Release Notes for Cisco Content Engine Software, Release 2.2.0

July 28, 2000

Note The most current Cisco documentation for released products is available on Cisco Connection Online (CCO) at http://www.cisco.com. The online documents may contain updates and modifications made after the hardcopy documents were printed.

Contents

These release notes describe the following topics:

CISCO SYSTEMS

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78-11226-01

Introduction

These release notes describe the new features included in software version 2.2.0 for the Cisco Content Engines and Cisco Cache Engines. To simplify terminology, both the Cache Engine and the Content Engine are referred to as the "CE." Software version 2.2.0 is an extension of software version 2.1.0. See the *Cisco Cache Engine User Guide, Version 2.1.0* for the following information:

- Instructions for installing, configuring and maintaining the Cache Engine 505, 550, and 570
- Command reference for CE global configuration, EXEC, show, and interface commands
- Descriptions of Web Cache Coordination Protocol (WCCP), versions 1 and 2

Determining the Operating Software Version

Note Cisco recommends that you install the most recent software version available for your model of the CE.

To determine the version of the software currently running on the Cisco CE, log on to the CE and enter the **show version** EXEC command.

Downloading Content Engine Software

CE software can be downloaded from the Cisco Systems Software Center at the following URL:

http://www.cisco.com/cgi-bin/tablebuild.pl/cache-engine

Upgrading to a New Software Release

Presently, two types of CE software files are available on CCO to download, files with the .pax suffix and files with the .bin suffix. The .pax file contains the full-image software with the graphical user interface (GUI) and is the file routinely installed. The .bin file software is for recovery situations that require booting from the network, or restoring Flash memory. Refer to the section "Recovering the Cache Engine System Software" in the *Cisco Cache Engine User Guide*, *Version 2.1.0* for instructions on loading your system image with the .bin file.

Step 1 Use an FTP client to transfer the .pax file to the */local* directory of your CE.

Step 2 Log on to the CE, and at the command prompt enter:

install *filename.pax*

where *filename* is the name of the .pax file.

Step 3 Follow the command line interface instructions as prompted.

Enter **y** at the "Copy new image to flash memory?[yes]:" prompt.

Step 4 After the CE has rebooted, use the **show version command** to display the current software version.

New Features in Software Version 2.2.0

Software version 2.2.0 is compatible with all models of the Cisco Series 500 Cache Engines and the Cisco Content Engine 590. To simplify terminology, both the Cache Engine and the Content Engine are referred to as the “CE” in this document.

Content Engine 590 Hardware Support

Software version 2.2.0 will be shipped as a software option for the Cisco Content Engine 590, and supports the use of the Cisco Storage Array.

Catalyst 6000 Family Switch Support

Improved WCCPv2 support for the Cisco Content Engines has been added to the Cisco Catalyst 6000 family switch.

Graphical User Interface Server Port Specification

The **gui-server** global configuration command was added to the command-line interface (CLI).

gui-server Command

To specify or disable the CE management graphical user interface (GUI) server port, use the **gui-server** global configuration command.

gui-server {**enable | port** *port*}

no gui-server {**enable | port** *port*}

enable Enables the graphical user interface.

port	Configures the graphical user interface server port.
port	Port number. The default is 8001 (1–65535).

Examples

The following example enables the CE management GUI on port 8002.

```
CE(config)# gui-server enable
CE(config)# gui-server port 8002
```

Proxy Forwarding

In transparent mode operation, the CE can intercept Hypertext Transfer Protocol (HTTP) and Secure Hypertext Transfer Protocol (HTTPS) traffic intended for another proxy server. The CE with software release 2.2.0 can forward the requests to the intended proxy, forward them to an alternative outgoing proxy, or service the client request directly with the origin server. Domain names, host names, and IP addresses can be excluded from proxy forwarding. The **proxy-protocols** global configuration command and the **show proxy-protocols** command were added to the CLI.

proxy-protocols Command

Use the **proxy-protocols** global configuration command to specify domain names, host names, or IP addresses to be excluded from proxy forwarding.

proxy-protocols {**outgoing-proxy exclude** {**domains-only** | **enable** | **list** *word*} | **transparent** {**default-server** | **original-proxy**}}

no proxy-protocols {**outgoing-proxy exclude** {**domains-only** | **enable** | **list** *word*} | **transparent** {**default-server** | **original-proxy**}}

outgoing-proxy exclude	Sets global outgoing proxy exclude criteria.
domains-only	Excludes only the domain names defined by the **list** option.
enable	Enables global outgoing proxy exceptions.
list	Sets the global outgoing proxy exclude list.
word	Domain names, host names, or IP addresses to be excluded from proxy forwarding.
transparent	Sets transparent mode behavior for proxy requests.
default-server	Uses the CE to go to the origin server or the outgoing proxy, if configured.
original-proxy	Uses the intended proxy server from the original request.

Usage Guidelines

When you enter the **proxy-protocols transparent default-server** global configuration command, the CE forwards intercepted HTTP and HTTPS proxy-style requests to the outgoing HTTP or HTTPS proxy server, if one is configured. If no outgoing proxy server is configured for the protocol, the request is serviced by the CE and the origin server.

The **proxy-protocols transparent original-proxy** global configuration option specifies that requests sent by a web client to another proxy server, but intercepted by the CE in transparent mode, be directed back to the intended proxy server.

The **proxy-protocols outgoing-proxy exclude** global configuration options allow the administator to specify domain names, host names, or IP addresses to be globally excluded from proxy forwarding. Domains are entered as an ASCII string, separated by spaces. The wildcard character * (asterisk) can be used for IP addresses (for instance, 174.12.*.*). Only one exclusion can be entered per command line. Enter successive command lines to specify multiple exclusions.

Examples

The following example configures the CE to forward intercepted HTTPS proxy-style requests to an outgoing proxy server. The domain names cisco.com, cruzio.com, and the IP addresses 174.12.*.* are excluded from proxy forwarding. The show proxy-protocols command verifies the configuration.

```
CE(config)# https proxy outgoing host 174.10.10.10 266
CE(config)# proxy-protocols transparent default-server
CE(config)# proxy-protocols outgoing-proxy exclude enable
CE(config)# proxy-protocols outgoing-proxy exclude list cisco.com
CE(config)# proxy-protocols outgoing-proxy exclude list 174.12.*.*
CE(config)# proxy-protocols outgoing-proxy exclude list cruzio.com
CE# show proxy-protocols all
Transparent mode forwarding policies: default server
  Global outgoing proxy exclude list is enabled
  Global outgoing proxy exclude list:
    cisco.com
    cruzio.com
    174.12.24.24
  Excluding only the domain names on the list is disabled.
```

The following example configures the CE to forward intercepted HTTP proxy-style requests to the intended proxy server.

```
CE(config)# proxy-protocols transparent original-proxy
```

Related Commands

http proxy outgoing

https proxy outgoing

show proxy-protocols

show proxy-protocols Command

Use the **show proxy-protocols** command to display current global outgoing proxy exclude status and criteria.

show {**all** | **outgoing-proxy** | **transparent**}

all	All proxy protocols-related parameters.
outgoing-proxy	Global outgoing proxy exceptions.
transparent	Transparent mode protocol policies.

Examples

```
console# show proxy-protocols all
  Transparent mode forwarding policies: original proxy
  Global outgoing proxy exclude list is disabled
  Global outgoing proxy exclude list:
    cisco.com
    cruzio.com
    174.12.24.24
  Excluding only the domain names on the list is disabled
```

Related Commands

proxy-protocols

Proxy Protocols Page

A Proxy Protocols page was added to the **Caching** menu, as shown in Figure 1. See the Proxy Protocols online help for further information.

Figure 1 Management GUI—Proxy Protocols Page

Memory File System

The **mfs** EXEC command and the **show mfs statistics** commands were added to the CLI. No changes were made to the Management GUI.

mfs Command

To alter default settings of the memory file system (mfs), use the **mfs** EXEC command.

mfs {**clear** [**force**] | **mount** [*size* [*objects*]] | s**ync** | **unmount**}

clear	Deletes all objects from the mfs volume.
force	Forcefully deletes all objects from the memory file system.
mount	Mounts the memory file system.
size	Maximum size of the memory file system in megabytes (1–1000).
objects	Maximum number of objects in the memory file system (1–1000000).
sync	Saves memory file system objects to the cache file system (cfs).
unmount	Unmounts the memory file system.

Usage Guidelines

The memory file system cannot be configured with the GUI.

Examples

The example defines the memory file system to use 1 megabyte of memory and to contain no more than 22222 objects.

```
CE# mfs mount 1 22222
```

Related Commands

cfs

show mfs statistics

show mfs statistics Command

Use the **show mfs** command to display the statistics and status information of the memory file system.

shows mfs statistics

statistics Displays memory file system statistics.

Example

```
console# show mfs statistics
Filesystem Statistics for volume MFS   Status: mounted
    Data Bytes Max                0 KB
    Data Bytes Used               0 KB
    Inode Hits                    0
    Inode Misses                  0
    MFS Read error                0
    MFS Write error               0
    MFS Object Truncations        0
    Volume Clears                 0
    Volume Syncs                  1
    Mount time      Wed Jul 19 08:56:48 2000
```

Related Commands

mfs

show cfs statistics

HTTPS and SSL Support

Software version 2.2.0 supports secure HTTP (HTTPS) with secure socket layers (SSL). The CE can be configured as an HTTPS proxy server or can transparently intercept and service HTTPS requests sent to another HTTPS proxy server. The HTTPS feature also implements the multiport feature, allowing HTTPS to share ports with native HTTP or other protocols. The **https** and **debug https** global configuration commands, as well as the **show https** command were added to the CLI. An HTTPS Proxy page was added to the **Caching** menu, as shown in Figure 2. See the HTTPS online help for further information.

https Command

Use the **https** global configuration command to configure the CE for HTTPS proxy services.

https {**destination-port** {**allow** {*port* | **all**} | **deny** {*port* | **all**}} | **proxy** {**incoming** *port* | **outgoing** {**host** *hostname* | *address*} *port*}}

no https {**destination-port** {**allow** {*port* | **all**} | **deny** {*port* | **all**}} | **proxy** {**incoming** *port* | **outgoing** {**host** *hostname* | *address*} *port*}}

destination-port	Destination port restrictions proxy.
allow	Allows HTTPS traffic to ports.
port	Port numbers on which to listen for HTTPS requests (1–65535).
all	Listens to all ports from 1 to 65535.
deny	Denies HTTPS traffic to ports.
proxy	Sets configuration parameters for proxy mode.
incoming	Sets configuration for incoming proxy-mode requests.
port	Port numbers on which to listen for HTTPS requests (1–65535).
outgoing	Sets configuration to direct outgoing requests to another proxy server.
host	Uses outgoing HTTPS proxy.
hostname	Hostname of outgoing proxy.
address	IP address of outgoing proxy.
port	Port of outgoing proxy (1–65535).

