Pulse Connect Secure

SA/MAG Series to PSA Series and MAG Series to PSA-V Appliance Migration Guide

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Pulse Secure MAG Series to PSA-V Appliance Migration Guide

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Revision History

Release	Document Version	Date	Description
9.0R1	1.2	February 2019	Old GUI screenshots are replaced with new GUI screenshots in section "**Migration from SA/MAG to PSA**"
9.0R1	1.1	November 2018	Merge the content in single document as most of the content was similar.
9.0R1	1.0	July 2018	Change in Guide name from "Upgrade" to "Migration". Also, "upgrade" word references are changed to "migrate" (wherever applicable) inside the document.

Contents

Revision History 3
Overview 5
Pre-requisite for Migration 5
Procedure 6
Migration from SA/MAG to PSA 6
Migration from MAG to PSA-V 19
References 31
PSA Hardware Guides 31
Pulse Connect Secure Administration Guide 31
KB discussing supported network type for clustering 31
PSA-related KBs 31

Overview

This document describes guidelines and procedures for successfully migrating older Secure Access and MAG platforms to the new PSA hardware platforms and MAG platforms to the new PSA-V platforms, where source configurations are either as standalone device or as a 2-node/multi-mode cluster configuration.

Binary configurations and selective XML configuration export from old device and import of these configurations to the new device is the recommended way to transfer configuration and settings. Following the steps in this document will ensure successful configuration migration to the next generation PSA devices.

Note: IVS migration is not supported directly from Pulse Connect Secure SA devices to the new hardware and should be individually migrated (manually) to become a root IVS which can then later be migrated over to the new hardware devices. This document does not discuss this process.

Pre-requisite for Migration

Listed below are necessary items for the migration preparation:

1. **Site assessment**: Ensure proper cooling and ventilation; and also ensure network between nodes that are to be clustered are in high bandwidth, low latency LAN type connection (See https://kb.pulsesecure.net/articles/Pulse_Secure_Article/KB26035).

   Hardware: Ensure that hardware components and part are complete (chassis, cables, connectors, and rack mount kits)
   Licenses: Needed licenses should be procured and ready, and whether you need to configure as license member in an Enterprise Licensing Server environment.

2. **Software**: PSA Series devices are delivered with 8.1R4.1 factory build, and PSA-V Series devices are delivered with 9.0R1 factory build, so, determine what software version will be used for the new devices and migrate accordingly. Next generation PSA devices do not support downgrading to previous software versions from its factory default software version or build.

3. **Configuration backup**: It is a preferred to backup the system.cfg and user.cfg binary files, along with XML export of Networking Settings immediately prior to migration.

   IVS.cfg (if upgrading from SAx500 platform) is not going to be usable for PSA Series as it does not support it, but back it up for any IVS manual conversion (not covered in this document).

4. **Configuration documentation**: Local settings that are mostly kept in system.cfg should be documented, as some of these may need to be manually re-entered to the PSA and PSA-V Series device/s such as cluster configurations.

   In A/A cluster, attention should be given to the Network>VPN Tunneling> IP address filter and VPN Tunneling Profile IP pool settings. Also, some of the configurable settings such as SNMP, Log settings, and Syslog can be configured in either cluster mode or individual nodes.

Note:

1. If converting a cluster, all PSA and PSA-V series devices to be put in cluster should have same version and build of software, and same hardware platforms e.g.; PSA300/PSA3000/PSA5000/PSA7000c/PSA7000f.
2. If converting a cluster, ensure to form with same cluster name and port definitions before importing XML, else, import will fail. Examples are external port enabling, cluster name and node names.
3. If converting from any platform to PSA7000f or PSA7000c, XML import of networks settings may fail due to network interface differences, ensure to edit XML changing port settings to "**Auto**".
4. If converting from a platform that has management port to one without, delete the **<Management-Port>** section from XML before importing XML
5. If you are using Active Directory or ACE authentication servers, there may be a need to recreate the AD computer objects for the new PSA and PSA-V series devices, and/or for ACE, to regenerate/re-import the SDCONF.REC file to the devices if authentication fails after import.
6. It is assumed during this migration that the replacement PSA Series devices will be installed in the same networks as the SA/MAG devices it is replacing, and PSA-V Series devices will be installed in the same networks as the MAG devices it is replacing.

Procedure

The below procedure applies to both standalone and cluster migration. The few major steps additional to clustering configurations that may need to be performed are:

1. Mapping certificates to ports
2. Setting up licensing client if using Enterprise Licensing server
3. Checking SNMP settings, checking and setting up of VPN profiles
4. Ensuring configs are fully transferred
5. Manually adding or correcting discrepancies, if any

Migration from SA/MAG to PSA

Following are the steps for migration from SA/MAG to PSA:

1. On the existing SA/MAG platform, log in to the standalone device or the primary node of the cluster (where the cluster was first formed) and export its binary configs (**system.cfg** and **user.cfg**), and the XML Network settings configurations.

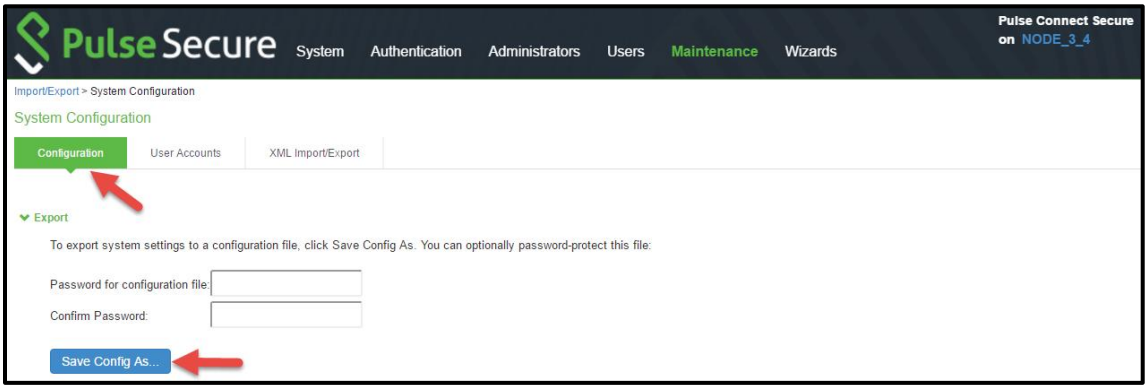
   To export the binary configurations from the PCS device:

   a. In the admin console, select Maintenance > Import/Export > Configuration.

   b. Under **Export**, enter a password if you'd like to password-protect the configuration file.

   c. Click **Save Config As** to save the file. By default, the filename will be **system.cfg.**

Figure: Configuration

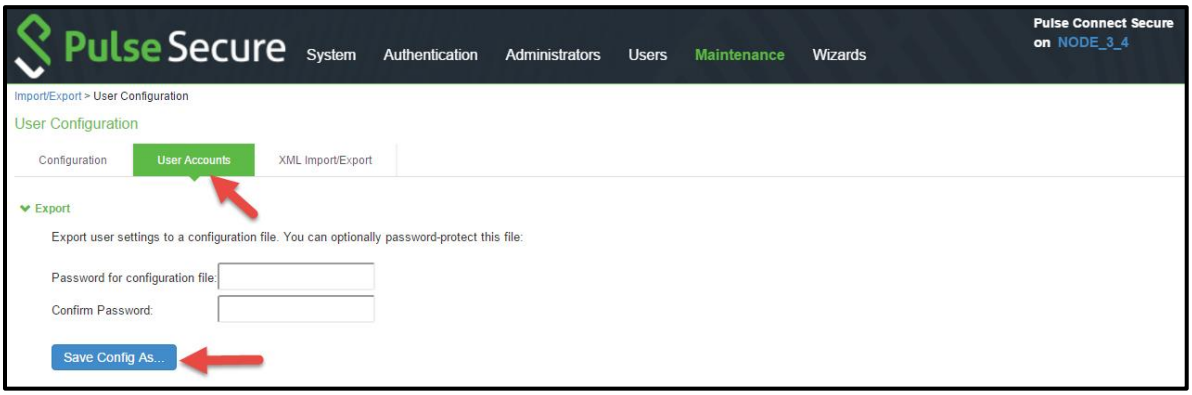


d. In the admin console, select **Maintenance** > **Import/Export** > **User Accounts**.

e. Under **Export**, enter a password if you'd like to password-protect the configuration file.

f. Click Save Config As to save the file. By default, the filename will be **user.cfg**.

Figure: User Accounts



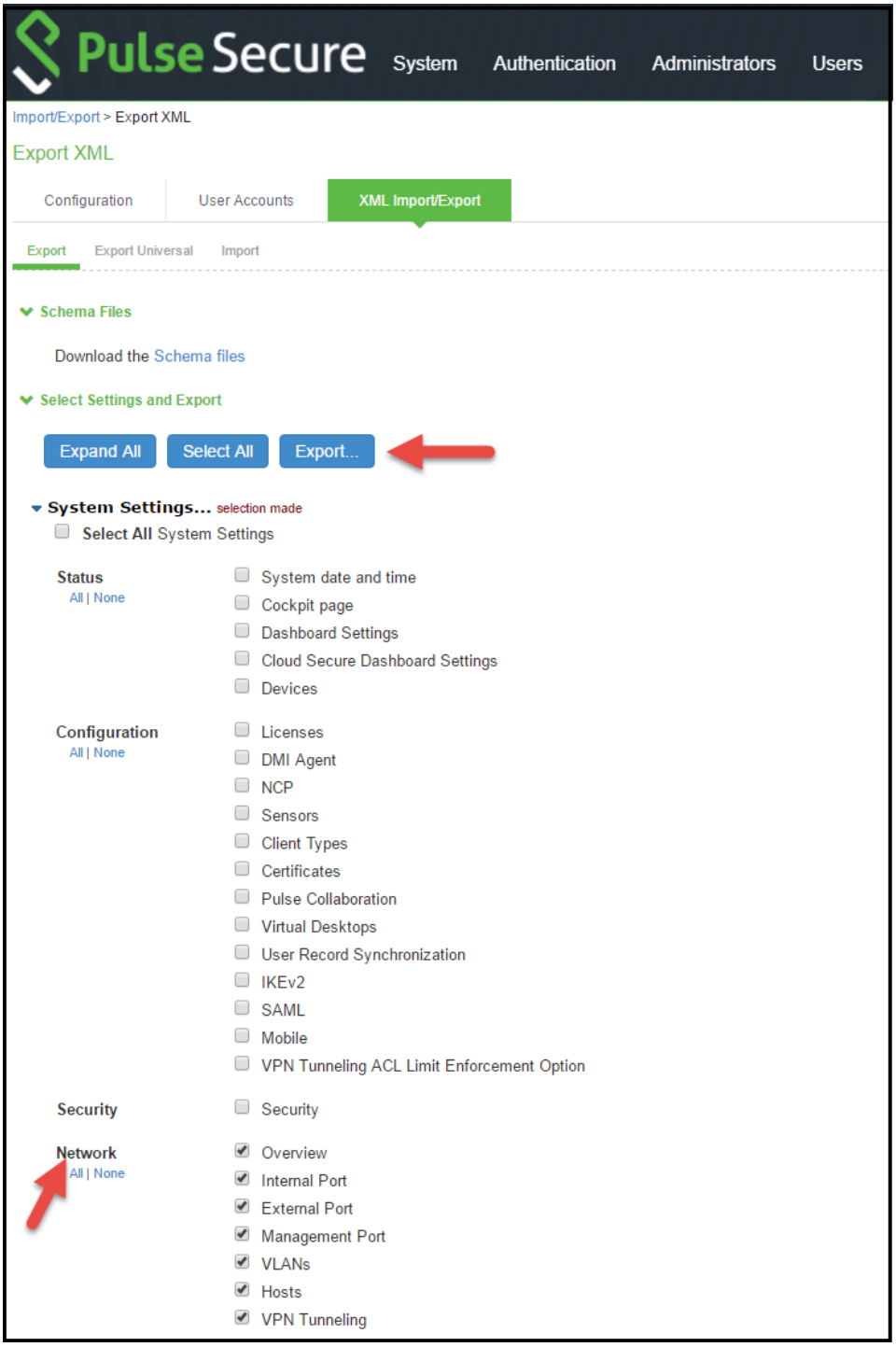
To export the XML Network Configuration:

a. In the admin console, select **Maintenance** > **Import/Export** > **Export XML**.

b. Under Export, expand System Settings and select **Network** > **All**.

c. Click **Export** and save the XML file.

