

# **Blue Coat® Systems**

# **ProxySG® Appliance**

*Configuration and Management Suite*  
*Volume 5: Advanced Networking*

*Version SGOS 5.3.x*



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# Contents

## Contact Information

### Chapter 1: About Advanced Networking

About This Book.....	13
Document Conventions .....	14
Notes and Warnings .....	14
About Procedures .....	14
Illustrations .....	15

### Chapter 2: Configuring an Application Delivery Network

#### Section A: ADN Overview

About the Application Delivery Network Elements .....	19
---	----

#### Section B: About ADN Deployment, Compression, and Security Behavior

Selecting the Correct Deployment.....	24
Transparent Connections .....	25
Explicit Connections .....	26
Combination of Transparent/Explicit Connections.....	27
Choosing Which Traffic to Optimize.....	27
About ADN Compression .....	27
ADN Security .....	28
Authenticating and Authorizing ADN Peers.....	28
Securing ADN Connections.....	29

#### Section C: Basic ADN Setup

About the ADN Manager .....	30
ADN Connection Behavior for ADN Managers .....	31
Configuring the ADN Managers.....	32

#### Section D: Transparent and Explicit Connection Deployments

Configuring a Transparent Deployment.....	34
Transparent Deployment Notes.....	34
Transparent Load Balancing.....	35
Configuring an Explicit Deployment.....	38
Managing Server Subnets and Enabling an Internet Gateway.....	38
Preserving the Destination Port .....	41
Explicit Load Balancing.....	41
Configuring a Combined (Transparent and Explicit) Deployment .....	44

## **Section E: Securing the ADN Network**

Configuring ADN Security Settings .....	47
Setting Device Security.....	47
Securing Connections .....	49
Authorizing Devices to Join the Network .....	51
Approved/Pending Notes .....	53

## **Section F: ADN Network History, Active Sessions, Byte-Caching Statistics, and Health Metrics**

Reviewing ADN History .....	54
Reviewing ADN Active Sessions .....	55
Reviewing Byte-Caching Statistics.....	57
Reviewing ADN Health Metrics .....	57

## **Section G: Advanced Tunnel Optimization**

Setting Advanced Tunneling Parameters .....	60
---	----

## **Section H: Byte-Cache Dictionary Sizing**

Understanding Dictionaries.....	64
Understanding Dictionary Sizing .....	64
Ranking Peers .....	65
Dictionary Sizing Messages.....	66
Ranking New Peers .....	66
Manually Sizing Peers .....	66

## **Section I: Related CLI Syntax to Configure an ADN Network**

### **Section J: Policy**

### **Section K: Troubleshooting**

Using the Test ADN Diagnostics Command.....	73
Transparent ADN: Success .....	73
Transparent ADN: Success but no Upstream ADN Connection .....	74
Explicit ADN: Success .....	74
Explicit ADN: The Upstream Device is not Functioning .....	75
Error Codes .....	75
Showing the ADN Configuration .....	76
Byte-Cache Configuration CLI Tables .....	77

## **Chapter 3: Preventing Denial of Service Attacks**

About Attack Detection .....	79
Configuring Attack-Detection Mode for the Client.....	80
Changing Global Settings .....	80
Configuring Attack-Detection Mode for a Server or Server Group.....	83

## **Chapter 4: TCP Connection Forwarding**

About Asymmetric Routing Environments.....	85
--	----

## Contents

---

The TCP Connection Forwarding Solution.....	86
About Bidirectional Asymmetric Routing.....	87
About Dynamic Load Balancing.....	88
About ADN Transparent Tunnel Load Balancing .....	89
TCP Configuration Forwarding Deployment Notes .....	90
Configuring TCP Connection Forwarding .....	90
Copying Peers to Another ProxySG in the Cluster .....	91
Removing a Peer.....	92
Related CLI Syntax to Configure TCP Connection Forwarding.....	92

### **Chapter 5: Bandwidth Management**

Bandwidth Management Overview .....	93
Allocating Bandwidth .....	94
Flow Classification.....	98
Configuring Bandwidth Allocation .....	98
Enabling Bandwidth Management.....	99
Creating, Editing, and Deleting Bandwidth Classes.....	99
Bandwidth Management Statistics.....	102
Current Class Statistics Tab .....	102
Total Class Statistics Tab .....	103
Bandwidth Management Statistics in the CLI .....	103
Using Policy to Manage Bandwidth .....	104
CPL Support for Bandwidth Management .....	105
VPM Support for Bandwidth Management .....	105
Bandwidth Allocation and VPM Examples .....	106
Policy Examples: CPL.....	113

### **Chapter 6: Authenticating a ProxySG**

Introduction.....	115
ProxySG Appliance Overview.....	115
Appliance Certificates and SSL Device Profiles .....	116
About ProxySG Appliance Certificates.....	116
About SSL Device Profiles .....	116
Obtaining a ProxySG Appliance Certificate .....	117
Automatically Obtaining an Appliance Certificate.....	118
Manually Obtaining an Appliance Certificate.....	119
Obtaining a Non Blue Coat Appliance Certificate.....	121
Creating an SSL Device Profile for Device Authentication .....	122
Related CLI Syntax to Manage Device Authentication.....	124

## **Chapter 7: Configuring Failover**

About Failover .....	125
Configuring Failover.....	126
Viewing Failover Statistics .....	128
Troubleshooting.....	128

## **Chapter 8: Configuring the Upstream Network Environment**

### **Section A: Overview**

### **Section B: About Forwarding**

About Load Balancing .....	133
About Host Affinity .....	133
Using Load Balancing with Host Affinity .....	134

### **Section C: Configuring Forwarding**

Creating Forwarding Hosts and Groups .....	136
Configuring Global Forwarding Defaults.....	139
Configuring the Default Sequence .....	140
Statistics.....	143

### **Section D: Using Forwarding Directives to Create an Installable List**

Creating Forwarding Host and Group Directives .....	145
Creating Forwarding Hosts .....	145
Creating Forwarding Groups Using Directives .....	146
Setting Special Parameters .....	146
Setting Fail Open/Closed and Host Timeout Values .....	146
Configuring Load-Balancing Directives .....	147
Configuring Host Affinity Directives.....	148
Creating a Default Sequence .....	148
Creating a Forwarding Installable List.....	149

## **Chapter 9: Internet Caching Protocol (ICP) Configuration**

About ICP Hierarchy .....	153
Using ICP Configuration Directives to Create an Installable List.....	154
Naming the IP Hosts .....	155
Restricting Access .....	156
Connecting to Other ICP Hosts .....	157
Creating an ICP Installable List.....	158
Enabling ICP.....	159

## **Chapter 10: Managing Routing Information Protocols (RIP)**

Installing RIP Configuration Files .....	161
Configuring Advertising Default Routes .....	163
RIP Commands .....	163

## Contents

---

net .....	163
host .....	164
RIP Parameters.....	164
ProxySG-Specific RIP Parameters .....	165
Using Passwords with RIP .....	166

### **Chapter 11: Configuring the ProxySG as a Session Monitor**

Configuring the Session Monitor .....	167
Configuring the RADIUS Accounting Protocol Parameters.....	167
Configuring a Session Monitor Cluster .....	168
Configuring the Session Monitor.....	169
Creating the CPL.....	170
Notes .....	171

### **Chapter 12: Accelerating and Controlling Micro-Branch and Mobile User Connections (ProxyClient)**

#### **Section A: ProxyClient Concepts**

Why Deploy ProxyClient?.....	174
Terminology .....	175
About Blue Coat in the Network.....	177
About the Roles of ProxySG Appliances With the ProxyClient .....	178
About the Role of the ProxyClient .....	179
About ProxyClient Licensing.....	181
Software and Hardware Requirements .....	182
About Location Awareness .....	182
Overview of Location Awareness.....	182
About Location Conditions .....	183
About Condition Rulebase Ordering .....	191
About ADN Feature Support in ProxyClient .....	192
ADN Features .....	192
About Internet Gateways.....	193
About Reflecting the ProxyClient IP Address .....	194
About ProxyClient Web Filtering.....	196
Web Filtering Terminology .....	196
How Blue Coat Enforces Web Filtering for Remote and Micro-Branch Users .....	197
Enabling or Disabling Web Filtering Based on Location .....	198
About the BCWF Database and Categorization .....	201
About Security With Guest User Scenarios.....	204
ProxyClient Security Disclaimers.....	204

#### **Section B: Configuring a ProxySG as the Client Manager**

About ProxyClient Deployment.....	205
Before You Begin Configuring the Client Manager .....	205

ProxySG Administrator Configuration Tasks.....	206
Client Installation Tasks.....	207
Preparing the ProxySG ADN Configuration for ProxyClient Deployment .....	207
About Manager Listening Mode.....	208
About Tunnel Listening Mode .....	209
About Secure Outbound Mode .....	209
Designating a ProxySG as the Client Manager .....	210
Before You Configure the Client Manager .....	210
Designating the Client Manager .....	210
Uploading the ProxyClient Software to the Client Manager .....	214
<b>Section C: Configuring the ProxyClient</b>	
Accelerating Network Traffic .....	216
Before You Begin Configuring ProxyClient Policy .....	216
Specifying the ProxyClient ADN Manager .....	217
Tuning the ADN Configuration.....	218
Enabling File Sharing Acceleration .....	221
Enabling ProxyClient Acceleration .....	223
Configuring ProxyClient Locations .....	225
Location Awareness Task Summary .....	225
Configuring Specific Locations .....	226
Ordering Locations in the Rulebase .....	229
Configuring Default Actions .....	230
Configuring ProxyClient Web Filtering .....	231
Web Filtering Task Summary .....	231
Enabling Blue Coat Web Filtering .....	233
Enabling the Use of the Local Database (Optional) .....	236
Enabling ProxyClient Web Filtering .....	238
Assigning Policy Actions to Content Categories.....	240
Web Filtering Best Practices .....	251
Displaying and Customizing Web Filtering Exception Pages.....	253
Enabling Web Filtering Logging .....	256
Configuring the ProxyClient from the Command Line.....	261
Setting the Client Manager (CLI) .....	261
Configuring General ProxyClient Settings (CLI) .....	261
Configuring ProxyClient ADN Manager Settings (CLI) .....	262
Configuring ProxyClient ADN Rules Settings (CLI) .....	262
Configuring ProxyClient Locations (CLI) .....	262
Configuring ProxyClient File Sharing (CIFS) Settings (CLI) .....	263
Configuring ProxyClient Web Filtering (CLI) .....	264
Loading the Software (CLI) .....	264

Showing ProxyClient Settings (CLI) .....	265
<b>Section D: Distributing the ProxyClient Software</b>	
ProxyClient Compatibility with SGOS.....	266
Overview of Distributing the ProxyClient Software .....	267
Preparing Interactive Installations .....	268
Preparing Silent Installations and Uninstallations .....	273
Parameters for Silent Installations .....	274
Command for Silent Uninstallations.....	278
Example Installations and Uninstallations.....	279
Limiting ProxyClient Visibility and Interactivity.....	281
Using Group Policy Object Distribution .....	285
<b>Section E: About the ProxyClient Application</b>	
How Users Access the ProxyClient Application.....	288
About the Status Tab Page.....	289
About the Network Tab Page.....	290
About the Advanced Tab Page .....	291
<b>Section F: Monitoring ProxyClient Performance</b>	
Viewing History Statistics .....	293
Viewing ProxyClient ADN History Statistics .....	295
Viewing ProxyClient Active Session Statistics.....	296
<b>Section G: About the ProxyClient System Footprint</b>	
Installation .....	298
Folders .....	298
Files .....	299
Setup Executable .....	299
Setup MSI .....	299
During Runtime .....	302
Logging and Support.....	302
Acceleration Files .....	302
Web Filter Files .....	303
Data Collector .....	303
Removal .....	303
<b>Section H: ProxyClient Troubleshooting</b>	
About HTTPS Browser Proxies .....	304
Client Manager Logging.....	305
Client Connection Issues .....	305
Acceleration Troubleshooting.....	306
About ADN Tunnels.....	306
Diagnosing the Concentrator .....	306

Diagnosing the ProxyClient .....	307
Web Filtering Troubleshooting.....	307
Why Are Users Receiving Blocked or Warn Messages For No Justifiable Reason?.....	308
ProxyClient Web Filtering Licensing .....	309
Disputing URL Categorization For ProxyClient .....	309
Advanced Troubleshooting.....	310
Changing the Client Manager.....	313
Limiting ProxyClient Visibility After Installation .....	315
Performing Data Traces and Data Collection.....	317
About ProxyClient Logs.....	317
About the Data Collection Application .....	318
Instructing Users to Perform Data Traces .....	318
Instructing Users to Run the ProxyClient Data Collector .....	319
Clearing the Cache.....	323
Changing the Location of the Cache .....	324
Uninstalling the ProxyClient Software.....	325

## **Chapter 13: SOCKS Gateway Configuration**

### **Section A: Configuring a SOCKS Gateway**

Configuring Global SOCKS Defaults.....	332
Configuring the Default Sequence .....	333
Statistics.....	336

### **Section B: Using SOCKS Gateways Directives with Installable Lists**

Configuring SOCKS Gateways Using Directives .....	338
Creating SOCKS Gateways Groups Using Directives .....	339
Setting Special Parameters .....	339
Setting Fail Open/Closed .....	339
Configuring Load Balancing Directives .....	339
Configuring Host Affinity Directives.....	340
Creating a Default Sequence .....	341
Creating a SOCKS Gateway Installable List .....	342

## **Chapter 14: Verifying the Health of Services Configured on the ProxySG**

### **Section A: Overview**

Background DNS Resolution .....	347
---------------------------------	-----

### **Section B: About Blue Coat Health Check Components**

Health Check Types.....	350
Health Check Tests .....	351

### **Section C: Configuring Global Defaults**

About Health Check Defaults.....	355
----------------------------------	-----

## Contents

---

Enabling and Disabling Health Checks .....	355
Notifications and SNMP Traps .....	356
Changing Health Check Default Settings .....	357
Configuring Health Check Notifications .....	361
<b>Section D: Forwarding Host and SOCKS Gateways Health Checks</b>	
Forwarding Hosts and SOCKS Gateways Configurations.....	366
Forwarding Hosts Health Checks.....	366
SOCKS Gateways Health Checks .....	366
Forwarding and SOCKS Gateways Groups Health Checks .....	366
Editing Forwarding and SOCKS Gateways Health Checks .....	366
<b>Section E: DNS Server Health Checks</b>	
Editing DNS Server Health Checks.....	373
<b>Section F: Authentication Health Checks</b>	
<b>Section G: Virus Scanning and Content Filtering Health Checks</b>	
<b>Section H: Managing User-Defined Health Checks</b>	
About User-Defined Host Health Checks .....	386
About User-Defined Composite Health Checks.....	387
Creating User-Defined Host and Composite Health Checks.....	388
Copying and Deleting User-Defined Health Checks .....	395
<b>Section I: Viewing Health Check Statistics</b>	
About Health Check Statistics.....	397
Interpreting Health Check Statistics.....	400
<b>Section J: Using Policy</b>	
<b>Section K: Related CLI Syntax to Configure Health Checks</b>	
<b>Chapter 15: TCP/IP Configuration</b>	
About the Options .....	405
RFC-1323 .....	406
TCP NewReno.....	406
ICMP Broadcast Echo Support .....	406
ICMP Timestamp Echo Support.....	406
TCP Window Size.....	407
TCP Time Wait .....	408
TCP Loss Recovery Mode.....	408
Viewing the TCP/IP Configuration.....	408
<b>Chapter 16: Virtual IP Addresses</b>	
Uses of a VIP.....	409
Creating a VIP .....	409

**Chapter 17: WCCP Settings**

Configuring WCCP .....	411
Procedure Overview .....	411
WCCP Router Configuration .....	411
ProxySG Configuration .....	412
Viewing WCCP Statistics and Service Group Status.....	415
Viewing WCCP Settings .....	415

**Appendix A: Using Policy to Manage Forwarding**

**Glossary**

**Index**

## *Chapter 1: About Advanced Networking*

*Volume 5: Advanced Networking* discusses networking tasks that are not required in every environment, such as:

- ❑ WAN Optimization, which enables you to optimize environments with application delivery networks (ADNs).
- ❑ TCP/IP settings.
- ❑ Forwarding, which allows you to define the hosts and groups of hosts to which client requests can be redirected.
- ❑ Health Checks, which reports on the health of upstream hosts.

### About This Book

This book is organized into the following chapters:

- ❑ [Chapter 2: "Configuring an Application Delivery Network" on page 17](#)
- ❑ [Chapter 3: "Preventing Denial of Service Attacks" on page 79](#)
- ❑ [Chapter 4: "TCP Connection Forwarding" on page 85](#)
- ❑ [Chapter 5: "Bandwidth Management" on page 93](#)
- ❑ [Chapter 6: "Authenticating a ProxySG" on page 115](#)
- ❑ [Chapter 7: "Configuring Failover" on page 125](#)
- ❑ [Chapter 8: "Configuring the Upstream Network Environment" on page 131](#)
- ❑ [Chapter 9: "Internet Caching Protocol \(ICP\) Configuration" on page 153](#)
- ❑ [Chapter 10: "Managing Routing Information Protocols \(RIP\)" on page 161](#)
- ❑ [Chapter 11: "Configuring the ProxySG as a Session Monitor" on page 167](#)
- ❑ [Chapter 12: "Accelerating and Controlling Micro-Branch and Mobile User Connections \(ProxyClient\)" on page 173](#)
- ❑ [Chapter 13: "SOCKS Gateway Configuration" on page 327](#)
- ❑ [Chapter 14: "Verifying the Health of Services Configured on the ProxySG" on page 345](#)
- ❑ [Chapter 15: "TCP/IP Configuration" on page 405](#)
- ❑ [Chapter 16: "Virtual IP Addresses" on page 409](#)
- ❑ [Chapter 17: "WCCP Settings" on page 411](#)
- ❑ [Appendix A: "Using Policy to Manage Forwarding" on page 419](#)

## Document Conventions

The following table 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.
Courier font	Screen output. For example, command line text, file names, and Blue Coat Content Policy Language (CPL).
<i>Courier Italics</i>	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.

---

## About Procedures

Many of the procedures in this volume begin:

- Select Configuration > TabName**, if you are working in the Management Console, or
- From the (config) prompt**, if you are working in the command line interface (CLI).

Blue Coat assumes that you are logged into the first page of the Management Console or entered into configuration mode in the CLI.

## Illustrations

To save space, screen shots illustrating a procedure often have the bottom portion removed, along with the blank space.

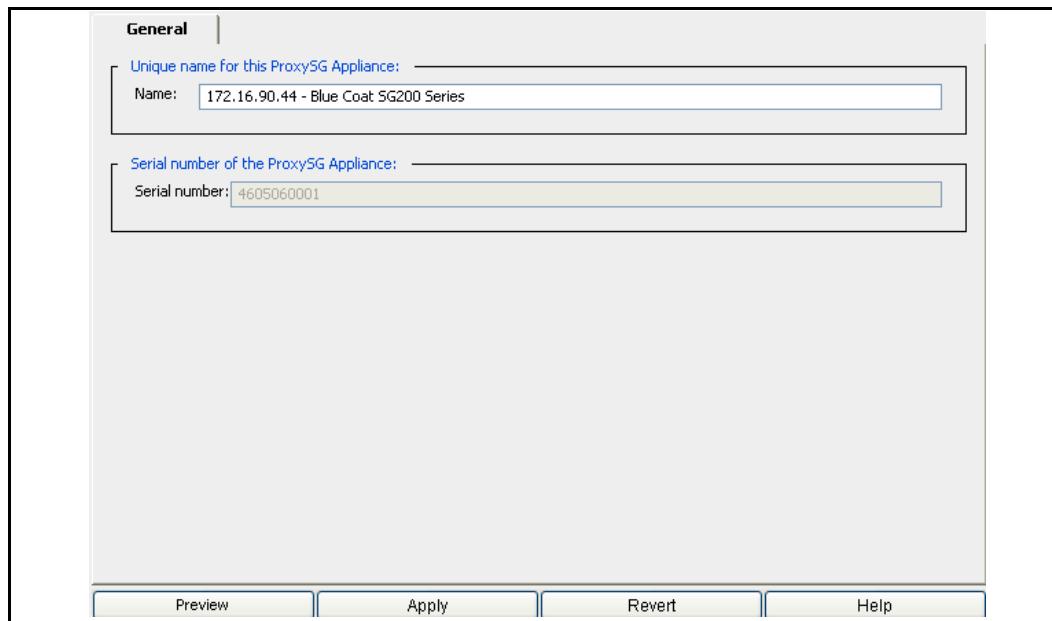


Figure 1–1 Configuration > General Tab with Bottom Buttons

- **Preview:** Click this button to view the configuration changes before applying the configuration to the ProxySG. To modify your changes, click **Close** and return to the the tab whose settings you want to modify.
- **Apply:** Click this button to apply unsaved configuration changes to the ProxySG.
- **Revert:** Click this button to revert any unapplied changes to the ProxySG configuration. Changes that previously have been applied to the ProxySG are not affected.
- **Help:** Click this button to view conceptual and procedural documentation about the tab's topic.

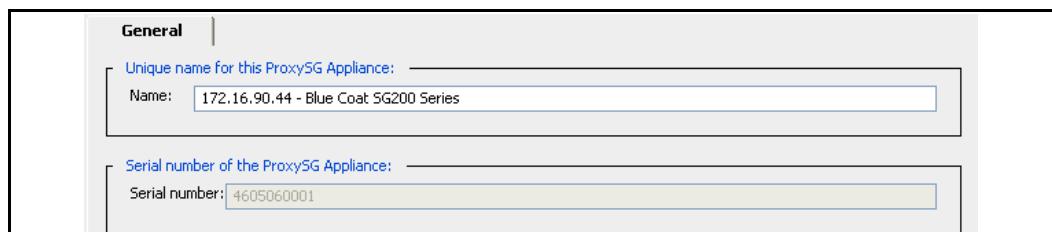


Figure 1–2 Configuration > General Tab with Bottom Buttons Removed



## *Chapter 2: Configuring an Application Delivery Network*

This chapter discusses the Blue Coat implementation of an Application Delivery Network (ADN), which optimizes traffic over the enterprise WAN.

### *Topics in this Chapter*

This chapter includes information about the following topics:

- ❑ [Section A: "ADN Overview" on page 18](#)
- ❑ [Section B: "About ADN Deployment, Compression, and Security Behavior" on page 24.](#)
- ❑ [Section C: "Basic ADN Setup" on page 30.](#)
- ❑ [Section D: "Transparent and Explicit Connection Deployments" on page 34.](#)
- ❑ [Section E: "Securing the ADN Network" on page 46.](#)
- ❑ [Section F: "ADN Network History, Active Sessions, Byte-Caching Statistics, and Health Metrics" on page 54.](#)
- ❑ [Section G: "Advanced Tunnel Optimization" on page 60.](#)
- ❑ [Section H: "Byte-Cache Dictionary Sizing" on page 64.](#)
- ❑ [Section I: "Related CLI Syntax to Configure an ADN Network" on page 70.](#)
- ❑ [Section J: "Policy" on page 72.](#)

## Section A: ADN Overview

Visibility is the key to achieving secure application performance while maintaining control over users and content. Because proxies terminate application traffic, they have a unique and native visibility into the application, the user, and the content of the interaction.

The Blue Coat Application Delivery Network, or ADN, optimizes application protocol traffic over the WAN by implementing Blue Coat MACH5 technology. MACH5 refers to the following aspects of the Multiprotocol Accelerated Caching Hierarchy.

- Bandwidth Management—Adds a throttle or modulate option to possible actions, which enables organizations to limit or guarantee bandwidth for individual (or groups of) applications.
- Protocol Optimization—Reduces the effects of latency for common protocols that were not initially designed to operate efficiently across WAN links by employing object pipelining, local authentication, and DNS caching.
- Object Caching—Reduces latency and bandwidth by caching and serving application data locally and supporting various pre-placing of commonly-requested content.
- Byte Caching—Reduces transmitted data at the packet level by replacing large chunks of TCP data with smaller tokens that represent that data.
- Compression—Reduces transmitted data through various other compression technology, such as GZIP, caching compressed and uncompressed objects, and HTTP and point-to-point compression.

The MACH5 optimization techniques complement each other to provide a multi-layered approach to application acceleration. As the five layers are governed by granular policy, organizations can apply acceleration techniques best suited to particular applications. Blue Coat ProxySG appliances located at key points in the network allow IT personnel to intercept and control all TCP (and UDP for streaming) traffic that is sent over the WAN, such as:

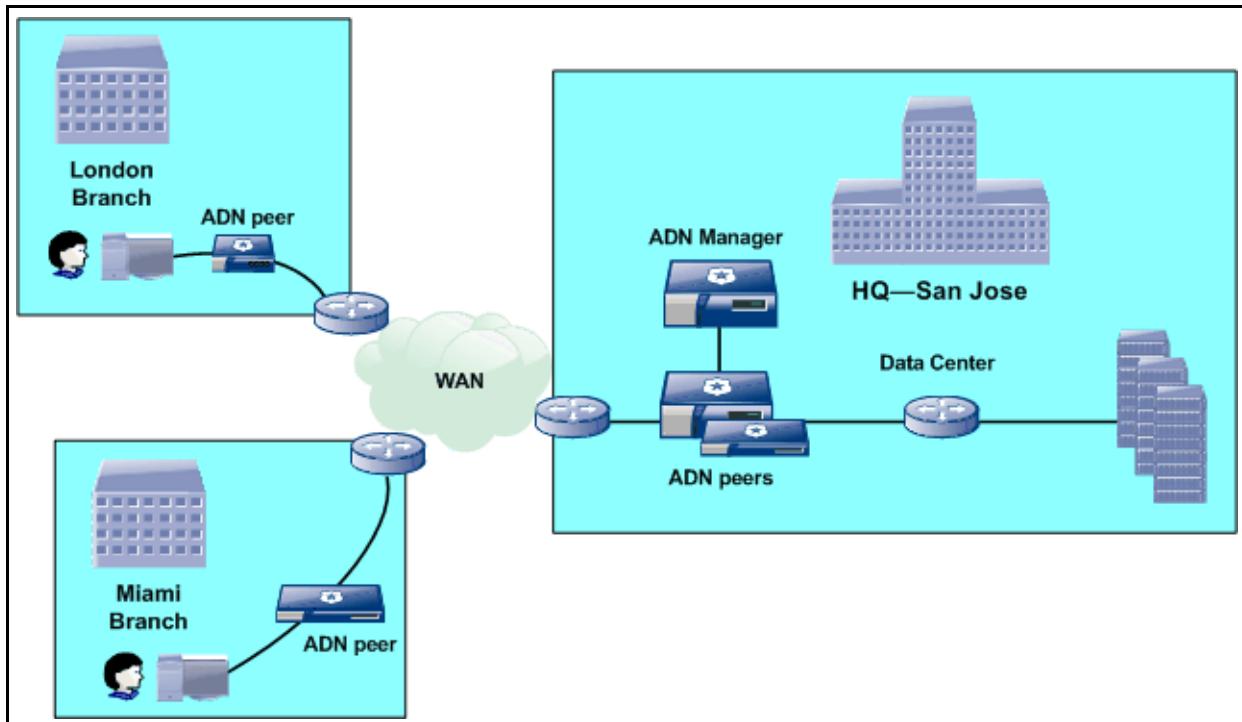
- Web (HTTP)
- File sharing services (CIFS)
- Microsoft Outlook/Exchange (MAPI)
- Secure Web (SSL)
- Generic TCP
- DNS
- Live and on-demand streaming (RTSP, MMS, and streaming over HTTP)

An ADN defines the physical network that enables application acceleration between various corporate offices separated by WAN links with limited bandwidth. An ADN consists of ProxySG appliances that are easily integrated into the network and provide acceleration and control. An ADN Manager

## Section A: ADN Overview

ProxySG located at the corporate location controls and manages other ProxySG appliances—called *peers*—that perform the ADN tasks. These peers are located at branch office and corporate data center locations. A branch office peer compresses data before sending it to its data center peer, but before accepting traffic from a peer, each ProxySG must verify that the peer is a valid member of the ADN.

The following diagram illustrates a *high-level* ADN deployment.



When deployed together at various network points, these elements function together to form an ADN.

## About the Application Delivery Network Elements

An ADN requires a minimum of two ProxySG appliances: one at the core (or enterprise data center location) and one at a branch location. Most deployments, however, require additional ProxySG appliances to accommodate the volume of enterprise users and various locations.

To create an ADN, you configure ProxySG appliances to serve in various roles in the ADN network. Any ProxySG can be configured to be an ADN Manager, branch peer or concentrator peer, based on its location in the network and connectivity to servers.

The following table describes the ADN roles of ProxySG appliances deployed at various points on the network.

## Section A: ADN Overview

Table 2–1 ADN Elements and Network Locations

ProxySG	ADN Role
	<p><b>ADN Manager</b>—Every ADN must have an ADN manager. This device performs the following functions:</p> <ul style="list-style-type: none"> <li>• Responsible for the authentication and authorization of peers.</li> <li>• In explicit ADN deployments, the ADN Manager Publishes the routing table to all ADN peers.</li> <li>• In transparent ADN deployments, peers <i>discover</i> each other as packets are routed through the ADN (router redirection).</li> </ul> <p>Although Blue Coat recommends that the ADN Manager <i>not</i> participate as an ADN peer, this is an acceptable deployment if you have correctly sized the ProxySG appliances.</p>
	<p><b>Backup ADN Manager</b>—Blue Coat recommends configuring a second ProxySG as a backup ADN manager. If a peer in the ADN detects that the primary ADN manager is not available (determined by <i>keep alive</i> messages), the peer switches to the backup ADN manager. When the primary ADN manager resumes responding to the peer, the active routing connection returns to the primary ADN manager.</p>
 	<p><b>Concentrator Peer</b>—ProxySG appliances deployed as concentrators reside in the data center and connect to a WAN router. Larger enterprises with multiple data centers deploy a concentrator in each data center. They can be also be deployed in clusters for load balancing and failover. Concentrator peers terminate the ADN tunnels, decompress the traffic, and forward the uncompressed data to the application server; the application data is then compressed and returned over the WAN to the requesting client by way of the branch peer.</p>
	<p><b>Branch Peer</b>—A ProxySG deployed near the gateway of each remote location (small or regional offices) that contains a centrally-managed router or where there is private IP connectivity through Multi Protocol Label Switching (MPLS), satellite, or point-to-point network. To retrieve client file and data requests from application servers located in the corporate data center, the branch proxy connects to the ADN concentrators—which are advertised by the ADN Managers or discovered transparently—in the data centers at the corporate location.</p> <p>If the branch location has servers, the branch peer also serves as a concentrator.</p> <p>ADN peers build byte caches and strive to maintain connections with the same peers in the network to take advantage of established byte caches. This is known as <i>host affinity</i>.</p>

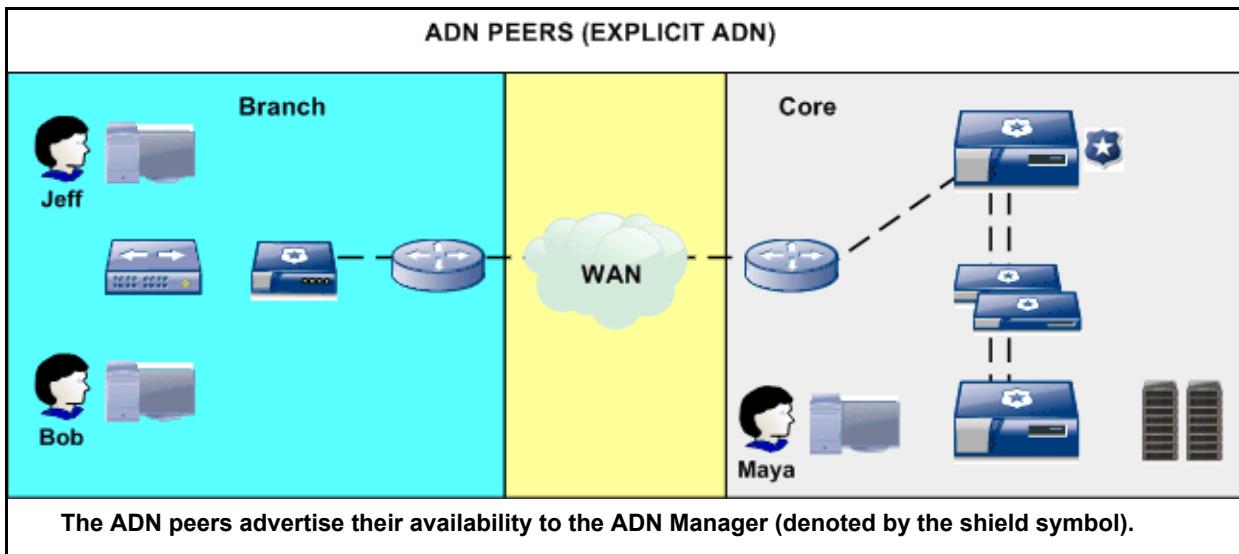
## Section A: ADN Overview

Table 2–1 ADN Elements and Network Locations

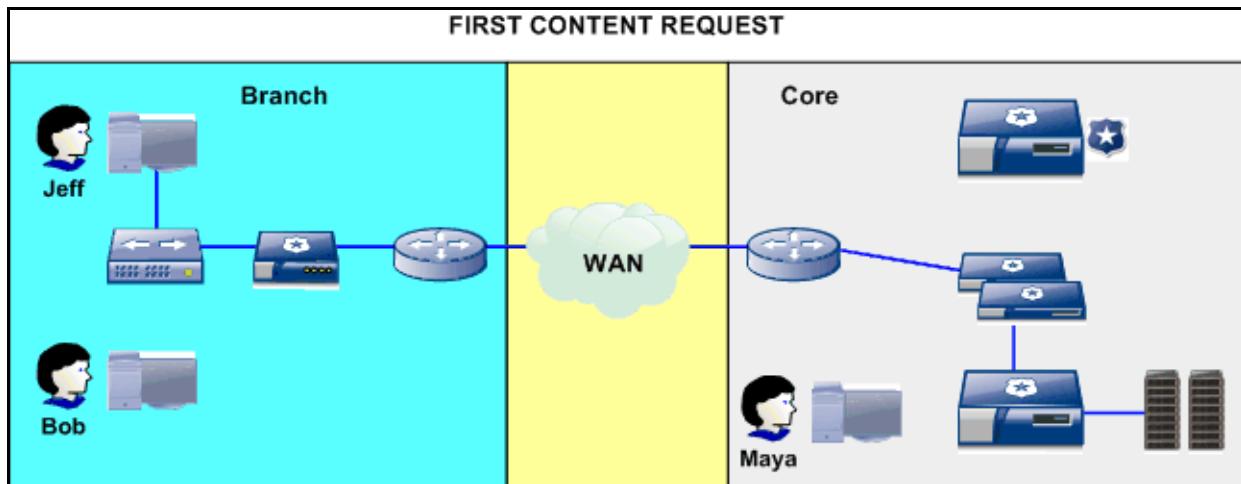
ProxySG	ADN Role
 	<p><b>Client Manager/ProxyClient</b>—For mobile users and remote deployments (such as a micro-branch or home office) where users connect directly to the Internet through a corporate-controlled VPN, Blue Coat offers the ProxyClient solution. When installed on user systems, ProxyClient mimics a small ProxySG appliance and provides ADN optimization and Web content filtering. A Client Manager is a ProxySG on the ADN that provides monitoring and software and configuration updates. Like all peers in the ADN, the ProxyClient application connects to the ADN Manager and obtains the advertised routes from the ADN Manager.</p> <p>The Client Manager can be the same ProxySG as the ADN Manager; a separate device is not required.</p> <p>Note: The ProxyClient component is outside the scope of this document. <i>Chapter 12: Accelerating and Controlling Micro-branch and Mobile Connections (ProxyClient)</i> in Volume 5: Advanced Networking of the SGOS Configuration and Management Suite provides full conceptual and implementation information.</p>

### Example

The following series of diagrams illustrate the principal functionality of an explicit ADN (transparent ADN performs the same conceptually). Through compression and object caching technologies, the ADN solution reduces WAN network traffic and improves the user experience.

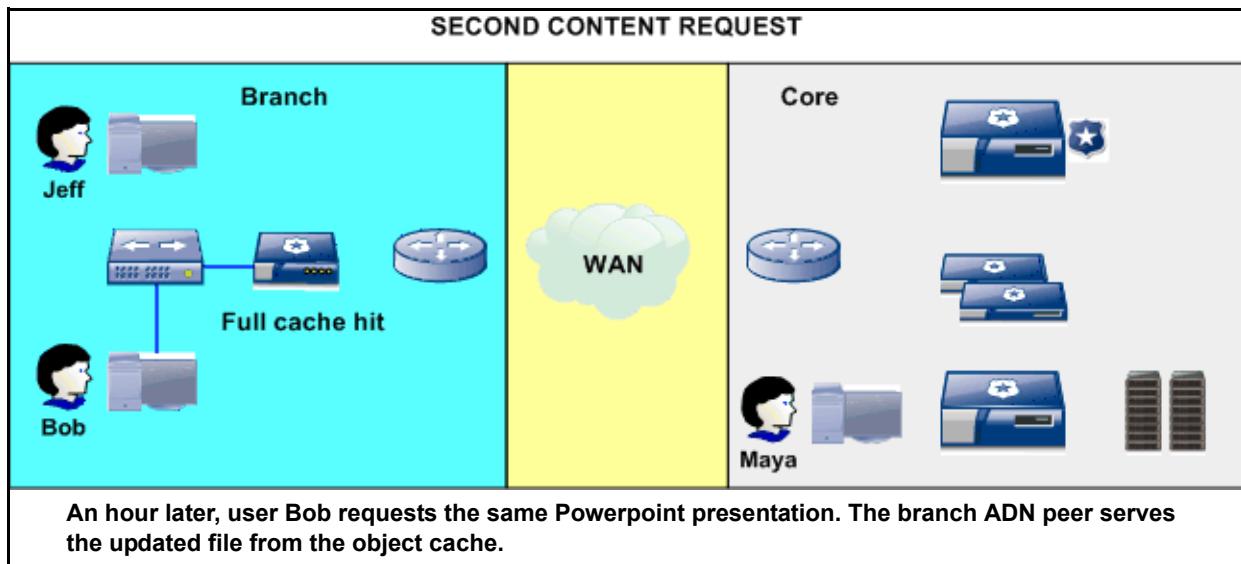


## Section A: ADN Overview



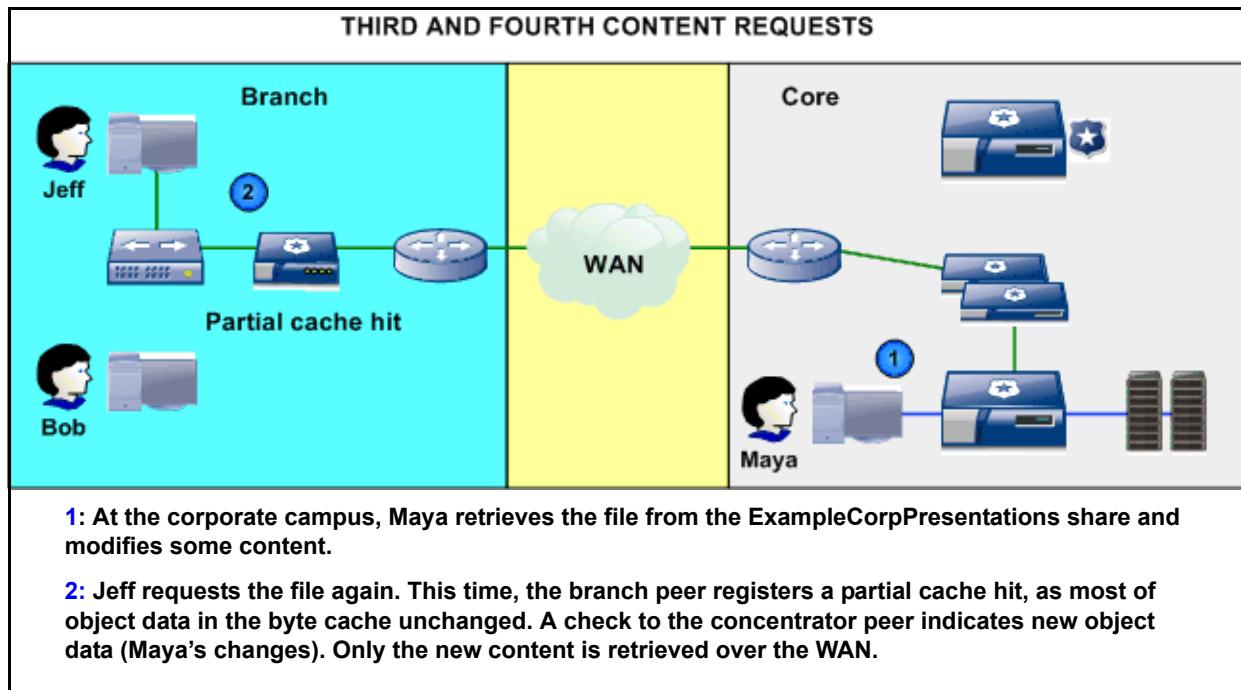
User Jeff requests a PowerPoint presentation from a file share named ExampleCorpPresentations on a server located at the corporate location. As this application is determined by policy to be mission-critical, the connection receives maximum allowed WAN bandwidth. The concentrator compresses the data and routes it back to over the WAN and through the branch ProxySG, where the content is decompressed, cached, and sent to Jeff's system.

Jeff changes the content on two slides and saves the file. When Jeff saves the file, the data is transmitted from Jeff's system to the branch ProxySG, which caches the new file, compresses the data, and sends only the changed data from the two modified slides over the WAN. The Concentrator decompresses the data and sends the updated file to the server.



An hour later, user Bob requests the same Powerpoint presentation. The branch ADN peer serves the updated file from the object cache.

## Section A: ADN Overview



Before deploying and configuring ProxySG appliances in your enterprise to form an ADN, you must understand your network topography and select a supported deployment type.

## Section B: About ADN Deployment, Compression, and Security Behavior

### Section B: About ADN Deployment, Compression, and Security Behavior

This section provides conceptual information regarding various deployments that employ WAN optimization.

Blue Coat recommends that you review this section for a high-level overview of the Blue Coat ADN implementation.

This section contains discussions on:

- "Selecting the Correct Deployment" on page 24.
- "About ADN Compression" on page 27.
- "ADN Security" on page 28.

#### Selecting the Correct Deployment

You must decide if the network should use explicit tunnel connections, transparent connections, or a combination of both. Note that ADN peers always intercept incoming transparent connections if ADN is enabled.

- Transparent: The branch ProxySG connects to the original server destination address and port. If an upstream proxy is capable of transparent tunneling, the downstream proxy transfers data over the ADN tunnel. The destination port is preserved and is not affected by security being enabled. Skip to "[Transparent Connections](#)" for more information.
- Explicit: The branch ProxySG connection is established to the ADN peer discovered from the routing lookup table. The connection is established to the tunnel listening port by default or, if you are preserving the destination port, to the port number the application specifies. Skip to "[Explicit Connections](#)" on page 26 for more information.
- Combination: In some circumstances, some ADN peers can connect transparently, while other peers require explicit routing. Skip to "[Combination of Transparent/Explicit Connections](#)" on page 27.

[Section B: About ADN Deployment, Compression, and Security Behavior](#)

### *Transparent Connections*

Transparent connections are used when the network is required to see the original destination IP addresses and ports. This requires that each peer be configured as an ADN peer and deployed in inline mode or virtual inline mode.

---

**Note:** Beyond setting up an ADN peer in an in-line network and configuring the ADN peer to point to the ADN manager and backup manager, no additional effort is required for transparent connections. If you use explicit connections, those connections must be explicitly configured.

---

Transparent connections take advantage of ADN tunnels that maintain layer-4 information from the original application connections. Layer-4 information provides an administrator more granular control of the ADN network and allows the enforcement of network policy.

In a transparent connection deployment, connections are not established to a particular peer in the ADN, as they are in an explicit deployment. An ADN peer can establish connections to its peers automatically in the absence of any ADN routing information.

The reject-inbound per interface setting is honored for transparent tunnel interception, while the allow-intercept setting is ignored for transparent tunnel interception.

Internet-bound traffic is automatically accelerated in a transparent deployment if a transparent ADN peer is installed at the internet access point and Internet traffic is routed correctly.

### **Transparent Deployment Load Balancing Scenarios**

In transparent load balancing, routes are not advertised, and configuration of load balancing must be done on each peer in the ADN cluster.

If you are using a transparent deployment, you have two options for load balancing.

- A dedicated ProxySG appliance as a load balancer; that system makes the decision about which peer receives which traffic.
- A WCCP router or other external load balancer, where the individual peers in the ADN cluster make the informed load balancing decision.

## Section B: About ADN Deployment, Compression, and Security Behavior

### Explicit Connections

Explicit connections are used when maximum network control and granularity is needed.

Blue Coat supports two explicit connections deployments: explicit or explicit but preserving the destination port. In the latter case, the destination port used is the original destination port from the client's request, such as port 80 for HTTP. The destination port is not affected by the connection setting.

In both explicit deployments, the server subnets that are fronted by each peer must be explicitly configured; the server subnets are then advertised to each ADN peer.

To accelerate Internet traffic in an explicit ADN network, set up a specific ADN peer as the Internet gateway. Typically, the Internet gateway is an ADN peer close to the enterprise's Internet access point.

---

**Note:** If multiple Internet gateways are available, each peer has its own preferred Internet gateway to route all Internet subnets.

---

When an ADN peer is configured as an Internet gateway, all other ADN peers forward the Internet traffic to this peer. The following logic is used by an ADN peer to determine if the connection is destined to the Internet:

- If the destination address matches an advertised subnet from any of the ADN peers, the connection is forwarded to that peer over the ADN tunnel.
- If the destination address matches one of the exempted subnets, the connection is not forwarded over the ADN tunnel.
- If the destination address does not match an advertised subnet or an exempted subnet, the connection is forwarded to an ADN peer that is designated as an Internet gateway.

### Explicit Deployment Load Balancing Scenarios

If you use explicit network connections, you have two options when configuring load balancing:

- A server subnet, where the branch ProxySG makes the decision about the peer receiving specific traffic for a destination subnet. This is the easiest and more preferred method. For more information, see "[Using a Server Subnet](#)" on page 41.
- An external load balancer, where that system makes the informed decision about which peer in the ADN cluster receives specific traffic. For more information, see "[Using an External Load Balancer](#)" on page 42.

## Section B: About ADN Deployment, Compression, and Security Behavior

### *Combination of Transparent/Explicit Connections*

In some circumstances, it is necessary to use explicit connections in addition to the much easier and preferred transparent connection deployment. A transparent network that can advertise explicit routing connections is supported. This configuration is useful:

- ❑ When a small branch office is using the ProxyClient, which allows SGOS functionality when a ProxySG is not on site.
- ❑ If some peers are not in an in-line configuration or are incapable of initiating transparent connections.

By default, if an ADN peer is advertising routes, explicit connections are made. If no explicit routes are found and there is an upstream proxy in the path capable of transparent tunneling, the connection is intercepted. This preference is configurable.

### *Choosing Which Traffic to Optimize*

When you configure proxy services to manage TCP traffic through the ADN network, you can set various attributes that can optimize the traffic for the network. A specific attribute, **use ADN**, allows you to disable ADN for a given service.

For information on using proxy services, including the services available, refer to *Volume 2: Proxies and Proxy Services*.

## About ADN Compression

ADN compression enables organizations to fully extract every performance benefit available when sending data through an ADN tunnel between ProxySG appliances. ADN tunnels require that ProxySG appliances on opposite sides of the WAN be members of the same ADN network and that the upstream ProxySG appliance either be advertising routes to servers to be accessed by appliances on the opposite side of the WAN or be deployed inline so that transparent ADN tunnels can be used.

Traffic accelerated between clients and servers is automatically compressed before being sent through the ADN tunnel, decreasing bandwidth usage and optimizing response time. ADN compression is often used in conjunction with byte caching and object caching to achieve optimum results. In the case of byte caching and compression, byte caching is first applied to the data and then the resulting data is compressed. Both features are enabled by default to optimize ADN directed traffic. ADN compression for any arbitrary protocol can also be configured on the ProxySG using policy; it can also be controlled separately for both inbound and outbound traffic on the WAN.

For more information on byte caching, see [Section H: "Byte-Cache Dictionary Sizing"](#) on page 64.

## Section B: About ADN Deployment, Compression, and Security Behavior

### ADN Security

ADN networks can and should be secured. You can limit access by:

- Authenticating and authorizing the ADN peers that are allowed on the network and prevent unauthorized peers from participating.
- Securing ADN connections.

#### *Authenticating and Authorizing ADN Peers*

By default, authentication and authorization are disabled.

#### **ADN Peer Authentication**

Secure ADN requires an appliance certificate for each ADN peer, including the ADN manager and backup manager for identification. You can provide your own device appliance certificates or obtain Blue Coat-issued appliance certificates from the Blue Coat CA server. For the most secure environment, Blue Coat-issued appliance certificates are recommended.

To enable secure ADN, you must enable the appliance authentication profile for the ADN network to use before configuring any other security parameters.

In secure ADN mode, full mutual authentication can be supported between the ADN manager and the ADN peers and among ADN communicating peers. If authorization is enabled on the ADN manager, the peer proxy is authorized through an approval mechanism by the ADN manager before joining the network. For more information on managing appliance certificates, see [Chapter 6: "Authenticating a ProxySG"](#).

#### **ADN Peer Authorization**

Authorization occurs when the ADN manager gives approval for the device to join the network.

If the profile, authentication, and authorization are configured on each peer, and the **Pending Peers** option is enabled on both the ADN manager and the backup ADN manager (if one is configured), the following behavior takes place automatically:

- When an ADN peer comes up, it contacts the ADN manager for routing information.
- The ADN manager extracts the device ID from the connecting ADN peer's appliance certificate and looks for the device ID in its approved list of ADN peers.
  - If the device is on the approved list, a REQUEST-APPROVED response is sent, followed by the route information, and the peer joins the network.
  - If the device is not on the approved list, the ADN manager adds the connecting peer's device ID to a pending-peers list and sends a REQUEST-PENDING response. After the peer is moved to the **Approved** list by the administrator, a REQUEST-APPROVED response is sent, followed by the route information, and the peer joins the network.

## Section B: About ADN Deployment, Compression, and Security Behavior

- If the **Pending Peers** option is not enabled and a peer is not on the approved list, the ADN manager sends a `REQUEST-DENIED` response and closes the connection. The connecting peer closes the connection and updates its connection status.
- If a peer is deleted from the approved list, the ADN manager broadcasts a `REJECT-PEER` to all peers to delete this peer and terminate any existing ADN connections to it. No new connections are routed through the deleted ADN peer.

For information on configuring authentication and authorization on each ADN peer, see "[Configuring ADN Security Settings](#)" on page 47.

### *Securing ADN Connections*

By default, ADN routing and tunnel connection requests are unauthenticated and all ADN protocol messaging and compressed application data are transferred in plaintext. For maximum security, you can configure the ADN network to secure ADN routing and tunnel connections using standard SSL protocol, which provides authentication, message privacy, and message authenticity security services, regardless of the application traffic that is being accelerated or tunneled.

In secure ADN mode, you can specify that the ADN manager and tunnel use secure mode to listen for routing and tunnel requests.

When secure ADN is enabled, any existing plain outbound connections are dynamically secured by activating SSL according to the `secure-outbound` setting.

For information on optimizing and securing ADN tunnels, see [Section E: "Securing the ADN Network"](#) on page 46 and [Section G: "Advanced Tunnel Optimization"](#) on page 60.

## Section C: Basic ADN Setup

### Section C: Basic ADN Setup

Basic ADN setup includes:

- Configuring each peer in an in-line deployment; if you are configuring an explicit deployment, you do not need to configure the network in an in-line deployment.
- Plugging each peer in.
- Enabling the ADN manager and backup manager on each peer, starting with the ADN manager and backup manager themselves.

If you are using a transparent connection deployment without load balancing, ADN configuration is complete at this point.

If you are using an explicit connection deployment, a transparent connection deployment with load balancing, or if you are securing the ADN network (highly recommended), after finishing this section you must continue with:

- ["Explicit Load Balancing" on page 41](#), for explicit deployment.
- ["Transparent Load Balancing" on page 35](#), for transparent deployment.
- [Section E: "Securing the ADN Network" on page 46](#).

## About the ADN Manager

The ADN manager keeps track of and advertises the routes of the appliances it knows about. The ADN manager *must* be one of the peers in the ADN optimization network.

A backup ADN manager (optional, but recommended) can also be configured. The ADN managers and the registered peers periodically send keep-alive messages to each other. If a peer detects the primary ADN manager is not responding, the peer automatically fails over to the back-up ADN manager. The peer repeatedly attempts to restore its connection with the primary manager. After the primary ADN manager is responding to the peer again, the active routing connection of this peer switches back to the primary manager.

If the ADN manager detects a peer is not responding, the ADN manager removes the peer from the database and notifies all other peers in the network to do the same.

If both the ADN manager and the backup ADN manager are unavailable, no further routing advertisements are broadcast. In this case, routes already known by the peers continue to be remembered and used.

You also can use the ADN manager and backup manager to authorize which peers are allowed to advertise or retrieve route information to and from the ADN manager, and whether plain connection requests to the ADN manager are accepted.

## Section C: Basic ADN Setup

### *ADN Connection Behavior for ADN Managers*

Connections to the ADN manager and backup manager are made at startup and kept open as long as ADN is enabled. These connections are referred to as routing connections, and are used to advertise configured server subnets and to receive routing table updates from the ADN manager.

---

**Note:** Even if you use a transparent tunnel deployment where ADN peers do not require routing information, you must configure each ADN peer and register it with the ADN manager. If you secure the network (highly recommended), the ADN manager is used to authorize ADN peers before they join the network.

---

Whenever the ADN manager receives a new advertisement from a peer that is joining the network, a route update is sent to all the appliances in the ADN optimization network that have already established a routing connection; in addition, the current routing table is updated. The ADN manager and backup manager can each listen on two ports: one accepting the default plain (unsecured) routing connection requests and another accepting secure routing connection requests. The plain listener can be shut down if routing connections from all ADN peers are secured.

When ProxySG connects to the primary ADN manager, subnet information is sent to the manager, including:

- Peer ID: The serial number of the device. This is a globally unique identifier for the peer ProxySG that is used as a key to select the dictionary of tokens to use.
- Data IP Address and Port: The destination IP address and port number that a branch proxy should use when establishing an explicit (non preserve-dest-port) tunnel connection.
- Server Subnet Advertisements: The list of server subnets the ProxySG contains are sent to the ADN manager.

## Section C: Basic ADN Setup

## Configuring the ADN Managers

The first step in configuring an ADN network is to define the primary ADN manager. Blue Coat also recommends deploying a backup ADN manager to prevent loss of routing information should the primary ADN manager become unavailable for any reason. The ADN manager and backup ADN manager *must* be configured on each peer that is joining the ADN network.

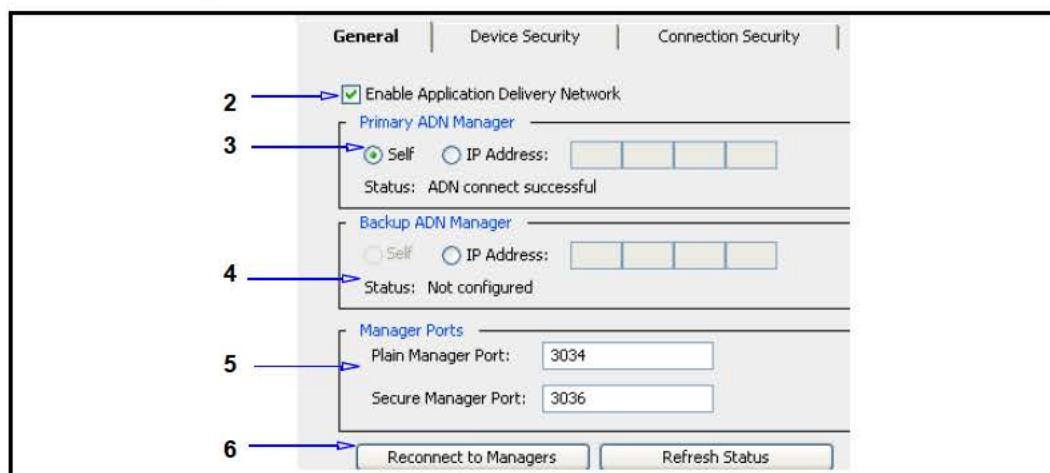
### To enable ADN optimization and define the primary/backup ADN managers:

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**Note:** Fill in all fields on this pane before clicking **Apply**.

---

1. Select **Configuration > ADN > General**.



2. Select **Enable Application Delivery Network**.
3. **Primary ADN Manager:** Enter the IP address of the primary ADN manager. This can be the ProxySG appliance itself or any peer on the ADN optimization network.
4. **Backup ADN Manager** (Optional but highly recommended): Enter the IP address of the backup ADN manager or select the **Self** radio button if this ProxySG is the backup manager.
5. **Manager Ports:** The ports are set to 3034 (for plain routing connections) and port 3036 (for secure routing connections).
6. Click **Reconnect to Managers** to connect to the ADN manager and backup ADN manager, if one is configured.

---

**Note:** You cannot select this option until you select the primary ADN manager and apply the changes. The ADN manager does not exist until the changes are applied.

---

7. Click **Apply**.

## Section C: Basic ADN Setup

### *Verification*

- ❑ If the ADN managers connect successfully, the procedure worked.
- ❑ If the ADN managers did not connect successfully, make sure:
  - Both systems are turned on.
  - Both systems are running the same version of SGOS.
  - Both systems are using the same device profile.
  - The ADN backup manager was approved by the ADN manager to join the ADN network (**Configuration > ADN > Manager > Pending Peers**).

## Section D: Transparent and Explicit Connection Deployments

If you are configuring a transparent connection deployment without load balancing, remember that ADN peers always intercept incoming transparent connections if ADN is enabled. No special configuration is required after basic ADN configuration is completed unless you use transparent connection load balancing or if you need to configure a combined (explicit and transparent) connection network.

The basic steps for configuring a combined transparent/explicit deployment or a pure explicit deployment are:

- ❑ Connect the peers in in-line mode or virtual in-line mode only for those peers that are using transparent connections.
- ❑ (Optional) Secure the ADN network:
  - Configure the ADN peers for ADN authentication and authorization for maximum security (see "[Configuring ADN Security Settings](#)" on page 47). The settings on each system should be identical.
  - Configure secure tunnels (see [Section G: "Advanced Tunnel Optimization"](#) on page 60).
- ❑ (Optional) Configure the load balancing parameters for each peer to be used in load balancing (see "[Explicit Load Balancing](#)" on page 41 or "[Transparent Load Balancing](#)" on page 35).

To configure transparent connections, including transparent connection load balancing, continue with the next section.

To configure explicit connections, including explicit connection load balancing, see "[Configuring an Explicit Deployment](#)" on page 38.

To configure a combined connection deployment, skip to "[Configuring a Combined \(Transparent and Explicit\) Deployment](#)" on page 44.

## Configuring a Transparent Deployment

After you have completed basic ADN configuration, transparent connections are made automatically. No further configuration is required, unless you need to configure transparent load balancing.

### *Transparent Deployment Notes*

- ❑ The first proxy in the chain that supports transparent tunnels and is on the same ADN network intercepts ADN transparent tunnel connections.
- ❑ In transparent load balancing, routes are not advertised, and configuration of load balancing must be done on each peer in the ADN cluster.
- ❑ Transparent load balancing relies on connection forwarding clusters for proper operation. All peers in an ADN load balancing group must be part of the same connection forwarding cluster.

## Section D: Transparent and Explicit Connection Deployments

- In the context of ADN, connection forwarding relates to how a ProxySG handles the first packet of a request. A decision is made on the first packet about which ADN peer is best to process that request, and subsequently that request is forwarded to that ADN peer from start to finish. If connection forwarding is not set up correctly, load balancing fails. For information on connection forwarding, see [Chapter 4: "TCP Connection Forwarding"](#).

***Transparent Load Balancing***

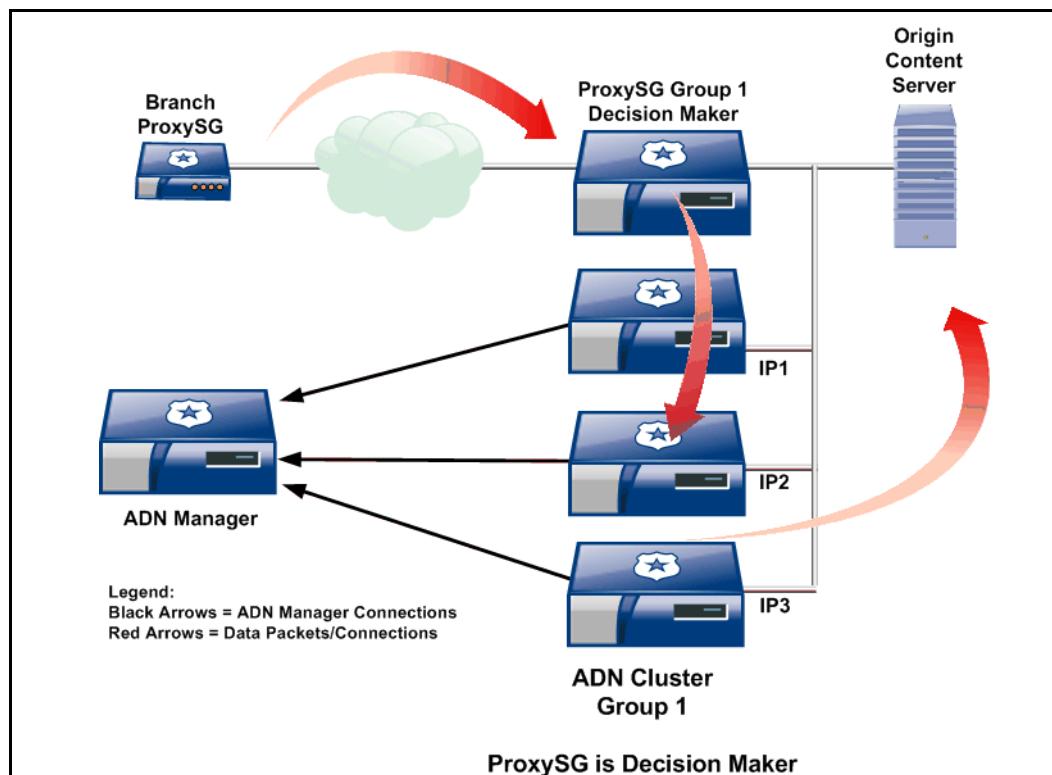
In transparent load balancing, routes are not advertised, and configuration of load balancing must be done on each peer in the ADN cluster.

If you are using a transparent deployment, you have two options for load balancing.

- A dedicated ProxySG appliance as a load balancer; that system makes the informed decision about which peer receives which traffic.
- A WCCP router or other external load balancer, where the individual peers in the ADN cluster make the informed load balancing decision.

**Using the ProxySG as a Load Balancer**

When a Blue Coat appliance is used as the external load balancer, it makes the decisions about which traffic is directed to which peer.



To configure transparent load balancing with a dedicated Blue Coat appliance as the decision maker:

## Section D: Transparent and Explicit Connection Deployments

- Deploy the load-balancing ProxySG in-line so that it can transparently intercept all traffic.
- Enable load balancing on all peers by going to **Configuration > ADN > Tunneling > Load Balancing**, and selecting the **Enable Load Balancing** checkbox.
- (Optional) Configure each box in the cluster with the same load-balancing group name.
- On the Blue Coat appliance that's acting as the dedicated load balancer, select **Act as load balancer only** through the **Configuration > ADN > Tunneling > Load Balancing** tab.
- Put all ADN peers into a connection forwarding cluster. For more information, see [Chapter 4: "TCP Connection Forwarding" on page 85](#).

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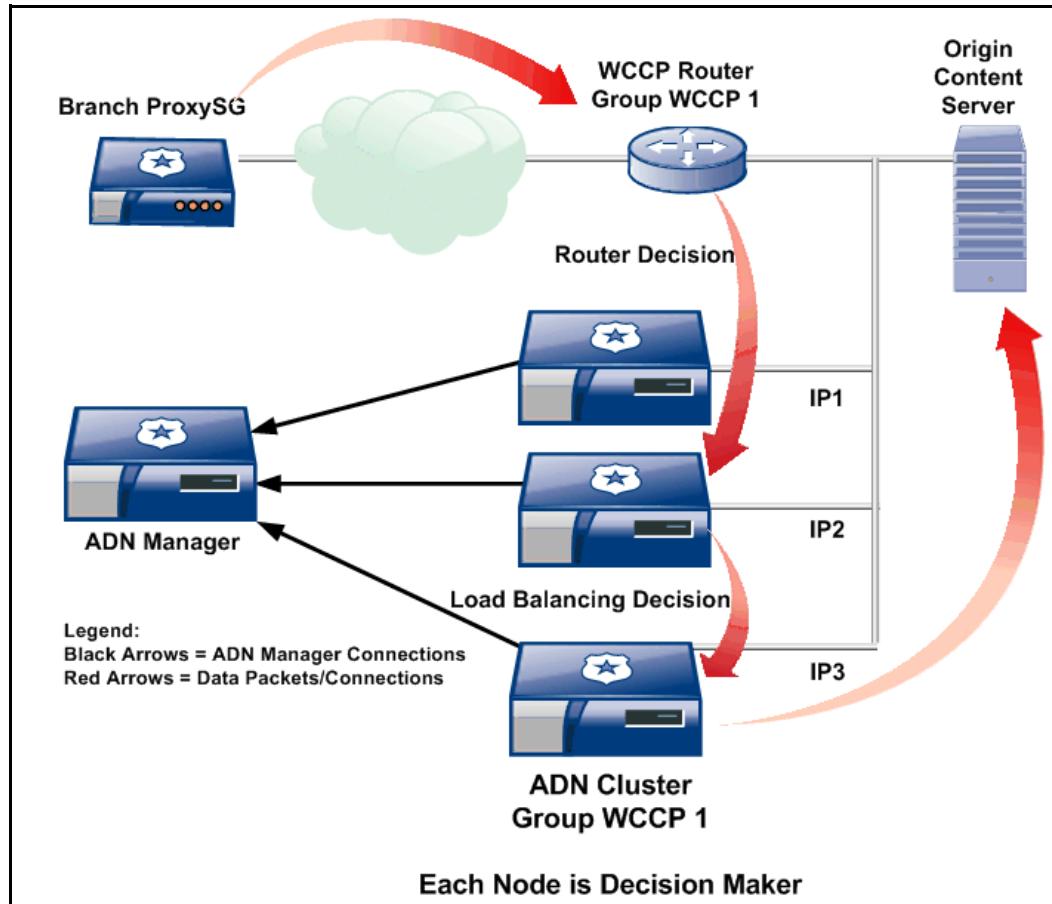
**Note:** For load balancing purposes, no special configuration is required for client IP address reflection beyond standard configuration. The standard configuration is to enable `reflect-client-ip` on the branch ProxySG and to set the concentrator ProxySG to allow client-ip reflection under ADN tunneling.

---

### Using a WCCP Router or L4 Switch as a Load Balancer

Using a WCCP router or L4 switch as a transparent load balancer is similar to using a ProxySG as a transparent load balancer, except that WCCP router or L4 switch must be configured on each system in the cluster. In this scenario, the router or switch cannot guarantee ADN peer affinity because the router cannot use the peer ID as input for its hash. Because of this, the ADN peers make the actual informed routing decisions.

## Section D: Transparent and Explicit Connection Deployments



To configure transparent load balancing with the peers in the ADN cluster as the decision makers:

- Enable load balancing on all peers by going to **Configuration > ADN > Tunneling > Load Balancing**, and selecting the **Enable Load Balancing** checkbox.
- (Optional) Set the same group name on all of the peers in the cluster.
- Put all ADN peers into a forwarding connection cluster. For more information, see [Chapter 4: "TCP Connection Forwarding" on page 85](#).
- Configure WCCP settings on all peers. For more information, see [Chapter 17: "WCCP Settings" on page 411](#).
- Configure WCCP router settings. Review the vendor's documentation for information.

## Section D: Transparent and Explicit Connection Deployments

---

**Note:** If client IP address reflection is needed, you must configure WCCP so that both traffic from the Branch Appliance to the Origin Content Server and traffic from the Origin Content Server to the Branch Appliance is redirected through WCCP. This requires configuring WCCP on multiple interfaces on your router, or configuring "in/out" rules. If specific ports are desired (rather than all ports), you must configure both source-port and destination-port rules in two different service groups.

---

### See Also

- ["WCCP Settings"](#)
- Chapter 2, "Services," in *Volume 2: Proxies and Proxy Services*

## Configuring an Explicit Deployment

Complete the following steps to configure an explicit deployment:

- Configure server subnets on each peer and enable an Internet gateway (see "[Managing Server Subnets and Enabling an Internet Gateway](#)").
- (Optional) Preserve the destination port (see "[Preserving the Destination Port](#)" on page 41).
- Configure explicit load balancing (see "[Explicit Load Balancing](#)" on page 41)

### *Managing Server Subnets and Enabling an Internet Gateway*

The server subnets you create here are advertised by this peer upon joining the explicit ADN network. You can also enable the peer as an Internet gateway. In addition, subnets not intended to go over ADN tunnels or to be routed to Internet gateways can be configured as exempt subnets.

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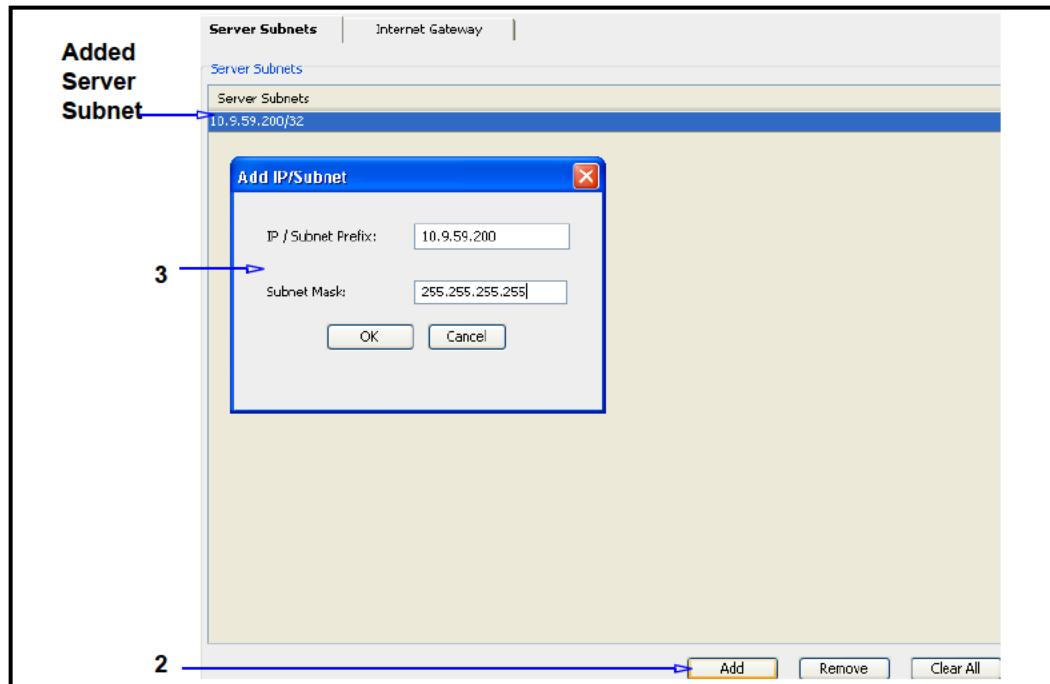
**Note:** You can also configure the exempt subnet capability through policy that allows you to disable ADN tunnel for specific connections. For more information, refer to *Volume 10: Content Policy Language Guide*.

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#### To create server subnets for this peer:

1. Select **Configuration > ADN > Routing > Server Subnets**.

## Section D: Transparent and Explicit Connection Deployments

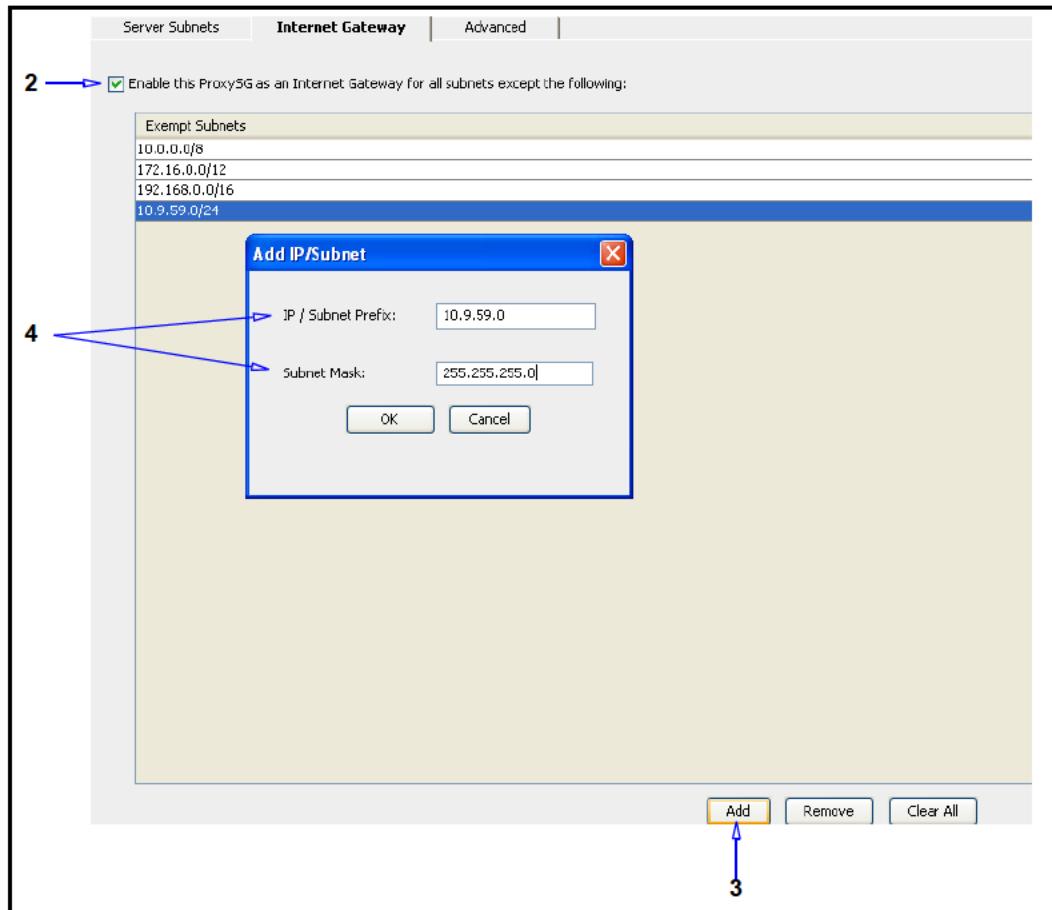


2. Click **Add**.
3. In the Add IP/Subnet dialog, enter the following information and click **OK** when you are done:
  - **IP / Subnet Prefix** field: Enter either an IP address or an IP address and subnet in Classless Inter-Domain Routing (CIDR) notation (for example, 192.168.0.1/16).
  - **Subnet Mask** field: Use this field if you entered only an IP address in the preceding field (in other words, if you used CIDR notation in the preceding field, you do not need to enter a value in this field).
  - To remove excluded subnets, click the subnets to remove and click **Remove**. You must confirm the action.
  - To clear all excluded subnets, requiring traffic from all IP addresses and subnets to be tunneled, click **Clear all**. You must confirm the action.
4. (Optional) Repeat for additional routes.
5. Click **Apply**.

**To enable this peer as an Internet gateway:**

1. Select **Configuration > ADN > Routing > Internet Gateway**.

## Section D: Transparent and Explicit Connection Deployments



2. Select the **Enable this ProxySG as an Internet Gateway for all subnets except the following** option.
3. Click **Add**.
4. Add the IP/Subnet that must not be routed to Internet gateway(s); click **OK**.

---

**Note:** Some subnets are on the exempt list by default. Make sure these default exempt defaults do not affect the configuration in your environment.

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5. (Optional) Repeat for additional subnets.
6. Click **Apply**.

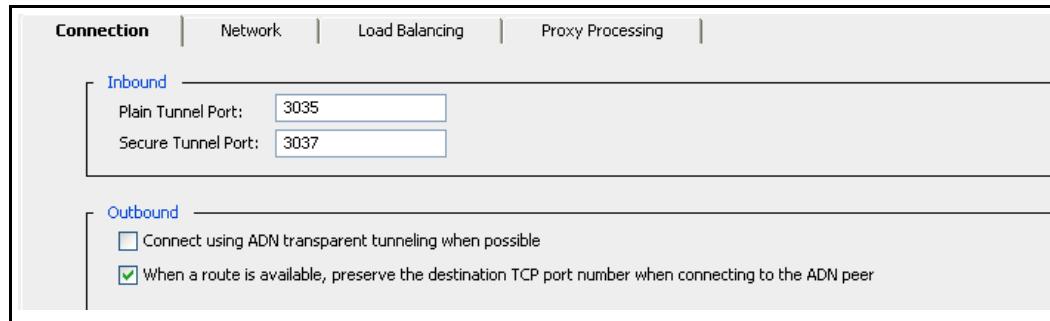
## Section D: Transparent and Explicit Connection Deployments

***Preserving the Destination Port***

Complete the following procedure.

**To preserve the destination port:**

1. Select **Configuration > ADN > Tunneling > Connection**.



2. Select the **When a route is available, preserve the destination TCP port number when connecting to the ADN peer** option.

***Explicit Load Balancing***

Of the two explicit load balancing types, server subnet or external load balancer, the server subnet is the preferred and easiest to use. While the server subnets must be configured, no additional load balancing settings must be made, and the ADN peers explicitly advertise their own IP addresses.

**Using a Server Subnet**

If you use an explicit deployment, or if you just want to load balance traffic destined to a specific subnet, configure the subnet as a server subnet on each ADN peer within that group.

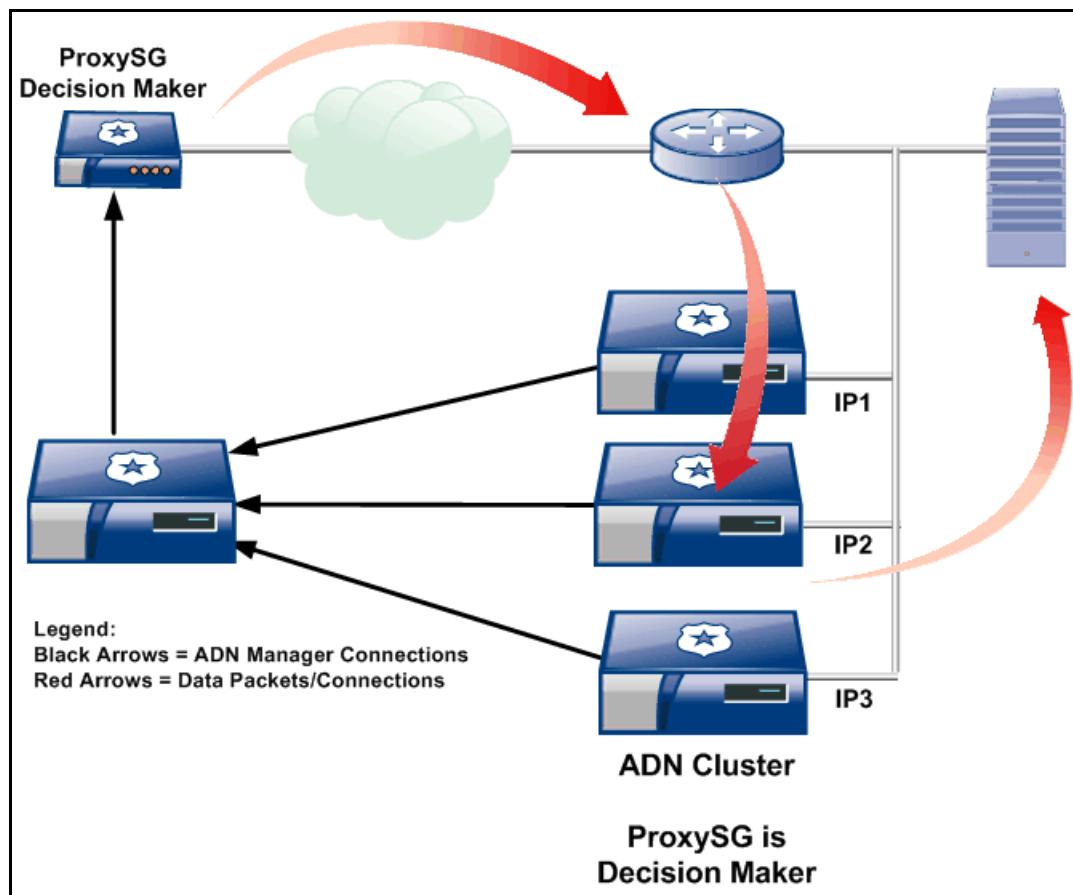
To forward the connection destined to the load balanced subnet, each ADN peer selects the preferred peer from the list of all peers fronting that subnet. This is done by ranking the list of all peers fronting a given subnet from highest to lowest. The peer with the highest rank is chosen to route the client traffic for that subnet.

---

**Note:** Load balancing is based on a hashing function, meaning that load balancing distribution is approximate, tending to be more evenly distributed with larger numbers of devices. Also, no allowance is made for equalizing load among different-sized hardware in the same ADN cluster.

---

## Section D: Transparent and Explicit Connection Deployments



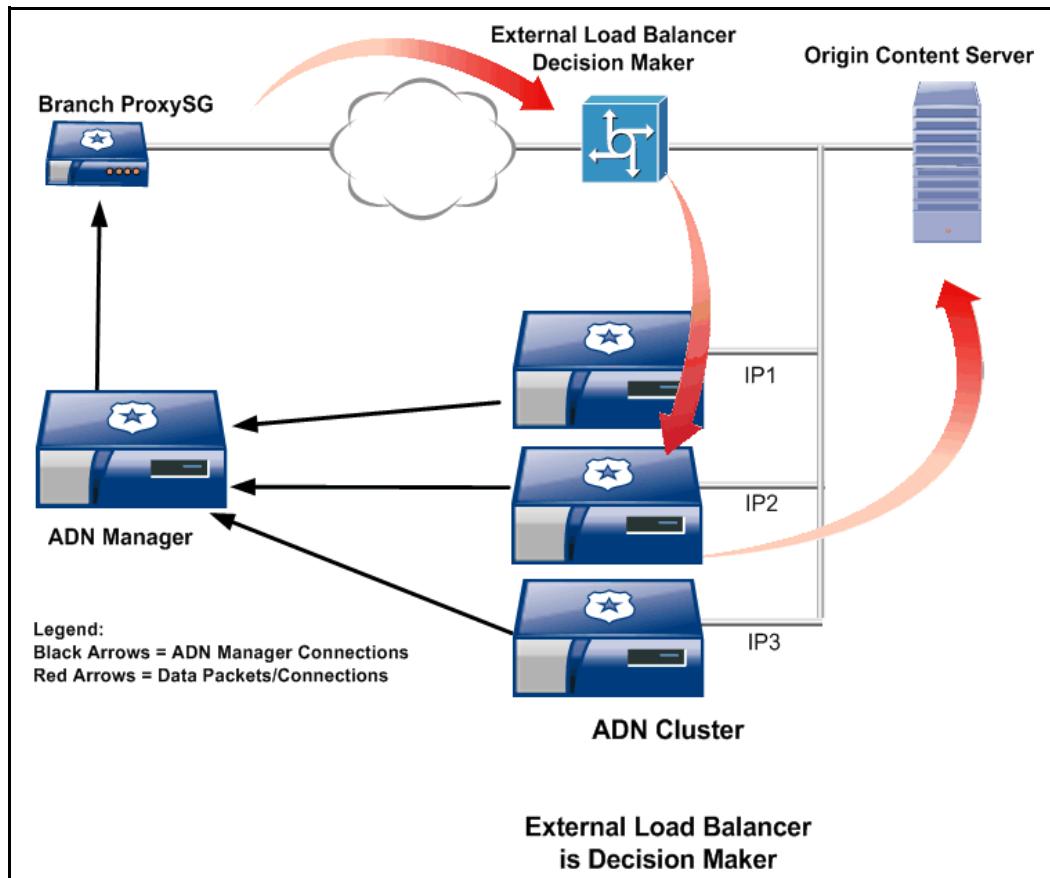
### Using an External Load Balancer

If you use explicit deployments, you can rely upon an external load-balancer fronting a group of ADN peers. The load balancer is configured to distribute the load among the peers that it fronts using client/IP address affinity.

The external load balancer provides more control than the server subnet, but it requires more configuration. For example, you must create an external VIP address on the **Configuration > ADN > Tunneling > Load Balancing** tab on each system in the ADN cluster; the VIP address is explicitly advertised by the ADN manager.

Both server subnet and external load balancer use a cluster of ADN peers for load balancing. The cluster is formed by ADN peers that are configured to the same ADN manager and are advertising the same server subnets.

## Section D: Transparent and Explicit Connection Deployments



Whether you are using server subnets or an external load balancer, you must configure server subnets. If you are using an external load balancer, you must also configure the external load balancer with a VIP address and put the address in the **Load Balancing** tab. Continue with the next procedures to configure explicit load balancing.

### Explicit Load Balancing Procedures

If you want to use either the server subnet load balancing deployment or the external load balancing deployment, you must configure server subnets. If you are using the external load balancing deployment, you must also configure the external load balancer with a VIP address.

#### To configure server subnets:

1. Go to Select **Configuration > ADN > Routing**.
2. Click **Add**.
3. Add the IP/Subnet route to be advertised by the ADN manager; click **OK**.
4. (Optional) Repeat for additional routes.

For detailed information about configuring server subnets, see "[Managing Server Subnets and Enabling an Internet Gateway](#)" on page 38.

## Section D: Transparent and Explicit Connection Deployments

### To configure VIP addresses:

1. Select **Configuration > ADN > Tunneling > Load Balancing**.
2. Enter the VIP address of the external load balancer.

---

**Note:** The VIP address is added from the **Load Balancing** tab of the App Delivery Network menu, not the **Advanced** tab of the Network menu.

---

3. Click **Apply**.

The address must be entered on each ADN peer in the cluster.

### See Also

- "Virtual IP Addresses"

## Configuring a Combined (Transparent and Explicit) Deployment

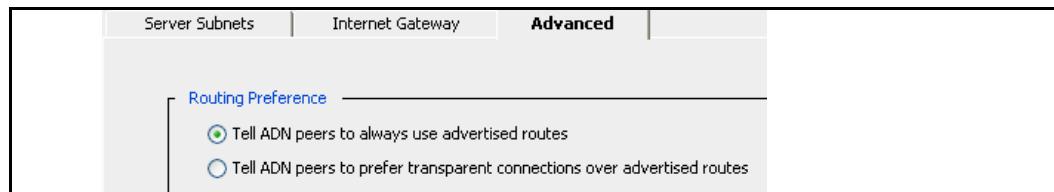
If you set up a transparent ADN network with no explicit connections, no additional configuration is required for transparent tunnel connections to work unless you want to configure load balancing. To configure transparent load balancing, skip to "["Setting Device Security"](#) on page 47.

If you set up a combined ADN network with both explicit and transparent connections, you must:

- Configure the explicit routes you need (see "["Managing Server Subnets and Enabling an Internet Gateway"](#) on page 38).
- Configure the routing preference for each ADN peer to tell ADN peers to prefer transparent connections (see "["To configure the routing preference:"](#) ). The default is to always use advertised, explicit, routes.
- Set the manager listening mode to **Plain read-only** mode if ProxyClients are in the network (see "["To configure ADN manager and tunnel listening mode and ports:"](#) on page 50).
- Configure transparent or explicit load balancing, if necessary. For more information, see "["Transparent Load Balancing"](#) on page 35 or "["Explicit Load Balancing"](#) on page 41.

### To configure the routing preference:

1. Select **Configuration > ADN > Routing > Advanced**.



2. Select the **Tell ADN peers to prefer transparent connections over advertised routes** option.

Section D: Transparent and Explicit Connection Deployments

**See Also**

- Chapter 2, “Adapters,” in *Volume 1: Getting Started*
- Appendix B, “Explicit and Transparent Proxy,” in *Volume 1: Getting Started*

## Section E: Securing the ADN Network

### Section E: Securing the ADN Network

Depending on your environment, you might need to secure your ADN network to provide the following services:

- ❑ Host validation: Securing the ADN network allows you to be sure that the ADN peers are talking to the right devices and that the peer is authorized to join the ADN network.
- ❑ Privacy: Privacy can be an issue, especially for tunnels that carry application data. You can configure the ADN network to secure ADN routing and tunnel connections using standard SSL protocol. SSL tunnels provide authentication, message privacy, and message authenticity security services, regardless of the application traffic that is being accelerated or tunneled.
- ❑ Message authenticity: Ensure that messages sent over ADN connections are not altered. Messages include the route information sent over the routing connections and compressed application data sent over the tunnel connections.

Secure ADN implementation includes:

- ❑ Device authentication, managed through the device authentication profile.
- ❑ Securing the device, including device authentication profile selection and device ID-based peer authorization.
- ❑ Securing the connections, both inbound and outbound connection security control.
- ❑ Configuring the SSL proxy.

---

**Note:** If you only want secure routing connections to the ADN manager, an SSL license is not required. Secure tunnel connections for applications such as CIFS, MAPI, TCP Tunnel, HTTP, or HTTPS/SSL, are dependent upon an SSL license.

---

Section E: Securing the ADN Network

## Configuring ADN Security Settings

For information on setting device security, continue with the next section. For information on setting connection security, continue with "["Securing Connections"](#)" on page 49.

### *Setting Device Security*

For maximum security, configure the ADN network for both device authentication and device authorization. Device authentication must be configured first.

---

**Note:** If the device being configured for authentication has Internet access, acquisition of the ProxySG appliance certificate is automatic. If you use your own appliance certificates and profile, or if the affected device does not have Internet access, manual device authentication is required.

---

For information on configuring device authentication, see [Chapter 6: "Authenticating a ProxySG"](#).

After the device authentication has been set up, point the ADN manager and ADN backup manager to the profile that is being used for authentication. Then enable authorization for maximum security.

---

**Note:** You cannot enable device authorization before configuring the ADN manager and backup ADN manager. You can, however, configure the ADN manager and backup ADN manager and then, without pressing **Apply**, enable device authorization. Then press **Apply** to save both tabs.

---

**To set device security:**

1. Select **Configuration > ADN > General > Device Security**.

## Section E: Securing the ADN Network

2. Configure the **Device Security** options:

- SSL Device Profile:** From the drop-down list, select the profile that you previously associated with the device authentication keyring. Note that only devices using the same profile are authenticated.
- Extracted Device ID:** The device ID that was extracted based on the selected profile is automatically displayed.

**Note:** The device ID is only used for security. The peer ID is the serial number.

- To enable authorization, select the **Validate ADN Peer Device IDs** checkbox.
  - If the primary or backup ADN manager is **Self**, the device ID is automatically displayed.
  - If the primary or backup ADN manager is a different system, click the **Retrieve Manager IDs** button to see the device ID. Click **Accept** to add the Manager device ID to the Authorization field.

**Note:** Authorization of devices is not complete until the devices have been approved to be part of the network. For more information on approving devices, see "[ADN Peer Authorization](#)" on page 28.

3. Click **Apply**.**See Also**

["Appliance Certificates and SSL Device Profiles"](#)

## Section E: Securing the ADN Network

### *Securing Connections*

Use the **Connection Security** tab to set:

- Manager and Tunnel Listening Mode
- Secure Outbound Connections

### **Listening Mode Options**

In secure ADN mode, you can specify that the ADN manager and tunnel use secure mode to listen for routing and tunnel requests. By default, ADN routing and tunnel connection requests are unauthenticated and all ADN protocol messaging and compressed application data are transferred in plain text.

You must enable the device authentication profile before setting any other security parameters.

After the profile is configured, the following security modes are automatically set:

- Secure-outbound: (Secure Proxies)** Both outbound routing and secure proxy connections are secured. You can also select the radio button to:
  - Not secure ADN connections.
  - Secure only ADN routing connections.
  - Secure all ADN and routing connections.

---

**Note:** The secure-outbound feature is dependent upon an SSL license.

---

- Manager-listening-mode:** (Both) Listen for requests on two ports: plain and secure. If your deployment requires a different ADN manager listening mode, you must explicitly configure it. Other options available are:
  - Secure Only.
  - Plain Only.
  - Plain Read-Only. Use this mode if SG Client is deployed in your ADN network. Currently, SG Client does not support secure ADN.
- Tunnel-listening-mode:** (Both) Listen for requests on two ports: plain and secure. Other options are:
  - Secure Only. Do not use this mode if you have SG Client deployed in your ADN network.
  - Plain Only.

## Section E: Securing the ADN Network

### Secure Outbound Connections

When secure ADN is enabled, any existing plain outbound connections are dynamically secured by activating SSL according to the `secure-outbound` setting. Determine which outbound ADN connections are secured by changing the `secure-outbound` parameter. If you select:

- None:** Neither routing nor tunnel connections are secured. Secure proxy connections bypass ADN connections and go directly to the origin content sever.
- Routing-only:** Only routing connections are secured. Secure proxy connections bypass ADN connections and go directly to the origin content sever.
- Secure Proxies:** Routing connections and secure proxy connections are secured.
- All:** All outbound connections are secured.

---

**Note:** Securing all outbound ADN connections should be done only if the platform has sufficient capacity to handle the extra overhead.

---

The table below describes secure outbound behavior with various applications.

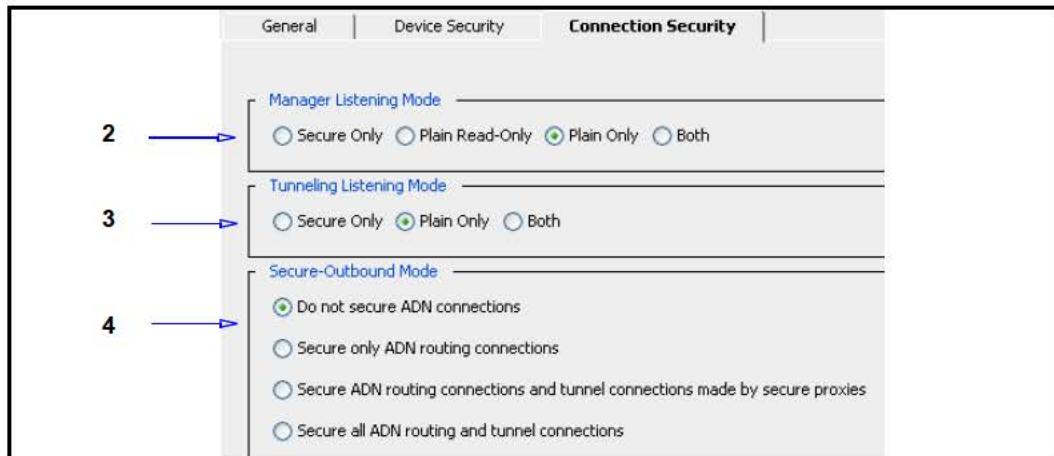
Table 2–2 Secure Outbound Behavior

Secure- Outbound Setting	Routing Connections	Application Connections		
		CIFS	SSL Proxy Intercept Mode	SSL Proxy Tunnel Mode
None	Plain Text	Plain Text	Bypass ADN	Bypass ADN
Routing-only	Encrypted	Plain Text	Bypass ADN	Bypass ADN
Secure Proxies	Encrypted	Plain Text	Encrypted	Encrypted by application
All	Encrypted	Encrypted	Encrypted	Encrypted by application

#### To configure ADN manager and tunnel listening mode and ports:

1. Select Configuration > ADN > General > Connection Security.

## Section E: Securing the ADN Network



2. Select a manager listening mode:
  - To change the manager listening mode, go to **Configuration > ADN > General > Connection Security**. The default is **Plain-only** before the device authentication profile is selected. After the device authentication profile is selected, the manager listening mode switches to **Both** by default.
  - To change the manager listening ports, go to **Configuration > ADN > General > General**. The default is plain port 3034 and secure port 3036.
3. Select a tunnel listening mode:
  - To change the tunnel listening mode, go to **Configuration > ADN > General > Connection Security**. The default is **Plain-only** before the device authentication profile is selected. After the device authentication profile is selected, the manager listening mode switches to **Both** by default.
  - To change tunnel listening ports, go to **Configuration > ADN > Tunneling > Connection**. The default is plain port 3035 and secure port 3037.

The tunnel listening port is used only if there are explicit tunnel connections to this ADN peer using the non-preserve-dest-port mode.
4. Click **Apply**.

*Authorizing Devices to Join the Network*

After a peer is configured for authentication (device security) and peer validation is enabled on the ADN manager, the peer must be accepted by the ADN manager and the backup ADN manager, if configured, before the device is allowed to join the network (authorization).

- ❑ When an ADN peer comes up, it contacts the ADN manager for routing information.
- ❑ If secure-outbound is **None** on the ADN peer and the ADN manager's listening mode is not secure-only, the ADN peer connects to the plain manager listening port and immediately joins the ADN network.

## Section E: Securing the ADN Network

- If the ADN peer connects to the secure manager listening port, the ADN manager extracts the device ID from connecting ADN peer's appliance certificate and looks for the device ID in its approved list of ADN peers.
  - If the device is on the approved list, a REQUEST-APPROVED response is sent, followed by the route information, and the peer joins the network.
  - If the device is not on the approved list, the ADN manager adds the connecting peer's device ID to the pending-peers list and sends a REQUEST-PENDING response. After the peer is moved to the **Approved** list by the administrator, a REQUEST-APPROVED response is sent, followed by the route information, and the peer joins the network.
  - If the **Pending Peers** option is not enabled and a peer is not on the approved list, the ADN manager sends a REQUEST-DENIED response and closes the connection. The connecting peer closes the connection and updates its connection status.
  - If a peer is deleted from the approved list, the ADN manager broadcasts a REJECT-PEER to all peers to delete this peer and terminate any existing ADN connections to it. No new connections are routed through the deleted ADN peer. To have the denied peer rejoin the ADN network, go to **ADN > Config > General > Reconnect to Managers**.

### To approve a device to join the network:

---

**Note:** Device security must be enabled on all ADN peers you want to join the network before you complete this procedure on the ADN manager and backup ADN manager. For more information, see "[Setting Device Security](#)" on page 47.

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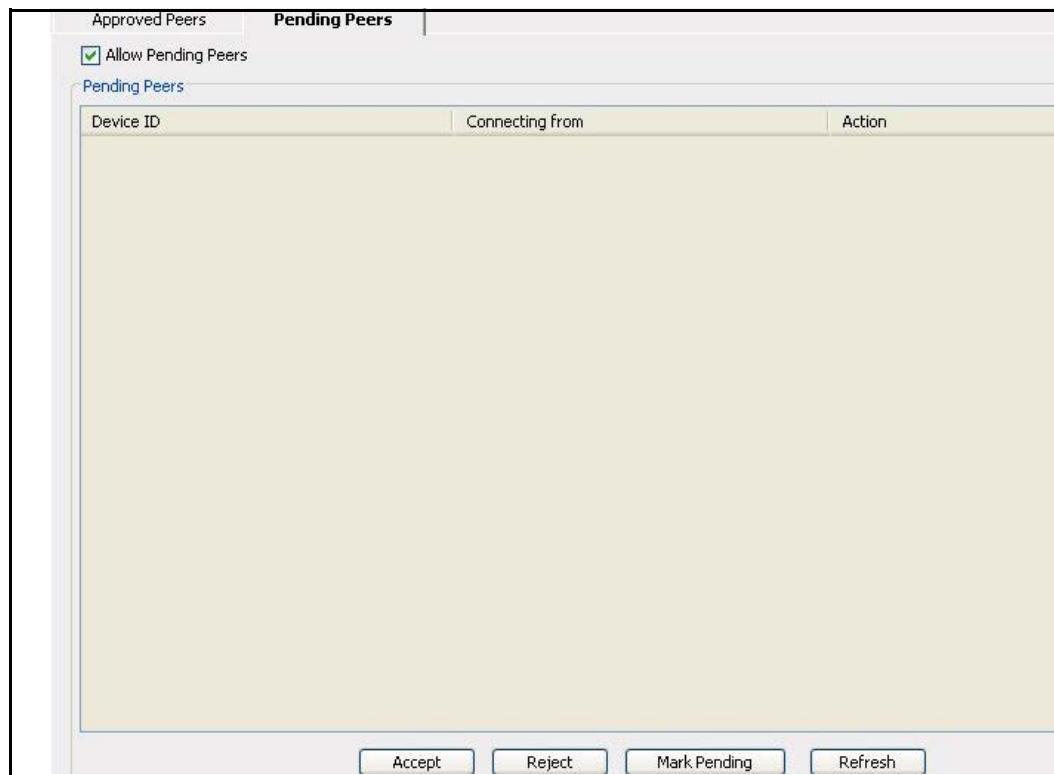
1. Select **Configuration > ADN > Manager > Approved Peers**.
2. To manage peers that you want to be approved to join the network or that have previously been approved to join the network:
  - Add peers to the list by selecting **Add**; a dialog box displays that allows you to enter one or a group of peers by listing one to a line. Click **OK** when through. If the device contacts the ADN manager and is on the approved list, a REQUEST-APPROVED response is sent, followed by the route information, and the peer joins the network.
  - Remove peers by highlighting the peer or peers and selecting **Remove**. If a peer is deleted from the approved list, the ADN manager broadcasts a REJECT-PEER to all peers to delete this peer and terminate any existing ADN connections to it. No new connections are routed through the deleted ADN peer.