Usage Guidelines

HTTPS Proxy Features	Related CLI Commands (Abbreviated Syntax)
Supports proxy on multiple ports (1–8)	**https proxy incoming** *port_1-65535* . . . (up to 8 ports)
Shares proxy ports with transparent services	Configure a WCCP service and an HTTPS incoming proxy on the same port.
Shares proxy ports with other proxy protocol services	**https proxy incoming** *port_1-65535* . . . (up to 8 ports) **wccp service-number . . .** **wccp port-list . . .** **wccp custom-web-cache . . .**
Restricts proxy protocols on specific ports (up to 8)	**https destination-port** {**allow** | **deny**} *port_1-65535* ... (up to 8 ports)
Configures outgoing HTTPS proxy server	**proxy-protocols outgoing-proxy exclude** . . . **https proxy outgoing host** {**hostname** | **ip_address**} *port_1-65535*
Original versus default outgoing HTTPS proxy decision process	**proxy-protocols transparent** {**default-server** | **original-proxy**}

HTTPS Proxy Features	Related CLI Commands (Abbreviated Syntax)
Uses global exclude list(s) for HTTPS proxy	**proxy-protocols outgoing-proxy exclude** . . .
Handles in transparent mode an HTTPS request bound for another proxy host	**proxy-protocols transparent** {**default-server** | **original-proxy**}

The order in which the CLI commands are entered is not important.

The CE with software version 2.2.0 supports HTTPS in the following two scenarios:

- The CE receives an HTTPS request sent by a Web client configured to use CE as an HTTPS proxy server.
- The CE in transparent mode intercepts a request sent by a Web client to another HTTPS proxy server.

In both cases the CE creates a connection to the origin server (directly or through another proxy server) and allows the Web client and origin server to set up an SSL tunnel through the CE.

HTTPS traffic is encrypted, and cannot be interpreted by the CE or any other device between the Web client and the origin server. HTTPS objects are not cached.

Because HTTPS does not provide headers used for most rule matching, the CE can only apply rules that are based on server name, domain name, or server IP address and port. See the “Rules Template” section on page 31 for other further information.

The CE as an HTTPS proxy server supports up to eight ports. It can share the ports with transparent-mode services and with HTTP. In proxy mode, the CE accepts and services the HTTPS requests on the ports specified with the **https proxy incoming** command. All HTTPS requests on other proxy-mode ports are rejected in accordance with the error-handling settings on the CE. In transparent mode, all HTTPS proxy-style requests intended for another HTTPS proxy server are accepted. The CE acts on these transparently received requests in accordance with the **proxy-protocols transparent** command.

When the CE is configured to use an HTTPS outgoing proxy with the **https proxy outgoing host** command, all incoming HTTPS requests are directed to this outgoing proxy. The **proxy-protocols outgoing-proxy exclude** command creates a global proxy exclude list effective for all proxy server protocols including HTTPS. The CE applies the following logic when an outgoing proxy server is configured:

- If the destination server is in the global exclude list, then go directly to the destination server.
- If the destination server is not in the global exclude list, the request is HTTP, and the destination server is in the HTTP exclude list, then go directly to the destination server.
- If the destination server is not in the global exclude list or in the HTTP exclude list, then go to the outgoing proxy server.

When a CE intercepts a proxy request intended for another proxy server and there is no outgoing proxy configured for HTTPS, and the **proxy-protocols transparent default-server** command is invoked, the CE addresses the request to the destination server directly and not to the client’s intended proxy server.

Statistics Reporting

Only connection statistics are reported. Because requests and responses are sent through the secure tunnel, the CE is not able to identify the number of requests sent, or the number of bytes per request. Thus, the request and transaction per second (TPS) statistics are not available for HTTPS.

Transaction Logging

The CE logs HTTPS transactions in the transaction log in accordance with Squid syntax. One log entry is made for each HTTPS connection, though many transactions are performed per connection. The CE is not aware of objects conveyed through the SSL tunnel, only the HTTPS server name,

Syslog and URL Tracking

When URL tracking is enabled, the CE logs HTTPS transaction information to the syslog file. The syslog entries have the prefix <https>. For HTTPS there are no "misses" or "hits." Because the CE ignores objects transferred through an SSL tunnel, there is only one URL tracking entry per HTTPS connection (similar to the transaction log).

Examples

In this example, the CE is configured as an HTTPS proxy server, and accepts HTTPS requests on ports 81, 8080, and 8081.

```
CE(config)# https proxy incoming 81 8080 8081
```

In this example, the CE is configured to forward HTTPS requests to an outgoing proxy server (10.1.1.1) on port 8880.

```
CE(config)# https proxy outgoing host 10.1.1.1 8880
```

In this example, HTTPS destination port connection requests are denied for ports 20, 21, 23, and 119.

```
CE(config)# https destination-port deny 20 21 23 119
```

In this example, a domain name is excluded from being forwarded to outgoing proxy server.

```
CE(config)# proxy-protocols transparent default-server
CE(config)# proxy-protocols outgoing-proxy exclude enable
CE(config)# proxy-protocols outgoing-proxy exclude list cruzio.com
```

Related Commands

proxy-protocols

http proxy

show proxy-protocols

show http proxy

show https Command

Use the **show https** command to display HTTPS proxy status and port policies.

show https {**all** | **destination-port** | **proxy**}

all	All HTTPS related configuration parameters.
destination-port	Destination port restrictions.
proxy	Proxy mode configuration.

Example

```
console# how https all
Incoming HTTPS proxy:
Not servicing incoming proxy mode connections.
Outgoing HTTPS proxy:
Directing request to proxy server at 1.1.1.1 port 76.
Destination port policies:
  Allow    all
  Allow    111   222   333
  Allow     33    44
  Deny     all
  Deny      20
  Deny      20    21    23   119
```

Related Commands

show statistics https

show statistics https Command

Use the **show statistics https** command to display HTTPS connection statistics.

show statistics https

Example

```
console# show statistics https
                              HTTPS Statistics
                                                Total               % of Total
                             -------------------------------------------------
          Total connections:                        0                       -
          Connection errors:                        0                     0.0
                Total bytes:                        0                       -
  Bytes received from client:                       0                     0.0
        Bytes sent to client:                       0                     0.0
```

Related Commands

show https

HTTPS Proxy Page

An HTTPS Proxy page has been added to the Caching menu, as shown in Figure 2. See the HTTPS online help for further information.

Figure 2 Management GUI—HTTPS Proxy Page

LDAP User Authentication

Enterprise system administrators can now use the CE to restrict Internet usage of users with the Lightweight Directory Access Protocol (LDAP). LDAP provides most of the services of the X.500 protocol, with less complexity and overhead. The **ldap** global configuration command was added to the CLI. Use the **no** form of the command to disable LDAP functions.

ldap Command

To configure the CE to perform user authentication with an LDAP server, use the **ldap** global configuration command.

ldap {**authcache** {**auth-timeout** *minutes* | **max-entries** *entries*} | **client auth-header** {**401** | **407**} | **server** {**allow-mode** | **base** *baseword* | **filter** *filterword* | **host** {*hostname* | *hostipaddress*} **port** *portnumber* | **retransmit** *retries* | **timeout** *seconds* | **user-id-attribute** *useidword*}}

no ldap {**authcache** {**auth-timeout** *minutes* | **max-entries** *entries*} | **client auth-header** {**401** | **407**} | **server** {**allow-mode** | **base** *baseword* | **filter** *filterword* | **host** {*hostname* | *hostipaddress*} **port** *portnumber* | **retransmit** *retries* | **timeout** *seconds* | **user-id-attribute** *useidword*}}

authcache	Configures LDAP authentication cache parameters.
auth-timeout	Sets the timeout value of records in the authentication cache.
minutes	Specifies length in minutes between the user's last internet access and the removal of their entry from the authorization cache, forcing reauthentication with the LDAP server (30–1440). Default is 480 minutes; minimum is 30 minutes; maximum is 1440 minutes (24 hours).
max-entries	Sets the maximum number of entries in the authentication cache.
entries	Specifies the maximum number of entries in the authentication cache (500–32000). Default values are as follows: • 2000 for the CE505 • 4000 for the CE550 • 8000 for the CE570 • 16000 for the CE590 Minimum is 50 percent of default value, Maximum is 200 percent of default value.
client	Configures LDAP client parameters.

auth-header	Specifies which HTTP header to use for authentication (user ID and password) when the style of the HTTP request indicates that no proxy server is present. Headers can be either HTTP 401 (server authentication) or HTTP 407 (proxy authentication). The default is HTTP 401.
401	Uses HTTP 401 to query users for credentials.
407	Uses HTTP 407 to query users for credentials.
server	Configures LDAP server parameters.
allow-mode	Allows HTTP traffic if the LDAP server does not respond. The default is enabled.
base	Sets the base distinguished name of the starting point for the search in the LDAP database.
baseword	Specifies th base value. There is no default.
filter	Sets the LDAP filter for the authentication group.
filterword	Specifies text for the LDAP filter. There is no default.
host	Sets host parameters.
hostname	Specifies host name of the LDAP server. Two servers can be named.
hostipaddress	Specifies the IP address of the LDAP server.
port	Sets the TCP port for the LDAP authentication server.
portnumber	Specifies LDAP server port number (1–65535). The default is 389.
retransmit	Sets the number of retries to the active server.
retries	Specifies the number of retries. The default is 3 retries (1–10).
timeout	Sets the time to wait for an LDAP server to reply.
seconds	Specifies the waiting time in seconds (1–100). The default is 5 seconds; minimum is 1 second; maximum is 100 seconds.
user-id-attribute	Sets the User ID attribute on the LDAP server.
useidword	Specifies the value for the User ID attribute (default is "uid").

Usage Guidelines

An LDAP-enabled CE authenticates users with an LDAP server. With an HTTP query, the CE obtains a set of credentials from the user (user ID and password) and compares them against those in an LDAP server.

Software version 2.2.0 implements LDAP version 3 and supports all LDAP features except for Secure Authentication and Security Layer (SASL).

When the CE authenticates a user through the LDAP server, a record of that authentication is stored locally in the CE RAM (authentication cache). As long as the authentication entry is kept, subsequent attempts to access restricted Internet content by that user do not require LDAP server lookups.

