

# Blue Coat® Systems ProxySG™ Appliance

*Configuration and Management Suite  
Volume 3: Web Communication Proxies*

*SGOS Version 5.3.x*



## Contact Information

Blue Coat Systems Inc.  
420 North Mary Ave  
Sunnyvale, CA 94085-4121

<http://www.bluecoat.com/support/contactsupport>

<http://www.bluecoat.com>

For concerns or feedback about the documentation: [documentation@bluecoat.com](mailto:documentation@bluecoat.com)

Copyright© 1999-2008 Blue Coat Systems, Inc. All rights reserved worldwide. No part of this document may be reproduced by any means nor modified, decompiled, disassembled, published or distributed, in whole or in part, or translated to any electronic medium or other means without the written consent of Blue Coat Systems, Inc. All right, title and interest in and to the Software and documentation are and shall remain the exclusive property of Blue Coat Systems, Inc. and its licensors. ProxyAV™, CacheOS™, SGOS™, SG™, Spyware Interceptor™, Scope™, ProxyRA Connector™, ProxyRA Manager™, Remote Access™ and MACH5™ are trademarks of Blue Coat Systems, Inc. and CacheFlow®, Blue Coat®, Accelerating The Internet®, ProxySG®, WinProxy®, AccessNow®, Ositis®, Powering Internet Management®, The Ultimate Internet Sharing Solution®, Cerberian®, Permeo®, Permeo Technologies, Inc.®, and the Cerberian and Permeo logos are registered trademarks of Blue Coat Systems, Inc. All other trademarks contained in this document and in the Software are the property of their respective owners.

BLUE COAT SYSTEMS, INC. DISCLAIMS ALL WARRANTIES, CONDITIONS OR OTHER TERMS, EXPRESS OR IMPLIED, STATUTORY OR OTHERWISE, ON SOFTWARE AND DOCUMENTATION FURNISHED HEREUNDER INCLUDING WITHOUT LIMITATION THE WARRANTIES OF DESIGN, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL BLUE COAT SYSTEMS, INC., ITS SUPPLIERS OR ITS LICENSORS BE LIABLE FOR ANY DAMAGES, WHETHER ARISING IN TORT, CONTRACT OR ANY OTHER LEGAL THEORY EVEN IF BLUE COAT SYSTEMS, INC. HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Document Number: 231-03012

Document Revision: SGOS 5.3.1—08/2008

# Contents

## Contact Information

## Chapter 1: Introduction

Document Conventions .....	7
Notes and Warnings .....	7

## Chapter 2: Managing Instant Messaging Protocols

About the Risks of Instant Messaging .....	9
About the Blue Coat IM Proxies .....	9
HTTP Proxy Support .....	10
Instant Messaging Proxy Authentication .....	10
Access Logging .....	10
Managing Skype .....	10
About Instant Message Network Inter-activity .....	11
Recommended Deployments .....	11
About Instant Messaging Reflection.....	11
Configuring ProxySG IM Proxies .....	14
Intercepting Default IM Services.....	15
Creating New IM Services For Custom Ports .....	16
Redirecting IM Client Requests.....	18
The Default IM Hosts.....	19
Handing Off Instant Messaging to HTTP.....	20
Configuring IM Alerts .....	20
Configuring IM Clients .....	21
General Configuration .....	22
AOL Messenger Client Explicit Proxy Configuration .....	22
MSN Messenger Client Explicit Proxy Configuration .....	23
Yahoo Messenger Client Explicit Proxy Configuration.....	24
Policy Examples .....	26
Example 1: File Transfer .....	26
Example 2: Send an IM Alert Message.....	28
Reference: Equivalent IM CLI Commands.....	29
Reference: Access Log Fields.....	30
Reference: CPL Triggers, Properties, and Actions .....	31
Triggers .....	31
Properties and Actions .....	31
IM History Statistics .....	31

## Chapter 3: Managing Streaming Media

### Section A: Concepts: Streaming Media

How the ProxySG Accelerates and Controls Media Streaming.....	36
What is Streaming Media? .....	36
Live versus On-Demand Streaming Media.....	36
Streaming Media and Bandwidth .....	37
About Windows Media .....	37
Pre-Populating WM Objects Hosted on a Web Server .....	38
Windows Media Deployment .....	38
Supported Streaming Features.....	38
Other Supported Features.....	40
Supported VPM Properties and Actions .....	40
Bandwidth Management.....	41
About Processing Streaming Media Content .....	41
Delivery Methods.....	41
Serving Content: Live Unicast.....	41
Serving Content: Video-on-Demand Unicast .....	42
Serving Content: Multicast Streaming .....	42
Limiting Bandwidth.....	43
Caching Behavior: Protocol Specific.....	45
Caching Behavior: Video-on-Demand .....	46
Splitting Behavior: Live Broadcast .....	46
Multiple Bit Rate Support .....	46
Bit Rate Thinning.....	47
Pre-Populating Content.....	47
About Fast Streaming (Windows Media).....	48
About QoS Support.....	48
About Streaming Media Authentication.....	48
Windows Media Server-Side Authentication .....	48
Windows Media Proxy Authentication .....	49
Windows Media Server Authentication Type (MMS).....	50
Real Media Proxy Authentication .....	50
QuickTime Proxy Authentication.....	50

### Section B: Configuring Streaming Media

Configuring Streaming Services to Intercept Traffic.....	51
Adding a New Streaming Service .....	52
Configuring the Streaming Proxies.....	55
Limiting Bandwidth .....	56
Configuring Bandwidth Limits—Global .....	56
Configuring Bandwidth Limits—Protocol-Specific .....	57

Configuring Bandwidth Limitation—Fast Start (WM).....	58
Configuring the ProxySG Multicast Network.....	58
Forwarding Client Logs.....	59
Related CLI Syntax to Manage Streaming .....	60
Reference: Access Log Fields .....	60
Reference: CPL Triggers, Properties, and Actions.....	62
Triggers.....	62
Properties and Actions .....	62
Streaming History Statistics .....	62
Viewing Current and Total Streaming Data Statistics.....	63
<b>Section C: Additional Windows Media Configuration Tasks</b>	
Managing Multicast Streaming for Windows Media.....	65
About Multicast Stations.....	65
Creating a Multicast Station .....	66
Monitoring the Multicast Station.....	68
Multicast to Unicast Live Conversion at the ProxySG .....	69
Managing Simulated Live Content (Windows Media) .....	69
About Simulated Live Content .....	69
Creating a Broadcast Alias for Simulated Live Content.....	70
ASX Rewriting (Windows Media) .....	71
About ASX Rewrite.....	71
<b>Section D: Configuring Windows Media Player</b>	
Windows Media Player Interactivity Notes .....	76
Striding .....	77
Other Notes.....	77
<b>Section E: Configuring RealPlayer</b>	
<b>Section F: Configuring QuickTime Player</b>	
<b>Section G: Supported Streaming Media Clients and Protocols</b>	
Supported Streaming Media Clients and Servers .....	84
Supported Streaming Protocols .....	85

## Glossary

## Index



## Chapter 1: Introduction

This chapter describes how to manage enterprise and non-enterprise instant messaging (IM) traffic through the ProxySG IM proxies.

The ProxySG allows you to control, track, and record communications that occur over AOL, MSN, or Yahoo IM clients on your corporate networks. The Streaming proxies allow you to alter allowed bandwidth and manage the broadcasts of streaming content over Microsoft and RealNetworks (with limited support for Apple) protocols.

This document contains the following chapters:

- ❑ Chapter 2: "Managing Instant Messaging Protocols" on page 9
- ❑ Chapter 3: "Managing Streaming Media" on page 35

## Document Conventions

The following section lists the typographical and Command Line Interface (CLI) syntax conventions used in this manual.

Table 1–1 Document Conventions

Conventions	Definition
<i>Italics</i>	The first use of a new or Blue Coat-proprietary term.
<code>Courier font</code>	Screen output. For example, command line text, file names, and Blue Coat Content Policy Language (CPL).
<code><i>Courier Italics</i></code>	A command line variable that is to be substituted with a literal name or value pertaining to the appropriate facet of your network system.
<b>Courier Boldface</b>	A Blue Coat literal to be entered as shown.
<b>Arial Boldface</b>	Screen elements in the Management Console.
{ }	One of the parameters enclosed within the braces must be supplied
[ ]	An optional parameter or parameters.
	Either the parameter before or after the pipe character can or must be selected, but not both.

## Notes and Warnings

The following is provided for your information and to caution you against actions that can result in data loss or personal injury:

---

**Note:** Information to which you should pay attention.

---

---

**Important:** Critical information that is not related to equipment damage or personal injury (for example, data loss).

---

---

**WARNING!** Used *only* to inform you of danger of personal injury or physical damage to equipment. An example is a warning against electrostatic discharge (ESD) when installing equipment.

---



## Chapter 2: Managing Instant Messaging Protocols

This chapter discusses how to control Instant Messaging (IM) activity through the ProxySG.

### *Topics in this Chapter*

This chapter includes information about the following topics:

- ❑ ["About the Risks of Instant Messaging"](#) on page 9
- ❑ ["About the Blue Coat IM Proxies"](#) on page 9
- ❑ ["About Instant Message Network Inter-activity"](#) on page 11
- ❑ ["Configuring ProxySG IM Proxies"](#) on page 14
- ❑ ["Configuring IM Clients"](#) on page 21
- ❑ ["Policy Examples"](#) on page 26
- ❑ ["Reference: Equivalent IM CLI Commands"](#) on page 29
- ❑ ["Reference: Access Log Fields"](#) on page 30
- ❑ ["Reference: CPL Triggers, Properties, and Actions"](#) on page 31
- ❑ ["IM History Statistics"](#) on page 31

### About the Risks of Instant Messaging

Instant Messaging use in an enterprise environment creates security concerns because regardless of how network security is configured, IM connections can occur from any established protocol, such as HTTP or SOCKS, on any open port. Because it is common for coworkers to use IM to communicate, especially in remote offices, classified company information can be exposed outside the network. Viruses and other malicious code can also be introduced into the network from file sharing through IM clients.

### About the Blue Coat IM Proxies

The ProxySG serves as an IM proxy. With policy, you can control IM actions by allowing or denying IM communications and file sharing based on users (both employee identities and IM handles), groups, file types and names, and other triggers. All IM communications can be logged and archived for review.

The ProxySG supports the AOL, MSN, and Yahoo IM client protocols. For the most current list of supported client versions, refer to the most current *Release Notes* for this release.

## HTTP Proxy Support

The ProxySG supports instant messaging through the HTTP proxy. IM clients are configured to connect to IM services through HTTP, which allows IM activity from behind restrictive firewalls.

The application of policies and IM activity logging is accomplished by the HTTP proxy handing off IM communications to the IM proxy.

### Notes

- ❑ AOL—Direct connections, file transfers, and files sharing are not available.
- ❑ Yahoo—Client cannot create a chat room.

## Instant Messaging Proxy Authentication

The ProxySG supports explicit proxy authentication if explicit SOCKS V5 proxy is specified in the IM client configuration.

Because the IM protocols do not natively support proxy authentication, authentication for transparently redirected clients is not supported because policies requiring authentication would deny transparently redirected clients.

### Notes

Consider the following proxy authentication notes, which apply to IM clients using HTTP proxy:

- ❑ AOL IM—Proxy authentication is supported.
- ❑ MSN IM (5.0 and above)—The ProxySG supports MSN/Live Messenger if the appliance is configured to use HTTP ProxyAuth code 407, not HTTP auth code 401.
- ❑ Yahoo IM—Yahoo IM clients do not have proxy authentication configuration abilities.

## Access Logging

Access log entries occur from various IM actions, such as logging on or joining a chat room. By default, the ProxySG uses the Blue Coat IM access log format:

```
date time c-ip cs-username cs-auth-group cs-protocol x-im-method x-im-  
user-id x-im-user-name x-im-user-state x-im-client-info x-im-buddy-id  
x-im-buddy-name x-im-buddy-state x-im-chat-room-id x-im-chat-room-type  
x-im-chat-room-members x-im-message-text x-im-message-size x-im-  
message-route x-im-message-type x-im-file-path x-im-file-size s-action
```

For a reference list and descriptions of used log fields, see ["Reference: Access Log Fields"](#) on page 30.

## Managing Skype

Skype is the most used IM service outside of the United States. It provides free PC-to-PC calling using VoIP. Skype communication is based on Peer-to-Peer technology. Managing Skype communications requires the creation of firewall and ProxySG policies, procedures that are outside the scope of this chapter.

See the *Blue Coat Controlling Skype Technical Brief*, available on the Blue Coat Web site Download page.

## About Instant Message Network Inter-activity

This section discusses IM deployment and describes IM reflection, which is how the ProxySG policy dictates IM communications.

### *Recommended Deployments*

Blue Coat recommends the following deployments:

- ❑ For large networks with unimpeded Internet access, Blue Coat recommends transparently redirecting the IM protocols to the ProxySG, which requires the ProxySG bridging feature or an L4 switch or WCCP.
- ❑ For networks that do not allow outbound access, Blue Coat recommends using the SOCKS proxy and configuring policy and content filtering denials for HTTP requests to IM servers.

### *About Instant Messaging Reflection*

IM reflection allows you to contain IM traffic within the enterprise network, which further reduces the risk of exposing company-confidential information through public IM networks or allow a client to incur a virus or malicious code. Normally, an IM sent from one buddy to another is sent to and from an IM service. With IM reflection, IM traffic between buddies, including chat messaging, on the same network never has to travel beyond the ProxySG. This includes IM users who login to two different ProxySG appliances configured in a hierarchy (proxy chaining).

#### **IM Reflection with Fail Open**

When the ProxySG policy is configured to fail open, IM reflection operates essentially the same as pass through mode. All messages are allowed in and out of the network. The following diagram illustrates IM processes with ProxySG fail open policy.

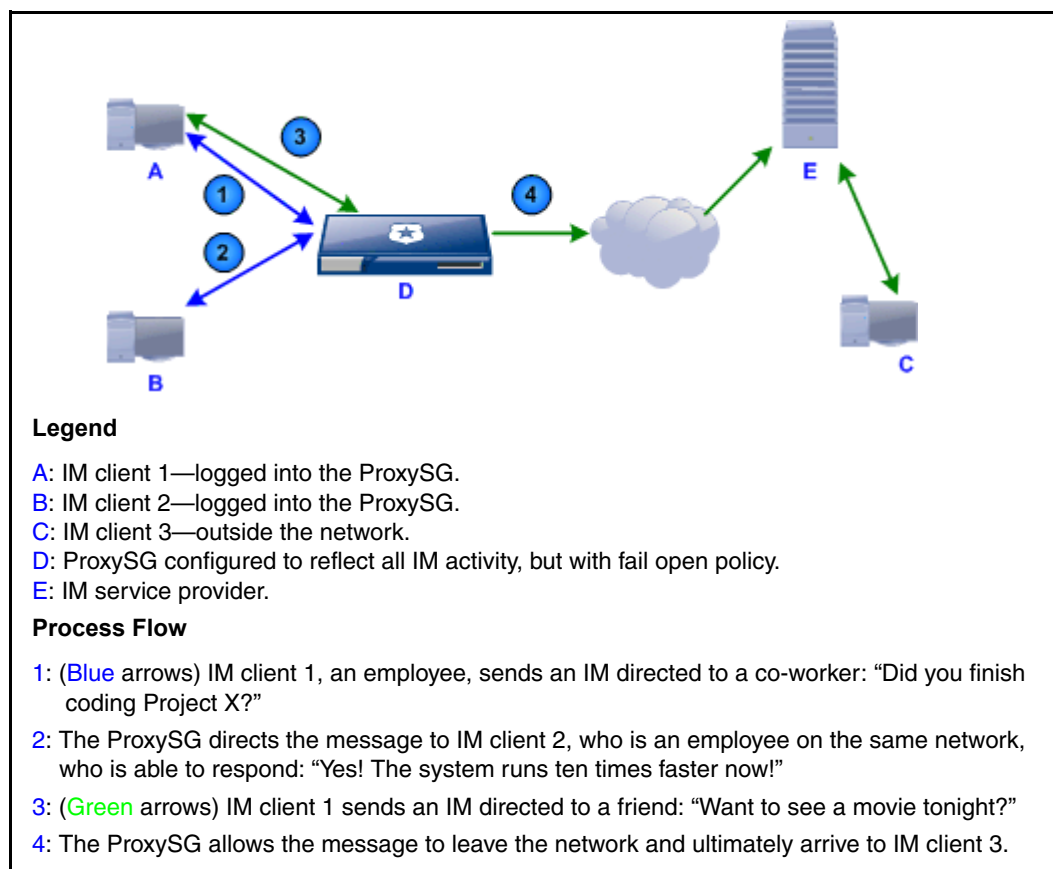


Figure 2–1 IM Reflection with ProxySG fail open policy.

## IM Reflection With Fail Closed

If the ProxySG is configured with fail closed policy, messages cannot leave the network (they never reach the IM service provider). Only clients on allowed enterprise networks can send and receive IMs. The following diagram illustrates IM processes with ProxySG fail closed policy.

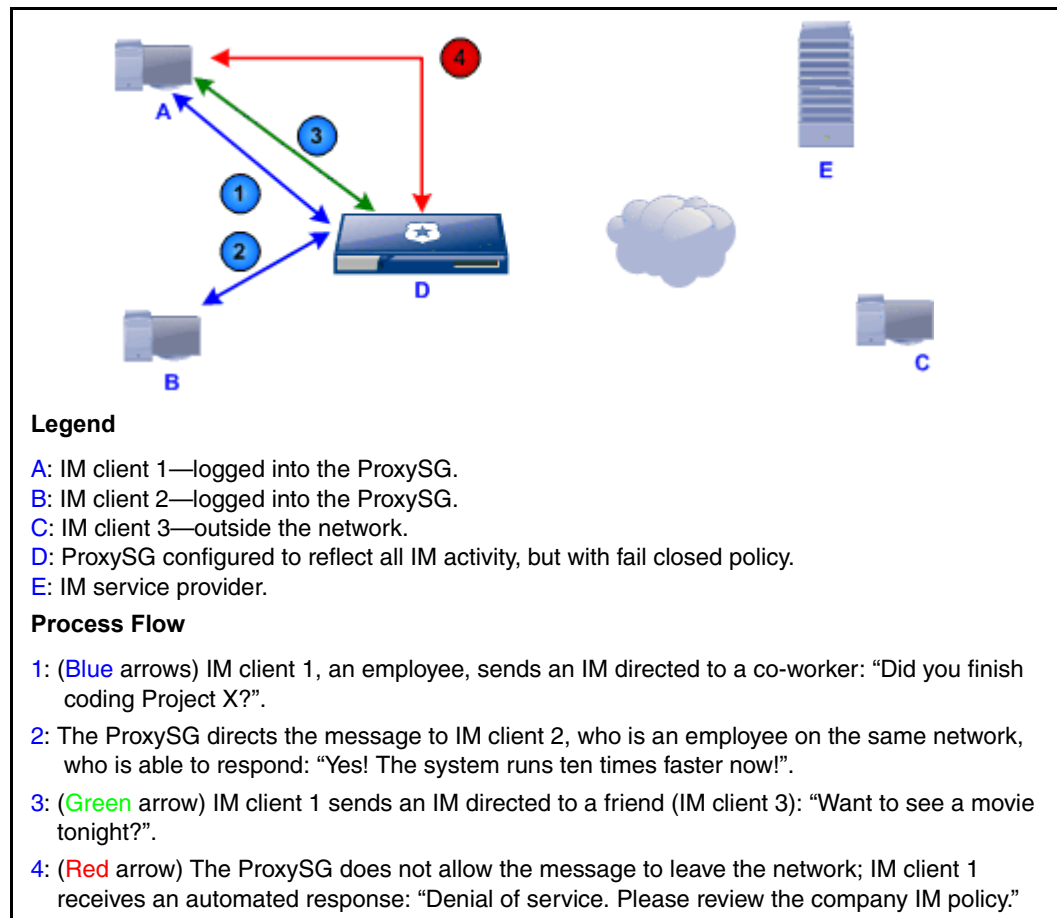


Figure 2–2 IM Reflection with ProxySG fail close policy

## IM Reflection With A Hierarchy Of Proxies

While the previous two sections document the conceptual fail open/fail closed functionality, larger, more typical enterprise networks have users logging in through different primary ProxySG appliances. IM reflection involving clients in different buildings and even on different sites is still possible by using SOCKS and HTTP forwarding, policy, and an ProxySG hierarchy. The following diagram illustrates IM processes with ProxySG proxy chaining and a combination of fail open/fail closed policies.

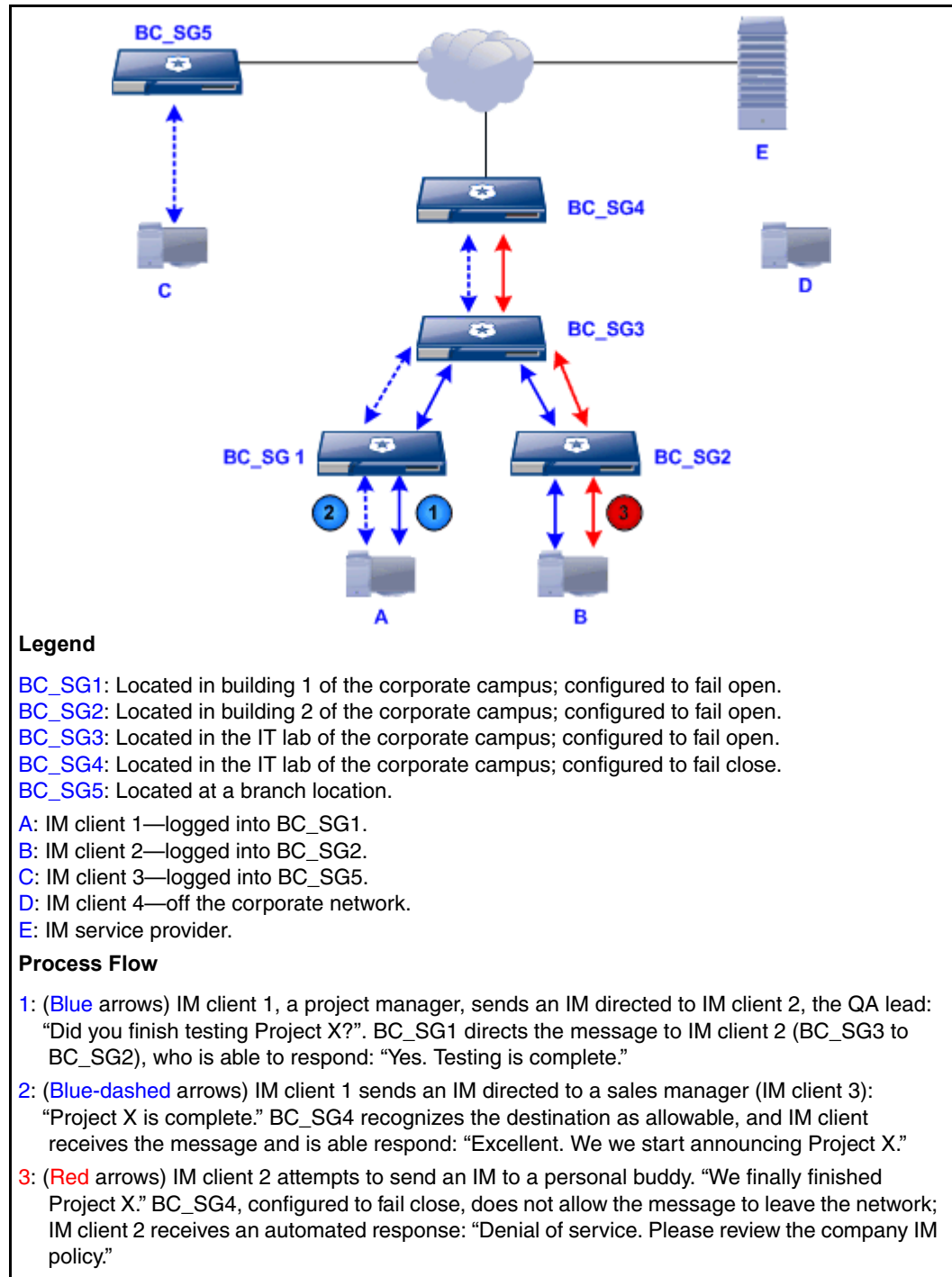


Figure 2–3 Proxy chaining deployment with fail open/fail closed policies.

## Configuring ProxySG IM Proxies

This chapter contains the following sections:

- ❑ "Intercepting Default IM Services" on page 15
- ❑ "Redirecting IM Client Requests" on page 18

- ❑ ["The Default IM Hosts"](#) on page 19
- ❑ ["Handing Off Instant Messaging to HTTP"](#) on page 20
- ❑ ["Configuring IM Alerts"](#) on page 20

## *Intercepting Default IM Services*

This section describes how to configure the ProxySG to intercept the default IM service ports.

Defaults:

- ❑ Proxy Edition: Upon upgrade and on new systems, the ProxySG has IM services configured for transparent connections on the following ports:
  - AOL-IM: 5190
  - MSN-IM: 1863 and 6891
  - Yahoo-IM: 5050 and 5101
- ❑ MACH5 Edition: IM services are not created and are not included in trend data.

*Notes:*

- ❑ MSN port 1863 and Yahoo port 5050 are the default client login ports. MSN port 6891 and Yahoo port 5101 are the default for client-to-client direct connections and file transfers. If these ports are not enabled:
- ❑ Client-to-client direct connections do not occur.
- ❑ After a file transfer request is allowed by the ProxySG, the resulting data is sent directly from one client to another without passing through the ProxySG:
  - For MSN: The above bullet point only applies to MSN version previous to and including 6.0. Post-6.0 versions use a dynamic port for file transfers; therefore, port 6891 is not required for the ProxySG to intercept file transfers.
  - For Yahoo: The above bullet only applies to standard file transfer requests. Port 5101 must be enabled to allow file list requests.