## Section E: Securing the ADN Network

**To manage devices not yet approved to join the network:**

If a peer is configured to contact the ADN manager on startup but has not been added to the approved list, the ADN manager adds the peer to the list of pending peers if the **Allow Pending Peers** checkbox is selected. The peer moves from the Pending Peers list to the Approved Peers list only through human action.

1. Select **Configuration > ADN > Manager > Pending Peers**.



2. Select the **Allow Pending Peers** option.
3. To manage pending peers:
  - Highlight a peer and click **Accept** or **Reject**; alternatively, you can select or reject all peers in the list by clicking **Accept All** or **Reject All**. If accepted, the peer moves to the **Approved** list; if not, it is dropped from the **Pending Peers** list.
  - You can also leave peers in the pending list by not selecting them or selecting them and clicking **Mark Pending**.
4. Click **Apply**.

**Approved/Pending Notes**

- Approved lists on the primary and backup ADN managers are not automatically kept in sync. You must approve peers on both the primary and backup ADN managers.

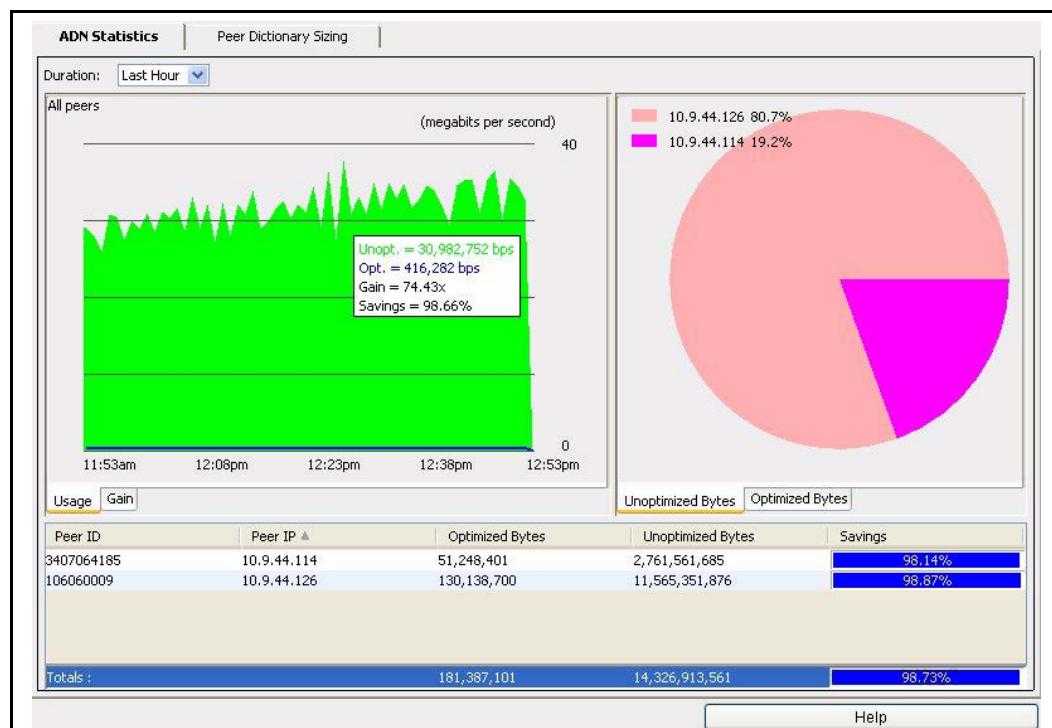
## Section F: ADN Network History, Active Sessions, Byte-Caching Statistics, and Health Metrics

### Section F: ADN Network History, Active Sessions, Byte-Caching Statistics, and Health Metrics

After ADN optimization has been enabled and is processing, you can review various ADN history and statistics.

#### Reviewing ADN History

Review the ADN history by selecting **Statistics > ADN History**.



You can view either usage statistics or gain statistics (by clicking the **Gain** tab) and either **Unoptimized Bytes** or **Optimized Bytes** through the pie charts on the right side.

The left side of the tab represents optimized and unoptimized bytes trend graphs for the selected peer or all peers; hovering the cursor over the graph displays statistics in numeric form. For information on tool tips, refer to *Volume 9: Managing the Blue Coat ProxySG Appliance*.

The right-side pie chart represents optimized and unoptimized bytes for all peers. The rows in the table below the graphs represent ADN peers and columns representing various aspects of the ADN peers:

---

**Note:** All ProxyClient peers are combined and shown on one row. For more information on ProxyClient statistics, see [Chapter 12: "Accelerating and Controlling Micro-Branch and Mobile User Connections \(ProxyClient\)"](#) on page 173.

## Section F: ADN Network History, Active Sessions, Byte-Caching Statistics, and Health Metrics

- Peer ID:** ID of the peer.
- Peer IP:** IP address of the peer.
- Optimized Bytes:** Data that has been byte-cached and/or compressed.
- Unoptimized Bytes:** Data that is to be byte-cached or compressed and data that has been *un*-byte-cached or decompressed.
- Savings:** The percentage of data that did NOT have to be sent over the WAN because of object and byte caching, protocol optimization, and compression. Moving the cursor over the **Savings** column value displays tool-tip information.

Selecting any row in the table changes the trend graph at top left and display graphs for the selected peer. If you select the last row, which displays totals, the trend graph at top left reflects the cumulative data. Changing the duration (using the **Duration** drop-down list) changes the graph accordingly.

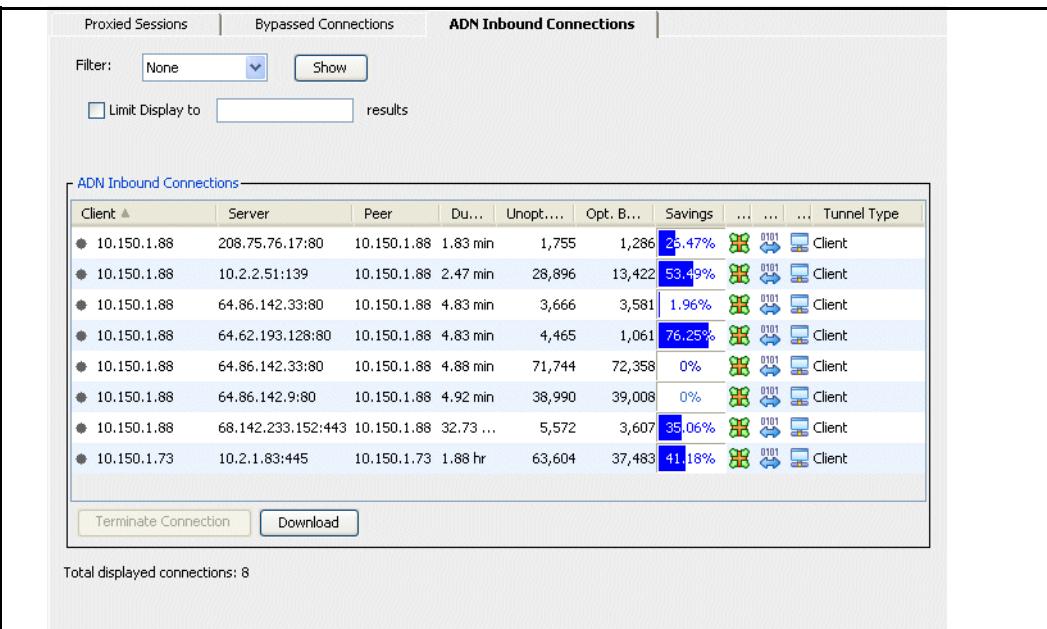
#### See Also

- Chapter 5, "Statistics," in *Volume 9: Managing the Blue Coat ProxySG Appliance*.

## Reviewing ADN Active Sessions

You can view active ADN inbound connections through the **Statistics > Active Sessions > ADN Inbound Connections**. Information from the **ADN Inbound Connections** tab can be used for diagnostic purposes.

Note that these connections are not persistent. When a connection completes, the statistics for that connection no longer display.



The screenshot shows the 'ADN Inbound Connections' tab of the Blue Coat ProxySG interface. At the top, there are tabs for 'Proxied Sessions', 'Bypassed Connections', and 'ADN Inbound Connections'. Below the tabs are filter options: 'Filter' dropdown set to 'None', a 'Show' button, and a 'Limit Display to' input field. A 'results' link is also present. The main area contains a table titled 'ADN Inbound Connections' with the following data:

Client	Server	Peer	Du...	Uno...	Opt. B...	Savings	Tunnel	Type
10.150.1.88	208.75.76.17:80	10.150.1.88	1.83 min	1,755	1,286	25.47%	0101	Client
10.150.1.88	10.2.2.51:139	10.150.1.88	2.47 min	28,896	13,422	53.19%	0101	Client
10.150.1.88	64.86.142.33:80	10.150.1.88	4.83 min	3,666	3,581	1.96%	0101	Client
10.150.1.88	64.62.193.128:80	10.150.1.88	4.83 min	4,465	1,061	76.25%	0101	Client
10.150.1.88	64.86.142.33:80	10.150.1.88	4.88 min	71,744	72,358	0%	0101	Client
10.150.1.88	64.86.142.9:80	10.150.1.88	4.92 min	38,990	39,008	0%	0101	Client
10.150.1.88	68.142.233.152:443	10.150.1.88	32.73 ...	5,572	3,607	35.06%	0101	Client
10.150.1.73	10.2.1.83:445	10.150.1.73	1.88 hr	63,604	37,483	41.18%	0101	Client

At the bottom of the table are buttons for 'Terminate Connection' and 'Download'. Below the table, a message states 'Total displayed connections: 8'.

## Section F: ADN Network History, Active Sessions, Byte-Caching Statistics, and Health Metrics

You can filter on a number of variables, including client, server, or peer IP address; server port, or none (shown above). You can also limit the number of connections being displayed to the *n* most recent.

---

**Note:** You must press **Show** each time you change display options or if you want to refresh the page.

---

You can terminate an active ADN inbound connection or you can download session details.

- To terminate an ADN inbound connection, select the session in the list and click **Terminate Connection**.
- To download details about all connections as a text file that you can open in a spreadsheet program, click **Download**. Note that all of the connections in the list are downloaded.

Each connection has the following details.

- **Client:** The IP address of the system that is being sent through the ProxySG over ADN connections.
- **Server:** The IP address of the server to which you are connecting: CNN, for example, or Google.
- **Peer:** The downstream ProxySG or ProxyClient.
- **Duration:** The length of time the connection has been active.
- **Unopt. Bytes:** The amount of data served to/from the server prior to or subsequent to ADN optimization.
- **Opt. Bytes:** The amount of compressed/byte-cached data sent to/received from the downstream ProxySG/ProxyClient.
- **Savings:** A relative percentage of bandwidth savings on the WAN link.
- **Compression:** Whether gzip compression is active in either direction on that tunnel.
- **Byte Caching:** Whether byte caching is active in either direction on that tunnel.
- **Encryption:** Whether encryption is active in either direction on that tunnel.
- **Tunnel Type:** One of the following: Explicit, Transparent, or Client.

### See Also

Chapter 5, “Statistics, in *Volume 9: Managing the Blue Coat ProxySG Appliance*.

Section F: ADN Network History, Active Sessions, Byte-Caching Statistics, and Health Metrics

## Reviewing Byte-Caching Statistics

To review byte caching statistics, select **Statistics > Advanced** and select the **ADN > ADN Statistics** link from the list.

Per-connection, real-time statistics are provided. Each connection has the following details:

- Client IP address/port.
- Server IP address/port.
- Bytes received from the application: The total bytes received from the client/server/application proxy.
- Bytes sent to the application: The total bytes sent to the client/server/application proxy.
- Bytes received from the peer SG appliance: The bytes received on the ADN tunnel connection from the peer at the other end of the WAN link. (This is compressed unless byte caching is disabled).
- Bytes sent to the peer SG appliance: The bytes sent on the ADN tunnel connection to the peer at the other end of the WAN Link. (This is compressed unless byte caching is disabled).
- Duration: The lifetime of this connection.

## Reviewing ADN Health Metrics

You can see the state of the ADN network, specifically the ADN peer, by checking the **Statistics > Health Monitoring> General** tab.

The status can have the values as shown in the following table. The information is meant for diagnostic and debugging purposes.

## Section F: ADN Network History, Active Sessions, Byte-Caching Statistics, and Health Metrics

Table 2–3 Connectivity to ADN Routing Manager Health Metric

Status	Message	Description	State
<b>ADN Health Status</b>	Connected	The ADN peer is connected to the ADN manager, ready to receive any route/peer updates. If a backup manager exists, this state indicates the peer is connected to both Managers.	OK
	Functionality Disabled	ADN functionality is not enabled.	OK
	Not operational	ADN functionality is not operational yet — components are starting up or shutting down.	OK
	Connection Approved	The ADN peer has been approved to connect to the ADN manager.	OK
	Connecting	The ADN peer is in process of connecting to ADN manager.	OK
	Partially Connected	The ADN peer is connected to one ADN manager but not the other.	Warning
	Mismatching Approval Status	The ADN peer is approved by the current active ADN manager but is rejected by the backup manager. This warning only exists if a backup ADN manager is configured.	Warning
	Approval Pending	The ADN peer is awaiting a decision from the active ADN manager for the peer's request to join the ADN network.	Warning
	Disconnected	The ADN peer is not connected to the ADN manager and cannot receive route/peer information. If a backup manager is configured, this state indicates the peer is disconnected from both manager peers.	Critical
	Connection Denied	The ADN peer is rejected by the ADN managers in the peer's request to join the ADN network.	Critical

## Section F: ADN Network History, Active Sessions, Byte-Caching Statistics, and Health Metrics

Table 2–3 Connectivity to ADN Routing Manager Health Metric (Continued)

Status	Message	Description	State
ADN Manager Status	Not an ADN manager	The ADN peer is not an ADN manager.	OK
	No Approvals Pending	All ADN peers that are requesting to join the network are already on the approved list.	OK
	Approvals Pending	ADN peers are requesting to join the network. The approvals are made by the administrator.	Warning

## Section G: Advanced Tunnel Optimization

### Section G: Advanced Tunnel Optimization

Tunnel connections are between the branch and concentrator proxies and are made on demand. To reduce connection startup latency, tunnel connections are pooled and reused.

If a route is present, proxies that support ADN optimization use an ADN tunnel connection. Data traveling over the tunnel connection is subject to byte caching, compression, and encryption, per the defined policies.

The tunnel connection occurs independently of the ADN optimization options chosen for that connection. These options can be configured for specific services and can also be modified in policy.

---

**Note:** Encryption options cannot be set through policy.

---

Optimization options include byte caching and gzip compression; byte caching and gzip compression can be controlled separately for inbound and outbound traffic on the WAN.

By default, ADN routing and tunnel connection requests are unauthenticated and all ADN protocol messaging and compressed application data are transferred in plaintext. For maximum security, you can configure the ADN network to secure ADN routing and tunnel connections using standard SSL protocol, which provides authentication, message privacy, and message authenticity security services, regardless of the application traffic that is being accelerated or tunneled.

For information on securing the network, see [Section E: "Securing the ADN Network"](#) on page 46.

### Setting Advanced Tunneling Parameters

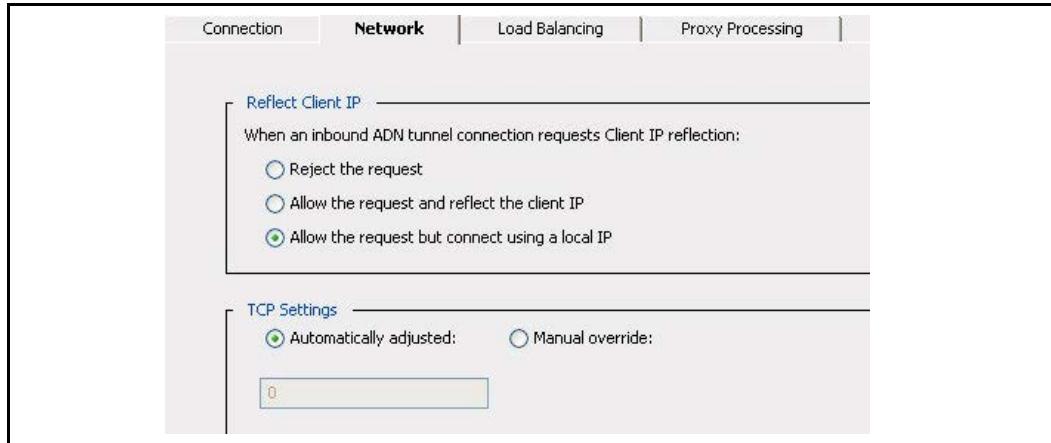
The tunneling parameters you set determine the behavior when you have special environmental needs where the default parameters are not adequate. These parameters generally do not need to be changed. Parameters that can be changed include:

- Connection Settings (see "[To configure ADN manager and tunnel listening mode and ports:](#)" on page 50).
- Network Settings (see "[To configure network tunneling settings:](#)" ).
- Load Balancing Settings (see "[Transparent Load Balancing](#)" on page 35 and "[Explicit Load Balancing](#)" on page 41).
- Proxy Processing Settings (see "[To change parameters for proxy processing:](#)" on page 63).

#### To configure network tunneling settings:

1. Select **Configuration > ADN > Tunneling > Network**.

## Section G: Advanced Tunnel Optimization



2. Determine the behavior of the concentrator proxy when a branch proxy requests client IP reflection. Concentrator client IP reflection configuration determines what IP address the concentrator advertises to the origin server as the source address—the concentrator's own address (referred to as *use local IP*) or as the proxy's address (referred to as *reflect the client IP*).

The option you choose depends mainly on whether or not the concentrator is installed inline between the proxy and the origin server, as follows:

- **Reject the request**

Choose this option to reject a proxy's request to reflect the client IP; as a result, the connection to the concentrator is rejected.

---

**Note:** The behavior of the ProxyClient is different than the behavior of a branch proxy. For the ProxyClient, this option is the same as **Allow the request but use a local IP**. For more information, see "[About Reflecting the ProxyClient IP Address](#)" on page 194.

---

- **Allow the request and reflect the client IP**

Choose this option if the concentrator is installed inline between the branch proxy and the origin server. This option means the return packets will have the branch proxy's IP address as the destination address and must be routed back through the same concentrator.

## Section G: Advanced Tunnel Optimization

- **Allow the request but use a local IP**

Choose this option if the concentrator is installed out of line with respect to the branch proxy and the origin server and when the option to reflect the client IP address results in a failed connection. The next paragraph discusses why connections might fail.

With the option to reflect the client IP enabled, the concentrator opens a different connection to the origin server than the one originally opened by the branch proxy, so response packets going directly from the origin server to the branch proxy will be rejected and the connection will fail.

3. *TCP window size* is the number of bytes that can be buffered on a system before the sending host must wait for an acknowledgement from the receiving host.

The TCP window size for ADN optimization tunnel connections is set and updated automatically, based on current network conditions and on the receiving host's acknowledgement. In most situations, the **TCP Settings** option should be left as **Automatically adjusted**.

Only use the **Manual override** setting if your network environment has intervening network equipment that makes the delay appear lower than it actually is. These environments are sometimes found on satellite links that have high bandwidth and high delay requirements. In this case, the automatically adjusted window size would be smaller than optimal.

The configurable range is between 8 Kb and 4 MB (8192 to 4194304), depending on your bandwidth and the round-trip delay. Setting sizes below 64Kb are not recommended.

---

**Note:** If you know the bandwidth and round-trip delay, you can compute the value to use as, roughly,  $2 * \text{bandwidth} * \text{delay}$ . For example, if the bandwidth of the link is 8 Mbits/sec and the round-trip delay is 0.75 seconds:

$$\text{window} = 2 * 8 \text{ Mbits/sec} * 0.75 \text{ sec} = 12 \text{ Mbits} = 1.5 \text{ Mbytes}$$

The setting in this example would be 1500000 bytes. This number goes up as either bandwidth or delay increases, and goes down as they decrease.

You can decrease or increase the window size based on the calculation; however, decreasing the window size below 64Kb is not recommended..

The window-size setting is a maximum value; the normal TCP/IP behaviors adjust downward as necessary. Setting the window size to a lower value might result in an artificially low throughput.

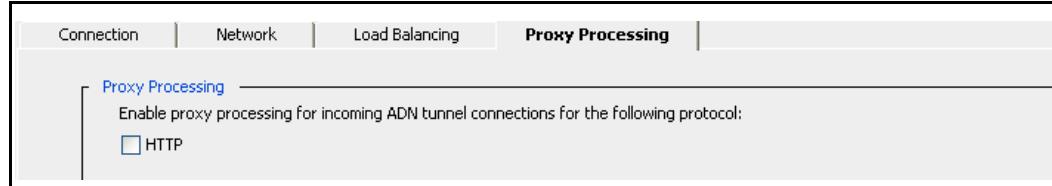
---

4. Click **Apply** to commit the changes to the ProxySG.

Section G: Advanced Tunnel Optimization

**To change parameters for proxy processing:**

1. Select **Configuration > ADN > Tunneling > Proxy Processing.**



2. (Optional) If the concentrator is required to perform HTTP proxy processing on requests arriving over an ADN tunnel, select **HTTP**. For most deployments, this is not needed. All proxy processing always happens at the branch proxy; generally speaking, the concentrator proxy just compresses and decompresses bytes and forwards them to and from the server. If this setting is enabled, proxy processing happens at both the branch and concentrator.

---

**Note:** If you enable this setting, do not duplicate any of the policy that exists at the branch, since the branch settings still apply. Depending on the policy involved, doing the processing twice can cause problems (such as doing URL rewrite multiple times) or it might just be unnecessary, taking up valuable resources.

---

3. Click **Apply**.

## Section H: Byte-Cache Dictionary Sizing

# Section H: Byte-Cache Dictionary Sizing

A *byte cache* dictionary comprises a set of data streams. A data stream can be thought of as a binary file containing data extracted from the data sent between two peers. The actual dictionary size is determined by the number of data streams in the dictionary.

Dictionary sizing is automatic and generally does not need to be changed. However, if a peer's dictionary is too small or too large, you can manually resize the dictionary. For more information on manually sizing a peer's dictionary, see "[Manually Sizing Peers](#)" on page 66.

## Understanding Dictionaries

Actual dictionary size is determined by the number of data streams in the dictionary. For dictionary sizing, the disk is considered full when the amount of disk space allocated to byte caching is full.

Unpopular streams are deleted when the dictionary becomes full. In normal operation, the disk is kept nearly full, with data streams being deleted and created in nearly the same numbers.

### *Understanding Dictionary Sizing*

The actual size of a dictionary is determined by the number of data streams in the dictionary. The calculation of the actual size of a dictionary assumes the actual size is the product of the number of data streams in the dictionary and the maximum size of a data stream, which is 16 megabytes.

By default, a new peer is allocated 100MB for its dictionary, although it does not require that much space at the beginning. The allocated dictionary size is treated as a minimum. If resources are available after all dictionaries have been allocated, any dictionary can request and get more space. To guarantee a minimum dictionary size, the value should be set manually on both peers. (See "[To manually resize byte cache dictionaries from the Statistics tab:](#)" on page 67.)

The ProxySG resizes the dictionary automatically for best utilization of the disk space, although you can force a re-size if necessary. As dictionary sizing can be an expensive operation, it is avoided whenever it is unnecessary.

The dictionary is resized:

- The first time after midnight (UTC) that the dictionary is used. A scheduled resizing is skipped if an immediate sizing has been done within the last two hours.

This setting is not configurable.

- If you modify the allocation for byte caching by setting the ADN maximum disk usage size. This causes a resizing if initialization has been completed. Increasing the allocation for byte caching causes a resizing if the byte cache status is **Insufficient Resources**.

## Section H: Byte-Cache Dictionary Sizing

- If you manually size a peer (or change the dictionary sizing to AUTO). If there is currently enough room to allocate the requested size for the peer, no resizing is done.
- If a peer either starts or stops using byte caching. If enough disk space is available to allocate a dictionary for the peer that is starting to use byte caching, no resizing is done; if the byte-cache status is "Insufficient Resources" when a peer stops using byte caching, resizing is done.

The re-sizing allows potentially unused or unutilized dictionaries to be identified, freeing resources.

The allocated size of a dictionary is a minimum size, not a maximum size. However, the allocated size is not a guaranteed minimum because it might take some time for a dictionary to grow to that size, and because the peer might be unable to provide a dictionary that large.

A peer with no allocated dictionary might still be able to get some data streams and do byte caching. In steady state, the disk is nearly full, and as new data arrives, streams must be deleted to make room. Only dictionaries whose actual size is larger than their allocated size are subject to stream deletion. The smaller the dictionary, the less likely it is that a match will be found. If no matches are found, gzip compression is the only available optimization.

## *Ranking Peers*

A table of peer rankings and dictionary sizes is created and maintained by the ProxySG. The highest-ranked peer is listed first. Manually sized peers outrank automatically sized peers, independent of their traffic.

Peer rankings are derived based on the amount of data traffic carried and the byte-caching efficiency.

---

**Note:** The rank table can track peers that are using SGOS versions prior to SGOS 5.3, but these peers cannot dynamically re-size or delete their dictionary.

---

If a peer is not using the current SGOS version, the peer is not ranked unless it has a manually sized dictionary.

---

**Note:** All manually sized peers using an older version of SGOS have the same rank, which is below the lowest ranked manually sized peer using the current version of SGOS and above the highest ranked automatically size peer using the current version of SGOS; they are displayed in random order. Similarly, all automatically sized peers using an older version of SGOS are considered to have the same rank; these peers are displayed at the end in random order.

---

## Section H: Byte-Cache Dictionary Sizing

The dictionary-sizing algorithm, starting with the highest-ranked peer, does the following:

- Calculates the recommended size based on traffic history and byte-caching efficiency
- Allocates this size, if possible.

---

**Note:** If it is not possible to allocate the recommended size, it allocates the available disk space if there is at least 100 MB, or else nothing is allocated. No lower-ranked peer gets a dictionary.

---

### *Dictionary Sizing Messages*

Peers send messages to each other announcing the allocated memory size; if the allocated size is other than zero, it is displayed as the advised size and a dictionary is allocated as per the algorithm.

If the advised size is zero, the peer does not have a dictionary, and no dictionary is allocated. If the peer had previously been using byte caching, the disk space allocated to that peer's dictionary is eventually freed.

## Ranking New Peers

When a peer joins the network, it is added to the peer ranking table. How much dictionary space the peer is allocated depends:

- If no history exists for this peer, the peer is allocated 100MB.
- If history does exist for the peer, the peer is allocated a dictionary based on that history.

### *Manually Sizing Peers*

Under certain circumstances, you might need to manually size a peer that does not get enough disk space, or you might have a network where one peer takes a disproportionate amount of resources. For example, if there are many peers, it is simpler to manually resize the one large dictionary than to manually resize all the rest.

If you determine that the algorithm does not guarantee the right dictionary size for a specific peer (either too large or too small), you can control the amount of disk space to be set aside for that peer's dictionary.

---

**Note:** You cannot reduce the space available for byte caching to below the total size of all manually sized dictionaries. You also cannot assign a size to a dictionary that would cause the total size of all manually sized dictionaries to exceed the space available for byte-caching.

---

## Section H: Byte-Cache Dictionary Sizing

You can manually resize an ADN byte-caching dictionary in two places in the Blue Coat appliance Management Console: From the **Statistics > ADN History > Peer Dictionary Sizing** tab, or from the **Configuration > ADN > Byte Caching** tab. You might find the Statistics tab easier to use, since that tab does not require you to know the peer ID. Note, however, that only peers that are known with an established dictionary are displayed in the **Statistics** tab. If a peer is unknown or has no existing dictionary, use **Configuration > ADN > Byte Caching**.

To manually resize byte cache dictionaries from the Statistics tab, continue with the next section. To manually resize byte cache dictionaries from the Configuration tab, skip to "[To manually resize byte cache dictionaries from the Configuration > ADN > Byte Caching tab:](#)" on page 68.

### To manually resize byte cache dictionaries from the Statistics tab:

1. Select **Statistics > ADN History > Peer Dictionary Sizing**.

Byte Cache Effectiveness							
Rank	Peer ID	Peer IP	Byte Cache Score	Peer Traffic (GB/Day)	Fill Rate (GB/Day)	Recommended Dict Size (GB)	Actual Dict Size (GB)
1	106080040	79046567867	102,2526	0.4989	324.8849	0.0000 (Resources)	
2	4606085072	26970611926	49.8733	0.0000	320.6383	0.0000	
3	106080053	10.9.32.200	23666111943	35.5028	0.0000	153.2356	6.9290
4	2506110040		0	0.0000	0.0000	0.0000	0.0000
5	1205000439		0	0.0000	0.0000	0.0000	0.0000
6	2905001339		0	0.0000	0.0000	0.0000	0.0000
7	106080025		0	0.0000	0.0000	0.0000	0.0000
8	2506110037		0	0.0000	0.0000	0.0000	0.0000

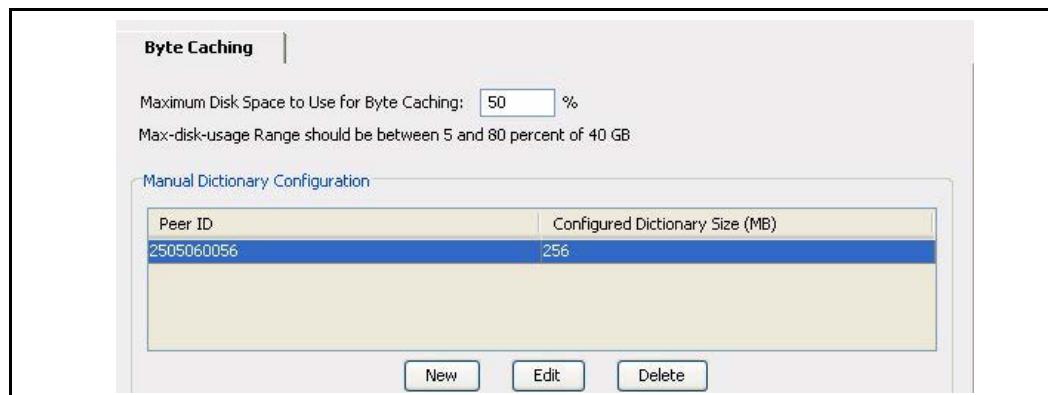
2. The Peer Dictionary Sizing tab gives you statistics relevant to the byte cache dictionary size of all peers on the network.
  - **Rank:** The ranking of a peer's dictionary. Manually-configured peers have a higher rank than dynamically-configured peers.
  - **Peer ID:** The serial number of the device.
  - **Peer IP:** The IP address of the device, if it is connected.
  - **Byte Cache Score:** The score of this peer relative to other peers. Score is calculated based on the traffic history and byte-caching efficiency of the peer.
  - **Peer Traffic (GB/Day):** The average amount of pre-byte-cache traffic per day.
  - **Fill Rate (GB/Day):** The average amount of data put into the dictionary per day over the last week.
  - **Recommended Dict Size (GB):** The dictionary size the Blue Coat appliance recommends, based on the peer traffic over the last week.

## Section H: Byte-Cache Dictionary Sizing

- **Actual Dict Size (GB):** The actual size of the dictionary.
3. Highlight the device whose dictionary you want to re-size and click Edit. The **Edit Peer** dialog displays.
  4. To select a dictionary size for the device, select the **Manual Re-size** radio button on the **Edit Peer** dialog and enter the value you want in megabytes.
  5. Click **OK** to have the resizing take effect immediately.

**To manually resize byte cache dictionaries from the Configuration > ADN > Byte Caching tab:**

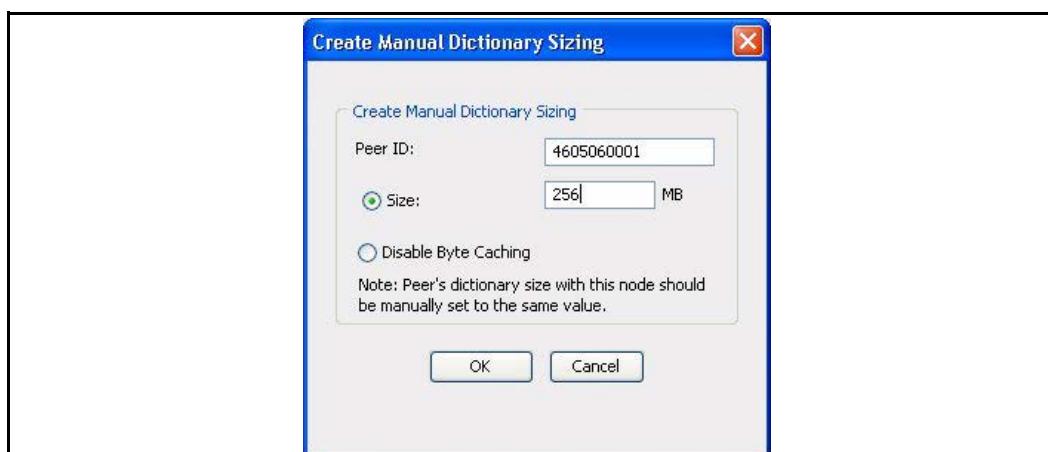
1. Select **Configuration > ADN > Byte Caching**.



2. To change the total disk space available for all byte-cache dictionaries, change the percentage in the **Maximum Disk Space to Use for Byte Caching** field.

The statement **Max-disk-usage Range should be between 5 and 80 percent of x GB** indicates how much of the existing disk can be used for byte caching.

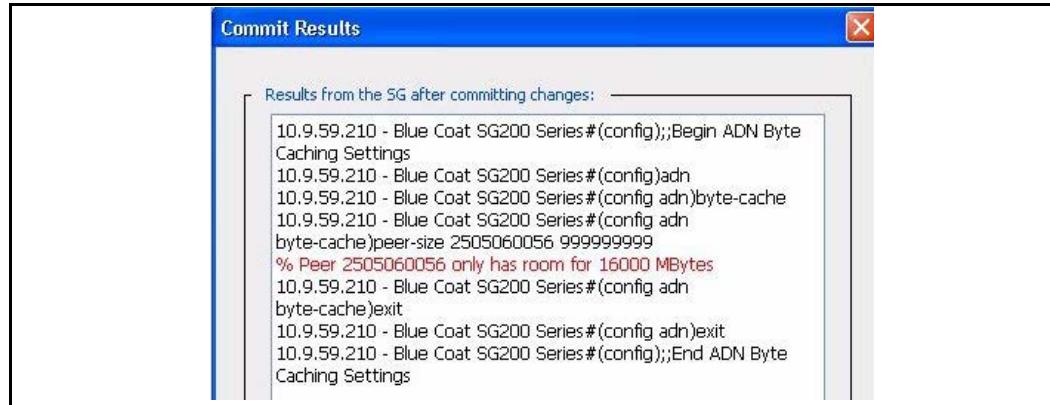
3. Click **New**. The **Create Manual Dictionary Sizing** dialog displays.



4. Enter the peer ID (serial number) of the device with which you are sharing a dictionary.
5. Enter the new value in megabytes in the **Size** field or select the **Disable Byte Caching** radio button to disable byte caching for this peer.

## Section H: Byte-Cache Dictionary Sizing

**Note:** If you enter an invalid value, an error message displays when you click **Apply**. The error message gives you the maximum accepted value to use. Repeat the previous steps to get a valid size.



6. Click **OK**. The peer is added to the manually configured dictionary sizing list and is ranked among the other manually sized peers at the top of the dictionary byte cache table.

Dynamic dictionary sizing is re-enabled through highlighting the peer and selecting **Delete**.

## Section I: Related CLI Syntax to Configure an ADN Network

**Section I: Related CLI Syntax to Configure an ADN Network**

- To enter configuration mode:

```
SGOS#(config) adn
SGOS#(config adn)
```

---

**Note:** For detailed information on using these commands, refer to *Volume 11: Command Line Interface Reference*.

---

- The following subcommands are available:

```
SGOS#(config adn) {enable | disable}
SGOS#(config adn) exit
SGOS#(config adn) byte-cache
    SGOS#(config adn byte-cache) max-disk-usage percentage
    SGOS#(config adn byte-cache) peer-size peer-id {size_in_megabytes | auto | none}
    SGOS#(config adn byte-cache) exit
    SGOS#(config adn byte-cache) view
SGOS#(config adn) load-balancing
    SGOS#(config adn load-balancing) {enable | disable}
    SGOS#(config adn load-balancing) exit
    SGOS#(config adn load-balancing) external-vip IP_address
    SGOS#(config adn load-balancing) group group_name
    SGOS#(config adn load-balancing) load-balance-only {enable | disable}
    SGOS#(config adn load-balancing) no {external-vip | group}
    SGOS#(config adn load-balancing) view
SGOS#(config adn) manager
    SGOS#(config adn manager) backup-manager {IP_address [ID] | self}
    SGOS#(config adn manager) exit
    SGOS#(config adn manager) no {backup-manager | primary-manager}
    SGOS#(config adn manager) port port_number
    SGOS#(config adn manager) primary-manager {IP_address [ID] | self}
    SGOS#(config adn manager) secure-port secure_port_number
    SGOS#(config adn manager) view [approved-peers | backup-manager-id | pending-peers | primary-manager-id]
    SGOS#(config adn manager) approved-peers
        SGOS#(config adn approved-peers) add peer-device-ID
        SGOS#(config adn approved-peers) exit
        SGOS#(config adn approved-peers) remove peer-device-ID
        SGOS#(config adn approved-peers) view
    SGOS#(config adn manager) pending-peers
        SGOS#(config adn pending-peers) {accept | reject}
        SGOS#(config adn pending-peers) {enable | disable}
        SGOS#(config adn pending-peers) exit
        SGOS#(config adn pending-peers) view
SGOS#(config adn) routing
    SGOS#(config adn routing) exit
    SGOS#(config adn routing) prefer-transparent {enable | disable}
    SGOS#(config adn routing) view
```

## Section I: Related CLI Syntax to Configure an ADN Network

```
SGOS#(config adn routing) advertise-internet-gateway
    SGOS#(config adn routing advertise-internet-gateway) {disable | enable}
        SGOS#(config adn routing advertise-internet-gateway) exempt-subnet {add {subnet_prefix[/prefix_length]} clear-all | remove {subnet_prefix[/prefix_length]} | view}
            SGOS#(config adn routing advertise-internet-gateway) exit
            SGOS#(config adn routing advertise-internet-gateway) view
SGOS#(config adn routing) server-subnets
    SGOS#(config adn routing server-subnets) add subnet_prefix [/prefix_length]
    SGOS#(config adn routing server-subnets) clear-all
    SGOS#(config adn routing server-subnets) remove subnet_prefix [/prefix_length]
    SGOS#(config adn routing server-subnets) exit
    SGOS#(config adn routing server-subnets) view
SGOS#(config adn) security
    SGOS#(config adn security) authorization {enable | disable}
    SGOS#(config adn security) exit
    SGOS#(config adn security) manager-listening-mode {plain-only | plain-read-only | secure-only | both}
    SGOS#(config adn security) no ssl-device-profile
    SGOS#(config adn security) secure-outbound {none | routing-only | secure-proxies | all}
    SGOS#(config adn security) ssl-device-profile profile_name
    SGOS#(config adn security) tunnel-listening-mode {plain-only | secure-only | both}
    SGOS#(config adn security) view
SGOS#(config adn) tunnel
    SGOS#(config adn tunnel) connect-transparent {enable | disable}
    SGOS#(config adn tunnel) exit
    SGOS#(config adn tunnel) preserve-dest-port {enable | disable}
    SGOS#(config adn tunnel) port port_number
    SGOS#(config adn tunnel) proxy-processing http {enable | disable}
    SGOS#(config adn tunnel) reflect-client-ip {deny | allow | use-local-ip}
    SGOS#(config adn tunnel) secure-port secure_port_number
    SGOS#(config adn tunnel) tcp-window-size {auto | window_size_in_bytes}
    SGOS#(config adn tunnel) view
```

Section J: Policy

## Section J: Policy

The following gestures can be used for WAN optimization from either the VPM or CPL.

---

**Note:** For more information on using the VPM or CPL to configure policy, refer to *Volume 6: The Visual Policy Manager and Advanced Policy* or *Volume 10: Content Policy Language Guide*.

---

- adn.server(yes | no) (This property overrides all other routing and intercept decisions made by ADN based on configuration and routing information.)
- adn.server.optimize(yes | no)
- adn.server.optimize.inbound(yes | no)
- adn.server.optimize.outbound(yes | no)
- adn.server.optimize.byte-cache(yes | no)
- adn.server.optimize.inbound.byte-cache(yes | no)
- adn.server.optimize.outbound.byte-cache(yes | no)
- adn.server.optimize.compress(yes | no)
- adn.server.optimize.inbound.compress(yes | no)
- adn.server.optimize.outbound.compress(yes | no)
- adn.server.dscp

## Section K: Troubleshooting

### Section K: Troubleshooting

You can troubleshoot your ADN network several ways:

- through the `test adn` diagnostics command
- through viewing the ADN configuration

Each of these tools can provide information about the ADN network and suggest reasons for the network failure.

### Using the Test ADN Diagnostics Command

This command is used to test connectivity from one ProxySG to a server on a specified port. This test also can be done with an ADN port to test the success or failure of a ProxySG connection to an ADN peer.

The command provides details of its success or failure.

#### *Transparent ADN: Success*

```
Blue Coat SG200 Series# test adn 192.168.0.222 80
connecting to 192.168.0.222:80...succeeded!
Diagnostics
Route decision   : Connect Transparently
Route reason     : ADN transparent due to no explicit route
Route policy     :
Connect result   : Success
Remote peer      : 207060009
Local Addr       : 192.168.0.121:64881
Peer Addr        : 192.168.0.222:80
```

#### Notes

- The remote peer information (device ID and IP address) is provided in a successful attempt.
- The **Remote Peer** is the device ID (serial number, in this case) of the remote ProxySG the test ADN command found.
- The **Local Addr** is the originating system.
- The **Peer Addr** is the server IP address, a side effect of the test adn command and a transparent deployment. Normally, the Peer Addr would be a ProxySG IP address.

## Section K: Troubleshooting

### *Transparent ADN: Success but no Upstream ADN Connection*

```
Blue Coat SG200 Series# test adn 192.168.0.222 80
Connecting to 192.168.0.222:80...succeeded!
Diagnostics
Route decision  : Attempted Transparent but went Direct
Route reason    : ADN transparent due to no explicit route
Route policy    :
Connect result  : Success
Peer Addr       : 192.168.0.222:80
```

#### Notes

- Because no ADN connection existed, the **Route decision** indicates what happened:
  - The `test adn` command went directly to the server.
  - **Success** in this case refers to the successful connection to the server but not through an ADN connection.
  - Remote peer device ID and local address information were not available.

### *Explicit ADN: Success*

```
Blue Coat SG200 Series# test adn 192.168.0.222 80
Connecting to 192.168.0.222:80...succeeded!
Diagnostics
Route decision  : Connect Explicitly
Route reason    : ADN explicit route found
Route policy    :
Explicit routes found:
  Peer (207060009) ip#0: 192.168.0.122, ports: 3035,3037 Connect
  result  : Success
  Remote peer   : 207060009
  Local Addr    : 192.168.0.121:53892
  Peer Addr     : 192.168.0.122:3035
```

#### Notes

- The **Remote Peer** is the device ID (serial number, in this case) of the remote SG the test ADN command found.
- The **Local Addr** is the originating system.
- The **Peer Addr** is the IP address of the remote peer.

## Section K: Troubleshooting

### *Explicit ADN: The Upstream Device is not Functioning*

```
Blue Coat SG200 Series# test adn 192.168.0.222 80
Connecting to 192.168.0.222:80...failed with error : 5!
Diagnostics
Route decision   : Connect Explicitly
Route reason     : ADN explicit route found
Route policy     :
Explicit routes found:
    Peer (207060009) ip#0: 192.168.0.122, ports: 3035,3037
Connect result   : Failure
Failure reason   : Socket internal error
Network error    : Socket error(5)
Local Addr       : 192.168.0.121:53892
Peer Addr        : 192.168.0.122:3035
```

## Notes

- For an explicit connection, the local IP address is displayed even if a connection cannot be established.

## Error Codes

Table 2–4 Error Codes

Error Code	Description
5	Networking Input/output error
50	Network is down
51	Network is unreachable
52	Network dropped connection on reset
53	Software caused connection abort
54	Connection reset by peer
55	No buffer space available
56	Socket is already connected
57	Socket is not connected
58	Can't send after socket shutdown
59	Too many references: can't splice
60	Operation timed out
61	Connection refused

## Section K: Troubleshooting

### Showing the ADN Configuration

You can view the entire ADN configuration through the **show adn** CLI command. Also, you can use the **show adn** subcommands to view specific parts of the ADN configuration. This section describes the **show adn** subcommands.

- **ADN Manager Configuration:** The manager configuration shows the primary and backup managers, ports, and where approved devices connect from.

```
SGOS# show adn manager
Primary manager:          self
Backup manager:           10.9.59.243 2505060056
Port:                     3034
Secure port:              3036
Approved device           Connecting from
2505060056 10.25.36.48
Allow pending devices:    enabled
Pending device            Connecting from
```

- **Tunnel Configuration:** The tunnel configuration displays connection information for this device.

```
SGOS# show adn tunnel
Port:                     3035
Secure port:              3037
proxy-processing http:    disabled
connect-transparent:      enabled
preserve-dest-port:      disabled
TCP window size:          auto
reflect-client-ip:        use-local-ip
```

- **Load Balance Configuration:** The load balance configuration displays the Load Balance information for this device.

```
SGOS# show adn load-balancing
Load Balancing Configuration:
Load-balancing:            disabled
Load-balancing Group:      <none>
Load-balance only mode:   disabled; will take traffic
External VIP:              none
```

- **Routing Table:** The routing table section shows the advertised subnets for this device. Note that the routing table is only populated if explicit ADN is used.

```
SGOS# show adn routing
Prefer Transparent:        disabled
Internet Gateway:         enabled
Exempt Server subnet:     10.0.0.0/8
Exempt Server subnet:     172.16.0.0/12
Exempt Server subnet:     192.168.0.0/16
Server subnet:             10.25.36.0/24
```

**Security Configuration:** This section displays security information about the device.

```
SGOS# show adn security
Ssl-device-profile: bluecoat-appliance-certificate (Device-id:
4605060001)
Manager-listening mode: both
Tunnel-listening mode: both
Authorization: enabled
Secure-outbound: secure-proxies
```

- **Byte Cache Configuration:** This section shows the percentage of disk space you are allowing this peer to use for byte caching. The recommended range is also displayed. For more information on the byte-caching CLI tables that are displayed as part of the byte-cache configuration output, continue with the next section.

```
SGOS# show adn byte-cache
Byte Cache Configuration:
Max-disk-usage: 65
; Max-disk-usage Range should be between 5 and 80 percent of 40 GB
```

## Byte-Cache Configuration CLI Tables

As part of the byte-cache configuration CLI output, two tables are displayed:

- Global Information
- Per-Peer Data

### Viewing Byte-Cache Global Information

The table has information that affects all caches.

Tot Size		Time of	Tot Size	Total
Alloc'd	Current Time (UTC)	Next Peer Ranking (UTC)	Allocabl	Rec Size
571 MB	19:50:00 16/04/2008	00:00:00 17/04/2008	20 GB	571 MB

The table contains the:

- current time
- time for the next scheduled (daily, at midnight UTC) peer ranking
- total allocable disk space (converted from a percent into an actual size in SI units—20GB is 20,000,000,000 bytes)
- total recommended size of all dictionaries
- total allocated size of all dictionaries

## Viewing Per-Peer Data

This table has per-peer data, with one line for each peer (all ProxyClients are combined into a single line).

Peer ID	Traffic	Savings	Adj.	Rec.	Alloc.	Actual	Manual	Flags
				Gzip	Size	Size	Size	
6 Clients	18 MB	742 KB	0 B	30 MB	30 MB	8069 MB	0 B	<u>  </u>

---

**Note:** One line summarizes all ProxyClients, as shown in the per-peer data table above—instead of a peer id, it says "N Clients", and information provided includes the total overall client statistics for the traffic, savings, adjusted gzip, recommended size, allocated size, actual size, and manual size; the flags column displays an unbroken underline.

---

Information included is the:

- peer id (or the number of ProxyClients)
- traffic (total uncompressed data over the last week)
- savings (byte-cache savings during the last week)
- adjusted gzip data (all the uncompressed data sent or received during the last week when byte caching was not being done)
- recommended size for this peer's dictionary
- allocated size for this peer's dictionary
- actual size for this peer's dictionary
- manual size for this peer's dictionary
- flags
  - **N** means that the user chose not to do compression when sending data to this peer
  - **M** means that manual sizing is in effect for this dictionary
  - **A** means that the peer has advertised that it is using a manual size for its dictionary
  - **P** means that the dictionary is peer-limited. The peer has asked for a smaller dictionary than allocated.

## *Chapter 3: Preventing Denial of Service Attacks*

This chapter describes how the ProxySG prevents attacks designed to prevent Web services to users.

### *Topics in this Chapter*

This chapter includes information about the following topics:

- About Attack Detection
- "Configuring Attack-Detection Mode for the Client" on page 80
- "Configuring Attack-Detection Mode for a Server or Server Group" on page 83

### **About Attack Detection**

The SGOS software can reduce the effects of distributed denial of service (DDoS) attacks and port scanning, two of the most common virus infections.

A DDoS attack occurs when a pool of machines that have been infected with a DDoS-type of virus attack a specific Web site. As the attack progresses, the target host shows decreased responsiveness and often stops responding. Legitimate HTTP traffic is unable to proceed because the infected system is waiting for a response from the target host.

Port scanning involves viruses attempting to self-propagate to other machines by arbitrarily attempting to connect to other hosts on the Internet. If the randomly selected host is unavailable or behind a firewall or does not exist, the infected system continues to wait for a response, thus denying legitimate HTTP traffic.

The ProxySG prevents attacks by limiting the number of simultaneous TCP connections from each client IP address and either does not respond to connection attempts from a client already at this limit or resets the connection. It also limits connections to servers known to be overloaded.

If the ProxySG starts seeing a large number of HTTP errors, and that number exceeds the configured error limit, subsequent requests are blocked and the proxy returns a warning page.

If the requests continue despite the warnings, and the rate exceeds the warning limit, the client is blocked at the TCP level.

You can configure attack detection for both clients and servers or server groups, such as <http://www.bluecoat.com>. The *client* attack-detection configuration is used to control the behavior of virus-infected machines behind the ProxySG. The *server* attack-detection configuration is used when an administrator knows ahead of time that a virus is set to attack a specific host.

This feature is only available through the CLI. You cannot use the Management Console to enable attack detection.

## Configuring Attack-Detection Mode for the Client

### To enter attack-detection mode for the client:

From the `(config)` prompt, enter the following commands:

```
SGOS#(config) attack-detection
SGOS#(config attack-detection) client
```

The prompt changes to:

```
SGOS#(config client)
```

## Changing Global Settings

The following defaults are global settings, used if a client does not have specific limits set. They do not need to be changed for each IP address/subnet if they already suit your environment:

- client limits enabled: false
- client interval: 20 minutes
- block-action: drop (for each client)
- connection-limit: 100 (for each client)
- failure-limit: 50 (for each client)
- unblock-time: unlimited
- warning-limit: 10 (for each client)

### To change the global defaults:

Remember that enable/disable limits and interval affect all clients. The values cannot be changed for individual clients. Other limits can be modified on a per-client basis.

---

**Note:** If you edit an existing client's limits to a smaller value, the new value only applies to new connections to that client. For example, if the old value was 10 simultaneous connections and the new value is 5, existing connections above 5 are not dropped.

---

```
SGOS#(config client) enable-limits | disable-limits
SGOS#(config client) interval minutes
SGOS#(config client) block ip_address [minutes] | unblock ip_address
SGOS#(config client) default block-action drop | send-tcp-rst
SGOS#(config client) default connection-limit
integer_between_1_and_65535
SGOS#(config client) default failure-limit integer_between_1_and_500
SGOS#(config client) default unblock-time minutes_between_10_and_1440
SGOS#(config client) default warning-limit integer_between_1_and_100
```

Table 3–1 Changing Global Defaults

enable-limits   disable-limits		Toggles between true (enabled) and false (disabled). The default is false. This is a global setting and cannot be modified for individual clients.
-----------------------------------	--	--

Table 3–1 Changing Global Defaults (Continued)

interval	integer	Indicates the amount of time, in multiples of 10 minutes, that client activity is monitored. The default is 20. This is a global setting and cannot be modified for individual clients.
block   unblock	<i>ip_address [minutes]</i>	Blocks a specific IP address for the number of minutes listed. If the optional <i>minutes</i> argument is omitted, the client is blocked until explicitly unblocked. Unblock releases a specific IP address.
default block-action	drop   send-tcp-rst	Indicates the behavior when clients are at the maximum number of connections or exceed the warning limit: drop the connections that are over the limit or send TCP RST for connections over the limit. The default is drop. This limit can be modified on a per-client basis.
default connection-limit	integer	Indicates the number of simultaneous connections between 1 and 65535. The default is 100. This limit can be modified on a per-client basis.
default failure-limit	integer	Indicates the maximum number of failed requests a client is allowed before the proxy starts issuing warnings. Default is 50. This limit can be modified on a per-client basis.
default unblock-time	<i>minutes</i>	Indicates the amount of time a client is blocked at the network level when the client-warning-limit is exceeded. Time must be a multiple of 10 minutes, up to a maximum of 1440. By default, the client is blocked until explicitly unblocked. This limit can be modified on a per-client basis.
default warning-limit	integer	Indicates the number of warnings sent to the client before the client is blocked at the network level and the administrator is notified. The default is 10; the maximum is 100. This limit can be modified on a per-client basis.

**To create and edit a client IP address:**

Client attack-detection configuration is used to control the behavior of virus-infected machines behind the ProxySG.

1. Verify the system is in the attack-detection client submode.

```
SGOS#(config) attack-detection
SGOS#(config attack-detection) client
SGOS#(config client)
```

2. Create a client.

```
SGOS#(config client) create {ip_address | ip_and_length}
```

3. Move to edit client submode.

```
SGOS#(config client) edit client_ip_address
```

The prompt changes to:

```
SGOS#(config client ip_address)
```

4. Change the client limits as necessary.

```

SGOS#(config client ip_address) block-action drop | send-tcp-rst
SGOS#(config client ip_address) connection-limit
integer_between_1_and_65535
SGOS#(config client ip_address) failure-limit
integer_between_1_and_65535
SGOS#(config client ip_address) unblock-time minutes
SGOS#(config client ip_address) warning-limit
integer_between_1_and_65535

```

Table 3–2 Changing the Client Limits

block-action	drop   send-tcp-rst	Indicates the behavior when the client is at the maximum number of connections: drop the connections that are over the limit or send TCP RST for the connection over the limit. The default is drop.
connection-limit	integer	Indicates the number of simultaneous connections between 1 and 65535. The default is 100.
failure-limit	integer	Indicates the behavior when the specified client is at the maximum number of connections: drop the connections that are over the limit or send TCP RST for the connection over the limit. The default is 50.
unblock-time	minutes	Indicates the amount of time a client is locked out at the network level when the client-warning-limit is exceeded. Time must be a multiple of 10 minutes, up to a maximum of 1440. By default, the client is blocked until explicitly unblocked.
warning-limit	integer	Indicates the number of warnings sent to the client before the client is locked out at the network level and the administrator is notified. The default is 10; the maximum is 100.

**To view the specified client configuration:**

Enter the following command from the edit client submode:

```

SGOS#(config client ip_address) view
Client limits for 10.25.36.47:
Client connection limit:      700
Client failure limit:        50
Client warning limit:        10
Blocked client action:       Drop
Client connection unblock time:   unlimited

```

**To view the configuration for all clients:**

1. Exit from the edit client submode:

```
SGOS#(config client ip_address) exit
```

2. Use the following syntax to view the client configuration:

```
view {<Enter> | blocked | connections | statistics}
```

**To view all settings:**

```
SGOS#(config client) view <Enter>
Client limits enabled: true
Client interval: 20 minutes
Default client limits:
    Client connection limit: 100
    Client failure limit: 50
    Client warning limit: 10
    Blocked client action: Drop
    Client connection unblock time: unlimited
Client limits for 10.25.36.47:
    Client connection limit: 700
    Client failure limit: 50
    Client warning limit: 10
    Blocked client action: Drop
    Client connection unblock time: unlimited
```

**To view the number of simultaneous connections to the ProxySG:**

```
SGOS#(config client) view connections
Client IP Connection Count
127.0.0.1 1
10.9.16.112 1
10.2.11.133 1
```

**To view the number of blocked clients:**

```
SGOS#(config client) view blocked
Client Unblock time
10.11.12.13 2004-07-09 22:03:06+00:00UTC
10.9.44.73 Never
```

**To view client statistics:**

```
SGOS#(config client) view statistics
Client IP Failure Count Warning Count
10.9.44.72 1 0
```

**To disable attack-detection mode for all clients:**

```
SGOS#(config client) disable-limits
```

## Configuring Attack-Detection Mode for a Server or Server Group

Server attack-detection configuration is used when an administrator knows ahead of time that a virus is set to attack a specific host.

You can create, edit, or delete a server. A server must be created before it can be edited. You can treat the server as an individual host or you can add other servers, creating a server group. All servers in the group have the same attack-detection parameters, meaning that if any server in the group gets the maximum number of simultaneous requests, all servers in the group are blocked.

You must create a server group before you can make changes to the configuration.

**To create a server or server group:**

1. At the (config) prompt:

```
SGOS#(config) attack-detection
SGOS#(config attack-detection) server
```

The prompt changes to:

```
SGOS#(config server)
```

2. Create the first host in a server group, using the fully qualified domain name:

```
SGOS#(config server) create hostname
```

**To edit a server or server group:**

At the (config server) prompt:

```
SGOS#(config server) edit hostname
```

The prompt changes to (config server *hostname*).

```
SGOS#(config server hostname) {add | remove} hostname
```

```
SGOS#(config server hostname) request-limit integer_from_1_to_65535
```

where:

<i>hostname</i>		The name of a previously created server or server group. When adding a hostname to the group, the hostname does not have to be created. The host that was added when creating the group cannot be removed.
<b>add</b>   <b>remove</b>	<i>hostname</i>	Adds or removes a server from this server group.
<b>request-limit</b>	<i>integer</i>	Indicates the number of simultaneous requests allowed from this server or server group. The default is 1000.

**To view the server or server group configuration:**

```
SGOS#(config server hostname) view
```

```
Server limits for hostname:
```

```
Request limit: 1500
```

## *Chapter 4: TCP Connection Forwarding*

This chapter describes how to configure the ProxySG appliance to join peer clusters that process requests in asymmetrically routed networks.

### *Topics in this Chapter*

The following topics are covered in this chapter:

- [□ "About Asymmetric Routing Environments" on page 85](#)
- [□ "The TCP Connection Forwarding Solution" on page 86](#)
- [□ "Configuring TCP Connection Forwarding" on page 90](#)

### **About Asymmetric Routing Environments**

It is common in larger enterprises to have multiple ProxySG appliances residing on different network segments; for example, the enterprise receives Internet connectivity from more than one ISP. If IP spoofing is enabled, connection errors can occur because the ProxySG terminates client connections and makes a new outbound connection (with the source IP address of the client) to the server. The response might not return to the originating ProxySG, as illustrated in the following diagram.

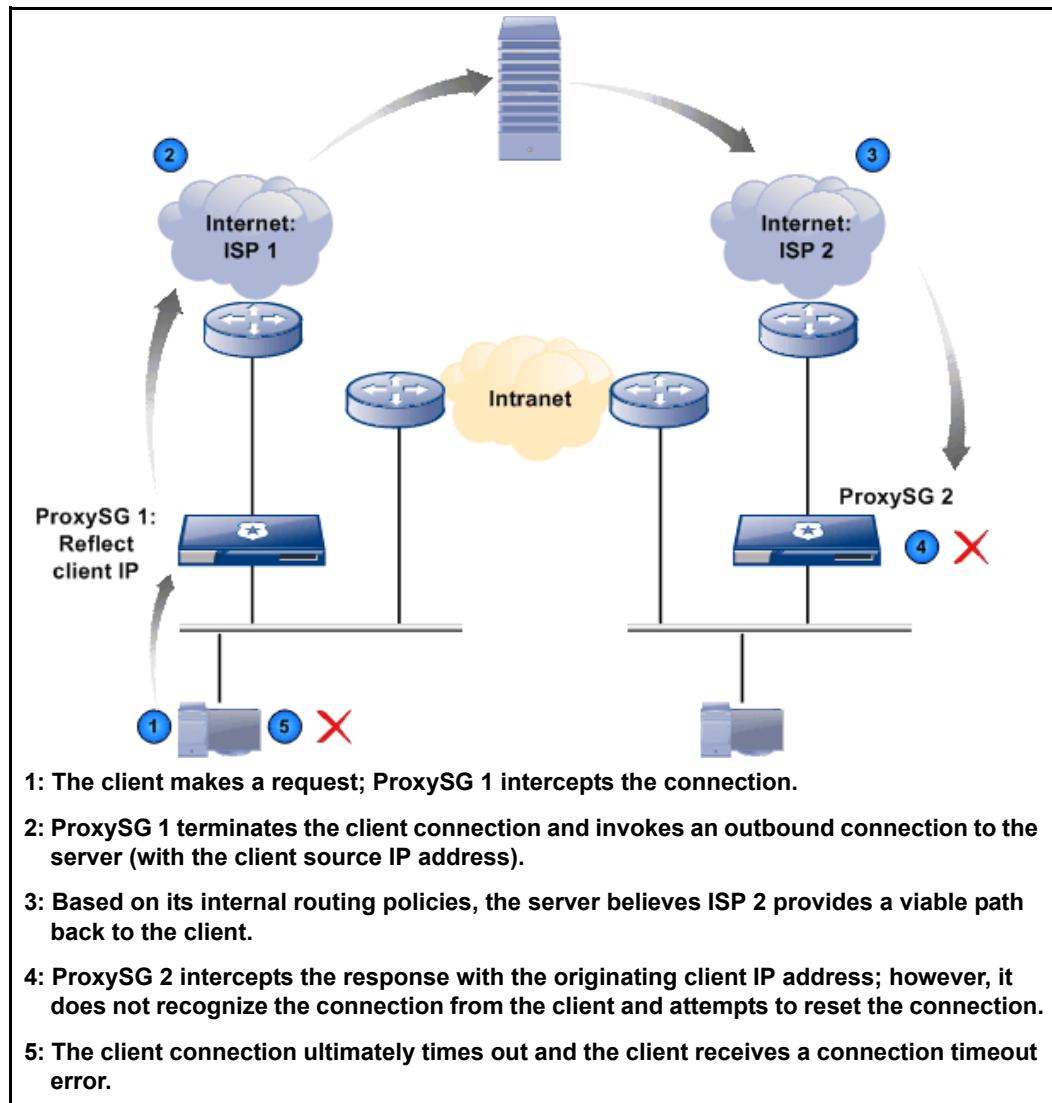


Figure 4–1 Multiple ProxySG appliances in an asymmetric routing environment

After a connection occurs (either intercepted or bypassed) through any ProxySG in the connection forwarding cluster, future packets of any such recorded flow that is subject to asymmetric routing are properly handled. The ProxySG also recognizes self-originated traffic (from any of the peers of the connection forwarding cluster), so any abnormal internal routing loops are also appropriately processed.

## The TCP Connection Forwarding Solution

Enabling TCP Connection Forwarding is a critical component of the following solutions:

- ❑ "About Bidirectional Asymmetric Routing" on page 87.
- ❑ "About Dynamic Load Balancing" on page 88.
- ❑ "About ADN Transparent Tunnel Load Balancing" on page 89.

## About Bidirectional Asymmetric Routing

To solve the asymmetric routing problem, at least one ProxySG on each network segment must be configured to perform the functionality of an L4 switch. These selected appliances form a cluster. With this peering relationship, the connection responses are able to be routed to the network segment where the originating client resides.

In the 5.1.4.x release, cluster membership is manual; that is, ProxySG appliances must be added to a cluster by enabling connection forwarding and adding a list of other peers in the cluster. After a peer joins a cluster, it begins sending and receiving TCP connections, and notifies the other peers about its connection requests.

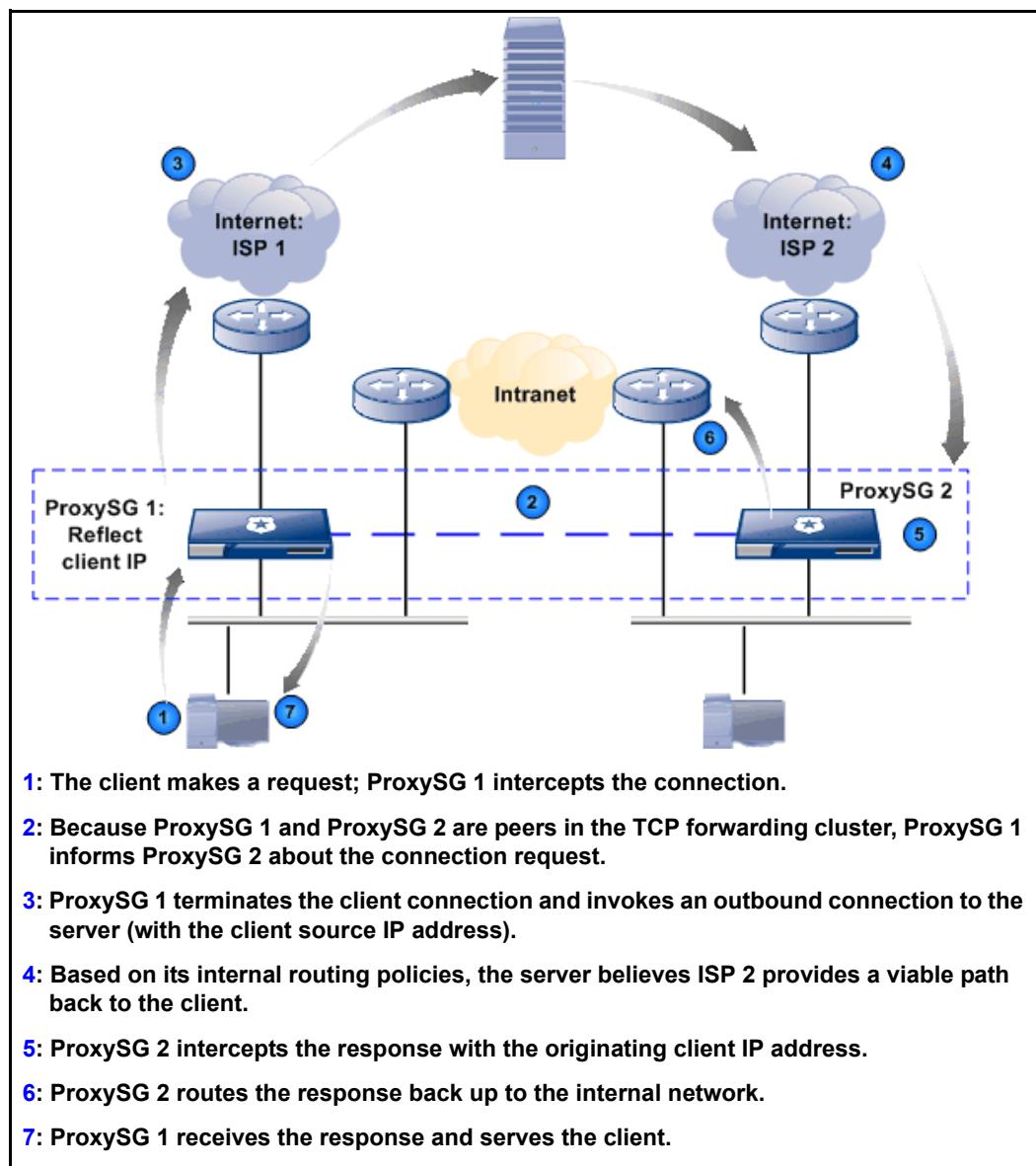


Figure 4–2 ProxySG appliances share TCP connection information

## About Dynamic Load Balancing

In a deployment where one ProxySG receives all of the traffic originating from clients and servers from an external routing device and distributes connections to other ProxySG appliances, TCP connection forwarding enables all of the appliances to share connection information (for each new connection) and the inline ProxySG routes the request back to the originating appliance, thus lightening the load on the inline appliance.

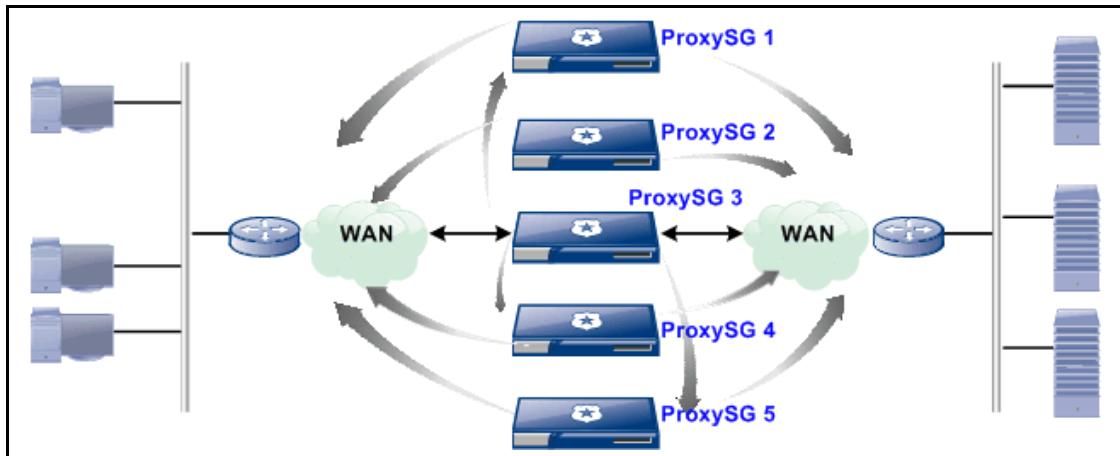


Figure 4–3 A ProxySG appliance serving inline as a load balancer

In the above network topography, ProxySG **SG 1** is deployed inline to receive all traffic (by way of a switch) originating from the clients to the servers and servers to the clients and serves as a load balancer to the other four ProxySG appliances. Appliances **2** through **5** also have independent connectivity to the clients and the servers. When all appliances belong to the same peering cluster and have connection forwarding enabled, appliance **SG 1** knows which of the other appliances made a specific connection and routes the response to that appliance.

In this deployment, a TCP acknowledgement is sent and retransmitted, if required, to ensure the information gets there, but each new connection message is not explicitly acknowledged. However, if the ProxySG receives packets for a connection that is unrecognized, the appliance retains those packets for a short time before deciding whether to forward or drop them, which allows time for a new connection message from a peer to arrive.

While adding more peers to a cluster increases the connection synchronization traffic, the added processing power all but negates that increase. You can have multiple peer clusters, and if you are cognoscente of traffic patterns to and from each cluster, you can create an effective cluster strategy. The only limitation is that a ProxySG can only be a peer in one cluster.

The Blue Coat load balancing solution is discussed in greater detail in earlier sections of this chapter.

## About ADN Transparent Tunnel Load Balancing

TCP connection forwarding is a critical component of the Blue Coat ADN transparent tunnel load balancing deployment. Achieving efficient load balancing is difficult when ADN transparent tunneling is employed and an external load balancer is distributing requests to multiple ProxySG appliances.

A user-visible performance degradation occurs if the router, switch, or load balancer sends traffic to a ProxySG that has not been servicing a particular client long enough to build up substantial byte caching dictionary, thus the compression ratio is low. When the ProxySG appliances connected to the routing device belong to the same peer cluster and connection forwarding is enabled, the ADN managers on each appliance know which of their peers has the best byte caching dictionary with the client and forwards the request. This is illustrated in the following diagram.

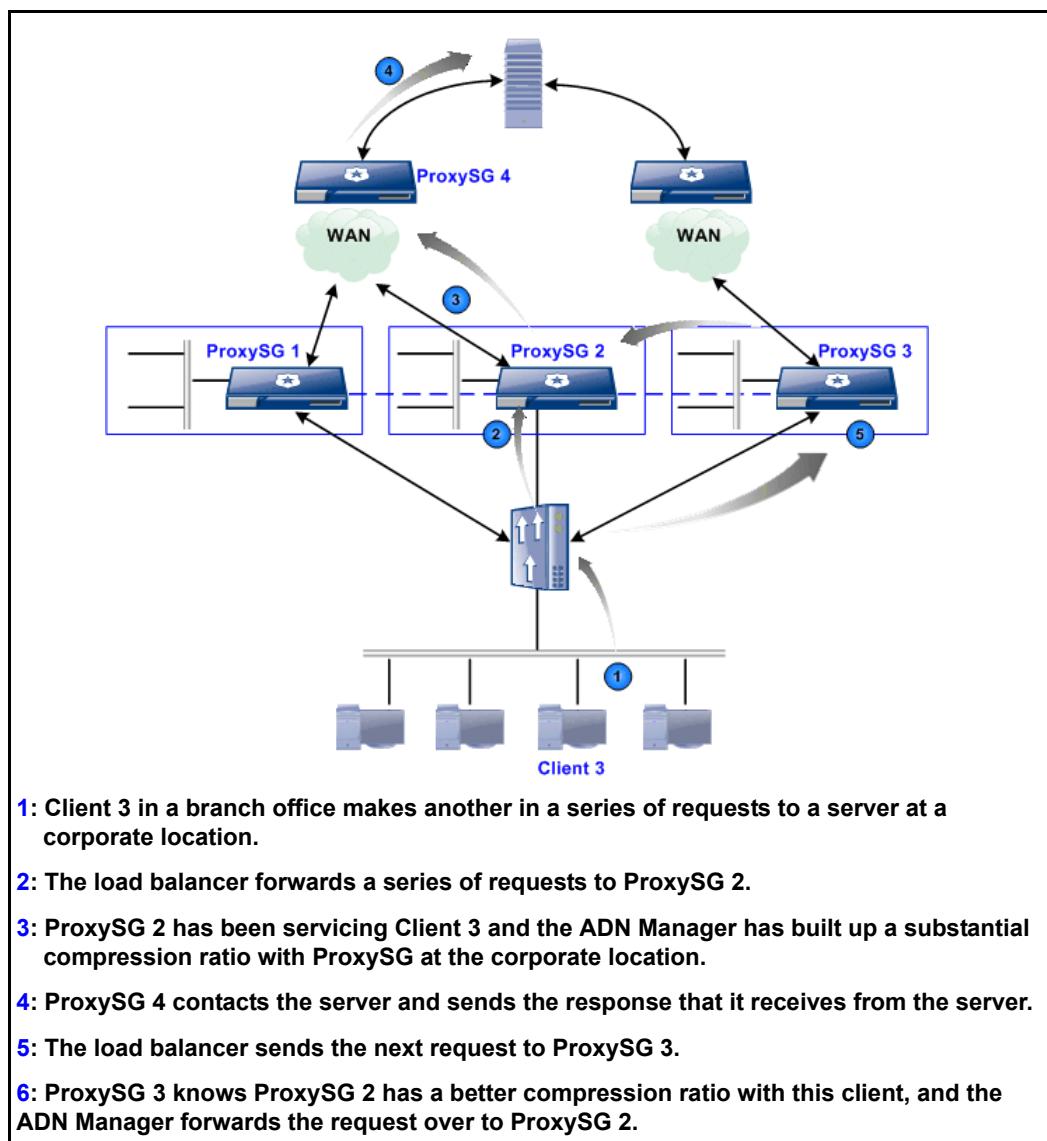


Figure 4–4 ADN Transparent Tunnel load balancing with Connection Forwarding enabled

Load balancing is based on the IP address of the remote ADN peer. This assures that all the traffic from a particular ADN peer to the local ADN cluster always goes to a specific local ProxySG, thus eliminating the inefficiency of keeping dictionaries for that remote peer on more than one local ProxySG.

The Blue Coat ADN solution is discussed in greater detail in [Chapter 2: "Configuring an Application Delivery Network" on page 17](#).

## TCP Configuration Forwarding Deployment Notes

When configuring your network for TCP connection forwarding, consider the following:

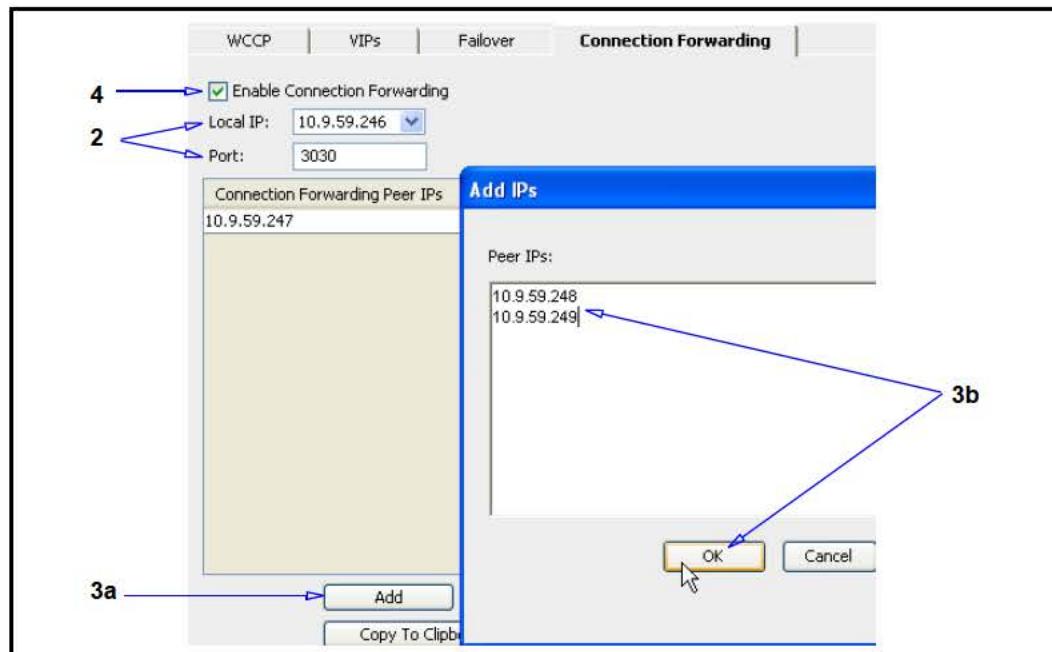
- Peers can be added to clusters at any time without affecting the performance of the other peers. A ProxySG that joins a peer cluster immediately contacts every other peer in the cluster. Likewise, a peer can leave a cluster at anytime. This might be a manual drop or a forced drop because of a hardware or software failure. If this happens, the other peers in the cluster continue to process connection forwarding requests.
- Connections between peers are not encrypted and not authenticated. If you do not assign the correct local IP address on a ProxySG with multiple IP addresses, traffic sent peer to peer might be routed through the Internet, not the intranet, exposing your company-sensitive data.
- The peering port—the connection between ProxySG connection forwarding peers—cannot be configured with bypass services. This means a ProxySG cannot be deployed in transparent mode between two ProxySG appliances that are peers.
- The ProxySG does not enforce a maximum number of appliances a peer cluster supports, but currently the deployment is designed to function with up to 20 ProxySG appliances.
- Because TCP connection forwarding must function across different network segments, employing multicasting, even among ProxySG peers on the same network, is not supported.
- There might be a slight overall performance impact from enabling TCP connection forwarding, especially in deployments where traffic is largely already being routed to the correct ProxySG. If a substantial amount of traffic requires forwarding, the performance hit is equitable to processing the same amount of bridging traffic.

## Configuring TCP Connection Forwarding

As described in the previous concept sections, enabling TCP connection forwarding provides one component to a larger deployment solution. After you have deployed Blue Coat appliances into the network topography that best fits your enterprise requirements, enable TCP connection forwarding on each Blue Coat appliance that is to belong to the peering cluster, and add the IP address of the other peers. The peer lists on *all* of the cluster members must be the same, and a ProxySG cannot have a different local peer IP address than what is listed in another peers list. A peer list can contain only one local IP address.

**To enable TCP Connection Forwarding:**

1. Select **Configuration > Network > Advanced > Connection Forwarding**.



2. From the **Local IP** drop-down list, select the IP address that is routing traffic to this ProxySG.

Specify the port number (the default is **3030**) that the ProxySG uses to communicate with all peers, which includes listening and sending out connection forwarding cluster control messages to all peers in the group. *All* peers in the group must use the same port number (when connection forwarding is enabled, you cannot change the port number).

3. Add the cluster peers:

- a. Click **Add**.
- b. In the **Peer IPs** field, enter the IP addresses of the other peers in the cluster that this ProxySG is to communicate connection requests with; click **OK**.

4. Select **Enable Connection Forwarding**.

5. Click **Apply**.

This ProxySG joins the peer cluster and immediately begins communicating with its peers.

### *Copying Peers to Another ProxySG in the Cluster*

If you have a larger cluster that contains several peer IP addresses, select all of the IP addresses in the **Connection Forwarding Peer IPs** list and click **Copy To Clipboard**; this action includes the local IP address of the peer you are copying from, and it will be correctly added as a remote peer IP address on the next appliance. When you configure connection forwarding on the next appliance, click **Paste From**

**Clipboard** to paste the list of peers, and click **Apply**. Whichever peer IP address is the new appliance's local IP address is pulled out of the list and used as the local IP address on the new appliance. If a local IP address is not found or if more than one local IP address is found, the paste fails with an error.

## *Removing a Peer*

A network change or other event might require you to remove a peer from the cluster. Highlight a peer IP address and click **Remove**. The peer connection is terminated and all connections associated with the peer are removed from the local system.

---

**Note:** A CLI command is available that allows you to disable a peer, which terminates the communication with other peers, but does not remove the peer from the cluster. See the next section.

---

## *Related CLI Syntax to Configure TCP Connection Forwarding*

- To enter configuration mode:

```
SGOS# (config) connection-forwarding
```

- The following subcommands are available:

```
SGOS# (config connection forwarding) add ip_address
SGOS# (config connection forwarding) port number
SGOS# (config connection forwarding) [enable | disable]
SGOS# (config connection forwarding) [clear | remove ip_address]
SGOS# (config connection forwarding) [view | exit]
```

- The following configuration and statistics commands are available:

```
SGOS# show connection-forwarding configuration
SGOS# show connection-forwarding statistics
```

## *Chapter 5: Bandwidth Management*

Bandwidth management (BWM) allows you to classify, control, and limit the amount of bandwidth used by different classes of network traffic flowing into or out of the ProxySG appliance. Network resource sharing (or link sharing) is accomplished by using a bandwidth-management hierarchy where multiple traffic classes share available bandwidth in a controlled manner.

---

**Note:** The ProxySG does not attempt to reserve any bandwidth on the network links that it is attached to or otherwise guarantee that the available bandwidth on the network can sustain any of the bandwidth limits which have been configured on it. The ProxySG can only shape the various traffic flows passing through it, and prioritize some flows over others according to its configuration.

---

By managing the bandwidth of specified classes of network traffic, you can accomplish the following:

- Guarantee that certain traffic classes receive a specified minimum amount of available bandwidth.
- Limit certain traffic classes to a specified maximum amount of bandwidth.
- Prioritize certain traffic classes to determine which classes have priority over available bandwidth.

### *Topics in this Chapter*

This chapter includes information about the following topics:

- "[Bandwidth Management Overview](#)" on page 93
- "[Configuring Bandwidth Allocation](#)" on page 98
- "[Bandwidth Management Statistics](#)" on page 102
- "[Using Policy to Manage Bandwidth](#)" on page 104

## **Bandwidth Management Overview**

To manage the bandwidth of different types of traffic that flow into, out of, or through the ProxySG, you must do the following:

- Determine how many bandwidth classes you need and how to configure them to accomplish your bandwidth management goals. This includes determining the structure of one or more bandwidth hierarchies if you want to use priority levels to manage bandwidth.
- Create and configure bandwidth classes accordingly.
- Create policy rules using those bandwidth classes to identify and classify the traffic in the ProxySG.

- Enable bandwidth management.

Bandwidth management configuration consists of two areas:

- Bandwidth allocation

This is the process of creating and configuring bandwidth classes and placing them into a bandwidth class hierarchy. This process can be done using either the Management Console or the CLI.

- Flow classification

This is the process of classifying traffic flows into bandwidth management classes using policy rules. Policy rules can classify flows based on any criteria testable by policy. You can create policy rules using either the Visual Policy Manager (VPM), which is accessible through the Management Console, or by composing Content Policy Language (CPL).

---

**Note:** For more information about using VPM to create policy rules, refer to *Volume 6: The Visual Policy Manager and Advanced Policy*. For information about composing CPL, refer to *Volume 10: Content Policy Language Guide*.

---

## Allocating Bandwidth

The process of defining bandwidth classes and grouping them into a bandwidth class hierarchy is called *bandwidth allocation*. Bandwidth allocation is based on:

- the placement of classes in a hierarchy (the parent/child relationships).
- the priority level of classes in the same hierarchy.
- the minimum and/or maximum bandwidth setting of each class.

For example deployment scenarios, see "["Bandwidth Allocation and VPM Examples"](#) on page 106.

## Bandwidth Classes

To define a bandwidth class, you create the class, giving it a name meaningful to the purpose for which you are creating it. You can configure the class as you create it or edit it later. The available configuration settings are:

- Parent: Used to create a bandwidth-management hierarchy.
- Minimum Bandwidth: Minimum amount of bandwidth guaranteed for traffic in this class.
- Maximum Bandwidth: Maximum amount of bandwidth allowed for traffic in this class.
- Priority: Relative priority level among classes in the same hierarchy.

### *Parent Class*

A parent class is a class that has children. When you create or configure a bandwidth class, you can specify another class to be its parent (the parent class must already exist). Both classes are now part of the same bandwidth-class hierarchy, and so are subject to the hierarchy rules (see "["Class Hierarchy Rules and Restrictions"](#) on page 96).

### *Minimum Bandwidth*

Setting a minimum for a bandwidth class guarantees that class receives at least that amount of bandwidth, if the bandwidth is available. If multiple hierarchies are competing for the same available bandwidth, or if the available bandwidth is not enough to cover the minimum, bandwidth management is not able to guarantee the minimums defined for each class.

---

**Note:** The ProxySG does not attempt to reserve any bandwidth on the network links that it is attached to or otherwise guarantee that the available bandwidth on the network can be used to satisfy bandwidth class minimums. The ProxySG can only shape the various traffic flows passing through it, and prioritize some flows over others according to its configuration.

---

### *Maximum Bandwidth*

Setting a maximum for a bandwidth class puts a limit on how much bandwidth is available to that class. It does not matter how much bandwidth is available; a class can never receive more bandwidth than its maximum.

To prevent a bandwidth class from using more than its maximum, the ProxySG inserts delays before sending packets associated with that class until the bandwidth used is no more than the specified maximum. This results in queues of packets (one per class) waiting to be sent. These queues allow the ProxySG to use priority settings to determine which packet is sent next. If no maximum bandwidth is set, every packet is sent as soon as it arrives, so no queue is built and nothing can be prioritized.

Unlike minimums and priority levels, the maximum-bandwidth setting can purposely slow down traffic. Unused bandwidth can go to waste with the maximum-bandwidth setting, while the minimum-bandwidth settings and priority levels always distributes any unused bandwidth as long as classes request it. However, priority levels are not meaningful without a maximum somewhere in the hierarchy. If a hierarchy has no maximums, any class in the hierarchy can request and receive any amount of bandwidth regardless of its priority level.

### *Priority*

When sharing excess bandwidth with classes in the same hierarchy, the class with the highest priority gets the first opportunity to use excess bandwidth. When the high-priority class uses all the bandwidth it needs or is allowed, the next class gets to use the bandwidth, if any remains. If two classes in the same hierarchy have the same priority, then excess bandwidth is shared in proportion to their maximum bandwidth setting.

## Class Hierarchies

Bandwidth classes can be grouped together to form a class hierarchy. Creating a bandwidth *class* allows you to allocate a certain portion of the available bandwidth to a particular type of traffic. Putting that class into a bandwidth-class *hierarchy* with other bandwidth classes allows you to specify the relationship among various bandwidth classes for sharing available (unused) bandwidth.

The way bandwidth classes are grouped into the bandwidth hierarchy determines how they share available bandwidth among themselves. You create a hierarchy so that a set of traffic classes can share unused bandwidth. The hierarchy starts with a bandwidth class you create to be the top-level parent. Then you can create other bandwidth classes to be the children of the parent class, and those children can have children of their own.

To manage the bandwidth for any of these classes, some parent in the hierarchy must have a maximum bandwidth setting. The classes below that parent can then be configured with minimums and priority levels to determine how unused bandwidth is shared among them. If none of the higher level classes have a maximum bandwidth value set, then bandwidth flows from the parent to the child classes without limit. In that case, minimums and priority levels are meaningless, because all classes get all the bandwidth they need at all times. The bandwidth, in other words, is not being managed.

### *Class Hierarchy Rules and Restrictions*

Certain rules and restrictions must be followed to create a valid BWM class hierarchy:

- Each traffic flow can only belong to one bandwidth management class.  
You can classify multiple flows into the same bandwidth class, but any given flow is always counted as belonging to a single class. If multiple policy rules match a single flow and attempt to classify it into multiple bandwidth classes, the last classification done by policy applies.
- When a flow is classified as belonging to a bandwidth class, all packets belonging to that flow are counted against that bandwidth class.
- If a minimum bandwidth is configured for a parent class, it must be greater than or equal to the sum of the minimum bandwidths of its children.
- If a maximum bandwidth is configured for a parent class, it must be greater than or equal to the largest maximum bandwidth set on any of its children. It must also be greater than the sum of the minimum bandwidths of all of its children.
- The minimum bandwidth available to traffic directly classified to a parent class is equal to its assigned minimum bandwidth minus the minimum bandwidths of its children. For example, if a parent class has a minimum bandwidth of 600 kbps and each of its two children have minimums of 300 kbps, the minimum bandwidth available to traffic directly classified into the parent class is 0.

## Relationship among Minimum, Maximum, and Priority Values

Maximum values can be used to manage bandwidth for classes whether or not they are placed into a hierarchy. This is not true for minimums and priorities, which can only manage bandwidth for classes that are placed into a hierarchy. Additionally, a hierarchy must have a maximum configured on a high-level parent class for the minimums and priorities to manage bandwidth.

This is because, without a maximum, bandwidth goes to classes without limit and there is no point to setting priorities or minimum guarantees. Bandwidth cannot be managed unless a maximum limit is set somewhere in the hierarchy.

When a hierarchy has a maximum on the top-level parent and minimums, maximums and priorities placed on the classes related to that parent, the following conditions apply:

- If classes in a hierarchy have minimums, the first thing that happens with available bandwidth is that all the minimum requests are satisfied. If the amount requested is less than the minimum for any class, it receives the entire amount, and its priority level does not matter.

Even though a minimum is considered to be a guaranteed amount of bandwidth, satisfying minimums is dependent on the parent being able to receive its own maximum, which is not guaranteed.

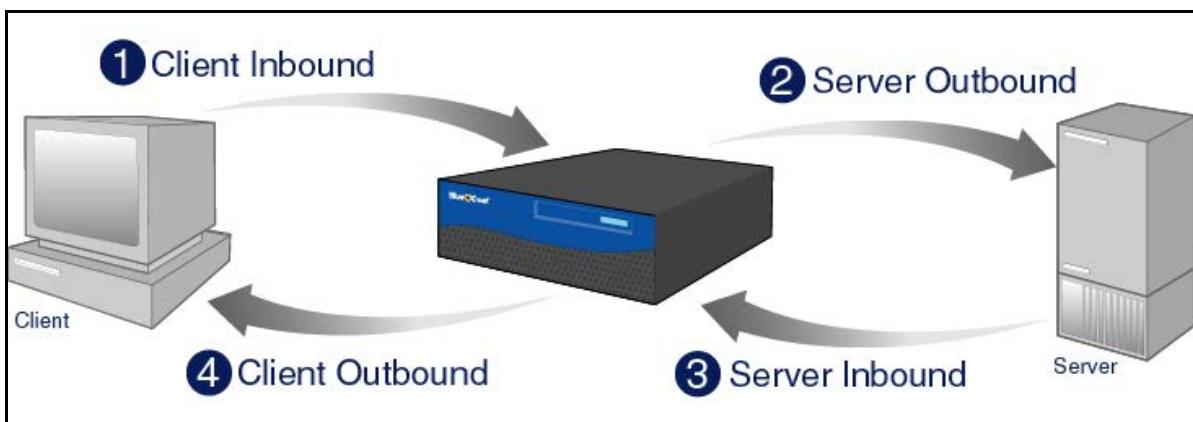
- When all of the classes in a hierarchy have had their minimums satisfied, any additional requests for bandwidth must be obtained. When a class requests more than its minimum, it must obtain bandwidth from its parent or one of its siblings. If, however, a class requests more than its maximum, that request is denied—no class with a specified maximum is ever allowed more than that amount.
- If a class does not have a minimum specified, it must obtain all of the bandwidth it requests from its parents or siblings, and it cannot receive any bandwidth unless all of the minimums specified in the other classes in its hierarchy are satisfied.
- Classes obtain bandwidth from their parents or siblings based on their priority levels—the highest priority class gets to obtain what it needs first, until either its entire requested bandwidth is satisfied or until it reaches its maximum. After that, the next highest priority class gets to obtain bandwidth, and this continues until either all the classes have obtained what they can or until the maximum bandwidth available to the parent has been reached. The amount available to the parent can sometimes be less than its maximum, because the parent must also participate in obtaining bandwidth in this way with its own siblings and/or parent if it is not a top-level class.

## Flow Classification

You can classify flows to BWM classes by writing policy rules that specify the bandwidth class that a particular traffic flow belongs to. A typical transaction has four traffic flows:

1. Client inbound—Traffic flowing into the ProxySG from a client (the entity sending a request, such as a client at a remote office linked to the appliance).
2. Server outbound—Traffic flowing out of the ProxySG to a server.
3. Server inbound—Traffic flowing back into the appliance from a server (the entity responding to the request).
4. Client outbound—Traffic flowing back out of the appliance to a client.

The figure below shows the traffic flows between a client and server through the ProxySG.



Some types of traffic can flow in all four directions. The following example describes different scenarios that you might see with an HTTP request. A client sends a GET to the ProxySG (client inbound). The appliance then forwards this GET to a server (server outbound). The server responds to the ProxySG with the appropriate content (server inbound), and then the appliance delivers this content to the client (client outbound).

Policy allows you to configure different classes for each of the four traffic flows. See ["Using Policy to Manage Bandwidth"](#) on page 104 for information about classifying traffic flows with policy.

## Configuring Bandwidth Allocation

You can use either the Management Console or the CLI to do the following tasks:

- Enable or disable bandwidth management.
- Create and configure bandwidth classes.
- Delete bandwidth classes.
- View bandwidth management class configurations.

**Note:** If you plan to manage the bandwidth of streaming media protocols (Windows Media, Real Media, or QuickTime), you might want to use the streaming features instead of the bandwidth management features described in this section. For most circumstances, Blue Coat recommends that you use the streaming features to control streaming bandwidth rather than the bandwidth management features. For information about the differences between these two methods, refer to *Volume 3: Web Communication Proxies*.

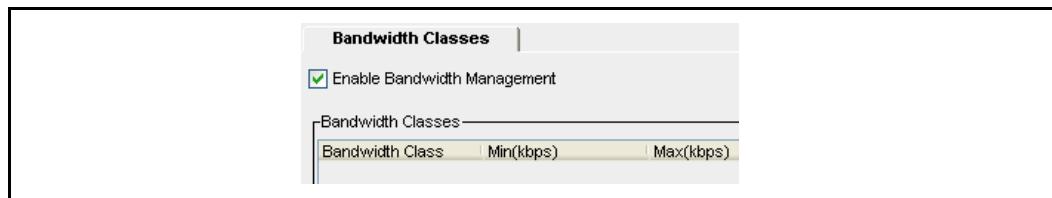
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## *Enabling Bandwidth Management*

The following procedures explain how to enable or disable bandwidth management.

### **To enable bandwidth management:**

1. Select **Configuration > Bandwidth Management > BWM Classes > Bandwidth Classes**.



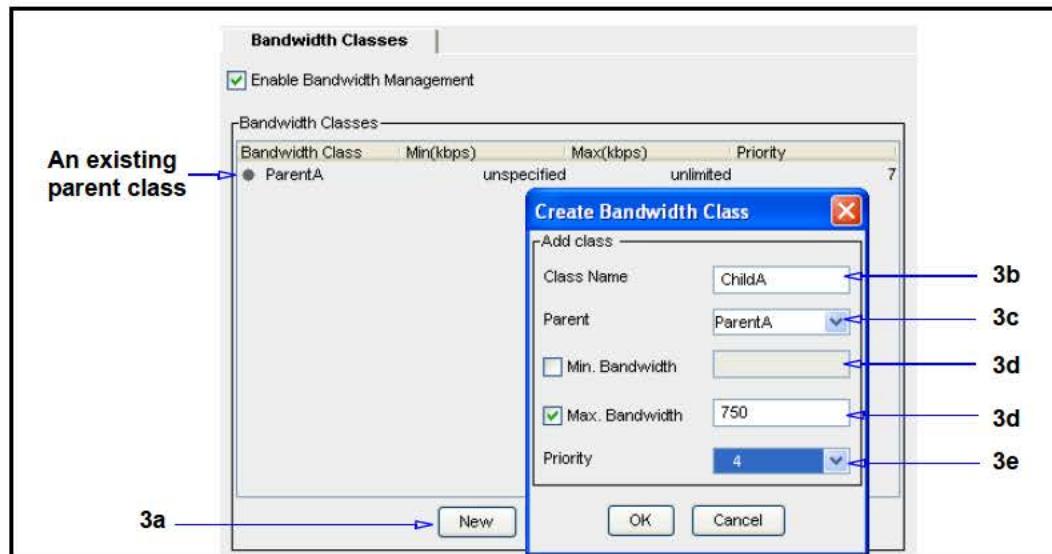
2. Select **Enable Bandwidth Management**.
3. Click **Apply**.

## *Creating, Editing, and Deleting Bandwidth Classes*

The following procedure details how to create bandwidth management class.

### **To create a BWM class:**

1. Select **Configuration > Bandwidth Management > BWM Classes > Bandwidth Classes**.



2. Create a new BWM class,
  - a. Click **New**. The Create Bandwidth Class dialog displays.
  - b. **Class name:** Assign a meaningful name for this class. The name can be up to 64 characters long; spaces are not allowed.
  - c. **Parent:** (Optional) To assign the class as a child of another parent class in the bandwidth class hierarchy, select an existing parent class from the drop-down list.
  - d. **Min. Bandwidth:** (Optional) Select **Min. Bandwidth** and enter a minimum bandwidth value in the field (kilobits per second (kbps)). The default minimum bandwidth setting is *unspecified*, meaning the class is not guaranteed a minimum amount of bandwidth.
  - e. **Max. Bandwidth:** (Optional) Select **Max. Bandwidth** and enter a maximum bandwidth value in the field. The default maximum bandwidth setting is *unlimited*, meaning the class is not limited to a maximum bandwidth value by this setting.
  - f. **Priority:** Select a priority level for this class from the **Priority** drop-down list—0 is the lowest priority level and 7 is the highest. The default priority is 0.
  - g. Click **OK** to close the dialog.
3. Click **Apply**.