The **ldap authcache max-entries** command sets the maximum number of authentication cache entries retained. The default values are as follows:

- CE505—2,000 entries (128 MB total system memory)
- CE550—4,000 entries (256 MB total system memory)
- CE570—6,000 entries (384 MB total system memory)
- CE590—16,000 entries (1 GB total system memory)

The **ldap authcache auth-timeout** command specifies how long an inactive entry can remain in the authentication cache before it is purged. Once a record has been purged, any subsequent access attempt to restricted Internet content requires an LDAP server lookup for reauthentication.

Proxy Mode LDAP Authentication

The events listed below occur when the CE is configured for LDAP authentication and one of the following two scenarios is true:

- The CE receives a proxy-style request from a client.
- The CE receives a transparent (WCCP-style) request from a client and the CE **ldap client auth-header** command parameter is set to 407 (because there is an upstream proxy).

1. The CE examines the HTTP headers of the client request to find user information (contained in the Proxy-Authorization header).
2. If no user information is provided, the CE returns a 407 (Proxy Authorization Required) message to the client.
3. The client resends the request, including the user information.
4. The CE searches its authentication cache (based on user ID and password) to see if the client has been previously authenticated.
5. If a match is found, the request is serviced normally.
6. If no match is found, the CE sends a request to the LDAP server to find an entry for this client.
7. If the server finds a match, the CE allows the request to be serviced normally and stores the client's user ID and password in the authentication cache.
8. If no match is found, the CE again returns a 407 (Proxy Authorization Required) message to the client.

Transparent Mode LDAP Authentication

The events listed below occur when the CE is configured for LDAP authentication and both of the following are true:

- The CE receives a redirected request from a client.
- The **ldap client auth-header** configuration parameter is set to 401 (because there is no upstream proxy).

1. The CE searches its authentication cache to see if the user's IP address has been previously authenticated.
2. If a match is found, the CE allows the request to be serviced normally.

3. If no match is found in the first step, the CE examines the HTTP headers to find user information (contained in the Authorization header).
4. If no user information is provided, the CE returns a 401 (Unauthorized) message to the client.
5. The client resends the request, including the user information.
6. The CE sends a request to the LDAP server to find an entry for this user.
7. If the server finds a match, the CE allows the request to be serviced normally and stores the client's IP address in the authentication cache.
8. If no match is found, the CE again returns a 401 (Unauthorized) message to the client.

In transparent mode, the CE uses the client's IP address as a key for the authentication database.

If you are using LDAP user authentication in transparent mode, it is recommended that the AuthTimeout interval configured with the **ldap authcache auth-timeout** command be short. IP addresses can be reallocated, or different users can access the Internet through an already authenticated device (PC, workstation, and the like). Shorter AuthTimeout values help reduce the possibility that individuals can gain access using previously authenticated devices. When the CE operates in proxy mode, it can authenticate with the user ID and password.

Allow Mode

Two LDAP servers can be specified with the **ldap server host command** to provide redundancy and improved throughput. CE load-balancing schemes distribute the requests to the servers.

If the CE cannot connect to either server, no authentication can take place. When the **ldap server allow-mode** command is invoked, the client is permitted access to the origin server if the LDAP server does not respond within the timeout interval specified with the **ldap server timeout** command. If allow mode is off (**no ldap server allow-mode**), users who have not been previously authenticated are denied access.

Security Options

The CE uses simple (nonencrypted) authentication to communicate with the LDAP server. Future expansion may allow for more security options based on SSL, SASL, or certificate-based authentication.

Domain Exclude

To exclude domains from LDAP authentication, define a **no-auth** rule. LDAP or Remote Authentication User Dial-in Service (RADIUS) authentication takes place only if the site requested does not match the specified pattern. See the “Rules Template” section on page 31 for more details.

LDAP and RADIUS Considerations

LDAP authentication can be used with Websense URL filtering, but not with RADIUS authentication. Both LDAP and RADIUS rely on different servers, which may require different user IDs and passwords, making RADIUS and LDAP authentication schemes mutually exclusive. Should both RADIUS and LDAP be configured on the CE at the same time, LDAP authentication is executed, not RADIUS authentication.

Hierarchical Caching

In some cases, users are located at branch offices. A CE (CE1) can reside with them in the branch office. Another CE (CE2) can reside upstream, with an LDAP server available to both CEs for user authentication.

Note The **http append ldap-proxy-auth-header** global configuration command must be configured on the downstream CEs to ensure that proxy-authorization information, required by upstream CEs, is not not stripped from the HTTP request by the downstream CEs.

If branch office user 1 accesses the Internet, and content is cached at CE1, then this content cannot be served to any other branch office user unless that user is authenticated. CE1 must authenticate the local users.

Assuming that both CE1 and CE2 are connected to the LDAP server and authenticate the users, when branch office user 2 firsts requests Internet content, CE1 responds to the request with an authentication failure response (either HTTP 407 if in proxy mode, or HTTP 401 if in transparent mode). User 2 enters the user ID and password, and the original request is repeated with the credentials included. CE1 contacts the LDAP server to authenticate user 2.

Assuming authentication success, and a cache miss, the request along with the credentials is forwarded to CE2. CE2 also contacts the LDAP server to authenticate user 2. Assuming success, CE2 either serves the request out of its cache or forwards the request to the origin server.

User 2 authentication information is now stored in the authentication cache in both CE1 and CE2. Neither CE1 nor CE2 needs to contact the LDAP server for user 2's subsequent requests (unless user 2's entry expires and is removed from the authentication cache).

This scenario assumes that CE1 and CE2 use the same method for authenticating users. Specifically, both CEs must expect the user credentials (user ID and password) to be encoded in the same way.

Hierarchical Caching in Transparent Mode

When the CE operates in transparent mode, the user's IP address is used as a key to the authentication cache. When user 2 sends a request transparently to CE1, after authentication, CE1 will insert its own IP address as the source for the request. Therefore CE2 cannot use the source IP address as a key for the authentication cache.

When CE1 inserts its own IP address as the source, it must also insert an X-Forwarded-For header in the request (**http append x-forwarded-for-header** command). CE2 must first look for an X-Forwarded-For header. If one exists, that IP address must be used to search the authentication cache. Assuming the user is authenticated at CE2, then CE2 must not change the X-Forwarded-For header, just in case there is a transparent CE3 upstream.

In this scenario, if CE1 does not create an X-Forwarded-For header (for example, if it is not a Cisco CE and does not support this header), then authentication on CE2 will not work.

Hierarchical Caching, CE in Transparent Mode with an Upstream Proxy

In a topology with two CEs, assume that CE1 is operating in transparent mode and CE2 is operating in proxy mode, with the browsers of all users pointing to CE2 as a proxy.

Because the browsers are set up to send requests to a proxy, an HTTP 407 message is sent from CE1 back to each user to prompt for credentials. By using the 407 message, the problem of authenticating based on source IP address is avoided. The user name and password can be used instead.

This mode provides better security than using the HTTP 401 message. The CE examines the style of the address to determine if there is an upstream proxy. If so, the CE uses an HTTP 407 message to prompt the user for credentials even when operating in transparent mode.

Authentication Cache Size Adjustments

If the authentication cache is not large enough to accommodate all authenticated users at the same time, the CE purges older entries that have not yet timed out.

The CE increments statistics that record these events. The **show statistics ldap authcache** command displays these statistics. When the authentication cache reaches 100% of capacity, a syslog message is generated. If the capacity stays at 100%, no new syslog messages are generated.

Another message is generated only if the capacity drops below 85%, and then returns to 100%. These syslog entries tell the administrator that the authentication cache size limit may need to be increased, assuming that enough system memory is available.

Transaction Logging

Once a user has been authenticated through LDAP, all transaction logs generated by the CE for that user contain user information. If the CE is acting in proxy mode, the user ID is included in the transaction logs. If the CE is acting in transparent mode, the user IP address is included instead.

If the **transaction-logs sanitize** command is invoked, the user information is suppressed.

Examples

Specify an LDAP server with IP address 1.1.1.1 on port 88.

```
CacheEngine(config)# ldap server host 1.1.1.1 port 88
```

To delete an LDAP server use the **no ldap server** command.

```
CacheEngine(config)# no ldap server host 1.1.1.1
```

Specify that the CE should use header 407 when asking the end user for authentication credentials (user ID and password).

```
CacheEngine(config)# ldap client auth-header 407
```

Related Commands

show ldap

show statistics ldap

clear statistics ldap

debug ldap

http append ldap-proxy-auth-header Command

Configure the **http ldap-proxy-auth-header** global configuration command when the CE and an upstream server or proxy is performing LDAP authentication.

http ldap-proxy-auth-header {*hostname* | *ipaddress*}

hostname	Hostname of upstream proxy or server that will perform LDAP authentication.
ipaddress	IP address of upstream proxy or server that will perform LDAP authentication.

Usage Guidelines

To prevent disclosure of a user's proxy authentication credentials to another host, the CE removes the HTTP Proxy-Authorization header from the HTTP request when it forwards the request. With LDAP authentication it is important that upstream proxies share the authentication credentials carried in the header. To prevent the CE from stripping out the HTTP Proxy-Authorization header, enter the **http append ldap-proxy-auth-header** global configuration command. The CE will forward the Proxy-Authorization header with credentials to the specified host name or IP address.

Examples

```
console(config)# http append ?
  ldap-proxy-auth-header  Forward 'Proxy Authorization' headers in outbound
                          requests
  via-header              Include 'Via' header in responses/replies
  x-forwarded-for-header  Notify client-ip-addr to web-server via
                          'X-Forwarded-For' header

console(config)# http append ldap-proxy-auth-header ?
Hostname or A.B.C.D  IP address or hostname of proxy/server to receive proxy-auth headers
console(config)# http append ldap-proxy-auth-header 172.10.1.1
```

Related Commands

ldap

show ldap

show ldap Command

The **show ldap** command to display the contents of the LDAP authentication cache and the LDAP configuration values.

show ldap {**authcache** | **server**}

authcache	Displays the contents of the LDAP authentication cache.
server	Displays LDAP server information.

Examples

To display the contents of the authentication cache, use the **show ldap authcache** command.

```
console# show ldap authcache
AuthCache
=====================
hash   914 : uid: admin nBkt: 0x0 nLRU: 0x0 pLRU: 0x0
             lacc: 964025922 ipAddr: a44247ab keyTp: 1
```

To display the LDAP configuration options of the CE, use the **show ldap server** command.

```
console# show ldap server
LDAP Configuration:
------------------
LDAP Authentication is on
    Timeout             = 5 seconds
    AuthTimeout         = 480 minutes
```

```
Retransmit          = 3
UserID-Attribute    = uid
Filter              =
Base                = ""
AllowMode           = ENABLED
----------------------
Servers
-------
IP 1.1.1.1, Port = 88, State: ENABLED
```

Related Commands

clear statistics ldap

ldap

show statistics ldap

show statistics ldap Command

Use the **show statistics ldap** command to display authentication and LDAP server related statistics.

show statistics ldap {**authcache** | **server** {**interface** | **protocol**}}

authcache	Displays LDAP authentication cache statistics.
server	Displays LDAP server statistics.
interface	Displays LDAP interface statistics.
protocol	Displays LDAP protocol response counts.

