Blue Coat Security First Steps
Solution for HTTP Object Caching
Third Party Copyright Notices

© 2014 Blue Coat Systems, Inc. All rights reserved. BLUE COAT, PROXYSG, PACKETSHAPER, CACHEFLOW, INTELLIGENCECENTER, CACHEOS, CACHEPULSE, CROSSBEAM, K9, DRTR, MACH5, PACKETWISE, POLICYCENTER, PROXYAV, PROXYCLIENT, SGOS, WEBPULSE, SOLERA NETWORKS, DEEPSEE, DS APPLIANCE, SEE EVERYTHING. KNOW EVERYTHING., SECURITY EMPOWERS BUSINESS, BLUETOUCH, the Blue Coat shield, K9, and Solera Networks logos and other Blue Coat logos are registered trademarks or trademarks of Blue Coat Systems, Inc. or its affiliates in the U.S. and certain other countries. This list may not be complete, and the absence of a trademark from this list does not mean it is not a trademark of Blue Coat or that Blue Coat has stopped using the trademark. All other trademarks mentioned in this document owned by third parties are the property of their respective owners. This document is for informational purposes only.

BLUE COAT MAKES NO WARRANTIES, EXPRESS, IMPLIED, OR STATUTORY, AS TO THE INFORMATION IN THIS DOCUMENT. BLUE COAT PRODUCTS, TECHNICAL SERVICES, AND ANY OTHER TECHNICAL DATA REFERENCED IN THIS DOCUMENT ARE SUBJECT TO U.S. EXPORT CONTROL AND SANCTIONS LAWS, REGULATIONS AND REQUIREMENTS, AND MAY BE SUBJECT TO EXPORT OR IMPORT REGULATIONS IN OTHER COUNTRIES. YOU AGREE TO COMPLY STRICTLY WITH THESE LAWS, REGULATIONS AND REQUIREMENTS, AND ACKNOWLEDGE THAT YOU HAVE THE RESPONSIBILITY TO OBTAIN ANY LICENSES, PERMITS OR OTHER APPROVALS THAT MAY BE REQUIRED IN ORDER TO EXPORT, RE-EXPORT, TRANSFER IN COUNTRY OR IMPORT AFTER DELIVERY TO YOU.

Americas:

Blue Coat Systems, Inc.
420 N. Mary Ave.
Sunnyvale, CA 94085

Rest of the World:

Blue Coat Systems International SARL
3a Route des Arsenaux
1700 Fribourg, Switzerland
Contents

Solution: Cache HTTP Objects ................................................................. 4
  About Object Caching ........................................................................ 5
  Select an HTTP Proxy Acceleration Profile ...................................... 6
  Intercept HTTP Traffic ..................................................................... 8
  Edit the Explicit or External HTTP Service .................................... 9
  Configure FTP Proxy Settings ......................................................... 11
  Intercept FTP Traffic ..................................................................... 12
  Verify Bandwidth Savings ................................................................ 13

Caching Troubleshooting .................................................................. 15
  Why isn’t the Traffic Mix report showing bandwidth savings? .......... 16
  Why are users seeing stale content? ............................................... 17
  How can I prevent sensitive content from being cached? .............. 18
  How can I delete objects in the cache? ......................................... 19
  How do I clear the cache? ............................................................... 20
**Solution: Cache HTTP Objects**

The purpose of an object cache is to improve the user experience and reduce bandwidth usage. In the ProxySG, the HTTP proxy optimizes the delivery of HTTP traffic. This solution assumes that you installed the ProxySG appliance and have redirected client traffic to it.

These are the basic steps you need to perform to configure object caching:

3. "Edit the Explicit or External HTTP Service" on page 9 to optimize caching.
4. (Optional) If caching FTP, "Configure FTP Proxy Settings" on page 11.
5. (Optional) If caching FTP, "Intercept FTP Traffic" on page 12.
About Object Caching

The purpose of an object cache is to improve the user experience and reduce bandwidth usage. In the ProxySG, the HTTP proxy optimizes the delivery of HTTP traffic in the following ways:

- **Object Caching:** When clients request content, the proxy server retrieves the content (from origin servers) and saves it to local disk (the cache) so future requests can be satisfied by the proxy. This reduces latency and minimizes the transmission of data over the Internet, and over the distributed enterprise.

