

***Cleo* VLPProxy™**

User Guide

Version 4.0



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About Cleo VLProxy

Cleo VLProxy is an automated firewall proxy tool that allows you to place Cleo Harmony, Cleo VLTrader, Cleo LexiCom, or Cleo Clarify inside your firewall and keep your documents secure while communicating with your trading partners. Cleo VLProxy is an HTTP forward and reverse proxy designed specifically for use with Cleo Harmony, Cleo VLTrader, Cleo LexiCom, and Cleo Clarify. Cleo VLProxy normally runs in the DMZ (demilitarized zone) and forwards requests between Cleo Harmony, Cleo VLTrader, Cleo LexiCom, and Cleo Clarify inside the company (behind the firewall) and external hosts on the Internet.

Cleo Technical Support

Standard Cleo Technical Support is available from 7am - 7pm CST, Monday through Friday. Support availability might differ depending on your support package.

Training and a support subscription are required to work with a Cleo technical support analyst for all products, except Cleo LexiCom.

When contacting the Cleo support team, have your contact information, the name of product you are calling about, and your serial number, if available. During the support process we may request additional information (for example, a support bundle) that will vary depending on the type of request or issue.

Requests are handled on a callback basis in the order they are received. The Cleo support answering service or web form will collect your information and your request will be placed in our callback queue.

To contact Cleo Technical Support:

- Use the request form at: <https://support.cleo.com/hc/en-us>.
- Call us:
 - 1-815-282-7894
 - US (toll free): 1-866-444-CLEO(2536)
 - UK: 02038653439

Getting Started

This section describes installing Cleo VLProxy and setting up to run it as a Unix daemon or a Windows service.

Installing Cleo VLProxy

Before you can begin installing Cleo VLProxy, you must download the Cleo VLProxy installer from <http://download.cleo.com/download/VLProxyReq.asp>. When you have the installer downloaded, follow the OS-specific installation instructions below.



Note: When you install Cleo VLProxy, the Java Runtime Environment (JRE) is installed into a subdirectory (`\jre`) wherever Cleo VLProxy is installed.

Windows

1. Navigate to the directory where you saved the Cleo VLProxy installer, and run `install.exe`.
2. Follow the prompts.



Note: For Windows, Cleo VLProxy is automatically installed as a service. The user has the option to have the Cleo VLProxy service start automatically when the computer is restarted. Cleo VLProxy generally should always be running unless configuration or maintenance is in progress. Having the Cleo VLProxy service start automatically has the following advantages:

- The service can run continuously. A user does not have to be logged into the computer to start Cleo VLProxy.
- When the computer is restarted, the operator does not need to manually start the proxy.

Solaris, Linux, and AIX

1. Open a shell.
2. Navigate to the directory where you saved the installer.
3. Change file permissions to **execute**: `chmod +x install.bin`.
4. At the prompt, type: `./install.bin`.
5. Follow the prompts.

The JRE is automatically installed into a subdirectory (`\jre`) of wherever Cleo VLProxy is installed. From this point on, the Windows and Unix installations are identical.

To complete the Cleo VLProxy installation, follow the instructions on the screen. It is highly recommended, for security reasons, that the installation program be deleted after the installation has completed successfully.

Setting up Cleo VLProxy as a Unix daemon

 **Note:** This section does not apply to Windows users.

Please note that the following procedures have been tested with specific distributions of Solaris, Linux, and AIX; consult your system documentation to ensure that these steps are correct before starting. Review the run levels (rc#.d) and sequence numbers (S# and K#) given for appropriate values. Only the system administrator should perform these changes.

Prior to installing Cleo VLProxy as a Unix daemon, the following command from the Cleo VLProxy installed directory can be used to first verify that Cleo VLProxy is operational: `./VLProxyc -s "service"`. To stop Cleo VLProxy as a service (-s): `VLProxy c -s "service, stop"`. If Cleo VLProxy is currently running as a service (e.g. Windows service, Unix daemon), this will cause a clean shutdown.

Solaris

1. Log in as root.
2. Change to the Cleo VLProxy installed directory.
3. Verify the `VLPHOME` variable in the `VLProxyd` script points to the Cleo VLProxy installed directory.
4. Copy the `VLProxyd` script to the startup/shutdown scripts directory: `cp VLProxyd /etc/init.d/`.
5. Create a symbolic link to start `VLProxyd`: `ln -s /etc/init.d/VLproxyd /etc/rc3.d/S98VLProxyd`.
6. Log out.
7. Reboot the computer and verify Cleo VLProxy is active.

Linux SystemD

1. Log in as root.
2. Change to the Cleo VLProxy installed directory.
3. Create a unit file in `/etc/systemd/system/vlproxyd.service` with the following content.

```
[Unit]
Description=Start VLProxy daemon

[Service]
Type=oneshot
ExecStart=/vlproxy/vlproxyd start
ExecStop=/vlproxy/vlproxyd stop
RemainAfterExit=yes

[Install]
WantedBy=multi-user.target
```

4. Run `systemctl enable vlproxyd.service`.
5. Verify the `VLPHOME` variable in the `VLProxyd` script points to the Cleo VLProxy installed directory.
6. Log out.
7. Reboot the computer and verify Cleo VLProxy is active.

Linux SystemV

1. Log in as root.
2. Change to the Cleo VLProxy installed directory.
3. Verify the `VLPHOME` variable in the `VLProxyd` script points to the Cleo VLProxy installed directory.

4. Copy the VLProxyd script to the startup/shutdown scripts directory: `cp VLProxyd /etc/rc.d/init.d/.`
5. Create a symbolic link to start Cleo VLProxy: `ln -s /etc/rc.d/init.d/VLProxyd /etc/rc.d/rc5.d/S98VLProxyd.`
6. Log out.
7. Reboot the computer and verify Cleo VLProxy is active.

AIX

1. Log in as root.
2. Change to the Cleo VLProxy installed directory.
3. Verify the *VLPHOME* variable in the VLProxyd script points to the Cleo VLProxy installed directory.
4. Copy the VLProxyd script to the etc directory: `cp VLProxyd /etc/.`
5. Create or edit the `/etc/rc.local` file, adding the line: `/etc/VLProxyd start.`
6. If the `/etc/rc.local` file did not previously exist, make `rc.local` executable and create the inittab entry:
`chmod +x /etc/rc.local mkitab "rclocal:2:wait:/etc/rc.local >/dev/console 2>&1".`
7. Log out.
8. Reboot the computer and verify Cleo VLProxy is active.

Invoking Cleo VLProxy as a Windows service or Unix daemon

After configuration has been completed, start Cleo VLProxy in the background. If Cleo VLProxy was not already started during a reboot, the following describes how to start Cleo VLProxy manually:

- **Windows:**
 - You can start the Cleo VLProxy service either through **Services** in the **Windows Control** panel or by entering `net start VLProxy` at the command prompt.
 - You can stop the service through **Services** in the **Windows Control** panel or using the command `net stop VLProxy`.
- **Linux and Unix:** To start the service, change to the Cleo VLProxy installed directory, and enter `./VLProxyd start` at the command prompt. To stop the service, enter `./VLProxyd stop`.

Configuring your system

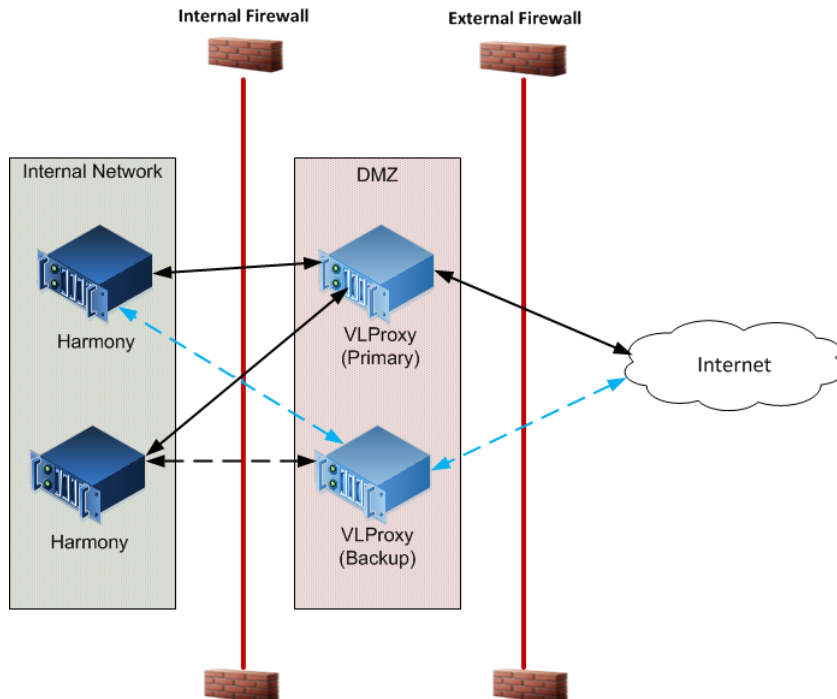
Configuring your system to use Cleo VLProxy requires configuring the Cleo VLProxy software and configuring Cleo Harmony, Cleo VLTrader, or Cleo LexiCom software to use Cleo VLProxy.

Configuring your Cleo VLProxy software includes identifying addresses and ports for each of the different proxies supported in Cleo VLProxy, and specifying values for some operational parameters Cleo VLProxy uses at runtime. See [Configuring Cleo VLProxy](#) on page 12.

Configuring your Cleo Harmony, Cleo VLTrader, or Cleo LexiCom software entails specifying addresses and ports to be used as proxies. These addresses and ports should be the same as those you specify when you configure your Cleo VLProxy software. See [Configuring Cleo Harmony, Cleo VLTrader, and Cleo LexiCom](#) on page 17.

Data flow and failover scenarios

The following illustrates data flow for an example configuration with both a Primary and Backup Forward and Reverse Cleo VLProxy. The solid lines are Primary paths. The dashed lines are Backup paths used only when the Primary paths are not functioning.



The following addresses failover situations for Cleo VLProxy and Cleo Harmony, Cleo VLTrader, or Cleo LexiCom .

