buttons on the ProxyAV front panel. Refer to the *ProxyAV Quick Start Guide* for specific steps. **Note** Ensure that the ProxySG and the ProxyAV are installed on the same subnet.
Step 3	Log in to the ProxyAV Management Console.	a. Open a Web browser. b. Enter the IP address you assigned to the ProxyAV followed by port number 8082. For example: https://192.0.2.3:8082
Step 4	Activate the license on the appliance.	a. Select **Licensing**. b. Click **Register**.  **ProxyAV Automatic Registration** Hardware serial number: 2808101126 Please provide your WebPower credentials: User ID: Password: Please enter Activation Code or Subscription Number: Code: c. Enter your WebPower (or BlueTouch Online) credentials. d. Enter your activation code from the e-mail received from Blue Coat. e. Click **Register ProxyAV**.

Configure and Install the ProxyAV

Step 5 Verify that you have activated the AV vendor that you purchased and obtain the most current pattern file.

a. Select **Antivirus**.

b. Verify that the license is active.

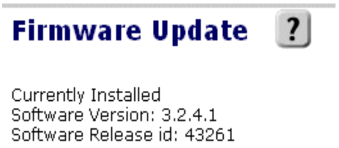


Vendor	Scan Engine Version	Pattern File Version	Days Remaining	Action
Kaspersky Labs	8.1.8.79	Pattern File Version: 130528 Number of virus definitions: 10160700 Timestamp: 2013.05.28 17:56:00	18	Update □ Force update

Step 6 If necessary, upgrade to AVOS 3.5.

This *Integration Guide* assumes the ProxyAV is running AVOS 3.5.

a. Select **Firmware Update**.



Firmware Update ?

Currently Installed
Software Version: 3.2.4.1
Software Release id: 43261

Proceed to the next chapter.

4 Configuring the ProxySG and ProxyAV Appliances

This chapter provides the configuration steps required to integrate the ProxySG and ProxyAV to perform Web malware scanning. For information on deployment topologies and for high-level guidelines and workflows to physically install the appliances into your network, see "Deployment" on page 3-9.

Note The most common deployment is to scan incoming data and downloads (responses to users' requests), which requires a response modification service. The tasks in this section describe performing malware scanning for a RESPMOD service.

Perform the following tasks to implement the Blue Coat threat protection solution:

- ❐ Task 1: (Optional) Prepare the Appliances for Secure ICAP—on page 4-22

  Skip this step if you plan to use plain ICAP.
- ❐ Task 2: Add the ProxyAV for In-Path Threat Detection—on page 4-25
- ❐ Task 3: Enable Malware Scanning—on page 4-27
- ❐ Task 4: Configure ProxyAV Scan Settings and Policies—on page 4-28
- ❐ Task 5: Test the Threat Protection Policy—on page 4-31

Task 1: (Optional) Prepare the Appliances for Secure ICAP

Blue Coat recommends using secure ICAP if you are scanning sensitive or confidential data. Secure ICAP is SSL encrypted ICAP and requires an SSL license on the ProxySG. Enabling a secure ICAP connection between the ProxyAV and the ProxySG is a two-step process that requires configuration on both the ProxySG and the ProxyAV.

For secure ICAP, you must select an SSL device profile on the ProxySG. An SSL device profile contains the information required for device authentication, including the name of the keyring with the private key and certificate.

On the ProxyAV, you must use a keyring that contains the keypair and the associated appliance certificate. The ProxyAV ships with a default keyring that contains a self-signed certificate and an automatically-generated key pair. You can either use the default keyring for secure ICAP or import a keyring signed by a well-known Certificate Signing Authority (CSA).

To perform secure ICAP communication between the ProxySG and the ProxyAV, you must complete the following tasks:

- On the ProxyAV, copy the ProxyAV appliance certificate.
- On the ProxySG:
  - Import the ProxyAV appliance certificate as a Certificate Authority (CA) certificate on the ProxySG.
  - Create a new CA Certificate List (CCL) for secure ICAP and add the newly created ProxyAV CA certificate to it.
  - Create a new SSL Device Profile for secure ICAP and select the default keyring and the CCL created for secure ICAP.
  - Configure the ICAP service to use the SSL device profile created above.

The following instructions take you through the tasks listed above.

Prepare the Appliances for Secure ICAP		
Step 1	Log in to the ProxyAV Management Console.	a. Open a Web browser. b. Enter the IP address you assigned to the ProxyAV followed by port number 8082. For example: https://192.0.2.3:8082
Step 2	Assign a port and an SSL keyring for the secure ICAP connection between the ProxyAV and the ProxySG. **Note**: To use secure ICAP, you must also select secure ICAP on the ProxySG. See Task 2: Add the ProxyAV for In-Path Threat Detection.	On the ProxyAV: a. Select **ICAP Settings**. b. In the *ICAP Server Ports* area, select **secure**. In most deployments, the default port (11344) is acceptable. If you change the port, you must specify the same port when configuring the ProxySG for ICAP scanning. c. Select an available keyring from the drop-down list. The ProxyAV includes a default keyring. If you choose the default keyring on the ProxyAV, proceed to Step 3. **Note:** If you prefer to create or import a custom keyring, go to **Advanced > SSL Keyrings** on the ProxyAV. d. Click **Save Changes**.

Prepare the Appliances for Secure ICAP

Step 3 Enable trust between the ProxyAV and the ProxySG.

If you used the default SSL device profile, you must copy the default SSL certificate from the ProxyAV on to the ProxySG.

On the ProxyAV:

a. Select **Advanced > SSL Certificates**

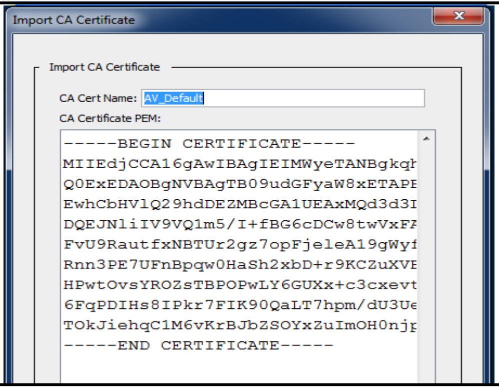
b. Copy the contents of the default certificate. Begin with. `--- BEGIN CERTIFICATE` and end at `--- END CERTIFICATE---`.

On the ProxySG:

a. Select **Configuration > SSL > CA Certificates > CA Certificates**.

b. Click **Import**. The Import CA Certificate dialog displays.

c. Add a new name and paste the contents of the default certificate into the CA Certificate PEM area. In this example, the certificate is named AV_Default.



CA Cert Name: AV_Default

CA Certificate PEM:

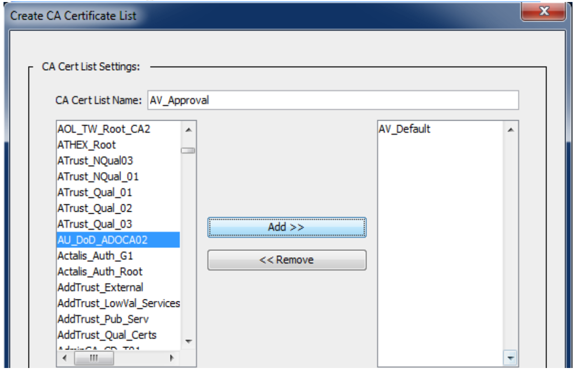
```
-----BEGIN CERTIFICATE-----
MIIEdjCCA16gAwIBAgIEIMWyeTANBgkqh
Q0ExEDAOBgNVBAgTB09udGFyaW8xETAPE
EwhCbHVlQ29hdDEZMBcGA1UEAxMQd3d3I
DQEJNliIV9VQ1m5/I+fBG6cDCw8twVxFA
FvU9RautfxNBTUr2gz7opFjeleA19gWyf
Rnn3PE7UFnBpqw0HaSh2xbD+r9KCZuXVE
HPwtOvsYROZsTBPOPwLY6GUXx+c3cxevt
6FqPDIHs8IPkr7FIK90QaLT7hpm/dU3Ue
TOkJiehqC1M6vKrBJbZSOYxZuImOH0njp
-----END CERTIFICATE-----
```

d. Click **OK** and **Apply**.

e. Select **Configuration > SSL > CA Certificates > CA Certificate Lists**.

f. Click **New**. The Creates a CA Certificate List dialog displays.

g. Add a new name and select the certificate that you added in Step c above, from the list.



CA Cert List Name: AV_Approval

AOL_TW_Root_CA2
ATHEX_Root
ATrust_NQual03
ATrust_NQual_01
ATrust_Qual_01
ATrust_Qual_02
ATrust_Qual_03
AU_DoD_ADOCA02
Actalis_Auth_G1
Actalis_Auth_Root
AddTrust_External
AddTrust_LowVal_Services
AddTrust_Pub_Serv
AddTrust_Qual_Certs

AV_Default

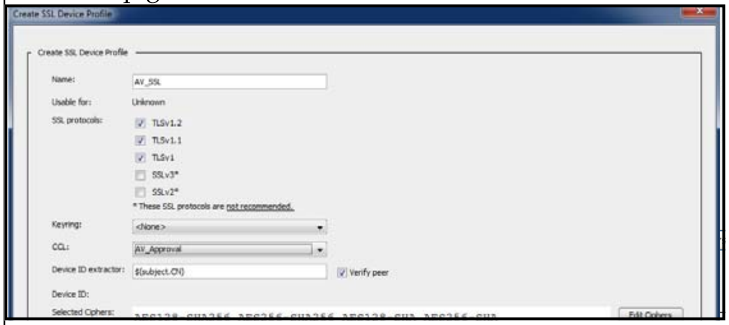
Prepare the Appliances for Secure ICAP

h. Click **Add**. The AV_Default certificate is now attached to the CCL.

i. Select **Configuration > SSL > Device Profiles**.

j. Click **New** and create a new SSL device profile.

k. Specify a new name and select the CCL that you added in Step g above.



Create SSL Device Profile

Create SSL Device Profile

Name: AV_SSL

Usable for: Unknown

SSL protocols: ☑ TLSv1.2 ☑ TLSv1.1 ☑ TLSv1 □ SSLv3* □ SSLv2*

* These SSL protocols are not recommended.

Keyring: <None>

CCL: AV_Approval

Device ID extractor: $(subject.CN) ☑ Verify peer

Device ID:

Selected Ciphers: AES128-SHA256 AES256-SHA256 AES128-SHA AES256-SHA

l. Click **OK**.

m. Click **Apply** to save your changes.

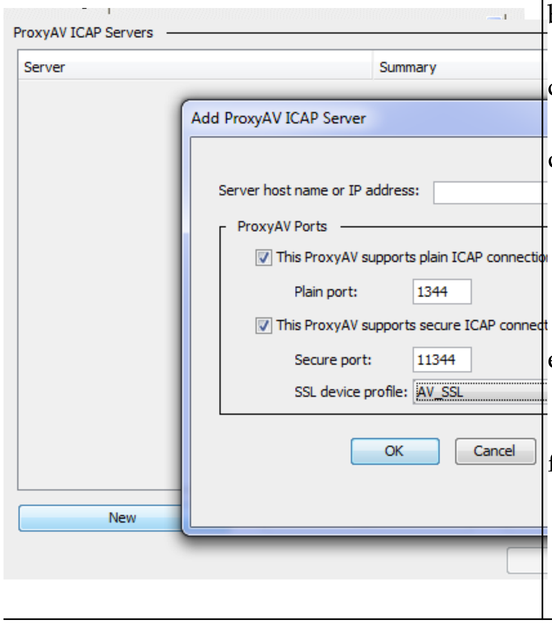
Task 2: Add the ProxyAV for In-Path Threat Detection

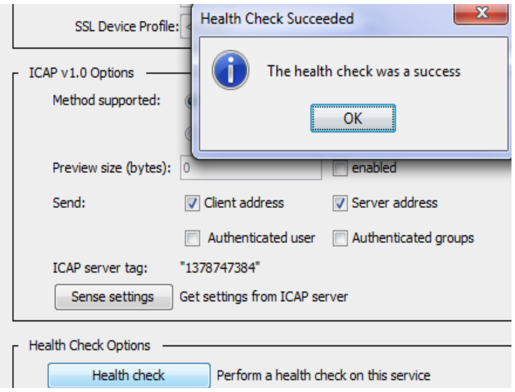
The ProxySG redirects Web responses fetched from the origin Web server to the ProxyAV before delivering the content to the user. In order to facilitate this communication, the ProxySG must be configured to communicate as an ICAP client with the ProxyAV (the ICAP server).

When you add a ProxyAV to the ProxySG, an ICAP service is automatically created. For example, the first ProxyAV configured takes the service name **proxyav1** and is a member of the **proxyav** service group. Each ProxyAV that you subsequently add is automatically listed as a member of the service group **proxyav** and is set to perform response modification.

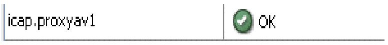
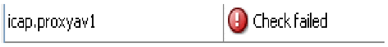
To add the ProxyAV for in-path threat detection, perform the following tasks:

- Add the ProxyAV to the ProxySG.
- Verify that the appliances are communicating.

Add the ProxyAV on the ProxySG		
Step 1	Log in to the ProxySG Management Console.	a. Open a Web browser. b. Enter the IP address you assigned to the ProxySG followed by port number 8082. For example: https://192.0.2.2:8082
Step 2	Add the ProxyAV appliance.  ProxyAV ICAP Servers Server Summary Add ProxyAV ICAP Server ProxyAV Ports OK Cancel New Server host name or IP address: ☑ This ProxyAV supports plain ICAP connectio Plain port: 1344 ☑ This ProxyAV supports secure ICAP connect Secure port: 11344 SSL device profile: AV_SSL	a. Select **Configuration > Threat Protection > Malware Scanning**. b. Select **New**. The Add ProxyAV Appliance dialog displays. c. In the **Host** field, enter the host name or IP address of the ProxyAV. Only an IPv4 address is accepted. d. Choose the connection mode(s) and ports. The default is plain ICAP on port 1344. For secure ICAP, the default secure ICAP port is 11344. If you changed the port when configuring the ProxyAV in the previous task, you must specify the same port number. e. Select the SSL Device Profile for the ICAP service. For more information, see Task 1: (Optional) Prepare the Appliances for Secure ICAP. f. Click **OK** to save your changes and exit the open dialog box. You now have **proxyav**_*number* service that is automatically created to perform response modification. For example, *proxyav1*.

Add the ProxyAV on the ProxySG		
Step 3	Verify that the ProxyAV is accessible.  SSL Device Profile: Health Check Succeeded The health check was a success OK ICAP v1.0 Options Method supported: Preview size (bytes): 0 ☐ enabled Send: ☑ Client address ☑ Server address ☐ Authenticated user ☐ Authenticated groups ICAP server tag: "1378747384" Sense settings Get settings from ICAP server Health Check Options Health check Perform a health check on this service	In External Services > ICAP, select a ProxyAV entry and click **Edit**. Click **health check** to verify that the ProxyAV is accessible. The health check result is displayed immediately.

At this point, the ProxyAV and ProxySG are configured to communicate with one another. To verify that the two appliances are communicating, look at the ICAP service health check on the ProxySG.

Verify Communication Between the ProxySG and ProxyAV		
Step 1	Log in to the ProxySG Management Console.	a. Open a Web browser. b. Enter the IP address you assigned to the ProxySG followed by port number 8082. For example: https://192.0.2.2:8082
Step 2	Check the status of the ICAP service.	a. Select **Statistics > Health Checks**. a. For the icap.proxyav1 service, look at the State. If the appliances are communicating, the State looks like this:  icap.proxyav1 ✓ OK If the appliances aren't communicating, the State looks like this:  icap.proxyav1 ! Check failed

If the ICAP health check failed:

- Go through Tasks 1 and 2 again and verify that you have followed the configuration steps properly.
- Make sure the ProxySG and ProxyAV are on the same subnet.
- Verify that the ProxySG and ProxyAV have the same ICAP service ports. On the ProxyAV, go to **ICAP Settings**. On the ProxySG, go to **Configuration > Threat Protection > Malware Scanning > Edit**.
- Make sure the ProxyAV has a valid license.

Task 3: Enable Malware Scanning

To begin content scanning after adding the ProxyAV to the ProxySG, Blue Coat provides a built-in threat protection policy with a set of predefined rules. These rules protect your network from malicious content while supporting your network performance or network protection needs.

Enabling malware scanning implements the threat protection policy on the ProxySG. The threat protection policy offers two levels for scanning ICAP responses — high performance and maximum security. While the ProxyAV scans all Web responses when set to maximum security, it selectively scans Web responses when set to high performance bypassing content that has a low risk of malware infection.

The high performance option is designed to ensure network safety while maintaining quick response times for enterprise users. For example, file types that are deemed to be low risk, such as certain image types, are not scanned when set to high performance. To view the content that is not scanned with the high performance option, in configuration mode of the CLI enter `show sources policy threat-protection`.

The threat protection policy implements the network performance rules or the network protection rules based on your preferences in the malware scanning configuration (**Configuration > Threat Protection > Malware Scanning**). That is, while the threat-protection policy itself does not change, only conditions that match your configuration settings are implemented from the threat protection policy file. And, when you change configuration, the compiled policy is automatically updated to reflect the configuration changes.

You cannot edit the built-in threat protection policy. If you would like to supplement or override the configuration in this policy, see "Fine-Tuning the Malware Scanning Policy" on page 6-57.

