



Additional Requirements

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High Availability Login Profiles

Important Notes About High Availability Login Profiles

- You can use the High Availability login profile tables in this section to configure the upper and lower client re-login values for your presence redundancy group. You configure the upper and lower client login values by choosing **Cisco Unified CM IM and Presence Administration > System > Service Parameters**, and choosing **Cisco Server Recovery Manager** from the Service menu.
- High Availability client login profiles apply only to single cluster deployments. High Availability client login profiles cannot configure the upper and lower client re-login values for the redundancy group if multiple clusters are present. You must perform more tests to discover High Availability client login profiles in multiple cluster deployments.
- If Debug Logging is enabled for the Cisco XCP Router service, then you should expect increased CPU usage and a decrease in the currently supported logging levels for IM and Presence Service.
- By configuring the upper and lower client re-login limits on your presence redundancy group based on the tables we provide here, you can avoid performance issues and high CPU spikes in your deployment.
- We provide a High Availability login profile for each IM and Presence Service node memory size, and for each High Availability deployment type, active/active or active/standby.
- The High Availability login profile tables are calculated based on the following inputs:
 - The lower client re-login limit is based on the Server Recovery Manager service parameter "Critical Service Down Delay", for which the default is 90 seconds. If the Critical Service Down Delay is changed then the lower limit must also change.
 - The total number of users in the presence redundancy group for Active/Standby deployments, or the node with highest number of users for Active/Active deployments.

- You must configure the upper and lower client re-login limit values on both nodes in a presence redundancy group. You must manually configure all these values on both nodes in the presence redundancy group.
- The upper and lower client re-login limit values must be the same on each node in the presence redundancy group.
- If you **rebalance** your users, you must reconfigure the upper and lower client re-login limit values based on the High Availability login profile tables.

Use High Availability Login Profile Tables

Use the High Availability login profile tables to retrieve the following values:

- **Client Re-Login Lower Limit** service parameter value
- **Client Re-Login Upper Limit** service parameter value.

Procedure

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- Step 1** Choose a profile table based on your virtual hardware configuration, and your High Availability deployment type.
 - Step 2** In the profile table, choose the number of users in your deployment (round up to the nearest value). If you have an active/standby deployment, use the node with the highest number of users.
 - Step 3** Based on the Number of Users value for your presence redundancy group, retrieve the corresponding lower and upper retry limits in the profile table.
 - Step 4** Configure the lower and upper retry limits on IM and Presence Service by choosing **Cisco Unified CM IM and Presence Administration > System > Service Parameters**, and choosing **Cisco Server Recovery Manager** from the Service menu.
 - Step 5** Check the Critical Service Down Delay value by choosing **Cisco Unified CM IM and Presence Administration > System > Service Parameters** and choosing **Cisco Server Recovery Manager** from the **Service Menu**. The default value is 90 seconds. The lower retry limit should be set to this value.
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Example High Availability Login Configurations

Example 1: 15000 Users Full UC Profile - active/active deployment

You have 3000 users in your presence redundancy group, with 2000 users on one node, and 1000 users on the second node. For an unbalanced active/active deployment, Cisco recommends you use the node with the highest number of users, in this case the node with 2000 users. Using the 15000 users full US (4 vCPU 8GB) active/active profile, you retrieve these lower and upper retry values:

| Expected Number of Active Users | Lower Retry Limit | Upper Retry Limit |
|---------------------------------|-------------------|-------------------|
| 2000 | 120 | 253 |



Note The upper retry limit is the approximate time (seconds) it takes for all clients to login to their backup node after a failover occurs.



Note The lower limit of 120 assumes the **Critical Service Down Delay** service parameter is set to 120.