---

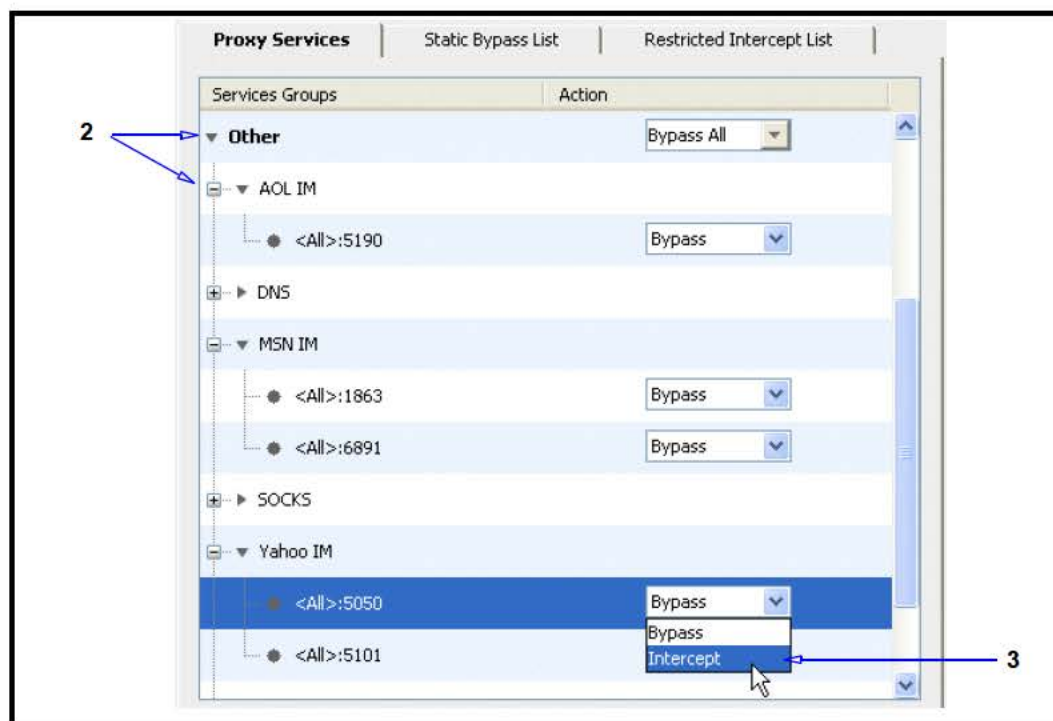
**Note:** All file transfers for AOL clients are handled through the default (5190) or specified client login port.

---

By default, these services are configured be **Transparent** and in **Bypass** mode. The following procedure describes how to change them to **Intercept** mode, and explains other attributes within the service.

**To configure the IM proxies services attributes:**

1. From the Management Console, select **Configuration > Services > Proxy Services**.



2. Scroll the list of service groups and click **Other** to expand the services list.
3. As you expand the services for AOL, MSN, and Yahoo, notice the **Action** for each default service is **Bypass**. Select **Intercept** from the drop-down list(s) for the IM services that apply in your enterprise.
4. Click **Apply**.

If you do not have custom IM service ports, proceed to ["Redirecting IM Client Requests"](#) on page 18.

### Creating New IM Services For Custom Ports

If your enterprise requires you to intercept IM traffic on ports other than the defaults, you can create custom services.

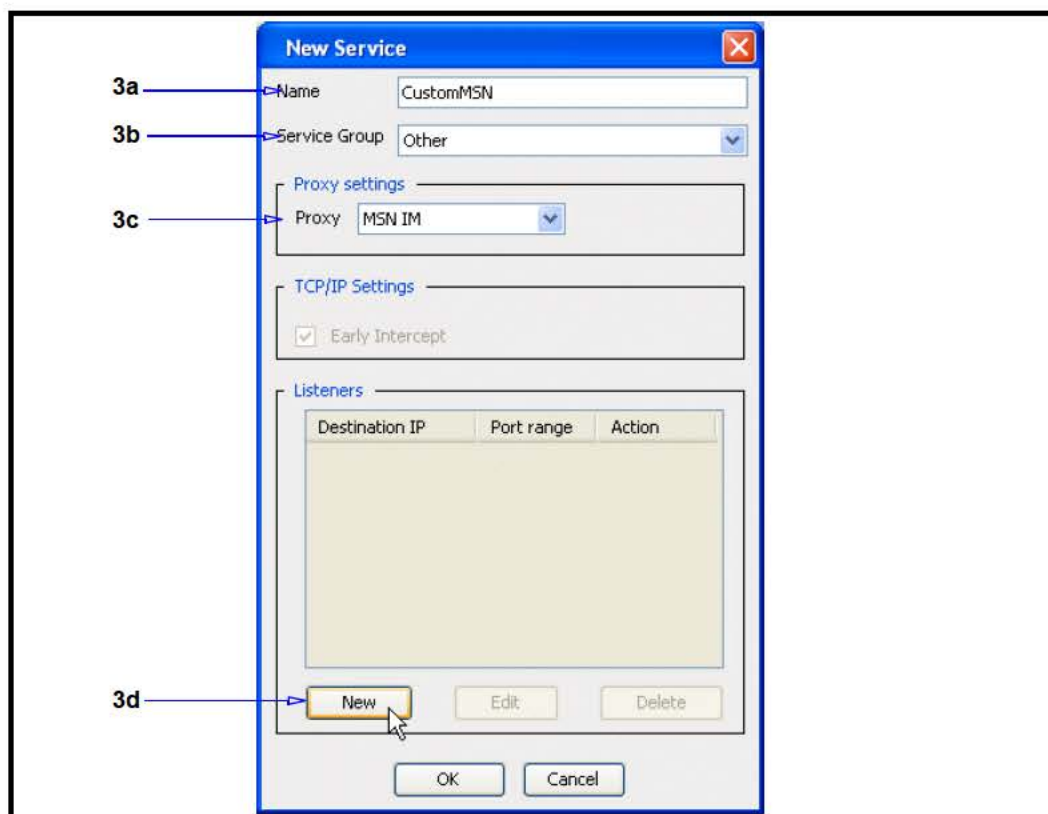
#### To create custom IM services:

1. From the Management Console, select **Configuration > Services > Proxy Services**.

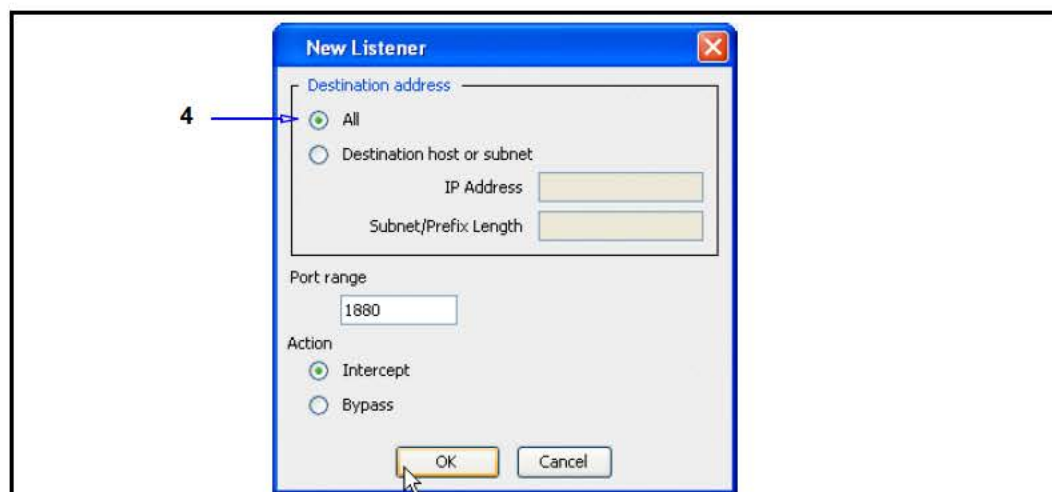


2. At the bottom of the page, click **New Service**. The New Service dialog displays.





3. Configure the new service attributes:
  - a. Name the service (tip: cannot use the default service name, such as **AOL IM**).
  - b. From the **Service Group** drop-down list, select **Other**.
  - c. From the **Proxy** drop-down list in the **Proxy settings** area, select the IM type for this service.
  - d. In the **Listeners** area, click **New**. The New Listener dialog displays.



4. Configure the new listener options:
  - a. In the **Destination address** area, select **All** unless you want to restrict the service to specific IP addresses and subnets.
  - b. In the **Port range** field, enter the port number or range of ports that this service listens on. For example: **1800-1890**.
  - c. Select **Intercept**.
  - d. Click **OK** to close the dialog.
5. Click **OK** to close the New Service dialog.
6. Click **Apply**.

Result: The IM service status appears in Management Console.

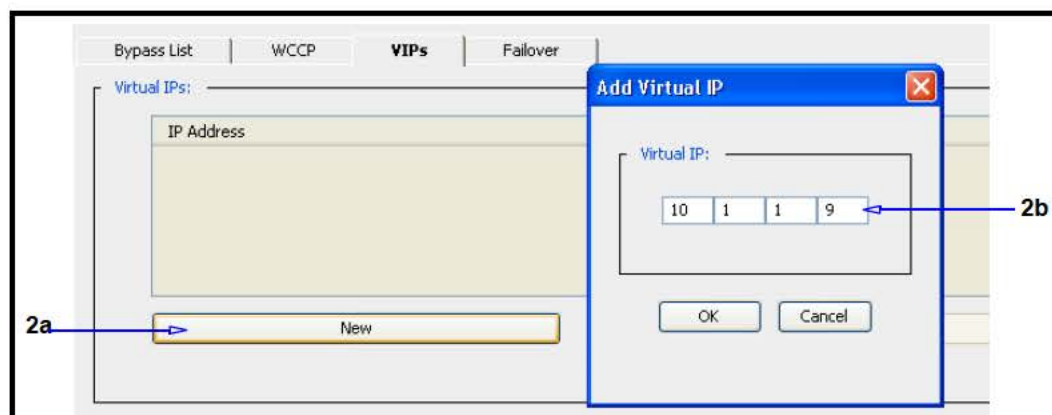
### *Redirecting IM Client Requests*

The ProxySG is configured as an IM proxy that performs a DNS redirection for client requests. This provides greater control because it prevents IM clients from making outside connections.

The IM clients provide the DNS lookup to the IM server, which the ProxySG DNS module uses to connect to the IM server. To the client, the ProxySG appears to be the IM server. A virtual IP address used only for IM must be configured, as it is used to represent the IM server address for all IM protocols.

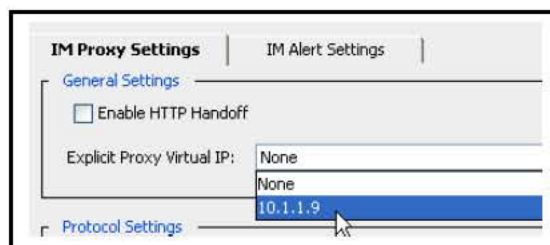
#### **To configure DNS redirection for IM:**

1. Select to **Configuration > Network > Advanced > VIPs**.



2. Create a virtual IP address:
  - a. Click **New**. The Add Virtual IP dialog appears.
  - b. Enter a unique IP address (used only to represent IM connections).
  - c. Click **OK** to add the VIP to the list.
3. Click **Apply**.
4. From the Management Console, select **Configuration > Services > IM Proxies > IM Proxy Settings**.
5. In the **General Settings** field, select the VIP from the **Explicit Proxy Virtual IP** drop-down list.
6. Click **Apply**.

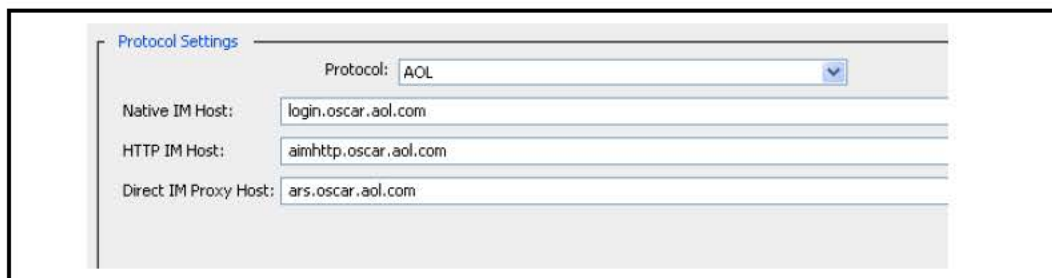
Result: IM clients regard the ProxySG as the IM server.



Remain on this screen and continue to the next section.

## The Default IM Hosts

Each IM client has hard-coded IM hosts. The ProxySG displays these values on the **Configuration > Services > IM Proxies > IM Proxy Settings** tab, which vary in number and fields dependent upon the selected IM protocol. Do not alter these hosts unless the client experiences a hard-coded change.



## Handing Off Instant Messaging to HTTP

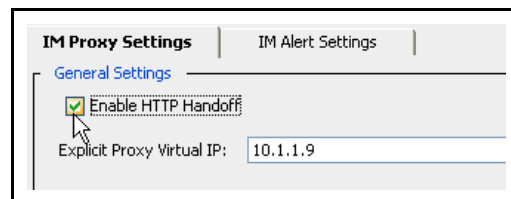
HTTP handoff allows the Blue Coat HTTP proxy to handle requests from supported IM protocols. If HTTP handoff is disabled, requests are passed through, and IM-specific policies are not applied. Enable HTTP handoff if you create and apply IM policy.

To allow a specific IM client to connect using the HTTP protocol through the ProxySG and that IM protocol has not been licensed, disable HTTP handoff to allow the traffic to be treated as plain HTTP traffic and to avoid an error in the licensing check performed by the IM module. This might be also be necessary to temporarily pass through traffic from new versions of IM clients that are not yet supported by Blue Coat.

### To enable HTTP handoff:

1. From the Management Console, select **Configuration > Services > IM Proxies > IM Proxy Settings**.
2. In the **General Settings** field, select **Enable HTTP Handoff**.
3. Click **Apply**.

Result: IM-specific policies are applicable on IM communications.



## Configuring IM Alerts

A ProxySG IM alert is an IM message sent to clients upon an action triggered by policy. An IM alert contains two elements:

- ❑ Admin buddy names: You can assign an administrator buddy name for each client type. An administrator buddy name can be a registered name user handle or a fictitious handle. The benefit of using a registered name is that users can send IM messages to the administrator directly to report any issues, and that communication can be logged for tracking and record-keeping. By default, the ProxySG assigns each IM protocol the admin buddy name: Blue Coat ProxySG.
- ❑ Exception message delivery method: Alert messages can be delivered in the same window or spawn a new window.

### To configure IM alert components:

1. From the Management Console, select **Configuration > Services > IM Proxies > IM Alert Settings**.



2. In the **Admin buddy names** field, enter the handle or handles to represent the administrator. In this example, the company sanctions AOL Messenger as the one used for internal communications. IM alerts are sent from **Example Corp IT**. MSN and Yahoo are acceptable for personal use, but a created policy denies file transfers. Alerts are sent from **Example Corp HR**.
3. Specify the exceptions message delivery method:
  - a. **Send exception messages in a separate window (out-of-band)**—If an exception occurs, the user receives the message in a separate IM window.
  - b. **Send exception messages in the existing window (in-band)**—If an exception occurs, the message appears in the same IM window. The message appears to be sent by the buddy on the other end, with the exception that when in a chat room, the message always appears to be sent by the configured Admin buddy name. You can enter a prefix message that appears in the client window before the message. For example: **Inappropriate IM use. Refer to Employee Conduct Handbook concerning Internet usage.**

---

**Note:** Regardless of the IM exception delivery configuration, IM alert messages triggered by policy based on certain protocol methods are always sent out-of-band because a specific buddy is not associated.

---

4. Click **Apply**.

ProxySG IM proxy configuration is complete. The final step is to configure IM clients to send traffic to the ProxySG.

## Configuring IM Clients

This section describes how to configure the IM clients to send traffic through the ProxySG.

## General Configuration

As each IM client has different menu structures, the procedures to configure them differ. This section provides the generic tasks that need to be completed.

### Explicit Proxy

Perform the following tasks on the IM client:

1. Navigate to the Connection Preferences dialog.
2. Select **Use Proxies**.
3. Select proxy type as **SOCKS V5**.
4. Enter the ProxySG IP address.
5. Enter the SOCKS port number; the default is **1080**.
6. Enter authentication information, if required.

### Transparent Proxy

IM clients do not require any configuration changes for transparent proxy. An L4 switch or inline ProxySG routes the traffic.

## AOL Messenger Client Explicit Proxy Configuration

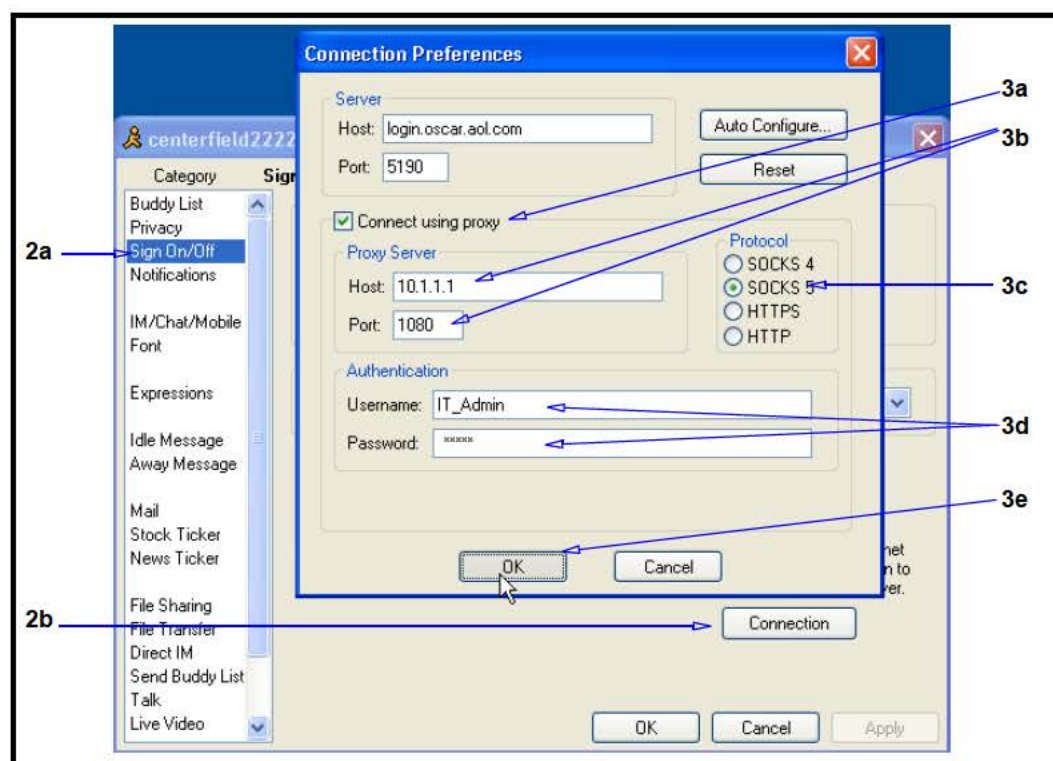
The following example configures a Yahoo Messenger client for explicit proxy.

---

**Note:** This example uses AOL Messenger 5.9. Other versions might vary.

---

1. Select **My AIM > Edit Options > Edit Preferences**.



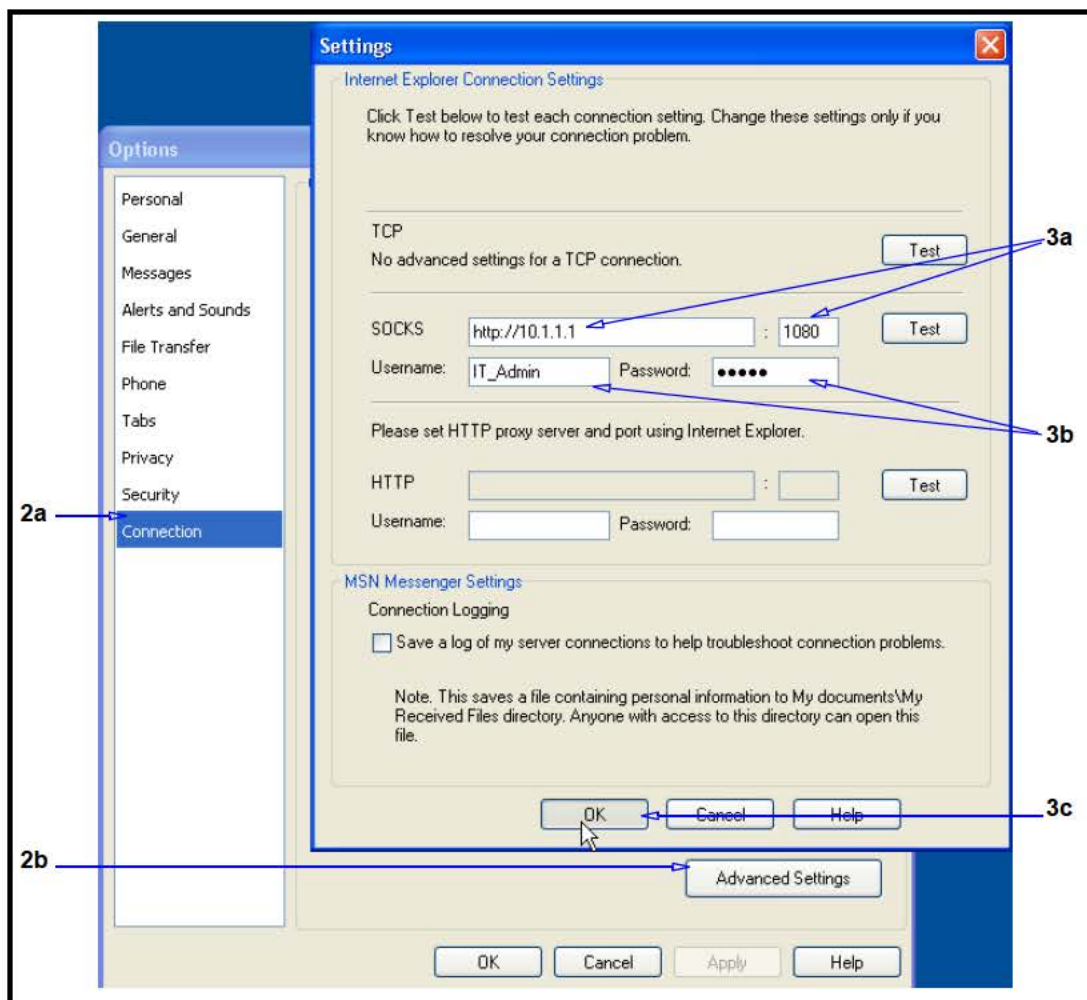
2. Navigate to Connection Preferences:
  - a. Select **Sign On/Off**.
  - b. Click **Connection**.
3. Configure the proxy settings:
  - a. Select **Connect using proxy**.
  - b. In the **Host** field, enter the ProxySG IP address. If the default port is **1080**, accept it; if not, change it to port **1080**.
  - c. Select **SOCKS 5**.
  - d. If authentication is required on the ProxySG, enter the authentication user name and password.
  - e. Click **OK** to close the Connections Preferences dialog.
4. Click **OK** to close the Preferences dialog. Result: the AOL client now sends traffic to the ProxySG.

### *MSN Messenger Client Explicit Proxy Configuration*

The following example configures a Yahoo Messenger client for explicit proxy.

**Note:** This example uses MSN Messenger 7.5. Other versions might vary.

1. From MSN Messenger, select **Tools > Options**.



2. Navigate to Settings:
  - a. Click **Connection**.
  - b. Click **Advanced Settings**. The Settings dialog appears.
3. Configure the proxy settings:
  - a. In the **SOCKS** field, enter the ProxySG IP address. If the default port is **1080**, accept it; if not, change it to port **1080**.
  - b. If authentication is required on the ProxySG, enter the authentication user name and password.
  - c. Click **OK**.
4. Click **OK** to close the **Options** dialog. Result: the MSN client now sends traffic to the ProxySG.

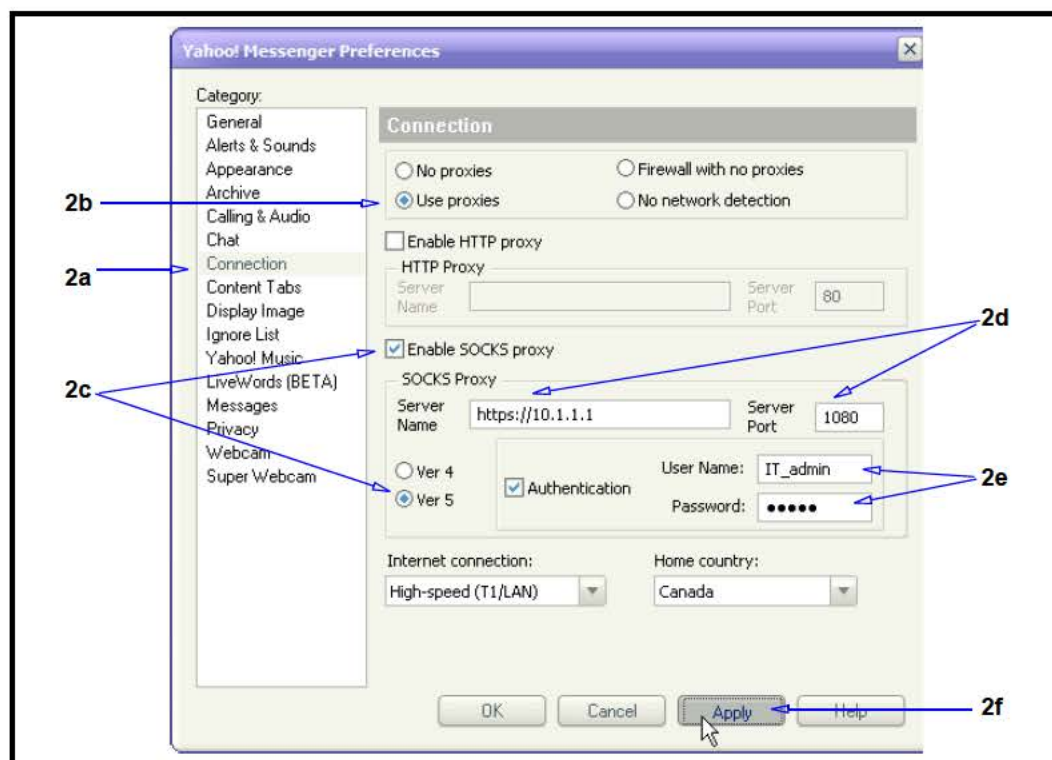
### *Yahoo Messenger Client Explicit Proxy Configuration*

The following example configures a Yahoo Messenger client for explicit proxy.



**Note:** This example uses Yahoo Messenger 7.0. Other versions might vary.

1. From Yahoo Messenger, select **Messenger > Preferences**.



2. Configure the following features:
  - a. Click **Connection**.
  - b. Select **Use proxies**.
  - c. Select **Enable SOCKS proxy**; select **Ver 5**.
  - d. Enter the ProxySG IP address. If the default port is **1080**, accept it; if not, change it to port **1080**.
  - e. If authentication is required on the ProxySG, enter the authentication user name and password.
  - f. Click **Apply** and **OK**. Result: the Yahoo client now sends traffic to the ProxySG.

### Notes

If Yahoo Messenger is configured for explicit proxy (SOCKS) through the ProxySG, the IM voice chat feature is disabled. Any client attempting a voice chat with a client behind the ProxySG firewall receives an error message. The voice data stream is carried by default on port 5001; therefore, you can create and open this port and configure Yahoo IM to use transparent proxy. However, the ProxySG only supports the voice data in pass-through mode.