Figure: XML Import/Export



2. Make notes of all the local settings for both nodes (if not yet done during preparation stage): IP information, clustering, virtual ports, VLANs, hosts, routes, DNS settings, SNMP (if configured), Syslog.
3. Shut down old SA/MAG cluster or standalone devices.
4. Configure the new PSA devices with same internal/external/management ports IPs with same IP addresses as the old SA devices and the proper DNS settings. Do not configure any other settings at

this time.

5. Apply the proper licenses for the new PSA devices. If the SA/MAG is a member of an Enterprise License Server, you have to manually recreate the client and re-establish connection to the license server later **at the end of migration**.

   Note: If upgrading a non-clustered SA/MAG device, proceed to Step-11.

6. In the new PSA device (first device), manually create a new cluster **with same name and settings** with **same node names** as the old SA/MAG cluster.

   Figure: Create New Cluster

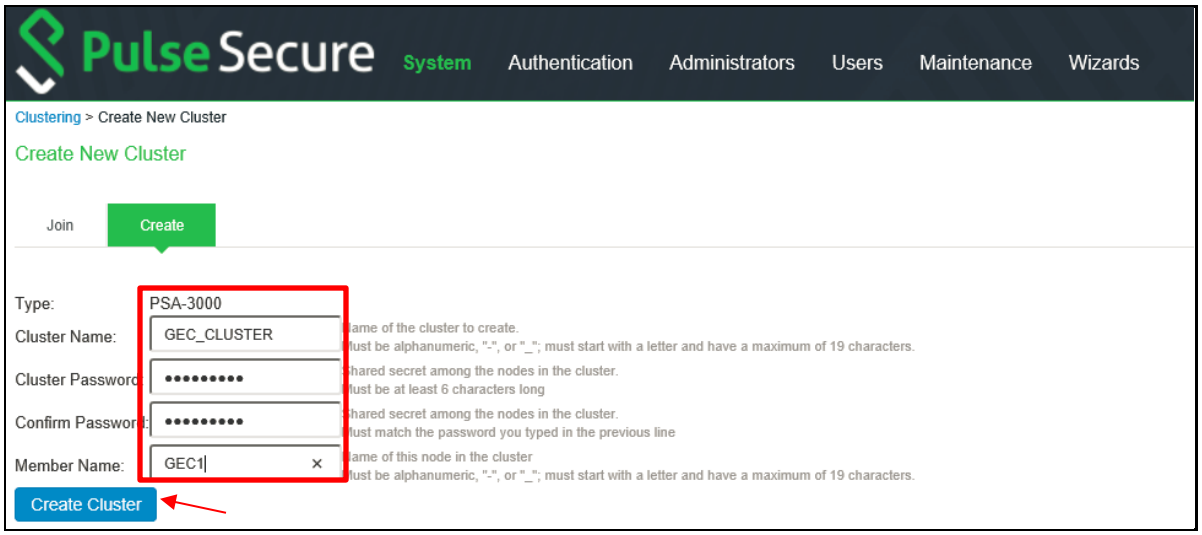
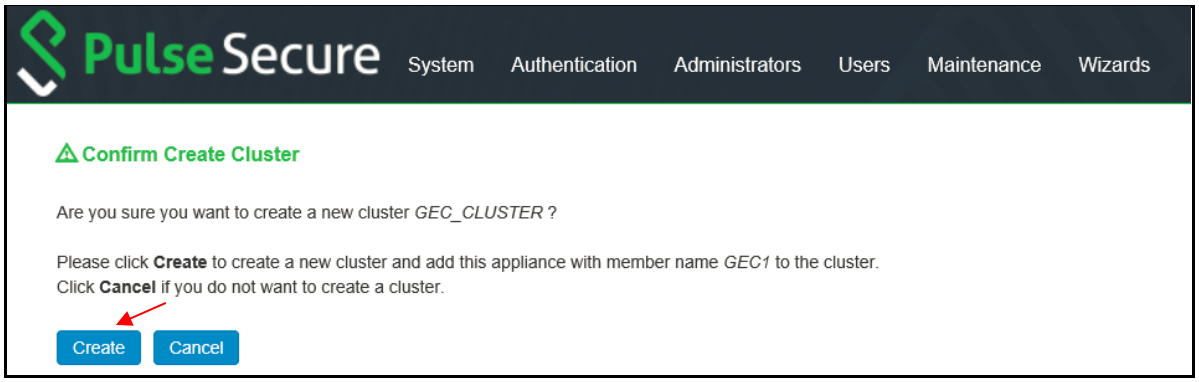


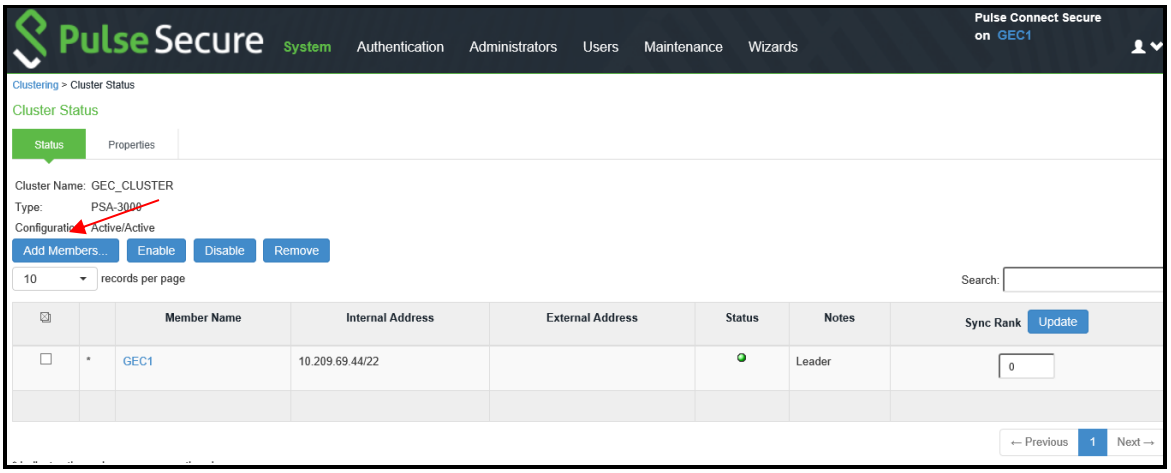
   Figure: Confirm Create Cluster



7. Add the second device to the cluster in the primary node cluster configuration and save the settings.

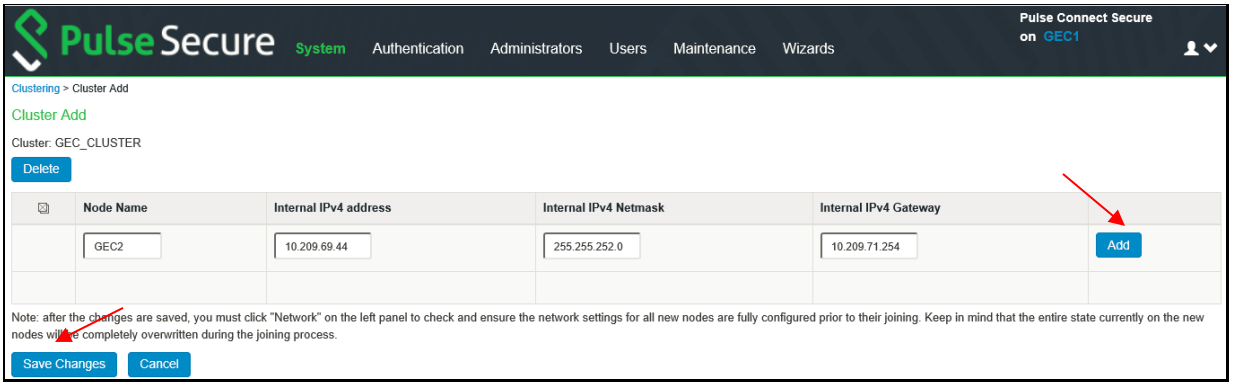
   a. Click **Add Members** to add a member.

Figure: Clustering Status



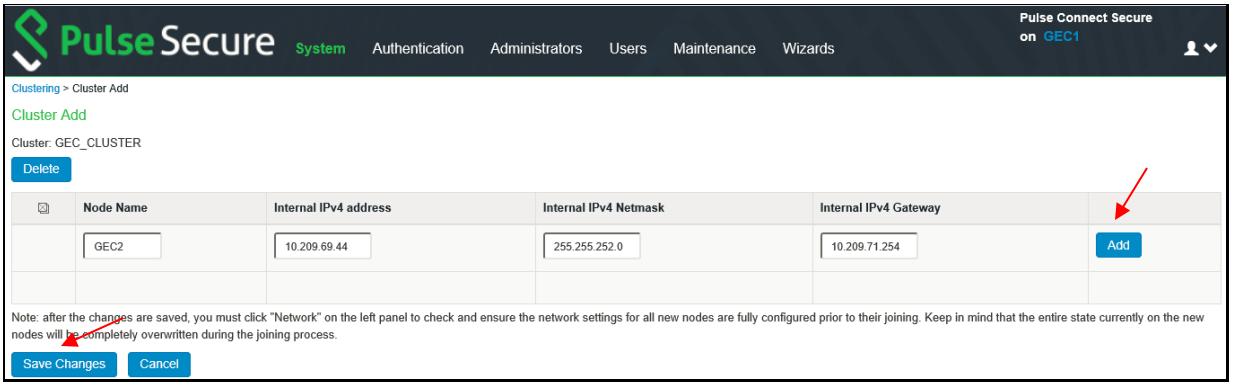
b. Enter member **node name** and **IP** and check **netmask** and **gateway**, then click **Add.**

Figure: Add Cluster Member



c. Click on **Save Changes**.