Enable Malware Scanning Between the ProxySG and ProxyAV		
Step 1	Log in to the ProxySG Management Console.	
Step 2	Invoke the threat protection policy.	a. Select **Configuration > Threat Protection > Malware Scanning.** b. Verify that one or more ProxyAV appliances have been added for content scanning. c. Select the **Enable malware scanning** checkbox. By default, when you enable malware scanning, the pre-selected options in the malware scanning configuration support high performance scanning using a secure ICAP connection between the ProxyAV and the ProxySG, if available, and the user is denied access to the requested content if the scan cannot be completed for any reason.
Step 3	(Optional, but recommended) Enable deferred scanning. For information on deferred scanning, see "About Deferred Scanning" on page 6-45	See "Enabling Deferred Scanning" on page 6-48.

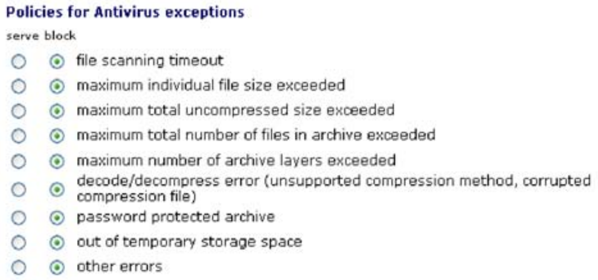
Task 4: Configure ProxyAV Scan Settings and Policies

The ProxyAV Management Console provides several options that allow you to set scanning thresholds and determine what happens when an exception—or event outside a normal scan process—occurs.

Perform the following tasks to configure scan settings and policies:

- Configure the scan settings on the ProxyAV
- (Optional) Configure scan policies by file extensions

Configure Scan Settings on the ProxyAV		
Step 1	Log in to the ProxyAV Management Console.	
Step 2	Display the Scanning Behavior page.	a. Select **Antivirus**. b. Click the **Scanning Behavior** link.
Step 3	Verify that the **Heuristic Parameters** option is enabled.	Because of the benefits it offers, Blue Coat recommends that you leave **Heuristic Parameters** at its default setting (enabled). When the **Heuristic Parameters** option is enabled, the AV appliance learns about traffic patterns on your network and adjusts accordingly to increase performance. After an initial learning period, the ProxyAV should be able to accelerate about 15 to 30 percent of the network's traffic. The learning process restarts whenever a new virus pattern file or an updated scanning engine is downloaded.
Step 4	Verify that the **Extended options** associated with detecting spyware/malware are enabled.	The option names in the **Extended options** section vary according the AV vendor engine you are using. Regardless of the option name, the behavior is as follows: **Enabled**: Scanning stops after the first instance of a virus or spyware. For Kaspersky, **Detect Adware** is enabled by default. It can be deselected, but it cannot be selected without selecting **Detect Spyware**. Disabled: Scanning stops only after the first instance of a virus is detected (spyware is disregarded).

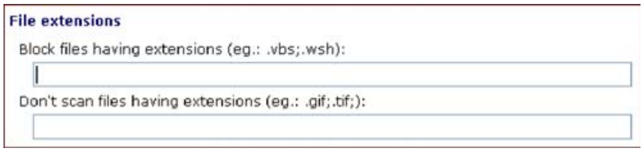
Configure Scan Settings on the ProxyAV		
Step 5	Define how the ProxyAV behaves when a timeout or other scanning error occurs.	The **Policies for Antivirus exceptions** defines whether a file is served or not when the ProxyAV is unable to scan a file. For example, it defines whether a password protected file or a file is too large to scan is served to the user. • **Block** is the default for all options. If set to block the ProxyAV responds with an ICAP 500 response to the ProxySG. In this case the ProxySG appliance’s response to the client varies depending on whether the ProxySG is configured to fail open or to fail closed. When the ProxySG is set to fail open the unscanned content is served to the client unless a policy rule states otherwise. When the ProxyAV is set to block and the ProxySG is set to fail closed, the content will never be served to the client. • If **Serve** is selected, the ProxyAV responds with an ICAP 200/204 response to the ProxySG. In this case, the unscanned file is served to the client unless you have created a rule in policy that instructs the ProxySG to serve an exception page to the client.  **Policies for Antivirus exceptions** serve block ○ ● file scanning timeout ○ ● maximum individual file size exceeded ○ ● maximum total uncompressed size exceeded ○ ● maximum total number of files in archive exceeded ○ ● maximum number of archive layers exceeded ○ ● decode/decompress error (unsupported compression method, corrupted compression file) ○ ● password protected archive ○ ● out of temporary storage space ○ ● other errors
Step 6	Save the settings.	Click **Save Changes**.

Configure Policies by File Extensions (Optional)

To accelerate the scanning process, you can specify scanning behavior on the ProxyAV based on the file name extension. For example, you can block certain file extensions that are notorious for containing viruses.

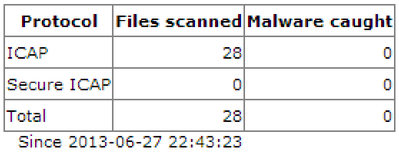
Blue Coat recommends configuring policy on the ProxySG for files that need not be scanned. This allows you to conserve resources because the ProxySG will not send these files to the ProxyAV.

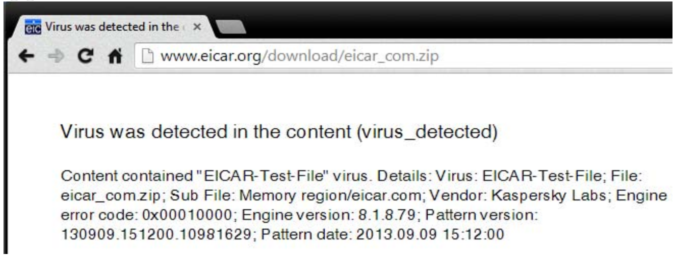
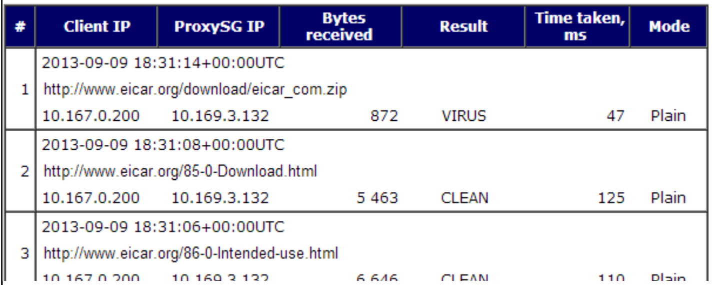
Use the following procedure to configure scanning behavior based on file extensions. For instructions on configuring file extension policy on the ProxySG, see Chapter 9, “Configuration Best Practices.”

Configuring Scanning Behavior Based on File Extensions		
Step 1	Indicate which file extensions to block and not serve to the client.	a. On the Scanning Behavior page, click the **Policies for file types** link. The Policies For File Types page displays. Locate the **File extensions** section.  File extensions Block files having extensions (eg.: .vbs;.wsh): Don't scan files having extensions (eg.: .gif;.tif;): b. In the **Block files having extensions** field, enter each file extension that should be blocked, separated by semi-colons. For example: `.vbs; .exe`
Step 2	Indicate which file extensions need not be scanned because they are unlikely to contain viruses; these file types will be served to the client without any attempt at scanning.	In the **Don't scan files having extensions** field, enter each file extension that you don't want to be scanned, separated by semi-colons. For example: `.gif; .tif` **Note** While not scanning files by extension can increase performance, it might present a security risk. This is because when a file is exempted for scanning by the file extension, the contents of the file are not inspected. So an EXE virus that is disguised as an innocuous TIF or GIF file extension, might not be scanned.
Step 3	Save the settings.	Click **Save Changes**.

Task 5: Test the Threat Protection Policy

Before proceeding with further configuration, test the basic deployment to verify the ProxyAV is scanning content and detecting malware based on your selections in configuration.

<table>
<tr><th colspan="3">Test the Policies</th></tr>
<tr><td>Step 1</td><td>Log in to the ProxyAV Management Console.</td><td></td></tr>
<tr><td>Step 2</td><td>The ProxyAV home page displays statistics about the number of files scanned and number of viruses caught.</td><td>If the home page is not already displayed, click <b>Home</b>.</td></tr>
<tr><td>Step 3</td><td>Confirm that the ProxyAV is scanning files.</td><td>Look at the ProxyAV home page:

<table>
<tr><th>Protocol</th><th>Files scanned</th><th>Malware caught</th></tr>
<tr><td>ICAP</td><td>28</td><td>0</td></tr>
<tr><td>Secure ICAP</td><td>0</td><td>0</td></tr>
<tr><td>Total</td><td>28</td><td>0</td></tr>
</table>
Since 2013-06-27 22:43:23
The <b>Files Scanned</b> value should increment as clients make Web requests. (The browser must be explicitly or transparently redirected to the ProxySG appliance.)</td></tr>
<tr><td>Step 4</td><td>Verify that the ProxyAV is configured to log ICAP requests. (You will check the log history later to make sure the test worked.)</td><td>a. Select <b>Advanced > Detailed stats > Requests history</b>.
b. Make sure that the <b>Collect last ___ requests</b> field contains a value greater than 0 (zero).
c. Click <b>Save Changes</b>.</td></tr>
<tr><td>Step 5</td><td>Log in to the ProxySG Management Console.</td><td></td></tr>
<tr><td>Step 6</td><td>Prepare the ProxySG for test validation by enabling access logging.</td><td>a. Select <b>Configuration > Access Logging > General > Default Logging</b>.
b. Enable the <b>Enable Access Logging</b> checkbox.
c. Click <b>Apply</b>.</td></tr>
<tr><td>Step 7</td><td>Display the log, so that log entries can be viewed during testing.</td><td>a. Select <b>Statistics > Access Logging > Log Tail</b>.
b. Click <b>Start Tail</b>.</td></tr>
<tr><td>Step 8</td><td>Request an “infected” test file.
<b>Note:</b> The file is not actually infected but has a virus signature that identifies it as infected for testing purposes.</td><td>a. Open a browser that is either explicitly or transparently redirected to the ProxySG.
b. Go to http://www.eicar.org.
c. Click the <b>Download Anti-Malware Testfile</b> link.
d. Read the information about the test files, and select one of the files to download (such as eicar.com).</td></tr>
</table>

<table>
<tr><th colspan="2">Test the Policies</th></tr>
<tr><td>Step 9 Confirm that you were not provided with the “infected” file.</td><td>A page should display indicating that the ProxyAV has detected a virus in the file, and that the file has been dropped.

Virus was detected in the
www.eicar.org/download/eicar_com.zip
Virus was detected in the content (virus_detected)
Content contained "EICAR-Test-File" virus. Details: Virus: EICAR-Test-File; File: eicar_com.zip; Sub File: Memory region/eicar.com; Vendor: Kaspersky Labs; Engine error code: 0x00010000; Engine version: 8.1.8.79; Pattern version: 130909.151200.10981629; Pattern date: 2013.09.09 15:12:00</td></tr>
<tr><td>Step 10 Check the ProxySG access log.</td><td>a. Go to the ProxySG’s <b>Access Log Tail</b> window.
b. Verify that the access log entry for the eicar file contains an entry for virus detection.
<pre>2009-03-12 17:39:51 382 10.9.16.75 - - virus_detected PROXIED "none"
http://www.eicar.org/anti_virus_test_file.htm 200 TCP_DENIED GET
text/html;%20charset=%220%22 http www.eicar.org 80
/download/eicar.com.txt - txt "Mozilla/4.0 (compatible; MSIE 6.0;
Windows NT 5.1; SV1; .NET CLR 2.0.50727)" 10.9.16.76 1000 383 "EICAR
test file"</pre></td></tr>
<tr><td>Step 11 Check the ProxyAV ICAP request history.</td><td>a. Go to the ProxyAV browser window.
b. Select <b>Advanced > Detailed statistics > Requests history</b>.
c. Click <b>Refresh Now</b>.
d. Locate the request for the eicar file.
e. Verify that the <b>Result</b> field contains <i>VIRUS</i>.

<table>
<tr><th>#</th><th>Client IP</th><th>ProxySG IP</th><th>Bytes received</th><th>Result</th><th>Time taken, ms</th><th>Mode</th></tr>
<tr><td>1</td><td colspan="6">2013-09-09 18:31:14+00:00UTC
http://www.eicar.org/download/eicar_com.zip</td></tr>
<tr><td></td><td>10.167.0.200</td><td>10.169.3.132</td><td>872</td><td>VIRUS</td><td>47</td><td>Plain</td></tr>
<tr><td>2</td><td colspan="6">2013-09-09 18:31:08+00:00UTC
http://www.eicar.org/85-0-Download.html</td></tr>
<tr><td></td><td>10.167.0.200</td><td>10.169.3.132</td><td>5 463</td><td>CLEAN</td><td>125</td><td>Plain</td></tr>
<tr><td>3</td><td colspan="6">2013-09-09 18:31:06+00:00UTC
http://www.eicar.org/86-0-Intended-use.html</td></tr>
<tr><td></td><td>10.167.0.200</td><td>10.169.3.132</td><td>6 646</td><td>CLEAN</td><td>110</td><td>Plain</td></tr>
</table></td></tr>
<tr><td>Step 12 Request the same “infected” test file and verify that ProxySG does not send a previously-scanned object to the ProxyAV since the response for the object is now in the ProxySG’s cache.</td><td>a. Request the same “infected” test file.
b. Go to the ProxyAV <b>Requests History</b> window.
c. Click <b>Refresh Now</b> and verify that there is NOT a second request for the eicar file. (Since the response for the object was served from the ProxySG cache, it should not have been sent to the ProxyAV for scanning.)</td></tr>
</table>

5 Monitoring ICAP Scanning

This chapter describes different ways to monitor ICAP scanning — on the ProxySG, on the ProxyAV, and in Blue Coat Reporter. It includes the following topics:

Displaying ICAP Graphs and Statistics on the ProxySG

On the ProxySG, you can display a variety of ICAP statistics in bar chart form as well as in a statistical table. Table 5-1 defines the ICAP statistics that the ProxySG tracks for each ICAP service and service group.

Note ICAP monitoring on the ProxySG requires SGOS 5.4 or higher.

Table 5-1 ICAP Statistics

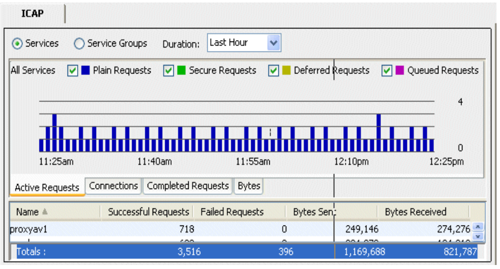
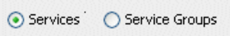
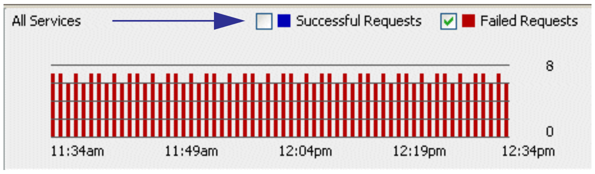
Statistic	Definition
Plain Requests	ICAP scanning transactions that are not encrypted
Secure Requests	ICAP scanning transactions that are encrypted and tunneled over SSL
Deferred Requests	ICAP scanning transactions that have been deferred until the full object has been received
Queued Requests	ICAP scanning transactions that are waiting until a connection is available
Successful Requests	ICAP scanning transactions that completed successfully
Failed Requests	ICAP scanning transactions that failed because of a scanning timeout, connection failure, server error, or a variety of other situations
Bytes Sent	Bytes of ICAP data sent to the ICAP service or service group **Note:** Bytes Sent does not include secure ICAP traffic.
Bytes Received	Bytes of data received from the ICAP service or service group
Plain Connections	Number of connections between the ProxySG and the ProxyAV across which plain ICAP scanning requests are sent **Note:** This statistic is not tracked for service groups.
Secure Connections	Number of connections between the ProxySG and the ProxyAV across which encrypted ICAP scanning requests are sent **Note:** This statistic is not tracked for service groups.

Displaying ICAP Graphs on the ProxySG

ICAP graphs can be used as diagnostic and troubleshooting tools. For instance, if the Active Requests graph shows excessive queued ICAP requests on a regular basis, this may indicate the need for a higher capacity ProxyAV.

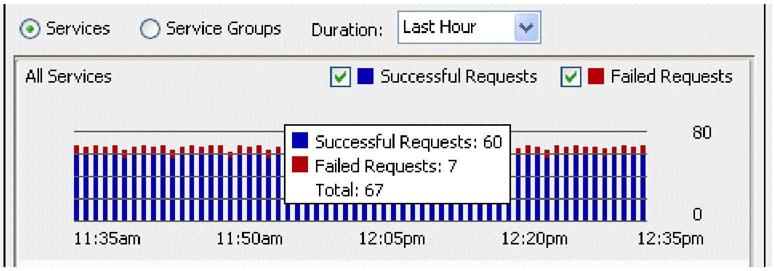
Display ICAP Graphs on the ProxySG	
Step 1 Log in to the ProxySG Management Console.	