Examples

To show LDAP statistics, use the **show stat ldap server protocol** command. The output is displayed for each LDAP server. Because of the large number of protocol responses (about 50), only nonzero statistics are displayed.

```
CacheEngine# show stat ldap server protocol
     LDAP Server
     --------------------------------
     1.1.1.1
     LDAP Success:              2005
     LDAP Invalid Syntax:          3
     --------------------------------
     100.4.5.6
     LDAP Success:               100
     LDAP Undefined Type:          9
     LDAP Unwilling To Perform:    8
```

To show statistics about access to the LDAP authentication cache, use the **show stat ldap authcache** command .

```
CacheEngine# show stat ldap authcache
     Adds                       1308  Deletes                    297
     Hits                      23491  Misses                    1598
```

```
Current Entries Used        1011  No Avail Entry                0
Avg.Cache Search             1.3  Max Cache Search Miss          3
Max Cache Search Hit           2  Dup Add Attempts              0
Number of Compares         26998  Userid Passwd Too Long        0
```

The **show statistics ldap server interface** command shows the LDAP statistics that refer to the interface between the rest of the CE code and the LDAP module. The output is broken down by server.

```
CacheEngine# show stat ldap server interface
     LDAP Server
     ---------------------------------------
     1.1.1.1
                  Attempts     Successes       Fails
     Connect      0            0               0
     Bind         0            0               0
     Search       0            0               0

     Unknown Password Format:
     -----------------------------------------
     100.4.5.6
                  Attempts     Successes       Fails
     Connect      0            0               0
     Bind         0            0               0
     Search       0            0               0

     Unknown Password Format:
     ---------------------------------------
```

Related Commands

clear statistics ldap

ldap

show ldap

clear ldap authcache Command

Use the **clear ldap authcache** command to purge the CE of all the the LDAP authentication cache entries.

clear ldap authcache

Examples

To purge all the entries in the authentication cache, use the **clear ldap authcache** command.

```
console# clear ldap authcache
Entries removed from authcache: 1
```

Related Commands

show ldap

clear statistics ldap

clear statistics ldap Command

Use the **clear statistics ldap** command to reset the LDAP statistic counters.

clear statistics ldap {**authcache** | **server** {**protocol** | **interface** | **all**}

authcache	Clears authentication cache statistics.
server	Clears LDAP server statistics.
protocol	Clears LDAP protocol statistics.
interface	Clears LDAP interface statistics.
all	Clears all LDAP statistics.

Examples

To clear LDAP server statistics, use the **clear statistics ldap server** command.

```
CacheEngine# clear statistics ldap server ?
       protocol    Clear LDAP protocol statistics
       interface   Clear LDAP interface statistics
       all         Clear all LDAP statistics
```

To clear LDAP authentication cache statistics, use the **clear statistics ldap authecache** command

```
console# clear statistics ldap authcache
Reset AuthCache Statistics
```

Related Commands

clear ldap authcache

debug ldap Command

The **debug ldap** command was added to the CLI. The no form of the command disables any option.

debug ldap {**authcache** {**all | daemon | entry**} | **server** {**all | ber | bind | connect | error | receive | request | trace**}}

no debug ldap {**authcache** {**all | daemon | entry**} | **server** {**all | ber | bind | connect | error | receive | request | trace**}}

authcache	Sets LDAP authentication cache debug options.
server	Sets LDAP server debug options.
all	Sets all authcache debugging.
daemon	Debugs the authcache daemon.
entry	Debugs authentication cache entry processing.
all	Sets all LDAP debugging.
ber	LDAP bit error rate debugs.
bind	LDAP bind debugs.
connect	LDAP connect debugs.
error	LDAP application program interface errors.
receive	LDAP receive debugs.
request	LDAP request debugs.
trace	LDAP trace debugs.

Usage Guidelines

In general, it is recommended that debug commands be used only at the direction of Cisco technical support personnel.

LDAP Page

An LDAP page was added to the Caching Menu, as shown in Figure 3. See the LDAP online help for further information.

Figure 3 Management GUI—LDAP Page

Multiport Receive of Transparent HTTP Requests

When operating with WCCP version 2, software version 2.2.0 allows the CE to receive and service HTTP and HTTPS requests transparently on multiple ports. The **wccp port-list** and the **wccp service-number** global configuration commands were added to the CLI.

wccp port-list Command

Use the **wccp port-list** global configuration command to associate ports with specific WCCP generic services.

wccp port-list *listnum portnum*

no wccp port-list *listnum portnum*

listnum	Port list number (1–8).
portnum	Port number. Up to eight ports per list number are allowed (1–65535).

Usage Guidelines

Up to 8 port numbers can be included in a single port list. The port list is referenced by the **wccp service-number** command that configures a specific WCCP generic service (90–97) to operate on those ports included in the port list.

Examples

In the following example, ports 10, 200, 3000, 110, 220, 330, 440 and 40000 are included in port list 3.

console(config)# **wccp port-list 3 10 200 3000 110 220 330 440 40000**

Related Commands

wccp service-number

wccp service-number Command

Use the **wccp service-number** command to enable up to eight generic WCCP redirection services on the CE. The services must also be configured on the router running WCCP Version 2.

wccp service-number *servnumber* **router-list-number** *routnumber* **port-list-number** *plistnumber* [**hash-destination-ip**] [**hash-destination-port**] [**hash-source-ip**] [**hash-source-port**] [**password** *passw*] [**weight** *percentage*]

no wccp service-number *servnumber*

service-number	Specifies the generic WCCP Version 2 service number.
servnumber	WCCP Version 2 service number (90–97).
router-list-number	Specifies the router list number.
routnumber	Router list number (1–8).
port-list-number	Specifies the port list number.
plistnumber	Port list number (1–8).
hash-destination-ip	(Optional.) Load-balancing hash—destination IP (default).
hash-destination-port	(Optional.) Load-balancing hash—destination port.

hash-source-ip	(Optional.) Load-balancing hash—source IP.
hash-source-port	(Optional.) Load-balancing hash—source port.
password	(Optional.) Specifies authentication password.
passw	Password.
weight	(Optional.) Sets weight percentage for load balancing (0–100).

Usage Guidelines

Proxy Mode

The CE supports up to eight incoming ports for HTTPS and eight incoming ports for HTTP. The incoming proxy ports can be the same ports that are used by the transparent-mode services. The incoming proxy ports can be changed without stopping any WCCP services running on the CE or on other CEs in the farm.

The CE parses requests received on a port to determine the protocol to be serviced. If the CE is not configured to support a received protocol, the proxy server returns an error. For example, if port 8080 is configured to run an HTTP and HTTPS proxy service, a File Transfer Protocol (FTP) request coming to this port is rejected.

Some TCP ports are reserved for system or network services (for example the CE FTP server and GUI) and cannot be used for proxying services in transparent mode or in proxy mode. If more than eight ports are required, the administrator can configure multiple custom WCCP services. Intercepted HTTP and HTTPS requests addressed to other proxy servers (received on transparent-mode ports) are serviced according to the **proxy-protocols transparent** command parameters.

Transparent Mode

The **wccp service-number** command can enable up to eight WCCP redirection services on a CE, provided that the services are also configured on the router. There are eight new generic WCCP services (90 to 97).

Each **wccp service-number** command specifies a router list, single port list (containing up to eight ports), hash parameters, password, and weight. With eight custom services using a maximum number of eight ports each, the maximum number of ports that can be specified for transparent redirection is 64.

The legacy custom web cache and reverse proxy services (service numbers 98 and 99) can be configured with only one port each. If only one legacy service is configured, the total maximum number of transparent redirection ports is 57. If both legacy services are configured, the maximum port total is 50.

All ports receiving HTTP that are configured as members of the same WCCP service share the following characteristics:

- They have the same hash parameters as configured with the **wccp service-number** command.
- The service on individual ports cannot be stopped or started individually (WCCP Version 2 restriction).

With CEs in a farm, the following restrictions apply:

- All CEs that use the same WCCP service are required to configure the same list of ports and the same hash parameters.

- A CE that tries to join the farm with the same WCCP service using a different list of ports or different hash parameters is rejected by the router.
- To change the port list for a particular WCCP service, WCCP service must be stopped on all involved CEs and then all must be restarted with the new parameters.

The CE WCCP implementation currently allows global settings that apply to all WCCP services, such as healing parameters, slow start, and others. The multiple service model does not change that, and the settings in question remain global for the whole WCCP system.

Modifying Configurations

For proxy mode and transparent-mode commands, issuing a new command replaces the old one.

In proxy-mode, a **no** command that specifies the protocol and no ports disables the service for that protocol. To add or remove ports in proxy mode, issue a new command that specifies all the ports to be used. Ports can also be removed by a **no** command with a list of ports to remove. A **no** command that specifies only some of the configured ports removes these ports from the list, and the service continues to run on the remaining ports. For example, if HTTPS is received on 8080, 8081, and 82, the **no https proxy incoming 8081** command disables port 8081 but permits the HTTPS proxy service to continue on ports 8080 and 82.

In transparent-mode, to add or remove ports for a WCCP service, modify the port-list or create a new port list for the WCCP service.

In transparent mode, a **no** command that specifies the WCCP service number disables the service.

Examples

In the following example, WCCP generic service 90 is configured with router list 1, and port list 1. Port 8080 is the only element in port list 1.

```
CE(config)# wccp 90 router-list-num 1 port-list-number 1 hash-source-ip
hash-destination-port

CE(config)# wccp port-list 1 8080
```

In this example, the CE is configured to accept HTTP and HTTPS proxy requests on ports 81, 8080 and 8081:

```
CE(config)# http proxy incoming 81 8080 8081
CE(config)# https proxy incoming 81 8080 8081
```

The **show wccp services** was added to the CLI.

