LET'S
BUILD
TOMORROW
TODAY
Best Practices for Migrating Previous Versions of Cisco Unified Communications Manager (CUCM) to Version 11.0

Brandon Ta, Customer Experience Architect
bta@cisco.com
Required GAAP Reconciliation and Forward-Looking Statements

The Cisco products, service or features identified in this document may not yet be available or may not be available in all areas and may be subject to change without notice. Consult your local Cisco business contact for information on the products or services available in your area. You can find additional information via Cisco’s World Wide Web server at http://www.cisco.com. Actual performance and environmental costs of Cisco products will vary depending on individual customer configurations and conditions.
Agenda

- Session Objectives and Scope
- CUCM License
- CUM 11.0 Upgrade Definition and Upgrade Path
- Virtualized CUCM
- System Level Upgrade
- Q&A
Solution Names and Versions

CUCM / Unified CM / CallManager / UC Manager

- Cisco CallManager
  3.0-3.3

- Cisco Unified CallManager
  4.0-4.2

- Cisco Unified Communications Manager (CUCM)
  4.3-11.0

License Manager

- Enterprise License Manager (ELM)
  9.0 – 9.1

- Prime License Manager (PLM)
  10.0-11.0
Session Objectives and Scope
Session Objectives

• To provide foundational knowledge for a successful upgrade or migration to CUCM 11.0
  • Planning
  • Considerations
  • Approaches

• To provide an overview and migration of CUCM licenses

• To provide an overview and best practice guidelines for platform conversion from bare metal CUCM to a virtualized CUCM
CUCM Platform Terminology

Appliance or bare metal servers

“Bare Metal CUCM”

UC on UCS or UC virtualization

“Virtualized CUCM”
Session Scope

1. Platform conversion from bare metal CUCM to virtualized CUCM 11.0
2. Upgrade or migrate to CUCM 11.0
3. System level approach
Session Highlights

- Upgrade Planning Cycle
- Collaboration License Evolution with Smart Licensing
- Cisco Device Association Tool (DAT)
- CUCM 11.0 and RSA Versions for COP and ISO Files
- CUCM 11.0 OVA Memory Changes
- Unity Connection 11.0 Changed Overage Behavior
CUCM License
CUCM License Evolution

<table>
<thead>
<tr>
<th>License Model</th>
<th>License Tracking</th>
<th>License Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Past</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Device Based</td>
<td>Local CUCM</td>
<td>DLU, Node and Software Feature</td>
</tr>
<tr>
<td>Current</td>
<td></td>
<td></td>
</tr>
<tr>
<td>User Based</td>
<td>ELM/PLM</td>
<td>UCL and CUWL</td>
</tr>
<tr>
<td>Future</td>
<td></td>
<td></td>
</tr>
<tr>
<td>User Based</td>
<td>Smart Software Licensing</td>
<td>UCL and CUWL</td>
</tr>
</tbody>
</table>

- Overview of CUCM Licensing
- Directionally Cisco solutions are being transform to support Smart Software Licensing
- Prepare for this transition

Past CUCM 8.X and Earlier Device Based License
CUCM 5.0 to 7.1(3) License Types

<table>
<thead>
<tr>
<th>TECHNICAL</th>
<th>ORDERING</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Node</td>
<td>Node</td>
<td>Number nodes per cluster</td>
</tr>
<tr>
<td>DLU</td>
<td>DLU</td>
<td>Number of phones, type of phones, mobility feature and presence users</td>
</tr>
<tr>
<td>SW Feature</td>
<td>ESW/UCSS</td>
<td>Maintenance for minor and major version upgrade</td>
</tr>
</tbody>
</table>

- Three license types: Node, Device License Unit (DLU) and Software Feature license
- Node license is enforced based on the number of node running CM service. TFTP and MOH also requires node licenses
- DLU is enforced based on provisioned phones, type of phones, mobility and presence features
- Major version upgrade requires Software Feature license
- License files are locked to MAC address of the first node or Publisher of the cluster
- License enforcement is done on CUCM
## CUCM 7.1(5) to 8.6 License Types

<table>
<thead>
<tr>
<th>TECHNICAL</th>
<th>ORDERING</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Node</td>
<td>UCL/CUWL</td>
<td>Number nodes per cluster</td>
</tr>
<tr>
<td>DLU</td>
<td>UCL/CUWL</td>
<td>Number of phones, type of phones, mobility feature and presence users</td>
</tr>
<tr>
<td>SW Feature</td>
<td>ESW/UCSS</td>
<td>Maintenance for minor and major version upgrade</td>
</tr>
</tbody>
</table>

- Technical license enforcement is the same as before: Node, DLU and Software Feature license. **Device based**
- Ordering is based on **User based**
- For bare metal servers (MCS), licenses are locked to **MAC address of the first node or Publisher** of the cluster
- In virtualized environment, licenses are locked to the **license MAC address of the first node or Publisher** of the cluster
- License enforcement is done on CUCM
# License Type & DLU (CUCM 8.6 and earlier)