Display ICAP Graphs on the ProxySG

Step 2	Select **Statistics > ICAP**.	The ICAP statistics screen displays.  ICAP ● Services ○ Service Groups Duration: Last Hour All Services ☑ 🟦 Plain Requests ☑ 🟩 Secure Requests ☑ 🟨 Deferred Requests ☑ 🟪 Queued Requests 4 0 11:25am 11:40am 11:55am 12:10pm 12:25pm Active Requests | Connections | Completed Requests | Bytes Name | Successful Requests | Failed Requests | Bytes Sent | Bytes Received proxyav1 | 718 | 0 | 249,146 | 274,276 Totals : | 3,516 | 396 | 1,169,688 | 821,787
Step 3	Choose what you want to graph.	Choose one of the following:  ● Services ○ Service Groups
Step 4	Select the time period to graph.	From the **Duration** drop-down list, choose from **Last Hour, Last Day**, **Last Week**, **Last Month**, or **Last Year**. Duration: Last Hour
Step 5	Select the type of graph.	Select one of the following tabs: **Active Requests** — Plain, secure, deferred, and queued active ICAP transactions (sampled once per minute) **Connections** — Plain and secure ICAP connections (sampled once per minute) **Completed Requests** — Successful and failed completed ICAP transactions **Bytes** — Bytes sent to the ICAP service and received from the ICAP service Each statistic displays as a different color on the stacked bar graph. By default, all relevant statistics are displayed.
Step 6	Select the name of what you want to graph.	In the **Name** column in the table beneath the graph, select one of the following: • Select the service name. • Select the service group name. • Select the **Totals** row (graphs all services or service groups)
Step 7	(Optional) Disable checkboxes next to any statistics you don't want displayed on the graph.	For example:  All Services □ 🟦 Successful Requests ☑ 🟥 Failed Requests 8 0 11:34am 11:49am 12:04pm 12:19pm 12:34pm

Additional Information

- While the ICAP statistics screen is displayed, you can view new graphs by selecting different services, service groups, time periods, or graph types.
- Graphs automatically refresh every minute. This may be noticeable only on graphs with the Last Hour duration.
- To see the actual statistics associated with a bar on the graph, hover the mouse pointer anywhere on the bar. A box showing the statistics and total appears at the mouse pointer.



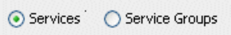
● Services ○ Service Groups Duration: Last Hour

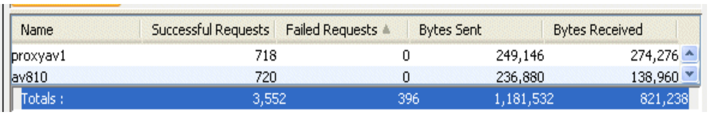
All Services ☑ 🟦 Successful Requests ☑ 🟥 Failed Requests

🟦 Successful Requests: 60
🟥 Failed Requests: 7
Total: 67

Displaying ICAP Statistical Data

If you are more interested in the data than graphs, the ICAP statistics screen displays this information as well; beneath the graph is a concise table that displays the number of successful and failed requests and number of bytes sent and received for each service or service group during the selected time period. The table also calculates totals for each statistic across all services or service groups.

<table>
<tr><th colspan="3">Display ICAP Statistical Data</th></tr>
<tr><td>Step 1</td><td>Select <b>Statistics &gt; ICAP</b>.</td><td>The ICAP statistics screen displays.</td></tr>
<tr><td>Step 2</td><td>Choose what you want to graph.</td><td>Choose one of the following:

● Services ○ Service Groups</td></tr>
<tr><td>Step 3</td><td>Select the time period to graph.</td><td>From the <b>Duration</b> drop-down list, choose from <b>Last Hour</b>, <b>Last Day</b>, <b>Last Week</b>, <b>Last Month</b>, or <b>Last Year</b>.

Duration: Last Hour</td></tr>
<tr><td>Step 4</td><td>Review the statistics.</td><td>For the time period you selected, the ProxySG displays statistics for individual services as well as totals for all services.

<table>
<tr><th>Name</th><th>Successful Requests</th><th>Failed Requests</th><th>Bytes Sent</th><th>Bytes Received</th></tr>
<tr><td>proxyav1</td><td>718</td><td>0</td><td>249,146</td><td>274,276</td></tr>
<tr><td>av810</td><td>720</td><td>0</td><td>236,880</td><td>138,960</td></tr>
<tr><td>Totals :</td><td>3,552</td><td>396</td><td>1,181,532</td><td>821,238</td></tr>
</table></td></tr>
</table>

Monitoring ICAP-Enabled Sessions on the ProxySG

For detailed information about active and errored sessions that have ICAP scanning enabled, view the Active Sessions and Errored Sessions pages. You can filter the session list to display only the ICAP-enabled sessions, so that you can easily view the ICAP state of each session (transferring, deferred, scanning, completed) and see fine-grained details (such as client IP address, server name, bytes, savings, and protocol).

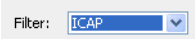
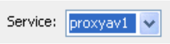
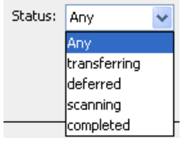
Additional ICAP filters are available as well. You can also filter by:

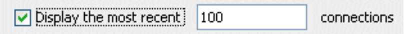
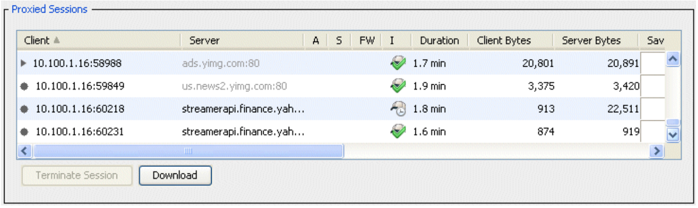
- Type of ICAP service: REQMOD (request) or RESPMOD (response)
- Service name
- ICAP status (for example, display only the deferred connections)

Note that these additional filters are optional. If you leave all the options set to **Any**, all ICAP-enabled sessions will be displayed.

Displaying Active ICAP-Enabled Sessions

By default, the Active Sessions screen displays all active sessions. When analyzing ICAP functionality, it's helpful to filter the list to display only ICAP-enabled sessions.

List ICAP-Enabled Sessions		
Step 1	Log in to the ProxySG Management Console.	
Step 2	Display active sessions.	Select **Statistics > Sessions > Active Sessions > Proxied Sessions**.
Step 3	Select the **ICAP** filter.	Use the **Filter** drop-down list.  Filter: ICAP
Step 4	(Optional) Filter by type of ICAP service.	Choose **REQMOD** or **RESPMOD**. Or choose **Any** to display both types of services.
Step 5	(Optional) Filter by service name.	Select the service name from the **Service** drop-down list, or choose **Any** to display all services.  Service: proxyav1
Step 6	(Optional) Select the ICAP state.	Choose one of the following from the Status drop-down list: **transferring**, **deferred**, **scanning**, **completed**. Or choose **Any** to display all types of connections.  Status: Any

<table>
<tr><th colspan="3">List ICAP-Enabled Sessions</th></tr>
<tr><td>Step 7</td><td>(Optional) Limit the number of connections to view.</td><td>Select <b>Display the most recent</b> and enter a number in the results field. This helps optimize performance when there is a large number of connections.

☑ Display the most recent 100 connections</td></tr>
<tr><td>Step 8</td><td>(Optional) View only the current errored proxied sessions.</td><td>Select <b>Show errored sessions only.</b></td></tr>
<tr><td>Step 9</td><td>Display the ICAP-enabled sessions.</td><td>Click <b>Show.</b> The Proxied Sessions table displays the ICAP-enabled sessions.

Proxied Sessions
<table>
<tr><th>Client ▲</th><th>Server</th><th>A</th><th>S</th><th>FW</th><th>I</th><th>Duration</th><th>Client Bytes</th><th>Server Bytes</th><th>Sav</th></tr>
<tr><td>▶ 10.100.1.16:58988</td><td>ads.yimg.com:80</td><td></td><td></td><td></td><td>✓</td><td>1.7 min</td><td>20,801</td><td>20,891</td><td></td></tr>
<tr><td>● 10.100.1.16:59849</td><td>us.news2.yimg.com:80</td><td></td><td></td><td></td><td>✓</td><td>1.9 min</td><td>3,375</td><td>3,420</td><td></td></tr>
<tr><td>● 10.100.1.16:60218</td><td>streamerapi.finance.yah...</td><td></td><td></td><td></td><td>🕒</td><td>1.8 min</td><td>913</td><td>22,511</td><td></td></tr>
<tr><td>● 10.100.1.16:60231</td><td>streamerapi.finance.yah...</td><td></td><td></td><td></td><td>✓</td><td>1.6 min</td><td>874</td><td>919</td><td></td></tr>
</table>
</td></tr>
</table>

Of particular interest in the Proxied Sessions table is the ICAP (**I**) column. This column indicates the status of the ICAP-enabled session, with unique icons identifying the ICAP status. Table 5-2 describes each of the ions.

Table 5-2 ICAP Icons

ICAP Icon	Description
(magnifying glass)	Scanning — ICAP requests are in the process of being scanned
(arrow)	Transferring — ICAP requests are being transferred to the ICAP server
(clock)	Deferred — ICAP scanning requests have been deferred until the full object has been received
(checkmark)	Completed — ICAP scanning requests completed successfully
(i)	Inactive — The ICAP feature is inactive for the session or connection
no icon	Unsupported — ICAP is not supported for the corresponding session or connection

Additional Information

Icon Tooltips—When you mouse over an ICAP icon, a tooltip displays details about the session:

- The type of ICAP service (REQMOD and/or RESPMOD)
- The name of the service
- The ICAP state (transferring, deferred, scanning, or completed), for example:

  REQMOD Service: icap1 (completed)

- When only one type of service is used for a session, the tooltip indicates whether the other type is inactive or unsupported, for example:

  RESPMOD Service: inactive

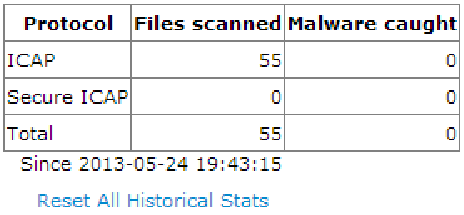
Sorting—If you click the **I** column heading, the sessions are sorted in the following order:

- Transferring
- Deferred
- Scanning
- Completed
- Inactive
- Unsupported

Viewing Statistics on the ProxyAV

The ProxyAV tracks historical and current statistics on scanned objects and found viruses.

<table>
<tr><th colspan="3">View Statistics on the ProxyAV</th></tr>
<tr><td>Step 1</td><td>Log in to the ProxyAV Management Console.</td><td></td></tr>
<tr><td>Step 2</td><td>The ProxyAV home page displays statistics about the number of files scanned and number of viruses caught. These statistics are accumulated since the last reboot of the appliance or the last reset of counters.</td><td>If the home page is not already displayed, click <b>Home</b>.</td></tr>
<tr><td>Step 3</td><td>View the statistics about number of files scanned and number of viruses caught.</td><td>In the middle of the home page:



<table>
<tr><th>Protocol</th><th>Files scanned</th><th>Malware caught</th></tr>
<tr><td>ICAP</td><td>55</td><td>0</td></tr>
<tr><td>Secure ICAP</td><td>0</td><td>0</td></tr>
<tr><td>Total</td><td>55</td><td>0</td></tr>
</table>

Since 2013-05-24 19:43:15

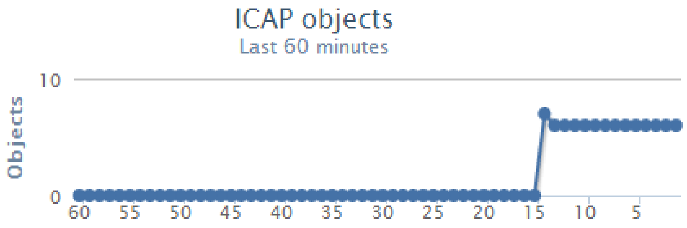
Reset All Historical Stats</td></tr>
<tr><td>Step 4</td><td>View historical data about ICAP objects and connections.</td><td>a. Select <b>Advanced > History Statistics</b>.
b. Select one of the following:

<b>ICAP Objects</b>: Number of ICAP objects received during the interval

<b>Connections</b>: Maximum number of concurrent connections made during the interval

<b>ICAP Bytes</b>: Total size in bytes of ICAP objects received during the interval
<b>CPU Usage:</b> CPU utilization for the appliance.
<b>Memory Usage:</b> Memory usage for the appliance.

For each type of statistic, graphs of three time periods are shown: last 60 minutes, last 24 hours, and last 30 days. Here’s an example of the ICAP Objects graph for the last 60 minutes:


</td></tr>
</table>

View Statistics on the ProxyAV

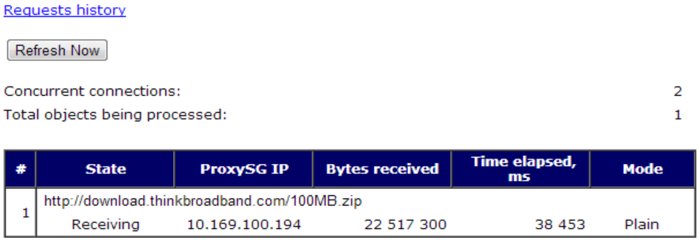
Step 5 Display details on the objects the ProxyAV is currently scanning.

a. Select **Advanced > Detailed Statistics**. The following details are displayed:

Concurrent connections: Current number of connections to the ProxyAV.

Total objects being processed: Number of objects the ProxyAV is currently scanning.

b. Click **Refresh Now** to see detailed statistics of the objects currently being scanned.



Requests history

Refresh Now

Concurrent connections: 2

Total objects being processed: 1

#	State	ProxySG IP	Bytes received	Time elapsed, ms	Mode
1	http://download.thinkbroadband.com/100MB.zip				
	Receiving	10.169.100.194	22 517 300	38 453	Plain

Step 6 Display the results of past anti-virus scans.

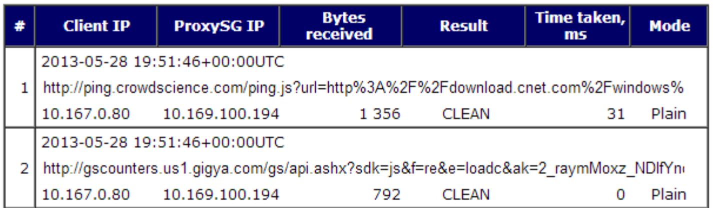
a. Select **Advanced > Detailed stats.**

b. Select **Requests History.**

c. In the **Collect last ___ requests** field, enter the number (0-1000) of requests to display in the list. When the number is set to zero, request logging is disabled.

d. Click **Save Changes**.

e. Click **Refresh Now** to obtain the most current data about processed requests.



#	Client IP	ProxySG IP	Bytes received	Result	Time taken, ms	Mode
1	2013-05-28 19:51:46+00:00UTC					
	http://ping.crowdscience.com/ping.js?url=http%3A%2F%2Fdownload.cnet.com%2Fwindows%					
	10.167.0.80	10.169.100.194	1 356	CLEAN	31	Plain
2	2013-05-28 19:51:46+00:00UTC					
	http://gscounters.us1.gigya.com/gs/api.ashx?sdk=js&f=re&e=loadc&ak=2_raymMoxz_NDlfYn					
	10.167.0.80	10.169.100.194	792	CLEAN	0	Plain

Creating Anti-Malware Reports in Blue Coat Reporter

For those using Blue Coat Reporter for their reporting needs, there are several anti-malware reports available.

Table 5-1 Anti-Virus Reports in Reporter

Reporter Version	Report Name	Description
8.3	ICAP virus IDs	Lists the IDs of detected viruses
8.3	ICAP virus URL	Lists the URL associated with each detected virus
8.3	ICAP virus user detail	Lists the client's login name or IP address associated with each detected virus
9.1	Malware Requested Blocked by Site	Lists all URLs that were blocked because of suspected malware presence
9.1	Potential Malware Infected Clients	Lists all client IP addresses that might be infected by malicious content This data is derived by the URLs requested by each client.
9.1	ProxyAV Malware Detected: Client IP	Lists each instance of malware encountered during employee Web browsing, based on the client IP address that browsed the URL
9.1	ProxyAV Malware Detected: Names	Lists the name of each malware code encountered during employee Web browsing
9.1	ProxyAV Malware Detected: Site	Lists all URLs that were detected as suspected malware sources
9.4	Malware Requests Blocked by Site	Lists all URLs that were blocked because of suspected malware presence
9.4	Potential Malware Infected Clients	Lists all client IP addresses that might be infected by malicious content
9.4	Potential Threats	Lists malware names and URL category for suspected threats
9.4	ProxyAV Malware Detected: Names	Lists detected malware by name
9.4	ProxyAV Malware Detected: Sites	Lists detected malware by the URL serving it
9.4	ProxyAV Malware Detected: Client IP	Lists detected malware and the client IP of the requesting user

6 Fine-Tuning the Configuration

This chapter describes techniques for improving the user experience during ICAP scanning (via patience pages or data trickling), ways to notify administrators about detected viruses, and several additional ICAP policies that you can implement. It also describes editing the automatically created ICAP response modification service and fine tuning the threat protection policy to meet your specific needs. It includes the following topics:

Improving the User Experience

To avoid having users abort and reinitiate their Web requests due to scanning delays, you may want to provide feedback to let users know that scanning is in progress. This feedback can take the form of a *patience page*, or you can use *data trickling* and *deferred scanning* to mitigate scanning delays. All three of these techniques are discussed below.

About Patience Pages

Patience pages are HTML pages displayed to the user if an ICAP content scan exceeds the specified duration. For example, the HTML page can display an informative message, such as

The content of the page you requested is currently being scanned. Please be patient...

You can configure the content of these pages to include a custom message and a help link. Patience pages refresh every five seconds and disappear when object scanning is complete.

Patience pages are not compatible with infinite stream connections—or live content streamed over HTTP—such as a webcam or video feed. ICAP scanning cannot begin until the object download completes. Because this never occurs with this type of content, the ProxySG continues downloading until the maximum ICAP file size limit is breached. At that point, the ProxySG either returns an error or attempts to serve the content to the client (depending on fail open/closed policy). However, even when configured to fail open and serve the content, the delay added to downloading this large amount of data is often enough to cause the user to give up before reaching that point. See Chapter 9: Configuration Best Practices for some alternate solutions.