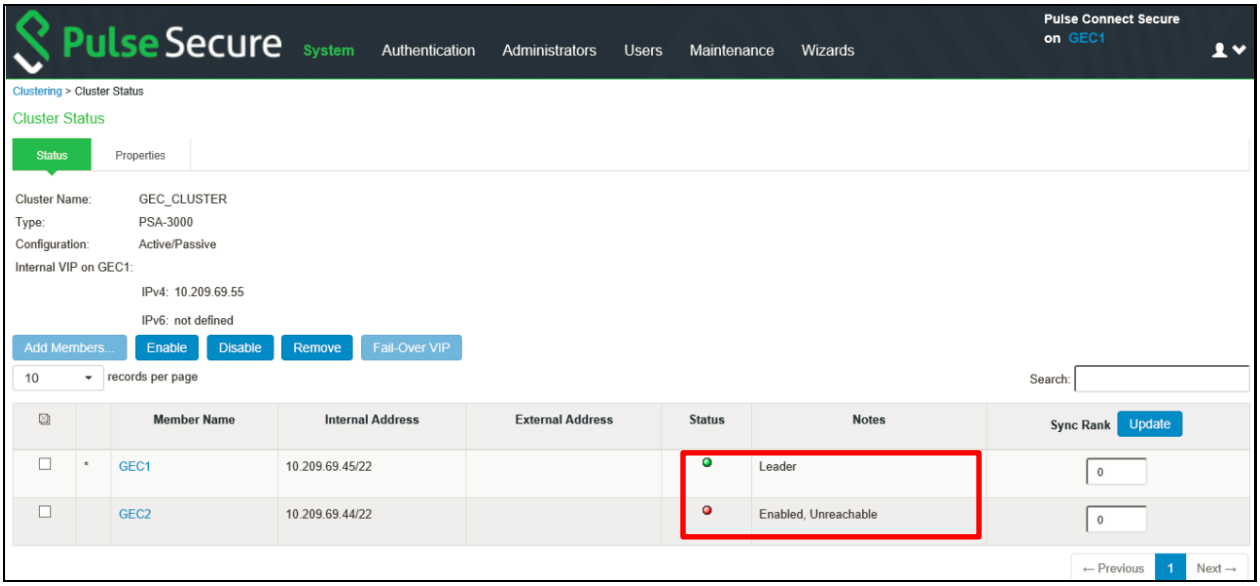
Figure: Save Changes



d. Check cluster **status**, it should go **transitioning** for short period, then first node becomes enabled and status should be **Leader**, the second node remains **Enabled, Unreachable** until it

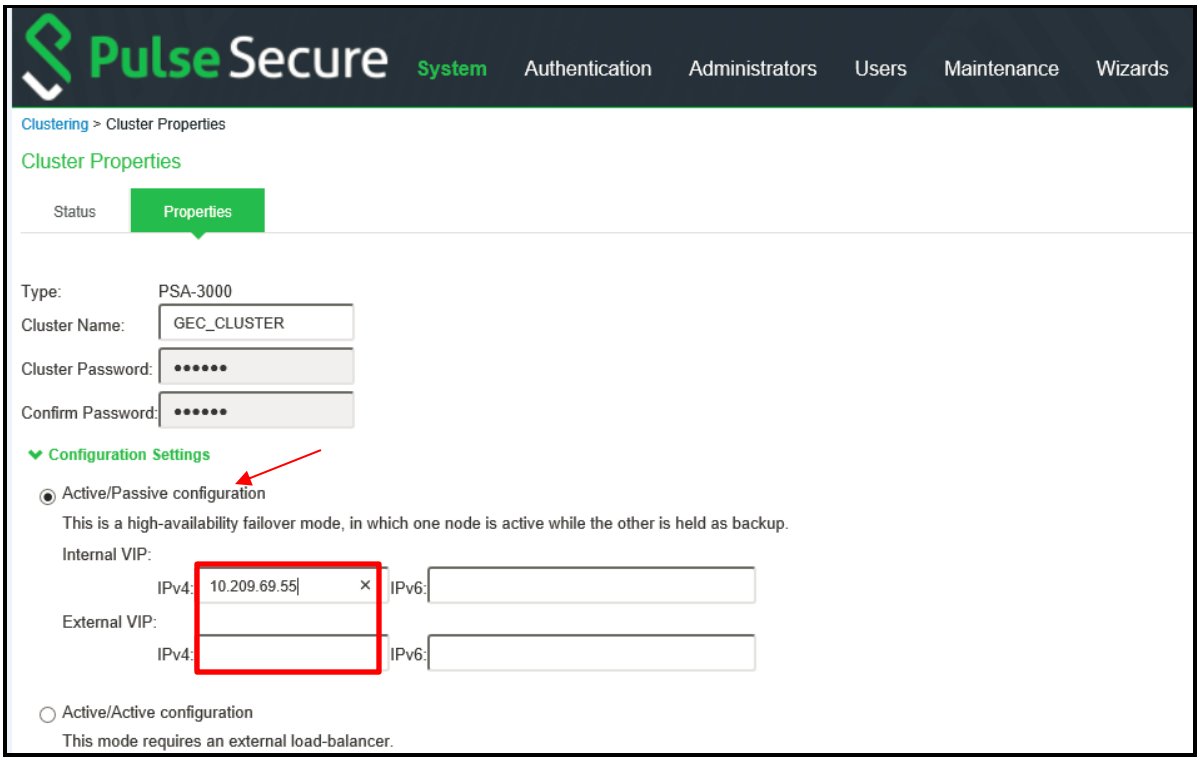
joins the cluster.

Figure: Clustering Status



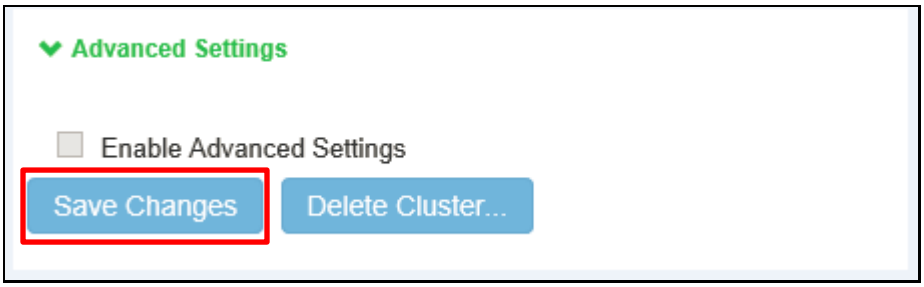
8. If the XML config is exported from an **Active/Passive** Cluster, following needs to be done prior to XML Import:
   a. Configure External Port for the Cluster Members (if external ports are configured in cluster)
   b. Go to **Clustering > Cluster Properties** page on the IVE. Change the Cluster Type from **Active/Active** to **Active/Passive** and add the cluster VIP address/es (the example here does not use external port).

Figure: Active/Passive Configuration



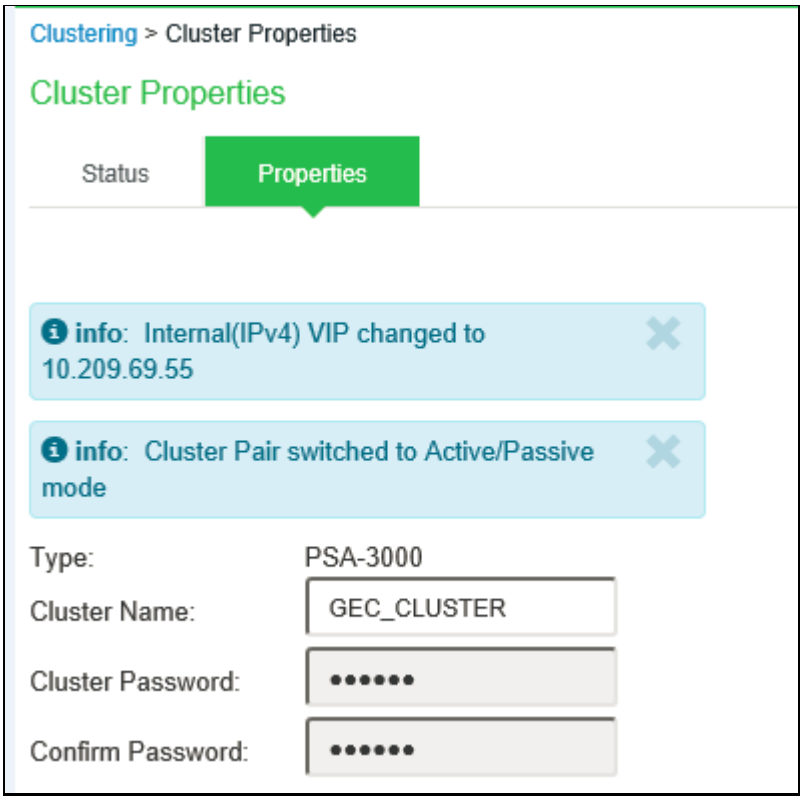
c. Save the cluster configuration settings.

Figure: Advanced Settings



d. Change confirmation will appear confirming change from **Active/Active** to **Active/Passive**.

Figure: Change Confirmation

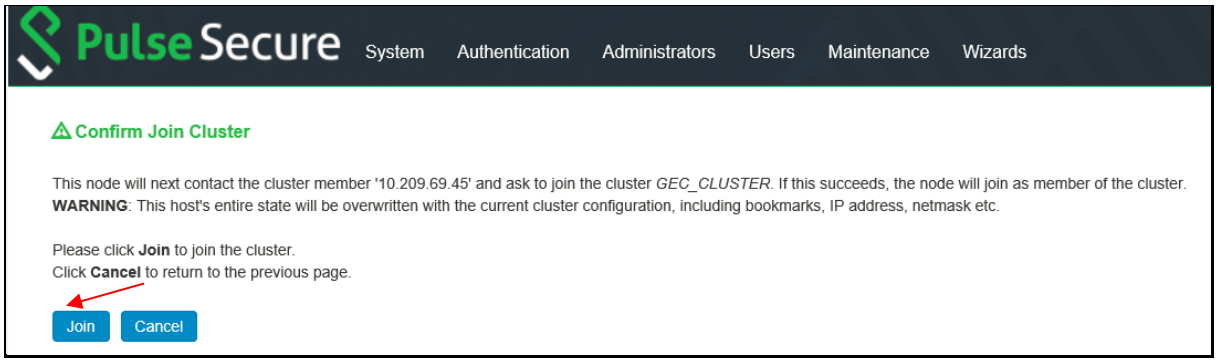


9. Log in to the second MAG device and join this node to the cluster by **Clustering > Join Cluster**.

Figure: Join Existing Cluster

In confirmation page, click **Join**.

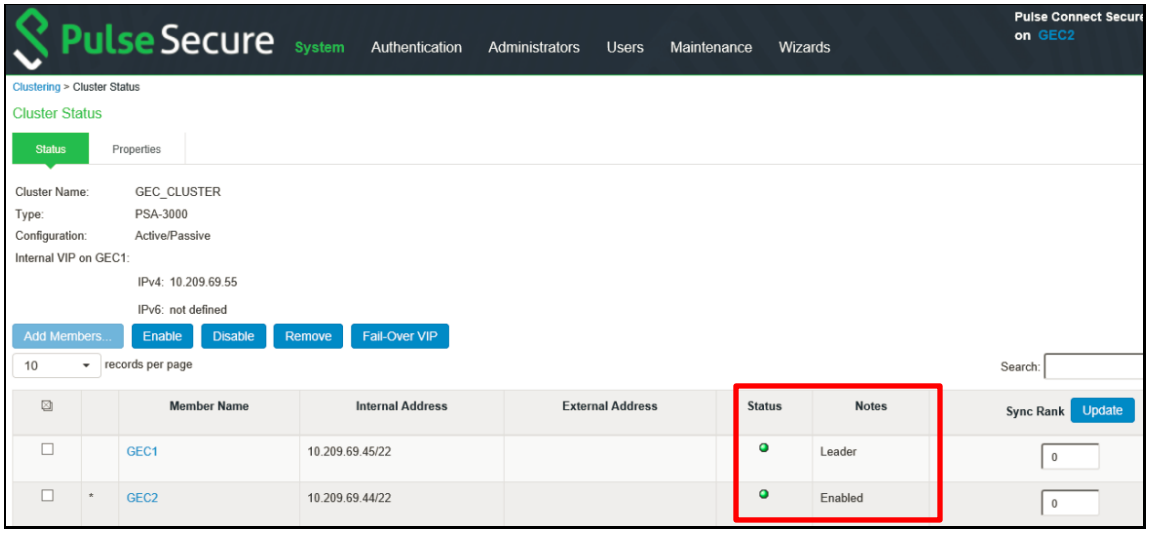
Figure: Confirm Join Cluster



After successful join, admin session will be forced off the secondary node that just joined.

