Cisco Prime Central Managing Certificates

Version 1.0.8

May, 2017

Americas Headquarters
Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
http://www.cisco.com
Tel: 408 526-4000
800 553-NETS (6387)
Fax: 408 527-0883

Abstract

The Cisco Prime Central Managing Certificates gives information on managing CA signed certificates for Prime Central and Prime Central Fault Management server.

Cisco Prime Central Managing Certificates

Table of Contents

1 Replacing the Certificates for Prime Central

Note: *For HA setup, virtual IP/Cluster IP shall be used for certificates hostname.*

Prime Central Host:

1. Login as primeusr
2. Navigate to <PRIME_HOME>/install/utils/sslgen
3. Take a backup of all files:
   #> cd <PRIME_HOME>/install/utils/sslgen/
   #> mkdir backup
   #> cp * backup/
   #> rm -rf prime.keystore prime.cer
4. Generate new keystore file:
   keytool -genkey -keyalg RSA -alias <alias_name> -keystore prime.keystore -storepass changeit -keysize 2048
5. Generate a Certificate Signing Request for the tomcat key:
   keytool -certreq -keyalg RSA –alias <alias_name> -file <serverName>.csr –keystore <PRIME_HOME>/install/utils/sslgen/prime.keystore
6. Enroll the CSR with your CA URL, fetch the signed certificate and place them in <PRIME_HOME/install/utils/sslgen directory

   For example:
   gbapanap-lnx.cisco.com.cer
   test-root-ca-2048.cer
   test-ssl-ca.cer
7. Rename the certificate file *gbapanap-lnx.cisco.com.cer to prime.cer*
8. Import certificates in keystore prime.keystore. If the signed certificate is in .p7b format, skip step 9,10.
9. Import the root CA certificate:
   # keytool -import -alias root-ca -trustcacerts -file test-root-ca-2048.cer -keystore prime.keystore
10. Import the intermediate CA certificate second:
    # keytool -import -alias test-ssl-ca -trustcacerts –file test-ssl-ca.cer –keystore prime.keystore
11. Import your new CA signed certificate last:
    # keytool -import -alias <alias_name> -trustcacerts -file prime.cer -keystore prime.keystore
12. Add root certificates to integration layer:
    a. Navigate to <PRIME_HOME>/ XMP_Platform/jre/lib/security
    b. Import the root CA certificate:

keytool -import -alias root-ca -trustcacerts –file <PRIME_HOME>
/install/utils /sslgen/test-root-ca-2048.cer -keystore cacerts

13. Restart PortalCtl services:
    # portalctl stop
    # portalctl start

2 Rollback the Certificates for Prime Central

1. Login as primeusr .
2. Navigate to <PRIME_HOME>/install/utils/sslgen/
   #> cd <PRIME_HOME>/install/utils/sslgen/
3. Restore from backup folder.
   #> rm -rf prime.keystore
   #> cp backup/prime.keystore backup/prime.cer <PRIME_HOME>/install/utils/sslgen/
4. Restart PortalCtl services:
   portalctl stop
   portalctl start

3 Procedure to change Keystore default Password

1. Navigate to <PRIME_HOME>/install/utils/sslgen/
2. Execute the below command
   # keytool -storepasswd -keystore prime.keystore
3. Enter keystore password: **changeit**
4. New keystore password: <new-password>
5. Re-enter new keystore password: <new-password>

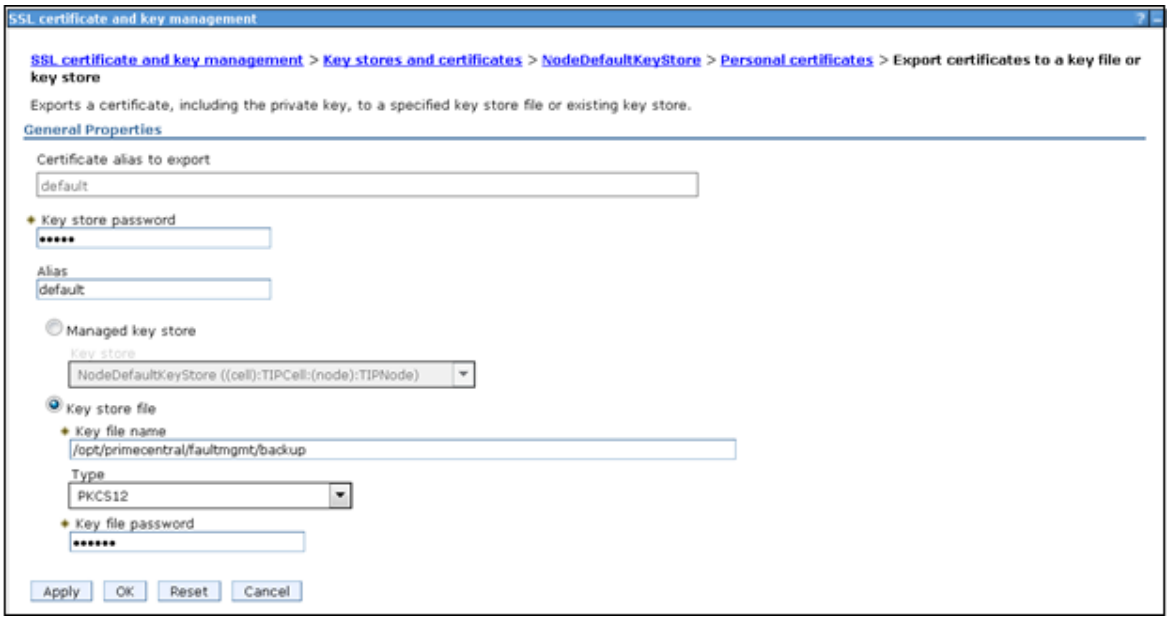
Note: *"changeit" is the default password for keystore. Once changed, user shall remember the new password and use it as existing password incase they wish to change it again in future.*

4 Replacing the Certificates for Prime Central Fault Management

4.1 Back up the Default Keystore File

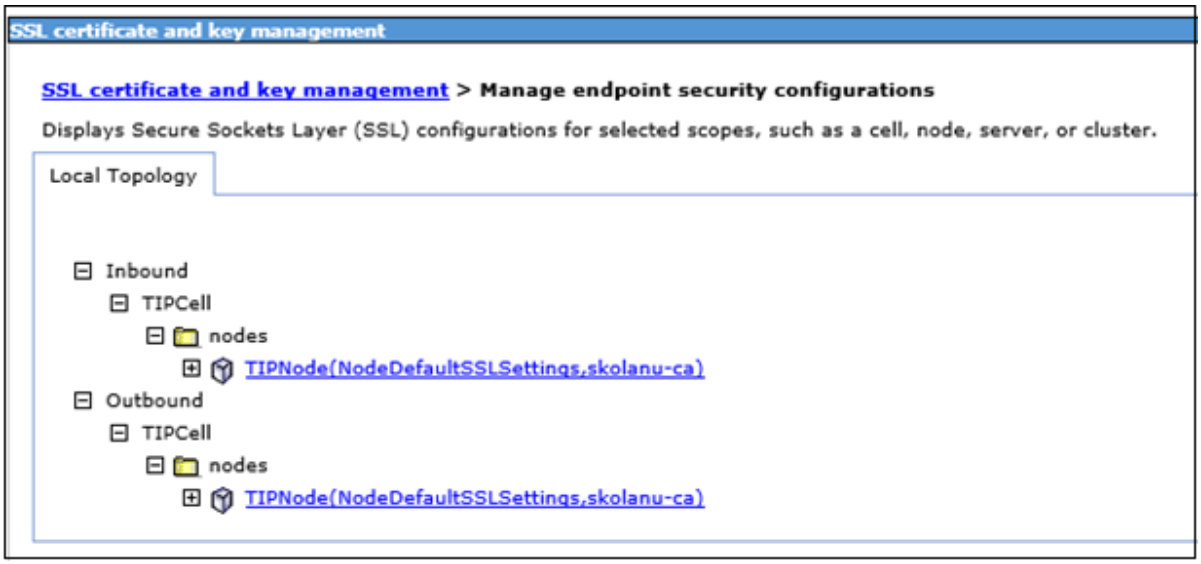
1. In the navigation pane of the Tivoli Integrated Portal, click **Settings** > **WebSphere Administrative Console**, and click **Launch WebSphere administrative console**.
2. Click **Security** > **SSL certificate and key management**.

3. On the "SSL certificate and key management" page, click **Manage endpoint security configurations**.
4. On the "Manage endpoint security configurations" page expand the **Inbound** node, if necessary, then click on **TIPNode(NodeDefaultSSLSettings)** under that node.
5. On the "TIPNode" page, click **Key stores and certificates** and on the page that appears, click **NodeDefaultKeyStore** in the table at the center of the page.
6. On the "NodeDefaultKeyStore" page, click **Personal certificates** and on the page that appears.
7. Select the “default” alias certificate and click on **Export** button.
8. Give the keystore password (Default Password is ‘**WebAS**’).
9. Select the key store file option and provide the required values.
10. Click **Ok**.