About Data Trickling

Patience pages provide a solution to appease users during relatively short delays in object scans. However, scanning relatively large objects, scanning objects over a smaller bandwidth pipe, or high loads on servers might disrupt the user experience because connection timeouts occur. To prevent such time-outs, you can allow data trickling to occur. Depending on the trickling mode you enable, the ProxySG either trickles—or allows at a very slow rate—bytes to the client at the beginning of the scan or near the very end.

The ProxySG begins serving server content without waiting for the ICAP scan result. However, to maintain security, the full object is not delivered until the results of the content scan are complete (and the object is determined to not be infected).

Note This feature is supported for HTTP/HTTPS connections only; data trickling for FTP connections is not supported.

Trickling Data From the Start

In *trickle from start* mode, the ProxySG buffers a small amount of the beginning of the response body. As the ProxyAV continues to scan the response, the ProxySG allows one byte per second to the client.

After the ProxyAV completes its scan:

- If the object is deemed to be clean (no response modification is required), the ProxySG sends the rest of the object bytes to the client at the best speed allowed by the connection.

- If the object is deemed to be malicious, the ProxySG terminates the connection and the remainder of the response object bytes are not sent to the client.

This method is the more secure option because the client receives only a small amount of data pending the outcome of the virus scan. However, the drawback is that users might become impatient, especially if they notice the browser display of bytes received. They might assume the connection is poor or the server is busy, close the client, and restart a connection.

Trickling Data at the End

In *trickle at end* mode, the ProxySG sends the response to the client at the best speed allowed by the connection, except for the last 16 KB of data. As the ProxyAV performs the content scan, the ProxySG allows one byte per second to the client.

After the ProxyAV completes its scan, the behavior is the same as described in "Trickling Data From the Start" on page 6-44.

Blue Coat recommends this method for media content, such as Flash objects. This method is more user-friendly than trickle at start because users tend to be more patient when they notice that 99 percent of the object is downloaded. Therefore, they are less likely to perform a connection restart. However, network administrators might perceive this method as the less secure method, as a majority of the object is delivered before the results of the ICAP scan.

Deciding Between Data Trickling and Patience Pages

Depending upon the type of traffic, the ProxySG configuration options plus policy allow you to provide different ICAP feedback actions:

- For *interactive* traffic, that is a request involving a Web browser, you can use either data trickling or a patience page.
- For *Non-interactive traffic,* that is a request that originates from a non-browser based application, such as automatic software download or update client, patience pages are incompatible; You can choose to use data trickling or to provide no feedback to the user.
- Trickling is not supported with native FTP traffic. However, when trickling is enabled globally in the ICAP service configuration, patience pages are supported with the proceeding policy:
  <Proxy>
  service.name=FTP response.icap_feedback.interactive(patience_page, 5)

Based on whether your enterprise places a higher value on security or availability, the ProxySG allows you to choose between patience pages and data trickling.

About Deferred Scanning

The deferred scanning feature helps to avoid network outages due to infinite streaming.

Infinite streams are connections such as webcams or Flash media—traffic over an HTTP connection—that conceivably have no end. Characteristics of infinite streams may include no content length, slow data rate and long response time. Because the object cannot be fully downloaded, the ICAP content scan cannot start; however, the connection between the ProxySG and the ProxyAV remains open, causing a wastage of finite connection resources.

With deferred scanning, ICAP requests that are unnecessarily holding up ICAP connections are detected and deferred until the full object has been received.

How Deferred Scanning Works

When the number of ICAP resources in use has reached a certain threshold, the ProxySG starts deferring scanning of the oldest outstanding ICAP requests. Once the defer threshold has been reached, for every new ICAP request, the ProxySG defers the oldest ICAP connection that has not yet received a full object.

The defer threshold is specified by the administrator as a percentage. For example, if the defer threshold is set to 70 percent and the maximum connections are set to 100, then up to 70 connections are allowed before the ProxySG begins to defer connections that have not finished downloading a complete object.

When an ICAP connection is deferred, the connection to the ProxyAV is closed. The application response continues to be received; when the download is complete, the ICAP request is restarted. The new ICAP request may still be queued if there are no available ICAP connections. Once a request is deferred, the ProxySG waits to receive the full object before restarting the request. If there is a queue when a deferred action has received a complete object, that action is queued behind other deferred actions that have finished. However, it will be queued before other new requests.

Deferred Scanning and Setting the Feedback Options

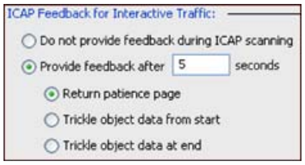
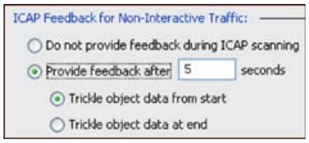
Depending on how you configure the ICAP feedback option (patience page or data trickling) and the size of the object, deferred scanning may cause a delay in ICAP response because the entire response must be sent to the ProxyAV at once.

If a patience page is configured, the browser continues to receive a patience page until the object is fully received and the outstanding ICAP actions have completed.

If the data trickle options are configured, the object continues to trickle during deferred scanning. However, due to the trickle buffer requirement, there may be a delay, with or without deferred scanning, before the ProxySG starts sending a response.

Configuring ICAP Feedback

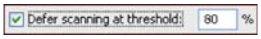
Use the following steps to configure the global feedback settings.To define additional feedback policy that applies to specific user and conditional subsets, you must use the **Return ICAP Feedback object** in the Web Access Layer of the Visual Policy Manager.

Configure ICAP Feedback for Interactive and Non-Interactive Traffic		
Step 1	Log in to the ProxySG Management Console.	
Step 2	Specify the amount of time to wait before notifying a Web-browser client that an ICAP scan is occurring.	a. Select **Configuration > External Services > ICAP > ICAP Feedback**. b. Locate the **ICAP Feedback for Interactive Traffic** section.  ICAP Feedback for Interactive Traffic: ○ Do not provide feedback during ICAP scanning ● Provide feedback after 5 seconds ● Return patience page ○ Trickle object data from start ○ Trickle object data at end c. Enter a value in the **Provide feedback after ___ seconds** field.
Step 3	Select the feedback method for interactive (browser-based) traffic.	Choose one of the following: - **Return patience page** (HTTP and FTP patience pages are available) - **Trickle object data from start** (more secure form of trickling) - **Trickle object data at end** (this form of trickling provides a better user experience)
Step 4	For non-interactive traffic, specify the amount of time to wait before notifying a client than an ICAP scan is occurring.	a. Locate the **ICAP Feedback for Non-Interactive Traffic** section.  ICAP Feedback for Non-Interactive Traffic: ○ Do not provide feedback during ICAP scanning ● Provide feedback after 5 seconds ● Trickle object data from start ○ Trickle object data at end b. Enter a value in the **Provide feedback after ___ seconds** field.
Step 5	Select the feedback for non-interactive traffic.	Choose one of the following: - **Trickle object data from start** - **Trickle object data at end**
Step 6	Save the settings.	Click **Apply**.

To customize the text on HTTP and FTP patience pages, select **Configuration > External Services > ICAP > ICAP Patience Page**. Note: for FTP transactions to be able to use a patience page, policy using the gesture `response.icap_feedback.interactive(patience_page, 5)` is required.

Enabling Deferred Scanning

The steps for enabling scanning deferral and setting its threshold appear below.

Enable Scanning Deferral for an ICAP Service		
Step 1	Log in to the ProxySG Management Console.	
Step 2	Edit the ICAP service.	a. Select **Configuration > External Services > ICAP > ICAP Services**. b. Select the ICAP service. c. Click **Edit**. The Edit ICAP Service window appears.
Step 3	Enable scanning deferral.	a. Select **Defer scanning at threshold** to enable the defer scanning feature.  ☑ Defer scanning at threshold: 80 % b. Enter a value (0-100) to set the threshold at which the ProxySG defers the oldest ICAP connection that has not yet received a full object.
Step 4	Save the settings.	a. Click **OK** to close the Edit ICAP Service window. b. Click **Apply**.

To continue with integrating the ProxyAV and the ProxySG , go to “Task 4: Configure ProxyAV Scan Settings and Policies” on page 4-28.

To continue with fine-tuning the configuration, go to the next section.

Configuring Alerts

The ProxySG and the ProxyAV can notify network administrators about detected viruses. Because the ProxyAV has options for notifying administrators about blocked and unscanned files, in addition to detected viruses, this section focuses on configuring notification on the ProxyAV.

In addition to or as an alternative to e-mail notification, you can enable logging on the ProxyAV. When logging is enabled, each configured alert is recorded in an alert log that you can view at any time.

The ProxyAV allows you to enable notification for the following alerts:

- Virus is found: A virus was found in an ICAP session.
- File was passed through without being scanned: Several settings on the Antivirus page enable the administrator to allow files to pass through ProxyAV unscanned. For example, there is an antivirus file scanning timeout.
- File was blocked (exclude virus case): A file is blocked for any reason other than a virus infection. For example, the administrator decides to block password protected compressed files.
- Subscription Expiring: Your license to use the antivirus software on the ProxyAV requires annual renewals. The ProxyAV reminds you when the end of the subscription period is approaching.
- Firmware update failed: The firmware update failed due to an error in retrieving or installing the latest image.
- Firmware update succeeded: A new version of the ProxyAV firmware has been installed.
- License update failed: An attempt to update the antivirus engine license failed.
- License update succeeded: A new license has been installed. Information about the vendor and validity of the license will be logged or sent to the e-mail address configured, if alerts are enabled.
- Antivirus update failed: The antivirus pattern file update failed. Enable alerts to receive information on the reason for the failure.
- Antivirus update succeeded: The antivirus pattern file has been updated.
- On Board Diagnostics: If the state of a monitored ProxyAV appliance metric changes, and that metric is selected to trigger an alert or SNMP trap, an alert or SNMP trap is sent.
- Intelligent Connection Traffic Monitoring (ICTM): If the maximum specified concurrent slow connection warning or critical thresholds are reached, an alert is sent.

To configure alerts, perform the following tasks:

- Select the types of alerts that you want to be notified about.
- Configure e-mail notification.

Selecting Alert Types

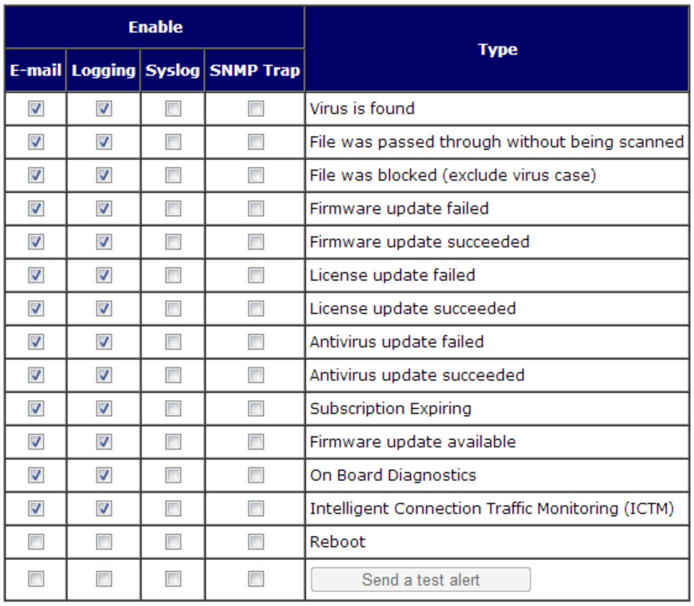
Select the types of alerts for which you want notification and/or alert log entries.

Select Alert Types		
Step 1	Log in to the ProxyAV Management Console.	

Select Alert Types

Step 2 Select which alerts you want e-mail notification and/or alert log entries created.

a. Select **Alerts**. The Alerts table appears. By default, all alerts are enabled for e-mail and logging.



Enable				Type
E-mail	Logging	Syslog	SNMP Trap	
☑	☑	□	□	Virus is found
☑	☑	□	□	File was passed through without being scanned
☑	☑	□	□	File was blocked (exclude virus case)
☑	☑	□	□	Firmware update failed
☑	☑	□	□	Firmware update succeeded
☑	☑	□	□	License update failed
☑	☑	□	□	License update succeeded
☑	☑	□	□	Antivirus update failed
☑	☑	□	□	Antivirus update succeeded
☑	☑	□	□	Subscription Expiring
☑	☑	□	□	Firmware update available
☑	☑	□	□	On Board Diagnostics
☑	☑	□	□	Intelligent Connection Traffic Monitoring (ICTM)
□	□	□	□	Reboot
□	□	□	□	Send a test alert

b. Enable/disable alerts as desired. The first three pertain to scanning results:
Virus is found
File was passed through without being scanned
File was blocked

Step 3 Save the settings.

Click **Save Changes**.

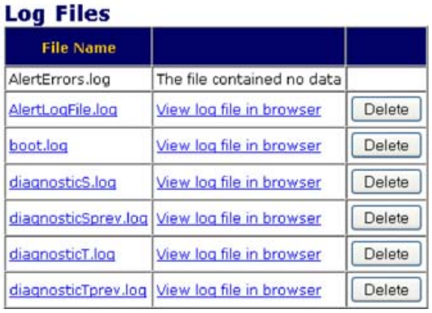
Select Alert Types

Step 4 If you enabled logging, you can verify that alerts are being recorded in the AlertLogFile.log.

To view the alert log on the ProxyAV:

a. Select **Log Files**.

b. In the Log Files table, select **View log file in browser** for the **AlertLogFile.log**.



Log Files

File Name		
AlertErrors.log	The file contained no data	
AlertLogFile.log	View log file in browser	Delete
boot.log	View log file in browser	Delete
diagnosticS.log	View log file in browser	Delete
diagnosticSprev.log	View log file in browser	Delete
diagnosticT.log	View log file in browser	Delete
diagnosticTprev.log	View log file in browser	Delete

In the **AlertLogfile.log**, a log entry for a blocked file displays as:

```
ATEXT=Cause: Maximum file size exceeded (engine error code:
0x00000000)

File has been dropped.

2013-05-28 20:18:02+00:00UTC
Hardware serial number: 1612105013
ProxyAV (Version 3.5.1.1(111017)) - http://www.BlueCoat.com/
Antivirus Vendor: Kaspersky Labs
Scan Engine Version: 8.1.8.79
Pattern File Version: 130528.185900.10161366 (Timestamp:
2013.05.28 18:59:00)


Machine name: ProxyAV
Machine IP address: 10.169.100.195
Server: 80.249.99.148
Client: 10.167.0.80
Protocol: ICAP

URL: http://download.thinkbroadband.com/1GB.zip
```

Configuring E-mail Notification

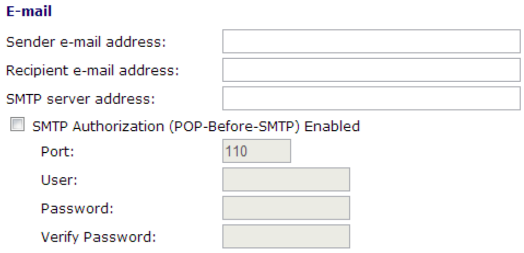
Use the following instructions to configure e-mail notification.

Configure Notification Settings on the ProxyAV

Step 1 Log in to the ProxyAV Management Console.

Configure Notification Settings on the ProxyAV

Step 2 Specify e-mail addresses.



E-mail

Sender e-mail address:

Recipient e-mail address:

SMTP server address:

☐ SMTP Authorization (POP-Before-SMTP) Enabled

Port: 110

User:

Password:

Verify Password:

a. Select **Alerts > Alert Settings**.

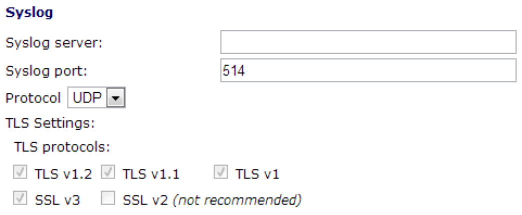
b. In the **Sender e-mail address** field, enter the source mail address to use for alert e-mails. (This address will appear in the From field of the e-mail.) For example: `proxyav123@company.com`

c. In the **Recipient e-mail address** field, enter the addresses of the people who should receive the alert e-mails, with each address separated by a comma. For example: `user1@company.com,user2@company.com, consultant@another.com`

d. In the **SMTP server address** field, enter your organization's SMTP server address.

e. If your server requires that POP authentication be used, select **SMTP Authorization (POP-Before-SMTP) Enabled**, and then enter the authentication information.

Step 3 Enter the SYSLOG server settings.



Syslog

Syslog server:

Syslog port: 514

Protocol UDP

TLS Settings:

TLS protocols:

☑ TLS v1.2 ☑ TLS v1.1 ☑ TLS v1

☑ SSL v3 ☐ SSL v2 *(not recommended)*

a. In the **Syslog server address** field, enter the IP address for your organization's Syslog server.

b. The port can be changed in the **Syslog port** field. The default port for Syslog, (514) is already entered for you.

c. If your Syslog server supports secure connections, enable them under **TLS Settings**.

Step 4 Save the settings.

Click **Save Changes**.

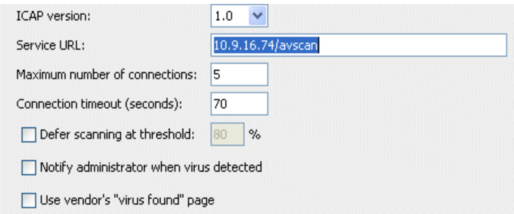
Modifying the ICAP Service

When you add a ProxyAV, a response modification ICAP service is automatically created for you. If you would like to edit the defaults for this RESPMOD service, use the instructions provided in this section.