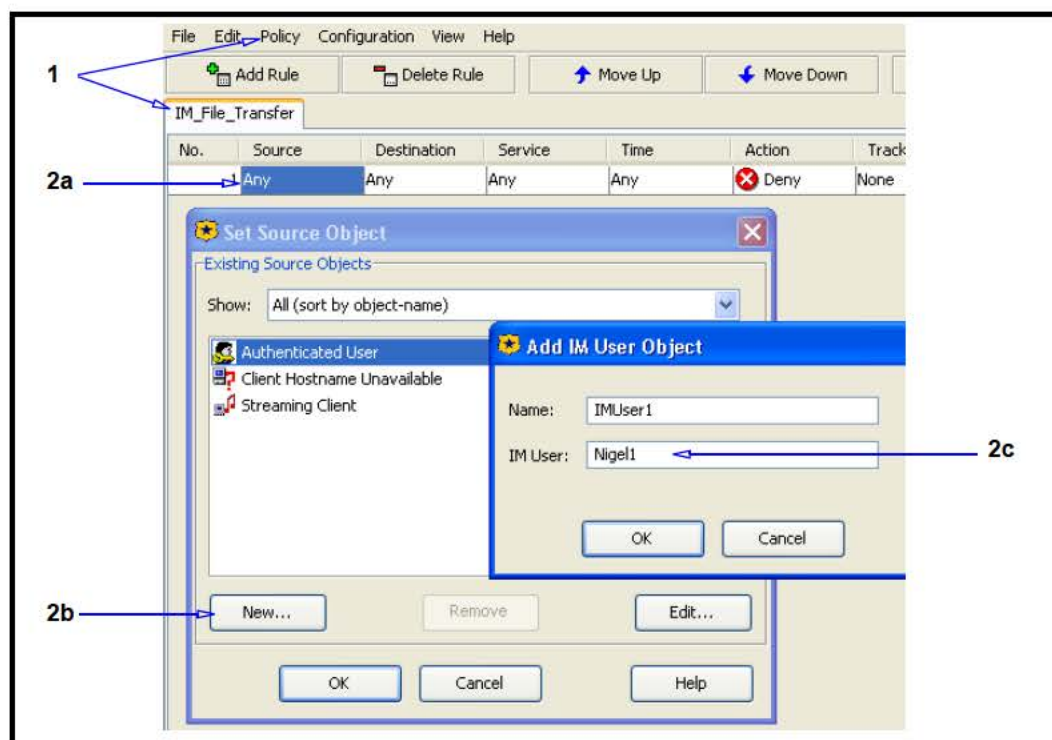
## Policy Examples

After the IM clients are configured to send traffic through the ProxySG, you can control and limit IM activity. The Visual Policy Manager (VPM) allows you to create rules that control and track IM communications, including IM activities based on users and groups, IM handle, chat room handle, file name, and other triggers.

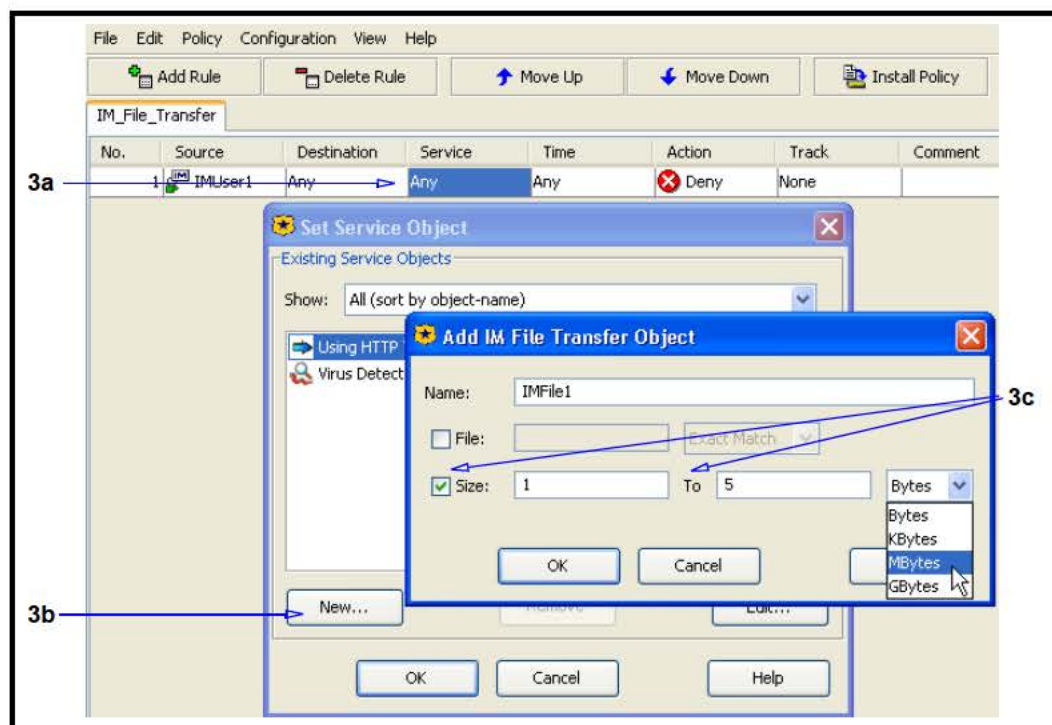
To learn about the VPM, refer to *Volume 6: The Visual Policy Manager and Advanced Policy*.

### Example 1: File Transfer

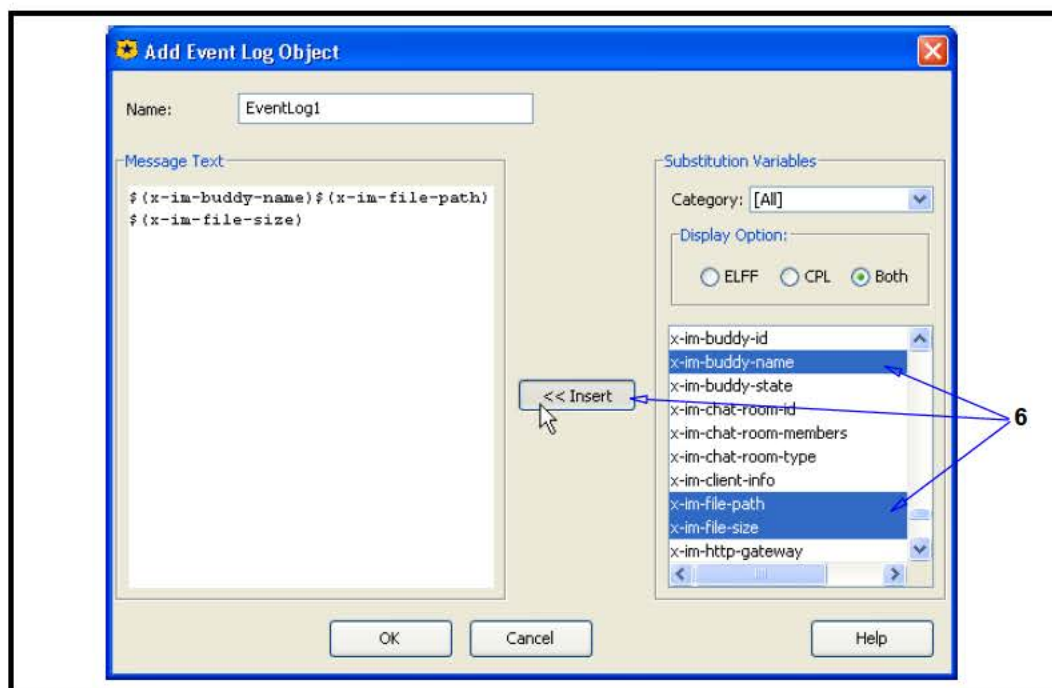
The following example demonstrates an IM rule created with the VPM that IM handle **Nigel1** can perform a file transfer at any time, but the file must be between 1 and 5 MB in size, and the handle, the file path, and file size are logged.



1. In the VPM, select **Policy > Add Web Access Layer**; name it **IM\_File\_Transfer**.
2. Create a new IM user object:
  - a. Right-click the **Source** field; select **Set**. The Set Source Object dialog appears.
  - b. Click **New**; select **IM User**. The Add IM User Object dialog appears.
  - c. In the **IM User** field, enter Nigel1; click **OK** in each dialog.



3. Create a File Transfer object:
  - a. Right-click the **Service** field; select **Set**. The Set Service Object dialog appears.
  - b. Click **New**; select **IM File Transfer**. The Add IM File Transfer dialog appears.
  - c. Select **Size** and enter a range 1 and 5.
  - d. Select **MBytes** from the drop-down list; click **OK** in each dialog.
4. Right-click the **Track** field; select **Set**. The Add Track Object dialog appears.
5. Click **New**; select **Event Log**. The Add Event Log Object dialog appears.



6. From the **Substitution Variables** list, select **x-im-buddy-name** and click insert. Repeat for **x-im-file-path** and **x-im-file-size**. Click **OK** in each dialog.



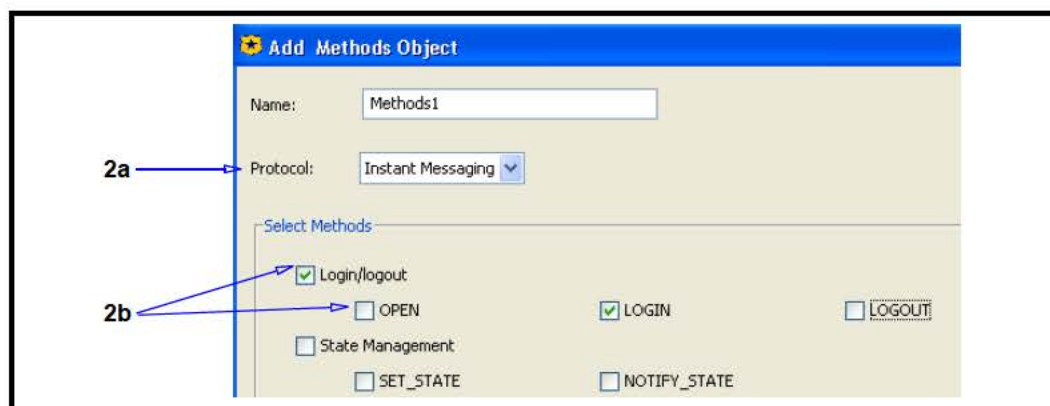
7. In the VPM, click **Install Policy**.

### Example 2: Send an IM Alert Message

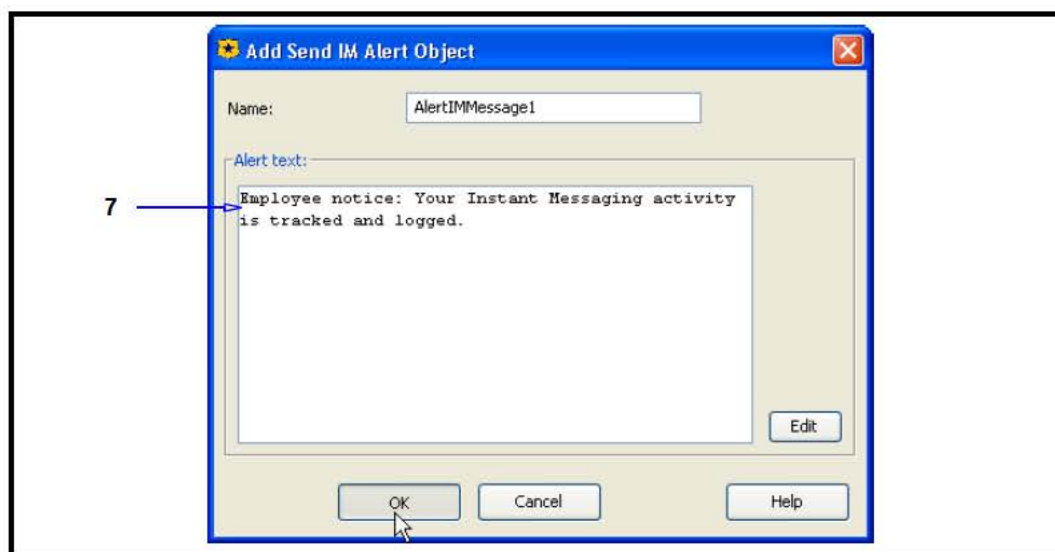
The following example demonstrates a rule created with the VPM that informs all IM users when they login that their IM activity is tracked and logged.

1. In the VPM, select **Policy > Add Web Access Layer**; name it **IM\_NotifyMessage**.
2. Right-click the **Service** field; select **Set**. The Set Service Object dialog appears.
3. Click **New**; select **Protocol Methods**. The Add Methods Object dialog appears.





4. Configure protocol method options:
  - a. From the **Protocol** drop-down list, select **Instant Messaging**.
  - b. Click **Login/Logout**; **LOGIN**; click **OK** to close the dialog; click **OK** to insert the object in the rule.
  - c. Click **OK** in each dialog.
5. Right-click the **Action** field; select **Set**. The Set Action Object dialog appears.
6. Click **New**; select **Send IM Alert**. The Add Send IM Alert Object dialog appears.



7. In the **Alert Text** field, enter a message that appears to users. For example, **Employee notice: Your Instant Messaging activity is tracked and logged**.
8. Click **OK** to close the dialog; click **OK** to insert the object in the rule.
9. Click **Install Policy**.

## Reference: Equivalent IM CLI Commands

The configuration tasks describes in this chapter can also be accomplished through the ProxySG CLI. The following are the equivalent CLI command syntaxes:

- ❑ To enter configuration mode:

```
SGOS#(config) proxy-services  
SGOS#(config proxy-services) create {aol-im | msn-im | yahoo-im}  
service_name
```

- ❑ The following submodes are available:

```
SGOS#(config proxy-services) edit service-name  
SGOS#(config service-name) add all | ip_address | ip_address/subnet-  
mask {port | first_port-last_port} [intercept | bypass]  
SGOS#(config service-name) attribute reflect-client-ip {enable |  
disable}  
SGOS#(config service-name) bypass all | ip_address | ip_address/  
subnet-mask {port | first_port-last_port}  
SGOS#(config service-name) exit  
SGOS#(config service-name) intercept all | ip_address | ip_address/  
subnet-mask {port | first_port-last_port}  
SGOS#(config service-name) remove all | ip_address | ip_address/  
subnet-mask {port | first_port-last_port}  
SGOS#(config service-name) view
```

## Reference: Access Log Fields

The default Blue Coat IM fields are (only IM-specific or relative are listed and described):

- ❑ `cs-protocol`: Protocol used in the client's request.
- ❑ `x-im-method`: The method associated with the instant message.
- ❑ `x-im-user-id`: Instant messaging user identifier.
- ❑ `x-im-user-name`: Display name of the client.
- ❑ `x-im-user-state`: Instant messaging user state.
- ❑ `x-im-client-info`: The instant messaging client information.
- ❑ `x-im-buddy-id`: Instant messaging buddy ID.
- ❑ `x-im-buddy-name`: Instant messaging buddy display name.
- ❑ `x-im-buddy-state`: Instant messaging buddy state
- ❑ `x-im-chat-room-id`: Instant messaging identifier of the chat room in use.
- ❑ `x-im-chat-room-type`: The chat room type, one of public or public, and possibly `invite_only`, `voice` and/or `conference`.
- ❑ `x-im-chat-room-members`: The list of chat room member IDs.
- ❑ `x-im-message-text`: Text of the instant message.
- ❑ `x-im-message-size`: Length of the instant message
- ❑ `x-im-message-route`: The route of the instance message.
- ❑ `x-im-message-type`: The type of the instant message.
- ❑ `x-im-file-path`: Path of the file associated with an instant message.

- ❑ `x-im-file-size`: Size of the file (in...?) associated with an instant message.

## Reference: CPL Triggers, Properties, and Actions

The following Blue Coat CPL is supported for IM:

### *Triggers*

- ❑ `im.buddy=`
- ❑ `im.chat_room.conference=`
- ❑ `im.chat_room.id=`
- ❑ `im.chat_room.invite_only=`
- ❑ `im.chat_room.type=`
- ❑ `im.chat_room.member=`
- ❑ `im.chat_room.voice_enabled=`
- ❑ `im.client=`
- ❑ `im.file.extension=`
- ❑ `im.file.name=`
- ❑ `im.file.path=`
- ❑ `im.file.size=`
- ❑ `im.message.opcode=`
- ❑ `im.message.reflected=`
- ❑ `im.message.route=`
- ❑ `im.message.size=`
- ❑ `im.message.text=`
- ❑ `im.message.type=`
- ❑ `im.method=`
- ❑ `im.user_agent=`
- ❑ `im.user_id=`

### *Properties and Actions*

- ❑ `im.block_encryptions()`
- ❑ `im.reflect()`
- ❑ `im.strip_attachments()`
- ❑ `im.transport()`
- ❑ `im.alert()`

## IM History Statistics

The IM statistics allow you to track IM connections, file transfers, and messages that are currently in use and in total, or have been allowed and denied. The information can be displayed for each IM client type or combined.

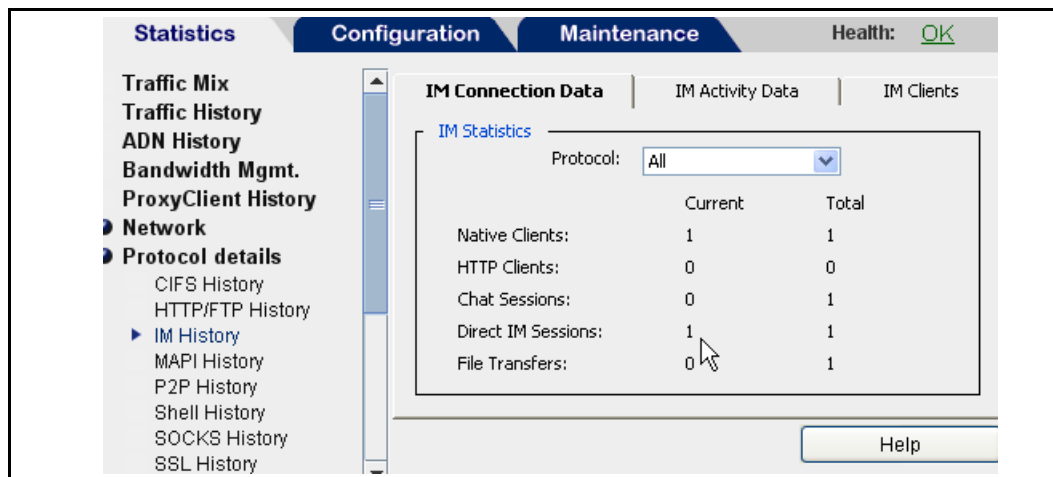
### **IM Connection Data Tab**

The following IM Connection Data statistics indicate current and overall connection data since the last statistics clear:

- ❑ **Native Clients**—The number of native IM clients connected.
- ❑ **HTTP Clients**—The number of HTTP IM clients connected.
- ❑ **Chat Sessions**—The number of IM chats occurring.
- ❑ **Direct IM Sessions**—The number of chats using direct connections.
- ❑ **File Transfers**—The number of file transfers sent through IM clients.

**To view the connection data statistics:**

1. Select **Statistics > Protocol Details > IM History > IM Connection Data**.



2. The default protocol is **All**. To select a specific protocol, select **AOL**, **MSN**, or **Yahoo** from the drop-down list.

## IM Activity Data Tab

The following IM Activity Data statistics indicate allowed and denied connections since the last statistics clear:

- ❑ **Logins**—The number of times IM clients have logged in.
- ❑ **Messages**—The number of IM messages.
- ❑ **File Transfers**—The number of file transfers sent through IM clients.
- ❑ **Voice Chats**—The number of voice conversations through IM clients.
- ❑ **Messages**—The number of IM messages reflected or not reflected (if IM Reflection policy is enabled).

---

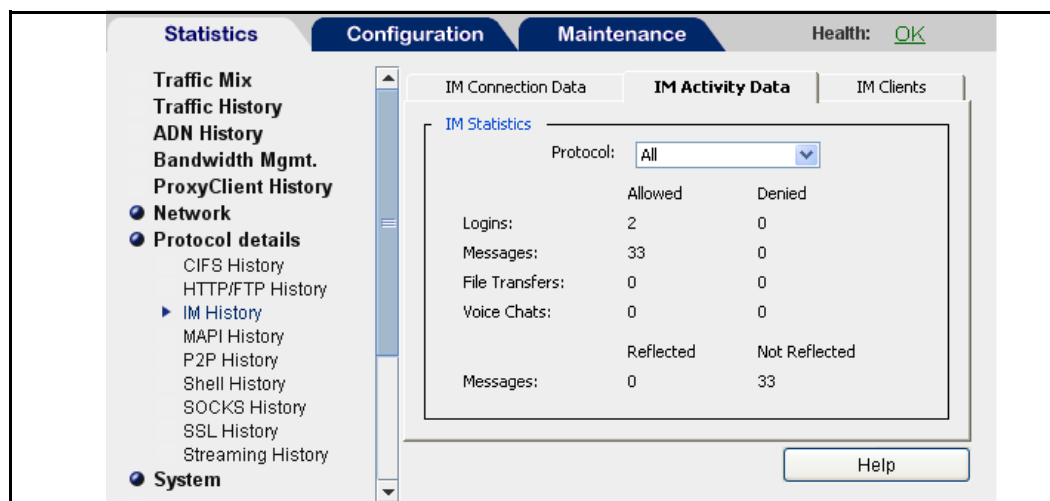
**Note:** The IM activity data statistics are available only through the Management Console.

---

**To view the activity data statistics:**

1. Select **Statistics > Protocol Details > IM History > IM Activity Data**.





2. The default protocol is **All**. To select a specific protocol, select **AOL**, **MSN**, or **Yahoo** from the drop-down list.

### IM Clients Tab

The IM Clients tab displays dynamic graphical statistics for connections over 60 minutes, 24 hours and 30 days. The page displays all values in the graph or clip a percentage of peak values. When peak values are clipped by a percentage, that percentage is allowed to fall off the top of the scale.

For example, if you clip 25% of the peaks, the top 25% of the values are allowed to exceed the scale for the graph, showing greater detail for the remaining 75% of the values.

Move the cursor over the graphs to dynamically display the color-coded AOL, MSN, Yahoo, and total statistics.

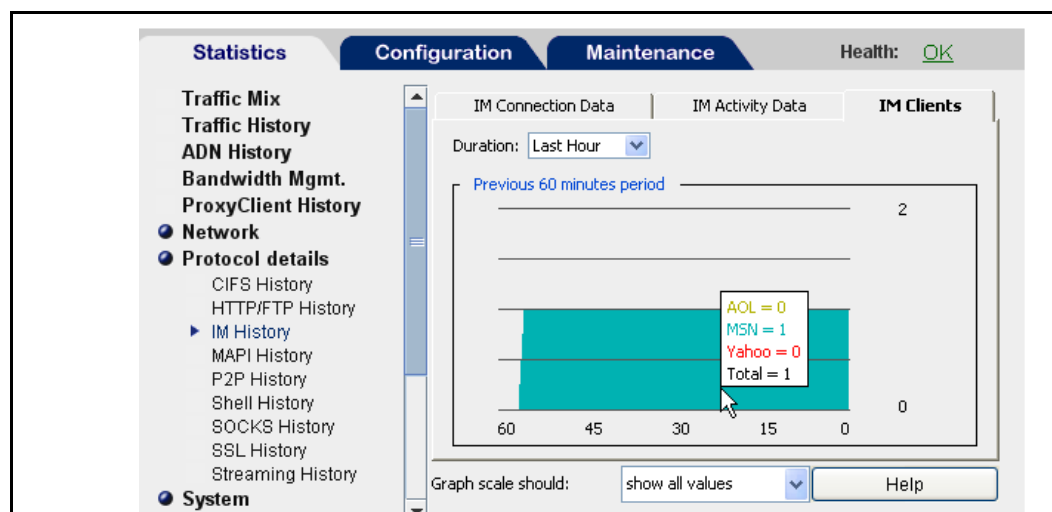
---

**Note:** The IM clients statistics are available only through the Management Console.

---

#### To view the client connection statistics:

1. Select **Statistics > Protocol Details > IM History > IM Clients**.



2. Select the **Duration:** for which the graph displays. The default is last hour. You can select from last hour, last day, last month and all periods.
3. (Optional) To set the graph scale to a different value, select a value from the **Graph scale should** drop-down list.

## Chapter 3: Managing Streaming Media

This chapter describes how to manage streaming content on the enterprise network through the ProxySG streaming proxies.

### *Topics of this Chapter*

This chapter includes information about the following topics:

- ❑ [Section A: "Concepts: Streaming Media"](#) on page 36—Explain general streaming solution concepts and terminology, as well as ProxySG streaming solution concepts and functionality.
- ❑ [Section B: "Configuring Streaming Media"](#) on page 51—Provides procedures for configuring the ProxySG to manage streaming media applications and bandwidth.
- ❑ [Section C: "Additional Windows Media Configuration Tasks"](#) on page 65—Provides additional procedures for configuring Windows Media.
- ❑ [Section D: "Configuring Windows Media Player"](#) on page 75—Explains
- ❑ how to configure the Windows Media client and describes associated interactivities and access log conventions.
- ❑ [Section E: "Configuring RealPlayer"](#) on page 79—Explains how to configure the Real Media client.
- ❑ [Section F: "Configuring QuickTime Player"](#) on page 83—Describes how to configure the QuickTime client.
- ❑ [Section G: "Supported Streaming Media Clients and Protocols"](#) on page 84—Describes the vendor-specific streaming protocols supported by the ProxySG.

## Section A: Concepts: Streaming Media

### Section A: Concepts: Streaming Media

This section contains the following topics:

- ❑ ["How the ProxySG Accelerates and Controls Media Streaming"](#) on page 36
- ❑ ["What is Streaming Media?"](#) on page 36
- ❑ ["About Windows Media"](#) on page 37
- ❑ ["About Processing Streaming Media Content"](#) on page 41
- ❑ ["About Streaming Media Authentication"](#) on page 48

### How the ProxySG Accelerates and Controls Media Streaming

The ProxySG streaming media proxies allow you to monitor, control, limit, or even block streaming media traffic on your network. Using the ProxySG for streaming delivery improves the quality of streaming media, reducing stutter and static. It supports the most popular streaming media clients: Windows Media, Real Media, and QuickTime.

ProxySG supports a variety of acceleration, control, and visibility features for streaming media. It provides acceleration features such as live splitting, video-on-demand caching, content prepopulation, and multicasting. It also offers control and visibility features such as fine-grained policy control including authentication, bandwidth limiting, access logging, and limiting the maximum user connections. ProxySG supports all the delivery methods supported by the client applications: TCP and UDP for unicast, HTTP, and multicast.

For example, ProxySG's *pre-population* process can deliver on-demand videos to branch offices during off-hours and save them for future viewing. ProxySG appliances can also cache or save video requested from the headquarters location by a user in a branch office and store it locally for use by subsequent viewers. In the case of live video broadcasts, ProxySG appliances can take a single stream of video and then split it locally into enough streams to serve all local viewers; this is called *live splitting*. The appliance's ability to identify individual users also enables the company to track which employees have watched required videos.

### What is Streaming Media?

Streaming media is a term used to describe media files that are served in discrete paced individual packets rather than in bulk, playing while they are being transmitted over the network to the media player on the client computer. In contrast, conventional Web files, which are downloaded through a file transfer, must be downloaded entirely before the user can view them. Commonly requested types of streaming media are video and audio. Streaming media also includes interactive media, cartoon-like animations, panoramic data, and more.