- Cleo VLProxy failures:

- **Forward:** A keep-alive is sent to Cleo VLProxy every 30 seconds. When the Primary Cleo VLProxy fails, it may take up to 30 seconds for Cleo Harmony, Cleo VLTrader, and Cleo LexiCom to start using the Backup Cleo VLProxy for forward proxying. There is no limit on the number of outbound attempts made during this 30-second time period. When the primary Cleo VLProxy is restarted and configured, forward proxying will be switched from the Backup to the Primary.
- **Reverse:** Reverse proxying is enabled on both the Primary and Backup Cleo VLProxy as long as **Enable reverse proxying** is selected. Inbound data can be received on either the Primary or the Backup Cleo VLProxy.
- Cleo Harmony, Cleo VLTrader, and Cleo LexiCom failures:
 - **Forward:** The outbound data must be routed through the backup Cleo Harmony, Cleo VLTrader, and Cleo LexiCom. The backup decides which Cleo VLProxy to use.
 - **Reverse:** It takes 90 seconds from the last keep-alive from the Primary Cleo Harmony, Cleo VLTrader, and Cleo LexiCom for Cleo VLProxy to switch to the Backup. Then, the inbound connections are routed to the Backup until the Primary is restored and completes initialization. This timeout applies when reverse proxying is enabled for inbound connections only.

Configuring Cleo VLProxy

This section describes how to configure Cleo VLProxy.

You use a command line utility to configure Cleo VLProxy. Configuration data is stored in the Cleo VLProxy `conf` directory in `VLProxy.properties`. If this file is deleted, you can no longer start Cleo VLProxy and you must reinstall Cleo VLProxy.

To configure Cleo VLProxy:

1. Invoke the Cleo VLProxy configuration utility. At the command line, enter:

```
VLProxyc -p
```

The Cleo VLProxy configuration screen displays:

```

VLProxy Version 4.0.0.0

Configuration Parameters:
 1. Serial Numbers           : HR0001-MU7803
 2. Internal Forward Proxy HTTP Ports : 8080
 3. Internal Address         :
 4. Internal Network IDs     :
 5. External Address         :
 6. External Reverse Proxy HTTP Ports : 15080
 7. External Reverse Proxy HTTPs Ports : 15443
 8. External Reverse Proxy FTP Ports   : 5021,21
 9. External Reverse Proxy FTPs Explicit Ports: 921
10. External Reverse Proxy FTPs Implicit Ports: 990
11. External Reverse Proxy FTP Data Ports : 20900-20999
12. External Reverse Proxy SSH FTP Ports : 22,8022
13. External Reverse Proxy OFTP Ports    : 5028
14. External Reverse Proxy OFTPs Ports   : 5029
15. VersaLex Read Timeout (seconds)      : 150
16. Remote Read Timeout (seconds)        : 150
17. Connection Backlog Size              : 50
18. SMTP Mail Server Address             :
19. SMTP Mail Server Username            :
20. SMTP Mail Server Password            :
21. SMTP Mail Server Use Start TLS       : Yes
22. Email on Fail Addresses              :
23. Execute on Failure Command            :
24. Max Log File Size (Mb)               : 5
25. Log External Address                 : No
26. Unknown Partner Message Action       : Defer
27. Reverse Proxy Load Balancing         : No
28. Reverse Proxy Retry                  : No

```

2. Modify configuration items as necessary.

- a) Enter the number of the parameter you want to modify and press **Enter**.

For information about the configuration parameters, see [Cleo VLProxy Configuration Parameters](#) on page 13.

- b) Enter a value for the parameter and press **Enter**.

To clear an entry, enter a space and press **Enter**

If you press **Enter** without specifying a value, the item's value is unchanged.

Cleo VLProxy Configuration Parameters

Provide values for these parameters in the Cleo VLProxy configuration screen. Some of these parameters correspond to parameters in Cleo Harmony, Cleo VLTrader, and Cleo LexiCom. The value you specify in Cleo VLProxy should match those you specify in Cleo Harmony, Cleo VLTrader, and Cleo LexiCom.

1. Serial Numbers

The serial numbers are the Cleo Harmony, Cleo VLTrader, and Cleo LexiCom serial numbers allowed with this instance of Cleo VLProxy. If multiple instances are being supported, the serial numbers should be separated by commas. See [Using Cleo VLProxy with multiple instances of Cleo Harmony, Cleo VLTrader, and Cleo LexiCom](#) on page 20 if Cleo VLProxy is supporting multiple instances of Cleo Harmony, Cleo VLTrader, and Cleo LexiCom.

2. Internal Forward Proxy HTTP Ports

These ports are used by Cleo Harmony, Cleo VLTrader, and Cleo LexiCom to send configuration data and forward proxy requests to Cleo VLProxy.

This parameter corresponds to the **Proxy Server Port #** parameter on the **VLProxy** dialog box in Cleo Harmony, Cleo VLTrader, and Cleo LexiCom.

3. Internal Address

The address of Cleo VLProxy when accessed from your internal network. It is used during the Reverse Proxy process and in response to the `FTP PASV` command when the address of the FTP client starts with one of the specified Internal Network IDs (below). If either the Internal Address or Internal Network IDs parameter is not specified, the External Address is used in response to the `FTP PASV` command.

This parameter corresponds to the **Proxy Server Address** field on the **VLProxy** dialog box in Cleo Harmony, Cleo VLTrader, and Cleo LexiCom.

4. Internal Network IDs

Used during the Reverse Proxy process to specify the start of addresses (partial addresses) on your internal network that need the Internal Address to be used in the `FTP` command `PASV` response or `PORT` request. For example, if all `10.10.ddd.ddd` (where $0 \leq ddd \leq 255$) addresses in your internal network need the Internal Address, use `10.10.` If multiple ranges are needed, they should be separated by commas. A wildcard (*) can be specified if you need the Internal Address to be used with any IP address. The wildcard is necessary for external outgoing connections if your firewall replaces the Internal Address with the External Address for FTP commands.

5. External Address

Used during the Reverse Proxy process. This address is sent to Cleo Harmony, Cleo VLTrader, or Cleo LexiCom and is used when requesting Asynchronous MDNS. This should be the address of Cleo VLProxy (the address to which your Trading Partners are sending AS2 messages). An external address is also required for FTP, but it must be in the form of an IP address. If both a fully-qualified domain name for AS2 and an IP address for FTP is needed, it must be configured as IP address, then a comma, then the fully-qualified domain name.

6. External Reverse Proxy HTTP Ports

Used during the Reverse Proxy process. Cleo VLProxy listens on these ports for incoming HTTP connections. The AS2, AS4, ebMS, or RNIF relationship or HTTP login is verified against those identified by Cleo VersaLex, and only if valid is the request sent into Cleo Harmony, Cleo VLTrader, or Cleo LexiCom.

7. External Reverse Proxy HTTPs Ports

Used during the Reverse Proxy process. Cleo VLProxy listens on these ports for incoming HTTP/s connections. The AS2, AS4, ebMS, or RNIF relationship or HTTP login is verified against those identified by Cleo Harmony, Cleo VLTrader, or Cleo LexiCom, and only if valid is the request sent into Cleo Harmony, Cleo VLTrader, and Cleo LexiCom.

8. External Reverse Proxy FTP Ports

For Cleo Harmony and Cleo VLTrader users only. Used during the Reverse Proxy process. Cleo VLProxy listens on these ports for incoming FTP connections. The FTP login is verified against those identified by Cleo Harmony or Cleo VLTrader, and only if valid is the request sent into Cleo Harmony or Cleo VLTrader.

9. External Reverse Proxy FTPs Explicit|Implicit Ports

For Cleo Harmony and Cleo VLTrader users only. Used during the Reverse Proxy process. Cleo VLProxy listens on these ports for incoming explicit|implicit FTP/s connections. The FTP login is verified against those identified by Cleo Harmony or Cleo VLTrader, and only if valid is the request sent into Cleo Harmony or Cleo VLTrader.

10. External Reverse Proxy FTPs Explicit|Implicit Ports

For Cleo Harmony and Cleo VLTrader users only. Used during the Reverse Proxy process. Cleo VLProxy listens on these ports for incoming explicit|implicit FTP/s connections. The FTP login is verified against those identified by Cleo Harmony or Cleo VLTrader, and only if valid is the request sent into Cleo Harmony or Cleo VLTrader.

11. External Reverse Proxy FTP Data Ports

Used during the Reverse Proxy process. For FTP server reverse proxying (Cleo Harmony and Cleo VLTrader users only), Cleo VLProxy chooses and listens on one of these ports for each incoming FTP passive mode data connection. For FTP client forward proxying, Cleo VLProxy chooses and listens on one of these ports for each incoming FTP active mode data connection. A range of ports must be specified, separated by a dash.

12. External Reverse Proxy SSH FTP Ports

For Cleo Harmony and Cleo VLTrader users only. Used during the Reverse Proxy process. Cleo VLProxy listens on these ports for incoming SSH FTP connections. The SSH FTP login (or public key) is verified with Cleo Harmony or Cleo VLTrader to see if it is valid, and only if valid is the request sent into Cleo Harmony or Cleo VLTrader.

13. External Reverse Proxy OFTP Ports

The External Reverse Proxy OFTP Ports are used during the Reverse Proxy process. Cleo VLProxy listens on these ports for incoming OFTP connections. The OFTP user ID and password is verified against those identified by Cleo Harmony, Cleo VLTrader, or Cleo LexiCom, and only if valid is the request sent into Cleo Harmony, Cleo VLTrader, or Cleo LexiCom.

14. External Reverse Proxy OFTPs Ports

The External Reverse Proxy OFTPs Ports are used during the Reverse Proxy process. Cleo VLProxy listens on these ports for incoming OFTP/s connections. The OFTP user ID and password is verified against those identified by Cleo Harmony, Cleo VLTrader, or Cleo LexiCom, and only if valid is the request sent into Cleo Harmony, Cleo VLTrader, or Cleo LexiCom.

15. VersaLex Read Timeout (seconds)

This is the timeout value in seconds when reading from Cleo Harmony, Cleo VLTrader, or Cleo LexiCom. If the read takes longer than this value, the socket is closed and the session will be stopped. This value must be at least 30 seconds.

16. Remote Read Timeout (seconds)

This is the timeout value in seconds when reading from the remote hosts. If the read takes longer than this value, the socket is closed and the session will be stopped. This value must be at least 30 seconds.