Example 2: 5000 Users Full UC Profile - active/active deployment

You have 4700 users on each node in your presence redundancy group . Cisco recommends that you round up to the nearest value, so using the 5000 users full US (4 vCPU 8GB) active/active profile you retrieve the lower and upper retry value based on a number of users value of 5000:

| Expected Number of Active Users | Lower Retry Limit | Upper Retry Limit |
|---------------------------------|-------------------|-------------------|
| 5000 | 120 | 953 |

Single Cluster Configuration

500 Users Full UC (1vCPU 700MHz 2GB) Active/Active Profile

Table 1: User Login Retry Limits for Standard Deployment (500 Users Full UC Active/Active)

| Expected Number of Active Users | Lower Retry Limit | Upper Retry Limit |
|---------------------------------|-------------------|-------------------|
| Full UC | | |
| 100 | 120 | 187 |
| 250 | 120 | 287 |

500 Users Full UC (1vCPU 700MHz 2GB) Active/Standby Profile

Table 2: User Login Retry Limits for Standard Deployment (500 Users Full UC Active/Standby)

| Expected Number of Active Users | Lower Retry Limit | Upper Retry Limit |
|---------------------------------|-------------------|-------------------|
| Full UC | | |
| 100 | 120 | 187 |
| 250 | 120 | 287 |
| 500 | 120 | 453 |

1000 Users Full UC (1vCPU 1500MHz 2GB) Active/Active Profile

Table 3: User Login Retry Limits for Standard Deployment (1000 Users Full UC Active/Active)

| Expected Number of Active Users | Lower Retry Limit | Upper Retry Limit |
|---------------------------------|-------------------|-------------------|
| Full UC | | |
| 100 | 120 | 153 |
| 250 | 120 | 203 |
| 500 | 120 | 287 |

1000 Users Full UC (1vCPU 1500MHz 2GB) Active/Standby Profile

Table 4: User Login Retry Limits for Standard Deployment (1000 Users Full UC Active/Standby)

| Expected Number of Active Users | Lower Retry Limit | Upper Retry Limit |
|---------------------------------|-------------------|-------------------|
| Full UC | | |
| 100 | 120 | 153 |
| 250 | 120 | 203 |
| 500 | 120 | 287 |
| 750 | 120 | 370 |
| 1000 | 120 | 453 |

2000 Users Full UC (1vCPU 1500Mhz 4GB) Active/Active Profile

Table 5: User Login Retry Limits for Standard Deployment (2000 Users Full UC Active/Active)

| Expected Number of Active Users | Lower Retry Limit | Upper Retry Limit |
|---------------------------------|-------------------|-------------------|
| Full UC | | |
| 100 | 120 | 153 |
| 500 | 120 | 287 |
| 1000 | 120 | 453 |

2000 Users Full UC (1vCPU 1500Mhz 4GB) Active/Standby Profile

Table 6: User Login Retry Limits for Standard Deployment (2000 Users Full UC Active/Standby)

| Expected Number of Active Users | Lower Retry Limit | Upper Retry Limit |
|---------------------------------|-------------------|-------------------|
| Full UC | | |
| 100 | 120 | 153 |
| 250 | 120 | 203 |
| 500 | 120 | 287 |
| 750 | 120 | 370 |
| 1000 | 120 | 453 |
| 1250 | 120 | 537 |
| 1500 | 120 | 620 |
| 1750 | 120 | 703 |
| 2000 | 120 | 787 |

5000 Users Full UC (4 GB 2vCPU) Active/Active Profile

Table 7: User Login Retry Limits for Standard Deployment (5000 Users Full UC Active/Active)

| Expected Number of Active Users | Lower Retry Limit | Upper Retry Limit |
|---------------------------------|-------------------|-------------------|
| Full UC | | |
| 100 | 120 | 137 |
| 500 | 120 | 203 |
| 1000 | 120 | 287 |
| 1500 | 120 | 370 |
| 2000 | 120 | 453 |
| 2500 | 120 | 537 |

5000 Users Full UC (4 GB 2vCPU) Active/Standby Profile



Attention To achieve maximum client login throughput on a 5000 user system, Cisco recommends a minimum of 2.6GHz CPU clock speed.

Table 8: User Login Retry Limits for Standard Deployment (5000 Users Full UC Active/Standby)

| Expected Number of Active Users | Lower Retry Limit | Upper Retry Limit |
|---------------------------------|-------------------|-------------------|
| Full UC | | |
| 100 | 120 | 154 |
| 500 | 120 | 287 |
| 1000 | 120 | 453 |
| 1500 | 120 | 620 |
| 2000 | 120 | 787 |
| 2500 | 120 | 953 |
| 3000 | 120 | 1120 |
| 3500 | 120 | 1287 |
| 4000 | 120 | 1453 |
| 4500 | 120 | 1620 |
| 5000 | 120 | 1787 |

15000 Users Full UC (4 vCPU 8GB) Active/Active Profile

Attention To achieve maximum client login throughput on a 15000 user system, Cisco recommends a minimum of 2.5GHz CPU clock speed.