### *Live versus On-Demand Streaming Media*

Streaming media is delivered in the following ways:

## Section A: Concepts: Streaming Media

- ❑ **Live media streams** Live media streams occur in real time, like the news program that you watch on your television set. Some organizations record a live media stream and then broadcast the media stream to their employees or customers at a specified time. All users who have requested the media stream see the same media stream at the same time. Users are not able to rewind or fast-forward the media stream.
- ❑ **On-demand (previously-recorded) media streams** Users can request these on-demand media streams at a time most convenient to them. Users can pause the media, seek to a different position, rewind, and fast-forward on-demand media streams. On-demand streaming content is commonly referred to as VOD (vide-on-demand).

ProxySG supports both of these types of streaming media.

## Streaming Media and Bandwidth

Video, audio, and other streaming media use a considerable amount of bandwidth—much more than the amount of bandwidth needed for Web and news traffic. For example, a media stream could require 10 KB each second, whereas a Web page that the user views for 10 seconds could require 10 KB.

In the typical streaming server-client model, the streaming server sends a separate copy of the media stream to each client that requested the same unique stream. Because streaming media uses a considerable amount of bandwidth, delivering multiple copies of the same media data between the streaming server and the clients can cause significant network and server congestion. The more clients that request the same media stream, the more bandwidth is used.

Planning for efficient bandwidth use is important for streaming media because bandwidth use has a direct correspondence to the quality of the media streams that are delivered to the clients. If your network is congested, your users are likely to experience problems such as jagged video, patchy audio, and unsynchronized video and audio as packets are dropped or arrive late. Conversely, the more bandwidth that is available, the better the quality of media streams.

The ProxySG has several methods for allocating bandwidth to streaming media traffic. See "[Limiting Bandwidth](#)" on page 43.

## About Windows Media

For heightened security and control, some enterprises prefer network environments that restrict Web traffic access (gateway connections) to port 80. Furthermore, beginning with Windows Media Player (WMP) version 11, WMP clients do not use the Microsoft Media Services (MMS) protocol—opting instead for traffic over HTTP and the Real Time Streaming Protocol (RTSP).

Windows Media streaming over HTTP differs slightly from downloading Windows Media objects over HTTP, which can be stored on any Web server. Streaming content, however, must be hosted on Windows Media Servers that allow the streaming of content over port 80.

## Section A: Concepts: Streaming Media

Beginning in version 5.3, SGOS offers unified support for WM content delivered over RTSP and HTTP. The ProxySG HTTP proxy hands off Windows Media Player HTTP streaming requests to the Windows Media HTTP Module, which itself is a component of the Windows Media RTSP Proxy.

The ProxySG supports the caching of WM content over the RTSP and HTTP protocols. The ProxySG uses the same object cache, which means the content can be served over RTSP and HTTP protocols. WM-HTTP and WM-RTSP both share the same cache.

Live splitting is also supported over both protocols, where all RTSP clients are served by an RTSP splitter and all HTTP clients are served by a separate HTTP splitter, involving two separate live streams to the server, one each for RTSP and HTTP.

### *Pre-Populating WM Objects Hosted on a Web Server*

SGOS 5.3 also supports pre-population of WM content from a Web server for the subsequent serving of RTSP and HTTP streaming requests for the content from the cache. This feature is in addition to the already existing support for pre-population of WM content from a WM server using the RTSP protocol. Existing content CLI commands can be used for this feature.

For example:

```
content distribute rtsp://wm_server/bar.wmv from http://web_server/  
bar.wmv
```

---

**Note:** In the example above, `rtsp://wm_server/bar.wmv` should also be accessible as a streaming object on a streaming server.

---

### *Windows Media Deployment*

In a Gateway Proxy deployment, the ProxySG supports the caching and splitting of WM content over the RTSP and HTTP protocols. In addition, there are streaming-specific acceleration and policy checks for WM HTTP streaming traffic.

In a Reverse Proxy deployment, the ProxySG can function as a Windows Media server, with WM content delivered over the RTSP and HTTP protocols.

As a Content Delivery Network (CDN) node, the ProxySG supports a shared cache for pre-populated content for delivery over RTSP or HTTP protocols.

Deployment action: Windows Media clients must be configured to enable the HTTP protocol to stream the WM content using HTTP protocol. Similarly, WM clients must be configured to enable RTSP/TCP, and/or RTSP/UDP protocols to stream WM content using RTSP protocol.

### *Supported Streaming Features*

The following table describes the supported Windows Media streaming features.

## Section A: Concepts: Streaming Media

**Live Support**

Table 3–1 Windows Media live streaming feature support

Feature	Live Support
Multi-Bit Rate and Thinning	Yes
UDP Retransmission	No
Server-Side Playlists	Yes
Stream Change	Yes
Splitting Server-Authenticated Data	Yes
Splitting Proxy-Authenticated Data	Yes

**On-Demand Support**

Table 3–2 Windows Media on-demand streaming feature support

Feature	On-Demand Support
Multi-Bit Rate and Thinning	Yes
Fast Forward and Rewind	No Caching
Fast Streaming	Yes
UDP Retransmission	No
Server-Side Playlists	No Caching
Stream Change	No
Caching Server-Authenticated Data	Yes
Caching Proxy-Authenticated Data	Yes
Adherence to RTSP Cache Directives	Yes
Partial File Caching	Yes
File Invalidation/Freshness checking for Cached Files	Yes

**Multicast Support**

Table 3–3 Windows Media Multicast UDP streaming feature support

Feature	Multicast
Multi-Bit Rate and Thinning	Yes
Server-Side Playlists	No
Stream Change	No

## Section A: Concepts: Streaming Media

Table 3–3 Windows Media Multicast UDP streaming feature support (Continued)

Feature	Multicast
Multicasting Server-Authenticated Data	No
Multicasting Proxy-Authenticated Data	No

### Other Supported Features

The Windows Media streaming feature also supports the following features:

- ❑ Access logging for unicast clients
- ❑ Summary statistics in the Management Console
- ❑ Detailed statistics
- ❑ Forwarding of client streaming logs to origin servers.

### Supported VPM Properties and Actions

Windows Media supports the following policy properties and actions:

- ❑ `allow, deny, force_deny`
- ❑ `access_server(yes|no)`. Forces the ProxySG to deliver content only from the cache. Requests for live streams are denied.
- ❑ `authenticate(realm)`
- ❑ `forward(alias_list|no)`
- ❑ `forward.fail_open(yes|no)`
- ❑ `reflect_ip(auto|no|client|vip|<ip address>)`
- ❑ `bypass_cache(yes|no)`. Forces the ProxySG to deliver content in pass-through mode.
- ❑ `limit_bandwidth()`
- ❑ `rewrite()`. One-way URL rewrite of server-side URLs is supported.

Windows Media also supports the following streaming-relevant properties:

- ❑ `max_bitrate(bitrate|no)`. Sets the maximum bit rate that can be served to the client. (This property does not apply to the bit rate consumed on the gateway connection.) If the bit rate of a client-side session exceeds the maximum bit rate set by policy, that client session is denied.
- ❑ `force_cache(yes|no)`. Causes the ProxySG to ignore cache directives and cache VOD content while serving it to clients.

---

**Note:** Windows Media does not support policy-based streaming transport selection.

---



## Section A: Concepts: Streaming Media

## Bandwidth Management

Windows Media supports bandwidth management for both client-side and gateway-side streaming traffic. Bandwidth limits are also supported for pass-through streams. See "[Limiting Bandwidth](#)" on page 43 for more information.

## About Processing Streaming Media Content

The following sections describe how the ProxySG processes, stores, and serves streaming media requests. Using the ProxySG for streaming delivery minimizes bandwidth use by allowing the ProxySG to handle the broadcast and allows for policy enforcement over streaming use. The delivery method depends on whether the content is live or video-on-demand.

## Delivery Methods

The ProxySG supports the following streaming delivery methods:

- ❑ **Unicast**—A one-to-one transmission, where each client connects individually to the source, and a separate copy of data is delivered from the source to each client that requests it. Unicast supports both TCP- and UDP-based protocols. The majority of streaming media traffic on the Internet is unicast.
- ❑ **Multicast**—Allows efficient delivery of streaming content to a large number of users. Multicast enables hundreds or thousands of clients to play a single stream, thus minimizing bandwidth use.

The following table provides a high-level comparison of unicast and multicast transmission.

Table 3–4 Unicast vs. Multicast

Element	Unicast	Multicast
Connections	One-to-one transmission	One-to-many transmission
Transport	TCP, UDP, HTTP	IP multicast channel
Type of stream	Video-on-demand or live streams	Live streams only
Device requirement	The network devices use unicast.	The network devices must support multicast (not all do).

## Serving Content: Live Unicast

A live broadcast can either be truly live or can be of prerecorded content. A common example is a company president making a speech to all employees.

A ProxySG can serve many clients through one unicast connection by receiving the content from the origin content server (OCS) and then splitting that stream to the clients that request it. This method saves server-side bandwidth and reduces the server load.

## Section A: Concepts: Streaming Media

Note that you cannot pause or rewind live broadcasts.

### *Serving Content: Video-on-Demand Unicast*

Video-on-demand (VOD) is a service in which individuals can select programming from a central information bank, allowing a movie or film clip to be broadcasted immediately when requested. Common examples of VOD include training videos or news broadcasts.

A ProxySG stores frequently requested data and distributes it upon client requests. Because the ProxySG is closer to the client than the origin server, the data is served locally, which saves firewall bandwidth and increases quality of service by reducing pauses or buffering during playback. Because of its proximity to the end user, the ProxySG provides higher quality streams (also dependent on the client connection rate) than the origin server.

Note that VOD content can be paused, rewound, and played back.

### *Serving Content: Multicast Streaming*

Multicast transmission is analogous to a radio frequency on which any device can listen. Any device that supports multicast can transmit on the multicast channel. One copy of the data is sent to a group address. Devices in the group listen for traffic at the group address and join the stream if clients in the routing tree are requesting the stream. Only the group participants receive the traffic at the address associated with the group. Broadcasts differ from multicast because broadcast traffic is sent to the entire network.

For multicast transmission to occur, the network devices through which the content is to be sent must support multicast. In particular:

- ❑ Content creators must explicitly set up their streaming servers to support multicast.

For example, for Windows Media, content creators can set up multicast-enabled stations, stations that are not multicast-enabled, or both. For RealNetworks, the configuration of the server includes specifying whether the server supports multicast and, if so, which clients (subnets) can use multicast.

- ❑ Routers on the path must support multicast.
- ❑ Clients must request a multicast transmission. Media players that are set for multicast transmission simply join the multicast channel to receive the streaming data, sometimes without establishing an explicit one-to-one connection to the device sending the transmission.

### **Benefits of Multicast**

The benefits of using multicast for streaming media include the following:

- ❑ It alleviates network congestion.

### Section A: Concepts: Streaming Media

- ❑ For live streaming events that have a large audience, multicast significantly reduces network traffic compared to the traffic that would result from transmitting the same live event over unicast. If unicast transport is used, the same content must be sent across the network multiple times or it must be broadcast to all devices on the network.
- ❑ It scales well as the number of participants expand.
- ❑ It is well suited for efficient transmission over satellite links.

A company might, for example want to reserve WAN connections for business-critical traffic, such as stock trades, but it needs a way to deliver corporate broadcasts. The company could efficiently transmit corporate broadcasts over satellite by using multicast transmission and reserve the WAN for business-critical traffic.

- ❑ It enables network planners to proactively manage network growth and control cost because deploying multicast is more cost-effective than alternatives for increasing LAN and WAN capabilities.

### Limitations of Multicast

The limitations of multicast include the following:

- ❑ In general, multicast support is not yet available on the Internet. Therefore, using multicast to deliver content is limited to intranet-style deployments.
- ❑ Not all networking equipment supports multicasting. In addition, not all network administrators enable the multicast functionality on their networking equipment.
- ❑ Switches do not understand multicast. When a multicast stream reaches a switch, the switch sends the multicast stream to all of its ports. A switch treats a multicast address as an Ethernet broadcast.

### About Serving Multicast Content

The ProxySG takes a multicast stream from the origin server and delivers it as a unicast stream. This avoids the main disadvantage of multicasting—that all of the routers on the network must be multicast-enabled to accept a multicast stream. Unicast-to-multicast, multicast-to-multicast, and broadcast alias-(scheduled live from stored content)-to-multicast are also supported.

For Windows Media multicast, a Windows Media Station file (.NSC) is downloaded through HTTP to acquire the control information required to set up content delivery.

For Real Media, multicasting maintains a TCP control (accounting) channel between the client and media server. The multicast data stream is broadcast using UDP from the ProxySG to streaming clients, who join the multicast.

### Limiting Bandwidth

The following sections describe how to configure the ProxySG to limit global and protocol-specific media bandwidth.

## Section A: Concepts: Streaming Media

To manage streaming media bandwidth, you configure the ProxySG to restrict the total number of bits per second the appliance receives from the origin media servers and delivers to clients. The configuration options are flexible to allow you to configure streaming bandwidth limits for the ProxySG, as well as for each streaming protocol (Windows Media, Real Media, and QuickTime).

---

**Note:** Bandwidth claimed by HTTP, non-streaming protocols, and network infrastructure is not constrained by this limit. Transient bursts that occur on the network can exceed the hard limits established by the bandwidth limit options.

---

After it has been configured, the ProxySG limits streaming access to the specified threshold. If a client tries to make a request after a limit has been reached, the client receives an error message.

---

**Note:** If a maximum bandwidth limitation has been specified for the ProxySG, the following condition can occur. If a Real Media client, followed by a Windows Media client, requests streams through the same ProxySG and total bandwidth exceeds the maximum allowance, the Real Media client enters the rebuffering state. The Windows Media client continues to stream.

---

Consider the following features when planning to limit streaming media bandwidth:

- ❑ ProxySG to server (all protocols)—The total kilobits per second allowed between the appliance and any origin content server or upstream proxy for all streaming protocols. Setting this option to 0 effectively prevents the ProxySG from initiating any connections to the media server. The ProxySG supports partial caching in that no bandwidth is consumed if portions of the media content are stored in the ProxySG.

Limiting ProxySG bandwidth restricts the following streaming media-related functions:

- Live streaming, where the proxy requests from the server, the sum of all unique bit rates requested by the clients
- The ability to fetch new data for an object that is partially cached
- Reception of multicast streams

- ❑ Client to ProxySG (all protocols)—The total kilobits per second allowed between streaming clients and the ProxySG. Setting this option to 0 effectively prevents any streaming clients from initiating connections through the ProxySG.

Limiting client bandwidth restricts the following streaming media-related functions:

- MBR support; when lower bit-rate selection by the client could have allowed the client to stream, the client is denied when the bandwidth limit is exceeded

## Section A: Concepts: Streaming Media

- Limits the transmission of multicast streams
- Client connections—The total number of clients that can connect concurrently. When this limit is reached, clients attempting to connect receive an error message and are not allowed to connect until other clients disconnect. Setting this variable to 0 effectively prevents any streaming media clients from connecting.

### Selecting a Method to Limit Streaming Bandwidth

The ProxySG offers two methods for controlling streaming bandwidth. The way that each method controls bandwidth differs—read the information below to decide which method best suits your deployment requirements.

Limiting streaming bandwidth using the streaming features (described in this chapter) works as follows: if a new stream comes in that pushes above the specified bandwidth limit, that new stream is denied. This method allows existing streams to continue to get the same level of quality they currently receive.

The alternate way of limiting streaming bandwidth is with the bandwidth management feature. With this technique, all streaming traffic for which you have configured a bandwidth limit shares that limit. If a new stream comes in that pushes above the specified bandwidth limit, that stream is allowed, and the amount of bandwidth available for existing streams is reduced. This causes streaming players to drop to a lower bandwidth version of the stream. If a lower bandwidth version of the stream is not available, players that are not receiving enough bandwidth can behave in an unpredictable fashion. In other words, if the amount of bandwidth is insufficient to service all of the streams, some or all of the media players experience a reduction in stream quality. For details, see *Volume 6: Advanced Networking*.

Because of the degradation in quality of service, for most circumstances, Blue Coat recommends that you use the streaming features to control streaming bandwidth rather than the bandwidth management features. Do *not* use both methods at the same time.

### Caching Behavior: Protocol Specific

This section describes the type of content the ProxySG caches for each supported protocol.

#### Windows Media

The ProxySG caches Windows Media-encoded video and audio files. The standard extensions for these file types are: `.wmv`, `.wma`, and `.asf`.

#### Real Media

The ProxySG caches Real Media-encoded files, such as RealVideo and RealAudio. The standard extensions for these file types are: `.ra`, `.rm`, and `.rmvb`. Other content served from a Real Media server through RTSP is also supported, but it is not

## Section A: Concepts: Streaming Media

cached. This content is served in *pass-through* mode only. (Pass-through mode offers application, layer-7 proxy functionality, but does not support acceleration features—caching, pre-population, splitting, and multi-casting.)

### QuickTime

The ProxySG does not cache QuickTime content (.mov files). All QuickTime content is served in pass-through mode only.

### Caching Behavior: Video-on-Demand

The ProxySG supports the caching of files for VOD streaming. First, the client connects to the ProxySG, which in turn connects to the origin server and pulls the content, storing it locally. Subsequent requests of this same content are served from the ProxySG. This provides bandwidth savings, as every hit to the ProxySG means less network traffic. Blue Coat also supports partial caching of streams.

---

**Note:** On-demand files must be unicast.

---

### Splitting Behavior: Live Broadcast

The ProxySG supports splitting of live content, but behavior varies depending upon the media type.

For live streams, the ProxySG can split streams for clients that request the same stream. First, the client connects to the ProxySG, which then connects to the origin server and requests the live stream. Subsequent requests of the same content from different clients are split from the appliance.

Two streams are considered identical by the ProxySG if they share the following characteristics:

- ❑ The stream is a live or broadcast stream.
- ❑ The URL of the stream requested by client is identical.
- ❑ MMS (Microsoft Media Services), MMSU (MMS UDP), and MMST (MMS TCP) are considered to be identical.

Splitting of live unicast streams provides bandwidth savings, since subsequent requests do not increase network traffic.

### Multiple Bit Rate Support

Content authors normally encode streaming media content into different bit rates to meet the needs of the different speeds of Internet access—modem, ISDN, DSL, and LAN. In contrast, the delivery bit rate is the actual speed at which the content is delivered to the client. For example, a stream encoded for playback at 56Kbps must be delivered to clients at a bit rate of 56Kbps or higher. A client with enough bandwidth might ask the streaming server to send the 56Kbps encoded stream at 220Kbps; the data is buffered locally and played back at 56Kbps. The playback

### Section A: Concepts: Streaming Media

experience of 56Kbps stream delivered at 220Kbps would be better at 220Kbps than at 56Kbps. The reason is that more time is available for the client to request packets to be retransmitted if packets are dropped.

The ProxySG supports multiple bit rate (MBR), which is the capability of a single stream to deliver multiple bit rates to clients requesting content from caches from within varying levels of network conditions (such as different connecting bandwidths and varying levels of competing traffic). This allows the ProxySG and the client to negotiate the optimal stream quality for the available bandwidth even when the network conditions are bad. MBR increases client-side streaming quality, especially when the requested content is not cached.

The ProxySG caches only the requested bit rate. For example, a media client that requests a 50Kbps stream receives that stream, and the ProxySG caches only the 50Kbps bit rate content, no other rate.

### *Bit Rate Thinning*

Thinning support is closely related to MBR, but thinning allows for data rate optimizations even for single data-rate media files. If the media client detects that there is network congestion, it requests a subset of the single data rate stream. For example, depending on how congested the network is, the client requests only the *key video frames* or audio-only instead of the complete video stream.

### *Pre-Populating Content*

The ProxySG supports pre-population of streaming files from both HTTP (Web) servers and origin content servers (that is, streaming servers). Downloading streaming files from HTTP servers reduces the time required to pre-populate the file.

---

**Note:** QuickTime content is not supported.

---

Pre-population can be accomplished through streaming from the media server. The required download time is equivalent to the file length; for example, a two-hour movie requires two hours to download. Now, if the media file is hosted on an HTTP server, the download time occurs at normal transfer speeds of an HTTP object, and is independent of the play length of the media file.

---

**Note:** Content must be hosted on an HTTP server in addition to the media server.

---

Using the content distribute CLI command, content is downloaded from the HTTP server and renamed with a given URL argument. A client requesting the content perceives that the file originated from a media server. If the file on the origin media server experiences changes (such as naming convention), SGOS bypasses the cached mirrored version and fetches the updated version.



## Section A: Concepts: Streaming Media

### About Fast Streaming (Windows Media)

---

**Note:** This feature applies to Windows Media only.

---

Windows Media Server version 9 and higher contains a feature called Fast Streaming that allows clients to provide streams with extremely low buffering time.

SGOS supports the following functionality for both cached and uncached content:

- ❑ Fast Start—Delivers an instant playback experience by eliminating buffering time. The first few seconds of data are sent using the maximum available bandwidth so that playback can begin as soon as possible.
- ❑ Fast Cache—Streams content to clients faster than the data rate that is specified by the stream format.

Fast Recovery and Fast Reconnect are currently not supported.

### About QoS Support

The ProxySG supports Quality of Service (QoS), which allows you to create policy to examine the Type of Service fields in IP headers and perform an action based on that information. For streaming protocols, managing the QoS assists with managing bandwidth classes.

For detailed information about managing QoS, see the Advanced Policy chapter in *Volume 6: The Visual Policy Manager and Advanced Policy*.

## About Streaming Media Authentication

The following sections discuss authentication between streaming media clients and ProxySG appliances and between ProxySG appliances and origin content servers (streaming servers).

### Windows Media Server-Side Authentication

Windows Media server authentication for HTTP and MMS supports the following authentication types:

- ❑ HTTP—BASIC Authentication and Membership Service Account
- ❑ HTTP—BASIC Authentication and Microsoft Windows Integrated Windows Authentication (IWA) Account Database
- ❑ IWA Authentication and IWA Account Database

The ProxySG supports the caching and live-splitting of server-authenticated data. It has partial caching functionality so that multiple security challenges are not issued to Windows Media Player when it accesses different portions of the same media file.

## Section A: Concepts: Streaming Media

The first time Windows Media content is accessed on the streaming server, the ProxySG caches the content along with the authentication type that was enabled on the origin server at the time the client sent a request for the content. The cached authentication type remains until the appliance learns that the server has changed the enabled authentication type, either through cache coherency (checking to be sure the cached contents reflect the original source) or until the ProxySG connects to the origin server (to verify access credentials).

### *Windows Media Proxy Authentication*

If you configure proxy authentication on the ProxySG, Windows Media clients are authenticated based on the policy settings. The ProxySG evaluates the request from the client and verifies the accessibility against the set policies. Windows Media Player then prompts the client for the proper password. If the client password is accepted, the Windows Media server might also require the client to provide a password for authentication. If a previously accepted client attempts to access the same Windows Media content again, the ProxySG verifies the user credentials using its own credential cache. If successful, the client request is forwarded to the Windows Media server for authentication.

### *Windows Media Player Authentication Interactivities*

Consider the following proxy authentication interactivities with Windows Media Player (except when specified, these do not apply to HTTP streaming):

- ❑ If the proxy authentication type is configured as BASIC and the server authentication type is configured as IWA, the default is denial of service.
- ❑ If proxy authentication is configured as IWA and the server authentication is configured as BASIC, the proxy authentication type defaults to BASIC.
- ❑ The ProxySG does not support authentication based on `url_path` or `url_path_regex` conditions when using `mms` as the `url_scheme`.
- ❑ Transparent style HTTP proxy authentication fails to work with Windows Media Players when the credential cache lifetime is set to 0 (independent of whether server-side authentication is involved).
- ❑ If proxy authentication is configured, a request for a stream through HTTP prompts the user to enter access credentials twice: once for the proxy authentication and once for the media server authentication.
- ❑ Additional scenarios involving HTTP streaming exist that do not work when the TTL is set to zero (0), even though only proxy authentication (with no server authentication) is involved. The ProxySG returning a 401-style proxy authentication challenge to Windows Media Player 6.0 does not work because the Player cannot resolve inconsistencies between the authentication response code and the server type returned from the ProxySG. This results in an infinite loop of requests and challenges. Example scenarios include transparent authentication—resulting from either a transparent request from a player or a hard-coded service specified in the ProxySG—and request of cache-local (ASX-rewritten or unicast alias) URLs.

## Section A: Concepts: Streaming Media

### *Windows Media Server Authentication Type (MMS)*

---

**Note:** This section applies to Windows Media MMS and requires the CLI.

---

Configure the ProxySG to recognize the type of authentication the origin content server is using: BASIC or NTLM/Kerberos.

#### **To configure the media server authentication type for WM-MMS:**

At the (config) prompt, enter the following command:

```
SGOS#(config) streaming windows-media server-auth-type {basic | ntlm}
```

### *Real Media Proxy Authentication*

If you configure proxy authentication on the ProxySG, Real Media clients are authenticated based on the policy settings. The ProxySG evaluates the request from the client and verifies the accessibility against the set policies. Next, RealPlayer prompts the client for the proper password. If the client password is accepted, the Real Media server can also require the client to provide a password for authentication. If a previously accepted client attempts to access the same Real Media content again, the ProxySG verifies the user credentials using its own credential cache. If successful, the client request is forwarded to the Real Media server for authentication.

#### *Real Media Player Authentication Limitation*

Using RealPlayer 8.0 in transparent mode with both proxy and Real Media server authentication configured to BASIC, RealPlayer 8.0 always sends the same proxy credentials to the media server. This is regardless of whether a user enters in credentials for the media server. Therefore, the user is never authenticated and the content is not served.

### *QuickTime Proxy Authentication*

BASIC is the only proxy authentication mode supported for QuickTime clients. If an IWA challenge is issued, the mode automatically downgrades to BASIC.

## Section B: Configuring Streaming Media

### Section B: Configuring Streaming Media

This section describes how to configure the various ProxySG streaming options. It contains the following topics:

- ❑ ["Configuring Streaming Services to Intercept Traffic"](#) on page 51
- ❑ ["Configuring the Streaming Proxies"](#) on page 55
- ❑ ["Limiting Bandwidth"](#) on page 56
- ❑ ["Configuring the ProxySG Multicast Network"](#) on page 58
- ❑ ["Forwarding Client Logs"](#) on page 59
- ❑ ["Related CLI Syntax to Manage Streaming"](#) on page 60
- ❑ ["Reference: Access Log Fields"](#) on page 60
- ❑ ["Reference: CPL Triggers, Properties, and Actions"](#) on page 62
- ❑ ["Streaming History Statistics"](#) on page 62

#### *Related Topics*

You must also configure the network service (**Configuration > Network > Services**) to assign port numbers and modes (transparent or proxy). For more information, refer to *Volume 2: Proxies and Proxy Services*.