17. Connection Backlog Size

This is the network socket backlog size per listening port. The client and server go through a handshake to set up a connection, which then allows the server to accept the connection; this backlog setting is the queue size for incoming connections that are in the process of being accepted. The larger the backlog size, the larger number of connections that can be in the process of being accepted at the same time. Connections that are not accepted result in a connection refused on the client side.

18. SMTP Mail Server Address

If you desire an e-mail notification when Cleo VLProxy fails to connect to Cleo Harmony, Cleo VLTrader, or Cleo LexiCom during the Reverse Proxy, then you can optionally set this value to the location of the SMTP mail server. If the SMTP mail server is not set, Cleo VLProxy will attempt to derive an SMTP mail server based on the destination email address at the time e-mail notifications are sent. If the e-mail on failure feature is used and you have specified an e-mail server that resides in the internal network, the internal firewall must also open port 25 for SMTP traffic from the DMZ to the internal network.

19. SMTP Mail Server Username/Password

If the SMTP mail server requires authentication, enter the username and password for the specified mail server.

20. SMTP Mail Server Username/Password

If the SMTP mail server requires authentication, enter the username and password for the specified mail server.

21. SMTP Mail Server Use Start TLS

Specify that the SMTP Proxy will send a STARTTLS command when the session is started. Defaults to "true".

22. Email on Fail Addresses

If you want to have e-mail notification for certain Cleo VLProxy failures, then this value must be set to the list of e-mail addresses to be notified. If configured, e-mail notifications will be sent if Cleo VLProxy fails to connect to Cleo VersaLex during the Reverse Proxy or if Cleo VLProxy is unable to start a reverse proxy port. The first e-mail address in the list will be considered both the FROM and the TO. Subsequent e-mail addresses will only be

considered TO. The first e-mail address should be an internal e-mail address to the company. If multiple e-mail addresses are used, they should be separated by semicolons (;) or commas (,).

23. Execute on Failure Command

If you wish to have an external script or program execute when Cleo VLProxy fails to connect to Cleo Harmony, Cleo VLTrader, or Cleo LexiCom during the Reverse Proxy, then this value must be set to the command that should be executed.

24. Max Log File Size

This is the maximum log file size in megabytes before it is archived. Archive files are created in the `logs/archive` sub-folder of Cleo VLProxy. Each archive will be named using the start and end date/time of the log (`VLProxy_YYYYMMDD-HHMMSS_YYYYMMDD-HHMMSS.zip`) and contains a zipped archive of the `VLProxy.xml` file.

25. Log External Address

This flag determines whether or not the External IP and port number are included in log events. For enhanced security, do not log these values. Values are **Yes** and **No**.

26. Unknown Partner Message Action

This flag determines the action when a message with an unknown AS2, AS4, ebMS, or RNIF relationship is received. The valid settings are **D** (defer), **I** (ignore), **R** (reject), **F** (forward), and **U** (URL-redirect). The actions for each of the settings are as follows:

D

Defer – Allows the most stringent setting of the active Cleo Harmony, Cleo VLTrader, or Cleo LexiCom instances to control the action to perform. In Cleo Harmony, Cleo VLTrader, or Cleo LexiCom, the setting can be found under **Unknown Message Partner Action** on the **Local Listener Advanced** tab.

I

Ignore – The sending system receives a valid response code (200 OK) without any explanation of the error, even if the sending system requested a receipt.

R

Reject – Disconnects from the sending system before completing receipt of the entire message entity.

F

Forward – The incoming message is forwarded to an active Cleo Harmony, Cleo VLTrader, or Cleo LexiCom instance. The **Unknown Partner Message Action** of the active instance should be set to one of the **Save** options.

U

URL-redirect – The incoming message is redirected to the specified URL. When this option is selected, a prompt is also given to enter a valid HTTP(s) URL (that minimally must include the server name).



Note: This option is currently only supported for AS2. If unknown trading relationships for other protocols are received while this option is enabled, the action for the other protocols will revert to the **D** (defer) option, specified above.

27. Reverse Proxy Load Balancing

This flag determines whether or not Cleo VLProxy will load balance reverse proxy requests between multiple, synchronized Cleo Harmony or Cleo VLTrader instances. See [Using Cleo VLProxy with multiple instances of Cleo Harmony, Cleo VLTrader, and Cleo LexiCom](#) on page 20 for additional information. When this value is **Yes**, Cleo VLProxy uses the following methods to determine which VersaLex will receive the next inbound client request:

Relationship

Only Cleo Harmony or Cleo VLTrader instances with the necessary trading partner relationship (see Reverse Proxy Issues) are considered.

Primary versus Backup

A primary (that is, active) Cleo Harmony or Cleo VLTrader instance has preference over any backup (passive) instance. A backup instance is designated with the **VersaLex Configure > Synchronization Backup Only** setting or through licensing.

Least connections

A request is sent to the Cleo Harmony or Cleo VLTrader instance with the fewest active connections.

Round-robin

Requests are sent to each Cleo Harmony or Cleo VLTrader instance in a sequential and circular pattern: instance 1, instance 2, instance 3, ... instance N.

For Cleo Harmony or Cleo VLTrader instances of the same type (that is, live and synchronized), Cleo VLProxy will initially use the fewest connections method to determine which one will handle the connection. The Cleo Harmony or Cleo VLTrader instance with the fewest active inbound and outbound connections through Cleo VLProxy will receive the next inbound connection. Cleo Harmony or Cleo VLTrader instances must be synchronized to handle asynchronous receipts (for example, AS2 MDNs). These instances should be the same type: for example, both Cleo Harmony or both Cleo VLTrader. For multiple instances of Cleo VLProxy, load balancing-related settings should be identical. When the number of connections is equal, the round-robin method is used. Values are **Yes** and **No**.

28. Reverse Proxy Retry

Cleo VLProxy takes approximately 90 seconds to recognize that a Cleo Harmony or Cleo VLTrader instance has ended abnormally. During this time, any inbound reverse proxy requests sent to this instance will experience connection failures. Instead of letting the inbound request fail when this happens, Cleo VLProxy can be configured to divert the request to one of the other synchronized Cleo Harmony or Cleo VLTrader instances, which avoids client-side errors. This flag indicates the preferred retry precedence. Valid settings are:

Prefer Active

First attempt retries to other active Cleo Harmony or Cleo VLTrader instances, and if unsuccessful or none exist, then retry to backup instances.

Prefer Backup

First attempt retries to backup Cleo Harmony or Cleo VLTrader instances, and if unsuccessful or none exist, then retry to other active instances.

Only Active

Only attempt retries to other active Cleo Harmony or Cleo VLTrader instances.

Only Backup

Only attempt retries to backup Cleo Harmony or Cleo VLTrader instances.

Configuring Cleo Harmony, Cleo VLTrader, and Cleo LexiCom

This section describes how to configure Cleo Harmony, Cleo VLTrader, and Cleo LexiCom to function with Cleo VLProxy.

The parameters are the same across Cleo Harmony, Cleo VLTrader, and Cleo LexiCom. You can use the native UI for Cleo Harmony, Cleo VLTrader, and Cleo LexiCom. For Cleo Harmony and Cleo VLTrader, you can also use a web UI.

1. In the native UI, go to **Configure > Proxies**. In the web UI, go to **Administration > Network > Proxies**.

In the native UI, the **Proxies** dialog box displays. In the web UI, the **Administration > Proxies** page displays. Both contain the same fields.

2. Click **New VLProxy**.

The VLProxy dialog box displays.

3. Populate the **Proxy Server Address** and **Port #** fields with values specified for **Internal Address** and **Internal Forward Proxy HTTP Ports**, respectively, when you configured Cleo VLProxy software. See [Configuring Cleo VLProxy](#) on page 12.

For more information about the fields in this dialog box, see [Cleo Harmony, Cleo VLTrader, and Cleo LexiCom configuration parameter reference](#) on page 19.

4. The external address and ports become the URL that you give your remote trading partners. Cleo VLProxy will reverse received messages into Cleo VersaLex.
 - a) Cleo VersaLex will automatically use the Cleo VLProxy URL as the requested location to send asynchronous AS2 MDNs.
5. For additional security, select **Reverse forward connections**, which indicates that outbound forward proxy connections from Cleo Harmony, Cleo VLTrader, and Cleo LexiCom should be pooled in Cleo VLProxy and used for reverse proxy requests. This option eliminates the need for any inbound ports through the internal firewall to Cleo Harmony, Cleo VLTrader, and Cleo LexiCom.
6. Multiple Cleo VLProxy instances can be configured as reverse proxies, either in a load balanced or a primary-backup arrangement. However, third-party or custom hardware/software (for example, a load balancer or a manual switch) is needed to facilitate this type of setup.
7. You can also configure multiple Cleo VLProxy instances as forward proxies in either a load balanced arrangement by selecting **Forward proxy load balance** or a primary-backup arrangement by selecting **Forward proxy backup only** on the **VLProxy** dialog box above. This does not require any additional third-party or custom hardware/software.
8. If you are using Cleo VLProxy as a Forward/Outbound proxy, you can do this for all FTP, FTP/s, HTTP, and HTTP/s hosts or selected hosts. For example, to use Cleo VLProxy for all outbound HTTP messages, select the Cleo VLProxy address/port in the **Default HTTP Forward Proxy** pulldown menu.
9. If you are using Cleo VLProxy as a Forward/Outbound proxy only for selected hosts, you must select it from the **Forward Proxy** pulldown for each host (found on the **General** tab).

Cleo Harmony, Cleo VLTrader, and Cleo LexiCom configuration parameter reference

Provide values for these fields to configure Cleo Harmony, Cleo VLTrader, or Cleo LexiCom to use a Cleo VLProxy instance.

Proxy Server Address

Port

Server address and port number to use for the Cleo VLProxy. These are required fields.

The **Proxy Server Address** corresponds to the **Internal Address** parameter on the Cleo VLProxy Configuration Screen (item #4).

The **Proxy Server Port #** corresponds to the **Internal Forward Proxy HTTP Ports** parameter on the Cleo VLProxy Configuration Screen (item #3).

Forward proxy group

One or more instances of Cleo VLProxy grouped together for different purposes, for example, internal vs. external communications.

To create a new group, type the name of the group in the text box.

To select an existing group, pull down the menu and select a group.

