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1. Installation and Configuration of Apache 2.2.25

1.1 Purpose

The objective of this document is to explain the installation and configuration of Apache 2.2.25. This includes setting up of server details and enabling SSL.

1.2 Introduction

Below is the typical deployment diagram and this document covers the setup for Apache Webserver Instance.
2. Installation of Apache

Unzip the Apache software, in this example the unzipped location is `/scratch/oracle/software/httpd-2.2.25`. Below steps should be executed from inside this directory location.

Software Directory: `/scratch/oracle/software/httpd-2.2.25`

1. `./configure --prefix=/scratch/oracle/apache --enable-ssl --with-included-apr`
   
   Where `/scratch/oracle/apache` is the apache home directory

2. `make`

3. `make install`
3. Configure Apache Server infront of Weblogic Server

1. Copy mod_wl_22.so from any weblogic Server ($WLS_HOME/server/plugin/linux/x_86_64) to $PREFIX/modules/ location in Apache Server.

   NOTE: In this example the OS is linux, copy the file from appropriate folder according to the weblogic installed directory.

2. Edit http.conf located under folder $PREFIX/conf to include mod_wl_22.conf file.

   ```
   LoadModule weblogic_module /scratch/oracle/apache/modules/mod_wl_22.so
   ```

3. Modify http.conf file for the required listen port

   ```
   Listen <HOST NAME>:<PORT>
   ```

   NOTE: This port is for http protocol and not for https

4. Modify the http.conf file to include the weblogic server details

   a. For WebLogic in single instance

      ```
      <Location /<<context/url>> >
      SetHandler weblogic-handler
      ```
WebLogicHost <<server name>>

WeblogicPort <<port>>

</Location>

Example:

<Location /FCJNeoWeb>

SetHandler weblogic-handler

WebLogicHost wlserver1

WeblogicPort 7004

</Location>

This will forward /FCJNeoWeb from Apache server to /FCJNeoWeb on WebLogic Server wlserver1: 7004

**NOTE:** If you want to allow more than one context root, then either add different Location entries for each context root eg: <Location /FCJNeoWeb>, <Location /FCJWebServices>, etc or Add <Location /> which will all the context roots.

b. For Weblogic instances in cluster

<Location /<<context/url>> >
SetHandler weblogic-handler

WebLogicCluster <server1>:<port1>,<server2>:<port2>

</Location>

Example

<Location /FCJNeoWeb >
SetHandler weblogic-handler
WebLogicCluster wlserver1:7065, wlserver2:7067
</Location>

This will forward /FCJNeoWeb from Apache server to /FCJNeoWeb on WebLogic Cluster wlserver1:7065 and wlserver2:7067

5. Enable "WebLogic Plug-In Enabled" flag in weblogic

This flag needs to be enabled in weblogic if it is accessed through proxy plugins. When the WebLogic plugin is enabled, a call to getRemoteAddr will return the address of the browser client from the proprietary WL-Proxy-Client-IP header instead of the web server.

a. Plugin flag at managed server level

i. Click on 'Environment' -> 'Servers' -> '<ManagedServer>' -> 'General' -> 'Advanced'

ii. Check the 'WebLogic Plug-In Enabled' box.
iii. Click 'Save'

iv. Restart the Server.

b. Plugin flag at domain level

i. Click on `<Domain> -> 'Web Applications'

ii. Check the 'WebLogic Plug-In Enabled' box.

iii. Click 'Save'

iv. Restart the server.

6. Restart the apache server and application can be accessed using link

   http://<hostname>:<port>/FCJNeoWeb/
Secure Sockets Layer (SSL) is required to run any Web site securely. Secure Sockets Layer (SSL) is an encrypted communication protocol that is designed to securely send messages across the Internet.

Reading of “SSL_Configuration on Weblogic” document provided as part of FCUBS installation is recommended before proceeding with further setup.

SSL configuration can be done between

1. Browser to Apache Server (Mandatory)
2. Apache to Oracle Weblogic Server (If required)

### 4.1 SSL configuration for Inbound Request to Apache

Perform these tasks to enable and configure SSL between browser and Apache Server.