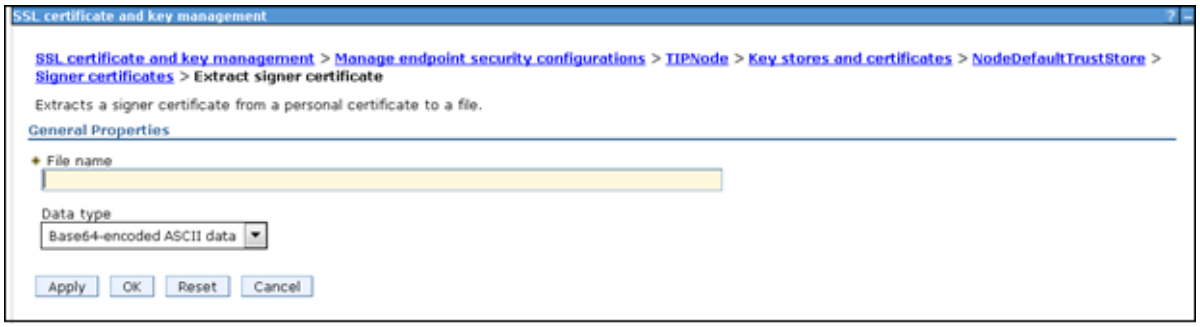


4.2 Back up the Signer certificate

1. Click **Security** > **SSL certificate and key management**.
2. On the "SSL certificate and key management" page, click **Manage endpoint security configurations**.
3. In the "Manage endpoint security configurations" page expand the **Inbound**.
4. Click on **TIPNode(NodeDefaultSSLSettings)** under that node.



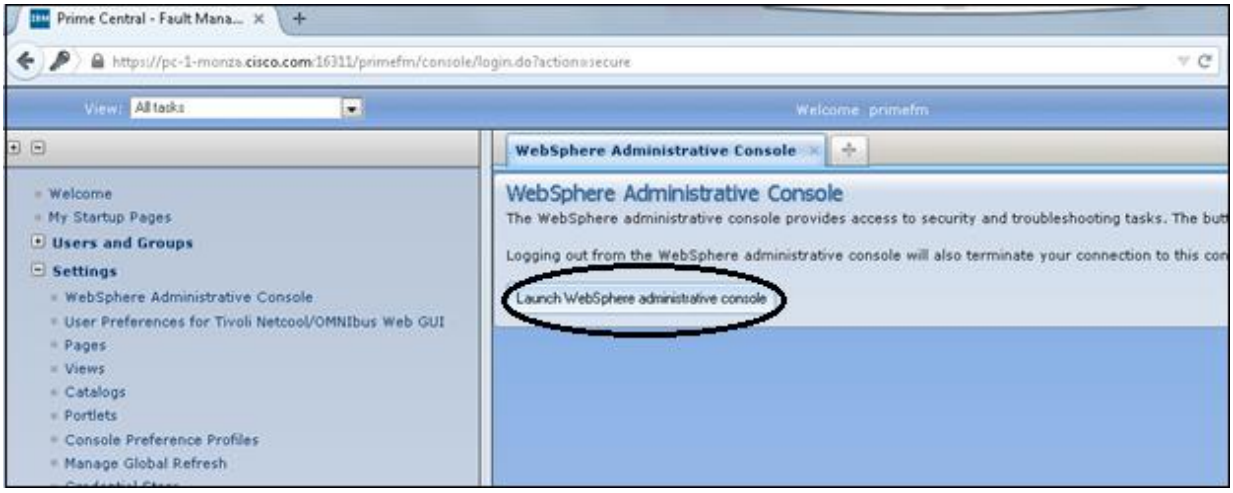
5. On the "TipNode" page, click **Key stores and certificates** and on the page that appears click **NodeDefaultTrustStore** in the table at the center of the page.
6. Click **Signer Certificates** and on the page that appears, select "**default_signer**" certificate and click Extract.



7. Provide the File Name with path.
   For Example:
   <Prime_HOME>/faultmgmt/default_signer.p12
8. Click **Ok**.

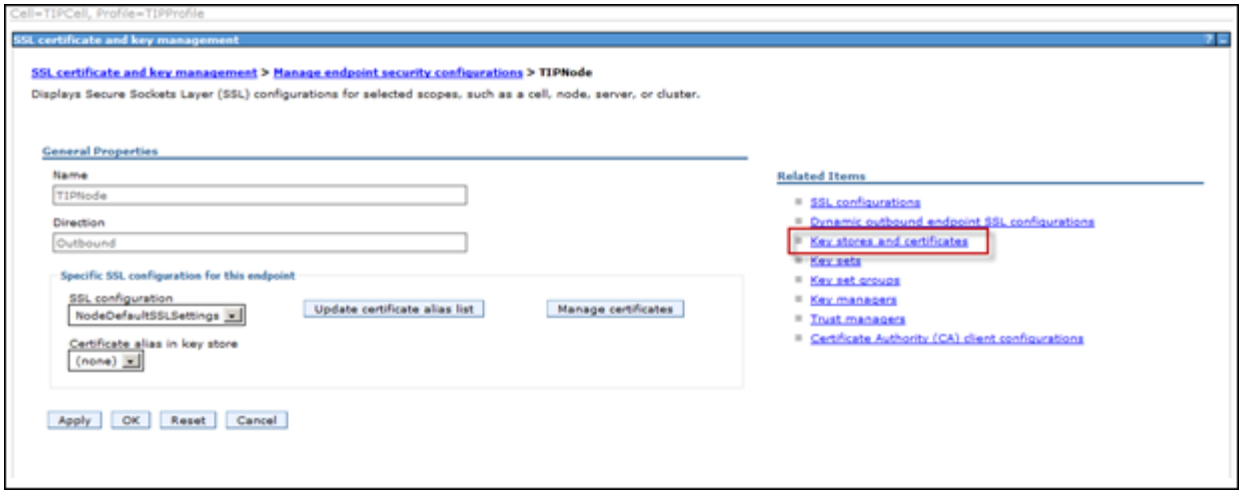
4.3 Procedure to get Prime Central Certificate in Fault Management

1. Login to WebSphere console as **primefm**.



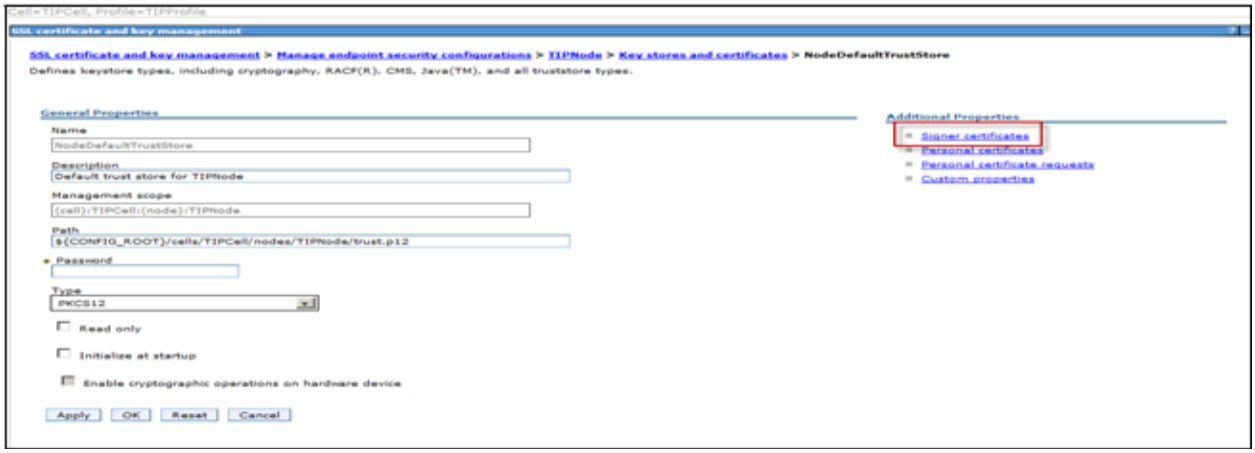
2. On Console go to "**Security > SSL Security and key management > Manage endpoint security configurations**".