Forward proxy backup only

Select this check box to specify this proxy as a backup for other proxies in the same group. The Cleo Harmony, Cleo VLTrader, or Cleo LexiCom application will attempt to use an available backup Cleo VLProxy instance only if it is unable to use the primary forward Cleo VLProxy instance.

You cannot select the same proxy to be a backup and the default forward proxy at either the system or host level.

Forward proxy load balance

Select this check box to balance forward proxy requests across all the available instances of Cleo VLProxy based on the current number of connections to each. Any backup instances configured are included in the load balancing when the primary Cleo VLProxy is not available.

This field is only available when there are multiple instances of Cleo VLProxy configured in the same group.

Enable reverse proxying

Select this check box to use the reverse proxy feature of the Cleo VLProxy application for incoming HTTP messages.

If you select the **Enable reverse proxying** check box, the **Reverse forward connections** check box is enabled.

Reverse forward connections

Select this check box to indicate that all incoming reverse requests from the Cleo VLProxy application should use connections that originate from the Cleo Harmony, Cleo VLTrader, or Cleo LexiCom application forward to the Cleo VLProxy application. In other words, with this setting on, no inbound HTTP or HTTP/s port need be open through the firewall for incoming Cleo VLProxy requests. In fact, the HTTP and HTTP/s ports in the Local Listener can be disabled unless there is also local traffic coming directly to the Cleo Harmony, Cleo VLTrader, or Cleo LexiCom application.

The product establishes an available reverse connection pool with the Cleo VLProxy application, the size of which is based on the Local Listener **Incoming Connection Backlog Size** advanced property. When an incoming request uses one of the available connections, the pool is immediately replenished. If the request to the Cleo VLProxy application is over a secure port, the connection to the Cleo Harmony, Cleo VLTrader, or Cleo LexiCom application is converted to a secure port just prior to the incoming request starting. (**Note:** If **not** using **Reverse forward connections** and the request to the Cleo VLProxy application is over a secure port, the request from the Cleo VLProxy application into the Cleo Harmony, Cleo VLTrader, or Cleo LexiCom application uses a secure port if the Local Listener HTTP/s port is enabled.) While maintaining the available connection pool

does add extra overhead, connections are established ahead of time; therefore, throughput with **Reverse forward connections** on or off should be comparable.

Selecting the **Reverse forward connections** check box also enables the **Proxy Connection(s)** portion of the dialog box.

Proxy Certificate(s)

SSL Certificate

Use Local Listener SSL Server Certificate(s)

Select this option to use the SSL certificate(s) configured in the Local Listener for both connections coming in through the Cleo VLProxy application and connections coming directly into the Cleo Harmony, Cleo VLTrader, or Cleo LexiCom application.

Select Proxy SSL Certificate

Password

Select this option to specify an SSL certificate and password to use for connections coming in through the Cleo VLProxy application. The SSL certificates configured in the Local Listener are used for connections coming directly into the Cleo Harmony, Cleo VLTrader, or Cleo LexiCom application. You can use different SSL certificates for each instance of the Cleo VLProxy application.

You can click **Browse** to navigate to and select a certificate.

SSH Certificate

Use Local Listener SSH Server Certificate

Select this option to use the SSH certificate configured in the Local Listener for both connections coming in through Cleo VLProxy and connections coming directly into Cleo Harmony, Cleo VLTrader, or Cleo LexiCom.

Select Proxy SSH Certificate

Password

Select this option to specify an SSH certificate and password to use for connections coming in through Cleo VLProxy. The SSL certificates configured in the Local Listener are used for connections coming directly into Cleo Harmony, Cleo VLTrader, or Cleo LexiCom.

You can click **Browse** to navigate to and select a certificate.

Use Proxy SSL Certificate

Select this check box to use the proxy SSL certificate specified in Cleo VLProxy for both SSL and SSH connections. You can use different SSH certificates for each Cleo VLProxy.

Using Cleo VLProxy with multiple instances of Cleo Harmony, Cleo VLTrader, and Cleo LexiCom

This section describes how to configure a single instance of Cleo VLProxy to support multiple instances of Cleo Harmony, Cleo VLTrader, and Cleo LexiCom installed on multiple computers inside the firewall. The proxied instances of Cleo Harmony, Cleo VLTrader, and Cleo LexiCom can be either **non-redundant** (distributed) or **redundant** (synchronized), or a combination of both. Use this feature to reduce the number of open ports in the outside firewall. All of the instances of Cleo Harmony, Cleo VLTrader, and Cleo LexiCom can share the same inbound and outbound ports.

Non-Redundant instances

Each of the non-redundant (distributed) instances of Cleo Harmony, Cleo VLTrader, and Cleo LexiCom can use the same Cleo VLProxy in a forward/outbound direction without issue. However, when using Cleo VLProxy as a reverse proxy for distributed instances, there are some issues to be aware of.

Reverse Proxy Issues

- Inbound (reverse proxy) traffic is routed to the appropriate instance of Cleo Harmony, Cleo VLTrader, or Cleo LexiCom based on the AS2 To/From relationship. The inbound traffic is routed to the first active instance found with a matching To/From relationship. This means that if duplicate AS2 relationships exist, it is possible for the incoming message to go to an instance you did not intend to receive it. This is especially true for incoming MDNs where one instance of Cleo Harmony, Cleo VLTrader, and Cleo LexiCom sends the initial message and the MDN comes back to a different instance. Therefore, do not duplicate AS2 relationships between non-redundant instances of Cleo Harmony, Cleo VLTrader, and Cleo LexiCom. If a host/mailbox is disabled, then the AS2 relationship is not forwarded to Cleo VLProxy and therefore is not considered a duplicate. This means that a particular *Cleo AS2 System Test* host should not be active/enabled in more than one instance of Cleo Harmony, Cleo VLTrader, and Cleo LexiCom.
- Similarly for the ebXML message service (ebMS), inbound ebMS traffic is routed to the appropriate instance of Cleo Harmony, Cleo VLTrader, and Cleo LexiCom based on the CPA ID. For the RosettaNet Implementation Framework (RNIF), inbound RNIF traffic is routed to the appropriate instance based on the two business IDs. For Cleo Harmony and Cleo VLTrader users using the FTP or SSH FTP or HTTP or OFTP server, inbound traffic is routed to the appropriate instance of Cleo Harmony or Cleo VLTrader based on the login.
- Cleo VLProxy's inbound ports will accept incoming connections when at least one of the VersaLexes is active. If an incoming message is determined to be for an inactive instance of Cleo Harmony, Cleo VLTrader, and Cleo LexiCom, the trading partner will receive a 503 `Service Unavailable` and the message will not be transferred.
- Certain settings are used by Cleo VLProxy in setting up the reverse proxy port(s). Having inconsistent settings between the instances of Cleo Harmony, Cleo VLTrader, and Cleo LexiCom can lead to a communications failure with your trading partners. For information about these settings, see [Cleo Harmony, Cleo VLTrader, and Cleo LexiCom settings used by Cleo VLProxy for Reverse Proxying](#) on page 21.

Cleo Harmony, Cleo VLTrader, and Cleo LexiCom settings used by Cleo VLProxy for Reverse Proxying

Certain communication items in Cleo Harmony, Cleo VLTrader, and Cleo LexiCom are recommended to be set up the same between all different instances of Cleo Harmony, Cleo VLTrader, and Cleo LexiCom using the same Cleo VLProxy software. The following option should be set consistently across the VersaLexes if Reverse Proxying is enabled:

- **Unknown Partner Message Action:** Cleo VLProxy uses this setting to determine what to do when an unknown AS2 relationship is found during a reverse proxy. If the settings are different between the instances of Cleo Harmony, Cleo VLTrader, and Cleo LexiCom, the most conservative setting of the different instances will be used. The order of the settings from most conservative to least conservative is as follows:
 - **REJECT**
 - **IGNORE**
 - **SAVE**

If it is determined that there are different settings among the instances of Cleo Harmony, Cleo VLTrader, and Cleo LexiCom, a message is logged to the Cleo VLProxy log file. Cleo VLProxy also has an **Unknown Partner Message Action** setting that can be used as an overriding factor to the Cleo Harmony, Cleo VLTrader, or Cleo LexiCom setting.

The following options should be set consistently across the instances of Cleo Harmony, Cleo VLTrader, and Cleo LexiCom if Reverse Proxying via HTTP/s and/or FTP/s and/or OFTP/s is enabled:

- **SSL Server Certificate:** Cleo VLProxy uses the SSL Server Certificate from Cleo Harmony, Cleo VLTrader, or Cleo LexiCom for the HTTP/s and FTP/s reverse proxy port(s). Only one server certificate can be active on a port. If each instance has its own SSL certificate, Cleo VLProxy chooses a certificate from one of the active instances of Cleo Harmony, Cleo VLTrader, or Cleo LexiCom. Your trading partners will then need to trust all of

the SSL certificates for each of these instances. If you use the same one on all instances of Cleo Harmony, Cleo VLTrader, and Cleo LexiCom, the trading partners will only need the one certificate. If it is determined that there are different settings among the instances of Cleo Harmony, Cleo VLTrader, and Cleo LexiCom, a message is logged to the Cleo VLProxy log file.

- **Authenticate Client:** Cleo VLProxy uses the **Authenticate Client** setting to determine whether the client should be authenticated during the SSL handshake. If any of the VersaLexes have **Authenticate Client** enabled, then authentication will occur for all inbound SSL connections. This requires all certificates for all trading partners to be present in the various instances of Cleo Harmony, Cleo VLTrader, and Cleo LexiCom regardless of the **Authenticate Client** setting in the respective instance. An inbound connection will pass authentication if the trading partner's certificate is present in any of the active instances. If it is determined there are different settings among these instances, a message is logged to the Cleo VLProxy log file.



Note: Separate accepted client authentication certificate lists can optionally be configured in Cleo Harmony, Cleo VLTrader, and Cleo LexiCom for the different protocols (HTTP/s, FTP/s, OFTP/s), but Cleo VLProxy combines these lists into a single list.