Modify a ProxySG ICAP Service		
Step 1	Log in to the ProxySG Management Console.	
Step 2	Edit the ICAP service.	a. Select **Configuration > External Services > ICAP > ICAP Services**. b. Select the ICAP service name, for example, proxyav1. c. Click **Edit**. The Edit ICAP Service dialog displays.

Modify a ProxySG ICAP Service

Step 3 Configure the service communication options.



ICAP version: 1.0

Service URL: 10.9.16.74/avscan

Maximum number of connections: 5

Connection timeout (seconds): 70

☐ Defer scanning at threshold: 80 %

☐ Notify administrator when virus detected

☐ Use vendor's "virus found" page

a. In the **Service URL** field, enter the URL of the ProxyAV.

The URL includes the scheme, the ProxyAV's hostname or IP address, and the ICAP service name. For example: icap://10.10.10.10/avscan

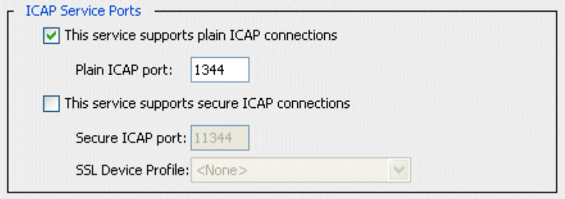
b. **Maximum number of connections** specifies the maximum possible connections at any given time that can occur between the ProxySG and the ProxyAV. *Do not change this value—use the* **Sense settings** *button to auto-detect the correct value that your platform supports*.

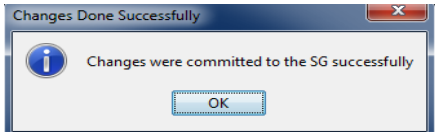
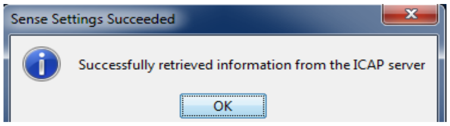
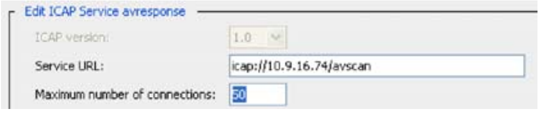
c. In the **Connection timeout** field, enter the number of seconds the ProxySG waits for replies from the ProxyAV. The default timeout is 70 seconds, but you will likely want it set to a higher value because large (several hundred MB) archives can easily take more than 70 seconds. If the ProxyAV gets a large file that takes more then the configured timeout to scan, the ProxySG will close the connection and the user will not get the file. The value you enter for the timeout is related to the maximum file size configured on the ProxyAV; larger file sizes require longer to scan so the connection timeout should be higher. If you allow only 100 MB file sizes, 70 seconds would be a sufficient timeout value. But if you allow 2 GB files, a timeout value of 70 would be too low. The range is 1 to 65535.

d. Select **Defer scanning at threshold** to set the threshold at which the ProxySG defers the oldest ICAP connection that has not yet received a full object. By default, the deferred scanning threshold is disabled when an ICAP service is created. When enabled, the defer threshold scanning defaults to 80 percent. For more information about scanning deferral, see "About Deferred Scanning" on page 6-45.

e. Select **Notify administrator when virus detected** to send an e-mail to the administrator if the ICAP scan detects a virus. The notification is also sent to the Event Log and the Event Log e-mail list. Note that the ProxyAV also has settings for notifying administrators when a virus is detected; this configuration is explained in "Configuring Alerts" on page 6-49.

f. Select **Use vendor's "virus found" page** to display the default vendor error exception page to the client instead of the ProxySG exception page.

Modify a ProxySG ICAP Service		
Step 4	Configure service ports for plain ICAP and/or secure ICAP. For more information on configuring secure ICAP, see Task 1: (Optional) Prepare the Appliances for Secure ICAP.	You can enable one or both types of ICAP connections at the same time.  ICAP Service Ports ☑ This service supports plain ICAP connections Plain ICAP port: 1344 □ This service supports secure ICAP connections Secure ICAP port: 11344 SSL Device Profile: <None> For plain ICAP: a. Select **This service supports plain ICAP connections**. Use plain ICAP when you are scanning plain data (HTTP). In this case, if the HTTPS proxy is enabled on the ProxySG, the data is decrypted first on the ProxySG and then sent to the ICAP server. b. Enter a port number in the **Plain ICAP port** field. The default port is 1344. For secure ICAP: a. Select **This service supports secure ICAP connections** to use secure ICAP. b. Enter a port number in the **Secure ICAP port** field. The default port is 11344. c. Select a valid SSL profile for secure ICAP in the **SSL Device Profile** field. This associates an SSL device profile with the secure ICAP service.
Step 5	Determine whether you need to use the preview feature.	• If you are using file scanning policies based on file extensions on the ProxyAV, enter 0 in the **Preview size (bytes)** field, and select **enabled**. With a 0 bytes preview size, only response headers are sent to the ProxyAV; more object data is only sent if requested by the ProxyAV. *or* • If you have enabled the Kaspersky Apparent Data Types feature on the ProxyAV, enter a value (512 is recommended) in the **Preview size (bytes)** field, and select **enabled**. The ProxyAV reads the object up to the specified byte total, and then either continues with the transaction (that is, receives the remainder of the object for scanning) or opts out of the transaction. *or* • Unselect **enabled** if the above two situations don't apply to you; do not use the preview option.

Modify a ProxySG ICAP Service		
Step 6	Determine the maximum number of connections that your ProxySG/ProxyAV can support.	a. Click **Sense settings**. b. Click **OK** to confirm.  Changes Done Successfully Changes were committed to the SG successfully c. Click **OK** to confirm your changes. If the **Sense settings** command was able to retrieve the settings from the ProxyAV, you will see the following message:  Sense Settings Succeeded Successfully retrieved information from the ICAP server d. Click **OK**.
Step 7	Refresh your browser to see the maximum number of connections that were “sensed.”	a. Click your browser’s refresh button. b. Edit the response service you created and look at the value that was entered for **Maximum number of connections**.  Edit ICAP Service avresponse ICAP version: 1.0 Service URL: icap://10.9.16.74/avscan Maximum number of connections: 50
Step 8	Save your modifications.	Click **OK**.

Fine-Tuning the Malware Scanning Policy

When malware scanning is enabled, the threat protection policy is invoked. The rules implemented in the threat protection policy either use the defaults or the selections that you configured in the malware scanning options in **Configuration > Threat Protection > Malware Scanning**.

Unlike other policy files, the threat protection policy file is not displayed in the **Policy Evaluation Order** list in **Policy > Policy Options > Policy Options** and the threat protection policy file cannot be edited or modified. However, you can create rules in the local policy file or in VPM policy to supplement or override the configured defaults. The rules created in local or VPM policy supersede the configuration in the threat protection policy because of the evaluation order of policy files. By default on the ProxySG, policy files are evaluated in the following order — Threat protection, VPM, Local, Central, and Forward.

The threat protection policy is evaluated before the VPM, Local, Central, or Forward policy to provide you with the flexibility to adapt this policy to meet your business needs. For example, even if the malware scanning mode is configured at maximum protection through configuration, you can create rules in VPM to allow all traffic from internal hosts/subnets to be scanned using the high performance mode. Alternatively, if the default malware scanning mode is high performance, you can add rules in VPM to invoke maximum protection mode for sites that belong to select content filtering categories such as software downloads or spyware sources.

The following example demonstrates how to create rules in VPM to complement the malware scanning options that are set in configuration. The setting in configuration, in the example below, uses maximum security. The VPM rule allows internal traffic to be scanned using the high performance rules that are defined in the threat protection policy.

Fine-Tune the Malware Scanning Policy		
Step 1	Log in to the ProxySG Management Console.	
Step 2	Verify that malware scanning is enabled and is set to **Maximum protection.**	a. Select **Configuration > Threat protection > Malware Scanning.** b. Verify that the **Enable malware scanning** checkbox is selected. c. Verify that the **Protection level** is set to **Maximum protection.** This setting is global for all ICAP scanning between the ProxySG and the ProxyAV.

Fine-Tune the Malware Scanning Policy

Step 3 Create policy to scan all traffic from an internal host using the high performance mode.
This example uses the 10.0.0.0/8 subnet.

a. Select **Configuration > Policy > Visual Policy Manager.**

b. Click **Launch**. The Visual Policy Manager displays in a new window.

c. Select **Policy > Add Web Content Layer**.

d. In the **Action** column, right click and select **Set**. The Set Action Object dialog box displays.

e. Click **New > Set Malware Scanning**, in the **Set Action Object** dialog box. The Add Malware Scanning Object dialog displays.

f. Select **Perform high performance malware scan**.

g. Click **OK** to save your changes and exit all open dialogs.

h. In the **Destination** column, right click and select **Set**. The Set Destination Object dialog box displays.

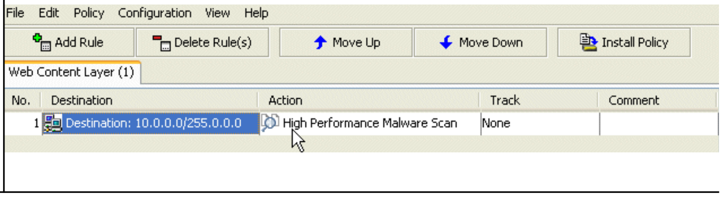
i. Select **Destination IP Address/Subnet.** The Set Destination IP/Subnet Object dialog displays.

j. Add the IP address and subnet for the internal host and click **Close**.

k. Click **OK** to save your changes and exit all open dialogs.

l. Click **Apply** to install the policy.
After this policy is installed, all traffic from the internal subnet 10.0.0.0/8 will be scanned using the high performance mode.

The completed rule is shown below.



No.	Destination	Action	Track	Comment
1	Destination: 10.0.0.0/255.0.0.0	High Performance Malware Scan	None	

Creating User-Based ICAP Policy

An ICAP service defines the parameters for setting up the transaction between the ProxySG and the ProxyAV. And ICAP policy allows you to specify an action for a specified service or service group; these are granular rules that can be based on individual users, user groups, protocol or other attributes and can make exceptions to the general rule. For example, you may want to allow administrators to download certain file types (such as EXE files) that are blocked for other users.

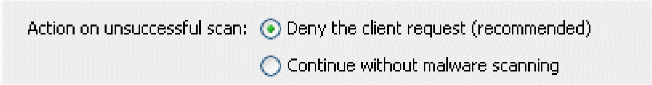
To set up user-based ICAP policies, you must complete the following tasks:

1. Add a ProxyAV; an ICAP response service is automatically created. If you have already added a ProxyAV, verify that an ICAP response service is available.
2. Enable malware scanning and verify that the **Action on unsuccessful scan** is set to **Deny the client request**.
3. Create a Web authentication layer that prompts for user credentials when a Web browser is opened.
4. Create a Web access layer with authorization rules that allow certain users access to blocked files and deny access to other users.

Note These steps assume you have already configured users and groups for authentication (using RADIUS, LDAP, Microsoft Active Directory, or other authentication servers) and created a realm on the ProxySG to connect to these servers.

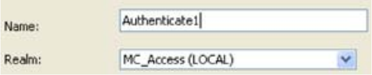
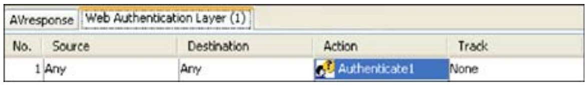
Creating the ICAP Response Service

The first task is to create the ICAP response service; you may already have created one earlier.

Create the ICAP Response Service		
Step 1	Log in to the ProxySG Management Console.	
Step 2	Create an ICAP response service.	Refer to "Task 2: Add the ProxyAV for In-Path Threat Detection" on page 4-25.
Step 3	Enable Malware scanning.	Refer to "Task 3: Enable Malware Scanning" on page 4-27. Make sure that the action on an unsuccessful ICAP scan is set to deny the client request, that is the request is not allowed if the scan cannot be completed.  Action on unsuccessful scan: ● Deny the client request (recommended) ○ Continue without malware scanning You will now create policy to specify exceptions to the default rule.

Enabling Web Authentication

To have users prompted for user name and password when they open a Web browser, you need to create a Web authentication layer.

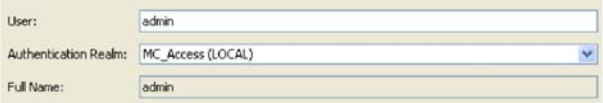
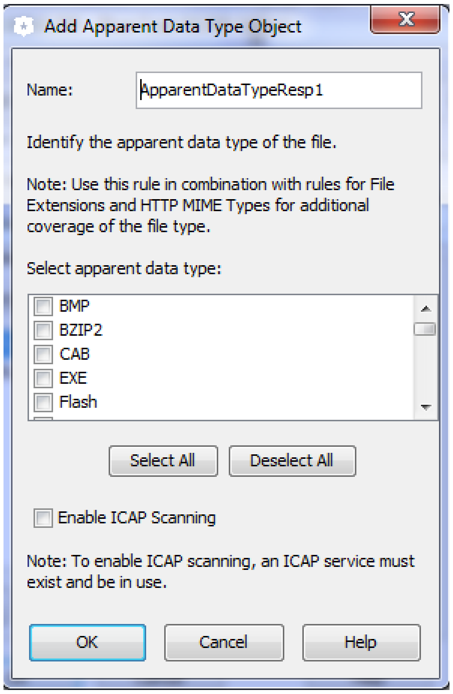
Create a Rule that Prompts for Web Authentication		
Step 1	The Visual Policy Manager should still be open.	
Step 2	Create a Web authentication layer.	a. Select **Policy > Web Authentication Layer**. b. Accept the proposed name or assign a descriptive name to the layer. c. Click **OK**.
Step 3	Configure an authentication action.	a. Right-click the Action column; select **Set**. The Set Action Object dialog displays. b. Click **New**. c. Select **Authenticate**. The Add Authenticate Object dialog displays.
Step 4	Specify the realm name for authentication.	a. In the **Name** field, accept the proposed name or type a descriptive name for the object. b. In the **Realm** drop-down list, select the name of the previously-configured realm.  Name: Authenticate1 Realm: MC_Access (LOCAL) c. Click **OK**; click **OK** again to add the object.  AVresponse | Web Authentication Layer (1) No. Source Destination Action Track 1 Any Any Authenticate1 None

Creating Authorization Rules

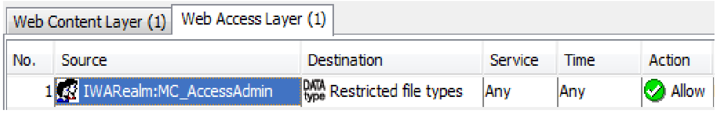
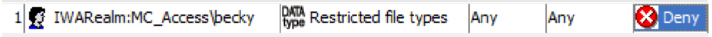
Create a rule that designates which users/groups are allowed access to blocked file types and which users/groups are denied access.

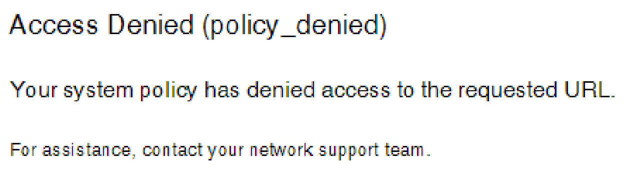
Create Rules for Allowing/Denying Access to Blocked File Types		
Step 1	The Visual Policy Manager should still be open.	
Step 2	Create a Web access layer.	a. Select **Policy > Web Access Layer**. b. Accept the proposed name or assign a descriptive name to the layer. c. Click **OK**.

Create Rules for Allowing/Denying Access to Blocked File Types

Step	Description	Procedure
Step 3	Create a user object for the user you want to allow access to blocked file type. **Note:** If you have created user groups and want to create rules based on groups instead of individual users, you can create a group object instead of a user object. Follow the steps to the right, except specify group information.	a. Right-click the Source column; select **Set**. The Set Source Object dialog displays. b. Click **New**. c. Select **User**. The Add Apparent Data Type displays. d. In the **User** field, type the user name. **Note:** Case is significant for local realms. e. In the **Authentication Realm** drop-down list, select the name of the previously-configured realm.  User: admin Authentication Realm: MC_Access (LOCAL) Full Name: admin f. Click **OK**; click **OK** again to add the object.
Step 4	In SGOS 6.5 and later, the destination policy object, **Set Apparent Data Type** can be used to identify the types of files contained within an archive, after scanning that data for malware. Based on the rest of the policy, this can be used to control the types of files the users and groups you configured in step 3 can download, even if those files are contained within an archive, (such as zip, gz or rar archive types).	a. Right-click the Destination column; select **Set**. The Set Service Object dialog displays. b. Click **New**. c. Select **Add Apparent Data Type.** The Add Apparent Data Type Object dialog displays. d. Choose the file types you wish to permit for this set of users from the list  Add Apparent Data Type Object Name: ApparentDataTypeResp1 Identify the apparent data type of the file. Note: Use this rule in combination with rules for File Extensions and HTTP MIME Types for additional coverage of the file type. Select apparent data type: □ BMP □ BZIP2 □ CAB □ EXE □ Flash Select All Deselect All □ Enable ICAP Scanning Note: To enable ICAP scanning, an ICAP service must exist and be in use. OK Cancel Help e. Select **Enable ICAP Scanning** at the bottom of the dialog box. f. In the **Name** field, change the name to *Restricted file types*. g. Click **OK**; click **OK** again to add the object.