### Configuring Streaming Services to Intercept Traffic

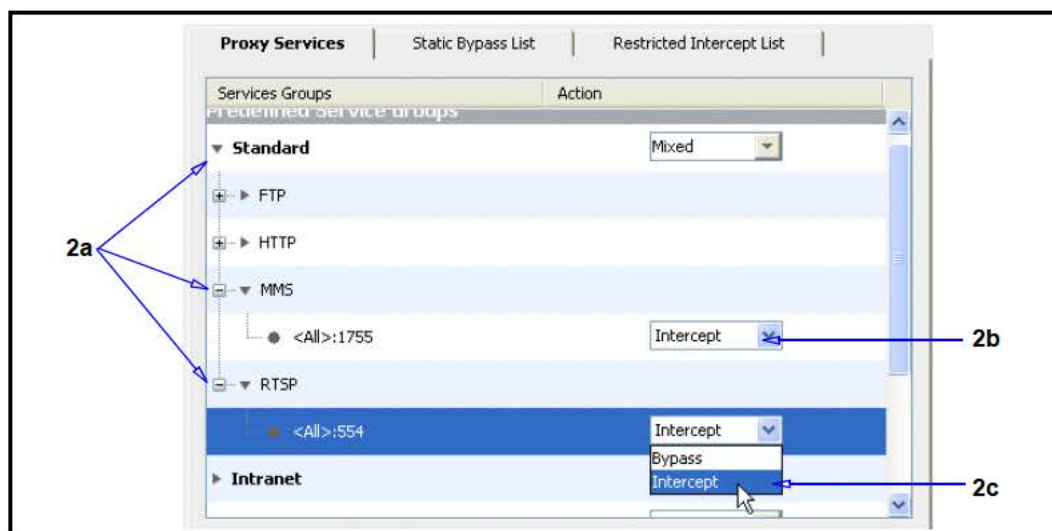
By default (upon upgrade and on new systems), the ProxySG has streaming services configured on ports 1755 (MMS) and 554 (RTSP). The services are configured to listen to all IP addresses, but are set to **Bypass** mode.

The following procedure describes how to change the service to **Intercept** mode.

#### **To configure the MMS/RTSP proxy services attributes:**

1. From the Management Console, select **Configuration > Services > Proxy Services**.

## Section B: Configuring Streaming Media



2. Change the streaming services to Intercept:
  - a. Scroll the list of services and select the **Standard** service group; select the **MMS** and **RTSP** groups (the service trees expand).
  - b. From the **MMS: <All>:1755** drop-down list, select **Intercept**.
  - c. From the **RTSP: <All>:554** drop-down list, select **Intercept**.
3. Click **Apply**.

Now that the streaming listeners are configured, you can configure the streaming proxies. Proceed to:

- ❑ ["Configuring the Streaming Proxies"](#) on page 55 to configure the proxy options that determine how to process streaming traffic.
- ❑ ["Adding a New Streaming Service"](#) (below) to add new streaming services that bypass specific network segments or listen on ports other than the defaults.

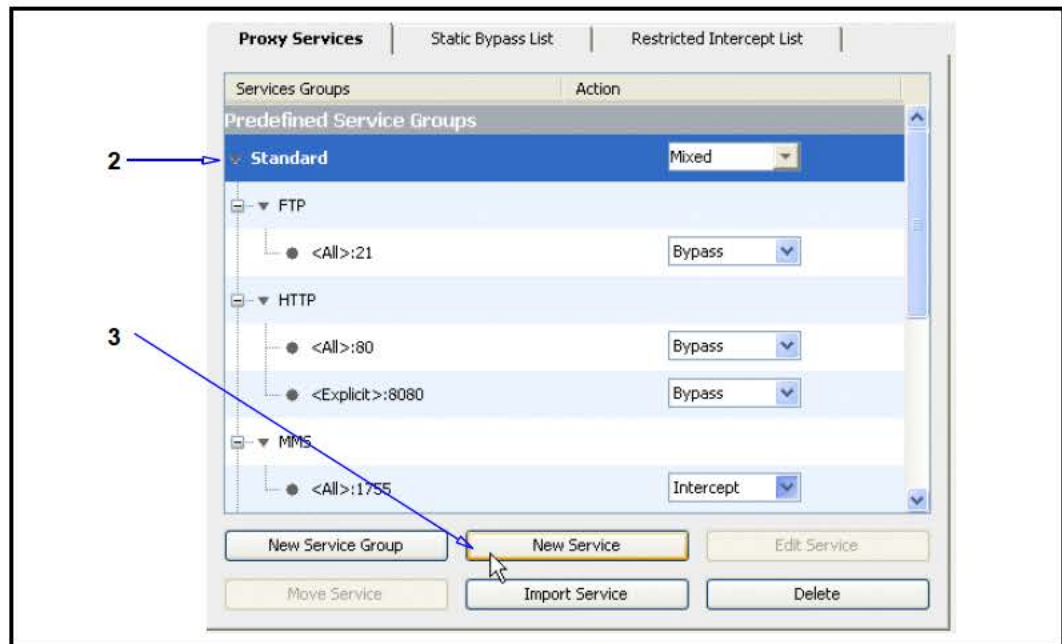
### Adding a New Streaming Service

The ProxySG allows you to add new streaming services. Consider the following scenario: you want the ProxySG to exclude (bypass) an IP address/subnet from intercepting streaming because that network segment is undergoing routine maintenance.

#### To add a new streaming service:

1. From the Management Console, select **Configuration > Services > Proxy Services**.

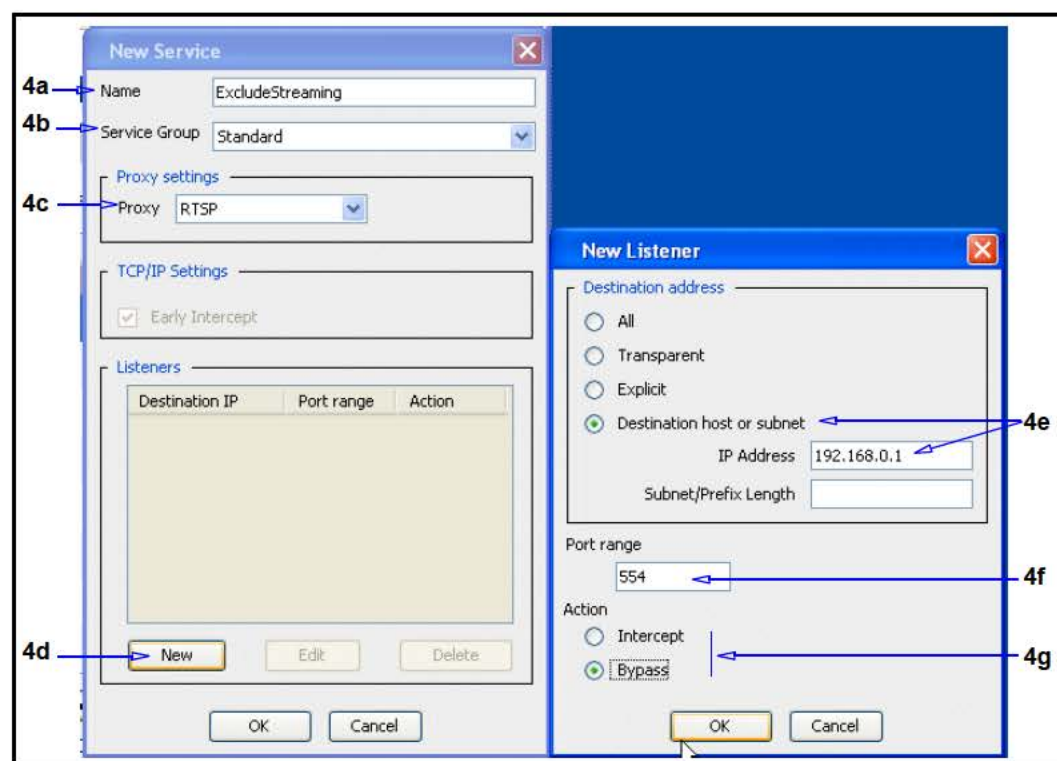
Section B: Configuring Streaming Media



2. Scroll the list of services and select the **Standard** service group.
3. Click **New Service**. The New Service dialog displays with the default settings.



## Section B: Configuring Streaming Media



4. Configure the service options:
  - a. Name the service. In this example, the service is named **ExcludeStreaming** because the network admin wants to prevent the ProxySG from intercepting streaming traffic from a specific IP address.
  - b. From the **Service Group** drop-down list, select **Standard**—the service group to which streaming traffic belongs.
  - c. From the **Proxy Settings** drop-down list, select **MMS** or **RTSP**.



## Section B: Configuring Streaming Media

---

**Note:** To bypass traffic from both streaming protocols, create another service for the streaming protocol not selected in this step.

---

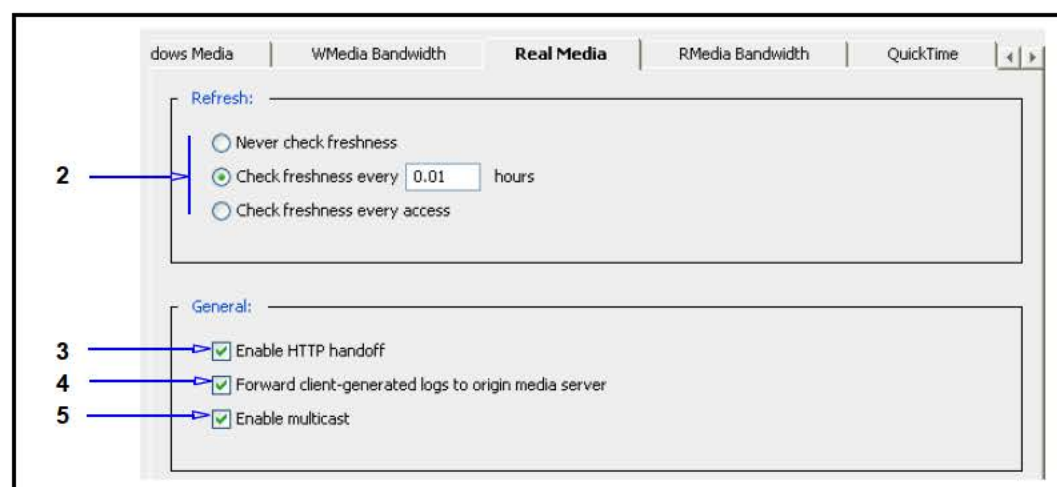
- d. Click **New**. The New Listener dialog displays.
- e. This example selects the **Destination host or subnet** option and specifies a sample IP address.
- f. This example accepts the default value of **554**, the default port for the RTSP protocol. If the ProxySG is intercepting streaming traffic on a different port, you must specify the port number here.
- g. This example selects **Bypass** as the option; the ProxySG will not intercept streaming traffic.
- h. Click **OK** in each dialog to close them. The new service displays under the **Intranet** service group as its own service, not under the **Endpoint Mapper** service.

## Configuring the Streaming Proxies

This section describes how to configure the Streaming Media proxies. The Windows Media and Real Media proxy options are identical except for one extra option for Real Media. As QuickTime is passed through the ProxySG and not cached, there is only one option (**Enable HTTP Handoff**).

**To configure Windows Media, Real Media, and QuickTime streaming proxies:**

1. From the Management Console, select **Configuration > Proxy Settings > Streaming Proxies > Windows Media, Real Media, or QuickTime**.



2. Specify how often the ProxySG checks cached streaming content for freshness.
  - **Never check freshness:** Although this is the default setting, Blue Coat recommends selecting one of the other freshness options.

## Section B: Configuring Streaming Media

- **Check freshness every *value* hours:** The ProxySG checks content freshness every *n.nn* hours.

---

**Note:** A value of 0 requires the streaming content to always be checked for freshness.

---

- **Check freshness every access:** Every time cached content is requested, it is checked for freshness.
3. **Enable HTTP handoff:** Enabled by default. When a Windows Media, Real Media, or QuickTime client requests a stream from the ProxySG over port 80, which in common deployments is the only port that allows traffic through a firewall, the HTTP module passes control to the streaming module so HTTP streaming can be supported through the HTTP proxy port. Only disable if you do not want HTTP streams to be cached or split.
  4. **Forward client-generated logs to origin media server:** Enabled by default. The ProxySG logs information, such as client IP address, the date, and the time, to the origin server for Windows Media and Real Media content. See ["Forwarding Client Logs"](#) on page 59 for more information about log forwarding.
  5. **Enable multicast (Real Media proxy only):** The ProxySG receives a unicast stream from the origin RealServer and serves it as a multicast broadcast. This allows the ProxySG to take a one-to-one stream and split it into a one-to-many stream, saving bandwidth and reducing the server load. It also produces a higher quality broadcast.  
  
Multicasting maintains a TCP control (accounting) channel between the client and RealServer. The multicast data stream is broadcast using UDP from the ProxySG to RealPlayers that join the multicast. The ProxySG support for Real Media uses UDP port 554 (RTSP) for multicasting. This port number can be changed to any valid UDP port number.
  6. Click **Apply**.

---

**Note:** For multicast, additional configuration is required. See ["Configuring the ProxySG Multicast Network"](#) on page 58.

---

## Limiting Bandwidth

This section describes how to limit bandwidth from the clients to the ProxySG and the ProxySG to origin content servers.

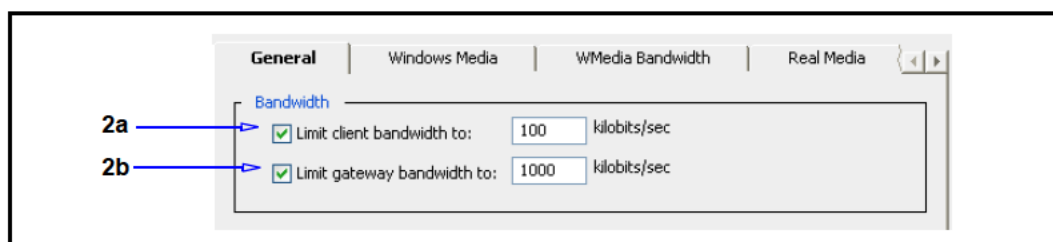
### *Configuring Bandwidth Limits—Global*

This section describes how to limit bandwidth use of all streaming protocols through the ProxySG.

Section B: Configuring Streaming Media

To specify the bandwidth limit for all streaming protocols:

1. Select **Configuration > Proxy Settings> Streaming Proxies > General**.



2. To limit the client connection bandwidth:
  - a. In the **Bandwidth** field, select **Limit client bandwidth to**. In the **Kilobits/sec** field, enter the maximum number of kilobits per second that the ProxySG allows for all streaming client connections.

---

**Note:** This option is not based on individual clients.

---

  - b. In the **Bandwidth** pane, select **Limit gateway bandwidth**. In the **Kilobits/sec** field, enter the maximum number of kilobits per second that the ProxySG allows for all streaming connections to origin media servers.
3. Click **Apply**.

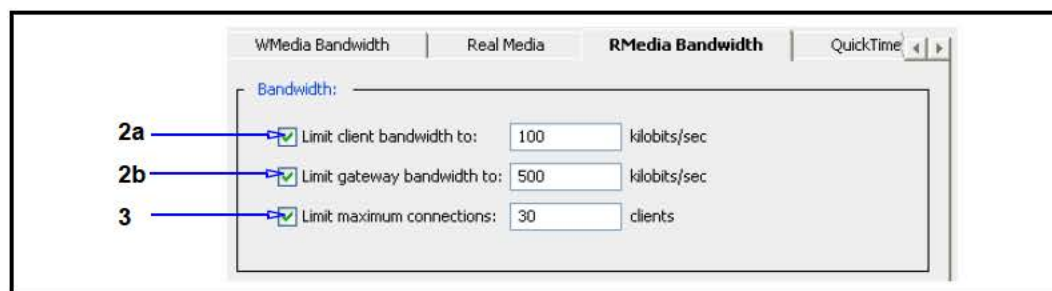
### *Configuring Bandwidth Limits—Protocol-Specific*

This section describes how to limit bandwidth use per-protocol through the ProxySG. You can also limit the number of connections from the ProxySG to the OCS. The following example uses Real Media, but the Management Console screens are identical for all protocols.

To specify the bandwidth limit for Windows Media, Real Media, or QuickTime:

1. Select **Configuration > Proxy Settings> Streaming Proxies > WMedia Bandwidth -or- RMedia Bandwidth -or- QuickTime Bandwidth**.

## Section B: Configuring Streaming Media



2. Configure bandwidth limit options:
  - a. To limit the bandwidth for client connections to the ProxySG, select **Limit client bandwidth to**. In the **Kilobits/sec** field, enter the maximum number of kilobits per second that the ProxySG allows for all streaming client connections.
  - b. To limit the bandwidth for connections from the ProxySG to origin content servers, select **Limit gateway bandwidth to**. In the **Kilobits/sec** field, enter the maximum number of kilobits per second that the ProxySG allows for all streaming connections to origin media servers.
3. To limit the bandwidth for connections from the ProxySG to the OCS, select **Limit maximum connections**. In the **clients** field, enter the total number of clients that can connect concurrently.
4. Click **Apply**.

### Configuring Bandwidth Limitation—Fast Start (WM)

---

**Note:** This section applies to Windows Media only and requires the CLI.

---

Upon connection to the ProxySG, Windows Media clients do not consume more bandwidth (in kilobits per second) than the defined value.

**To specify the maximum starting bandwidth:**

At the (config) prompt, enter the following command:

```
SGOS#(config) streaming windows-media max-fast-bandwidth kbps
```

### Configuring the ProxySG Multicast Network

This section describes how to configure the ProxySG multicast service. Additional steps are required to configure the ProxySG to serve multicast broadcasts to streaming clients (Windows Media and Real Media); those procedures are provided in subsequent sections.

**To configure the multicast service:**

1. Select **Configuration > Services > Streaming Proxies > General**.



## Section B: Configuring Streaming Media

The screenshot shows the 'General' tab of the ProxySG configuration interface. Under the 'Multicast' section, there are three fields: 'Maximum hops' with a value of 16, 'IP range' with a range from 224.2.128.0 to 224.2.255.255, and 'Port range' with a range from 32768 to 65535. Arrows labeled 2a, 2b, and 2c point to these fields respectively.

2. Configure multicast options:
  - a. In the **Maximum hops** field, enter a time-to-live (TTL) value.
  - b. In the **IP range** fields, enter the range of IP addresses that are available for multicast.
  - c. In the **Port range** fields, enter the range of ports available for multicast.
3. Click **Apply**.
4. Enable multicast:
  - Real Media: See [Step 5](#) on page 56.
  - Windows Media: See "[Managing Multicast Streaming for Windows Media](#)" on page 65.

## Forwarding Client Logs

The ProxySG can log information about Windows Media and Real Media streaming sessions between the client and the ProxySG and can also forward these client generated logs to the origin media server. Additionally, for Windows Media RTSP only, ProxySG also supports forwarding values for certain fields to the server, when windows-media streaming proxy has log forwarding enabled and logging compatibility disabled.

---

**Note:** For Real Media, the log is only forwarded before a streaming session is halted; QuickTime log forwarding is not supported.

---

The following fields are included in the client log record:

- ❑ `cs-uri-stem`: URI stem of the client request.
- ❑ `s-cpu-util`: CPU utilization of the ProxySG.
- ❑ `s-totalclients`: Clients connected to the ProxySG (but not necessarily receiving streams).
- ❑ `s-pkts-sent`: Number of packets the ProxySG sent to the client, during the playstart.

## Section B: Configuring Streaming Media

- ❑ `s-proxied`: Set to 1 for proxied sessions.
- ❑ `s-session-id`: A unique ID of the streaming session between the client and the ProxySG.
- ❑ `sc-bytes`: Number of bytes the ProxySG sent to the client, during the playspurt.

### To enable/disable log forwarding:

Use the Management Console (see ["Configuring the Streaming Proxies"](#) on page 55) or use the following CLI command at the `(config)` prompt:

```
SGOS#(config) streaming windows-media log-forwarding {enable | disable}
```

### To enable/disable RTSP log compatibility:

At the `(config)` prompt, enter the following command:

```
SGOS#(config) streaming windows-media log-compatibility {enable | disable}
```

## Related CLI Syntax to Manage Streaming

- ❑ To enter configuration mode:

```
SGOS#(config) proxy-services
SGOS#(config proxy-services) create {mms | rtsp} service_name
```

- ❑ The following submodes are available:

```
SGOS#(config) streaming max-client-bandwidth kbits_second
SGOS#(config) streaming max-gateway-bandwidth kbits_second
SGOS#(config) streaming {windows-media | real-media | quicktime} {max-client-bandwidth kbits_second | no max-client-bandwidth}
SGOS#(config) streaming {windows-media | real-media | quicktime} {max-gateway-bandwidth kbits_second | no max-gateway-bandwidth}
SGOS#(config) streaming {windows-media | real-media | quicktime} {max-connections number | no max-connection}
SGOS#(config) streaming {windows-media | real-media | quicktime} http-handoff disable
SGOS#(config) streaming {windows-media | real-media} refresh-interval number.number
SGOS#(config) streaming real-media multicast enable
SGOS#(config) streaming windows-media server-auth-type {basic | ntlm}
SGOS#(config) content-distribute url [from url]
```

## Reference: Access Log Fields

The QuickTime and Real Media proxies generate a streaming access log at the end of a streaming session; the Windows Media proxy generates a log entry when one of the following occurs:

- ❑ It receives a log record from the client at the end of each playspurt.

### Section B: Configuring Streaming Media

- ❑ A denial or error condition prevents the client from creating a playspurt or ends the playspurt abruptly. Examples include: when a client is denied access due to authentication failures or content filtering, when the ProxySG is unable to process a session due to bandwidth or connection allocation errors, and when the server returns an error to a client request.

The type of action is recorded in the `s-action` access log field: `ALLOWED`, `DENIED`, `FAILED`, `SERVER_ERROR`.

The streaming-specific access log fields are described below, in alphabetical order.

- ❑ `audiocodec`: Audio codec used in stream.
- ❑ `avgbandwidth`: Average bandwidth (in bits per second) at which the client was connected to the server.
- ❑ `channelURL`: URL to the `.nsc` file.
- ❑ `c-buffercount`: Number of times the client buffered while playing the stream.
- ❑ `c-bytes`: An MMS-only value of the total number of bytes delivered to the client.
- ❑ `c-cpu`: Client computer CPU type.
- ❑ `c-hostexe`: Host application.
- ❑ `c-hostexever`: Host application version number.
- ❑ `c-os`: Client computer operating system.
- ❑ `c-osversion`: Client computer operating system version number.
- ❑ `c-playerid`: Globally unique identifier (GUID) of the player.
- ❑ `c-playerlanguage`: Client language-country code.
- ❑ `c-playerversion`: Version number of the player.
- ❑ `c-rate`: Mode of Windows Media Player when the last command event was sent.
- ❑ `c-starttime`: Timestamp (in seconds) of the stream when an entry is generated in the log file.
- ❑ `c-status`: Codes that describe client status.
- ❑ `c-totalbuffertime`: Time (in seconds) the client used to buffer the stream.
- ❑ `filelength`: Length of the file (in seconds).
- ❑ `filesize`: Size of the file (in bytes).
- ❑ `protocol`: Protocol used to access the stream: `mms`, `http`, or `asfm`.
- ❑ `s-session-id`: Session ID for the streaming session.
- ❑ `s-totalclients`: Clients connected to the server (but not necessarily receiving streams).
- ❑ `transport`: Transport protocol used (UDP, TCP, multicast, and so on).



## Section B: Configuring Streaming Media

- ❑ `videocodec`: Video codec used to encode the stream.
- ❑ `x-cache-info`: **Values:** UNKNOWN, DEMAND\_PASSTHRU, DEMAND\_MISS, DEMAND\_HIT, LIVE\_PASSTHRU, LIVE\_SPLIT.
- ❑ `x-duration`: Length of time a client played content prior to a client event (FF, REW, Pause, Stop, or jump to marker).
- ❑ `x-wm-c-dns`: Hostname of the client determined from the Windows Media protocol.
- ❑ `x-wm-c-ip`: The client IP address determined from the Windows Media protocol.
- ❑ `x-cs-streaming-client`: Type of streaming client in use (`windows_media`, `real_media`, or `quicktime`).
- ❑ `x-rs-streaming-content`: Type of streaming content served.
- ❑ `x-streaming-bitrate`: The reported client-side bitrate for the stream.

## Reference: CPL Triggers, Properties, and Actions

The following Blue Coat CPL is supported in streaming proxies:

### *Triggers*

- ❑ `streaming.client=`
- ❑ `streaming.content=`

### *Properties and Actions*

`streaming.transport=`

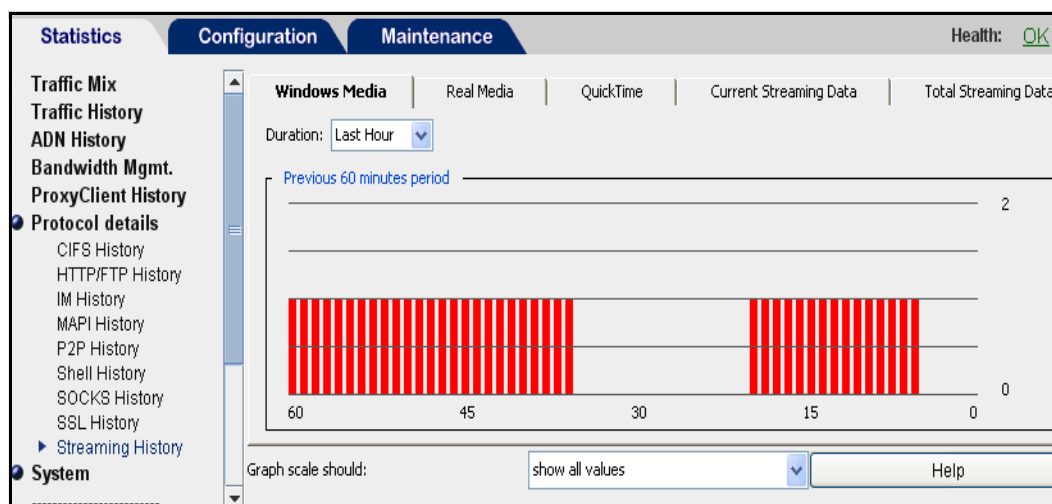
## Streaming History Statistics

The **Streaming History** tabs (Windows Media, Real Media, and QuickTime) display bar graphs that illustrate the number of active client connections over the last hour (60 minutes), day (24 hours), and month (30 days). These statistics are not available through the CLI. The Current Streaming Data and Total Streaming Data tabs display real-time values for current connection and live traffic activity on the ProxySG. Current and total streaming data statistics are available through the CLI.

### **To view client statistics:**

1. Select **Statistics > Protocol Details > Streaming History**.
2. Select the tab for the client for which you want to view statistics: **Windows Media, RealMedia, QuickTime**.
3. Select the **Duration:** from the drop-down menu.  
Choose from **Last Hour, Last Day, Last Month, and All Periods**.