Redundant (synchronized) instances of Cleo Harmony, Cleo VLTrader, and Cleo LexiCom

Redundant instances of Cleo Harmony, Cleo VLTrader, and Cleo LexiCom can easily be configured in Cleo VLProxy. The listed order of the Cleo Harmony, Cleo VLTrader, or Cleo LexiCom serial numbers during configuration indicates precedence. If **Reverse Proxy Load Balancing** is disabled, the first redundant instance listed is the primary installation and the second redundant instance listed is the backup installation. Cleo VLProxy will forward incoming traffic to a backup Cleo Harmony, Cleo VLTrader, or Cleo LexiCom instance if the primary instance is not currently connected. Once the primary instance reconnects to Cleo VLProxy, it will again be forwarded incoming traffic.

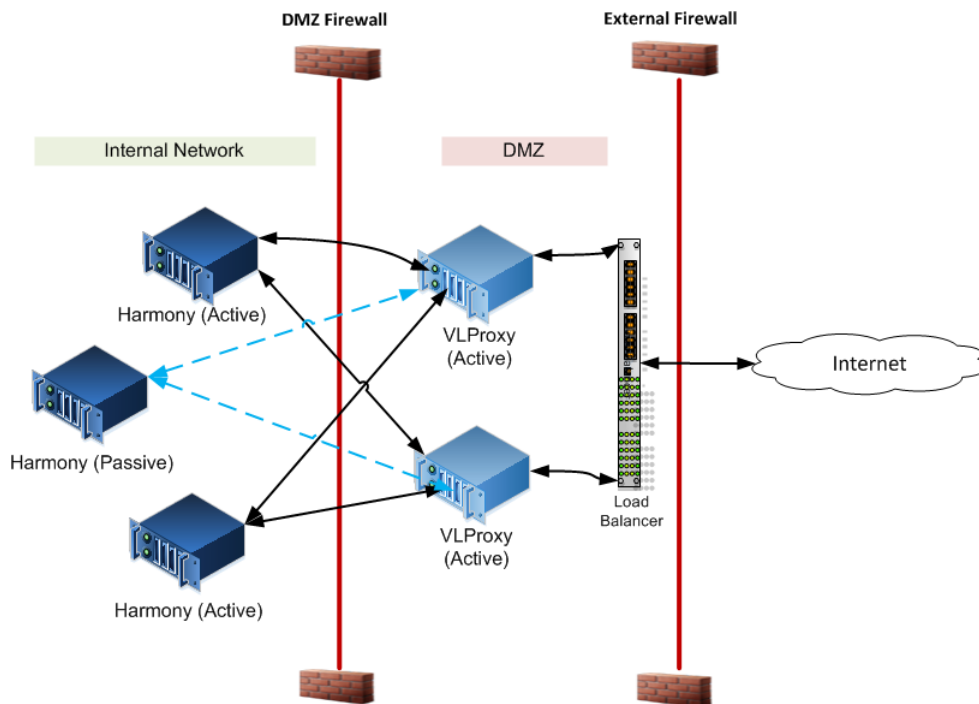
Multiple redundant backups of a single primary installation are supported. Simply list the serial numbers of the backups by order of precedence when configuring Cleo VLProxy.

Using non-redundant and redundant Cleo VersaLex platforms together is also supported. Make sure to configure the serial numbers of the redundant Cleo VersaLex platforms by order of precedence. The order of the non-redundant Cleo VersaLex serial number groups is unimportant.

If **Reverse Proxy Load Balancing** is enabled, the ordering of the serial numbers described above does not apply. Instead, the Reverse Proxy Load Balancing methods for determining which Cleo VersaLex the incoming traffic is forwarded to are used. A backup Cleo VersaLex must be designated with the **VersaLex Configure>Synchronization Backup Only** setting or through licensing.

Configuring a high-availability system

This section describes how to set up a high-availability environment with multiple synchronized instances of Cleo Harmony, Cleo VLTrader, and Cleo LexiCom and, optionally, multiple instances of Cleo VLProxy as shown in the illustration below.



Configuring for high-availability consists of several tasks:

- Installing Cleo VLProxy. See [Installing Cleo VLProxy](#) on page 7.
- Configuring your system for a single instance of Cleo VLProxy supporting a single instance of Cleo Harmony, Cleo VLTrader, or Cleo LexiCom. See [Configuring Cleo VLProxy](#) on page 12 and [Configuring Cleo Harmony, Cleo VLTrader, and Cleo LexiCom](#) on page 17
- Adding more instances of Cleo Harmony, Cleo VLTrader, or Cleo LexiCom. See [Adding instances of Cleo Harmony or Cleo VLTrader](#) on page 23.
- Adding more instances of Cleo VLProxy. See [Adding instances of Cleo VLProxy to your system](#) on page 26.

Adding instances of Cleo Harmony or Cleo VLTrader

This section describes how to add more instances of Cleo Harmony or Cleo VLTrader to your system. When you finish this procedure, the following should be true:

- The Cleo Harmony and Cleo VLTrader application schedule is load-balanced between the active, primary servers.
- If failover groups are not defined, or primary/backup servers are grouped together, the active server with the lowest serial number is the master scheduler. If an active server should go down, a backup server is activated and will begin to run scheduled actions. When *all primary* and *all backup* servers are grouped together, then the schedule is automatically started on the backup system with the lowest serial number *only after all active primary systems are down/offline*. The number of backup systems that become active is the same as the number 'n' of previously active primary systems, that is, if you have synchronized more backup systems than primary systems, only 'n' number of backup systems will become active.
 - If using Cleo Harmony or Cleo VLTrader outgoing database payload, load balanced and backup servers are managed similar to the application schedule using a master database payload controller.
 - If using the Cleo Harmony or Cleo VLTrader payload router, a master router is again employed, but even if the servers are configured in an active-active configuration, only the master router sends outgoing requests.
- If using Cleo VLProxy as a forward proxy, each active Cleo Harmony and Cleo VLTrader server will forward outbound requests through Cleo VLProxy.

- If using Cleo VLProxy as a reverse proxy, Cleo VLProxy will load balance inbound requests between the active, primary Cleo Harmony and Cleo VLTrader servers. If an active Cleo Harmony or Cleo VLTrader server goes down and failover groups are not defined, Cleo VLProxy will activate a backup server and begin to send it inbound requests. When failover primary/backup groups are defined, Cleo VLProxy will activate a backup server within that same group and begin to send it inbound requests. When groups are configured with all primary servers in one group and all backup servers in the other group, all the primary servers must be offline before any backup servers are activated.
- For layouts involving more than two Cleo Harmony or Cleo VLTrader servers where failover groups are not defined, a combination of active-active and active-passive can be deployed, for example, three servers in an active-active-passive configuration.

Adding instances Cleo Harmony or Cleo VLTrader software

1. Install and license the additional Cleo Harmony or Cleo VLTrader applications, but do not enter any configuration other than setting the Local Listener HTTP port if the default is not to be used. This is because the first application contains the starting point of the configuration, and any modifications entered now into an additional application will be overlaid when synchronization is initialized.
2. After you have installed and licensed the additional Cleo Harmony or Cleo VLTrader applications, go to Cleo VLProxy and add the additional Cleo Harmony or Cleo VLTrader application Serial Number in the VLProxy configuration screen. See [Configuring Cleo VLProxy](#) on page 12.
3. Return to the first Cleo Harmony or Cleo VLTrader instance and add an instance to synchronize. In the web UI, go to **Administration > Network > Synchronization**. In the native UI, go to **Configure > Synchronization**. Then, click **Add...** to display the **Synchronization** dialog box.

Cleo Harmony Synchronization

* Serial Number ☐ High Availability Backup

* Address * Port #

Group ☒ HTTP ☐ HTTP/s

Optional Alias ☐ VLNavigator Alias

Location Note

Sync Items with Harmony 'HD0001-YS3469'

- ☐ Trading partner/CA certificates
- ☐ User certificates/private keys
- ☐ System options
- ☐ Proxy settings
- ☐ AS/400 configuration
- ☐ Windows/Unix folders configuration
- ☐ Schedule
- ☐ Routes
- ☐ Local Listener
- ☐ Hosts
- ☐ Trading partners
- ☐ IP blacklist

☐ Temporarily disable synchronization with this Harmony

All **None** **OK** **Cancel** **Help**

4. Configure the additional Cleo Harmony or Cleo VLTrader instance using the Synchronization dialog box.

- a) Enter the **Serial Number** of the additional Cleo Harmony or Cleo VLTrader application.
- b) The **Address** and **Port** are the address and port of the additional application as seen by the first application (see [Configuring Cleo VLProxy](#) on page 12 and [Configuring Cleo Harmony, Cleo VLTrader, and Cleo LexiCom](#) on page 17).
- c) Add an optional **Group** to specify failover rules that designate how production/backup systems will respond when production systems go offline. This might be the case when, for example, you have production (primary) and backup systems located together in separate data centers and want them to be logically grouped together; or you have backup systems that are designated for disaster recovery and only want the backup systems to become active when all the production systems are offline. When groups are specified, the Cleo Harmony and Cleo VLTrader systems support either multiple production/backup groups or one all-production group and one all-backup group. A combination of production/backup system groupings with either all-production and/or all-backup groups is not supported and will be treated as if failover groups have not been configured. If any group names are defined, nodes without a group name are themselves considered within the same logical group. Failover group rules apply only when the scheduler and/or hosts are synchronized.
- d) To distinguish the multiple application instances, you can enter an **Optional Alias**, which is displayed in the application title bar.
- e) Select items you want to be synchronized.

Typically, all items are synchronized, but at a minimum the following should be selected:

- **Trading partner/CA certificates**
- **User certificates/private keys**
- **Proxy settings** (if using Cleo VLProxy or a third-party forward proxy)
- **Schedule**
- **Routes** (if applicable)
- **Hosts**



Note: Synchronized Cleo Harmony and Cleo VLTrader applications should use shared file server inbox/outbox directories, or a shared database if using database payload. If using the payload router, synchronized applications should also use a shared file server autoroute directory.

5. For an active-active (load balanced) Cleo Harmony or Cleo VLTrader inbound/outbound configuration:
 - Make sure **Backup Only** is disabled. In the web UI, go to **Administration > Network > Synchronization**. In the native UI, go to **Configure > Synchronization**.
 - If using Cleo VLProxy to reverse proxy inbound requests, turn on Reverse Proxy Load Balancing in the VLProxy Configuration Screen. See [Configuring Cleo VLProxy](#) on page 12.
 - While at Cleo VLProxy, consider setting one of the Reverse Proxy Retry options in the VLProxy Configuration Screen.
6. For an active-passive Cleo VersaLex inbound/outbound configuration (primary/backup):
 - Turn on **Backup Only** in the **Configure > Synchronization** pairing.
 - If using Cleo VLProxy to reverse proxy inbound requests, go to Cleo VLProxy and ensure the primary Cleo VersaLex application serial numbers are listed first in the Cleo VLProxy configuration before the backup application serial number.