Table 9: User Login Retry Limits for Standard Deployment (15000 Users Full UC Active/Active)

| Expected Number of Active Users | Lower Retry Limit | Upper Retry Limit |
|---------------------------------|-------------------|-------------------|
| Full UC | | |
| 100 | 120 | 127 |
| 500 | 120 | 153 |
| 1000 | 120 | 187 |

| Expected Number of Active Users | Lower Retry Limit | Upper Retry Limit |
|---------------------------------|-------------------|-------------------|
| 1500 | 120 | 220 |
| 2000 | 120 | 253 |
| 2500 | 120 | 287 |
| 3000 | 120 | 320 |
| 3500 | 120 | 353 |
| 4000 | 120 | 387 |
| 4500 | 120 | 420 |
| 5000 | 120 | 453 |
| 6000 | 120 | 520 |
| 7000 | 120 | 587 |
| 7500 | 120 | 620 |

15000 Users Full UC (4 vCPU 8GB) Active/Standby Profile

Attention To achieve maximum client login throughput on a 15000 user system, Cisco recommends a minimum of 2.6GHz CPU clock speed.

Table 10: User Login Retry Limits for Standard Deployment (15000 Users Full UC Active/Standby)

| Expected Number of Active Users | Lower Retry Limit | Upper Retry Limit |
|---------------------------------|-------------------|-------------------|
| Full UC | | |
| 100 | 120 | 137 |
| 500 | 120 | 203 |
| 1000 | 120 | 287 |
| 1500 | 120 | 370 |
| 2000 | 120 | 453 |
| 2500 | 120 | 537 |
| 3000 | 120 | 620 |
| 3500 | 120 | 703 |
| 4000 | 120 | 787 |

| Expected Number of Active Users | Lower Retry Limit | Upper Retry Limit |
|---------------------------------|-------------------|-------------------|
| 4500 | 120 | 870 |
| 5000 | 120 | 953 |
| 6000 | 120 | 1120 |
| 7000 | 120 | 1287 |
| 8000 | 120 | 1453 |
| 9000 | 120 | 1620 |
| 10000 | 120 | 1787 |
| 11000 | 120 | 1953 |
| 12000 | 120 | 2120 |
| 13000 | 120 | 2287 |
| 14000 | 120 | 2453 |
| 15000 | 120 | 2620 |

25000 Users Full UC (6 vCPU 16GB) Active/Active Profile



Attention To achieve maximum client login throughput on a 25000 user system, Cisco recommends a minimum of 2.8GHz CPU clock speed.

Table 11: Login rates for active /active profiles: 9 uses 45% CPU

| Expected Number of Active Users | Lower Retry Limit | Upper Retry Limit |
|---------------------------------|-------------------|-------------------|
| 100 | 120 | 131 |
| 500 | 120 | 176 |
| 1000 | 120 | 231 |
| 1500 | 120 | 287 |
| 2000 | 120 | 342 |
| 2500 | 120 | 398 |
| 3000 | 120 | 453 |
| 3500 | 120 | 509 |

| Expected Number of Active Users | Lower Retry Limit | Upper Retry Limit |
|---------------------------------|-------------------|-------------------|
| 4000 | 120 | 564 |
| 4500 | 120 | 620 |
| 5000 | 120 | 676 |
| 6000 | 120 | 787 |
| 7000 | 120 | 898 |
| 7500 | 120 | 953 |
| 8000 | 120 | 1009 |
| 9000 | 120 | 1120 |
| 10000 | 120 | 1231 |
| 11000 | 120 | 1342 |
| 12000 | 120 | 1453 |
| 12500 | 120 | 1509 |

25000 Users Full UC (6 vCPU 16GB) Active/Standby Profile



Attention To achieve maximum client login throughput on a 25000 user system, Cisco recommends a minimum of 2.6GHz CPU clock speed.