Bandwidth Classes			
Bandwidth Class	Min(kbps)	Max(kbps)	Priority
ParentA	unspecified	unlimited	7
ChildA	unspecified	750	4

Figure 5–1 A child bandwidth management class added to a parent class.

After you add a child class to a parent class, the parent class is denoted by a folder icon. Double-click the folder to view all of the child classes under that parent.

**To edit a BWM class:**

1. Select **Configuration > Bandwidth Management > BWM Classes > Bandwidth Classes**.
2. Highlight the class and click **Edit**.
3. Edit the fields as appropriate.

**To delete a BWM class:**

---

**Note:** You cannot delete a class that is referenced by another class or by the currently installed policy. For instance, you cannot delete a class that is the parent of another class or one that is used in an installed policy rule. If you attempt to do so, a message displays explaining why this class cannot be deleted.

---

1. Select **Configuration > Bandwidth Management > BWM Classes > Bandwidth Classes**.
2. Highlight the class to delete and **Delete**.
3. Click **Yes** to delete the class.
4. Click **Apply**.

## Viewing Bandwidth Management Configurations

You can view the following bandwidth class configurations:

- Level in the hierarchy (parent/child relationships)
- Priority level
- Maximum bandwidth value
- Minimum bandwidth value

**To view BWM configuration:**

1. Select **Configuration > Bandwidth Management > BWM Classes > Bandwidth Classes**.  
On this tab, you can view a class's minimum, maximum and priority value. Top level classes are visible—classes with children have a folder icon on the left.
2. To view the configurations of the child class(es) of a class, double-click the folder icon.

The child classes become visible. A second double-click closes the folder.

## Related CLI Syntax to Configure Bandwidth Management

- To enter configuration mode:  

```
SGOS# (config) bandwidth-management
```
- The following subcommands are available:  

```
SGOS# (config bandwidth-management) enable | disable  
SGOS# (config bandwidth-management) create | delete bwm_class
```
- To enter edit mode:  

```
SGOS# (config bandwidth-management) edit bwm_class
```

- The following subcommands are available:

```
SGOS#(config bw-class bwm_class) min-bandwidth minimum_in_kbps
SGOS#(config bw-class bwm_class) max-bandwidth maximum_in_kbps
SGOS#(config bw-class bwm_class) priority value_from_0_to_7
bandwidth-management bwm_class) no {min-bandwidth | max-bandwidth}
SGOS#(config bandwidth-management bwm_class) parent parent_class_name
-or-
SGOS#(config bandwidth-management bwm_class) no parent
SGOS#(config bandwidth-management bwm_class) view
```

## Bandwidth Management Statistics

The bandwidth management statistics tabs (Current Class Statistics and Total Class Statistics) display the current packet rate and total number of packets served, the current bandwidth rate, and the total number of bytes served and packets dropped.

### *Current Class Statistics Tab*

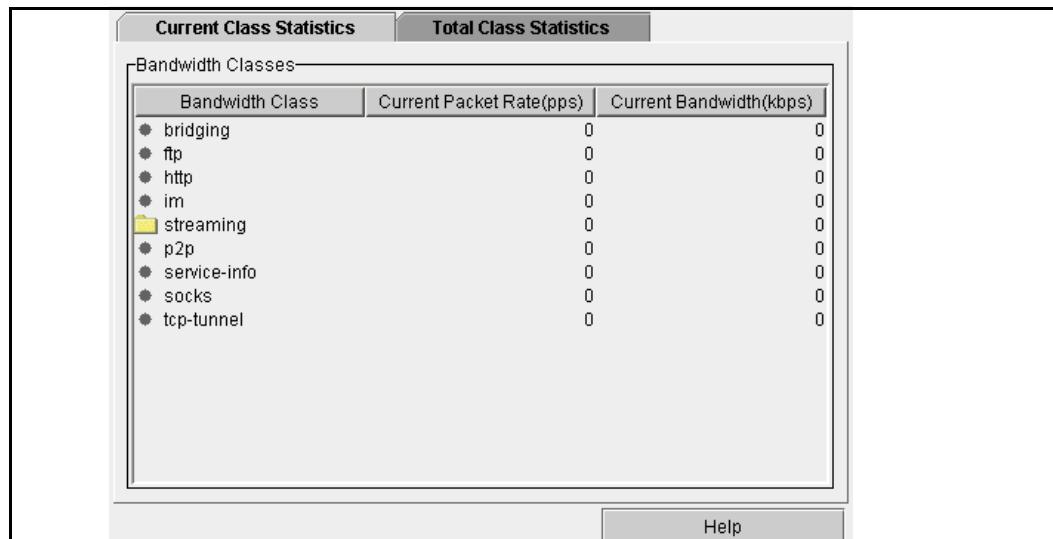
The **Current Class Statistics** tab displays the following information for each bandwidth class:

- **Current Packet Rate:** current packets-per-second (pps) value.
- **Current Bandwidth:** current bandwidth in kilobits per second (Kbps).

#### To view current bandwidth management class statistics:

1. Select **Statistics > Bandwidth Management > Current Class Statistics**.

The high level bandwidth classes and their statistics are visible.



The screenshot shows a software interface for viewing bandwidth management statistics. At the top, there are two tabs: 'Current Class Statistics' (which is selected) and 'Total Class Statistics'. Below the tabs is a section titled 'Bandwidth Classes-' containing a table. The table has three columns: 'Bandwidth Class', 'Current Packet Rate(pps)', and 'Current Bandwidth(kbps)'. The data in the table is as follows:

Bandwidth Class	Current Packet Rate(pps)	Current Bandwidth(kbps)
bridging	0	0
ftp	0	0
http	0	0
im	0	0
streaming	0	0
p2p	0	0
service-info	0	0
socks	0	0
tcp-tunnel	0	0

At the bottom right of the table area is a 'Help' button.

2. To view the statistics of child bandwidth classes, double-click the folder icon of the parent class.

The child classes become visible. A second double-click closes the folder.

## Total Class Statistics Tab

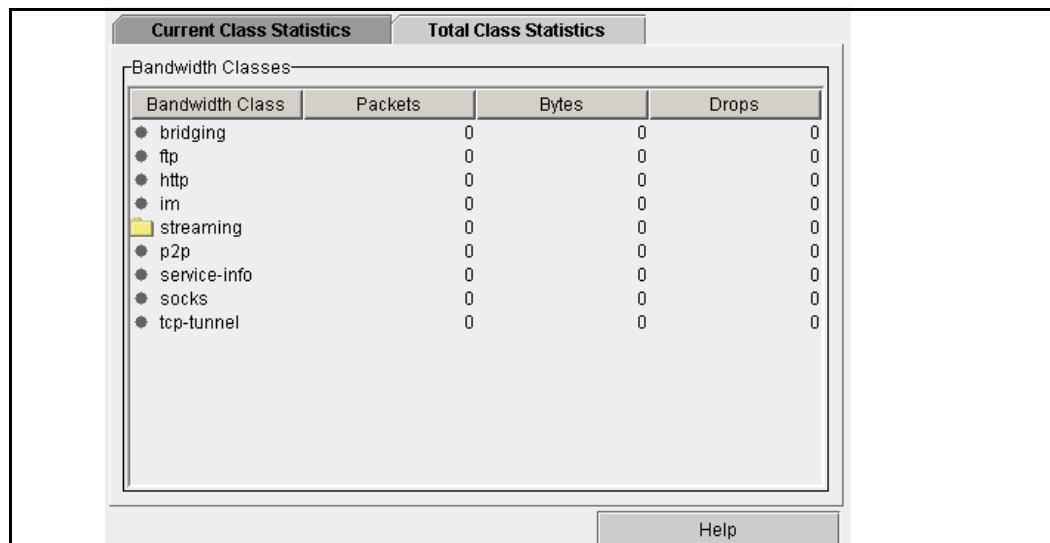
The **Total Class Statistics** tab displays the following information for each bandwidth class:

- Packets:** the total number of packets served.
- Bytes:** the total number of bytes served.
- Drops:** the total number of packets dropped.

**To view total bandwidth management class statistics:**

1. Select **Statistics > Bandwidth Management > Total Class Statistics**.

The high level bandwidth classes and their statistics are visible.



The screenshot shows a software interface with a title bar "Total Class Statistics". Below it is a table titled "Bandwidth Classes" with four columns: "Bandwidth Class", "Packets", "Bytes", and "Drops". The table lists several bandwidth classes, some of which have a folder icon indicating they have child classes. All listed classes have zero values for Packets, Bytes, and Drops.

Bandwidth Class	Packets	Bytes	Drops
bridging	0	0	0
ftp	0	0	0
http	0	0	0
im	0	0	0
streaming	0	0	0
p2p	0	0	0
service-info	0	0	0
socks	0	0	0
tcp-tunnel	0	0	0

2. To view the statistics of child bandwidth classes, double-click the folder icon of the parent class. A second double-click closes the folder.

## Bandwidth Management Statistics in the CLI

**To view bandwidth management statistics:**

1. To view all bandwidth management statistics, enter the following commands at the prompt:

```
SGOS# (config) bandwidth-management
SGOS# (config bandwidth-management) view statistics
```

2. To view the BWM statistics for a specific class, enter the following command at the (config) command prompt:

```
SGOS# (config bandwidth-management) view statistics bwm_class
```

**Example**

```
SGOS# (config bandwidth-management) view statistics http
Class Name:          http
Parent:              <none>
Minimum Bandwidth:  unspecified
Maximum Bandwidth:  unlimited
Priority:           0
Total Bytes:         0 bytes
Total Packets:       0 pkts
Dropped Packets:    0 pkts
Current Bandwidth:  0 kbps
Current Packet Rate: 0 pps
Queue Length:        0 bytes
```

Parent	The class name of the parent of this class.
Minimum Bandwidth	The maximum bandwidth setting for this class.
Maximum Bandwidth	The minimum bandwidth setting for this class.
Priority	The priority level for this class.
Total Bytes	The total number of bytes served.
Total Packets	The total number of packets served.
Dropped Packets	Total number of packets dropped (packets in the queue that are dropped because the queue length is reached).
Current Bandwidth	Current bandwidth value (in kilobits per second).
Current Packet Rate	Current packets-per-second value.
Queue Length	Maximum length allowed for the queue of packets that lack available bandwidth but are waiting for bandwidth to become available.

**To clear bandwidth management statistics:**

1. To clear bandwidth management statistics for all bandwidth management classes, enter the following command at the prompt:

```
SGOS# clear-statistics bandwidth-management
```

2. To clear bandwidth management statistics for a particular class, enter the following command at the prompt:

```
SGOS# clear-statistics bandwidth-management class bandwidth_class_name
```

## Using Policy to Manage Bandwidth

After creating and configuring bandwidth management classes, create policy rules to classify traffic flows using those classes. Each policy rule can only apply to one of four traffic flow types:

- Client inbound
- Client outbound
- Server inbound

- Server outbound

You can use the same bandwidth management classes in different policy rules; one class can manage bandwidth for several types of flows based on different criteria. However, any given flow is always counted as belonging to a single class. If multiple policy rules match a flow and try to classify it into multiple bandwidth classes, the last classification done by policy applies.

To manage the bandwidth classes you have created, you can either compose CPL (see "[CPL Support for Bandwidth Management](#)" on page 105 below) or you can use VPM (see "[VPM Support for Bandwidth Management](#)" on page 105). To see examples of policy using these methods, see "[Bandwidth Allocation and VPM Examples](#)" on page 106 or "[Policy Examples: CPL](#)" on page 113.

## *CPL Support for Bandwidth Management*

You must use policy to classify traffic flows to different bandwidth classes. Refer to *Volume 10: Content Policy Language Guide* for more information about writing and managing policy.

### **CPL Triggers**

You can use all of the CPL triggers for BWM classification (refer to *Volume 10: Content Policy Language Guide* for information about using CPL triggers). Basing a bandwidth decision on a trigger means that the decision does not take effect until after the information needed to make that decision becomes available. For example, if you set the CPL to trigger on the MIME type of the HTTP response, then the HTTP headers must be retrieved from the OCS before a classification can occur. The decision to retrieve those headers occurs too late to count any of the request bytes from the client or the bytes in the HTTP response headers. However, the decision affects the bytes in the body of the HTTP response and any bytes sent back to the client.

### **Supported CPL**

Bandwidth class can be set with policy on each of these four traffic flows:

- `limit_bandwidth.client.inbound(none | bwm_class)`
- `limit_bandwidth.client.outbound(none | bwm_class)`
- `limit_bandwidth.server.inbound(none | bwm_class)`
- `limit_bandwidth.server.outbound(none | bwm_class)`

If you set policy to `none`, the traffic is unclassified and is not to be bandwidth-managed.

## *VPM Support for Bandwidth Management*

You can manage bandwidth using VPM in the **Action** column of four policy layers: Web Access, DNS Access, Web Content, and Forwarding Layers. For more information about using VPM to manage bandwidth, refer to *Volume 6: The Visual Policy Manager and Advanced Policy*. For examples of bandwidth management scenarios using VPM, see "[Bandwidth Allocation and VPM Examples](#)" below.

## Bandwidth Allocation and VPM Examples

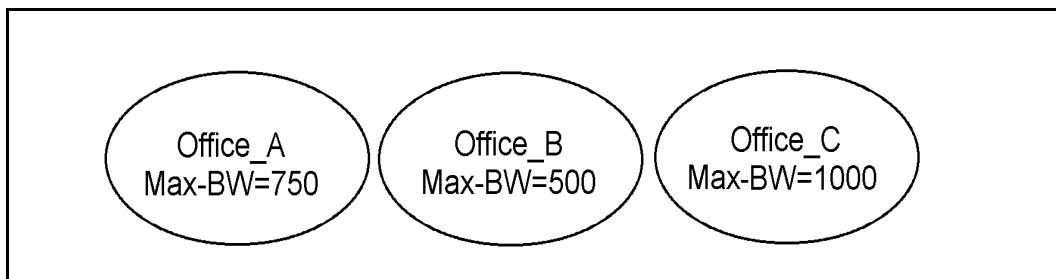
This section illustrates how to use the VPM to allocate bandwidth, arrange hierarchies, and create policy. It describes an example deployment scenario and the tasks an administrator must accomplish to manage the bandwidth for this deployment. For specific instructions about allocating bandwidth, see ["Configuring Bandwidth Allocation" on page 98](#). For examples of CPL bandwidth management tasks, see ["Policy Examples: CPL" on page 113](#).

### Task One: Bandwidth Allocation

The administrator is responsible for managing the bandwidth of three branch offices. He was told to ensure that each office uses no more than half of its total link bandwidth for Web and FTP traffic. The total link bandwidth of each office is as follows:

- Office A: 1.5 Mb
- Office B: 1 Mb
- Office C: 2 Mb

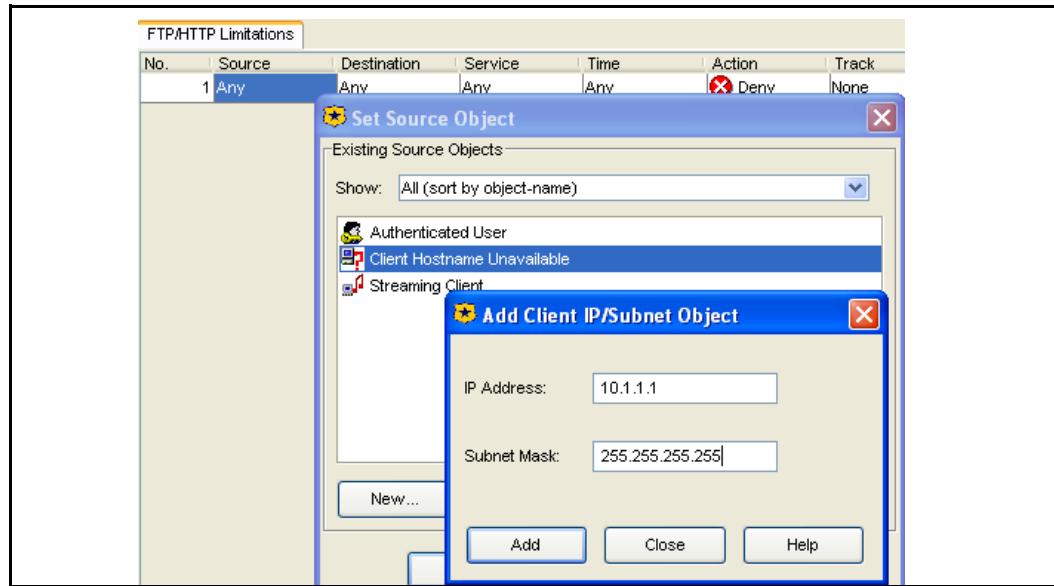
He creates one bandwidth class for each of the three offices and configures the maximum bandwidth to an amount equal to half of the total link bandwidth of each, as shown below. He also creates policy rules for each class, as described below in "Task One: VPM".



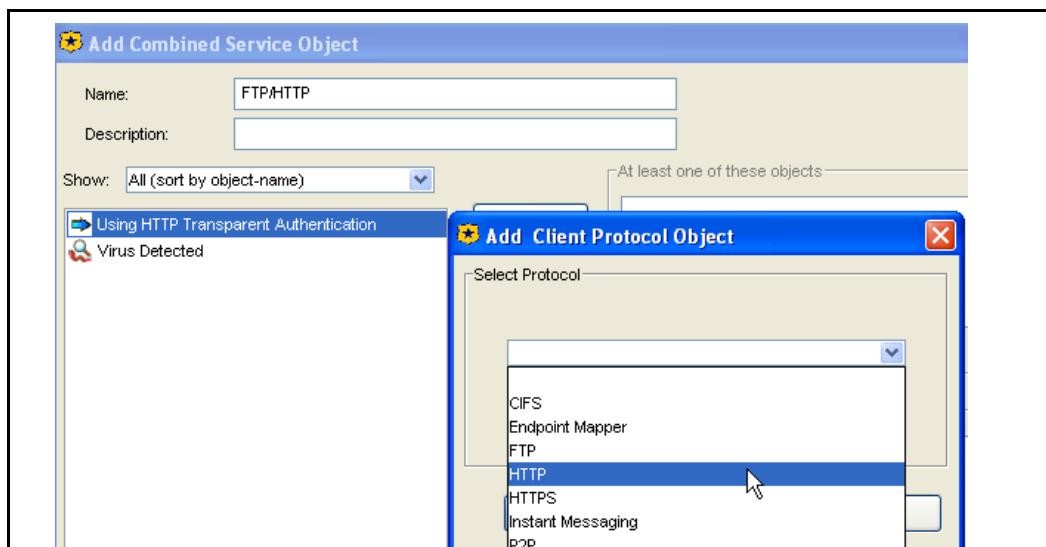
Each of the classes above has a maximum set at an amount equal to half of the total link bandwidth for each office. A hierarchy does not exist in this scenario.

### Task One: VPM

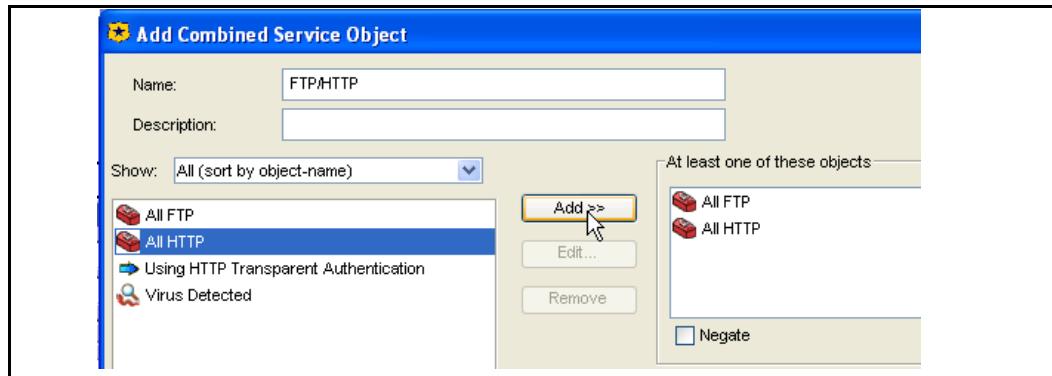
The administrator has created one bandwidth class for each office, setting a maximum bandwidth on each one equal to the half of the total link bandwidth of each. Now he must create policy rules to classify the traffic flows.



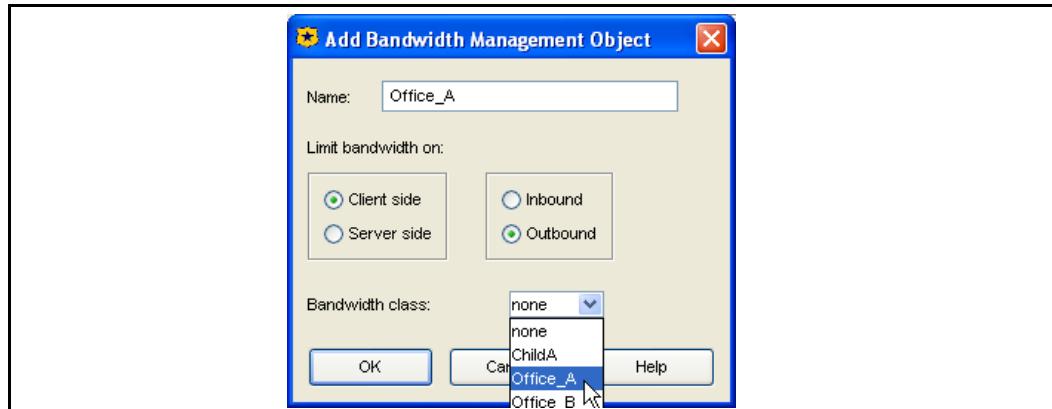
The administrator launches the VPM and creates a new Web Access Layer, naming it **FTP/HTTP Limitations**. He selects the **Client IP Address/Subnet** object in the **Source** column, filling in the IP address and mask of the subnet used by **Office\_A**.



He selects a **Combined Service Object** in the **Service** column, naming it **FTP/HTTP** and adding a **Client Protocol** for FTP and for HTTP.



He adds both protocols to the **At least one of these objects** field.



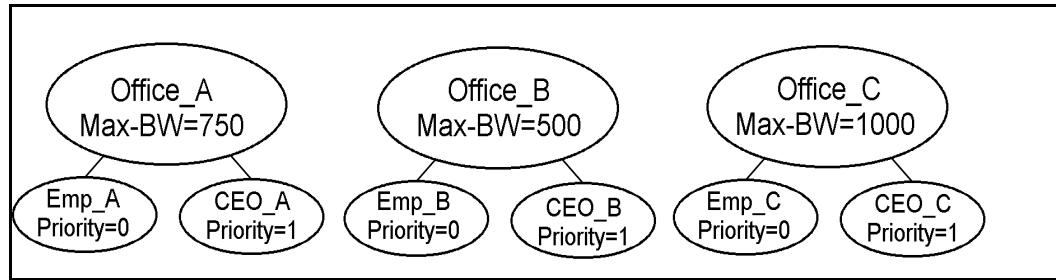
In the **Action** column, he selects **Manage Bandwidth**, naming it **Office\_A** and setting it to manage the bandwidth of **Office\_A** on the **Client side** in the **Outbound** direction.

He adds two more similar rules for the other two offices. He is able to reuse the same **Combined Service Object** in the **Service** column, but must add new objects specific to each office in the **Source** and **Action** columns. The order of the rules does not matter here, because each office, and thus each rule, is distinct because of its IP address/subnet mask configuration.

### *Task Two: Bandwidth Allocation*

A few days later, the administrator gets a visit from the CEO of his company. She wants him to fix it so that she can visit any of the branch offices without having her own Web and FTP access slowed down unnecessarily.

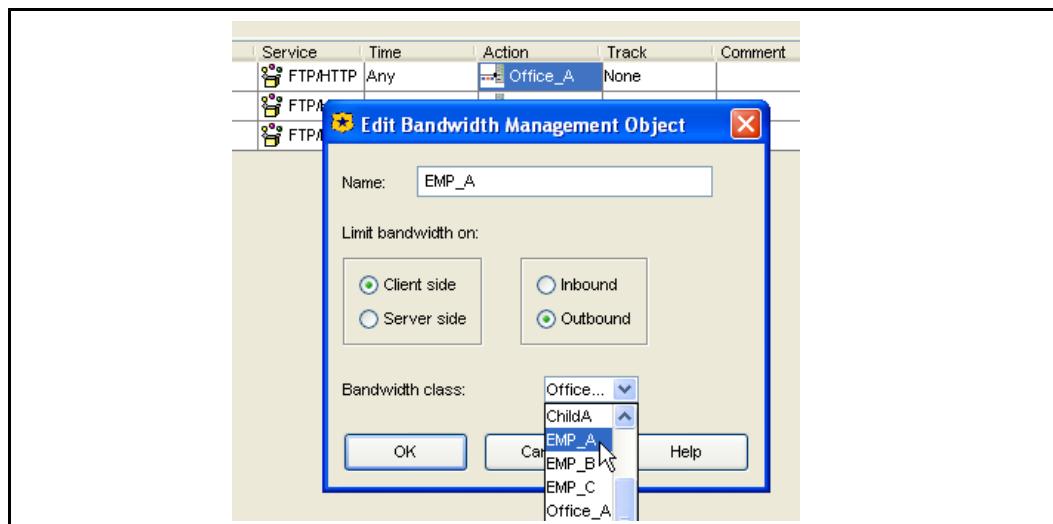
The administrator creates two more classes for each office: one for the CEO and another for everyone else (employees). He sets the parent class of each new class to the appropriate class that he created in Task One. For example, he creates **Emp\_A** and **CEO\_A** and sets their parent class to **Office\_A**. He also sets a priority level for each class: **0** (the lowest) for employees and **1** for the CEO. He then uses VPM to create additional policy rules for the new classes (see "[Task Two: VPM](#)" on page 109). This figure shows the hierarchical relationship among all of the classes.



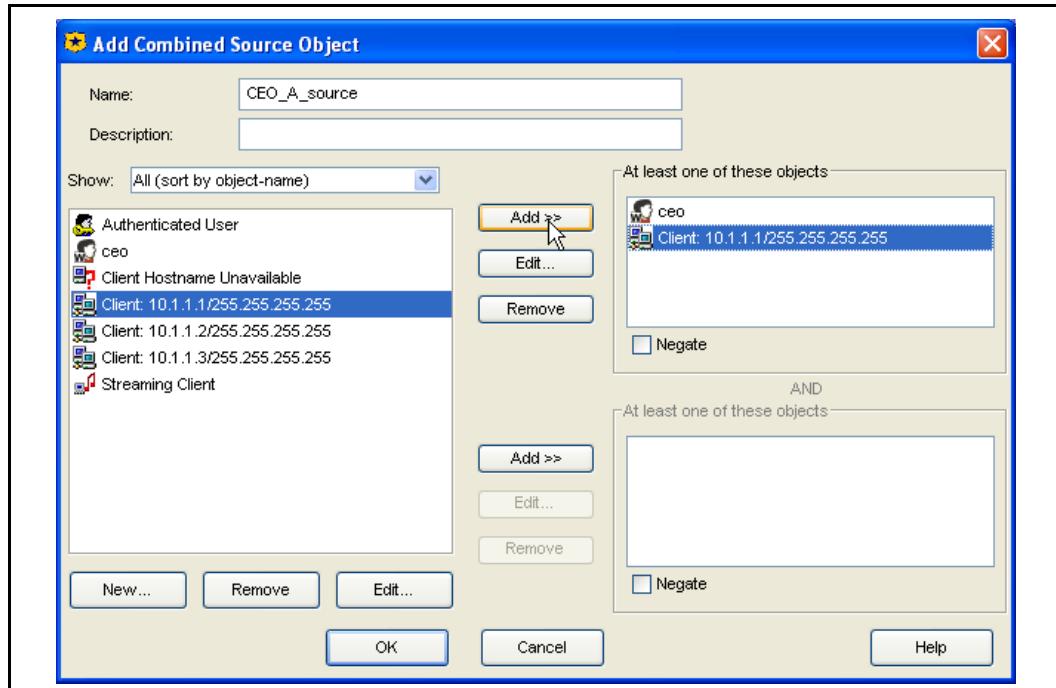
The administrator now has three separate hierarchies. In each one, bandwidth is limited by the configuration of the parent class, and the two child classes are prioritized to determine how they share any unused bandwidth. Because no minimums have been set, the highest priority class has the first opportunity to use all of the available bandwidth; whatever is left then goes to the next priority class. Priority levels are only effective among the classes in the same hierarchy. This means that the priority levels for the **Office\_A** hierarchy do not affect the classes in the **Office\_B** or **Office\_C** hierarchies.

### Task Two: VPM

Because the CEO wants to prioritize FTP and HTTP access among employees and herself, the administrator must create additional bandwidth classes (as described above in "Task Two: Bandwidth Allocation") and write policy rules to classify the traffic for the new classes.



He first edits each of the three VPM rules for the three offices. He edits each the Manage Bandwidth objects, changing the name of the objects to **EMP\_A**, **EMP\_B**, and **EMP\_C** and changes the bandwidth class to the corresponding employee class.



Next, he creates three more rules for the CEO, moving them above the first three rules. For the CEO rules, he selects the same combined **FTP/HTTP** object in the **Service** column; in the **Action** column, he selects a **Manage Bandwidth** object configured for client side/outbound, as before, but this time, he names the objects **CEO\_A**, **CEO\_B**, and **CEO\_C** and selects the corresponding CEO bandwidth class. In the **Source** column, he creates a **Combined Source Object**, naming it for the CEO. He combines the **Client IP/subnet** object already created for each office with a **User** object that he creates for the CEO.

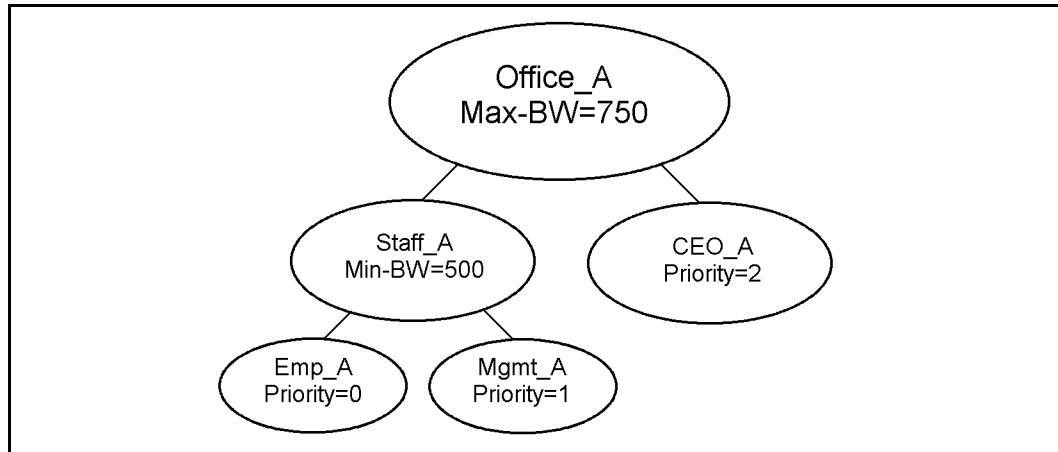
The administrator places all three CEO rules above the employee rules, because the ProxySG looks for the first rule that matches a given situation and ignores the remaining rules. If he had placed the CEO rules below the employee rules, the appliance would never get to the CEO rules because the CEO's Web surfing client IP address matches both the CEO rules and the employee rules, and the ProxySG would stop looking after the first match. With the CEO rules placed first, the appliance applies the CEO rules to the CEO's Web surfing, and an employee's Web surfing does not trigger the CEO rules and instead skips ahead to the appropriate employee rule.

### **Task Three: Bandwidth Allocation**

It soon becomes apparent that CEO visits are causing problems for the branch offices. At times, she uses all of the available bandwidth, resulting in decreased productivity throughout the office she visits. Also, management has complained that they have been given the same priority for FTP and HTTP traffic as regular employees, and they are requesting that they be given priority over employees for this type of traffic.

First, the administrator creates two new classes for each office. In this example, we look at the classes and configurations for the first office only. He creates a class called **Staff\_A** and sets a minimum bandwidth of 500 kbps on it. He also creates a

class called **Mgmt\_A**, setting the priority to 1 and the parent to **Staff\_A**. He edits the class **Emp\_A**, setting the parent to **Staff\_A**. Finally, he edits the class **CEO\_A**, changing the priority to 2. The resulting hierarchy is illustrated below. To see what the administrator did to the policy rules, see "[Task Three: VPM](#)" on page 111.



In the example illustrated above, employees and management combined are guaranteed a total of 500 kbps. The CEO's priority level has no effect until that minimum is satisfied. This means that the CEO can only use 250 kbps of bandwidth if the rest of the staff are using a total of 500 kbps. It also means that the CEO can use 750 kbps if no one else is using bandwidth at the time. In fact, any of the classes can use 750 kbps if the other classes use none.

Priority levels kick in after all of the minimums are satisfied. In this example, if the staff requests more than 500 kbps, they can only receive it if the CEO is using less than 250 kbps. Now notice that the minimum setting for the staff is set on the parent class, **Staff\_A**, and not on the child classes, **Emp\_A** or **Mgmt\_A**. This means that the two child classes, representing employees and management, share a minimum of 500 kbps. But they share it based on their priority levels. This means that management has priority over employees. The employees are only guaranteed a minimum if management is using less than 500 kbps.

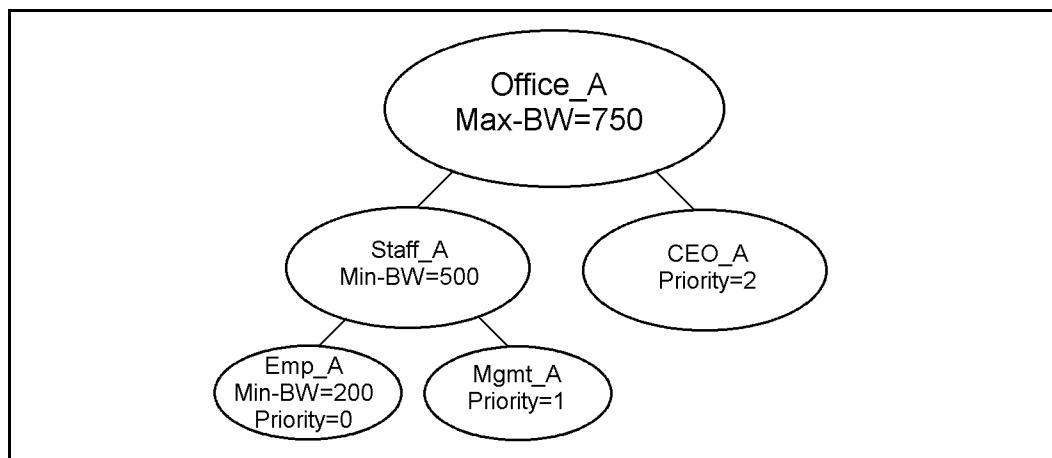
### **Task Three: VPM**

The administrator has added additional classes for each office and edited the existing employee classes, as described above in "[Task Three: Bandwidth Allocation](#)" on page 110. One of the new classes he added for each office is a parent class that does not have traffic classified to it; it was created to provide a minimum amount of bandwidth to its child classes. Not every class in the hierarchy has to have a traffic flow. This means that he needs to add just three more rules for the three new management classes. For the management rules, he selects the same combined **FTP/HTTP** object in the **Service** column; in the **Action** column, he selects a **Manage Bandwidth** object configured for client side/outbound with the bandwidth class one of the management classes (**Mgmt\_A**, **Mgmt\_B**, or **Mgmt\_C**). In the **Source** column, he creates a **Combined Source Object** containing the subnet object for the office and the **Group** object for management.

The management rules must go above the employee rules, although it does not matter where they are placed in relation to the CEO rules. This would not be true if the CEO was part of the same group as management, however. If that were true, the CEO rules would still need to go on top.

#### **Task Four: Bandwidth Allocation**

The administrator decided later that he needed to guarantee employees some bandwidth. He configures a minimum for the class **Emp\_A**, as illustrated below.



He decides to leave the minimum on the parent class **Staff\_A** and not to set a minimum for the class **Mgmt\_A**. This is okay, because the minimum of the parent class is available to its children if the parent class does not use all of it, and the only way that the CEO can get more than 250 kbps is if the employees and management combined use less than 500.

This last change does not require additional changes to policy; the administrator has added a minimum to a class that he has already classified for traffic using policy.

In the above scenario, the class called **Staff\_A** does not have traffic configured for it—it was created to guarantee bandwidth minimums for its child classes. However, if it were configured for traffic, it would have a practical minimum of 300 kbps. The practical minimum of a parent class is equal to its assigned minimum bandwidth minus the minimums of its children. In that case, if the parent class **Staff\_A** used 300 kbps and the child class **Emp\_A** used 200 kbps, the child class **Mgmt\_A** would not receive any bandwidth unless the class **CEO\_A** was using less than 250 kbps. Under those circumstances, the administrator probably also needs to create a minimum for management.

#### **Task Five: Bandwidth Allocation**

The CEO makes another request, this time for the main office, the one the administrator himself works from. This office uses the content filtering feature of the ProxySG to control the types of Web sites that employees are allowed to view. Although the office uses content filtering, access to sports sites is not restricted because the CEO is a big fan.

The administrator creates a bandwidth management class called **Sports** with a maximum bandwidth of 500 kbps and launches VPM to create policy for this class as described below.

### **Task Five: VPM**

To classify traffic for the **Sports** class, the administrator opens VPM, creates a Web Access Layer, and sets the **Destination** column to the **Category** object that includes sports viewing (content filtering is already set up in VPM). He sets the **Action** column to the **Manage Bandwidth** object, selecting **Server side/Inbound** and the **Sports** bandwidth class he created. After installing the policy and verifying that bandwidth management is enabled, he is finished.

### **Policy Examples: CPL**

The examples below are complete in themselves. The administrator uses CLI to create and configure bandwidth management classes and writes CPL to classify traffic flow for these classes. These examples do not make use of a bandwidth class hierarchy. For examples of hierarchies, see "["Bandwidth Allocation and VPM Examples"](#) on page 106.

#### **Example One: CPL**

In this example, the administrator of a college is asked to prevent college students from downloading MP3 files during peak hours, while still allowing the music department to download MP3 files at any time. The CPL triggers used are authentication and/or source subnet and MIME type. The action taken is to limit the total amount of bandwidth consumed by students to 40 kbps.

CLI commands:

```
SGOS#(config) bandwidth-management
SGOS#(config bandwidth-management) create mp3
SGOS#(config bandwidth-management) edit mp3
SGOS#(config bw-class mp3) max-bandwidth 40
```

CPL:

```
define condition student_mp3_weekday
    client_address=student_subnet response_header.Content-Type="audio/
mpeg" \
    weekday=1..5 hour=9..16
end condition

<proxy>
    condition=student_mp3_weekday limit_bandwidth.server.inbound(mp3)
```

#### **Example Two: CPL**

In this example, an administrator must restrict the amount of bandwidth used by HTTP POST requests for file uploads from clients to 2 Mbps. The CPL trigger used is request method, and the action taken is to throttle (limit) the amount of bandwidth used by client side posts by limiting inbound client side flows.

CLI:

```
SGOS#(config) bandwidth-management  
bandwidth-management) create http_post  
SGOS#(config bandwidth-management) edit http_post  
SGOS#(config bw-class http_post) max-bandwidth 2000
```

CPL:

```
define condition http_posts  
    http.method=POST  
end condition  
  
<proxy>  
    condition=http_posts limit_bandwidth.client.inbound(http_post)
```

### *Example Three: CPL*

In this example, the administrator of a remote site wants to limit the amount of bandwidth used to pre-populate the content from headquarters to 50 kbps during work hours. The CPL triggers used are current-time and pre-population transactions. The action taken is to limit the total amount of bandwidth consumed by pre-pop flows.

CLI:

```
SGOS#(config) bandwidth-management  
SGOS#(config bandwidth-management) create pre-pop  
SGOS#(config bandwidth-management) edit pre-pop  
SGOS#(config bw-class pre-pop) max-bandwidth 50
```

CPL:

```
define condition prepop_weekday  
    content_management=yes weekday=1..5 hour=9..16  
end condition  
  
<proxy>  
    condition=prepop_weekday limit_bandwidth.server.inbound(pre-pop)
```

## *Chapter 6: Authenticating a ProxySG*

This chapter discusses device authentication, which is a mechanism that allows devices to verify each others' identity; devices that are authenticated can be configured to trust only other authenticated devices.

---

**Note:** ProxySG authentication is always used in association with other SGOS features. For example, you can use appliance authentication with the ADN implementation of secure tunnels. The secure tunnels feature uses authentication, the process of verifying a device's identity, with authorization, the process of verifying the permissions that a device has. For information on secure tunnels and appliance authentication, see [Section E: "Securing the ADN Network" on page 46](#).

---

### Introduction

Device authentication is important in several situations:

- ❑ Securing the network. Devices that are authenticated have exchanged certification information, verified each others' identity and know which devices are trusted.
- ❑ Securing protocols. Many protocols require authentication at each end of the connection before they are considered secure.

### *Topics in this Chapter*

This chapter includes information about the following topics:

- ❑ "[ProxySG Appliance Overview](#)"
- ❑ "[Appliance Certificates and SSL Device Profiles](#)" on page 116
- ❑ "[Creating an SSL Device Profile for Device Authentication](#)" on page 122
- ❑ "[Related CLI Syntax to Manage Device Authentication](#)" on page 124
- ❑ "[Obtaining a Non Blue Coat Appliance Certificate](#)" on page 121
- ❑ "[Related CLI Syntax to Manage Device Authentication](#)" on page 124

### ProxySG Appliance Overview

The Blue Coat implementation allows devices to be authenticated without sending passwords over the network. Instead, a device is authenticated through certificates and SSL device profiles that reference the certificates. Both the profile and the referenced certificate are required for device authentication.

- ❑ Certificates: Certificates contain information about a specific device. Blue Coat runs an Internet-accessible Certificate Authority (CA) for the purpose of issuing appliance certificates to SGOS devices. You can also create your own appliance certificates.

- Profiles: A profile is a collection of information used for several purposes, such as device-to-device authentication or when the ProxySG is an SSL endpoint for non-proxy traffic.

Three built-in profiles exist: The profile for device authentication is called *bluecoat-appliance-certificate* and references the appliance certificate on your ProxySG. The profile can indicate whether the device has a certificate and if the certificates of other devices should be verified. You can create other profiles to change the default settings.

---

**Note:** Authenticating the ProxySG appliance and authenticating the ProxySG appliance server name are two different procedures that require two different certificates. For information on authenticating server names, refer to *Volume 4: Securing the Blue Coat ProxySG Appliance*.

---

## Appliance Certificates and SSL Device Profiles

In the Blue Coat implementation of device authentication, both an appliance certificate and an SSL device profile that references the appliance certificate keyring are required for device authentication to be successful. Each device to be authenticated must have an appliance certificate and a profile that references that certificate.

Note that device authentication does not take effect unless the SSL device profile is enabled; for example, if you use WAN optimization, you enable the profile on the **Configuration > ADN > General > Device Security** tab.

### About ProxySG Appliance Certificates

ProxySG appliances come with a cryptographic key that allows the system to be authenticated as an ProxySG appliance when an *appliance certificate* is obtained.

An appliance certificate is an X.509 certificate that contains the hardware serial number of a specific ProxySG as the CommonName (CN) in the subject field. This certificate then can be used to authenticate the ProxySG appliance whose hardware serial number is listed in the certificate. Information from the presented certificate is extracted and used as the *device ID*.

Blue Coat runs an Internet-accessible CA for the purpose of issuing appliance certificates. The root certificate for the Blue Coat CA is automatically trusted by SGOS for device authentication. These Blue Coat-signed certificates contain no authorization information and are valid for five years.

You can provide your own device authentication certificates for the ProxySG appliances on your network if you prefer not to use the Blue Coat CA.

### About SSL Device Profiles

An SSL device profile contains the information required for device authentication:

- The name of the keyring that contains the private key and certificate this device uses to authenticate itself. The default keyring is *appliance-key*. (For information on private and public keys, refer to *Volume 4: Securing the Blue Coat ProxySG Appliance*.)

- The name of the CA Certificate List (CCL) that contains the names of certificates of CAs trusted by this profile. If another device offers a valid certificate signed by an authority in this list, the certificate is accepted. The default is `appliance-ccl`. For information on CCLs, refer to *Volume 4: Securing the Blue Coat ProxySG Appliance*.

- Verification of the peer certificate.

When the ProxySG is participating in device authentication as an SSL client, the peer certificate verification option controls whether the server certificate is validated against the CCL. If verification is disabled, the CCL is ignored.

When the ProxySG is participating in device authentication as an SSL server, the peer certificate verification option controls whether to require a client certificate. If verification is disabled, no client certificate is obtained during the SSL handshake. The default is `verify-peer-certificate` enabled.

- Specification of how the device ID authorization data is extracted from the certificate. The default is `$ (subject.CN)`.
- SSL cipher settings. The default is AES256-SHA.

Each Blue Coat appliance has an automatically-constructed profile called **bluecoat-appliance-certificate** that can be used for device-to-device authentication. This profile cannot be deleted or edited.

If you cannot use the built-in profile because, for example, you require a different cipher suite or you are using your own appliance certificates, you must create a different profile, and have that profile reference the keyring that contains your certificate.

---

**Note:** If you do not want to use peer verification, you can use the built-in **passive-attack-detection-only** profile in place of the **bluecoat-appliance-certificate** profile.

This profile uses a self-signed certificate and disables the `verify-peer` option, so that no authentication is done on the endpoints of the connection. The traffic is encrypted, but is vulnerable to active attacks.

---

This profile can be used only when there is no threat of an active man-in-the-middle attack. Like the **bluecoat-appliance certificate** profile, the **passive-attack-detection-only** profile cannot be edited or deleted.

---

If you create your own profile, it must contain the same kind of information that is contained in the Blue Coat profile. To create your own profile, skip to "[Creating an SSL Device Profile for Device Authentication](#)" on page 122.

## Obtaining a ProxySG Appliance Certificate

In many cases, if you have Internet connectivity, an appliance certificate is automatically fetched by the ProxySG, and no human intervention is required. In other cases, if the Internet connection is delayed or if you do not have Internet access, you might have to manually initiate the process of obtaining an appliance certificate.

How you obtain an appliance certificate depends upon your environment:

- If the device to be authenticated has Internet connectivity and can reach the Blue Coat CA server, continue with "[Automatically Obtaining an Appliance Certificate](#)" on page 118.
- If the device to be authenticated cannot reach the Blue Coat CA server, you must acquire the certificate manually; continue with "[Manually Obtaining an Appliance Certificate](#)" on page 119.

After the certificate is obtained, you must configure the device to use the profile you choose to use. For information on configuring the device to use the profile, see [Chapter 2: "Configuring an Application Delivery Network"](#).

If you are configuring device authorization as well as authentication, configure device authentication before authorization. For more information on device authorization, see [Chapter 2: "Configuring an Application Delivery Network"](#).

---

**Important:** Only the following ProxySG platforms support appliance certificates:

- SG200 (manufactured after August 1, 2006)
- SG210
- SG510
- SG810
- SG8100

If you attempt to obtain an appliance certificate for other platforms (through **Configuration > SSL > Appliance Certificates > Request appliance certificate**), the request fails with the following error message:

- Request failed: Signing server reported error: No such serial number *serial number*.**

If you receive this message, you cannot use Blue Coat appliance certificates, but you can create your own appliance certificates for use in a secure network. For more information, see "["Obtaining a Non Blue Coat Appliance Certificate"](#)" on page 121.

---

## [\*Automatically Obtaining an Appliance Certificate\*](#)

The appliance attempts to get the certificate completely automatically (with no user intervention) if it can connect to the Blue Coat CA server at boot time or within about five minutes of being booted. If the appliance does not have a certificate (for example, it had one until you did a `restore-defaults factory-defaults` command) it attempts to get one on every boot. Once the appliance gets a certificate, that certificate is used until another `restore-defaults factory-defaults` command is issued.

If Internet connectivity is established more than five minutes after the system is booted, you might need to complete the following steps.

**To automatically obtain an appliance certificate:**

1. Select **Configuration > SSL > Appliance Certificates > Request Certificate**.
2. Click **Request appliance certificate**.

The Blue Coat CA server does validation checks and signs the certificate. The certificate is automatically placed in the `appliance-key` keyring. Note that the `appliance-key` keyring cannot be backed up. The keyring is re-created if it is missing at boot time.

### *Manually Obtaining an Appliance Certificate*

Complete the following steps to obtain an appliance certificate manually. The overview of the procedure is to:

- Generate a appliance certificate signing request and send it to the Blue Coat CA server for verification and signature.
- Import the signed certificate into the ProxySG.

**To generate a CSR:**

1. Select **Configuration > SSL > Appliance Certificates > Request Certificate**.
2. Select **Create CSR**.



3. Copy the certificate request, including the certificate request signature. Be sure to include the `Begin Certificate` and `End Certificate` statements, as well as the `Begin CSR Signature` and `End CSR Signature` statements.
4. Click **OK**.
5. Go to the Blue Coat CA Server Website at <https://abrc.ca.bluecoat.com/sign-manual/index.html>.

**Blue Coat - ABRCA Manual Form**

```

-----BEGIN CERTIFICATE REQUEST-----
MIIBxzCCATACAQAwgYYxCzAJBgNVBAYTA1VTMQswCQYDVQQIEwJDQTESMBAGA1UE
BxMjU3Vubn12YWx1MSAwHgYDVQQKExdCbHV1IENvYXQgU31zdGVtcywgSW5jLjEf
MBQGA1UECxMWQmx1ZSBDb2FOIFNhmjAwIFNlcm1lczETMBEGA1UEAxMKNDUwNTA2
MDAyMDCBnzANBgkqhkiG9wOBAQEFAOBjQAwgYkCgYEAtLY3SaIts6ADY8BPYhVb
Mrva/aRsOEd6OCwwsuxifFSTHm3ijDug5ttT5DDvfmxxy4YcgP7vdTaeVdqoQdBwkM
FpjxxWfjTHXINgeBWKhTM8WLcO/gBa8z7cWUrxyyGS9FS3H2ZBZXSxSvQT19zWu3
2XA3QtI1r8RH7MM1dbPomrOCAwEAAAAMAOGCSqGS1b3DQEBAUAA4GBAHB1kVOC
TjM8zMnPttII7dMNChmfPIy3zeypdrMFLLJcnJwqh1XrndN7WHYUXEwhYjtU9p
7OkyFs+giBtIzdd8fn2aeF4JXNCzSfLqWnpKOjTBA9WLTmc1Th1Hp1UZE/T11DRS
kZ6AfyhJQGhxKuAi8LLRjPM05YOowxo8A17
-----END CERTIFICATE REQUEST-----
----- BEGIN CSR SIGNATURE -----
KsrqFGa5jb2Az+GL/Hm9OFmmBzLg0svAwBbaYD64qNm3VH17ADaMw2LfrZ1D13ez
B0gxKJEBU5w7TULG23QJV3XpwP7XOb6ms1ekg/XPNZ2OmoNjI3VreJ+A9usYpUhh
56qFKfIcivnchukrhI=
----- END CSR SIGNATURE -----

```

6. Paste the CSR and signature into the CSR panel.
7. Click **Generate Cert.**

The signed certificate displays, and can be pasted into the appliance-key keyring.

```

-----BEGIN CERTIFICATE-----
MIIF/jCCBoagAwIBAgICAMowDQYJKoZIhvCNQEFBQAwbYxCzAJBgNVBAYTA1VT
MRMwEQYDVQQIEwpDYWxpZm9ybmlhMRIwEAYDVQQHEw1TdW5ueXZhbgUxIDAeBgbNV
BAoTF0JsdWUgQ29hdCBTeXN0ZW1zLCBjbmMuMRkwFwYDVQQLExBcbHV1IENvYXQs
IEFCUkNBMRswGQYDVQQDExJhYnJjYS5ibHV1Y29hdC5jb20xJDAiBgkqhkiG9w0B
CQEWFVN5c2FkbWluQGJsdWVjb2F0LmNvbTAeFw0wNzAxMjkyMDM5NDdaFw0xMjAx
MjkyMDM5NDdaMIGGMQswCQYDVQQGEwJVUzELMAkGA1UECBMCQ0ExEjAQBgNVBAcT
CVN1bm55dmFsZTEgMB4GA1UEChMXQmx1ZSBDb2F0IFN5c3R1bXMsiEluYy4xHzAd
BgNVBAsTFkJsdWUgQ29hdCBTrzIwMCBTZXJpZXMsEzARBgNVBAMTCjA1MDUwNjAw
OTIwgZ8wDQYJKoZIhvCNQEBBQADgY0AMIGJAoGBAMBUmCuKSSd+D5kJQiWu3OG
DNLCvf7SyKK5+SBCJU2iKwP5+efiq5JsScWJghtIo94EhdSC2zvBPQqWbZAJXN74
k/yM4w9ufjfo+G7xPYcMrGmwVBGnxBhQkagc1FH2orINNY8SVDYVL1V4dRM+0at
YpEiBmSxipmRSMZL4kqtAgMBAAGjggLGMIICwjaJBgNVHRMEAjAAMAsGA1UdDwQE
AwIE8DBOBgNVHSUERzBFBgrBgEFBQcDAQYIKwYBBQUHAwIGCCsGAQUFBwMEBgsr
BgEEAfElAQECAQYLKwYBBAHxJQEBAgIGCysGAQQB8SUBAQIDMB0GA1UdDgQWBBSF
NqC2ubTI7OT5j+KqCPG1SD07DzCB6wYDVR0jBIHjMIHggBSwEYwcq1N6G1ZhpcXn
OTIu8fNe1aGBvKSBUtCBtjELMAkGA1UEBhMCVVMxEzARBgNVBAgTCkNhbg1mb3Ju
aWExEjAQBgNVBAcTCVN1bm55dmFsZTEgMB4GA1UEChMXQmx1ZSBDb2F0IFN5c3R1
bXMsiEluYy4xGTAXBgnVBAsTEEJsdWUgQ29hdCwgQUJSQ0ExGzAZBgnVBAMTEmFi
-----END CERTIFICATE-----

```

```
cmNhLmJsdWVjb2F0LmNvbTEkMCIGCSqGS1b3DQEJARYVc31zYWRtaW5AYmx1ZWNv
YXQuY29tggkAhmhBUPEEb60wgZ8GCCsGAQUFBwEBBIGSMIGPMEkGCCsGAQUFBzAB
hj1odHRwcsovL2FicmNhLmJsdWVjb2F0LmNvbS9jZ2ktYmluL2RldmljZS1hdXRo
ZW50aNhdG1vbi9vY3NwMEIGCCsGAQUFBzAChjZodHRwOi8vYWJyY2EuYmx1ZWNv
YXQuY29tL2RldmljZS1hdXRoZW50aNhdG1vbi9jYS5jZ2kwSAYDVR0fBEEwPzA9
oDugOYY3aHR0cDovL2FicmNhLmJsdWVjb2F0LmNvbS9kZXZpY2UtYXV0aGVudG1j
YXRpb24vQ1JMLmNybdbfBgNVHSAEWDBWMFQGCisGAQQB8SUBAQewRjBEBggrBgfEF
BQcCARY4aHR0cDovL2FicmNhLmJsdWVjb2F0LmNvbS9kZXZpY2UtYXV0aGVudG1j
YXRpb24vcnBhLmh0bWwwDQYJKoZIhvcNAQEFBQADggEBACIhQ7Vu6aGJBpxP255X
d2/Qw7NiVsng0lAy913QZlieFFVATJnCeSrH+M9B/2XtnRxVT0/ZWrf4GbsdYqTF
hc9jR/IwKu6kZq32Dqo8qFU5OzbAEzT2oebB5QgwuJtHcJHgqp9PS9uS27qAnGQK
OeB2bYcjWtMvTvr50iDOV69BEQz+VXos8QiZmRHLVnebQSj13bi1w3VjBw31tCmc
clgz0s1N9ZmJdRU/P1WdNVqD4OLqcMZQ53HqcdWNEzN2uvigIb//rM7XazK7xIaq
r23/+BsZ1YKAeVMq3PEmxaA2zLzO+jf79a8ZvIKrF27nNuTN7NhFL/V6pWNE1o9A
rbs=
-----END CERTIFICATE-----
```

**To import a certificate onto the ProxySG appliance:**

1. Copy the certificate to your clipboard. Be sure to include the `Begin Certificate` and `End Certificate` statements.
2. Select **Configuration > SSL > Keyrings**.
3. Select the keyring that is used for device authentication. The keyring used by the `bluecoat-appliance-certificate` profile is the `appliance-key` keyring.
4. Click **Edit** in the **Keyrings** tab.
5. In the **Certificate** panel, click **Import**.
6. Paste the certificate you copied into the dialog box.
7. Click **Close**.

## Obtaining a Non Blue Coat Appliance Certificate

If you run your own certificate signing authority for device authentication, complete the following steps:

1. Create a keyring for the appliance's certificate. For information on creating a keyring, refer to *Volume 4: Securing the Blue Coat ProxySG Appliance*.
2. Generate the certificate signing request and get it signed. For information on creating a CSR, refer to *Volume 4: Securing the Blue Coat ProxySG Appliance*.

---

**Note:** You cannot put a Blue Coat appliance certificate into a keyring you create yourself.

---

3. Create a CA certificate list. For information on creating a CCL, refer to *Volume 4: Securing the Blue Coat ProxySG Appliance*.
  - a. Import the CA's root certificate.
  - b. Add the certificate to the CCL.
4. Create a device authentication profile. (To create a profile, see "[Appliance Certificates and SSL Device Profiles](#)" on page 116.)
5. Associate the profile with the keyring and CCL. The keyring and CCL must already exist.  
Adjust other parameters, including authorization data extractor (if the certificate is to be used for authorization), as needed.

Configure each application that uses device authentication to reference the newly created profile, and set up its whitelist. To associate the device with the profile, see [Chapter 2: "Configuring an Application Delivery Network"](#).

## [Creating an SSL Device Profile for Device Authentication](#)

An SSL device profile only needs to be created if you cannot use the built-in **bluecoat-appliance-certificate** profile without modification; note that the **bluecoat-appliance-certificate** profile cannot be deleted or edited.

Additional profiles with different settings can be created; for example, if you require a different cipher setting than what the **bluecoat-appliance-certificate** profile uses, you can create a profile with the different cipher suite.

### **To create a new authentication profile:**

1. Select **Configuration > SSL > Device Profiles > Profiles**.
2. Click **New**.

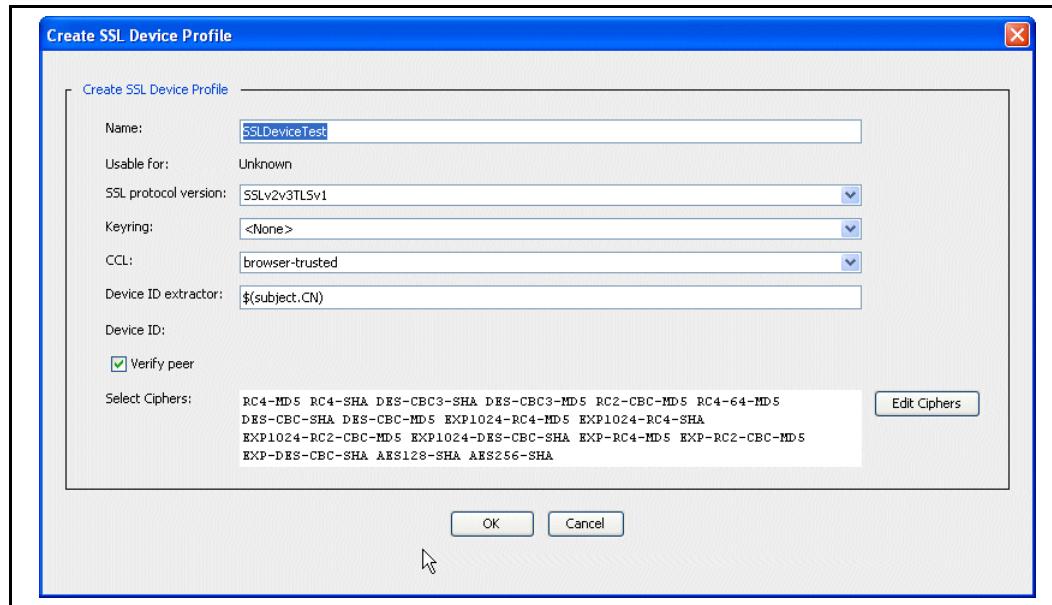
**Create SSL Device Profile**

Name:	<input type="text" value="SSLDDeviceTest"/>
Usable for:	Unknown
SSL protocol version:	<input type="text" value="SSLv2v3TLSv1"/>
Keyring:	<input type="text" value="&lt;None&gt;"/>
CCL:	<input type="text" value="browser-trusted"/>
Device ID extractor:	<input type="text" value="\${subject.CN}"/>
Device ID:	<input checked="" type="checkbox"/> Verify peer
Select Ciphers:	RC4-MD5 RC4-SHA DES-CBC3-SHA DES-CBC3-MD5 RC2-CBC-MD5 RC4-64-MD5 DES-CBC-SHA DES-CBC-MD5 EXP1024-RC4-MD5 EXP1024-RC4-SHA EXP1024-RC2-CBC-MD5 EXP1024-DES-CBC-SHA EXP-RC4-MD5 EXP-RC2-CBC-MD5 EXP-DES-CBC-SHA AES128-SHA AES256-SHA

3. **Name:** Give the profile a meaningful name. The only valid characters are alphanumeric, the underscore, and hyphen, and the first character must be a letter.
4. **SSL protocol versions:** Change the default from **SSLv2v3TLSv1** to any other protocol listed in the drop-down list.
5. **Keyring:** From the drop-down list, select the keyring you want to use for device authentication.

**Note:** You must create a new keyring for device authentication if you do not use the `appliance-key` keyring. The keyrings shipped with the ProxySG are dedicated to other purposes. For information on creating a new keyring, refer to *Volume 4: Securing the Blue Coat ProxySG Appliance*.

6. **CCL:** From the drop-down list, select the CA Certificate List you want to use.
7. **Device ID extractor:** The field describes how device ID information is extracted from a presented certificate. The string contains references to the attributes of the subject or issuer in the form `$(subject.attr[.n])` or `$(issuer.attr[.n])`, where `attr` is the short-form name of the attribute and `n` is the ordinal instance of that attribute, counting from 1 when the subject is in LDAP (RFC 2253) order. If `n` is omitted, it is assumed to be 1.  
The default is `$(subject.CN)`; many other subject attributes are recognized, among them `OU`, `O`, `L`, `ST`, `C`, and `DC`.
8. **Verify peer:** This setting determines whether peer certificates are verified against the CCL or whether client certificates are required.



9. **Selected ciphers:** To use a different cipher suite:
  - a. click **Edit ciphers**.
  - b. Select the ciphers and click **Add** to add the cipher to the list of selected cipher suites. Cipher suites that you do not want to use should be removed from the selected list.
10. Click **OK** to close the dialog.
11. Click **Apply**.

## Related CLI Syntax to Manage Device Authentication

- To enter configuration mode:

```
SGOS#(config) ssl
```

- The following SSL device profile commands are available:

```
SGOS#(config ssl) create ssl-device-profile profile_name keyring_ID
SGOS#(config ssl) edit ssl-device-profile test
SGOS#(config device-profile test) cipher-suite cipher-suite
SGOS#(config device-profile test) ccl ccl_name
SGOS#(config device-profile test) device-id device_ID
SGOS#(config device-profile test) exit
SGOS#(config device-profile test) keyring-id keyring_ID
SGOS#(config device-profile test) protocol {sslv2 | sslv3 | tlsv1 |
sslv2v3 | sslv2tlsv1 | sslv3tlsv1 | sslv2v3tlsv1}
SGOS#(config device-profile test) verify-peer [enable | disable]
SGOS#(config device-profile test) view
SGOS#(config ssl) request-appliance-certificate
SGOS#(config ssl) view appliance-certificate-request
SGOS#(config ssl) view ssl-device-profile
```

## *Chapter 7: Configuring Failover*

Using IP address failover, you can create a redundant network for any explicit proxy configuration. If you require transparent proxy configuration, you can create software bridges to use failover. For information on creating software bridges, refer to *Volume 1: Getting Started*.

---

**Note:** If you use the Pass-Through adapter for transparent proxy, you must create a software bridge rather than configuring failover. For information on using the Pass-Through adapter, refer to *Volume 1: Getting Started*.

---

Using a pool of IP addresses to provide redundancy and load balancing, Blue Coat moves these IP addresses among a group of machines.

### *Topics in this Chapter*

This chapter includes information about the following topics:

- "About Failover"
- "Configuring Failover" on page 126

### About Failover

Failover allows a second machine to take over if a first machine (not just an interface card) fails, providing redundancy to the network through a master/slave relationship. In normal operations, the master (the machine whose IP address matches the group name) owns the address. The master sends keepalive messages (*advertisements*) to the slaves. If the slaves do not receive advertisements at the specified interval, the slave with the highest configured priority takes over for the master. When the master comes back online, the master takes over from the slave again.

The Blue Coat failover implementation resembles the Virtual Router Redundancy Protocol (VRRP) with the following exceptions:

- A configurable IP multicast address is the destination of the advertisements.
- The advertisement interval is included in protocol messages and is learned by the slaves.
- A virtual router identifier (VRID) is not used.
- Virtual MAC addresses are not used.
- MD5 is used for authentication at the application level.

Masters are elected, based on the following factors:

- If the failover mechanism is configured for a physical IP address, the machine owning the physical address have the highest priority. This is not configurable.
- If a machine is configured as a master using a virtual IP address, the master has a priority that is higher than the slaves.

When a slave takes over because the master fails, an event is logged in the event log. No e-mail notification is sent.

## Configuring Failover

Before you begin, ensure that software bridges already exist. For information on configuring bridges, refer to *Volume 1: Getting Started*.

You also must decide which machine is the master and which machines are the slaves, and whether you want to configure explicit proxy or transparent proxy network.

When configuring the group, the master and all the systems in the group must have exactly the same failover configuration except for priority, which is used to determine the rank of the slave machines. If no priority is set, a default priority of 100 is used. If two appliances have equal priority, the one with the highest physical address ranks higher.

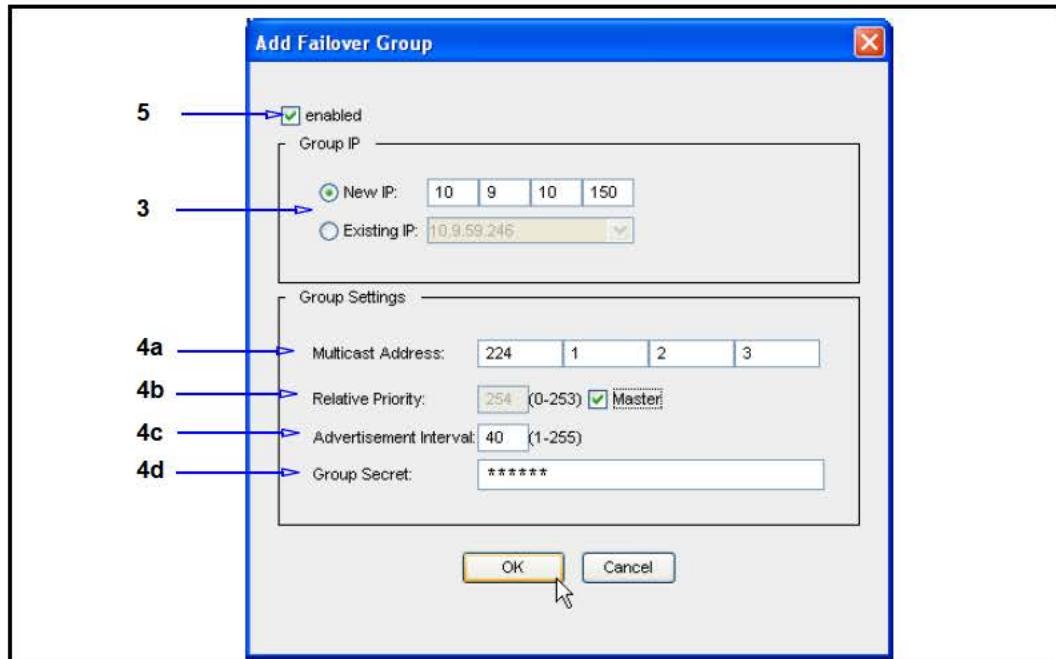
---

**Note:** Configuring failover on an Application Data Network (ADN) is similar to configuring failover on other appliances, with the exception that you add a server subnet on multiple boxes instead of just one.

---

### To configure failover:

1. Select **Configuration > Network > Advanced > Failover**.
2. Click **New**.



3. Create a group using either a new IP address or an existing IP address. If the group has already been created, you cannot change the new IP address without deleting the group and starting over.
4. Configure group options:
  - a. **Multicast address** refers to a Class D IP address that is used for multicast. It is not a virtual IP address.
 

**Note:** Class D IP addresses (224 to 239) are reserved for multicast. A Class D IP address has a first bit value of 1, second bit value of 1, third bit value of 1, and fourth bit value of 0. The other 28 bits identify the group of computers that receive the multicast message.
  - b. **Relative Priority** refers to a range from 1-255 that is assigned to systems in the group. 255 is reserved for the system whose failover group ID equals the real IP address. (Optional) **Master** identifies the system with the highest priority (the priority value is greyed out).
  - c. (Optional) **Advertisement Interval** refers to the length of time between advertisements sent by the group master. The default is 40 seconds. If the group master fails, the slave with the highest priority takes over (after approximately three times the interval value). The failover time of the group is controlled by setting this value.
  - d. (Optional, but recommended) **Group Secret** refers to a password shared only with the group.
5. Select **enabled**.
6. Click **OK** to close the dialog.
7. Click **Apply**.

### Related CLI Syntax to Configure Failover

- To enter configuration mode:

```
SGOS#(config) failover
```

- The following subcommands are available:

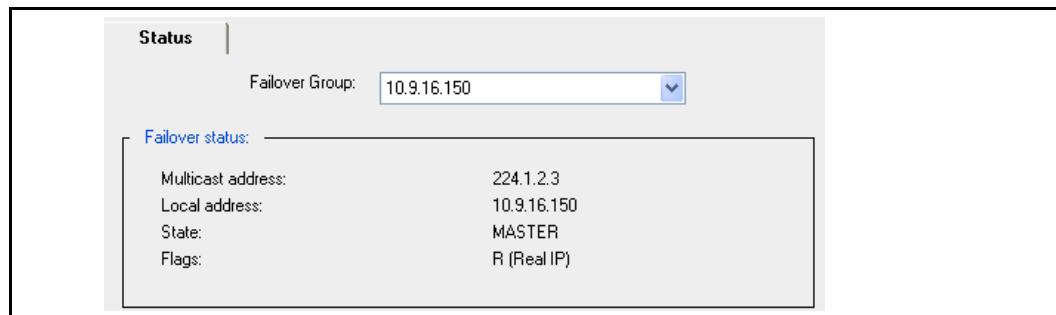
```
SGOS#(config failover) create group_address
SGOS#(config failover) edit group_address
SGOS#(config failover group_address) multicast-address
multicast_address
SGOS#(config failover group_address) master
SGOS#(config failover group_address) priority number
SGOS#(config failover group_address) interval seconds
SGOS#(config failover group_address) secret secret
-or-
SGOS#(config failover group_address) encrypted-secret encrypted_secret
SGOS#(config failover group_address) enable
```

## Viewing Failover Statistics

At any time, you can view statistics for any failover group you have configured on your system.

### To view failover status:

1. Select **Statistics > System > Failover**.



2. From the drop-down list, select the group to view.

The information displayed includes the multicast address, the local address, the state, and any flags, where **V** indicates the group name is a virtual IP address, **R** indicates the group name is a physical IP address, and **M** indicates this machine can be configured to be the master if it is available.

## Troubleshooting

An indication that there may be issues with the election of a master is if advertisements are not being sent or received by either of the systems in a failover group.

To troubleshoot, view statistics in the command line interface:

```
Blue Coat SG200 Series#(config) failover
Blue Coat SG200 Series#(config failover) view statistics
Failover Statistics
    Advertisements Received : 0
```

```
    Advertisements Sent      : 0
    States Changes          : 0
    Bad Version             : 0
    Bad Packet              : 0
    Bad Checksum            : 0
    Packet Too Short        : 0
    Bad Packet Header       : 0
    Invalid Group           : 0
Blue Coat SG200 Series#(config failover)
```

If the statistics illustrate there may be a potential issue, debug further by running a PCAP on each ProxySG to verify the multicast packets are actually being sent. If not, verify the multicast address is configured correctly (**Configuration > Network > Advanced > Failover**). If both proxies are sending the multicast packets but not receiving them, it is possible that a switch/router is blocking multicast packets.



## *Chapter 8: Configuring the Upstream Network Environment*

This chapter describes how to configure the ProxySG to interact with both the local network and with the upstream network environment.

### *Topics in this Chapter*

This chapter includes information about the following topics:

- ❑ [Section A: "Overview" on page 132](#)
- ❑ [Section B: "About Forwarding" on page 133](#)
- ❑ [Section C: "Configuring Forwarding" on page 136](#)
- ❑ [Section D: "Using Forwarding Directives to Create an Installable List" on page 144](#)

Section A: Overview

## Section A: Overview

To control upstream interaction, the ProxySG appliance supports:

- The ProxySG forwarding system—Allows you to define the hosts and groups of hosts to which client requests can be redirected. Those hosts can be servers or proxies. Rules to redirect requests are set up in policy.
- SOCKS gateways—SOCKS servers provide application-level firewall protection for an enterprise. The SOCKS protocol provides a generic way to proxy HTTP and other protocols. For information on configuring SOCKS gateways, see [Chapter 13: "SOCKS Gateway Configuration" on page 327](#).
- ICP—ICP handles ICP queries from other caching devices looking for cached data. The ProxySG appliance also can use ICP. For information on configuring ICP, see [Chapter 9: "Internet Caching Protocol \(ICP\) Configuration" on page 153](#).

[Section B: About Forwarding](#)

## Section B: About Forwarding

*Forwarding* allows you to redirect requests to IP addresses other than those specified in the URL. Forwarding also allows you to organize how the Web traffic flows around the network. Forwarding does not affect the URL that appears in the request. It only affects the IP address of the upstream device a request is sent to.

The ProxySG forwarding system consists of forwarding, upstream SOCKS gateways, load balancing, host affinity, health checks, and ICP. The ProxySG appliance forwarding system determines the upstream address where a request is sent, and is tied in with all the protocol agents, including HTTP, HTTPS, streaming, and FTP, and the network configuration. The combination of forwarding and the policy engine allows traffic management and flexible configuration.

---

**Note:** The ProxySG forwarding system directly supports the forwarding of HTTP, HTTPS, FTP, Windows Media, RTSP, Telnet, and TCP tunnels.

---

### About Load Balancing

*Load balancing* is a way to share traffic requests among multiple upstream systems or multiple IP addresses on a single host. Load-balancing methods include round robin, which selects the next system in the list, or least connections, which selects the system with the least number of connections among the selected group.

You can configure load balancing two ways:

- For individual hosts: If a host is DNS-resolved to multiple IP addresses, then that host's load-balancing method (round robin, least connections, or none) is applied to those IP addresses. The method is either explicitly set for that host or taken from the configurable global default settings.
- For groups: Load balancing for groups works exactly the same as load balancing for hosts with multiple IP addresses—the forwarding system collects all of the IP addresses for all of the hosts in the group and load balances over that set using the method that is specified. You can also use a domain or URL hash, as well.

### About Host Affinity

*Host affinity* is 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. For example, a Web site uses shopping carts to allow customers to purchase items. The site might use load balancing with a group of Web servers working in parallel, but only one server in the group has information on a single user. If the user connections are sent to a different server, the server has no previous information on the user and might start over.

## Section B: About Forwarding

Host affinity forces the user's connections to return to the same server until the user is idle. After a configurable period of inactivity, the host affinity times out and the association of multiple connections with that single user is lost.

Host affinity allows you to use the following options:

- Use the client IP address to determine which group member was last used. When the same client IP sends another request, the host makes the connection to that group member.
- Place a cookie in the response to the client. When the client makes further requests, the cookie data is used to determine which group member the client last used. The host makes the connection to that group member.
- For HTTPS, extract the SSL session ID name from the connection information. The host uses the session ID in place of a cookie or client IP address to determine which group member was last used. The host makes the connection to that group member.

### *Using Load Balancing with Host Affinity*

By default, if you use load balancing, each connection is treated independently. The connection is made to whichever member of the load-balancing group that the load-balancing algorithm selects. The load balancing responsibility is to distribute the connections among group members to share the load.

If host affinity is configured, the system checks host affinity first to see if the request comes from a known client. If this is a first connection, the load-balancing algorithm selects the group member to make the connection. Host affinity records the result of the load balancing and uses it if that client connects again.

Host affinity does not make a connection to a host that health checks report is down; instead, if host affinity breaks, the load-balancing algorithm selects a group member that is healthy and re-establishes affinity on that working group member.

---

**Note:** You might find it necessary to disable caching for traffic sent to the load-balanced groups (or hosts if DNS hides a group under one entry) to prevent copies of customized Web pages being served to a different user.

It is not always necessary to disable caching; for example, load balancing can be used without host affinity or without disabling caching to distribute load among several proxies.

However, if caching is enabled for traffic going through load balancing, retrieval of updated content by the cache is done according to load balancing rules; the cache does not support host affinity and ignores it if enabled.

---

## Section B: About Forwarding

Host affinity methods are discussed in the table below.

Table 8–1 Host Affinity Methods

Setting	Description	HTTP	SSL	Other (TCP Tunnel or Telnet)
<b>Global Default</b>	Use the default setting for all forwarding hosts on the system.	x	x	x
<b>None</b>	Disables host affinity.	x	x	x
<b>Client IP Address</b>	Uses the client IP address to determine which group member was last used.	x	x	x
<b>Accelerator Cookie</b>	Inserts a cookie into the response to the client.	x	x	
<b>SSL Session ID</b>	Used in place of a cookie or client IP address. Extracts the SSL session ID name from the connection information.		x	

## Section C: Configuring Forwarding

High-level steps to configure forwarding are:

- Create the forwarding hosts and groups, including parameters such as protocol agent and port.
- Set Load Balancing and Host Affinity values.

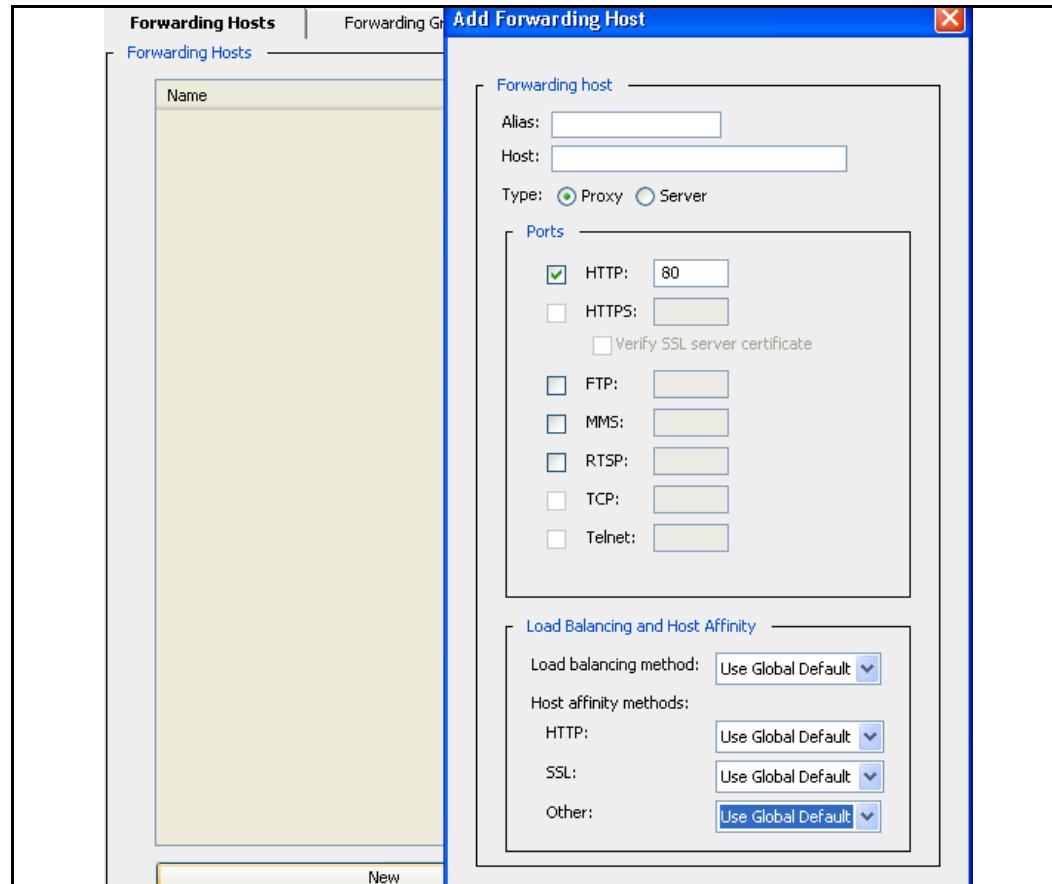
### *Creating Forwarding Hosts and Groups*

You can create as many hosts, groups, or members of a group as you need.

To create groups, see "[To create forwarding groups:](#)" on page 137

#### **To create forwarding hosts:**

1. Click Configuration > Forwarding > Forwarding Hosts.
2. Click New. The Add Forwarding Host dialog displays.



3. Configure the host options:

- a. In the **Alias** field, enter the name of the host as it will be named in policy.

## Section C: Configuring Forwarding

---

**Note:** The host alias cannot be a CPL keyword, such as `no`, `default`, or `forward`.

---

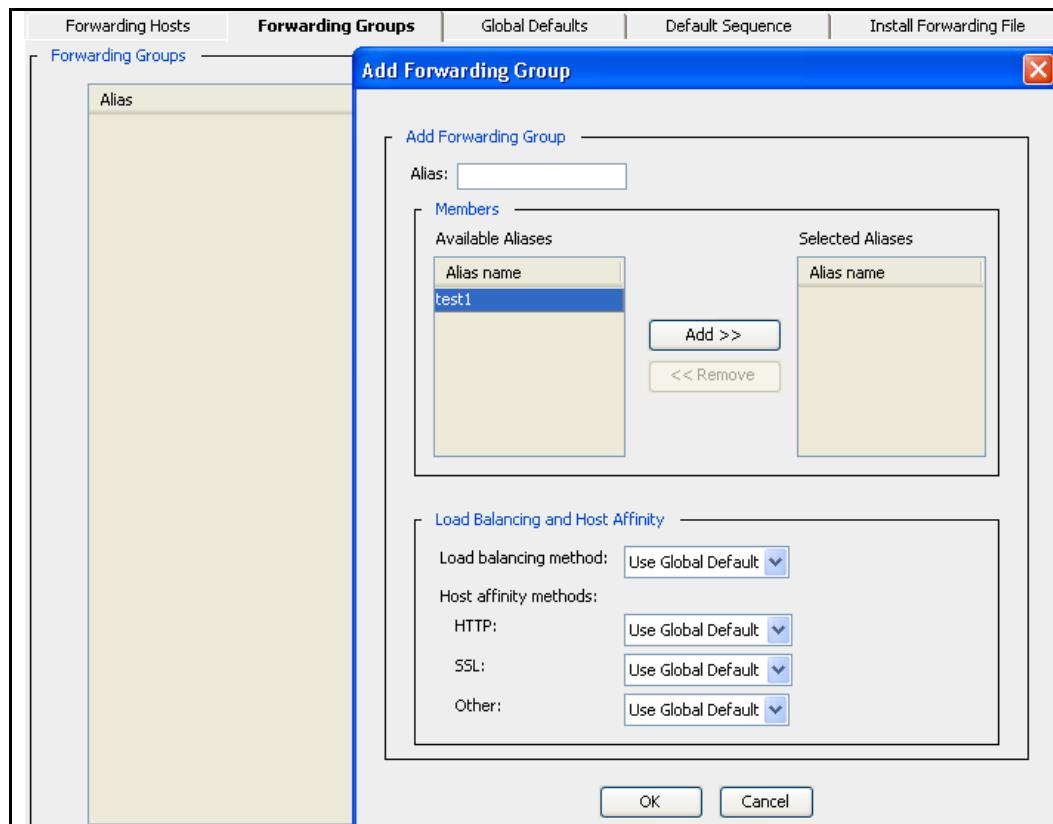
- b. In the **Host** field, give the name of the host domain or its IP address.
  - c. Define the host type by selecting either the **Proxy** or **Server** radio button. Terminated HTTPS, TCP tunnels, and Telnet can be forwarded to a server only; they cannot be forwarded to a proxy. **Server** specifies to use the relative path for URLs in the HTTP header because the next hop is a Web server, not a proxy server. The default is **Proxy**.
  - d. Select the port you want to use.  
Port 80 is the default for HTTP. The rest of the host types default to their appropriate Internet default port, except TCP tunnels, which have no default and for which a port must be specified.
  - e. In the **Load Balancing and Host Affinity** section, select a load-balancing method from the drop-down list. **Global default** (configured on the **Configuration > Forwarding > Global Defaults** tab), sets the default for all forwarding hosts on the system. You can also specify the load-balancing method for this system: **Least Connections** or **Round Robin**, or you can disable load balancing by selecting **None**.
  - f. In the **Host affinity methods** drop-down list (see [Table 8–1, "Host Affinity Methods"](#) on page 135), select the method you want to use.
4. Click **OK**.
  5. Click **Apply**.

### To create forwarding groups:

An existing host can belong to one or more groups as needed. It can only belong once to a single group.

1. Click **Configuration > Forwarding > Forwarding Groups**.
2. Click **New**. The Add Forwarding Group dialog displays, showing the available aliases.

## Section C: Configuring Forwarding



3. Enter a name for the new group in the **Alias** field.

**Note:** The group alias cannot be a CPL keyword, such as no, default, or forward.

4. To add members to a group, highlight the hosts you want grouped and click **Add**. You can also create a group with no members.
5. In the **Load Balancing and Host Affinity** section, select the load-balancing method from the drop-down list. **Global default** (configured on the **Configuration > Forwarding > Global Defaults** tab), are the defaults that were set for all forwarding groups on the system. To specify the load-balancing method for this system, select **Least Connections**, **Round Robin**, **Domain Hash**, **URL Hash**, or you can disable load balancing by selecting **None**.
6. In the **Host affinity methods** drop-down list (see [Table 8–1, "Host Affinity Methods"](#) on page 135), select the method you want to use.
7. Click **OK**.
8. Click **Apply**.

## Section C: Configuring Forwarding

## Configuring Global Forwarding Defaults

The global defaults apply to all forwarding hosts and groups unless the settings are specifically overwritten during host or group configuration.

**To configure global defaults:**

1. Select **Configuration > Forwarding > Global Defaults**.

2. Configure General Settings as follows:

- Determine how connections behave if no forwarding is available. Failing open is an insecure option. The default is to fail closed. This setting can be overridden by policy, if it exists.
- Decide if you want to **Use forwarding for administrative downloads**. The default is to use forwarding in this case.

This option determines whether forwarding is applied to requests generated for administrative reasons on the system, such as downloading policy files or new system images.

If the option is on, meaning that forwarding is applied, you can control the forwarding in policy as needed.

This option also affects the use of SOCKS gateways.

- Enter the **Timeout for integrated hosts** interval: 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` policy property, ages out after being idle for the specified time. The default is 60 minutes.

3. Configure Global Load Balancing and Host Affinity Settings.

- Load-balancing methods:

## Section C: Configuring Forwarding

- Forwarding hosts: Specify the load-balancing method for all forwarding hosts unless their configuration specifically overwrites the global settings. You can choose **Least Connections** or **Round Robin**, or you can disable load balancing by selecting **None**. **Round Robin** is specified by default.
  - Forwarding groups: Specify the load-balancing method for all forwarding groups unless their configuration specifically overwrites the global settings. You can choose to do a **domain hash** or a **URL hash**. You can also select **Least Connections** or **Round Robin**, or disable load balancing by selecting **None**. **Round Robin** is specified by default.
- b. In the Global Host Affinity methods (see [Table 8–1, "Host Affinity Methods"](#) on page 135), select the method you want to use.
- c. Enter the **Host Affinity Timeout** interval, the amount of time a user's IP address, SSL ID, or cookie remains valid after its most recent use. The default is 30 minutes, meaning that the IP address, SSL ID or cookie must be used once every 30 minutes to restart the timeout period.
4. Click **Apply**.

## Configuring the Default Sequence

The default sequence is the default forwarding rule, used for all requests lacking policy instructions. Failover is supported if the sequence (only one is allowed) has more than one member.

---

**Note:** Creating the default sequence through the CLI is a legacy feature. You can set up sequences by using policy alone. The default sequence (if present) is applied only if no applicable forwarding gesture is in policy.

For information on using VPM, refer to *Volume 6: The Visual Policy Manager and Advanced Policy*; for information on using CPL, refer to *Volume 10: Content Policy Language Guide*. For information on using forwarding with policy, see [Appendix A: "Using Policy to Manage Forwarding"](#) on page 419.

---

The default sequence (and any sequence specified in policy) works by allowing healthy hosts to take over for an unhealthy host (one that is failing its DNS Resolution or its health check). If more than one member is in the sequence, the sequence specifies the order of failover, with the second host taking over for the first host, the third taking over for the second, and so on.

---

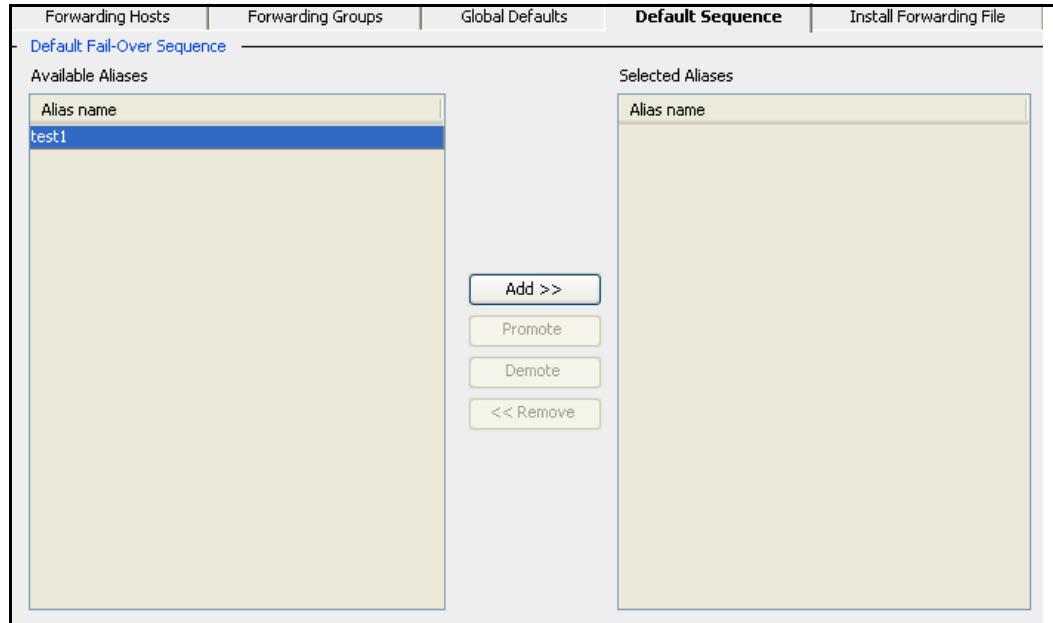
**Note:** In normal circumstances, only the first member of the sequence is ever used. Traffic is forwarded to the first member of the sequence until it fails, then traffic is sent to the second member of list until it fails or the first member becomes healthy again, and so on.

---

## Section C: Configuring Forwarding

### To create a default sequence:

1. Select **Configuration > Forwarding > Default Sequence**. The available aliases are displayed.



2. To select an alias, highlight it and click **Add**.

---

**Note:** Any host or group in the default sequence is considered in use by policy. As a result, if you try to delete a host or group while it is in the default sequence, you receive an error message. You must remove the host/group from the sequence first, then delete the host or group.

---

3. Click **Promote** or **Demote** to change the order of the hosts in the failover sequence.
4. Click **Apply**.

### Related CLI Syntax to Configure Forwarding

- To enter configuration mode for forwarding:

```
SGOS#(config) forwarding
SGOS#(config forwarding)
```

- The following subcommands are available:

```
SGOS#(config) forwarding
SGOS#(config forwarding) create host host_alias host_name [http[=port]
[https[=port]] [ftp[=port]] [mms[=port]] [rtsp[=port]] [tcp[=port]]
[telnet[=port]] [ssl-verify-server[=yes | =no]] [group=group_name]
[server | proxy]
SGOS#(config forwarding) create group group_name
SGOS#(config forwarding) delete all
SGOS#(config forwarding) delete group group_name
```

## Section C: Configuring Forwarding

```

SGOS#(config forwarding) delete host host_alias
SGOS#(config forwarding) download-via-forwarding {disable | enable}
SGOS#(config forwarding) edit host_alias
SGOS#(config forwarding host_alias) exit
SGOS#(config forwarding host_alias) {ftp | http | https | mms |
rtsp | tcp | telnet} [port]
SGOS#(config forwarding host_alias) host hostname
SGOS#(config forwarding host_alias) host-affinity http {default |
none | client-ip-address | accelerator-cookie}
SGOS#(config forwarding host_alias) host-affinity ssl {default |
none | client-ip-address | accelerator-cookie | ssl-session-id}
SGOS#(config forwarding host_alias) host-affinity other {default |
none | client-ip-address}
SGOS#(config forwarding host_alias) load-balance method {default |
least-connections | none | round-robin}
SGOS#(config forwarding host_alias) no {ftp | http | https | mms |
rtsp | ssl-verify-server | tcp | telnet}
SGOS#(config forwarding host_alias) proxy | server
SGOS#(config forwarding host_alias) ssl-verify-server
SGOS#(config forwarding host_alias) view
SGOS#(config forwarding) edit group_alias
SGOS#(config forwarding group_alias) {add | remove} host_alias
SGOS#(config forwarding group_alias) exit
SGOS#(config forwarding group_alias) host-affinity http {default |
none | client-ip-address | accelerator-cookie}
SGOS#(config forwarding group_alias) host-affinity ssl {default |
none | client-ip-address | accelerator-cookie | ssl-session-id}
SGOS#(config forwarding group_alias) host-affinity other {default |
none | client-ip-address}
SGOS#(config forwarding group_alias) load-balance {default |
domain-hash | least-connections | none | round-robin | url-hash}
SGOS#(config forwarding group_alias) view
SGOS#(config forwarding) exit
SGOS#(config forwarding) failure-mode {closed | open}
SGOS#(config forwarding) host-affinity http {default | none | client-
ip-address | accelerator-cookie} host_or_group_alias
SGOS#(config forwarding) host-affinity http {none | client-ip-address |
accelerator-cookie}
SGOS#(config forwarding) host-affinity ssl {default | none | client-
ip-address | accelerator-cookie | ssl-session-id} host_or_group_alias
SGOS#(config forwarding) host-affinity ssl {none | client-ip-address |
accelerator-cookie | ssl-session-id}
SGOS#(config forwarding) host-affinity other {default | none | client-
ip-address} host_or_group_alias
SGOS#(config forwarding) host-affinity other {none | client-ip-
address}
SGOS#(config forwarding) host-affinity timeout minutes
SGOS#(config forwarding) integrated-host-timeout minutes

```

## Section C: Configuring Forwarding

```
SGOS#(config forwarding) load-balance group {default | none | domain-
hash | url-hash | round-robin | least-connections} group_alias
SGOS#(config forwarding) load-balance group {none | domain-hash | url-
hash | round-robin | least-connections}
SGOS#(config forwarding) load-balance host {default | none | round-
robin | least-connections} host_alias
SGOS#(config forwarding) load-balance host {none | round-robin | 
least-connections}
SGOS#(config forwarding) no path
SGOS#(config forwarding) path url
SGOS#(config forwarding) sequence add host_or_group_alias
SGOS#(config forwarding) sequence clear
SGOS#(config forwarding) sequence demote host_or_group_alias
SGOS#(config forwarding) sequence promote host_or_group_alias
SGOS#(config forwarding) sequence remove host_or_group_alias
SGOS#(config forwarding) view
```

## Statistics

To view forwarding statistics, select **Statistics > Advanced > Forwarding**.

## Section D: Using Forwarding Directives to Create an Installable List

# Section D: Using Forwarding Directives to Create an Installable List

You can use directives instead of using the Management Console or CLI to configure forwarding. Note that the Management Console offers the easiest method of configuration. Using directives, you can:

- ❑ Create the forwarding hosts and groups
- ❑ Provide load balancing and host affinity

Table 8–2 Forwarding Directives

Directive	Meaning	See
fwd_fail	Determines whether the forwarding host should fail open or fail closed if an operation does not succeed.	"Setting Fail Open/Closed and Host Timeout Values" on page 146.
fwd_host	Creates a forwarding host and sets configuration parameters for it, including protocols and ports.	"Creating Forwarding Hosts" on page 145.
group	Creates a forwarding group and identifies members of the group.	"Creating Forwarding Groups Using Directives" on page 146.
host_affinity	Directs multiple connections by a single user to the same group member.	"Configuring Host Affinity Directives" on page 148.
integrated_host_timeout	Manages an origin content server that has been added to the health check list. The host ages out after being idle for the specified time.	"Setting Fail Open/Closed and Host Timeout Values" on page 146.
load_balance	Manages the load among forwarding hosts in a group, or among multiple IP addresses of a host.	"Configuring Load-Balancing Directives" on page 147.
sequence	Sets the default sequence to the space separated list of one or more forwarding host and group aliases. (The default sequence is the default forwarding rule, used for all requests lacking policy instructions.)	"Creating a Default Sequence" on page 148.

## Section D: Using Forwarding Directives to Create an Installable List

**Creating Forwarding Host and Group Directives**

A forwarding host directive creates a host along with all its parameters. You can include a group that the forwarding host belongs to.

A group directive creates a group and identifies group members. For more information on group directives, skip to "[Creating Forwarding Groups Using Directives](#)" on page 146.

***Creating Forwarding Hosts***

To create a forwarding host, choose the protocols you want to use and add the forwarding host to a group, enter the following into your installable list. Create a `fwd_host` directive for each forwarding host you want to create.

```
fwd_host host_alias hostname [http[=port]] [https[=port]] [ftp[=port]]
[mms[=port]] [rtsp[=port]] [tcp=port] [telnet[=port]] [ssl-verify-
server[=yes | =no]] [group=group_name [server | proxy]]
```

Table 8–3 Commands to Create Forwarding Host and Group Directives

host_alias		This is the alias for use in policy. Define a meaningful name.
hostname		The name of the host domain, such <code>www.bluecoat.com</code> , or its IP address.
http https ftp mms rtsp telnet	=port	At least one protocol must be selected  HTTPS and Telnet cannot be used with a proxy. Note that HTTPS refers to terminated HTTPS, so it is used only for a server.
tcp	=port	If you choose to add a TCP protocol, a TCP port must be specified.  TCP protocols are not allowed if the host is a proxy.
ssl-verify-server	=yes   =no	Sets SSL to specify that the ProxySG checks the CA certificate of the upstream server.  The default for <code>ssl-verify-server</code> is yes. This can be overridden in the SSL layer in policy.  To disable this feature, you must specify <code>ssl-verify-server=no</code> in the installable list or CLI. In other words, you can configure <code>ssl-verify-server=yes</code> in three ways: do nothing (yes is the default), specify <code>ssl-verify-server=no</code> , or specify <code>ssl-verify-server=yes</code> .

## Section D: Using Forwarding Directives to Create an Installable List

Table 8–3 Commands to Create Forwarding Host and Group Directives (Continued)

group	= <i>group_name</i>	Specifies the group (or server farm or group of proxies) to which this host belongs. If this is the first mention of the group <i>group_name</i> then that group is automatically created with this host as its first member. The ProxySG uses load balancing to evenly distribute forwarding requests to the origin servers or group of proxies.
server   proxy		<i>server</i> specifies to use the relative path for URLs in the HTTP header because the next hop is a Web server, not a proxy server. The default is <i>proxy</i> .

### Example

```
fwd_host www.bluecoat1.com 10.25.36.48 ssl-verify-server=no
group=bluecoat
```

## Creating Forwarding Groups Using Directives

The forwarding groups directive has the following syntax:

```
group group_name host_alias_1 host_alias_2...
```

where *group\_name* is the name of the group, and *host\_alias\_1*, *host\_alias\_2*, and so forth are the forwarding hosts you are assigning to the forwarding group.

Forwarding host parameters are configured through the forwarding host directives.