<table>
<thead>
<tr>
<th>LICENSE TYPE</th>
<th>DLU</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>CUWL Pro</td>
<td>17/12</td>
<td>Prior to January 2012/After January 2012</td>
</tr>
<tr>
<td>CUWL Standard</td>
<td>11/8</td>
<td>Prior to January 2012/After January 2012</td>
</tr>
<tr>
<td>CUWL Entry</td>
<td>9</td>
<td>Migrate to Enhanced Plus UCL CUCM 9.X and later</td>
</tr>
<tr>
<td>CUWL Analog</td>
<td>2</td>
<td>Migrate to Essential UCL in CUCM 9.X and later</td>
</tr>
<tr>
<td>CUWL Public Space</td>
<td>5</td>
<td>Migrate to Enhanced UCL in CUCM 9.X and later</td>
</tr>
<tr>
<td>Enhanced UCL</td>
<td>6</td>
<td>Migrate to Enhanced UCL or CUWL in CUCM 9.X and later</td>
</tr>
<tr>
<td>Basic UCL</td>
<td>4</td>
<td>Migrate to Basic UCL in CUCM 9.X and later</td>
</tr>
<tr>
<td>Essential UCL</td>
<td>0</td>
<td>Migrate to Essential UCL in CUCM 9.X and later</td>
</tr>
<tr>
<td>Public Space</td>
<td>5</td>
<td>Migrate to Enhanced UCL in CUCM 9.X and later</td>
</tr>
<tr>
<td>UCL Adjunct</td>
<td>5</td>
<td>Using corresponding license, migrate to Enhanced Plus UCL in CUCM 9.X and later</td>
</tr>
<tr>
<td>UCL TP Single/Multi-screen</td>
<td>6</td>
<td>Migrate to TelePresence Room Based Endpoint, Single or Multi-Screen</td>
</tr>
</tbody>
</table>

Current CUCM 9.X and Later User Based License
Prime License Manager (PLM)
Cisco Prime License Manager (PLM)

- PLM is a centralized enterprise-wide license management solution for Cisco collaboration applications
  - CUCM, CUCM SME and CUCMBE 6K
  - Cisco Unity Connection (CUC)
  - Cisco Emergency Responder (CER)
- PLM deployment can be standalone or co-resident with CUCM, CUCM-BE 6K or CUC
- In PLM 10.5(1)SU1, PLM can be removed from the product

PLM Implementation

<table>
<thead>
<tr>
<th>PLM Implementation</th>
<th>Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standalone</td>
<td>PLM</td>
</tr>
<tr>
<td>Co-resident with CUCM</td>
<td>PLM+ CUCM</td>
</tr>
<tr>
<td>Co-resident with CUCMBE 6K</td>
<td>PLM+ CUCMBE 6K</td>
</tr>
<tr>
<td>Co-resident with CUC</td>
<td>PLM+ CUC</td>
</tr>
</tbody>
</table>

Cisco Prime License Manager User Guide:
## License Manager Versions and Builds

### License Manager

<table>
<thead>
<tr>
<th>Enterprise License Manager (ELM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.0 – 9.1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Prime License Manager (PLM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.0-11.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Version</th>
<th>Build</th>
</tr>
</thead>
<tbody>
<tr>
<td>Same as CUCM</td>
<td>Same as CUCM</td>
</tr>
<tr>
<td>e.g. 9.1(2) SU3</td>
<td>9.1.2.13900-10</td>
</tr>
<tr>
<td><strong>NEW</strong></td>
<td><strong>11.0.1.10000-X</strong></td>
</tr>
<tr>
<td>10.5(2)</td>
<td>10.5.2.10000-6</td>
</tr>
<tr>
<td>10.5(1)</td>
<td>10.5.1.10000-9</td>
</tr>
<tr>
<td>10.0(1)</td>
<td>10.0.1.10000-19</td>
</tr>
<tr>
<td>Co-Resident</td>
<td>Same as CUCM</td>
</tr>
<tr>
<td>Same as CUCM</td>
<td>Same as CUCM</td>
</tr>
</tbody>
</table>

- ELM is built into CUCM ISO
- PLM is built into CUCM ISO or as independent ISO with standalone deployment
License Manager Architecture 11.0

- License Manager API in CUCM 11.0, CUC 11.0 and CER 11.0 interacts with PLM for license request and approval
- License Manager API was added CUCM in version 9.0, CUC in version 9.0 and CER in version 10.0
# License Manager Product Support and Usage

<table>
<thead>
<tr>
<th>Product Version</th>
<th>ELM 9.X (Bare Metal or Virtualized)</th>
<th>PLM 10.X (Virtualized)</th>
<th>PLM 11.X (Virtualized)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CUCM 9.X / CUC 9.X</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>CUCM 10.X / CUC 10.X</td>
<td>Yes w/ License Definition (1)</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>CUCM 11.X / CUC 11.X</td>
<td>Yes w/ License Definition (2)</td>
<td>Yes w/ License Definition (3)</td>
<td>Yes</td>
</tr>
<tr>
<td>CER 10.X</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>CER 11.0</td>
<td>No</td>
<td>Yes w/ License Definition (2)</td>
<td>Yes</td>
</tr>
</tbody>
</table>

1. License Definition for 9.1 = elm_LicenseDef_9_1_v1.cop.sgn
2. License Definition for 9.1 = elm_LicenseDef_9_1_v2.cop.sgn
3. License Definition for 10.X = license-def-11-for-PLM-10x.def

- For CER 10.X/11.X, use PLM
- Use license definition file to support the higher version of the products (CUCM, CUC and CER)
- For virtualized PLM and virtualized CUCM with co-resident PLM, **manually** set MAC address since license is partly based on MAC address (Edit virtual machine settings > Machine Network adapter > Manual) before requesting license file
ELM to PLM Upgrade

- Use “Replacing a Single Server for Cisco Unified Communications Manager” procedure to change from bare metal ELM to virtualized ELM.
- Use ELM/PLM upgrade COP file (elm_Elm_v9_1_1_PlmUpgrade.cop.sgn) to allow for ELM to PLM10.X/11.X upgrade
- Use pre-upgrade RSA keys COP file (ciscocm.version3-keys.cop.sgn) to upgrade to PLM 10.5 and later for 9.X
- Re-host license by using Product License Registration (www.cisco.com/go/license)

Replacing a Single Server or Cluster for Cisco Unified Communications Manager:
http://www.cisco.com/c/en/us/td/docs/voice_ip_comm/cucm/install/10_0_1/replace/CUCM_BK_RA042F11_00_replace-server-cluster-cucm-100.html
CUCM and PLM Interaction

**CUCM**
- Evaluate phone, users and features usage
- Send license usage to PLM
- Receive license response and operate in the appropriate mode