Create Rules for Allowing/Denying Access to Blocked File Types

Step 5	Indicate that this user should be allowed access to blocked file types.	a. Right-click the Action column; select **Allow**. The Set Service Object dialog displays. The rule should look similar to the following:  Web Content Layer (1) Web Access Layer (1) No. Source Destination Service Time Action 1 IWARealm:MC_AccessAdmin Restricted file types Any Any Allow
Step 6	In the same Web access layer, create a rule for another user/group. This rule will deny access to the user/group.	a. Click **Add Rule**. A new rule row displays. b. Right-click the source field, click **Set**. Select **User** or **Group** and browse for the user or group that will not be permitted to download the restricted file types identified in step 5. Click OK to save this user or group as the source for the rule. c. Right-click the destination column; select **Set**. The Set Service Object dialog displays. d. From the existing service objects, select ***Restricted File Types*** e. Click **OK** to add the object. The rule should look similar to the following:  1 IWARealm:MC_Access\becky Restricted file types Any Any Deny Note that the default action is **Deny**, so it is already correctly set.
Step 7	Create other users/groups to whom you want to allow or deny access.	Follow the above steps to create appropriate rules in the Web access layer.
Step 8	Install the policy (all layers).	a. Click **Install Policy**. b. Click **OK**. c. Close the VPM window.

Create Rules for Allowing/Denying Access to Blocked File Types		
Step 9	Test the policy.	Users who have an Allow rule will be able to access URLs that point to blocked file types or have archive files containing a blocked file type (for instance, a ZIP file that contains an EXE file). Users who have a Deny rule will see a screen similar to the following when attempting to access a blocked file type:  Access Denied (policy_denied) Your system policy has denied access to the requested URL. For assistance, contact your network support team.

Implementing a Request Modification ICAP Service

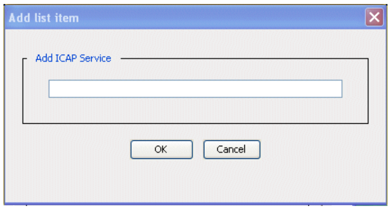
ICAP response modifications for incoming traffic are used for virus protection; ICAP request modifications for outgoing traffic are used for data leak protection (DLP) in Forward Proxy deployments and for AV and Malware scanning in Reverse Proxy deployments.

1. Create an ICAP service on the ProxySG for request modification.
2. Create a policy for the ICAP Request service for data leak protection on outbound traffic.
3. Test the policy.

Note The same client request can have request modification applied before it is forwarded to the origin-content server and response modification applied as the object data returns.

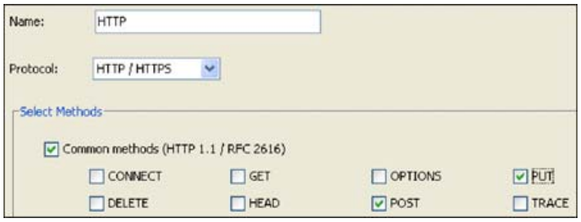
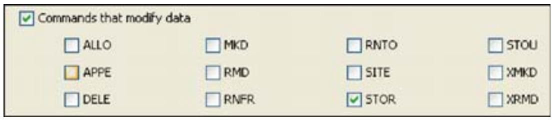
Creating an ICAP Request Service

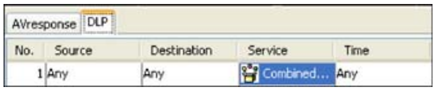
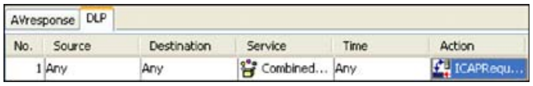
Follow these general steps for creating an ICAP request modification service.

Create the ICAP Request Modification Service		
Step 1	Log in to the ProxySG Management Console.	
Step 2	Create a new ICAP service.	a. Select **Configuration > External Services > ICAP > ICAP Services**. b. Click **New**.  c. Assign a descriptive name to the service. For example, *DLP or ReverseProxy*AV. d. Click **OK**. The new ICAP object displays in the services list.
Step 3	Edit the new service.	a. Select the newly added service and click **Edit**, to edit the service. b. For the **Service URL**, enter the URL of the ProxyAV. The URL includes the scheme, the ProxyAV's hostname or IP address, and the ICAP service name. For example: icap://10.10.10.10/avscan c. Select **request modification** for the ICAP method. d. Change other settings as required. For details on configuring the options on the service, see "Modifying the ICAP Service" on page 6-53. e. Click **Sense settings** to auto detect the maximum number of ICAP connections that are supported by the ProxyAV.

Creating an ICAP Request Policy - Forward Proxy/DLP

Configure the policy for ICAP requests. The ICAP request mode is used to scan an outgoing request for Forward Proxies where internal user requests can be subjected to URL filtering, anti-virus scanning or data leak prevention. In the following example, the ICAP request will scan all outbound HTTP, HTTPS, FTP connections and will prevent you from uploading a virus to a public FTP server.

Configure the ICAP Request Policy		
Step 1	Create a Web access layer.	a. Select **Policy > Web Access Layer**. b. Assign a descriptive name to the layer (for example, *DLP*). c. Click **OK**.
Step 2	Create an HTTP/HTTPS service object for the request policy.	a. Right-click the Service column; select **Set**. The Set Service Object dialog displays. b. Click **New**. c. Select **Protocol Methods**. The Add Methods Object dialog displays. d. Name the protocol method *HTTP* and select **HTTP/HTTPS** from the **Protocol** list. e. In the *Common methods* section, select the **POST** and **PUT** checkboxes, and click **OK**.  Name: HTTP Protocol: HTTP / HTTPS Select Methods ☑ Common methods (HTTP 1.1 / RFC 2616) □ CONNECT □ GET □ OPTIONS ☑ PUT □ DELETE □ HEAD ☑ POST □ TRACE
Step 3	Create an FTP service object.	a. In the Set Action Object dialog, click **New**. b. Select **Protocol Methods**. The Add Methods dialog displays. c. Name the protocol method *FTP* and select **FTP** from the **Protocol** list. d. In the *Commands that modify data* section, select the **STOR** checkbox, and click **OK**.  ☑ Commands that modify data □ ALLO □ MKD □ RNTO □ STOU □ APPE □ RMD □ SITE □ XMKD □ DELE □ RNFR ☑ STOR □ XRMD

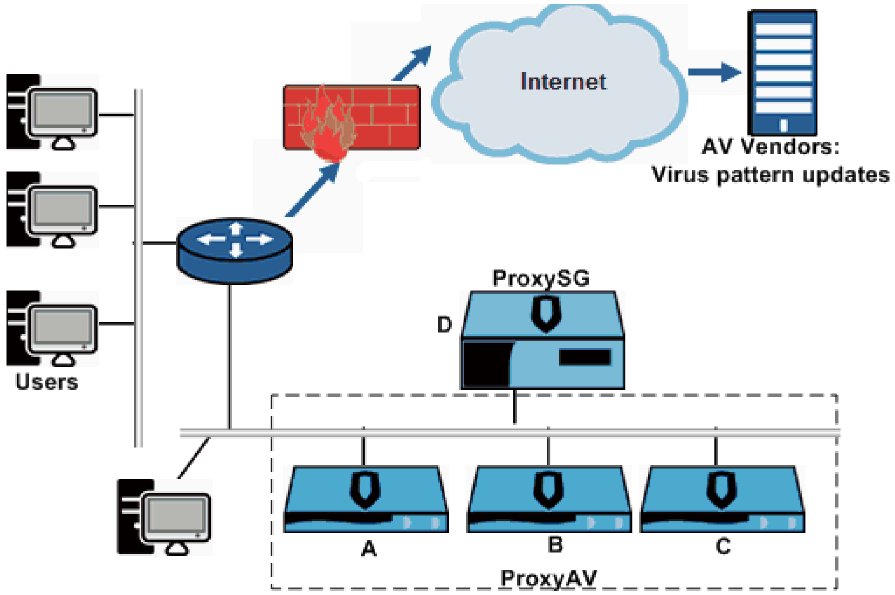
Configure the ICAP Request Policy		
Step 4	Create a combined (HTTP and FTP) service object.	a. In the Set Action Object dialog, click **New**. b. Select the *HTTP* object and click **Add**. c. Select the *FTP* object and click **Add**. d. Click **OK**. e. Click **OK** again to set the Combined Service object as the Web Access Layer service.  AVresponse | DLP No. | Source | Destination | Service | Time 1 | Any | Any | Combined... | Any
Step 5	Set the action for the Request policy.	a. Right-click the Action column and select **Set**. b. Click **New** and select **Set ICAP Request Service**. The Add ICAP Request Service Object dialog appears. c. Select the *DLP* ICAP Request service and click **Add**. d. Click **OK**. e. Click **OK** again.  AVresponse | DLP No. | Source | Destination | Service | Time | Action 1 | Any | Any | Combined... | Any | ICAPRequ...
Step 6	Install the policy (all layers).	a. Click **Install Policy**. b. Click **OK**. c. Close the VPM window.

7 Load Balancing Between Multiple ProxyAV Appliances

This chapter describes how to set up load balancing of scanning requests when your deployment includes multiple ProxyAV appliances. It includes the following topics:

About ICAP Service Groups

A ProxySG ICAP service is a named entity that identifies the ProxyAV, the ICAP method, and the supported number of connections. A *service group* is a named set of ICAP services. You will need to create service groups when you are using multiple ProxyAV appliances to process a large volume of scanning requests (load balancing).



Legend:

A: AV1; a ProxyAV with 10 maximum connections and a specified weight of 1.
B: AV2; a ProxyAV with 10 maximum connections and a specified weight of 1.
C: AV3, a ProxyAV with 25 maximum connections and a specified weight of 3.
D: A ProxySG with a Service Group named AV_Reponse that contains AV1, AV2, and AV3.

Figure 7-1 ICAP service group of three ProxyAV ICAP servers.

Your deployment can have multiple ProxySG appliances, each using an identical ICAP service group of multiple ProxyAV appliances.

To help distribute and balance the load of scanning requests when the ProxySG is forwarding requests to multiple services within a service group, the ProxySG uses an intelligent load balancing algorithm. When deciding which service in the service group to send a scanning request, this algorithm takes into consideration the following factors:

- Number of requests that are in a “waiting” state on each service (a request is in this state when it has been sent to the service but the response hasn’t been received)
- Number of unused connections available on each service (calculated by subtracting the number of active transactions from the connection maximum on the server)
- The user-assigned weight given to each server (see "Weighting" below)

Weighting

Weighting determines what proportion of the load one ProxyAV bears relative to the others. If all ProxyAV servers have either the default weight (1) or the same weight, each share an equal proportion of the load. If one server has weight 25 and all other servers have weight 50, the 25-weight server processes half as much as any other server.

Before configuring weights, consider the capacity of each server. Factors that could affect assigned weight of a ProxyAV include the following:

- The processing capacity of one ProxyAV in relationship to other ProxyAV appliances (for example, the number and performance of CPUs or the number of network interface cards).
- The maximum number of connections configured for the service. The maximum connections setting pertains to how many simultaneous scans can be performed on the server, while weighting applies to throughput in the integration. While these settings are not directly related, consider both when configuring weighted load balancing.

Note External services (ICAP, Websense off-box) have a reserved connection for health checks. This means that as the load goes up and the number of connections to the external service reaches the maximum, with additional requests being queued up and waiting, the maximum simultaneous connections is actually one less than the limit.

Having appropriate weights assigned to your services is critical when all ProxyAV servers in a service group become overloaded. As servers reach their capacity, proper weighting is important because requests are queued according to weight.

One technique for determining weight assignments is to start out by setting equal weights to each service in a group; then, after several thousand requests, make note of how many requests were handled by each service. For example, suppose there are two services in a group: Service A handled 1212 requests, Service B handled 2323. These numbers imply that the second service is twice as powerful as the first. So, the weights would be 1 for Service A and 2 for Service B.

Setting the weight value to 0 (zero) disables weighted load balancing for the ICAP service. Therefore, if one ProxyAV of a two-server group has a weight value of 1 and the second a weight value of 0, should the first ProxyAV go down, a communication error results because the second ProxyAV cannot process the request.

Load Balancing

When load balancing between services, how does the ProxySG decide which ICAP service to send a scanning request to? For each service, it calculates an index by dividing the number of waiting transactions by the server weight (think of this as wait/weight). The ICAP service with the lowest index value will handle the new ICAP action, assuming that the service has an available connection to use. If it does not, it will send the request to the service with the next lowest index value that has a free connection.

Load will be distributed among services proportionally according to their configured weights until the maximum connection limit is reached on all services.

Example 1

Service A and B are in the same service group.

- Service A can handle up to 50 connections, is assigned a weight of 1, has 17 active transactions, with 5 transactions in the waiting state. The index is calculated by dividing the wait by the weight: 5/1 = 5.
- Service B can handle up to 100 connections, is assigned a weight of 2, has 17 active connections, with 15 waiting transactions. The index is 15/2 = 7.5.

Which service will the ProxySG assign the next ICAP action? Service A because it has a lower index.

Example 2

Service C and D are in the same service group.

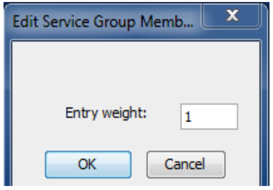
- Service C can handle up to 5 connections, is assigned a weight of 1, has 5 active transactions, with 1 transaction in the waiting state. The index is 1/1=1.
- Service D can handle up to 10 connections, is assigned a weight of 1, has 7 active transactions, with 5 waiting transactions. The index is 5/1=5.

To which service will the ProxySG assign the next ICAP action? Although Service C has a lower index than Service D, it does not have any available connections; therefore, the ProxySG will assign the next ICAP action to Service D which has several free connections.

Specifying Weight within an ICAP Service Group

An ICAP service group is automatically created when you add one or more ProxyAV appliances to the ProxySG. For example, the proxyav service group includes all response modification services configured on the ProxySG.

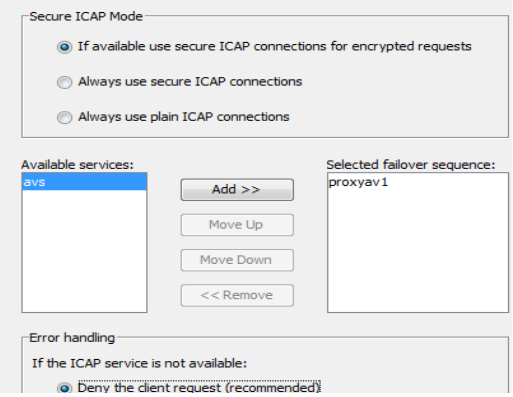
To load balance, each service in the service group must be assigned a weight. This weight value specified determines the number of requests that will be directed to each ProxyAVin the service group.

Assigning Weights to an ICAP Service Group		
Step 1	Log in to the ProxySG Management Console.	
Step 2	Edit the service group to assign a weight to each service on the group.	a. Select **Configuration > External Services > Service Groups**. b. Select the service group and click **Edit**; the Edit Service Group dialog displays. c. Select a service and click **Edit**; the Edit Service Group Member dialog appears.  Entry weight: 1 d. In the **Entry Weight** field, assign a weight value. The valid range is 0-255. e. Repeat steps a and b for each service in the group. f. Click **OK** to close the dialog. g. Click **OK** again to close the Edit Service Group Entry dialog. h. Click **Apply**.

Creating Load Balancing Policy

An ICAP response load balancing policy is essentially the same as a standard ICAP response policy; the only difference is that you specify the *service group* as the response service object instead of the *service*.

Using the ICAP load balancing policy, the ProxySG sends ICAP response modification requests to ProxyAV appliances in the service group. The load carried by each ProxyAV in the group is determined by the weight values that you assigned in the previous task.

Configure Load Balancing Policy		
Step 1	Log in to the ProxySG Management Console.	
Step 2	Launch the VPM.	a. Select **Configuration > Policy > Visual Policy Manager.** b. Click **Launch**.
Step 3	Create a Web content layer.	a. Select **Policy > Web Content Layer**. b. Assign a descriptive name to the layer (for example, *avcluster*). c. Click **OK**.
Step 4	Create an action for the rule.	a. Right-click the Action column; select **Set**. The Set Action Object dialog displays. b. Click **New**. c. Select **Set ICAP Response Service**. The Add ICAP Response Service Object dialog displays.
Step 5	Configure the response service group object.	a. Select **If avaliable use secure ICAP connections** for the secure ICAP mode. b. In the *Available services* list, select the response service group and click **Add**.  Secure ICAP Mode ● If available use secure ICAP connections for encrypted requests ○ Always use secure ICAP connections ○ Always use plain ICAP connections Available services: avs Selected failover sequence: proxyav1 Error handling If the ICAP service is not available: ● Deny the client request (recommended) c. In the Error Handling section, select **Deny the client request**. d. Click **OK**; click **OK** again to add the object.
Step 6	Install the policy.	a. Click **Install Policy**. b. Click **OK**. c. Close the VPM window.

8 Configuring ProxyAV Failover

This chapter describes how to use two ProxyAV appliances to provide redundancy in case the primary ProxyAV fails. It includes the following topics:

About ProxyAV Failover

Failover is the capability to switch over automatically to a redundant or secondary appliance when the primary appliance fails. To ensure that your network is always protected from malware threats, you can deploy two ProxyAV appliances on the same subnet and configure ICAP processing to fail over to the second appliance if the primary ProxyAV goes down.

When creating an ICAP policy, you specify a list of ICAP services to use, in order of preference. If the first service in the list does not pass the health checks, the ProxySG uses the next healthy service on the list to perform the scanning. This alternate ProxyAV is called the *standby* server.

The primary ProxyAV resumes ICAP processing when the next health check is successful; the standby ProxyAV does not retain the primary responsibility.