## Setting Special Parameters

After you configure the forwarding hosts and groups, you might need to set other special parameters to fine tune the hosts. You can configure the following settings:

- ❑ "Setting Fail Open/Closed and Host Timeout Values".
- ❑ "Configuring Load-Balancing Directives" on page 147.
- ❑ "Configuring Host Affinity Directives" on page 148.

## Setting Fail Open/Closed and Host Timeout Values

Using directives, you can determine if the forwarding host fails open or closed, if an operation does not succeed, and the interval it takes for integrated hosts to be aged out.

An integrated host is an Origin Content Server (OCS) that has been added to the health check list. If the policy property `integrate_new_hosts` applies to a forwarding request as a result of matching the `integrate_new_hosts` property, the ProxySG makes a note of each OCS and starts health checking to help future accesses to those systems. If the host is idle for the interval you specify, it is aged out. Sixty minutes is the default interval.

## Section D: Using Forwarding Directives to Create an Installable List

The syntax is:

```
fwd_fail {open | closed}
integrated_host_timeout minutes
```

Table 8–4 Commands to Set Fail Open/Closed and Host Timeout Values

fwd_fail	{open   closed}	Determines whether the forwarding host should fail open or fail closed if an operation does not succeed. Fail open is a security risk, and fail closed is the default if no setting is specified. This setting can be overridden by policy, (using the <code>forward.fail_open(yes no)</code> property).
integrated_host_timeout	minutes	An OCS that has been added to the health check list is called an integrated host. The host ages out after being idle for the specified time.

### Examples

```
fwd_fail open
integrated_host_timeout 90
```

## Configuring Load-Balancing Directives

Load balancing shares the load among a set of IP addresses, whether a group or a host with multiple IP addresses.

The syntax is:

```
load_balance group {none | domain-hash | url-hash | round-robin |
least-connections} [group_alias]
load_balance host {none | round-robin | least-connections}
[host_alias]
```

Table 8–5 Load Balancing Directives

Command	Suboptions	Description
load_balance group	{none   domain-hash   url-hash   round-robin   least-connections} [group_alias]	If you use <code>group</code> for load balancing, you can set the suboption to none or choose another method. If you do not specify a group, the settings apply as the default for all groups.
load_balance host	{none   round-robin   least-connections} [host_alias]	If you use <code>host</code> for load balancing, you can set the suboption to none or choose another method. If you do not specify a host, the settings apply as the default for all hosts.

### Example

```
load_balance host least_connections
```

---

## Section D: Using Forwarding Directives to Create an Installable List

### Configuring Host Affinity Directives

Host affinity is the attempt to direct multiple connections by a single user to the same group member.

The syntax is:

```
host_affinity http {none | client-ip-address | accelerator-cookie}
[host_or_group_alias]
host_affinity ssl {none | client-ip-address | accelerator-cookie |
ssl-session-id} [host_or_group_alias]
host_affinity other {none | client-ip-address} [host_or_group_alias]
host_affinity timeout minutes
```

Table 8–6 Commands to Configure Host Affinity Directives

Command	Suboption	Description
host_affinity http	{accelerator-cookie   client-ip-address   none} [host_or_group_alias]	Determines which HTTP host-affinity method to use (accelerator cookie or client-ip-address), or you can specify none. If you do not specify a host or group, the settings apply as the default for all hosts or groups.
host_affinity ssl	{accelerator-cookie   client-ip-address   none   ssl-session-id} [host_or_group_alias]	Determines which SSL host-affinity method to use (accelerator cookie, client-ip-address, or ssl-session-id), or you can specify none. If you do not specify a host or group, the settings apply as the default for all hosts or groups.
host_affinity other	{none   client-ip-address} [host_or_group_alias]	Determines whether client-ip-address mode is used with TCP tunnels or Telnet.
host_affinity timeout	minutes	Determines how long a user's IP address, SSL ID, or cookie remains valid when idle

#### Example

```
host_affinity ssl_method 10.25.36.48
host_affinity timeout 5
```

### Creating a Default Sequence

The default sequence is the default forwarding rule, used for all requests lacking policy instructions. Failover is supported if the sequence (only one is allowed) has more than one member.

---

**Note:** The default sequence is completely overridden by policy.

---

## Section D: Using Forwarding Directives to Create an Installable List

A default failover sequence works by allowing healthy hosts to take over for an unhealthy host (one that is failing its DNS resolution or its health check). The sequence specifies the order of failover, with the second host taking over for the first host, the third taking over for the second, and so on).

If all hosts are unhealthy, the operation fails either open or closed, depending upon your settings.

This configuration is generally created and managed through policy. If no forwarding policy applies, you can create a default sequence through the CLI. This single default sequence consists of a single default host (or group) plus one or more hosts to use if the preceding ones are unhealthy.

The syntax is:

```
sequence alias_list
```

where *alias\_list* is a space-separated list of one or more forwarding host and group aliases.

### *Example*

```
sequence bluecoat
```

## Creating a Forwarding Installable List

You can create and install the forwarding installable list using one of the following methods:

- Text Editor, which allows you to enter the installable list of directives (or copy and paste the contents of an already-created file) directly onto the appliance.
- A local file, created on your system; the ProxySG can browse to the file and install it.
- A remote URL, where you placed an already-created file on an FTP or HTTP server to be downloaded to the ProxySG.
- CLI `inline` command.

When the Forwarding Installable List is installed, it replaces the forwarding configuration on the ProxySG. The configuration remains in effect until overwritten by another installable list; the configuration can be modified or overwritten using CLI commands.

---

**Note:** During the time that a forwarding installable list is being compiled and installed, forwarding might not be available. Any transactions that come into the ProxySG during this time might not be forwarded properly.

---

Installation of forwarding installable lists should be done outside peak traffic times.

## Section D: Using Forwarding Directives to Create an Installable List

### To create a forwarding installable list:

1. Select **Configuration > Forwarding > Install Forwarding File**.
2. From the drop-down list, select the method to use to install the forwarding installable list; click **Install**.

---

**Note:** A message is written to the event log when you install a list through the SGOS software.

---

- **Remote URL:**

Enter the fully-qualified URL, including the filename, where the installable list is located. To view the file before installing it, click **View**. Click **Install**. Examine the installation status that displays; click **OK**.

- **Local File:**

Click **Browse** to display the Local File Browse window. Browse for the installable list file on the local system. Open it and click **Install**. When the installation is complete, a results window opens. View the results, close the window, click **Close**.

- **Text Editor:**

The current configuration is displayed in installable list format. You can customize it or delete it and create your own. Click **Install**. When the installation is complete, a results window opens. View the results, close the window, click **Close**.

---

**Note:** The Management Console text editor is a way to enter an installable list for forwarding. It is not a way to enter CLI commands. The directives are understood only by the installable list parser for forwarding.

---

3. Click **Apply**.

---

**Note:** You can create forwarding settings using the CLI `#inline forwarding` command. You can use any of the forwarding directives.

For more information on using inline commands, refer to *Volume 11: Command Line Interface Reference*.

---

### To delete forwarding settings on the ProxySG:

From the `(config)` prompt, enter the following commands to delete a host, a group, or all hosts and groups from the forwarding configuration:

```
SGOS#(config) forwarding
SGOS#(config forwarding) delete {all | group group_name | host
host_alias}
```

---

**Note:** Any host or group in the default sequence (or the DRTR service configuration) is considered in use by policy. As a result, if you try to delete a host or group while it is in the default sequence or DRTR service configuration, you will receive an error message. You must remove the host/group from the sequence or service first, then delete.

---



## *Chapter 9: Internet Caching Protocol (ICP) Configuration*

ICP is a communication protocol for caches. It allows a cache (not necessarily a ProxySG) to query other caches for an object, without actually requesting the object. By using ICP, the cache can determine if the object is available from a neighboring cache, and which cache provides the fastest response.

---

**Note:** The ProxySG (assuming ICP is configured) does ICP queries only if no forwarding host or SOCKS gateway is identified as an upstream target. If ICP is used by the appliance, it prompts other cache devices for the item, and upon a positive response re-directs the upstream request to that cache device instead of the content origin server.

---

Only use ICP if you have ICP hosts available or to have the ProxySG support requests from other ICP hosts.

By default, the ICP protocol requires the requesting host to wait up to two seconds for all ICP hosts to respond to the request for an object (the time is configurable).

If the ICP service is configured and running, the service is used if no forwarding or SOCKS gateway target was specified. In other words, the policy rule `icp(yes)` is the default, assuming that the ICP service is available. You can disable ICP with the policy rule `icp(no)` to control ICP queries for requests.

### *Topics in this Chapter*

This chapter includes information about the following topics:

- ❑ "About ICP Hierarchy" on page 153
- ❑ "Using ICP Configuration Directives to Create an Installable List" on page 154
- ❑ "Naming the IP Hosts" on page 155
- ❑ "Restricting Access" on page 156
- ❑ "Connecting to Other ICP Hosts" on page 157
- ❑ "Creating an ICP Installable List" on page 158
- ❑ "Enabling ICP" on page 159

### **About ICP Hierarchy**

An ICP *hierarchy* is comprised of a group of caches, with defined parent and sibling relationships. A cache parent is one that can return the object if it is in the cache, or request the object from the source on behalf of the requester if the object is not in the cache. A cache sibling is a device that can only return the object if it is in the cache. One cache acting as a parent can also act as a sibling to other cache devices.

- When an object is not cached, the cache device sends an ICP query to its neighbors (parents and siblings) to see if any of its peers holds the object.
- Each neighbor that holds the requested object returns an `ICP_HIT` reply.
- Each neighbor that does not hold the object returns an `ICP_MISS` reply.

Based on the responses, the cache can determine where to request the object: from one of its neighbors or from the source. If an `ICP_HIT` reply is received, the request is sent to the host that returned the first reply. If no `ICP_HIT` reply is received, the request is forwarded to the first parent that replied. If no parents respond or are configured, the request is made directly to the source.

## Using ICP Configuration Directives to Create an Installable List

To configure ICP you must create an installable list and load it on the ProxySG. The ICP protocol contains a number of *directives*, commands used to create a list that can be installed on the ProxySG.

For information on installing the file itself, see "[Creating an ICP Installable List](#)" on page 158.

The ICP configuration includes directives that:

- Name the ICP hosts
- Restrict ICP access to only these hosts

Available directives are listed in [Table 9–1](#).

Table 9–1 ICP Directives

Directive	Meaning	Where used
<code>icp_host</code>	The <code>icp_host</code> directive describes cache peers in the hierarchy. There should be one entry for each ProxySG you want to use.	Names the ICP hosts. See " <a href="#">Naming the IP Hosts</a> " on page 155.
<code>icp_access_domain</code>	The <code>icp_access_domain</code> directive is used to control which ICP queries are accepted. The <code>icp_access_domain</code> directive requires a reverse DNS lookup of each ICP query to validate the IP address.	Restricts access. See " <a href="#">Restricting Access</a> " on page 156.
<code>icp_access_ip</code>	The <code>icp_access_ip</code> directive works like the <code>icp_access_domain</code> command, except that you can specify an IP address and subnet mask rather than a domain.	Restricts access. See " <a href="#">Restricting Access</a> " on page 156.
<code>icp_port</code>	The <code>icp_port</code> directive sets the port the ProxySG uses to listen for ICP requests. The default port is 3130. If you set the port to 0, ICP is disabled.	Connects to other ICP hosts. See " <a href="#">Connecting to Other ICP Hosts</a> " on page 157.

Table 9–1 ICP Directives (Continued)

Directive	Meaning	Where used
neighbor_timeout	The <code>neighbor_timeout</code> directive sets the number of seconds the ProxySG waits for ICP replies. When the cache device sends an ICP request, it waits for all hosts to reply or for the <code>neighbor_timeout</code> to expire. The default timeout is two seconds.	Connects to other ICP hosts. See " <a href="#">Connecting to Other ICP Hosts</a> " on page 157.
icp_failcount	The <code>icp_failcount</code> directive sets the number of consecutive failures the cache device can receive before considering the ICP host as failed. By default, the ICP failure count is set to 20. Each time a request fails, the failure count is incremented. When a request succeeds, the failure count is reset to zero.	Connects to other ICP hosts. See " <a href="#">Connecting to Other ICP Hosts</a> " on page 157.
http_failcount	The <code>http_failcount</code> directive sets the number of consecutive failures the cache device can receive before considering the HTTP host as failed. By default, the HTTP failure count is set to five. The failure count increments each time a request fails. When a request succeeds, the failure count is reset to zero. When an HTTP host fails, the cache device waits five minutes before attempting to use it again as a forwarding target. If the next request fails, the cache device continues to wait five minutes between attempts until the cache becomes available.	Connects to other ICP hosts. See " <a href="#">Connecting to Other ICP Hosts</a> " on page 157.
host_fail_notify	The <code>host_fail_notify</code> directive tells the cache device to send event notification e-mail when a connect fails persistently.	Connects to other ICP hosts. See " <a href="#">Connecting to Other ICP Hosts</a> " on page 157.
host_recover_notify	The <code>host_recover_notify</code> directive tells the cache device to send event notification e-mail when a failed host recovers.	Connects to other ICP hosts. See " <a href="#">Connecting to Other ICP Hosts</a> " on page 157.

## Naming the IP Hosts

The `icp_host` directive describes peers in the hierarchy. One entry is required for each ProxySG appliance you want to use.

```
icp_host hostname peertype HTTPport ICPport [default | backup | feeder]
```

Table 9–2 ICP\_host Directive

Command	Suboptions	Description
hostname		The host name of the ProxySG.

Table 9–2 ICP\_host Directive

Command	Suboptions	Description
peertype	{parent   sibling}	Relationship of the appliance to the cache device you are configuring.
HTTPport		TCP port where the appliance accepts HTTP requests. The common HTTP port is 80 or 8080.
ICPport		UDP port where the appliance accepts ICP requests. The common ICP port is 3130.
default		If specified, designates a ProxySG host parent to be the default ICP parent. If no ICP reply is received, all requests are forwarded to the default parent.
backup		If specified, designates the cache device host parent to be the backup default ICP parent. If the default parent is not available, the cache device uses the backup default parent.
feeder		If specified, designates the ProxySG host sibling as a feeder-type host, using ICP request loops to populate the appliance.

The following are sample `icp_host` directives that can be entered into the ICP configuration:

```
; Define ICP parent and sibling hosts.
icp_host cm1.bluecoat.com parent 8080 3130 default
icp_host cm2.bluecoat.com sibling 8080 3130
icp_host cm3.bluecoat.com sibling 8080 3130
icp_host cm4.bluecoat.com sibling 8080 3130
icp_host cm5.bluecoat.com parent 8080 3130
```

## Restricting Access

You can restrict access to ProxySG appliances acting as caches by other ICP hosts using the `icp_access_domain` and `icp_access_ip` directives. By default, when ICP is configured, all ICP hosts are allowed access. You should deny access to all domains other than the ICP hosts you want to use.

### **`icp_access_domain` Directive**

The `icp_access_domain` directive defines which hosts can request objects from the Web cache using ICP. The default action is to allow all requests. When you use `icp_access_domain`, each ICP query requires a reverse DNS lookup to validate the IP address. Depending on the number of ICP requests, these lookups can consume ProxySG resources.

```
icp_access_domain {allow | deny} domain
```

Table 9–3 ICP\_Access\_Domain Directive

Directive Option	Description
allow   deny	Allows or denies ICP queries from neighbors that match the domain specification.

Table 9–3 ICP\_Access\_Domain Directive

Directive Option	Description
domain	The domain to match. All ICP queries from neighbors that match the specified domain are handled by the host. The special domain of <i>all</i> defines the default action when there is no domain match.

The following are sample `icp_access_domain` directives to be entered into the ICP configuration:

```
; allow ICP access to this Blue Coat Systems SG Appliance from the
; bluecoat.com domain
icp_access_domain allow bluecoat.com
icp_access_domain deny all
; the deny all option should always be specified to deny all other
; domains
```

### icp\_access\_ip Directive

The `icp_access_ip` directive works like the `icp_access_domain` command, except that you can specify an IP address and subnet mask rather than a domain. The following describes the parameters for the `icp_access_ip` command:

```
icp_access_ip {allow | deny} subnet mask
```

Table 9–4 ICAP\_Access\_IP Directive

Directive Option	Description
allow   deny	Allow or deny ICP queries from neighbors that match the address specification.
address/subnet mask	The address and subnet mask to match. All ICP queries that match the specified address are handled by the ICP host. The special address of <code>0.0.0.0</code> defines the default action when there is no address match.

The following are sample `icp_access_ip` directives to be entered into the ICP configuration:

```
; allow ICP access to this Blue Coat Systems SG Appliance from the
local subnet
icp_access_ip allow 192.168.10.0/255.255.255.0
icp_access_ip deny 10.25.36.47
; the deny all option should always be specified to deny all other
domains
```

## Connecting to Other ICP Hosts

In addition to the ICP directives described in the sections above, you can specify the following directives in the ICP configuration:

```
icp_port 0
neighbor_timeout 2
icp_failcount 20
http_failcount 5
host_fail_notify on
host_recover_notify on
```

Table 9–5 Connecting to Other ICP Hosts

Directive	Description
icp_port	The default port is 3130. If you set the port to 0, ICP is disabled.
neighbor_timeout	When the cache device sends an ICP request, it waits for all hosts to reply or for the neighbor_timeout to expire. The default timeout is two seconds.
http_failcount	By default, the HTTP failure count is set to five. The failure count increments each time a request fails. When a request succeeds, the failure count resets to zero. When an HTTP host fails, the cache device waits five minutes before attempting to use it again as a forwarding target.
icp_failcount	By default, the ICP failure count is set to 20. Each time a request fails, the failure count is incremented. When a request succeeds, the failure count is reset to zero.
host_fail_notify	on tells the cache to send event notification e-mail when a connect fails persistently; off disables this setting.
host_recover_notify	on tells the cache to send event notification e-mail when a failed host recovers; off disables this setting.

## Creating an ICP Installable List

You can create the ICP installable list using one of the following methods:

- ❑ Text Editor, which allows you to enter directives (or copy and paste the contents of an already-created file) directly onto the ProxySG.
- ❑ Local file, installed on your system; the ProxySG can browse to the file and install it.
- ❑ A remote URL, where you place an already-created file on an FTP or HTTP server to be downloaded to the appliance.
- ❑ The CLI `inline` command.

When the ICP installable list is created and installed, it overwrites any ICP settings on the ProxySG.

### To create an ICP installable list:

1. Select **Configuration > Forwarding > ICP**.
2. From the drop-down list, select the method you want to use to install the ICP configuration; then click **Install**.
  - Remote URL:

Enter the fully-qualified URL, including the filename, where the configuration is located. To view the file before installing it, click **View**. Click **Install**. Examine the installation status that displays; click **OK**.

- Local File:

Click **Browse** to bring up the Local File Browse window. Browse for the file on the local system. Click **Install**. When the installation is complete, a results window opens. View the results, close the window, click **Close**.

- **Text Editor:**

The current configuration is displayed in installable list format. You can customize it or delete it and create your own. Click **Install**. When the installation is complete, a results window opens. View the results, close the window, click **Close**.

3. Click **Apply**.

---

**Note:** You can create ICP settings using the CLI inline commands.

For more information on using inline commands, refer to *Volume 11: Command Line Interface Reference*.

---

## Enabling ICP

Before ICP can be used in the ProxySG environment:

- ICP must be running
- At least one forwarding host must be configured

ICP can be enabled or disabled through the policy rule `icp`. The default is `icp(yes)`. You can disable ICP with the policy rule `icp(no)` to control ICP queries for requests.



## *Chapter 10: Managing Routing Information Protocols (RIP)*

This chapter discusses the Routing Information Protocol (RIP), which is designed to select the fastest route to a destination. RIP support is built into the ProxySG appliance, and is configured by creating and installing an RIP configuration text file onto the device.

The Blue Coat RIP implementation also supports advertising default gateways. Default routes added by RIP are treated the same as the static default routes; that is, the default route load balancing schemes apply to the default routes from RIP as well.

### *Topics in this Chapter*

This chapter includes information about the following topics:

- ❑ "Installing RIP Configuration Files" on page 161
- ❑ "Configuring Advertising Default Routes" on page 163
- ❑ "RIP Commands" on page 163
- ❑ "RIP Parameters" on page 164
- ❑ "ProxySG-Specific RIP Parameters" on page 165
- ❑ "Using Passwords with RIP" on page 166

### **Installing RIP Configuration Files**

No RIP configuration file is shipped with the appliance. For commands that can be entered into the RIP configuration file, see "["RIP Commands"](#)" on page 163.

After creating an RIP configuration file, install it using one of the following methods:

- ❑ Using the Text Editor, which allows you to enter settings (or copy and paste the contents of an already-created file) directly onto the appliance.
- ❑ Creating a local file on your local system; the ProxySG can browse to the file and install it.
- ❑ Using a remote URL, where you place an already-created file on an FTP or HTTP server to be downloaded to the ProxySG.
- ❑ Using the CLI `inline rip-settings` command, which allows you to paste the RIP settings into the CLI.
- ❑ Using the CLI `rip` commands, which require that you place an already-created file on an FTP or HTTP server and enter the URL into the CLI. You can also enable or disable RIP with these commands.

**To install an RIP configuration file:**

**Note:** When entering RIP settings that affect current settings (for example, when switching from ripv1 to ripv2), disable RIP before you change the settings; re-enable RIP when you have finished.

---

1. Select **Configuration > Network > Routing > RIP**.
2. To display the current RIP settings, routes, or source, click one or all of the **View RIP** buttons.
3. In the **Install RIP Setting** from drop-down list, select the method used to install the routing table; click **Install**.
  - **Remote URL:**  
Enter the fully-qualified URL, including the filename, where the routing table is located. To view the file before installing it, click **View**. Click **Install**. To view the installation results, click **Results**; close the window when you are finished. Click **OK**.
  - **Local File:**  
Click **Browse** to display the Local File Browse window. Browse for the file on the local system. Open it and click **Install**. When the installation is complete, a results window opens. View the results and close the window.
  - **Text Editor:**  
The current configuration is displayed in installable list format. You can customize it or delete it and create your own. Click **Install**. When the installation is complete, a results window opens. View the results, close the window, and click **OK**.
4. Click **Apply**.
5. Select **Enable RIP**.
6. Click **Apply**.

**Related CLI Syntax to Configure RIP**

```
SGOS#(config) rip {disable | enable}
```

- To enter a path to a remote URL where you have placed an already-created RIP configuration file, enter the following commands at the `(config)` command prompt:

```
SGOS#(config) rip path url
SGOS#(config) load rip-settings
```
- To paste an RIP configuration directly into the CLI, enter the following command at the `(config)` command prompt:

```
SGOS#(config) inline rip-settings end-of-file_marker
```

## Configuring Advertising Default Routes

Default routes advertisements are treated the same as the static default routes; that is, the default route load balancing schemes also apply to the default routes from RIP.

By default, RIP ignores the default routes advertisement. You can change the default from disable to enable and set the preference group and weight through the CLI only.

### To enable and configure advertising default gateway routes:

- At the `(config)` command prompt:

```
SGOS#(config) rip default-route enable
SGOS#(config) rip default-route group group_number
SGOS#(config) rip default-route weight weight_number
```

Where `group_number` defaults to 1, and `weight_number` defaults to 100, the same as the static default route set by the `ip-default-gateway` command.

- (Optional) To view the default advertising routes, enter:

```
SGOS#(config) show rip default-route
RIP default route settings:
Enabled: Yes
Preference group: 3
Weight: 30
```

## RIP Commands

You can place any of the commands below into a Routing Information Protocol (RIP) configuration text file. You cannot edit a RIP file through the command line, but you can overwrite a RIP file using the `inline rip-settings` command.

After the file is complete, place it on an HTTP or FTP server accessible to the ProxySG and download it.

---

**Note:** RIP parameters are accepted in the order that they are entered. If a RIP parameter is added, it is appended to the default RIP parameters. If a subsequent parameter conflicts with a previous parameter, the most recent one is used.

---

### *net*

```
net Nname[/mask] gateway Gname metric Value {passive | active | external}
```

Table 10–1 net Commands

Parameters	Description
<code>Nname</code>	Name of the destination network. It can be a symbolic network name, or an Internet address specified in dot notation.
<code>/mask</code>	Optional number between 1 and 32 indicating the netmask associated with <code>Nname</code> .

Table 10–1 net Commands (Continued)

Parameters	Description
<i>Gname</i>	Name or address of the gateway to which RIP responses should be forwarded.
<i>Value</i>	The hop count to the destination host or network. A net <i>Nname</i> /32 specification is equivalent to the host <i>Hname</i> command.
passive   active   external	Specifies whether the gateway is treated as passive or active, or whether the gateway is external to the scope of the RIP protocol.

## host

```
host Hname gateway Gname metric Value {passive | active | external}
```

Table 10–2 host Commands

Parameters	Description
<i>Hname</i>	Name of the destination network. It can be a symbolic network name, or an Internet address specified in dot notation.
<i>Gname</i>	Name or address of the gateway to which RIP responses should be forwarded. It can be a symbolic network name, or an Internet address specified in dot notation.
<i>Value</i>	The hop count to the destination host or network. A net <i>Nname</i> /32 specification is equivalent to the host <i>Hname</i> command.
passive   active   external	Specifies whether the gateway is treated as passive or active, or whether the gateway is external to the scope of the RIP protocol.

## RIP Parameters

Lines that do not start with net or host commands *must* consist of one or more of the following parameter settings, separated by commas or blank spaces:

Table 10–3 RIP Parameters

Parameters	Description
<i>if=[0 1 2 3]</i>	Specifies that the other parameters on the line apply to the interface numbered 0,1,2, or 3 in SGOS terms.
<i>passwd=XXX</i>	Specifies an RIPv2 password included on all RIPv2 responses sent and checked on all RIPv2 responses received. The password must not contain any blanks, tab characters, commas or '#' characters.
<i>no_ag</i>	Turns off aggregation of subnets in RIPv1 and RIPv2 responses.

Table 10–3 RIP Parameters (Continued)

Parameters	Description
no_super_ag	Turns off aggregation of networks into supernets in RIPv2 responses.
passive	Marks the interface to not be advertised in updates sent through other interfaces, and turns off all RIP and router discovery through the interface.
no_rip	Disables all RIP processing on the specified interface.
no_ripv1_in	Causes RIPv1 received responses to be ignored.
no_ripv2_in	Causes RIPv2 received responses to be ignored.
ripv2_out	Turns off RIPv1 output and causes RIPv2 advertisements to be multicast when possible.
ripv2	Is equivalent to no_ripv1_in and no_ripv1_out. This parameter is set by default.
no_rdisc	Disables the Internet Router Discovery Protocol. This parameter is set by default.
no_solicit	Disables the transmission of Router Discovery Solicitations.
send_solicit	Specifies that Router Discovery solicitations should be sent, even on point-to-point links, which by default only listen to Router Discovery messages.
no_rdisc_adv	Disables the transmission of Router Discovery Advertisements.
rdisc_adv	Specifies that Router Discovery Advertisements should be sent, even on point-to-point links, which by default only listen to Router Discovery messages.
bcast_rdisc	Specifies that Router Discovery packets should be broadcast instead of multicast.
rdisc_pref=N	Sets the preference in Router Discovery Advertisements to the integer N.
rdisc_interval=N	Sets the nominal interval with which Router Discovery Advertisements are transmitted to N seconds and their lifetime to 3*N.
trust_gateway=rname	Causes RIP packets from that router and other routers named in other trust_gateway keywords to be accepted, and packets from other routers to be ignored.
redirect_ok	Causes RIP to allow ICMP Redirect messages when the system is acting as a router and forwarding packets. Otherwise, ICMP Redirect messages are overridden.

## ProxySG-Specific RIP Parameters

The following RIP parameters are unique to ProxySG configurations:

Table 10–4 ProxySG-Specific RIP Parameters

Parameters	Description
supply_routing_info -or- advertise_routes	-s option: Supplying this option forces routers to supply routing information whether it is acting as an Internetwork router or not. This is the default if multiple network interfaces are present or if a point-to-point link is in use.  -g option: This flag is used on Internetwork routers to offer a route to the `default' destination. This is typically used on a gateway to the Internet, or on a gateway that uses another routing protocol whose routes are not reported to other local routers.  -h option: Suppress_extra_host_routes advertise_host_route  -m option: Advertise_host_route on multi-homed hosts  -A option: Ignore_authentication //
no_supply_routing_info	-q option: opposite of -s.
no_rip_out	Disables the transmission of all RIP packets. This setting is the default.
no_ripv1_out	Disables the transmission of RIPv1 packets.
no_ripv2_out	Disables the transmission of RIPv2 packets.
rip_out	Enables the transmission of RIPv1 packets.
ripv1_out	Enables the transmission of RIPv1 packets.
rdisc	Enables the transmission of Router Discovery Advertisements.
ripv1	Causes RIPv1 packets to be sent.
ripv1_in	Causes RIPv1 received responses to be handled.

## Using Passwords with RIP

The first password specified for an interface is used for output. All passwords pertaining to an interface are accepted on input. For example, with the following settings:

```
if=0 passwd=aaa
if=1 passwd=bbb
passwd=ccc
```

Interface 0 accepts passwords `aaa` and `ccc`, and transmits using password `aaa`. Interface 1 accepts passwords `bbb` and `ccc`, and transmits using password `bbb`. The other interfaces accept and transmit the password `ccc`.

## *Chapter 11: Configuring the ProxySG as a Session Monitor*

This chapter discusses how you can configure the SGOS software to monitor RADIUS accounting messages and to maintain a session table based on the information in these messages. The session table can then be used for logging or authentication.

You can also, optionally, configure multiple appliances to act as a session monitor *cluster*. The session table is then replicated to all members of the cluster.

Once configured and enabled, the session monitor maintains a session table that records which sessions are currently active and the user identity for each session.

### *Topics in this Chapter*

This chapter includes information about the following topics:

- ❑ "Configuring the Session Monitor" on page 167
- ❑ "Creating the CPL" on page 170

## **Configuring the Session Monitor**

Three steps are required to configure the session monitor:

- ❑ Configure the RADIUS accounting protocol parameters for the session monitor.
- ❑ (Optional) Configure the session monitor cluster.
- ❑ Configure the session monitor parameters.

### **Configuring the RADIUS Accounting Protocol Parameters**

The configuration commands to create the RADIUS accounting protocol parameters can only be done through the CLI. If you are using session-monitor clustering, the commands must be invoked on each system in an already-existing failover group. (For information on configuring a failover group, see Chapter 7: "Configuring Failover" on page 125.)

#### **To configure the RADIUS accounting protocol parameters:**

- ❑ To enter configuration mode:  

```
SGOS#(config) session-monitor
```
- ❑ The following subcommands are available:  

```
SGOS#(config session-monitor) radius acct-listen-port port_number  
SGOS#(config session-monitor) radius authentication {enable |  
        disable}  
SGOS#(config session-monitor) radius encrypted-shared-secret  
        encrypted_secret
```

```

SGOS#(config session-monitor) radius no encrypted-shared-secret
SGOS#(config session-monitor) radius response {enable | disable}
SGOS#(config session-monitor) radius shared-secret plaintext_secret

```

Table 11–1 Session Monitor Accounting Command Descriptions

Command	Option	Description
radius acct-listen-port	<i>port_number</i>	The port number where the ProxySG listens for accounting messages
radius authentication	enable   disable	Enable or disable (the default) the authentication of RADIUS messages using the shared secret. The shared secret must be configured before authentication is enabled.
radius encrypted-shared-secret	<i>encrypted_shared_secret</i>	Specify the shared secret (in encrypted form) used for RADIUS protocol authentication. The secret is decrypted using the configuration-passwords-key.
radius no shared-secret		Clears the shared secret used for RADIUS protocol authentication.
radius response	enable   disable	Enable (the default) or disable generation of RADIUS responses.
radius shared-secret	<i>plaintext_secret</i>	Specify the shared secret used for RADIUS protocol in plaintext.

## Configuring a Session Monitor Cluster

Configuring a session monitor cluster is optional. When a session monitor cluster is enabled, the session table is replicated to all members of the cluster. The cluster members are the ProxySG appliances that are configured as part of the failover group referenced in the session monitor cluster configuration. The failover group must be configured before the session monitor cluster. (For information on configuring a failover group, see [Chapter 7: "Configuring Failover" on page 125](#).)

To replicate the session table to all the members of a failover group, you can use the following commands.

---

**Note:** When using a session monitor cluster, the RADIUS client must be configured to send the RADIUS accounting messages to the failover group's virtual IP address.

---

Proxy traffic can be routed to any of the machines in the cluster.

---

**Note:** Each member of the failover group must be configured with the cluster commands to maintain the session table for RADIUS accounting messages.

---

### To configure session monitor cluster parameters:

```
SGOS#(config) session-monitor
```

- The following subcommands are available:

```
SGOS#(config session-monitor) cluster {enable | disable}
SGOS#(config session-monitor) cluster group-address IP_address
SGOS#(config session-monitor) cluster port port_number
SGOS#(config session-monitor) cluster grace-period seconds
SGOS#(config session-monitor) cluster synchronization-delay seconds
```

Table 11–2 Session Monitor Cluster Command Descriptions

Command	Option	Description
cluster	enable   disable	Enable or disable (the default) clustering on a failover group. The group address must be set before the cluster can be enabled.
cluster group-address   no group-address	IP_address	Set or clear (the default) the failover group IP address. This must be an existing failover group address.
cluster port	port_number	Set the TCP/IP port for the session replication control. The default is 55555.
cluster synchronization-delay	seconds	Set the maximum time to wait for session table synchronization. The default is zero; the range is from 0 to $2^{31}-1$ seconds. During this time evaluation of \$(session.username) is delayed, so proxy traffic might also be delayed.
cluster grace-period	seconds	Set the time to keep session transactions in memory while waiting for slave logins. This can be set to allow session table synchronization to occur after the synchronization-delay has expired. The default is 30 seconds; the range is 0 to $2^{31}-1$ seconds.

## Configuring the Session Monitor

The session monitor commands set up session monitoring behavior. If using session-monitor clustering, these commands must be invoked on all systems in the failover group.

### To configure the session monitor:

1. At the (config) prompt:

```
SGOS#(config) session-monitor
SGOS#(config session-monitor) disable | enable
SGOS#(config session-monitor) max-entries integer
SGOS#(config session-monitor) timeout minutes
```

Table 11–3 Session Monitor Configuration Command Descriptions

Command	Option	Description
enable   disable		Enable or disable (the default) session monitoring
max_entries	integer	The maximum number of entries in the session table. The default is 500,000; the range is from 1 to 2,000,000. If the table reaches the maximum, additional START messages are ignored.
timeout	minutes	The amount of time before a session table entry assumes a STOP message has been sent. The default is 120 minutes; the range is from 0 to 65535 minutes. Zero indicates no timeout.

2. (Optional) To view the session-monitor configuration, you can either use the `session-monitor view` command or the `config show session-monitor` command.

```
SGOS#(config) show session-monitor
General:
Status: enabled
Entry timeout: 120 minutes
Maximum entries: 500000
Cluster support: enabled
Cluster port: 55555
Cluster group address: 10.9.17.159
Synchronization delay: 0
Synchronization grace period: 30
Accounting protocol: radius
Radius accounting:
Listen ports:
Accounting: 1813
Responses: Enabled
Authentication: Enabled
Shared secret: *****
```

## Creating the CPL

Be aware that the examples below are just part of a comprehensive authentication policy. By themselves, they are not adequate.

**Note:** Refer to *Volume 10: Content Policy Language Guide* for details about CPL and how transactions trigger the evaluation of policy file layers.

- In this example, the ProxySG is using the session table maintained by the session monitor for authentication.

```
<proxy>
  allow authenticate(session)
```

where `session` is a policy substitution realm that uses `$(session.username)` in building the username. (For information on creating a Policy Substitution realm, refer to *Volume 4: Securing the Blue Coat ProxySG Appliance*.)

## Notes

- The session table is stored entirely in memory. The amount of memory needed is roughly 40MB for 500,000 users.
- The session table is kept in memory. If the system goes down, the contents of the session table are lost. However, if the system is a member of a failover cluster, the current contents of the session table can be obtained from another machine in the cluster. The only situation in which the session table is entirely lost is if all machines in the cluster go down at the same time.
- The session replication protocol replicates session information only; configuration information is not exchanged. That means that each ProxySG must be properly configured for session monitoring.
- The session replication protocol is not secured. The failover group should be on a physically secure network to communicate with each other.
- The session monitor requires sufficient memory and at least 100Mb-per-second network links among the cluster to manage large numbers of active sessions.
- The username in the session table is obtained from the Calling-Station-ID attribute in the RADIUS accounting message and can be a maximum of 19 bytes.



## *Chapter 12: Accelerating and Controlling Micro-Branch and Mobile User Connections (ProxyClient)*

This chapter describes the Blue Coat ProxyClient solution, which provides security to mobile users and enables systems that do not reside behind a gateway Blue Coat ProxySG to achieve accelerated performance and ensure users abide by company Web usage policies.

This chapter discusses the following topics:

- [Section A: "ProxyClient Concepts" on page 174](#)
- [Section B: "Configuring a ProxySG as the Client Manager" on page 205](#)
- [Section C: "Configuring the ProxyClient" on page 216](#)
- [Section D: "Distributing the ProxyClient Software" on page 266](#)
- [Section E: "About the ProxyClient Application" on page 288](#)
- [Section F: "Monitoring ProxyClient Performance" on page 293](#)
- [Section G: "About the ProxyClient System Footprint" on page 298](#)
- [Section H: "ProxyClient Troubleshooting" on page 304](#)

## Section A: ProxyClient Concepts

# Section A: ProxyClient Concepts

Before configuring the ProxyClient, Blue Coat recommends that you understand the conceptual information discussed in this section.

---

**Note:** This section assumes that you are familiar with the Blue Coat Application Delivery Network (ADN) concepts and features, as described in [Chapter 2: "Configuring an Application Delivery Network" on page 17](#).

---

This section includes the following topics:

- ["Why Deploy ProxyClient?"](#)
- ["Terminology" on page 175](#)
- ["About Blue Coat in the Network" on page 177](#)
- ["About the Roles of ProxySG Appliances With the ProxyClient" on page 178](#)
- ["About the Role of the ProxyClient" on page 179](#)
- ["About ProxyClient Licensing" on page 181](#)
- ["About Location Awareness" on page 182](#)
- ["About ADN Feature Support in ProxyClient" on page 192](#)
- ["About ProxyClient Web Filtering" on page 196](#)
- ["ProxyClient Security Disclaimers" on page 204](#)

## Why Deploy ProxyClient?

As mobile technology efficiency has advanced, so has the ability for enterprises and other organizations to mobilize their workforce and allow access to remote systems. Employees who are often in the field, at home, or in small offices—including those who log into the corporate network through a Virtual Private Network (VPN) connection—require the same performance that is achieved when in the corporate network environment.

Likewise, corporations seek to extend the same security, policy control, and tracking abilities that are available in the corporate network. Blue Coat designed the ProxyClient solution to provide accelerated application delivery and Web filtering in the following scenarios:

- For employees using laptops and who work from both the office and the field. These users enjoy accelerated network performance while on the corporate network, but lose that performance when they must, from a remote location, connect to the enterprise network using VPN.
- For users in *micro-branches*, or offices with a very small number of users, where it might not be cost-justifiable to deploy even the smallest Blue Coat ProxySG acceleration gateway appliance.

In both of these scenarios, the ProxyClient maintains user productivity levels by providing enterprise-grade performance, while also ensuring that the corporate Web usage policies are maintained on company-owned systems in the field (only users with administrator privileges can remove or disable the ProxyClient).

## Section A: ProxyClient Concepts

### Terminology

This chapter commonly uses to the following terms:

- **ProxyClient**

Downloaded and installed on user systems, the ProxyClient provides increased network performance and Web filtering when the connection is from a network that is not fronted by a Blue Coat ProxySG. Users are afforded some configuration and monitoring abilities.

- **ADN Manager**

Every ADN network must have a ProxySG designated as the ADN Manager, which is responsible for publishing the routing table to ProxyClients (and to other ProxySG ADN peers).

You can optionally designate another ProxySG appliance as the backup manager. This appliance takes over the duty of providing routing information to ProxyClients in the event the ADN manager becomes unavailable.

- **Concentrator**

A ProxySG appliance that receives inbound ADN tunnels from the ProxyClient (and other ProxySG appliances on the ADN network) and accelerates data center resources (such as file servers and Web applications).

- **Branch ProxySG**

A ProxySG deployed near a branch office router (where *branch office* means a small or regional office). To retrieve client file and data requests from servers located in the corporate data center, the branch proxy connects to the ADN concentrators—which are advertised by the ADN manager or discovered transparently—in the data centers at the corporate location.

If the branch location has servers, the branch peer also serves as a concentrator. A branch ProxySG can provide acceleration, Web filtering, or both for the branch office.

- **Client Manager**

A Client Manager is a ProxySG (running a compatible version of SGOS) that provides the ProxyClient software to users, maintains the software and the client configuration of all clients in the ADN network. Commonly, the Client Manager appliance is deployed in the intranet behind the enterprise VPN gateway, with a router connection to the Internet.

For details, including which SGOS versions are supported, see the *ProxyClient Release Notes*.

- **Mobile user**

Employees who use laptops with ProxyClient installed and travel from corporate locations to other locations, such as customer sites, hotels, or home offices. Mobile users does not refer to users with hand-held devices.

## Section A: ProxyClient Concepts

### Location awareness

The ability of the ProxyClient to detect the presence of a network connection and enable or disable acceleration and Web filtering as determined by policy. For example, you typically disable both ProxyClient acceleration and Web filtering in the office but enable them for mobile users.

The ProxySG administrate determines the criteria that define locations and enables or disables acceleration and Web filtering for each location.

### Byte caching

A specific form of compression that looks for repeated data patterns transmitted over the WAN. Byte caching plus other forms of compression (such as gzip) optimizes the data sent over the TCP tunnel.

### Common Internet File System (CIFS) optimization

ProxyClient significantly enhances WAN file service delivery by implementing the following:

- CIFS protocol optimization, which improves performance by consolidating data forwarded across the WAN.
- Client object caching, which enables clients to get previously obtained data from the cache rather than from across the WAN.

These terms are brief descriptions of ADN technology as they relate to ProxyClient. For more detailed information about the Blue Coat WAN optimization solution, see [Chapter 2: "Configuring an Application Delivery Network"](#).

## Section A: ProxyClient Concepts

### About Blue Coat in the Network

ProxyClient optimizes the enterprise network conduit between remote or micro-branch office systems and ProxySG appliances. [Figure 12–1](#) provides a high-level, logical view of Blue Coat deployed in the network.

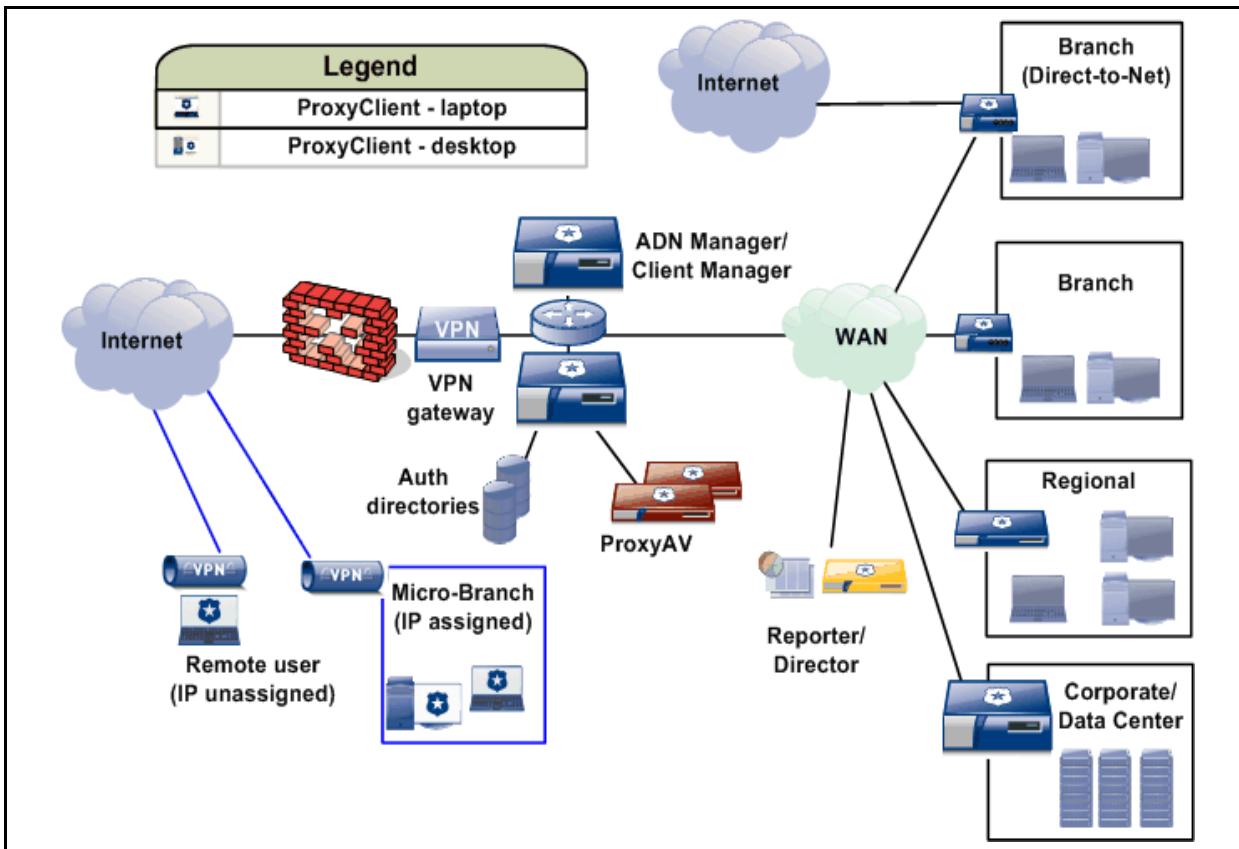


Figure 12–1 Blue Coat in the network

Blue Coat does not provide strict guidelines for determining whether a remote location requires a local ProxySG. Generally, use a local ProxySG if the branch office has a data center (that is, file servers and so on) and to offload acceleration and Web filtering functions from the corporate ProxySGs to the branch.

Blue Coat recommends considering a ProxyClient-only solution at a remote location if any of the following is true:

- The remote location is a mobile user whose location is constantly changing.
- The remote location is a home office.
- The remote location has a few users and therefore does not justify a local ProxySG appliance.

In any of the proceeding locations, you might provide connectivity to the corporate network with VPN client software; however, that is not a requirement for using the ProxyClient.

## Section A: ProxyClient Concepts

---

**Note:** Refer to the ProxyClient *Release Notes* for the latest list of supported VPN technologies and operating systems.

---

### About the Roles of ProxySG Appliances With the ProxyClient

One or more ProxySG appliances interact with ProxyClients in the following ways:

- ADN Manager and backup manager—As discussed in "[Terminology](#)" on page 175, you must configure an ADN Manager and Blue Coat recommends you also configure a backup manager.
- Client Manager—The ProxySG that provides the management infrastructure to ProxyClients, including the following services:
  - Software for the client (initial deployment and updates)
  - Periodic verification of the Blue Coat Web Filter (BCWF) license and database (required to use BCWF)
  - Monitoring
  - Client configuration management (such as Web filtering policy)

---

**Note:** The Client Manager can be *any* appliance in the ADN network, including a concentrator, the ADN manager, or a backup manager. For example, the Client Manager could also be the ADN manager, but that is not a requirement.

---

- Concentrator—A ProxySG that terminates ProxyClient ADN tunnels, and provides two-way compression and data forwarding to and from the appropriate server. A concentrator accelerates network traffic.
- Branch ProxySG—Depending on how it is configured, a branch ProxySG might provide acceleration and Web filtering for a branch office.

## Section A: ProxyClient Concepts

The following diagram illustrates a high-level network architecture involving ProxyClient.

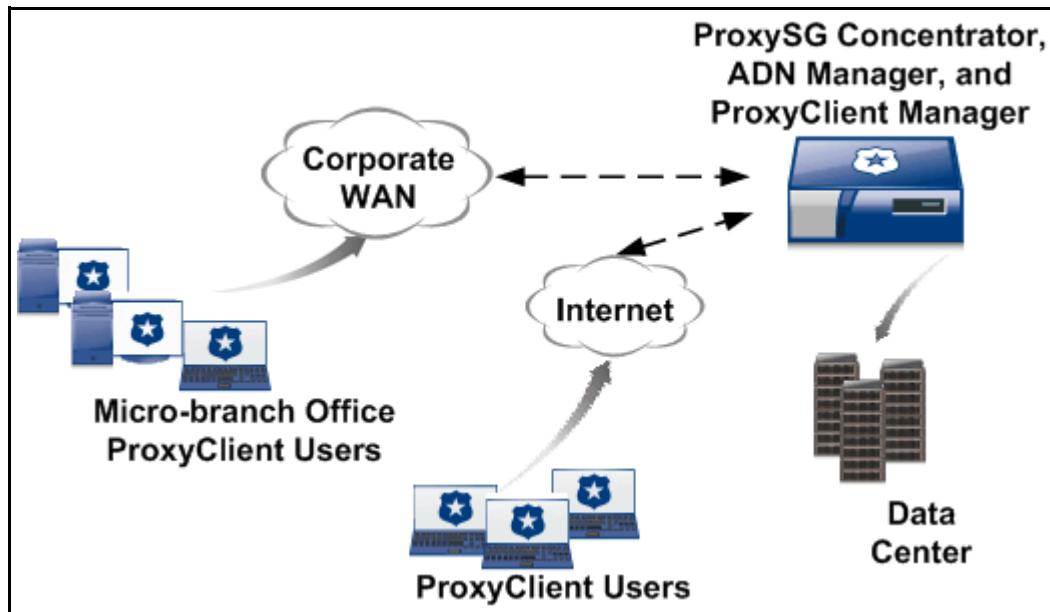


Figure 12–2 High-level ProxyClient network diagram

## About the Role of the ProxyClient

The ProxyClient software is made available either manually by user installation or is pre-installed by administrators. After it is installed and enabled, ProxyClient mimics a proxy appliance and processes requests.

For example, if Web filtering is enabled and a user requests the URL `www.amazon.com`, a policy check occurs to verify that **Shopping** is an allowable category.

If acceleration is enabled and a user requests a file transfer, ProxyClient applies the Blue Coat ADN compression capability to the CIFS protocol. The following diagram illustrates the *high level* decision order within ProxyClient (and assumes a valid base SGOS or trial license is installed).

## Section A: ProxyClient Concepts

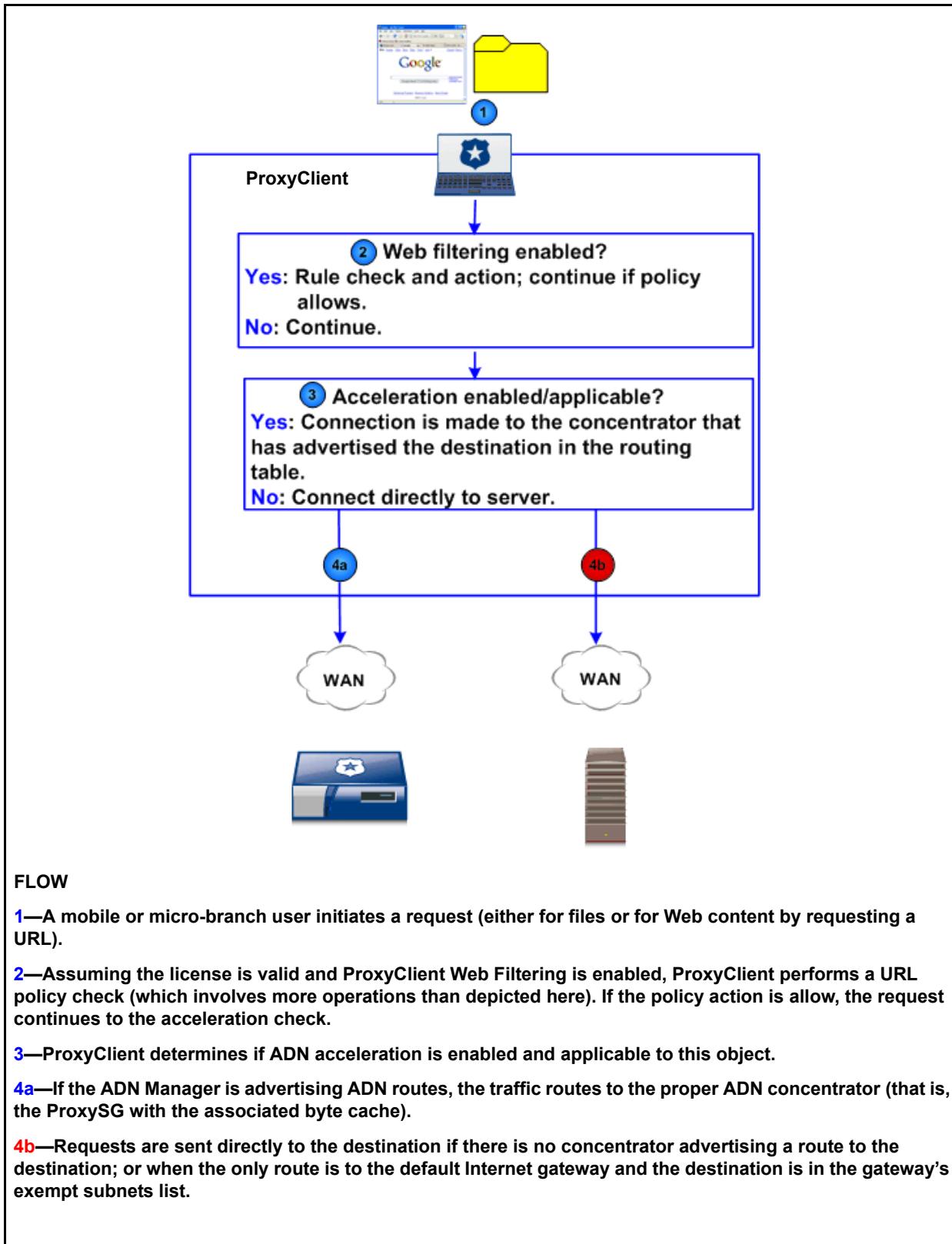


Figure 12–3 ProxyClient data flow decision diagram

## Section A: ProxyClient Concepts

---

**Note:** More information about Web filtering is discussed in "[About ProxyClient Web Filtering](#)" on page 196.

---

### About ProxyClient Licensing

There are two ProxyClient feature license components:

- The ProxyClient—Acceleration license enables the ProxyClient to accelerate ADN traffic, optimize file transfers using the CIFS protocol, and collect statistics to ProxyClient systems in your enterprise.

The Client Manager license enables unlimited ProxyClient connections provided the SGOS base license is valid; however, concentrators have user limits. Each unique IP address counts as one user.

Although the Client Manager license enables it to support unlimited users, you must size your ProxyClient deployment based on Client Manager scalability and concentrator user limits.

- The ProxyClient—Web Filtering license enables content filtering policy enforcement on ProxyClients.

---

**Important:**

- ProxyClient Web Filtering requires a valid Blue Coat Web Filter (BCWF) contract, with a valid BCWF database installed on the Client Manager (that is, the database must be updated at least once every 30 days).
- Even if you have BCWF databases installed on other ProxySG appliances serving as forward proxies, you *must* download the BCWF database on the Client Manager.

---

Licenses are installed on the ProxySG and managed the same as other ProxySG features (as described in *Volume 1: Getting Started*). For ProxyClient, the feature licenses components enable the ProxySG to be a Client Manager. Any ProxySG still operating in the trial period can be a Client Manager as well. Client (user) systems do not require licenses to use the ProxyClient software.

## Section A: ProxyClient Concepts

### Software and Hardware Requirements

For information about software and hardware requirements, see the [ProxyClient Release Notes](#).

### About Location Awareness

The following sections discuss location awareness:

- [□ "Overview of Location Awareness"](#)
- [□ "About Location Conditions" on page 183](#)
- [□ "About Condition Rulebase Ordering" on page 191](#)

### Overview of Location Awareness

*Location awareness* enables administrators to enable or disable ProxyClient acceleration and Web filtering functionality based on the location from which the client connects.

For example, the administrator should disable both acceleration and Web filtering for users in the office if ProxySG concentrators and proxies in the office perform those functions. Administrators should enable both acceleration and Web filtering for mobile users because there is no local ProxySG to perform those functions. (In general, enable the ProxyClient to perform functionality a local ProxySG does *not* perform.)

*Locations* are defined by the ProxySG administrator using one or more the following *location conditions* ([Configuration > ProxyClient > General > Locations](#)):

- [□ Source IP range, which is appropriate for situations \(such as in the office\) where you know the IP address range from which clients connect.](#)
- [□ DNS server IP address](#)

In some situations, the client's IP address might not be enough to uniquely define a location. If that is the case, DNS servers can be used as additional location conditions.

- [□ Virtual network interface IP address, which should be used whenever clients connect to the corporate network using VPN software.](#)

VPN software typically creates a virtual network adapter (referred to as a *virtual NIC*) that is assigned an IP address that is used when the client connects to the corporate network over VPN.

A VPN gateway behind the firewall at the corporate data center provisions IP addresses and DNS server addresses to VPN clients.

---

**Note:** Location conditions are logically ANDed together so choosing more than one location condition for a location is a good way to uniquely identify the location.

---

## Section A: ProxyClient Concepts

### *About Location Conditions*

This section discusses general guidelines to follow when setting up locations and provides an example:

- "General Guidelines for Location Conditions"
- "Location Example" on page 184

### **General Guidelines for Location Conditions**

In general, configure the ProxyClient to perform the features that a ProxySG does *not* perform (that is, either acceleration or Web filtering). When planning your ProxyClient deployment, Blue Coat recommends you take the following into account:

- Whether or not a ProxySG at the location performs acceleration or Web filtering
- Which two of the three available location conditions uniquely defines the location

The following table shows how to use these guidelines in a sample four-location deployment:

Location type	How to apply the guidelines
Mobile with no local ProxySG	<ul style="list-style-type: none"> <li>• Role of local ProxySG: There is none so the location should enable both ProxyClient acceleration and Web filtering.</li> <li>• Location conditions: To uniquely identify the location, choose Virtual NIC IP address and DNS server IP address.</li> </ul>
Headquarters with several local ProxySGs	<ul style="list-style-type: none"> <li>• Role of local ProxySGs: Perform both acceleration and Web filtering so the location should disable both features.</li> <li>• Location conditions: To uniquely identify the location, choose source IP address range and DNS server IP address.</li> </ul>
Branch office with no local ProxySG	<ul style="list-style-type: none"> <li>• Role of local ProxySG: There is none so the location should enable ProxyClient acceleration. However, if a branch ProxySG at headquarters performs Web filtering, you should disable Web filtering at the branch office.</li> <li>• Location conditions: To uniquely identify the location, choose source IP address range and DNS server IP address.</li> </ul>

## Section A: ProxyClient Concepts

Location type	How to apply the guidelines
Branch office with a local ProxySG	<ul style="list-style-type: none"> <li>• Role of local ProxySG: If the local ProxySG performs both acceleration and Web filtering, the location should disable both.</li> <li>    However, if the local ProxySG performs only acceleration, the location should disable ProxyClient acceleration and enable Web filtering.</li> <li>• Location conditions: To uniquely identify the location, choose source IP address range and DNS server IP address.</li> </ul>

### Location Example

Figure 12–4 shows a sample deployment with the following locations  
**(Configuration > ProxyClient > General > Locations):**

- A home office or mobile user that uses VPN to connect to the network
- Company headquarters
- Branch office with no local ProxySG; in this example, there is an IP address conflict to illustrate the importance of choosing more than one location condition
- Branch office with a local ProxySG that performs both acceleration and Web filtering

## Section A: ProxyClient Concepts

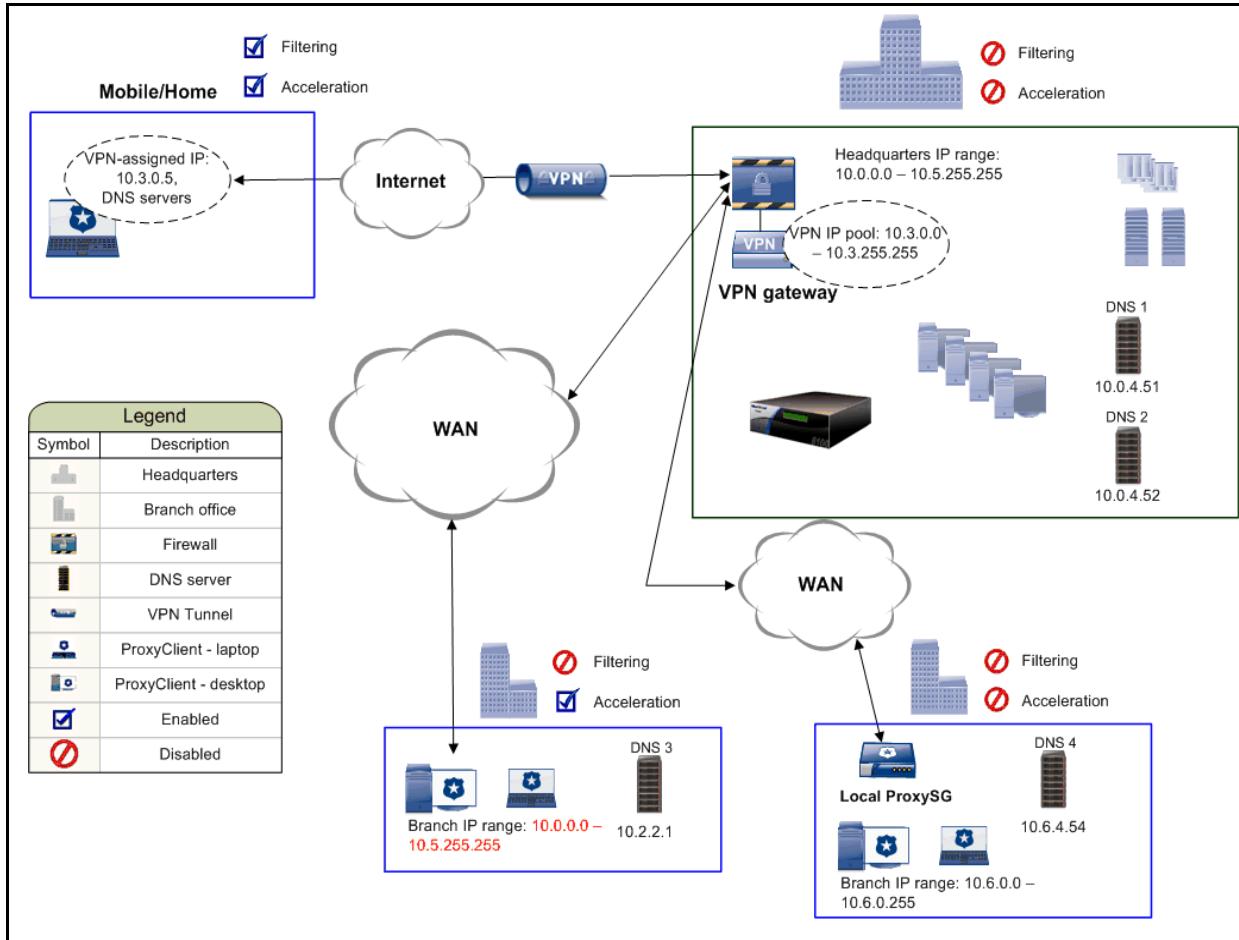


Figure 12–4 ProxyClient location awareness

The following sections discuss Figure 12–4 in more detail:

- ❑ "Home Office or Mobile Location"
- ❑ "Headquarters Location" on page 187
- ❑ "Branch Office Location with no ProxySG" on page 189
- ❑ "Branch Office With a Local ProxySG" on page 190

### Home Office or Mobile Location

The home office user in Figure 12–4 connects to the corporate network using VPN. The network administrator configures a VPN gateway at headquarters to provision a pool of IP addresses and DNS server IP addresses for connecting to the corporate network. In this example, the IP address range is a subset of the headquarters IP address range.

The user's VPN client software creates a virtual network adapter (also referred to as a *virtual NIC*) that has an IP address that is used when the user connects to the network.

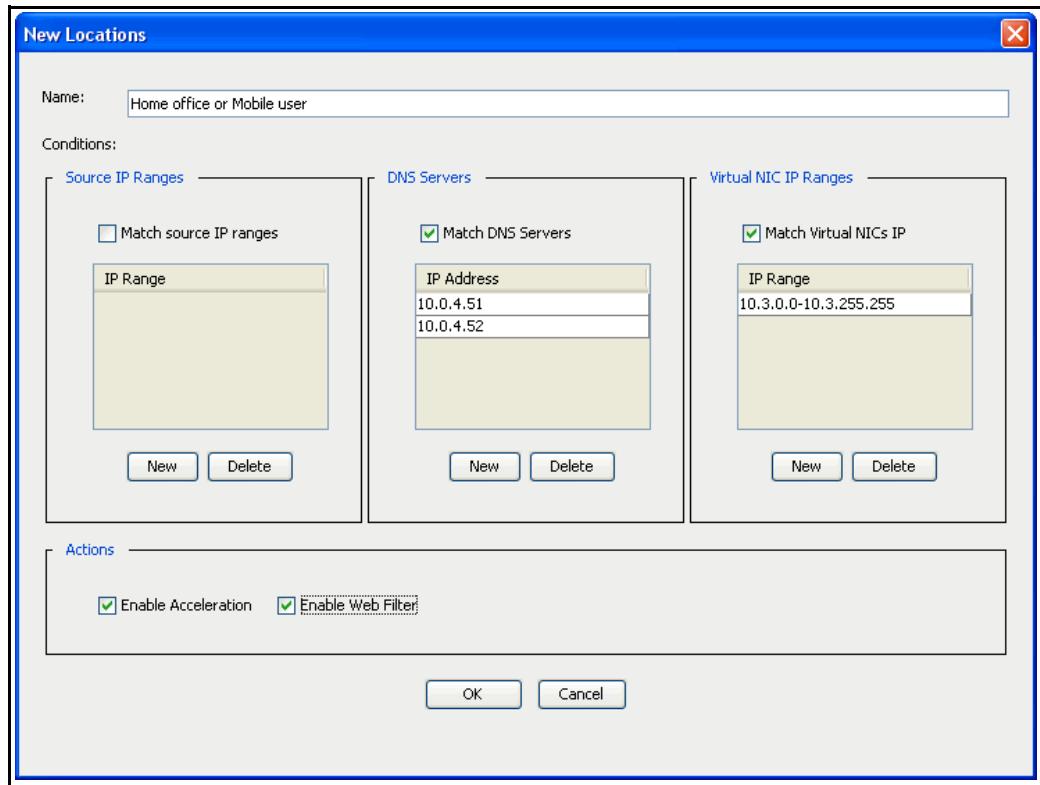
In Figure 12–4, the VPN IP address (also referred to as a *virtual NIC IP*) for the home office user is 10.3.0.5.

## Section A: ProxyClient Concepts

### *Setting up the home office or mobile location*

Keeping in mind the information discussed in "[General Guidelines for Location Conditions](#)" on page 183, the ProxySG administrator notes that in this location, there is no ProxySG to perform either acceleration or Web filtering.

Therefore, to enable location awareness for home office or mobile users, the administrator sets up a location similar to the following:



## Section A: ProxyClient Concepts

The administrator chooses to match both of the following:

- A Virtual NIC IP range that matches the IP address range the VPN gateway at headquarters provisions. In this example, the Virtual NIC IP range is a subset of the headquarters IP address range.  
If your VPN hardware device manages its own IP addresses, or if you configure your VPN hardware to provision IP addresses in a particular range, make sure you enter the correct address range; otherwise, clients will not be identified at the correct location.
- To make sure the location is unique, the administrator adds the DNS servers' IP addresses.

### *Enabling features for the home office location*

The ProxySG administrator enables both ProxyClient acceleration and Web filtering for this location because the user does not connect to a branch ProxySG.

---

**Note:** Some VPN software does not create a virtual NIC with a separate IP address. Instead, the computer uses the IP address assigned to it by the user's home router or DHCP server. In that case, the administrator has the following options:

- If this VPN solution enables the client computer to keep its IP address and DNS server, the same location works because even though the user's IP address might conflict with headquarters, the DNS server IP address will not. The user will be correctly identified in both locations.
  - Configure *default* policy actions, which are used when users do not match any location conditions. For more information, see "[Configuring Default Actions](#)" on page 230.
- 

## **Headquarters Location**

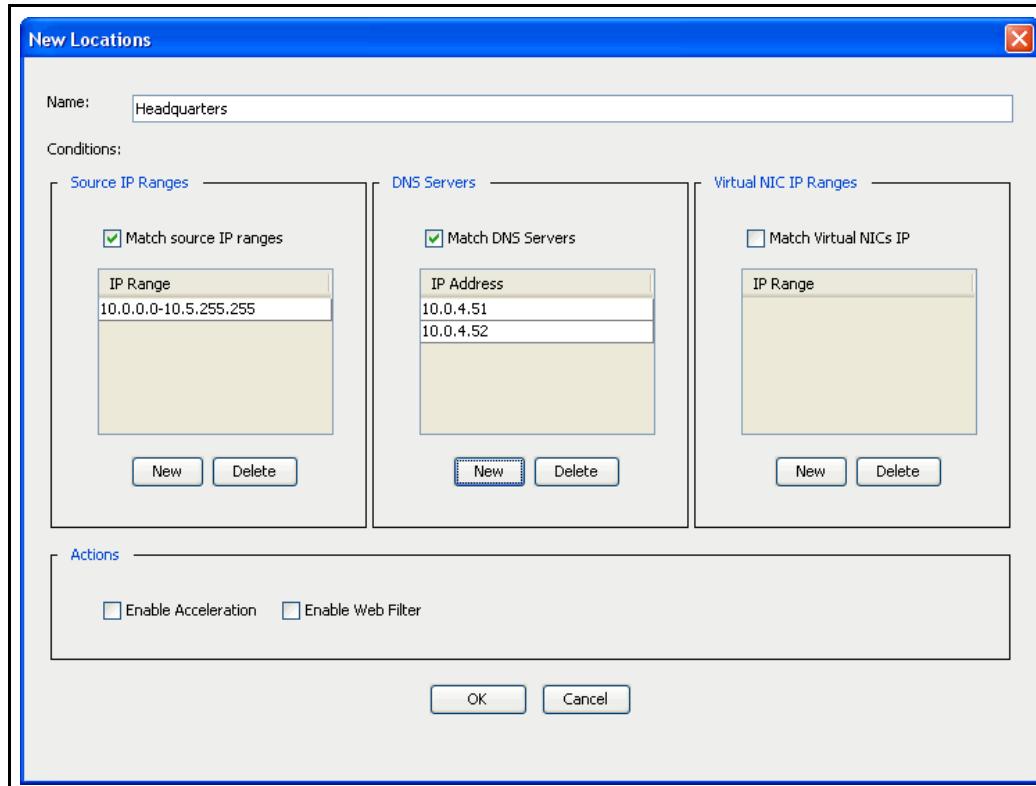
Users at headquarters connect to a ProxySG concentrator. Other ProxySG appliances at headquarters might perform other functions, such as Web filtering.

### *Setting up the headquarters location*

Keeping in mind the information discussed in "[General Guidelines for Location Conditions](#)" on page 183, the ProxySG administrator notes that in this location, there are ProxySGs that perform both acceleration and Web filtering.

## Section A: ProxyClient Concepts

Therefore, to enable location awareness for headquarters users, the administrator sets up a location similar to the following.



The administrator chooses to match both of the following:

- Source IP ranges because the administrator knows that users at headquarters are assigned IP addresses in this range.
- DNS servers because the administrator knows the DNS servers at headquarters.

Together, source IP address ranges and DNS servers uniquely identify headquarters users.

### *Enabling features for the headquarters location*

The ProxySG administrator disables both ProxyClient acceleration and Web filtering for this location because the user connects to a branch ProxySG at headquarters. Web filtering services are provided by a branch ProxySG; at headquarters, acceleration is usually not necessary because the client computer is on the same network as the servers.

## Section A: ProxyClient Concepts

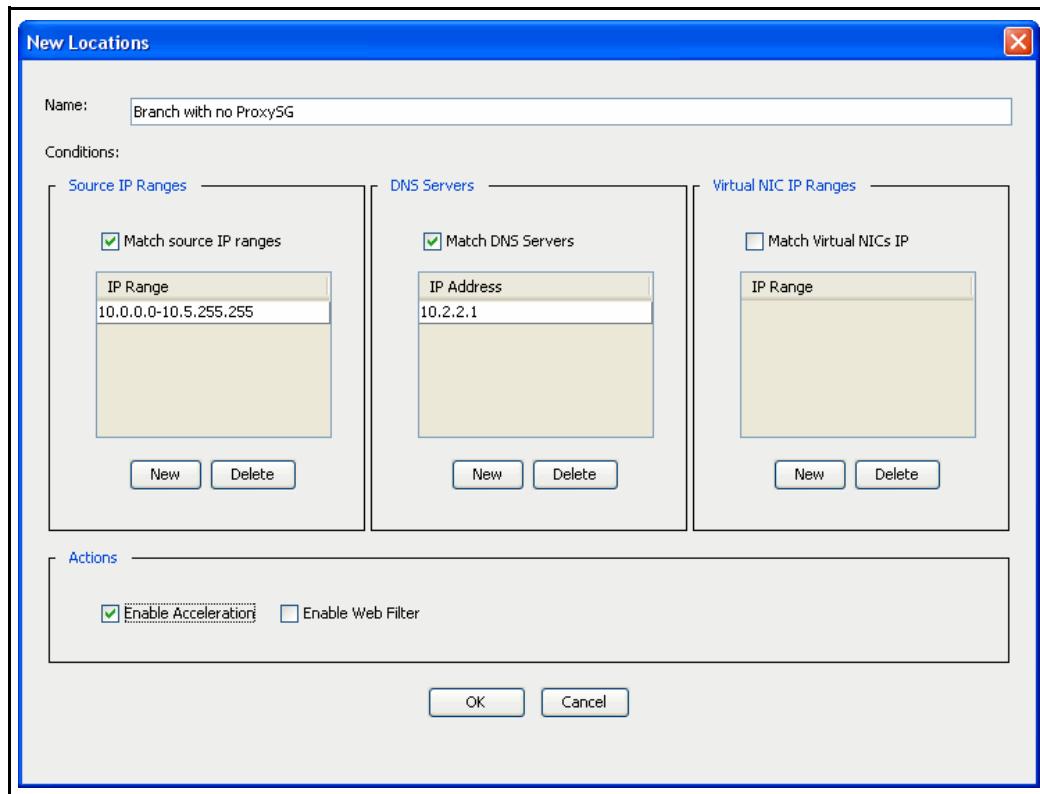
### Branch Office Location with no ProxySG

In this example, assume that because of a recent acquisition, the branch office gets IP addresses assigned from the same network as headquarters (10.0.0.0 to 10.5.255.255). This source address range poses a potential problem for the ProxySG administrator because it makes the two locations indistinguishable based on source IP address alone.

Also, assume that the network is configured so traffic is sent from the branch through headquarters so a branch ProxySG at headquarters performs Web filtering.

Keeping in mind the information discussed in "[General Guidelines for Location Conditions](#)" on page 183, the ProxySG administrator notes that in this location, there is no ProxySG to perform acceleration but there is a branch ProxySG at headquarters that performs Web filtering.

Therefore, to enable location awareness for branch office users, the administrator sets up a location similar to the following:



The administrator chooses to match both of the following:

- Source IP range because it partially identifies the branch office location.

However, the problem is that a computer at the branch office might be identified as being at headquarters if *only* the source IP address range is used. If a computer at this branch office is identified as being at headquarters, neither acceleration nor Web filtering is enabled.

## Section A: ProxyClient Concepts

- ❑ The branch's DNS server IP address because it is different from the DNS servers at headquarters.
- Because the administrator chooses to add the DNS server IP address to this location condition, both the headquarters and branch office locations are unique. Computers at each location will have the correct ProxyClient features applied to them.

### *Enabling features for the branch office location (no ProxySG)*

The ProxySG administrator enables ProxyClient acceleration but disables Web filtering for this location. Acceleration is provided by the ProxyClient communicating with a concentrator at headquarters.

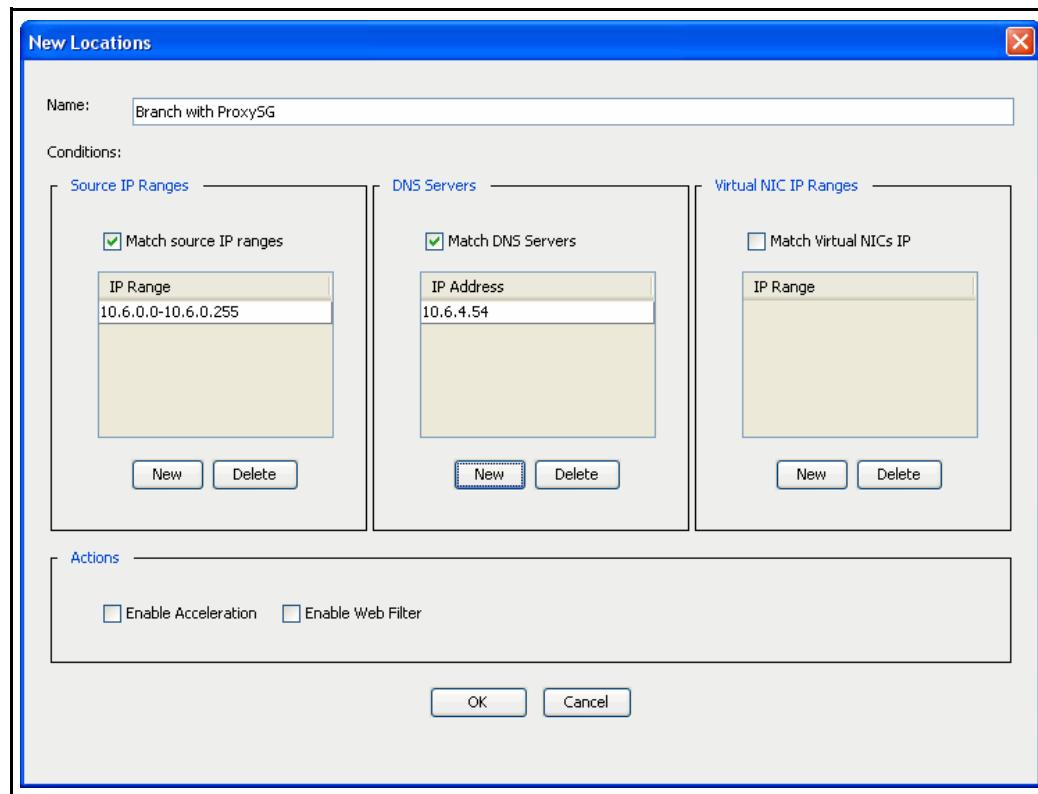
Web filtering is provided by a branch ProxySG at headquarters so the administrator disables Web filtering at the branch office.

## Branch Office With a Local ProxySG

To a ProxySG administrator, configuring a branch office that has a local ProxySG is similar to configuring the headquarters location.

Keeping in mind the information discussed in "[General Guidelines for Location Conditions](#)" on page 183, the ProxySG administrator notes that in this location, there is a ProxySG to perform both acceleration and Web filtering.

Therefore, to enable location awareness for branch office users, the administrator sets up a location similar to the following.



## Section A: ProxyClient Concepts

The administrator chooses to match both source IP address range and DNS server IP address because both are unique to this branch office.

### *Enabling features for the branch office location (with ProxySG)*

The ProxySG administrator disables both ProxyClient acceleration and Web filtering for this location because the ProxySG at the branch office provides these services.

## *About Condition Rulebase Ordering*

The order in which locations display on the **Configuration > ProxyClient > General > Locations** tab page determine the order in which the rules are evaluated when users connect to the Client Manager. To avoid mismatches, order the rules from most to least restrictive.

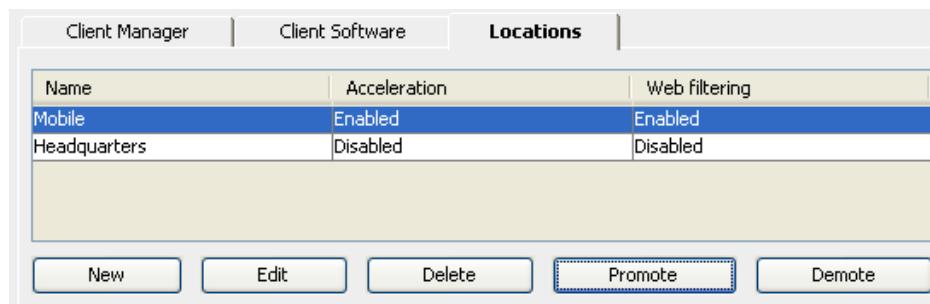
For example, suppose headquarters uses IP addresses in the range from 10.0.0.0 to 10.255.255.255 but the VPN gateway located at headquarters has a pool of IP addresses in a subset of that range; for example, 10.3.1.1 to 10.3.1.255. Because the VPN gateway is used by home office or mobile users, the administrator wants to use different policy actions for headquarters and home office users.

Users at the headquarters location should have ProxyClient acceleration and Web filtering disabled but users in a home office or mobile location should have both ProxyClient features enabled.

To accomplish that, the administrator creates the two locations as follows.

Location	Conditions
Headquarters	<ul style="list-style-type: none"> <li>Source IP address range: 10.0.0.0 to 10.255.255.255</li> <li>DNS server IP address: For example, 10.0.0.11 and 10.0.0.12</li> </ul>
Home office or mobile	<ul style="list-style-type: none"> <li>DNS server IP address: Same as headquarters</li> <li>VNIC IP address range: 10.3.1.1 to 10.3.1.255</li> </ul>

To make sure the home office or mobile location is detected first, the administrator must order it in the rulebase before the headquarters location. An example follows.



## Section A: ProxyClient Concepts

### About ADN Feature Support in ProxyClient

This section includes the following topics:

- ❑ "ADN Features" on page 192
- ❑ "About Internet Gateways" on page 193
- ❑ "About Reflecting the ProxyClient IP Address" on page 194

### *ADN Features*

The ProxyClient supports the following ADN features:

- ❑ Byte caching—*Byte caching* is a compression mechanism where data tokens that represent larger blocks of repeated data are sent across the WAN.

When one of these data tokens match tokens in the data dictionary cached on the ProxyClient computer, the entire block of data is passed to the application that requested it, resulting in reduced WAN bandwidth. For example, if you request a file using Internet Explorer and a data dictionary match is found, the data is sent to Internet Explorer.

If no data dictionary match is found, the token and its corresponding byte values are added to the data dictionary cached on the ProxyClient computer.

A data token is a few bytes in size; the corresponding block of data for a token is much larger.

- ❑ CIFS protocol (file sharing) optimization and CIFS object caching on the client—Regions of files that are read or written by the client are placed in the cache. Object caching applies to both read and write file activities.

---

**Note:** You can set the maximum percentage of *total* disk space (as opposed to *available* disk space) the ProxyClient allocates to the byte cache and the CIFS cache. The ProxyClient always leaves at least 1GB of available disk space on the client computer. By default, the cache is located on the system root volume but the cache location can be changed as discussed in "[Changing the Location of the Cache](#)" on page 324.

---

- ❑ Load balancing and failover—The ProxyClient attempts three types of connections in the ADN network: the *routing connection*, the ADN *tunneling connection*, and a *control connection*. The routing connection obtains the routing table from the ADN Manager or backup Manager; the tunneling connection transfers data to the ADN network; and the control connection contains client identification information.

The ProxyClient first attempts to connect to the primary ADN manager to get routing information; if the ADN Manager is not available, the client attempts to connect to the backup ADN Manager. If the backup ADN manager is also not available, the connection continues on (bypassed by ADN) because an ADN route is not provided. When either of the ADN Managers becomes available again, acceleration automatically resumes.

## Section A: ProxyClient Concepts

Client connections that do not go through a concentrator are not accelerated and remain unaccelerated as long as the connection is open (that is, until the connection is closed by the application).

After a concentrator becomes available, new connections are accelerated.

*ADN peer affinity* helps maintain fast application performance by persisting connections from a ProxyClient to a particular concentrator and therefore reusing the byte cache. After establishing a connection to an ADN peer, ProxyClient always attempts to connect to that peer; a connection to another peer occurs only when the initial peer becomes unavailable.

- Cache encryption—To maintain a high security level *after* content is retrieved over the network connection, ProxyClient supports the Microsoft Encrypted File System (EFS), which makes it extremely difficult for malicious users to hack into a user system's cache to retrieve company-sensitive files.

No other user can access the data in the cache, even the system administrator.

If ProxyClient is uninstalled, the EFS encrypted caches are also deleted.

---

**Note:** EFS is supported only on the New Technology File System (NTFS) partitions, although Windows XP Home Edition supports NTFS, but not EFS. File Allocation Table (FAT) or FAT32 partitions do not support EFS and therefore, the cache is not encrypted on those partitions.

---

## About Internet Gateways

The ProxyClient honors Internet Gateway settings. Network traffic that is not bound by ADN routing rules routes to the specified gateway unless an exception rule applies.

There are some routes, such as those for local hosts, that are not required to go through the ADN Internet gateway. You can define these routes using the ProxySG Management Console (**Configuration > ADN > Routing > Internet Gateway**). ProxyClient uses this configuration.

## Section A: ProxyClient Concepts

### About Reflecting the ProxyClient IP Address

When the ProxyClient version 3.1 or later attempts to connect to a destination, it always requests the concentrator *reflect* its IP address. The concentrator can be configured to either reflect the client's IP address or to reject the reflection request.

Concentrator client IP reflection configuration determines what IP address the concentrator advertises to the origin server as the source address—the concentrator's own address (referred to as *use local IP*) or as the ProxyClient computer's address (referred to as *reflect the client IP*).

---

**Note:** For client IP reflection to work, the concentrator used by the ProxyClient should be deployed inline between the ProxyClient and the origin server. In other words, the return packets will have ProxyClient's IP address as the destination address and must be routed back through the same concentrator.

If the origin server is able to connect directly back to the ProxyClient computer, the connection fails. This happens because the concentrator opens a different connection to the origin server than the one originally opened by the ProxyClient, so response packets going directly from the origin server to the ProxyClient will be rejected and the connection will fail.

If the concentrator is deployed out of line, you can configure the concentrator to *use local IP*.

---

For example, suppose the ProxyClient requests data from a server in the corporate data center. The ProxyClient request is accepted by a ProxySG concentrator, which sends the request to the server. When the concentrator sends the request, you can configure the following IP reflection options:

- Allow the request and reflect the client IP**—The concentrator can present its own IP address as the source address.  
Select this option if your network is configured so that the origin server cannot reach a ProxyClient computer with an outside IP address; in other words, an IP address located outside the internal network.
- Allow the request but use a local IP**—The concentrator can present the ProxyClient computer IP address as the source address.
- Reject the request**—If the concentrator can be configured to deny client reflection, in which case one of the following occurs:
  - If the concentrator runs SGOS 5.3 or later, the concentrator presents its own IP address as the source address. This option is equivalent to **Allow the request but use a local IP**.
  - If the concentrator runs an SGOS version earlier than 5.3, the connection fails.

## Section A: ProxyClient Concepts

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**Note:** If a ProxyClient connects to an ADN concentrator running an SGOS version earlier than 5.3, and that concentrator that is configured to reject client IP reflection requests, you must change the configuration. Otherwise, ProxyClients cannot connect to origin servers.

Any of the following options can be used with the ProxyClient:

- Management Console using the **Configuration > ADN > Tunneling > Network** tab page.

Choose either of the following options (click **Help** for more information about the options):

- **Allow the request and reflect the client IP**
  - **Allow the request but use a local IP**
  - Command line:
    - SGOS#(config adn tunnel) **reflect-client-ip allow**
    - SGOS#(config adn tunnel) **reflect-client-ip use-local-ip**
-

## Section A: ProxyClient Concepts

### About ProxyClient Web Filtering

Web filtering is required by many enterprises for security and compliance reasons. Network managers want the security of knowing users can be prevented from accessing Web sites with malicious content. Human Resources wants to prevent users from accessing offensive content or from losing productivity due to too much Web surfing.

Blue Coat's Web filtering solution provides an answer for both concerns by providing robust filtering—both in the office and on the road.

This section discusses Web filtering in the following sections:

- "Web Filtering Terminology"
- "How Blue Coat Enforces Web Filtering for Remote and Micro-Branch Users" on page 197
- "Enabling or Disabling Web Filtering Based on Location" on page 198
- "About the BCWF Database and Categorization" on page 201
- "About Security With Guest User Scenarios" on page 204

### *Web Filtering Terminology*

This section defines common terms used to discuss ProxyClient Web filtering.

- Blue Coat Web Filtering (BCWF) database

A database that stores URLs and their corresponding categories. The database is maintained by Blue Coat and is accessible by service points located around the globe.

To enable and use ProxyClient Web filtering, the BCWF database must be downloaded on the Client Manager and updated at least once every 30 days. (The database must be downloaded on the Client Manager for licensing purposes only; the ProxyClient does not use the BCWF database on the Client Manager.)

The administrator chooses categories and policy actions for each category; these categories and actions are downloaded to the ProxyClient in its configuration file. For example, you can configure the ProxyClient to block any Web site that is categorized in the BCWF database as Pornography and to allow any Web site that is categorized as News/Media.

- Category

Each known URL is classified into one or more categories. These categories are used by ProxySG administrators to determine whether a user who goes to a URL is allowed to access it, is blocked from accessing it, or is warned about accessing it.

- Service point

Located around the world, service points obtain a URL categorization from the BCWF database. Anytime a ProxyClient user browses to a URL whose policy action has not already been cached on the client, the service point

## Section A: ProxyClient Concepts

returns the category for the URL. If the URL has not yet been categorized, the URL goes to DRTR.

URLs, categories, and policy actions are temporarily cached on the ProxyClient computer.

- Dynamic Real-Time Rating (DRTR)

A service that categorizes URLs that are not yet categorized in the BCWF database.

---

**Note:** One major difference between ProxyClient Web filtering and branch ProxySG Web filtering is that categorization for the ProxyClient is performed by service points and, if necessary, DRTR. ProxyClient categorization is *not* performed by the Client Manager.

To use ProxyClient Web filtering, you must enable the BCWF database on the Client Manager. However, DRTR does not need to be enabled on the Client Manager because DRTR lookup is always performed for any uncategorized ProxyClient request without the Client Manager's involvement.

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- Policy action

The action that is applied to a ProxyClient URL request. Possible actions are allow, block and warn. More information about these policy actions can be found in ["How Blue Coat Enforces Web Filtering for Remote and Micro-Branch Users"](#).

- WebPulse

The service that provides Dynamic Web Analysis; in other words, the service that includes the BCWF database, service points, and DRTR.

### ***How Blue Coat Enforces Web Filtering for Remote and Micro-Branch Users***

The ProxyClient filters URL requests based on the configuration file it downloads from the Client Manager. The configuration file determines the following:

- Whether or not Web filtering is enabled for the user's location.

More information about Web filtering and location awareness can be found in ["Enabling or Disabling Web Filtering Based on Location"](#) on page 198.

- Web site categories the administrator configures on the Client Manager and policy actions for each. Possible policy actions are allow, warn, and block.

URL categorization is performed either by the service point or DRTR. URLs and categories are stored in the BCWF database.

## Section A: ProxyClient Concepts

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**Note:** One major difference between ProxyClient Web filtering and branch ProxySG Web filtering is that categorization for the ProxyClient is performed by service points and, if necessary, DRTR. ProxyClient categorization is *not* performed by the Client Manager.

To use ProxyClient Web filtering, you must enable the BCWF database on the Client Manager. However, DRTR does not need to be enabled on the Client Manager because DRTR lookup is always performed for any uncategorized ProxyClient request without the Client Manager's involvement.

---

For the ProxyClient to perform Web filtering, ProxySG administrators must enable the following features on the Client Manager:

- ❑ The Blue Coat Web Filter database: **Configuration > Content Filtering > General**.
- ❑ Download the current BCWF database: **Configuration > Content Filtering > Blue Coat**.
- ❑ Categories for use by the ProxyClient and policy actions for each: **Configuration > ProxyClient > Web Filtering > Policy**.

More information about these options can be found in:

- ❑ "Configuring ProxyClient Web Filtering" on page 231
- ❑ *Volume 7: Managing Content*

### *Enabling or Disabling Web Filtering Based on Location*

You can enable or disable Web filtering based on a user's location. For example, if the user is at headquarters or in a branch office where there is a branch ProxySG that performs Web filtering, you should disable ProxyClient Web filtering. You should enable ProxyClient Web filtering in mobile locations because mobile users do not connect to a branch ProxySG.

Use location awareness to enable or disable ProxyClient features as discussed in "About Location Awareness" on page 182.

The key differences between Web filtering features offered by the ProxyClient and the ProxySG follow:

- ❑ Multiple operating system support: Currently, the ProxyClient is supported only on Windows clients, while any computer in an ADN network can have Web filtering policies applied to it by a branch ProxySG.

For details about ProxyClient operating system support, see the *ProxyClient Release Notes*.

## Section A: ProxyClient Concepts

- Web filtering policies can be set per user: Using CPL or VPM, you can configure the branch ProxySG to apply different Web filtering policies for users or groups. For example, a network administrator might have a less restrictive Web filtering policy than an ordinary user.

More information about performing these tasks can be found in *Volume 10: Content Policy Language Guide* or *Volume 6: The Visual Policy Manager and Advanced Policy*.

**Figure 12–5** illustrates the Web filter service decisions in a sample two-location configuration.

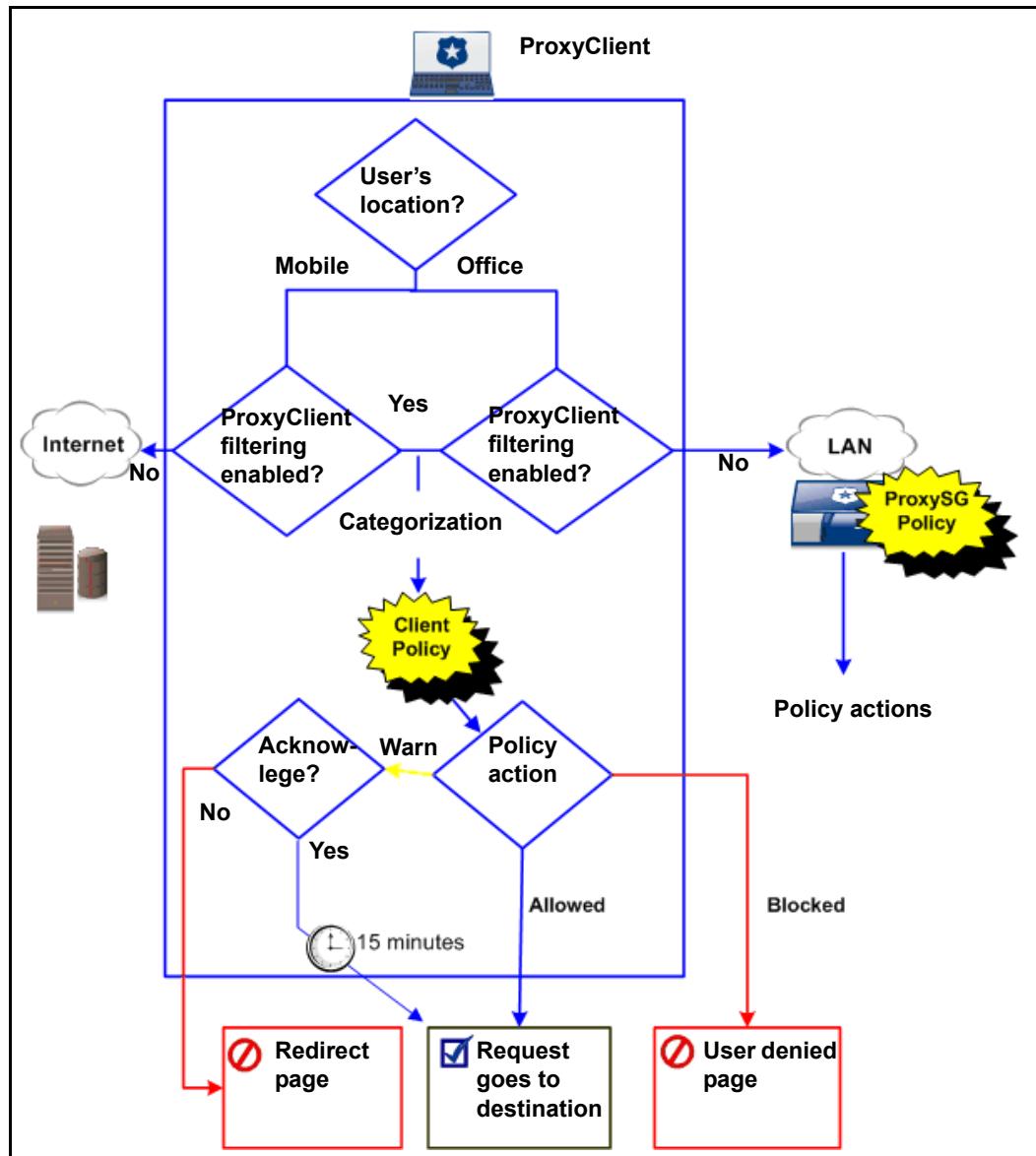


Figure 12–5 High-level diagram of ProxyClient Web filtering

## Section A: ProxyClient Concepts

In the preceding figure, two locations are defined: Mobile and Office. The following sections discuss how the ProxyClient processes Web filtering for each location:

- "Mobile Web Filtering Summary"
- "In-Office Web Filtering Summary" on page 201

### Mobile Web Filtering Summary

This section discusses a summary of the mobile Web filtering process. For more detail, see "[About Categorization](#)" on page 201.

If the user is in a mobile location without a branch ProxySG:

1. The user requests a URL.
2. The ProxyClient's configuration file determines whether or not Web filtering is enabled for this location:
  - If ProxyClient Web filtering is *disabled*, the URL request goes to its destination. That is the end of the process.
  - If ProxyClient Web filtering is *enabled*, continue with step 3.
3. The ProxyClient collects Web filtering categories from its configuration file.
4. The ProxyClient requests a category for the URL from a service point.

The result of the request can be one of the following:

- The URL request is categorized by a service point, if a result was not found in the cache.
  - If the URL is not found in the BCWF database, the service point gets a categorization using DRTR.
  - If DRTR cannot determine a URL's category, the URL is categorized as `none` and the appropriate policy action is taken.
  - If no service point is available, the URL is categorized as `unavailable` and the appropriate policy action is taken.
5. After categories are determined, the ProxyClient's configuration file determines the policy action (block, deny, or warn) according to the first match in the rulebase.

If the policy action is warn, the user can visit the Web site for 15 minutes after clicking an acknowledgement link.
  6. Results of service point lookups are temporarily cached.

### See Also

- ["About Categorization"](#) on page 201
- ["About Location Conditions"](#) on page 183
- ["Assigning Policy Actions to Content Categories"](#) on page 240
- ["Web Filtering Best Practices"](#) on page 251

## Section A: ProxyClient Concepts

### In-Office Web Filtering Summary

This section discusses the main differences between in-office Web filtering and mobile Web filtering. If a user is in an office that has a branch ProxySG and if the user's location is identified as in the office, you should disable ProxyClient Web filtering in the location.

The branch ProxySG then performs the following tasks:

- The branch ProxySG performs categorization and, if necessary, gets a category from DRTR.
- Specific policies defined on the branch ProxySG can be applied to users and groups. For example, network administrators might have less restrictive policy actions applied to them compared to ordinary users.

### About the BCWF Database and Categorization

This section discusses the following topics:

- ["About the BCWF Database"](#)
- ["About Categorization" on page 201](#)

### About the BCWF Database

The Client Manager is responsible for getting the current BCWF database at least once every 30 days. If the database is not updated within 30 days since its last update, BCWF becomes inactive and all URL requests are either allowed or blocked, depending on the administrator's choice for the **On License Expiration** option located on the **Configuration > ProxyClient > Web Filtering > Policy** tab page.

---

**Note:** The Client Manager must keep the BCWF database current for licensing purposes only. The ProxyClient does not use the BCWF database on the Client Manager; instead, it gets URL categories from a service point.

---

### About Categorization

*Categorization* is the process of assigning a classification to a particular requested URL. If ProxyClient Web filtering is enabled for the user's location, the categorization process is as follows:

1. The user requests a URL.
2. The ProxyClient collects Web filtering categories from its configuration file. Categories are defined by the following:
  - The local database, if enabled.
  - VPM policy, if configured.
  - Results of service point lookups that are temporarily cached on the user's computer.
3. The ProxyClient requests a category for the URL from a service point.