Related Commands

https proxy incoming

http proxy incoming

proxy-protocols

show https proxy

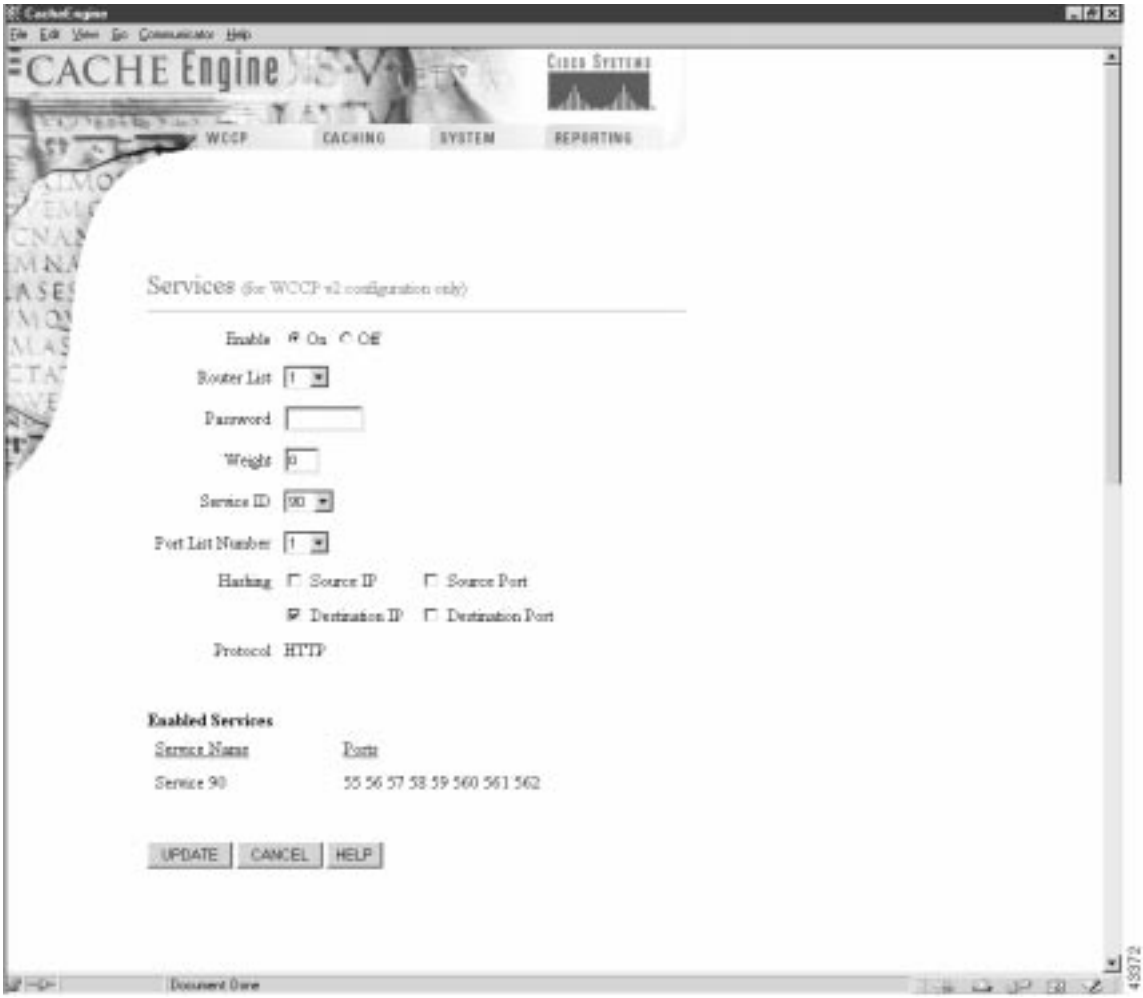
show http proxy

show services

Service Page

A Services page has been added to the WCCP menu, as shown in Figure 4. See the Services online help for further information.

Figure 4 Management GUI—WCCP Services Page



Rules Template

The Rules Template feature provides the administrator a flexible mechanism to configure caching and proxy behaviors. You specify a set of rules, each with a pattern and an action. For every incoming HTTP request, if a rule's pattern matches the request, the corresponding action of the rule is taken. The CLI syntax can be generalized as follows:

Define a rule: Rule **action pattern-type patterns**

Remove a rule: No **rule action pattern-type patterns**

A pattern can be URLs, domain names, IP addresses, port numbers, MIME types, or regular expressions. The **rule** global configuration command has been added to the CLI.

rule Command

Use the **rule** global configuration command to set the rules by which the CE filters web traffic.

rule { **block** options | **enable** | **no-auth** options | **no-cache** options | **no-proxy** options | **refresh** options | **selective-cache** options | **use-proxy** options}

rule block {**domain** *LINE* | **dst-ip** *d_ipaddress d_subnet* | **dst-port** *port* | **src-ip** *s_ipaddress s_subnet* | **url-regex** *LINE*}

rule enable

rule no-auth {**domain** *LINE* | **dst-ip** *d_ipaddress d_subnet* | **dst-port** *port* | **src-ip** *s_ipaddress s_subnet* | **url-regex** *LINE*}

rule no-cache {**domain** *LINE* | **dst-ip** *d_ipaddress d_subnet* | **dst-port** *port* | **mime-type** *LINE* | **src-ip** *s_ipaddress s_subnet* | **url-regex** *LINE*}

rule no-proxy {**domain** *LINE* | **dst-ip** *d_ipaddress d_subnet* | **dst-port** *port* | **src-ip** *s_ipaddress s_subnet* | **url-regex** *LINE*}

rule refresh {**domain** *LINE* | **dst-ip** *d_ipaddress d_subnet* | **dst-port** *port* | **mime-type** *LINE* | **src-ip** *s_ipaddress s_subnet* | **url-regex** *LINE*}

rule selective-cache {**domain** *LINE* | **dst-ip** *d_ipaddress d_subnet* | **dst-port** *port* | **mime-type** *LINE* | **src-ip** *s_ipaddress s_subnet* | **url-regex** *LINE*}

rule use-proxy {*hostname* | *ipaddress*} *port* {**domain** *LINE* **|** **dst-ip** *d_ipaddress d_subnet* | **dst-port** *port* | **mime-type** *LINE* | **src-ip** *s_ipaddress s_subnet* | **url-regex** *LINE*}

no rule {**block** pattern-type pattern | **enable** | **no-auth** pattern-type pattern **|** **no-cache** pattern-type pattern| **no-proxy** pattern-type pattern | **refresh** pattern-type pattern **|** **selective-cache** pattern-type pattern | **use-proxy** {*host* | *ipaddress*} *port* pattern-type pattern}

enable	Enables rules processing.
block	Action—Blocks the request.
no-auth	Action—Does not authenticate.

no-cache	Action—Does not cache the object.
no-proxy	Action—Does not use any upstream proxy.
refresh	Action—Revalidates the object with the Web server.
selective-cache	Action—Caches this object if permitted by HTTP.
use-proxy	Action—Uses a specific upstream proxy.
hostname	Host name of the specific proxy.
ipaddress	IP address of the specific proxy.
port	Port number of the specific proxy (1–65535).
domain	Pattern type—Regular expression to match the domain name.
dst-ip	Pattern type—Destination IP address of the request.
d_ipaddress	Destination IP address of the request.
d_subnet	Destination IP subnet mask.
dst-port	Pattern type—Destination port number.
port	Destination port number (1–65535).
mime-type	Pattern type—MIME type to be matched with the Content-Type HTTP header.
src-ip	Pattern type—Source IP address of the request.
s_ipaddress	Source IP address of the request.
s_subnet	Source IP subnet mask.
url-regex	Pattern Type—Regular expression to match a substring of the URL.
LINE	Pattern—Regular expression.

Usage Guidelines

A rule is a pattern and an action. If an HTTP request matches the pattern, the corresponding action is performed on the request.

A pattern defines the limits of an HTTP request; for instance, a pattern may specify that the source IP address fall in the subnet range 172.69.*.*.

An action is something the CE performs when processing an HTTP request, for instance, blocking the request, using an alternative proxy, and so forth.

Rules can be dynamically added, displayed, or deleted from the CE. The rules are preserved across reboots because they are written into persistent storage such as NVRAM. Only the system resources limit the number of rules the CE can support. Because rules consume resources, the the more rules there are defined, the more CE performance may be affected.

Actions

The Rules Template feature supports eight actions as follows:

- **Block**—Blocks this request.
- **No-auth**—Does not authenticate, for example, in RADIUS and LDAP.
- **No-cache**—Does not cache this object. If both **no-cache** and **selective-cache** actions are matched, **no-cache** takes precedence.
- **No-proxy**—For a cache miss, does not use the configured upstream proxy but rather contacts the server directly.
- **Refresh**—For a cache hit, forces an if-modified-since (IMS) freshness check with the server.
- **Selective-cache**—Caches this object only if it is a match, and is allowed to be cached by HTTP. If one or more rules specify this action, an object is cached if and only if it matches at least one of the **selective-cache** rules and passes every other caching restriction such as the object-size check and the no-cache-on-authenticated-object check. If the object does not match any of the **selective-cache** rules, the object will *not* be cached.
- **Use-proxy**—For a cache miss, uses a specific upstream proxy. Specify the upstream proxy's IP address (or domain name) and port number. If both **no-proxy** and **use-proxy** are matched, **no-proxy** takes precedence.

Note The commands **rule no-proxy** and **rule use-proxy** take precedence over **http proxy outgoing**.

Rules are ORed together. Multiple rules may all match a request; then all actions are taken, with precedence among conflicting actions. Each rule contains one pattern; patterns cannot be ANDed together. In future releases, ANDed patterns may be supported.

Note Because the MIME type exists only in the response, only the actions **refresh** , **no-cache,** and **selective-cache** apply to a rule of MIME type.

It is possible to circumvent some rules. For example, to circumvent a rule with the **domain** pattern, just enter the Web server's IP address instead of the domain name in the browser. A rule may have unintended effects. For instance, a rule with the **domain** pattern specified as "ibm" that is intended to match "www.ibm.com" can also match domain names like www.ribman.com.

An **src-ip** rule may not apply as intended to requests that are received from another proxy because the original client IP address is in an X-fowarded-for header.

Patterns

The Rules Template feature supports six types of patterns, with the following names and functions.

- **Domain**—Match the domain name in the URL or the Host header against a regular expression. For example, ".*ibm.*" matches any domain name that contains the "ibm" substring. "\.foo\.com$" matches any domain name that ends with the ".foo.com" substring.

Note In regular expression syntax, the dollar sign "$" metacharacter directs that a match is made only when the pattern is found at the end of a line.