While at Cleo VLProxy, consider setting one of the Reverse Proxy Retry options in the VLProxy Configuration Screen.
7. Click **OK** on the **Configure > Synchronization > Add VersaLex** dialog, and then select **Yes** for the subsequent prompts to allow the initial synchronization to occur. When the application synchronization status indicates **Waiting for sync requests**, initialization has been completed. At this point, modifications entered at either application are synchronized instantly with the other applications.

8. In the Cleo Harmony or Cleo VLTrader application, navigate to **Configure > Options > Other > Synchronized Backup Failover** to set the amount of time after an active server is first detected as down before a backup server is activated. Default value is 5 minutes.

If not using Cleo VLProxy to reverse proxy inbound requests, a third-party software/hardware device (for example, network load balancer or router not provided by Cleo) must be placed in front of the synchronized Cleo Harmony or Cleo VLTrader applications. Depending on the device, it will offer options for either an active-active or active-passive configuration inbound to the Cleo Harmony or Cleo VLTrader applications.

Adding instances of Cleo VLProxy to your system

When you finish this procedure, the following should be true:

- If using Cleo VLProxy as a forward proxy, each active Cleo VersaLex application will split outbound requests between the load balanced Cleo VLProxy servers. If an active Cleo VLProxy server should go down, the Cleo VersaLex application will begin to send a backup Cleo VLProxy outbound requests.
- If using Cleo VLProxy as a reverse proxy, a third-party device is needed in front of the Cleo VLProxy servers.
- For layouts involving more than two Cleo VLProxy servers, a mixture of active-active and active-passive can be deployed (e.g. three Cleo VLProxy servers in an active-active-passive configuration).

1. Install the additional Cleo VLProxy servers. Enter the same configuration in the **VLProxy Configuration Screen** (see [Configuring Cleo VLProxy](#) on page 12) as the first Cleo VLProxy server, except for the **Internal Address** and, if necessary, the **Internal Forward Proxy HTTP Port**.
2. Then, on any Cleo VersaLex instance, go to the **Proxies** page to add the Cleo VLProxy. In the native UI, go to **Configure > Proxies**. In the web UI, go to **Administration > Network > Proxies**.

In the native UI, the **Proxies** dialog box displays. In the web UI, the **Administration > Proxies** page displays. Both contain the same fields.

3. Click the **New VLProxy** button.

The VLProxy dialog box displays.

The screenshot shows a 'VLProxy' configuration window. It includes fields for 'Proxy Server Address' and 'Port #' (set to 0). There is a dropdown for 'Forward proxy group'. Four checkboxes are present: 'Forward proxy backup only', 'Forward proxy load balance', 'Enable reverse proxying', and 'Reverse forward connections'. 'OK' and 'Cancel' buttons are at the bottom.

4. Enter the proxy address and port (the **Internal Address** and **Internal Forward Proxy HTTP Port**, respectively, for this Cleo VLProxy instance.) See [Configuring Cleo VLProxy](#) on page 12 and [Configuring Cleo Harmony, Cleo VLTrader, and Cleo LexiCom](#) on page 17.
5. Match the settings from the first Cleo VLProxy server for **Enable reverse proxying** and [Reverse forward connections](#).

6. For an active-active Cleo VLProxy outbound configuration (that is, load balanced), turn on **Forward proxy load balance** (which turns it on for all instances of Cleo VLProxy).

Otherwise, for an active-passive Cleo VLProxy outbound configuration (that is, primary/backup), the first one is the primary proxy. Set this additional proxy to **Forward proxy backup only**.



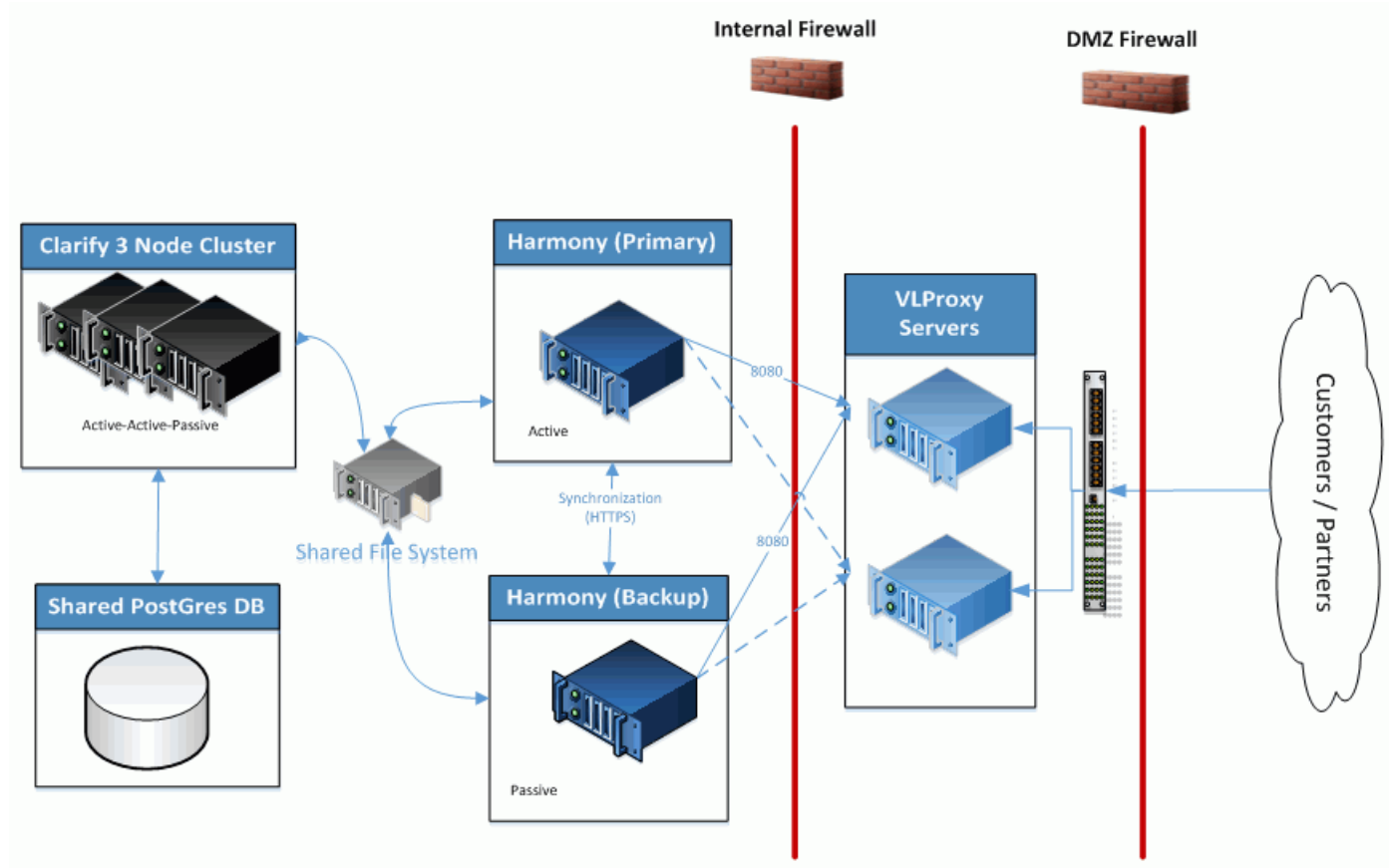
Note: With either **Forward proxy load balance** or **Forward proxy backup only** selected, the default forward proxy settings for the first Cleo VLProxy server carry over to this additional Cleo VLProxy server.

7. If you want to use Cleo VLProxy to reverse proxy inbound requests, you must place a third-party software/hardware device (for example, network load balancer or router, etc., not provided by Cleo) in front of the multiple Cleo VLProxy servers. Depending on the device, it will offer options for either an active-active or active-passive configuration inbound to the Cleo VLProxy servers.

Integrating with Cleo Clarify

Cleo Clarify supports every phase of business integration – building, integrating, and maintaining – in one simplified, streamlined product. An individual may create, test, and deploy integration processes from beginning to end, or Clarify can be used by teams with multiple participants and roles – including business analysts, developers, and IT operations personnel.

Cleo VLProxy normally runs in the DMZ (demilitarized zone, or perimeter network) and forwards requests between Cleo Clarify inside the company (behind the firewall) and external hosts on the Internet.



Note: This illustration shows a Harmony-Clarify integration using multiple VLProxies.

The following topics describe how to configure Cleo Clarify with VLProxy based on these different configuration types:

- Clarify Single Server with one or multiple VLProxy installs

- Clarify Server Cluster with one or multiple VLProxy installs

Configuration involves adjusting parameters within configuration files for both systems.

System Requirements and Technical Assumption

These system requirements must be met between both systems.

- Cleo Clarify v4.14.3 or higher installed (including an updated license)
- Cleo VLProxy v3.7.0.6 or higher installed



Note: The latest Clarify server requires an updated license. See how to apply your license in the *System Maintenance/Licensing* section of the Cleo Clarify User Guide.

Based on the requirements above, the following assumptions apply:

- You have successfully configured a Clarify server (cluster or single) environment.
- You have successfully configured VLProxy. If using multiple VLProxies, these have been configured correctly.
- If Harmony is part of your overall integration, both installation and integration with VLProxy and Clarify have been completed successfully.