1. In httpd.conf, uncomment the below line

   ```
   Include conf/extra/httpd-ssl.conf
   ```

2. Edit httpd-ssl.conf file located in $PREFIX/conf/extra/ to give the server address and port as below

   ```
   Listen <hostname>:<port>
   ```
NOTE: This is the https port and not for http

3. Obtain a certificate from CA or create a self signed certificate using openSSL

   a. Steps to create certificate using openSSL

      openssl genrsa -des3 -out test.key 1024

      openssl req -new -key test.key -out test.csr

      openssl x509 -req -days 365 -in test.csr -signkey test.key -out test.crt

      This will generate 3 files named test.key, test.csr, test.crt

4. Copy the files with extenstion.crt and .key to $PREFIX/conf/ folder.

5. Edit httpd-ssl.conf to give the location and name for .crt and .key as below

    SSLCertificateFile "/scratch/oracle/apache/conf/test.crt"

    SSLCertificateKeyFile "/scratch/oracle/apache/conf/test.key"

6. Restart apache and application can be accessed using URL

    https://<hostname>:<port>/FCJNeoWeb/
NOTE: When apache is started with SSL enabled it will ask for pass phrase: here enter the pass phrase used during creation of certificate

4.2 Configuring SSL between Apache and Oracle Weblogic Server

1. Obtain a certificate from CA or create a self signed certificate using Keytool

   keytool -genkeypair -alias testselfcert -keyalg RSA -keypass admin123 -validity 365 -keystore testidentity.jks

   keytool -export -alias testselfcert -file test.cer -keystore testidentity.jks

2. Configure in weblogic to use the generated keyStore

   a. Enable the enable SSL port for the managed server

      ![Managed Server Configuration](image)

      b. In KeyStores tab select Custom Identity and Java Standard Trust
c. Enter the Path where KeyStore generated is stored and then Enter the passphrase

d. Under SSL tab Enter the Alias and the key Passphrase
Certificate displayed by Weblogic needs to be copied to apache, below steps needs to be followed

**e. Execute the openssl command, openssl s_client -connect <WL host: Port>**

Eg: openssl s_client -connect wlserver1:7004.
It will give output as below

```
-bash-4.1$ openssl s_client -connect wlserver1:7004
CONNECTED(00000003)
deepth=0 C = IN, ST = IN, L = IN, O = IN, OU = IN, CN = IN
verify error:num=18:self signed certificate
verify return:1
deepth=0 C = IN, ST = IN, L = IN, O = IN, OU = IN, CN = IN
verify return:1
---
Certificate chain
0 s:/C=IN/ST=IN/L=IN/O=IN/OU=IN/CN=IN
  i:/C=IN/ST=IN/L=IN/O=IN/OU=IN/CN=IN
---
Server certificate
-----BEGIN CERTIFICATE-----
MIICezCCAXygAwIBAgIEUigrQTANBgkqhkiG9w0BAQUFADBOMQswCQYDVQQGEwJJ
TjELMAkGA1UECBMCSU4xCzAJBgNVBAcTAklOMQswCQYDVQQKEwJJTjELMAkGA1UE
CxMCu4xCzAJBgNVBAgTAklOMQswCQYDVQQHEwJJTjELMAkGA1UEBhMCSU4xCzAJ
BgNVBAsTAklOMQswCQYDVQQDEwJJTjCBnzANBgkqhkiG9w0BAQEABojQwYQIeAita
2L8q7ca+a+MbnCIWlijXO+2if+1/Oz3tLiC2ulhD/kd7Q+s:7xPSqGdKjg4ljLOTk
4wwNjawwVQUBY+s5XGw5qauijkgk9kmu+d+P295Hwer0ww/AmRH3k4tjOa1ue5hgl
d1e5s16bdadMV1C7Z9T1M+2fdjzGWSI0UC
AwEAATCERTIkqGqkG9w0BAQUFAAOGAgBAgjQEiwL1Love/0IA/2+9W3dYhPjI
6Zn6JQpmWyZQO8Iz3+5W7NhF+Izoa+t/On3HvW19Qy9x99zQwUrV2G79+CI"==
```

*ORACLE*
f. The section highlighted in red above is the certificate presented by weblogic. This needs to be copied to new file and name this file as server.pem under location $PREFIX/conf/.

3. Apache to be configured to use the SSL

In httpd.conf add the below directive

```httpd
<Location /FCJNeoWeb>
    SetHandler weblogic-handler
    SecureProxy ON
    WLProxySSL ON
    RequireSSLHostMatch false
    TrustedCAFile /scratch/oracle/apache/conf/server.pem
    EnforceBasicConstraints false
</Location>
```
4. Restart Apache and access using the URL

https://<hostname>:<port>/FCJNeoWeb/
5. Starting, Stopping, and Restarting Apache

Run below commands

- $PREFIX/bin/apachectl start
- $PREFIX/bin/apachectl stop
- $PREFIX/bin/apachectl restart
6. Debugging

1. LogLevel and ErrorLog directives in httpd.conf file control the location and log file severity.

   ```
   LogLevel warn
   ErrorLog "logs/error_log"
   ```

2. To enable debugging for communication between apache and weblogic add the following directives under Location tag:

   WLLogFile <File path>

   Debug ALL

   DebugConfigInfo ON