Table 12: Login rates for active /standby profiles: 16 users 80% CPU

| Expected number of Active Users | Lower Retry Limit | Upper Retry Limit |
|---------------------------------|-------------------|-------------------|
| 100 | 120 | 133 |
| 500 | 120 | 183 |
| 1000 | 120 | 245 |
| 1500 | 120 | 308 |
| 2000 | 120 | 370 |
| 2500 | 120 | 433 |
| 3000 | 120 | 495 |
| 3500 | 120 | 558 |
| 4000 | 120 | 620 |

| Expected number of Active Users | Lower Retry Limit | Upper Retry Limit |
|---------------------------------|-------------------|-------------------|
| 4500 | 120 | 683 |
| 5000 | 120 | 745 |
| 6000 | 120 | 870 |
| 7000 | 120 | 995 |
| 8000 | 120 | 1058 |
| 9000 | 120 | 1120 |
| 10000 | 120 | 1245 |
| 11000 | 120 | 1370 |
| 12000 | 120 | 1495 |
| 13000 | 120 | 1620 |
| 14000 | 120 | 1870 |
| 15000 | 120 | 1995 |
| 16000 | 120 | 2120 |
| 17000 | 120 | 2245 |
| 18000 | 120 | 2370 |
| 19000 | 120 | 2495 |
| 20000 | 120 | 2620 |
| 21000 | 120 | 2745 |
| 22000 | 120 | 2870 |
| 23000 | 120 | 2995 |
| 24000 | 120 | 3120 |
| 25000 | 120 | 3245 |

XMPP Standards Compliance

The IM and Presence Service is compliant with the following XMPP standards:

- RFC 3920 Extensible Messaging and Presence Protocol (XMPP): Core RFC 3921 Extensible Messaging and Presence Protocol (XMPP): Instant Messaging and Presence
 - XEP-0004 Data Forms

- XEP-0012 Last Activity
- XEP-0013 Flexible Offline Message Retrieval
- XEP-0016 Privacy Lists
- XEP-0030 Service Discovery
- XEP-0045 Multi-User Chat
- XEP-0054 Vcard-temp
- XEP-0055 Jabber Search
- XEP-0060 Publish-Subscribe
- XEP-0065 SOCKS5 Bystreams
- XEP-0066 Out of Band Data Archive OOB requests
- XEP-0068 Field Standardization for Data Forms
- XEP-0071 XHTML-IM
- XEP-0082 XMPP Date and Time Profiles
- XEP-0092 Software Version
- XEP-0106 JID Escaping
- XEP-0114 Jabber Component Protocol
- XEP-0115 Entity Capabilities
- XEP-0124 Bidirectional Streams over Synchronous HTTP (BOSH)
- XEP-0126 Invisibility
- XEP-0128 Service Discovery Extensions
- XEP-0160 Best Practices for Handling Offline Messages
- XEP-0163 Personal Eventing Via PubSub
- XEP-0170 Recommended Order of Stream Feature Negotiation
- XEP-0178 Best Practices for Use of SASL EXTERNAL
- XEP-0220 Server Dialback
- XEP-0273 SIFT (Stanza Interception and Filtering Technology)

Configuration Changes and Service Restart Notifications

Whenever you need to restart a service, an **Active Notifications** popup appears. There is an **Active Notifications Summary** in the top right of the Cisco Unified CM IM and Presence Administration GUI header.

In addition, you can access an Active Notifications Listing by choosing **System > Notifications** From the Cisco Unified CM IM and Presence Administration interface.

Configuration Changes that Require a Restart

For many IM and Presence configuration changes and updates, you must restart the Cisco XCP Router, Cisco SIP Proxy or Cisco Presence Engine.

The following table displays the configuration changes that require a restart of any of these services. This list includes configuration changes, but does not include platform changes such as installs or upgrades.

| Configurations that Require a Restart | Restart this Service |
|---|-----------------------------|
| Application Listener Configuration (System > Application Listeners) Editing Application Listeners | Cisco SIP Proxy |
| Compliance Profile Configuration (Messaging > Compliance > Compliance Settings) (Messaging > Compliance > Compliance Profiles) If you edit settings for events that are assigned to a 3 rd party compliance server | Cisco XCP Router |
| Group Chat System Administrators (Messaging > Group Chat System Administrators) If you enable or disable this setting | Cisco XCP Router |
| External File Server Configuration (Messaging > External Server Setup > External File Servers) If you edit the Host/IP Address Setting If you regenerate the External File Server Public Key | Cisco XCP Router |
| Group Chat and Persistent Chat Configuration (Messaging > Group Chat and Persistent Chat) If a chat node cannot reach its external DB at startup, the Cisco XCP Text Conference Mgr Service is not running | Cisco XCP Router |
| Group Chat Server Alias Mapping (Messaging > Group Chat Server Alias Mapping) Adding a chat alias | Cisco XCP Router |
| ACL Configuration (System > Security > Incoming ACL) (System > Security > Outgoing ACL) Edit Incoming or Outgoing ACL Configuration | Cisco SIP Proxy |
| Compliance Settings Message Archiver - edit the settings | Cisco XCP Router |