- **Object Pipeling:** Pipelining allows the ProxySG appliance to open several connections to a server, speeding up the delivery of content into the cache.

- **Pre-fetching:** Content on a requested web page several levels deep is requested and cached for fast delivery to users.
Select an HTTP Proxy Acceleration Profile

An acceleration profile is a collection of object caching and object pipelining attributes that have been pre-selected to achieve optimal results for a specific customer goal.

1. Log in to the ProxySG appliance Management Console.
2. Select **Configure > Proxy Settings > HTTP Proxy > Acceleration Profile**

3. Click one of the three buttons to select an acceleration profile.
   - **Normal:**
     Acts as a client accelerator, and is used for enterprise deployments. Normal is the default profile and can be used wherever the ProxySG is used as a normal forward proxy. This profile is typically used in enterprise environments, where the freshness of objects is more important than controlling the use of server-side bandwidth. The Normal profile is the profile that most follows the HTTP standards concerning object revalidation and staleness. Additionally, pre-fetching (pipelining) of embedded objects and redirects is enabled, which reduces response time for clients.
   - **Bandwidth Gain:**
     The Bandwidth Gain profile is useful wherever server-side bandwidth is an important resource. This profile is typically used in Internet Service Provider (ISP) deployments. In such deployments, minimizing server-side bandwidth is most important. Therefore, maintaining the freshness of an object in cache is less important than controlling the use of server-side bandwidth. The Bandwidth-Gain profile enables various HTTP configurations that can increase page response times and the likelihood that stale objects are served, but it reduces the amount of server-side bandwidth required.
   - **Portal:**
     When configured as a server accelerator or reverse proxy, the ProxySG improves object response time to client requests, scalability of the origin content server (OCS) site, and overall Web performance at the OCS. A server accelerator services requests meant for an OCS, as if it is the OCS itself.
Blue Coat Security First Steps

In some cases, you might see the server bytes increasing even after the client has closed the connection. This can occur when a client requests a large object and aborts the download before receiving the entire object. The server bytes continue to increase because the ProxySG is retrieving the object for caching. You can change this behavior by enabling the bandwidth gain mode. Alternatively, add the following policy:

```xml
<cache>
delete_on_abandonment(yes)
</cache>
```

4. (Optional) To customize the profile settings, select or clear any of the check boxes. If you are concerned about serving stale content, deselect Cache expired objects. Alternatively, select Always check with source before serving object in the Policies tab.

5. Click OK; click Apply.

For more information about the acceleration settings, refer to the chapter Intercepting and Optimizing HTTP Traffic in the SGOS Administration Guide.

Next Step: "Intercept HTTP Traffic" on page 8
To cache Web objects, you must first intercept all HTTP traffic.

1. Log in to the ProxySG appliance Management Console.
2. Select Configuration > Services > Proxy Services.
3. In the Standard service group, locate the applicable HTTP service: Explicit HTTP or External HTTP.
   - **Explicit HTTP**: Intercept this service if clients are configured to send requests directly to the proxy (explicit proxy deployments). The Explicit HTTP proxy service listens on ports 80 and 8080 for explicit connections.
   - **External HTTP**: Intercept this service if the proxy is inline and is transparently proxying connections. The External HTTP proxy service listens on port 80 for all other transparent connections to the ProxySG. Typically, these requests are for access to Internet resources.

   The **Internal HTTP** proxy service listens on port 80 and transparently intercepts HTTP traffic from clients to internal network hosts. It is not typically used for caching.