## Section A: ProxyClient Concepts

The result of the request can be one of the following:

- The URL request is categorized by a service point, if a result was not found in the cache.  
(The cache, which is temporary, consists of results from previous lookups.)
- If the URL is not found in the BCWF database, the service point gets a categorization using DRTR.
- If DRTR cannot determine a URL's category, the URL is categorized as `none` and the appropriate policy action is applied.
- If BCWF is not available, the URL is categorized as `unavailable` and the appropriate policy action is applied.

---

**Note:** One Web site can have many URLs associated with it. For example, many Web sites have advertisements that each trigger a URL request and therefore a categorization request to the service point.

---

4. After categories are determined, the ProxyClient's configuration file determines the policy action (*block*, *deny*, or *warn*) according to the first match in the rulebase.
  - If the policy action is *allow*, the request goes to its destination.
  - If the policy action is *block*, the blocked category exception page displays.
  - If the policy action is *warn*, a warning message displays.

The user must click an acceptance link, which represents an acknowledgment that the content request might violate corporate Web use policy. If the user clicks the acceptance link, the request goes to its destination.

**Note:** If a user clicks the acceptance link, the requested Web site will be accessible for 15 minutes. The accessibility time period is not currently configurable for the Web site.
5. Results of service point lookups are temporarily cached.

### *Resolving Policy Action Conflicts*

In step 4 of the preceding procedure, suppose the same URL is listed in two or more categories with different policy actions.

In the case of a conflict between policy actions, the policy action associated with the first rulebase match is applied.

For example, suppose the same URL (`www.example.com/news`) is listed in two categories. One category has a policy action of *allow* and the other category has a policy action of *block*.

In the table that follows, `www.example.com/news` is in both the Blogs/Personal Pages and News/Media categories. The following table shows how the conflict is resolved.

## Section A: ProxyClient Concepts

Rulebase configuration	Policy action								
<p>Selected Category Rulebase:</p> <table border="1"> <thead> <tr> <th>Categories</th> <th>Action</th> </tr> </thead> <tbody> <tr> <td>News/Media</td> <td>Allow</td> </tr> <tr> <td>Blogs/Personal Pages</td> <td>Block</td> </tr> <tr> <td>Default</td> <td>Allow</td> </tr> </tbody> </table> <p style="text-align: center;"> <input type="button" value="Move-Up"/>    <input type="button" value="Move-Down"/>  <input type="button" value="Promote to Top"/>    <input type="button" value="Demote to Bottom"/> </p>	Categories	Action	News/Media	Allow	Blogs/Personal Pages	Block	Default	Allow	<p>Because News/Media is first in the rulebase and its policy action is <i>allow</i>, <a href="http://www.example.com/news">www.example.com/news</a> is allowed.</p>
Categories	Action								
News/Media	Allow								
Blogs/Personal Pages	Block								
Default	Allow								
<p>Selected Category Rulebase:</p> <table border="1"> <thead> <tr> <th>Categories</th> <th>Action</th> </tr> </thead> <tbody> <tr> <td>Blogs/Personal Pages</td> <td>Block</td> </tr> <tr> <td>News/Media</td> <td>Allow</td> </tr> <tr> <td>Default</td> <td>Allow</td> </tr> </tbody> </table> <p style="text-align: center;"> <input type="button" value="Move-Up"/>    <input type="button" value="Move-Down"/>  <input type="button" value="Promote to Top"/>    <input type="button" value="Demote to Bottom"/> </p>	Categories	Action	Blogs/Personal Pages	Block	News/Media	Allow	Default	Allow	<p>Because Blogs/Personal Pages is first in the rulebase and its policy action is <i>block</i>, <a href="http://www.example.com/news">www.example.com/news</a> is blocked.</p>
Categories	Action								
Blogs/Personal Pages	Block								
News/Media	Allow								
Default	Allow								

**Note:** If the user is in an office location with ProxyClient Web filtering disabled, a branch ProxySG performs Web filtering. For more information about configuring a branch ProxySG to perform Web filtering, see *Volume 7: Managing Content*.

Blue Coat recommends you order Web filtering rules in the category rulebase as follows:

1. Whitelist overrides (that is, local database and policy categories you always want to allow)
2. Blacklist overrides (that is, local database and policy categories you always want to block)
3. All other categories with policy action set to block
4. All other categories with policy action set to warn
5. All other categories with policy action set to allow

## Section A: ProxyClient Concepts

### About Security With Guest User Scenarios

When travelling, users might be required to initially access the Internet as a *guest*. For example, some businesses and hotels provide WiFi or hard-wired networks, but require users to gain access through a portal. When the user connects to the network and opens their Web browser, the browser redirects to a *welcome page* from which the user must interact to gain connectivity to the Internet.

The welcome page can be as simple as a click-through service agreement or as complex as a service that requires a credit card payment for Internet access. After users complete the required agreement or transaction, they are allowed to access the Internet.

When the ProxyClient detects this, it enables the user to view the welcome page and complete whatever authentication transaction is required to gain additional connectivity without applying Web filtering. After the user can connect to the Internet, the ProxyClient applies Web filtering policy.

ProxyClient operates within the restricted network before completing the welcome page transaction, yet prevents any unauthorized user access.

### ProxyClient Security Disclaimers

When you deploy the ProxyClient in your network, be aware of the following:

- Any user with administrative privileges can disable the ProxyClient by stopping the service or by disabling acceleration, Web filtering, or both.
- Avoid allowing users with FAT and FAT32 partitions to download the ProxyClient for the following reasons:
  - EFS encryption is not supported; therefore, the object cache (that is, the byte cache and CIFS cache) will not be encrypted.
  - Because the ProxyClient uses NTFS permissions, Web filtering can be bypassed on FAT or FAT32 partitions and logs can be deleted.
- Any user with sufficient privileges to edit files on the machine can change the Web filtering log files before or after they are uploaded to the FTP server. Because the FTP server allows anonymous access, anyone can download a log file, change it, and upload it again without detection (although your FTP server can report the source IP address used to upload log files).

The preceding vulnerabilities can be exploited by a legitimate user or by an unauthorized user (such as a hacker or malware).

- If a user runs a VMWare image on their computer, even if the computer has the ProxyClient, the VMWare image can access the Internet without restrictions, effectively circumventing Web filtering. (The VMWare image also operates without acceleration.)

To avoid this issue, install the ProxyClient software on the VMWare image.

## Section B: Configuring a ProxySG as the Client Manager

This section describes how to configure the ProxySG Client Manager to manage the ProxyClient application.

This section includes the following topics:

- "About ProxyClient Deployment"
- "Preparing the ProxySG ADN Configuration for ProxyClient Deployment" on page 207
- "Designating a ProxySG as the Client Manager" on page 210
- "Uploading the ProxyClient Software to the Client Manager" on page 214

### About ProxyClient Deployment

ProxyClient deployment requires the following high-level tasks:

- A ProxySG administrator configures the Client Manager options, which define the behavior of the ProxyClient application.
- The user (or administrator) installs the ProxyClient application on remote and desktop computers (or provides instructions describing how to perform the installation).

This section discusses the high-level administrator configuration tasks and client installation tasks.

### *Before You Begin Configuring the Client Manager*

To enable the ProxyClient to perform acceleration, you must configure an ADN manager and optionally a backup ADN manager as discussed in "[Configuring the ADN Managers](#)" in Chapter 2: "[Configuring an Application Delivery Network](#)".

Make sure you review the concepts discussed in Section A: "[ADN Overview](#)" and Section B: "[About ADN Deployment, Compression, and Security Behavior](#)" in Chapter 2: "[Configuring an Application Delivery Network](#)".

You can also configure internet gateway settings (**Configuration > ADN > Routing > Internet Gateway**) because the ProxyClient honors internet gateway settings. For more information, see "[Managing Server Subnets and Enabling an Internet Gateway](#)" on page 38.

Section B: Configuring a ProxySG as the Client Manager

## ProxySG Administrator Configuration Tasks

The ProxySG administrator performs all of the following tasks in the order shown:

1. Set up an ADN manager and optionally a backup ADN manager as discussed in ["Before You Begin Configuring the Client Manager" on page 205](#).  
This enables the ProxyClient to perform acceleration.
2. Confirm the ProxySG ADN configuration settings are compatible for ProxyClient deployment.  
For more information, see ["Preparing the ProxySG ADN Configuration for ProxyClient Deployment" on page 207](#).
3. Configure a ProxySG as the Client Manager,  
For more information, see ["Designating a ProxySG as the Client Manager" on page 210](#).
4. Verify the Client Manager has a valid SGOS base license.  
For more information, see ["About ProxyClient Licensing" on page 181](#).
5. Upload the latest Blue Coat ProxyClient software to the Client Manager.  
For more information, see ["Uploading the ProxyClient Software to the Client Manager" on page 214](#).
6. Configure the following ProxyClient options:
  - ["Accelerating Network Traffic" on page 216](#)
  - ["Configuring ProxyClient Locations" on page 225](#)
  - ["Configuring ProxyClient Web Filtering" on page 231](#)
7. Provide the ProxyClient software to users in one of the ways discussed in this chapter.  
For more information, see ["Distributing the ProxyClient Software" on page 266](#).

## Section B: Configuring a ProxySG as the Client Manager

### *Client Installation Tasks*

The ProxyClient deployment process involves the following:

1. An administrator provides the ProxyClient software URL displayed on the Client Manager to users or pre-installs the application using SMS or another software distribution system before issuing the system to a user.

---

**Note:** To run `ProxyClientSetup.exe` and `ProxyClientSetup.msi`, the user must be in the `Administrators` group on the computer.

---

When the person performing the installation enters the URL, a setup application (`ProxyClientSetup.exe`) runs that in turn downloads and starts a Microsoft Installer (`ProxyClientSetup.msi`).

---

**Note:** Installation methods are discussed in [Section D: "Distributing the ProxyClient Software" on page 266](#).

---

2. After installing the ProxyClient software, the user must reboot the machine.
3. Periodically, the ProxyClient polls the Client Manager for changes to the ProxyClient software and configuration.

## Preparing the ProxySG ADN Configuration for ProxyClient Deployment

To use the ProxyClient in your ADN network, you must configure options for Manager Listening Mode and Tunnel Listening Mode on the ADN manager and backup manager (if any) as discussed in this section.

The ProxyClient does not publish routes; it obtains routes from the ADN manager. Also, the ProxyClient uses plain communications only. The options you select for manager listening mode and tunnel listening mode must be compatible with the ProxyClient.

This section discusses the following topics:

- ❑ ["About Manager Listening Mode" on page 208](#)
- ❑ ["About Tunnel Listening Mode" on page 209](#)
- ❑ ["About Secure Outbound Mode" on page 209](#)

---

**Note:** To select options for either manager listening mode or tunnel listening mode, you must have previously set up an SSL device profile on the ProxySG. For more information about SSL device profiles, see ["About SSL Device Profiles" on page 116](#).

---

## Section B: Configuring a ProxySG as the Client Manager

### About Manager Listening Mode

Manager listening mode determines the way routes are published in the ADN network: using the *plain manager port* (non-secure communication) or the *secure manager port* (secure communication), or both.

Select manager listening mode options on the ADN manager and backup manager only. Manager listening mode options are not available on other ProxySG appliances.

For more information about setting the plain manager port and the secure manager port, see "[About the ADN Manager](#)" on page 30.

As discussed in "[Securing Connections](#)" on page 49, the following options are available:

**Secure Only**

Only ProxySG appliances using secure connections can publish routes. However, because selecting this option means that only the secure listener is active, you *cannot* select this option if you have ProxyClients in your ADN network because ProxyClients use only plain connections.

**Plain Read-Only**

Select this option if *all* ProxySG appliances in the ADN network use SGOS version 5.1.4 or later—where all appliances support secure routing, *and* you have enabled secure routing on those ProxySG appliances.

This option means that ProxySG appliances that use secure connections can publish routes. Devices that use plain communications can obtain routes but cannot publish routes.

---

**Note:** Select this option only if all appliances in the ADN network run SGOS version 5.1.4 or later.

---

**Plain Only**

Select this option in cases where you do not secure *any* ADN connections between ProxySG appliances.

This option means that only ProxySG appliances that use plain connections can publish routes.

**Both**

Select this option if you use the ProxyClient in your ADN network and some appliances in the network are not capable of using secure connections (for example, some appliances run SGOS version 5.1.3 or earlier).

This option means that ProxySG appliances that use either secure or plain connections can publish routes. If secure is enabled and available, it is used by default.

## Section B: Configuring a ProxySG as the Client Manager

### About Tunnel Listening Mode

Tunnel listening mode determines the type of incoming tunnel communications this ProxySG appliance accepts: using the plain tunnel port (non-secure communications) or the secure tunnel port (secure communications).

Select options for tunnel listening mode on every concentrator to which you expect ProxyClients to connect. For example, select a tunnel listening mode option for the concentrator discussed in "[About Tunnel Listening Mode](#)" on page 209.

For more information about the plain tunnel port and the secure tunnel port, see "[Securing Connections](#)" on page 49.

The following options are available:

**Secure Only**

This option means the ProxySG appliance accepts only secure tunneling connections. Because the ProxyClient uses only plain connections, you *cannot* select this option if you have ProxyClients in your ADN network.

**Plain**

Select this option to enable the ProxyClient to connect to the appliance in cases where you do *not* secure any ADN connections between ProxySG appliances.

This option means this appliance accepts only plain tunneling connections.

**Both**

*Recommended for ProxyClient deployments in ADN networks in which secure ADN is used.* Select this option if you use the ProxyClient in your ADN network and some appliances in the network use secure ADN. This option also enables you to support appliances that are not capable of accepting incoming secure tunneling connections (for example, some appliances run SGOS version 5.1.3 or earlier).

This option means this appliance accepts both plain and secure tunneling connections.

### About Secure Outbound Mode

The Secure Outbound Mode options have no impact on the ProxyClient because these options determine how ProxySG appliances communicate with each other. For a tunneling connection to be established between two ProxySG appliances, the initiating appliance's secure outbound mode must be compatible with the tunnel listening mode of the receiving appliance.

## Section B: Configuring a ProxySG as the Client Manager

### Designating a ProxySG as the Client Manager

This section discusses how to configure an appliance in the ADN network as the Client Manager.

You must configure one ProxySG in your ADN network as the Client Manager. The Client Manager is responsible for providing the ProxyClient software, software updates, and client configuration to ProxyClient applications installed on user computers.

---

**Note:** The Client Manager can be a different appliance than the ADN manager or the backup ADN manager. That is, you can configure the ADN manager or the backup ADN manager as the Client Manager, but it is not required.

---

### Before You Configure the Client Manager

Before you configure the Client Manager, make sure you performed all of the following tasks:

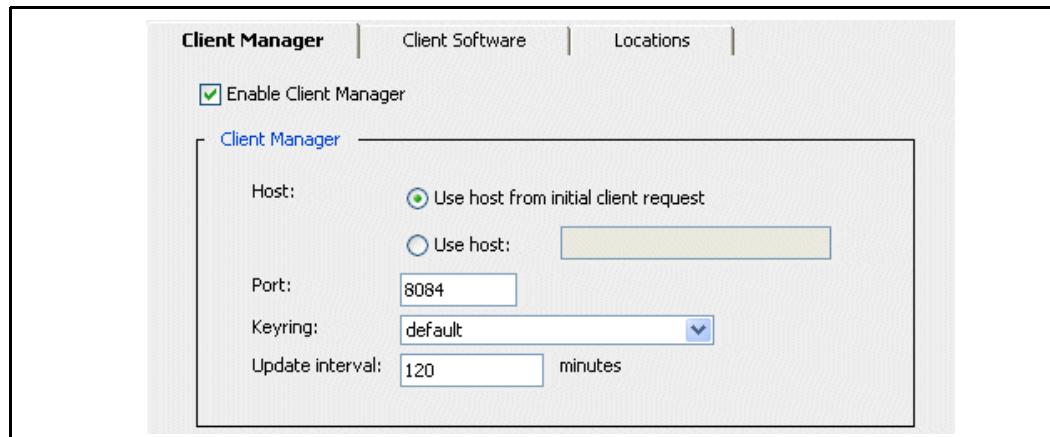
- "Before You Begin Configuring the Client Manager" on page 205
- "Preparing the ProxySG ADN Configuration for ProxyClient Deployment" on page 207
- "About ProxyClient Licensing" on page 181.

### Designating the Client Manager

This section discusses how to designate a ProxySG concentrator as the Client Manager.

#### To designate a ProxySG as the Client Manager:

1. Log in to the Client Manager's Management Console as an administrator.
2. Click **ProxyClient > General > Client Manager**.



3. On the **Client Manager** tab page, select the **Enable Client Manager** check box. This designates this ProxySG as a Client Manager.

## Section B: Configuring a ProxySG as the Client Manager

4. In the **Client Manager** section, enter or edit the following information:

Table 12–1 Client Manager options

Option	Description
Host section	<p>Specify the host from which users get the ProxyClient software, configuration, and updates. Blue Coat recommends you specify a fully qualified host name, and not an unqualified (short) host name or IP address. If you use a fully qualified host name and the Client Manager's IP address changes later, you need only to update DNS for the Client Manager's new address and clients can continue to download the software and updates from the Client Manager.</p> <p>You have the following options:</p> <ul style="list-style-type: none"> <li>• <b>Use host from initial client request:</b> (<i>Recommended.</i>) Select this option to enable clients to download the ProxyClient software, configuration, and updates from the host from which the clients originally obtained the software and configuration. In other words, in a typical ProxyClient deployment, the administrator e-mails users a URL from which they obtain the ProxyClient software and configuration initially. The host name or IP address in this URL is used to download the software to the client and is written to the client's configuration file for use in future software and configuration updates.</li> </ul> <p>This option is compatible with all methods of deploying the ProxyClient, including Windows Group Policy Object (GPO) and Microsoft Systems Management Server (SMS). For more information about these deployment options, see <a href="#">Section D: "Distributing the ProxyClient Software"</a> on page 266.</p> <ul style="list-style-type: none"> <li>• <b>Use host:</b> Select this option to download the ProxyClient software and configuration from the host name you specify. Enter a fully qualified host name or IP address only; do not preface it with <code>http://</code> or <code>https://</code> because downloads will fail.</li> </ul> <p>Use this option to migrate users from one Client Manager to another Client Manager. (Also see "<a href="#">Changing the Client Manager</a>" on page 313.)</p>
Port field	Enter the port on which the Client Manager listens for requests from clients. The default is 8084.
Keyring list	Click the name of the keyring to use when clients connect to the Client Manager.
Update Interval field	<p>Specify the length of time (in minutes) between update checks. For example, if the value is <b>120</b>, each ProxyClient application connects to the Client Manager every 120 minutes for configuration and software updates (beginning at startup).</p> <p>Valid values are 10-432000 (that is, 300 days). The default is 120 minutes.</p>

After you apply the changes, the **Client Components** section displays a summary of the information you selected.

## Section B: Configuring a ProxySG as the Client Manager

Client Components	
Client setup:	<a href="https://host-from-client-request:8084/proxyclient/ProxyClientSetup.exe">https://host-from-client-request:8084/proxyclient/ProxyClientSetup.exe</a>
Client install MSI:	<a href="https://host-from-client-request:8084/proxyclient/ProxyClientSetup.msi">https://host-from-client-request:8084/proxyclient/ProxyClientSetup.msi</a>
Client configuration:	<a href="https://host-from-client-request:8084/proxyclient/ProxyClientConfig.xml">https://host-from-client-request:8084/proxyclient/ProxyClientConfig.xml</a>
Client configuration last modified:	January 29, 2008 10:54:51 AM PST

Table 12–2 discusses the meaning of this information.

Table 12–2 Client Components section

Item	Description
<b>Client setup</b>	<p>Displays the URL from which users download the ProxyClient setup application. The setup application (<code>ProxyClientSetup.exe</code>) downloads the Microsoft installer (<code>ProxyClientSetup.msi</code>) to the client.</p> <p>This information is intended for interactive client installations from the Client Manager; for more information, see "<a href="#">Preparing Interactive Installations</a>" on page 268.</p> <p>Provide this URL to users so they can install the ProxyClient software on their computers. To install the software this way, the user must have administrator privileges on the client machine.</p> <p><b>Note:</b> If you selected <b>Use host from client request</b> for Host, the URL displays as follows:  <code>https://host-from-client-request:8084/proxyclient/ProxyClientSetup.exe</code></p> <p>To download the ProxyClient using this URL, substitute the Client Manager's host name or IP address for <code>host-from-client-request</code>.</p>
<b>Client install MSI</b>	<p>Displays the URL from which <code>ProxyClientSetup.exe</code> downloads <code>ProxyClientSetup.msi</code>.</p> <p>This information is intended for non-interactive installations using Group Policy Objects (GPO) or the Microsoft Systems Management Server (SMS), as discussed in "<a href="#">Using Group Policy Object Distribution</a>" on page 285.</p> <p><b>Note:</b> Blue Coat recommends users <i>not</i> run the <code>.msi</code> on their computers because the installation fails unless the user enters parameters on the command line (for example, <code>BCSI_UPDATEURL</code>).</p>

## Section B: Configuring a ProxySG as the Client Manager

Table 12–2 Client Components section

Item	Description
<b>Client configuration</b>	<p>Displays the URL from which the ProxyClient installer downloads the client configuration file (<code>ProxyClientConfig.xml</code>).</p> <p>This information is provided for your reference only. This URL must be used as the value of the <code>BCSI_UPDATEURL</code> parameter for silent, GPO, or SMS installations. For more information, see one of the following sections:</p> <ul style="list-style-type: none"><li>• <a href="#">"Preparing Silent Installations and Uninstallations" on page 273</a></li><li>• <a href="#">"Using Group Policy Object Distribution" on page 285</a></li></ul>
<b>Client configuration last modified</b>	Displays the most recent date and time <code>ProxyClientConfig.xml</code> was updated on the Client Manager.

### See Also

[Section D: "Distributing the ProxyClient Software" on page 266](#)

["About the Roles of ProxySG Appliances With the ProxyClient" on page 178](#)

["Setting the Client Manager \(CLI\)" on page 261](#)

["Configuring General ProxyClient Settings \(CLI\)" on page 261](#)

## Section B: Configuring a ProxySG as the Client Manager

### Uploading the ProxyClient Software to the Client Manager

This section describes how to upload the latest ProxyClient software to the Client Manager to make it available to install or to update on client machines.

---

**Important:** After you update the ProxyClient software on the Client Manager, whenever users connect using the ProxyClient, they must update their ProxyClient software unless software updates are disabled. You have the option of disabling software updates from the Client Manager if you plan to distribute updates some other way (for example, by GPO or SMS). For more information, see "Parameters for Silent Installations" on page 274.

Before uploading the ProxyClient software, verify the Client Manager is running compatible SGOS software. For example, ProxyClient 3.1.x requires SGOS 5.3.x.

---

#### To upload `ProxyClient.car` to the Client Manager:

1. Get `ProxyClient.car` as follows:
  - a. Log in to WebPower by entering your credentials at the following URL:  
<http://webpower.bluecoat.com>  
If you do not have a WebPower login, register at <http://webpower.bluecoat.com/register>.
  - b. Click **Download Software**.
  - c. On the Downloads page, click the Blue Coat ProxyClient link.
  - d. Click the link to request the ProxyClient software.
  - e. When prompted, enter your WebPower credentials.
  - f. A link to the software will be e-mailed to the user who registered with WebPower.
  - g. Follow the prompts in the e-mail to download `ProxyClient.car`.
2. Locate `ProxyClient.car` in any of the following:
  - On the local file system of the computer you run the Client Manager's Management Console.  
That is, to upload the ProxyClient software from your local file system or from a network share drive (as opposed to uploading it from a remote URL), you must copy `ProxyClient.car` to an accessible location.
  - On a Web server the Client Manager can access.
3. Log in to the Client Manager's Management Console as an administrator.
4. Click **ProxyClient > Client Manager > Client Software**.  
The Current ProxyClient Software section displays information about the ProxyClient software this Client Manager is currently using.
5. From the **Install ProxyClient software from** list, click one of the following:

## Section B: Configuring a ProxySG as the Client Manager

- **Remote URL:** Upload `ProxyClient.car` from a location specified by a URL in the following format:

`http://host:port/path/ProxyClient_version.car`

For example,

`http://myapache.example.com/software/ProxyClient_3.1.1.1.car`

- **Local file:** Upload the `ProxyClient` software from a location accessible by the machine on which you are running the Management Console.

6. Click **Install**.
7. Follow the displayed prompts to complete the upload.
8. Clients get the updated software at the next update interval.

## Section C: Configuring the ProxyClient

### Section C: Configuring the ProxyClient

The Client Manager enables you to configure the following options for the ProxyClient:

- "Accelerating Network Traffic"
- "Configuring ProxyClient Locations" on page 225
- "Configuring ProxyClient Web Filtering" on page 231

For more information about these options, see [Section A: "ProxyClient Concepts" on page 174](#).

## Accelerating Network Traffic

This following sections discuss how to configure the WAN acceleration options on the Client Manager:

- "Before You Begin Configuring ProxyClient Policy"
- "Specifying the ProxyClient ADN Manager" on page 217
- "Tuning the ADN Configuration" on page 218
- "Enabling File Sharing Acceleration" on page 221
- "Enabling ProxyClient Acceleration" on page 223

### *Before You Begin Configuring ProxyClient Policy*

Before performing the tasks discussed in this section, you must configure your ADN manager to route subnets; otherwise, no network traffic will be accelerated.

On all concentrators that front servers to which you want to accelerate ProxyClient traffic, click **Configuration > ADN > Routing > Server Subnets**. For additional assistance, click **Help** or see ["Managing Server Subnets and Enabling an Internet Gateway" on page 38](#).

Because the ProxyClient also accelerates Internet traffic, you can set Internet gateway options: **Configuration > ADN > Routing > Internet Gateway**. For more information, see ["Managing Server Subnets and Enabling an Internet Gateway" on page 38](#).

## Section C: Configuring the ProxyClient

### **Specifying the ProxyClient ADN Manager**

This section discusses how to specify the ADN manager that will publish routes to the ProxyClient.

#### **To specify the ADN manager for the ProxyClient:**

1. Log in to the Client Manager's Management Console as an administrator.
2. Click **Configuration > ProxyClient > Acceleration > ADN Manager**.

3. On the ADN Manager tab page, enter or edit the following information:

Field	Description
<b>Primary manager IP address</b>	Enter the IP address of the ADN manager for the ADN network to which the ProxyClient connects. For more information about the role of the ADN manager, see " <a href="#">Terminology</a> " on page 175 and " <a href="#">About the Roles of ProxySG Appliances With the ProxyClient</a> " on page 178.
<b>Backup manager IP address</b>	Enter the IP address of the backup ADN manager, if any.
<b>ADN manager port</b>	Enter the ADN manager's plain listen port (by default, 3034).

**Important:** Do *not* enter a secure port number, because the ProxyClient version 3.1.x does not support secure tunnels.

4. Click **Apply**.

## Section C: Configuring the ProxyClient

5. If you have not already done so, perform the following tasks to enable ProxyClient acceleration:
  - a. Click **Configuration > ProxyClient > Acceleration > General**.
  - b. In the right pane, click the **Enable Acceleration** check box.
  - c. Click **Apply**.

You must also enable acceleration for locations as discussed in "[Configuring ProxyClient Locations](#)" on page 225.

## Tuning the ADN Configuration

The ProxySG enables you to customize *include* and *exclude* subnets and port lists, which are advanced settings that limit the traffic that is accelerated by the ADN network. Because the ADN manager sets options for both its peers in the ADN network and for ProxyClients, you can use the include or exclude ports list to fine-tune the way ProxySG appliances interact with the ProxyClient.

For example, if you know that ProxyClient traffic over particular ports is not compressible, you can add those ports in the exclude ports list. Blue Coat strongly recommends you test the include/exclude ports settings in a controlled environment before using them in production because improper settings can have an adverse impact on performance.

Specifically, you must understand the following:

- Excluded subnets—You can exclude intranet connections from being forwarded to a ProxySG configured as an Internet gateway. This is important if your network is designed such that a connection to an intranet server fails if it is sent through an Internet gateway.

Provided an Internet gateway is configured, forwarding occurs as follows:

- a. If the destination IP address is a local address, do not attempt to use an ADN tunnel; instead, connect directly. This is the end of the process.
- b. If the destination IP address is in the ProxyClient's excluded subnets list, do not attempt to use an ADN tunnel; instead, connect directly. This is the end of the process.

Otherwise, if the IP address is *not* in the ProxyClient's exclude list, continue with the next step.

- c. If the destination IP address matches an entry in the ADN routing table, forward the connection over an ADN tunnel; otherwise, continue with the next step.
- d. If a ProxySG is configured as an Internet gateway, look up the destination IP address in the Internet gateway's exception list.

If the address does *not* match, forward the connection over an ADN tunnel to the Internet gateway; otherwise, connect directly to the destination IP address.

## Section C: Configuring the ProxyClient

- ❑ Include and exclude ports—Includes or excludes TCP ports in ADN tunnels. Assuming ProxyClients can connect to a ProxySG that can optimize traffic to the destination address, this setting determines which ports are accelerated (or are not accelerated) for clients. You can use either the excluded ports list or included ports list, but not both.

See one of the following sections for more information:

- ❑ "Excluding Subnets from Being Accelerated"
- ❑ "Excluding and Including Ports" on page 220

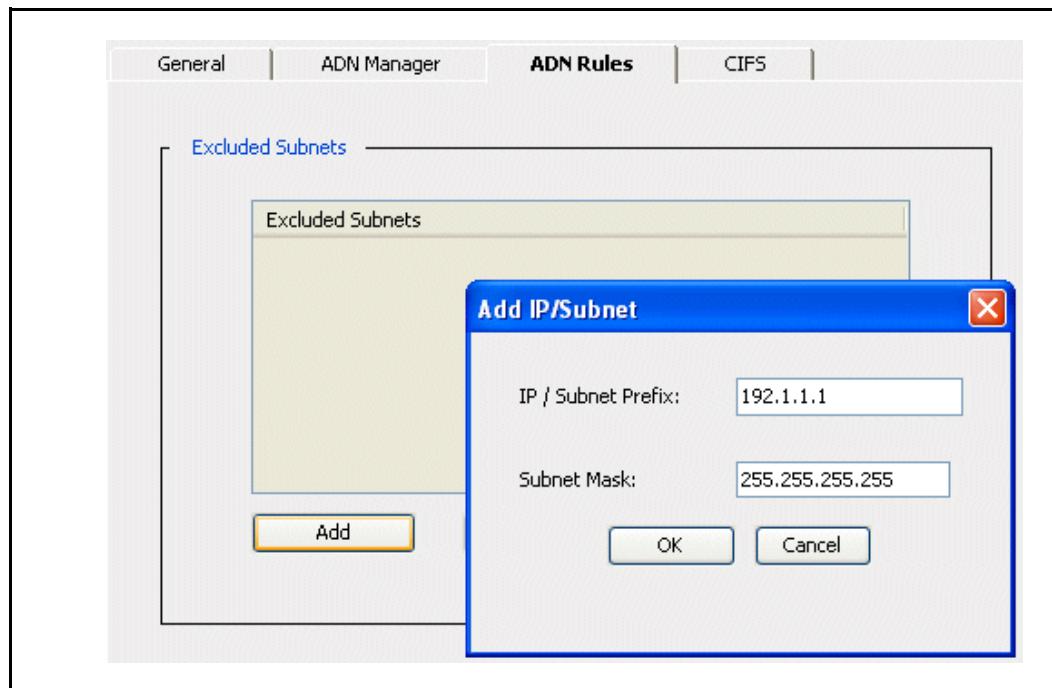
### Excluding Subnets from Being Accelerated

This section discusses how to prevent subnets from being accelerated when clients connect using the ProxyClient.

#### To exclude subnets:

1. Log in to the Client Manager's Management Console as an administrator.
2. Click **Configuration > ProxyClient > Acceleration > ADN Rules**.
3. On the ADN Rules tab page, in the Excluded Subnets section, click **Add**.

The Add IP/Subnet dialog displays.



## Section C: Configuring the ProxyClient

- Enter or edit the following information:

Option	Description
<b>IP / Subnet Prefix</b> field	Enter either an IP address or an IP address and subnet in Classless Inter-Domain Routing (CIDR) notation (for example, <b>192.168.0.0/16</b> ).
<b>Subnet Mask</b> field	Use this field if you entered only an IP address in the preceding field (that is, if you used CIDR notation in the preceding field, you do not need to enter a value in this field).

- In the Add IP/ Subnet dialog, click **OK**.
- Repeat these tasks to exclude more subnets, if required.

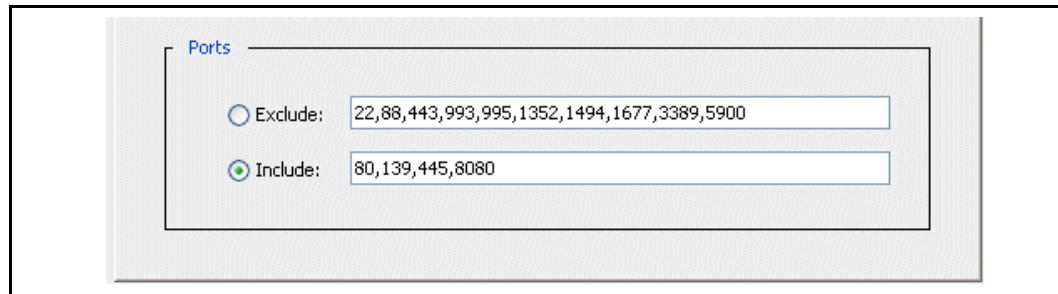
### Excluding and Including Ports

This section discusses how to include and exclude from traffic on certain TCP ports; in other words, traffic on these ports either will be accelerated (if included) or will not be accelerated (if excluded). Note that if you include ports, all other traffic is *not* accelerated.

#### To exclude or include ports:

- Log in to the Client Manager's Management Console as an administrator.
- Click **Configuration > ProxyClient > Acceleration > ADN Rules**.

The ports section displays.



- In the Ports section, click one of the following options:
    - Exclude:** Client traffic from specified ports is *not* routed through the ADN tunnel. All other traffic is accelerated.
- Valid values: Comma-separated list of ports and port ranges (no spaces, separated by a dash character). For example:

22,88,443,993,995,1352,1494,1677,3389,5900-5902

## Section C: Configuring the ProxyClient

- **Include:** Client traffic from specified ports is routed through the ADN tunnel and therefore is accelerated. All other traffic bypasses the tunnel and is not accelerated.

Valid values: Comma-separated list of ports and port ranges (no spaces, separated by a dash character). For example:

80,139,445,8080-8088

Include ports 139 and 445 for file sharing (CIFS services) acceleration.

---

**Note:** The include and exclude ports lists are advanced settings that limit the traffic that is accelerated by the ADN network.

---

4. Click **Apply**.

### *Enabling File Sharing Acceleration*

This section discusses how to enable the ProxyClient to enable Common Internet File System (CIFS) protocol acceleration, which is the protocol used to send files and directories across the WAN. Using CIFS acceleration improves performance when users request the same files from a file server at headquarters, for example.

---

**Note:** The ProxyClient does not perform CIFS acceleration in the following conditions:

- to a server that has SMB message signing enabled. For more information, see [Microsoft KB article 887429](#).
- to a server that uses SMB 2.0
- other conditions discussed in the *ProxyClient Release Notes*

For file sharing conceptual information, see "[ADN Features](#)" on page 192.

For more detailed information about CIFS optimization on the ProxySG, see the Acceleration File Sharing chapter in *Volume 2: Proxies and Proxy Services* of the ProxySG Configuration and Management Documentation Suite

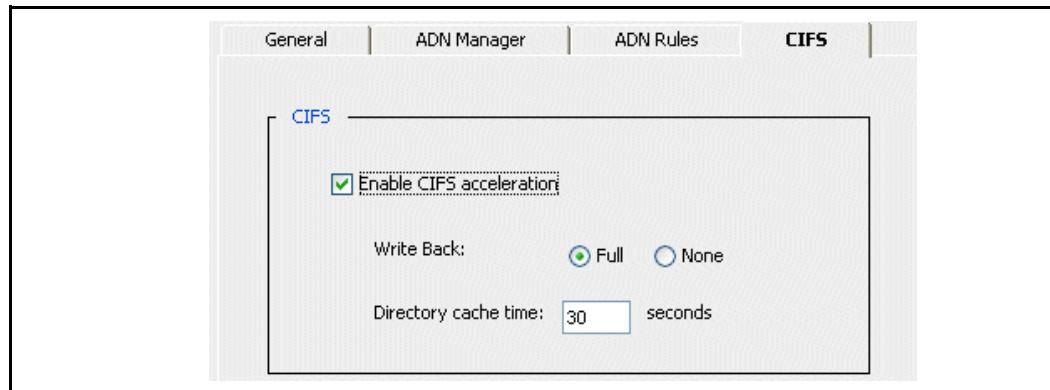
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#### **To enable file sharing acceleration using the ProxyClient:**

1. Log in to the Client Manager's Management Console as an administrator.
2. Verify the CIFS ports are listed in the Included Port list as discussed in "[Enabling File Sharing Acceleration](#)" on page 221.
3. Click **Configuration > ProxyClient > Acceleration > CIFS**.

## Section C: Configuring the ProxyClient

The CIFS tab page displays.



- On the CIFS tab page, enter or edit the following information:

Option	Description
<b>Enable CIFS acceleration</b> check box	You must select this check box to enable clients to accelerate CIFS traffic.
<b>Write Back</b> options	<p>Write back options determine whether or not user connections continue sending data to the ProxySG appliance while the appliance is writing data on the back end. Select one of the following:</p> <ul style="list-style-type: none"> <li>Select <b>Full</b> to enable write-back, which causes the ProxyClient to send data to the appliance without waiting for acknowledgement that the data was written successfully.</li> </ul> <p>This setting improves responsiveness but can lead to data loss if the ProxyClient crashes or the link drops before delivering all the data to the ProxySG appliance.</p> <ul style="list-style-type: none"> <li>Select <b>None</b> to disable write-back. Disabling write-back can introduce substantial latency while clients send data to the appliance and wait for acknowledgement before sending more data.</li> </ul> <p>One reason to set this option to <b>None</b> is the risk of data loss if the link from the branch to the core server fails. There is no way to recover queued data if such a link failure occurs.</p>
<b>Directory cache time</b> field	Enter the number of seconds for directory listings to remain in the client's cache.

- Click **Apply**.

## Section C: Configuring the ProxyClient

### See Also

*Volume 2: Proxies and Proxy Services*

"[ADN Features](#)" on page 192

"[Clearing the Cache](#)" on page 323

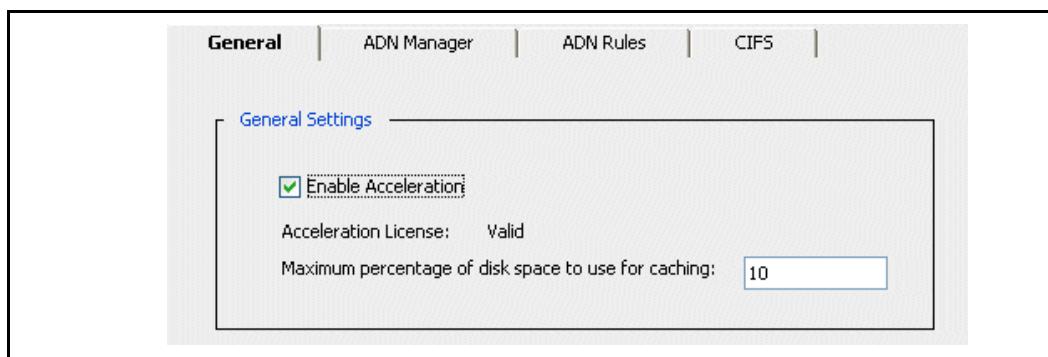
"[Changing the Location of the Cache](#)" on page 324

### *Enabling ProxyClient Acceleration*

After you have configured your network parameters (ADN manager information, excluded subnets, included or excluded ports, and CIFS protocol options), you are ready to enable acceleration for the ProxyClient.

#### To enable ProxyClient acceleration:

1. Log in to the Client Manager's Management Console as an administrator.
2. If you have not already done so, perform the following prerequisite tasks:
  - a. Enable the Client Manager as discussed in "[Designating a ProxySG as the Client Manager](#)" on page 210.
  - b. Specify the ADN manager as discussed in "[Specifying the ProxyClient ADN Manager](#)" on page 217.
3. Click **Configuration > ProxyClient > Acceleration > General**.



4. On the **General** tab, enter or edit the following information:

Option	Description
<b>Enable Acceleration</b>	You must select this check box to enable ProxyClient to accelerate network traffic using all of the following methods: <ul style="list-style-type: none"> <li>• gzip</li> <li>• CIFS protocol acceleration</li> <li>• byte caching</li> </ul> If you clear the check box, the ProxyClient performs no acceleration.

## Section C: Configuring the ProxyClient

Option	Description
<b>Acceleration License</b>	<p>Displays the status of your acceleration license as either Valid or Invalid.</p> <p>The ProxyClient—Acceleration license component is part of the base SGOS license. If the status is Invalid, there is a problem with your Blue Coat license.</p> <p>Verify a valid base SGOS license is installed (<b>Maintenance &gt; Licensing &gt; View</b>). Contact Blue Coat Support for license troubleshooting issues.</p>
<b>Maximum percentage of disk space to use for caching</b> field	<p>Enter the maximum percentage of <i>total</i> client disk space (as opposed to <i>available</i> disk space) to use for caching objects, such as CIFS objects. Valid values are 1–90; the default is 10.</p> <p>The higher you set the value, the more information is cached on user systems, but at the expense of disk space that might be required to run other applications.</p> <p>See also:</p> <ul style="list-style-type: none"> <li>• <a href="#">"Clearing the Cache" on page 323</a></li> <li>• <a href="#">"Changing the Location of the Cache" on page 324</a></li> </ul>

5. Click **Apply**.

### More About ProxyClient Caching

The following is a summary of how CIFS protocol acceleration and byte caching work on the client computer:

1. The ProxyClient starts.
2. The user requests a cacheable object, such as a file.
3. The ProxyClient allocates sufficient disk space on the client computer to cache the object—up to the limit set by the administrator. That is, if the client computer's system has 100GB of total space and the administrator configures the cache to use a maximum of 10%, the ProxyClient allocates up to 10GB for the cache.

Cache space is divided equally between the CIFS cache and the byte cache.

However, if the maximum cache size leaves less than 1GB of available disk space, the cache size is further limited. Continuing this example, if the client has only 9GB of available space, the maximum cache size is 8GB instead of 10GB.

4. If any single object (such as a file) exceeds the maximum CIFS cache size, that object is not cached in the CIFS cache; however, tokens associated with the object *are* cached in the byte cache.

### Section C: Configuring the ProxyClient

For example, if the maximum size of the CIFS cache is 5GB, and the client requests a file that is 6GB in size, that file is not cached in the CIFS cache.

5. If the cache is full, objects are expired from the cache based on a number of criteria, such as unopened files and oldest objects first.

---

**Note:** For details about where the cache files are stored by default and for information about how to change the location of cache files, see "["Changing the Location of the Cache"](#) on page 324.

---

## Configuring ProxyClient Locations

The ProxyClient application automatically detects its location by matching a combination of IP address, virtual NIC IP address, and DNS server address as specified by the ProxySG administrator.

The purpose of configuring locations is to enable ProxyClient features based on where the user connects. For example, a user who works from home on a laptop needs the ProxyClient to perform both acceleration and Web filtering because the user does not connect to a network with a local ProxySG that performs those functions. However, if the user brings the same laptop to work, both ProxyClient acceleration and Web filtering should be disabled because a local ProxySG concentrator or branch appliance performs those functions.

This section discusses the following topics:

- ["Configuring Specific Locations"](#)
- ["Configuring Default Actions"](#) on page 230

For an overview and examples, see "["About Location Awareness"](#) on page 182.

### Location Awareness Task Summary

The following table summarizes the tasks required to set up location awareness:

Task	Description
1. <a href="#">"About Location Conditions"</a> on page 183	Understand your network; specifically, how clients use VPN to access your network, IP source address ranges, and DNS server IP addresses.
2. <a href="#">"Location Example"</a> on page 184	Plan your locations.
3. <a href="#">"Configuring Specific Locations"</a> on page 226	Configure locations for office, branch office, home office, and mobile users.
4. <a href="#">"Configuring Default Actions"</a> on page 230	Default actions are used for users that do not match any configured locations.
5. <a href="#">"Ordering Locations in the Rulebase"</a> on page 229	To make sure users match the correct location, put the most restrictive (that is, more specific) locations in the rulebase before less restrictive locations.

## Section C: Configuring the ProxyClient

### **Configuring Specific Locations**

This section discusses how to use location conditions to define specific locations, such as office headquarters, branch offices with ProxySG concentrators, and mobile users.

For more information and examples, see the following sections:

- "About Location Conditions" on page 183
- "About Condition Rulebase Ordering" on page 191

#### **To specify locations:**

1. Log in to the Client Manager's Management Console as an administrator.
2. Select **Configuration > ProxyClient > General > Locations**.
3. On the **Locations** tab page, click **New**.  
The New Locations dialog displays.
4. In the **Name** field, enter a name that identifies this location. For example, **Headquarters**.

---

**Note:** The location name cannot be changed later.

---

5. In the **Conditions** section, select one or more conditions that define this location.

The **Conditions** section enables you to specify one or more conditions that define the location, and therefore the ProxyClient features to apply to users in the location. For more information and examples of setting up locations, see the following sections:

- "About Location Conditions" on page 183
- "About Condition Rulebase Ordering" on page 191

## Section C: Configuring the ProxyClient

To add a location condition, perform the following tasks:

Condition	Tasks
Source IP ranges	<ol style="list-style-type: none"> <li>Select the <b>Match source IP ranges</b> check box.</li> <li>Click <b>New</b>. <b>Note:</b> You cannot directly edit an existing condition. First delete the existing condition and then add a new one.</li> <li>In the Add IP Source Range dialog, enter a starting and ending IP address in the provided fields. You must enter a pair of IP addresses; you cannot enter CIDR notation.</li> <li>Click <b>OK</b>.</li> <li>Repeat these tasks to enter other source IP address ranges if required. <b>Note:</b> This condition is matched if the user has an IP address in any of the ranges you define.</li> </ol>
DNS servers	<ol style="list-style-type: none"> <li>Select the <b>Match DNS servers</b> check box.</li> <li>Click <b>New</b>. <b>Note:</b> You cannot directly edit an existing condition. First delete the existing condition and then add a new one.</li> <li>In the Add DNS Servers IPs dialog, enter the server's IP address.</li> <li>Click <b>OK</b>.</li> <li>Repeat these tasks to enter other DNS server IP addresses if required. <b>Note:</b> This condition is matched only if <i>all</i> DNS servers are matched. For example, if the location defines DNS IP addresses 10.1.1.1 and 10.1.1.2, and the user's computer has only 10.1.1.2 defined, there is no match. However, if the location condition defines DNS IP addresses 10.1.1.1 and 10.1.1.2, and the user's computer has 10.1.1.1, 10.1.1.2, and 10.1.1.3 defined, there is a match.</li> </ol>

## Section C: Configuring the ProxyClient

Condition	Tasks
Virtual NIC IP ranges	<p>1. Select the <b>Match Virtual NICs IP</b> check box.</p> <p>2. Click <b>New</b>.</p> <p><b>Note:</b> You cannot directly edit an existing condition. First delete the existing condition and then add a new one.</p> <p>3. In the Add Virtual NIC IP Range dialog, enter a starting and ending IP address in the provided fields. The range you enter should correspond to a range of IP addresses provisioned by your VPN gateway.</p> <p>You must enter a pair of IP addresses; you cannot enter CIDR notation.</p> <p>4. Click <b>OK</b>.</p> <p>5. Repeat these tasks to enter other Virtual NIC IP address ranges if required.</p> <p><b>Note:</b> This condition is matched if the user has an VNIC IP address in any of the ranges you define.</p>

6. Select the check box corresponding to which features are enabled for this location:
  - **Enable Acceleration:** Select this option to accelerate network traffic using all of the following:
    - gzip
    - CIFS protocol acceleration
    - byte caching
  - **Enable Web Filter:** Select this option to perform Web filtering in this location.

---

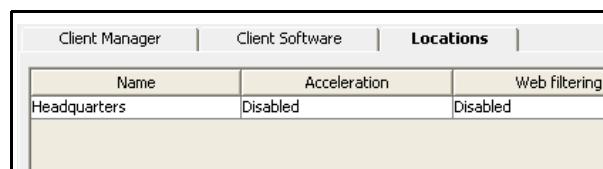
**Important:** All selected conditions must match to enable the selected location features. For example, if **Source IP Address** and **DNS Servers** conditions are selected, and if the user matches the source IP address but not the DNS server IP address, the user does not match this location and the features enabled by the location will not be applied to the user.

Users who do not match *any* location conditions have default actions applied to them as discussed in "[Configuring Default Actions](#)" on page 230.

---

7. Click **OK**.

The location name and associated policy actions display on the Locations tab page.



Name	Acceleration	Web filtering
Headquarters	Disabled	Disabled

## Section C: Configuring the ProxyClient

### See Also

["Overview of Location Awareness" on page 182](#)

["About Location Conditions" on page 183](#)

["About Condition Rulebase Ordering" on page 191](#)

### *Ordering Locations in the Rulebase*

The order in which locations display on the **Configuration > ProxyClient > General > Locations** tab page determine the order in which the rules are evaluated when users connect to the Client Manager. To avoid mismatches, order the rules from most to least restrictive.

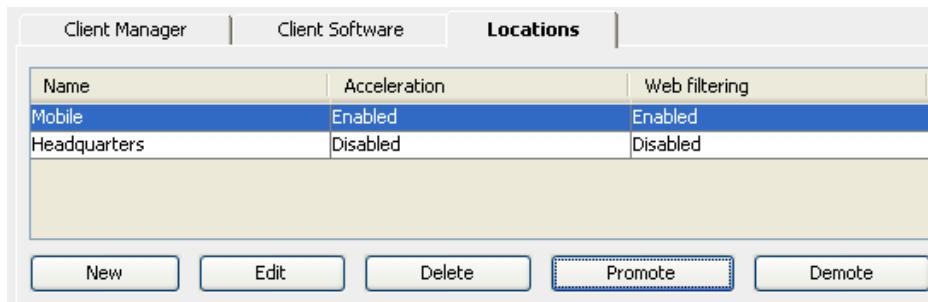
For example, suppose headquarters uses IP addresses in the range from 10.0.0.0 to 10.255.255.255 but the VPN gateway located at headquarters has a pool of IP addresses in a subset of that range; for example, 10.3.1.1 to 10.3.1.255. Because the VPN gateway is used by home office or mobile users, the administrator wants to use different policy actions for headquarters and home office users.

Users at the headquarters location should have ProxyClient acceleration and Web filtering disabled but users in a home office or mobile location should have both ProxyClient features enabled.

To accomplish that, the administrator creates the two locations as follows.

Location	Conditions
Headquarters	<ul style="list-style-type: none"> <li>Source IP address range: 10.0.0.0 to 10.255.255.255</li> <li>DNS server IP address: For example, 10.0.0.11 and 10.0.0.12</li> </ul>
Home office or mobile	<ul style="list-style-type: none"> <li>DNS server IP address: Same as headquarters</li> <li>VNIC IP address range: 10.3.1.1 to 10.3.1.255</li> </ul>

To make sure the home office or mobile location is detected first, the administrator must order it in the rulebase before the headquarters location. An example follows.



## Section C: Configuring the ProxyClient

### Configuring Default Actions

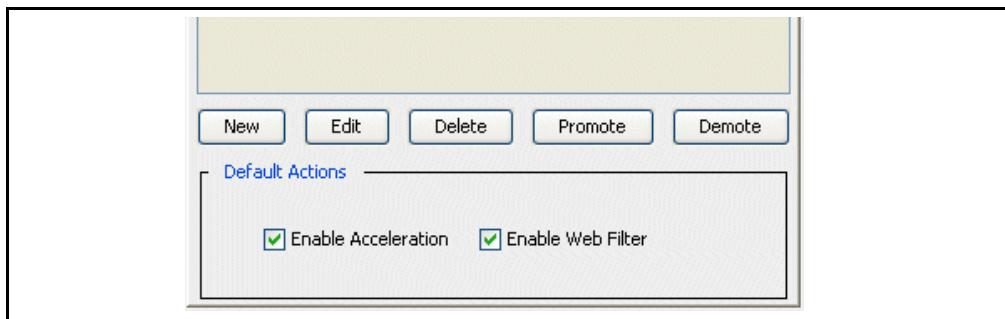
The purpose of default actions is to enable ProxyClient features for users that do not match any location conditions you defined earlier.

For example, mobile users that do not connect to the network using VPN have unknown source IP ranges and DNS servers. If a mobile user connects to the network using VPN, the user has a VNIC IP address you can use to establish the user's location.

#### To configure default actions:

1. Log in to the Management Console as an administrator.
2. Click **Configuration > ProxyClient > General > Locations**.
3. At the bottom of the Locations tab page, in the Default Actions section, select the check box corresponding to features to enable for clients who do not match any defined location conditions.

The following figure shows an example of enabling both acceleration and Web filtering by default:



#### See Also

["Overview of Location Awareness" on page 182](#)

["About Location Conditions" on page 183](#)

## Section C: Configuring the ProxyClient

### Configuring ProxyClient Web Filtering

This section discusses how to configure the Client Manager to provide the Blue Coat Web Filtering service for ProxyClient users. Web filtering enables you to allow, block, or warn users about accessing content in categories you specify using any of the following:

- The Blue Coat Web Filtering database categories
- Local database categories
- Policy categories (also referred to as *custom categories*)
- System and Default categories, which are discussed in more detail later in this section

For conceptual information about Web filtering, see "[About ProxyClient Web Filtering](#)" on page 196.

### Web Filtering Task Summary

To use ProxyClient Web filtering, you must perform the following tasks in the order shown:

Task	Description
1. Prerequisites	<ul style="list-style-type: none"> <li>• "<a href="#">About ProxyClient Licensing</a>" on page 181 The use of BCWF depends on proper licensing on the Client Manager.</li> <li>• "<a href="#">Designating a ProxySG as the Client Manager</a>" on page 210 You must designate a Client Manager before you can enable Web filtering for the ProxyClient.</li> </ul>
2. " <a href="#">Enabling the Blue Coat Web Filter Database</a> " on page 233	<p>The BCWF database must be enabled on the Client Manager before ProxyClient Web filtering can be enabled.</p> <p><b>Note:</b> Although it is possible to enable other databases (for example, Internet Watch Foundation), only the following categories can be used by the ProxyClient:</p> <ul style="list-style-type: none"> <li>• Blue Coat Web Filter</li> <li>• Policy, such as VPM policy</li> <li>• The local database</li> <li>• System and Default categories</li> </ul> <p>Categories from other databases are <i>not</i> used by ProxyClient Web filtering.</p>
3. " <a href="#">Setting up the BCWF Database Download</a> " on page 234	<p>Set up updates for the BCWF database; the database must be updated on the Client Manager at least once every 30 days.</p>

## Section C: Configuring the ProxyClient

Task	Description
4. <i>Optional.</i> <a href="#">"Enabling the Use of the Local Database (Optional)" on page 236</a>	<p>The local database is one way you can optionally create categories to whitelist or blacklist specific lists of URLs for your employees.</p> <p>You can also add policy categories (also referred to as <i>custom categories</i>) to set up whitelists and blacklists. For more information, see <a href="#">"Managing Policy Categories" on page 242</a>.</p>
5. <a href="#">"Enabling ProxyClient Web Filtering" on page 238</a>	After you have the current BCWF database, you can enable the ProxyClient to perform Web filtering.
6. <a href="#">"Assigning Policy Actions to Content Categories" on page 240</a>	Define categories of content you will allow users to access, block users from accessing, or warn users about accessing.
7. <a href="#">"Web Filtering Best Practices" on page 251</a>	Information about how to best use Web filtering in your corporation.
8. <a href="#">"Displaying and Customizing Web Filtering Exception Pages" on page 253</a>	Exception pages are displayed to users when they attempt to access content that the administrator chose to either block or to warn about. Blue Coat recommends you customize the default exception pages to provide users with more specific information.
9. <a href="#">"Enabling Web Filtering Logging" on page 256</a>	How to upload user Web filtering logs to an anonymous FTP server.

## Section C: Configuring the ProxyClient

### *Enabling Blue Coat Web Filtering*

Before Web filtering can be enabled for the ProxyClient, Blue Coat Web Filtering must be enabled on the Client Manager.

You must obtain a BCWF license, which entitles you to a BCWF user name and password. For more information, contact your Blue Coat representative. Because the BCWF database must be updated at least once every 30 days, make sure the Client Manager is capable of accessing the Internet.

---

**Note:** The Client Manager must keep the BCWF database current for licensing purposes only. The ProxyClient does not use the BCWF database on the Client Manager; instead, it gets URL categories from a service point.

---

### **Enabling the Blue Coat Web Filter Database**

This section discusses how to enable the use of the Blue Coat Web Filter database, which is required for ProxyClient Web filtering.

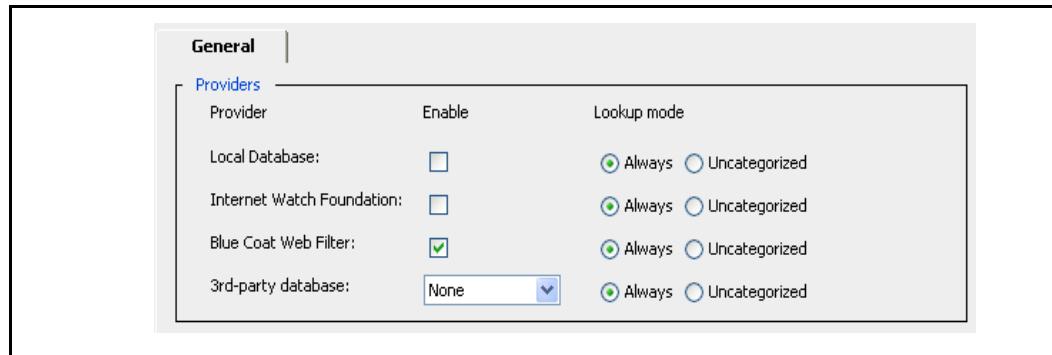
---

**Note:** Blue Coat Web Filtering must be enabled on the Client Manager; however, DRTR does not need to be enabled. ProxyClient categorization does not occur on the Client Manager; instead, the ProxyClient gets categories from a service point. The service point gets a category from DRTR if the URL is not already categorized in the BCWF database.

---

#### **To enable the Blue Coat Web Filter database:**

1. Log in to the Client Manager's Management Console as an administrator.
2. Click **Configuration > Content Filtering > General**.



3. In the right pane, select the **Enable** check box for Blue Web Filter.
4. Click **Apply**.
5. Continue with the next section.

For more information about other options, including lookup mode and memory allocation, click **Help** or see the section on setting the memory allocation in Chapter 2, Filtering Web Content, in *Volume 7: Managing Content*.

## Section C: Configuring the ProxyClient

### Setting up the BCWF Database Download

The Blue Coat Web Filter database must be updated at least once every 30 days. You have the option of updating the database automatically or at a time range you select. This section discusses how to update the database automatically.

#### To set up the BCWF database download:

1. Log in to the Client Manager's Management Console as an administrator.
2. Click **Configuration > Content Filtering > Blue Coat > Blue Coat Web Filter**.
3. On the Blue Coat Web Filter tab page, enter the following information:

Option	Description
<b>Username</b> field	Enter the user name provided with your BCWF subscription.
<b>Change Password</b> button	Click the button and follow the prompts on your screen to set or change your BCWF password.
<b>URL</b> field	Enter the URL provided with your BCWF subscription. Typically, the URL is: <a href="https://list.bluecoat.com/bcwf/activity/download/bcwf.db">https://list.bluecoat.com/bcwf/activity/download/bcwf.db</a>
<b>Set to default</b> button	Click to reset the URL field to its default value of <a href="https://list.bluecoat.com/bcwf/activity/download/bcwf.db">https://list.bluecoat.com/bcwf/activity/download/bcwf.db</a>

4. Click **Download Now**.

This starts the download process. Make sure you verify the download was successful as discussed in the next step.

5. Allow a few minutes for the download to complete and click **Verify Download**.

The following table shows sample success messages.

Type of download	Success message
Full database	<pre>Blue Coat download at: 2008/07/16 19:25:29 - 0500 Downloading from https://list.bluecoat.com/bcwf/activity/download/bcwf.db Requesting initial database Download size: 170228642 Database date: Wed, 16 Jul 2008 04:06:30 UTC Database expires: Fri, 15 Aug 2008 04:06:30 UTC Database version: 200819804 Database format: 1.1</pre>

## Section C: Configuring the ProxyClient

Type of download	Success message
Differential update	<pre>Blue Coat download at: 2008/07/16 14:16:19 - 0500 Downloading from https://list.bluecoat.com/bcwf/activity/download/bcwf.db Requesting differential update Differential update applied successfully Download size: 170228642 Database date: Wed, 16 Jul 2008 04:06:30 UTC Database expires: Fri, 15 Aug 2008 04:06:30 UTC Database version: 200819804 Database format: 1.1</pre>

The following table shows sample error messages with suggestions about how to correct the error.

Failure message	Suggested workaround
ERROR: Socket connect error	<p>The Client Manager cannot contact the BCWF URL, most likely for any of the following reasons:</p> <ul style="list-style-type: none"> <li>• The URL is incorrect Click <b>Configuration &gt; Content Filtering &gt; Blue Coat</b> and verify the value of the <b>URL</b> field with the information provided with your Web filtering license. Try clicking <b>Set to default</b> and trying the download again.</li> <li>• Network issues prevent the Client Manager from reaching the site. Log in to the Client Manager's CLI and enter the following command: <code>&gt; ping list.bluecoat.com</code> If you cannot ping the <code>list.bluecoat.com</code> Web site, check the configuration of routers and firewalls to make sure the Client Manager can reach the site.</li> </ul>
ERROR: HTTP 401 - Unauthorized	<p>Either the user name or password you specified is incorrect.</p> <p>Click <b>Configuration &gt; Content Filtering &gt; Blue Coat</b> and verify the value of the <b>Username</b> field. Click <b>Change Password</b> and enter your password again in the provided fields.</p>

## Section C: Configuring the ProxyClient

For more information about other options, click **Help** or see the section on configuring Blue Coat Web filter in Chapter 2, Filtering Web Content, in *Volume 7: Managing Content*.

1. Select the **Automatically check for updates** check box.
2. Click **Apply**.
3. Continue with the next section.

### Enabling Other Databases

Although it is possible to enable other databases (for example, Internet Watch Foundation), categories in these databases are not used by ProxyClient Web filtering. Categories from *only* the following sources are used by the ProxyClient:

- The BCWF database
- The local database
- Policy, such as VPM policy
- System categories (`none` and `unavailable`), which cannot be edited or deleted
- The Default category, which enables you to allow or block any content request that is not classified into any of the preceding categories

The tasks required to use categories from these sources are discussed in the following sections.

### *Enabling the Use of the Local Database (Optional)*

The local database can be used by administrators to set up whitelists or blacklists; in other words, it enables you to add categories with particular URLs that you can allow, block, or warn.

If you do not wish to enable the local database, skip this section and continue with "["Enabling ProxyClient Web Filtering"](#) on page 238.

This section discusses the following topics:

- ["Creating the Local Database"](#)
- ["Enabling the Local Database"](#) on page 237

### Creating the Local Database

#### To create the local database:

1. Create a text file in the following format:

```
define category-name
url1
url2
urln
end
```

## Section C: Configuring the ProxyClient

```
define category-name
url1
url2
urln
end
```

For example,

```
define category whitelist
www.cnn.com
www.webmd.com
end

define category blacklist
www.gambling.com
end
```

Each category can have an unlimited number of URLs.

2. Upload the text file to a Web server that the Client Manager can access.
3. Continue with the next section.

## Enabling the Local Database

### To enable the local database:

1. Log in to the Client Manager's Management Console as an administrator.
2. Click **Configuration > Content Filtering > General**.
3. In the right pane, select the **Enable** check box next to Local Database.
4. Click **Apply**.
5. Continue with the next section.

### *Uploading the Local Database to the Client Manager*

### To upload the local database to the Client Manager:

1. Log in to the Client Manager's Management Console as an administrator.
2. Click **Configuration > Content Filtering > Local Database**.

## Section C: Configuring the ProxyClient

3. In the right pane, enter or edit the following information:

Option	Description
<b>Username</b> field	Enter the user name required to access the local database, if any.
<b>Change Password</b> button	Click the button and follow the prompts on your screen to set or change your local database password.
<b>URL</b> field	Enter the URL to the local database.

4. Click **Download Now**.
5. To verify the download, click **Verify Download**.
6. Select the **Automatically check for updates** check box.
7. Click **Apply**.
8. Continue with the next section.

### See Also

Section on configuring the local database in Chapter 2, Filtering Web Content, in *Volume 7: Managing Content*

## *Enabling ProxyClient Web Filtering*

This section discusses how to enable ProxyClient Web filtering on the Client Manager.

### To enable ProxyClient Web filtering:

1. Complete the following prerequisite tasks:
  - a. "[Designating a ProxySG as the Client Manager](#)" on page 210
  - b. "[Enabling Blue Coat Web Filtering](#)" on page 233
2. Log in to the Client Manager's Management Console as an administrator.
3. Click **Configuration > ProxyClient > Web Filtering > Policy**.

## Section C: Configuring the ProxyClient

4. Verify the status of Web Filtering License is **Valid**.

If another status displays (such as `Invalid`), perform the following tasks on **Configuration > Content Filtering > Blue Coat > Blue Coat Web Filter**:

- Verify that the value for **Username** is correct.
- Click **Change Password** and enter the password provided with your BCWF license in the provided fields.
- Optional. Click **Set to default** to set the value of the download URL to its default value.

5. If you have a valid Web filtering license, select the **Enable Web Filtering** check box.
6. Click **Apply**.

If that does not resolve the problem, download the database manually as discussed in steps 4 and 5 in "[Setting up the BCWF Database Download](#)" on page 234.

7. After you have successfully enabled the BCWF database with a valid license, continue with the next section.

### See Also

Chapter 2, Filtering Web Content, in *Volume 7: Managing Content*

## Section C: Configuring the ProxyClient

### Assigning Policy Actions to Content Categories

You define content policy by selecting categories and corresponding policy actions that either allows the content, blocks the content, or warns users that accessing content might violate company Web use policies.

This section discusses the following topics:

- [□ "Getting Started With Categories"](#)
- [□ "Selecting Categories" on page 241](#)
- [□ "Managing Policy Categories" on page 242](#)
- [□ "Selecting Policy Actions for Categories" on page 244](#)
- [□ "Configuring System and Default Policy Actions" on page 246](#)
- [□ "Ordering Categories in the Rulebase" on page 247](#)
- [□ "Configuring Other Web Filtering Options" on page 250](#)

If you are configuring ProxyClient Web filtering for the first time, you should complete the tasks discussed in the preceding sections in the order in which they are shown. If you are modifying an existing configuration, choose any task.

#### Getting Started With Categories

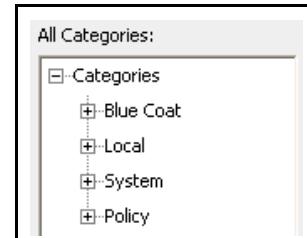
This section discusses how to locate the available categories so you can get started defining categories and their associated policy actions.

##### To implement Web filtering policy for ProxyClient users:

1. Log in to the Client Manager's Management Console as an administrator.
2. Click **Configuration > ProxyClient > Web Filtering > Policy**.

On the **Policy** tab, the **All Categories** section displays the available category nodes:

- **Blue Coat:** The BCWF database.
- **Local:** The local database, which is discussed in "[Enabling the Use of the Local Database \(Optional\)](#)" on page 236.
- **System:** Special categories (`none` and `unavailable`) that are discussed in more detail in [Step 4](#) on page 246.
- **Policy:** Categories defined using policy (usually the Visual Policy Manager (VPM)).



## Section C: Configuring the ProxyClient

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### Note:

- If you are not familiar with ProxySG content filtering, refer to Chapter 2, Content Filtering, in *Volume 7: Managing Content* of the *Blue Coat ProxySG Configuration and Management Suite*.
- Many Web sites generate more than one URL request so it is possible that an allowed Web site might create other URL requests that are categorized differently, or are categorized as the System category `none`.

For example, images and advertisements displayed on an allowed Web site are individually classified based on their URLs. Even if you allow users to access that Web site, each of the ads and images on the site can be blocked based on each URL's categorization.

---

### 3. Continue configuring Web filtering.

If you are configuring ProxyClient Web filtering for the first time, complete following tasks in the order in which they are presented. If you have already configured Web filtering and need to modify your previous choices, choose a task from the following list.

- "[Selecting Categories](#)"
- "[Configuring System and Default Policy Actions](#)" on page 246
- "[Selecting Policy Actions for Categories](#)" on page 244
- "[Ordering Categories in the Rulebase](#)" on page 247
- "[Configuring Other Web Filtering Options](#)" on page 250

## Selecting Categories

This section discusses how to select categories to use when filtering Web content for ProxyClient users. Select only the categories you wish to explicitly allow, deny, or warn users about accessing.

If a user accesses content that is not associated with any categories you select, the policy action for the Default category is applied. For more information about the Default category, see "[Configuring System and Default Policy Actions](#)" on page 246.

### To select categories:

1. Complete the tasks discussed in the following sections first:
  - "[Enabling Blue Coat Web Filtering](#)" on page 233
  - Optional. "[Enabling the Use of the Local Database \(Optional\)](#)" on page 236
  - "[Enabling ProxyClient Web Filtering](#)" on page 238
2. In the Client Manager's Management Console, click **Configuration > ProxyClient > Web Filtering > Policy**.

## Section C: Configuring the ProxyClient

3. In the **All Categories** pane, expand **Blue Coat**.

---

**Note:** If the Client Manager does not have a valid BCWF database, the BCWF categories do not display. If the database is stale (not updated in the last 30 days), the categories are unavailable. Both of these symptoms indicate a BCWF license issue. For more information, see one of the following:

- "[Configuring ProxyClient Web Filtering](#)" on page 231
  - Chapter 2, [Web Filtering](#), in *Volume 7: Managing Content*
- 

4. Select the check box next to each category to enforce a policy action on that category.

When you select a category, it automatically displays in the **Selected Category Rulebase** pane with a policy action the opposite of the **Default** category.

5. Repeat the preceding steps for the local and policy categories.

If you have no policy categories defined, see the next section.

If you do not wish to configure or change your policy categories, skip the next section and continue with "[Selecting Policy Actions for Categories](#)" on page 244.

## Managing Policy Categories

This section discusses how to add or edit policy categories. If an administrator has already configured policy categories using VPM, you can add, edit, delete, or edit URLs in any configured category. If you do not already have policy categories, you can add them.

For more information about using VPM to add categories, see *Volume 6: The Visual Policy Manager and Advanced Policy*.

### To add, edit, delete, or edit URLs in policy categories:

1. Complete the tasks discussed in the following sections first:
  - "[Enabling Blue Coat Web Filtering](#)" on page 233
  - "[Enabling the Use of the Local Database \(Optional\)](#)" on page 236
  - "[Enabling ProxyClient Web Filtering](#)" on page 238
  - "[Getting Started With Categories](#)" on page 240
2. In the Client Manager's Management Console, click **Configuration > ProxyClient > Web Filtering > Policy**.
3. Near the bottom of the right pane, click **Edit Categories**.

The Edit Categories dialog displays the currently configured category nodes (for example, Policy, Local, Blue Coat, and System).

## Section C: Configuring the ProxyClient

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**Note:** You can manage only the Policy categories. With the exception of local categories (that come from the local database, if it is configured), the other categories cannot be changed.

---

4. In the Edit Categories dialog, expand **Policy**.
5. You have the following options:

Task	Procedure
Add a policy category	<ol style="list-style-type: none"> <li>1. Click <b>Policy</b>.</li> <li>2. Click <b>Add</b>.</li> <li>3. In the Object Name dialog, enter a name for the policy category.</li> <li>4. Click <b>OK</b>.</li> <li>5. Add URLs to the category as discussed in later in this table.</li> </ol>
Rename a policy category	<ol style="list-style-type: none"> <li>1. Click the name of the category.</li> <li>2. Click <b>Rename</b>.</li> <li>3. In the Edit Locally defined category Object dialog, enter a new name for the policy category.</li> <li>4. Click <b>OK</b>.</li> <li>5. Optionally add URLs to the category as discussed in later in this table.</li> </ol>
Delete a policy category	<ol style="list-style-type: none"> <li>1. Click the name of the category.</li> <li>2. Click <b>Remove</b>.</li> </ol> <p>You are required to confirm the deletion.</p>
Edit the list of URLs in a policy category	<ol style="list-style-type: none"> <li>1. Click the name of the category in which you want to edit the list of URLs.</li> </ol> <p><b>Note:</b> You cannot add URLs to the Policy node. You must first create a category under that node as discussed earlier in this table.</p> <ol style="list-style-type: none"> <li>2. Click <b>Edit URLs</b>.</li> <li>3. In the Edit Locally defined category Object dialog, enter or edit the list of URLs, one URL per line.</li> <li>4. Click <b>OK</b>.</li> </ol>

6. In the Edit Categories dialog, click **OK**.
7. Continue with the next section.

## Section C: Configuring the ProxyClient

### Selecting Policy Actions for Categories

After choosing content categories, you must assign a policy action to each category. You have the following options:

- If the policy action is *allow*, the request goes to its destination.
- If the policy action is *block*, the blocked category exception page displays.
- If the policy action is *warn*, a warning message displays.

The user must click an acceptance link, which represents an acknowledgment that the content request might violate corporate Web use policy. If the user clicks the acceptance link, the request goes to its destination.

**Note:** If a user clicks the acceptance link the requested Web site will be accessible for 15 minutes. The accessibility time period is not currently configurable for the Web site.

#### To select policy actions:

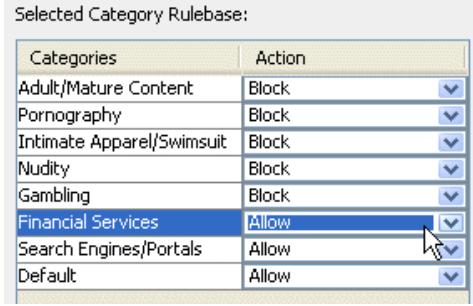
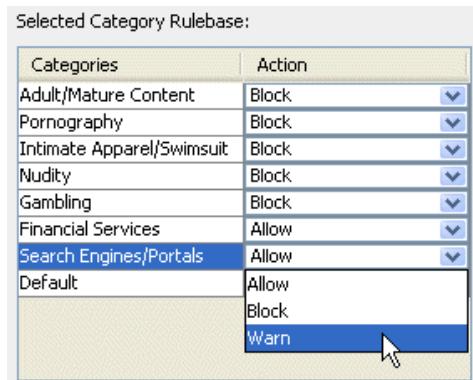
1. Complete the tasks discussed in the following sections first:
  - "[Enabling Blue Coat Web Filtering](#)" on page 233
  - "[Enabling the Use of the Local Database \(Optional\)](#)" on page 236
  - "[Enabling ProxyClient Web Filtering](#)" on page 238
  - "[Getting Started With Categories](#)" on page 240
  - "[Selecting Categories](#)" on page 241
2. In the Client Manager's Management Console, click **Configuration > ProxyClient > Web Filtering > Policy**.
3. In the **Selected Category Rulebase** section, select a policy action for each category you added.

The following table discusses the available policy actions.

For detailed information about the exception page that displays in the user's Web browser for the block and warn policy actions, see "[Displaying and Customizing Web Filtering Exception Pages](#)" on page 253.

Policy action	Example																		
<b>Block:</b> Users are denied this content; an access log entry occurs; the user receives an exception page notifying their breach of Web use policy.	<p>Selected Category Rulebase:</p> <table border="1"> <thead> <tr> <th>Categories</th><th>Action</th></tr> </thead> <tbody> <tr> <td>Adult/Mature Content</td><td>Block</td></tr> <tr> <td>Pornography</td><td>Block</td></tr> <tr> <td>Intimate Apparel/Swimsuit</td><td>Block</td></tr> <tr> <td>Nudity</td><td>Allow</td></tr> <tr> <td>Gambling</td><td>Allow</td></tr> <tr> <td>Financial Services</td><td>Block</td></tr> <tr> <td>Search Engines/Portals</td><td>Warn</td></tr> <tr> <td>Default</td><td>Allow</td></tr> </tbody> </table>	Categories	Action	Adult/Mature Content	Block	Pornography	Block	Intimate Apparel/Swimsuit	Block	Nudity	Allow	Gambling	Allow	Financial Services	Block	Search Engines/Portals	Warn	Default	Allow
Categories	Action																		
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Pornography	Block																		
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Nudity	Allow																		
Gambling	Allow																		
Financial Services	Block																		
Search Engines/Portals	Warn																		
Default	Allow																		

## Section C: Configuring the ProxyClient

Policy action	Example																						
<p><b>Allow:</b> Users are allowed this content; an access log entry occurs for URL tracking and analyzing Web use (if the value of <b>Log Exceptions Only</b> on the <b>Configuration &gt; ProxyClient &gt; Web Filtering &gt; Log</b> tab page is set to <b>All</b>).</p>	 <table border="1"> <thead> <tr> <th>Categories</th> <th>Action</th> </tr> </thead> <tbody> <tr> <td>Adult/Mature Content</td> <td>Block</td> </tr> <tr> <td>Pornography</td> <td>Block</td> </tr> <tr> <td>Intimate Apparel/Swimsuit</td> <td>Block</td> </tr> <tr> <td>Nudity</td> <td>Block</td> </tr> <tr> <td>Gambling</td> <td>Block</td> </tr> <tr> <td>Financial Services</td> <td>Allow</td> </tr> <tr> <td>Search Engines/Portals</td> <td>Allow</td> </tr> <tr> <td>Default</td> <td>Allow</td> </tr> </tbody> </table>	Categories	Action	Adult/Mature Content	Block	Pornography	Block	Intimate Apparel/Swimsuit	Block	Nudity	Block	Gambling	Block	Financial Services	Allow	Search Engines/Portals	Allow	Default	Allow				
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<p><b>Warn:</b> An access log entry occurs; an exception page displays in the user's Web browser notifying the user this Web content <i>might</i> violate Web use policy; the user must click a displayed link to acknowledge this browsed category before proceeding (or they can opt out).</p> <p><b>Note:</b> If a user clicks the acceptance link the requested Web site will be accessible for 15 minutes. The accessibility time period is not currently configurable for the Web site.</p>	 <table border="1"> <thead> <tr> <th>Categories</th> <th>Action</th> </tr> </thead> <tbody> <tr> <td>Adult/Mature Content</td> <td>Block</td> </tr> <tr> <td>Pornography</td> <td>Block</td> </tr> <tr> <td>Intimate Apparel/Swimsuit</td> <td>Block</td> </tr> <tr> <td>Nudity</td> <td>Block</td> </tr> <tr> <td>Gambling</td> <td>Block</td> </tr> <tr> <td>Financial Services</td> <td>Allow</td> </tr> <tr> <td>Search Engines/Portals</td> <td>Allow</td> </tr> <tr> <td>Default</td> <td>Allow</td> </tr> <tr> <td></td> <td>Block</td> </tr> <tr> <td></td> <td>Warn</td> </tr> </tbody> </table>	Categories	Action	Adult/Mature Content	Block	Pornography	Block	Intimate Apparel/Swimsuit	Block	Nudity	Block	Gambling	Block	Financial Services	Allow	Search Engines/Portals	Allow	Default	Allow		Block		Warn
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Financial Services	Allow																						
Search Engines/Portals	Allow																						
Default	Allow																						
	Block																						
	Warn																						

4. Continue with the next section.

If you have already defined policy actions for the system and default categories, continue with "[Ordering Categories in the Rulebase](#)" on page 247.

## Section C: Configuring the ProxyClient

### Configuring System and Default Policy Actions

This section discusses how to configure policy actions for the following categories:

Category	Description
System	<p>The System node contains the following categories, which cannot be edited or deleted:</p> <ul style="list-style-type: none"> <li>• <b>none</b>, a category for Web sites that are not rated in any available categories and for which the DRTR could not determine a rating. <i>Available categories</i> mean BCWF database categories, local database categories (if enabled), and policy categories (if configured).</li> </ul> <p>Many Web sites generate more than one URL request so it is possible that an allowed Web site might create other URL requests that are categorized differently, or are categorized as none.</p> <p>For example, images and advertisements displayed on an allowed Web site are individually classified based on their URLs. Even if you allow users to access that Web site, each of the ads and images on the site can be blocked based on each URL's categorization.</p> <ul style="list-style-type: none"> <li>• <b>unavailable</b>, a category that is used if <i>all</i> of the following are true of a particular URL request: <ul style="list-style-type: none"> <li>• When a service point cannot be reached</li> <li>• When there is no match either in the local database (if enabled) or policy categories (if configured)</li> </ul> </li> </ul>
Default	<p>The Default category always displays as the last entry in the Category Rulebase section. The policy action for the Default category is used if a URL request is not classified into any of the categories in the Category Rulebase section.</p> <p>Use caution before setting the policy action of the Default category to <b>block</b>. If Default is set to block, any URL that is not in a category that you specifically allow will be blocked.</p>

#### To configure the System categories and the Default category:

1. Complete the tasks discussed in the following sections first:
  - "[Enabling Blue Coat Web Filtering](#)" on page 233
  - "[Enabling the Use of the Local Database \(Optional\)](#)" on page 236
  - "[Enabling ProxyClient Web Filtering](#)" on page 238
  - "[Getting Started With Categories](#)" on page 240
  - "[Selecting Categories](#)" on page 241
2. In the Client Manager's Management Console, click **Configuration > ProxyClient > Web Filtering > Policy**.
3. In the **All Categories** pane, expand **System**.
4. Select the check box next to the **none** or **unavailable** categories.

## Section C: Configuring the ProxyClient

The following table discusses the meanings of policy actions for these categories.

System category	Policy action description
<b>none</b>	Set the policy action for Web sites that could not be categorized by the service point.
<b>unavailable</b>	Set the policy action for Web sites for which the ProxyClient could not reach a service point, or the service point could not reach BCWF, to determine a categorization.

5. When you are satisfied with your policy configuration, select the **Enable Web Filtering** check box.
6. Click **Apply**.
7. In the **Selected Category Rulebase** pane, choose a policy action for the **Default** category.

---

**Note:** The **Default** category cannot be moved from the bottom position because this category is intended to be used if no other category matches result.

---

8. Click **Apply**.
9. Continue with the next section.

### Ordering Categories in the Rulebase

After you have added categories to the rulebase and selected policy actions for each, you must consider how the categories are ordered. Many URLs are classified in more than one category, which results in a conflict.

In the case of a conflict between policy actions, the policy action associated with the first rulebase match is applied.

For example, suppose the same URL (`www.example.com/news`) is listed in two categories. One category has a policy action of allow and the other category has a policy action of block.

In the table that follows, `www.example.com/news` is in both the Blogs/Personal Pages and News/Media categories. The following table shows how the conflict is resolved.

## Section C: Configuring the ProxyClient

Rulebase configuration	Policy action								
<p>Selected Category Rulebase:</p> <table border="1"> <thead> <tr> <th>Categories</th> <th>Action</th> </tr> </thead> <tbody> <tr> <td>News/Media</td> <td>Allow</td> </tr> <tr> <td>Blogs/Personal Pages</td> <td>Block</td> </tr> <tr> <td>Default</td> <td>Allow</td> </tr> </tbody> </table> <p>Move-Up      Move-Down Promote to Top      Demote to Bottom</p>	Categories	Action	News/Media	Allow	Blogs/Personal Pages	Block	Default	Allow	Because News/Media is first in the rulebase and its policy action is <i>allow</i> , <a href="http://www.example.com/news">www.example.com/news</a> is allowed.
Categories	Action								
News/Media	Allow								
Blogs/Personal Pages	Block								
Default	Allow								
<p>Selected Category Rulebase:</p> <table border="1"> <thead> <tr> <th>Categories</th> <th>Action</th> </tr> </thead> <tbody> <tr> <td>Blogs/Personal Pages</td> <td>Block</td> </tr> <tr> <td>News/Media</td> <td>Allow</td> </tr> <tr> <td>Default</td> <td>Allow</td> </tr> </tbody> </table> <p>Move-Up      Move-Down Promote to Top      Demote to Bottom</p>	Categories	Action	Blogs/Personal Pages	Block	News/Media	Allow	Default	Allow	Because Blogs/Personal Pages is first in the rulebase and its policy action is <i>block</i> , <a href="http://www.example.com/news">www.example.com/news</a> is blocked.
Categories	Action								
Blogs/Personal Pages	Block								
News/Media	Allow								
Default	Allow								

**Note:** If the user is in an office location with ProxyClient Web filtering disabled, a branch ProxySG performs Web filtering. For more information about configuring a branch ProxySG to perform Web filtering, see *Volume 7: Managing Content*.

Blue Coat recommends you order Web filtering rules in the category rulebase as follows:

1. Whitelist overrides (that is, local database and policy categories you always want to allow)
2. Blacklist overrides (that is, local database and policy categories you always want to block)
3. All other categories with policy action set to block
4. All other categories with policy action set to warn
5. All other categories with policy action set to allow

## Section C: Configuring the ProxyClient

### To order categories in the category rulebase:

1. Complete the tasks discussed in the following sections first:
  - "[Enabling Blue Coat Web Filtering](#)" on page 233
  - "[Enabling the Use of the Local Database \(Optional\)](#)" on page 236
  - "[Enabling ProxyClient Web Filtering](#)" on page 238
  - "[Getting Started With Categories](#)" on page 240
  - "[Selecting Categories](#)" on page 241
  - "[Configuring System and Default Policy Actions](#)" on page 246
  - "[Selecting Policy Actions for Categories](#)" on page 244
2. In the Client Manager's Management Console, click **Configuration > ProxyClient > Web Filtering > Policy**.
3. In the **Category Rulebase** pane, click the name of a category to move.
4. Click one of the following buttons:

Button	Meaning
<b>Move-Up</b>	Move the selected category up one position in the rulebase. Use this button to move a more restrictive category and action before a less restrictive category and action.
<b>Move-Down</b>	Move the selected category down one position in the rulebase. Use this button to move a more general category and action after a more restrictive category and action.
<b>Promote to Top</b>	Move the selected category and action to the top of the rulebase. Use this button to move a very specific category and action to the top of the rulebase.
<b>Demote to Bottom</b>	Move the selected category and action to the bottom of the rulebase. (The Default category is always the last category in the rulebase; this button demotes the selected category to a position immediately above Default.)

5. Continue with the next section.

If you have already configured options for license expiration, HTTPS filtering, and safe search, continue with one of the following sections:

- "[Web Filtering Best Practices](#)" on page 251
- "[Displaying and Customizing Web Filtering Exception Pages](#)" on page 253
- "[Enabling Web Filtering Logging](#)" on page 256

## Section C: Configuring the ProxyClient

### Configuring Other Web Filtering Options

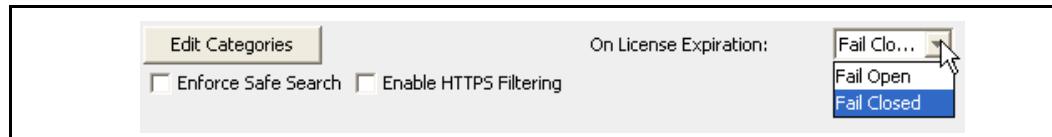
This section discusses how to configure the following options:

- ❑ On license expiration, which sets the behavior of ProxyClient Web filtering in the event the BCWF license expires on the Client Manager
- ❑ HTTPS filtering, which determines whether or not Web filtering policy actions are applied to HTTPS content
- ❑ Safe search, which determines whether or not ProxyClient users are required to use safe search with supported search engines.

#### To configure other Web filtering options:

1. Complete the tasks discussed in the following sections first:
  - "[Enabling Blue Coat Web Filtering](#)" on page 233
  - "[Enabling the Use of the Local Database \(Optional\)](#)" on page 236
  - "[Enabling ProxyClient Web Filtering](#)" on page 238
  - "[Getting Started With Categories](#)" on page 240
  - "[Selecting Categories](#)" on page 241
  - "[Configuring System and Default Policy Actions](#)" on page 246
  - "[Selecting Policy Actions for Categories](#)" on page 244
2. In the Client Manager's Management Console, click **Configuration > ProxyClient > Web Filtering > Policy**.

The bottom portion of the Policy tab page displays.



Editing categories is not discussed in this section; for more information, see "[Managing Policy Categories](#)" on page 242.

3. Enter or edit the following information:

Option	Description
<b>On License Expiration</b> list	<p>Select the action to take if the BCWF license expires (usually because the database has not been updated in a 30-day period):</p> <ul style="list-style-type: none"> <li>• <b>Fail Open</b>—Users are allowed to browse anywhere; in other words, content is not filtered. Select this option if user Web access is more critical than filtering or security.</li> <li>• <b>Fail Closed</b>—Users are not allowed to browse to any Web page. A Service Unavailable exception displays in the user's Web browser. Select this option if security is your primary concern.</li> </ul>

## Section C: Configuring the ProxyClient

Option	Description
<input checked="" type="checkbox"/> <b>Enable HTTPS Filtering</b> check box	<p>Select this check box to use Web filtering when the content request is sent over an SSL connection using the default port 443. For exceptions to this behavior, see the <i>ProxyClient Release Notes</i>.</p> <p>Clear this check box to not filter HTTPS traffic if certain browsers are used.</p>
<input type="checkbox"/> <b>Enforce Safe Search</b> check box	<p>Select this check box to force a search engine that supports Safe Search to enable its strictest search filter; however, the quality of the filtering is based on the search engine's built-in capabilities. The same search string entered on one search engine might yield different results when entered on another search engine (including returning varying levels of inappropriate content).</p> <p>Safe Search is supported on the following search engines: A9, Altavista, MSN/Live, Google, Yahoo, ASK, Earthlink, and Orange.co.uk.</p> <p>With safe search enabled, the search engine Web page displays Safe Search ON, Family Filter On, Safe Search Strict, or another engine-specific string.</p> <p>Clear this check box if you do not wish to enforce Safe Search.</p>

### See Also

- ["About ProxyClient Web Filtering" on page 196](#)
- ["Web Filtering Best Practices" on page 251](#)
- ["Displaying and Customizing Web Filtering Exception Pages" on page 253](#)
- ["Enabling Web Filtering Logging" on page 256](#)
- ["Configuring ProxyClient Web Filtering \(CLI\)" on page 264](#)

## Web Filtering Best Practices

Blue Coat recommends the following best practices when configuring ProxyClient Web filtering:

- If you have mobile users who frequently stay in hotels or access networks that require an initial guest login before getting Internet access, select the **System > unavailable** category and set it to **Allow**. For more information about this scenario, see ["About Security With Guest User Scenarios" on page 204](#).
- Some software update sites will be blocked if the Business/Economy category is set to **Block** or **Warn**.

For example, Java updates would fail because the Java update site is rated as Business/Economy. Either allow the Business/Economy category or add the software update Web sites to a custom category (using either the local

## Section C: Configuring the ProxyClient

database or VPM), set its policy action to **Allow**, and order the rule before the Business/Economy category.

- ❑ Because a particular URL might be listed in more than one category, policy action conflicts can occur.

In the case of a conflict between policy actions, the policy action associated with the first rulebase match is applied.

For example, suppose the same URL (`www.example.com/news`) is listed in two categories. One category has a policy action of allow and the other category has a policy action of block.

In the table that follows, `www.example.com/news` is in both the Blogs/Personal Pages and News/Media categories. The following table shows how the conflict is resolved.

Rulebase configuration	Policy action								
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Categories	Action								
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**Note:** If the user is in an office location with ProxyClient Web filtering disabled, a branch ProxySG performs Web filtering. For more information about configuring a branch ProxySG to perform Web filtering, see *Volume 7: Managing Content*.

## Section C: Configuring the ProxyClient

Blue Coat recommends you order Web filtering rules in the category rulebase as follows:

1. Whitelist overrides (that is, local database and policy categories you always want to allow)
2. Blacklist overrides (that is, local database and policy categories you always want to block)
3. All other categories with policy action set to block
4. All other categories with policy action set to warn
5. All other categories with policy action set to allow

## Displaying and Customizing Web Filtering Exception Pages

An exception page is an HTML message that displays in a user's Web browser when a content request triggers a policy action. You have the option of editing the default exception pages to provide more detail about why the category is blocked.

**Note:** The behavior of exception pages when the user is browsing HTTPS content when HTTPS filtering is enabled is as follows:

- Some Web browsers: The exception page displays in the same browser window as the request.
- All other Web browsers: The exception page displays in a new browser window.

For more information, see:

- For up-to-date information about Web browsers and their behavior with HTTPS filtering, see the *ProxyClient Release Notes*.
- To enable HTTPS filtering, in the Client Manager's Management Console, click **Configuration > ProxyClient > Web Filtering > Policy**, and select the **Enable HTTPS Filtering** check box. Click **Help** for more information.

Blue Coat provides default exception pages for the following occurrences:

- Blocked content: When a user requests content that violates (matched by category) enterprise Web use policy, the following message displays in the Web browser:

```
Your request was denied because of its content categorization:  
Category: offending_category_name  
URL: requested_URL
```

## Section C: Configuring the ProxyClient

- ❑ Warn: When a user requests content that *might* violate enterprise Web use policy (for example, you chose a policy action of Warn for the Search Engine/Portals category, and you want to coach a user regarding Web use policies), the following message appears in the browser:

```
It may violate company policy to visit this site.  
Category: Search Engine/Portals  
URL: www.google.com  
Click here to continue anyway.
```

The last line, available only (by default) on the Warn exception page, is a link that users click to acknowledge the warning and proceed with the content request. If they elect to opt out of this request, they must navigate to another page, click the **Back** button on the browser, or exit the browser.

- ❑ Unavailable rating service: If a user is logged in remotely, requests a URL that is not already categorized, and ProxyClient cannot connect to a content rating service, the following message displays in the browser:

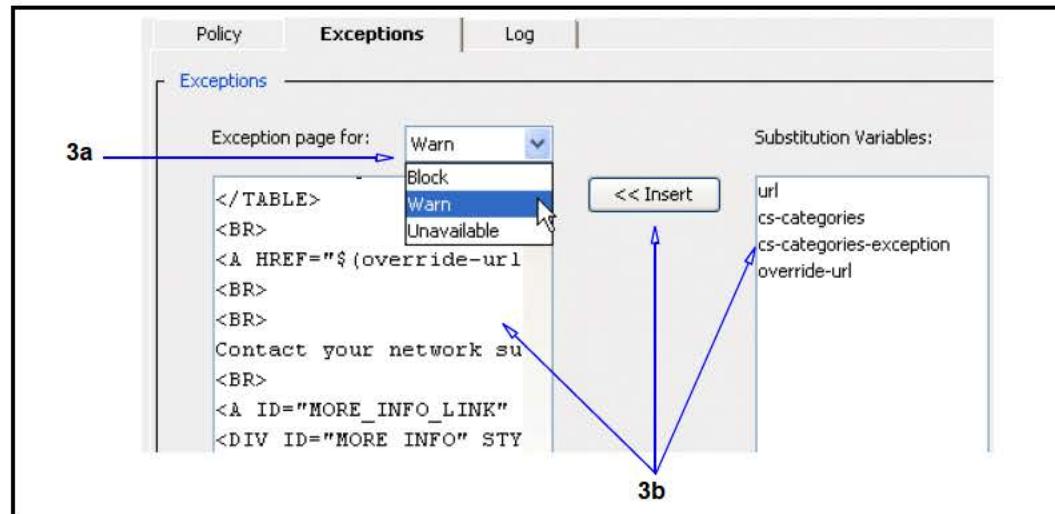
```
The Blue Coat Web Filter Service point could not be reached. This  
may be due to a networking error.
```

Users are not allowed to retrieve Web content until a rating service is reached (unless the **System > unavailable** category is set to **Allow**).

If you decide to change or add to the default text, each exception page is customizable using the Management Console or the command line.

### To customize exception pages:

1. Log in to the Client Manager's Management Console as an administrator.
2. Click **Configuration > ProxyClient > Web Filtering > Exceptions**.



## Section C: Configuring the ProxyClient

3. Customize exception pages:
  - a. From the **Exception page for** list, select a page to customize:
    - **Block:** Display text when a user browses to content blocked by policy.
    - **Warn:** Display text to inform users that the content they are requesting *might* violate Web use policy. Users must click a link to acknowledge this warning before receiving the content.
    - **Unavailable:** Display text when the rating service becomes unavailable.
  - b. Customize the Web page header and body text. The **Substitution Variables** field provides variables you can insert to display content information:
    - **url:** Displays the requested URL.
    - **cs-categories:** A full list of all category rating assigned to the Web site. Many Web sites have more than one rating.
    - **cs-categories-exception:** The category that caused the exception (the first one matched in the rulebase).
    - **override-url:** Applies to the Warn exception page only. This is used if you change the `Continue anyway` link to something else, such as a button. It will be substituted with the URL that must be pulled through an HTML request to visit the page that was blocked by the exception.
- c. Click **Apply**.

To add a variable to the custom message, insert the cursor in the HTML code where you want the variable to be, select a variable, and click **Insert**. You can add as many variables as you want.

## Section C: Configuring the ProxyClient

### ***Enabling Web Filtering Logging***

This section discusses Web filtering logging in the following sections:

- "About Web Filtering Logging"
- "How to Enable Web Filtering Logging" on page 256
- "Interpreting the Log Files" on page 259

#### **About Web Filtering Logging**

Analyzing user Web browsing activity allows you to better customize your content filter policies and to verify that your users are abiding by company policies. You can configure the ProxyClient to upload user Web browsing activity logs to an anonymous FTP server at regular time intervals or when the local log file reaches a specified size.

Connections occur only when the client system has access to the specified FTP server, which is typically when the user connects to the corporate network.

---

**Note:** Because log files are uploaded using anonymous FTP, Blue Coat strongly recommends you put your FTP server behind the corporate firewall. In addition, you should configure the FTP server to disable scans and file overwrites.

Placing an FTP server outside the firewall has the advantage that even mobile users can upload log files to it; however, it exposes the server and your company to potentially serious malicious activity.

---

#### **How to Enable Web Filtering Logging**

This section discusses how to enable Web filtering logging. You need to know the name of the anonymous FTP server to which to upload files and the directory to which to write the files. You can also configure automatic upload options based on configurable thresholds.

If the user exceeds either of the following configurable thresholds, log updates occur as soon as possible:

- Number of hours since the last upload
- Number of MB required for log files on the user's computer

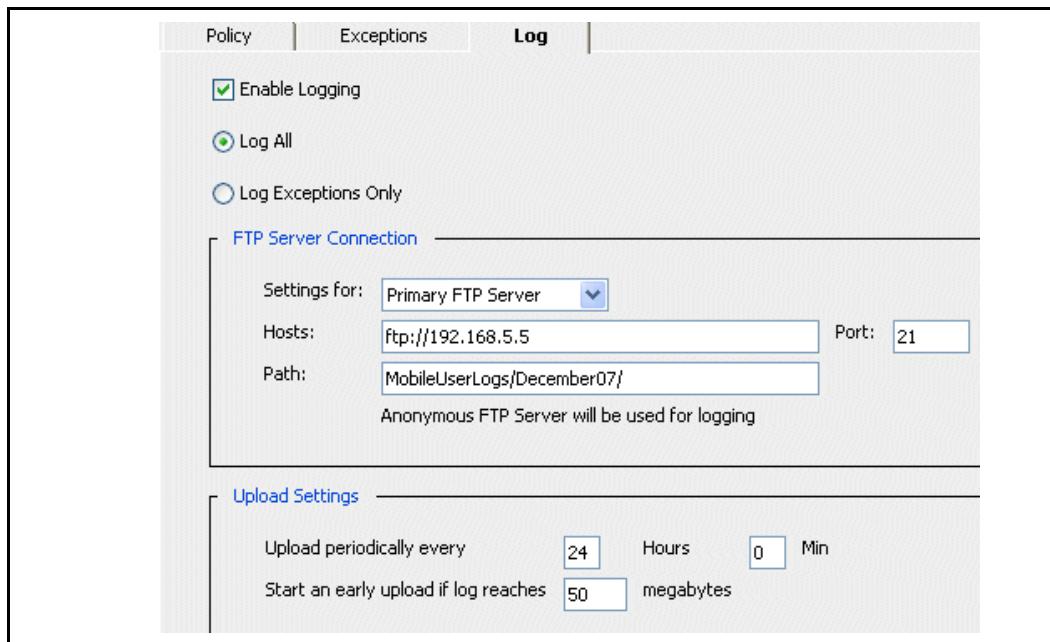
#### **To enable logging and configure logging options:**

1. Log in to the Client Manager's Management Console as an administrator.

## Section C: Configuring the ProxyClient

2. Click Configuration > ProxyClient > Web Filtering > Log.

The Log tab page displays.