## Section B: Configuring Streaming Media



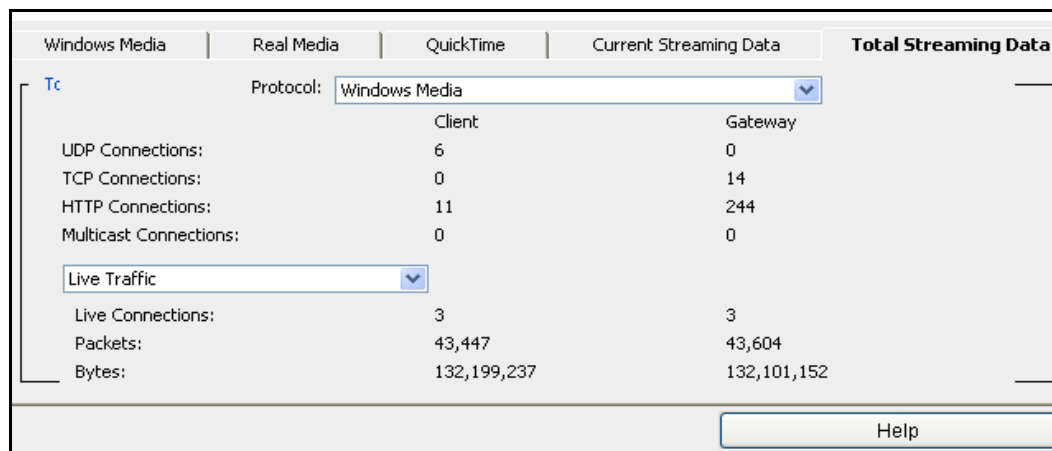
4. (Optional) To set the graph scale to a different value, select a value from the **Graph scale should** drop-down list.

### Viewing Current and Total Streaming Data Statistics

The Management Console **Current Streaming Data** tab and the **Total Streaming Data** tab show real-time values for Windows Media, Real Media, and QuickTime activity on the ProxySG. These statistics can also be viewed through the CLI.

**To view current streaming data statistics:**

1. Select **Statistics > Protocol Details > Streaming History > Current Streaming Data**.

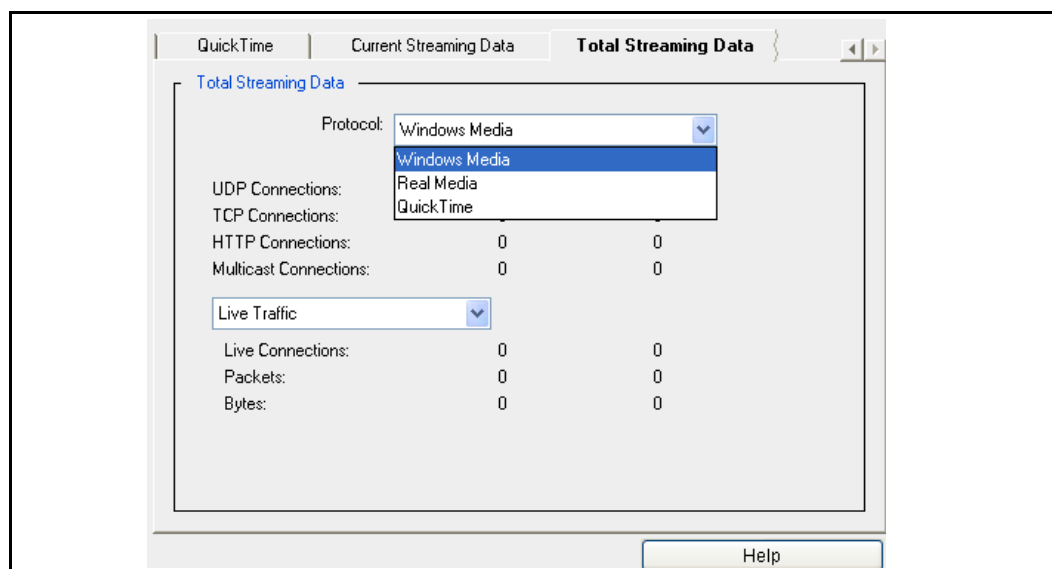


2. Select a streaming protocol (**Windows Media**, **Real Media**, **QuickTime**) from the **Protocol** drop-down list.
3. Select a traffic connection type (**Live Traffic**, **On-Demand Traffic**, or **Passthru Traffic**) from the drop-down list.

**To view total streaming data statistics:**

1. Select **Statistics > Streaming History > Total Streaming Data**.

## Section B: Configuring Streaming Media



2. Select a streaming protocol (**Windows Media**, **Real Media**, **QuickTime**) from the **Protocol** drop-down list.
3. Select a traffic connection type (**Live Traffic**, **On-Demand**, or **Passthru Traffic**) from the drop-down list.

**To clear streaming statistics:**

To zero-out the streaming statistics, enter the following command at the CLI prompt:

```
SGOS# clear-statistics {quicktime | real-media | windows-media}
```

## Section C: Additional Windows Media Configuration Tasks

### Section C: Additional Windows Media Configuration Tasks

This section provides Windows Media configuration tasks that aren't available through the Management Console, but can be executed through the CLI.

This section contains the following topics:

- ❑ "Managing Multicast Streaming for Windows Media" on page 65
- ❑ "Managing Simulated Live Content (Windows Media)" on page 69
- ❑ "ASX Rewriting (Windows Media)" on page 71

### Managing Multicast Streaming for Windows Media

This section describes multicast station and `.nsc` files, and explains how to configure the ProxySG to send multicast broadcasts to Windows Media clients.

#### *About Multicast Stations*

A *multicast station* is a defined location from where Windows Media Player retrieves live streams. This defined location allows Advanced Streaming Format (`.asf`) streams to be delivered to many clients using only the bandwidth of a single stream. Without a multicast station, streams must be delivered to clients through unicast.

A multicast station contains all of the information needed to deliver `.asf` content to a Windows Media Player or to another ProxySG, including:

- ❑ IP address
- ❑ Port
- ❑ Stream format
- ❑ TTL value (time-to-live, expressed hops)

The information is stored in an `.nsc` file, which Window Media Player must be able to access to locate the IP address.

If Windows Media Player fails to find proper streaming packets on the network for multicast, the player can roll over to a unicast URL. Reasons for this include lack of a multicast-enabled router on the network or if the player is outside the multicast station's TTL. If the player fails to receive streaming data packets, it uses the unicast URL specified in the `.nsc` file. All `.nsc` files contain a unicast URL to allow rollover.

#### *Unicast to Multicast*

Unicast to multicast streaming requires converting a unicast stream on the server-side connection to a multicast station on the ProxySG. The unicast stream must contain live content before the multicast station works properly. If the unicast stream is a video-on-demand file, the multicast station is created but is not able to send packets to the network. For video-on-demand files, use the `broadcast-alias` command. A *broadcast alias* defines a playlist, and specifies a starting time, date, and the number of times the content is repeated.

## Section C: Additional Windows Media Configuration Tasks

### *Multicast to Multicast*

Use the `multicast-alias` command to get the source stream for the multicast station.

### *Creating a Multicast Station*

To create a multicast station, you perform the following steps:

- ❑ Define a name for the multicast station.
- ❑ Define the source of the multicast stream.
- ❑ (Optional) Change the port range to be used.
- ❑ (Optional) Change the IP address range of the multicast stream.
- ❑ (Optional) Change the Time-to-Live (TTL) value. TTL is a counter within an ICMP packet. As a packet goes through each router, the router decrements this TTL value by 1. If the packet traverses enough routers for the value to reach 0, routers will no longer forward this packet.
- ❑ Use the multicast alias, unicast alias, and broadcast alias commands to enable the functionality.

### *Syntax*

```
multicast-station name {alias | url} [address | port | ttl]
```

where

- *name* specifies the name of the multicast station, such as `station1`.
- `{alias | url}` defines the source of the multicast stream. The source can be a URL or it can be a multicast alias, a unicast alias, or simulated live. (The source commands must be set up before the functionality is enabled within the multicast station.)
- `[address | port | ttl]` are optional commands that you can use to override the default ranges of these values. (Defaults and permissible values are discussed below.)

### *Example 1: Create a Multicast Station*

This example:

- ❑ Creates a multicast station, named `station1`, on ProxySG `10.25.36.47`.
- ❑ Defines the source as `rtsp://10.25.36.47/tenchi`
- ❑ Accepts the address, port, and TTL default values.

```
SGOS#(config) streaming windows-media multicast-station station1
rtsp://10.25.36.47/tenchi.
```

To delete multicast `station1`:

```
SGOS#(config) streaming no multicast-station station1
```

Section C: Additional Windows Media Configuration Tasks

**Example 2: Create a Broadcast Alias and Direct a Multicast Station to Use it as the Source**

This example:

- ❑ To allow unicast clients to connect through multicast, creates a broadcast alias named `array1`; defines the source as `rtsp://10.25.36.48/tenchi2`.
- ❑ Instructs the multicast station from Example 1, `station1`, to use the broadcast alias, `array1`, as the source.

```
SGOS#(config) streaming windows-media broadcast-alias array1 rtsp://  
10.25.36.48/tenchi2 0 today noon  
SGOS#(config) streaming windows-media multicast-station station1  
array1
```

**Changing Address, Port, and TTL Values**

Specific commands allow you to change the address range, the port range, and the default TTL value. To leave the defaults as they are for most multicast stations and change it only for specified station definitions, use the `multicast-station` command.

The `multicast-station` command randomly creates an IP address and port from the specified ranges.

- ❑ Address-range: the default ranges from `224.2.128.0` to `224.2.255.255`; the permissible range is between `224.0.0.2` and `239.255.255.255`.
- ❑ Port-range: the default ranges from `32768` to `65535`; the permissible range is between `1` and `65535`.
- ❑ TTL value: the default value is `5` hops; the permissible range is from `1` to `255`.

**Syntax, with Defaults Set**

```
multicast address-range <224.2.128.0>-<224.2.255.255>  
multicast port-range <32768>-<65535>  
multicast ttl <5>
```

**Getting the .nsc File**

The `.nsc` file is created from the multicast station definition and saved through the browser as a text file encoded in a Microsoft proprietary format.

Without an `.nsc` file, the multicast station definition does not work.

To create an `.nsc` file from the newly created `station1`, open the file by navigating through the browser to the multicast station's location (where it was created) and save the file as `station1.nsc`.

The file location, based on the streaming configuration above:

```
http://10.25.36.47/MMS/nsc/station1.nsc
```

Save the file as `station1.nsc`.

---

**Note:** You can also enter the URL in Windows Media Player to start the stream.

---

## Section C: Additional Windows Media Configuration Tasks

The newly created file is not editable; the settings come from the streaming configuration file. In that file, you have already defined the following pertinent information:

- ❑ The address, which includes TTL, IP address, IP port, Unicast URL, and the NSC URL. All created `.nsc` files contain a unicast URL for rollover in case Windows Media Player cannot find the streaming packets.
- ❑ The description, which references the RTSP URL that you defined.
- ❑ The format, which contains important Advanced Streaming Format (ASF) header information. All streams delivered by the multicast station definition have their ASF headers defined here.

### *Monitoring the Multicast Station*

You can determine the multicast station definitions by viewing the streaming Windows Media configuration.

#### **To view the multicast station setup:**

```
SGOS#(config) show streaming windows config
; Windows Media Configuration
license: 1XXXXXXX-7XXXXXXX-7XXXXX
logging: enable
logging enable
http-handoff: enable
live-retransmit: enable
transparent-port (1755): enable
explicit proxy: 0
refresh-interval: no refresh interval (Never check freshness)
max connections: no max-connections (Allow maximum
connections)
max-bandwidth: no max-bandwidth (Allow maximum bandwidth)
max-gateway-bandwidth: no max-gateway-bandwidth (Allow maximum
bandwidth)
multicast address: 224.2.128.0 - 224.2.255.255
multicast port: 32768 - 65535
multicast TTL: 5
asx-rewrite: No rules
multicast-alias: No rules
unicast-alias: No rules
broadcast-alias: No rules
multicast-station: station1 rtsp://10.25.36.47/tenchi
224.2.207.0 40465 5 (playing)
```

---

**Note:** *Playing* at the end of the multicast station definition indicates that the station is currently sending packets onto the network. The IP address and port ranges have been randomly assigned from the default ranges allowed.

---

To determine the current client connections and current ProxySG connections, use the `show streaming windows-media statistics` command.



## Section C: Additional Windows Media Configuration Tasks

### To view the multicast station statistics:

```
SGOS#(config) show streaming windows stat
;Windows Media Statistics
Current client connections:
  by transport: 0 UDP, 0 TCP, 0 HTTP, 1 multicast
  by type: 1 live, 0 on-demand
Current gateway connections:
  by transport: 0 UDP, 1 TCP, 0 HTTP, 0 multicast
  by type: 1 live, 0 on-demand
```

### *Multicast to Unicast Live Conversion at the ProxySG*

The ProxySG supports converting multicast streams from an origin content server to unicast streams. The stream at the ProxySG is given the appropriate unicast headers to allow the appliance to direct one copy of the content to each user on the network.

Multicast streaming only uses UDP protocol and does not know about the control channel, which transfers essential file information. The `.nsc` file (a file created off-line that contains this essential information) is retrieved at the beginning of a multicast session from an HTTP server. The `multicast-alias` command specifies an alias to the URL to receive this `.nsc` file.

The converted unicast stream can use any of the protocols supported by Windows Media, including HTTP streaming.

When a client requests the alias content, the ProxySG uses the URL specified in the `multicast-alias` command to fetch the `.nsc` file from the HTTP server.

The `.nsc` file contains all of the multicast-related information, such as addresses and `.asf` file header information that is normally exchanged through the control connection for unicast-delivered content.

---

**Note:** For Windows Media streaming clients, additional multicast information is provided in ["Managing Multicast Streaming for Windows Media"](#) on page 65.

---

## Managing Simulated Live Content (Windows Media)

This section describes simulated live content and how to configure the ProxySG to manage and serve simulated live content.

### *About Simulated Live Content*

The simulated live content feature defines playback of one or more video-on-demand files as a scheduled live event, which begins at a specified time. The content can be looped multiple times, or scheduled to start at multiple start times throughout the day. If used in conjunction with the `multicast-alias` command, the live content is multicast; otherwise, live content is accessible as live-splitting sources. The feature does *not* require the content to be cached.

When you have set a starting date and time for the simulated live content, the broadcast of the content starts when at least one client requests the file. Clients connecting during the scheduled playback time of the simulated live content receive cached content for playback. Clients requesting the simulated live content

## Section C: Additional Windows Media Configuration Tasks

before the scheduled time are put into wait mode. Clients requesting the content after all of the contents have played receive an error message. Video-on-demand content does not need to be on the ProxySG before the scheduled start time, but prepopulating the content on the provides better streaming quality.

The ProxySG computes the starting playtime of the broadcast stream based on the time difference between the client request time and the simulated live starting time.

Before configuring simulated live, consider the following:

- ❑ The simulated live content name must be unique. Aliases are not case sensitive.
- ❑ The name cannot be used for both a unicast and a multicast alias name.
- ❑ After simulated live content is referenced by one or more multicast stations, the simulated live content cannot be deleted until all multicast stations referencing the simulated live content are first deleted.

The multicast station appears as another client of simulated live content, just like a Windows Media Player.

---

**Note:** This note applies to HTTP only. If a client opens Windows Media Player and requests an alias before the starting time specified in the broadcast-alias option, the HTTP connection closes after a short time period. When the specified time arrives, the player fails to reconnect to the stream and remains in waiting mode.

---

### *Creating a Broadcast Alias for Simulated Live Content*

#### **Syntax**

```
streaming windows-media broadcast-alias alias url loops date time
```

where:

- *alias* is the name of the simulated live content.
- *url* is the URL for the video-on-demand stream. Up to 128 URLs can be specified for simulated live content.
- *loops* is the number of times you want the content to be played back. Set to 0 (zero) to allow the content to be viewed an indefinite number of times.
- *date* is the simulated live content starting date. Valid date strings are in the format *yyyy-mm-dd* or *today*. You can specify up to seven start dates by using the comma as a separator (no spaces).
- *time* is the simulated live content starting time. Valid time strings are in the format *hh:mm* (on a 24-hour clock) or one of the following strings:
  - midnight, noon
  - 1am, 2am, ...
  - 1pm, 2pm, ...

## Section C: Additional Windows Media Configuration Tasks

Specify up to 24 different start times within a single date by using the comma as a separator (no spaces).

### Example 1

This example creates a playlist for simulated live content. The order of playback is dependent on the order you enter the URLs. You can add up to 128 URLs.

```
SGOS#(config) streaming windows-media broadcast-alias alias url
```

### Example 2

This example demonstrates the following:

- ❑ creates a simulated live file called *bca*.
- ❑ plays back `rtsp://ocs.bca.com/bca1.asf` and `rtsp://ocs.bca.com/bca2.asf`.
- ❑ configures the ProxySG to play back the content twice.
- ❑ sets a starting date and time of today at 4 p.m., 6 p.m., and 8 p.m.

```
SGOS#(config) streaming windows-media broadcast-alias bca rtsp://  
ocs.bca.com/bca1.asf 2 today 4pm,6pm,8pm  
SGOS#(config) streaming windows-media broadcast-alias bca rtsp://  
ocs.bca.com/bca2.asf
```

**To delete simulated live content:**

```
SGOS#(config) streaming windows-media no broadcast-alias alias
```

## ASX Rewriting (Windows Media)

This section describes ASX rewriting and applies to Windows Media only.

An ASX file is an active streaming redirector file that points to a Windows Media audio or video presentation. It is a metafile that provides information about Active Streaming Format (ASF) media files.

### About ASX Rewrite

If your environment does not use a Layer 4 switch or the Cisco Web Cache Control Protocol (WCCP), the ProxySG can operate as a proxy for Windows Media Player clients by rewriting the Windows Media ASX file (which contains entries with URL links to the actual location of the streaming content) to point to the ProxySG rather than the Windows Media server.

The metadata files can have `.asx`, `.wvx`, or `.wax` extensions, but are commonly referred to as ASX files. The ASX file references the actual media files (with `.asf`, `.wmv`, and `.wma` extensions). An ASX file can refer to other `.asx` files, although this is not a recommended practice. If the file does not have one of the metafile extensions and the Web server that is serving the metadata file does not set the correct MIME type, it is not processed by the Windows Media module. Also, the `.asx` file with the appropriate syntax must be located on an HTTP (not a Windows Media) server.

The ASX rewrite module is triggered by either the appropriate file extension or the returned MIME type from the server (`x-video-asf`).

## Section C: Additional Windows Media Configuration Tasks

---

**Note:** If an `.asx` file syntax does not follow the standard `<ASX>` tag-based syntax, the ASX rewrite module is not triggered.

---

For the ProxySG to operate as a proxy for Windows Media Player requires the following:

- ❑ The client is explicitly proxied for HTTP content to the ProxySG that rewrites the `.asx` metafile.
- ❑ The streaming media ProxySG is configurable.

---

**Note:** Windows Media Player automatically tries to roll over to different protocols according to its Windows Media property settings before trying the rollover URLs in the `.asx` metafile.

---

With the `asx-rewrite` command, you can implement redirection of the streaming media to a ProxySG by specifying the rewrite protocol, the rewrite IP address, and the rewrite port.

The protocol specified in the ASX rewrite rule is the protocol the client uses to reach the ProxySG. You can use forwarding and policy to change the default protocol specified in the original `.asx` file that connects to the origin media server.

When creating ASX rewrite rules, you need to determine the number priority. It is likely you will create multiple ASX rewrite rules that affect the `.asx` file; for example, rule 100 could redirect the IP address from `10.25.36.01` to `10.25.36.47`, while rule 300 could redirect the IP address from `10.25.36.01` to `10.25.36.58`. In this case, you are saying that the original IP address is redirected to the IP address in rule 100. If that IP address is not available, the ProxySG looks for another rule matching the incoming IP address.

### Notes and Interactivities

Before creating rules, consider the following.

- ❑ Each rule you create must be checked for a match; therefore, performance might be affected if you create many rules.
- ❑ Low numbers have a higher priority than high numbers.

---

**Note:** Rules can only be created through the CLI.

---

- ❑ ASX rewrite rules configured for multiple ProxySG appliances configured in an HTTP proxy-chaining configuration can produce unexpected URL entries in access logs for the *downstream* ProxySG (the ProxySG that the client proxies to). The combination of proxy-chained ProxySG appliances in the HTTP path coupled with ASX rewrite rules configured for multiple ProxySG appliances in the chain can create a rewritten URL requested by the client in the example form of:

## Section C: Additional Windows Media Configuration Tasks

```
protocol1://downstream_SecApp/redirect?protocol2://<upstream_SecApp>/redirect?protocol3://origin_host/origin_path
```

In this scenario, the URL used by the downstream ProxySG for caching and access logging can be different than what is expected. Specifically, the downstream ProxySG creates an access log entry with `protocol2://upstream_SecApp/redirect` as the requested URL. Content is also cached using this truncated URL. Blue Coat recommends that the ASX rewrite rule be configured for only the downstream ProxySG, along with a proxy route rule that can forward the Windows Media streaming requests from the downstream to upstream ProxySG appliances.

**Syntax for the `asx-rewrite` Command:**

```
asx-rewrite rule # in-addr cache-proto cache-addr [cache-port]
```

where:

- `in-addr`—Specifies the hostname or IP address delivering the content
- `cache-proto`—Specifies the rewrite protocol on the ProxySG. Acceptable values for the rewrite protocol are:
  - `mmsu` specifies Microsoft Media Services UDP
  - `mmst` specifies Microsoft Media Services TCP
  - `http` specifies HTTP
  - `mms` specifies either MMS-UDP or MMS-TCP
  - `*` specifies the same protocol as in the `.asx` file

If the `.asx` file is referred from within another `.asx` file (not a recommended practice), use a `*` for the `cache-proto` value. The `*` designates that the protocol specified in the original URL be used. As a conservative, alternative approach, you could use HTTP for the `cache-proto` value.

- `cache-addr`—Specifies the rewrite address on the ProxySG.
- `cache-port`—Specifies the port on the ProxySG. This value is optional.

**To set up the `.asx` rewrite rules:**

At the `(config)` command prompt, enter the following command:

```
SGOS#(config) streaming windows-media asx-rewrite number in-addr  
cache-proto cache-addr cache-port
```

---

**Note:** To delete a specific rule, enter `streaming windows-media no asx-rewrite number`.

---

To ensure that an ASX rewrite rule is immediately recognized, clear the local browser cache.

**Example**

This example:

## Section C: Additional Windows Media Configuration Tasks

- ❑ Sets the priority rule to 200.
- ❑ Sets the protocol to be whatever protocol was originally specified in the URL and directs the data stream to the appropriate default port.
- ❑ Provides the rewrite IP address of 10.9.44.53, the ProxySG.

```
SGOS#(config) streaming windows-media asx-rewrite 200 * * 10.9.44.53
```

---

**Note:** ASX files must be fetched from HTTP servers. If you are not sure of the network topology or the content being served on the network, use the asterisks to assure the protocol set is that specified in the URL.

---

### *ASX Rewrite Incompatibility With Server-side IWA Authentication*

Server-side authentication (MMS only, not HTTP) is supported if the origin media server authentication type is BASIC or No Auth. However, if you know that a Windows Media server is configured for IWA authentication, the following procedure allows you to designate any virtual IP addresses to the IWA authentication type. If you know that all of the activity through the ProxySG requires IWA authentication, you can use the IP address of the appliance.

#### **To designate an IP address to an authentication type:**

1. If necessary, create a virtual IP address that is used to contact the Windows Media server.

2. At the (config) prompt, enter the following command:

```
SGOS#(config) streaming windows-media server-auth-type ntlm ip_address
```

3. Configure the ASX rewrite rule to use the IP address.

- a. To remove the authentication type designation:

```
SGOS#(config) streaming windows-media no server-auth-type  
ip_address
```

- b. To return the authentication type to BASIC:

```
SGOS#(config) streaming windows-media server-auth-type basic  
ip_address
```

Section D: Configuring Windows Media Player

## Section D: Configuring Windows Media Player

This section describes how to configure Windows Media Player to communicate through the ProxySG.

To apply the ProxySG Windows Media streaming services, Windows Media Player must be installed and configured to use explicit proxy.

---

**Note:** The example below uses Windows Media Player 11. Installation and setup varies with different versions of Windows Media Player.

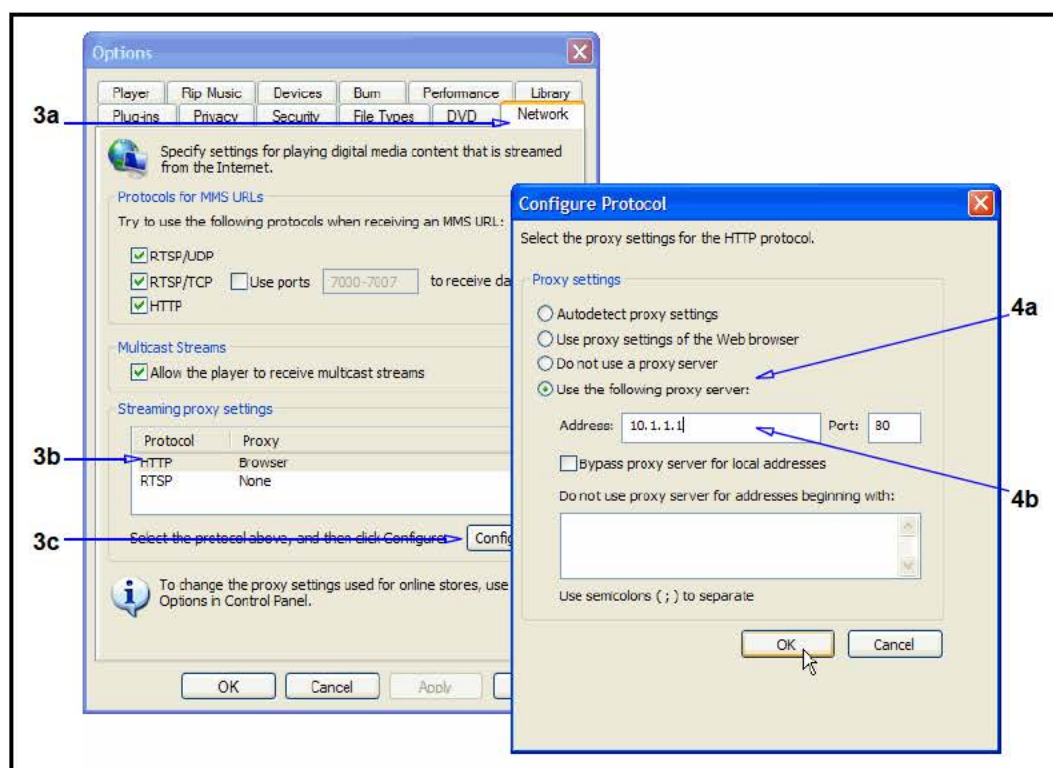
---

**To configure Windows Media Player:**

1. Start Windows Media Player.
2. Select **Tools > Options**.



## Section D: Configuring Windows Media Player



3. Navigate to protocol configuration:
  - a. Select **Network**.
  - b. Select **HTTP**.
  - c. Click **Configure**. The Configure Protocol dialog displays.
4. Configure the proxy settings:
  - a. Select **Use the following proxy server**.
  - b. Enter the ProxySG IP address and the port number used for the explicit proxy (the default HTTP port is 80). These settings must match the settings configured in the ProxySG. If you change the ProxySG explicit proxy configuration, you must also reconfigure Windows Media Player.
5. Click **OK** in both dialogs. Result: Windows Media Player now proxies through the ProxySG and content is susceptible to streaming configurations and access policies.