3. Click “**Key stores and Certificates**”.



4. Click on “**NodeDefaultTrustStore**”.

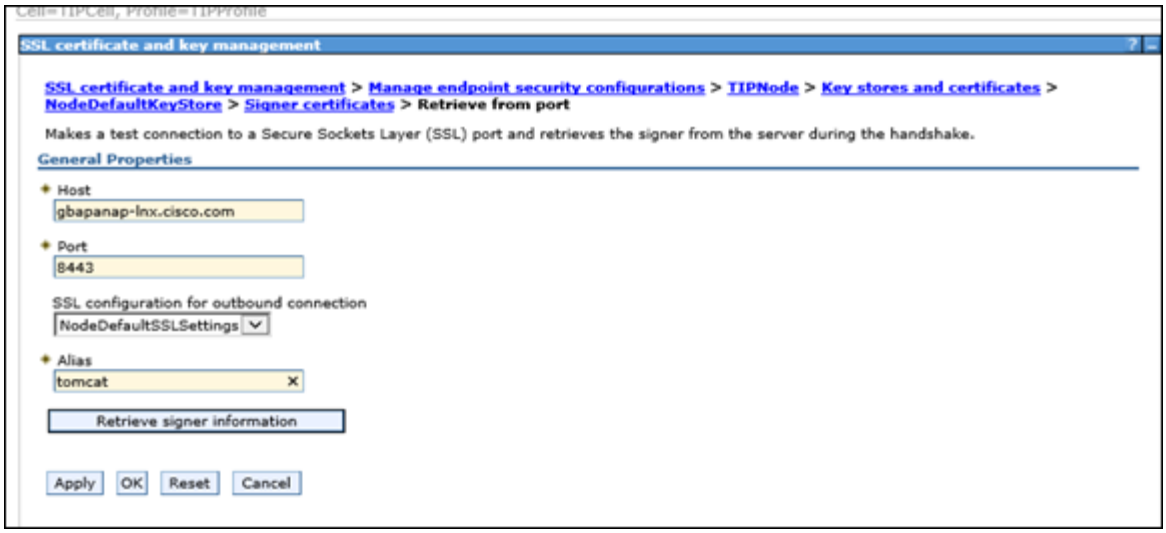
5. Click on “**Signer Certificate**”.



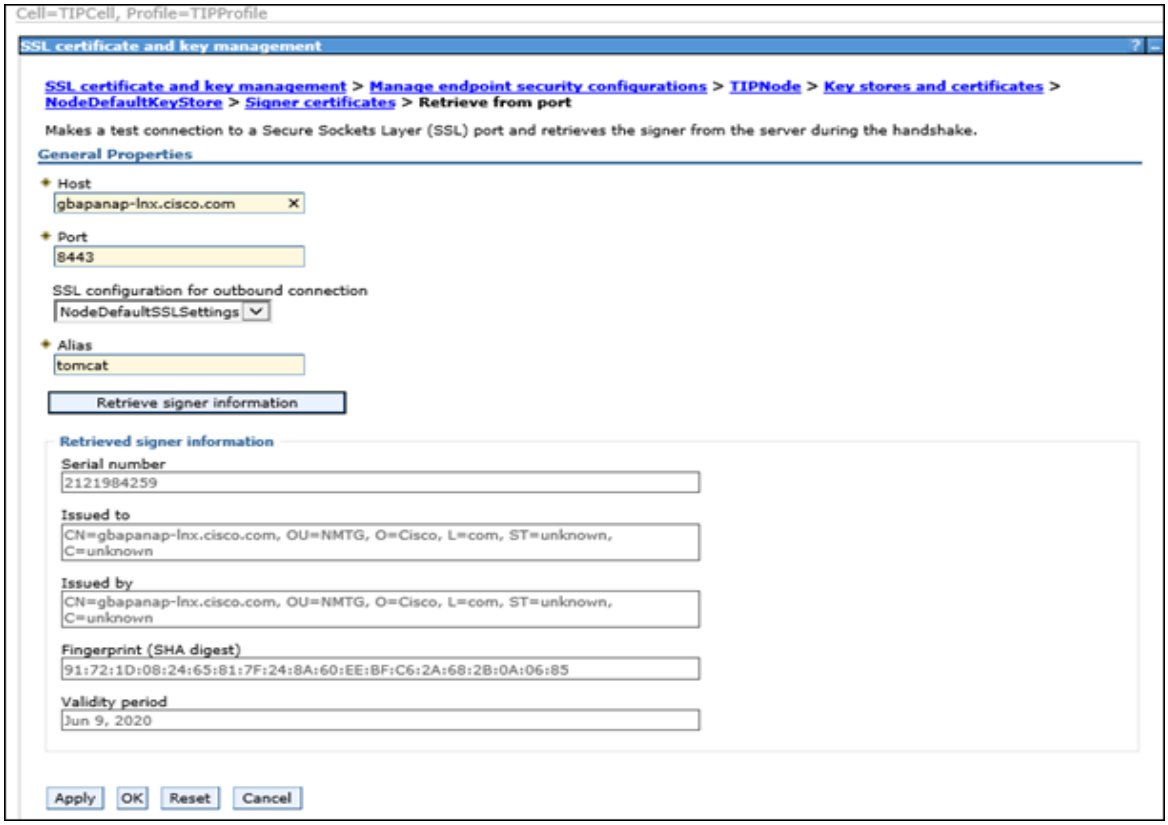
6. Fill in the details on Prime Central details:

Host: FQDN of Prime Central server
Port: 8443 (It should be 8443. Prime Central tomcat server is running on 8443 port)
Alias: Alias name used in Prime Central to generate certificate

7. Click on "**Retrieve from Port**" .



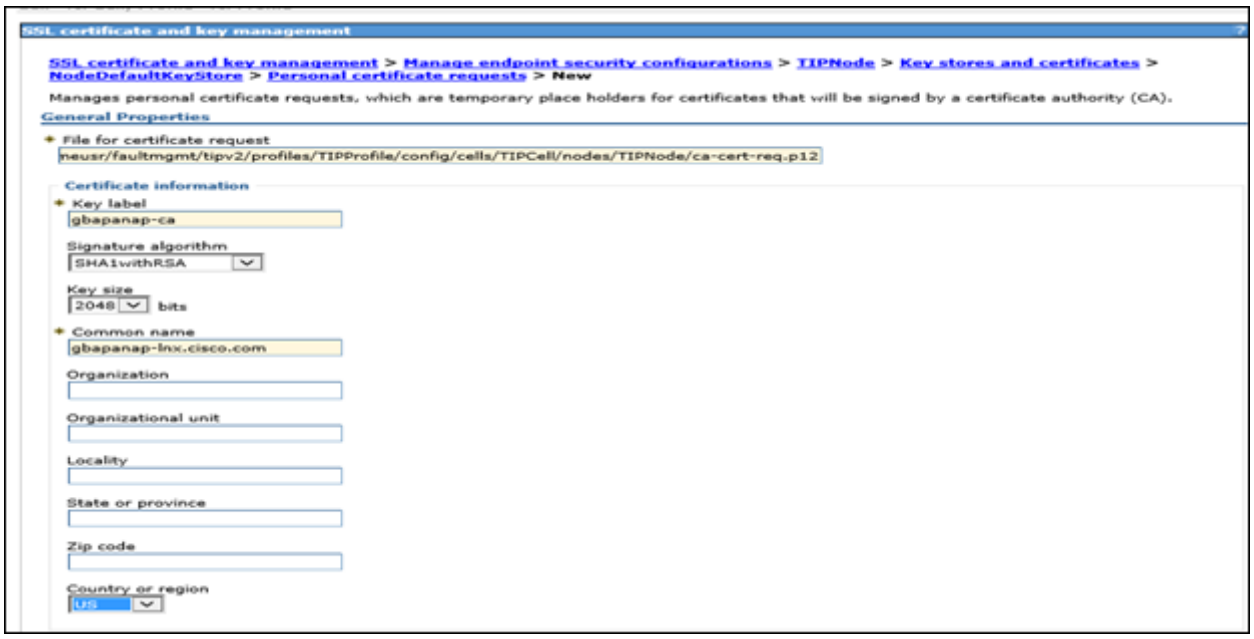
8. Click **Apply** and **Save.**



4.4 Generating Certificates for Fault Management

4.4.1 Creating a Request for the Certificate

1. Navigate to **Settings** > **WebSphere Administrative Console** > **Launch WebSphere administrative console**.
2. Click **Security** > **SSL certificate and key management** > **Manage endpoint Security Configuration** > **Inbound** > **TIPNode(NodeDefaultSSLSettings)**.
3. On the "**SSL certificate and key management**" page, click **Key stores and certificates** > **NodeDefaultKeyStore** > **Personal certificate requests**.
4. Click **New** and enter the required details as per your server to generate CSR for Prime Central Fault Management.



5. In **File for certificate request** enter the path name for the file to hold the certificate request. Use the following form:
   tip_home_dir/profiles/TIPProfile/config/cells/TIPCell/nodes/TIPNode/request_file_name.p12

   Replace request_file_name with a suitable name for the request.

   For example:
   ca-cert-request
6. Click **Apply**.
7. On the "SSL certificate and key management" page, click **Back**.
8. Set the check box for the entry containing the new key label and click **Extract**.
9. On the "Extract certificate request" page enter the path of the file to hold the certificate request that you can send to the CA. Use the following form:

tip_home_dir/profiles/TIPProfile/config/cells/TIPCell/nodes/TIPNode/ca_request_file_name.p12

Replace ca_request_file_name with a suitable name for the request.

For example:
cert-request-to-send-to-CA

10. Click **Ok**.

Results:

- The system creates the file containing the request to send to the CA.
- Send the certificate signing request to a certificate authority (CA).