**PLM**
- Poll all products every 24 hours
- Evaluate adequate licenses
- Perform license substitution
- Provide Valid or Invalid license response

- PLM polls all registered CUCM clusters
- CUCM cluster evaluates license usage and sends license usage back to PLM
- PLM evaluate all CUCM cluster responses to see if there is adequate licenses for the requested types
- PLM performs license substitution if does not have adequate license of the requested type
- PLM response back to with either valid or invalid (not enough licenses) to all CUCM clusters
- CUCM receives the response from PLM and function accordingly

Detailed CUCM and ELM/PLM interactions with signaling are in the appendix
PLM License Substitution

• Licenses are based on hierarchical model where lower feature license can be covered by a higher feature license
  - I.E. UCL Basic can be covered by UCL Enhance
  - I.E. UCL Enhance can be covered by UCL Enhance Plus

• PLM evaluates ALL system license requirements on a per product (CUCM, CUC and CER) basis and respond back with one consistent response to ALL registered systems
  - VALID: adequate license
  - INVALID: inadequate license

• Centralize and enterprise-wide licensing view per product set
# Grace Period and License Overage

<table>
<thead>
<tr>
<th></th>
<th>Grace Period</th>
<th>Behavior when license is exceeded</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CUCM 9.X-11.0</strong></td>
<td>60</td>
<td><strong>License Overage:</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• System function normally</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Existing phones cannot be de-provisioning</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Additional phones cannot be provisioned</td>
</tr>
</tbody>
</table>

| **CUC 9.X-10.5**  | 60           | **Expire:**                        |
|                  |              | • System will not take calls       |
|                  |              | • Users cannot retrieve messages   |
|                  |              | • Additional users or mailboxes cannot be provisioned |

| **CUC 11.0**    | 60           | **Expire:**                        |
|                |              | • System functions normally        |
|                |              | • Additional voicemail boxes can not be provisioned |

| **CER 10.X-11.0** | 60           | **License Overage:**               |
|                  |              | • Responder system stops tracking and updating the phone Location |
CUCM License Usage
CUCM License Usage

1. **User**
   - Extension mobility users: No license
   - Extension mobility user with Unified Mobility (SNR): UCL Basic license

2. **Device**
   - Device without Owner User ID association: UCL
   - Based on the device
   - E.g. Public space phones, shared workspace phones, etc.

3. **User / Device**
   - Device with Owner User ID association: UCL or CUWL
   - Based on the model of device and the number of devices assigned to the user
   - I.e. 1-2 devices: UCL, 3-10 devices: CUWL

4. **TelePresence**
   - TelePresence (TP) device
   - E.g. CTS, MX, SX, TX, etc.

List of devices and associated license are in the appendix

[Source](http://www.cisco.com/c/en/us/td/docs/voice_ip_comm/cucm/admin/10_0_1/ccmfeat/CUCM_BK_F3AC1CF0_00_cucm-features-services-guide-100/CUCM_BK_F3AC1CF0_00_cucm-features-services-guide-100_chapter_0100101.html#CUCM_RF_UCAE0263_00)
Device and Owner User ID Association

Device > Phone > Device Name

- Device with Owner User ID field configured potentially uses less licenses
  - I.E. Extension mobility user with Unified Mobility feature and a phone uses one license
  - I.E. Multiple phones with the same Owner ID field

- Owner User ID Field:
  - CUCM 9.1(1a) or earlier: User or None
  - CUCM 9.1(2) or later: User or Anonymous

- Previous Methods:
  - BAT, Run SQL via CLI, UDS and AXL
  - Links in the Appendix

**Recommend to perform this task before upgrading to CUCM 9.X or later**
Cisco Device Assignment Tool (DAT)
Cisco Device Assignment Tool (DAT)

- Pre-upgrade or post-upgrade of CUCM 9.0 and later releases
- Align OwnerUserID to IP Phones for User Based Licensing (CUCM 9.0 and later releases).
- Windows PC (7 and later) or Apple Mac (OSX 10.8 and later) Java application

<table>
<thead>
<tr>
<th>Device Name</th>
<th>OwnerUserID</th>
<th>CUCM Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEP123456789012</td>
<td>None</td>
<td>9.1(1a) or earlier</td>
</tr>
<tr>
<td>SEP098765432109</td>
<td>Anonymous</td>
<td>9.1(2) or later</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Device Name</th>
<th>OwnerUserID</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEP123456789012</td>
<td>UserX</td>
</tr>
<tr>
<td>SEP098765432109</td>
<td>UserY</td>
</tr>
</tbody>
</table>
Cisco Device Assignment Tool (DAT)

- Based on sequence of 7 rules or manually edited xls file

**DAT (UdatApplication.jar)**

**STEP 1**
Match Users to Unassigned Endpoints
- Start Matching

**STEP 2**
Update System with Matched Users
- Start Update
Future CUCM User Based License
Current versus Smart Software Licensing Model

<table>
<thead>
<tr>
<th>Feature</th>
<th>Node-Locked</th>
<th>PLM Based</th>
<th>Smart Software Licensing</th>
</tr>
</thead>
<tbody>
<tr>
<td>PAK</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>License Pooling</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Multiple Products</td>
<td>No</td>
<td>Partial</td>
<td>Partial</td>
</tr>
<tr>
<td>Cross Product Lines</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Partition</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Products shown above are used as examples only
Deployment Models

Options

1. **Direct cloud access**
   Cisco product sends usage information directly over the internet. No additional components are needed.

2. **Direct cloud access through an HTTP proxy**
   Cisco Products send usage information over the internet via a Proxy Server. Any off-the-shelf Proxy will work.

3. **Mediated access through an on-premises collector – connected**
   Cisco Products send usage information to a local Mediator such as the Smart Call Home Transport Gateway (Free VM Download), which automatically completes the transaction with the backend.