## Windows Media Player Interactivity Notes

This section describes Windows Media Player interactivities that might affect performance.

## Section D: Configuring Windows Media Player

### Striding

When you use Windows Media Player, consider the following interactivities in regard to using fast forward and reverse (referred to as *striding*):

- ❑ If you request a cached file and repeatedly attempt play and fast forward, the file freezes.
- ❑ If you attempt a fast reverse of a cached file that is just about to play, you receive an error message, depending on whether you have a proxy:
  - Without a proxy: A device attached to the system is not functioning.
  - With a proxy: The request is invalid in the current state.
- ❑ If Windows Media Player is in pause mode for more than ten minutes and you press fast reverse or fast forward, an error message displays: `The network connection has failed.`

### Other Notes

- ❑ Applies to Version 9: If a `url_host_rewrite` rule is configured to rewrite a host name that is a domain name instead of an IP address, a request through the MMS protocol fails and the host is not rewritten. As the connect message sent by the player at the initial connection does not contain the host name, a rewrite cannot occur. HTTP requests are not affected by this limitation.
- ❑ If explicit proxy is configured and the access policy on the ProxySG is set to `deny`, a requested stream using HTTP from Windows Media Player 9 serves the stream directly from the origin server even after the request is denied. The player sends a request to the OCS and plays the stream from there.

Blue Coat recommends the following policy:

```
<proxy>
    streaming.content=yes deny
-or-
<proxy>
    streaming.content=windows_media deny
```

The above rules force the HTTP module to hand off HTTP requests to the MMS module. MMS returns the error properly to the player, and does not go directly to the origin server to try to serve the content.

- ❑ If you request an uncached file using the HTTP protocol, the file is likely to stop playing if the authentication type is set to BASIC or NTLM/Kerberos and you initiate rapid seeks before the buffering begins for a previous seek. Windows Media Player, however, displays that the file is still playing.
- ❑ If a stream is scheduled to be accessible at a future time (using a simulated live rule), and the stream is requested before that time, Windows Media Player enters a waiting stage. This is normal. However, if HTTP is used as the protocol, after a minute or two Windows Media Player closes the HTTP connection, but remains in the waiting stage, even when the stream is broadcasting.

## Section D: Configuring Windows Media Player

### **Notes:**

For authentication-specific notes, see "[Windows Media Server-Side Authentication](#)" on page 48 and "[Windows Media Proxy Authentication](#)" on page 49.

## Section E: Configuring RealPlayer

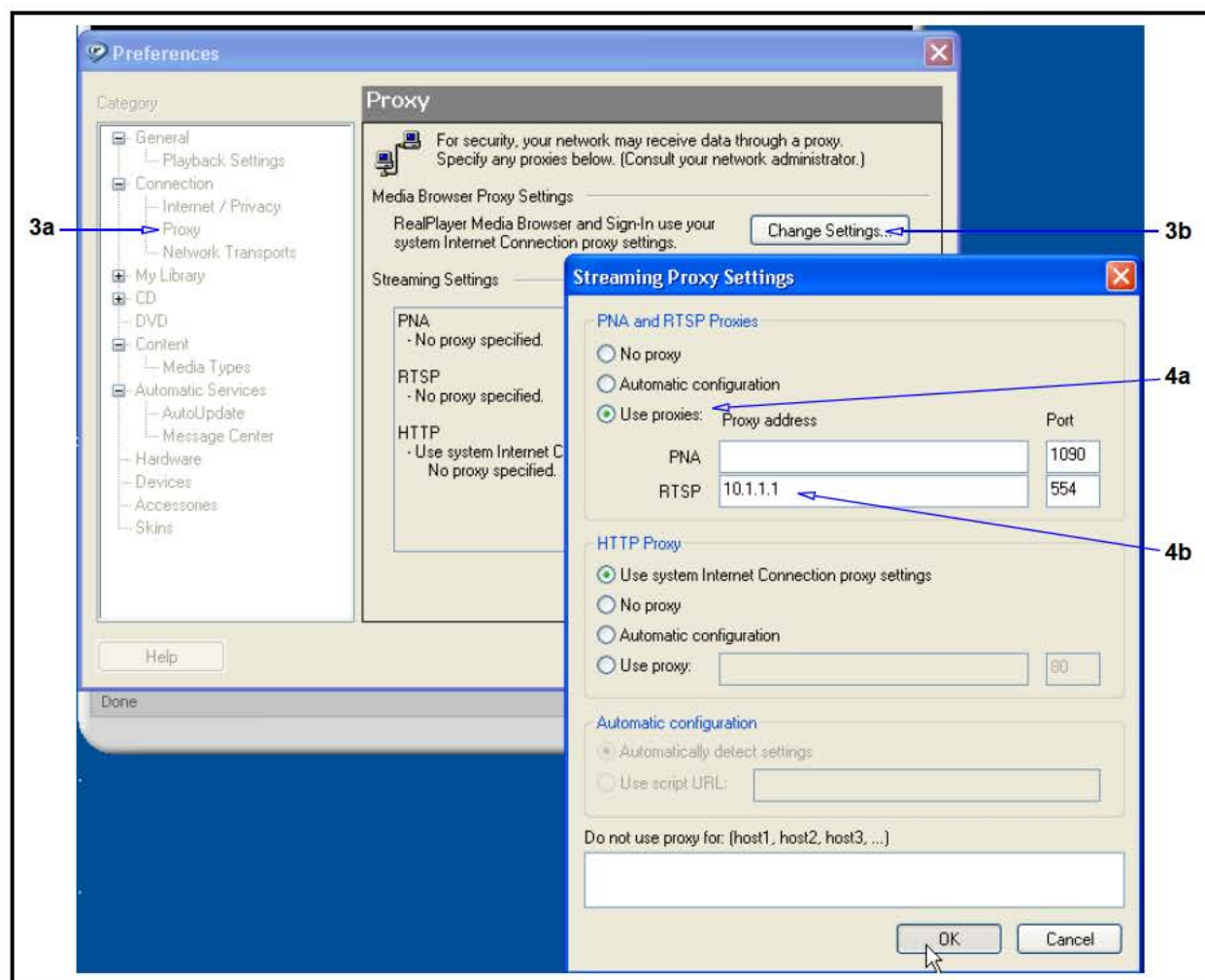
This section describes how to configure Real Player to communicate through the ProxySG.

To use the ProxySG Real Media streaming services with an explicit proxy configuration, the client machine must have RealPlayer installed and configured to use RTSP streams. If you use transparent proxy, no changes need to be made to RealPlayer.

**Note:** This procedure features RealPlayer, version 10.5. Installation and setup menus vary with different versions of RealPlayer. Refer to the RealPlayer documentation to configure earlier versions of RealPlayer.

### To configure RealPlayer:

1. Start RealPlayer.
2. Select **Tools > Preferences**.



3. Navigate to proxy settings:
  - a. Select **Connection > Proxy**.
  - b. Click **Change Settings**. The Streaming Proxy Settings dialog appears.
4. Configure options:
  - a. In the **PNA and RTSP proxies:** field, select **Use proxies**.
  - b. Enter the ProxySG IP address and the port number used for the explicit proxy (the default RTSP port is 544). These settings must match the settings configured in the ProxySG. If you change the ProxySG explicit proxy configuration, you must also reconfigure RealPlayer. If using transparent proxy, RTSP port 554 is set by default and cannot be changed.

---

**Note:** For **HTTP Proxy**, if you have an HTTP proxy already configured in your browser, select **Use system Internet Connection proxy settings**.

---

- c. Optional: For **HTTP Proxy**, if you have an HTTP proxy already configured in your browser, select **Use system Internet Connection proxy settings**.
- d. Optional: In the **Do not use proxy for:** section, you can enter specific hosts and bypass the ProxySG.

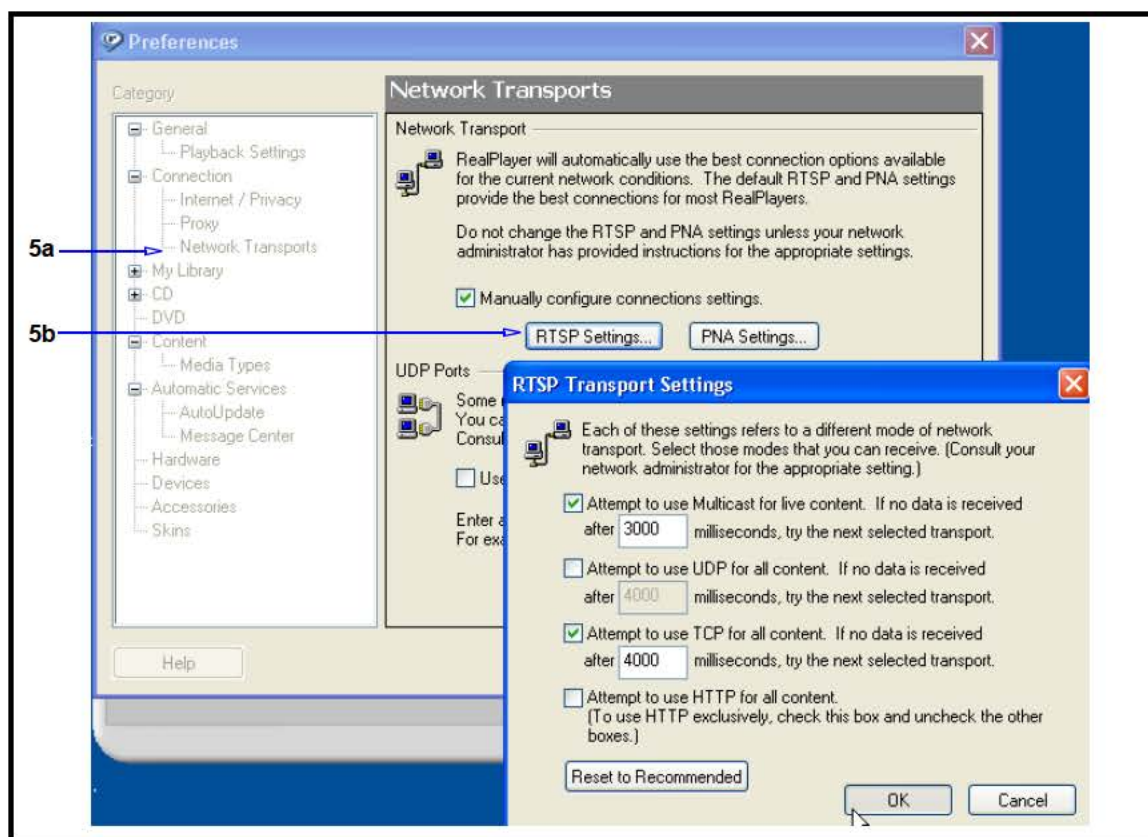
---

**Note:** This can also be accomplished with policy, the method Blue Coat recommends.

---

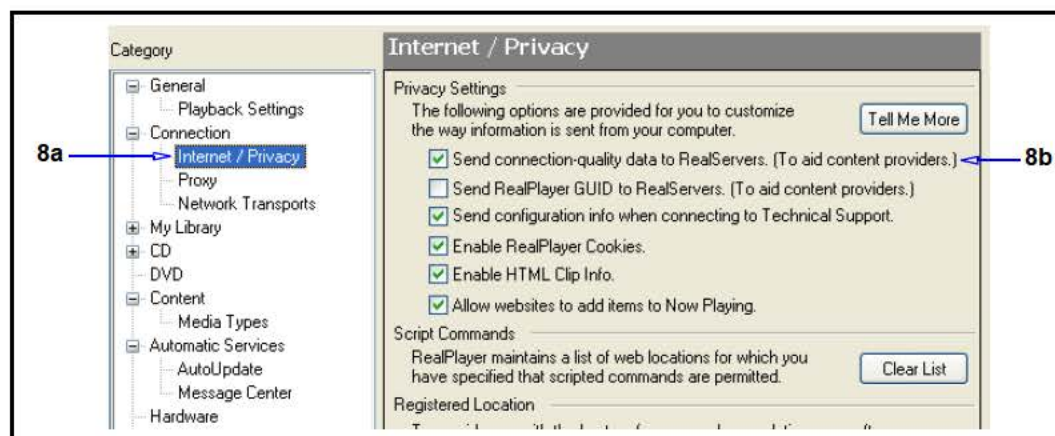
- e. Click **OK** to close the Streaming Proxy Settings dialog.





5. Configure RealPlayer transport settings:
  - a. Select **Connection > Network Transports**.
  - b. Click **RTSP Settings**. The RTSP Transport Settings dialog appears.
6. If required, deselect options, based on your network configuration. For example, if your firewall does not accept UDP, you can deselect **Attempt to use UDP for all content**, but leave the TCP option enabled. Blue Coat recommends using the default settings.
7. Click **OK**.

To allow the creation of access log entries, RealPlayer must be instructed to communicate with the RealServer.



8. Perform the following:

- a. **Select View > Preferences > Internet/Privacy.**
- b. In the **Privacy** field, select **Send connection-quality data to RealServers**; click **OK**.

Result: RealPlayer now proxies through the ProxySG and content is susceptible to streaming configurations and access policies.

**Notes:**

For authentication-specific issues, see "[Real Media Proxy Authentication](#)" on page 50.

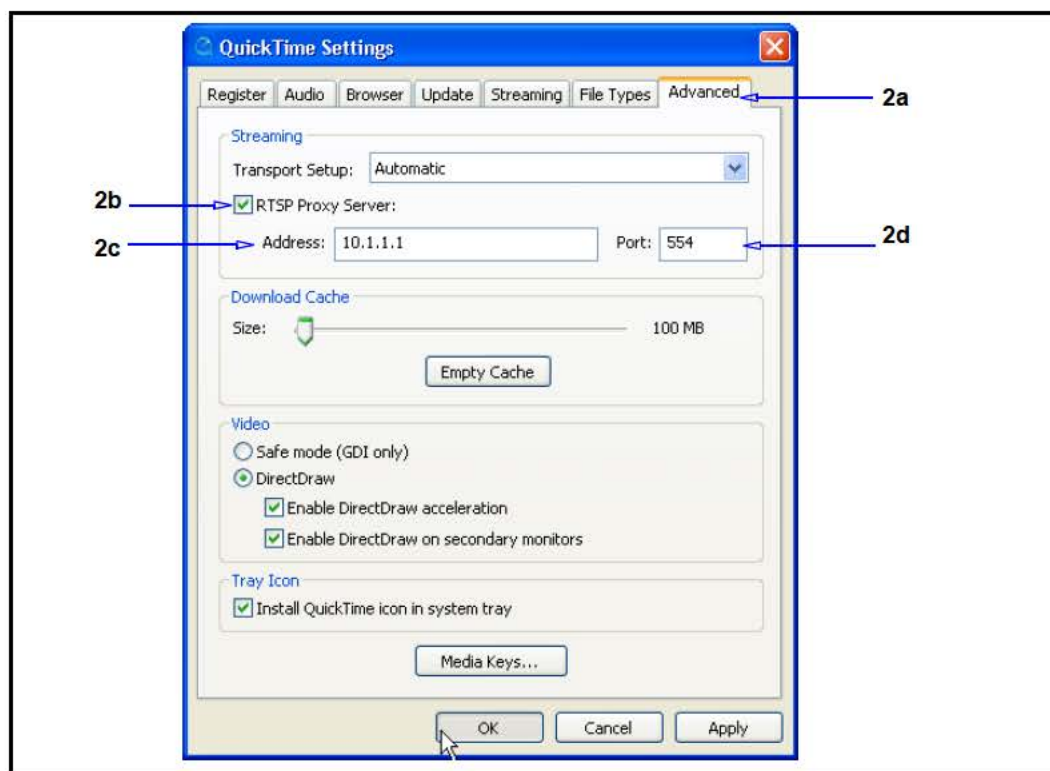


## Section F: Configuring QuickTime Player

This section describes how to configure QuickTime player for explicit proxy to the ProxySG.

### To configure QuickTime

1. Start QuickTime player.
2. Select **Edit > Preferences > QuickTime Preferences**.



3. Configure the protocol settings:
  - a. Click **Advanced**.
  - b. Select **RTSP Proxy Server**;
  - c. Enter the IP address of the ProxySG.
  - d. Enter the port number (554 is the default).

These settings must match the settings configured in the ProxySG. If you change the ProxySG explicit proxy settings, set similar settings in QuickTime.

4. Close **OK**. Result: QuickTime now proxies—in pass-through mode—through the ProxySG.

### Notes:

For authentication-specific issues, see ["QuickTime Proxy Authentication"](#) on page 50.

## Section G: Supported Streaming Media Clients and Protocols

This section describes the vendor-specific streaming protocols supported by the ProxySG.

---

**Note:** Blue Coat recommends upgrading to WMP version 9 or later. Note that WMP version 11 does not support the Microsoft Media Services (MMS) protocol.

---

### *Supported Streaming Media Clients and Servers*

The ProxySG supports Microsoft Windows Media, RealNetworks RealPlayer, and Apple QuickTime; however, the various players might experience unexpected behavior dependent upon certain SGOS configurations and features. Feature sections list such interactivities, as necessary. For a list of the most current versions of each supported client, refer to the Blue Coat *SGOS Release Notes* for this release.

#### **Supported Windows Media Players and Servers**

The ProxySG supports the following versions and formats:

- ❑ Windows Media Player
- ❑ Windows Media Server

#### **Supported Real Media Players and Servers**

The ProxySG supports the following versions:

- ❑ RealOne Player
- ❑ RealPlayer
- ❑ RealServer
- ❑ Helix Universal Server

---

**Note:** Blue Coat recommends not deploying a Helix proxy between the ProxySG and a Helix server where the Helix proxy is the parent to the ProxySG. This causes errors with the Helix server. The reverse is acceptable (using a Helix proxy as a child to the ProxySG).

---

#### **Supported QuickTime Players and Servers**

The ProxySG supports the following versions, but in pass-through mode only:

- ❑ QuickTime Player
- ❑ Darwin Streaming Server
- ❑ Helix Universal Server

## *Supported Streaming Protocols*

Each streaming media platform supports its own set of protocols. This section describes the protocols the ProxySG supports.

### **Windows Media Protocols**

The ProxySG supports Windows Media content streamed over RTSP and HTTP. The following Windows Media transports are supported:

#### *Client-side*

- ❑ RTP over unicast UDP (RTSP over TCP, RTP over unicast UDP)
- ❑ Interleaved RTSP (RTSP over TCP, RTP over TCP on the same connection)
- ❑ RTP over multicast UDP (RTP over multicast UDP; for live content only)
- ❑ HTTP streaming
- ❑ MMS-UDP (Microsoft Media Streaming—User Data Protocol)
- ❑ MMS-TCP (Microsoft Media Streaming—Transmission Control Protocol)
- ❑ Multicast-UDP is the only delivery protocol supported for multicast. No TCP control connection exists for multicast delivery

#### *Server-side*

- ❑ Interleaved RTSP
- ❑ HTTP streaming
- ❑ MMS-TCP between the ProxySG and origin server for video-on-demand and live unicast content

Server-side RTP over UDP is not supported. If policy directs the RTSP proxy to use HTTP as server-side transport, the proxy denies the client request. The client then rolls over to MMS or HTTP.

---

**Note:** The MMS protocol is usually referred to as either MMS-TCP or MMS-UDP depending on whether TCP or UDP is used as the transport layer for sending streaming data packets. MMS-UDP uses a TCP connection for sending and receiving media control messages, and a UDP connection for streaming the actual media data. MMS-TCP uses TCP connections to send both control and data messages. The MMS protocol is not supported in WMP 11 and higher.

---

### **Real Media Protocols**

The ProxySG supports the following Real Media protocols:

### ***Client-Side***

- ❑ HTTP streaming (RTSP and RDT over TCP tunneled through HTTP)—HTTP streaming is supported through a handoff process from HTTP to RTSP. HTTP accepts the connection and, based on the headers, hands off to RTSP. The headers identify an RTSP URL.
- ❑ RDT over unicast UDP (RTSP over TCP, RDT over unicast UDP)
- ❑ Interleaved RTSP (RTSP over TCP, RDT over TCP on the same connection)
- ❑ RDT over multicast UDP (RTSP over TCP, RDT over multicast UDP; for live content only)

### ***Server-Side***

- ❑ HTTP streaming
- ❑ Interleaved RTSP

### ***Unsupported Protocols***

The following Real Media protocols are not supported in this version of SGOS:

- ❑ PNA
- ❑ Server-side RDT/UDP (both unicast and multicast)

### **QuickTime Protocols**

The ProxySG supports the following QuickTime protocols:

- ❑ HTTP streaming (RTSP and RDT over TCP tunneled through HTTP)—HTTP streaming is supported through a handoff process from HTTP to RTSP. HTTP accepts the connection and, based on the headers, hands off to RTSP. The headers identify an RTSP URL.
- ❑ RTP over unicast UDP (RTSP over TCP, RDT over unicast UDP)
- ❑ Interleaved RTSP (RTSP over TCP, RDT over TCP on the same connection)

### ***Server-Side***

- ❑ HTTP streaming
- ❑ Interleaved RTSP

### ***Unsupported Protocols***

The following QuickTime protocols are not supported in this version of SGOS:

- ❑ Server-side RTP/UDP, both unicast and multicast, is not supported.

Client-side multicast is not supported.

## Glossary

### A

**access control list**—Allows or denies specific IP addresses access to a server.

**access log**—A list of all the requests sent to a ProxySG. You can read an access log using any of the popular log-reporting programs. When a client uses HTTP streaming, the streaming entry goes to the same access log.

**account**—A named entity that has purchased the ProxySG or the Entitlements from Blue Coat.

**activation code**—A string of approximately 10 characters that is generated and mailed to customers when they purchase the ProxySG.

**active content stripping**—Provides a way to identify potentially dangerous mobile or active content and scripts, and strip them out of a response.

**active content types**—Used in the Visual Policy Manager. Referring to Web Access policies, you can create and name lists of active content types to be stripped from Web pages. You have the additional option of specifying a customized message to be displayed to the user

**administration access policy**—A policy layer that determines who can access the ProxySG to perform administrative tasks.

**administration authentication policy**—A policy layer that determines how administrators accessing the ProxySG must authenticate.

**AJAX**—Acronym for Asynchronous JavaScript and XML, the technology used for live updating of Web objects without having to reload the entire page.

**Application Delivery Network (ADN)**—A WAN that has been optimized for acceleration and compression by Blue Coat. This network can also be secured through the use of appliance certificates. An ADN network is composed of an ADN manager and backup ADN manager, ADN nodes, and a network configuration that matches the environment.

**ADN backup manager**—Takes over for the ADN manager in the event it becomes unavailable. See *ADN manager*.

**ADN manager**—Responsible for publishing the routing table to SG Clients (and to other ProxySG appliances).

**ADN optimize attribute**—Controls whether to optimize bandwidth usage when connecting upstream using an ADN tunnel.

**A record**—The central records of DNS, which link a domain or subdomain to an IP address. An A record can correspond to a single IP address or many IP addresses.

**asx rewrite**—Allows you to rewrite URLs and then direct a client's subsequent request to the new URL. One of the main applications of ASX file rewrites is to provide explicit proxy-like support for Windows Media Player 6.4, which cannot set explicit proxy mode for protocols other than HTTP.

**audit**—A log that provides a record of who accessed what and how.

**authenticate-401 attribute**—All transparent and explicit requests received on the port always use transparent authentication (cookie or IP, depending on the configuration). This is especially useful to force transparent proxy authentication in some proxy-chaining scenarios

**authenticated content**—Cached content that requires authentication at the origin content server (OCS). Supported authentication types for cached data include basic authentication and IWA (or NTLM).

**authentication**—Allows you to verify the identity of a user. In its simplest form, this is done through usernames and passwords. Much more stringent authentication can be employed using digital certificates that have been issued and verified by a Certificate Authority. *See also* basic authentication, proxy authentication, and SSL authentication.

**authentication realm**—Authenticates and authorizes users to access SG services using either explicit proxy or transparent proxy mode. These realms integrate third-party vendors, such as LDAP, Windows, and Novell, with the Blue Coat operating system.

**authorization**—The permissions given to an authenticated user.

## B

**bandwidth**—The amount of data you can send through a network or modem connection, usually measured in bits per second (bps).

**bandwidth class**—A defined unit of bandwidth allocation.

**bandwidth class hierarchy**—A grouping of bandwidth classes into a tree structure that specifies the relationship among different classes. You create a hierarchy by creating at least one parent class and assigning other classes as its children.

**bandwidth gain**—Bandwidth gain is a calculation of the savings that occur when bandwidth is not consumed as a result of some form of optimization.

For example, bandwidth gain for active sessions is calculated by subtracting the number of client bytes from the number of server bytes and dividing the result by the number of server bytes.

$$(\text{Client Bytes} - \text{Server Bytes}) / \text{Server Bytes}$$

**bandwidth management**—Classify, control, and, if needed, limit the amount of bandwidth used by network traffic flowing in or out of a ProxySG.

**basic authentication**—The standard authentication for communicating with the target as identified in the URL.

**BCAAA**—Blue Coat Authentication and Authorization Agent. Allows SGOS 5.x to manage authentication and authorization for IWA, CA eTrust SiteMinder realms, Oracle COREid, Novell, and Windows realms. The agent is installed and configured separately from SGOS 5.x and is available from the Blue Coat Web site.

**BCLP**—Blue Coat Licensing Portal.

**byte-range support**—The ability of the ProxySG to respond to byte-range requests (requests with a Range : HTTP header).

---

## C

**cache**—An "object store," either hardware or software, that stores information (objects) for later retrieval. The first time the object is requested, it is stored, making subsequent requests for the same information much faster.

A cache helps reduce the response time and network bandwidth consumption on future, equivalent requests. The ProxySG serves as a cache by storing content from many users to minimize response time and prevent extraneous network traffic.

**cache control**—Allows you to configure which content the ProxySG stores.

**cache efficiency**—A tab found on the Statistics pages of the Management Console that shows the percent of objects served from cache, the percent loaded from the network, and the percent that were non-cacheable.

**cache hit**—Occurs when the ProxySG receives a request for an object and can serve the request from the cache without a trip to the origin server.

**cache miss**—Occurs when the ProxySG receives a request for an object that is not in the cache. The ProxySG must then fetch the requested object from the origin server.

**cache object**—Cache contents includes all objects currently stored by the ProxySG. Cache objects are not cleared when the ProxySG is powered off.

**Certificate Authority (CA)**—A trusted, third-party organization or company that issues digital certificates used to create digital signatures and public key/private key pairs. The role of the CA is to guarantee that the individuals or company representatives who are granted a unique certificate are who they claim to be.

**child class (bandwidth gain)**—The child of a parent class is dependent on that parent class for available bandwidth (they share the bandwidth in proportion to their minimum/maximum bandwidth values and priority levels). A child class with siblings (classes with the same parent class) shares bandwidth with those siblings in the same manner.

**cipher suite**—Specifies the algorithms used to secure an SSL connection. When a client makes an SSL connection to a server, it sends a list of the cipher suites that it supports.