3. Select the **Enable Logging** check box.
4. Click one of the following logging options:

Option	Description
<b>Log All</b>	Log all Web browsing activity.
<b>Log Exceptions Only</b>	Add a log entry only when a policy exception occurs (blocks, warnings, and rating service unavailability).

## Section C: Configuring the ProxyClient

5. In the FTP Server Connection section, enter or edit the following information:

Option	Description
<b>Settings for</b> list	Click the type of host you are configuring: <ul style="list-style-type: none"><li>• Primary FTP Server</li><li>• Alternate FTP Server</li></ul>
<b>Hosts</b> field	Enter the FTP server's fully-qualified domain name or IP address.
<b>Port</b> field	Enter the FTP server's listen port. The default is port 21. Make sure your firewall allows FTP traffic through this port, and change the port from the default only if your firewall and FTP server are configured accordingly.
<b>Path</b> field	Enter the relative path on the server to write the access log files.

6. Choose options that determine when files are uploaded from the ProxyClient computer to the FTP server.

You can choose either a time interval or the total size, in MB, files occupy on the client computer. This setting is particularly useful for mobile or offsite users that cannot connect to your FTP server.

If a mobile or offsite user is away from the network for an extended period of time and the threshold values are exceeded, an upload occurs as soon as possible.

## Section C: Configuring the ProxyClient

Enter or edit the following information:

Option	Description
<b>Upload periodically every</b>	<ul style="list-style-type: none"> <li><b>Hours</b> field: Enter the maximum number of hours to wait before attempting to upload logs from the ProxyClient computer to the FTP server.</li> <li><b>Minutes</b> field: Enter the maximum number of minutes to wait before attempting to upload logs from the ProxyClient computer to the FTP server.</li> </ul> <p><b>Note:</b> If you enter a non-zero value for both Hours and Minutes, the total amount of time is used. For example, if you enter <b>24</b> Hours and <b>10</b> Minutes, the client waits 24 hours and 10 minutes to upload log files.</p>
<b>Start an early upload if log reaches</b>	<p>Enter the minimum log file size, in megabytes, to trigger a log file upload.</p> <p>This value takes precedence over the value you entered in the preceding field. In other words, if you specify <b>24</b> hours in the preceding field and <b>10</b> megabytes in this field, if the client log file size reaches 10 megabytes after only 10 hours, the ProxyClient attempts to upload its log files to the FTP server.</p>

7. Click **Apply**.

## Interpreting the Log Files

The log file starts similarly to the following:

```
#Software:SG Client 3.1.1.0
#Version:1.0
#Fields: datetime c-ip c-username x-CS-AUTH-DOMAIN c-computername x-
exception-idcs-categoriescs-categories-exception cs-referer cs-method
cs-uri-schemeccs-hostcs-uri-port cs-uri-path cs-uri-query cs-uri-
extensioncs-user-agents-ip
```

The following table defines the fields used in the log:

Field	Description
date	Date in Universal Time Code (UTC) format.
time	Time stamp in UTC format.
c-ip	Client's IP address.
c-username	Client's login user name.
x-CS-AUTH-DOMAIN	Client's domain name (if available).
c-computername	Client's computer name.

## Section C: Configuring the ProxyClient

Field	Description
x-exception-id	One of the following: <ul style="list-style-type: none"> <li>• - if the content is allowed.</li> <li>• content_filter_warned if the policy action is warn.</li> <li>• content_filter_denied if the policy action is block.</li> </ul>
cs-categories	Semi-colon-delimited categories for the content request.
cs-categories-exception	The first category match; in other words, the category on which the policy action shown by x-exception-id is based.
cs-referer	Referring URL, if any.
cs-method	The method used in the content request (for example, GET).
cs-uri-scheme	The URI's schema (http or https).
cs-host	The host portion of the URI.
cs-uri-port	The port used to access the URI.
cs-uri-path	The path relative to cs-host. If cs-uri-scheme is https, this field is blank.
cs-uri-query	Query string, if any. If cs-uri-scheme is https, this field is blank.
cs-uri-extension	File extension of the object.
cs-user-agent	Information about the Web browser that requested the object.
s-ip	Web server's public IP address.

Following is a sample log entry showing that content was blocked:

```
2008-07-3117:51:17-joe.jones USA-TX-Austin LT-JOEJONES
content_filter_denied"Vehicles" "Vehicles" -GET /http www.mazdausa.com
80      / --Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 5.1; .NET
CLR 1.1.4322; .NET CLR 2.0.50727; .NET CLR 3.0.04506.30)129.33.107.81
```

In the preceding example, user joe.jones requested content from `http://www.mazdausa.com` and the content was blocked. The content was categorized as Vehicles, was requested by Internet Explorer 7, and was delivered from a Web server with public IP address 129.33.107.81.

## Section C: Configuring the ProxyClient

### Configuring the ProxyClient from the Command Line

This section includes the following topics:

- ❑ "Setting the Client Manager (CLI)" on page 261
- ❑ "Configuring General ProxyClient Settings (CLI)" on page 261
- ❑ "Configuring ProxyClient ADN Manager Settings (CLI)" on page 262
- ❑ "Configuring ProxyClient ADN Rules Settings (CLI)" on page 262
- ❑ "Configuring ProxyClient Locations (CLI)" on page 262
- ❑ "Configuring ProxyClient File Sharing (CIFS) Settings (CLI)" on page 263
- ❑ "Configuring ProxyClient Web Filtering (CLI)" on page 264
- ❑ "Loading the Software (CLI)" on page 264
- ❑ "Showing ProxyClient Settings (CLI)" on page 265

#### *Setting the Client Manager (CLI)*

For more information about configuring the Client Manager, see "[Designating a ProxySG as the Client Manager](#)" on page 210.

##### **To configure the Client Manager:**

1. At the #(config) command prompt, enter `proxy-client`.
2. Enable this appliance as the Client Manager:

```
#(config proxy-client) enable
```

3. Configure Client Manager settings:

```
#(config proxy-client) client-manager host {from-client-address |  
ip_address | host}  
#(config proxy-client) client-manager install-port port  
#(config proxy-client) client-manager keyring keyring
```

#### *Configuring General ProxyClient Settings (CLI)*

For more information about general client settings, see "[Designating a ProxySG as the Client Manager](#)" on page 210.

##### **To configure general client settings:**

1. At the #(config) command prompt, enter `proxy-client`.
2. Configure general client settings:

```
#(config proxy-client) max-cache-disk-percent percentage  
#(config proxy-client) software-upgrade-path url  
#(config proxy-client) update-interval minutes  
#(config proxy-client) view
```

## Section C: Configuring the ProxyClient

### *Configuring ProxyClient ADN Manager Settings (CLI)*

For more information about client ADN Manager settings, see "["Accelerating Network Traffic"](#) on page 216.

#### **To configure client ADN manager settings:**

1. At the #(config) command prompt, enter **proxy-client**.
2. At the #(config proxy-client) prompt, enter **adn**.
3. Configure ADN manager settings:

```
#(config proxy-client acceleration adn) primary-manager ip-address  
#(config proxy-client acceleration adn) backup-manager ip-address  
#(config proxy-client acceleration adn) manager-port plain-port
```

### *Configuring ProxyClient ADN Rules Settings (CLI)*

For more information about client ADN rules settings, see "["Accelerating Network Traffic"](#) on page 216.

#### **To configure client ADN rules settings:**

1. At the #(config) command prompt, enter **proxy-client**.
2. At the #(config proxy-client) prompt, enter **adn**.
3. Configure ADN rules settings:

```
#(config proxy-client acceleration adn) port-list {exclude-ports |  
include-ports}  
#(config proxy-client acceleration adn) {exclude-ports | include-  
ports} {port | port-list | port-range}  
#(config proxy-client acceleration adn) exclude-subnets  
    #(config proxy-client acceleration adn exclude-subnets) {add |  
        remove} subnet_prefix[/prefix length]  
    #(config proxy-client acceleration adn exclude-subnets) clear  
    #(config proxy-client acceleration adn exclude-subnets) exit  
    #(config proxy-client acceleration adn exclude-subnets) view  
#(config proxy-client acceleration adn) exit
```

### *Configuring ProxyClient Locations (CLI)*

For more information about location settings, see "["Configuring ProxyClient Locations"](#) on page 225.

#### **To configure client location settings:**

1. At the #(config) command prompt, enter **proxy-client**.
2. At the #(config proxy-client) command prompt, enter **locations**.

## Section C: Configuring the ProxyClient

### 3. Configure location settings:

```

#(config proxy-client locations) create location_name
#(config proxy-client locations) edit location_name
#(config proxy-client name) acceleration {enable | disable}
#(config proxy-client name) webfilter {enable | disable}
#(config proxy-client name dns) add ip-address
#(config proxy-client name dns) clear
#(config proxy-client name dns) exit
#(config proxy-client name dns) remove ip-address
#(config proxy-client name dns) view
#(config proxy-client name source) add ip-address-range
#(config proxy-client name source) clear
#(config proxy-client name source) exit
#(config proxy-client name source) remove ip-address-range
#(config proxy-client name source) view
#(config proxy-client name vnic) add vnic-address-range
#(config proxy-client name vnic) clear
#(config proxy-client name vnic) exit
#(config proxy-client name vnic) remove vnic-address-range
#(config proxy-client name vnic) view
#(config proxy-client name) match-dns {enable | disable}
#(config proxy-client name) source {enable | disable}
#(config proxy-client name) vnic {enable | disable}
#(config proxy-client name) exit
#(config proxy-client name) view
#(config proxy-client locations) acceleration {disable | enable}
#(config proxy-client locations) webfilter {disable | enable}
#(config proxy-client locations) {promote location_name | demote
location_name}
#(config proxy-client locations) delete location_name
#(config proxy-client locations) clear
#(config proxy-client locations) view

```

## *Configuring ProxyClient File Sharing (CIFS) Settings (CLI)*

For more information about CIFS client settings, see "[Enabling File Sharing Acceleration](#)" on page 221.

### To configure client CIFS client settings:

1. At the #(config) command prompt, enter **proxy-client**.
2. At the #(config proxy-client) command prompt, enter **cifs**.
3. Configure CIFS settings:

```

#(config proxy-client acceleration cifs) directory-cache-time seconds
#(config proxy-client acceleration cifs) {disable | enable}
#(config proxy-client acceleration cifs) exit
#(config proxy-client acceleration cifs) write-back {full | none}
#(config proxy-client acceleration cifs) view

```

## Section C: Configuring the ProxyClient

### Configuring ProxyClient Web Filtering (CLI)

For more information about Web Filtering client settings, see "[Configuring ProxyClient Web Filtering](#)" on page 231.

#### To configure Proxy Client Web Filtering settings:

1. At the #(config) command prompt, enter **proxy-client**.
2. At the #(config proxy-client) command prompt, enter **web-filtering**.
3. Configure Web filtering settings:

```
#(config proxy-client web-filtering) disable
#(config proxy-client web-filtering) enable
#(config proxy-client web-filtering) default-action {allow | block}
#(config proxy-client web-filtering) {allow category_name | block
category_name | warn category_name}
#(config proxy-client web-filtering) {promote category_name | demote
category_name}
#(config proxy-client web-filtering) {promote-to-top category_name |
demote-to-bottom category_name}
#(config proxy-client web-filtering) failure-mode {open | closed}
#(config proxy-client web-filtering) safe-search {disable | enable}
#(config proxy-client web-filtering) https-filtering {disable |
enable}
#(config proxy-client web-filtering) inline exception {block | allow |
warn} data end-of-file-marker
#(config proxy-client web-filtering) log
    #(config proxy-client web-filtering log) {disable | enable}
    #(config proxy-client web-filtering log) early-update megabytes
    #(config proxy-client web-filtering log) periodic-upload upload-
interval hours [minutes]
    #(config proxy-client web-filtering log) ftp-client {alternate |
primary} host hostname port
    #(config proxy-client web-filtering log) mode {all-requests |
exceptions-only}
#(config proxy-client web-filtering) view
```

### Loading the Software (CLI)

The following commands enable you to upload an updated `ProxyClient.car` file to the Client Manager.

```
#(config proxy-client) software-upgrade-path path-to-proxyclient-car
```

You can use any of the following commands to load the ProxyClient software on the Client Manager:

```
#(config) load proxy-client-software
```

Section C: Configuring the ProxyClient

*Showing ProxyClient Settings (CLI)*

To show current ProxyClient settings:

```
#(config) show proxy-client [adn [exclude-subnets] | clients | cifs |  
locations | web-filtering]
```

## Section D: Distributing the ProxyClient Software

# Section D: Distributing the ProxyClient Software

This section discusses the following topics:

- "ProxyClient Compatibility with SGOS"
- "Overview of Distributing the ProxyClient Software" on page 267
- "Preparing Interactive Installations" on page 268
- "Preparing Silent Installations and Uninstallations" on page 273
- "Using Group Policy Object Distribution" on page 285

## ProxyClient Compatibility with SGOS

Before you deploy the ProxyClient, make sure the ADN manager, backup manager (if any), concentrators and the Client Manager in your ADN network are running compatible versions of SGOS. In general, use the following guidelines:

- Make sure the ADN manager, ADN backup manager (if any), concentrators, and Client Manager are running the most recent version of SGOS.
- If you need to upgrade ProxySG appliances, do so in the following order:
  - a. ADN Manager and ADN backup manager, if any
  - b. Concentrators
  - c. Client Manager
  - d. ProxyClient software on client computers

The following table summarizes SGOS compatibility with the ProxyClient (version 3.1.x) and the SG Client (version 2.1.x):

	<b>5.3 CM 5.3 ADN Mgr 5.3 Con</b>	<b>5.3 CM 5.3 ADN Mgr 5.2 Con</b>	<b>5.3 CM 5.2 ADN Mgr 5.2 Con</b>	<b>5.2 CM 5.2 ADN Mgr 5.2 Con</b>	<b>5.2 CM 5.3 ADN Mgr 5.2 Con</b>	<b>5.2 CM 5.3 ADN Mgr 5.3 Con</b>
SG Client version 2.1.x	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible
ProxyClient version 3.1.x	Compatible	Compatible	Compatible	<i>Not</i> compatible	<i>Not</i> compatible	<i>Not</i> compatible

In other words, SGOS 5.3 is backward compatible with the SG Client version 2.1.x. However, to use the ProxyClient version 3.1.x in your ADN network, your Client Manager and ADN Manager (and backup manager, if any) *must* run SGOS version 5.3.x. In addition, Blue Coat recommends all concentrators that provide ADN tunnels for ProxyClients be upgraded to SGOS version 5.3.x.

## Section D: Distributing the ProxyClient Software

### Overview of Distributing the ProxyClient Software

Administrators can make ProxyClient software available to users in any of the following ways:

- Interactive installations started from:
  - A command line on the user's machine
  - The Client Manager

For more information, see "[Preparing Interactive Installations](#)" on page 268

- Silent installations

For more information, see "[Preparing Silent Installations and Uninstallations](#)" on page 273

- Windows Group Policy Object distribution

For more information, see "[Using Group Policy Object Distribution](#)" on page 285

- Windows Systems Management Server (SMS) distribution

For more information about SMS, consult the documentation provided with your SMS server.

---

**Note:** For the user to run `ProxyClientSetup.exe` or `ProxyClientSetup.msi`, the user must be in the Administrators group on the client machine.

---

#### Important:

- Do not rename `ProxyClientSetup.msi`; doing so causes future updates to fail.
- Do not edit `ProxyClientConfig.xml` after it has been downloaded to the client machine; instead, click **Check for Updates Now** on the ProxyClient Web browser window's Advanced tab page to get updates from the Client Manager.

## Section D: Distributing the ProxyClient Software

### Preparing Interactive Installations

Users can install the ProxyClient software either by downloading `ProxyClientSetup.exe` from the Client Manager, or manually by running `ProxyClientSetup.msi` from a command line, as shown in the following table:

Table 12–3 ProxyClient Installation Options

Option	Description
Install from Client Manager	<p>Provide users the URL to <code>ProxyClientSetup.exe</code>, which displays on the Client Manager tab page when you select <b>ProxyClient &gt; Client Manager</b>.</p> <p><code>ProxyClientSetup.exe</code> downloads and runs <code>ProxyClientSetup.msi</code> on the client machine. Users see the installation in progress and have the option of canceling the installation.</p> <p>For more information about this installation method, see "<a href="#">Interactive Installations from the Client Manager</a>" on page 268.</p>
Install from the command line	<p>To install the ProxyClient using <code>ProxyClientSetup.msi</code>, users must first download it to the client machine, then execute it from the command line as discussed in "<a href="#">Interactive Manual Installations</a>" on page 272.</p> <p><b>Note:</b> For a complete discussion of <code>ProxyClientSetup.msi</code> command-line parameters, see "<a href="#">Preparing Silent Installations and Uninstallations</a>" on page 273.</p>

---

**Note:** Users who run the ProxyClient setup application must be in the Administrators group on the client machine. Also, although it is possible for users to run the `.msi`, it is not recommended because the installation will fail unless the user provides parameters on the command-line (for example, `BCSI_UPDATEURL`).

---

### Interactive Installations from the Client Manager

To interactively install the ProxyClient software from the Client Manager, the user must be in the Administrators group on the client machine.

#### To enable users to run `ProxyClientSetup.exe` from the Client Manager:

Send users an e-mail with the URL to `ProxyClientSetup.exe` on the Client Manager.

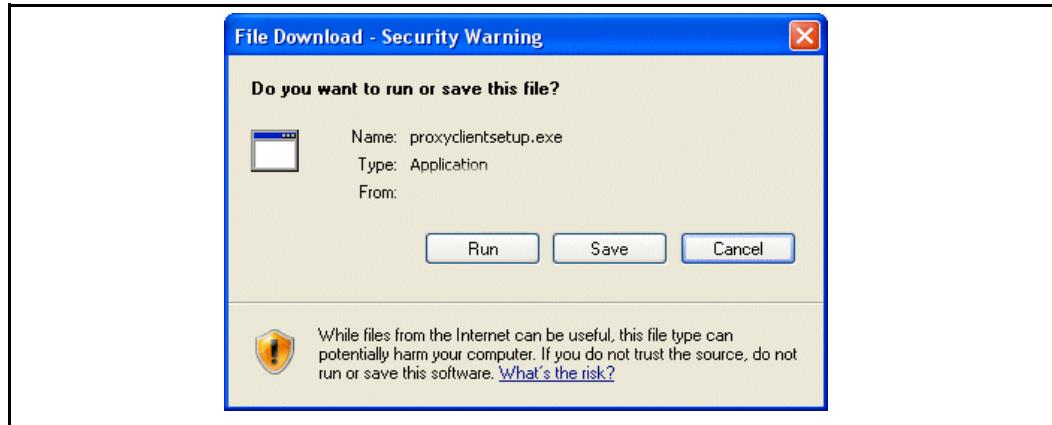
The URL displays when on the **ProxyClient > Client Manager > Client Manager** tab page.

## Section D: Distributing the ProxyClient Software

### To install the ProxyClient using this method:

1. Get the URL or location from which you access `ProxyClientSetup.exe`.
2. Click the URL in an e-mail or enter it in your browser's address field.
3. `ProxyClientSetup.exe` starts the setup application—`ProxyClientSetup.msi`—that installs the ProxyClient software.

The following dialog displays if you use Internet Explorer 6:



4. Click **Run**. The following dialog displays if your browser is Internet Explorer 6:

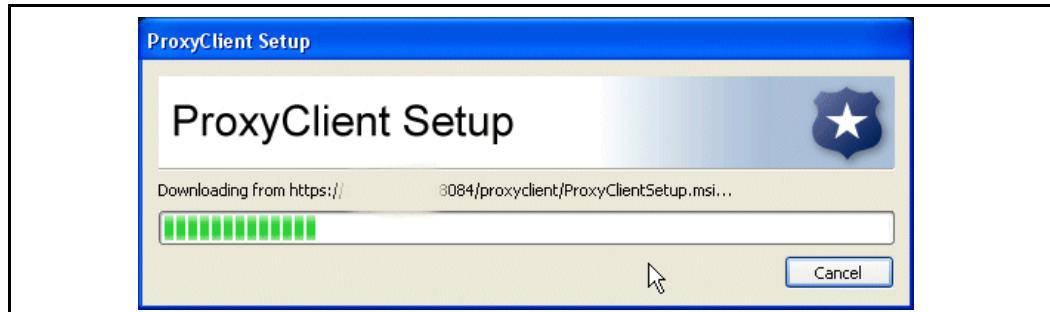


**Note:** The Security Warning dialog displays because `ProxyClientSetup.exe` is not signed. This is because `ProxyClientSetup.exe` is unique to each Client Manager, which in turn makes signing it by a recognized certificate authority difficult.

5. Click **Run**.

## Section D: Distributing the ProxyClient Software

The ProxyClient software download begins. During the download, a progress dialog similar to the following displays:



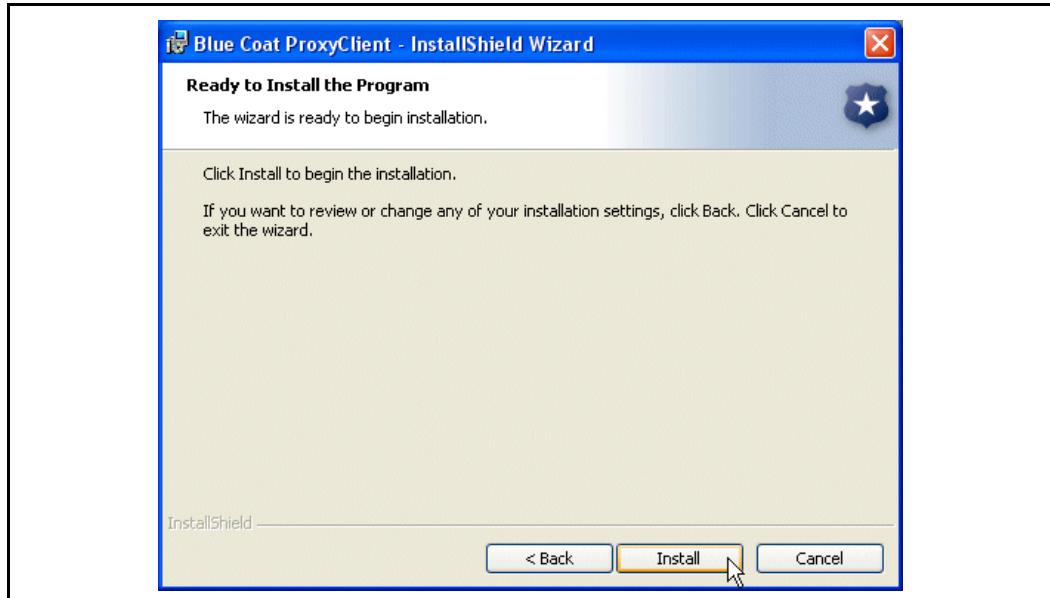
When the download completes, the InstallShield Wizard dialog displays.



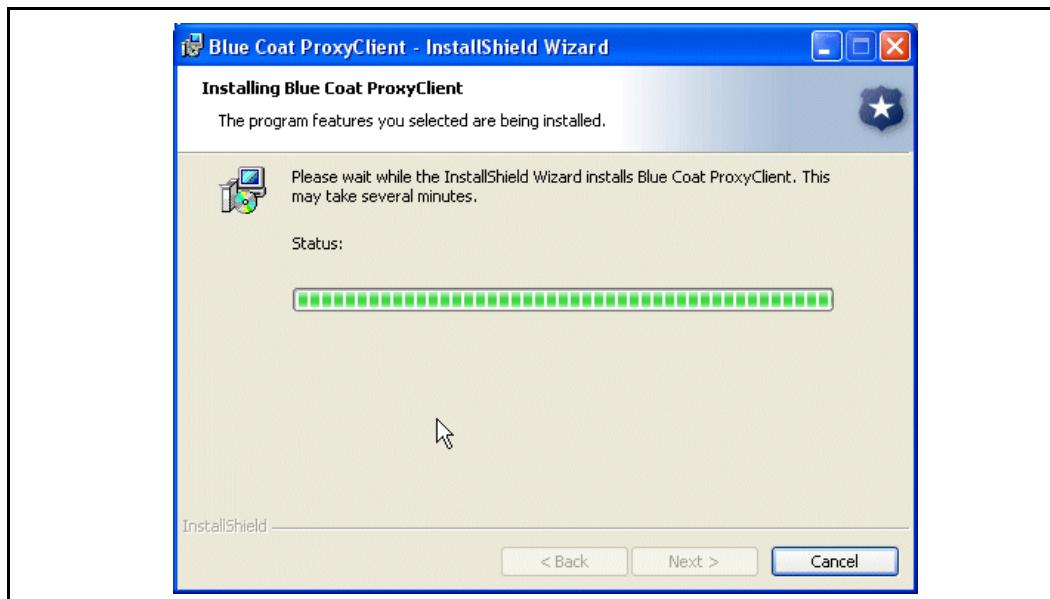
6. Click **Next**.
7. The Destination Folder dialog allows you to determine the folder location to which ProxyClient is installed. Blue Coat recommends that you install to the default directory: `c:\Program Files\Blue Coat\Proxy Client`. To accept the default click **Next** and proceed to Step 8.

#### Section D: Distributing the ProxyClient Software

To install to a directory of your choosing, click **Change**. The Change Current Destination Folder dialog displays. Click the icons to navigate to a folder and click **Ok**.

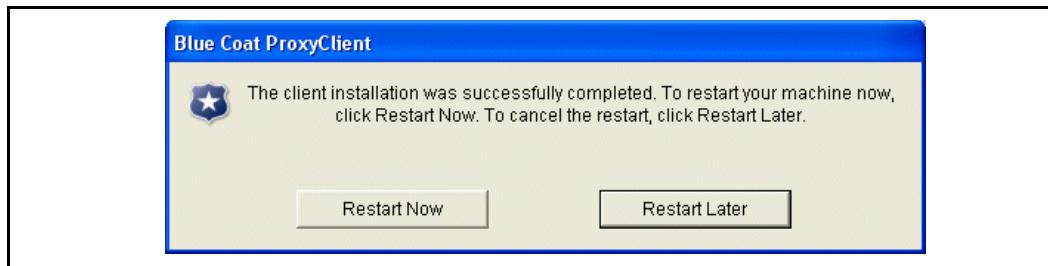


- When are satisfied with your installation preparation decisions, click **Install**. The Installing Blue Coat ProxyClient wizard dialog displays.



## Section D: Distributing the ProxyClient Software

When the installation is complete, a dialog displays.



- Click **Restart Now** to reboot the system immediately.
- Click **Restart Later** to reboot the system at a later time. Select this option to save work before you reboot.

## Interactive Manual Installations

### To enable users to manually install the ProxyClient software:

Provide a location from which the user can download `ProxyClientSetup.msi` to the client machine; for example, provide the user the URL to the Client Manager.

---

**Important:** Do not rename `ProxyClientSetup.msi`; doing so causes future updates to fail.

Do not edit `ProxyConfig.xml` on the client machine; instead, click **Check for Updates Now** on the Advanced tab page in the ProxyClient Web browser window to get updates from the Client Manager.

---

### To install the ProxyClient using this method:

1. Download `ProxyClientSetup.msi` to a location on the local file system.
2. Perform either of the following:
  - Select **Start > Run**, then enter the command shown in step 3.
  - Open a DOS command prompt window and change to the directory to which you downloaded `ProxyClientSetup.msi`
3. Enter the following command:  
`path\ProxyClientSetup.msi BCSI_UPDATEURL=url-to-config.xml`  
where `path` is the absolute file system path to `ProxyClientSetup.msi` (if necessary), `url-to-config.xml` is the URL to `ProxyConfig.xml` on the Client Manager.

## Section D: Distributing the ProxyClient Software

This URL displays when you select **ProxyClient > Client Manager** and click the **Client Manager** tab as discussed in ["Designating a ProxySG as the Client Manager"](#) on page 210.

For example,

```
ProxyClientSetup.msi BCSI_UPDATEURL=http://mysg.example.com:8084/  
proxy/ProxyClientConfig.xml
```

---

**Note:** Other command-line parameters are available. For a complete list, see ["Preparing Silent Installations and Uninstallations"](#) on page 273.

---

4. The installation proceeds as discussed in steps **1–5** in ["Interactive Installations from the Client Manager"](#) on page 268.

## Preparing Silent Installations and Uninstallations

This section discusses how to silently install or uninstall the ProxyClient.

This section includes the following topics:

- ["Parameters for Silent Installations"](#) on page 274
- ["Command for Silent Uninstallations"](#) on page 278
- ["Example Installations and Uninstallations"](#) on page 279

---

**Important:** Do not rename `ProxyClientSetup.msi`; doing so causes future updates to fail.

Do not edit `ProxyClientConfig.xml` on the client computer after it has been downloaded from the Client Manager. Instead, click **Check for Updates Now** on the Advanced tab page of the ProxyClient's Web browser window to get a configuration update.

---

For information about distributing the ProxyClient software using Group Object Policy, skip this section and see ["Using Group Policy Object Distribution"](#) on page 285.

## Section D: Distributing the ProxyClient Software

### Parameters for Silent Installations

The following table shows parameters to use with `ProxyClientSetup.msi` for silent installations. For examples, see "Example Installations and Uninstallations" on page 279.

### Silent Installation Usage

```
ProxyClientSetup.msi [/qf | /qb | /qr | /qn] BCSI_UPDATEURL=url
REINSTALL=ALL REINSTALLMODE=vamus [AUTOUPDATEPROHIBITED=0|1]
[FORCEREBOOT={yes|no} | {y|n}] [REBOOTTIME=secs]
[REGISTRYSETTINGS=settings] [NO_UI_SHORTCUT={0|1}] [/l*v logfile]
```

### Silent Installation Parameters

The following table shows the meanings of the parameters that can be used for silent installations; for examples, see "Example Installations and Uninstallations" on page 279:

Table 12–4 Parameters for Silent ProxyClient Installations

Parameter	Argument	Description
/qf   /qb   /qr   /qn   /quiet		<p>Sets the user interface level (in other words, the extent to which the installer interface displays to the user).</p> <p>/qf (fully visible and interactive, the default) enables the user to see and interact with the installer and to cancel the installation.</p> <p>/qb (basic)</p> <p>/qr (reduced) enables the user to see and interact with the installer and to cancel the installation.</p> <p>/qn or /quiet (totally silent) prevents the user from seeing or interacting with the installer and from canceling the installation.</p> <p><b>Note:</b> Because this is an <code>msiexec</code> parameter, other options are available. Enter <code>msiexec</code> at a command prompt for more information about other options.</p>
BCSI_UPDATEURL	url	<p>URL to <code>ProxyClientConfig.xml</code> on the Client Manager, which you can find as discussed in "Designating a ProxySG as the Client Manager" on page 210, entered in the following format:</p> <p><code>https://client-manager-host:client-manager-port/proxyclient/ProxyClientConfig.xml</code></p>
REINSTALL	ALL	<p>Installs all ProxyClient components, whether they are already installed or not.</p> <p>ALL is the only supported parameter value in this release.</p>

## Section D: Distributing the ProxyClient Software

Table 12–4 Parameters for Silent ProxyClient Installations (Continued)

Parameter	Argument	Description
REINSTALLMODE	vamus	Blue Coat recommends using <code>vamus</code> as the parameter value. Because this is an <code>msiexec</code> parameter, other options are available. For more information, see the description of the <code>REINSTALLMODE</code> parameter on the <a href="#">MSDN Web site</a> .
AUTOUPDATEPROHIBITED	0   1	<p>0 (default) means the ProxyClient automatically implements software updates at the interval the administrator specified for software update interval in <a href="#">"Designating a ProxySG as the Client Manager"</a> on page 210.</p> <p>1 means only the ProxyClient configuration can be updated (automatically or manually), but the ProxyClient software <i>cannot</i> be updated. Use this setting if you want to distribute software updates in some way other than the Client Manager, such as GPO or SMS.</p> <p><b>Note:</b> Regardless of the value of this setting, the client always gets configuration updates automatically when they are available. Users can also get configuration updates manually.</p>
FORCEREBOOT	yes   no y   n	<p>yes or <code>y</code> mean the dialog displays with only a <b>Restart Now</b> button and a progress bar that increments until the computer reboots. (However, if <code>REBOOTTIME=0</code>, neither a dialog nor progress bar displays.)</p> <p>no or <code>n</code> (default) mean a dialog displays with two options: <b>Restart Now</b> and <b>Restart Later</b>, enabling users to either reboot immediately, wait for the timer to expire (see the next parameter), or wait until a later time of their choosing.</p>
REBOOTTIME	secs	<p>Number of seconds after the ProxyClient installation completes before the user's machine is rebooted. A non-zero value means a counter displays on the post-installation reboot dialog.</p> <p>A value of 0 means there is no timer before rebooting; to the user, a value of 0 has different meanings, depending on the value of <code>FORCEREBOOT</code>. For more information, see <a href="#">"Example Installations and Uninstallations"</a> on page 279. The default is 0.</p>

## Section D: Distributing the ProxyClient Software

Table 12–4 Parameters for Silent ProxyClient Installations (Continued)

Parameter	Argument	Description
NOUISHORTCUT	0   1	<p>Set to 1 to hide the Start menu option for the ProxyClient: <b>Start &gt; [All] Programs &gt; Blue Coat ProxyClient &gt; ProxyClient</b>. To start the ProxyClient browser window, a user must double-click the ProxyClient shortcut located in %SystemDrive%:\Program Files\Blue Coat\ProxyClient.</p> <p>Set to 0 to show the Start menu option. The default is 0.</p>
REGISTRYSETTINGS	"name:type:value"	Colon-delimited, semicolon-separated list of registry settings to create for the client. For more information, see <a href="#">Table 12–5</a> .
/1*v	logfile	If you want the installation to be logged, enter the absolute file system path and file name of the log file. The user installing the software must have permission to write to the indicated folder and the folder must be available during the installation; therefore, you should avoid specifying a network drive.

[Table 12–5](#) shows the available arguments for the REGISTRYSETTINGS parameter. This parameter sets the key name, data type, and value of ProxyClient registry settings under HKEY\_LOCAL\_MACHINE\SOFTWARE\Blue Coat Systems\Proxy Client. Examples of using these settings can be found in "[Limiting ProxyClient Visibility and Interactivity](#)" on page 281.

---

**Important:** Blue Coat strongly recommends testing these registry settings before deploying them in a production environment. Improper registry settings might cause the installation to fail or to not function as expected.

---

## Section D: Distributing the ProxyClient Software

Table 12–5 Parameters for ProxyClient registry settings

Key name	Data type	Value
CacheDirectory	REG_SZ	<p>Set the folder in which ProxyClient byte and CIFS cache files are stored. The directory you specify must already exist. For example,</p> <pre>REGISTRYSETTINGS="CacheDirectory:REG_SZ:D:\BCCacheDir"</pre> <p>By default, with no registry key specified, cache files are stored in the following folder:</p> <ul style="list-style-type: none"> <li>• Windows XP  <code>%SystemDrive%\Documents and Settings\LocalService\Local Settings\Application Data\Blue Coat\Blue Coat ProxyClient</code></li> <li>• Windows Vista  <code>%SystemDrive%\Windows\system32\config\systemprofile\AppData\Local\Blue Coat\Blue Coat ProxyClient</code></li> </ul>
ChangeCMAllowed	REG_DWORD	<p>Allowed values: 0   1</p> <p>Set to 1 to allow the user to change the Client Manager. For example,</p> <pre>REGISTRYSETTINGS="ChangeCMAllowed:REG_DWORD:1"</pre> <p>Set to 0 to prevent the user from changing the Client Manager.</p> <p>The default is 0.</p>
TiNotVisible	REG_DWORD	<p>Allowed values: 0   1</p> <p>Set to 1 to hide the ProxyClient system tray icon and pop-up messages except to indicate that software updates are being downloaded, or if the computer must be rebooted to apply a software update. For more detail about ProxyClient icon states, see "<a href="#">"Limiting ProxyClient Visibility and Interactivity"</a> on page 281.</p> <p>For example,</p> <pre>REGISTRYSETTINGS="TiNotVisible:REG_DWORD:1"</pre> <p>Set to 0 to display the ProxyClient tray icon and pop-up messages.</p> <p>The default is 0.</p>

## Section D: Distributing the ProxyClient Software

Table 12–5 Parameters for ProxyClient registry settings

Key name	Data type	Value
TiNotVisibleForceUpdate	REG_DWORD	<p>Allowed values: 0   1</p> <p>Set to 1 to force ProxyClient <i>software</i> updates on client computers without user interaction. This registry setting does not depend on the setting for TiNotVisible; in other words, setting the value of this key to 1 means clients always get updates regardless of whether or not the tray icon is hidden.</p> <p>For example,</p> <pre>REGISTRYSETTINGS="TiNotVisibleForceUpdate:REG_DWORD:1"</pre> <p>Set to 0 to apply ProxyClient software updates normally; that is, provided updates are allowed, users must install the updates manually.</p> <p>The default value is 0.</p> <p><b>Note:</b> Regardless of the value of this registry key, clients always get <i>configuration</i> updates automatically at the update interval you set using <b>Configuration &gt; ProxyClient &gt; General &gt; Client Manager</b>. Clients can also get configuration updates manually at any time.</p>

### Command for Silent Uninstallations

To silently uninstall the ProxyClient software, use the following command:

```
msiexec /X{D35B0C7A-4545-4A98-A810-3810B3FE25E5} /quiet
```

The string {D35B0C7A-4545-4A98-A810-3810B3FE25E5} identifies the ProxyClient installer's MSI product code.

## Section D: Distributing the ProxyClient Software

During uninstallation, the ProxyClient removes:

- The *SG Client* (this is the pre-SGOS 5.3 version of ProxyClient).
- All ProxyClient drivers, folders, files, the service, and so on.
- ProxyClient cache files and the cache folder.

---

**Note:** Users who have administrative privileges on their machines can uninstall the ProxyClient using the **Control Panel > Add or Remove Programs** application.

---

### Example Installations and Uninstallations

This section shows the following examples:

- "Example Installations" on page 279
- "Example Uninstallation" on page 281

Additional examples are discussed in "["Limiting ProxyClient Visibility and Interactivity"](#) on page 281.

---

**Important:** Do not rename `ProxyClientSetup.msi`; doing so causes future updates to fail.

Do not edit `ProxyClientConfig.xml` on the client computer after it has been downloaded. Instead, click **Check for Updates Now** on the Advanced tab page of the ProxyClient's Web browser window to get updates.

---

### Example Installations

**Example 1:** Automated, interactive installation, manual software updates possible, cache directory located in `D:\BCCacheDir`:

```
ProxyClientSetup.msi /qr BCSI_UPDATEURL=https://mysg.example.com:8084/
proxyclient/ProxyClientConfig.xml REINSTALL=ALL REINSTALLMODE=vamus
FORCEREBOOT=no REBOOTTIME=30
REGISTRYSETTINGS="CacheDirectory:REG_SZ:D:\BCCacheDir"
```

The ProxyClient configuration downloads from the Client Manager at `https://mysg.example.com:8084`. The user sees the installation in progress and can cancel it.

The `REINSTALL` and `REINSTALLMODE` parameters cause all ProxyClient components to install, which is useful in cases where you are recovering from an incomplete or previously unsuccessful installation.

After the installation is complete, a dialog counts down from 30 seconds to the time the computer will reboot automatically. When the dialog displays, the user has the following options:

- Click **Restart Later** in the dialog to defer rebooting until a later time.
- Click **Restart Now** in the dialog to reboot immediately.

## Section D: Distributing the ProxyClient Software

The `REGISTRYSETTINGS` parameter locates the cache directory in `D:\BCCacheDir`. This directory must exist prior to the installation; otherwise, the default cache directory will be used.

**Example 2:** Automated, interactive installation; the user has the ability to change the Client Manager using the ProxyClient browser window

```
ProxyClientSetup.msi /qr BCSI_UPDATEURL=https://mysg.example.com:8084/
proxyclient/ProxyClientConfig.xml REINSTALL=ALL REINSTALLMODE=vamus
FORCEREBOOT=yes REBOOTTIME=30
REGISTRYSETTINGS="ChangeCMAllowed:REG_DWORD:1"
```

The ProxyClient configuration downloads from the Client Manager at `https://mysg.example.com:8084`. The user sees the installation in progress and can cancel it. The `REINSTALL` and `REINSTALLMODE` parameters make sure that all ProxyClient components install, which is useful in cases where you are recovering from an incomplete or previously unsuccessful installation.

The `REGISTRYSETTINGS` parameter creates a registry key that enables users to change the Client Manager using the ProxyClient browser window (for more information, see "[Changing the Client Manager](#)" on page 313).

After the installation is complete, the user has the following options:

- Wait 30 seconds for the machine to reboot.
- Click **Restart Now** in the dialog to reboot immediately.

**Example 4:** Automated, interactive installation without a timer

```
ProxyClientSetup.msi /qr BCSI_UPDATEURL=https://mysg.example.com:8084/
proxyclient/ProxyClientConfig.xml REINSTALL=ALL REINSTALLMODE=vamus
FORCEREBOOT=no REBOOTTIME=0
```

The ProxyClient configuration downloads from the Client Manager at `https://mysg.example.com:8084`. The user sees the installation in progress and can cancel it. The `REINSTALL` and `REINSTALLMODE` parameters make sure that all ProxyClient components install, which is useful in cases where you are recovering from an incomplete or previously unsuccessful installation.

After the installation is complete, the user has the following options:

- Click **Restart Later** in the dialog to defer rebooting until a later time.
- Click **Restart Now** in the dialog to reboot immediately.

**Example 5:** Totally silent installation, immediate reboot

```
ProxyClientSetup.msi /qn BCSI_UPDATEURL=https://mysg.example.com:8084/
proxyclient/ProxyClientConfig.xml REINSTALL=ALL REINSTALLMODE=vamus
FORCEREBOOT=yes REBOOTTIME=0
```

The ProxyClient configuration downloads from the Client Manager specified at `https://mysg.example.com:8084`. The user does not see the installation in progress and cannot cancel it. The user's machine is rebooted immediately after the installation is complete. The `REINSTALL` and `REINSTALLMODE` parameters make sure that all ProxyClient components install, which is useful in cases where you are recovering from an incomplete or previously unsuccessful installation.

## Section D: Distributing the ProxyClient Software

### Example Uninstallation

```
msiexec /X{D35B0C7A-4545-4A98-A810-3810B3FE25E5} /quiet
```

The string `{D35B0C7A-4545-4A98-A810-3810B3FE25E5}` identifies the ProxyClient installer's MSI product code.

### *Limiting ProxyClient Visibility and Interactivity*

This section discusses how to limit ProxyClient application visibility and user interaction with the ProxyClient software. You can implement any or all of the following options:

Option	Setting
Force ProxyClient software and configuration updates on clients without user interaction	<code>TiNotVisibleForceUpdate</code> registry key set to 1
Hide the ProxyClient system tray icon	<code>TiNotVisible</code> registry key set to 1
Hide the ProxyClient Start menu option	<code>NOUISHORTCUT</code> installer switch

Registry keys and installer switches are discussed in more detail in "[Command for Silent Uninstallations](#)" on page 278.

The following table shows the ProxyClient tray icon states and how they are affected by these settings:

Icon	Icon meaning	Registry setting	Description
	Normal	Default: <code>TiNotVisible</code> registry key not present	Always displays
		Invisible: <code>TiNotVisible</code> set to 1	Never displays

## Section D: Distributing the ProxyClient Software

Icon	Icon meaning	Registry setting	Description
	Warning state (for example, low disk space or updates are available)	Default: <ul style="list-style-type: none"> <li>TiNotVisible registry key not present</li> <li>TiNotVisible-ForceUpdate set to 0</li> </ul>	Always displays to warn users about critical states or when user action is required (for example, to get software updates manually)
		Invisible but interactive: <ul style="list-style-type: none"> <li>TiNotVisible set to 1</li> <li>TiNotVisible-ForceUpdate registry key not present</li> </ul>	Never displays; <i>configuration</i> updates are downloaded automatically but the user must get <i>software</i> updates manually. However, if software updates are disabled (AutoUpdate-Prohibited registry key set to 1), the user never gets software updates.
		Invisible and non-interactive: <ul style="list-style-type: none"> <li>TiNotVisible set to 1</li> <li>TiNotVisible-ForceUpdate set to 1</li> </ul>	Displays only to indicate that <i>software</i> updates are currently being downloaded; <i>configuration</i> updates are downloaded automatically but the icon does not display.
	Reboot required	TiNotVisible registry key not present, set to 0 or set to 1	Displays to indicate that a reboot is required after a software update or driver failure.

### Note:

- In the preceding table, only the (critical) icon state depends on both TiNotVisible and TiNotVisibleForceUpdate. The other icon states are not affected by TiNotVisibleForceUpdate.
- To enable users to get software updates if you hide the system tray icon or Start menu option, set the AutoUpdateProhibited registry key to 0. You can do this by editing the registry or by installing the ProxyClient software with the AUTOUPDATEDPROHIBITED installer option absent or set to 0.

To use these options *after* you install the ProxyClient software, see "[Limiting ProxyClient Visibility After Installation](#)" on page 315.

## Examples

This section provides the following examples:

- Example of installation allowing partially interactivity: Hiding the system tray icon, and requiring clients to accept software updates without interaction:

```
ProxyClientSetup.msi /qn BCSI_UPDATEURL=https://mysg.example.com:8084/
proxyclient/ProxyClientConfig.xml REINSTALL=ALL REINSTALLMODE=vamus
FORCEREBOOT=yes REGISTRYSETTINGS="TiNotVisible:REG_DWORD:1;
TiNotVisibleForceUpdate:REG_DWORD:1"
```

## Section D: Distributing the ProxyClient Software

This example sets the following options:

Option	Description
/qn	Performs a non-interactive installation.
BCSI_UPDATEURL=https://mysg.example.com:8084/proxyclient/ProxyClientConfig.xml	Specifies the URL from which clients obtain policy.
REINSTALL=ALL	Installs all ProxyClient components, whether they are already installed or not.
REINSTALLMODE=vamus	For more information, see the description of the REINSTALLMODE parameter on the <a href="#">MSDN Web site</a> .
FORCEREBOOT=yes	Forces clients to reboot after installing the ProxyClient software.
REGISTRYSETTINGS="TiNotVisible:REG_DWORD:1; TiNotVisibleForceUpdate:REG_DWORD:1"	<ul style="list-style-type: none"> <li>• TiNotVisible:REG_DWORD:1 Hides the ProxyClient system tray icon unless software updates are being downloaded. The icon also displays after the updates have been installed to indicate the computer must be rebooted.</li> <li>• TiNotVisibleForceUpdate:REG_DWORD:1 Requires clients to accept software updates when they are available. User interaction is not permitted. However, if the AutoUpdateProhibited registry key is set to 1, it takes precedence and software updates are never downloaded.</li> </ul>

- Example of installation with no application visibility or interactivity:  
Installing the ProxyClient to hide the system tray icon, hide the Start menu option, and require clients to accept upgrades without interaction:

```
ProxyClientSetup.msi /qn BCSI_UPDATEURL=https://mysg.example.com:8084/proxyclient/ProxyClientConfig.xml REINSTALL=ALL REINSTALLMODE=vamus FORCEREBOOT=yes NO_UI_SHORTCUT=1 REGISTRYSETTINGS="TiNotVisible:REG_DWORD:=1; TiNotVisibleForceUpdate:REG_DWORD:1"
```

## Section D: Distributing the ProxyClient Software

This example sets the following options:

Option	Description
/qn	Performs a non-interactive installation.
BCSI_UPDATEURL=https://mysg.example.com:8084/proxyclient/ProxyClientConfig.xml	Specifies the URL from which clients obtain policy.
REINSTALL=ALL	Installs all ProxyClient components, whether they are already installed or not.
REINSTALLMODE=vamus	For more information, see the description of the REINSTALLMODE parameter on the <a href="#">MSDN Web site</a> .
FORCEREBOOT=yes	Forces clients to reboot after installing the ProxyClient software.
NO_UI_SHORTCUT=1	Hides the ProxyClient Start menu option. To view the ProxyClient browser window, the user must double-click the ProxyClient shortcut located in %SystemDrive%:\Program Files\Blue Coat\ProxyClient
REGISTRYSETTINGS="TiNotVisible:REG_DWORD:=1; TiNotVisibleForceUpdate:REG_DWORD:1"	<ul style="list-style-type: none"> <li>• TiNotVisible:REG_DWORD:1 Hides the ProxyClient system tray icon unless software updates are being downloaded. The icon also displays after the updates have been installed to indicate the computer must be rebooted.</li> <li>• TiNotVisibleForceUpdate:REG_DWORD:1 Requires clients to accept software or configuration updates when they are available. User interaction is not permitted. However, if the AutoUpdateProhibited registry key is set to 1, it takes precedence and software updates are never downloaded.</li> </ul>

## Section D: Distributing the ProxyClient Software

### Using Group Policy Object Distribution

This section discusses how to distribute the ProxyClient software using Windows Group Policy Object (GPO).

**Important:** Only an experienced Windows administrator should attempt to complete the tasks discussed in this section.

#### To distribute the ProxyClient software using GPO:

1. Get an .msi transform tool, such as the Orca database editor.

Orca is a table-editing tool available in the Windows Installer SDK that can be used to edit your .msi files. You can also use similar tools available from other vendors.

---

**Note:** Blue Coat does not recommend a particular transform tool.

---

For more information about Orca, see [Microsoft KB article 255905](#).

The remainder of this section assumes you use Orca. Consult the documentation provided with the transform tool you are using for vendor-specific instructions.

2. Open `ProxyClientSetup.msi`.
3. Perform the following changes to the `Property` table:

---

**Note:** Be advised, this action invalidates the signature on the MSI.

---

Table 12–6 ProxyClient setup property table changes

Property	Action	Value
<code>BCSI_UPDATEURL</code>	Add row	<i>Required for all installations.</i> URL to <code>ProxyClientConfig.xml</code> on the Client Manager, entered in the following format: <code>https://client-manager-host:client-manager-port/proxyclient/ProxyClientConfig.xml</code>
<code>FORCEREBOOT</code>	Edit value	<i>Required for all installations.</i> Change the value from <code>n</code> to <code>y</code> . This value causes the user's machine to reboot after the ProxyClient is downloaded, which is required to use the ProxyClient.

## Section D: Distributing the ProxyClient Software

Table 12–6 ProxyClient setup property table changes

Property	Action	Value
REINSTALL	Add row	<p>Add this row and set it to <code>all</code> only if you want to update the ProxyClient software and configuration using GPO.</p> <p>If clients get future ProxyClient software and configuration updates from the Client Manager, do not add this row.</p>
REINSTALLMODE	Add row	<p>Add this row and change it to <code>vamus</code> only if you want to update the ProxyClient software and configuration using GPO.</p> <p>If clients will get future ProxyClient software and configuration updates from the Client Manager, do not add this row.</p>
AUTOUPDATEPROHIBITED	Edit value	<p>Change the value from 0 to 1 only if you want to update the ProxyClient software in some way other than from the Client Manager, such as using GPO or SMS. (Configuration updates are obtained from the Client Manager whose URL is specified by the <code>BCSI_UPDATEURL</code> parameter discussed earlier in this table.)</p> <p>1 means only the ProxyClient configuration can be updated (automatically or manually), but the ProxyClient software <i>cannot</i> be updated. Use this setting if you want to distribute software updates in some way other than the Client Manager, such as using GPO or SMS.</p> <p>If clients will get future ProxyClient software updates from the Client Manager, leave this value at 0.</p>

#### Section D: Distributing the ProxyClient Software

4. To implement registry changes discussed in [Table 12–5](#) on page 277, use the following steps:
  - a. Add one row to the `Registry` table for every registry setting you wish to set.
  - b. In the Add Row dialog box, enter the following information:

Field	Description
<b>Registry</b>	Enter a unique description of the registry entry. The value you enter is not written to the registry; it is used only to identify the entry. The value must begin with <code>Registry</code> . For example, <b>Registry1</b> .
<b>Root</b>	Enter <b>2</b> .
<b>Key</b>	Enter the ProxyClient registry path relative to <code>HKEY_LOCAL_MACHINE\Software\Blue Coat Systems\Proxy Client</code>
<b>Name</b>	Enter the name of the registry key; see <a href="#">Table 12–5</a> on page 277.
<b>Value</b>	Enter the value of the registry key. <b>Note:</b> If the value is REG_DWORD, you must preface the value with the number sign (#). For example, a registry key value of 1 must be entered as <b>#1</b> .
<b>Component</b>	Enter <b>ProxyClientSvc.exe</b> .

5. Generate the transformation.

Section E: About the ProxyClient Application

## Section E: About the ProxyClient Application

This section provides an overview of the ProxyClient application that runs on user systems. Review this section so that you are aware of your users interaction with ProxyClient.

The user interface allows users to view statistics and Web filtering verdicts, manually retrieve configuration and policy updates from the Client Manager, perform basic troubleshooting tasks, and forward diagnostic information to system administrators.

---

**Note:** The descriptions in this section are brief; for more detailed explanations of specific options, access the Help file in the application.

---

### How Users Access the ProxyClient Application

Users access the application by:

- Selecting from the Windows **Start** menu: **[All] Programs > Blue Coat ProxyClient > ProxyClient.**
- Double-clicking the ProxyClient shield icon in the system program tray.
- Right-clicking the ProxyClient shield icon in the system program tray and selecting **Show Status**.

---

**Note:** To prevent users from seeing the ProxyClient application or knowing it is running, you can optionally hide the tray icon as discussed in "[Limiting ProxyClient Visibility and Interactivity](#)" on page 281.

---

ProxyClient starts in a Web browser window. If your default Web browser is Internet Explorer, the ProxyClient starts in an Internet Explorer window. If your default Web browser is Firefox, the ProxyClient starts in a Firefox window.

If your default Web browser is neither Internet Explorer nor Firefox, the ProxyClient starts in an Internet Explorer window.

## Section E: About the ProxyClient Application

*About the Status Tab Page*

The first page users see is the **Status** tab page.

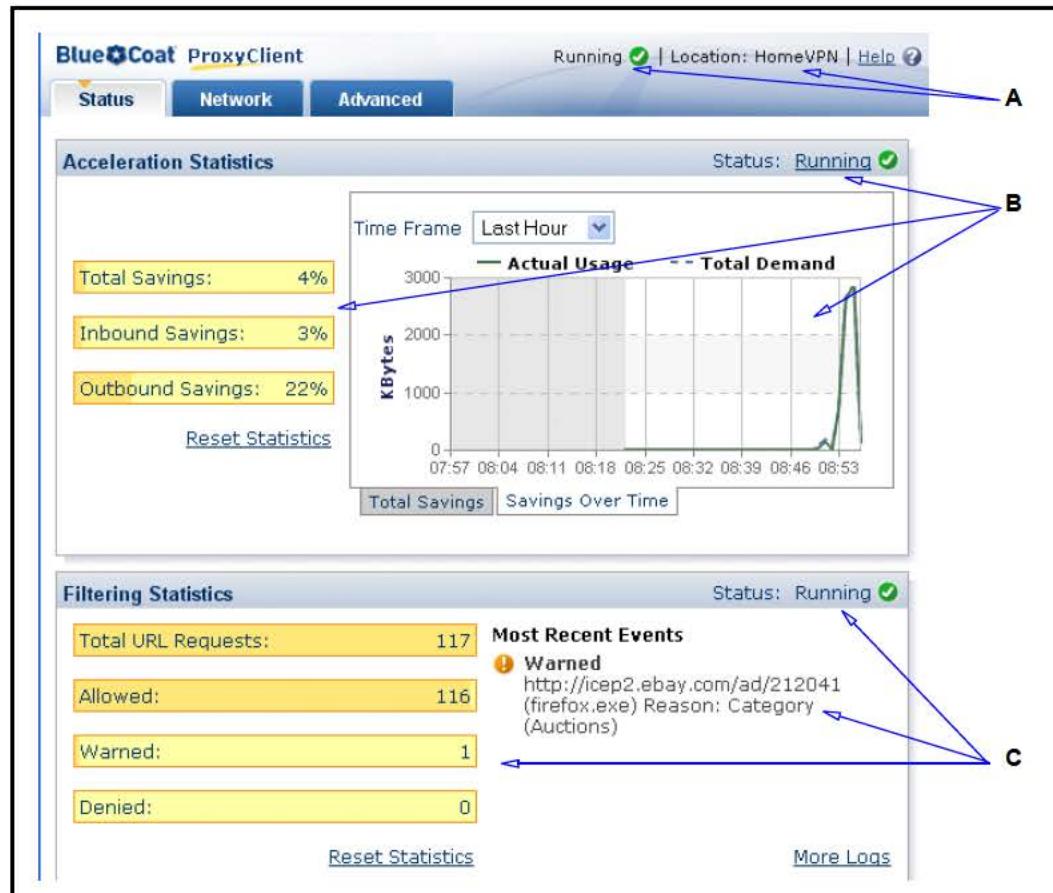


Figure 12–6 The ProxyClient Status tab page

The Status tab page contains the following components:

- **A: Client Status:** The status of the application (running or disabled for various reasons) and the network location detected by the ProxyClient.
- **B: Acceleration Status and Statistics:** If acceleration is enabled, this area displays in the application, providing statistics indicating the bandwidth use gain provided by ProxyClient. Users can view total savings or savings over the previous specified time period. The **Status** link is an active link; users can disable acceleration.
- **C: Web Filtering Status and Statistics:** If Web filtering is enabled, this area displays and provides to users Web filtering verdicts (**Warned** and **Denied** verdicts). The **Status** link is not an active link; users *cannot* disable Web filtering.

**Note:** The **More Logs** link displays a dialog that provides an expanded list of events, such as filtering verdicts and various ProxyClient network and module connections.

## Section E: About the ProxyClient Application

*About the Network Tab Page*

The Network tab page provides ADN and network connectivity information.



Figure 12–7 The ProxyClient Network tab page

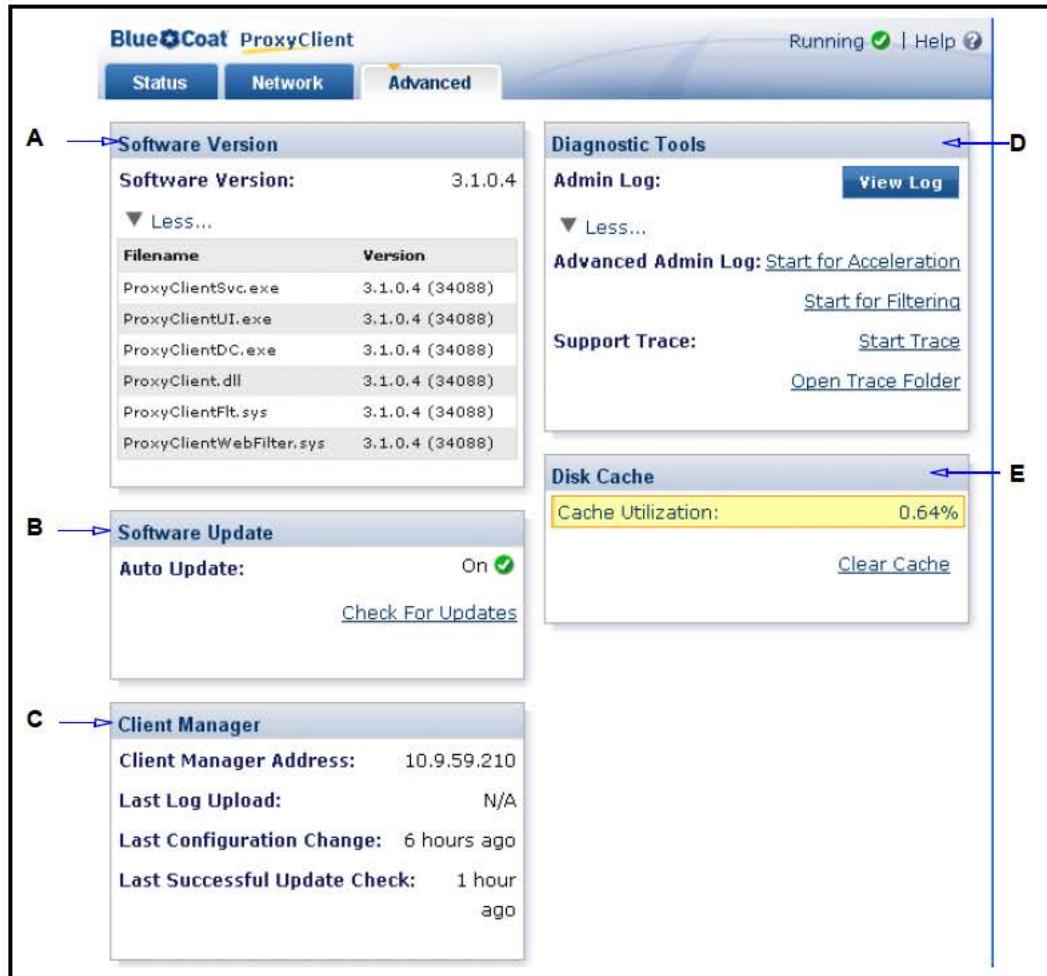
The **Network** tab contains the following components:

- **A: Configuration:** This information reflects the Client Manager configuration.
  - The IP addresses of the **Primary** and **Backup ADN Managers** (**Configuration > ProxyClient > Acceleration > ADN Manager** tab).
  - The **Ports** list might be **Included** or **Excluded**. If it is **Included Ports**, the ProxyClient listens for traffic only on the listed ports; conversely, if **Excluded Ports** displays, the ProxyClient listens on every port except those listed.
- **B: ADN Tunnels:** An ADN tunnel is a network connection that increases performance over a Wide Area Network (WAN).  
The **More Info** link displays a dialog with granular data relating to the bandwidth gain and savings provided by the ProxyClient.
- **C: Subnets:** Displays the next ADN *hop*; that is, the IP address of a concentrator on a different subnet that is advertising routes and accelerating traffic for the ProxyClient.
- **D: Exempt Routes:** These are network routes that your administrator identified as internal to the enterprise, thus do not require processing by the ProxyClient.

## Section E: About the ProxyClient Application

*About the Advanced Tab Page*

The Advanced tab page provides ProxyClient update information and basic diagnostic tools.



The Advanced tab contains the following components:

- **A: Software Version:** The current version of ProxyClient software. Clicking **More** displays the individual component version and software build (and changes the option to **Less**).
- **B: Software Update:** This area allows users to manually check for software and configuration (such as Web filtering policy) updates. Clicking the link displays a small dialog that informs the user if any updates occurred. If you have elected to not enable automatic updates, the Auto Updates status is off and users must periodically perform a manual check.
- **C: Client Manager:** This area displays the Client Manager address, the last time the access logs were uploaded, and how long the last update check and configuration change occurred.

## Section E: About the ProxyClient Application

- **D: Diagnostic Tools:** These options allow users to (when instructed) perform ProxyClient process traces. These traces can be for all processes or limited to acceleration or Web filtering processes. For more detailed troubleshooting information, see "["Performing Data Traces and Data Collection" on page 317](#)". Also, users can click **View Log** to see a list of recent actions. For details, see "["Admin Log Contents" on page 292](#)".
- **E: Disk Cache:** Allows users to clear the ADN object cache. See "["Client Manager Logging" on page 305](#)".

### *Admin Log Contents*

The ProxyClient software maintains a diagnostic log that records the following:

- Client installation (the timestamp of the initial installation and any updates, including errors).
- Activation of the driver and client service components every time those components start.
- Configuration download events (whenever a configuration download is attempted and whether it succeeded or failed).
- Connection information between the client machine and the ADN manager.
- ADN tunnel creation and destruction.
- Activation/deactivation of the trace log, which is discussed in more detail in "["Performing Data Traces and Data Collection" on page 317](#)".
- Various error conditions (for example, out of memory, out of disk space, and so on).

Log entries include the date and time of each event. The log file is a maximum of 20MB in size, after which the oldest log entries are deleted as new entries are written.

## Section F: Monitoring ProxyClient Performance

This section discusses the following topics:

- "Viewing History Statistics"

### **Statistics > ProxyClient History**

Aggregated bandwidth usage statistics related to the ProxyClient and all concentrators in the network, and with the Client Manager (for example, number of clients, number of software updates, and number of configuration updates).

- "Viewing ProxyClient ADN History Statistics" on page 295

### **Statistics > ADN History**

Statistics related to the ProxyClient and a particular concentrator. To view statics related to ProxyClients and all concentrators on the network, view the BW Usage tab page on **Statistics > ProxyClient History**.

- "Viewing ProxyClient Active Session Statistics" on page 296

### **Statistics > Sessions > Active Sessions > ADN Inbound Connections**

Statistics related to inbound ADN connections to a concentrator from ProxyClients.

## Viewing History Statistics

This section describes how to view the following statistics:

- Client Manager: Current active ProxyClients, the number of software updates, number of configuration updates, and ProxyClient version information.
- Concentrators: Bandwidth usage aggregated for all concentrators.

### **To view ProxyClient history statistics:**

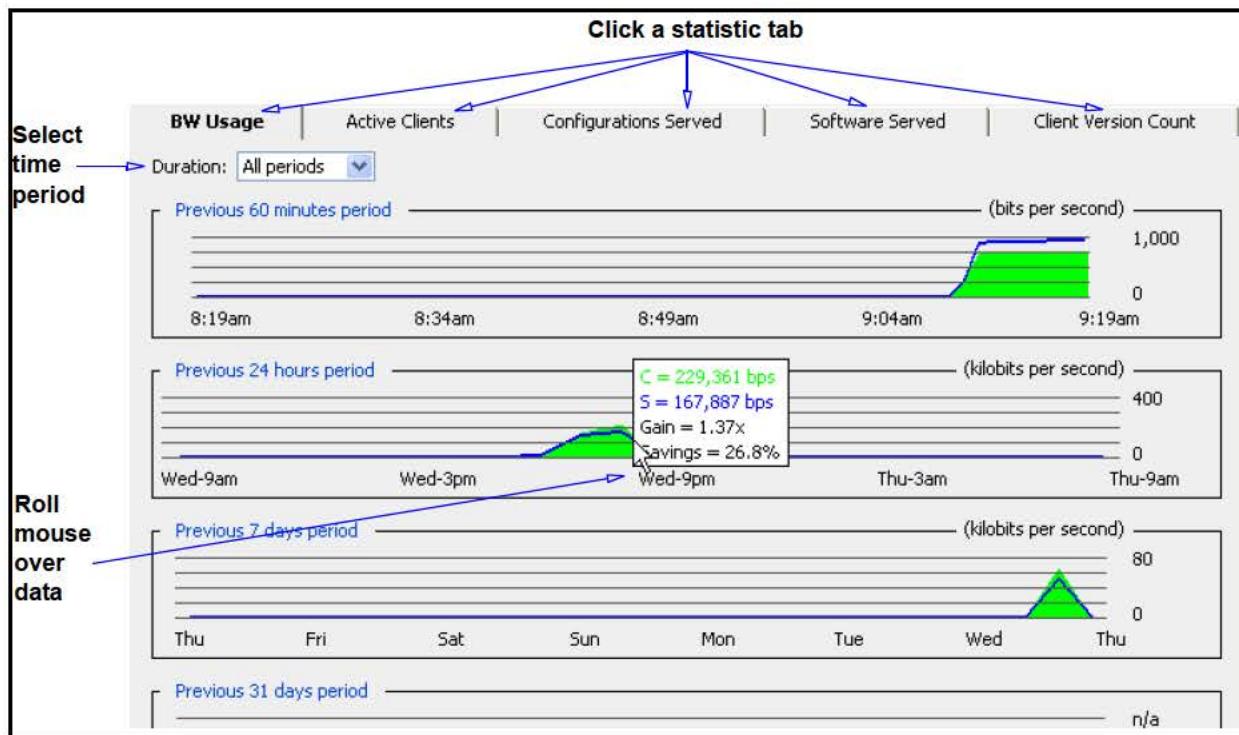
1. Log in to a ProxySG appliance's Management Console as an administrator.

The statistics you view depend on the role of the appliance, as follows:

- Client Manager: To view Active Clients, Configurations Served, Software Served, or Client Version Count.
- Concentrator: To view BW Usage.

2. From the Management Console, select **Statistics > ProxyClient History**.

## Section F: Monitoring ProxyClient Performance



3. Click a tab to view statistics. The ProxySG displays graphs for each tab (except the **Client Version Count** tab) in different selectable time increments, varying from the last hour to the last year. Hover the mouse pointer over any graph on the page to see metric data.
  - **Bandwidth Usage:** Aggregated statistics for all ProxyClients using this Client Manager.
    - **C:** The number of bytes sent and received by the applications running on the client's computer (that is, corresponding to the Total Demand graph in the ProxyClient browser window).
    - **S:** The number of bytes sent over the WAN after acceleration was applied (that is, corresponding to the Actual Usage graph in the ProxyClient browser window).
    - **Gain:** The magnitude of bandwidth gain.
    - **Savings:** The percentage of bandwidth savings.
  - **Active Clients:** Track how many ProxyClients are active on the network. Any ProxyClient that does not report for ten consecutive minutes is treated as inactive.
  - **Configurations Served:** Track how many times the ProxyClient configuration file was downloaded from the Client Manager.
  - **Software Served:** Track how many times updated ProxyClient software was downloaded to user systems.

## Section F: Monitoring ProxyClient Performance

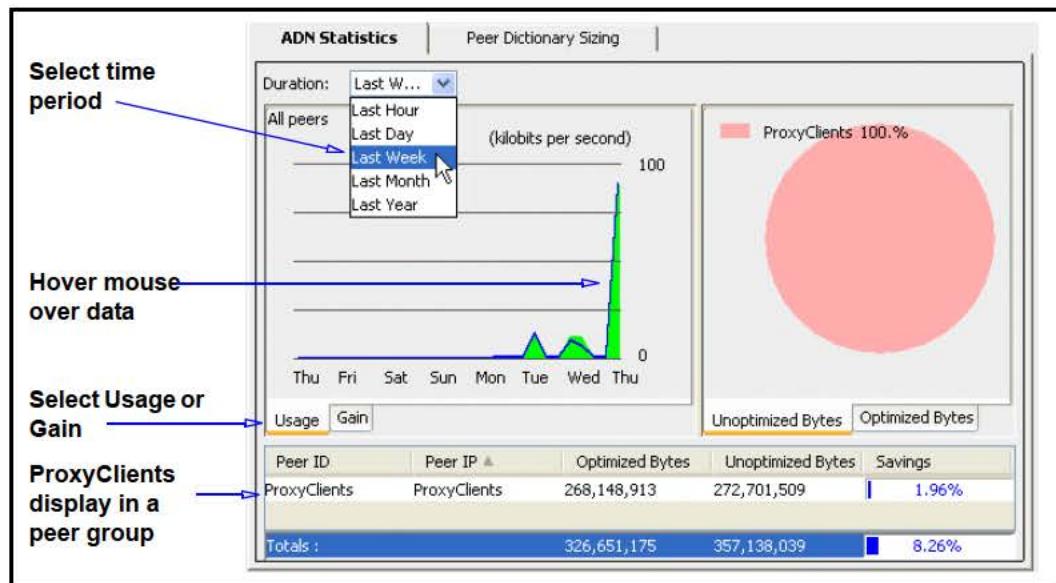
- **Client Version Count:** View the total number of active ProxyClients by software version number.

## Viewing ProxyClient ADN History Statistics

These statistics relate to bandwidth usage and gain from ProxyClient connections to a specific concentrator. To view aggregated statistics for bandwidth usage and gain for all concentrators in the network, see "Viewing History Statistics" on page 293.

### To view ProxyClient ADN History statistics:

1. Log in to a concentrator's Management Console as an administrator.
2. Click **Statistics > ADN History**.



3. From the **Duration** list, click a time frame.

4. View the following statistics:

The displayed statistics represent all ADN traffic processed by this concentrator. ProxyClients are aggregated into one peer group, with ProxyClients as the Peer ID and Peer IP.

Other appliances on the network devices are listed by IP address.

The other attributes for both usage and gain are:

- **Optimized Bytes:** How many bytes were sent using the ADN tunnel.
- **Unoptimized Bytes:** How many bytes would have been sent over the network had ADN not been used.

By comparing optimized bytes and unoptimized bytes, you can determine how much savings was realized by using ADN.

- **Savings:** The performance gained by ADN processing.

## Section F: Monitoring ProxyClient Performance

## Viewing ProxyClient Active Session Statistics

Active session statistics display current bandwidth usage and savings information between ProxyClients and a particular concentrator.

**To view Active Session statistics:**

1. Log in to a concentrator's Management Console as an administrator.
2. Click **Statistics > Sessions > Active Sessions > ADN Inbound Connections**.

Client	Server	Peer	Duration	Unopt. Bytes	Opt. Bytes	Savings	C	BC	E	Tunnel Type
10.107.0.187	66.150.208.54:80	10.107.0....	1 sec	2,320	1,112	52.15%				Client
10.107.0.187	4.71.104.187:80	10.107.0....	1 sec	2,389	1,380	42.2%				Client
10.107.0.187	74.203.241.34:80	10.107.0....	1 sec	33,267	33,428	0%				Client
10.107.0.187	64.236.29.63:80	10.107.0....	2 sec	4,603	2,448	46.81%				Client
10.107.0.187	64.236.91.21:80	10.107.0....	2 sec	4,486	2,055	54.13%				Client

3. At the top of the ADN Inbound Connections tab page, click **Show** to display statistics from active sessions.
  - **Client**—The IP address of the ProxyClient (for example, the outbound IP address of the VPN application).
  - **Server**—The IP address of the final destination server (such as a content server).
  - **Peer**—For ProxyClients, client and peer IP addresses are the same because ProxyClient mimics a branch ProxySG.
  - **Duration**—How long the active session has been connected.
  - **Unopt. Bytes**—The number of bytes served to or from the server before or after ADN optimization. For example, the number of bytes sent to a server before the traffic was optimized by ADN.
  - **Opt. Bytes**—The number of bytes optimized by ADN processing.
  - **Savings**—The performance gained by ADN processing.
  - **C**—Whether the data is compressed or not.  
 (compressed) displays if the data is being compressed.
  - (not compressed) if compression is not being used.
  - **BC**—Whether or not byte caching was used.

## Section F: Monitoring ProxyClient Performance

- **E**—Whether or not the incoming ADN tunnel is encrypted. In this release, ProxyClient connections are not encrypted.
- **Tunnel**—The type of TCP tunnel; ProxyClient connections are always identified as Client.

[Section G: About the ProxyClient System Footprint](#)

## Section G: About the ProxyClient System Footprint

This section lists each file and folder on user systems impacted by the installation and removal of the ProxyClient application. This chapter divides the information into the following sections:

- "Installation" on page 298
  - "Folders" on page 298
  - "Files" on page 299
  - "Setup Executable" on page 299
  - "Setup MSI" on page 299
    - "Installed Files" on page 300
    - "Shortcuts" on page 300
    - "Registry" on page 301
    - "During Runtime" on page 302
- "During Runtime" on page 302
  - "Logging and Support" on page 302
  - "Acceleration Files" on page 302
  - "Web Filter Files" on page 303
  - "Data Collector" on page 303
- "Removal" on page 303

### Installation

This section lists all of the folders and files affected by installation.

#### *Folders*

Installation affects the following folders.

Table 12–7 Folders affected by installation

Name Used in the Document	Default Path	Notes
Temp	%temp%	This is the user's temporary folder.
Support	%SystemDrive%\Documents and Settings\All Users\Application Data\Blue Coat Systems\ProxyClient\support	Diagnostic data is stored here.
Installation Target	%SystemDrive%\Program Files\Blue Coat\ProxyClient	Default installation location.

## Section G: About the ProxyClient System Footprint

Table 12–7 Folders affected by installation

Name Used in the Document	Default Path	Notes
Drivers	%SystemDrive%\WINDOWS\system32\drivers	None

### Files

Installation affects the following files.

Table 12–8 Files affected by installation

File Name	Location
ProxyClientSetup.exe	If the file is opened directly from the browser, it will be downloaded to the Internet Explorer's temporary Internet files folder.
ProxyClientSetup.msi	%TEMP%
InstallSupport.log	Support folder
proxyclientlog.etl	Support folder
ProxyClientSetup_exe.log	Support folder
ProxyClientSetup_msi.log	Support folder

### Setup Executable

The user can download the setup executable to any location on the system (disk). The executable is a single file that downloads the setup MSI to the `Temp` folder before execution (see "[Setup MSI](#)" for details about the MSI package). Additionally, it creates the `Support` folder. Within this folder the executable creates the install support log, the setup log for the executable, and a trace (`.etl`) file. After it downloads the MSI, the executable runs the MSI to perform the actual installation.

### Setup MSI

This is to be run either by the setup executable or directly by the user (or by a software distribution mechanism, such as SMS or GPO). If the `Support` folder and files have not already been created by the setup executable, the MSI creates the folder and files. The MSI package itself is approximately 7 MB in size.

## Section G: About the ProxyClient System Footprint

### Installed Files

The MSI installs the majority of the ProxyClient files to the Installation Target, with the exception of the drivers, which are installed in the `Drivers` folder. The following table lists these files.

Table 12–9 List of installed files.

File Name	Description
ProxyClient	Shortcut for the ProxyClient application
ProxyClientSvc.exe	ProxyClient service executable
ProxyClientUI.exe	ProxyClient tray icon executable
ProxyClient.dll	ProxyClient acceleration/web filtering library
ProxyClientDC.exe	ProxyClient Data Collector utility
SGClientEula.html	End User License Agreement
Chartdir.dll	User interface support library
SGCustomAction.dll	Installation support library
Bridge.pyc	User interface support file
StringTable.pyc	User interface support file
ProxyClientConfig.xml	ProxyClient configuration and policy file (downloaded from Client Manager)
ProxyClientFlt.sys	Acceleration driver (written to Drivers folder)
ProxyClientWebFilter.sys	Web Filter driver (written to Drivers folder)

Additionally, several user interface files are written to the `include` and `webroot` folders under the Installation Target. The total size of the installed files (not including the initial configuration file) is approximately 10 MB. The size of the configuration file varies in size, from 2 KB to several MB.

### Shortcuts

The MSI also creates a shortcut in the **Start** menu. The shortcut is called **ProxyClient**, and is in the **Blue Coat ProxyClient** folder. No shortcuts are created on the desktop.

## Section G: About the ProxyClient System Footprint

### Registry

**Table 12–10** lists some of the registry keys used by the ProxyClient. In the table, the following abbreviations are used:

- **HKCR** means `HKEY_CLASSES_ROOT`
- **HKCU** means `HKEY_CURRENT_USER`
- **HKLM** means `HKEY_LOCAL_MACHINE`

Table 12–10 List of registry keys.

Path	Purpose
<code>HKCR\AppBarID\{5CDD0A2B-2C5C-4313-83EF-A3F4A4551918}</code>	Key: Contains data required by the service
<code>HKCU\Software\Blue Coat Systems\Proxy Client\{DE43B3A2-ABC3-E2AE-37EC-4C3557CB104E}</code>	Key: Required by installer
<code>HKLM\Software\Blue Coat Systems\Proxy Client</code>	Key: Software settings for ProxyClient Keys under this node are discussed in <a href="#">Table 12–11</a> on page 311.
<code>HKLM\Software\Microsoft\Windows\CurrentVersion\Run</code>	Value: Start tray icon on log-in
<code>HKLM\Software\Microsoft\Windows NT\CurrentVersion\Tracing\ProxyClient Service</code>	Key: Diagnostic settings
<code>HKLM\System\CurrentControlSet\Services\(proxyclientflt, proxyclientwebfilter, WebFilter)</code>	Sub-keys (in parentheses) created for acceleration and web filter drivers
<code>HKLM\System\CurrentControlSet\Control\SafeBoot\Network\proxyclientsvc</code>	Key: Start ProxyClient when booting in Safe Mode

## Section G: About the ProxyClient System Footprint

### During Runtime

As the ProxyClient runs, it creates additional files depending on what functionality is enabled. When the service runs, an encrypted folder is created under the Windows user folder for the LocalService account. This provides a more secure environment for storing sensitive data.

### Logging and Support

In the `Support` folder, if tracing is enabled a file named `proxyclientdebug.etl` is created. Additionally, if the service crashes for any reason, a memory dump file is generated in the `Support` folder.

---

**Note:** Trace files and memory dumps must be sent to Blue Coat Support for interpretation.

---

If at any point a downgrade is performed through the auto-update mechanism, an additional downgrade log is created in the `Support` folder.

### Acceleration Files

When acceleration is enabled, this encrypted folder contains the byte and object cache files in a protected environment. The size of the cache varies by machine, and is determined by the amount of free space on the drive as well as the configured amount of disk space to use.

The cache directory is used for both byte caching and CIFS caching, with each cache using approximately half of the available space. The size of the files in the cache directory are limited; 1GB free space is always available on the client computer. For more information, see "[More About ProxyClient Caching](#)" on page 224.

The default location of the cache directory follows:

- Windows XP

```
%SystemDrive%\Documents and Settings\LocalService\Local  
Settings\Application Data\Blue Coat\Blue Coat ProxyClient
```

- Windows Vista

```
%SystemDrive%\Windows\  
system32\config\systemprofile\AppData\Local\Blue Coat\Blue Coat  
ProxyClient
```

To change the location of the cache directory, see one of the following sections:

- To set the cache directory when you install the ProxyClient software, see "[Command for Silent Uninstallations](#)" on page 278.
- To change the location of the cache directory after the software is installed, see "[Changing the Location of the Cache](#)" on page 324.

## Section G: About the ProxyClient System Footprint

### *Web Filter Files*

When Web filtering is enabled, activity is logged to the encrypted folder. The log files are periodically uploaded, and the extent of the data to be logged is determined by the administrator.

### *Data Collector*

The Data Collector utility, which is installed with the ProxyClient, creates a folder within the `Temp` folder as a repository for the collected data. The contents of the `Support` folder are copied here, and several new files are created. The specifics of the folder's contents are discussed in other documents about the Data Collector.

---

**Note:** The Data Collector is a troubleshooting utility. For more details, see "Instructing Users to Run the ProxyClient Data Collector" on page 319

---

### *Removal*

When the ProxyClient is removed from a user's system, all installed software and drivers are removed, including:

- The object cache
- The Web filter cache
- Support data
- Registry data
- Application shortcut

### **Contents Left Behind**

No files that were created in the `Temp` folder are removed. There is currently no mechanism to track all of the files that are created there. However, these files are safe for removal at any time.

Immediately following the removal of the ProxyClient (but before rebooting), it might appear that some files created by the software or the installation process have not yet been removed. This is because the files are still in use by other system resources.

When this happens, the removal process marks the files for removal upon reboot. Windows automatically removes them the next time that the system is restarted.

Section H: ProxyClient Troubleshooting

## Section H: ProxyClient Troubleshooting

For administrators to assist ProxyClient users with diagnosing errors, you must be familiar with the topics discussed in this section:

- "About HTTPS Browser Proxies" on page 304
- "Client Manager Logging" on page 305
- "Acceleration Troubleshooting" on page 306
- "Web Filtering Troubleshooting" on page 307
- "Advanced Troubleshooting" on page 310
- "Performing Data Traces and Data Collection" on page 317
- "Clearing the Cache" on page 323
- "Changing the Location of the Cache" on page 324
- "Uninstalling the ProxyClient Software" on page 325

---

**Note:** If ProxyClient users are unable to get software or configuration updates from the Client Manager or if network acceleration is not working, make sure your firewall has the following ports open:

- Client Manager listen port (by default, 8084)
  - ADN manager's plain listen port (by default, 3034)
  - Concentrator's plain tunnel port (by default, 3035)
- 

### About HTTPS Browser Proxies

This section discusses how to configure an Internet Explorer browser proxy to enable users to download the ProxyClient software and updates. If you do not use a proxy for SSL traffic, you can skip this section.

---

**Note:** Because the ProxyClient uses the Internet Explorer proxy settings to download software and configuration updates, change the proxy settings in Internet Explorer.

---

The following options are available:

- If users can connect directly to the Client Manager, change the browser's proxy settings to exclude the Client Manager from being proxied.
- Change the proxy settings to allow connections to the Client Manager listen port (by default, 8084). You defined the Client Manager listen port as discussed in "Designating a ProxySG as the Client Manager" on page 210.

## Section H: ProxyClient Troubleshooting

### Client Manager Logging

The Client Manager logs success or failure events related to users downloading the ProxyClient software and configuration. Each log should include timestamp, HTTP GET string (including the HTTP return code), and client machine name.

#### To obtain Client Manager logs:

Enter the following URL in your browser's address field:

`https://host:port/proxyclient/log`

where `host` is the fully qualified host name or IP address of the Client Manager, and `port` is the ProxySG appliance's listen port.

### Client Connection Issues

Use standard networking tools such as ping, tracert, telnet, and Internet Explorer to understand why the client cannot connect. Because the Client Manager protocol is HTTPS and the client uses the standard Windows Wininet library (which is also used by Internet Explorer, and shares settings such as proxy settings with Internet Explorer), you can use Internet Explorer as the main tool to test these types of connectivity problems.

Verify the user can connect to the Client Manager from Internet Explorer by entering the URL of the Client Manager. For example:

`https://client_manager_IP_address:8084/`

---

**Note:** For remote users, a VPN connection might be required to access the Client Manager.

---

If Internet Explorer can access this URL, the client should also be able to communicate with the Client Manager. If this is not the case, look for:

- Things that might block traffic on the desktop for specific applications, such as desktop security products.
- Application-specific settings on the remote access VPN solution (verify that traffic from the `ProxyClientSvc.exe` service is handled by the VPN solution).

---

**Note:** If ProxyClient users are unable to get software or configuration updates from the Client Manager or if network acceleration is not working, make sure your firewall has the following ports open:

- Client Manager listen port (by default, 8084)
  - ADN manager's plain listen port (by default, 3034)
  - Concentrator's plain tunnel port (by default, 3035)
-

## Section H: ProxyClient Troubleshooting

### Acceleration Troubleshooting

The main sources of information for troubleshooting are the ProxyClient, the Client Manager (for checking configuration and viewing client status), and the relevant ProxySG concentrator. If you suspect there are ADN routing problems, you can use the ADN manager for troubleshooting.

---

**Note:** If ProxyClient users are unable to get software or configuration updates from the Client Manager or if network acceleration is not working, make sure your firewall has the following ports open:

- Client Manager listen port (by default, 8084)
  - ADN manager's plain listen port (by default, 3034)
  - Concentrator's plain tunnel port (by default, 3035)
- 

### About ADN Tunnels

On the **Network** tab page of the ProxyClient browser window, clicking the **More Info** link in the **ADN Tunnels** area displays detailed information about available tunnels, including whether a tunnel is idle or bypassed.

An *idle* tunnel is one that is not currently being used but preserves connection connection information to decrease the amount of time required to use that connection later, if necessary.

A *direct* tunnel indicates an error with the connection to the indicated ProxySG.

### Diagnosing the Concentrator

This section provides what to look for on the concentrator:

- **Statistics > Active Sessions > ADN Inbound Sessions** displays information about currently active sessions, including sessions with ProxyClients. Use a client IP address filter to view tunnels from a specific client.

For more information, see "[Viewing ProxyClient Active Session Statistics](#)" on page 296

To view related client statistics, see the discussion of the Live ADN Session View in "[Diagnosing the ProxyClient](#)" on page 307

- **Statistics > Advanced > ADN:**

- The **Peer statistics** link displays aggregate information per peer (client). For each peer, it shows byte cache information such as dictionary status and cache size.
- The tunnel connection link shows information per each active connection.
- The tunnel connection pool link shows information about idle tunnels. This correspond to the idle tunnels displayed on the client side Live ADN Session View.

## Section H: ProxyClient Troubleshooting

- The dashboard link and other links display aggregate information for components such as tunnels and dictionary sizes.

### *Diagnosing the ProxyClient*

This section provides what to look for on the client side of the ADN. Most of the information provided by ProxyClient is statistical, but it might help you narrow the ADN device causing the issues.

- The Admin log (**Advanced** tab > **Diagnostic** Tools area) displays any error conditions with established connections to the ADN Manager and to the Concentrators. The log also displays successful events for connecting to the ADN manager and establishing a new tunnel to a concentrator. However, it does not show successful accelerated connection events.
- Advanced Acceleration Admin Log—When this is activated, successful accelerated connection events will also be recorded in the Admin Log.
- The ProxyClient tray icon displays warnings or errors (such as pending configuration updates and updates that require rebooting). Hover the mouse pointer over the icon to display details.
- ProxyClient user interface:
  - The **Acceleration Statistics** area of the **Status** tab provides information about total traffic gains (totals and historic charts).
  - The **Network** tab provides information about the current ADN configuration. For example, which subnets and ports are accelerated (**Configuration**, **Subnets**, and **Exempt Routes** areas). The ADN Tunnels area displays the number of active tunnels, idle tunnels, and direct connections. The ADN managers are listed in the **Configuration** area.
  - The **More Info** link in the **Network** tab > **ADN Tunnels** area displays a dialog referred to as the Live ADN Session View. This dialog displays all currently accelerated connections, idle tunnels, and direct connections, each with statistics showing acceleration gains (if accelerated), activity, and the process that *owns* the connection.
  - The user can disable acceleration by clicking on the **Status** link on the **Status** tab > **Acceleration Statistics** area.

## Web Filtering Troubleshooting

The following sections provide methods to diagnose Web filtering issues reported by users:

- "Why Are Users Receiving Blocked or Warn Messages For No Justifiable Reason?"
- "ProxyClient Web Filtering Licensing" on page 309
- "Disputing URL Categorization For ProxyClient" on page 309

## Section H: ProxyClient Troubleshooting

### Why Are Users Receiving Blocked or Warn Messages For No Justifiable Reason?

The most common message you are likely to receive from your users is that ProxyClient is denying them access to a Web site that they feel does not violate Web-use policy.

The first step is to understand why the page is blocked or warned:

- The rating server returned a category that resulted in a block action. The exception page, admin log, and Most Recent Events list displays the category that caused the block action.
- The rating server did not return a category, and the **none** system category is configured with a block action.
- None the BCWF service points (rating servers) are available, and the **unavailable** system category is associated with a block action.
- License expiration is *fail closed* and the Client Manager is not licensed for ProxyClient Web Filtering or does not have a fresh BCWF database. ProxyClient displays **Not licensed** as the Web Filtering status on the **Status** tab. The tray icon mouse over text also displays this state.
- The service is not running or not responding, and the **unavailable** system category is configured with a policy action of block. In this case, the tray icon displays as  (needs reboot). The ProxyClient browser interface and admin log are not available in this case.
- After uninstalling the ProxyClient software but before rebooting because the ProxyClient blocks all URLs when a reboot is required.
- After a software update has been received but before the computer is rebooted if the **unavailable** system category is configured with a block action.

In other words, software updates require a reboot. Between the time the update is installed and the time the user reboots, the policy action for the **unavailable** system category is applied.

- by the client because the client blocks all URLs when a reboot is required. Software updates always require a reboot.

Normal Web filtering resumes after the user reboots.

- Some images on requested pages do not display. This is most likely caused by subsequent requests on an allowed Web page falling into a blocked category. (For example, a section or portlet on an allowed Web page might contact a prohibited site for an advertisement.)

Advise your users this is expected behavior.

More detailed information for most of these events can be retrieved by activating the Advanced Web Filtering Admin Log (see "[Instructing Users to Perform Data Traces](#)" on page 318).

## Section H: ProxyClient Troubleshooting

Various actions to remedy unjustified block (and warn) actions are available, depending on the reason for the block action:

- ❑ Add a URL to a custom category that is associated with an allow action (that is, create a whitelist). Move this category above the category that is causing the block action. This causes the allow action to be processed first.  
You also have the option to disagree with the rating decision made by BCWF and submit a request for categorization change.  
See "[Disputing URL Categorization For ProxyClient](#)" on page 309.
- ❑ Consider modifying the rule base, allowing the blocked category, allowing **none** or **unavailable** categories, or changing the unlicensed behavior to *fail open*. This option is valid if you are authorized to change the corporate compliant browsing policy.
- ❑ Fix the license violation. See "[ProxyClient Web Filtering Licensing](#)" on page 309.
- ❑ Restart ProxyClient to fix non-responsive services.

### *ProxyClient Web Filtering Licensing*

If your users notify you that the application displays the **Filtering Unlicensed** message, the BCWF license is no longer valid or the URL database has not been refreshed in the last 30 days.

On the **Configuration > Content Filtering > Blue Coat > Blue Coat Web Filter** tab page, verify you have a valid license and click **Download now** to update the database.

### *Disputing URL Categorization For ProxyClient*

In the event users report they are blocked from accessing a normally allowable Web site, first make sure the problem is not caused by improper ordering of categories in the Web filter rulebase. This is particularly true if a single URL is listed in multiple categories.

For more information, see "[Web Filtering Best Practices](#)" on page 251.

If BCWF is blocking access to the Web site and you disagree with the URL's categorization, Blue Coat enables you to submit a Web site for review, stating ProxyClient as the Web filter source.

## Section H: ProxyClient Troubleshooting

### To dispute a ProxyClient Web filter rating:

1. In your Web browser's address or location field, enter:  
<http://sitereview.bluecoat.com/sitereview.jsp>  
The Web Page Review Process page displays.
2. In the field, enter the URL to be reviewed and click **Submit**.
3. On the second Web Page Review Process page, select **Blue Coat ProxyClient** from the **Filtering Service** drop-down list.
4. From the first **What category or categories does this site belong to?** drop-down list, select the category you believe the site belongs to. You can optionally select a secondary category (for example, if your Web filtering policy allows one category, but not the other).
5. (Optional) Select **Please send results of the Site Review via email** if you want Blue Coat to notify you of the submission verdict.
6. In the **Comments and Site Description** field, enter a detailed message to Blue Coat site reviewers explaining your reason for this submission.
7. Click **Submit**.

## Advanced Troubleshooting

This section discusses advanced troubleshooting tools and procedures for administrators. The tasks discussed in this section should be performed only by administrators, or by users with assistance from administrators.

Following is a brief discussion of each troubleshooting tool:

Task	Description	Detail	For more information
Change the Client Manager URL	Enables you to connect to a Client Manager other than the one from which you initially downloaded the ProxyClient software. The typical use is running ProxySG demonstrations, trials, and evaluations from different ADN networks.	After you set the required registry key, click the <b>Advanced</b> tab. In the Client Manager section, the <b>Client Manager Address</b> value is a link.	" <a href="#">Changing the Client Manager</a> " on page 313
Support trace	Collects ProxyClient process information (that is, both acceleration or Web filtering) and provides more details than the Admin Log.	<b>Advanced</b> tab page, in the Diagnostic Tools section.	" <a href="#">Instructing Users to Perform Data Traces</a> " on page 318
Advanced logs	Enables users to collect detailed trace information for acceleration or Web filtering individually, or for both.	<b>Advanced</b> tab page, in the Diagnostic Tools section. Click <b>More</b> under Admin Log.	" <a href="#">Performing Data Traces and Data Collection</a> " on page 317

## Section H: ProxyClient Troubleshooting

Task	Description	Detail	For more information
Data collector	Collects diagnostic information useful to troubleshoot unexpected behavior and connectivity problems.	Enables users to collect logs and system information so you can analyze the problem and refer it to Blue Coat Support, if necessary. If you have an SR number, you can attach data collector output to the SR ticket.	" <a href="#">Instructing Users to Run the ProxyClient Data Collector</a> " on page 319
Registry settings	See <a href="#">Table 12–11</a> .		

[Table 12–11](#) summarizes ProxyClient registry settings:

Table 12–11 ProxyClient registry settings

Key name	Data type	Value
AutoUpdateProhibited	DWORD	<p>0 (default) means the ProxyClient automatically implements software updates at the interval the administrator specified for software update interval in "<a href="#">Designating a ProxySG as the Client Manager</a>" on page 210.</p> <p>1 means only the ProxyClient configuration can be updated (automatically or manually), but the ProxyClient software <i>cannot</i> be updated. Use this setting if you want to distribute software updates in some way other than the Client Manager, such as GPO or SMS.</p> <p><b>Note:</b> Regardless of the value of this setting, the client always gets configuration updates automatically when they are available. Users can also get configuration updates manually.</p>

## Section H: ProxyClient Troubleshooting

Table 12–11ProxyClient registry settings

Key name	Data type	Value
CacheDirectory	STRING	<p>Set the folder in which ProxyClient cache files are stored. The path must already exist; otherwise, the default cache directory is used.</p> <p>The default cache directory follows:</p> <ul style="list-style-type: none"> <li>• Windows XP %SystemDrive%\Documents and Settings\LocalService\Local Settings\Application Data\Blue Coat\Blueprint ProxyClient</li> <li>• Windows Vista %SystemDrive%\Windows\system32\config\systemprofile\AppData\Local\Blueprint\Blueprint ProxyClient</li> </ul> <p>For more information, see "<a href="#">"Changing the Location of the Cache"</a> on page 324.</p>
ChangeCMAllowed	DWORD	<p>Allowed values: 0   1</p> <p>Set to 1 to allow the user to change the Client Manager.</p> <p>Set to 0 to prevent the user from changing the Client Manager.</p> <p>The default is 0.</p> <p>For more information, see "<a href="#">"Changing the Client Manager"</a> on page 313.</p>
TiNotVisible	DWORD	<p>Allowed values: 0   1</p> <p>Set to 1 to hide the ProxyClient system tray icon and pop-up messages except in certain circumstances.</p> <p>Set to 0 to display the ProxyClient tray icon and pop-up messages.</p> <p>By default, this registry key does not exist.</p> <p>For more information, see "<a href="#">"Limiting ProxyClient Visibility After Installation"</a> on page 315.</p>

## Section H: ProxyClient Troubleshooting

Table 12–11ProxyClient registry settings

Key name	Data type	Value
TiNotVisibleForceUpdate	DWORD	<p>Allowed values: 0   1</p> <p>Set to 1 to force users to accept software and configuration updates without interaction. This key is independent of <code>TiNotVisible</code>; in other words, the setting for this key determines update behavior whether or not the ProxyClient tray icon is hidden.</p> <p>Set to 0 to allow updates normally; that is, users always get configuration updates. Software updates can be installed manually.</p> <p>By default, this registry key does not exist.</p> <p><b>Note:</b> The availability of software updates is controlled by the <code>AutoUpdateProhibited</code> registry key. If <code>AutoUpdateProhibited</code> is set to 1, users cannot get software updates, regardless of the value of this registry key. For more information, see <a href="#">"Parameters for Silent Installations" on page 274</a>.</p> <p>For more information, see <a href="#">"Limiting ProxyClient Visibility After Installation" on page 315</a>.</p>

## Changing the Client Manager

You can change which Client Manager the ProxyClient uses if, for example, you want to run trials or demonstrations on a different ADN network than the one for which you initially configured the ProxyClient.

---

**Note:** After you change the Client Manager IP address, the client gets a configuration update immediately. The behavior of software updates is not changed; in other words, if you prohibited software updates, the client will not attempt get a software update after it connects to the new Client Manager. If software updates are allowed, the client gets an update at the next update interval.

---

### To change the Client Manager URL:

1. Set the `ChangeCMAllowed` registry key in any of the following ways:
  - When the ProxyClient software is installed as discussed in [Table 12–5](#) on page 277.
  - After installing the ProxyClient software as discussed in the next step.
2. If a user is not allowed to change the Client Manager URL and the ProxyClient is already installed, perform the following tasks:
  - a. Start a registry editor application like regedit.

## Section H: ProxyClient Troubleshooting

- b. Browse to the following node:  
HKEY\_LOCAL\_MACHINE\SOFTWARE\Blue Coat Systems\ProxyClient
- c. Double-click the **ChangeCMAccounted** registry key.
- d. In the Edit DWORD Value dialog, in the **Value data** field, enter **1**.
- e. Click **OK**.

**Note:** It is safe to set this while the service is already running.

3. In the ProxyClient Web browser window, click the **Advanced** tab.
4. In the Client Manager section, click the current Client Manager address link.  
The Change Client Manager dialog displays.
5. In the Change Client Manager dialog, enter or edit the following information:

Field	Description
<b>New Address</b>	Enter the Client Manager's fully qualified host name or IP address.
<b>New Port</b>	Enter the Client Manager's listen port.