| Configurations that Require a Restart | Restart this Service |
|---|---|
| <p>LDAP Server</p> <p>(Application > Third-Party Clients > Third-party LDAP Settings)</p> <p>LDAP Search - editing LDAP Search</p> <p>Editing the Build vCards from LDAP</p> <p>Editing the LDAP attribute to use for vCard FN</p> | Cisco XCP Router |
| <p>Message Settings Configuration</p> <p>(Messaging > Settings)</p> <p>Editing the Enable instant message</p> <p>Suppress offline instant messaging</p> | Cisco XCP Router |
| <p>Microsoft RCC Configuration</p> <p>(Application > Microsoft RCC > Settings)</p> <p>Editing any of the settings on this page</p> | Cisco SIP Proxy |
| <p>Presence Gateway</p> <p>(Presence > Gateways)</p> <p>Add, edit, delete a presence gateway</p> <p>After you upload MS Exchange certificates</p> | Cisco Presence engine |
| <p>Presence Settings Configuration</p> <p>(Presence > Settings > Standard Configuration)</p> <p>Editing the Enable Availability Sharing setting</p> <p>Allow users to view the availability of other users without being prompted for approval</p> <p>Maximum Contact List Size (per user)</p> <p>Maximum Watchers</p> | Cisco Presence Engine Cisco XCP Router |
| <p>Presence Settings Configuration</p> <p>(Presence > Settings > Standard Configuration)</p> <p>Editing the Enable user of Email address for Interdomain Federation field</p> | Cisco XCP Router |
| <p>Partitioned Intradomain Federation Configuration</p> <p>Presence > Settings > Standard Configuration (check box)</p> <p>Presence > Intradomain Federation Setup (wizard)</p> <p>Enable Partitioned Intradomain Federation with LCS/OCS/Lync via the check box or via the wizard</p> <p>Partitioned intradomain Routing Mode - configured via the Standard Configuration window or via the wizard</p> | <p>Editing these settings causes automatic restart of Cisco SIP Proxy</p> <p>In addition, you must restart XCP Router</p> |

| Configurations that Require a Restart | Restart this Service |
|--|---|
| <p>Proxy Configuration (Presence > Routing > Settings) Any edit to the Proxy Configuration</p> | Cisco SIP Proxy |
| <p>Security Settings (System > Security > Settings) Editing any SIP security settings such as SIP Intracluster Proxy to Proxy Transport Protocol Editing any XMPP security setting</p> | Cisco SIP Proxy (for SIP security edits) Cisco XCP Router (for XMPP security edits) |
| <p>SIP Federated Domain (Presence > Interdomain Federation > SIP Federation) Add, edit, delete this configuration</p> | Cisco XCP Router |
| <p>Third-Party Compliance Service (Application > Third-Party Clients > Third-Party LDAP Servers) Edit the Hostname/IP Address, Port, Password/Confirm Password fields</p> | Cisco XCP Router |
| <p>TLS Peer Subject Configuration (System > Security > TLS Peer Subjects) Any edits on this page</p> | Cisco SIP Proxy |
| <p>TLS Context (System > Security > TLS Context Configuration) Any edits on this page</p> | You may need to restart the associated chat server |
| <p>XMPP Federation (Presence > Interdomain Federation > XMPP Federation > Settings) (Presence > Interdomain Federation > XMPP Federation > Policy) Any edits to XMPP Federation</p> | Cisco XCP Router |
| <p>Intercluster Peering (Presence Inter-clustering) Editing the intercluster peer configuration</p> | You may be asked to restart the Cisco XCP Router (a notification appears in the top right window) in some cases |
| <p>Ethernet settings (From Cisco Unified IM and Presence OS Administration, Settings > IP > Ethernet/Ethernet IPv6) Editing any ethernet settings</p> | Causes immediate system restart |