4. **Mediated access through an on-premises collector – disconnected**
   Cisco Products send usage information to a local disconnected collector, which acts as a local license authority. Once a month, an exchange of human readable information will be performed to keep the databases in sync.
License Pooling is handled through the Cisco Smart Software Manager.
Smart Software Manager Satellite

- ESXi 5.X
- OVA
  - 4 vCPU
  - 8 GB vRAM
  - 50GB - 200GB vDisk

• Communication
  - Registration files (2)
  - Synchronization
    • Network
    • Manual

Smart Software Manager

OVA

JeOS

Smart Call Home
Transport Gateway
Virtual Accounts

You can create virtual accounts that reflect your organization’s departments then associate licenses and devices with those departments.

- A self-defined construct to reflect your company organization, geography, budgeting, or other structure.

- Enable Delegated Authority and Differential Access.
  - Smart Account Approver
  - Smart Account Administrator
  - Smart Licensing Administrator
  - Virtual Account Administrator
Smart Software Licensing Pre-planning

- Get familiar with Smart Software Licensing:
  - Coordinate with internal team on Smart Software Licensing
  - Create Smart Account
  - Transfer current collaboration licenses
  - Decide on the deployment model for collaboration
  - Plan out virtual accounts, users and roles

Create Smart Account

- Cisco Software Workspace: https://webapps.cisco.com/software/csws/ws/platform/home
- Administration > Create Smart Accounts

Transfer Current License to Smart Account

- Product License Registration: http://tools.cisco.com/SWIFT/LicensingUI/Quickstart
- Licenses > Actions > Assign to a Smart Account

Manage Smart Account (Virtual Accounts, Licenses, Users and Roles)

- Smart Software Manager: https://tools.cisco.com/rhodui/index
License Migration from Device Based License to User Based License (9.X or later)
License Count Utility (UCT) for CUCM 6.X-8.X

- Perform AXL calls to existing CUCM (6.X, 7.X and 8.X) clusters for current license and license usage and generate pre-upgrade license report
- Report can be send to licensing@cisco.com
- Include number of public space, license case number / MAC address and UCSS/ESW or SO number, if send directly to licensing@cisco.com

Opening Licensing Case

Web

- https://survey.opinionlab.com/survey/s?s=10422
- Type of problem = Licensing

Email

- licensing@cisco.com

Phone

- 1-800-553-2447
- Option 3, License Support
CUM 11.0 Upgrade Definition and Upgrade Path
CUCM Version, Build and Upgrade Schedule
## CUCM Major/Minor Versions

<table>
<thead>
<tr>
<th>CUCM Major Version</th>
<th>CUCM Minor Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.0</td>
<td>11.5</td>
</tr>
<tr>
<td>10.0</td>
<td>10.5</td>
</tr>
<tr>
<td>9.0</td>
<td>9.1</td>
</tr>
<tr>
<td>8.0</td>
<td>8.5 and 8.6</td>
</tr>
<tr>
<td>7.0</td>
<td>7.1</td>
</tr>
<tr>
<td>6.0</td>
<td>6.1</td>
</tr>
<tr>
<td>5.0</td>
<td>5.1</td>
</tr>
</tbody>
</table>

- Major and minor version upgrades requires active Cisco Software Support Service (SWSS)
- End of Sales support service contracts
  - Minor version upgrade requires active Essential Operate Service (ESW) contract
  - Major version upgrade requires active Unified Communication Software Subscription (UCSS) contract
- End of Sales (EOS) notice [EOS]
# End of Life/Support Notices and Release Selection

<table>
<thead>
<tr>
<th>Milestone</th>
<th>Potential Activity</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before End-of-Sales Date</td>
<td>Ability to deploying new cluster</td>
<td></td>
</tr>
<tr>
<td>After End-of-Sales Date</td>
<td>Start planning for upgrades</td>
<td></td>
</tr>
<tr>
<td>End of SW Maintenance</td>
<td>Desire to complete the upgrade</td>
<td>1 year</td>
</tr>
</tbody>
</table>

## Deployment Models:
- Extended period on a single release with “Long-Life Release” (i.e. 10.5, 11.5, etc.)
- New features with “Short-Life Releases” (i.e. 11.0, 12.0, etc.)

## Upgrade Planning:
- Consistent release cycles
- Predictable End of Sales/Support milestone durations

Sample Upgrade Schedule for Long-Life Release

Long-life release customers can upgrade to every Long-Life release or every other Long-life releases

Cisco Notification Service
http://www.cisco.com/cisco/support/notifications.html
### Sample CUCM Versions and Builds

<table>
<thead>
<tr>
<th>CUCM Version</th>
<th>CUCM Build</th>
<th>Numbering Convention</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.0(1) NEW</td>
<td>11.0.1.10000-5</td>
<td>(A) Major version (License)</td>
</tr>
<tr>
<td>10.5(2)SU1</td>
<td>10.5.2.11900-3</td>
<td>10.5.2.11900-3</td>
</tr>
<tr>
<td>10.5(2)</td>
<td>10.5.2.10000-5</td>
<td>(B) Minor version (Long Life Release)</td>
</tr>
<tr>
<td>10.5(1)</td>
<td>10.5.1.10000-6</td>
<td>10.5.2.10000-5</td>
</tr>
<tr>
<td>10.0(1)SU2</td>
<td>10.0.1.12900-2</td>
<td>(C) Maintenance release (Patch and/or Features)</td>
</tr>
<tr>
<td>10.0(1)SU1</td>
<td>10.0.1.11900-2</td>
<td>10.5.2.10000-5</td>
</tr>
<tr>
<td>9.1(2)SU3</td>
<td>9.1.2.13900-10</td>
<td>(X) Build (Patch)</td>
</tr>
<tr>
<td>9.1(2)SU2a</td>
<td>9.1.2.12901-3</td>
<td>10.5.2.10000-5</td>
</tr>
<tr>
<td>9.1(2)SU2</td>
<td>9.1.2.12900-11</td>
<td>10.5.2.20000-5 (example)</td>
</tr>
<tr>
<td>9.1(2)SU1</td>
<td>9.1.2.11900-12</td>
<td>(Y) FCS:0, ES or SU: 1-9</td>
</tr>
<tr>
<td>9.1(2)</td>
<td>9.1.2.10000-28</td>
<td>10.5.2.10000-5 (FCS)</td>
</tr>
<tr>
<td>9.1(1a)</td>
<td>9.1.1.20000-5</td>
<td>10.5.2.10000-5 (FCS)</td>
</tr>
</tbody>
</table>