6. Click **OK**.

A success or fail message displays in the Change ProxyClient Manager browser window as the URL is verified.

The client gets a configuration update from the new Client Manager immediately. If software updates are ready to download at the next update interface, and if the client is allowed to get software updates, you are notified before the updates are installed.

When the operation is complete, the **Advanced** tab page displays the new Client Manager host name or IP address.

## Section H: ProxyClient Troubleshooting

### Limiting ProxyClient Visibility After Installation

This section discusses how to limit ProxyClient application visibility and user interaction with the ProxyClient software. You can implement any or all of the following options:

Option	Setting
Force ProxyClient software and configuration updates on clients without user interaction	<code>TiNotVisibleForceUpdate</code> registry key set to 1
Hide the ProxyClient system tray icon	<code>TiNotVisible</code> registry key set to 1
Hide the ProxyClient Start menu option	<code>NOUISHORTCUT</code> installer switch

This section discusses how to limit visibility and interaction after the ProxyClient software is installed.

The following table shows the ProxyClient tray icon states and how they are affected by these settings:

Icon	Icon meaning	Registry setting	Description
	Normal	Default: <code>TiNotVisible</code> registry key not present	Always displays
		Invisible: <code>TiNotVisible</code> set to 1	Never displays
	Warning state (for example, low disk space or updates are available)	Default: <ul style="list-style-type: none"> <li><code>TiNotVisible</code> registry key not present</li> <li><code>TiNotVisible-ForceUpdate</code> set to 0</li> </ul>	Always displays to warn users about critical states or when user action is required (for example, to get software updates manually)
		Invisible but interactive: <ul style="list-style-type: none"> <li><code>TiNotVisible</code> set to 1</li> <li><code>TiNotVisible-ForceUpdate</code> registry key not present</li> </ul>	Never displays; <i>configuration</i> updates are downloaded automatically but the user must get <i>software</i> updates manually. However, if software updates are disabled ( <code>AutoUpdate-Prohibited</code> registry key set to 1), the user never gets software updates.
		Invisible and non-interactive: <ul style="list-style-type: none"> <li><code>TiNotVisible</code> set to 1</li> <li><code>TiNotVisible-ForceUpdate</code> set to 1</li> </ul>	Displays only to indicate that <i>software</i> updates are currently being downloaded; <i>configuration</i> updates are downloaded automatically but the icon does not display.

## Section H: ProxyClient Troubleshooting

Icon	Icon meaning	Registry setting	Description
	Reboot required	TiNotVisible registry key not present, set to 0 or set to 1	Displays to indicate that a reboot is required after a software update or driver failure.

### Note:

- In the preceding table, only the (critical) icon state depends on both TiNotVisible and TiNotVisibleForceUpdate. The other icon states are not affected by TiNotVisibleForceUpdate.
- To enable users to get software updates if you hide the system tray icon or Start menu option, set the AutoUpdateProhibited registry key to 0. You can do this by editing the registry or by installing the ProxyClient software with the AUTOUPDATEDPROHIBITED installer option absent or set to 0.

To install the ProxyClient software with limited visibility and user interaction, see "[Limiting ProxyClient Visibility and Interactivity](#)" on page 281.

### To limit ProxyClient visibility and interaction after installation:

- Log in to a computer running the ProxyClient as an administrator.
- Start a registry editor application like regedit.
- Navigate to the following node:  
HKEY\_LOCAL\_MACHINE\SOFTWARE\Blue Coat Systems\ProxyClient
- Do any of the following:

To get this behavior	Perform these tasks
Hide the system tray icon	<ol style="list-style-type: none"> <li>Right-click the ProxyClient key.</li> <li>From the pop-up menu, click <b>New &gt; DWORD Value</b>.</li> <li>For the name of the value, enter <b>TiNotVisible</b>.</li> <li>Double-click <b>TiNotVisible</b>. The Edit DWORD Value dialog displays.</li> <li>In the <b>Value Data</b> field, enter <b>1</b>.</li> <li>Click <b>OK</b>.</li> </ol>
Force users to accept configuration and software updates without interaction	<ol style="list-style-type: none"> <li>Right-click the ProxyClient key.</li> <li>From the pop-up menu, click <b>New &gt; DWORD Value</b>.</li> <li>For the name of the value, enter <b>TiNotVisibleForceUpdate</b>.</li> <li>Double-click <b>TiNotVisible</b>. The Edit DWORD Value dialog displays.</li> <li>In the <b>Value Data</b> field, enter <b>1</b>.</li> <li>Click <b>OK</b>.</li> </ol>

- Close the registry editor application.

## Section H: ProxyClient Troubleshooting

6. Reboot the computer for the changes to take effect.

The tray icon and pop-up messages are not visible except to notify the user that a software update is being downloaded, and to notify the user to reboot the computer after updates have been installed. If you prohibit automatic software updates, the icon never displays.

## Performing Data Traces and Data Collection

Traces, logs, and data collection allows users to send you files containing ProxyClient process data that you or Blue Coat Support can use to diagnose issues.

This section discusses the following topics:

- "About ProxyClient Logs"
- "About the Data Collection Application" on page 318
- "Instructing Users to Perform Data Traces" on page 318
- "Instructing Users to Run the ProxyClient Data Collector" on page 319

### *About ProxyClient Logs*

Logs are written to the following folder:

- Windows XP:

```
%SystemDrive%\Documents and Settings\All Users\Application Data\Blue Coat Systems\ProxyClient\support
```

- Windows Vista:

```
%SystemDrive%\ProgramData\Blue Coat Systems\proxyclient\support
```

The ProxyClient creates the following log files:

Log file name	Used by
proxyclientautoupdate.log	Logs automatic software updates but not configuration updates.
proxyclientlog.etl	<p>Admin log (the log users can view on the ProxyClient Web browser window's Advanced tab page).</p> <p>The admin log contains information about acceleration, Web filtering, software upgrades, and configuration updates.</p> <p>The admin log is written during the entire time the ProxyClient is running.</p>

## Section H: ProxyClient Troubleshooting

Log file name	Used by
proxyclientdebug.etl	<ul style="list-style-type: none"> <li>• All advanced admin logs on the Advanced tab page</li> </ul> <p>Trace logs contain more information than the admin log. Users can enable trace logging for acceleration, Web filtering, or both. All trace logs are written to this file.</p> <ul style="list-style-type: none"> <li>• Support trace, which records all client activity in detail.</li> </ul>

**Note:** .etl is a binary format that is readable only by Blue Coat Support.

### About the Data Collection Application

The `ProxyClientDC` application gathers system information to send to Blue Coat Support for troubleshooting and debugging purposes. Users have the option of collecting logs and e-mailing them to you or sending them directly to Blue Coat support and attaching them to an existing Service Request (SR).

For more information, see "[Instructing Users to Run the ProxyClient Data Collector](#)" on page 319.

### Instructing Users to Perform Data Traces

To create trace logs to get assistance from Blue Coat support, ask users to enable any of the following:

- The support trace, which records all client activity.
- Detailed trace activity for acceleration, Web filtering, or both.

#### For users to start a trace:

1. The user starts the ProxyClient Web browser window.  
If you limited the ProxyClient's visibility, see "[Limiting ProxyClient Visibility After Installation](#)" on page 315.
2. Click the **Advanced** tab.
3. On the Advanced tab page, in the Diagnostic Tools section, click **More** under Admin Log.
4. Click the **Start Trace** link next to the trace you wish to start.
5. Repeat the activity that caused the problem.
6. Click the **Stop Trace** link.
7. Click **Open Trace Folder**.
8. Send the appropriate .etl file to Blue Coat Support with detailed information about what caused the issue.

## Section H: ProxyClient Troubleshooting

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**Note:** These instructions are included in the ProxyClient on-line help that is available to users. Users can click **Help** either on the ProxyClient system tray icon or in the Web browser window.

---

### *Instructing Users to Run the ProxyClient Data Collector*

Installed in the ProxyClient folder on user systems, the ProxyClient Data Collector is a utility that end users run to collect comprehensive system information that administrators or Blue Coat Support can use to diagnose problems with the ProxyClient application and network connectivity.

When users access the Data Collector, they must select one of two data collection modes:

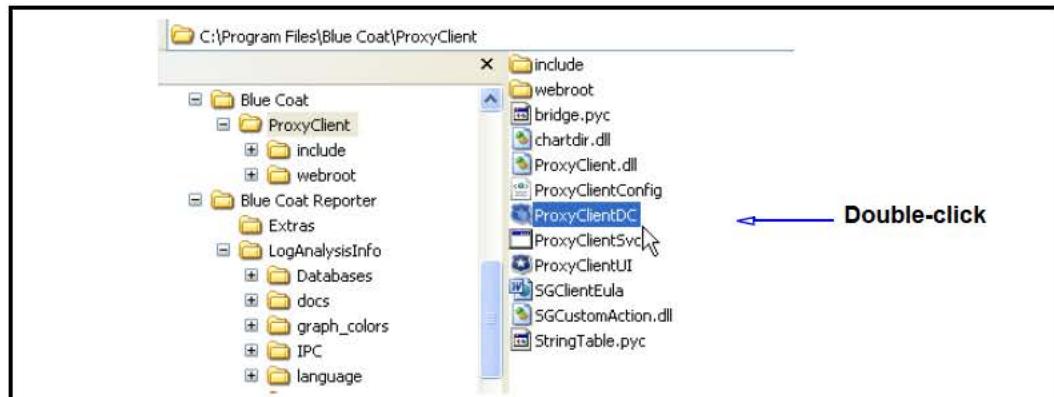
- System Administrator Mode: This mode collects the following information, which is intended for corporate network administrators:
  - All ProxyClient logs, including installation logs and diagnostic trace messages.
  - A memory dump of the ProxyClient service process.
  - The current configuration file and registry settings.
  - A list of all running processes on the system.
  - Various network-related information (IP configuration, trace route, netstat data, and so on).
- Blue Coat Mode: If your issue was assigned a Service Response (SR) number, the user must enter the SR number to enter Blue Coat mode. In Blue Coat mode, the ProxyClient collects the following information in addition to the information discussed in the preceding point:
  - Diagnostic trace messages.
  - A full memory dump of the ProxyClient service process.

#### **To run the ProxyClient Data Collector utility:**

1. The user starts Windows Explorer or double-clicks **My Computer**.
2. Locate the ProxyClient installation folder.

The default location is %SystemDrive%:\Program Files\Blue Coat\Proxy Client\.

## Section H: ProxyClient Troubleshooting



3. Double-click the `ProxyClientDC` application.

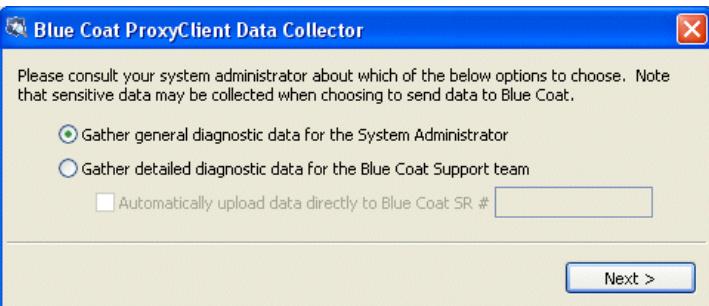
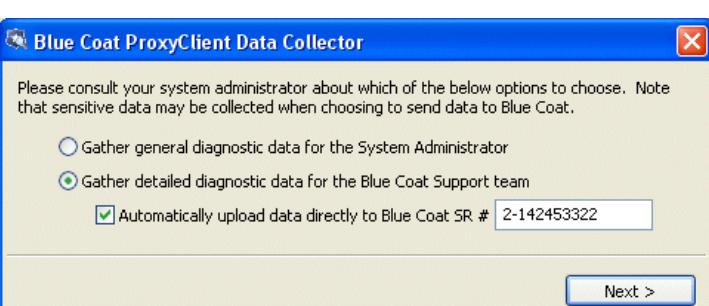
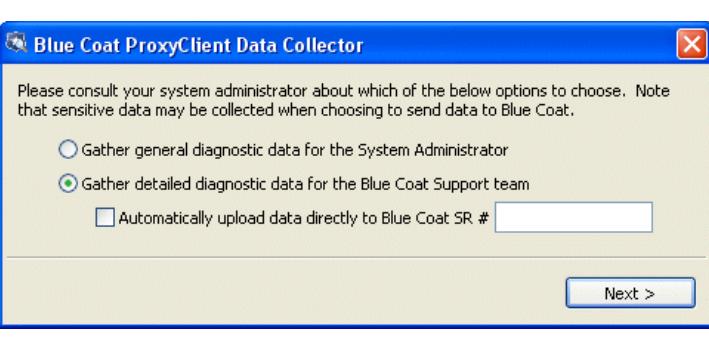
The Blue Coat ProxyClient Data Collector dialog displays.



4. Choose the mode in which to run the Data Collector.

## Section H: ProxyClient Troubleshooting

Options are discussed in the following table.

Option	Action
	Ask users to select this option if you suspect a configuration or network problem.
	If you have entered a support case with Blue Coat Support and have received an SR number, provide users with that number. The user should select the check box and enter the SR number in the provided field.
	Alternate: If you do not have an SR number but want to collect detailed information for Blue Coat Support, clear the check box. After the data collection process completes, ask the user to send you the file so you can contact Blue Coat Support.

5. Click **Next**.

The Data Collector starts and displays the Blue Coat ProxyClient DataCollector dialog.

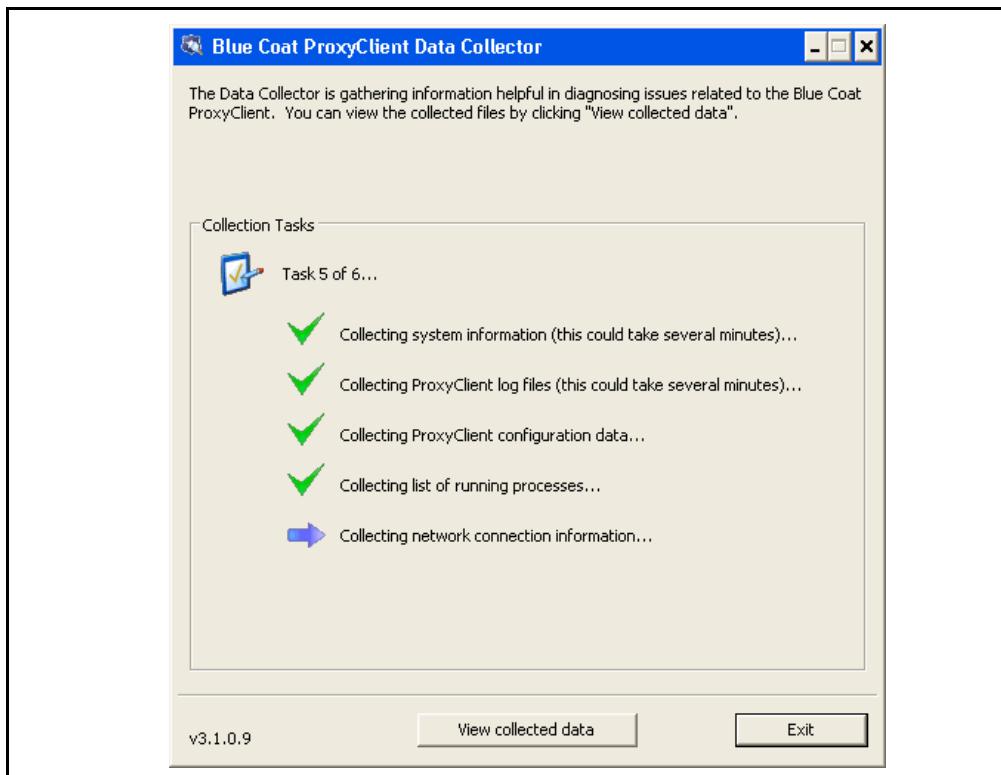


Figure 12–8 Green check marks indicate successful task completion.

**Note:** The preceding example shows collecting data in System Administrator mode. If the user selects Blue Coat Support mode, additional tasks are performed.

A green check mark displays next to each task as it completes successfully (some tasks might require several minutes to complete). At any time, click **Stop** to stop the data collection process (for example, the process appears hung on one stage).

6. After ProxyClient completes all of the tasks:

- System Administrator Mode or Blue Coat mode *without* selecting the check box to send the data to Blue Coat. Instruct users to:

a	Click <b>View collected data</b> . The collected files display in Windows Explorer.
b	Right-click the .zip file (begins with proxyclientdc- and ends with the user's system name and date/timestamp) and select <b>Send to &gt; My Documents</b> .
c	E-mail the .zip file to you.
d	Click <b>Exit</b> .

- Blue Coat Mode (with the **Automatically upload data directly to Blue Coat** option selected): ProxyClient automatically forwards the information and associated case number to Blue Coat Support. Click **Exit**.
- Blue Coat Mode—connection error: If users experience a connection error—that is, ProxyClient cannot upload to Blue Coat— instruct them to run the Data Collector in Blue Coat Mode again, but do *not* select **Automatically upload data directly to Blue Coat**.

## Clearing the Cache

Clearing the object cache might be necessary to free disk space if disk space becomes critical. Because the object cache improves network performance, you should consider this action only after the user removes other unnecessary applications and files.

Clearing the object cache removes files for both byte caching and CIFS optimization. These files are located by default in one of the following hidden folders:

Windows XP

```
%SystemDrive%\Documents and Settings\LocalService\Local  
Settings\Application Data\Blue Coat\Blue Coat ProxyClient
```

Windows Vista

```
%SystemDrive%\Windows\  
system32\config\systemprofile\AppData\Local\Blue Coat\Blue Coat  
ProxyClient
```

**To clear the object cache:**

1. The user double-clicks the ProxyClient system tray icon to start the Web browser window.  
If you chose to hide the system tray icon, see "["Limiting ProxyClient Visibility and Interactivity" on page 281](#)".
2. Click the **Advanced** tab.
3. On the Advanced tab page, in the Disk Cache section, click **Clear Cache**.  
You are required to confirm the action.

---

**Note:**

- Clearing the cache while the client is running does *not* delete files that are currently in use.
- These instructions are included in the ProxyClient on-line help that is available to users. Users can click **Help** either on the ProxyClient system tray icon or in the Web browser window.

## Changing the Location of the Cache

This section discusses how to change the location the ProxyClient stores CIFS cache and byte cache files.

By default, the cache is stored in the following folder:

- Windows XP

```
%SystemDrive%\Documents and Settings\LocalService\Local  
Settings\Application Data\Blue Coat\Blue Coat ProxyClient
```

- Windows Vista

```
%SystemDrive%\Windows\system32\config\systemprofile\AppData\Local\Blue  
Coat\Blue Coat ProxyClient
```

**To optionally locate the files on a different volume (for example, a volume that has more available space):**

1. If the ProxyClient is already installed, perform the following tasks first:
  - a. Double-click the ProxyClient icon in the system tray.
  - b. In the ProxyClient Web browser window, click the **Advanced** tab.
  - c. On the Advanced tab page, click **Clear Cache**.  
You are required to confirm the action. This deletes or expires all the files in the cache directory.
2. Create a registry value named `CacheDirectory` of type `REG_SZ` (that is, `string`) in the following key:  
`HKEY_LOCAL_MACHINE\SOFTWARE\Blue Coat Systems\ProxyClient`
3. Set the **Value data** of `CacheDirectory` to the location to store the object cache.

---

**Note:**

- The directory must already exist; otherwise, the default cache directory will be used.
- You can also create the registry key during a silent installation as discussed in [Table 12–5](#) on page 277.

- 
4. Reboot the client computer for the registry key to take effect.

## Uninstalling the ProxyClient Software

This section describes how to uninstall the ProxyClient application software from user systems. You can uninstall ProxyClient from your system only if you are in the Administrators group on the computer.

For information about silent uninstallation, see "[Example Uninstallation](#)" on page 281.

### To uninstall the ProxyClient software:

1. Log in to your machine as a user who is a member of the Administrators group.
2. Click **Start > Control Panel**.
3. In the Control Panel window, double-click **Add or Remove Programs**.
4. Click **Blue Coat ProxyClient**.
5. Click **Remove**.
6. Follow the prompts to uninstall the software.

### Secondary Procedure

If you discover the preceding procedure did not remove all traces of the ProxyClient software, perform the tasks discussed in this section.

### To uninstall the ProxyClient in Windows Safe Mode:

1. Boot into **Safe Mode without Networking**, which means that no ProxyClient components are loaded by the system.
2. Log in as an administrator
3. Click **Start > Settings > Control Panel**.
4. In the Control Panel window, double-click **Add or Remove Programs**.
5. Click **Blue Coat ProxyClient**.
6. Click **Remove**.
7. Follow the prompts to uninstall the software.



## *Chapter 13: SOCKS Gateway Configuration*

This chapter discusses the Blue Coat implementation of SOCKS, which includes the following:

- ❑ A SOCKS proxy server that supports both SOCKSv4/4a and SOCKSv5, running on the ProxySG appliance.
- ❑ Support for forwarding through SOCKS gateways.

To configure a SOCKS proxy server on the ProxySG, refer to *Volume 2: Proxies and Proxy Services*. To use SOCKS gateways when forwarding traffic, continue with this chapter.

### *Topics in this Chapter*

This chapter includes information about the following topics:

- ❑ [Section A: "Configuring a SOCKS Gateway" on page 328.](#)
- ❑ [Section B: "Using SOCKS Gateways Directives with Installable Lists" on page 337.](#)

## Section A: Configuring a SOCKS Gateway

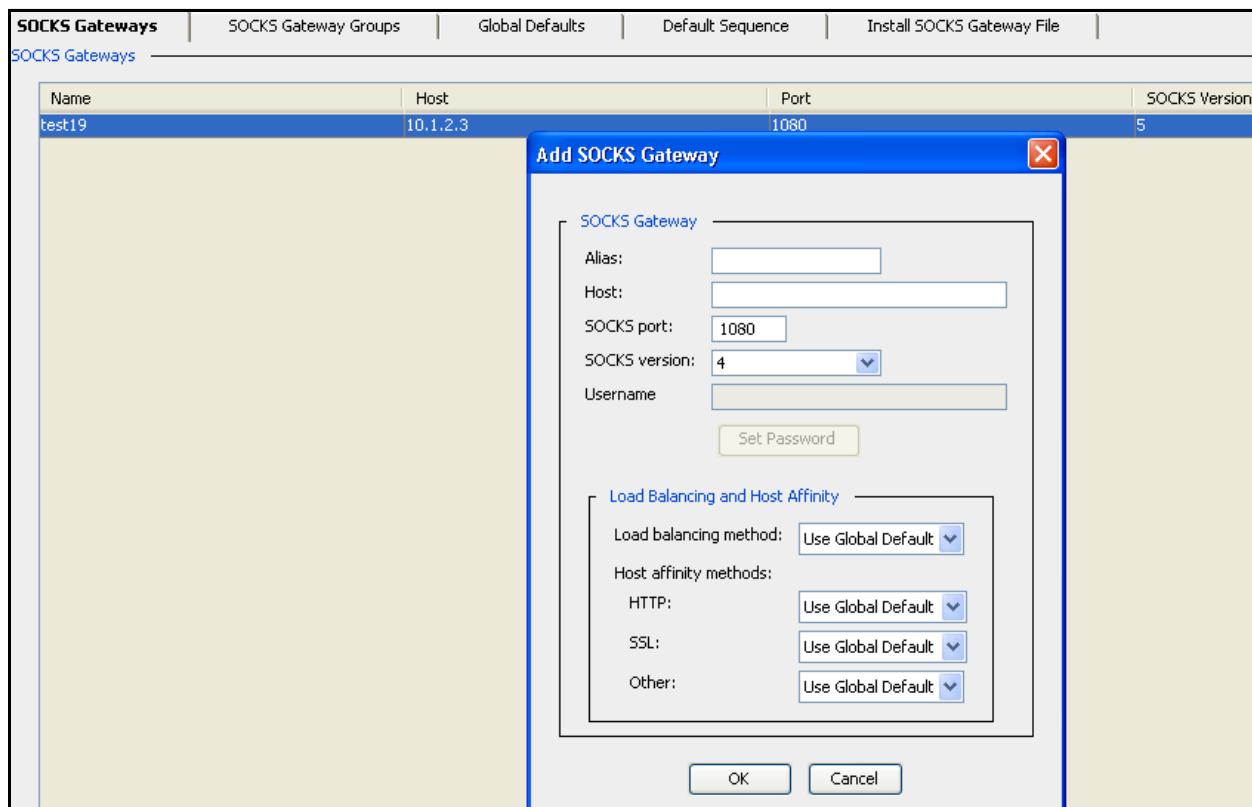
### Section A: Configuring a SOCKS Gateway

SOCKS servers provide application level firewall protection for an enterprise.

SOCKS gateways, like ICP and forwarding, can use installable lists for configuration. You can configure the installable list using directives. You can also use the Management Console or the CLI to create a SOCKS gateways configuration. Using the Management Console is the easiest method.

#### To configure a SOCKS gateway:

1. Select **Configuration > Forwarding > SOCKS Gateways > SOCKS Gateways**.
2. Click **New** to create a new SOCKS gateway.



3. Configure the SOCKS gateway as follows:
  - a. Alias: Give the gateway a meaningful name.

## Section A: Configuring a SOCKS Gateway

---

**Note:** SOCKS gateway aliases cannot be CPL keywords, such as `no`, `default`, `forward`, or `socks_gateways`.

---

- b. **Host:** Add the IP address or the host name of the gateway where traffic is directed. The host name must DNS resolve.
- c. **Port:** The default is 1080.
- d. **SOCKS version:** Select the version that the SOCKS gateway can support from the drop-down list. Version 5 is recommended.
- e. **Username** (Optional, and only if you use version 5) The username of the user on the SOCKS gateway. The username already must exist on the gateway. If you have a username, you must also set the password.
- f. **Set Password:** The plaintext password or encrypted password of the user on the SOCKS gateway. The password must match the gateway's information. The password can be up to 64 bytes long. Passwords that include spaces must be within quotes.

You can enter an encrypted password (up to 64 bytes long) either through the CLI or through installable list directives.

- g. In the **Load Balancing and Host Affinity** section, select the load balancing method from the drop-down list. **Global default** (configured on the **Configuration > Forwarding > Global Defaults** tab), sets the default for all SOCKS gateways on the system. You can also specify the load balancing method for this system: **Least Connections** or **Round Robin**, or you can disable load balancing by selecting **None**.
- h. In the **Host affinity methods** drop-down list, select the method you want to use:

- **HTTP:** The default is to use the **Global Defaults**. Other choices are **None**, which disables host affinity, **Accelerator Cookie**, which places a cookie in the response to the client, and **Client IP Address**, which uses the client IP address to determine which upstream SOCKS gateway was last used.

By default, SOCKS treats all incoming requests destined to port 80 as HTTP, allowing the usual HTTP policy to be performed on them, including ICAP scanning. If the SOCKS connection is being made to a server on another port, write policy on the ProxySG to match on the server host and port and specify that it is HTTP using SOCKS.

- **SSL:** The default is to use the **Global Defaults**. Other choices are **None**, which disables host affinity, **Accelerator Cookie**, which places a cookie in the response to the client, and **Client IP Address**, which uses the client IP address to determine which group member was last used. In addition, you can select **SSL Session ID**, used in place of a cookie or IP address, which extracts the SSL session ID name from the connection information.

## Section A: Configuring a SOCKS Gateway

- **Other.** Other applies to any traffic that is not HTTP, terminated HTTPS, or intercepted HTTPS. You can attempt load balancing of any of the supported traffic types in forwarding and this host affinity setting can be applied as well. For example, you could load balance a set of TCP tunnels and apply the **Other** host affinity (client IP only).

The default is to use **Global Defaults**. Other choices are **None**, which disables host affinity, and **Client IP Address**, which uses the client IP address to determine which group member was last used.

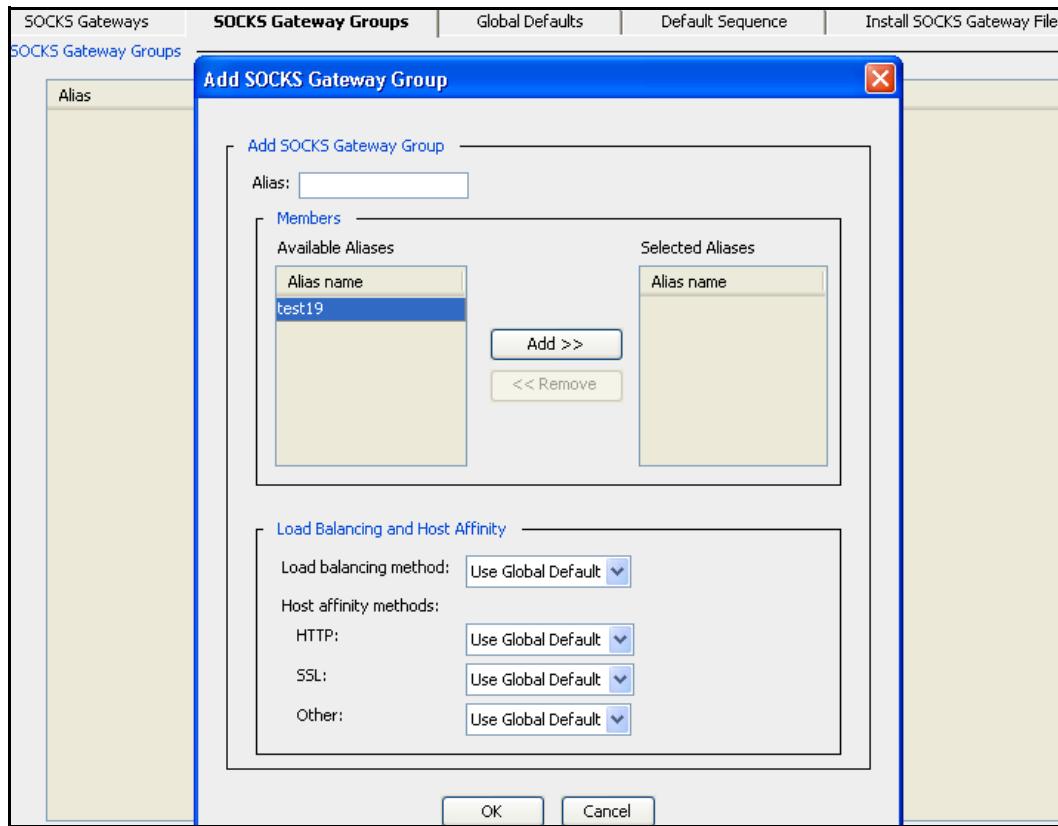
- i. Click **OK** to close the dialog.
4. Click **Apply**.

### To create groups:

An existing gateway can belong to none, one, or more groups as desired (it can only belong once to a single group, however).

1. Select **Configuration > Forwarding > SOCKS Gateways > SOCKS Gateway Groups**.
2. Click **New**. The Add SOCKS Gateway Group dialog displays.

## Section A: Configuring a SOCKS Gateway



3. To create an alias group, highlight the hosts and groups you want grouped, and click **Add**.
4. Give the new group a meaningful name.
5. In the **Load Balancing and Host Affinity** section, select the load balancing method from the drop-down list. **Global default** (configured on the **Configuration > Forwarding > SOCKS Gateways > Global Defaults** tab), sets the default for all forwarding hosts on the system. You can also specify the load balancing method for this system: **Least Connections**, **Round Robin**, **Domain Hash**, **URL Hash**, or you can disable load balancing by selecting **None**.
6. In the **Host affinity methods** drop-down lists, select the method you want to use. Refer to the previous procedure for details on methods. You are selecting between the resolved IP addresses of all of the hosts in the group, not the resolved IP addresses of an individual host.
  - **HTTP:** The default is to use the **Global Defaults**. Other choices are **None**, which disables host affinity, **Accelerator Cookie**, which places a cookie in the response to the client, and **Client IP Address**, which uses the client IP address to determine which group member was last used.

## Section A: Configuring a SOCKS Gateway

- **SSL:** The default is to use the **Global Defaults**. Other choices are **None**, which disables host affinity, **Accelerator Cookie**, which places a cookie in the response to the client, and **Client IP Address**, which uses the client IP address to determine which group member was last used. In addition, you can select **SSL Session ID**, used in place of a cookie or IP address, which extracts the SSL session ID name from the connection information.
- **Other.** Applies to any traffic that is not HTTP, terminated HTTPS, or intercepted HTTPS. You can attempt load balancing of any of the supported traffic types in forwarding and this host affinity setting can be applied as well. For example, you could load balance a set of TCP tunnels and apply the **Other** host affinity (client IP only).

The default is to use **Global Defaults**. Other choices are **None**, which disables host affinity, and **Client IP Address**, which uses the client IP address to determine which group member was last used.

7. Click **OK** to close the dialog.

8. Click **Apply**.

## Configuring Global SOCKS Defaults

The global defaults apply to all SOCKS gateways hosts and groups unless the settings are specifically overwritten during host or group configuration.

### To configure global defaults:

1. Select **Configuration > Forwarding > SOCKS Gateways > Global Defaults**.

2. Determine how you want connections to behave if the health checks fail: **Connect Directly (fail open)** or **Deny the request (fail closed)**. Note that failing open is an insecure option. The default is to fail closed. This option can be overridden by policy, if it exists.
3. In the **Global Load Balancing and Host Affinity** area:
  - a. Configure **Load Balancing methods**:

## Section A: Configuring a SOCKS Gateway

- **SOCKS hosts:** Specify the load balancing method for all forwarding hosts unless their configuration specifically overwrites the global settings. You can choose **Least Connections** or **Round Robin**, or you can disable load balancing by selecting **None**. **Round Robin** is specified by default.
- **SOCKS groups:** Specify the load balancing method for all forwarding groups unless their configuration specifically overwrites the global settings. You can choose to hash the domain or the full URL. You can also choose **Least Connections**, **Round Robin**, **Domain Hash**, **URL Hash**, and you can disable load balancing by selecting **None**. **Round Robin** is specified by default.

### b. Configure **Global Host Affinity** methods:

- **HTTP:** The default is to use **None**, which disables host affinity. Other choices are **Accelerator Cookie**, which places a cookie in the response to the client, and **Client IP Address**, which uses the client IP address to determine which group member was last used.
- **SSL:** The default is to use **None**, which disables host affinity. Other choices are **Accelerator Cookie**, which places a cookie in the response to the client, and **Client IP Address**, which uses the client IP address to determine which group member was last used, and **SSL Session ID**, used in place of a cookie or IP address, which extracts the SSL session ID name from the connection information.
- **Other:** **Other** applies to any traffic that is not HTTP, terminated HTTPS, or intercepted HTTPS. You can attempt load balancing of any of the supported traffic types in forwarding and this host affinity setting can be applied as well. For example, you could load balance a set of TCP tunnels and apply the **Other** host affinity (client IP only).

The default is to use **None**, which disables host affinity. You can also choose **Client IP Address**, which uses the client IP address to determine which group member was last used.

### c. **Host Affinity Timeout:** This is the amount of time a user's IP address, SSL ID, or cookie remains valid. The default is 30 minutes, meaning that the IP address, SSL ID or cookie must be used once every 30 minutes to restart the timeout period.

### 4. Click **Apply**.

## Configuring the Default Sequence

The default sequence defines what SOCKS gateways to use when no policy is present to specify something different. The system uses the first host or group in the sequence that is healthy, just as it does when a sequence is specified through policy. Only one default sequence is allowed. All members must be pre-existing hosts, and no member can be in the group more than once.

## Section A: Configuring a SOCKS Gateway

A default failover sequence allows healthy hosts to take over for an unhealthy host (one that is failing its DNS Resolution or its health check). The sequence specifies the order of failover, with the second host taking over for the first host, the third taking over for the second, and so on.

If all hosts are unhealthy, the operation fails either open or closed, depending upon your settings.

This configuration is usually created and managed through policy. If no SOCKS-gateways policy applies, you can create a default sequence through the CLI. This single default sequence consists of a single default host (or group) plus one or more hosts to use if the preceding ones are unhealthy.

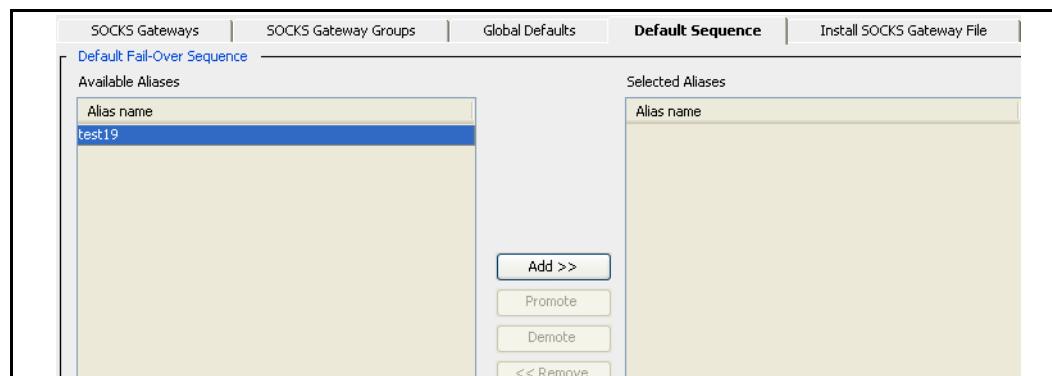
### To create the default sequence:

---

**Note:** Traffic is forwarded to the first member of the list until it fails, then traffic is sent to the second member of list until it fails or the first member becomes healthy again, and so on.

---

1. Select **Configuration > Forwarding > SOCKS Gateways > Default Sequence**.



2. The available aliases (host and group) display in the **Available Aliases** pane. To select an alias, highlight it and click **Add**.

---

**Note:** Any host or group in the default sequence is considered in use by policy. As a result, if you try to delete a host or group while it is in the default sequence, you receive an error message. You must remove the host/group from the sequence first, then delete the host or group.

---

3. You can use the **Promote** and **Demote** buttons to change the order of the hosts and groups in the sequence after you add them to the **Selected Aliases** pane.
4. Click **Apply**.

### Related CLI Syntax to Configure SOCKS Gateways

```
SGOS#(config) socks-gateways
SGOS#(config socks-gateways) create gateway gateway_alias gateway_host
SOCKS_port [group=group-alias] [version {=4 | =5}] [user=username
{password=password | encrypted-password=encrypted-password}]
```

## Section A: Configuring a SOCKS Gateway

```
SGOS#(config socks-gateways) create group group_name
SGOS#(config socks-gateways) delete all
SGOS#(config socks-gateways) delete gateway gateway_alias
SGOS#(config socks-gateways) delete group group_name
SGOS#(config socks-gateways) destroy-old-passwords
SGOS#(config socks-gateways) edit gateway alias

SGOS#(config socks-gateways gateway_alias) encrypted-password
encrypted_password
SGOS#(config socks-gateways gateway_alias) host gateway_host
SGOS#(config socks-gateways gateway_alias) host-affinity http
{default | none | client-ip-address | accelerator-cookie}
SGOS#(config socks-gateways gateway_alias) host-affinity ssl
{default | none | client-ip-address | accelerator-cookie | ssl-session-id}
SGOS#(config socks-gateways gateway_alias) host-affinity other
{default | none | client-ip-address}
SGOS#(config socks-gateways gateway_alias) load-balance method
{default | least-connections | none | round-robin}
SGOS#(config socks-gateways gateway_alias) no {password | user}
SGOS#(config socks-gateways gateway_alias) password password
SGOS#(config socks-gateways gateway_alias) port socks_port
SGOS#(config socks-gateways gateway_alias) user username
SGOS#(config socks-gateways gateway_alias) version {4 | 5}
SGOS#(config socks-gateways gateway_alias) view

SGOS#(config socks-gateways) edit group alias
SGOS#(config socks-gateways group_alias) {add | remove}
gateway_alias
SGOS#(config socks-gateways group_alias) host-affinity http
{default | none | client-ip-address | accelerator-cookie}
SGOS#(config socks-gateways group_alias) host-affinity ssl {default
| none | client-ip-address | accelerator-cookie | ssl-session-id}
SGOS#(config socks-gateways group_alias) host-affinity other
{default | none | client-ip-address}
SGOS#(config socks-gateways group_alias) load-balance method
{default | domain-hash | least-connections | none | round-robin |
url-hash}
SGOS#(config socks-gateways group_alias) view

SGOS#(config socks-gateways) exit
SGOS#(config socks-gateways) failure-mode {open | closed}
SGOS#(config socks-gateways) host-affinity http {default | none |
client-ip-address | accelerator-cookie} gateway_or_group_alias
-or-
SGOS#(config socks-gateways) host-affinity ssl {default | none |
client-ip-address | accelerator-cookie | ssl-session-id}
gateway_or_group_alias
-or-
SGOS#(config socks-gateways) host-affinity other {default | client-ip-
address | none} gateway_or_group_alias
SGOS#(config socks-gateways) load-balance gateway {default | none |
round-robin | least-connections} gateway_alias
SGOS#(config socks-gateways) load-balance group {default | none |
domain-hash | url-hash | round-robin | least-connections} group_alias
SGOS#(config socks-gateways) no path
```

## Section A: Configuring a SOCKS Gateway

```
SGOS#(config socks-gateways) path url  
SGOS#(config socks-gateways) sequence {add | demote | promote |  
remove} gateway-alias  
SGOS#(config socks-gateways) sequence clear  
SGOS#(config socks-gateways) view
```

## Statistics

SOCKS gateways statistics are available through the **Statistics > Advanced > SOCKS Gateways** menu item.

## Section B: Using SOCKS Gateways Directives with Installable Lists

To configure a SOCKS gateway, you can use the Management Console (easiest), the CLI, or you can create an installable list and load it on the ProxySG. To use the Management Console, see [Section A: "Configuring a SOCKS Gateway" on page 328](#). For information on installing the file itself, see ["Creating a SOCKS Gateway Installable List" on page 342](#).

The SOCKS gateways configuration includes SOCKS directives that:

- ❑ Names the SOCKS gateways, version, and port number
- ❑ Creates the SOCKS gateways groups
- ❑ Provide load balancing and host affinity
- ❑ Specifies the username
- ❑ Specifies the password

Available directives are described in the table below.

Table 13–1 SOCKS Directives

Directive	Meaning
gateway	Specifies the gateway alias and name, SOCKS port, version supported, usernames and password.
group	Creates a forwarding group directive and identifies member of the group.
host_affinity	Directs multiple connections by a single user to the same group member.
load_balance	Manages the load among SOCKS gateways in a group, or among multiple IP addresses of a gateway.
sequence alias_list	Adds a space-separated list of one or more SOCKS gateways and group aliases. (The default sequence is the default forwarding rule, used for all requests lacking policy instructions)
socks_fail	In case connections cannot be made, specifies whether to abort the connection attempt or to connect to the origin content server.

Syntax for the SOCKS directives are:

```

gateway gateway_alias gateway_name SOCKS_port [group=group_alias]
[version={4 | 5}] [user=username] [password=password] [encrypted-
password=encrypted_password]
group=group_alias [gateway_alias_list]
host_affinity http {none | client-ip-address | accelerator-cookie}
[gateway_or_group_alias]
host_affinity ssl {none | client-ip-address | accelerator-cookie |
ssl-session-id} [gateway_or_group_alias]
host_affinity other {none | client-ip-address}
[gateway_or_group_alias]
host_affinity timeout minutes

```

## Section B: Using SOCKS Gateways Directives with Installable Lists

```

load_balance group {none | domain-hash | url-hash | round-robin | least-connections} [group_alias]
load_balance gateway {none | round-robin | least-connections} [gateway_alias]
sequence alias_list
socks_fail {open | closed}

```

For more information on SOCKS gateway directives, continue with the next section. For information on:

- ❑ `group` directives, continue with "[Creating SOCKS Gateways Groups Using Directives](#)" on page 339
- ❑ `load_balance` directives, continue with "[Configuring Load Balancing Directives](#)" on page 339
- ❑ `host_affinity` directives, continue with "[Configuring Host Affinity Directives](#)" on page 340
- ❑ `socks_fail` directives, continue with "[Setting Fail Open/Closed](#)" on page 339
- ❑ `sequence` directives, continue with "[Creating a Default Sequence](#)" on page 341

## Configuring SOCKS Gateways Using Directives

SOCKS gateways can be configured using the gateways suboptions in the table below.

Table 13–2 SOCKS Gateways Syntax

Command	Suboptions	Description
gateway		Configures the SOCKS gateway.
	gateway_alias	A meaningful name that is used for policy rules.
	gateway_name	The IP address or name of the gateway where traffic is directed. The gateway name must DNS resolve.
	SOCKS_port	The port number of the SOCKS gateway.
	version={4   5}	The version that the SOCKS gateway can support.
	user=username	(Optional, if you use v5) The username of the user. It already must exist on the gateway.
	password=password	(Optional, if you use v5) The password of the user on the SOCKS gateway. It must match the gateway's information.
	encrypted-password=encrypted_password	(Optional, if you use v5) The encrypted password of the user on the SOCKS gateway. It must match the gateway's information.

## Section B: Using SOCKS Gateways Directives with Installable Lists

### *Example*

```
gateway Sec_App1 10.25.36.47 1022 version=5 user=username  
password=password
```

## Creating SOCKS Gateways Groups Using Directives

The SOCKS gateway `groups` directive has the following syntax:

```
group group_name gateway_alias_1 gateway_alias_2...
```

where `group_name` is the name of the group, and `gateway_alias_1`, `gateway_alias_2`, and so forth are the gateways you are assigning to the SOCKS gateways group.

## Setting Special Parameters

After you configure the SOCKS gateways and groups, you might need to set other special parameters to fine tune gateways. You can configure the following settings:

- ❑ "Setting Fail Open/Closed"
- ❑ "Configuring Load Balancing Directives" on page 339
- ❑ "Configuring Host Affinity Directives" on page 340

### *Setting Fail Open/Closed*

Using directives, you can determine if the SOCKS gateways fails open or closed or if an operation does not succeed.

The syntax is:

```
socks_fail {open | closed}
```

where the value determines whether the SOCKS gateways should fail open or fail closed if an operation does not succeed. Fail open is a security risk, and fail closed is the default if no setting is specified. This setting can be overridden by policy, using the `SOCKS_gateway.fail_open(yes|no)` property.

### *Examples*

```
socks_fail open
```

### *Configuring Load Balancing Directives*

Load balancing shares the load among a set of IP addresses, whether a group or a gateway with multiple IP addresses.

The syntax is:

```
load_balance group {none | domain-hash | url-hash | round-robin |  
least-connections} [group_alias]  
load_balance gateway {none | round-robin | least-connections}  
[gateway_alias]
```

## Section B: Using SOCKS Gateways Directives with Installable Lists

Table 13–3 Load Balancing Directives

Command	Suboptions	Description
load_balance group	{none   domain-hash   url-hash   round-robin   least-connections} [group_alias]	If you use group for load balancing, you can set the suboption to none or choose another method. If you do not specify a group, the settings apply as the default for all groups.
load_balance gateway	{none   round-robin   least-connections} [gateway_alias]	If you use gateway for load balancing, you can set the suboption to none or choose another method. If you do not specify a gateway, the settings apply as the default for all gateways.

### Example

```
load_balance gateway least_connections
```

## Configuring Host Affinity Directives

Host affinity is the attempt to direct multiple connections by a single user to the same group member.

The syntax is:

```
host_affinity http {none | client-ip-address | accelerator-cookie}
[gateway_or_group_alias]
host_affinity ssl {none | client-ip-address | accelerator-cookie |
ssl-session-id} [gateway_or_group_alias]
host_affinity other {none | client-ip-address}
[gateway_or_group_alias]
host_affinity timeout minutes
```

Table 13–4 Commands to Configure Host Affinity Directives

Command	Suboption	Description
host_affinity http	{accelerator-cookie   client-ip-address   none} [gateway_or_group_alias]	Determines which HTTP host-affinity method to use (accelerator cookie or client-ip-address), or you can specify none. If you do not specify a gateway or group, the settings apply as the default for all gateways or groups.

## Section B: Using SOCKS Gateways Directives with Installable Lists

Table 13–4 Commands to Configure Host Affinity Directives (Continued)

Command	Suboption	Description
host_affinity ssl	{accelerator-cookie   client-ip-address   none   ssl-session-id} [gateway_or_group_alias]	Determines which SSL host-affinity method to use (accelerator cookie, client-ip-address, or ssl-session-id), or you can specify none. If you do not specify a gateway or group, the settings apply as the default for all gateways or groups.
host_affinity other	other {none   client-ip-address} [gateway_or_group_alias]	Determines whether TCP tunnel and Telnet is used. Determines whether to use the client-ip-address host-affinity method or specify none. If you do not specify a gateway or group, the settings apply as the default for all gateways or groups.
host_affinity timeout	minutes	Determines how long a user's IP address, SSL ID, or cookie remains valid when idle.

*Example*

```
host_affinity ssl accelerator-cookie 10.25.36.48
host_affinity timeout 5
```

## Creating a Default Sequence

The default sequence is the default SOCKS gateways rule, used for all requests lacking policy instructions. Failover is supported if the sequence (only one is allowed) has more than one member.

**Note:** Creating the default sequence through the CLI is a legacy feature. You can set up sequences by using policy alone. The default sequence (if present) is applied only if no applicable command is in policy.

For information on using VPM, refer to *Volume 6: The Visual Policy Manager and Advanced Policy*; for information on using CPL, refer to *Volume 10: Content Policy Language Guide*.

A default failover sequence works by allowing healthy SOCKS gateways to take over for an unhealthy gateway (one that is failing its DNS resolution or its health check). The sequence specifies the order of failover, with the second gateway taking over for the first gateway, the third taking over for the second, and so on).

If all gateways are unhealthy, the operation fails either open or closed, depending upon your settings.

This configuration is generally created and managed through policy. If no forwarding policy applies, you can create a default sequence through the CLI. This single default sequence consists of a single default gateway (or group) plus one or more gateways to use if the preceding ones are unhealthy.

The syntax is:

```
sequence alias_list
```

where `alias_list` is a space-separated list of one or more SOCKS gateways and group aliases.

### **Example**

```
sequence gateway_alias
```

## **Creating a SOCKS Gateway Installable List**

You can create and install the SOCKS gateway installable list with the following methods:

- Use the Text Editor, which allows you to enter directives (or copy and paste the contents of an already-created file) directly onto the ProxySG.
- Create a local file on your local system; the ProxySG can browse to the file and install it.
- Use a remote URL, where you place an already-created file on an FTP or HTTP server to be downloaded to the ProxySG appliance.

When the SOCKS gateway installable list is created, it overwrites any previous SOCKS gateway configurations on the ProxySG. The installable list remains in effect until it is overwritten by another installable list; it can be modified or overwritten using Management Console or CLI commands.

---

**Note:** During the time that a SOCKS gateways installable list is being compiled and installed, SOCKS gateways might not be available. Any transactions that come into the appliance during this time might not be forwarded properly.

---

Installation of SOCKS gateways installable-list configuration should be done outside peak traffic times.

### **To create a SOCKS gateway installable list:**

1. Select **Configuration > Forwarding > SOCKS Gateways > Install SOCKS Gateway File**.
2. If you use a SOCKS gateway server for the primary or alternate forwarding gateway, you must specify the ID for the Identification (Ident) protocol used by the SOCKS gateway in SOCKS server handshakes. The default is **BLUECOAT SYSTEMS**.
3. From the drop-down list, select the method used to install the SOCKS gateway configuration; click **Install**.

- **Remote URL:**

Enter the fully-qualified URL, including the filename, where the configuration is located. To view the file before installing it, click **View**. Click **Install**. Examine the installation status that displays; click **OK**.

- **Local File:**

Click **Browse** to bring up the Local File Browse window. Browse for the file on the local system. Click **Install**. When the installation is complete, a results window opens. View the results, close the window, click **Close**.

- **Text Editor:**

The current configuration is displayed in installable list format. You can customize it or delete it and create your own. Click **Install**. When the installation is complete, a results window opens. View the results, close the window, click **Close**.

4. Click **Apply**.

*Related CLI Syntax to specify the SOCKS Gateway Machine ID*

```
SGOS#(config) socks-machine-id machine_ID
```



## *Chapter 14: Verifying the Health of Services Configured on the ProxySG*

This chapter discusses Blue Coat health checks, which enable you to determine the availability of external networking devices and off-box services.

### *Topics in this Chapter*

This chapter includes information about the following topics:

- ❑ [Section A: "Overview" on page 346](#)
- ❑ [Section B: "About Blue Coat Health Check Components" on page 349](#)
- ❑ [Section C: "Configuring Global Defaults" on page 355](#)
- ❑ [Section D: "Forwarding Host and SOCKS Gateways Health Checks" on page 366](#)
- ❑ [Section E: "DNS Server Health Checks" on page 373](#)
- ❑ [Section F: "Authentication Health Checks" on page 377](#)
- ❑ [Section G: "Virus Scanning and Content Filtering Health Checks" on page 380](#)
- ❑ [Section H: "Managing User-Defined Health Checks" on page 386](#)
- ❑ [Section I: "Viewing Health Check Statistics" on page 397](#)
- ❑ [Section J: "Using Policy" on page 403](#)
- ❑ [Section K: "Related CLI Syntax to Configure Health Checks" on page 404](#)

## Section A: Overview

### Section A: Overview

The ProxySG performs health checks to test for network connectivity and to determine the responsiveness of external resources. Examples of external resources include — DNS servers, forwarding hosts, SOCKS gateways, authentication servers, ICAP services (for example, anti-virus scanning services), and Websense off-box services.

The ProxySG automatically generates health checks based on:

- Forwarding configuration
- SOCKS gateways configuration
- DNS server configuration
- ICAP service configuration
- Websense off-box configuration
- Authentication realm configuration
- Whether Dynamic Real-Time Rating (DRTR) is enabled

You also can create user-defined health checks, including a composite health check that combines the results of multiple other health check tests. For information on health check types, see [Section B: "About Blue Coat Health Check Components" on page 349](#).

Health checks fall into three broad categories:

- Determining if the IP address can be reached. Health check types that fall into this category are:
  - Forwarding hosts
  - SOCKS gateways
  - User-defined host health checks
- Determining if a service is responsive. Health check types that fall into this category are:
  - Authentication servers
  - DNS server
  - Dynamic Real-Time Rating (DRTR) service
  - ICAP services
  - Websense off-box services
- Determining if a group is healthy. Group tests are compilations of individual health checks, and the health of the group is determined by the status of the group members. Health check types that fall into this category are:
  - Forwarding groups
  - SOCKS gateway groups

## Section A: Overview

- ICAP service groups
- Websense off-box service groups
- User-defined composite health checks

Information provided by health checks allows you to accomplish the following:

- Detect potential network issues before they become critical. For example, if the health check for an individual host fails, the ProxySG sends an alert (using e-mail, SNMP, or by writing to an event log) to the designated recipients, if configured. To configure recipients, see [Section C: "Configuring Global Defaults" on page 361](#).
- Track response times and report failures. For example, if the DNS server performance suffers a reduction, the users experience response time delays. The DNS health check records the average response time (in milliseconds) and allows you to interpret the reason for the performance reduction. Should the DNS server become unavailable, the failed health check triggers an alert.

Furthermore, the ProxySG uses health check information to accomplish the following:

- When combined with failover configurations, health checks redirect traffic when a device or service failure occurs. For example, a health check detects an unhealthy server and a forwarding rule redirects traffic to a healthy server or proxy.
- Monitor the impact of health check states on the overall health of the appliance. Health check status is a metric in calculating the overall health of the ProxySG and is reflected in the health monitor, which is located at the upper right hand corner of the Management Console. For example, if a health check fails, the health monitor displays **Health: Warning**. You can click on the health monitor link to navigate and view the cause for the warning.

## Executing an instant health check

Although the ProxySG automatically executes health checks, you can run an instant health check from the **Configuration > Health Checks > General > Health Checks** tab by selecting the health check and clicking **Perform health check**. You can also view the health check state on the **Statistics > Health Check** tab.

## Background DNS Resolution

Background testing of the DNS resolutions is done on all resolvable hostnames used in the health check system, including forwarding hosts, DRTR, and SOCKS gateways. That way, the list of IP addresses associated with a hostname stays current. The DNS system is checked whenever the time-to-live (TTL) value of the DNS entry expires.

---

**Note:** If a hostname consists of a dotted IP address, no DNS resolution is performed.

---

## Section A: Overview

When a host is resolved by DNS to multiple IP addresses, health checks keep those addresses current through background updates. You can configure the timing for the updates on the **Configuration > Health Checks > Background DNS** tab. After the test or tests are conducted for each IP address, the results are combined. If the result for any of the resolved IP addresses is healthy, then the host is considered healthy because a healthy connection to that target can be made.

Section B: About Blue Coat Health Check Components

## Section B: About Blue Coat Health Check Components

Health checks have two components:

- 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
  - DNS servers
  - External Authentication servers
  - ICAP service and ICAP service group
  - Websense off-box service and Websense off-box service group
  - Dynamic Real-Time Rating Service
  - User-defined host and composite health checks
- Health check tests: The method of determining network connectivity, target responsiveness, and basic functionality.
  - Health checks (external targets)
    - Authentication
    - Internet Control Message Protocol (ICMP)
    - DNS
    - TCP
    - SSL
    - HTTP
    - HTTPS
    - ICAP
    - Websense
    - DRTR
  - Health checks (group targets)
    - Groups
    - Composite

---

**Note:** Some health checks (such as forwarding hosts and SOCKS gateways) can be configured to report the result of a composite health check instead of their own test.

---

## Section B: About Blue Coat Health Check Components

Some health check types only have one matching test, while others have a selection. For more information about health check types and tests, see [Table 14–1](#) on page 351.

### Health Check Types

Most health checks are automatically created and deleted when the underlying entity being checked is created or deleted. When a forwarding host is created, for example, a health check for that host is created. Later, if the forwarding host is deleted, the health check for it is deleted as well. User interaction is not required, except to change or customize the health check behavior if necessary. However, if a health-check is referenced in policy, you cannot delete the corresponding host or the health check itself until the reference in policy is deleted.

In addition to the health checks that are automatically generated, run, and deleted, Blue Coat also supports two kinds of user-defined health checks. These health checks are manually created, configured, and deleted.

- *Composite* health checks: A method to take the results from a set of health checks (automatically generated or user-defined health checks) and combine the results.
- *Host* health checks: A method to test a server, using a selection of ICMP, TCP, SSL, HTTP, and HTTPS tests.

---

**Note:** Although a host health check tests an upstream server, it can also be used to test whether a proxy is working correctly. To test HTTP/HTTPS proxy behavior, for example, you can set up a host beyond the proxy, and then use forwarding rules so the health check passes through the proxy to the host, allowing the proxy to be tested.

---

User-defined health checks allow you to test for attributes that the ProxySG does not test automatically. For example, for a forwarding host, you could perform three user-defined tests — an HTTP test, an HTTPS test, and a TCP test of other ports. Then, you can set up a composite health check that combines the results of these user-defined tests to represent the health of the forwarding host. The ProxySG reports the status of the (user-defined) composite health check as the forwarding host's health, instead of the default forwarding host health check.

All health check types are given standardized names, based on the name of the target. For example:

- Forwarding hosts and groups have a prefix of **fwd**
- DNS servers have a prefix of **dns**
- SOCKS gateways and gateway groups have a prefix of **socks**
- Authentication realms have a prefix of **auth**
- External services have prefixes of **icap**, **ws**, and **drtr**
- User-defined or composite health checks have a prefix of **user**

## Section B: About Blue Coat Health Check Components

***Health Check Tests***

Based on the health check type, the ProxySG periodically tests the health status, and thus the availability of the host. You can configure the time interval between tests. If the health check test is successful, the appliance considers the host available.

The health check tests are described in the table below.

Table 14–1 Health Check Tests

Health Check Test	Description	Used With Health Check Type
Response Times	The minimum, maximum, and average response times are tracked, with their values being cleared whenever the health check changes state.	All
ICMP Test (Layer 3)	<p>The basic connection between the ProxySG and the origin server is confirmed. The server must recognize ICMP echoing, and any intervening networking equipment must support ICMP. The ProxySG appliance sends a ping (three ICMP echo requests) to the host.</p> <p>ICMP tests do not support policy for SOCKS gateways or forwarding.</p>	Forwarding hosts, SOCKS gateways, or user-defined hosts
TCP Socket Connection Test (Layer 4)	<p>A TCP test establishes that a TCP layer connection can be established to a port on the host. Then the connection is dropped.</p> <p>TCP tests for a SOCKS gateway do not support policy for SOCKS gateways or forwarding.</p> <p>TCP tests for a forwarding host or a user-defined health check support SOCKS gateways policy but not forwarding policy.</p>	Forwarding hosts, SOCKS gateways, or user-defined hosts
SSL Test	<p>A connection is made to a target and the full SSL handshake is conducted. Then, much like the TCP test, the connection is dropped.</p> <p>For a forwarding host, a terminating HTTPS port must be defined or the test fails.</p> <p>SSL tests for a forwarding host or a user-defined health check support SOCKS gateways policy. The SSL tests do not support forwarding policy.</p> <p>An SSL test executes the SSL layer in policy and obeys any settings that apply to server-side certificates, overriding any settings obtained from a forwarding host.</p>	Forwarding hosts or user-defined hosts

## Section B: About Blue Coat Health Check Components

Table 14–1 Health Check Tests (Continued)

Health Check Test	Description	Used With Health Check Type
HTTP/HTTPS Tests for Servers and Proxies	<p>HTTP/HTTPS tests execute differently depending on whether the upstream target is a server or a proxy. For a forwarding host, the server or a proxy is defined as part of the forwarding host configuration. For a user-defined health check, the target is always assumed to be a server.</p> <p>For a server:</p> <ul style="list-style-type: none"> <li>The HTTP test sends an HTTP GET request containing only the URL path to an HTTP port.</li> <li>The HTTPS test sends an HTTPS GET request containing only the URL path over an SSL connection to a terminating HTTPS port.</li> </ul> <p>If an appropriate port is not available on the target, the test fails.</p> <p>For a proxy:</p> <ul style="list-style-type: none"> <li>The HTTP test sends an HTTP GET request containing the full URL to an HTTP port.</li> <li>Since a server is required to terminate HTTPS, the HTTPS test sends an HTTP CONNECT request to the HTTP port.</li> </ul> <p>If an appropriate HTTP port is not available on the proxy, either test fails.</p> <p>An HTTP/HTTPS test requires a full URL for configuration.</p> <p>The HTTP/HTTPS tests for a forwarding host support SOCKS gateway policy but not forwarding policy.</p> <p>The HTTP/HTTPS tests for a user-defined health check support SOCKS gateway and forwarding policy.</p> <p>An HTTPS test executes the SSL layer in policy and obeys any settings that apply to server-side certificates, overriding any settings obtained from a forwarding host.</p>	Forwarding hosts or user-defined hosts.
HTTP/HTTPS Authentication	For HTTP/HTTPS tests, you can test authentication using a configured username and password. The passwords are stored securely in the registry.	Forwarding hosts or user-defined hosts.

## Section B: About Blue Coat Health Check Components

Table 14–1 Health Check Tests (Continued)

Health Check Test	Description	Used With Health Check Type
HTTP/HTTPS Allowed Responses	For an HTTP or HTTPS test, this is the set of HTTP response codes that indicate success. The default is to accept only a 200 response as successful. You can specify the sets of response codes to be considered successful.	Forwarding hosts or user-defined hosts.
External Services Tests	The tests for external services are specialized tests devised for each particular kind of external service. The health check system conducts external service tests by sending requests to the external services system, which reports back a health check result.	ICAP, Websense off-box, DRTR service.
Group	<p>Individual tests that are combined for any of the four different available groups (forwarding, SOCKS gateways, ICAP services, and Websense off-box). If any of the members is healthy, then the group as a whole is considered healthy.</p> <p>Note: Blue Coat supports a composite test, used only with composite (user-defined) health checks, that is similar to a group test except that, by default, all members must be healthy for the result to be healthy.</p> <p>These settings are configurable.</p> <p>By default, group health tests are used for two purposes:</p> <ul style="list-style-type: none"> <li>• Monitoring and notification</li> <li>• Policy</li> </ul>	Forwarding groups, SOCKS gateways groups, and ICAP and Websense off-box external service groups.
DNS Server	The DNS server maps the hostname, default is www.bluecoat.com, to an IP address. The health check is successful if the hostname can be resolved to an IP address by the DNS server.	DNS
Authentication	Authentication health checks assess the realm's health using data maintained by the realm during active use. Authentication health checks do not probe the authentication server with an authentication request.	Authentication

### See Also:

- ❑ "To edit forwarding and SOCKS gateways health checks:" on page 367
- ❑ "To edit forwarding or SOCKS gateway group health checks:" on page 369
- ❑ "To edit a DNS server health check:" on page 373

## Section B: About Blue Coat Health Check Components

- "To edit an authentication health check:" on page 377
- "To edit virus scanning and content filtering tests:" on page 380
- "To edit Websense off-box or ICAP group tests:" on page 383
- "To create a user-defined host health check:" on page 388
- "To create a user-defined composite health check:" on page 392

## Section C: Configuring Global Defaults

### Section C: Configuring Global Defaults

In general, all health checks are initially configured to use global defaults.

---

**Note:** The DRTR service is initially configured to override two of the default settings. The healthy interval is set to 10800 seconds (3 hours), and a failure trigger is set to 1.

---

### About Health Check Defaults

You can change the defaults on most health checks. These defaults override global defaults, which are set from the **Configuration > Health Checks > General > Default Settings** tab.

You can edit health check intervals, severity, thresholds, and notifications for automatically generated health checks in two ways:

- Setting the global defaults. These settings affect all health checks, unless overridden by explicit settings.
- Setting explicit values on each health check.

The default health check values are:

- Ten seconds for healthy and sick *intervals* (an interval is the period between the completion of one health check and the start of the next health check).
- One for healthy and sick *thresholds*. A healthy threshold is the number of successful health checks before an entry is considered healthy; a sick threshold is the number of unsuccessful health checks before an entry is considered sick.
- Warning for the *severity* notification, which governs the effect that a health check has on the overall health status of the ProxySG.
- Disabled for logging health check status using e-mails, event logs, or SNMP traps.

To configure the settings, continue with "["Changing Health Check Default Settings"](#) on page 357. To configure notifications, continue with "["Configuring Health Check Notifications"](#) on page 361.

### *Enabling and Disabling Health Checks*

You can enable or disable health checks and configure them to report as healthy or unhealthy during the time they are disabled.

Setting a health check as disabled but reporting healthy allows the ProxySG to use the device or service without performing health checks on it. If, for example, you have configured a forwarding host on the ProxySG, a health check for the forwarding host is automatically created. If you then configure the health check as disabled reporting healthy, the ProxySG considers the forwarding host as healthy without performing periodic health checks on it.

## Section C: Configuring Global Defaults

If the case of a group health check that is disabled but reporting healthy, all members of the group are treated as healthy regardless of the status of the members' individual health checks.

---

**Note:** Individual health checks for members of a group remain active; they can be used apart from the group.

---

Setting a health check as disabled but reporting sick is useful to remove an upstream device for servicing, testing, or replacement. This setting takes the device offline after it completes processing pre-existing traffic. Then the device can be safely disconnected from the network without altering any other configuration.

You cannot enable or disable all health checks at once.

### *Related CLI Syntax to Enable and to Disable a Health Check*

```
#(config health-check) enable alias_name
```

Enables the health check.

```
#(config health-check) disable { healthy alias_name | sick alias_name }
```

Disables the specified health check and sets it to report healthy or unhealthy.

## Notifications and SNMP Traps

If you configure notifications, the ProxySG sends all or any of e-mail, SNMP, and event log notifications when a change of health check state occurs. By default, all notifications are disabled.

On the ProxySG you can:

- Globally change notifications for all health checks
- Explicitly change notifications for specific health checks
- Enable notifications of transitions to healthy
- Enable notifications of transitions to unhealthy

A transition to healthy occurs as soon as the target is sufficiently healthy to be sent a request, even though the target might not be completely healthy. For example, if you have multiple IP addresses resolved and only one (or a few) is responsive, the group is classified as healthy and the health status might be **Ok with errors** or **Ok for some IP's**. For some health check groups, like forwarding hosts, you can configure a minimum number of members that must be healthy for the group to be healthy.

In the event log, status changes can be logged as either informational or severe logs. In addition to the overall health of the device, you can enable notifications for each resolved IP address of a target device (if applicable).

An SNMP trap can also be used for notification of health check state changes. It is part of the Blue Coat Management Information Base (MIB) as *blueCoatMgmt 7.2.1*. For information on configuring SNMP, see *Volume 9: Managing the Blue Coat ProxySG Appliance*.

## Section C: Configuring Global Defaults

### Guidelines for Setting the Severity of a Health Check

Severity indicates how a failed health check affects the overall health of the device. The **severity** option links **Health Checks** and **Health Monitoring**. The health monitor displays the overall health of the device after considering the health check status in conjunction with other health monitoring metrics. For information on the health monitoring metrics, see *Volume 9: Managing the Blue Coat ProxySG Appliance*.

---

**Note:** Severity of a health check is pertinent only when a health check fails.

---

The ProxySG allows you to configure the severity option to Critical, Warning and No effect. Set the severity of a health check to:

- Critical: If the success of a health check is crucial to the health of the device. If the health check then reports unhealthy, the overall health status becomes **Critical**.
- Warning: If a failed health check implies an emerging issue and the administrator must be alerted when the health check state transitions from healthy to unhealthy. Consequently, when the health check reports unhealthy, the overall health status transitions to **Warning**.
- No effect: If the success of a health check bears no impact on the health of the device. Should the health check transition to unhealthy, the overall health status of the device retains its current status and does not change.

For example, if the severity on an external service health check for **Websense—ws.ws\_1**, is set to severity level **Critical** and the health check fails, the overall health status of the device will transition to **Health: Critical**.

To change notifications, continue with "[Configuring Health Check Notifications](#)" on page 361.

## Changing Health Check Default Settings

You can modify the default settings for all health checks on the **Configuration > Health Checks > General > Default Settings** tab or you can override the default settings for a health check on the **Configuration > Health Checks > General > Health Checks** tab, selecting the health check, and clicking **Edit**. Explicit health settings override the global defaults.

To change the global default settings:

1. Select **Configuration > Health Checks > General > Default Settings**.

## Section C: Configuring Global Defaults

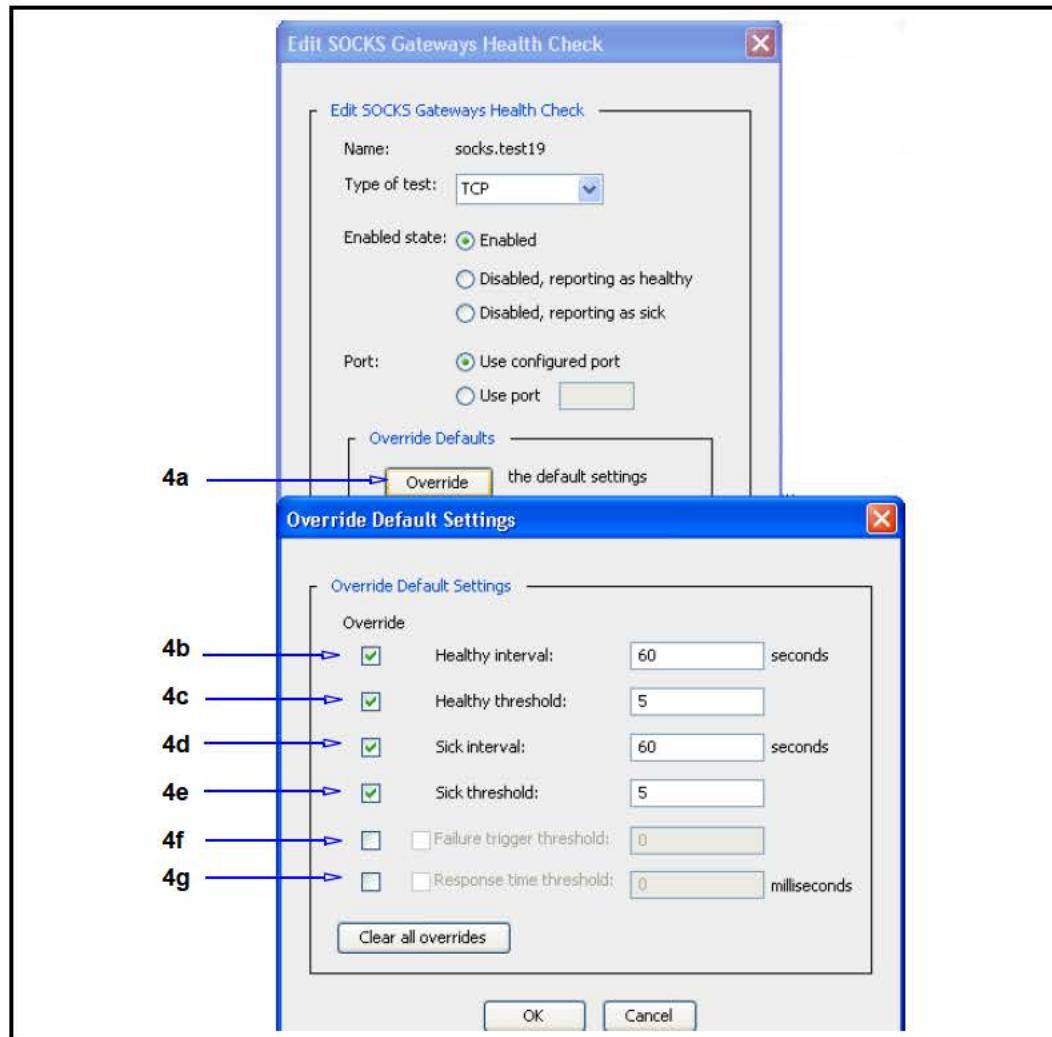
Default Settings	
Healthy interval:	<input type="text" value="10"/> seconds
Healthy threshold:	<input type="text" value="1"/>
Sick interval:	<input type="text" value="10"/> seconds
Sick threshold:	<input type="text" value="1"/>
<input type="checkbox"/> Failure trigger threshold:	<input type="text" value="0"/>
<input type="checkbox"/> Response time threshold:	<input type="text" value="0"/> milliseconds

2. Change the settings as appropriate:
  - a. Specify the healthy interval, in seconds, between health checks. The default is **10**. The healthy interval can be between 1 second and 31536000 seconds (about one year).
  - b. Specify the healthy threshold for the number of successful health checks before an entry is considered healthy. Valid values can be between 1 and 65535. The default is **1**.
  - c. Specify the sick interval, in seconds, between health checks to the server that has been determined to be unhealthy or out of service. The default is **10**. The sick interval can be between 1 second and 31536000 seconds (about 1 year).
  - d. Specify the sick threshold, or the number of failed health checks before an entry is considered unhealthy. Valid values can be between 1 and 65535. The default is **1**.
  - e. Specify the failure threshold for the number of failed connections to the server before a health check is triggered. Valid values can be between 1 and 2147483647. It is disabled by default.  
The failures are reported back to the health check as a result of either a connection failure or a response error. The number of these external failures is cleared every time a health check is completed. If the number of failures listed meets or exceeds the threshold and the health check is idle and not actually executing, then the health of the device or service is immediately checked.
  - f. Specify the maximum response time threshold, in milliseconds. The threshold time can be between 1 and 65535.
3. Click **Apply**.

**To override default settings for a targeted health check:**

1. Select **Configuration > Health Checks > General > Health Checks**.
2. Select the test you want to modify.
3. Click **Edit**. The example below uses a SOCKS gateway.

## Section C: Configuring Global Defaults



4. To substitute special values for this test:
  - a. Click **Override the default settings**. The Override Default Settings dialog displays. Configure the override options. You can cancel your choices by clicking **Clear all overrides**.
  - b. Specify the healthy interval, in seconds, between health checks to the server. The default is **10**. The healthy interval is between 1 second and 31536000 seconds (about one year).
  - c. Specify the healthy threshold for the number of successful health checks before an entry is considered healthy. Valid values are 1-65535. The default is **1**.
  - d. Specify the sick interval, in seconds, between health checks to the server that has been determined to be unhealthy or out of service. The default is **10**. The sick interval is between 1 second and 31536000 seconds (about 1 year).
  - e. Specify the sick threshold, or the number of failed health checks before

## Section C: Configuring Global Defaults

an entry is considered unhealthy. Valid values are 1-65535. The default is **1**.

- f. Specify the failure trigger for the number of failed connections to the server before a health check is triggered. Valid values are between 1 and 2147483647.

The failures are reported back to the health check as a result of either a connection failure or a response error. The number of these external failures is cleared every time a health check is completed. If the number of failures listed meets or exceeds the threshold, and the health check is idle and not actually executing, then the health of the device or service is immediately checked.

- g. Specify the maximum response time threshold, in milliseconds. The threshold time can be between 1 and 65535.
- h. Click **OK** to close the dialog.

5. Click **Apply**.

### *Related CLI Syntax to Modify Default Settings Globally*

```
#(config health-check) default failure-trigger {none | count}
```

Configures defaults for the failure-trigger options.

```
#(config health-check) default interval {healthy seconds| sick seconds}
```

Configures defaults for interval options.

```
#(config health-check) default threshold {healthy count | response-time milliseconds | sick count}
```

Configures defaults for threshold options.

### *Related CLI Syntax to Modify Default Settings for a Targeted Health Check*

```
#(config health-check) edit alias_name
```

Allows you to configure options for the specified health check.

```
#(config health-check alias_name) clear-statistics
```

Clears statistics for this health check.

```
#(config health-check alias_name) failure-trigger {default | none | count}
```

Configures options for the failure-trigger.

```
#(config health-check alias_name) interval {healthy {default | seconds} | sick {default | seconds}}
```

Configures intervals before the health check is re-run. The intervals can be different for health checks that are reporting healthy and health checks that are reporting sick.

```
#(config health-check alias_name) perform-health-check
```

Starts the health check immediately and reports the result.

### Section C: Configuring Global Defaults

```
#(config health-check alias_name) threshold {healthy {default | count} | response-time {default | none | milliseconds} | sick {default | count}}
```

Sets the level when health checks will report healthy or sick.

```
#(config health-check alias_name) use-defaults
```

Resets the defaults of the health check to use the global defaults instead of any explicitly set values.

```
#(config health-check alias_name) exit
```

Exits the health check editing mode.

## Configuring Health Check Notifications

The ProxySG allows you to configure notifications that alert you to changes in health status and to emerging issues. By default, notifications for health check events and status are disabled.

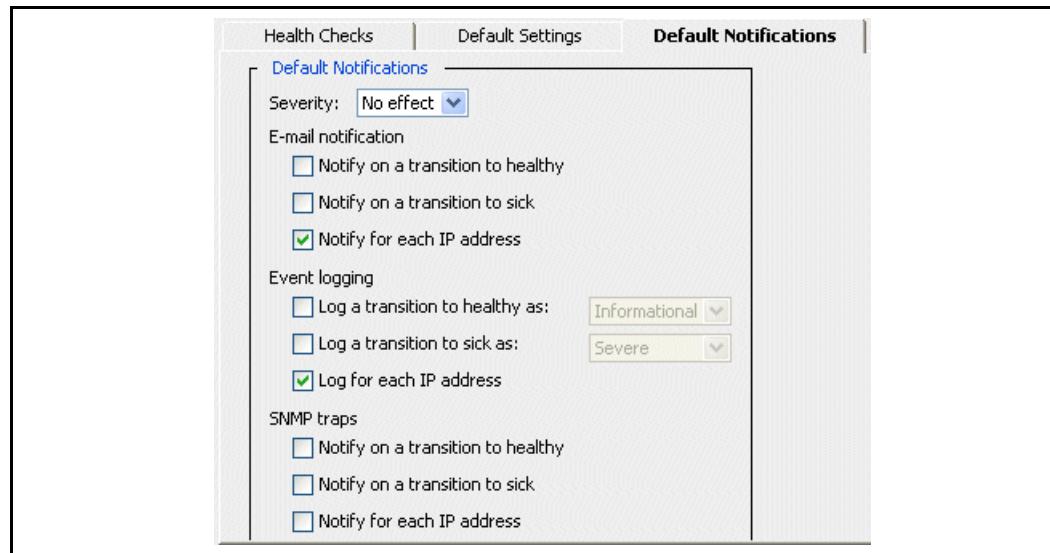
You can set up health check notifications:

- Globally on the **Configuration > Health Checks > General > Default Notifications** tab
- Explicitly, for a health check, on the **Configuration > Health Checks > General > Health Checks** tab, selecting the health check, and clicking **Edit**.  
Explicit health settings override the global defaults.

### To configure health check notifications globally:

1. Select **Configuration > Health Checks > General > Default Notifications**.
2. Select the **Severity** level for the health check.
  - Critical: If the health check fails, the device is in critical condition
  - Warning: If the health check fails, the device needs to be monitored and the health check status displays as Warning. This is the default setting.
  - No effect: The health check has no impact on the overall health of the device.

## Section C: Configuring Global Defaults

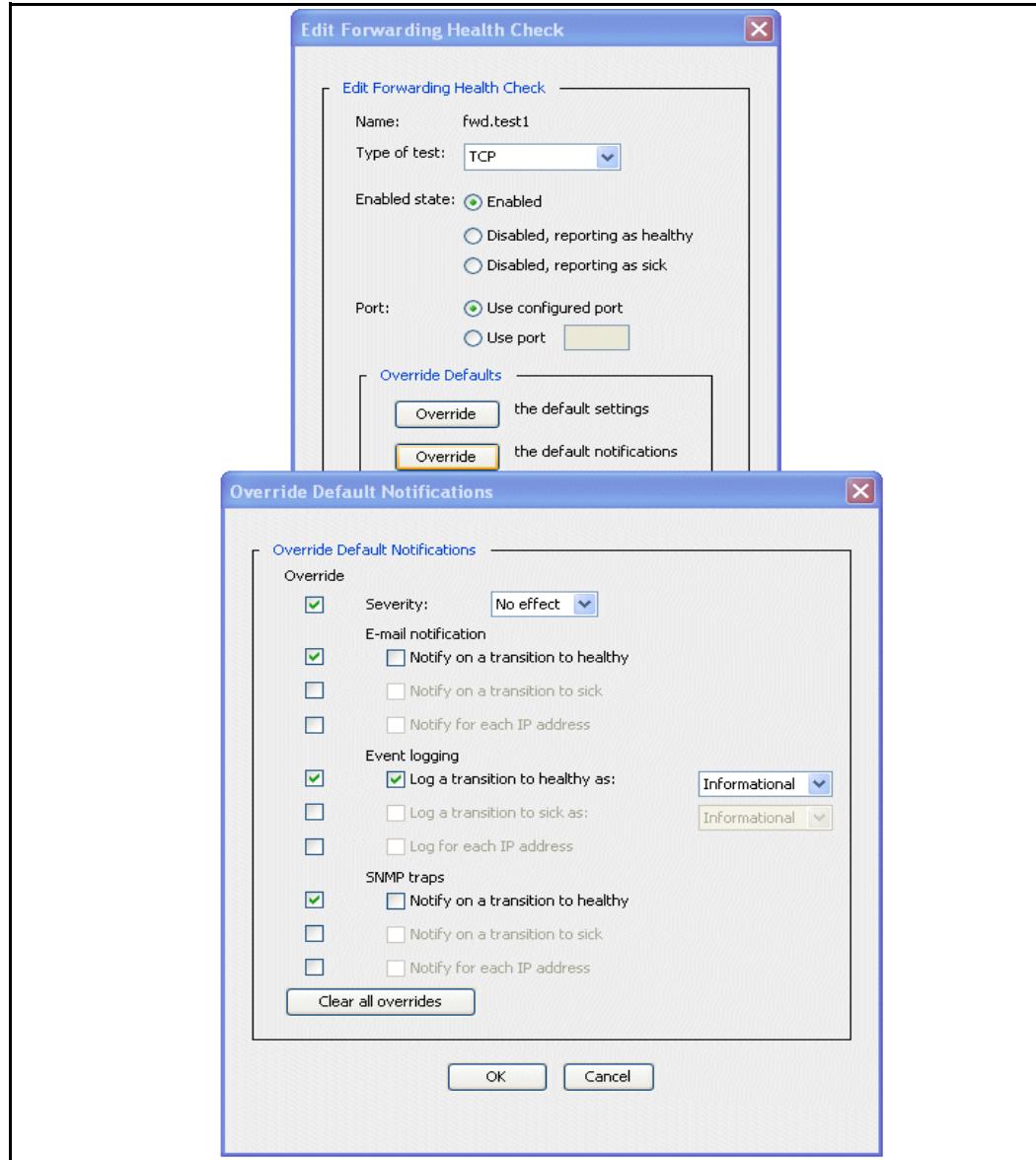


3. Select the options to enable notifications:
  - a. **E-mail notification:** Select the appropriate check boxes to enable the e-mail notifications you require. Recipients are specified in **Maintenance > Event Logging > Mail**.
  - b. **Event logging:** Select the appropriate options to enable the event logging you require. Messages can be logged as either informational or severe.
  - c. **SNMP traps:** Select the situations for which you require SNMP traps to be sent.
4. Click **Apply**.

**To override the default notifications for a targeted health check:**

1. Select **Configuration > Health Checks > General > Health Checks**.
2. Select the test you want to modify.
3. Click **Edit**. The Edit dialog displays. The example below uses a forwarding host.
4. To change default notifications for this test, click **Override the default notifications**. By default, notifications are not sent for any health checks.

## Section C: Configuring Global Defaults



5. Select the options to override. You can cancel your choices by clicking **Clear all overrides**.
  - a. **Severity:** Select the severity option as required.
    - Critical: If the health check fails, the device is in critical condition
    - Warning: If the health check fails, the device needs to be monitored and the health check status displays as Warning. This is the default setting.

## Section C: Configuring Global Defaults

- No effect: The health check has no impact on the overall health of the device.
  - b. **Override E-mail notification:** Select the appropriate check boxes to enable the e-mail notifications you require. Specify recipients in **Maintenance > Event Logging > Mail**.
  - c. **Event logging:** Select the appropriate check boxes to enable the event logging you need. Messages can be logged as either informational or severe.
  - d. **SNMP traps:** Select the situations in which you want SNMP traps to be sent.
  - e. Click **OK** to close the override dialog
  - f. Click **OK** to close the edit dialog.
6. Click **Apply**.

### *Related CLI Syntax to Modify Default Notifications Globally*

```
#(config health-check) default e-mail {healthy {enable | disable} |
report-all-ips {enable|disable} | sick {enable|disable}}
```

Configures defaults for e-mail notifications.

```
#(config health-check) default event-log {healthy {enable |
information |severe} | report-all-ips {enable | disable} | sick
{disable |information |severe}}
```

Configures defaults for event-log notifications. An informational or a severe event-log message is logged depending on the setting chosen.

```
#(config health-check) default snmp {healthy {enable | disable} |
report-all-ips {enable | disable} | sick {enable | disable}}
```

Configures defaults for snmp notifications.

```
#(config health-check) default severity {critical|no-effect|warning}
```

Configures default severity for all health checks.

### *Related CLI Syntax to Modify Default Notifications for a Targeted Health Check*

```
#(config health-check) edit alias_name
```

Allows you to configure options for the specified health check.

```
#(config health-check alias_name) severity {critical|no-effect|default |
warning}
```

Configures default severity for the health check.

```
#(config health-check alias_name) e-mail {healthy {enable | disable |
default} | report-all-ips {enable | disable | default} | sick {enable |
disable | default}}
```

Configures e-mail notifications for the health check.

### Section C: Configuring Global Defaults

```
#(config health-check alias_name) event-log {healthy {disable|information| severe}| report-all-ips {enable | disable} | sick {disable| information|severe}}}
```

Configures event-log notifications for the health check. An informational or a severe event-log message is logged depending on the setting chosen.

```
#(config health-check alias_name) snmp {healthy {enable | disable} | report-all-ips {enable|disable} | sick {enable|disable}}}
```

Configures snmp notifications for the health check

```
#(config health-check alias_name) use-defaults
```

Resets the defaults of the health check to use the global defaults instead of any explicitly set values.

## Section D: Forwarding Host and SOCKS Gateways Health Checks

### Section D: Forwarding Host and SOCKS Gateways Health Checks

Before you can edit forwarding or SOCKS gateways health check types, you must configure forwarding hosts or SOCKS gateways. For information about configuring forwarding, see [Chapter 8: "Configuring the Upstream Network Environment" on page 131](#); for information about configuring SOCKS gateways, see [Chapter 13: "SOCKS Gateway Configuration" on page 327](#).

This section discusses managing the automatically generated forwarding host and SOCKS gateway health checks.

## Forwarding Hosts and SOCKS Gateways Configurations

The forwarding host health check configuration defines whether the target being tested is a server or a proxy, which ports are available, and provides the setting for the server certificate verification.

The SOCKS gateways health check configuration defines the SOCKS port, the version (4 or 5), and possibly a username and password.

### *Forwarding Hosts Health Checks*

The default for a newly created forwarding host is a TCP health check using the first port defined in the forwarding host's port array (typically the HTTP port). You can change the port setting. The TCP test can support SOCKS gateway policy. The URL uses the forwarding host hostname, such as:

```
tcp://gateway_name:port/
```

### *SOCKS Gateways Health Checks*

The default for a newly created SOCKS gateway is a TCP health check using the SOCKS port in the SOCKS gateways configuration.

### *Forwarding and SOCKS Gateways Groups Health Checks*

Specific tests are not done for groups. Health check test results are determined from examining and combining the health of the group members.

---

**Note:** You can create groups in the **Configuration > Forwarding > Forwarding Hosts** tab or **Configuration > Forwarding > SOCKS Gateways** tab.

---

By default, if any of the members of the group are healthy, then the group is considered healthy. You can specify the number of group members that must be healthy for the group to be considered healthy.

### *Editing Forwarding and SOCKS Gateways Health Checks*

You can edit, but not delete, the forwarding and SOCKS gateway tests and groups. The settings you can change are:

- Enable or disable the health check

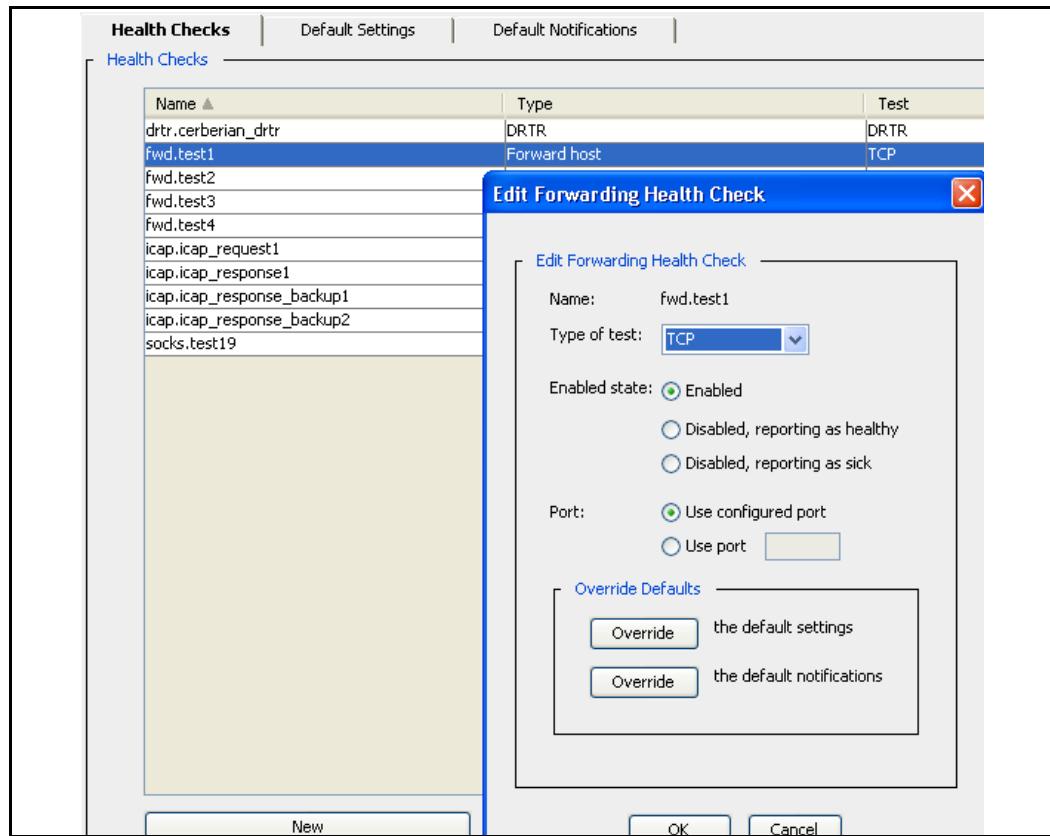
#### Section D: Forwarding Host and SOCKS Gateways Health Checks

- Override default notifications
- Select the type of test
- Specify settings for the selected test
- Override default settings
- Select the minimum number of healthy members for a group to report healthy

**To edit forwarding and SOCKS gateways health checks:**

1. Select **Configuration > Health Checks > General > Health Checks**.
2. Select the forwarding host test or SOCKS gateways test to modify.
3. Click **Edit**.

## Section D: Forwarding Host and SOCKS Gateways Health Checks



4. Make the necessary changes:
  - a. Select the **Type of Test** from the drop-down list.
  - b. Select the **Enabled state** radio button as required.
  - c. Select the port setting you require. If you select **Use Port**, enter the new port number.
  - d. To change the default settings for this test, click **Override the default settings**. Select the options to override. Cancel your choices by clicking **Clear all overrides**. For detailed information about configuring healthy and sick intervals and thresholds, see "[Changing Health Check Default Settings](#)" on page 357. Click **OK** to close the dialog.
  - e. To change default notifications, click **Override the default notifications**. By default, no notifications are sent for any health checks. Select the options to override. You can cancel your choices by clicking **Clear all overrides**. For detailed information about configuring notifications, see "[Configuring Health Check Notifications](#)" on page 361. Click **OK** to close the dialog.
  - f. Click **OK** to close the edit dialog.
5. Click **Apply**.

## Section D: Forwarding Host and SOCKS Gateways Health Checks

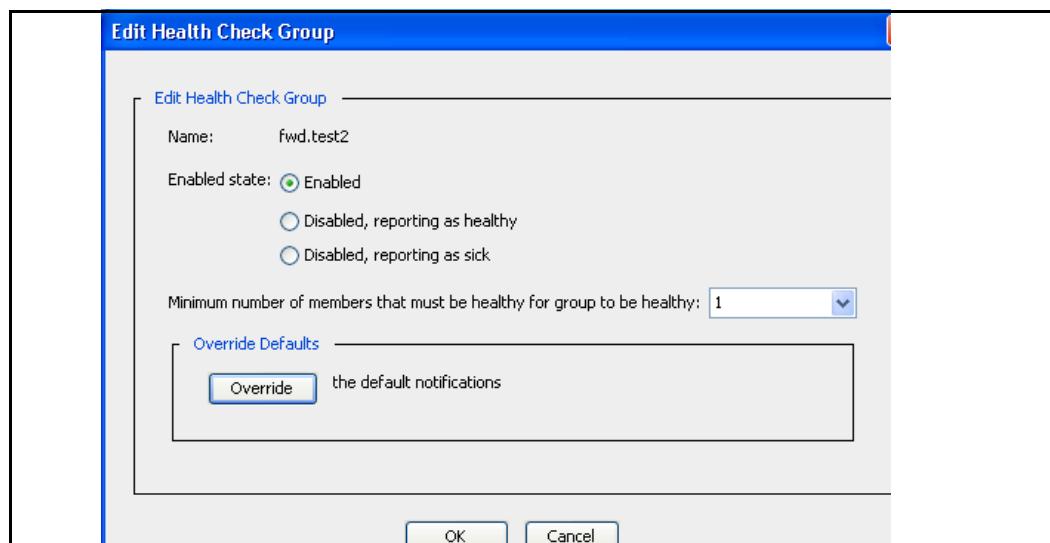
**To edit forwarding or SOCKS gateway group health checks:**


---

**Note:** The only way to add or delete group members to the automatically generated health check tests is to add and remove members from the actual forwarding or SOCKS gateway group. The automatically generated health check is then updated.

---

1. Select **Configuration > Health Checks > General > Health Checks**.
2. Select the forwarding or SOCKS gateways group health check you need to modify.
3. Click **Edit**.



4. Make the necessary changes:
  - a. Select the **Enabled state** radio button as required.
  - b. Select the **Minimum number of users that must be healthy for group to be healthy** from the drop-down list.
  - c. To create notification settings, click **Override the default notifications**. Select the options. Cancel your choices by clicking **Clear all overrides**. For detailed information about configuring notifications, see "[Configuring Health Check Notifications](#)" on page 361.
  - d. Click **OK** to close the override dialog.
  - e. Click **OK** to close the health check group.
5. Click **Apply**.

**Related CLI Syntax to Edit Forwarding Groups and SOCKS Groups Health Checks**

The examples below use the forwarding group, `fwd.group_name`.

```
#(config health-check) edit fwd.group_name
```

## Section D: Forwarding Host and SOCKS Gateways Health Checks

Allows you to configure options for the health check you specified.

```
#(config health-check fwd.group_name) combine {all healthy | any-  
healthy | some-healthy}
```

Combines the results when a group test is healthy.

```
#(config health-check fwd.group_name) e-mail {healthy {default |  
enable | disable} | report-all-ips {default | enable | disable} | sick  
{default | enable | disable}}
```

Sends e-mail notification when the health check reports healthy or sick, whether or not those reports are for all IP addresses.

```
#(config health-check fwd.group_name) event-log {healthy {default |  
disable | information | severe} | report-all-ips {default | enable |  
disable} | sick {default | disable | information | severe}}
```

Logs an event when the health check reports healthy or sick, whether or not those reports are for all IP addresses. An informational or a severe event-log message is logged depending on the setting chosen.

```
#(config health-check fwd.group_name) exit
```

Exits the health check editing mode.

```
#(config health-check fwd.group_name) perform-health-check
```

Starts the health check immediately and reports the result.

```
#(config health-check fwd.group_name) severity {critical|no-effect  
|default |warning}
```

Configures default severity for the health check.

```
#(config health-check fwd.group_name) snmp {healthy {default | enable  
| disable} | report-all-ips {default | enable | disable} | sick {default  
| enable | disable}}
```

Sends a trap when the health check reports healthy, whenever an IP address health check reports healthy, or when a health check reports sick.

```
#(config health-check fwd.group_name) use-defaults
```

Resets the defaults of the health check to use the global defaults instead of any explicitly set values.

```
#(config health-check fwd.group_name) view {configuration |  
statistics}
```

Views the health check's configuration or statistics.

### *Related CLI Syntax to Edit Forwarding Hosts and SOCKS Gateway Health Checks*

The examples below use the forwarding host, `fwd.host_name`.

```
#{config health-check}edit fwd.host_name
```

Allows you to configure options for the health check you specified.

## Section D: Forwarding Host and SOCKS Gateways Health Checks

```
#(config health-check fwd.host_name) authentication {basic | disable |
encrypted-password encrypted-password| password password| username
username}
```

Allows you to specify a username and password for the health-check target, if it uses basic authentication.(Used with HTTP or HTTPS health checks.)

```
#(config health-check fwd.host_name) clear-statistics
```

Clears statistics for this health check.

```
#(config health-check fwd.host_name) e-mail {healthy {default | enable
| disable}| report-all-ips {default | enable | disable}| sick {default
| enable | disable}}
```

Sends e-mail notification when the health check reports healthy or sick, whether or not those reports are for all IP addresses.

```
#(config health-check fwd.host_name) event-log {healthy {default |
disable | information | severe}| report-all-ips {default | enable |
disable}| sick {default | disable | information | severe}}
```

Logs an event when the health check reports healthy or sick, whether or not those reports are for all IP addresses. An informational or a severe event-log message is logged depending on the setting chosen.

```
#(config health-check fwd.host_name) exit
```

Exits the health check editing mode.

```
#(config health-check fwd.host_name) failure-trigger {default | none |
count}
```

Configures options for the failure-trigger.

```
#(config health-check fwd.host_name) interval {healthy {default |
seconds}| sick {default | seconds}}
```

Configures intervals before the health check is re-run. The intervals can be different for health checks that are reporting healthy and health checks that are reporting sick.

```
#(config health-check fwd.host_name) perform-health-check
```

Starts the health check immediately and reports the result.

```
#(config health-check fwd.host_name) proxy-authentication {basic |
disable | encrypted-password encrypted-password | password password |
username username}
```

Allows you to specify a username and password for the intermediate proxy. (Used with HTTP or HTTPS health checks, when intermediate proxies are between you and the target.)

```
#(config health-check fwd.host_name) response-code {add codes | remove
codes}
```

Manages a list of codes that are considered valid and result in health-check successes. You can add or remove codes, separated by semi-colons. If a success code is received by the health check, the health check considers the HTTP/ HTTPS test to be successful.