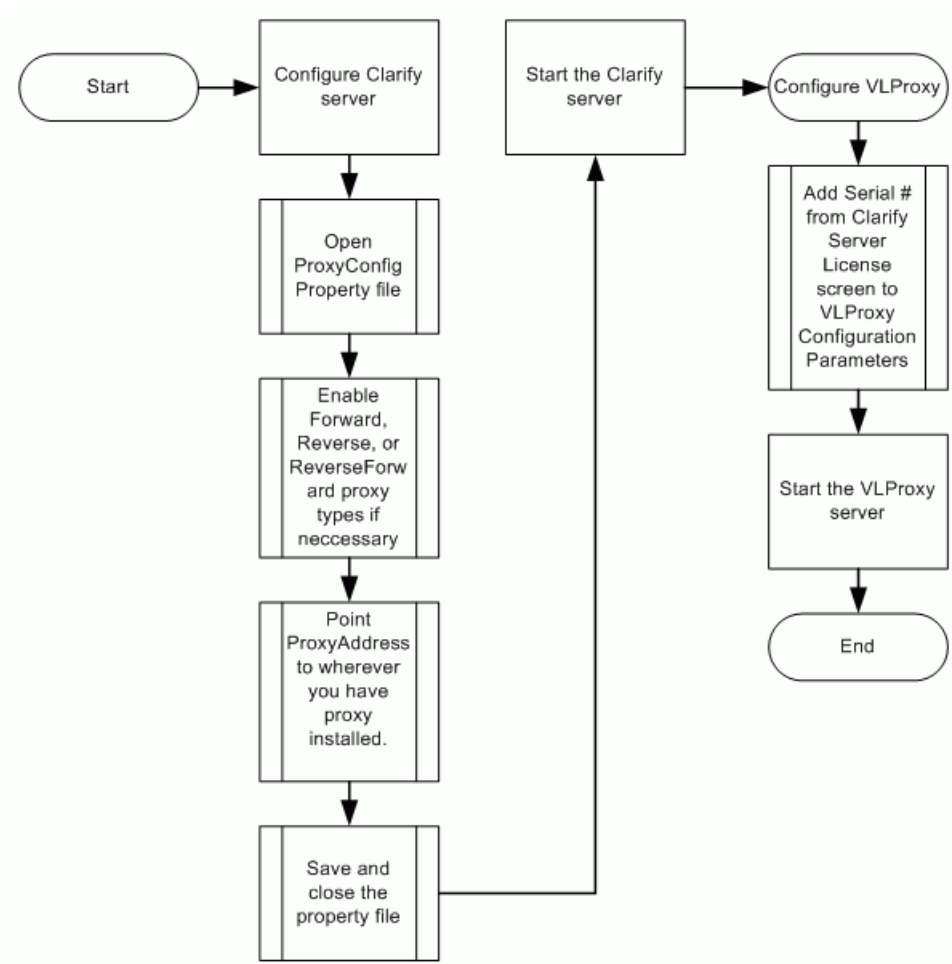
Additional Information

See [Installing Cleo VLProxy](#) on page 7 and [Configuring Cleo VLProxy](#) on page 12 for information on installing, configuring, and using Cleo VLProxy.

Reference the *Getting Started with Clarify Server* for information on installing and configuring Cleo Clarify. This is also in the Installation section of the Cleo Clarify User Guide.

Overall Process Flow

This diagram illustrates the high-level process to configure both Clarify and VLProxy. Both servers must be stopped running during these steps.



Clarify Configuration

Setting up Clarify to communicate through VLProxy uses a *ProxyConfig* property file, which can be found in your Clarify server workspace. The following steps describe how to configure this file.

1. Shut down the Clarify server. Always follow the steps per server type (single or cluster).
See the *Getting Started with the Cleo Clarify Server* install guide.
For server cluster, see *How to Stop, Suspend, and Resume the Server Cluster*.
For single server, see *How to Stop, Suspend, and Resume Single Servers*.
2. From the Clarify server workspace, go to `ws/resources/config/server/misc` and open the `ProxyConfig.properties` file (shown here).

```

ForwardProxyCommsEnabled=false
ReverseProxyCommsEnabled=false
ReverseForwardProxyCommsEnabled=false
NumberOfReverseForwardConnections=10
ProxyAddresses=127.0.0.1:8080

```

3. Enter the address(es) for the VLProxy installation in `ProxyAddresses`.

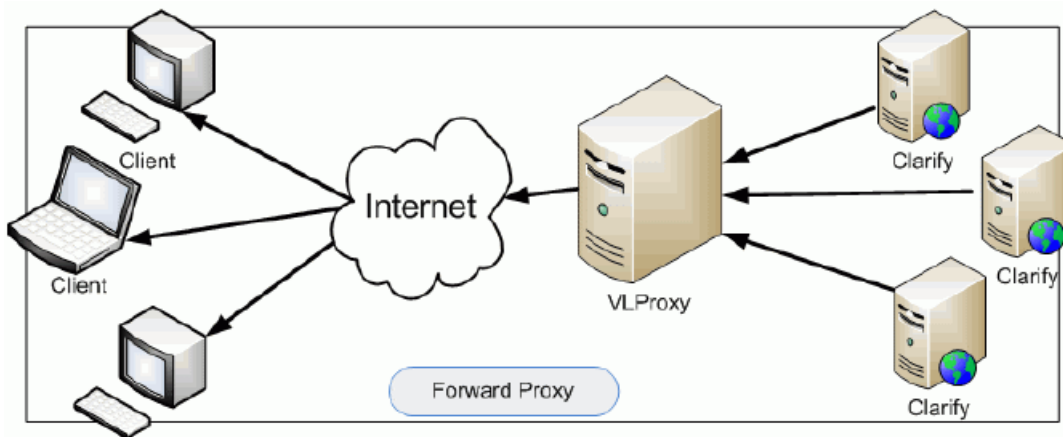
- This is a semicolon delimited list of all proxy addresses.
 - Each ProxyAddress contains a host and a port.
 - For example: 172.0.0.1:8080;172.0.0.2:8080;172.0.0.3:8080
4. Set values to true based on the proxy type being used (See [Proxy Types](#) on page 32 for more information.)
 5. Save and close the file.
 6. Re-start the Clarify server. See the referenced topics in Step 1 for correct method.

Proxy Types

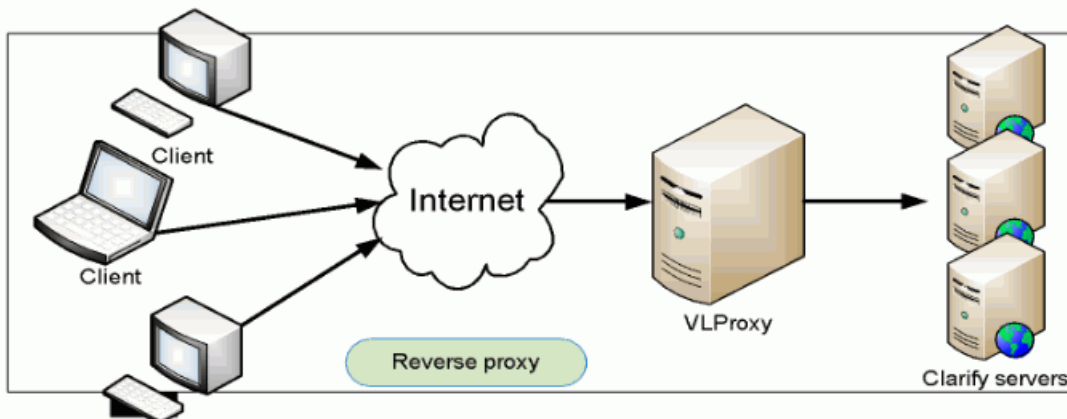
In addition to listing the IP address for the VLProxy install location, the ProxyConfig.properties file is where you enable which communication types are used. Proxy types include forward, reverse, and reverseforward, which are briefly described here.

A reverse proxy is a single entry point that serves multiple backend servers; a forward proxy serves clients behind it. Both are single points of entry that are a "proxy" on behalf of either servers (reverse) or clients (forward).

In Clarify, forward proxy is used for **outbound** HTTP, such as the Cleo Cloud Connectors and Web Service Consumers (SOAP & REST).



Reverse proxy is used for inbound processing to Clarify, such as Web Service Providers (SOAP & REST).



For additional security, select reverseforward proxy, which indicates that outbound forward proxy connections from Clarify should be pooled in VLProxy and used for reverse proxy requests. This option eliminates the need for any inbound ports through the internal firewall to Clarify.

Required changes when using SOAP Web Services Provider objects with VLProxy

When using a Web Service Provider object in Clarify to connect with VLProxy, there are two specific fields that within the Provider's editor that must be adjusted.

- External Address
- External Port

The screenshot shows the 'Web Service Provider (SOAP/WSDL)' configuration window. The 'Name' field is 'MyWsProviderWSPwsdl'. The 'External Address' and 'External Port' fields are highlighted with a green box. The 'External Port' is set to 8091. Below these fields are checkboxes for 'SSL' and 'Disable SOAP with Attachments', both of which are unchecked. The 'Authorization Type' is set to 'None'.

1. Change the *External Address* field in the object to that of the VLProxy external address. This is parameter 6 in the VLProxy *Configuration Parameters* screen.

Note: *If using multiple VLProxies.* The External Address field can only be populated with a single server address (that consumers will use to obtain your service). In the case of multiple VLProxies, you will need to have a DNS or Load Balancer that routes data to the VLProxy servers. In this case, the path to your Load Balancer or DNS would be the external address configured in the SOAP Web Service Provider object.

2. Change the *External Port* in the object to that of the VLProxy External Reverse Proxy HTTP (or HTTPS) Ports. This is parameter 7 (or 8) in the VLProxy *Configuration Parameters* screen.

VLProxy Configuration

Take these steps to configure VLProxy for integration with Clarify.

1. Stop the VLProxy server (if not already).
2. Using a command prompt (from the VLProxy install folder), run the `vlproxyc -p` command.
The VLProxy *Configuration Parameters* screen appears.

```

VLProxy Version 4.0.0.0

Configuration Parameters:
 1. Serial Numbers           : HR0001-MU7803
 2. Internal Forward Proxy HTTP Ports : 8080
 3. Internal Address         :
 4. Internal Network IDs     :
 5. External Address         :
 6. External Reverse Proxy HTTP Ports : 15080
 7. External Reverse Proxy HTTPs Ports : 15443
 8. External Reverse Proxy FTP Ports   : 5021,21
 9. External Reverse Proxy FTPs Explicit Ports: 921
10. External Reverse Proxy FTPs Implicit Ports: 990
11. External Reverse Proxy FTP Data Ports : 20900-20999
12. External Reverse Proxy SSH FTP Ports : 22,8022
13. External Reverse Proxy OFTP Ports    : 5028
14. External Reverse Proxy OFTPs Ports   : 5029
15. VersaLex Read Timeout (seconds)      : 150
16. Remote Read Timeout (seconds)        : 150
17. Connection Backlog Size              : 50
18. SMTP Mail Server Address             :
19. SMTP Mail Server Username            :
20. SMTP Mail Server Password            :
21. SMTP Mail Server Use Start TLS       : Yes
22. Email on Fail Addresses              :
23. Execute on Failure Command            :
24. Max Log File Size (Mb)               : 5
25. Log External Address                 : No
26. Unknown Partner Message Action       : Defer
27. Reverse Proxy Load Balancing         : No
28. Reverse Proxy Retry                  : No

```

3. Enter the Serial Number for the Clarify server (cluster or single) that will communicate with VLProxy. This serial number can be found on both the Clarify Server and Studio Information screen. To view, go to the Clarify Studio's main menu : **Help > View Studio Information**.