**client consent certificates**—A certificate that indicates acceptance or denial of consent to decrypt an end user's HTTPS request.

**client-side transparency**—A way of replacing the ProxySG IP address with the Web server IP address for all port 80 traffic destined to go to the client. This effectively conceals the ProxySG address from the client and conceals the identity of the client from the Web server.

**concentrator**—A ProxySG, usually located in a data center, that provides access to data center resources, such as file servers.

**content filtering**—A way of controlling which content is delivered to certain users. ProxySG appliances can filter content based on content categories (such as gambling, games, and so on), type (such as http, ftp, streaming, and mime type), identity (user, group, network), or network conditions. You can filter content using vendor-based filtering or by allowing or denying access to URLs.



## D

**default boot system**—The system that was successfully started last time. If a system fails to boot, the next most recent system that booted successfully becomes the default boot system.

**default proxy listener**—See *proxy service (default)*.

**denial of service (DoS)**—A method that hackers use to prevent or deny legitimate users access to a computer, such as a Web server. DoS attacks typically send many request packets to a targeted Internet server, flooding the server's resources and making the system unusable. Any system connected to the Internet and equipped with TCP-based network services is vulnerable to a DoS attack.

The ProxySG resists DoS attacks launched by many common DoS tools. With a hardened TCP/IP stack, the ProxySG resists common network attacks, including traffic flooding.

**destination objects**—Used in Visual Policy Manager. These are the objects that define the target location of an entry type.

**detect protocol attribute**—Detects the protocol being used. Protocols that can be detected include: HTTP, P2P (eDonkey, BitTorrent, FastTrack, Gnutella), SSL, and Endpoint Mapper.

**diagnostic reporting**—Found in the Statistics pane, the Diagnostics tab allows you to control whether Daily Heartbeats and/or Blue Coat Monitoring are enabled or disabled.

**directives**—Commands used in installable lists to configure forwarding and SOCKS gateway.

**DNS access**—A policy layer that determines how the ProxySG processes DNS requests.

**domain name system (DNS)**—An Internet service that translates domain names into IP addresses.

**dynamic bypass**—Provides a maintenance-free method for improving performance of the ProxySG by automatically compiling a list of requested URLs that return various kinds of errors.

**dynamic real-time rating (DRTR)**—Used in conjunction with the Blue Coat Web Filter (BCWF), DRTR (also known as *dynamic categorization*) provides real-time analysis and content categorization of requested Web pages to solve the problem of new and previously unknown uncategorized URLs—those not in the database.

When a user requests a URL that has not already been categorized by the BCWF database (for example, a brand new Web site), the ProxySG dynamic categorization service analyzes elements of the requested content and assigns a category or categories. The dynamic service is consulted *only* when the installed BCWF database does not contain category information for an object.

## E

**early intercept attribute**—Controls whether the proxy responds to client TCP connection requests before connecting to the upstream server. When early intercept is disabled, the proxy delays responding to the client until after it has attempted to contact the server.

---

**ELFF-compatible format**—A log type defined by the W3C that is general enough to be used with any protocol.

**emulated certificates**—Certificates that are presented to the user by the ProxySG when intercepting HTTPS requests. Blue Coat emulates the certificate from the server and signs it, copying the subjectName and expiration. The original certificate is used between the ProxySG and the server.

**encrypted log**—A log is encrypted using an external certificate associated with a private key. Encrypted logs can only be decrypted by someone with access to the private key. The private key is not accessible to the ProxySG.

**EULA**—End user license agreement.

**event logging**—Allows you to specify the types of system events logged, the size of the event log, and to configure Syslog monitoring. The ProxySG can also notify you by email if an event is logged. *See also* access logging.

**explicit proxy**—A configuration in which the browser is explicitly configured to communicate with the proxy server for access to content. This is the default for the ProxySG and requires configuration for both the browser and the interface card.

**extended log file format (ELFF)**—A variant of the common log file format, which has two additional fields at the end of the line—the referer and the user agent fields.

## F

**fail open/closed**—Failing open or closed applies to forwarding hosts and groups and SOCKS gateways. Fail open or closed applies when health checks are showing sick for each forwarding or SOCKS gateway target in the applicable fail-over sequence. If no systems are healthy, the ProxySG fails open or closed, depending on the configuration. If closed, the connection attempt simply fails.

If open, an attempt is made to connect without using any forwarding target (or SOCKS gateway). Fail open is usually a security risk; fail closed is the default if no setting is specified.

**filtering**—*See content filtering.*

**forward proxy**—A proxy server deployed close to the clients and used to access many servers. A forward proxy can be explicit or transparent.

**FTP**—*See Native FTP and Web FTP.*

## G

**gateway**—A device that serves as entrance and exit into a communications network.

## H

**hardware serial number**—A string that uniquely identifies the ProxySG; it is assigned to each unit in manufacturing.

**health check tests**—The method of determining network connectivity, target responsiveness, and basic functionality. The following tests are supported:

- ICMP
- TCP
- SSL
- HTTP
- HTTPS
- Group
- Composite and reference to a composite result
- ICAP
- Websense
- DRTR rating service

**health check type**—The kind of device or service the specific health check tests. The following types are supported:

- Forwarding host and forwarding group
- SOCKS gateway and SOCKS gateway group
- CAP service and ICAP service group
- Websense off-box service and Websense off-box service group
- DRTR rating service
- User-defined host and a user-defined composite

**heartbeat**—Messages sent once every 24 hours that contain the statistical and configuration data for the ProxySG, indicating its health. Heartbeats are commonly sent to system administrators and to Blue Coat. Heartbeats contain no private information, only aggregate statistics useful for pre-emptively diagnosing support issues.

The ProxySG sends emergency heartbeats whenever it is rebooted. Emergency heartbeats contain core dump and restart flags in addition to daily heartbeat information.

**host affinity**—The attempt to direct multiple connections by a single user to the same group member. Host affinity is closely tied to load balancing behavior; both should be configured if load balancing is important.

**host affinity timeout**—The host affinity timeout determines how long a user remains idle before the connection is closed. The timeout value checks the user's IP address, SSL ID, or cookie in the host affinity table.

|

**inbound traffic (bandwidth gain)**—Network packets flowing into the ProxySG. Inbound traffic mainly consists of the following:

- Server inbound: Packets originating at the origin content server (OCS) and sent to the ProxySG to load a Web object.

- **Client inbound:** Packets originating at the client and sent to the ProxySG for Web requests.

**installable list**—A list of configuration parameters that can be created using a text editor (either Blue Coat or another text editor) or through the CLI inline commands. The list can then be downloaded to the ProxySG from an HTTP server or locally from your PC. Configurations that can be created and installed this way include the SG Client, archiving, forwarding hosts, SOCKS gateways, ICP, policy files, and exceptions.

**integrated host timeout**—An integrated host is an origin content server (OCS) that has been added to the health check list. The host, added through the `integrate_new_hosts` property, ages out of the integrated host table after being idle for the specified time. The default is 60 minutes.

**intervals**—Time period from the completion of one health check to the start of the next health check.

**IP reflection**—Determines how the client IP address is presented to the origin server for explicitly proxied requests. All proxy services contain a `reflect-ip` attribute, which enables or disables sending of client's IP address instead of the IP address of the ProxySG.

**issuer keyring**—The keyring used by the ProxySG to sign emulated certificates. The keyring is configured on the appliance and managed through policy.

## L

**licensable component (LC)**—(Software) A subcomponent of a license; it is an option that enables or disables a specific feature.

**LCAMS**—License Configuration and Management System.

**license**—Provides both the right and the ability to use certain software functions within a ProxyAV (or ProxySG) appliance. The license key defines and controls the license, which is owned by an account.

**listener**—The service that is listening on a specific port. A listener can be identified by any destination IP/subnet and port range. Multiple listeners can be added to each service.

**live content**—Also called live broadcast. Used in streaming, it indicates that the content is being delivered fresh.

**LKF**—License key file.

**load balancing**—A way to share traffic requests among multiple upstream systems or multiple IP addresses on a single host.

**local bypass list**—A list you create and maintain on your network. You can use a local bypass list alone or in conjunction with a central bypass list.

**local policy file**—Written by enterprises (as opposed to the central policy file written by Blue Coat); used to create company- and department-specific advanced policies written in the Blue Coat Policy Language (CPL).

**log facility**—A separate log that contains a single logical file and supports a single log format. It also contains the file's configuration and upload schedule information as well as other configurable information such as how often to rotate (switch to a new log) the logs at the destination, any passwords needed, and the point at which the facility can be uploaded.

**log format**—The type of log that is used: NCSA/Common, SQUID, ELFF, SurfControl, or Websense.

The proprietary log types each have a corresponding pre-defined log format that has been set up to produce exactly that type of log (these logs cannot be edited). In addition, a number of other ELFF type log formats are also pre-defined (im, main, p2p, ssl, streaming). These can be edited, but they start out with a useful set of log fields for logging particular protocols understood by the ProxySG. It is also possible to create new log formats of type ELFF or Custom which can contain any desired combination of log fields.

**log tail**—The access log tail shows the log entries as they get logged. With high traffic on the ProxySG, not all access log entries are necessarily displayed. However, you can view all access log information after uploading the log.

## M

**MACH5**—SGOS 5 MACH5 Edition.

**Management Console**—A graphical Web interface that lets you to manage, configure, monitor, and upgrade the ProxySG from any location. The Management Console consists of a set of Web pages and Java applets stored on the ProxySG. The appliance acts as a Web server on the management port to serve these pages and applets.

**management information base (MIB)**—Defines the statistics that management systems can collect. A managed device (gateway) has one or more MIBs as well as one or more SNMP agents, which implements the information and management functionality defined by a specific MIB.

**maximum object size**—The maximum object size stored in the ProxySG. All objects retrieved that are greater than the maximum size are delivered to the client but are not stored in the ProxySG.

**Media Access Control (MAC) address**—A unique value associated with a network adapter; also known as hardware address or physical address. For the ProxySG, it is a hardware address that is stored in each network card (such as an SSL accelerator card or a Quad GigE Fiber LX card) on the ProxySG. The MAC address uniquely identifies an adapter on a LAN and is a 12-digit hexadecimal number (48 bits in length).

**MIME/FILE type filtering**—Allows organizations to implement Internet policies for both uploaded and downloaded content by MIME or FILE type.

**multi-bit rate**—The capability of a single stream to deliver multiple bit rates to clients requesting content from ProxySG appliances from within varying levels of network conditions (such as different connecting bandwidths and traffic).

**multicast**—Used in streaming; the ability for hundreds or thousands of users to play a single stream.

---

**multicast aliases**—Used in streaming; a streaming command that specifies an alias for a multicast URL to receive an .nsc file. The .nsc files allows the multicast session to obtain the information in the control channel

**multicast station**—Used in streaming; a defined location on the proxy where the Windows Media player can retrieve streams. A multicast station enables multicast transmission of Windows Media content from the cache. The source of the multicast-delivered content can be a unicast-live source, a multicast (live) source, and simulated live (video-on-demand content converted to scheduled live content).

**multimedia content services**—Used in streaming; multimedia support includes Real Networks, Microsoft Windows Media, Apple QuickTime, MP3, and Flash.

## N

**name inputting**—Allows a ProxySG to resolve host names based on a partial name specification. When a host name is submitted to the DNS server, the DNS server resolves the name to an IP address. If the host name cannot be resolved, Blue Coat adds the first entry in the name-inputting list to the end of the host name and resubmits it to the DNS server

**native FTP**—Native FTP involves the client connecting (either explicitly or transparently) using the FTP protocol; the ProxySG then connects upstream through FTP (if necessary).

**NCSA common log format**—Blue Coat products are compatible with this log type, which contains only basic HTTP access information.

**network address translation (NAT)**—The process of translating private network (such as intranet) IP addresses to Internet IP addresses and vice versa. This methodology makes it possible to match private IP addresses to Internet IP addresses even when the number of private addresses outnumbers the pool of available Internet addresses.

**non-cacheable objects**—A number of objects are not cached by the ProxySG because they are considered non-cacheable. You can add or delete the kinds of objects that the appliance considers non-cacheable. Some of the non-cacheable request types are:

- Pragma no-cache, requests that specify non-cached objects, such as when you click refresh in the Web browser.
- Password provided, requests that include a client password.
- Data in request that include additional client data.
- Not a GET request.

**.nsc file**—Created from the multicast station definition and saved through the browser as a text file encoded in a Microsoft proprietary format. Without an .nsc file, the multicast station definition does not work.

**NTP**—To manage objects in an appliance, a ProxySG must know the current Universal Time Coordinates (UTC) time. By default, the ProxySG attempts to connect to a Network Time Protocol (NTP) server to acquire the UTC time. The ProxySG includes a list of NTP servers available on the Internet, and attempts to connect to them in the order they appear in the NTP server list on the NTP tab.

## O

**object (used in caching)**—An object is the item that is stored in an appliance. These objects can be frequently accessed content, content that has been placed there by content publishers, or Web pages, among other things.

**object (used in Visual Policy Manager)**—An object (sometimes referred to as a condition) is any collection or combination of entry types you can create individually (user, group, IP address/subnet, and attribute). To be included in an object, an item must already be created as an individual entry.

**object pipelining**—This patented algorithm opens as many simultaneous TCP connections as the origin server will allow and retrieves objects in parallel. The objects are then delivered from the appliance straight to the user's desktop as fast as the browser can request them.

**Online Certificate Status Protocol (OCSP)**—An Internet protocol used for obtaining the revocation status of an X.509 digital certificate. OCSP was created as an alternative to certificate revocation lists (CRL), specifically addressing certain problems associated with using CRLs in a public key infrastructure (PKI). OCSP servers are called OCSP responders due to the request/response nature of these messages.

**origin content server (OCS)**—Also called origin server. This is the original source of the content that is being requested. An appliance needs the OCS to acquire data the first time, to check that the content being served is still fresh, and to authenticate users.

**outbound traffic (bandwidth gain)**—Network packets flowing out of the ProxySG. Outbound traffic mainly consists of the following:

- Client outbound: Packets sent to the client in response to a Web request.
- Server outbound: Packets sent to an OCS or upstream proxy to request a service.

## P

**PAC (Proxy AutoConfiguration) scripts**—Originally created by Netscape, PACs are a way to avoid requiring proxy hosts and port numbers to be entered for every protocol. You need only enter the URL. A PAC can be created with the needed information and the local browser can be directed to the PAC for information about proxy hosts and port numbers.

**packet capture (PCAP)**—Allows filtering on various attributes of the Ethernet frame to limit the amount of data collected. You can capture packets of Ethernet frames going into or leaving a ProxySG.



---

**parent class (bandwidth gain)**—A class with at least one child. The parent class must share its bandwidth with its child classes in proportion to the minimum/maximum bandwidth values or priority levels.

**passive mode data connections (PASV)**—Data connections initiated by an FTP client to an FTP server.

**pipelining**—See *object pipelining*.

**policies**—Groups of rules that let you manage Web access specific to the needs of an enterprise. Policies enhance ProxySG feature areas such as authentication and virus scanning, and let you control end-user Web access in your existing infrastructure.

**policy-based bypass list**—Used in policy. Allows a bypass based on the properties of the client, unlike static and dynamic bypass lists, which allow traffic to bypass the appliance based on destination IP address. See also *dynamic bypass*.

**policy layer**—A collection of rules created using Blue Coat CPL or with the VPM.

**pragma: no cache (PNC)**—A metatag in the header of a request that requires the appliance to forward a request to the origin server. This allows clients to always obtain a fresh copy.

**proxy**—Caches content, filters traffic, monitors Internet and intranet resource usage, blocks specific Internet and intranet resources for individuals or groups, and enhances the quality of Internet or intranet user experiences.

A proxy can also serve as an intermediary between a Web client and a Web server and can require authentication to allow identity-based policy and logging for the client.

The rules used to authenticate a client are based on the policies you create on the ProxySG, which can reference an existing security infrastructure—LDAP, RADIUS, IWA, and the like.

**Proxy Edition**—SGOS 5 Proxy Edition.

**proxy service**—The proxy service defines the ports, as well as other attributes, that are used by the proxies associated with the service.

**proxy service (default)**—The default proxy service is a service that intercepts all traffic not otherwise intercepted by other listeners. It only has one listener whose action can be set to bypass or intercept. No new listeners can be added to the default proxy service, and the default listener and service cannot be deleted. Service attributes can be changed.

**ProxySG**—A Blue Coat security and cache box that can help manage security and content on a network.

**public key certificate**—An electronic document that encapsulates the public key of the certificate sender, identifies this sender, and aids the certificate receiver to verify the identity of the certificate sender. A certificate is often considered valid if it has been digitally signed by a well-known entity, which is called a Certificate Authority (such as VeriSign).

**public virtual IP (VIP)**—Maps multiple servers to one IP address and then propagates that information to the public DNS servers. Typically, there is a public VIP known to the public Internet that routes the packets internally to the private VIP. This enables you to “hide” your servers from the Internet.

## R

**real-time streaming protocol (RTSP)**—A standard method of transferring audio and video and other time-based media over Internet-technology based networks. The protocol is used to stream clips to any RTP-based client.

**reflect client IP attribute**—Enables the sending of the client's IP address instead of the SG's IP address to the upstream server. If you are using an application delivery network (ADN), this setting is enforced on the concentrator proxy through the **Configuration > App. Delivery Network > Tunneling** tab.

**registration**—An event that binds the appliance to an account, that is, it creates the Serial#, Account association.

**remote authentication dial-in user service (RADIUS)**—Authenticates user identity via passwords for network access.

**Return to Sender (RTS)**—A way of allowing outgoing TCP packets to use the same network interface on which the corresponding incoming TCP packets arrived. The destination Media Access Control (MAC) address for the outgoing packets is the same as the source MAC address of the incoming packets. See also *Media Access Control (MAC) address*.

**reverse proxy**—A proxy that acts as a front end to a small number of predefined servers, typically to improve performance. Many clients can use it to access the small number of predefined servers.

**routing information protocol (RIP)**—Designed to select the fastest route to a destination. RIP support is built into ProxySG appliances.

**router hops**—The number of jumps a packet takes when traversing the Internet.

**RTS**—See *Return to Sender*.

## S

**secure shell (SSH)**—Also known as Secure Socket Shell. SSH is an interface and protocol that provides strong authentication and enables you to securely access a remote computer. Three utilities—login, ssh, and scp—comprise SSH. Security via SSH is accomplished using a digital certificate and password encryption. Remember that the Blue Coat ProxySG requires SSH1. A ProxySG supports a combined maximum of 16 Telnet and SSH sessions.

**serial console**—A third-party device that can be connected to one or more Blue Coat appliances. Once connected, you can access and configure the appliance through the serial console, even when you cannot access the appliance directly.

**server certificate categories**—The hostname in a server certificate can be categorized by BCWF or another content filtering vendor to fit into categories such as banking, finance, sports.

**server portals**—Doorways that provide controlled access to a Web server or a collection of Web servers. You can configure Blue Coat appliances to be server portals by mapping a set of external URLs onto a set of internal URLs.

---

**server-side transparency**—The ability for the server to see client IP addresses, which enables accurate client-access records to be kept. When server-side transparency is enabled, the appliance retains client IP addresses for all port 80 traffic to and from the ProxySG. In this scheme, the client IP address is always revealed to the server.

**service attributes**—Define the parameters, such as explicit or transparent, cipher suite, and certificate verification, that the ProxySG uses for a particular service.

**sibling class (bandwidth gain)**—A bandwidth class with the same parent class as another class.

**signed system image**—Cryptographically signed with a key known only to Blue Coat, and the signature is verified when the image is downloaded to the system.

**simple network management protocol (SNMP)**—The standard operations and maintenance protocol for the Internet. It consists of a set of standards for network management, including an application layer protocol, a database schema, and a set of data objects. In SNMP, the available information is defined by management information bases (MIBs), which describe the structure of the management data.

**simulated live**—Used in streaming. Defines playback of one or more video-on-demand files as a scheduled live event, which begins at a specified time. The content can be looped multiple times, or scheduled to start at multiple start times throughout the day.

**SmartReporter log type**—A proprietary ELFF log type that is compatible with the SmartFilter SmartReporter tool.

**SOCKS**—A proxy protocol for TCP/IP-based networking applications that allows users transparent access across the firewall. If you are using a SOCKS server for the primary or alternate forwarding gateway, you must specify the appliance's ID for the identification protocol used by the SOCKS gateway. The machine ID should be configured to be the same as the appliance's name.

**SOCKS proxy**—A generic way to proxy TCP and UDP protocols. The ProxySG supports both SOCKSv4/4a and SOCKSv5; however, because of increased username and password authentication capabilities and compression support, Blue Coat recommends that you use SOCKS v5.

**splash page**—The custom message page that displays the first time you start the client browser.

**split proxy**—Employs co-operative processing at the branch and the core to implement functionality that is not possible in a standalone proxy. Examples of split proxies include:

- Mapi Proxy
- SSL Proxy

**SQUID-compatible format**—A log type that was designed for cache statistics and is compatible with Blue Coat products.

**squid-native log format**—The Squid-compatible format contains one line for each request.

**SSL authentication**—Ensures that communication is with “trusted” sites only. Requires a certificate issued by a trusted third party (Certificate Authority).

**SSL client**—See SSL device profile.

**SSL device profile**—Used to determine various SSL parameters for outgoing HTTPS connections. Specifically, its role is to:

- Identify the SSL protocol version that the ProxySG uses in negotiations with origin servers.
- Identify the cipher suites used.
- Determine which certificate can be presented to origin servers by associating a keyring with the profile.

**SSL interception**—Decrypting SSL connections.

**SSL proxy**—A proxy that can be used for any SSL traffic (HTTPS or not), in either forward or reverse proxy mode.

**static route**—A manually-configured route that specifies the transmission path a packet must follow, based on the packet's destination address. A static route specifies a transmission path to another network.

**statistics**—Every Blue Coat appliance keeps statistics of the appliance hardware and the objects it stores. You can review the general summary, the volume, resources allocated, cache efficiency, cached contents, and custom URLs generated by the appliance for various kinds of logs. You can also check the event viewer for every event that occurred since the appliance booted.

**stream**—A flow of a single type of data, measured in kilobits per second (Kbps). A stream could be the sound track to a music video, for example.

**SurfControl log type**—A proprietary log type that is compatible with the SurfControl reporter tool. The SurfControl log format includes fully-qualified usernames when an NTLM realm provides authentication. The simple name is used for all other realm types.

**syslog**—An event-monitoring scheme that is especially popular in Unix environments. Most clients using Syslog have multiple devices sending messages to a single Syslog daemon. This allows viewing a single chronological event log of all of the devices assigned to the Syslog daemon. The Syslog format is: "Date Time Hostname Event."

**system cache**—The software cache on the appliance. When you clear the cache, all objects in the cache are set to expired. The objects are not immediately removed from memory or disk, but a subsequent request for any object requested is retrieved from the origin content server before it is served.

## T

**TCP window size**—The number of bytes that can be buffered before the sending host must wait for an acknowledgement from the receiving host.

**time-to-live (TTL) value**—Used in any situation where an expiration time is needed. For example, you do not want authentication to last beyond the current session and also want a failed command to time out instead of hanging the box forever.

**traffic flow (bandwidth gain)**—Also referred to as *flow*. A set of packets belonging to the same TCP/UDP connection that terminate at, originate at, or flow through the ProxySG. A single request from a client involves two separate connections. One of

---

them is from the client to the ProxySG, and the other is from the ProxySG to the OCS. Within each of these connections, traffic flows in two directions—in one direction, packets flow out of the ProxySG (outbound traffic), and in the other direction, packets flow into the ProxySG (inbound traffic). Connections can come from the client or the server. Thus, traffic can be classified into one of four types:

- Server inbound
- Server outbound
- Client inbound
- Client outbound

These four traffic flows represent each of the four combinations described above. Each flow represents a single direction from a single connection.

**transmission control protocol (TCP)**—TCP, when used in conjunction with IP (Internet Protocol) enables users to send data, in the form of message units called packets, between computers over the Internet. TCP is responsible for tracking and handling, and reassembly of the packets; IP is responsible for packet delivery.

**transparent proxy**—A configuration in which traffic is redirected to the ProxySG without the knowledge of the client browser. No configuration is required on the browser, but network configuration, such as an L4 switch or a WCCP-compliant router, is required.

**trial period**—Starting with the first boot, the trial period provides 60 days of free operation. All features are enabled during this time.

## U

**unicast alias**—Defines an name on the appliance for a streaming URL. When a client requests the alias content on the appliance, the appliance uses the URL specified in the unicast-alias command to request the content from the origin streaming server.

**universal time coordinates (UTC)**—A ProxySG must know the current UTC time. By default, the appliance attempts to connect to a Network Time Protocol (NTP) server to acquire the UTC time. If the ProxySG cannot access any NTP servers, you must manually set the UTC time.

**URL filtering**—*See* content filtering.

**URL rewrite rules**—Rewrite the URLs of client requests to acquire the streaming content using the new URL. For example, when a client tries to access content on `www.mycompany.com`, the ProxySG is actually receiving the content from the server on `10.253.123.123`. The client is unaware that `mycompany.com` is not serving the content; however, the ProxySG access logs indicate the actual server that provides the content.

## W

**WCCP**—Web Cache Communication Protocol. Allows you to establish redirection of the traffic that flows through routers.

**Web FTP**—Web FTP is used when a client connects in explicit mode using HTTP and accesses an ftp:// URL. The ProxySG translates the HTTP request into an FTP request for the OCS (if the content is not already cached), and then translates the FTP response with the file contents into an HTTP response for the client.

**Websense log type**—A Blue Coat proprietary log type that is compatible with the Websense reporter tool.

## X

**XML responder**—HTTP XML service that runs on an external server.

**XML requestor**—XML realm.

## Index

### A

- ASX rewrite
  - command syntax 73
  - rules 72
  - setting up for Windows Media 71

### B

- Blue Coat SG
  - instant messaging
    - configuring clients 21
    - proxy authentication 10
    - securing 9
    - Yahoo Messenger client configuration 24
  - instant messaging, IM clients tab statistics 33
  - instant messaging, IM data tab statistics 31

### D

- document
  - conventions 7

### I

- instant messaging
  - configuring clients 21
  - proxy authentication 10
  - securing 9
  - statistics, IM clients tab 33
  - statistics, IM data tab 31
  - Yahoo Messenger client configuration 24

### M

- multicast
  - defined 41
  - unicast, converting by Windows Media 69

### P

- port services
  - instant messaging protocols 9

### R

- RealMedia
  - proxy authentication 50

### S

- streaming media
  - delivery type 41
  - live content defined 42
  - multicast defined 41
  - prepopulating content, description 47
  - unicast defined 41

### U

- unicast
  - defined 41
  - multicast, converting from by Windows Media 69

### W

- Windows Media
  - .ASX-rewrite rules 72
  - .nsc file 67
  - ASX rewrite and NTLM incompatibility 74
  - authentication limitations 49
  - multicast station monitoring 68
  - multicast to unicast 69
  - prepopulating content description 47
  - setting up ASX rewrite 71