

Configuring HP Apache on Veritas Cluster File System with HP Serviceguard



Introduction	2
Intended Audience.....	2
Prerequisites	2
Assumptions	2
Supported Configurations	2
Active-Active Configuration.....	2
Directory Structure	2
Configuration Changes.....	3
Starting HP Apache Server.....	6
Accessing HP Apache Server.....	6
Stopping HP Apache Server	6
Active-Passive Configuration	7
Directory Structure	7
Configuration Changes.....	7
Starting HP Apache Server.....	8
Accessing HP Apache Server.....	9
Stopping HP Apache Server	9
Configuration Notes.....	10
Summary.....	10

Introduction

HP Apache is the Apache based web server shipped with HP-UX. HP Apache is one of the top featured products of HP. The Veritas Cluster File System (CFS) allows multiple instances of HP Apache, running on different machines, to serve the same set of pages available at a shared location. HP Serviceguard provides high availability to the HP Apache instances. Integrating HP Apache with HP Serviceguard on a CFS environment would provide a robust and simple high availability solution. This document describes the steps to setup the required configuration.

Intended Audience

This document is intended for System/Network administrators who configure and run HP Apache servers in a Veritas CFS environment.

Prerequisites

- Considering two nodes (assuming the same applies to any number of nodes), these nodes must have HP-UX 11i v2 installed with Veritas CVM/CFS 4.1/5.0 and supported version of HP Serviceguard.
- hpuxwsApache version 2.0.58.01 is installed in the /opt/hpws/apache directory and hpuxwsWebmin A.1.070.09 is installed in the /opt/hpws/webmin directory. For serving Perl scripts using mod_perl, Perl 5.8.8 must be installed.

Assumptions

HP Apache integration with HP Serviceguard in a CFS/CVM environment is contingent to Enterprise Cluster Master Toolkit support for this configuration. Please refer above Enterprise Cluster Master Toolkit support matrix for information on ECMT version supporting HP Apache with HP Serviceguard in CFS/CVM environment.

Supported Configurations

HP Apache supports two configurations namely, Active-Active Configuration and Active-Passive Configuration. The following sections describe both these configurations, their setup and use. These configurations provide high availability and use minimum storage.

Active-Active Configuration

In an Active-Active configuration, HP Apache web server can be started simultaneously from different nodes as the HP Apache binaries are shared on a CFS mount point accessible from all nodes.

Directory Structure

This subsection describes the directory structure before modification and after modification done for the Active-Active configuration.

1. Initial directory structure: When HP Apache is installed, the default location where HP Apache gets installed is /opt/hpws/apache.

HP Apache Home: /opt/hpws/apache


```
mach1# cp -R /mnt/apachedgb/apache/logs
      /etc/cmcluster/apacheconfdir
```

4. Edit the httpd.conf located in conf directory of ServerRoot. Use the following command:

```
mach1# vi <New_ServerRoot Directory>/conf/httpd.conf
```

For example:

```
mach1# vi /etc/cmcluster/apacheconfdir/conf/httpd.conf
```

5. Change the ServerRoot directive in httpd.conf to look as follows:

```
ServerRoot      <New_ServerRoot>
```

For example:

```
ServerRoot      /etc/cmcluster/apacheconfdir
```

6. The configuration for the HP Apache modules can be done in either of the following methods:

- a. Prepend <New_location_for_apache> to ALL the LoadModule directives in httpd.conf

For example:

```
LoadModule access_module modules/mod_access.so
```

Should be changed to look like

```
LoadModule access_module
      /mnt/apachedg/apache/modules/mod_access.so
```

(OR)

- b. Create a link "modules" in the New_ServerRoot directory linking to the modules directory in <New_location_for_apache>. Use the following commands

```
mach1# cd <New_ServerRoot>
```

```
mach1# ln -s <New_location_for_apache>/modules modules
```

For example:

```
mach1# cd /etc/cmcluster/apacheconfdir
```

```
mach1# ln -s /mnt/apachedb/apache/modules modules
```

7. Edit the ssl.conf located in conf directory of ServerRoot. Use the following command

```
mach1# vi <New_ServerRoot Directory>/conf/ssl.conf
```

For example:

```
mach1# vi /etc/cmcluster/apacheconfdir/conf/ssl.conf
```

Change the directives ServerName and ServerAdmin in ssl.conf for each instance as required

```
ServerName <name>:443  
ServerAdmin www@<name>
```

For example:

```
ServerName mach1:443  
ServerAdmin www@mach1
```

8. Change the directives SSLSessionCache, SSLMutex, ErrorLog, TransferLog, SSLCertificateFile and SSLCertificateKeyFile in ssl.conf to look as follows

```
SSLSessionCache  
    shmcb:<New_ServerRoot>/logs/ssl_scache(512000)  
SSLMutex file:<New_ServerRoot>/logs/ssl_mutex  
ErrorLog <New_ServerRoot>/logs/error_log  
TransferLog <New_ServerRoot>/logs/access_log  
SSLCertificateFile  
    <New_ServerRoot>/conf/ssl.crt/server.crt  
SSLCertificateKeyFile  
    <New_ServerRoot>/conf/ssl.key/server.key
```