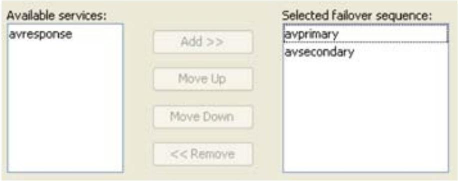
Notes

- Failover is configured as part of the ICAP policy definition.
- You cannot configure failover policy until ICAP services are configured on the ProxySG.
- To avoid errors, ICAP service names cannot be named fail_open or fail_closed (the CLI commands prevent these names from being created).

Creating ProxyAV Failover Policy

A ProxyAV failover policy is similar to a standard ICAP response policy, except that you add *two* services to the policy (one for each ProxyAV). The order in which you select the services determines which ProxyAV is considered the primary server and which is considered the standby server: the primary should be selected first. The ICAP failover policy tells the ProxySG to use the primary ProxyAV for all ICAP scanning. If the primary server fails, the ProxySG will the use the standby ProxyAV for scanning until the primary server is healthy again.

The following procedure assumes that you have already created an ICAP service for each ProxyAV. (See "Task 2: Add the ProxyAV for In-Path Threat Detection" on page 4-25.) Note that the services must be of the same type (for instance, response modification).

Configure the ProxyAV Failover Policy		
Step 1	Log in to the ProxySG Management Console.	
Step 2	Launch the VPM.	a. Select **Configuration > Policy > Visual Policy Manager.** b. Click **Launch**.
Step 3	Create a Web content layer.	a. Select **Policy > Web Content Layer**. b. Assign a descriptive name to the layer (for example, *avfailover*). c. Click **OK**.
Step 4	Create an action for the rule.	a. Right-click the Action column; select **Set**. The Set Action Object dialog displays. b. Click **New**. c. Select **Set ICAP Response Service**. The Add ICAP Response Service Object dialog displays.
Step 5	Configure the response service group object.	a. Select **Use ICAP response service**. b. In the *Available services* list, select the primary ProxyAV service and click **Add**. c. In the *Available services* list, select the secondary (standby) ProxyAV service and click **Add**.  Available services: avresponse Selected failover sequence: avprimary avsecondary d. Select **Deny the client request**. e. Click **OK**; click **OK** again to add the object.
Step 6	Install the policy.	a. Click **Install Policy**. b. Click **OK**. c. Close the VPM window.

9 Configuration Best Practices

This chapter describes strategies for improving scanning performance. It includes the following topics:

Conserving Scanning Resources

HTTP Web objects range from very small to very large in size, and for each scanned object, a scanning resource (connection) is used on the ProxyAV. Some objects, referred to as *infinite streams* or *slow downloads*, do not have finite object ends. For example, a stock ticker is an infinite data stream that is transmitted over HTTP using a Web browser.

Since the ProxyAV has a finite number of ICAP connections available at any given time, attempting to scan this type of data can potentially consume significant time and ProxyAV resources (potentially slowing other scans)—until an error is returned. If allowed to continue, these transfers fail with one of the following ICAP error codes:

- Maximum file size exceeded
- Scan timeout

The default configuration of the ProxyAV triggers such errors after the file size exceeds 100MB or after 800 seconds of scanning. While these settings are appropriate for other types of Web objects, they don't work for infinite streams such as Web cams and stock tickers. To conserve system resources and prevent scanning of infinite streams, select solution A, B or C listed below. Each solution offers a different approach and should not be used concurrently.

Solution A: No-Scan Policy

To enhance user satisfaction and achieve maximum performance from the ProxyAV, many customers choose not to scan data streams that are known to cause issues. One benefit of this policy is reduced load on the ProxyAV. The risk is that the exemption could potentially allow malicious content to slip viruses through unscanned.

Note If you have enabled deferred scanning as recommended in "Task 3: Enable Malware Scanning" on page 4-27, this policy is not required. The deferred scanning capability on the ProxyAV prevents scanning of excessively large or slow downloads.

This policy assumes that the ICAP response rule is already defined; the actions in the policy will reset it back to (no) upon an attempt to scan a streaming object or an object that shouldn't be scanned.

The policy looks for very long content or objects in which no content length is provided; these are signs that this object may tie up ProxyAV resources. The policy also looks for common infinite streaming media types as well as user agents that are known to cause scanning problems. In addition, the policy defines URL domains that shouldn't be scanned (such as finance.google.com and youtube.com) because they are known to contain infinite streams.

Install a No Scan Policy for Slow Downloads	
Step 1 Download the CPL text file.	a. Copy the policy text after this procedure to your clipboard. b. Paste it into a text document and save it to your desktop or other convenient location. c. Modify the policy to meet your requirements. For example, you can add URL domains that you know contain infinite streams.

Install a No Scan Policy for Slow Downloads		
Step 2	Log in to the ProxySG Management Console.	
Step 3	Install the policy file.	a. Select **Configuration > Policy > Policy Files**. b. From the **Install Local File** from drop-down list, select **Text Editor**. c. Click **Install**. A browser window displays the Edit and Install the Local Policy File page. d. Open your CPL file and copy the text. e. Return to the Edit and Install the Local Policy File page, and paste the contents of the file at the end of the local policy file on your ProxySG. f. Click **Install**. A dialog displays, informing you whether the installation was successful. If necessary, correct any errors in the file and reinstall it.

CPL Code for No-Scan Policy

```
;--------------START ICAP Best Practices NO-SCAN CPL as of 2FEB15
;ICAP Best Practices CPL is designed to be placed in local policy
;which, by default, is evaluated after other policy files (such as VPM).
;This CPL assumes there is a preceeding "response.icap_service(icap_service_name)"
;rule, already parsed in a prior policy file. The following
;policy negates the "response.icap_service" rule, based on the following conditions

<Cache>
delete_on_abandonment(yes)

<Proxy>
request.header.User-Agent="ProxyAV" response.icap_feedback.interactive(no)

<Cache>
condition=NOICAP condition=http_https_scheme response.icap_service(no)


define condition http_https_scheme
   url.scheme=http
   url.scheme=https
end condition http_https_scheme

define condition MisBehaving_Old_UserAgents
   request.header.User-Agent="Winamp"
   request.header.User-Agent="NSPlayer"
   request.header.User-Agent="RMA"
   request.header.User-Agent="ultravox"
   request.header.User-Agent="itunes"
   request.header.User-Agent="forest"
   request.header.User-Agent="Scottrader"
   request.header.User-Agent="SVN"
end condition MisBehaving_Old_UserAgents

define condition HTTPv0.9_UserAgents
   http.response.version=0.9 condition=MisBehaving_Old_UserAgents
end condition HTTPv0.9_UserAgents

define condition NO_or_LARGE_CONTENT_LENGTH
   ;note- the following line is correct- do NOT add .* between quotes
   response.header.Content-Length=!"" ;true if Content-Length header is not present
   response.header.Content-Length=!"^[0-9]{1,8}$" ;>99,999,999
end condition NO_or_LARGE_CONTENT_LENGTH

define condition Bad_response_for_ICAP
   condition=NO_or_LARGE_CONTENT_LENGTH
   condition=HTTPv0.9_UserAgents
   condition=MEDIA_MIME_TYPES
   url.domain=//streamerapi.finance.yahoo.com ;
   ; Yahoos stock ticker problem -15sep06
   url.domain=//streamerapi.finance.yahoo.com
   url.domain=//stream.aol.com
   url.domain=//finance.google.com
   ; Other streaming media exceptions
   url.domain=//youtube.com
   url.domain=//pandora.com
end condition Bad_response_for_ICAP

define condition MEDIA_MIME_TYPES
   response.header.Content-Type="video/"
   response.header.Content-Type="application/streamingmedia"
   response.header.Content-Type="application/x-streamingmedia"
   response.header.Content-Type="application/vnd.rn"
   response.header.Content-Type="application/ogg"
   response.header.Content-Type="application/x-ogg"
   response.header.Content-Type="audio/"
   response.header.Content-Type="multipart/x-mixed-replace"
end condition MEDIA_MIME_TYPES

define condition Not_ICAP_response
   ;note- the following line is correct- do NOT add .* between quotes
   response.x_header.X-Virus-ID=!"" ;true if X-Virus-ID header is not present
end condition Not_ICAP_response

define condition NOICAP
   ;Negate ICAP service only if the OCS response is undesirable
   condition=Bad_response_for_ICAP condition=Not_ICAP_response
end condition NOICAP
;--------------END ICAP Best Practices NO-SCAN CPL
```

Solution B: Scan-Until-Error Policy

Some administrators choose to wait for one of the symptomatic errors (*Maximum file size exceeded* or *Scan timeout*) to occur and then serve the data stream unscanned. This approach ensures that all data is still sent to the ProxyAV—thus, the maximum amount of scanning can occur.

The downside to this approach is that all requests for infinite data streams must reach the maximum file size or scan timeout configured on the ProxyAV. If a sufficient number of concurrent requests for such data streams occur, the request queue will slow or delay other traffic.

This policy example serves the data stream if the error is *Maximum file size exceeded* or *Scan timeout*; other errors are denied. Blue Coat has written the CPL for this policy and you can download the file, customize it for your own needs, and install it on your ProxySG.

Install a Scan-Until-Error Policy		
Step 1	Download the CPL text file.	a. Copy the text after this procedure. b. Save the file to a text file on your desktop or other convenient location. c. Replace ***<resp_service>*** with the name of your ICAP response service name. d. Modify the policy to meet your requirements.
Step 2	Log in to the ProxySG Management Console.	
Step 3	Install the policy file.	a. Select **Configuration > Policy > Policy Files**. b. From the **Install Local File** from drop-down list, select **Text Editor**. c. Click **Install**. A browser window displays the Edit and Install the Local Policy File page. d. Open your CPL file and copy the text. e. Return to the Edit and Install the Local Policy File page, and paste the contents of the file at the end of the local policy file on your ProxySG. f. Click **Install**. A dialog displays, informing you whether the installation was successful. If necessary, correct any errors in the file and re-install it.

CPL Code for Scan-Until-Error Policy

```
;--------------START ICAP Best Practices SCAN-UNTIL-ERROR CPL
; edit the <resp_service> below to be the name of your ICAP respmod service name
<cache>
response.icap_service(<resp_service>, fail_open)

<proxy>
condition=!maxfilesizeexceeded_or_scantimeout_errors_or_none exception(icap_error)

define condition maxfilesizeexceeded_or_scantimeout_errors_or_none
   icap_error_code=max_file_size_exceeded
   icap_error_code=scan_timeout
   icap_error_code=none
end condition maxfilesizeexceeded_or_scantimeout_errors_or_none
;--------------END ICAP Best Practices SCAN-UNTIL-ERROR CPL
```

Solution C: Scan-And-Serve Policy

This solution uses the ICAP Mirroring policy action, introduced in SGOS 6.5. This policy action allows you to serve content for known, difficult-to-handle data types (such as stock tickers or media streams without end, also known as "infinite streams") directly to users, without needing to have them wait for the ProxyAV to scan portion or the complete stream before it is served to their browser. When invoked, this policy action opens two connections - one to serve the file to the requesting user and another to one to the ICAP server to be scanned.

The target for this solution is ProxySG/ProxyAV deployments that require all data to be scanned for company or governmental regulations. All data will be scanned, but with no delay for the user. If a threat is detected during scanning while the user is still accessing the data, the user's connection will be terminated.

Similar to the "No Scan" policy, the Scan-and-Serve policy ensures that all data is sent to the ICAP server.

Install a Scan and Serve Policy for Slow Downloads		
Step 1	Download the CPL text file.	a. Copy the text after this procedure into your system clipboard. b. Paste the contents of the clipboard into a text file on your desktop or other convenient location. c. Modify the policy to meet your requirements.
Step 2	Log in to the ProxySG Management Console.	
Step 3	Install the policy file.	a. Select **Configuration > Policy > Policy Files**. b. From the **Install Local File** from drop-down list, select **Text Editor**. c. Click **Install**. A browser window displays the Edit and Install the Local Policy File page. d. Open your CPL file and copy the text. e. Return to the Edit and Install the Local Policy File page, and paste the contents of the file at the end of the local policy file on your ProxySG. f. Click **Install**. A dialog displays, informing you whether the installation was successful. If necessary, correct any errors in the file and re-install it.

CPL Code for Scan-and-Serve Policy

Note This policy requires SGOS version 6.5.7.7, 6.6.3.2, or higher and expects that you have an existing ICAP rule elsewhere in policy.

```
;--------------START ICAP Best Practices Scan and Serve CPL as of December 17, 2015
;ICAP Best Practices - Scan and Serve Policy is designed to be placed in local policy
;which, by default, is evaluated after other policy files (such as VPM).
;This policy requires that the ProxySG appliance is running SGOS 6.5.7.7, 6.6.3.2, or higher.
;Modify the policy with known infinite stream URLs under the “Bad_response_for_ICAP" section.


<Cache>
delete_on_abandonment(yes)

<Proxy>
request.header.User-Agent="ProxyAV" response.icap_feedback.interactive(no)


<Proxy>
condition=http_https_scheme response.icap_mirror(yes) condition=ICAP_Mirror

define condition http_https_scheme
   url.scheme=http
   url.scheme=https
end condition http_https_scheme

define condition ICAP_Mirror
;Negate ICAP service only if the OCS response is undesirable
    condition=Bad_response_for_ICAP condition=Not_ICAP_response
end condition ICAP_Mirror

define condition Bad_response_for_ICAP
    condition=NO_or_LARGE_CONTENT_LENGTH
condition=MEDIA_MIME_TYPES
    condition=HTTPv0.9_UserAgents
; Yahoos stock ticker problem -15sep06
url.domain=//streamerapi.finance.yahoo.com
url.domain=//stream.aol.com
url.domain=//finance.google.com
; Other streaming media exceptions
url.domain=//youtube.com
url.domain=//pandora.com
end condition Bad_response_for_ICAP

define condition NO_or_LARGE_CONTENT_LENGTH
;note- the following line is correct- do NOT add .* between quotes
   response.header.Content-Length=!"" ;true if Content-Length header is not present
   response.header.Content-Length=!"^[0-9]{1,8}$" ;>99,999,999
end condition NO_or_LARGE_CONTENT_LENGTH

define condition MEDIA_MIME_TYPES
response.header.Content-Type="video/"
response.header.Content-Type="application/streamingmedia"
response.header.Content-Type="application/x-streamingmedia"
response.header.Content-Type="application/vnd.rn"
response.header.Content-Type="application/ogg"
response.header.Content-Type="application/x-ogg"
response.header.Content-Type="audio/"
response.header.Content-Type="multipart/x-mixed-replace"
end condition MEDIA_MIME_TYPES

define condition HTTPv0.9_UserAgents
   http.response.version=0.9 condition=MisBehaving_Old_UserAgents
end condition HTTPv0.9_UserAgents

define condition MisBehaving_Old_UserAgents
   request.header.User-Agent="Winamp"
   request.header.User-Agent="NSPlayer"
```

```
      request.header.User-Agent="RMA"
      request.header.User-Agent="ultravox"
      request.header.User-Agent="itunes"
      request.header.User-Agent="forest"
      request.header.User-Agent="Scottrader"
      request.header.User-Agent="SVN"
   end condition MisBehaving_Old_UserAgents

   define condition Not_ICAP_response
   ;note- the following line is correct- do NOT add .* between quotes
      response.x_header.X-Virus-ID=!"" ;true if X-Virus-ID header is not present
   end condition Not_ICAP_response

   ;--------------END ICAP Best Practices Scan and Serve CPL as of December 17, 2015
```

Best Practices for PDF Documents

Some versions of the Adobe Acrobat browser plug-ins, when interacting with certain PDF documents, make requests with very large numbers of byte-range groupings. The HTTP byte-range request is a method of requesting only a portion of the data within an object. A single HTTP request can specify multiple byte ranges in a list using start and stop byte offsets.

The ProxyAV supports up to 70 byte ranges per request. For requests with fewer than 70 byte ranges, the object data is retrieved from the origin server and scanned normally. If the entire object is already in the cache, each byte range is extracted and served from the cached data. However, if a request has more than 70 byte ranges, the ProxySG is unable to serve the data from the cache and instead must retrieve the data from the origin server and rescan it.

Some Acrobat plug-ins fail to handle the patience-page behavior of the ProxySG during these 70+ byte-range retrievals and, instead, display a blank screen. Such Acrobat plug-ins operate correctly for all other requests, even with regard to patience-page operation.

Normally, this issue can be resolved by upgrading the Acrobat plug-in. However, if an upgrade is not possible, or the particular PDF files continue to trigger this behavior, you can use a different type of ICAP feedback instead of patience pages: data trickling. You needn’t change the default ICAP feedback; you can specify data trickling for PDF objects from a specific domain. The following example policy enables data trickling for PDF objects from Blue Coat sites:

```
<proxy>
url.domain=bluecoat.com url.extension=(pdf) response.icap_feedback.interactive(trickle_start,5)
```

Use `trickle_end` if you want the data trickling to occur at the end of the download.

Avoiding Processing of Cancelled Connections

Note The following policy is included with "Solution A: No-Scan Policy" on page 80 and "Solution C: Scan-And-Serve Policy" on page 84. If you have installed either of these policies, skip this procedure.

When an HTTP request appears cacheable, the ProxySG completes the download, even if the requesting client has abandoned the connection. This allows the ProxySG to store a cached version of the object for future requests. However, for slow downloads, this behavior can result in each client request queuing a separate instance for scanning.

To avoid the continued processing of a request after the client application has disconnected, you can enable the CPL property delete_on_abandonment for certain client applications.