- **Dst-ip**—Matches the request's destination IP address and netmask. Specify an IP address and a netmask. In proxy mode, the CE does a DNS lookup to resolve the destination IP address of the HTTP request making the response time longer, and possibly negating the benefit of setting a **dst-ip** rule. When an outgoing proxy is configured, cache miss requests are forwarded by the CE to the outgoing proxy without examination of the destination server IP address, making the **dst-ip** rule unenforceable on the first CE.
- **Dst-port**—Matches the request's destination port number. Specify a port number.
- **MIME-type**—Matches the MIME type of the response. Specify a MIME type string, for example, "image/gif", as defined in RFC 2046 (http://info.internet.isi.edu/in-notes/rfc/files/rfc2046.txt). The administrator can specify a subtring, for example, "java" and have it apply to all MIME types with the "java" substring, such as "application/x-javascript".
- **Src-ip**—Match the request's source IP address and netmask. Specify an IP address and a netmask.
- **URL-regex**—Match the URL against a regular expression. The match is case insensitive. Specify a regular expression whose syntax can be found at http://yenta.www.media.mit.edu/projects/Yenta/Releases/Documentation/regex-0.12/.

  For example, the administrator can specify a file extension name by entering "\.jpg$". In regular expression syntax, "\" is the escape character and "\." means to match the period "." character.

  When making rules for a URL, specifying the double forward slash "//" is not necessary, and can result in a failure to match. For example, to create a rule for any URL containing a file with a .JPG extension, use the expression ".*\.jpg$" rather than ".*://.*\.jpg.*" because a browser under some conditions can issue the HTTP GET command as GET /mydir/me.jpg rather than GET http://my.dot.com/mydir/me.jpg.

Examples

Multiple patterns can be input on the same line. If any of them matches the incoming HTTP request, the corresponding action is taken.

```
CacheEngine(config)# rule block domain \.foo.com ?
 LINE    <cr>
CacheEngine(config)# rule block domain \.foo.com bar.com
CacheEngine(config)#

CacheEngine(config)# rule no-cache url-regex \.*cgi-bin.* ?
 LINE     <cr>
CacheEngine(config)# rule no-cache url-regex \.*cgi-bin.*
CacheEngine(config)#

CacheEngine(config)# rule no-cache dst-ip 172.77.120.0 255.255.192.0
```

Most actions do not have any parameters, as in the preceding examples. One exception is **use-proxy**, as in the following example.

```
CacheEngine(config)# rule use-proxy ?
 Hostname or A.B.C.D. IP address of the specific proxy
CacheEngine(config)# rule use-proxy CE.foo.com ?
<1-65535>  Port number of the specific proxy
CacheEngine(config)# rule use-proxy CE.foo.com 8080 ?
  domain     Regular expression to match with the domain name
  dst-ip     Destination IP address of the request
```

```
  dst-port   Destination port number
  src-ip     Source IP address of the request
  url-regex  Regular expression to substring match with the URL
CacheEngine(config)# rule use-proxy CE.foo.com 8080 url-regex ?
 LINE  Regular expression to substring match with the URL
CacheEngine(config)# rule use-proxy CE.foo.com 8080 url-regex .*\.jpg$ ?
 LINE     <cr>
CacheEngine(config)# rule use-proxy CE.foo.com 8080 url-regex .*\.jpg$ .*\.gif$ .*\.pdf$
CacheEngine(config)#
```

Other branches of the **rule** command work similarly to the above examples.

To delete rules, use **no** in front of the rule creation command.

```
CacheEngine(config)#no rule block url-regex .*\.jpg$ .*\.gif$ .*\.pdf$
CacheEngine(config)#
```

Related Commands

bypass static

clear statistics rule

http proxy outgoing

proxy-protocols outgoing exclude

show rule

show statistics rule

url-filter

show rule Command

Use the **show rule** command to display rule definitions and to determine rule processing status.

show rule {**action** {action-type {**all** | **pattern** pattern-type}} | **all**}

action	Specifies which rules to show.
all	Shows all the rules.
Action type	
block	Specify block rule to show.
no-auth	Shows Do not authenticate rules.
no-cache	Shows no-cache rules.
no-proxy	Shows no-proxy rules.
refresh	Revalidates the object with the Web server.
selective-cache	Caches this object.
use-proxy	Uses a specific upstream proxy.

Pattern type

domain	Regular expression to match with the domain name.
dst-ip	Destination IP address of the request.
dst-port	Destination port number.
mime-type	MIME type to be matched with the Content-Type.
src-ip	Source IP address of the request.
url-regex	Regular expression to substring match with the URL.

Examples

```
console# show rule all
Rules Template Configuration
----------------------------
Rule Processing Enabled
rule block dst-port 33
rule block domain ethel.com
rule no-auth domain giggle.com
rule no-cache domain fred.com
```

To display all the rules, use the **show rule** command as follows:

```
CacheEngine# show rule ?
 all              show all the rules
 action           show all the rules with the same action
CacheEngine# show rule action ?
  block            Block the request
  no-auth          Do not authenticate
  no-cache         Do not cache the object
  no-proxy         Do not use any upstream proxy
  refresh          Revalidate the object with the web server
  selective-cache  Cache this object
  use-proxy        Use a specific upstream proxyCacheEngine
CacheEngine# show rule action use-proxy ?
 all                 show all the rules
 pattern             show all the rules with a specific type of pattern
CacheEngine# show rule action use-proxy pattern ?
  domain     Regular expression to match with the domain name
  dst-ip     Destination IP address of the request
  dst-port   Destination port number
  src-ip     Source IP address of the request
  url-regex  Regular expression to substring match with the URL
CacheEngine# show rule action use-proxy pattern url-regex
  Action : use-proxy 171.64.1.2 port 8080
  Pattern : url-regex \.jpg$ \.gif$ \.pdf$
...
```

Related Commands

rule

show statistics rule

clear statistics rule

show statistics rule Command

The **show statistics rule** command was added to the CLI.

show statistics rule {**action** {action-type {**all** | **pattern** pattern-type}} | **all**}

See the "show rule Command" section on page 35 for an explanation of key words.

Examples

To display all rules, use the **show statistics rule all** command.

```
console# show statistics rule all
Rules Template Statistics
-------------------------
Rule hit count = 0   Rule: rule block dst-port 33
Rule hit count = 0   Rule: rule block domain sample1.com
Rule hit count = 0   Rule: rule no-auth domain sample2.com
Rule hit count = 0   Rule: rule no-cache domain .foo.com

CacheEngine# show statistics rule ?
 all              show all the rules
 action           show all the rules with the same action
CacheEngine# show statistics rule action ?
  block            Block the request
  no-auth          Do not authenticate
  no-cache         Do not cache the object
  no-proxy         Do not use any upstream proxy
  refresh          Revalidate the object with the web server
  selective-cache  Cache this object
  use-proxy        Use a specific upstream proxy
CacheEngine# show statistics rule action no-cache ?
 all                 show all the rules
 pattern             show all the rules with the same type of pattern
CacheEngine#show statistics rule action no-cache pattern ?
  domain     Regular expression to match with the domain name
  dst-ip     Destination IP address of the request
  dst-port   Destination port number
  mime-type  MIME type to be matched with the Content-Type
  src-ip     Source IP address of the request
  url-regex  Regular expression to substring match with the URL
CacheEngine# show statistics rule action no-cache pattern domain
  Action : no-cache
  Pattern : domain .foo.com
  Time executed : 35  12  77
...
```

Related Commands

rule

show rule

clear statistics rule

clear statistics rule

To reset the rule statistics counters, use the **clear statistics rule** EXEC command.

The **show statistics rule** command was added to the CLI.

clear statistics rule {**action** {action-type {**all** | **pattern** pattern-type}} | **all**}

See the "show rule Command" section on page 35 for an explanation of key words.

Example

To clear all rule statistics, use the **clear statistics rule all** command.

```
console# clear statistics rule all
```

Related Commands

rule

show rule

show statistics rule

debug rule Command

The **debug rule** EXEC command has been added to the CLI.

Usage Guidelines

It is recommended that the **debug rule** command only be used at the direction of Cisco technical support personnel.

Rules Template Page

A Rules Template page has been added to the System menu, as shown in Figure 5. See the Rules Template online help for further information.

Figure 5 Management GUI—Rules Template Page

Transaction Log Files Archived at a Specified Time

The new Transaction Log feature allows the administrator to schedule the archive and export of transaction log files in terms of specific days, hours, minutes, and seconds rather than in minutes and seconds only.

transaction-logs Command

To schedule the archive and export of transaction log files to an FTP server, use the **transaction-logs** global configuration command. To disable transaction log features, use the **no** form of the command.

transaction-logs {**archive** options **| enable | export** options **| file-marker | sanitize**}

archive	Configures archive parameters.
enable	Enables transaction log feature.
export	Configures file export parameters.
file-marker	Adds statements to translog indicating the file begin and end.
sanitize	Masks end user identities in log file.
options	See the expanded form of the command that follows.

transaction-logs archive

transaction-logs archive {**files** *maxnumfiles* | **interval** {*seconds* | **every-day** {**at** *time* | **every** *hour*} | **every-hour** {**at** *minute* | **every** *interval*} | **every-week** [**on** *days* [**at** *time*]]}

archive	Configures archive parameters.
files	Saves archive log files to disk.
maxnumfiles	Maximum number of archive files to save on disk (1–10). The default is 1.
interval	Determines how frequently the archive file is to be saved.
seconds	Time interval in seconds (120–86400). The default is 86,400 seconds (1 day).
every-day	Archives using frequencies of 1 day or less.
at *time*	Specifies the time of day at which to archive in hours and minutes (hh:mm).
every *hour*	Interval in hours (1, 2, 3, 4, 6, 8, 12 or 24).
every-hour	Archives using frequencies of 1 hour or less.
at *minute*	Specifies the minute alignment for the hourly archive (0–59).

every *interval*	Interval in minutes (2, 10, 15, 20, 30).
every-week	Archives one or more times a week.
on *days*	(Optional). Archives one or more days of the week (mon, tue, wed, thu, fri, sat, sun).
at *time*	(Optional). Specifies the time of day at which to archive in hours and minutes (hh:mm).

transaction-logs enable

transaction-logs enable

enable	Enables transaction log feature.

transaction-logs export

transaction-logs export {**enable** | **ftp-server** {*hostname* | *servipaddrs*} *login passw directory*} | **interval** {*seconds* | **every-day** {**at** *time* | **every** *hour*} | **every-hour** {**at** *minute* | **every** *interval*} | **every-week** [**on** *days* [**at** *time*]]}}}

export	Configures file export parameters.
enable	Enables the exporting of log files at the specified interval.
ftp-server	Sets FTP server to receive exported archived files.
hostname	Host name of target FTP server.
servipaddrs	IP address of target FTP server.
login	User login to target FTP server.
passw	User password to target FTP server.
directory	Target directory for exported files on FTP server.
interval	Transfers files to the FTP server after this interval.
minutes	Export time interval in minutes (1–10,080). The default is 60 minutes.
every-day	Exports using frequencies of 1 day or less.
at *time*	Specifies the time at which to export each day in hours and minutes (hh.mm).
every *hour*	Interval in hours (1, 2, 3, 4, 6, 8, 12, or 24).
every-hour	Exports using frequencies of 1 hour or less.

at *minute*	Specifies the minute alignment for the hourly archive (0–59).
every *interval*	Interval in minutes (2, 10, 15, 20, or 30).
every-week	Exports one or more times a week.
on *days*	(Optional). Exports on one or more days of the week (mon, tue, wed, thu, fri, sat, sun).
at *time*	(Optional). Specifies the time of day at which to export in hours and minutes (hh:mm).

transaction-logs file-marker

transaction-logs file-marker

file-marker	Adds statements to translog indicating the file begin and end.

transaction-logs sanitize

transaction-logs sanitize

sanitize	Writes user IP addresses in log file as 0.0.0.0.