4.5 Obtaining the certificate from the CA

Apply to your chosen Certification Authority for the certificate, typically using their web site. When asked to supply the request use the complete contents of the certificate request file. This is the file:

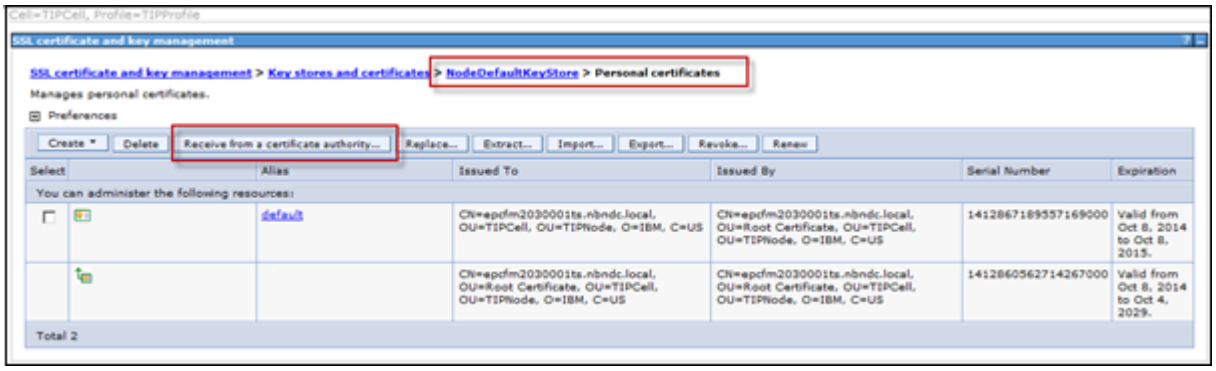
tip_home_dir/profiles/TIPProfile/config/cells/TIPCell/nodes/TIPNode/<SSL file from CA>

When you receive the certificate from the CA, copy it to a suitably named file, with a filename extension of .p12, in:

tip_home_dir/profiles/TIPProfile/config/cells/TIPCell/nodes/TIPNode

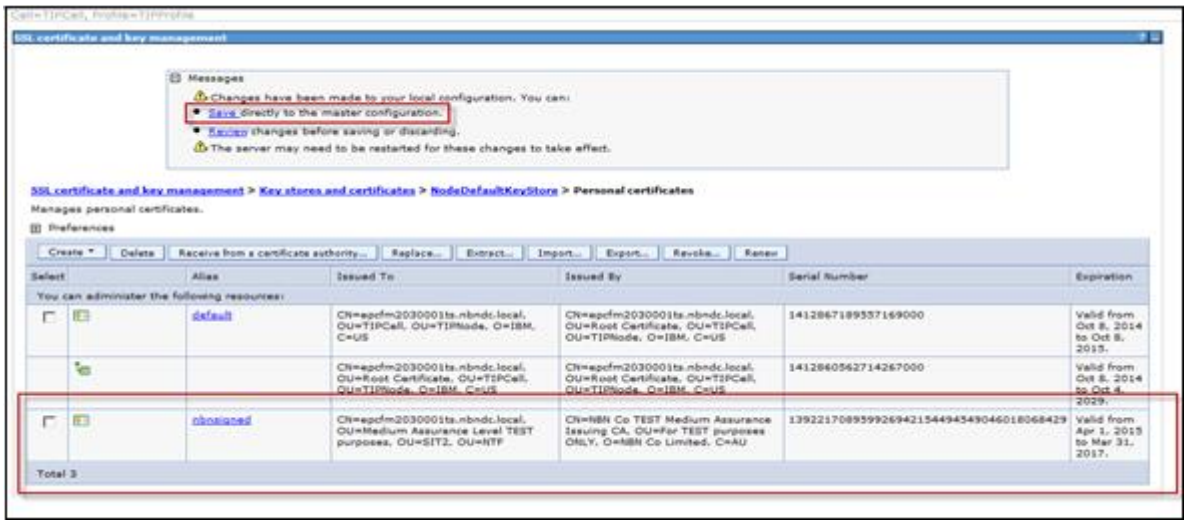
4.5.1 Receiving the Certificate

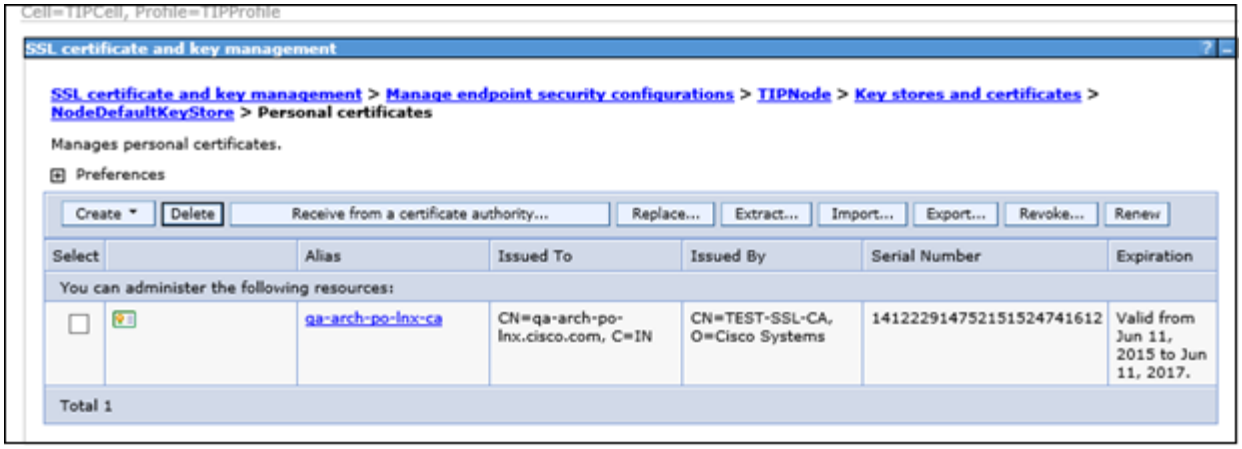
1. In the navigation pane of the Tivoli Integrated Portal, click **Settings** > **WebSphere Administrative Console**, and click **Launch WebSphere administrative console**.
2. Click **Security** > **SSL certificate and key management**.
3. On the "SSL certificate and key management" page, click **Manage endpoint security configurations**.
4. On the "Manage endpoint security configurations" page expand the **Inbound** node, if necessary, then click on **TIPNode(NodeDefaultSSLSettings)** under that node.
5. On the "TIPNode" page, click **Key stores and certificates** and on the page that appears, click **NodeDefaultKeyStore** in the table at the center of the page.
6. On the "NodeDefaultKeyStore" page, click **Personal certificates** and on the page that appears, click **Receive a certificate from a certificate authority**.



7. In the displayed form, enter the path of the file that contains the certificate from the CA then click **Apply**.

   For example:
   tip_home_dir/profiles/TIPProfile/config/cells/TIPCell/nodes/TIPNode/<SSL file from CA>.p12
8. On the "SSL certificate and key management" page, click **Save**.





Results:

- The new certificate appears in the list of certificates on the "Personal certificates" page.

Note: *If there is a problem with the new SSL certificate you will be unable to log on to the TIP server.*

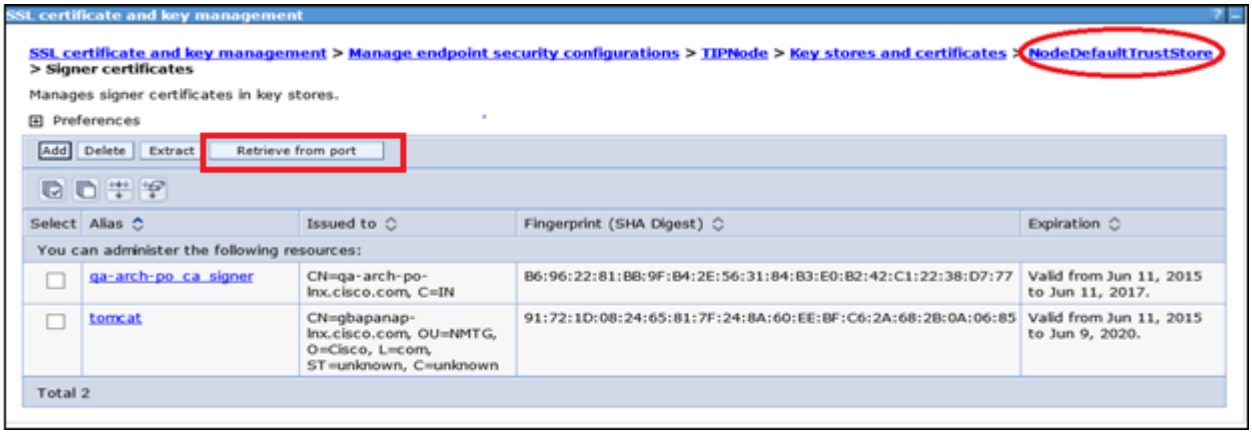
4.6 Activating the SSL certificate

1. On the "Signer certificates" page, click **Manage endpoint security configurations** in the series of links at the top of the page.
2. On the "Manage endpoint security configurations" page expand the **Inbound** node,if necessary, then click on **TIPNode(NodeDefaultSSLSettings)** under that node.
3. On the "TIPNode" page choose the alias name of the certificate from the drop-down list in **Certificate alias in key store** and click **Apply**.
4. On the "TIPNode" page, click **Save**.