| Configurations that Require a Restart | Restart this Service |
|---|---|
| IPv6 Configuration (System > Enterprise Parameters) Editing the Enable IPv6 enterprise parameter | Cisco XCP Router Cisco SIP Proxy Cisco Presence Engine |
| Troubleshooting If an IM and Presence publisher changes while subscriber is offline Edit the Settings > IP > Publisher setting from the subscriber | Restart subscriber node |
| Upgrading IM and Presence and you need to switch to previous version | Restart the system |
| Regenerating the cup certificate | Cisco SIP Proxy Cisco Presence Engine |
| Regenerate cup-xmpp | Cisco XCP Router |
| Regenerate cup-xmpp-s2s certificate | Cisco XCP Router |
| Upload new certificate | Restart relevant service for that certificate. For Cup-trust certificates, restart the Cisco SIP Proxy |
| Remote Audit Log Transfer Protocol if you run any of the utils remotesyslog set protocol * CLI commands | Restart the node |
| If you get any of the following alerts: <ul style="list-style-type: none"> • PEIDSQueryError • PEIDStoIMDBDatabaseSyncError • PEIDSSubscribeError • PEWebDAVInitializationFailure | It's recommended to restart Cisco Presence Engine |
| If you get any of the following alerts: <ul style="list-style-type: none"> • • XCPConfigMgrJabberRestartRequired • XCPConfigMgrR2RPasswordEncryptionFailed • XCPConfigMgrR2RRequestTimedOut • XCPConfigMgrHostNameResolutionFailed | It's recommended to restart Cisco XCP Router |
| PWSSCBInitFailed | It's recommended to restart Cisco SIP Proxy |

| Configurations that Require a Restart | Restart this Service |
|--|--|
| Editing any of the Exchange Service Parameters <ul style="list-style-type: none"> • Microsoft Exchange Notification Port • Calendar Spread • Exchange Timeout (seconds) • Exchange Queue • Exchange Threads • EWS Status Frequency | Cisco Presence Engine |
| Upload Exchange Certificates | Cisco SIP Proxy Cisco Presence Engine |
| Installing locales | Restart the IM and Presence Service |
| Create new MSSQL external database | Cisco XCP Router |
| Editing external database configuration | Cisco XCP Router |
| Merging external database | Cisco XCP Router |
| Configuring TLS Peer Subjects | Cisco SIP Proxy |
| Configuring Peer Authentication TLS Context | Cisco SIP Proxy |
| Editing the following Cisco SIP Proxy Service Parameters: <ul style="list-style-type: none"> • CUCM Domain • Server Name (supplemental) • HTTP Port • Stateful Server (transaction Stateful) • Persist TCP Connections • Shared memory size (bytes) • Federation Routing IM/P FQDN • Microsoft Federation User-Agent Headers (comma-delimited) | Cisco SIP Proxy |
| Edit the Routing Communication Type service parameter | Cisco XCP Router |
| Editing the IM address scheme | Cisco XCP Router |
| Assign a default domain | Cisco XCP Router |
| Deleting or removing a node from the cluster | Cisco XCP Router |

| Configurations that Require a Restart | Restart this Service |
|--|-----------------------------|
| Any edit to a parameter that affects the Cisco XCP router requires you to restart the Cisco XCP router | Cisco XCP Router |
| Routing Communication Type service parameters | Cisco XCP Router |
| Editing either of the Cisco XCP File Transfer Manager service parameters: <ul style="list-style-type: none"> • External File Server Available Space Lower Threshold • External File Server Available Space Upper Threshold | Cisco XCP Router |
| Edit the Enable Multiple Device Messaging service parameter | Cisco XCP Router |
| Editing the Maximum number of logon sessions per user service parameter | Cisco XCP Router |
| Updating the <code>install_dir /data/pg_hba.conf</code> or <code>install_dir /data/postgresql.conf</code> config files on the external database | Cisco XCP Router |
| Migration utilities: <ul style="list-style-type: none"> • Editing the Allow users to view the availability of other users without being prompted for approval setting in the Presence Settings window. • Editing the Maximum Contact Lists Size (per user) and Maximum Watchers (per user) setting in the Presence Settings configuration window. | Cisco XCP Router |
| Deleting or removing a node from a cluster | Cisco XCP Router |