Usage Guidelines

The transaction log archive and export functions are configured with the following commands:

- The **transaction-logs archive interval** global configuration command allows the user to specify when the working.log file is saved.
- The **transaction-logs export interval** global configuration command determines when the previously archived transaction log files are transferred to the FTP server.
- The **transaction-log force** EXEC command can force the archiving of a working.log file or the export of the transaction logs to an FTP server.

The following limitations apply:

- When the interval is scheduled in units of hours, the value must divide evenly into 24. For example, the interval can be every 4 hours, but not every 5 hours.
- When the interval is scheduled in units of minutes, the value must divide evenly into 60.
- Only the more common choices of minutes are supported. For example, the interval can be 5 minutes or 10 minutes, but not 6.
- The selection of interval alignment is limited. If an interval is configured for every 4 hours, it will align with midnight. It cannot align with 12:30 or with 7 a.m.
- The feature does not support archiving or exporting at different times on different days. For example, it does not support an interval of "Monday at noon and Wednesday at midnight."
- The feature does not support different intervals within the day. For example, it does not support an interval that is hourly during regular business hours, and then every 4 hours during the night.

- No coordination exists between the archive and export scheduling functionalities. Even if they are scheduled at the same interval, there is no guarantee that the archive function will execute before the export function.

Examples

Configuring Intervals Between 1 Day and 1 Hour.

The interval can be set for once an day with a specific timestamp. It can also be set for frequencies of hours; these frequencies align with midnight. For example, every 4 hours means archiving will occur at 0000, 0400, 0800, 1200, 1600 and the like. It is not possible to archive at 0030, 430, 830, and so forth.

```
cepro(config)# transaction-logs archive interval every-day ?
  at        Specify the time at which to archive each day
  every     Specify the interval in hours. It will align with midnight

cepro(config)# transaction-logs archive interval every-day at ?
hh:mm  Time of day at which to archive (hh:mm)

cepro(config)# transaction-logs archive interval every-day every ?
<1-24>  Interval in hours: {1, 2, 3, 4, 6, 8, 12 or 24}
```

Scheduling Intervals of 1 Hour or Less

The interval can be set for once an hour with a minute alignment. It can also be set for frequencies of less than an hour; these frequencies will align with the top of the hour. That is, every 5 minutes means archiving will occur at 1700, 1705, and 1710.

```
cepro(config)# transaction-logs archive interval every-hour ?
  at     Specify the time at which to archive each day
  every     Specify interval in minutes. It will align with top of the hour

cepro(config)# transaction-logs archive interval every-hour at ?
<0-59>  Specify the minute alignment for the hourly archive
```

Scheduling Weekly Intervals

The interval can be set for once a week or multiple times within the week. For example, it is possible to archive “every Sunday at 0630” or “every Monday, Wednesday, and Friday at 1900”. The administrator can select as many days as they wish, including all 7 days. Note that is it not possible to schedule the interval for different times on different days.

```
cepro(config)# transaction-logs archive interval every-week ?
  on  Day of the week
  <cr>

cepro(config)# transaction-logs archive interval every-week on ?
  DAY  Day of week to archive

cepro(config)# transaction-logs archive interval every-week on Monday ?
  DAY  Day of week to archive
  at   Specify the time of day at which to archive
  <cr>

cepro(config)# transaction-logs archive interval every-week on Monday Friday at ?
  hh:mm  Time of day at which to archive (hh:mm)
```

Related Commands

clear transaction-log

show transaction-logging

show statistics transaction-logs

transaction-log force

transaction-log force Command

transaction-log force {**archive** | **export**}

archive	Forces the archive of the working.log file.
export	Forces the archived files to be exported to a server.

Usage Guidelines

The **transaction-log force archive** command causes the transaction log to be archived immediately to the CE hard disk. This command has the same effect as the **clear transaction-log** command.

The **transaction-log force export** command causes the transaction log to be exported immediately to an FTP server designated by the **transaction-logs export ftp-server** command.

The force commands do not change the configured schedule for archive or export of transaction log files. If a scheduled archive or export job is executing when a corresponding force command is entered, an error message is displayed. If a force command is executing when an archive or export job is scheduled to run, the scheduled job executes when the force command is complete.

Examples

```
console# transaction-log force archive
Starting transaction-log force archive command
Completed transaction-log force archive command
```

Related Commands

transaction-logs

clear statistics transaction-logs

clear transaction-log

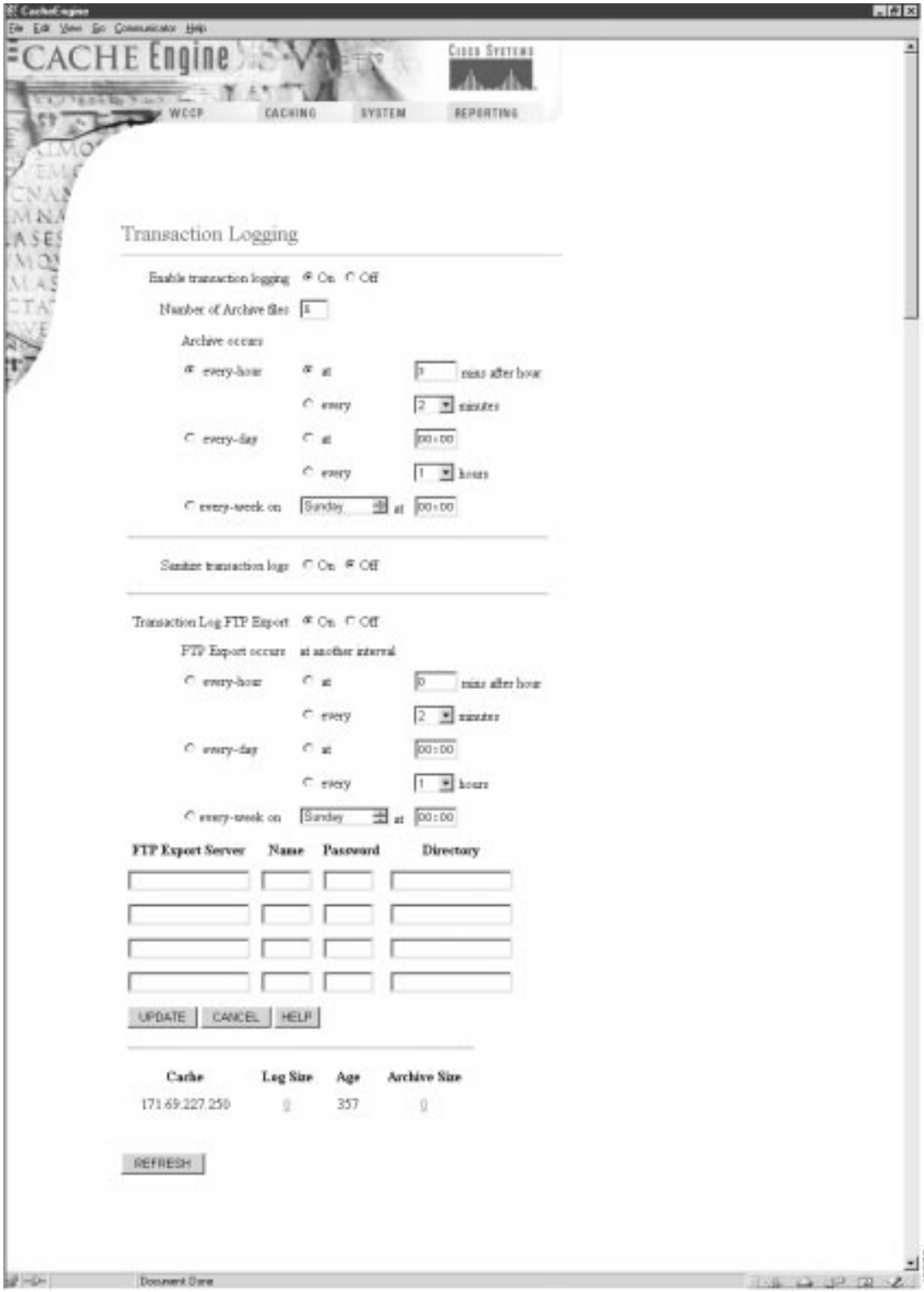
show statistics transaction-logs

show transaction-logging

Transaction Logging Page

The Transaction Logging page in the Caching menu has been updated, as shown in Figure 6. See the Transaction Logging online help for further information.

Figure 6 Management GUI—Transaction Logging Page



Storage Array Installation Notes

The Storage Array hard disks are shipped without formatting or partitions. You must enter the **disk manufacture** EXEC command for each newly installed hard disk. Use the **disk**, **cfs**, and **dosfs** EXEC commands for subsequent maintenance of the disks.

Hard Disk Preparation Procedure for the Cisco Storage Array

Perform the following procedure when installing a new hard disk for the Cisco Storage Array:

Step 1 Make sure the disk drives are properly inserted into the Storage Array slots, and that the SCSI cable connectors on the CE and Storage Array are tightened.

Step 2 Power up the Storage Array, and then power up the CE.

Step 3 Make a note of the target numbers of any new disk drive that did not mount. The target number is the value of the “t” parameter in the disk volume name.

Determine the target numbers of the unmounted disks with one of the following methods:

- Enter the **show cfs volumes** command.
- Count the hard drives in the Storage Array.
- Read the “mount failed” error messages that appear when the CE boots up with an attached Storage Array.