- **(A)** Major version (License)
- **(B)** Minor version (Long Life Release)
- **(C)** Maintenance release (Patch and/or Features)
- **(X)** Build (Patch)
- **(Y)** FCS:0, ES or SU: 1-9
- **(zzz)** FCS:000, ES: 001-899, SU: 900-999
Upgrade Definition
Previous CUCM Upgrade Process

**W1 Upgrade: Windows to Appliance model**
- High complexity with possible longest downtime
- (e.g. CUCM 4.1(3), 4.2(3), or 4.3(2) to 7.1(5b))

**Bridge Upgrade: Appliance to Appliance model**
- Upgrade is allowed with Cisco CallManager service “Not Running”
- Long downtime due non-functional system and a platform change
- (i.e. Older servers that cannot newer version of CUCM)

**Jump Upgrade: Appliance to Virtualized model**
- Virtualized CUCM with 6.1(4), 6.1(5), 7.1(3) and 7.1(5) for lab upgrade
- Minimal downtime due to lab upgrade
- (i.e. Older servers that cannot upgrade to 8.0(3) or later to virtualized)

*Not covered in detail in this session. Covered in previous Cisco Live sessions and is in the appendix*
Current CUCM Upgrade Process and Definition

L2 Upgrade: Appliance/Virtual to Appliance/Virtual model
- Low complexity with possible shortest downtime
- Between CUCM versions with the same major RHEL versions
- (e.g. CUCM 10.0 to 11.0 or CUCM 10.5 to 11.0)

RU (Refresh Upgrade): Appliance/Virtual to Appliance/Virtual model with major RHEL version change (starting with RHEL 5)
- Medium complexity with possible longer downtime
- (e.g. CUCM 8.6 to 11.0 or CUCM 9.1 to 11.0)

Platform Change: Appliance to Virtualized model
- Variable complexity with variable downtime pending approach
- Single or multiple hop upgrade or migration
- (i.e. Bare metal servers that cannot run CUCM 10.0 or above)
L2 and RU Upgrade: Appliance/Virtual to Appliance/Virtual Model

1. Updated CUCM SW
2. Switch Version via OS Admin or CLI
3. Active Partition
   InActive partition
CUCM Publisher
CUCM Subscriber

Active Partition
InActive partition
CUCM Publisher
CUCM Subscriber

Active partition
CUCM Publisher
CUCM Subscriber

InActive Partition
Active partition
### L2 and RU Upgrade: Appliance/Virtual to Appliance/Virtual Decision Tree

<table>
<thead>
<tr>
<th>CUCM Version</th>
<th>RHEL Release</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.0(4)</td>
<td>RHEL 3 Update 6</td>
</tr>
<tr>
<td>5.1(x) &amp; 6.X</td>
<td>RHEL 3 Update 8</td>
</tr>
<tr>
<td>7.0(1)</td>
<td>RHEL 4 Update 4</td>
</tr>
<tr>
<td>7.1(2)</td>
<td>RHEL 4 Update 6</td>
</tr>
<tr>
<td>7.1(3) &amp; 8.0(x)</td>
<td>RHEL 4 Update 7</td>
</tr>
<tr>
<td>8.5</td>
<td>RHEL 4 Update 8</td>
</tr>
<tr>
<td>8.6*</td>
<td>RHEL 5 Update 5</td>
</tr>
<tr>
<td>9.X</td>
<td>RHEL 5 Update 7</td>
</tr>
<tr>
<td>10.0(1)</td>
<td>RHEL 6 Update 2</td>
</tr>
<tr>
<td>10.5(1)</td>
<td>RHEL 6 Update 5</td>
</tr>
<tr>
<td>11.0(1)</td>
<td>RHEL 6 Update 6</td>
</tr>
</tbody>
</table>

* RU starts with CUCM 8.6 or RHEL 5 for CUCM.
L2 versus RU Upgrade

**L2 Upgrade**
- Active partition is running while upgrade software is being install on inactive partition
- Low downtime since upgrade can be done while system is functioning

**RU Upgrade**
- Server is down while upgrade software is being install
- More reboots for bare metal servers
- Higher downtime since upgrade cannot be done while system is functioning
- Upgrade is equal to complete installation of CUCM

Detailed L2 and RU upgrade process are in the appendix
In-Place L2/RU Upgrade Process

1. Back Up With DRS
2. Upgrade Publisher Inactive Partition
3. Upgrade Subscribers Inactive Partition
4. Switch Partition on Publisher
5. Switch Partition on Subscriber
6. Add License to ELM/PLM and add CUCM to PLM if new cluster

- Add version 11 of license for the appropriate ELM or PLM
- For 9.X to 11.X, upgrade IM&P after CUCM cluster is upgraded
- This scenario applies to virtualized CUCM only
CUCM Platform Conversion (PC) with Examples

- Bare Metal or Appliance to Virtual Platform Conversion
  - E.g. CUCM 10.X and later can only run virtualized
  - E.g. MCS to UCS

- Virtual to Virtual Platform Conversion
  - E.g. Change from C-Series Rack Servers to B-Series Blade Servers