4. Select Intercept for each set of ports defined for the service.
5. Click Apply.

**Next Step:** "Edit the Explicit or External HTTP Service" on page 9
Edit the Explicit or External HTTP Service

After intercepting HTTP traffic, you must enable the Detect Protocol option. This option enables the proxy to recognize and optimize incoming data.

1. Log in to the ProxySG appliance Management Console.
2. Select Configuration > Services > Proxy Services.
3. In the Standard service group, select the applicable HTTP service: Explicit HTTP or External HTTP and click Edit Service.
4. In the Edit Service dialog, select Detect Protocol.
5. Click **OK**, then **Apply**.

Next Step: "Configure FTP Proxy Settings" on page 11
Configure FTP Proxy Settings

If you want to cache FTP content, you must configure the FTP proxy and "Intercept FTP Traffic" on page 12.

1. Log in to the ProxySG appliance Management Console.
2. Select Configure > Proxy Settings > FTP Proxy.
3. Select Enable Caching of FTP Objects. The default is enabled.

4. Determine how long the object will be cached, in relation to when it was last modified. This setting assumes the object’s last-modified date/time is available from the server. The amount of time that the object will be cached is calculated as follows:

   \[
   \text{percentage} \times (\text{current\_time} - \text{last\_modified\_time})
   \]

   \text{current\_time} is the time when the object was requested by the client. So, if it’s been 10 days since the object was modified, and the setting is 10%, the object will be cached for one day.

5. Enter an amount, in hours, that the object remains in the cache before becoming eligible for deletion. This setting applies to objects for which the last-modified date is unknown. The default is 24 hours.

6. Click Apply.

Next Step: "Intercept FTP Traffic" on page 12
If you want to cache FTP content, you must configure the FTP proxy and intercept FTP traffic.

1. Log in to the ProxySG appliance Management Console.
2. From the Management Console, select **Configuration > Services > Proxy Services**.
3. Intercept FTP traffic:
   a. In the **Standard** service group, expand the services list and locate the **FTP** service.
   b. Verify that **FTP** service is set to **Intercept**. If necessary, select Interception from the drop-down list.

4. Click **Apply**.

Next Step: "Verify Bandwidth Savings" on page 13
Verify Bandwidth Savings

To determine that you have correctly configured your solution, verify the bandwidth savings achieved by the proxy. The following Management Console pages display caching/bandwidth savings:

**Statistics > Summary**

![Graph showing bandwidth savings](image1)

The Statistics > Summary page displays the role of the ProxySG in boosting the performance of traffic within your network using its acceleration, optimization, policy control, and caching techniques.

**Statistics > Traffic Details > Traffic Mix**

![Traffic Mix report](image2)

The Traffic Mix report allows you to view traffic distribution and bandwidth statistics for traffic running through the ProxySG. You can break down the data according to proxy type or service name across various time periods.

**Statistics > Traffic Details > Traffic History**
To view bandwidth usage and bandwidth gain statistics on the HTTP proxy, click Statistics > Traffic History tab. Select the HTTP proxy service to view statistics over the last hour, day, week, month, and year.