10. Log in to primary node and check cluster status and it should stabilize in a few minutes.

Figure: Clustering Status

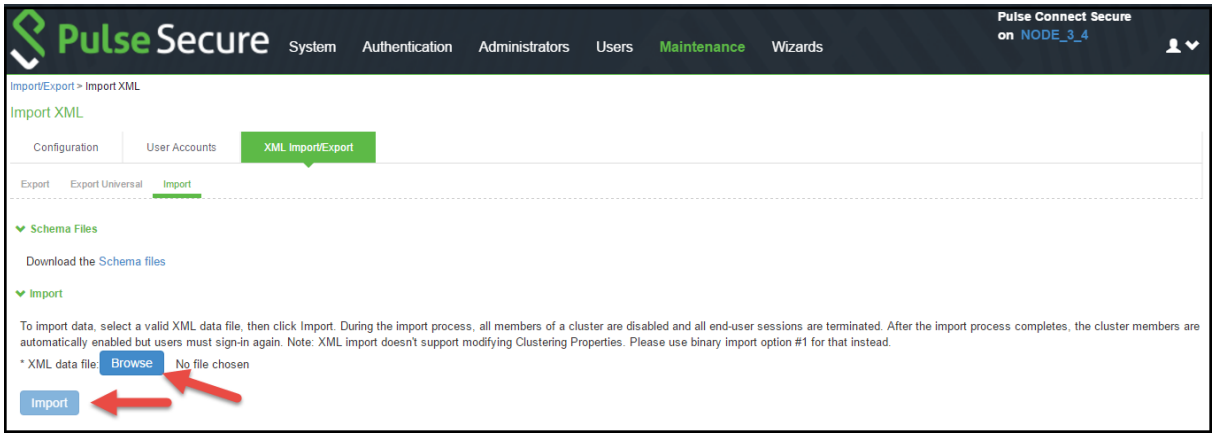


11. In the standalone environment or primary node of the new cluster, do the XML Import of Networking Settings. All networking settings would get imported, including the following:

- Internal Virtual Ports
- External Virtual Ports
- Management Ports
- VLANs
- Static Routes
- Port settings

Go to **Maintenance > Import/Export** and, select **Import XML**, then browse for the XML network settings file, then click **Import**.

Figure: Import XML



If it errors out with interface issues like upgrading to PSA7000f or PSA7000c, edit XML as follows before import: (Set link-speed to “auto”)

```
<internal-port>
    <node>SSLVPN-NODEX</node>
    <settings>
        <ip-address>10.10.10.n</ip-address>
        <netmask>255.255.255.224</netmask>
        <default-gateway>10.10.10.1</default-gateway>
        <link-speed>auto</link-speed>
        <arp-ping-timeout>5</arp-ping-timeout>
        <mtu>1500</mtu>
    </settings>
    <virtual-ports>
    </virtual-ports>
    <arp-cache>
    </arp-cache>
    <routes>
    </routes>
</internal-port>
```

Figure: Import Progress

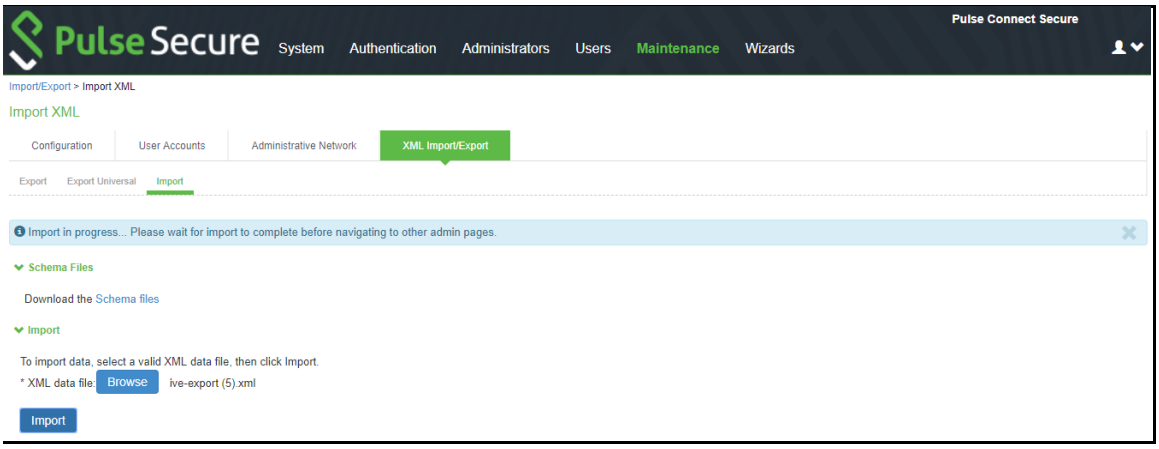
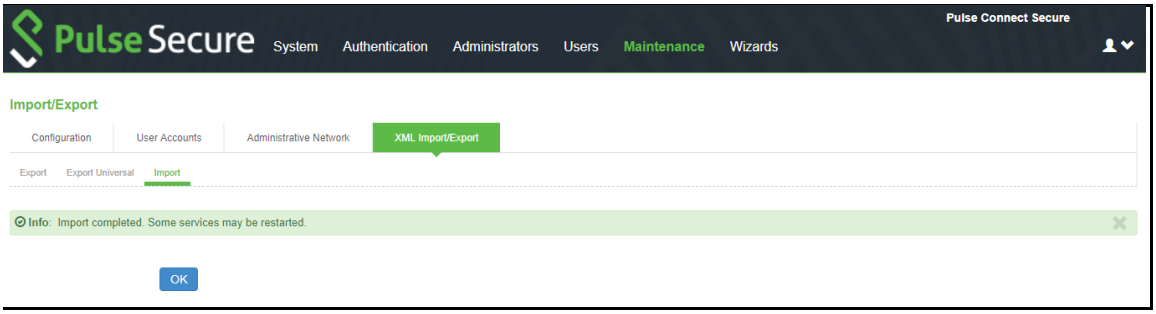
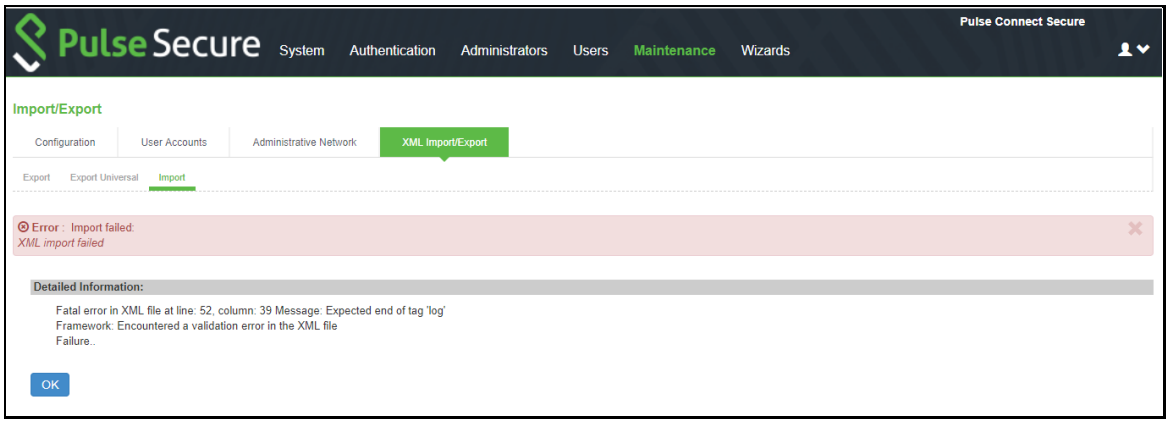


Figure: Detailed Information



Note: If the Source device has Management Port (e.g. MAG-SM360), and the Destination IVE does not have Management Port (e.g. PSA300), the XML import would fail with the following error:

Figure: Error Message



To work-around this issue, remove the Management Port settings (highlighted below) from the XML and then retry the XML Import.

Figure: Management Port Settings

```
</internal-port>
    <management-port>
      <node>localhost2</node>
      <settings>
        <is-enabled>disabled</is-enabled>
        <ip-address></ip-address>
        <netmask></netmask>
        <default-gateway></default-gateway>
        <enable-ipv6>disabled</enable-ipv6>
        <ipv6-address></ipv6-address>
        <ipv6-prefix-length>64</ipv6-prefix-length>
        <ipv6-default-gateway></ipv6-default-gateway>
        <link-speed>auto</link-speed>
        <arp-ping-timeout>5</arp-ping-timeout>
        <mtu>1500</mtu>
      </settings>
      <arp-cache>
      </arp-cache>
      <ndp-cache>
      </ndp-cache>
      <routes>
      </routes>
      <ipv6-routes>
      </ipv6-routes>
    </management-port>
    <network-connect>
      <nc-base-ip>10.200.200.200</nc-base-ip>
      <network-ip-filter>
        <node>localhost2</node>
        <nc-ip-filters>
          <nc-ip-filter>
            <ip-filter>*</ip-filter>
          </nc-ip-filter>
        </nc-ip-filters>
      </network-ip-filter>
    </network-connect>
```

12. In the standalone environment or primary node of the new cluster, import the system.cfg (this is the same process in a standalone mode migrate).

Note: This export process is the same for upgrading a standalone device.

To import the system configurations on the PSA device:

a. In the admin console, select Maintenance > Import/Export > Configuration.

b. Specify whether you want to import the Secure Access Service certificate.

Note: The certificate is not imported unless you select the **Import Device Certificate(s)?** check box.

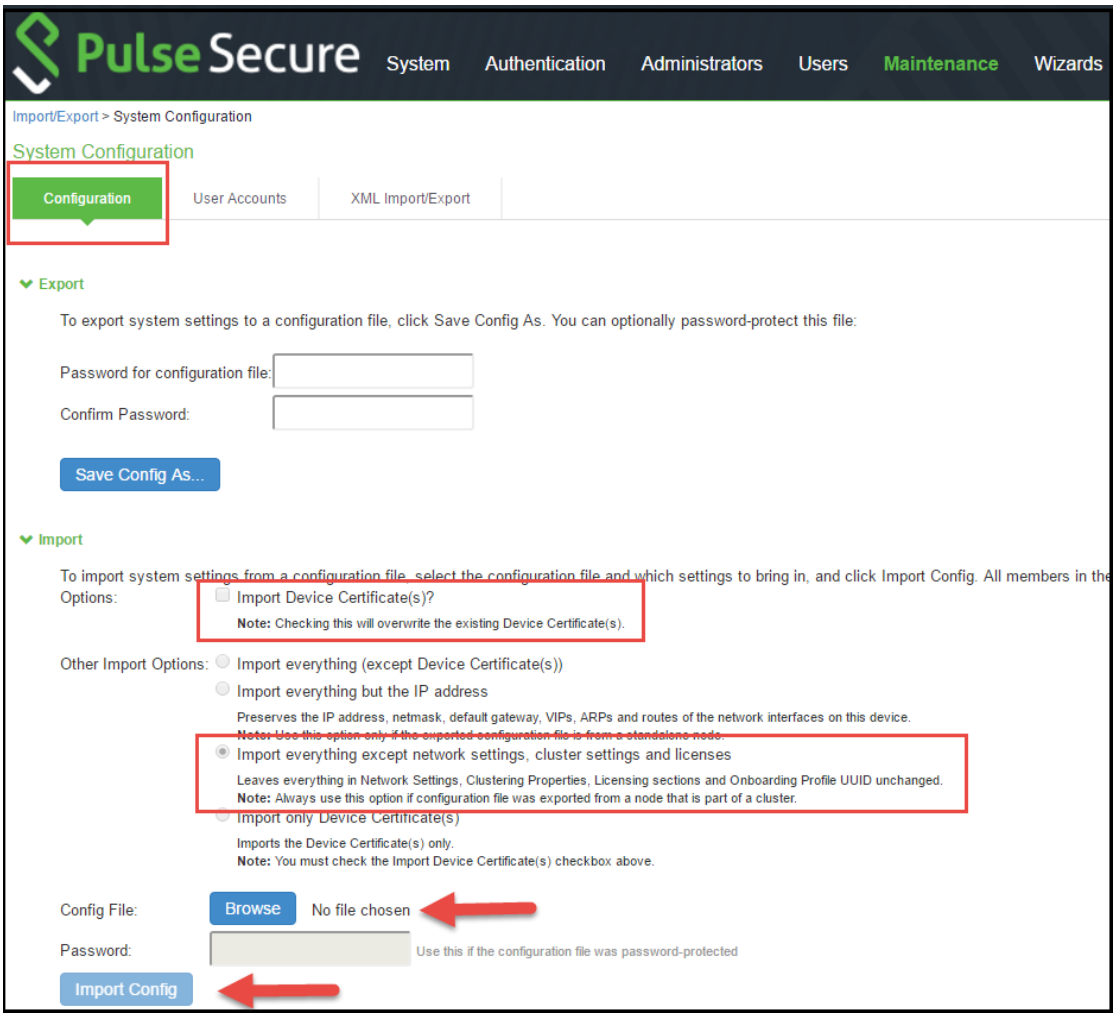
c. Select **Import everything except network settings and licenses** — This option imports all configuration settings except the network, cluster and license settings.

d. Browse to the configuration file, which is named **system.cfg** by default.

e. Enter the password you specified for the file. If you did not specify a password before exporting the file, then leave this field blank.

f. Click **Import Config**.