Perform steps (1-4) for **Outbound** Node and click **Save**.

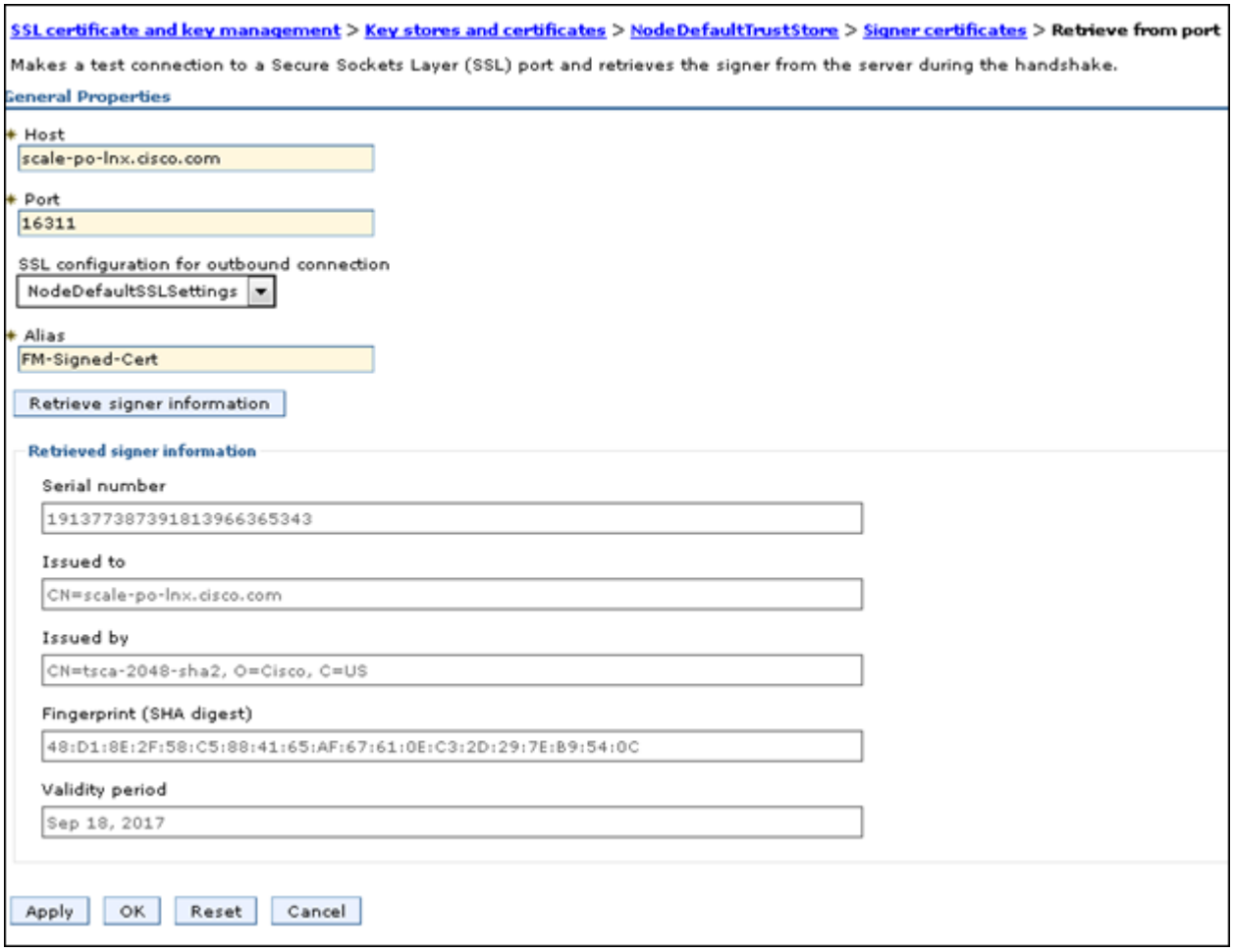
4.7 Adding the signer certificate to the store

1. On the "Manage personal certificates" page, click **TIPNode** in the series of links at the top of the page.
2. On the "TipNode" page, click **Key stores and certificates** and on the page that appears click **NodeDefaultTrustStore** in the table at the center of the page.
3. Click **Signer Certificates** and on the page that appears click **Retrieve from port**.



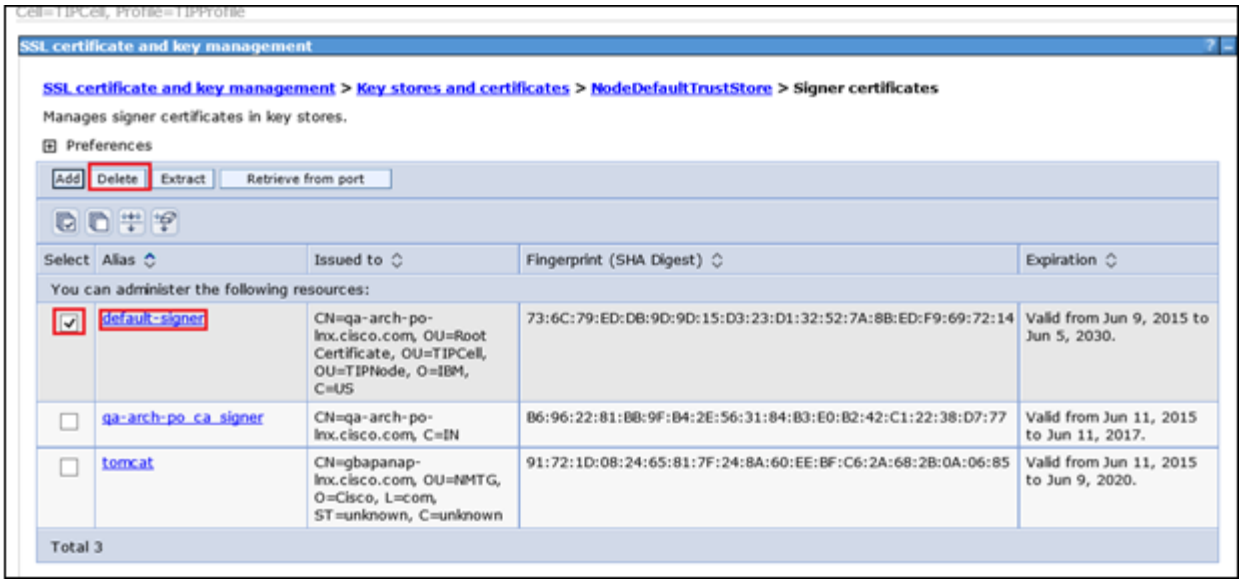
4. Complete the fields in the "Configuration" panel as follows:
   Host : Hostname of the Prime Central Fault Management Server
   Port: 16311
   Alias: Alias name for this certificate.

5. Click "**Retrieve Signer Information**".



6. On the "SSL certificate and key management" page, click **Apply**.
7. Click "**Save**".

8. Delete the default-signer certificate; keep only the newly added certificate.



Results:
The certificate appears in the list of certificates on the "Signer certificates" page.

4.8 Restarting the Fault Management

Stop the Fault manager TIP Server

- Login as primeusr
- Navigate to ~/faultmgmt/tipv2/profiles/TIPProfile/bin
- ./stopServer.sh server1
- When prompt to add the trust singer type “Y “
- When prompt the username and password enter primefm and its password.
- Wait until the server stops

Sample Output

```
[root@anuraga-lnx TIPNode]# su – primeusr
primeusr@anuraga-lnx [~]# cd ~/faultmgmt/tipv2/profiles/TIPProfile/bin
primeusr@anuraga-lnx [~/faultmgmt/tipv2/profiles/TIPProfile/bin]# ./stopServer.sh
server1
ADMU0116I: Tool information is being logged in file
            /opt/primeusr/faultmgmt/tipv2/profiles/TIPProfile/logs/server1/stopServer.log
ADMU0128I: Starting tool with the TIPProfile profile
ADMU3100I: Reading configuration for server: server1
*** SSL SIGNER EXCHANGE PROMPT ***
```

SSL signer from target host 10.131.17.26 is not found in trust store /opt/primeusr/faultmgmt/tipv2/profiles/TIPProfile/etc/trust.p12.

Here is the signer information (verify the digest value matches what is displayed at the server):

Subject DN: CN=anuraga-lnx.cisco.com, OU=Medium Assurance Level, OU=NCN Production PrimeFM, OU=Operations, OU=Network and Service Operations, O=NBN Co Limited
Issuer DN: CN=NBN Co Medium Assurance Issuing CA, O=NBN Co Limited, C=AU
Serial number: 76836815926645099439777448740625650123
Expires: Sun Apr 09 23:59:59 UTC 2017
SHA-1 Digest: 95:14:7F:8C:0B:25:41:D2:11:1A:59:73:29:B9:9B:5B:F8:85:18:EB
MD5 Digest: 67:E3:9A:7E:7B:9F:39:F2:EC:EC:25:35:0C:8F:FE:32

Add signer to the trust store now? (y/n) y
A retry of the request may need to occur if the socket times out while waiting for a prompt response. If the retry is required, note that the prompt will not be redisplayed if (y) is entered, which indicates the signer has already been added to the trust store.
Realm/Cell Name: <default>
Username: primefm
Password: xxxxxx
ADMU3201I: Server stop request issued. Waiting for stop status.
ADMU4000I: Server server1 stop completed.