- Virtual to Virtual Platform Conversion
  - E.g. Change older C-Series Rack Servers to current older C-Series Rack Servers
CUCM Platform Conversion (PC) Approaches

1. Cisco DRS (Disaster Recovery System):
   Traditional method leveraging DRS backup and DRS restore to change platform **only**

2. Cisco PCD (Prime Collaboration Deployment):
   New method leveraging PCD to change platform and/or **upgrade**
Cisco DRS Approach
Replacing a Single Server or Cluster for Cisco Unified Communications Manager:
http://www.cisco.com/c/en/us/td/docs/voice_ip_comm/cucm/install/10_0_1/replace/CUCM_BK_RA042F11_00_replace-server-cluster-cucm-100.html
PC and Upgrade Using DRS for 8.0(2) - 9.1(2)

1. Upgrade ELM to PLM before RU upgrade CUCM to 11.X
2. License upload:
   - 8.X: Node, DLU and SW Feature with license MAC on Publisher
   - 9.X: License to ELM
   - 10.X/11.X: License to PLM

Replacing a Single Server or Cluster for Cisco Unified Communications Manager:
http://www.cisco.com/c/en/us/td/docs/voice_ip_comm/cucm/install/10_0_1/replace/CUCM_BK_RA042F11_00_replace-server-cluster-cucm-100.html
PC and Upgrade for 6.1(4), 6.1(5), 7.1(3) or 7.1(5)

- Leverage Jump Upgrade to by-pass MCS server limitation on running CUCM 8.X or later to get to CUCM version 9.1(2)
- RU upgrade to CUCM version 11.X
- For other CUCM clusters not on version 6.1(4), 6.1(5), 7.1(3) or 7.1(5), upgrade to the above releases

Jump Upgrade Procedure: [https://supportforums.cisco.com/sites/default/files/legacy/3/6/1/15365163-Drive_to_Nine_Jump_upgrade_versions_4.1.3-7.1.5_to_9.1.2%5B2%5D.pdf](https://supportforums.cisco.com/sites/default/files/legacy/3/6/1/15365163-Drive_to_Nine_Jump_upgrade_versions_4.1.3-7.1.5_to_9.1.2%5B2%5D.pdf)

Detailed Jump Upgrade Process is in the appendix
Cisco Prime Collaboration Deployment (PCD) Approach
Prime Collaboration Deployment (PCD)

- PCD is a VMware vApp used for management of Cisco collaboration applications:
  - CUCM
  - CUC
  - CUP / IM&P
  - CUCCX
- Management tasks (Upgrade, Switch Versions, Server Restart, Readdress, Install and Migrate) are based on collaboration application and version of the application
- VMware vApp is pre-configured virtual machine with OS and PCD application (1.4GB)
## CUCM Supported Tasks by PCD 11.0

<table>
<thead>
<tr>
<th>Feature</th>
<th>CUCM 6.1(5)</th>
<th>CUCM 7.1(3), 7.1(5)</th>
<th>CUCM 8.0(1-3)</th>
<th>CUCM 8.5(1)</th>
<th>CUCM 8.6(1-2)</th>
<th>CUCM 9.x</th>
<th>CUCM 10.X</th>
<th>CUCM 11.X</th>
</tr>
</thead>
<tbody>
<tr>
<td>Migration to 10.X/11.X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Fresh Install</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Upgrade</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Switch Version</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Restart</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Readdress (Hostname/IP Address Change)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

**Reference**

PCD Requirements

• Virtual machine virtual requirements
  - 2 vCPU
  - 4 GB vRAM
  - 80 GB vDisk

• VMware requirements
  - ESXi 4.1, 5.0, 5.1 and 5.5
  - VMware API:
    - CUCM-BE 6K and CUCM-BE 7K comes with Cisco UC Virtualization Hypervisor. Update to Cisco UC Virtualization Foundation

PCD Administration Guide:
Ordering and Deploying PCD for Upgrade

<table>
<thead>
<tr>
<th>PCD Version</th>
<th>PCD Build</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.0(1)</td>
<td>11.0.1.10000-x</td>
</tr>
<tr>
<td>10.5(1)</td>
<td>10.5.1.10000-6</td>
</tr>
<tr>
<td>10.0(1)</td>
<td>10.0.1.10000-14</td>
</tr>
</tbody>
</table>

- Product Upgrade Tool (PUT) - [www.cisco.com/upgrade](http://www.cisco.com/upgrade)
- PCD part of “CUCM Software Version 10.X/11.X for PUT Only”
- Download as `pcd_vApp_UCOS_1X.x.xxxxx-x.iso`

PCD Interactions with External Components

- PCD and VMware ESXi communication
  - ESXi host root credential
  - NFS mount PCD /fresh_install directory
  - Data center or server team coordination
- PCD and CUCM communication
  - CUCM OS admin credential
- Management laptop and PCD
  - Web for GUI admin
  - Secure ftp client to upload ISOs and COP files
PCD Considerations and Planning

- Cisco UC Virtualization Hypervisor with BE6K and BE7K
- Network team versus server team dynamics
  - Root access to ESXi host
  - ESXi host see another NFS datastore
  - Customer storage standard might not be or allow NFS
- Allow network traffic to and from PCD
- For L2/RU upgrade does not automate COP file installation
  - ciscocm.version3-keys.cop.sgn
  - ciscocm.refresh_upgrade_v1.3.cop.sgn
- Might do a hybrid of manual and PCD upgrade due other applications

PCD Administration Guide:
COP Files for Upgrades
# CUCM and RSA (Rivest Shamir Adleman) Version

## CUCM RSA Version

<table>
<thead>
<tr>
<th>CUCM Build</th>
<th>RSA Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 8.5.1.17123-1</td>
<td>RSA v2</td>
</tr>
<tr>
<td>&lt; 8.6.2.24122-1</td>
<td>RSA v2</td>
</tr>
<tr>
<td>&lt; 9.1.2.11018-1</td>
<td>RSA v2</td>
</tr>
<tr>
<td>10.X</td>
<td>RSA v2 and v3</td>
</tr>
<tr>
<td>11.X</td>
<td>RSA v3</td>
</tr>
</tbody>
</table>