Figure: System.cfg



System settings and certificates are imported.

13. Next, in the same primary node, import the user.cfg binary file.

Note: This export process is the same for upgrading a standalone device.

To import the system configurations on the PSA device:

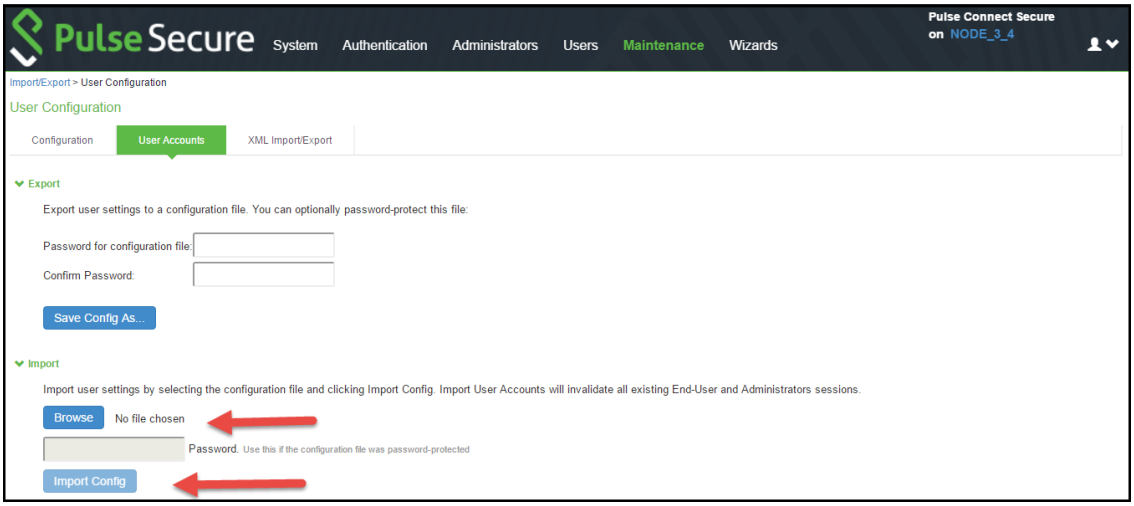
a. In the admin console, select **Maintenance** > **Import/Export** > **User Accounts**.

b. Browse to the configuration file, which is named **user.cfg** by default.

c. Enter the password you specified for the file. If you did not specify a password before exporting the file, then leave this field blank.

d. Click **Import Config**.

Figure: user.cfg



14. After importing XML, system and user.cfg files, check and/or modify/add remaining local settings and other settings such as:
    a. **Network > Overview** settings (set in cluster or individual nodes)
    b. **Network > Routes** (for internal, external and other ports)
    c. **Network > Hosts** (set in cluster or individual nodes)
    d. **Network > Internal Port/ External Port>Virtual Ports** (if clustered, set this up in cluster "Entire Cluster")
    e. **Network > VLANs** (if clustered, set this up in cluster "Entire Cluster")
    f. **Network > VPN Tunneling** (set in cluster or individual nodes)
    g. **Log/Monitoring > SNMP** (set in cluster or individual nodes)
    h. Configuration>Certificates>Device Certificates (and its ports bindings)
    i. Resource Policies>VPN Tunneling>Connection Profiles (if configured)
    j. **Auth Servers > ACE Auth server**, if used (check the node secret file status)

    Configuration > Licensing - License client-server settings (if used as license client in Enterprise Licensing Server environment), proper licenses installed
15. Check cluster status (if clustered) and test operation by logging in to the cluster VIPs (or the standalone PSA device IP). Test the authentication using AD, ACE, etc., and all other functionalities enabled, such as NC or Pulse.
16. This completes the SA/PSA to PSA hardware platform migration.

Migration from MAG to PSA-V

Following are the steps for migration from MAG to PSA-V:

1. On the existing SA/MAG platform, log in to the standalone device or the primary node of the cluster (where the cluster was first formed) and export its binary configs (**system.cfg** and **user.cfg)**, and the XML Network settings configurations.

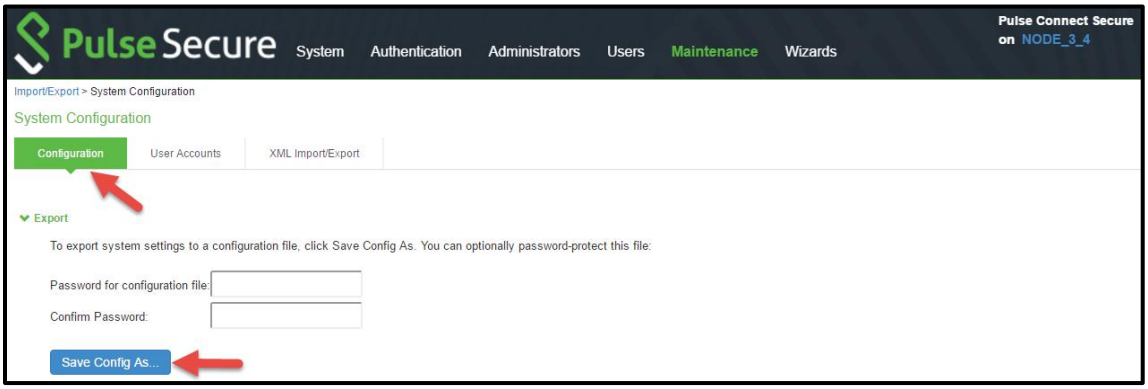
   To export the binary configurations from the PCS device:

   a. In the admin console, select Maintenance > Import/Export > Configuration.

   b. Under **Export**, enter a password if you'd like to password-protect the configuration file.

   c. Click **Save Config As** to save the file. By default, the filename will be **system.cfg.**

   Figure: Configuration

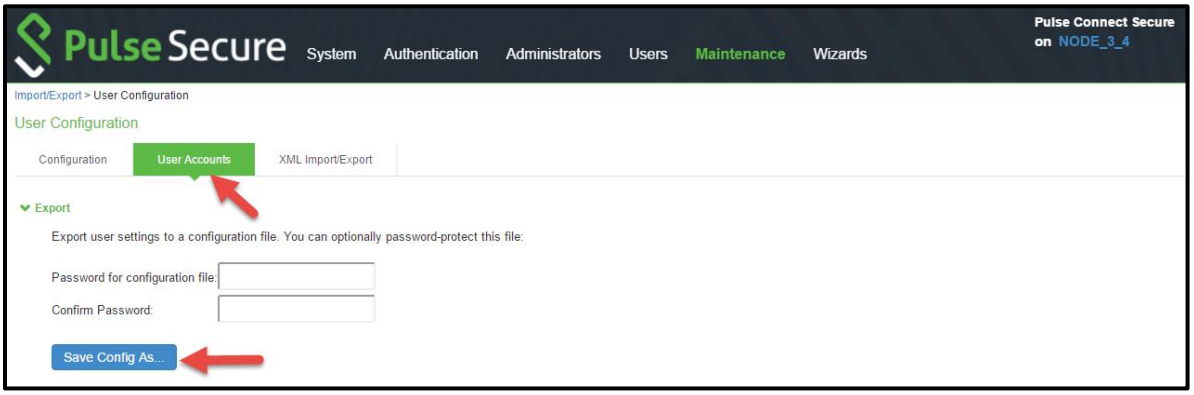


   d. In the admin console, select Maintenance > Import/Export > User Accounts.

   e. Under **Export**, enter a password if you would like to password-protect the configuration file.

   f. Click **Save Config As** to save the file. By default, the filename will be **user.cfg.**

   Figure: Save Config As – user.cfg



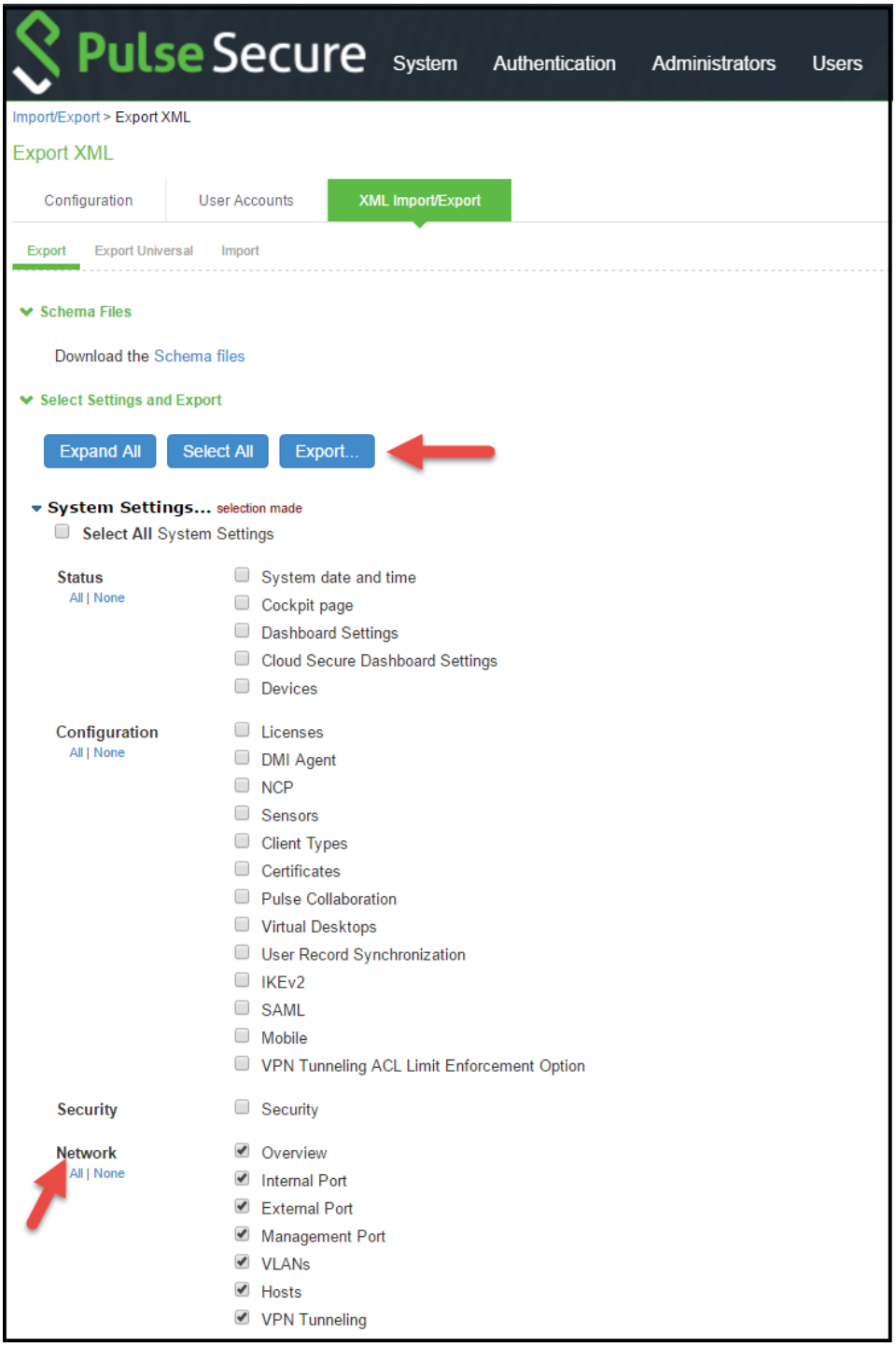
   To export the XML Network Configuration:

   a. In the admin console, select **Maintenance** > **Import/Export** > **Export XML.**

   b. Under Export, expand System Settings and select **Network** > **All**.

   c. Click **Export** and save the XML file.