Stop the Fault manager

- Login as primeusr
- fmctl stop

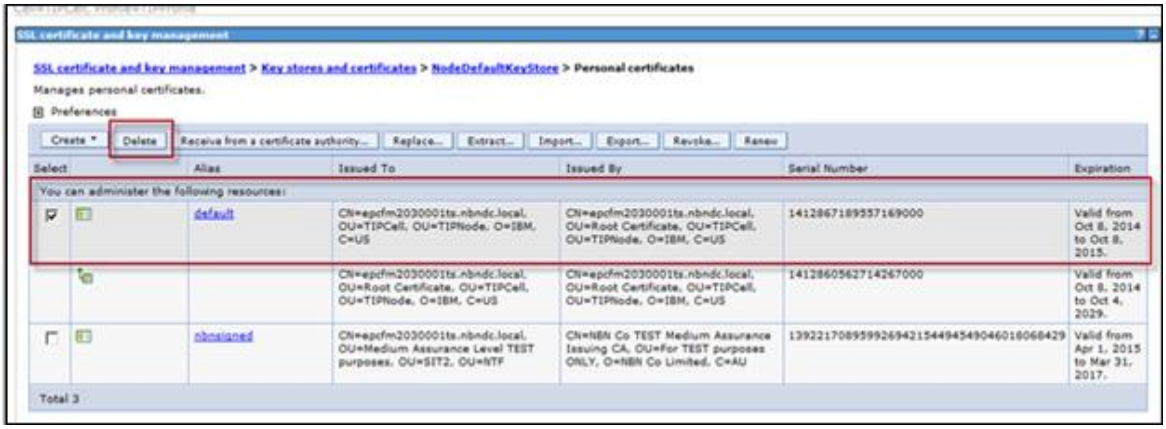
Start the Fault manager

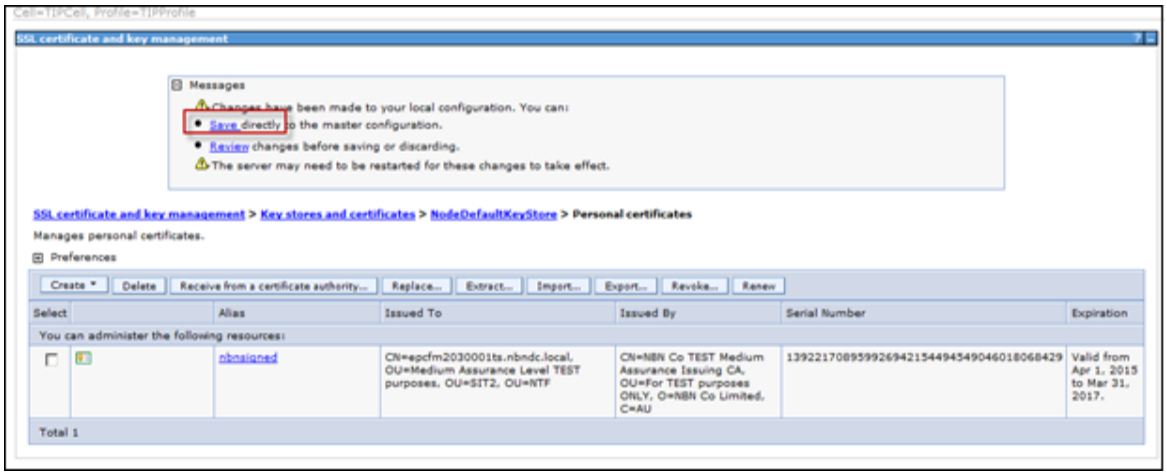
- Login as primeusr
- fmctl start

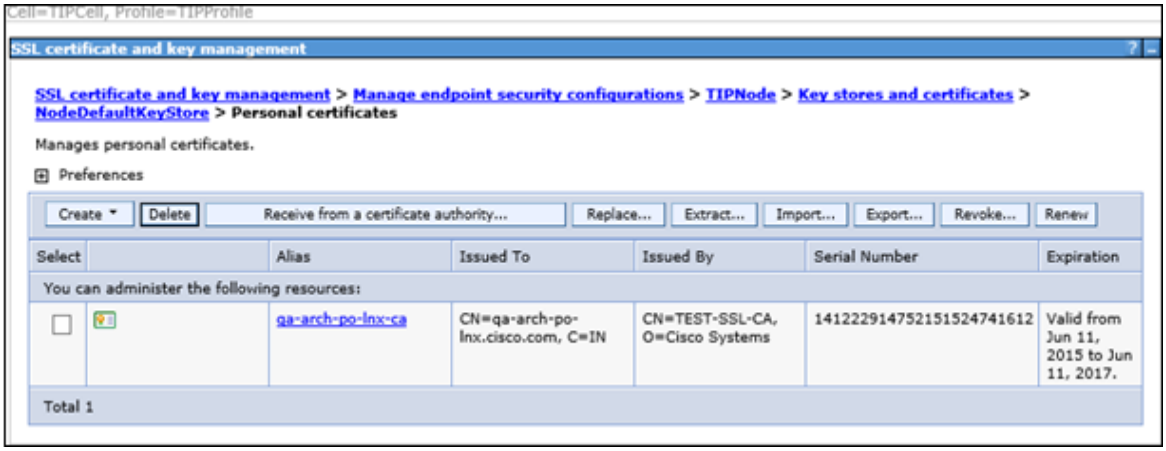
4.9 Delete the old Personal Certificate

1. Login to WebSphere console as **primefm**.
2. In the navigation pane of the Tivoli Integrated Portal, click **Settings** > **WebSphere Administrative Console**, and click **Launch WebSphere administrative console**.
3. Click **Security** > **SSL certificate and key management**.
4. On the "SSL certificate and key management" page, **click Manage endpoint security configurations**.
5. On the "Manage endpoint security configurations" page expand the **Inbound** node, if necessary, then click on **TIPNode(NodeDefaultSSLSettings)** under that node.

6. On the "TIPNode" page, click **Key stores and certificates** and on the page that appears, click **NodeDefaultKeyStore** in the table at the center of the page.
7. On the "NodeDefaultKeyStore" page, click **Personal certificates** and on the page that appears.
8. Delete the old certificate, keep only the newly import certificate.