Note Delete_on_abandonment does not work when patience pages are enabled; It can be used only with data trickling or with no ICAP feedback.

The following example policy prevents queuing of duplicate requests for a known aggressive client:

```
<cache>
request.header.User-Agent="Winamp" delete_on_abandonment(yes)
```

Alternatively, you can enable delete_on_abandonment for all clients, using the following code:

```
<proxy>
delete_on_abandonment(yes)
```

10 Troubleshooting

This chapter provides solutions to problems you may have when integrating the ProxySG and the ProxyAV. It includes the following topics:

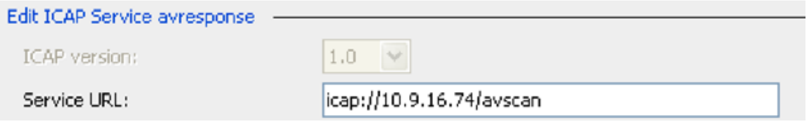
The ProxyAV is not Scanning Web Traffic

Symptoms: The ProxyAV's Home page does not show any files being scanned. The **Advanced> History Stats** page does not display any ICAP objects, connections, or bytes for the last hour (or other recent time period). The ProxySG's **Statistics > ICAP** page does not display any requests, connections, or bytes for the last hour (or other recent time period).

Solutions: If the ProxyAV is not scanning Web traffic, there is likely a configuration error that is preventing the ProxySG from sending traffic to the ProxyAV. Here are a few things to double-check:

- Did you create an ICAP service on the ProxySG? (See "Task 2: Add the ProxyAV for In-Path Threat Detection" on page 4-25.)

- Does the ICAP service have the correct URL of the ProxyAV? Does the URL include the same antivirus service name specified on the ProxyAV? If you changed the antivirus service name from its default (*avscan*), you must make sure to include this same name as part of the Service URL for the ICAP service on the ProxySG. The Service URL should look something like this:

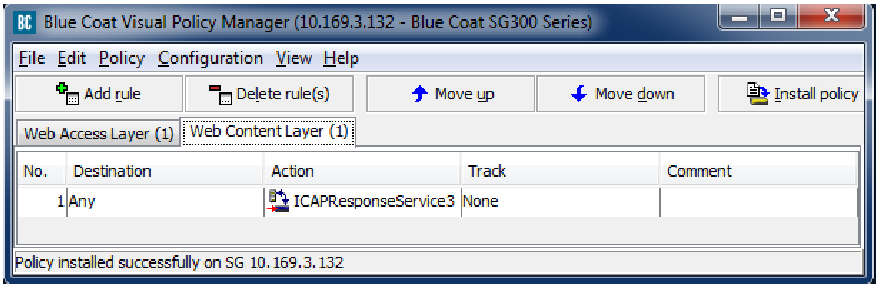


Edit ICAP Service avresponse

ICAP version: 1.0

Service URL: icap://10.9.16.74/avscan

- Did you create a policy for the ICAP service? (See "Task 3: Enable Malware Scanning" on page 4-27.)



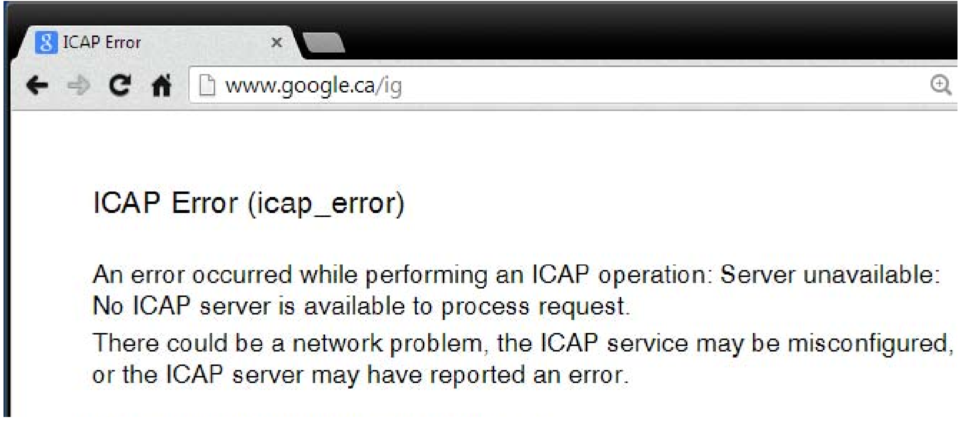
Blue Coat Visual Policy Manager (10.169.3.132 - Blue Coat SG300 Series)
File Edit Policy Configuration View Help
Add rule
Delete rule(s)
Move up
Move down
Install policy
Web Access Layer (1)
Web Content Layer (1)

No.	Destination	Action	Track	Comment
1	Any	ICAPResponseService3	None	

Policy installed successfully on SG 10.169.3.132

Users Cannot Access Any Web Sites

Symptoms: All users get a denied message in their Web browsers when trying to go to any Web site.

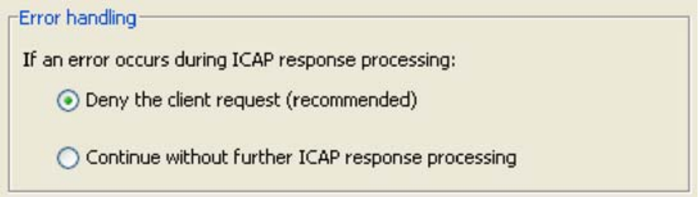


ICAP Error (icap_error)

An error occurred while performing an ICAP operation: Server unavailable: No ICAP server is available to process request.

There could be a network problem, the ICAP service may be misconfigured, or the ICAP server may have reported an error.

Solution 1: If the ProxyAV is down and your ICAP policy is set to **Deny the client request** if an error occurs during ICAP processing, users will not be able to browse the Internet — all requests will be denied. Thus, if you have created your ICAP policy on the ProxySG before setting up the ProxyAV, users will not have Web access. Therefore, it's important to have the ProxyAV up and running *before* you install the ICAP policy.



Error handling

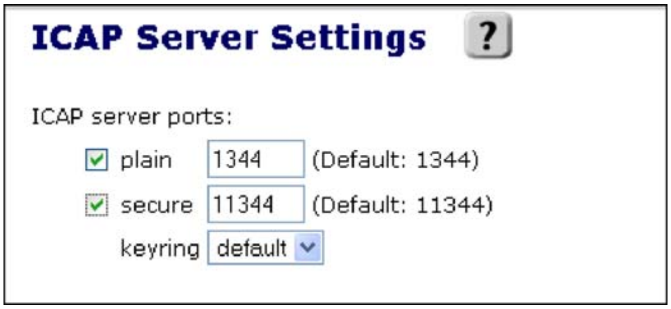
If an error occurs during ICAP response processing:

● Deny the client request (recommended)

○ Continue without further ICAP response processing

To avoid the inevitable support calls that result from lack of Web access when the ProxyAV is down, you may want to consider changing the ICAP policy to **Continue without further ICAP response processing**. With this setting, users will be able to browse the Internet when the ProxyAV is down. However, this opens up the network to potential viruses being downloaded during the ProxyAV downtime. (Although desktop virus scanners might provide some protection from malware.)

Solution 2: This problem can also be caused by inconsistent secure ICAP settings for the ICAP service, ProxyAV, and ICAP policy. If you want to use secure ICAP for HTTPS, you need to enable it in all three places. The following series of screenshots show the proper settings that should be in place to allow users to browse secure Web sites (scanned with secure ICAP) and non-secure Web sites (scanned with plain ICAP).



ICAP Server Settings

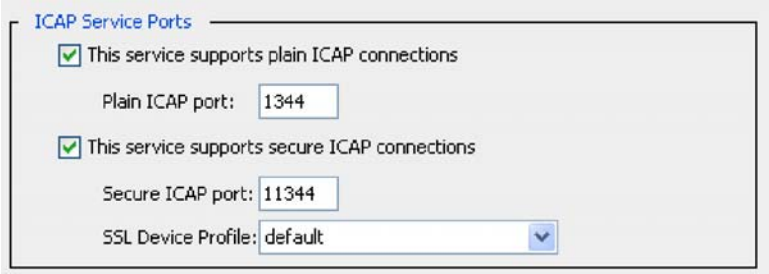
ICAP server ports:

☑ plain 1344 (Default: 1344)

☑ secure 11344 (Default: 11344)

keyring default

Figure 10-1 Secure ICAP enabled on the ProxyAV



ICAP Service Ports

☑ This service supports plain ICAP connections

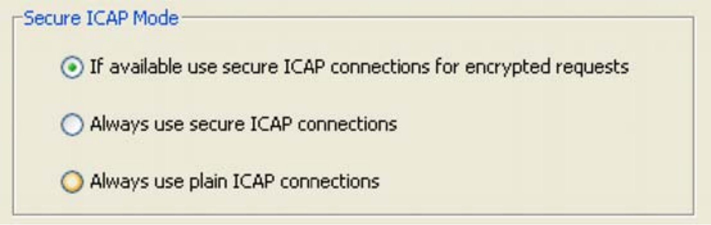
Plain ICAP port: 1344

☑ This service supports secure ICAP connections

Secure ICAP port: 11344

SSL Device Profile: default

Figure 10-2 Secure ICAP enabled on the ICAP service (configured on the ProxySG)



Secure ICAP Mode

● If available use secure ICAP connections for encrypted requests

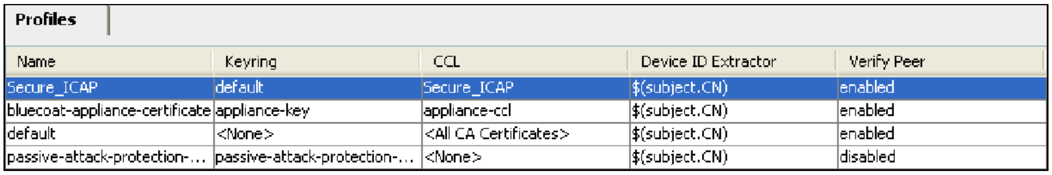
○ Always use secure ICAP connections

○ Always use plain ICAP connections

Figure 10-3 Secure ICAP enabled in the policy for the ICAP response service (configured in the VPM)

Solution 3: This problem can be caused by incorrect SSL configuration for secure ICAP. Make sure you have followed the steps below:

1. Copy the ProxyAV appliance certificate (**Advanced > SSL Certificates**).
2. Import the ProxyAV appliance certificate as a CA certificate on the ProxySG (**Configuration > SSL > CA Certificates > Import**).
3. Create a new CA certificate list specifically for secure ICAP and add the ProxyAV CA certificate created in step 2 (**Configuration > SSL > CA Certificates > CA Certificate Lists > New**).
4. Create a new SSL device profile for secure ICAP. Select the default keyring and the CCL you created in step 3 (**Configuration > SSL > Device Profiles > New**).

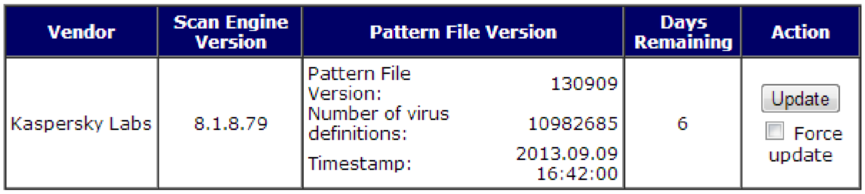


Profiles

Name	Keyring	CCL	Device ID Extractor	Verify Peer
Secure_ICAP	default	Secure_ICAP	$(subject.CN)	enabled
bluecoat-appliance-certificate	appliance-key	appliance-ccl	$(subject.CN)	enabled
default	<None>	<All CA Certificates>	$(subject.CN)	enabled
passive-attack-protection-…	passive-attack-protection-…	<None>	$(subject.CN)	disabled

5. Configure the ICAP service to use the SSL device profile created in step 4 (**Configuration > External Services > ICAP > Edit**).

Solution 4: The anti-virus license could be invalid or expired. To check the status of the anti-virus license on the ProxyAV, click **Antivirus**.

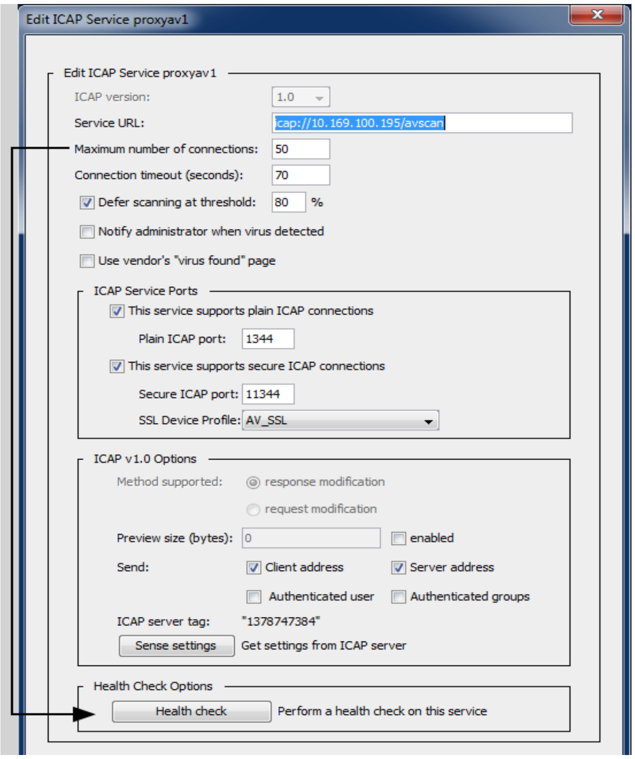


Vendor	Scan Engine Version	Pattern File Version	Days Remaining	Action
Kaspersky Labs	8.1.8.79	Pattern File Version: 130909 Number of virus definitions: 10982685 Timestamp: 2013.09.09 16:42:00	6	Update □ Force update

ProxySG Runs Out of Memory During Heavy Traffic Load

Symptoms: The ProxySG becomes unresponsive and needs to be restarted.

Solution: The most common cause of this problem is setting too high of a value for the **Maximum number of connections** for the ICAP service. With too high of a value, ICAP connections start queuing up, and eventually the ProxySG will run out of memory and need to be restarted. When editing the ICAP service, you should use the **Sense settings** button to have the ProxySG retrieve the appropriate setting from the ProxyAV. Blue Coat recommends that you *not* modify the **Maximum number of connections** value manually; let the **Sense settings** feature determine the appropriate value.



Edit ICAP Service proxyav1

Edit ICAP Service proxyav1

ICAP version: 1.0

Service URL: icap://10.169.100.195/avscan

Maximum number of connections: 50

Connection timeout (seconds): 70

☑ Defer scanning at threshold: 80 %

□ Notify administrator when virus detected

□ Use vendor's "virus found" page

ICAP Service Ports

☑ This service supports plain ICAP connections

Plain ICAP port: 1344

☑ This service supports secure ICAP connections

Secure ICAP port: 11344

SSL Device Profile: AV_SSL

ICAP v1.0 Options

Method supported: ● response modification ○ request modification

Preview size (bytes): 0 □ enabled

Send: ☑ Client address ☑ Server address

□ Authenticated user □ Authenticated groups

ICAP server tag: "1378747384"

Sense settings Get settings from ICAP server

Health Check Options

Health check Perform a health check on this service

If you have two ProxySGs sending ICAP requests to a single ProxyAV, you also need to be careful about not setting too high of a value for **Maximum number of connections**. If the **Sense settings** button determines that the maximum number of connections is 10, you should divide this value by two, and enter this setting on each of the ProxySGs.

Scans are Taking Too Long

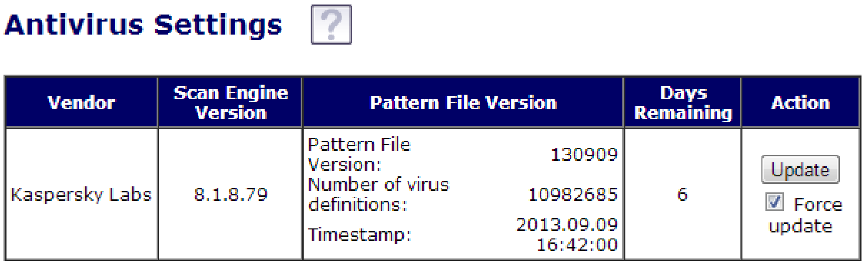
Symptoms: Users complain about delays in Web browsing.

Solution: Slow scanning is most likely caused by the ProxyAV attempting to virus scan infinite streams. To avoid this problem, Blue Coat recommends that customers implement one of the policies described in the Best Practices chapter. See "Conserving Scanning Resources" on page 9-80 for additional details.

My ProxyAV is Not Getting Virus Updates

Symptoms: The network administrator gets an e-mail notification that the anti-virus update failed.

Solution 1: It's possible that the DNS server was temporarily down or some other network problem interfered with the virus update. Try forcing the update:



Antivirus Settings

Vendor	Scan Engine Version	Pattern File Version	Days Remaining	Action
Kaspersky Labs	8.1.8.79	Pattern File Version: 130909 Number of virus definitions: 10982685 Timestamp: 2013.09.09 16:42:00	6	Update ☑ Force update

Solution 2: Each anti-virus vendor provides pattern file updates that necessarily contain portions (or descriptions) of viruses. Generally, these virus segments are encoded and are too small to be mistaken as a true virus by other AV vendors. But occasional false positives occur. These can be prevented by exempting virus pattern update locations from scanning, as the following example policy illustrates (place this policy after all other ICAP policies on the ProxySG):

```
<cache>
url.host=download.bluecoat.com response.icap_service(no)
url.host=av-download.bluecoat.com response.icap_service(no)
```