For example:

```
SSLSessionCache  
    shmcb:/etc/cmcluster/apacheconfdir/logs/ssl_scache(512000)  
SSLMutex file:/etc/cmcluster/apacheconfdir/logs/ssl_mutex  
ErrorLog /etc/cmcluster/apacheconfdir/logs/error_log  
TransferLog /etc/cmcluster/apacheconfdir/logs/access_log  
SSLCertificateFile  
    /etc/cmcluster/apacheconfdir/conf/ssl.crt/server.crt  
SSLCertificateKeyFile  
    /etc/cmcluster/apacheconfdir/conf/ssl.key/server.key
```

9. Edit the apachectl located in bin directory of mounted HP Apache directory <New_location_for_apache>. Use the following command:

```
mach1# vi <New_location_for_apache>/bin/apachectl
```

For example:

```
mach1# vi /mnt/apachedgb/apache/bin/apachectl
```

Modify the following in the apachectl file.

- a) Evaluate APACHE_PREFIX to the ServerRoot

```
Change the APACHE_PREFIX assignment to look like  
APACHE_PREFIX=<New_ServerRoot>
```

For example:

```
APACHE_PREFIX=/etc/cmcluster/apacheconfdir
```

- b) Remove the "-d" from \$HTTPD

```
Change the HTTPD assignment to look like  
HTTPD='<New_location_for_apache>/bin/httpd'
```

For example:

```
HTTPD= ' /mnt /apachedg/apache/bin/httpd '
```

- c) Redefine the PIDFILE value by changing the PIDFILE assignment as below:
PIDFILE=\$APACHE_PREFIX/logs/httpd.pid

Starting HP Apache Server

This section describes the commands for starting the HP Apache web server. The HP Apache web server can be started simultaneously on different nodes in the Active-Active configuration.

To start a Non-SSL Server use the following command:

```
mach1# <New_location_for_apache>/bin/apachectl -d  
          <New_ServerRoot> -k start
```

For example:

```
mach1# /mnt/apachedg/apache/bin/apachectl -d  
          /etc/cmcluster/apacheconfdir -k start
```

To start a SSL Server use the following command:

```
mach1# <New_location_for_apache>/bin/apachectl -d  
          <New_ServerRoot> -DSSL -k start
```

For example:

```
mach1# /mnt/apachedg/apache/bin/apachectl -d  
          /etc/cmcluster/apacheconfdir -DSSL -k start
```

Accessing HP Apache Server

This section describes how to access the HP Apache web server.

To access the HP Apache web server:

1. Repeat the steps mentioned in the "Configuration Changes" section on every node.
2. Using the commands mentioned in "Starting HP Apache Server" start the HP Apache web server on every node.
3. Now the HP Apache web server is up and running on all the nodes and is available for access.

Important:

To integrate HP Apache with HP Serviceguard, use the Enterprise Cluster Master Toolkit.

Stopping HP Apache Server

This section describes the commands for stopping the HP Apache web server.

1. To stop a Non-SSL HP Apache web server use the following command:

```
mach1# <New_location_for_apache>/bin/apachectl -d  
          <New_ServerRoot> -k stop
```

For example:

```
mach1# /mnt/apachedg/apache/bin/apachectl -d
      /etc/cmcluster/apacheconfdir -k stop
```

2. To stop a SSL HP Apache web server use the following command:

```
mach1# <New_location_for_apache>/bin/apachectl -d
      <New_ServerRoot> -DSSL -k stop
```

For example:

```
mach1# /mnt/apachedg/apache/bin/apachectl -d
      /etc/cmcluster/apacheconfdir -DSSL -k stop
```

Active-Passive Configuration

In an Active-Passive Configuration, HP Apache web server instance will be started on only one node. Upon failure of this instance, HP Serviceguard does the failover to another node where HP Apache is already configured.

Directory Structure

This subsection shows the Directory Structure before modification and after modification done for the Active-Passive configuration.

1. Initial Directory Structure: When HP Apache is installed this is the default location where HP Apache gets installed.

HP Apache Home: /opt/hpws/apache

2. Directory Structure after modification: The directories mentioned below are considered for illustration purposes only. While choosing directories other than the directories mentioned below in the illustrations, please note that /mnt/apachedg/apache (New_location_for_apache) should be replaced with a directory which is on the shared location

HP Apache Home: /mnt/apachedg/apache

HP Apache Home directory contains the libraries and executables and other apache files except the conf, logs and modules directories.

ServerRoot: Same as HP Apache Home

ServerRoot directory contains the conf directory, the logs directory and the modules directory.