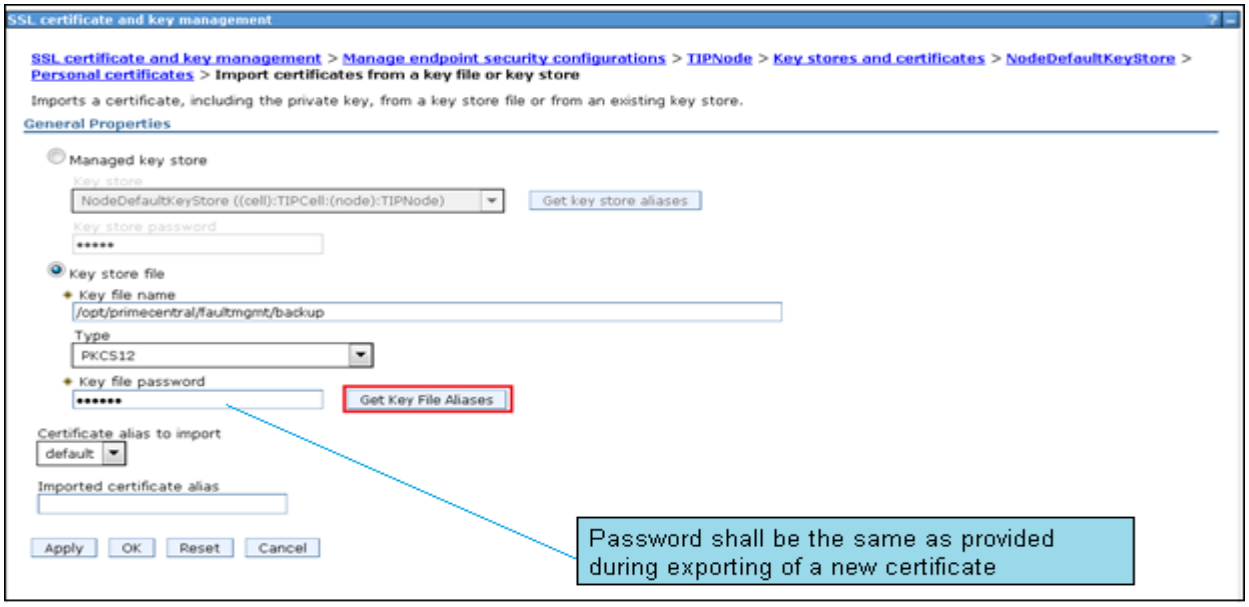






5 Rollback Procedure for Prime Central Fault Management

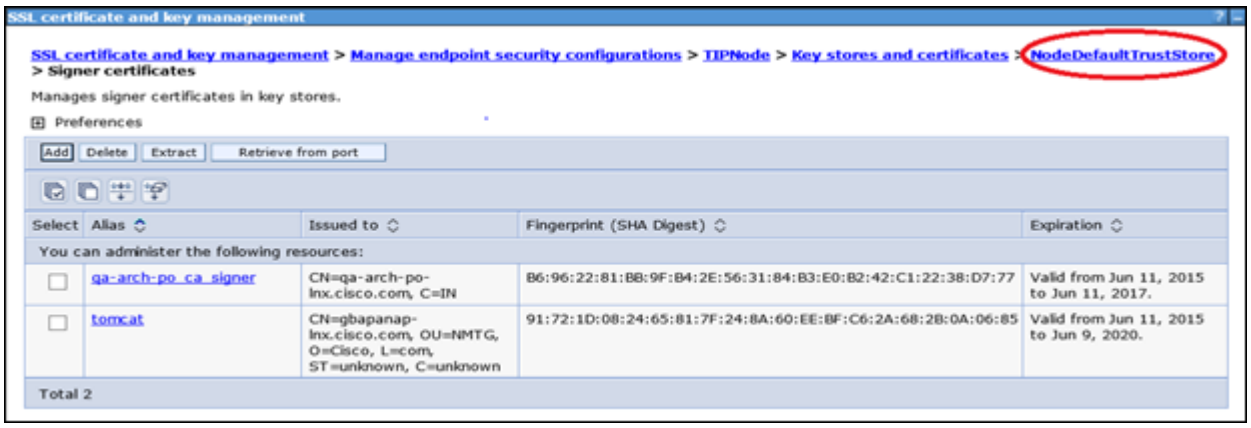
9. In the navigation pane of the Tivoli Integrated Portal, click **Settings** > **WebSphere Administrative Console**, and click **Launch WebSphere administrative console**.
10. Click **Security** > **SSL certificate and key management**.
11. On the "SSL certificate and key management" page, **click Manage endpoint security configurations**.
12. On the "Manage endpoint security configurations" page expand the **Inbound** node, if necessary, then click on **TIPNode(NodeDefaultSSLSettings)** under that node.
13. On the "TIPNode" page, click **Key stores and certificates** and on the page that appears, click **NodeDefaultKeyStore** in the table at the center of the page.
14. On the "NodeDefaultKeyStore" page, click **Personal certificates** and on the page that appears.
15. Click **Import** button.



16. Select the key store file option and provide the key file password.
17. Press the “Get Key File Aliases” and select the “default” value from the drop down.
18. Click **Ok**.

5.1 Adding the signer certificate to the store

1. On the "Manage personal certificates" page, click **TIPNode** in the series of links at the top of the page.
2. On the "TipNode" page, click **Key stores and certificates** and on the page that appears click **NodeDefaultTrustStore** in the table at the center of the page.
3. Click Signer Certificates and on the page that appears click **Add**.

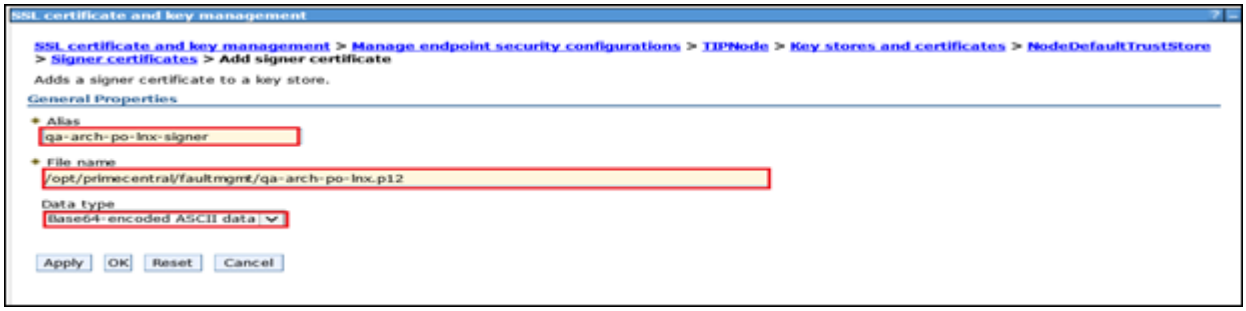


4. Complete the fields in the "Configuration" panel as follows:

   Alias
   Enter an alias name for the certificate that is unique among the signer certificates in the key store.

   File Name
   Enter the path of the file where you stored the certificate while taking backup.

   For example:
   <Prime_HOME>/faultmgmt/default_signer.p12



5. Click **Apply**.
6. On the "SSL certificate and key management" page, click **Save**.

5.2 Activating the SSL certificate

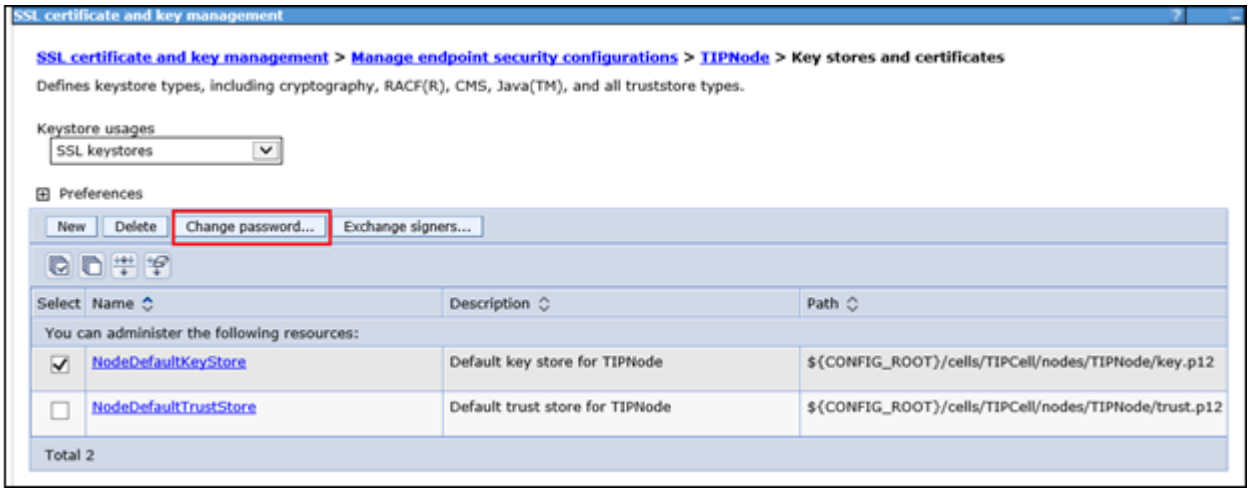
1. On the "Signer certificates" page, click **Manage endpoint security configurations** in the series of links at the top of the page.
2. On the "Manage endpoint security configurations" page expand the **Inbound** node, if necessary, then click on **TIPNode(NodeDefaultSSLSettings)** under that node.

3. On the "TIPNode" page choose the “**default**”alias name of the certificate from the drop-down list in **Certificate alias in key store** and click **Apply**.
4. On the "TIPNode" page, click **Save**.
5. Perform steps (1-4) for **Outbound** node and click **Save**.
6. Restart the Prime Central FM. Follow steps as mentioned in Section “**Restarting the Fault Management**”.

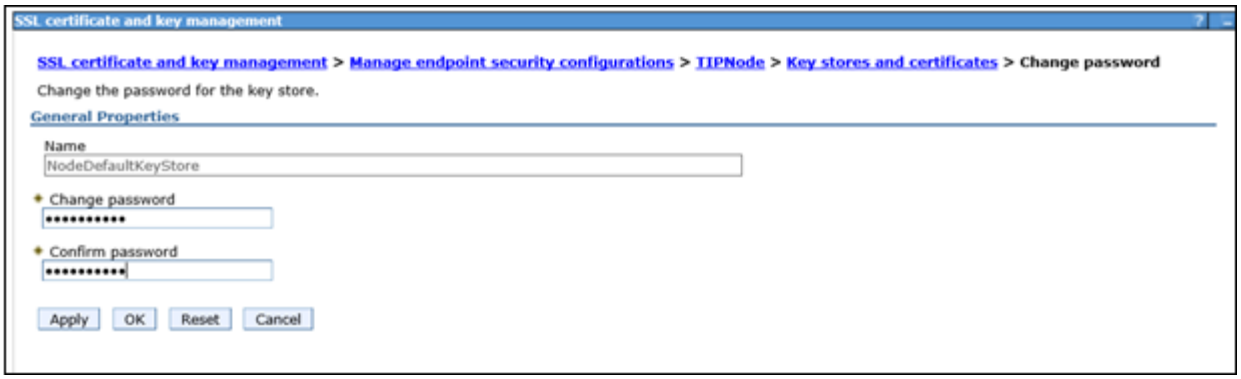
6 Procedure to change KeyStore default Password (Fault Management)

6.1 Change the default password for NodeDefaultKeyStore

1. Click **Security** > **SSL certificate and key management**.
2. On the "SSL certificate and key management" page, click **Manage endpoint security configurations**.
3. On the "Manage endpoint security configurations" page expand the **Inbound** node, if necessary, then click on **TIPNode(NodeDefaultSSLSettings)** under that node.
4. On the "TipNode" page, click **Key stores and certificates** and on the page that appears select **NodeDefaultKeyStore** in the table at the center of the page and click on **Change Password** button.

