Blue Coat Security First Steps
Solution for HTTP Object Caching
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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.

Steps

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

1. "Select an HTTP Proxy Acceleration Profile" below.
3. "Edit the Explicit or External HTTP Service“ on page 7 to optimize caching.
5. (Optional) If caching FTP, "Intercept FTP Traffic" on page 10.

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 Pipelining: 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.

  Tip: 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:
Cache HTTP Objects

<cache>
delete_on_abandonment(yes)

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.

Tip: 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" below

Intercept HTTP Traffic

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.

   Note: 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" below

**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**.
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5. Click **OK**, then **Apply**.

**Next Step:** "Configure FTP Proxy Settings" below

**Configure FTP Proxy Settings**

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

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" below**

**Intercept FTP Traffic**

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 Intercept from the drop-down list.
4. Click **Apply**.

Next Step: "Verify Bandwidth Savings" below

**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
Cache HTTP Objects

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

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.
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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>
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<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>
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<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>
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<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>
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<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>
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<td></td>
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<td>Explicit HTTP</td>
</tr>
<tr>
<td>6 sec</td>
<td>49,116</td>
<td>20,981</td>
<td>57.23%</td>
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<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?

**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 4
- Intercepted the External or Explicit HTTP services. See "Intercept HTTP Traffic" on page 6
- Ensure that Detect Protocol is enabled. See "Edit the Explicit or External HTTP Service" on page 7

See also, the following article in the Blue Coat Knowledge Base: 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**.

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:** See the following article in the Blue Coat Knowledge Base: How to bypass object caching for specific URLs
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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 the following Blue Coat Knowledge Base article: 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.

Note: 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.