**Statistics > Active Sessions > Proxied Sessions**

<table>
<thead>
<tr>
<th>Duration</th>
<th>Client Bytes</th>
<th>Server Bytes</th>
<th>Savings</th>
<th>C</th>
<th>BC</th>
<th>OC</th>
<th>P</th>
<th>BM</th>
<th>Service Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 sec</td>
<td>9,961</td>
<td>1,876</td>
<td>81.17%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Explicit HTTP</td>
</tr>
<tr>
<td>6 sec</td>
<td>6,992</td>
<td>1,254</td>
<td>82.07%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Explicit HTTP</td>
</tr>
<tr>
<td>6 sec</td>
<td>1,459</td>
<td>1,534</td>
<td>0%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Explicit HTTP</td>
</tr>
<tr>
<td>6 sec</td>
<td>7,473</td>
<td>3,373</td>
<td>54.83%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Explicit HTTP</td>
</tr>
<tr>
<td>6 sec</td>
<td>10,635</td>
<td>1,935</td>
<td>81.81%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Explicit HTTP</td>
</tr>
<tr>
<td>6 sec</td>
<td>8,067</td>
<td>8,072</td>
<td>0%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Explicit HTTP</td>
</tr>
<tr>
<td>6 sec</td>
<td>2,163</td>
<td>1,950</td>
<td>9.85%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Explicit HTTP</td>
</tr>
<tr>
<td>6 sec</td>
<td>11,218</td>
<td>1,257</td>
<td>88.79%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Explicit HTTP</td>
</tr>
<tr>
<td>6 sec</td>
<td>6,200</td>
<td>1,312</td>
<td>78.84%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Explicit HTTP</td>
</tr>
<tr>
<td>6 sec</td>
<td>49,116</td>
<td>20,981</td>
<td>57.25%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Explicit HTTP</td>
</tr>
<tr>
<td>6 sec</td>
<td>5,937</td>
<td>1,984</td>
<td>66.58%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Explicit HTTP</td>
</tr>
</tbody>
</table>

The Statistics > Active Sessions > Proxied Sessions page provides an immediate picture of the sessions and the protocol types, services, bytes, savings, and other statistics. These statistics are derived from WAN optimization and object caching and are associated with client traffic.
Caching Troubleshooting

Why isn't the Traffic Mix report showing bandwidth savings? ......................................................... 16
Why are users seeing stale content? ................................................................................................. 17
How can I prevent sensitive content from being cached? ................................................................. 18
How can I delete objects in the cache? ............................................................................................. 19
How do I clear the cache? .................................................................................................................. 20
Why isn't the Traffic Mix report showing bandwidth savings?

**Problem:** The ProxySG Traffic Mix reports aren't showing bandwidth savings.

**Resolution:** Verify that you have:

- Properly configured explicit client redirection.
- Selected the correct acceleration profile for your deployment. See "Select an HTTP Proxy Acceleration Profile" on page 6.
- Intercepted the External or Explicit HTTP services. See "Intercept HTTP Traffic" on page 8
- Ensure that Detect Protocol is enabled. See "Edit the Explicit or External HTTP Service" on page 9

See also, KB3191 Initial ProxySG deployment is not showing any bandwidth savings in the Traffic Distribution Statistics (Traffic Mix).
Why are users seeing stale content?

Problem: Users are frequently seeing stale content.
Resolution: Do the following:

1. Log in to the ProxySG appliance Management Console.
2. Select Configuration > Proxy Settings > HTTP Proxy > Acceleration Profile.
3. Clear the Cache expired objects option and click Apply.
4. Click the HTTP Proxy > Policies tab.
5. Select the Always check with source before serving object option and click Apply.

See also KB5277 Client received stale content when using the normal HTTP Acceleration Profile.
How can I prevent sensitive content from being cached?

**Problem:** If you have sensitive or critical content that you don't want to cache, you can negate caching for that URL by creating policy.

**Resolution:** Refer to KB5229 How to bypass object caching for specific URLs for more information.
How can I delete objects in the cache?

**Problem:** A file is in the ProxySG cache that we don’t want cached.

**Resolution:** Refer to FAQ221 How do I check for cached objects and delete them selectively.
How do I clear the cache?

**Problem:** It is typically not necessary to clear the object cache, except when evaluating the caching capabilities of the product.

**Resolution:** When you clear the cache, all objects in the cache are set to expired. The objects are not immediately deleted, but a subsequent request for any object is not served from the cache; it is retrieved from the OCS. To clear the HTTP object cache:

1. Log in to the ProxySG appliance Management Console.
2. Select **Maintenance > System and Disks > Tasks**.
3. Click **Clear the object cache**.
4. Click **OK** to confirm.

This action may be temporarily intrusive during business hours, because the ProxySG appliance may delete content being accessed by users at that time. Blue Coat recommends performing this task during a maintenance window or outside of business hours.