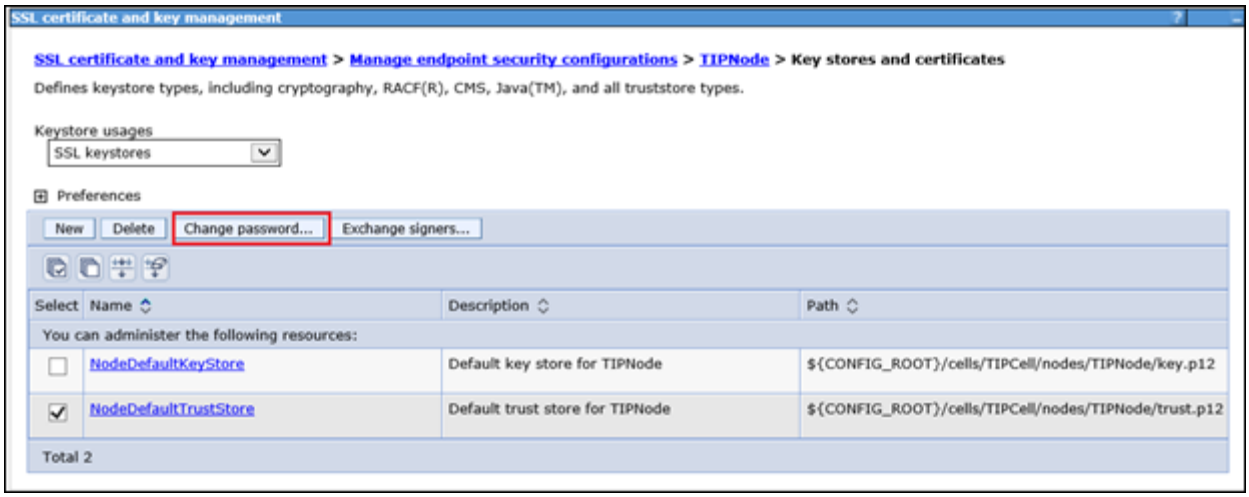


5. Provide the **New Password** and **Confirm Password** and click **Ok**.

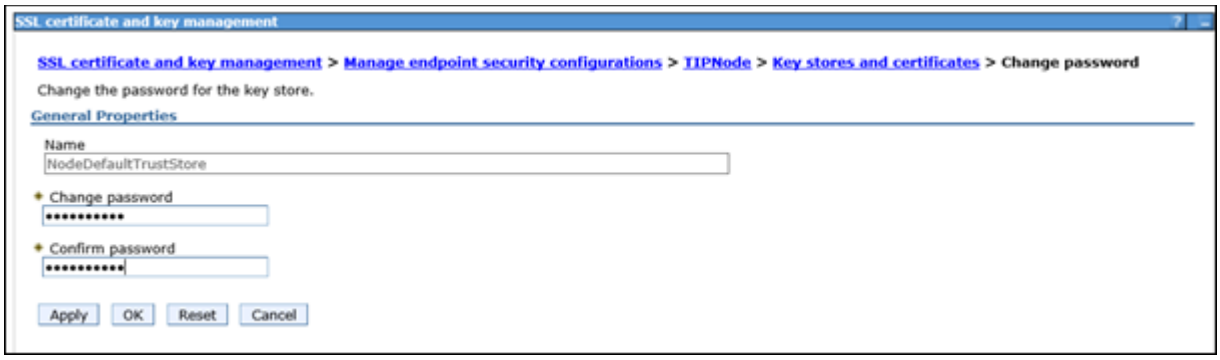


6.2 Change the default password for NodeDefaultTrustStore

1. Click **Security** > **SSL certificate and key management**.
2. On the "SSL certificate and key management" page, click **Manage endpoint security configurations**.
3. On the "Manage endpoint security configurations" page expand the **Inbound** node, if necessary, then click on **TIPNode(NodeDefaultSSLSettings)** under that node.
4. On the "TipNode" page, click **Key stores and certificates** and on the page that appears select **NodeDefaultTrustStore** in the table at the center of the page and click on **Change Password** button.



5. Provide the **New Password** and **Confirm Password** and click on **Ok**.



7 Procedure to backup and Restore CA Certificates After Installation or Upgrade

If the standby server has its own CA signed certificates, you can backup and load CA certificates after installation or upgrade. You can perform the certificate backup and restore procedures on the DR or HA setup where Prime Central (PC) and Fault Management (FM) is installed in a separate server.

To back up and restor CA certifcates for HA or DR setup in Prime Central, use the following procedure:

1. Log in to Prime Central Primary Server as root.
2. Create a directory "certtool" under root directory using the following command.
   mkdir /root/certtool
3. In the Prime Central, copy **restoreCerttool.sh** from *PRIME_HOME/local/scripts* to */root/certtool*
   cp /opt/primecentral/local/scripts/restoreCerttool.sh /root/certtool
   Note:By default PRIME_HOME = /opt/primecentral
4. Repeat steps 1 through 3 in Secondary server as well.
5. Use the following scripts:
   Run the following command on Primary and Secondary Servers to back up the certifi-cates:
   $ ./restoreCerttool.sh -b -pc
6. After installation or upgrade on Primary and Secondary servers, restore the certificates.
   $ ./restoreCerttool.sh -r -pc

   NOTE:
   1) PRIME_HOME might be different than default. Make necessary changes when running above commands.
   2.) During script execution, respective Prime Central and Fault Management services will be restarted automatically.

To backup and restore CA certificates for HA or DR setup in Fault Management, use the following procedure:

1. Log in to Fault Management Primary Server as root.
2. Create a directory "certtool" under root directory using the following command.
   mkdir /root/certtool
3. In the Prime Central, copy **restoreCerttool.sh**
   PRIME_HOME/faultmgmt/prime_integrator/scripts to /root/certtool
   cp /opt/primeusr/faultmgmt/prime_integrator/scripts/restoreCerttool.sh /root/certtool
   Note:By default PRIME_HOME = /opt/primeusr
4. Repeat steps 1 through 3 in Secondary server as well.
5. Use the following scripts:
   Run the following command on Primary and Secondary Servers to back up the certifi-cates:
   $ ./restoreCerttool.sh -b -fm
   Note: In case of both Prime Central and Fault Management in the same server, use
   $ ./restoreCerttool.sh -b -pcfm
6. After installation or upgrade on Primary and Secondary servers, restore the certificates.
   *$ ./restoreCerttool.sh -r –fm (*in case of both Prime Central and Fault Management in the same server, use *$ ./restoreCerttool.sh -r –pcfm).*

   NOTE:
   1) PRIME_HOME might be different than default. Make necessary changes when running above commands.
   2.) During script execution, respective Prime Central and Fault Management services will be restarted automatically.

8 Troubleshooting

8.1 Prime Provisioning cross launch fails after applying Prime Central certificate

Description: If CA signed certificates are applied on Prime Central after integration with Prime Provisioning is done, then Prime Provisioning is not able to cross launch from Prime Central megamemu.

Solution: Ensure that new certificate shall be named as prime.cer and after applying the certificates on Prime Central, Prime Provisioning shall be re-integrated to Prime Central, as it pulls the prime.cer file during integration.

8.2 Prime Central Application Launch Fails on the IE11 Browser Due to the absence of Self-signed or CA Signed Certificate

Description: Even after adding security exceptions on the Internet Explorer (IE11) browser, the Prime Central Application fails to launch due the absence of Self-Signed or CA Signed Certificate.

Solution: Use the following procedures for both Prime Central and Fault Management.

1. Add the Prime Central and Fault Management server address to the list of IE Trusted Sites.
   a. Open the IE browser.
   b. Choose **Tools** > **Internet Options** > **Security**.
   c. Select **Trusted Sites,** and then click **Sites**.
   d. In the **Trusted Sites** window, add the Prime Central and Fault Management server websites to the list of trusted sites.
   e. Click **Close.**
2. Import the Certificate.
   a. On the IE browser, enter either Prime Central or Fault Managemnt URL.
      Note: Make sure that you have administrative privileges.
   b. Click the **Certificate Error** in the browser's address bar. The **Untrusted Certificate** dialog box appears.
   c. Click **View Certificates.**
   d. In the **Certificate** dialog box, click **Install Certificate**, and then click **Next.**
   e. Click the **Place all certificates** radio button, and then click **Browse.**
   f. Check the **Show Physical Store**s check box.
   g. Choose **Trusted Root Certificate Authorities** > **Local Computer.**
   h. Click **OK** > **Next** > **Finish** > **OK.**
   i. Restart the Internet Explorer.