Figure: XML Import/Export



2. Make notes of all the local settings for both nodes (if not yet done during preparation stage): IP information, clustering, virtual ports, VLANs, hosts, routes, DNS settings, SNMP (if configured), Syslog.
3. Shut down old MAG cluster or standalone devices.
4. Configure the new PSA-V devices with same internal/external/management ports IPs with same IP addresses as the old MAG devices and the proper DNS settings. Do not configure any other settings

at this time.

5. Apply the proper licenses for the new PSA-V devices. If the MAG is a member of an Enterprise License Server, you have to manually recreate the client and re-establish connection to the license server later at the end of migration.

   Note: If upgrading a non-clustered MAG device, proceed to step-10.

6. Now, admin must install the core licenses. Without core licenses, the clustering option is not enabled and admin cannot create a cluster in a PSA-V. From 8.3R3 and later releases, core licenses can be downloaded from PCLS. Refer to the **License Configuration for VA-SPE/PSA-V Appliances Deployment Guide** for detailed steps. If admin is deploying 8.3R1 and then upgrading to 8.3Rx, core license is not needed.

7. In the new PSA-V device (first device), manually create a new cluster **with same name and settings** with **same node names** as the old MAG cluster.

   Figure: Create

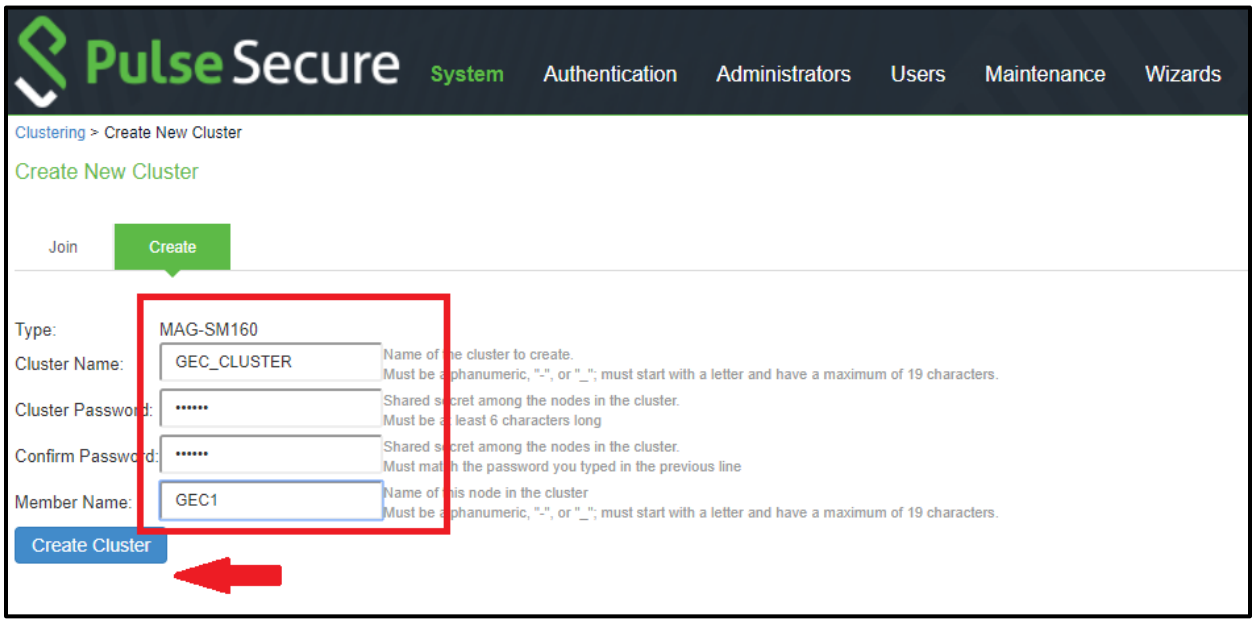
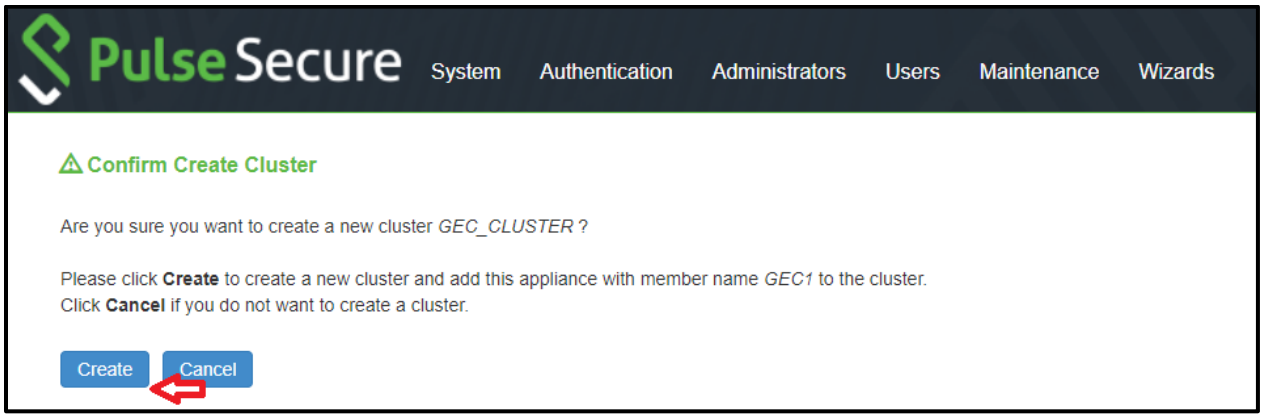


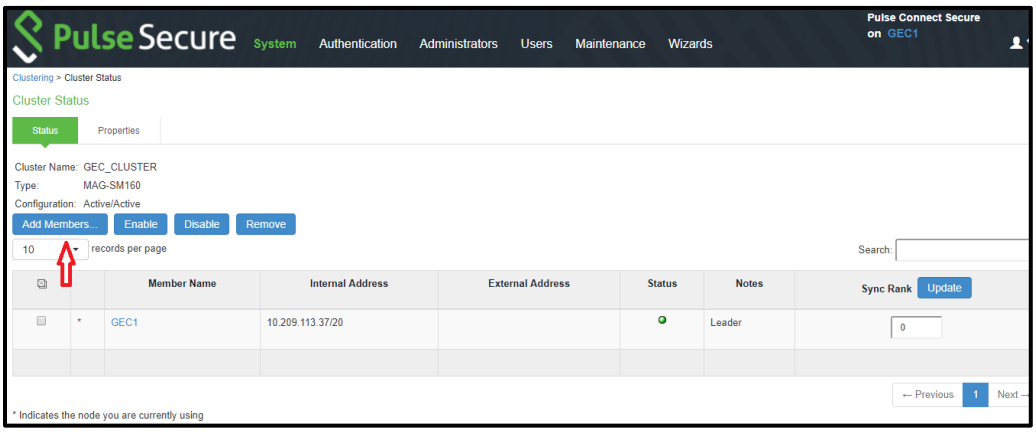
   Figure: Confirm Create Cluster



8. Add the second device to the cluster in the primary node cluster configuration and save the settings.

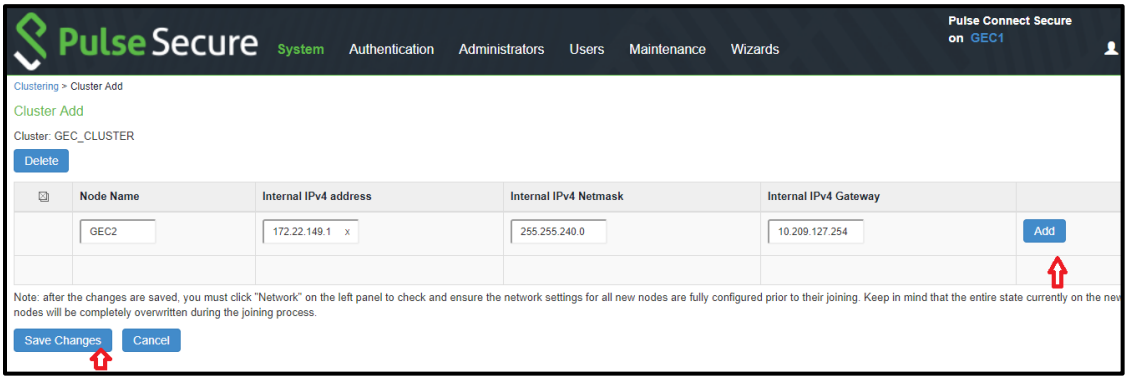
a. Add a member by clicking **Add Members.**

Figure: Add Members



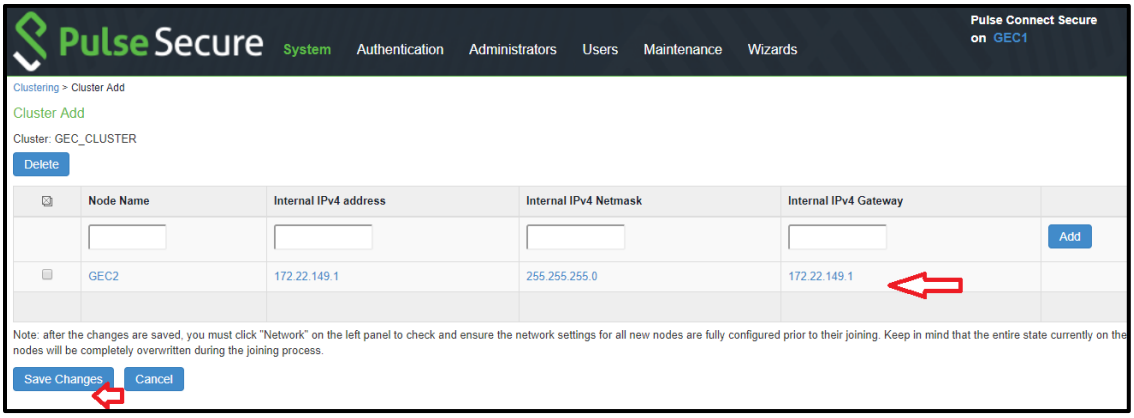
b. Enter member **node name** and **IP** and check **netmask** and **gateway**, then click **Add.**

Figure: Mode Name



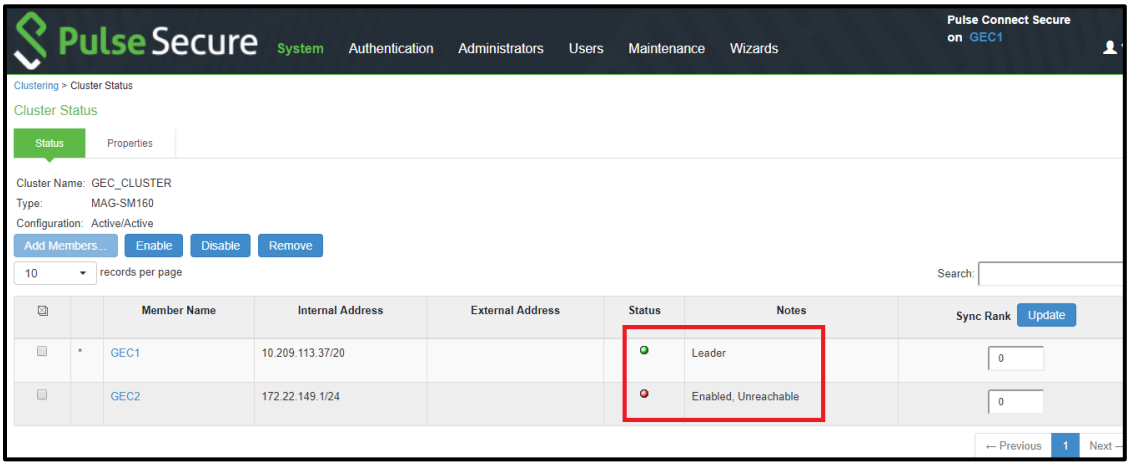
c. Click on Save Changes.