Configuration Changes

This section contains the details of the changes to be made for the Active-Passive configuration of Apache.

1. From one of the nodes (e.g.: mach1) move the HP Apache home directory into one of the mounted path. All HP Apache binaries and other files will now be on the shared/mounted patch.

To move HP Apache home directory to the shared/mounted path, enter the following command

```
mach1# /opt/hpws/util/altroot.sh --apache
      /opt/hpws/apache <New_location_for_apache>
```

For example:

```
mach1# /opt/hpws/util/altroot.sh --apache  
      /opt/hpws/apache /mnt/apachedg/apache
```

Important:

Refer the Section on Configuration Notes at the end of this document.

2. Edit the apachectl located in bin directory of mounted Apache directory <New_location_for_apache>. Use the following command

```
mach1# vi <New_location_for_apache>/bin/apachectl
```

For example:

```
mach1# vi /mnt/apachedgb/apache/bin/apachectl
```

Remove the "-d" from \$HTTPD. Change the HTTPD assignment to look like

```
HTTPD='<New_location_for_apache>/bin/httpd'
```

For example:

```
HTTPD=' /mnt/apachedg/apache/bin/httpd'
```

3. Edit the ssl.conf located in conf directory of ServerRoot. Use the following command

```
mach1# vi <New_location_for_apache>/conf/ssl.conf
```

For example:

```
mach1# vi /mnt/apachedg/apache/conf/ssl.conf
```

Change the directives ServerName and ServerAdmin in ssl.conf to look as follows

```
ServerName <virtual_ip>:443  
ServerAdmin www@<virtual_ip>
```

Important:

The virtual IP address is obtained while configuring HP ServiceGuard. For details visit <http://docs.hp.com> à High Availability à ServiceGuard à Managing ServiceGuard manual

Starting HP Apache Server

This section gives the command for starting the HP Apache web server. The HP Apache web server can be started simultaneously on different nodes in this Active-Active configuration.

1. To start a Non-SSL Server use the following command

```
mach1# <New_location_for_apache>/bin/apachectl -d  
      <New_ServerRoot> -k start
```

For example:

```
mach1# /mnt/apachedg/apache/bin/apachectl -d  
      /etc/cmcluster/apacheconfdir -k start
```

2. To start a SSL Server use the following command

```
mach1# <New_location_for_apache>/bin/apachectl -d  
      <New_ServerRoot> -DSSL -k start
```

For example:

```
mach1# /mnt/apachedg/apache/bin/apachectl -d
      /etc/cmcluster/apacheconfdir -DSSL -k start
```

Accessing HP Apache Server

This section describes how to access the HP Apache web server.

To access the HP Apache web server, repeat the steps mentioned in the "Configuration Changes" section on every node.

Now the HP Apache web server is up and running on only one node and the required configuration needs to be done for Serviceguard to do the failover when necessary onto other nodes.

Important:

To integrate HP Apache with HP Serviceguard, use the Enterprise Cluster Master Toolkit.

Stopping HP Apache Server

This section gives the commands for stopping the HP Apache web server.

1. To stop a Non-SSL Server use the following command

```
mach1# <New_location_for_apache>/bin/apachectl -d
      <New_ServerRoot> -k stop
```

For example:

```
mach1# /mnt/apachedg/apache/bin/apachectl -d
      /etc/cmcluster/apacheconfdir -k stop
```

2. To stop a SSL Server use the following command

```
mach1# <New_location_for_apache>/bin/apachectl -d
      <New_ServerRoot> -DSSL -k stop
```

For example:

```
mach1# /mnt/apachedg/apache/bin/apachectl -d
      /etc/cmcluster/apacheconfdir -DSSL -k stop
```

Configuration Notes

The following steps need to be adhered to, while performing the configuration changes in the supported configurations listed above:

- Either all the nodes should have the same version of HP Apache web_server installed in /opt directory

OR

There should be only 1 installation of HP Apache web server on the node from where the allroot is invoked.

- If there is a version mismatch, the HP Apache web server may not start on the other nodes.
- A chatr on the httpd shows that /opt/hpws/apache/lib directory is in the embedded path and enabled first.

```
mach1# chatr httpd
```

- While loading the libraries, HP Apache attempts to load the older version and hence fails to start.
- On PA machines, you can run the following command and then start the server.

```
mach1# chatr +b disable httpd
```
- However, it is not possible to disable the embedded path for ELF binaries.
- The file /etc/rc.config.d/hpws_apacheconf which is modified by allroot must be copied to other machines where HP Apache needs to be started.

Summary

With the Active-Passive configuration described in this document, HP Apache can be used successfully in an HP Serviceguard environment where the failover from one node to another happens seamlessly. Also, in the Active-Active configuration HP Apache can be simultaneously run from different nodes while still using the shared binaries available in the CFS.

For additional information visit the HP web site at <http://www.hp.com/go/apache>.

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