Method 1: Enter the show cfs volumes Command

The **show cfs volumes** command displays all unmounted disks as unmounted cache filing system (cfs) volumes. In the following example, disk targets 2, 3, 4, 5, 6, and 7 are not mounted.

```
CacheEngine# show cfs volumes
/c0t0d0s3: mounted
/c0t1d0s3: mounted
/c0t2d0s3: not mounted
/c0t3d0s3: not mounted
/c0t4d0s3: not mounted
/c0t5d0s3: not mounted
/c0t6d0s3: not mounted
/c0t7d0s3: not mounted
```

Method 2: Count the Hard Disks in the Storage Array

The leftmost hard disk inserted in a Storage Array bus is always target 2. Counting to the right, the next disk is target 3, the next disk is target 4, and so on. There can be empty slots between targets on the same bus, but this is not recommended.

In a two-host, split-bus configuration, each bus is counted independently. For example, in a split-bus, six-disk, fully populated Storage Array, bus 0 disk drive targets are 2, 3, 4, and bus 1 disk drive targets are 2, 3, 4. If the first disk on bus 1 is removed (slot 5 is empty) and the Cache Engine is rebooted, bus 0 targets are still 2, 3, 4, but bus 1 targets are 2 and 3. The empty disk slot is skipped, and the target count begins with the first detected disk on bus 1.

Method 3: Read the Mount Failed Error Messages

The CE generates an error message for each disk drive that fails to mount as the CE boots up. In the following example, disk targets 2, 3, 4, 5, 6, and 7 failed to mount:

```
Thu Dec 31 16:06:50 1987: CFS volume /c0t2d0s3 mount failed S_cfslib_NOT_CFS_PARTITION
Thu Dec 31 16:06:50 1987: CFS volume /c0t3d0s3 mount failed S_cfslib_NOT_CFS_PARTITION
Thu Dec 31 16:06:50 1987: CFS volume /c0t4d0s3 mount failed S_cfslib_NOT_CFS_PARTITION
Thu Dec 31 16:06:50 1987: CFS volume /c0t5d0s3 mount failed S_cfslib_NOT_CFS_PARTITION
Thu Dec 31 16:06:50 1987: CFS volume /c0t6d0s3 mount failed S_cfslib_NOT_CFS_PARTITION
Thu Dec 31 16:06:50 1987: CFS volume /c0t7d0s3 mount failed S_cfslib_NOT_CFS_PARTITION
```

Step 4 Enter the **disk manufacture** command for each new hard disk to be installed.

In the following example, the disks with target numbers 2 and 3 are partitioned, formatted, and mounted with the **disk manufacture** EXEC command.

```
CacheEngine# disk manufacture /c0t2d0
total size of disk = 35843670
CISCO_UVFAT_1 vol /c0t2d0s1 part_off 0 part_siz 0
Skipping creation of DOS partition for SCSI device
CISCO_BFS_1 vol /c0t2d0s2 part_off 10 part_siz 1024
CISCO_CFS_1 vol /c0t2d0s3 part_off 1044 part_siz 35842616
CacheEngine# disk manufacture /c0t3d0
total size of disk = 35843670
CISCO_UVFAT_1 vol /c0t3d0s1 part_off 0 part_siz 0
Skipping creation of DOS partition for SCSI device
CISCO_BFS_1 vol /c0t3d0s2 part_off 10 part_siz 1024
CISCO_CFS_1 vol /c0t3d0s3 part_off 1044 part_siz 35842616
```

Step 5 Enter the **show cfs volumes** command to verify that the disks are mounted.

```
CacheEngine# show cfs volumes
/c0t0d0s3: mounted
/c0t1d0s3: mounted
/c0t2d0s3: mounted
/c0t3d0s3: mounted
```

disk manufacture Command

Use the **disk manufacture** command to partition, format, and mount new disk drives in the Cisco Storage Array.

disk manufacture *device_name*

device_name — Specify the device name of the disk drive with the following syntax:

/c*n1*t*n2*d*n3*

- ***n1*** is the SCSI controller number. The value of *n1* is always zero for CEs.
- ***n2*** is the target number of the disk drive (0–13). Targets 0 and 1 are the CE internal disk drives.
- ***n3*** is the logical unit number. The value of *n3* is always zero for CE.

The device name is the same as the volume name, but the device name does not include a partition parameter (the “s” number).

Usage Guidelines

Target numbers are not statically mapped to a SCSI ID or a slot number. Upon bootup, the CE SCSI driver always scans the SCSI bus in the same direction and assigns logical target numbers to disks in simple numerical sequence according to their order on the SCSI bus. The first disk drive discovered on the SCSI bus is designated target 0; the second target 1; the third target 2; and so on. Targets 0 and 1 are the CE internal disk drives.

Cisco Storage Array Guidelines

Targets 2 through 13 are assigned to Storage Array disk drives. The leftmost hard disk inserted in a Storage Array bus is always target 2. Counting to the right, the next disk is target 3, the next disk is target 4, and so on. There can be empty slots between targets on the same bus, but this is not recommended. In a two-host, split-bus configuration, each bus is counted independently.

For example, in a split-bus, six-disk, fully populated Storage Array, bus 0 disk drive targets are 2, 3, 4, and bus 1 disk drive targets are 2, 3, 4. If the first disk on bus 1 is removed (slot 5 is empty) and the Cache Engine rebooted, bus 0 targets are still 2, 3, 4, but bus 1 targets are 2 and 3. The empty disk slot is skipped, and the target count begins with the first detected disk on bus 1.

Once a disk drive has been partitioned and formatted, it can be used in any Storage Array slot, but moving a disk drive from one slot to another makes the data it contains unusable to the CE. Power cycle the Cache Engine if the following actions occur while the Storage Array is in operation:

- A disk is moved from one slot to another.
- A disk is removed, or removed and reinserted.

Examples

In the following example, cache1 and cache2 are CE 570 machines running software release 2.2.0. Refer to the *Cisco Storage Array Installation and Configuration Guide* for further information on configuring the Storage Array.

Note The larger the storage capacity of the disk drive, the longer the duration of the **disk manufacture** routine.

In this example, six Storage Array disk drives are initialized in a single-host, joined-bus Storage Array configuration.

```
cache1# disk manufacture /c0t2d0
cache1# disk manufacture /c0t3d0
cache1# disk manufacture /c0t4d0
cache1# disk manufacture /c0t5d0
cache1# disk manufacture /c0t6d0
cache1# disk manufacture /c0t7d0
```

In the following example, cache1 is connected to the SCSI 0 connector of the Storage Array and cache2 is connected to the SCSI 1 connector.

The disks of a fully populated six-disk Storage Array are initialized in a two-host, split-bus configuration.

```
cache1# disk manufacture /c0t2d0
cache1# disk manufacture /c0t3d0
cache1# disk manufacture /c0t4d0

cache2# disk manufacture /c0t2d0
cache2# disk manufacture /c0t3d0
cache2# disk manufacture /c0t4d0
```

Related Commands

show disks

show disk-partitions

cfs

disk

dosfs

Open Caveats

The following sections describe caveats still open at the printing of these release notes.

Open Caveats—Software Release 2.2.0

- CSCdr84113

  A known limitation with the **proxy-protocols outgoing exclude** configuration may result in some requests not being excluded.

  If a network has subdomains (for example, us.cisco.com within cisco.com), and the browser client has the larger local domain (cisco.com) configured for domain proxy exclusion, the CE does not append the local domain name (cisco.com) to any request of the type, http://intranet-server.us/, because the CE cannot determine if the request is a subdomain or a fully qualified domain name (FQDN).

  The workaround is to enable **proxy-protocols outgoing-proxy exclude domains-only** and add all the subdomain names (us.cisco.com) to the CE outgoing proxy exclude list.

- CSCdr89649

  Specifying 65535 as an HTTPS destination port causes a page fault error.
  (For example, **https destination-port allow 65535**, and **https destination-port deny 65535**). This has been fixed in the first post-FCS revision of release 2.2.0

Open Caveats—Software Release 2.1.0

- CSCdp64946

  When CEs are clustered and WCCP weights are changed dynamically, authenticated HTTP traffic may sometimes not be bypassed, though the authentication bypass feature is enabled (**bypass auth-traffic enable**).

Resolved Caveats

The following section describes caveats from previous releases that are resolved in Release 2.2.0.

Resolved Caveats—Release 2.1.3

- CSCdr13225

  Cisco Systems has observed that in topologies with 20 or more routers configured to service multiple Cache Engines, some of the Cache Engines do not receive hash allotments, and thus receive no redirected traffic from the routers. The routers can be configured in either unicast or multicast mode.

  Workaround: To correct this condition, reboot each Cache Engine or stop and start the Web Cache Communication Protocol (WCCP) on each Cache Engine using the Cache Engine **wccp** global configuration command.

  For example, to reset WCCP on a Cache Engine in the cache farm configured with basic web caching only, issue the following commands:

  ```
  console(config)# no wccp web-cache
  console(config)# wccp web-cache router-list 1
  ```

  Wait 30 seconds between stopping and starting WCCP. The **wccp** keywords and options shown here apply only to the Cache Engine in this example. Use the keywords and options appropriate to the configuration of each Cache Engine.

  Display the hash allotments for Cache Engines by using the **show ip wccp web-cache detail** router command.

- CSCdr23275

  The **http proxy outgoing exclude list** command is currently case sensitive. If a user on Netscape attempts to connect to HOME.INTERNAL.DOMAIN.COM, or Home.Internal.DOMAIN.Com, or any other combination of domain.com that is not all lowercase, then the **exclude list domain.com** command fails.

- CSCdr28820

  In certain cases, Java or JavaScript programs that run on port 80 are reset. The error bypass mechanism (in Cache Engine) fails to insert the correct IP address into the bypass list. Because the bypass list was not correctly updated, the Java or JavaScript traffic on port 80 was never bypassed.

- CSCdr38222

  Sometimes the BUCKET_IN flag is not cleared even though the corresponding AWAY flag is cleared in the Cache Engine that previously had the bucket.

- CSCdr47024

  When the Cache Engine is in bypass mode, with buckets bypassed, issuing the **no load bypass enable** command does not disable the bypass mechanism, and thus buckets stay bypassed.

- CSCdr51262

  When the origin server sends a large object with the wrong Content Length value, the Cache Engine deletes the object after downloading it. If there are multiple requests for the same object, the remaining clients receive a truncated object after the object is deleted.

Related Documentation

Cisco Cache Engine User Guide, Version 2.1.0

Release Notes for Cisco Cache Engine 500 Series, Software Version 2.1.0

Release Notes for Cisco Cache Engine Software, Release 2.1.3

Cisco Storage Array Installation and Configuration Guide

Release Notes for the Cisco Storage Array

Regulatory Compliance and Safety Information for Cisco Cache Engine 500 Series

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Spanish	tac@cisco.com
Thai	thai-tac@cisco.com

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