## RSA Signed Files

- RSA version of ISO or COP file(s) have match what CUCM supports

## Signed RSA Version

<table>
<thead>
<tr>
<th>CUCM Build</th>
<th>Signed RSA Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.0(4) – 10.0(X)</td>
<td>RSA v2</td>
</tr>
<tr>
<td>10.5(1) or higher</td>
<td>RSA v3</td>
</tr>
</tbody>
</table>
| ciscocm.free_common_space_v1.1.k3.cop.sgn | RSA v3 signature

Third party COP files need RSA v3 signature

Only RSA v3 files can be added to CUCM 11.X and later
CUCM and ISO/COP Files

CUCM 9.1(2)  
CUCM accepts RSA v2  
COP file is RSA v3

CUCM accepts RSA v3  
COP file is RSA v3

CUCM 11.0  
CUCM 11.0 ISO is RSA v3

CUCM 9.1(2)  
CUCM 11.0 ISO is RSA v3

CUCM 10.0  
CUCM 10.0 ISO is RSA v2

CUCM 10.0  
CUCM accepts RSA v2/v3

CUCM 11.0  
CUCM 11.0 ISO is RSA v3

CUCM 11.0

CUCM accepts RSA v3  
COP file is RSA v2

CUCM accepts RSA v3  
COP file is RSA v3

COP file is RSA v3

COP file is RSA v3

Verify that Third-party COP files have been signed with RSA v3 if installed onto CUCM 11.X or later:

2N, Ascom, Avara, BT, DoCoMo, Fujitsu, Intelbras, IP Blue, IP Trade, Mindshare, Mobile Heartbeat, Nokia, RIM, Sony, Speakerbus, Spectralink, Syn-Apps, Tandberg, Telecore, Telematrix, Verizon

BRKUCC-2011 © 2015 Cisco and/or its affiliates. All rights reserved. Cisco Public 71
## CUCM COP Files for Upgrade

<table>
<thead>
<tr>
<th>Current Version</th>
<th>Target Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;8.5.1.17123-1</td>
<td>10.5(1) or higher</td>
</tr>
<tr>
<td>&lt;8.6.2.24122-1</td>
<td>10.5(1) or higher</td>
</tr>
<tr>
<td>&lt;9.1.2.11018-1</td>
<td>10.5(1) or higher</td>
</tr>
<tr>
<td>8.5(x) or lower</td>
<td>8.6 or higher</td>
</tr>
<tr>
<td>8.5(1), 8.6(2), 9.1(1), 9.1(2) or lower</td>
<td>ciscocm.vmware-disk-size-reallocation-1.0.cop.sgn</td>
</tr>
<tr>
<td>9.1(x) or lower</td>
<td>9.1(x)</td>
</tr>
<tr>
<td>6.1(4), 6.1(5), 7.1(3)</td>
<td>8.5(x)</td>
</tr>
</tbody>
</table>

- Backup system before apply COP file
- Match RSA version of COP file to CUCM supported RSA version
- To check for COP file installed, use “show version active” in CLI or “Show > Software” in OS Admin

Reference

- Backup system before apply COP file
- Match RSA version of COP file to CUCM supported RSA version
- To check for COP file installed, use “show version active” in CLI or “Show > Software” in OS Admin
Upgrade Path
Direct L2 Upgrade (Virtualized to Virtualized)

- The CUCM versions that will support a L2 upgrade to 11.X
- Short or minimal downtime
- Pre-upgrade RSA keys COP file (ciscocm.version3-keys.cop.sgn) not required
Direct RU Upgrade (Virtualized to Virtualized)

- Longer downtime
- Medium upgrade complexity
- Pre-upgrade RSA keys COP file (ciscocm.version3-keys.cop.sgn) is required
- RU upgrade COP file (ciscocm.refresh_upgrade_v1.3.cop.sgn) is required for CUCM 8.5 or earlier
## Appliance to Virtualized CUCM 11.X (DRS)

<table>
<thead>
<tr>
<th>Platform Number</th>
<th>Supported Normal Mode</th>
<th>Supported Bridge</th>
<th>Not Supported</th>
<th>Upgrade Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6.1-7.1</td>
<td>8.0</td>
<td>8.5-9.1</td>
<td>Jump upgrade, upgrade to 11.X</td>
</tr>
<tr>
<td>2</td>
<td>6.1-7.1</td>
<td>8.0-8.5</td>
<td>8.6-9.1</td>
<td>Jump upgrade, upgrade to 11.X</td>
</tr>
<tr>
<td>3</td>
<td>6.1-8.0</td>
<td>NA</td>
<td>8.5-9.1</td>
<td>Jump upgrade or upgrade to 8.0 to change platform, upgrade to 11.X</td>
</tr>
<tr>
<td>4</td>
<td>6.1-8.0</td>
<td>8.5</td>
<td>8.6-9.1</td>
<td>Jump upgrade or upgrade to 8.0 to change platform, upgrade to 11.X</td>
</tr>
<tr>
<td>5</td>
<td>6.1-8.0</td>
<td>8.5-9.1</td>
<td>NA</td>
<td>Jump upgrade or upgrade to 8.0 to change platform, upgrade to 11.X</td>
</tr>
<tr>
<td>6</td>
<td>6.1-8.5</td>
<td>8.5-9.1</td>
<td>NA</td>
<td>Jump upgrade or upgrade to 8.0 to change platform, upgrade to 11.X</td>
</tr>
<tr>
<td>7</td>
<td>7.1-9.1</td>
<td>NA</td>
<td>NA</td>
<td>Jump upgrade or upgrade to 9.1 to change platform, upgrade to 11.X</td>
</tr>
</tbody>
</table>

- Jump upgrade process is preferred due to licenses acquisition complexity and the many steps involved.