When connecting to a server cluster, other information, in addition to the serial number is necessary:

- The IP Address for each server node in the cluster.
- The Node Type for every possible node that has the possibility of communicating with VLProxy. This means that both active and passive nodes need to be included.

Format: <Serial Number>-<IP address>-<Node type>

Node type is indicated by a “W” (for worker) and “R” (for receiver). Coordinators do not need to be addressed.

Example: CY1675-IC84334-10.10.20.33-R

This example below shows three server nodes, each with a receiver node and a worker node. Each node must be separated by a comma

```

CY1675-IC84334-10.10.20.33-R,CY1675-IC84334-10.10.20.34-R,CY1675-
IC84334-10.10.20.35-R, CY1675-IC84334-10.10.20.33-W,CY1675-
IC84334-10.10.20.34-W,CY1675-IC84334-10.10.20.35-W

```

 **Note:** If configuring a single Clarify server, then just the serial number is enough.

4. Complete these additional configuration parameters, if required for reverse proxy. These include:
 - **Internal Address:** Used during the reverse proxy process, this is the address of VLProxy when accessed from your internal network.
 - **Internal Network IDs:** Used during the reverse proxy process, this parameter is used to specify the start of addresses (partial addresses) on your internal network.

- **External Address:** Used during the reverse proxy process, this address is sent to Clarify. This address should be the address of VLProxy.
 - **External Reverse Proxy HTTP Ports:** Used during the reverse proxy process. VLProxy listens on these ports for incoming HTTP connections. The HTTP login is verified against those identified by Clarify.
 - **External Reverse Proxy HTTPS Ports:** Used during the reverse proxy process. VLProxy listens on these ports for incoming HTTP/s connections. The HTTP login is verified against those identified by Clarify.
5. Enter “0” to exit the configuration screen.

System Log File

System log file format

The system log file is an XML file located in `\logs\VLProxy.xml`. While Cleo VLProxy is running, the log is continually appended with any messages generated by active Forward and Reverse Proxies. However, even though it is continuously updated, the log is always a valid and well-formed XML file.

The log XML file is formatted as follows:

- One and only one `<Log>` exists in the file
- `<Log>` may contain one or more `<Session>`
- `<Session>` has the product name and version
- `<Session>` contains one `<System>` and one `<Run>`
- `<System>` has information about the computer
- `<Run>` has the `<Session>` starting date/time stamp, `<Thread>` number, and `<Event>` number
- `<Run>` may contain one or more `<Event>`
- `<Event>` contains either `<Detail>`, `<ProxyConnect>`, `<Request>`, `<Response>`, `<Result>`, or `<ProxyDisconnect>` always followed by `<Mark>`
- `<Detail>` provides extra detailed information anywhere in the flow
- `<ProxyConnect>` provides information about direction (Inbound or Outbound), URL, and optionally connection IP and port
- `<Request>` contains the protocol-specific request made to the host
- `<Response>` contains the protocol-specific response from the host
- `<Result>` marks the end of a request and has resultant status
- `<ProxyDisconnect>` provides information about direction (Inbound or Outbound) and the number of seconds the connection was active
- `<Mark>` has the date/time stamp and corresponding `<Thread>` number (TN=), `<Command>` number (CN=), and `<Event>` number (EN=).

Because more than one action can be active at any given time, the `<Thread>` number and `<Command>` number references provide a means for grouping related `<Event>`s together.

The following is a sample log file:

```
<? xml version="1.0" standalone="yes" ?>
< Log descName = "  Cleo Communications application log file  ">
< Session appName = "  VLProxy  " version = "  1.0  " cmdLine = "  -s service
">
< System name = "  BBowley1  " address = "  10.10.101.29  " locale = "  USA  "
timeZone = "  CST  " OS = "  Windows XP  " version = "  5.1  " java = "  1.3.1_09  "
userName = "  bbowley  " workDir = "  C:\Program Files\VLProxy  " />
```

```
< Run date =" 2004/03/01 15:19:28 " TN =" 1 " EN =" 1 ">
C:\Users\username\AppData\Local\Temp\logs\VLProxy.xml - # < Event >
< Detail level =" 1 "> Operating System backlog is 5 connections. </
Detail >
< Mark date =" 2004/03/01 15:19:29 " TN =" 1 " CN =" 1 " EN =" 1 " />
</ Event >
< Event >
< Detail level =" 1 "> Starting Forward HTTP proxy on port 8080 </ Detail
>
< Mark date =" 2004/03/01 15:19:29 " TN =" 1 " CN =" 1 " EN =" 2 " />
</ Event >
< Event >
< Detail level =" 1 "> Received initialization data from VL0001-XXXXXX </
Detail >
< Mark date =" 2004/03/01 15:19:40 " TN =" 1 " CN =" 1 " EN =" 3 " />
</ Event >
< Event >
< Detail level =" 1 "> Received AS2 Local Host data from VL0001-XXXXXX </
Detail >
< Mark date =" 2004/03/01 15:19:40 " TN =" 1 " CN =" 1 " EN =" 4 " />
</ Event >
< Event >
< Detail level =" 1 "> VL0001-XXXXXX set Allow Reverse Proxy to false </
Detail >
< Mark date =" 2004/03/01 15:19:40 " TN =" 1 " CN =" 1 " EN =" 5 " />
</ Event >
< Event >
< Detail level =" 1 "> Received AS2-To/From data from VL0001-XXXXXX </
Detail >
< Mark date =" 2004/03/01 15:19:40 " TN =" 1 " CN =" 1 " EN =" 6 " />
</ Event >
< Event >
< Detail level =" 1 "> Received SSL Socket data from VL0001-XXXXXX </
Detail >
< Mark date =" 2004/03/01 15:19:40 " TN =" 1 " CN =" 1 " EN =" 7 " />
</ Event >
< Event >
< Detail level =" 1 "> VL0001-XXXXXX set All ow Reverse Proxy to false </
Detail >
< Mark date =" 2004/03/01 15:19:40 " TN =" 1 " CN =" 1 " EN =" 8 " />
</ Event >
< Event >
< Detail level =" 1 "> Received CA Certificate data from VL0001-XXXXXX </
Detail >
< Mark date =" 2004/03/01 15:19:40 " TN =" 1 " CN =" 1 " EN =" 9 " />
</ Event >
< Event >
< Detail level =" 1 "> VL0001-XXXXXX set All ow Reverse Proxy to true </
Detail >
< Mark date =" 2004/03/01 15:19:41 " TN =" 1 " CN =" 1 " EN =" 11 " />
</ Event >
< Event >
< Detail level =" 1 "> Starting Reverse HTTP proxy on port 5050 </ Detail
>
< Mark date =" 2004/03/01 15:19:41 " TN =" 1 " CN =" 1 " EN =" 12 " />
</ Event >
< Event >
```

```

< Detail level =" 1 "> Starting Reverse HTTPs proxy on port 443 </ Detail
>
< Mark date =" 2004/03/01 15:19:41 " TN =" 1 " CN =" 1 " EN =" 13 " />
</ Event >
< Event >
< ProxyConnect direction =" Outbound " sourceIP =" 10.10.101.29 "
sourcePort =" 3146 " destURL =" test.cleo.com " />
< Mark date =" 2004/03/01 15:20:03 " TN =" 1 " CN =" 6 " EN =" 14 " />
</ Event >
< Event >
< Request text =" POST " type =" HTTP " />
< Mark date =" 2004/03/01 15:20:03 " TN =" 1 " CN =" 6 " EN =" 15 " />
</ Event >
< Event >
< Response host =" 200 OK " />
< Mark date =" 2004/03/01 15:20:04 " TN =" 1 " CN =" 6 " EN =" 16 " />
</ Event >
< Event >
< Result text =" Success " direction =" Outbound " bytes =" 2114 " seconds
=" 0.02 " />
< Mark date =" 2004/03/01 15:20:04 " TN =" 1 " CN =" 6 " EN =" 17 " />
</ Event >
< Event >
< ProxyDisconnect direction =" Outbound " secondsConnected =" 0.77 " />
< Mark date =" 2004/03/01 15:20:04 " TN =" 1 " CN =" 6 " EN =" 18 " />
</ Event >
</ Run >
</ Session >
</ Log >

```

Monitor System log file

While Cleo VLProxy is active, use a special command in Cleo VLProxy to watch the Log file. At the command prompt, enter the command `VLProxyc -m`. This will display the last few items in the system log and continue to display any new events logged. To stop the log display, click **Enter**.

Debug Options

Cleo VLProxy software can be started in Debug Mode by running it from the command line. You can debug to the screen, a file, or both. There are two levels of debugging. The first is high-level debugging only, and the second is full debug mode. The following shows the syntax for Cleo VLProxy software debugging:

- `VLProxyc -s service -d<Level> [<OutputMode>]`
- `<Level>` is either **1** for high-level debugging, **2** for full debug, or **3** for only SSL debug
- `<OutputMode>` is either **file** for outputting to a debug file in the logs directory, **screen** for outputting to the screen only, or **both** to output to both the file and the screen.



Note: When the SSL debug level 3 is specified, the `<OutputMode>` specifier is ignored. SSL debug is always only output to a debug file.

The debug data logged is application specific and will not be described. Debug mode is for advanced users or when speaking with Cleo Technical Support.



Note: The debug file is not archived, so debug should not be left on for an extended period of time.

To view the version information for the Cleo VLProxy software, enter the command `VLProxyc -s version`. This will display the version of the product along with information for each of the `.jar` files in the product.