Figure: Save Changes



d. Check cluster **status**, it should go **transitioning** for short period, then first node becomes enabled and status should be **Leader**, the second node remains **Enabled**, **Unreachable** until it joins the cluster.

Figure: Status

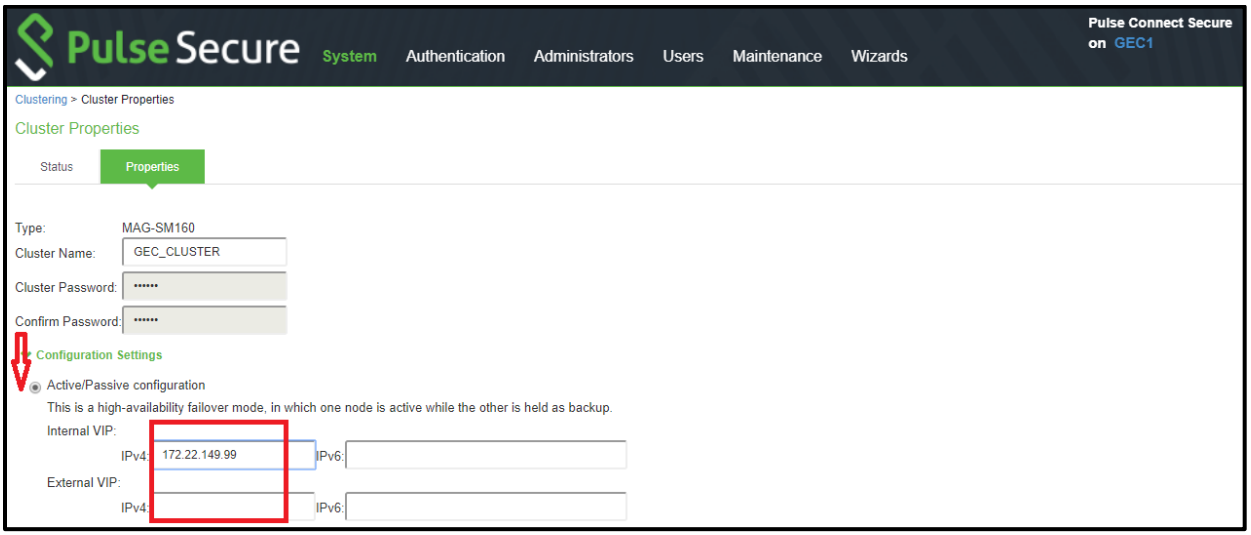


9. If the XML config is exported from an **Active/Passive** Cluster, following needs to be done prior to XML Import:

   a. Configure External Port for the Cluster Members (if external ports are configured in cluster)

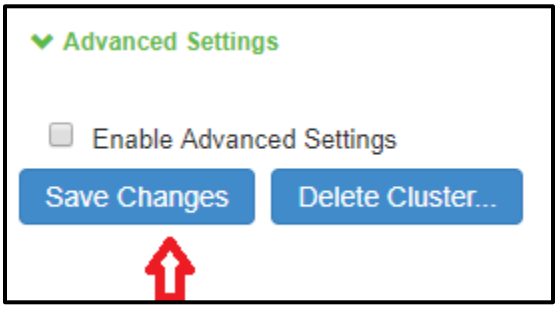
   b. Go to **Clustering > Cluster Properties** page on the IVE. Change the Cluster Type from **Active/Active to Active/Passive** and add the cluster VIP address/es (the example here does not use external port).

   Figure: Cluster Properties



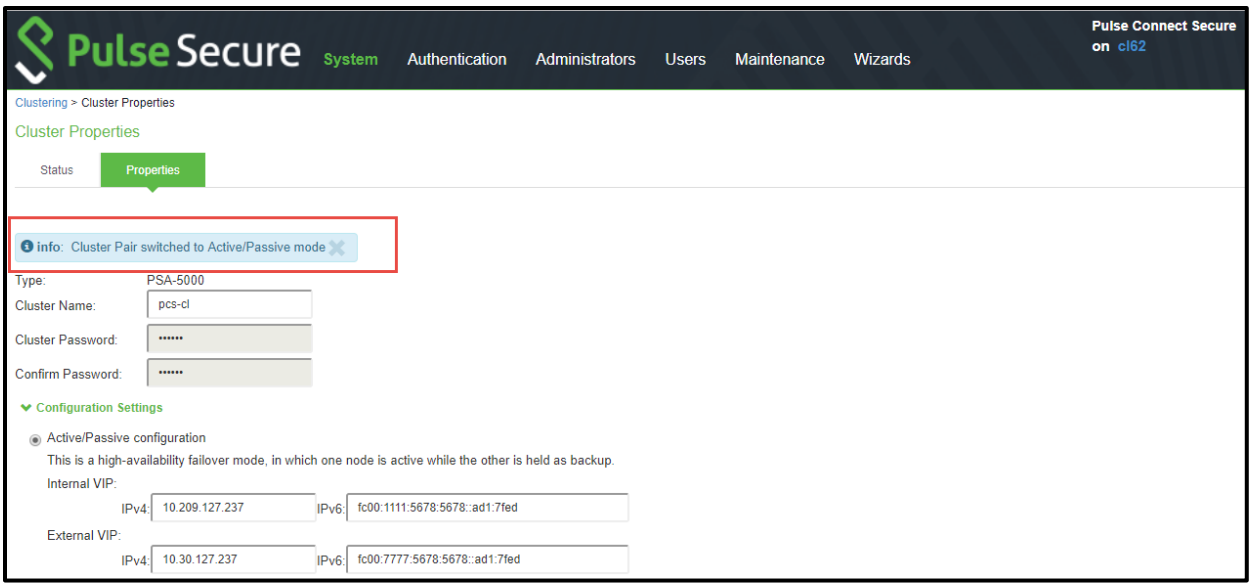
   c. Save the cluster configuration settings.

Figure: Advanced Settings



d. Change confirmation will appear confirming change from **Active/Active** to **Active/Passive.**

Figure: Confirmation Change

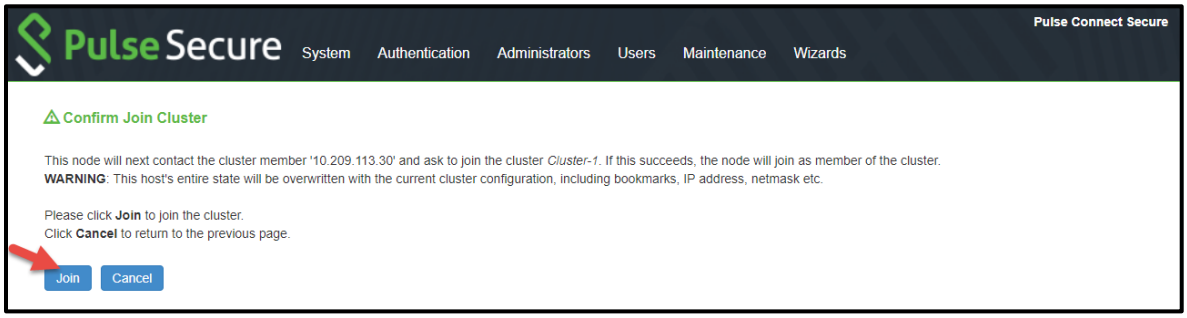


10. Log in to the second PSA-V device and join this node to the cluster by **Clustering > Join Cluster**.

Figure: Join Existing Cluster

In confirmation page, click Join.

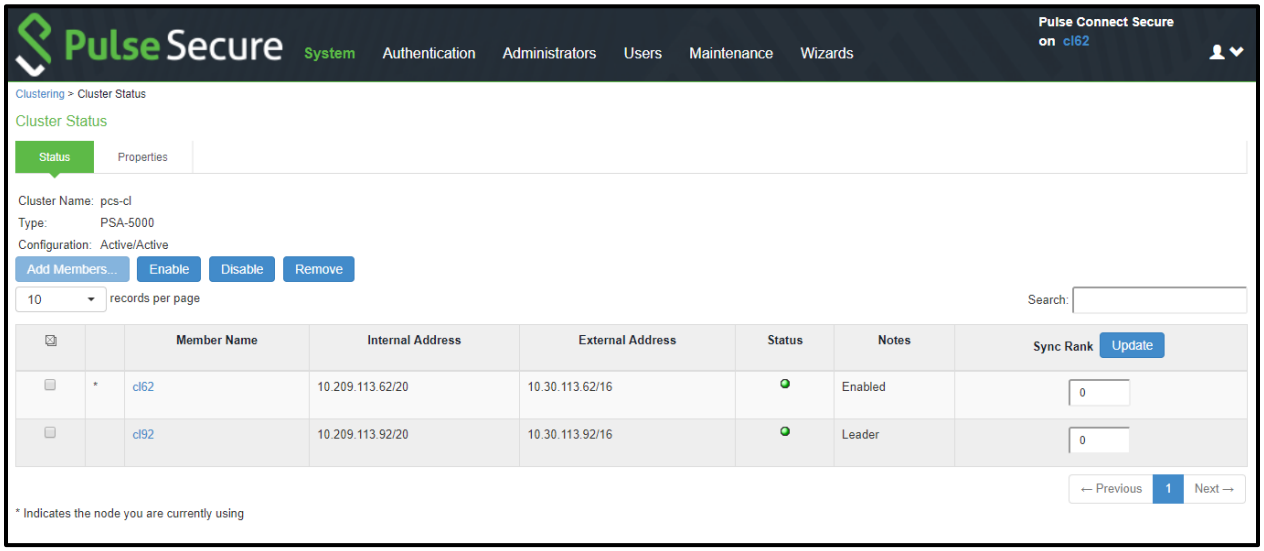
Figure: Confirm Join Cluster



After successful join, admin session will be forced off the secondary node that just joined.

11. Log in to primary node and check cluster status and it should stabilize in a few minutes.

Figure: Cluster Status

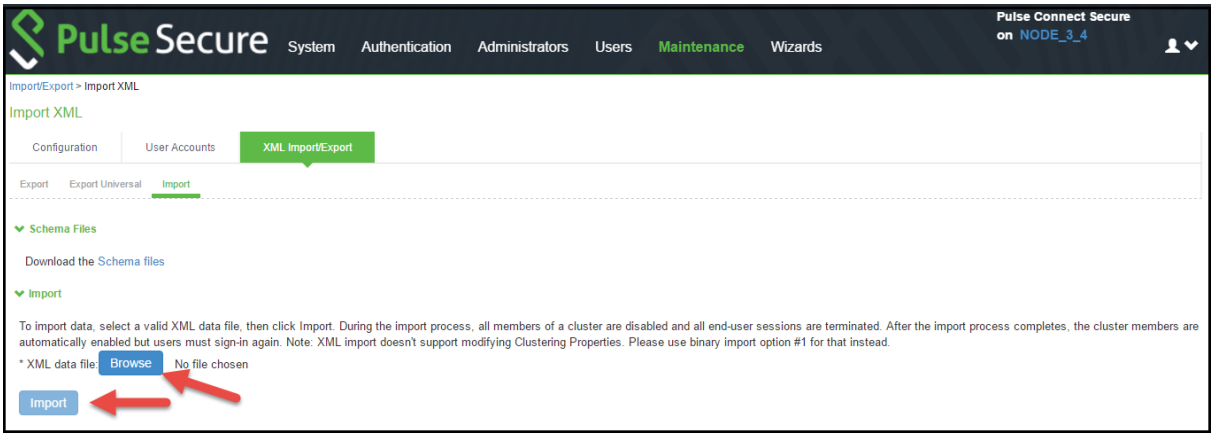


12. In the primary node of the new cluster, do the XML Import of Networking Settings. All networking settings would get imported, including the following:

    - Internal Virtual Ports
    - External Virtual Ports
    - Management Ports
    - VLANs
    - Static Routes
    - Port settings

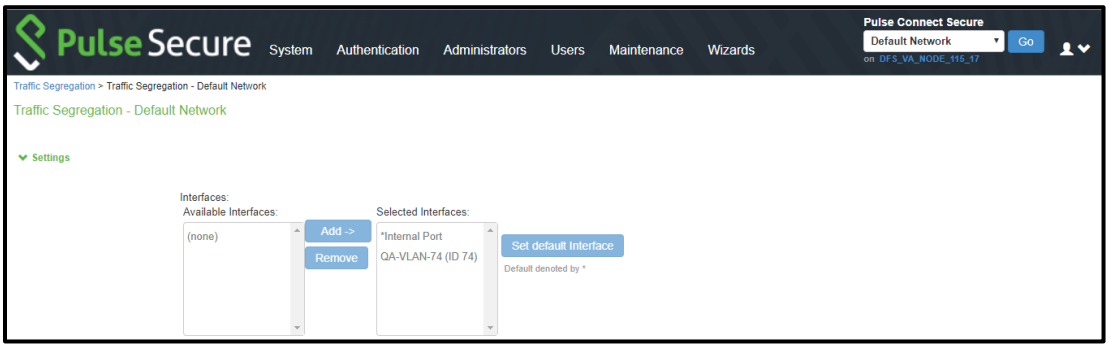
    a. Go to **Maintenance > Import/Export,** select **Import XML**, then browse for the XML network settings file, then click Import.