(Used with HTTP or HTTPS health checks.)

## Section D: Forwarding Host and SOCKS Gateways Health Checks

```
#(config health-check fwd.host_name) severity {critical |no-effect  
|default |warning}
```

Configures default severity for the health check.

```
#(config health-check fwd.host_name) snmp {healthy {default | enable |  
disable} | report-all-ips {default | enable |disable} | sick {default |  
enable |disable}}
```

Sends a trap when the health check reports healthy, whenever an IP address health check reports healthy, or when a health check reports sick.

```
#(config health-check fwd.host_name) threshold {healthy {default |  
count} | response-time {default | none | milliseconds} | sick {default  
| count}}
```

Sets the level when the health check will report healthy or sick.

```
#(config health-check fwd.host_name) type {http URL | https URL | icmp  
hostname | ssl hostname [port] | tcp hostname [port]}
```

Sets the number of consecutive healthy or sick test results before the health check actually reports as healthy or sick.

```
#(config health-check fwd.host_name) use-defaults
```

Resets the defaults of the health check to use the global defaults instead of any explicitly set values.

```
#(config health-check fwd.host_name) view {configuration | events  
| statistics}
```

Displays the health check's configuration, recent event-log messages or statistics.

## Section E: DNS Server Health Checks

### Section E: DNS Server Health Checks

A DNS server health check is automatically generated for each DNS server configured on the ProxySG and is deleted when the DNS server is removed. For information on configuring DNS servers, refer to *Volume 1: Getting Started*.

The ProxySG uses DNS server health checks to verify the responsiveness of the DNS server. The health check status is recorded as:

- Healthy, when the ProxySG successfully establishes a connection with the DNS server and is able to resolve the configured hostname.
- Unhealthy, either if the ProxySG is unable to establish a connection with the DNS server, or if the ProxySG is unable to resolve the configured hostname. The status reports **Check failed** or **DNS failed**.

When a DNS server is unhealthy, the ProxySG avoids contacting that server and directs requests to other DNS servers configured in the group, as applicable.

The DNS health check attempts to look up a configurable hostname. The default hostname depends on the DNS configuration:

- For a server in the primary or alternate DNS group, the default is `www.bluecoat.com`.
- For a server in a custom DNS group, the default is the longest domain name listed in the group.

You can also override these defaults and specify a health check hostname for each DNS server.

#### See Also

DNS (Volume 1, Chapter 8)

### *Editing DNS Server Health Checks*

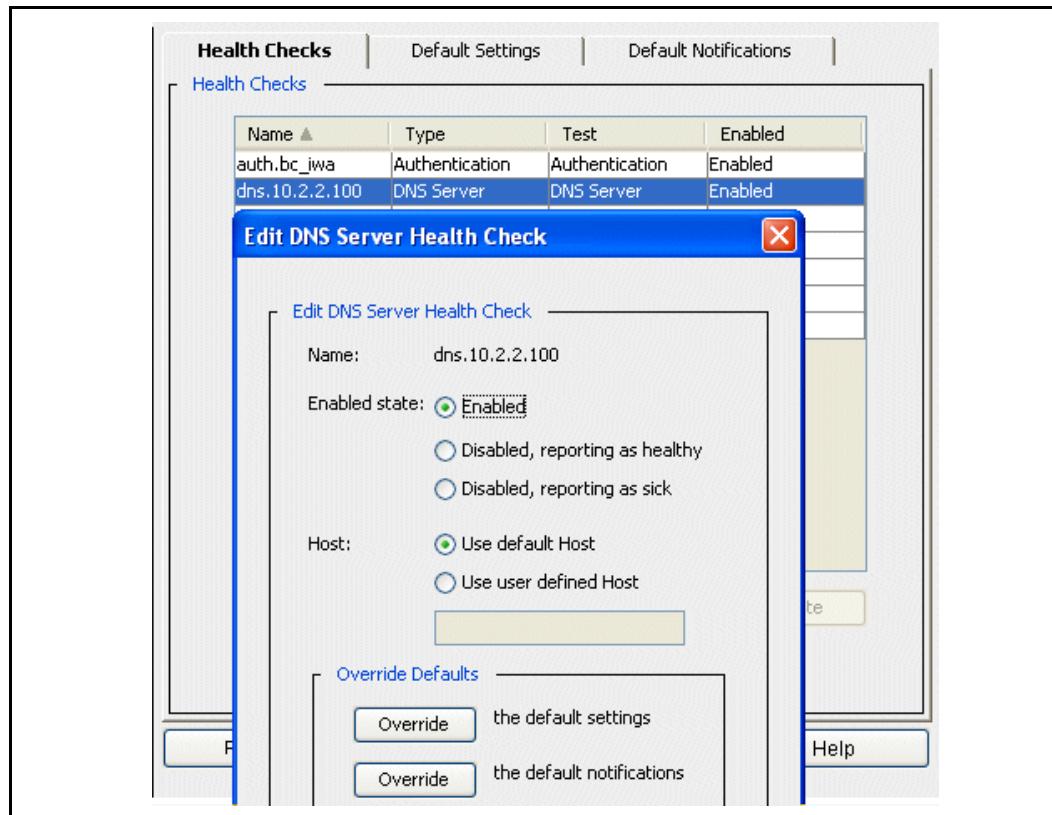
On the ProxySG, you can edit the following settings for a DNS server health check:

- Enable or disable the health check
- Specify a hostname
- Override default settings — change healthy and sick intervals, and thresholds
- Override default notifications — change the severity and notification options for alerts

#### To edit a DNS server health check:

1. Select **Configuration > Health Checks > General > Health Checks**.
2. Select the DNS health check to modify.
3. Click **Edit**. The Edit DNS server dialog displays.

## Section E: DNS Server Health Checks



4. Configure the DNS server health check options:

- Select the **Enabled state** option, as required.
  - Enabled** allows the ProxySG to query the DNS server and to report changes in the health state.
  - Disabled, reporting as healthy** disables the health check and reports the service as healthy.
  - Disabled, reporting as sick** disables the health check and reports the service as unhealthy.
- Select the **Host** option, as required.
  - Use default host** uses the default hostname.

## Section E: DNS Server Health Checks

- **Use user defined host** allows you to configure a custom hostname for this health check. Enter the hostname in the box provided.

Proceed to Step e if you do not want to override defaults.

- c. To change default settings, click **Override the default settings**. Select the options to override. Cancel your choices by clicking **Clear all overrides**. For detailed information about configuring healthy and sick intervals and thresholds, see "[Changing Health Check Default Settings](#)" on page 357. Click **OK** to close the dialog.
  - d. To change the default notifications, click **Override the default notifications**. Select the options. Cancel your choices by clicking **Clear all overrides**. For detailed information about configuring notifications, see "[Configuring Health Check Notifications](#)" on page 361.
  - e. Click **OK** to close the override dialog.
5. Click **OK** to close the edit dialog.
6. Click **Apply**.

### *Related CLI Syntax to Edit DNS Server Health Checks*

```
#(config health-check) edit dns.test_name
```

Allows you to configure options for the health check you specified.

```
#(config health-check dns.test_name) clear-statistics
```

Clears statistics for this health check.

```
#(config health-check dns.test_name) e-mail {healthy {default | enable | disable} | report-all-ips {default | enable | disable} | sick {default | enable | disable}}
```

Sends e-mail notification when the health check reports healthy or sick, whether or not those reports are for all IP addresses.

```
#(config health-check dns.test_name) event-log {healthy {default | enable | disable | information | severe} | report-all-ips {default | enable | disable} | sick {default | enable | information | severe}}
```

Logs an event when the health check reports healthy or sick, whether or not those reports are for all IP addresses. An informational or a severe event-log message is logged depending on the setting chosen.

```
#(config health-check dns.test_name) exit
```

Exits the health check editing mode.

```
#(config health-check dns.test_name) failure-trigger {default | none | count}
```

Configures options for the failure-trigger.

```
#(config health-check dns.test_name) interval {healthy {default | seconds} | sick {default | seconds}}
```

## Section E: DNS Server Health Checks

Configures intervals before the health check is re-run. The intervals can be different for health checks that are reporting healthy and health checks that are reporting sick.

```
#(config health-check dns.test_name) hostname {default|hostname }
```

Sets the hostname for the DNS Server health check to the default hostname or to a user-defined hostname.

```
#(config health-check dns.test_name) perform-health-check
```

Starts the health check immediately and reports the result.

```
#(config health-check dns.test_name) severity {critical|no-effect  
|default |warning}
```

Configures default severity for the health check.

```
#(config health-check dns.test_name) snmp {healthy {default | enable |  
disable} | report-all-ips {default | enable | disable} | sick {default |  
enable | disable}}
```

Sends a trap when the health check reports healthy, whenever an IP address health check reports healthy, or when a health check reports sick.

```
(config health-check dns.test_name) threshold {healthy {default |  
count} | response-time {default | none | milliseconds} | sick {default  
| count}}
```

Sets the level when health checks will report healthy or sick.

```
#(config health-check dns.test_name) use-defaults
```

Resets the defaults of the health check to use the global defaults instead of any explicitly set values.

```
#(config health-check dns.test_name) view {configuration | events  
| statistics}
```

Displays the health check's configuration, recent event-log messages or statistics.

## Section F: Authentication Health Checks

This section includes information on authentication server health checks. For information on authentication realms, refer to *Volume 4: Securing the Blue Coat ProxySG Appliance*.

An authentication health check is automatically generated for each external authentication realm that is configured on the ProxySG. Authentication health checks assess the realm's health based on data gathered during the most recent authentication attempt. The response time recorded for this health check represents the average response time between two consecutive health checks.

Unlike most health checks, authentication health checks do not probe the target realm with an authentication request. Therefore, the health check will report healthy until the ProxySG records a failed authentication attempt.

The health states for authentication health checks can be:

- Ok**, when the ProxySG records successful authentication attempts.
- Check failed**, when the device records an unsuccessful authentication attempt.
- Functioning on alternate server**, when a realm is operating on its alternate server.
- Functioning properly with errors**, when the health check records intermittent failures on a server.

On an authentication health check, you can edit the following settings:

- Enable or disable the health check
- Override default settings — change healthy and sick intervals, and thresholds
- Override default notifications — change the severity, and notification options for alerts

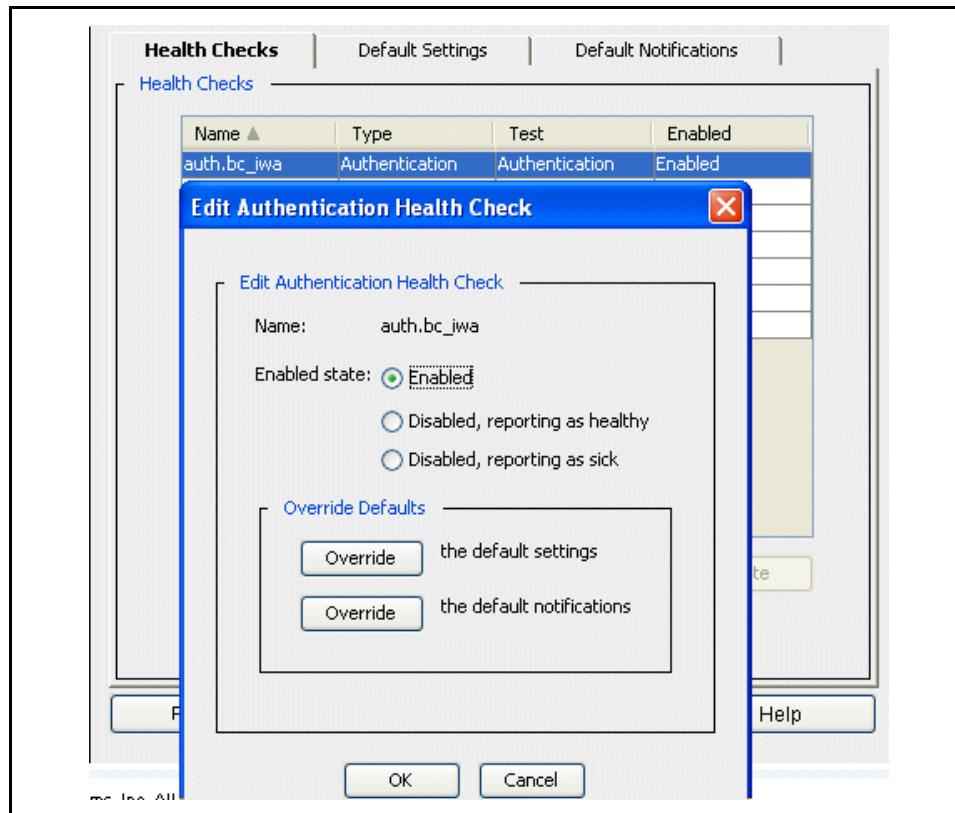
By default, the health check is enabled and the ProxySG tracks the response time for the most recent authentication attempts. The other options are — Disabled, reporting sick and Disabled, reporting healthy.

Use the Disabled, reporting sick option when an authentication server requires downtime for maintenance, or the server is taken off-line temporarily. And the Disabled, reporting healthy option is relevant when you elect to use an authentication server despite failures in authentication attempts.

### To edit an authentication health check:

1. Select **Configuration > Health Checks > General > Health Checks**.
2. Select the **auth.test\_name** health check to modify.
3. Click **Edit**. The Edit Authentication health check dialog displays

## Section F: Authentication Health Checks



4. Configure the authentication health check options:
  - a. Select the **Enabled state** radio button as required.
  - b. To change the default settings, click **Override the default settings**. Select the options to override. Cancel your choices by clicking **Clear all overrides**. For detailed information about configuring healthy and sick intervals and thresholds, see "[Changing Health Check Default Settings](#)" on page 357. Click **OK** to close the dialog.
  - c. To change the default notifications, click **Override the default notifications**. Select the options. Cancel your choices by clicking **Clear all overrides**. For detailed information about configuring notifications, see "[Configuring Health Check Notifications](#)" on page 361. Click **OK** to close the dialog.
  - d. Click **OK** to close edit dialog.
5. Click **Apply**.

### *Related CLI Syntax to Edit Authentication Health Checks*

```
#(config health-check) edit auth.test_name
```

Allows you to configure options for the health check you specified.

```
#(config health-check auth.test_name) clear-statistics
```

Clears statistics for this health check.

---

```
#(config health-check auth.test_name) e-mail {healthy {default |
enable | disable} | report-all-ips {default | enable | disable} | sick
{default | enable | disable}}
```

Sends e-mail notification when the health check reports healthy or sick, whether or not those reports are for all IP addresses.

```
#(config health-check auth.test_name) event-log {healthy {default |
disable | information | severe} | report-all-ips {default | enable |
disable} | sick {default | disable | information | severe}}
```

Logs an event when the health check reports healthy or sick, whether or not those reports are for all IP addresses. An informational or a severe event-log message is logged depending on the setting chosen.

```
#(config health-check auth.test_name) exit
```

Exits the health check editing mode.

```
#(config health-check auth.test_name) failure-trigger {default | none
| count}
```

Configures options for the failure-trigger.

```
#(config health-check auth.test_name) interval {healthy {default |
seconds} | sick {default | seconds}}
```

Configures intervals before the health check is re-run. The intervals can be different for health checks that are reporting healthy and health checks that are reporting sick.

```
#(config health-check auth.test_name) perform-health-check
```

Starts the health check immediately and reports the result.

```
#(config health-check auth.test_name) severity {critical|no-effect
|default |warning}
```

Configures default severity for the health check.

```
#(config health-check auth.test_name) snmp {healthy {default | enable |
disable} | report-all-ips {default | enable | disable} | sick {default |
enable | disable}}
```

Sends a trap when the health check reports healthy, whenever an IP address health check reports healthy, or when a health check reports sick.

```
#(config health-check auth.host_name) threshold {healthy {default |
count} | response-time {default | none | milliseconds} | sick {default |
count}}
```

Sets the level when health checks will report healthy or sick.

```
#(config health-check auth.test_name) use-defaults
```

Resets the defaults of the health check to use the global defaults instead of any explicitly set values.

```
#(config health-check auth.test_name) view {configuration | events
| statistics}
```

Displays the health check's configuration, recent event-log messages or statistics.

## Section G: Virus Scanning and Content Filtering Health Checks

The virus scanning and content filtering services include ICAP services, Websense off-box services, and the DRTR service. While these external service health checks are created and deleted automatically, the service itself must be created before health checks can be used. For more information about creating ICAP and Websense off-box services, refer to *Volume 7: Managing Content*. The DRTR service health check is automatically created if you use Blue Coat Web Filter (BCWF) and the rating service is enabled.

The health check system conducts external service tests by sending requests to the external services system, which reports back a health check result. The tests for each of the external services is specialized and is devised specifically for each service.

---

**Note:** The names of the ICAP and Websense off-box services and service groups can be a maximum of 64 characters long, a change from previous releases, which allowed names to be a maximum of 127 characters. If a previously existing name exceeds 64 characters, the service or service group continues to function normally but no corresponding health check type is created.

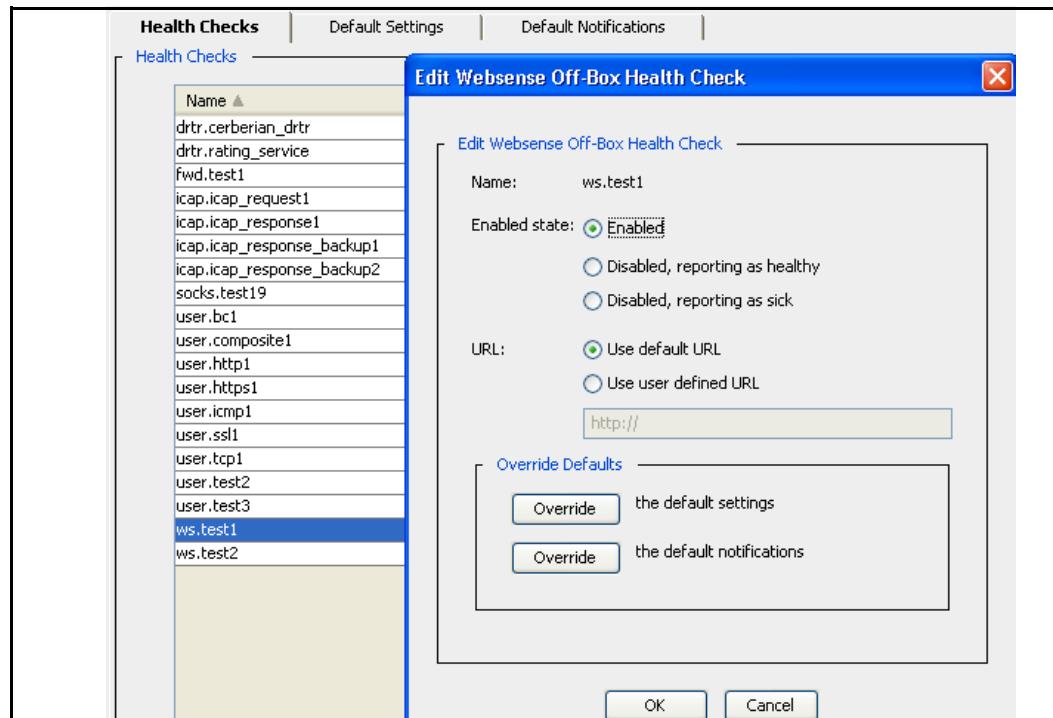
---

The settings you can change on ICAP, Websense off-box, and DRTR service health checks are:

- Enable or disable the health check
- Override default settings
- Override default notifications

**To edit virus scanning and content filtering tests:**

1. Select **Configuration > Health Checks > General > Health Checks**.
2. Select the external service to modify. External services have prefix names of **drtr**, **icap**, and **ws**.
3. Click **Edit**.



4. Make the necessary changes:
  - a. Select the **Enabled state** radio button as required.
  - b. (Websense only): If you do not want to use the default URL, select the **Use user defined URL** option and enter the test URL to use.
  - c. To change default settings, click **Override the default settings**.
    - Select the check boxes to override. Cancel your choices by clicking **Clear all overrides**. For detailed information about configuring healthy and sick intervals and thresholds, see "["Changing Health Check Default Settings"](#) on page 357.

---

**Note:** DRTR health check has default settings that differ from the defaults for other external services: 10800 seconds (3 hours) for the interval, and 1 for the failure trigger.

---

- Click **OK**.
  - d. To change default notifications, click **Override the default notifications**. By default, no notifications are sent for any health checks. Select the options. Cancel your choices by clicking **Clear all overrides**. For detailed information about configuring notifications, see "["Configuring Health Check Notifications"](#) on page 361.
  - e. Click **OK** to close the override dialog.
  - f. Click **OK** to close the edit dialog.
5. Click **Apply**.

## Section G: Virus Scanning and Content Filtering Health Checks

### *Related CLI Syntax to Modify ICAP Service and Content Filtering Health Checks*

The examples below use Blue Coat's Content Filter — DRTR\_

```
#(config health-check) edit drtr.test_name
```

Allows you to configure options for the health check you specified.

```
#(config health-check drtr.test_name) clear-statistics
```

Clears statistics for this health check.

```
#(config health-check drtr.test_name) e-mail {healthy {default | enable | disable} | report-all-ips {default | enable | disable} | sick {default | enable | disable}}
```

Sends e-mail notification when the health check reports healthy or sick, whether or not those reports are for all IP addresses.

```
#(config health-check drtr.test_name) event-log {healthy {default | enable | disable | information | severe} | report-all-ips {default | enable | disable} | sick {default | enable | disable | information | severe}}
```

Logs an event when the health check reports healthy or sick, whether or not those reports are for all IP addresses. An informational or a severe event-log message is logged depending on the setting chosen.

```
#(config health-check drtr.test_name) exit
```

Exits the health check editing mode.

```
#(config health-check drtr.test_name) failure-trigger {default | none | count}
```

Configures options for the failure-trigger.

```
#(config health-check drtr.test_name) interval {healthy {default | seconds} | sick {default | seconds}}
```

Configures intervals before the health check is re-run. The intervals can be different for health checks that are reporting healthy and health checks that are reporting sick.

```
#(config health-check drtr.test_name) perform-health-check
```

Starts the health check immediately and reports the result.

```
#(config health-check drtr.test_name) severity {critical | no-effect | default | warning}
```

Configures default severity for the health check.

```
#(config health-check drtr.test_name) snmp {healthy {default | enable | disable} | report-all-ips {default | enable | disable} | sick {default | enable | disable}}
```

Sends a trap when the health check reports healthy, whenever an IP address health check reports healthy, or when a health check reports sick.

```
#(config health-check drtr.test_name) threshold {healthy {default | count} | response-time {default | none | milliseconds} | sick {default | count}}
```

---

Sets the level when the health check will report healthy or sick.

```
#(config health-check ws.test_name) test-url {default |url}
```

(Used only with the WebSense health checks) Sets the test URL to default.

```
#(config health-check drtr.test_name) use-defaults
```

Resets the defaults of the health check to use the global defaults instead of any explicitly set values.

```
#(config health-check drtr.test_name) view {configuration |events  
|statistics}
```

Displays the health check's configuration, recent event-log messages or statistics.

**To edit Websense off-box or ICAP group tests:**

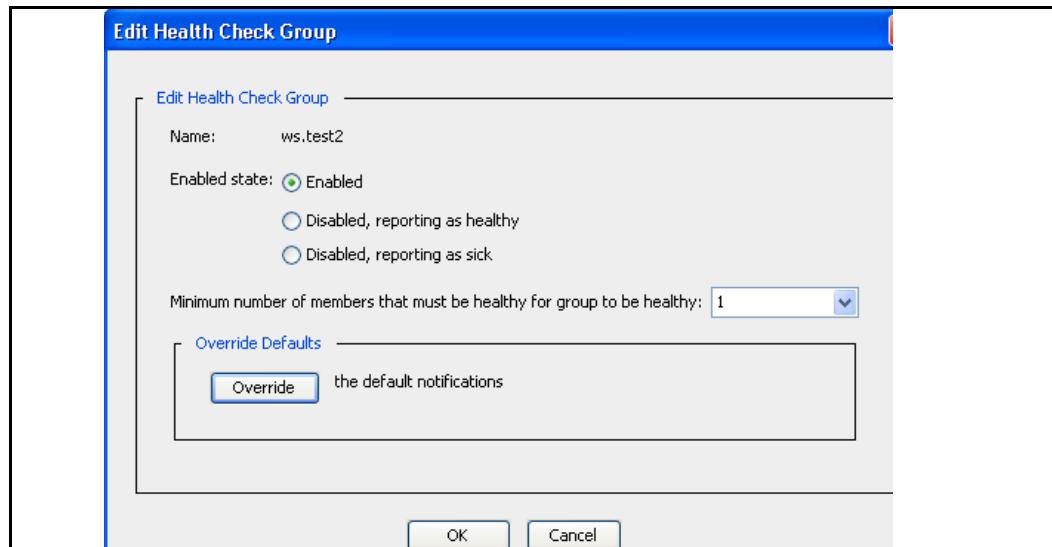
---

**Note:** The only way to add or delete group members to the automatically generated health check tests is to add and remove members from the ICAP or Websense off-box services. The automatically generated health check type is then updated.

---

1. Select **Configuration > Health Checks > General > Health Checks**.
2. Select the external service group health check to modify. Groups are identified in the **Type** column.
3. Click **Edit**.

## Section G: Virus Scanning and Content Filtering Health Checks



4. Make the necessary changes:
  - a. Enable or disable the **Enabled state** radio button as required.
  - b. Select the **Minimum number of members that must be healthy for group to be healthy** from the drop-down list. The default is set to one.
  - c. To create notification settings, click **Override the default notifications**. Select the options. Cancel your choices by clicking **Clear all overrides**. For detailed information about configuring notifications, see "[Configuring Health Check Notifications](#)" on page 361.
  - d. Click **OK** to close the override dialog.
  - e. Click **OK** to close the edit dialog.
5. Click **Apply**.

### *Related CLI Syntax to Modify ICAP and Websense Group Tests*

The examples below use Websense.

```
#(config health-check) edit ws.group_name
```

Allows you to configure options for the health check you specified.

```
#(config health-check ws.group_name) combine {all healthy | any-healthy | some-healthy}
```

Combines the results when a group test is healthy.

```
#(config health-check ws.group_name) e-mail {healthy {default | enable | disable} | report-all-ips {default | enable | disable} | sick {default | enable | disable}}
```

Sends e-mail notification when the health check reports healthy or sick, whether or not those reports are for all IP addresses.

```
#(config health-check ws.group_name) event-log {healthy {default | disable | information | severe} | report-all-ips {default | enable | disable} | sick {default | disable | information | severe}}
```

---

Logs an event when the health check reports healthy or sick, whether or not those reports are for all IP addresses. An informational or a severe event-log message is logged depending on the setting chosen.

```
#(config health-check ws.group_name) exit
```

Exits the health check editing mode.

```
#(config health-check ws.group_name) perform-health-check
```

Starts the health check immediately and reports the result.

```
#(config health-check ws.group_name) snmp {healthy {default | enable | disable} | report-all-ips {default | enable | disable} | sick {default | enable | disable}}
```

Sends a trap when the health check reports healthy, whenever an IP address health check reports healthy, or when a health check reports sick.

```
#(config health-check ws.group_name) use-defaults
```

Resets the defaults of the health check to use the global defaults instead of any explicitly set values.

```
#(config health-check ws.group_name) view {configuration | events | statistics}
```

Displays the health check's configuration, recent event-log messages or statistics.

## Section H: Managing User-Defined Health Checks

### Section H: Managing User-Defined Health Checks

You can manually create and manage ICMP, TCP, HTTP, HTTPS, or SSL health check tests for any upstream TCP/IP device. You can use these user-defined health check types to send notifications of health check state changes.

Under most circumstances, you do not need to create user-defined health checks because the automatically generated health checks meet most needs. However, to check for things that Blue Coat does not test for automatically — for example, the health of the Internet or of the router, you might create user-defined health checks.

If, for example, you want to control Web traffic based on the apparent health of the Internet, you can create a user-defined health check to target known Internet sites. As long as a certain number of the sites are healthy, you can consider the Internet as healthy.

Further, you can use policy to configure forwarding rules on the ProxySG. Subsequently, if the user-defined health check determining internet accessibility transitions to unhealthy, all requests directed to the ProxySG will be forwarded to the alternate ProxySG until the primary ProxySG transitions to healthy again.

---

**Note:** Frequent testing of specific Internet sites can result in that Internet site objecting to the number of hits.

---

Blue Coat supports two types of user-defined health checks:

- Host: This health check type is for any upstream TCP/IP device. For more information, continue with the next section.
- Composite: This health check type combines the results of other existing health checks. It can include other composite health checks, health checks for user defined hosts, and any automatically generated health checks. For more information, continue with "[About User-Defined Composite Health Checks](#)" on page 387.

For information about configuring parameter and notification settings for automatically generated health check types, see [Section C: "Configuring Global Defaults"](#) on page 355.

### About User-Defined Host Health Checks

You can create, configure, and delete user-defined host health checks. These health checks support everything an automatically generated health check contains, including background DNS resolution monitoring and support for multiple addresses.

User-defined health checks can include:

- ICMP: The basic connection between the ProxySG and the origin server is confirmed. The server must recognize ICMP echoing, and any intervening networking equipment must support ICMP.

- 
- TCP: Establishes that a TCP layer connection can be made to a port on the host. Then the connection is dropped.
  - SSL: A connection is made to a target and the full SSL handshake is confirmed. Then the connection is dropped.
  - HTTP/HTTPS: An HTTP or HTTPS test is defined by the URL supplied. The port used for this test is as specified in that URL. If no port is explicitly specified in the URL, the port defaults to the standard Internet value of 80 or 443.

When configuring user-defined host health check types, keep the following in mind:

- User-defined host health checks are created and deleted manually.
- All individual user-defined tests consider the target to be a server.
- To conduct proxy HTTP/HTTPS tests, a proxy must be defined as a forwarding host, set up between the originating device and the target, and forwarding policy must cause the test to be directed through the proxy.
- For an ICMP test, a hostname is specified in the health check configuration.
- The TCP and SSL tests support SOCKS gateway policy, based on a URL of `tcp://hostname:port/` and `ssl://hostname:port/`, respectively, using a hostname and port supplied in health check configuration.
- An HTTP/HTTPS test requires a full URL. The port used for this test is as specified in that URL. If no port is explicitly specified in the URL, the port defaults to the standard value for these protocols of 80 or 443. The server being tested is assumed to support whatever port is indicated.

Forwarding and SOCKS gateway policy is applied based on the URL. The HTTPS or SSL tests use all the server certificate settings in the SSL layer in policy. For a forwarding host, all the sever certificate settings in the SSL layer also apply, and if present, override the forwarding host configuration setting.

---

**Note:** None of the above tests apply to user-defined composite health checks, which only consist of a set of members and a setting to combine the results.

---

## About User-Defined Composite Health Checks

You can create a composite health check to combine the results of multiple health checks. A composite health check can contain any number of individual health checks. Further, forwarding host and SOCKS gateway health checks can be configured to use the result of a composite health check.

By default, to report healthy, all members of a composite health check must be healthy. However, you can configure the number of members that must be healthy for the composite result to report healthy.

Composite health checks with no members always appear unhealthy.

## Section H: Managing User-Defined Health Checks

---

**Note:** Automatically generated group tests and user-defined composite tests are not the same.

Group tests are automatically generated; they cannot be deleted. Some editing is permitted, but you cannot add or remove members of the group through the health checks module. You must modify the forwarding or SOCKS gateways groups to update the automatically generated group tests.

For a group test, the default is for the group to be healthy if any member is healthy. For a composite test, the default is for the group to be healthy if all members are healthy. (The default is configurable.)

---

## Creating User-Defined Host and Composite Health Checks

You can create user-defined host and composite health checks for arbitrary targets.

---

**Note:** You cannot create user-defined health checks for external service tests, such as authentication servers, ICAP, Websense off-box, and the DRTR service.

---

The following procedure explains how to create a user-defined host health check. To create a user-defined composite health check, continue with "[To create a user-defined composite health check:](#)" on page 392.

**To create a user-defined host health check:**

1. Select **Configuration > Health Checks > General > Health Checks**.
2. Click **New**.

User Defined Host Health Check

User Defined Host Health Check

Name:

Type of test:

Enabled state:  Enabled  
 Disabled, reporting as healthy  
 Disabled, reporting as sick

URL:

**Authentication**

Enable basic authentication  
Username:  Set Password

**Proxy Authentication**

Enable basic proxy authentication  
Username:  Set Password

**Allowed Response Codes**

Allowed Response Codes:

**Override Defaults**

the default settings  
 the default notifications

3. Select the type of test to configure from the **Type of test** drop-down list. To configure a composite test, see "[To create a user-defined composite health check:](#)" on page 392.

The options you can select vary with the type of health check. The example above uses the HTTP/HTTPS options. Options for other tests are explained in this procedure, as well.

- a. Enter a name for the health check.
- b. Select the **Enabled state** option, as required.
- c. If you are configuring an SSL or TCP health check, enter the port to use.
- d. If you are configuring an ICMP, SSL, or TCP health check, enter the hostname of the health check's target.
- e. For HTTP/HTTPS only:
  - Enter the URL address of the target.

## Section H: Managing User-Defined Health Checks

- To use Basic user authentication, select the check box and enter the username and password of the target.
- To use Basic proxy authentication because intermediate proxies might be between you and the target, select the check box and enter the username and password of the target.
- To manage a list of HTTP/HTTPS response codes that are considered successes, enter the list in the **Allowed Response Code** field, separated by semi-colons. If one of them is received by the health check then the health check considers the HTTP(S) test to have been successful.

---

**Note:** The 200 response code is added by default. The list must always have at least one member.

---

- f. To change the default settings for this test, click **Override the default settings**. Select the override options. Cancel your choices by clicking **Clear all overrides**. For detailed information about configuring healthy and sick intervals and thresholds, see "["Changing Health Check Default Settings"](#) on page 357. Click **OK**.
- g. To change the default notifications for this test, click **Override the default notifications**. By default, no notifications are sent for any health checks. Select the override options. You can cancel your choices by clicking **Clear all overrides**. For detailed information about configuring notifications, see "["Configuring Health Check Notifications"](#) on page 361 Click **OK**.
- h. Click **OK** to close the dialog.

4. Click **Apply**.

### Related CLI Syntax to Create and Modify User-Defined Host Health Checks

```
#(config health-check) create {composite alias_name | http alias_name url | https alias_name url | icmp alias_name hostname| ssl alias_name hostname [port]| tcp alias_name hostname [port]}
```

Creates a user-defined health check of the type specified.

```
#(config health-check) edit health_check_name
```

Allows you to configure options for the health check you specified.

```
#(config health-check user.health_check_name) authentication {basic | disable | encrypted-password encrypted-password| password password| username username}
```

Allows you to specify a username and password for the health-check target, if its allows basic authentication.(Used with HTTP or HTTPS health checks.)

```
#(config health-check user.health_check_name) clear-statistics
```

Clears statistics for this health check.

```
#(config health-check user.health_check_name) e-mail {healthy {default  
| enable | disable}| report-all-ips {default | enable | disable}| sick  
{default | enable | disable}}
```

Sends e-mail notification when the health check reports healthy or sick, whether or not those reports are for all IP addresses.

```
#(config health-check user.health_check_name) event-log {healthy  
{default | disable | information | severe}| report-all-ips {default |  
enable | disable}| sick {default | disable | information | severe}}
```

Logs an event when the health check reports healthy or sick, whether or not those reports are for all IP addresses. An informational or a severe event-log message is logged depending on the setting chosen.

```
#(config health-check user.health_check_name) exit
```

Exits the health check editing mode.

```
#(config health-check user.health_check_name) failure-trigger {default  
| none | count}
```

Configures options for the failure-trigger.

```
#(config health-check user.health_check_name) interval {healthy  
{default | seconds}| sick {default | seconds}}
```

Configures intervals before the health check is re-run. The intervals can be different for health checks that are reporting healthy and health checks that are reporting sick.

```
#(config health-check user.health_check_name) perform-health-check
```

Starts the health check immediately and reports the result.

```
#(config health-check user.health_check_name) proxy-authentication  
{basic | disable | encrypted-password encrypted-password | password  
password | username username}
```

Allows you to specify a username and password for the intermediate proxy. (Used with HTTP or HTTPS health checks, when intermediate proxies are between you and the target.)

```
#(config health-check user.health_check_name) response-code {add codes  
| remove codes}
```

Manages a list of codes that are considered valid and result in health-check successes. You can add or remove codes, separated by semi-colons. If a success code is received by the health check, the health check considers the HTTP/ HTTPS test to be successful. (Used with HTTP or HTTPS health checks.)

```
#(config health-check user.health_check_name) severity {critical | no-  
effect | default | warning}
```

Configures default severity for the health check.

```
#(config health-check user.health_check_name) snmp {healthy {default |  
enable | disable}| report-all-ips {default | enable | disable}| sick  
{default | enable | disable}}
```

Sends a trap when the health check reports healthy, whenever an IP address health check reports healthy, or when a health check reports sick.

## Section H: Managing User-Defined Health Checks

```
#(config health-check user.health_check_name) threshold {healthy  
{default | count} | response-time {default | none | milliseconds} |  
sick {default | count}}}
```

Sets the threshold level when the health check will report healthy or sick.

```
#(config health-check user.health_check_name) type {http URL | https  
URL | icmp hostname | ssl hostname [port] | tcp hostname [port]}
```

Sets the number of consecutive healthy or sick test results before the health check actually reports as healthy or sick.

```
#(config health-check user.health_check_name) use-defaults
```

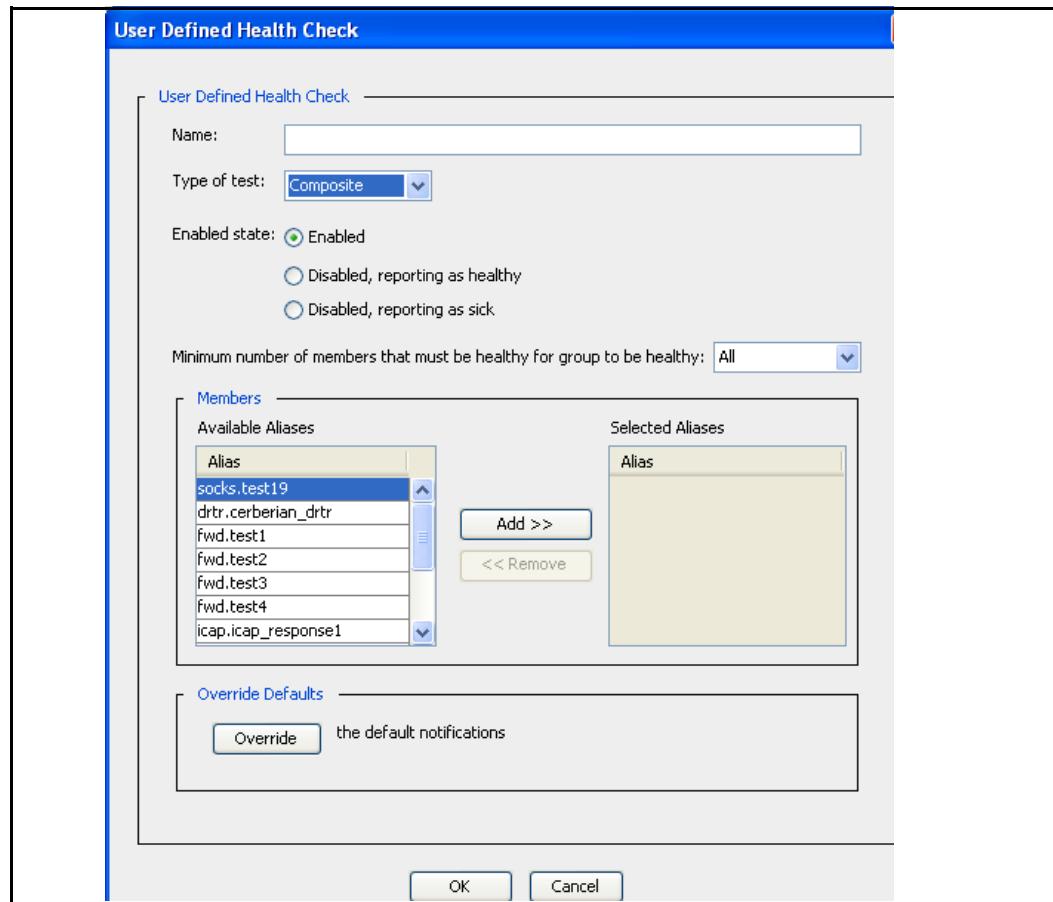
Resets the defaults of the health check to use the global defaults instead of any explicitly set values.

```
#(config health-check user.health_check_name) view {configuration |  
events | statistics}
```

Displays the health check's configuration, recent event-log messages or statistics.

### To create a user-defined composite health check:

1. Select **Configuration > Health Checks > General > Health Checks**.
2. Click **New**.



3. Make the necessary changes:
  - a. Select **Composite** from the **Type of Test** from the drop-down list.
  - b. Enable or disable the **Enabled state** option as required.
  - c. Select the **Minimum number of members that must be healthy for the group to be healthy** from the drop-down list. The default is **All**.
  - d. Add the health check members to the composite test from the **Available Aliases** list by selecting the health check to add and clicking **Add >>** to move the alias to the **Selected Aliases** list.
  - e. To change the default notifications for this test, click **Override the default notifications**. By default, no notifications are sent for any health checks. Select the override options. You can cancel your choices by clicking **Clear all overrides**. For detailed information about configuring notifications, see "[Configuring Health Check Notifications](#)" on page 361
  - f. Click **OK** to close the override dialog.
  - g. Click **OK** to close the edit dialog.
4. Click **Apply**.

## Section H: Managing User-Defined Health Checks

### *Related CLI Syntax to Create and Modify User-Defined Composite Health Checks*

```
#(config health-check) create {composite alias_name | http alias_name url | https alias_name url | icmp alias_name hostname| ssl alias_name hostname [port]| tcp alias_name hostname [port]}
```

Creates a user-defined health check of the type specified.

```
#(config health-check) edit composite_health_check
```

Edits the specified composite health check.

```
#(config health-check user.composite_health_check) add member_name
```

Adds the specified member to the composite health check group.

```
#(config health-check user.composite_health_check) combine {all-healthy | any-healthy | some-healthy}
```

Requires that all, some, or any members of the group report as healthy to have the composite health check report as healthy.

```
#(config health-check user.composite_health_check) e-mail {healthy {default |enable |disable}| report-all-ips {default |enable |disable}| sick {default |enable |disable}}
```

Sends e-mail notification when the health check reports healthy or sick, whether or not those reports are for all IP addresses.

```
#(config health-check user.composite_health_check) event-log {healthy {default | disable | information | severe}| report-all-ips {default | enable | disable}| sick {default | disable | information | severe}}
```

Logs an event when the health check reports healthy or sick, whether or not those reports are for all IP addresses. An informational or a severe event-log message is logged depending on the setting chosen.

```
#(config health-check user.composite_health_check) exit
```

Exits the composite health check editing submode.

```
#(config health-check user.composite_health_check) perform-health-check
```

Performs a health check on the members of the composite immediately and reports the result.

```
#(config health-check user.composite_health_check) remove member_name
```

Removes a member from the composite group.

```
#(config health-check user.composite_health_check) snmp {healthy {default |enable |disable}| report-all-ips {default |enable |disable}| sick {default |enable |disable}}
```

Sends a trap when the health check reports healthy or sick, whether or not those reports are for all IP addresses.

```
#(config health-check user.composite_health_check) severity {critical | default|no-effect|warning}
```

Sets the severity level of the health check, which determines how this health check affects the overall health of the device.

```
#(config health-check user.composite_health_check) use-defaults
```

Resets the defaults of the health check to use the global defaults instead of any explicitly set values.

```
#(config health-check user.composite_health_check) view {configuration | events | statistics}
```

Displays the composite health check's configuration, event log messages, or statistics.

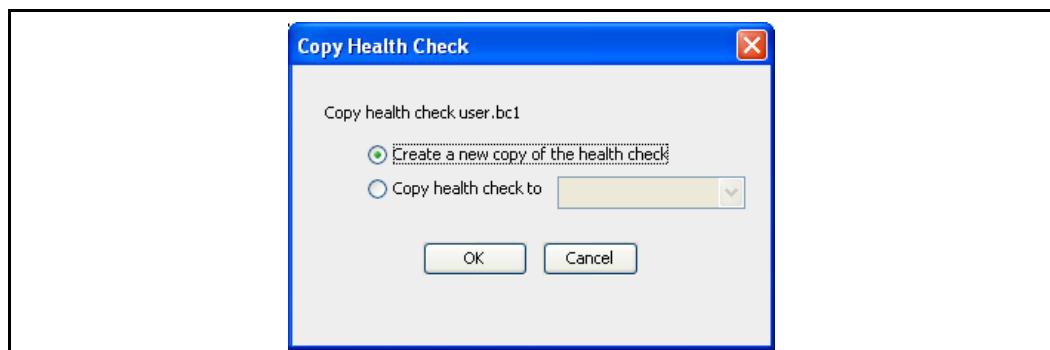
## Copying and Deleting User-Defined Health Checks

Only user-defined health checks can be copied and deleted. Automatically generated health checks cannot be copied or deleted.

- ❑ If the source health check is user-defined host or a composite and the target alias name does not exist:
  - A new health check of the same kind with that alias name is created
  - The new health check has identical configuration settings to the source health check.
- ❑ If the target alias does exist and the target is of the same kind (that is, both are user-defined hosts or both are composite), then the complete configuration is copied from the source to the target.
- ❑ If a health check is referenced either in policy or in another health check, it cannot be deleted.

### To copy or delete a user-defined host or composite health check:

1. Select **Configuration > Health Checks > General > Health Checks**.
2. Select the user-defined host or composite health check to copy or to delete.
3. Click **Copy** or **Delete**, as applicable.



If the target does not match the source type, the copy operation fails and you receive an error message.

### Related CLI Syntax to Copy and to Delete a User-Defined Health Check

```
#(config health-check) copy source-alias target-alias
```

## Section H: Managing User-Defined Health Checks

Copies settings from one health check to another, creating the target if necessary.

```
#(config health-check) delete alias_name
```

- Deletes the specified health check.

## Section I: Viewing Health Check Statistics

The ProxySG presents a comprehensive list of all the health checks configured on the appliance in the **Statistics > Health Checks** tab. You can view the details and events for each health check in this screen, to edit the health checks, go to the **Configuration > Health Checks > General** tab.

### To view health checks on the ProxySG:

Select **Statistics > Health Checks**. The list of configured health checks displays.

Name	State	Last check		Since last transition				
		When	Time (ms)	Duration	#Checks	Avg (ms)	Min (ms)	Max (ms)
auth.bc_iwa	OK on alt server	11:17:12	6	17.0 min	20	8	5	11
auth.blue_coat_ldap	Unknown	-	-	-	-	-	-	-
dns.10.2.2.100	OK with errors	11:17:01	4	23.7 hrs	5,537,695	5	3	40
dns.10.2.2.101	Check Failed	11:17:08	3	18.0 min	46	-	-	-
dns.172.16.90.110	OK	11:17:09	15	23.7 hrs	3,892,344,090	18	13	459
socks.gateway1	OK	11:16:49	12	3.7 hrs	2,837	65	18	1,614
dtr.rating_service	OK for some IPs	08:41:57	5,104	17.6 hrs	8,544	5,368	96	10,071
fwd.google	OK	11:17:00	28	20.2 hrs	10,790	47	28	3,072
fwd.my_ssh	OK	11:17:14	5	23.7 hrs	2,810	6	4	75
icap.inbound	OK	11:17:13	18	38.6 min	82	22	17	286
icap.outbound	OK	11:17:11	17	36.6 min	77	18	16	26
icap.test	Disabled: Healthy	1995-12-31	9,990	23.7 hrs	4,258	9,992	9,970	10,032
socks.personal	Disabled: Unhealthy	11:15:08	994	18.6 min	91	-	-	-
user.group	Check Failed	1995-12-31	346	23.7 hrs	10,872	-	-	-
user.public.dns.server	OK	11:17:15	21	23.7 hrs	3,330,935,572	53	15	1,194

### About Health Check Statistics

The **Statistics > Health Check** panel provides a snapshot of all the health checks configured on the device. By default, the screen is sorted by the name column. To change the sort order, click any column header to sort by that column.

The **Statistics > Health Check** screen displays the following information:

- **Current time:** Displays the current date and time.
- **Last Boot:** Displays the date and time when the device was last booted.
- **Since Boot:** Displays the time that the device has been functioning since the last boot.
- **Status:** Displays the summary of each health check configured on the ProxySG.
  - **Name:** The health check name. Example, auth.blue\_coat\_iwa
  - **State:** The health check state is represented by an icon and a status message. If the health check is disabled, it displays as:
    - Disabled: Healthy

## Section I: Viewing Health Check Statistics

- Disabled: Unhealthy

If the health check is enabled, the table below shows the messages displayed:

Table 14–2 Status messages for enabled health checks

Status Message	Icon	Description	Health State
<b>Unknown</b>		Health has not yet been tested successfully.	Healthy
<b>OK</b>		The target device or service is completely healthy.	Healthy
<b>OK with errors (multiple IP addresses)</b>		One or more IP addresses have errors but none are down.	Healthy
<b>OK for some IP addresses (multiple IP addresses)</b>		One or more IP addresses are down but not all.	Healthy
<b>OK on alt server</b>		The primary server has failed; the realm is functioning on the alternate server.	Healthy
<b>Functioning but going down (single IP address)</b>		Failures are occurring; but the IP address is still functioning.	Healthy
<b>Check failed</b>		Device or service cannot be used.	Unhealthy
<b>DNS failed</b>		The hostname cannot be resolved	Unhealthy

- **Last check:** Information on the last completed health check probe.
  - **When:** Time of the last check.
  - **Time:** Response time of the last check.
- **Since last transition:** Displays aggregate values since the last transition between healthy and unhealthy.
  - **Duration:** Length of time since the last transition.
  - **#Checks:** Number of health checks performed since the last transition.
  - **Avg:** The mean response time since the last transition. This statistic is not displayed for a health check reporting unhealthy.
  - **Min:** Minimum response time. This statistic is not displayed for a health check reporting unhealthy.
  - **Max:** Maximum response time. This statistic is not displayed for a health check reporting unhealthy.

- 
- Details:** This option is active only if a single row is selected. When you click **Details**, it displays a new HTML window that contains detailed statistics on the selected health check. For example, in a domain check, this display provides an itemized explanation about each IP address in a domain.
  - Events:** This button is active only when a single row is selected. When you click the button, it displays a new HTML window containing the filtered event log entries for the selected health check.

## Section I: Viewing Health Check Statistics

### Interpreting Health Check Statistics

The **Statistics > Health Check** tab in the Management Console provides a snapshot of all the health checks configured on the ProxySG. This screen allows you to glance at the health checks for routine maintenance, to diagnose potential problems, and to view health check failures.

The screenshot below shows the **Statistics > Health Check** panel along with an explanation of the display.

Name	State	Last check		Since last transition				
		When	Time (ms)	Duration	#Checks	Avg (ms)	Min (ms)	Max (ms)
auth.bc_iwa	OK on alt server	11:17:12	6	17.0 min	20	8	5	11
auth.blue_coat_ldap	Unknown	-	-	-	-	-	-	-
dns.10.2.2.100	OK with errors	11:17:01	4	23.7 hrs	5,537,695	5	3	40
dns.10.2.2.101	Check failed	11:17:08	3	18.0 min	46	-	-	-
dns.172.16.90.110	OK	11:17:09	15	23.7 hrs	3,892,344,090	18	13	459
socks.gateway1	OK	11:16:49	12	3.7 hrs	2,837	65	18	1,614
dtr.rating_service	OK for some IPs	08:41:57	5,104	17.6 hrs	8,544	5,368	96	10,071
fwd.google	OK	11:17:00	28	20.2 hrs	10,790	47	28	3,072
fwd.my_ssh	OK	11:17:14	5	23.7 hrs	2,810	6	4	75
icap.inbound	OK	11:17:13	18	38.6 min	82	22	17	286
icap.outbound	OK	11:17:11	17	36.6 min	77	18	16	26
icap.test	Disabled: Healthy	1995-12-31	9,990	23.7 hrs	4,258	9,992	9,970	10,032
socks.personal	Disabled: Unhealthy	11:15:08	994	18.6 min	91	-	-	-
user.group	Check failed	1995-12-31	346	23.7 hrs	10,872	-	-	-
user.public.dns.server	OK	11:17:15	21	23.7 hrs	3,330,935,572	53	15	1,194

[Details](#) [Events](#)

- The current time is 11:17 on January 23, 2008
- Authentication realm Blue Coat IWA —auth.bc\_iwa is functioning on its alternate server for 17 minutes. The primary server failed just 17 minutes ago.
- Authentication realm Blue Coat LDAP — auth.blue\_coat\_ldap is configured, but is not currently referenced in policy. The health state is **Unknown** because it is not being queried by the ProxySG for authentication lookups or for health checks.
- DNS server —dns.10.2.2.100 is functioning with errors, and it reports healthy since boot. Select the row and click **Events** to view the expanded display about the earlier failed health check.
- DNS server —dns.10.2.2.101 is not functioning since 11:17 (for 18 minutes now). Select the row and click **Details** to view the expanded display for the health check.
- DNS server 172.16.90.110 reports healthy and is stable since the device was booted.

- 
- ❑ SOCKS gateway— socks.gateway1 is healthy and is operating for the last 3.7 hours. The average response time for this gateway is 65 ms.
  - ❑ DRTR service group — drtr.rating-service is healthy, and the average response time is adequate. However the status icon shows that the service is experiencing difficulties with some IP addresses. Select the row and click **Details** to view the information on the configured IP addresses and the failure points. The **Details** button displays the following information:

```
Domain name: sp.cwfservice.net  DNS status: success
Enabled  OK for some IPs  UP
IP address: 217.169.46.101           Enabled  OK  UP
Last status: Success.
Successes (total): 8  (last): Wed, 23 Jan 2008 16:35:36 GMT
(consecutive): 8
Failures (total): 0  (last): Never (consecutive): 0 (external): 0
Last response time: 331 ms  Average response time: 357 ms
Minimum response time: 300 ms  Maximum response time: 613 ms
IP address: 65.160.238.181 Enabled  Check failed  DOWN
Last status: A communication error has occurred.
Successes (total): 0  (last): Never (consecutive): 0
Failures (total): 3809  (last): Wed, 23 Jan 2008 16:45:09 GMT
(consecutive): 3809  (external): 0
Last response time: 9990 ms  Average response time: 9992 ms
Minimum response time: 9981 ms  Maximum response time: 10071 ms
IP address: 204.246.129.201 Enabled  OK  UP
Last status: Success.
Successes (total): 8  (last): Wed, 23 Jan 2008 16:41:57 GMT
(consecutive): 6
Failures (total): 15  (last): Wed, 23 Jan 2008 01:41:44 GMT
(consecutive): 0 (external): 0
Last response time: 104 ms  Average response time: 1133 ms
Minimum response time: 96 ms  Maximum response time: 6281 ms
IP address: 65.160.238.183           Enabled  Check failed  DOWN
Last status: A communication error has occurred.
Successes (total): 0  (last): Never (consecutive): 0
Failures (total): 3809  (last): Wed, 23 Jan 2008 16:45:09 GMT
(consecutive): 3809  (external): 0
Last response time: 9991 ms  Average response time: 9993 ms
Minimum response time: 9981 ms  Maximum response time: 10067 ms
```

- ❑ Forwarding host — fwd.google is functioning for 20.2 hours.
- ❑ The forwarding host — fwd.my\_ssh is healthy since boot.
- ❑ ICAP service — icap.inbound and icap.outbound are healthy.
- ❑ ICAP service — icap.test is disabled and configured to report healthy. Disabled health checks appear grayed out on the screen.
- ❑ SOCKS gateway — socks.personal is disabled and configured to report unhealthy.

## Section I: Viewing Health Check Statistics

- The user-defined health check — `user.public.dns.server` is healthy.

---

## Section J: Using Policy

The results of a health check can be affected through forwarding, SOCKS gateway, or SSL certificate policy. The health check transactions execute the <forward> layer and (for SSL or HTTPS tests) the <ssl> layer to determine applicable policy.

This allows health check behavior to match as closely as possible to that of the SSL traffic that the health check is monitoring.

Health checks cannot be deleted while referenced in policy. If a health check is automatically deleted when its target is deleted, a reference to the health check in policy can block deletion not only of the health check but of its target.

Two policy conditions exist for health checks:

- `health_check=` : This condition tests whether the current transaction is a health check transaction. Optionally, the condition tests whether the transaction is that of a specific health check.
- `is_healthy.health_check_name=` : This condition tests whether the specified health check is healthy.

Example: For a user-defined health check `user.internet` that gates access to a popular Website and tests for Internet connectivity and responsiveness, you could define policy to redirect traffic through a forwarding host if the health check fails.

To do this in policy:

```
<Forward>
  is_healthy. user.internet = no forward(alternate_route)
```

For more information about using policy, refer to *Volume 6: The Visual Policy Manager and Advanced Policy* and *Volume 10: Content Policy Language Guide*.

## Section K: Related CLI Syntax to Configure Health Checks

### Section K: Related CLI Syntax to Configure Health Checks

- To enter health check mode:

```
SGOS#(config) health-check
SGOS#(config health-check)
```

---

**Note:** For detailed information about using these commands, refer to *Volume 11: Command Line Interface Reference*.

---

- The following subcommands are available:

```
SGOS#(config health-check) copy source-alias target-alias
SGOS#(config health-check) create {composite alias_name | http
alias_name url | https alias_name url | icmp alias_name hostname| ssl
alias_name hostname [port]| tcp alias_name hostname [port]}
SGOS#(config health-check) default e-mail {healthy {enable | disable} |
report-all-ips {enable | disable} | sick {enable | disable}}
SGOS#(config health-check) default event-log {healthy { disable
|information | severe}| report-all-ips {enable | disable} | sick {enable
| disable}}
SGOS#(config health-check) default failure-trigger {none | count}
SGOS#(config health-check) default interval {healthy seconds| sick
seconds}
SGOS#(config health-check) default snmp {healthy {enable | disable} |
report-all-ips {enable | disable} | sick {enable | disable}}
SGOS#(config health-check) default severity {no-effect | warning
| critical}
SGOS#(config health-check) default threshold {healthy count |
response-time milliseconds | sick count}
SGOS#(config health-check) delete alias_name
SGOS#(config health-check) disable {healthy alias_name | sick
alias_name}
SGOS#(config health-check) edit health_check_name
(config health-check health_check_name) subcommands
SGOS#(config health-check) enable alias_name
SGOS#(config health-check) exit
SGOS#(config health-check) perform-health-check alias_name
SGOS#(config health-check) view {configuration |quick-statistics |
statistics}
```

## *Chapter 15: TCP/IP Configuration*

This chapter describes the TCP/IP configuration options, which enhance the performance and security of the ProxySG. Except for IP Forwarding (refer to *Volume 2: Proxies and Proxy Services*), these commands are only available through the CLI.

### *Topics in this Chapter*

The following topics are discussed in this chapter:

- ❑ "About the Options" on page 405
- ❑ "RFC-1323" on page 406
- ❑ "TCP NewReno" on page 406
- ❑ "ICMP Broadcast Echo Support" on page 406
- ❑ "ICMP Timestamp Echo Support" on page 406
- ❑ "TCP Window Size" on page 407
- ❑ "PMTU Discovery" on page 407
- ❑ "TCP Time Wait" on page 408
- ❑ "TCP Loss Recovery Mode" on page 408
- ❑ "TCP Loss Recovery Mode" on page 408

### **About the Options**

- ❑ RFC-1323: Enabling RFC-1323 support enhances the high-bandwidth and long-delay operation of the ProxySG appliances over very high-speed paths, ideal for satellite environments.
- ❑ TCP NewReno: Enabling TCP NewReno support improves the fast recovery of the appliances.
- ❑ ICMP Broadcast Echo: Disabling the response to these messages can limit security risks and prevent an attacker from creating a distributed denial of service (DDoS) to legitimate traffic.
- ❑ ICMP Timestamp Echo: Disabling the response to these messages can prevent an attacker from being able to reverse engineer some details of your network infrastructure.
- ❑ TCP Window Size: Configures the amount of unacknowledged TCP data that the ProxySG can receive before sending an acknowledgement.
- ❑ PMTU Discovery: Enabling PMTU Discovery prevents packets from being unable to reach their destination because they are too large.

To view the TCP/IP configuration, see "["TCP Loss Recovery Mode"](#) on page 408.

## RFC-1323

The RFC-1323 TCP/IP option enables the ProxySG to use a set of extensions to TCP designed to provide efficient operation over large bandwidth-delay-product paths and reliable operation over very high-speed paths, including satellite environments. RFC-1323 support can be configured through the CLI and is enabled by default.

### To enable or disable RFC-1323 support:

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

```
SGOS#(config) tcp-ip rfc-1323 {enable | disable}
```

## TCP NewReno

NewReno is a modification of the Reno algorithm. TCP NewReno improves TCP performance during fast retransmit and fast recovery when multiple packets are dropped from a single window of data. TCP NewReno support is enabled by default.

### To enable or disable TCP NewReno support:

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

```
SGOS#(config) tcp-ip tcp-newreno {enable | disable}
```

## ICMP Broadcast Echo Support

Disabling the ICMP broadcast echo command can prevent the ProxySG from participating in a Smurf Attack. A Smurf attack is a type of Denial-of-Service (DoS) attack, where the attacker sends an ICMP echo request packet to an IP broadcast address. This is the same type of packet sent in the `ping` command, but the destination IP is broadcast instead of unicast. If all the hosts on the network send echo reply packets to the ICMP echo request packets that were sent to the broadcast address, the network is jammed with ICMP echo reply packets, making the network unusable. By disabling ICMP broadcast echo response, the ProxySG does not participate in the Smurf Attack.

This setting is disabled by default.

### To enable or disable ICMP broadcast echo support:

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

```
SGOS#(config) tcp-ip icmp-bcast-echo {enable | disable}
```

For more information on preventing DDoS attacks, see [Chapter 3: "Preventing Denial of Service Attacks"](#) on page 79.

## ICMP Timestamp Echo Support

By disabling the ICMP timestamp echo commands, you can prevent an attacker from being able to reverse engineer some details of your network infrastructure.

For example, disabling the ICMP timestamp echo commands prevents an attack that occurs when the ProxySG responds to an ICMP timestamp request by accurately determining the target's clock state, allowing an attacker to more effectively attack certain time-based pseudo-random number generators (PRNGs) and the authentication systems on which they rely.

This setting is disabled by default.

**To enable or disable ICMP Timestamp echo support:**

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

```
SGOS#(config) tcp-ip icmp-timestamp-echo {enable | disable}
```

PMTU Discovery

PMTU (Path Maximum Transmission Unit) is a mechanism designed to discover the largest packet size sent that is not fragmented anywhere along the path between two communicating appliances that are not directly attached to the same link.

A ProxySG that is not running PMTU might send packets larger than that allowed by the path, resulting in packet fragmentation at intermediate routers. Packet fragmentation affects performance and can cause packet discards in routers that are temporarily overtaxed.

A ProxySG doing PMTU sets the `Do-Not-Fragment` bit in the IP header when transmitting packets. If fragmentation becomes necessary before the packets arrive at the second ProxySG, a router along the path discards the packets and returns an `ICMP Host Unreachable` error message, with the error condition of `Needs-Fragmentation`, to the original ProxySG appliance. The first appliance then reduces the PMTU size and re-transmits the transmissions.

The discovery period temporarily ends when the ProxySG estimates the PMTU is low enough that its packets can be delivered without fragmentation or when the ProxySG stops setting the `Do-Not-Fragment` bit.

Following discovery and rediscovery, the size of the packets that are transferred between the two communicating nodes dynamically adjust to a size allowable by the path, which might contain multiple segments of various types of physical networks.

PMTU is disabled by default.

**To configure PMTU discovery:**

At the `(config)` command prompt:

```
SGOS#(config) tcp-ip pmtu-discovery {enable | disable}
```

## TCP Window Size

Adjusting the TCP window-size regulates the amount of unacknowledged data that the ProxySG receives before sending an acknowledgement.

**To configure the TCP window size:**

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

```
SGOS#(config) tcp-ip window-size window_size
```

where `window_size` indicates the number of bytes allowed before acknowledgement (the value must be between 8192 and 4194304).

## TCP Time Wait

When a TCP connection is closed (such as when a user enters `quit` for an FTP session), the TCP connection remains in the `TIME_WAIT` state for twice the Maximum Segment Lifetime (MSL) before completely removing the connection control block.

The `TIME_WAIT` state allows an end point (one end of the connection) to remove remnant packets from the old connection, eliminating the situation where packets from a previous connection are accepted as valid packets in a new connection.

The MSL defines how long a packet can remain in transit in the network. The value of MSL is not standardized; the default value is assigned according to the specific implementation.

To change the MSL value, enter the following commands at the (config) command prompt:

```
SGOS#(config) tcp-ip tcp-2msl seconds
```

where `seconds` is the length of time you chose for the 2MSL value. Valid values are 1 to 16380 inclusive.

## TCP Loss Recovery Mode

A new TCP algorithm helps to recover throughput efficiently after packet losses occur and also addresses performance problems due to a single packet loss during a large transfer over long delay pipes. The feature is *enhanced* by default.

**To enable the algorithm:**

```
SGOS#(config) tcp-ip tcp-loss-recovery-mode {enhanced | aggressive}
```

**To disable the algorithm:**

```
SGOS#(config) tcp-ip tcp-loss-recovery-mode {normal}
```

## Viewing the TCP/IP Configuration

To view the TCP/IP configuration:

```
SGOS#(config) show tcp-ip
RFC-1323 support: enabled
TCP Newreno support: disabled
IP forwarding: disabled
ICMP bcast echo response: disabled
ICMP timestamp echo response: disabled
Path MTU Discovery: disabled
TCP 2MSL timeout: 120 seconds
TCP window size: 65535 bytes
TCP Loss Recovery Mode: Aggressive
```

## *Chapter 16: Virtual IP Addresses*

This chapter discusses the uses of Virtual IP (VIP) addresses and how to create them.

Virtual IP addresses are addresses assigned to a system (but not an interface) that are recognized by other systems on the network. Up to 255 VIPs can be configured on each ProxySG appliance.

### *Topics in this Chapter*

This chapter includes information about the following topics:

- "Uses of a VIP" on page 409
- "Creating a VIP" on page 409

### **Uses of a VIP**

VIP addresses have several uses:

- Assign multiple identities to a system on the same or different network, partitioning the box in to separate logical entities for resource sharing or load sharing.
- Create an HTTPS Console to allow multiple, simultaneous, secure connections to the system.
- Direct authentication challenges to different realms.
- Set up failover among multiple ProxySG appliances on the same subnet.

---

**Note:** For information on creating an HTTPS Console, refer to *Volume 2: Proxies and Proxy Services*; for information on using VIPs with authentication realms, refer to *Volume 4: Securing the Blue Coat ProxySG Appliance*; to use VIPs with failover, see [Chapter 7: "Configuring Failover" on page 125](#).

---

### **Creating a VIP**

#### **To create a VIP:**

1. Select **Configuration > Network > Advanced > VIPs**.
2. Click **New**.
3. Enter the virtual IP address you want to use. It can be any IP address, except a multicast address. (A multicast address is a group address, not an individual IP address.)

---

**Note:** You cannot create a VIP address that is the IP address used by the origin content server. You must assign a different address on the ProxySG, and use DNS or forwarding to point to the origin content server's real IP address.

---

4. Click **OK**.

5. Click **Apply**.

The VIP address can now be used.

*Related CLI Syntax to manage a VIP*

```
SGOS#(config) virtual address ip_address  
SGOS#(config) virtual no address ip_address  
SGOS#(config) virtual clear  
SGOS#(config) show virtual
```

## Chapter 17: WCCP Settings

The SGOS software can be configured to participate in a WCCP (Web Cache Control Protocol) scheme, in which a WCCP-capable router collaborates with a set of WCCP-configured ProxySG appliances to service requests.

### *Topics in this Chapter*

This chapter includes information about the following topics:

- ❑ "Configuring WCCP" on page 411
- ❑ "Viewing WCCP Statistics and Service Group Status" on page 415

## Configuring WCCP

WCCP is a Cisco®-developed protocol that allows you to establish redirection of the traffic that flows through routers.

---

**Note:** Blue Coat recommends that WCCP-compliant caches from different vendors be kept separate and that only one vendor's routers be used in a service group.

---

One of the caches participating in the WCCP service group is automatically elected as the designated cache to configure the home router's redirection tables. This way, caches can be transparently added and removed from the WCCP service group without requiring operator intervention. WCCP version 2 supports multiple service groups.

For detailed information on using WCCP with a ProxySG, refer to the *WCCP Reference Guide*.

## Procedure Overview

Two tasks must be completed to get WCCP running with the ProxySG:

- ❑ Configuring the router
- ❑ Configuring the ProxySG

## WCCP Router Configuration

1. From the router (config) mode, tell WCCP which service group you want use. The Web-cache service group redirects port 80 (HTTP) traffic only. Create other service groups to redirect traffic from other ports.

```
Router(config) #ip wccp web-cache
```

2. Enter the (config-if) submode by telling WCCP which IP address to use.

```
Router(config)# int interface
```

where *interface* is the adapter interface with an IP address. The prompt changes to configuration interface submode.

3. Enable packet redirection on the LAN (inbound) interface.

```
Router(config-if)# ip wccp web-cache redirect in
```

4. If L2 packet return is enabled, prevent those return packets from being considered for WCCP redirection by running the following command on the interface used to communicate with the ProxySG:

```
Router(config-if)# ip wccp redirect exclude in
```

For more information on WCCP router configuration, refer to the *WCCP Reference Guide*.

## ProxySG Configuration

The Management Console provides a text editor that can be used to create the configuration file. The ProxySG configuration file is used to tell the Cisco device how to use WCCP with this cache (the ProxySG).

---

**Note:** You can also create the file off-box, downloading the file from a ProxySG-accessible Web server or uploading the file from a local system.

---

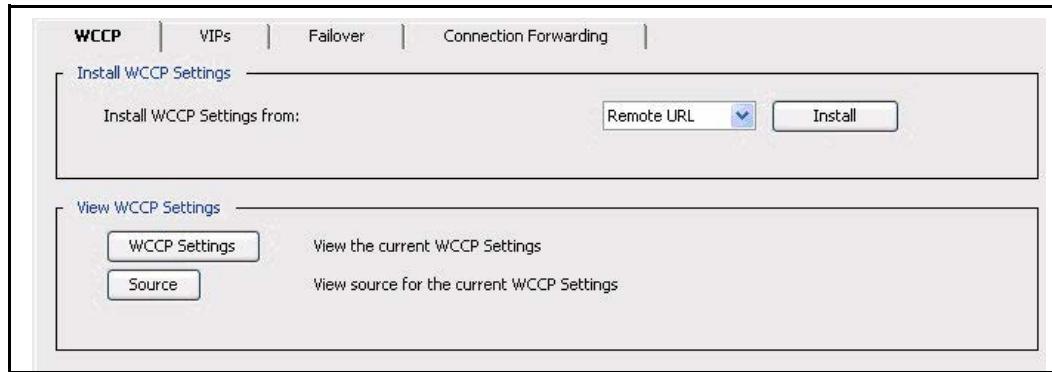
An example of a WCCP configuration file is:

```
wccp enable
wccp version 2
service-group 9
  forwarding-type L2
  assignment-type mask
  mask-scheme source-port
  priority 1
  protocol 6
  service-flags destination-ip-hash
  service-flags ports-defined
  ports 80 21 1755 554 0 0 0 0
  interface 0:0
    home-router 10.16.18.2
end
```

For descriptions of the values in the configuration file, refer to the *WCCP Reference Guide*.

### To install the configuration file:

1. Select **Configuration > Network > Advanced >WCCP**.



2. (Optional): View the WCCP settings that are currently on the system or view the text file with the current settings by going to the **View WCCP Settings** panel and clicking **WCCP Settings** or **Source**.
3. In the **Install WCCP Settings** panel, select the location of the configuration file: a remote URL, a local file, or you can use the text editor on the system.
4. Click **Install**.

If you selected **Remote URL** or **Local File**, a dialog opens that allows you to enter the complete path, and the file is retrieved.

If you selected **Text Editor**, the text editor displays with the current settings. You can copy and paste the contents of an existing configuration file or you can enter new text and click **Install** when finished.

5. If the configuration file contains the line `wccp enable`, WCCP is automatically enabled when the WCCP configuration is installed. Otherwise, you must specifically enable WCCP on the ProxySG. To do this, go the **WCCP Statistics** panel and click **Enable WCCP**.

---

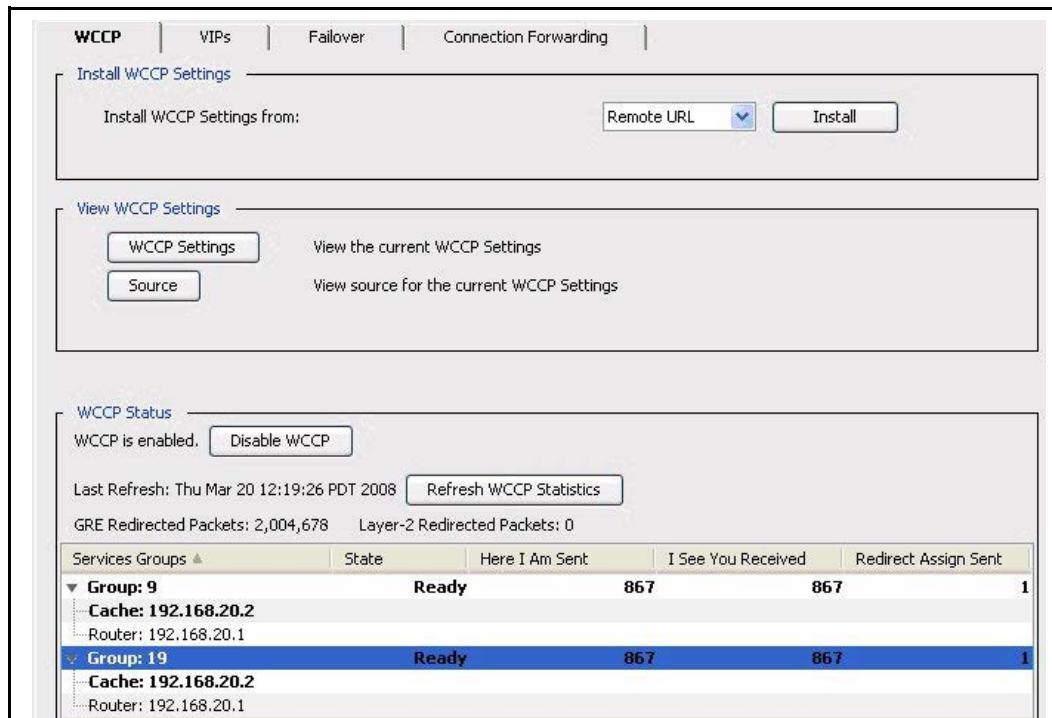
**Note:** If you enable or disable WCCP, the action is completed immediately.

---

6. Click **Apply** to save the changes.

**To view WCCP status:**

1. Select **Configuration > Network > Advanced >WCCP**.



2. To enable or disable WCCP, click **Enable/Disable WCCP**.
3. The current status of the WCCP services are in the pane below the **Enable/Disable WCCP** button.
  - a. You can use **Refresh WCCP Statistics** to update WCCP statistics. The last refresh time is displayed.
  - b. Redirected packets, either GRE or Layer 2, are displayed. The redirected packets value is reset when WCCP is disabled.
  - c. Service Groups: Lists details on the available service groups
    - The **Cache IP address** is the designated Web cache (the ProxySG with the lowest IP address) for the service group.
    - The **Router IP address** is also the router ID.
  - d. State: Displays the availability of the service group. Messages include:
    - Idle: Before the first Here I Am protocol message is sent.
    - Waiting: Here I Am protocol message is sent; waiting for the I See You message to be returned.
    - Negotiating: I See You protocol message received.
    - Capability Mismatch: I See You protocol message parsed, but the router/ProxySG WCCP capabilities do not match.
    - Packet Forwarding Mismatch: I See You protocol message parsed, but a forwarding-type mismatch was found.
    - Packet Return Mismatch: I See You protocol message parsed, but a return-type mismatch was found.

- Assignment Mismatch: I See You protocol message parsed, but an assignment-type mismatch was found.
  - Service Group Mismatch: I See You protocol message parsed, but a service-group mismatch was found
  - Security Mismatch: I See You protocol message parsed, but a security mismatch was found.
  - Bad Router ID: I See You protocol message parsed, but a bad router ID component was found.
  - Bad Router View: I See You protocol message parsed, but a bad router view component was found.
  - Ready: Redirect Assignment protocol messages sent.
- e. Protocol messages: Lists the number of packets sent and received:
- Here I Am: Announces the ProxySG presence to the routers.
  - I See You: Router acknowledges the ProxySG
  - Redirect Assignments: ProxySG sends assignment requests.

**To create a ProxySG WCCP configuration file and enable WCCP using the CLI:**

1. Create a WCCP configuration file through either the ProxySG appliance's CLI inline commands or through a text editor.
2. Make sure that the home router you enter here is the home router that was named in the router's configuration. If there is a mismatch, you must correct it before continuing. For troubleshooting information, refer to the *WCCP Reference Guide*.
3. Next steps:
  - a. If you used the inline commands, you have completed WCCP configuration on the ProxySG. No further steps are needed.
  - b. If you used a text editor, copy the file to an HTTP server accessible to the ProxySG. Then, enable WCCP and download the configuration file to the ProxySG.

```
SGOS# (config) wccp enable
SGOS# (config) wccp path http://10.25.36.47/files/wccp.txt
SGOS#(config) load wccp-settings
```

## Viewing WCCP Statistics and Service Group Status

### *Viewing WCCP Settings*

You can view the following WCCP statistics through the CLI `show wccp` command options:

- configuration
- statistics
- service-group status

## Configuration

This command displays the configuration for each service group on the system.

```
SGOS# show wccp configuration
;WCCP Settings
;Version 1.3
wccp enable
wccp version 2
service-group 29
forwarding-type GRE
assignment-type hash
priority 1
protocol 6
service-flags source-ip-hash
service-flags ports-defined
ports 8080 0 0 0 0 0 0 0
interface 0:0
home-router 10.25.36.47
end
```

## Statistics

WCCP statistics are repeated for each service group on the system.

```
SGOS# show wccp statistics
;WCCP Statistics
;Version 1.3
Current time :Tue, Mar 11 2008 21:36:40 UTC
Last stats reset time :Tue, Mar 11 2008 20:21:04 UTC
Packets sent :1,374
Bytes sent :165,852
Packet received :1,342
Bytes received :187,536
Bad packets received :0
Receive error :0
Unknown type :0
Total size too small:0
Header too small :0
Bad version :0
Bad security comp :0
Bad service info comp:0
Bad query info comp :0
Unknown group :0
Unsolicited query :0
Bad router id comp :0
Bad router view comp:0
Service group mismatch:0
Forwarding type mismatch:0
Returning type mismatch:0
Assignment type mismatch:0
Capability mismatch :0
Bad security packets :0
Internal errors :0
Failed to send :0
Add RID for router :0
Alloc query member :0
Alloc query timer :0
```

```
Add router to group :0
Add cache to group :0
Alloc active caches :0
Bucket reassignment :0
Allocated blocks     :4
Service Group ident. :512,1,29, 1,6,17, 8080,0,0,0,0,0,0,0
Home Routers         :10.25.36.47
Multicast TTL        :1
Forwarding type      :GRE
Returning type        :GRE
Assignment type       :hash
Hotspots announced   :0
Assignment state      :idle
Designated Cache      :10.25.36.48
Announcement key #   :2
Cache view change #  :9
Router View Changed   :0
Recent hit count     :0
Primary hit count    :0
Alternate hit count  :0
Total ip payload bytes redirected:0
Total gre payload bytes redirected:0
```

## Service Group Status

Through the CLI, you can view the output of the `show wccp status` command. The output is repeated for each service group.

```
SGOS> show wccp status
;WCCP Status
;Version 2
Number of GRE redirected packets: 0
Number of Layer 2 redirected packets: 0
Service group: 9
State: Ready
Number of Here_I_Am sent: 514
Number of I_See_You received: 502
Number of Redirect_Assign sent: 2
Router IP: 10.25.36.47
Cache IP: *10.25.36.48
```



## Appendix A: Using Policy to Manage Forwarding

After ICP, forwarding, and the SOCKS gateways are configured, use policy to create and manage forwarding rules. Forwarding, ICP, and SOCKS gateway rules should go in the <Forward> layer of the Forwarding Policy file or the VPM Policy file (if you use the VPM).

The separate <Forward> layer is provided because the URL can undergo URL rewrites before the request is fetched. This rewritten URL is accessed as a *server\_url* and decisions about upstream connections are based on the rewritten URL, requiring a separate layer. All policy commands allowed in the <Forward> layer are described below.

Table A–1 Policy Commands Allowed in the <Forward> Layer

Forward	Description
<b>Conditions</b>	
client_address=	Tests the IP address of the client. Can also be used in <Exception> and <Proxy> layers.
client.host=	Tests the hostname of the client (obtained through RDNS). Can also be used in <Admin>, <Proxy>, and <Exception> layers.
client.host.has_name=	Tests the status of the RDNS performed to determine client.host. Can also be used in <Admin>, <Proxy>, and <Exception> layers.
client.protocol=	Tests true if the client transport protocol matches the specification. Can also be used in <Exception> and <Proxy> layers.
date[.utc]=	Tests true if the current time is within the startdate..enddate range, inclusive. Can be used in all layers.
day=	Tests if the day of the month is in the specified range or an exact match. Can be used in all layers.
has_client=	has_client= is used to test whether or not the current transaction has a client. This can be used to guard triggers that depend on client identity.
hour[.utc]=	Tests if the time of day is in the specified range or an exact match. Can be used in all layers.
im.client=	Tests the type of IM client in use. Can also be used in <Proxy>, <Exception>, and <Cache> layers.
im.message.reflected=	Tests whether IM reflection occurred. Can also be used in <Proxy> and <Cache> layers.

Table A–1 Policy Commands Allowed in the &lt;Forward&gt; Layer (Continued)

Forward	Description
minute[.utc]=month[.utc]=	Tests if the minute of the hour is in the specified range or an exact match. Can be used in all layers.
proxy.address=	Tests the IP address of the network interface card (NIC) on which the request arrives. Can also be used in <Admin> and <Proxy> layers.
proxy.card=	Tests the ordinal number of the network interface card (NIC) used by a request. Can also be used in <Admin> and <Proxy> layers.
proxy.port=	Tests if the IP port used by a request is within the specified range or an exact match. Can also be used in <Admin> and <Proxy> layers.
server_url[.case_sensitive .no_lookup]=	Tests if a portion of the requested URL exactly matches the specified pattern.
server_url.address=	Tests if the host IP address of the requested URL matches the specified IP address, IP subnet, or subnet definition.
server_url.domain[.case_sensitive .no_lookup]=	Tests if the requested URL, including the domain-suffix portion, matches the specified pattern.
server_url.extension[.case_sensitive]=	Tests if the filename extension at the end of the path matches the specified string.
server_url.host.has_name=	Tests whether the server URL has a resolved DNS hostname.
server_url.host[.exact .substring .prefix .suffix .regex][.no_lookup]=	Tests if the host component of the requested URL matches the IP address or domain name.
server_url.host.is_numeric=	This is true if the URL host was specified as an IP address.
server_url.host.no_name=	This is true if no domain name can be found for the URL host.
server_url.host.regex=	Tests if the specified regular expression matches a substring of the domain name component of the requested URL.
server_url.is_absolute=	Tests whether the server URL is expressed in absolute form.
server_url.path[.exact .substring .prefix .suffix .regex][.case_sensitive]=	Tests if a prefix of the complete path component of the requested URL, as well as any query component, matches the specified string.
server_url.path.regex=	Tests if the regex matches a substring of the path component of the request URL.
server_url.port=	Tests if the port number of the requested URL is within the specified range or an exact match.

Table A–1 Policy Commands Allowed in the &lt;Forward&gt; Layer (Continued)

<b>Forward</b>	<b>Description</b>
server_url.query.regex=	Tests if the regex matches a substring of the query string component of the request URL.
server_url.regex=	Tests if the requested URL matches the specified pattern.
server_url.scheme=	Tests if the scheme of the requested URL matches the specified string.
socks=	This condition is true whenever the session for the current transaction involves SOCKS to the client.
socks.version=	Switches between SOCKS 4/4a and 5. Can also be used in <Exception> and <Proxy> layers.
streaming.client=	yes   no. Tests the user agent of a Windows, Real Media, or QuickTime player.
time[.utc]=	Tests if the time of day is in the specified range or an exact match. Can be used in all layers.
tunneled=	yes   no. Tests TCP tunneled requests, HTTP CONNECT requests, and unaccelerated SOCKS requests
weekday[.utc]=	Tests if the day of the week is in the specified range or an exact match. Can be used in all layers.
year[.utc]=	Tests if the year is in the specified range or an exact match. Can be used in all layers.
<b>Properties</b>	
access_server()	Determines whether the client can receive streaming content directly from the OCS. Set to no to serve only cached content.
ftp.transport()	Determines the upstream transport mechanism. This setting is not definitive. It depends on the capabilities of the selected forwarding host.
forward()	Determines forwarding behavior. There is a box-wide configuration setting (<config>forwarding>failure-mode) for the forward failure mode. The optional specific settings can be used to override the default.
forward.fail_open()	Controls whether the ProxySG appliance terminates or continues to process the request if the specified forwarding host or any designated backup or default cannot be contacted.
http.refresh.recv.timeout()	Sets the socket timeout for receiving bytes from the upstream host when performing refreshes. Can also be used in <Cache> layers.

Table A–1 Policy Commands Allowed in the &lt;Forward&gt; Layer (Continued)

Forward	Description
http.server.connect_attempts()	Sets the number of attempts to connect performed per-address when connecting to the upstream host.
http.server.recv.timeout()	Sets the socket timeout for receiving bytes from the upstream host. Can also be used in <Proxy> layers.
icp()	Determines when to consult ICP. The default is yes if ICP hosts are configured and if no forwarding host or SOCKS gateway is identified as an upstream target.
im.transport()	Sets the type of upstream connection to make for IM traffic.
integrate_new_hosts()	Determines whether to add new host addresses to health checks and load balancing. The default is no. If it is set to yes, any new host addresses encountered during DNS resolution of forwarding hosts are added to health checks and load balancing.
reflect_ip()	Determines how the client IP address is presented to the origin server for explicitly proxied requests. Can also be used in <Proxy> layers.
socks_gateway()	The <code>socks_gateway()</code> property determines the gateway and the behavior of the request if the gateway cannot be contacted. There is a box-wide configuration setting for the SOCKS failure mode. The optional specific settings can be used to override the default.
socks_gateway.fail_open()	Controls whether the ProxySG terminates or continues to process the request if the specified SOCKS gateway or any designated backup or default cannot be contacted.
streaming.transport()	Determines the upstream transport mechanism. This setting is not definitive. The ability to use <code>streaming.transport()</code> depends on the capabilities of the selected forwarding host.
trace.request()	Determines whether detailed trace output is generated for the current request. The default value is no, which produces no output
trace.rules()	Determines whether trace output is generated that shows each policy rule that fired. The default value of no suppresses output.
trace.destination()	Used to change the default path to the trace output file. By default, policy evaluation trace output is written to an object in the cache accessible using a console URL of the following form: <code>http://ProxySG_ip_address:8082/Policy/Trace/path</code>

Table A–1 Policy Commands Allowed in the &lt;Forward&gt; Layer (Continued)

Forward	Description
<b>Actions</b>	
notify_email()	Sends an e-mail notification to the list of recipients specified in the Event Log mail configuration. Can be used in all layers.
notify_snmp()	The SNMP trap is sent when the transaction terminates. Can be used in all layers.
log_message	Writes the specified string to the event log.
<b>Definitions</b>	
define server_url.domain condition name	Binds a user-defined label to a set of domain suffix patterns for use in a <code>condition=</code> expression.



## 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).

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## 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.

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**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.

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**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 inputing**—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-inputing 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.

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**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.

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**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

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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 a 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](http://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](http://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

### Active Sessions

  ADN inbound connections 55

### active sessions

  ProxyClient 296

### ADN history (ProxyClient)

  295

### ADN manager, defining

  30

### Application Delivery Network (ADN)

  ADN History, reviewing 54

  ADN manager, defining 30

  basic setup 30

#### byte-cache

  dictionary, manually resizing 64

  statistics, reviewing 57

#### byte-cache configuration, viewing

#### CLI syntax

#### combined deployment, configuring

#### compression, using

#### configuration, viewing

#### connections deployments

#### connections, securing

#### deployment

#### device security, setting

#### devices, authorizing

#### dictionary

  disk space, changing 68

  dynamic 69

  invalid value 68

  manual sizing 68

#### dictionary sizing

  byte-caching tab, resizing from 68

  messages 66

  new peers, ranking 66

  peers, manually sizing 66

  peers, ranking 65

  statistics tab, resizing from 67

  statistics, viewing 67

  troubleshooting 65

  understanding 64

explained 18

explicit deployment

configuring 38

destination port, preserving explicit

  deployment

  destination port, preserving for ADN

  41

load balancing 41

managing server subnets 38

health metrics, reviewing 57

History/Stats/Health Metrics 54

inbound connections, active sessions 55

network

  constructing 30

  optimizing 24

  securing 46

network elements 19

network elements, example 21

policy gestures available for use with 72

security settings, configuring 47

Security, using 28

statistics, viewing 57

test adn

  error codes 75

  explicit test, success 74

  failure 75

  success 73

transparent ADN, test adn successful 74

transparent deployment

  configuring 34

  load balancing 35

troubleshooting 73

tunnel

  optimization, understanding 60

  parameters, setting 60

attack-detection

client

  block-action, explained 82

  connection-limit, explained 82

  creating and editing 81

  failure-limit, explained 82

  global defaults 80

  global defaults, changing 80

unblock-time, explained 82  
warning-limit, explained 82  
configuration, viewing 82  
mode, entering 80  
server  
add or remove server from group 84  
configuration, viewing 84  
configuring 83  
creating 83  
editing 84  
hostname, explained 84  
request-limit, explained 84  
authentication, device. *See* device authentication.  
116

## B

Background 347  
bandwidth management  
allocating bandwidth 94  
allocation examples 106  
class hierarchies 96  
creating classes 99  
deleting bandwidth-classes 101  
editing classes 101  
enabling or disabling 99  
flow classification 98  
maximum bandwidth 95  
minimum bandwidth 95  
overview 94  
policy examples 106  
priority levels 95  
viewing configurations 101  
BWM, *see* bandwidth management  
byte-cache dictionary, manually resizing 64

## C

Client Manager  
changing 313  
ProxyClient 175  
combined deployment  
configuring for ADN 44  
configuration, ADN, troubleshooting 76  
connections, securing for ADN 49  
Content filtering  
Blue Coat Web Filter  
configuring (ProxyClient) 233

ProxyClient, about 196  
ProxyClient, configuring 231  
CPL  
enabling ICP 159  
RADIUS policies, creating 170

## D

D range multicast address, explained 127  
Data Collector, ProxyClient 319  
default sequence  
deleting hosts or groups 151  
device authentication  
appliance certificates, about 116  
cipher suites, changing 124  
cipher suites, default 117  
CLI syntax 124  
device ID, setting 123  
overview 116  
platforms supported 118  
ssl device profile, creating 122  
device security  
ADN, setting for 47  
devices  
ADN authorization 51  
dictionary sizing  
troubleshooting 65  
directives  
forwarding, available 144  
forwarding, using 144  
SOCKS gateways, available 337  
DNS 373  
background resolution 347  
health check tests, editing 373  
document  
conventions 14  
Do-Not-Fragment, *see* PMTU  
DRTR service configuration, deleting hosts or  
groups 151

## E

event log  
notifications, health checks 357  
explicit deployment  
ADN server subnets, managing. 38  
ADN, configuring for 38  
load balancing for ADN network 41

### external services

  health checks tests 353

## F

### failover

  configuring, overview 126

  group secret 127

  master, explained 126

  multicast address, using 127

  priority ranges 127

  statistics page, viewing 128

  troubleshooting 128

  VRRP, using with 125

### failover group

  configuring as session monitor 168

### Forwarding 366

### forwarding

  CLI, configuring through 141

  configuring 136

  default sequence, configuring 141

  default sequence, understanding 140

### directives

  available 144

### host

  fail open/closed 146, 339

### installable list

  creating 150

  host timeout values 146, 339

  using 144

### DNS resolution, using 347

### global defaults

  configuring 139

  load balancing and host affinity,

    configuring 139

### group

  health checks tests, editing 369

### groups

  configuring 137

  load balancing and host affinity,

    configuring 138

### health checks 366

### host

  configuring 136

  load balancing and host affinity,

    configuring 137

  TCP health check 366

### hosts

  fail open/closed 146, 339

### load balancing

  understanding 133

  load balancing and host affinity, using together 134

  policy commands in forward layer 419

  policy, managing with 419

  statistics, locating 143

  understanding 133

## G

Group Policy Object (GPO) distribution, ProxyClient 285

## H

### health checks

  about 350

  authentication server, editing 377

  authentication servers, external 377

  categories 346

  CLI 404

  copy or delete user-defined health checks 395

  edit authentication server health checks 378

  edit default notifications for a targeted health check 364

  edit default notifications globally 364

  edit defaults for a targeted health check 360

  edit defaults globally 360

  edit DNS server health checks 375

  edit forwarding groups and SOCKS groups 369

  edit forwarding hosts and SOCKS gateway health checks 370

  edit ICAP and Websense groups 384

  edit ICAP service and content filtering health checks 382

  edit user-defined composite health checks 394

  edit user-defined host health checks 390

  enable or disable a health check 356

  composite and group tests 388

  content filtering 380

copying 395  
default settings 355  
default settings, changing 357  
deleting 395  
disable 355  
DNS resolution, background 347  
DNS server 373  
enable 355  
external services tests 353  
forwarding 366  
group tests 353  
HTTP/HTTPS tests 352  
ICAP group tests, editing 383  
ICMP test 351  
naming conventions 350  
notifications 356  
    explicit, configuring 362  
    global, configuring 361  
notifications, configuring 361  
overview 346  
policy, understanding 403  
severity 357  
SNMP traps 356  
SOCKS gateways 366  
SSL test 351  
state, viewing 397  
TCP socket test 351  
tests 351  
types  
    user-defined composite 350  
    user-defined host 350  
user-defined  
    about 386  
    composite checks, creating 388  
        host checks, creating 388  
    user-defined, composite, about 387  
user-defined, copying 395  
user-defined, deleting 395  
virus scanning 380  
virus scanning and content filtering, editing  
    380  
Websense off box, editing 383  
hide tray icon (ProxyClient) 281  
home router  
    version 2 configuration 411

host affinity  
    forwarding  
        global defaults, configuring 139  
        group, configuring 138  
        host, configuring 137  
    load balancing, using with 134  
    SOCKS gateways  
        configuring 329  
        groups, configuring 331

HTTP  
    health checks test 352  
    user-defined health check tests, using with  
        386

HTTPS  
    health checks test 352  
    user-defined health check tests, using with  
        386

**I**

ICMP  
    health check test 351  
    user-defined health check tests, using with  
        386

ICMP broadcast echo  
    configuring 406

ICMP error message  
    ICMP host unreachable 407

ICMP timestamp echo  
    configuring 406

ICP  
    creating an installable list for 154  
    enabling through CPL 159  
    hierarchy 153  
    icp\_access\_domain directive 156  
    icp\_access\_ip directive 157  
    installable list, creating through Management  
        Console 158  
    restricting access 156

installable list  
    ICP 154  
    SOCKS gateways 337

integrated host, timeout interval 146, 339

**L**

load balancing  
    forwarding

- global defaults, configuring 139
- group, configuring 138
- host, configuring 137
- host affinity, using with 134
- SOCKS gateways
  - configuring 329
  - groups, configuring 331
  - understanding 133
- location awareness, ProxyClient
  - about 182
  - configuring 225
  - examples 184
- M**
  - multicast
    - D range address, explained 127
    - failover, using with 127
  - multicast, troubleshooting 128
- N**
  - notifications
    - default 356
    - e-mail 356
    - event logging 356
    - snmp 356
- P**
  - password
    - with RIP 166
  - PMTU
    - enabled by default 407
    - overview 407
  - policy
    - bandwidth management examples 106
  - proxies
    - setting up 13
  - ProxyClient
    - active sessions 296
    - ADN features, about 192
    - ADN manager, about 175
    - CIFS cache, changing location of 324
    - Client Manager, about 175
    - Client Manager, changing 313
    - Data Collector utility 319
    - deployment overview 205
    - Group Policy Object (GPO) distribution 285
    - hide Start menu option 281
    - hide tray icon 281
    - history statistics 293
    - installing interactively 268
    - installing silently 273
    - Internet gateways 193
    - licensing 181
    - location awareness
      - about 182
      - configuring 225
      - examples 184
    - manager listening mode 208
    - object cache, about 192
    - reflect client IP 194
    - registry settings 311
    - requirements 182
    - troubleshooting
      - acceleration 306
      - Web filtering 307
    - tunnel listening mode 209
    - uninstalling 325
    - Web filtering
      - categories 240
      - categories (policy) 242
      - categories (system and default) 246
      - category rulebase 247
      - configuring 231
      - enabling BCWF 233
      - HTTPS 250
      - on license expiration 250
      - Safe Search 250
    - ProxyClientSetup.exe 207
    - ProxyClientSetup.msi 207
    - ProxySG
      - configuration file, example 415
      - WCCP configuration file, creating 415
  - R**
    - RADIUS
      - policies, creating 170
    - RADIUS session monitor
      - cluster, configuring 168
      - configuring 169
      - configuring failover group 168
    - reflect client IP address
      - ProxyClient 194

reflect ip address attribute, ProxyClient 194  
registry settings (ProxyClient) 311

RFC-1323  
    configuring 406

RIP  
    configuring 161  
    definition of 161  
    installing configuration file 162  
    parameters 164  
    ProxySG-specific RIP parameters 165  
    using passwords with 166

routing information protocol, *see* RIP

## S

severity, options 357

SNMP  
    Blue Coat MIB 356  
    health checks 356  
    notifications 356

SOCKS gateways  
    CLI, configuring through 334  
    configuring 328  
    default sequence  
        creating 334  
        understanding 333  
    directives  
        available 337  
        installable list, creating 342  
        using 337  
    DNS resolution, using 347  
    global defaults, configuring 332  
    group  
        health checks tests, editing 369  
    groups, configuring load balancing and host  
        affinity 331  
    groups, creating 330  
    health checks 366  
    identification (Ident) protocol 342  
    installable list, creating 337  
    load balancing and host affinity, configuring  
        329  
    statistics, locating 336  
    TCP health check 366

## SSL

    health checks test 351  
ssl device profile

    understanding 116  
statistics  
    failover page, viewing 128  
    forwarding 143  
    health checks 397  
    ProxyClient history 293  
    SOCKS gateways 336

## T

TCP  
    health checks test 351  
    user-defined health check tests, using with  
        386  
TCP Connection Forwarding  
    about 85  
    CLI commands 92  
    configuring 90  
    deployment 90  
TCP NewReno  
    configuring 406  
TCP/IP  
    configuration, showing 408  
    ICMP broadcast echo 406  
    ICMP timestamp echo 406  
    overview 405  
    PMTU, configuring 407  
    RFC-1323 406  
test adn  
    error codes 75  
    explicit test, success 74  
    failure 75  
    no upstream connection 74  
    troubleshooting 73  
    using 73  
transparent deployment  
    ADN load balancing 35  
    ADN, configuring for 34  
troubleshooting  
    ADN 73  
    ADN dictionary sizing 68  
    failover 128  
    ICMP host unreachable error message 407

## V

virtual IPs  
    creating 409

## Index

understanding 409

VRRP, failover, using with 125

### **W**

WCCP

configuration, viewing 416

configuring 411

enable 414

router configuration, initial 411

service group status, viewing 414, 417

settings 411

settings, understanding 411

settings, viewing 415

statistics, viewing 416

Web Cache Control Protocol, *see* WCCP