Figure: XML Import/Export



13. Now assign VLANs (if any):
    a. Go to **System** > **Traffic Segregation** > **Default Network**.
    b. Move the interfaces from the **Available Interfaces** to **Selected Interfaces**.
    c. Click on **Save Changes**.

    Figure: Traffic Segregation



14. In the primary node of the new cluster, do the same XML Import process for Logs and SNMP settings, by importing the Logs and Settings XML done in step 1.2.c. All log settings would get imported, including the following:
    - Events
    - User Access
    - Admin Access
    - Sensors
    - Log Filters
    - SNMP
15. In the primary node of the new cluster, import the **system.cfg** (this is the same process in a standalone mode migrate).

    Note: This export process is the same for upgrading a standalone device.

To import the system configurations on the PSA device:

a. In the admin console, select Maintenance > Import/Export > Configuration.

b. Specify whether you want to import the Secure Access Service certificate. Note: The certificate is not imported unless you select the **Import Device Certificate(s)?** check box.

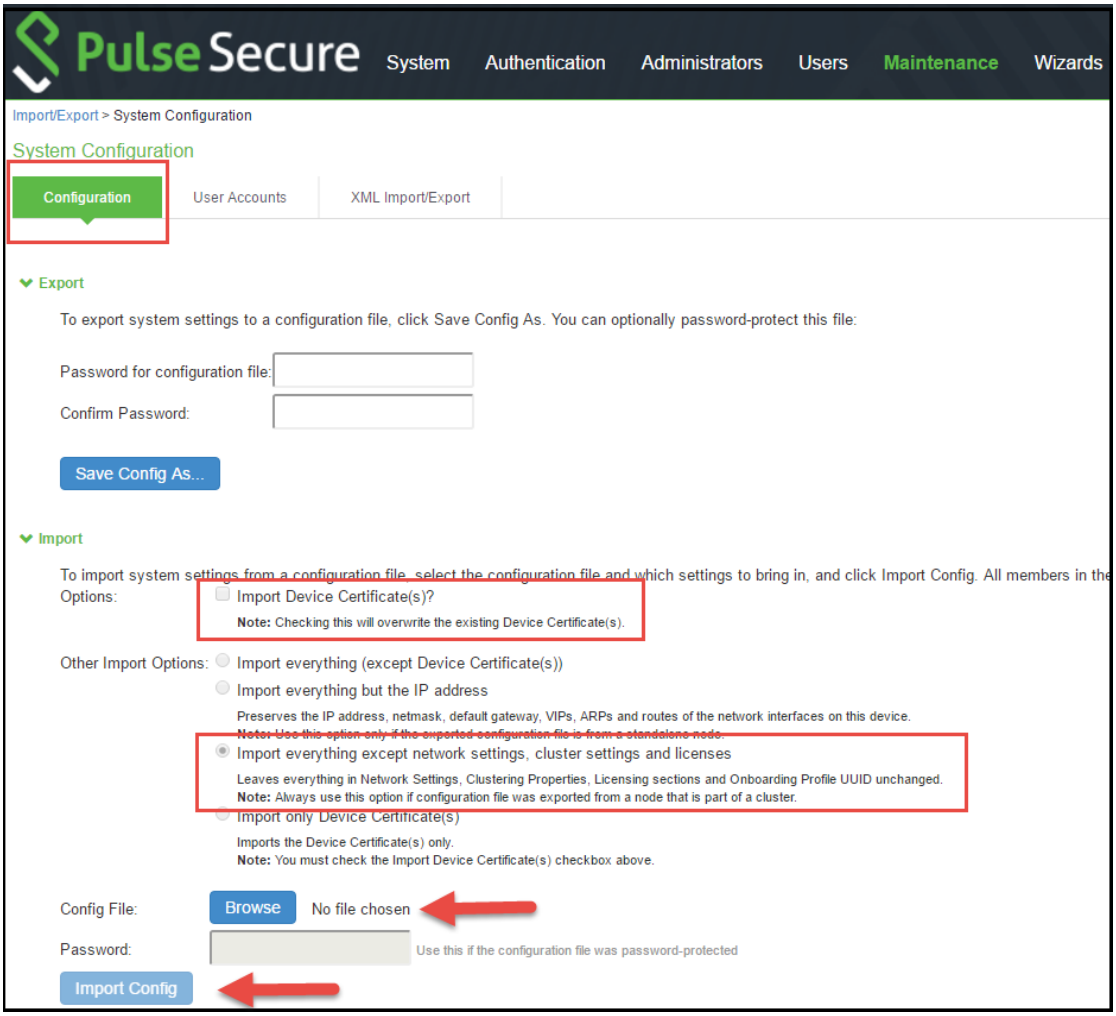
c. Select **Import everything except network settings and licenses** — This option imports all configuration settings except the network, cluster and license settings.

d. Browse to the configuration file, which is named **system.cfg** by default.

e. Enter the password you specified for the file. If you did not specify a password before exporting the file, then leave this field blank.

f. Click Import Config.

Figure: Configuration



g. System settings and certificates are imported.

16. Next, in the same primary node, import the user.cfg binary file.

Note: This export process is the same for upgrading a standalone device.

To import the system configurations on the PSA device:

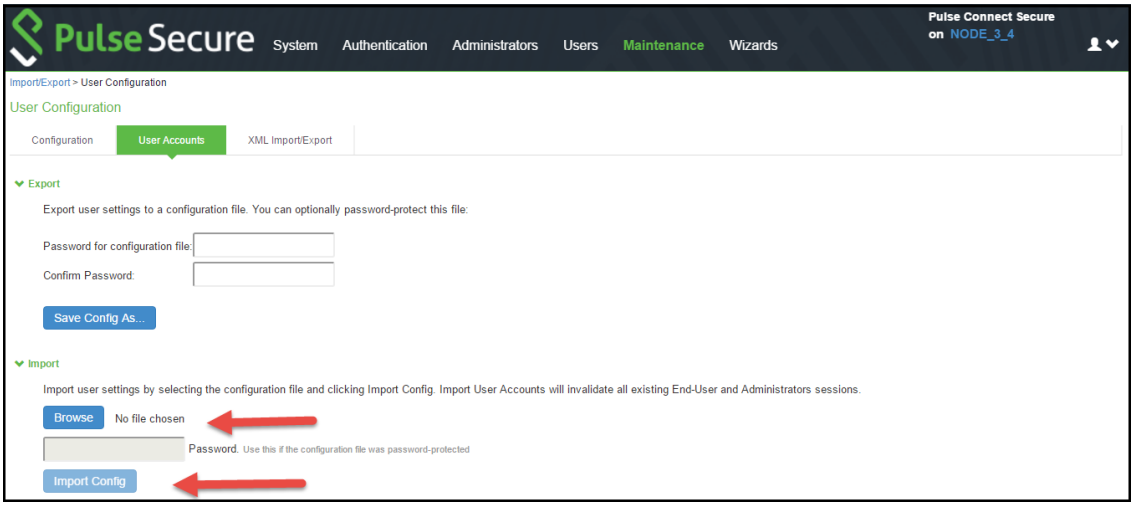
a. In the admin console, select Maintenance > Import/Export > User Accounts.

b. Browse to the configuration file, which is named **user.cfg** by default.

c. Enter the password you specified for the file. If you did not specify a password before exporting the file, then leave this field blank.

d. Click Import Config.

Figure: User Accounts



17. Next, import the **All roles** XML configuration file. This step restores all the roles restriction settings for Virtual Ports.

18. After importing the 2 XML files and the system and user.cfg files, check and/or modify/add remaining local settings and other settings as necessary if not restored, such as:

    a. **Network > Overview** settings (set in cluster or individual nodes)

    b. **Network > Routes** (for internal, external and other ports)

    c. **Network > Hosts** (set in cluster or individual nodes)

    d. **Network > Internal Port/ External Port>Virtual Ports** (if clustered, set this up in cluster "Entire Cluster")

    e. **Network > VLANs** (if clustered, set this up in cluster "Entire Cluster")

    f. **Network > VPN Tunneling** (set in cluster or individual nodes)

    g. **Log/Monitoring > SNMP** (set in cluster or individual nodes)

    h. Log/Monitoring > Events/Admin Access/User Access > Settings (set in cluster or individual nodes if different)

    i. Configuration>Certificates>Device Certificates (and its ports bindings)

    j. Resource Policies>VPN Tunneling>Connection Profiles (if configured)

    k. **Auth Servers > ACE Auth server**, if used (check the node secret file status)

l. **Configuration > Licensing** - License client-server settings (if used as license client in Enterprise Licensing Server environment), proper licenses installed

19. Check cluster status (if clustered) and test operation by logging in to the cluster VIPs (or the standalone PSA device IP). Test the authentication using AD, ACE, etc., and all other functionalities enabled, such as NC or Pulse.
20. This completes the MAG to PSA-V platform migration.

References

PSA Hardware Guides

https://www.pulsesecure.net/download/techpubs/current/502/pulseappliances/psa/psa7000HardwareGuide.pdf

https://www.pulsesecure.net/download/techpubs/current/501/pulseappliances/psa/psa5000HardwareGuide.pdf

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https://www.pulsesecure.net/download/techpubs/current/499/pulseappliances/psa/psa300HardwareGuide.pdf

Pulse Connect Secure Administration Guide

https://docs.pulsesecure.net/WebHelp/PCS/9.0R1/Home.htm

https://www.pulsesecure.net/download/techpubs/current/1219/pulse-connect-secure/pcs/9.0rx/ps-pcs-sa-9.0r1-admin-guide.pdf

KB discussing supported network type for clustering

https://kb.pulsesecure.net/articles/Pulse_Secure_Article/KB26035

PSA-related KBs

https://kb.pulsesecure.net/articles/Pulse_Secure_Article/KB40034/?q=kb40034&l=en_US&fs=Search&pn=1&atype=

https://kb.pulsesecure.net/articles/Pulse_Secure_Article/KB40035/?q=kb40034&l=en_US&fs=Search&pn=1&atype=

- 8.3R3 PCS and 5.4R3 PPS Service Provider Virtual Appliance Deployment Guide
- 8.3R3 PCS and 5.4R3 PPS License Configuration for VA-SPE/PSA-V Appliances: On-Premise and Cloud