---

Appliance to Virtualized CUCM 11.X (PCD Migrate)

- Same or different IP addresses
- Same or different IP hostnames
Appliance to Virtualized CUCM 11.X (PCD Migrate)

- Multiple hops
- Same or different IP addresses
- Same or different IP hostnames
PCD or DRS

- Tools and process familiarity
- Network team versus server team dynamics
  - Root access to ESXi host
  - ESXi host see another NFS datastore
  - Customer storage standard might not be or allow NFS
- Other collaboration applications
Other uses for PCD versus DRS Approach

- Virtual to virtual for platform change
- L2/RU upgrade for virtualized CUCM
Virtualized CUCM
Appliance to Virtualized CUCM
Appliance to Virtualization Conversion

1. Server platform selection
2. VMware ESXi requirements
3. Conversion of appliance to virtual machine or OVA
4. Leverage “Unified Communications in a Virtualized Environment” Docwiki

http://www.cisco.com/go/uc-virtualized
1. Server Platform Selection

Packaged Collaboration Solution
- Business Edition 6000
- Business Edition 7000

TRC
- UC on UCS

Specs-Based
- UC on UCS
- 3rd-Party

Less (Leverage Existing Investment)
More

Less
More

Assurance Simplicity
Less
More

Ease of Deployment
Less
More
2. VMware ESXi Requirements

- ESXi Hypervisor: 4.0, 4.1, 5.0, 5.1 and 5.5
- ESXi Edition: VMware vSphere Hypervisor, Cisco UC Virtualization Hypervisor, VMware vSphere Hypervisor Foundation, Cisco UC Virtualization Foundation, Standard, Enterprise or Enterprise Plus
- VMware vCenter: Essential, Foundation or Standard
  - Recommended for large deployment. centralize management, license management, etc.
  - Mandatory for Specs-Based deployment
- VMware acquisition: Cisco, Partner or VMware
Cisco Virtual Template (OVA) File

• Open Virtual Archive (OVA): Portable virtual appliance that defines configuration (memory, storage space, etc.) for a virtual machine and is a compressed version of OVF

• Cisco will provide OVA files with Virtual Machine Hardware Version (VMV) 7 and VMV8 on CCO for collaboration applications deployment

• Deploy the latest OVA version and the highest available VMV version that matches to ESXi version
3. Conversion of Appliance to Virtual Machine or OVA

<table>
<thead>
<tr>
<th>MCS Server Model</th>
<th>Maximum Number of Phone</th>
<th>OVA Deployment Size</th>
<th>vCPU</th>
</tr>
</thead>
<tbody>
<tr>
<td>7845-I3 or earlier</td>
<td>10000</td>
<td>10000</td>
<td>4</td>
</tr>
<tr>
<td>7845-I3 or earlier</td>
<td>7500</td>
<td>7500</td>
<td>2</td>
</tr>
<tr>
<td>7845-I2/H2 or earlier</td>
<td>7500</td>
<td>7500</td>
<td>2</td>
</tr>
<tr>
<td>7825-I5 or earlier</td>
<td>1000</td>
<td>2500</td>
<td>2</td>
</tr>
<tr>
<td>7825-I5 or earlier</td>
<td>1000</td>
<td>1000</td>
<td>2</td>
</tr>
<tr>
<td>7816-I5 or earlier</td>
<td>500</td>
<td>1000</td>
<td>2</td>
</tr>
<tr>
<td>7828-I5 or earlier</td>
<td>500</td>
<td>1000</td>
<td>2</td>
</tr>
</tbody>
</table>

- Smaller MCS server converts to a standard 2500 device OVA or restricted performance CPU OVA on CUCMBE 6K
- MCS and C series both has similar direct attached storage (DAS)
- Storage option for redundancy: FC SAN

![Cisco Live!](image)
ESXi and Collaboration OVA Version

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>4.0</td>
<td>7</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.1</td>
<td>7</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.0</td>
<td>8</td>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.1</td>
<td>9</td>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.5</td>
<td>10</td>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

• Use matching collaboration application OVA file to correct corresponding ISO file
  – E.g. plm_10.5_vmv8_v1.1.ova and Bootable_UCSInstall_UCOS_10.5.1.10000-5.sgn.iso

• VMV can be upgraded, but cannot be downgraded
## Appliance versus Virtualization Support

<table>
<thead>
<tr>
<th>Feature</th>
<th>Appliance</th>
<th>Virtual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Music on Hold (live source)</td>
<td>USB audio (unicast and multicast)</td>
<td>IOS or Barix (multicast only)</td>
</tr>
<tr>
<td>Install and upgrade error logs</td>
<td>USB</td>
<td>Virtual serial port</td>
</tr>
<tr>
<td>Answer file (platformConfig.xml)</td>
<td>USB</td>
<td>Virtual floppy</td>
</tr>
<tr>
<td>UPS via USB</td>
<td>APC UPS via USB</td>
<td>UPS on UCS/ESXi</td>
</tr>
<tr>
<td>Back up</td>
<td>Tape</td>
<td>Secure ftp</td>
</tr>
<tr>
<td>eToken encryption key</td>
<td>USB on client and not server</td>
<td>USB on client and not server</td>
</tr>
<tr>
<td>SMDI</td>
<td>Serial port</td>
<td>NA</td>
</tr>
</tbody>
</table>

- Take these support considerations into account when virtualizing CUCM
Virtual to Virtualized CUCM
CUCM 9 to CUCM 10/11 OVA Change

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>RHEL Guest OS</td>
<td>5 (32bit)</td>
<td>6 (64 bit)</td>
</tr>
<tr>
<td>Adapter Type</td>
<td>Flexible</td>
<td>VMXNet3</td>
</tr>
</tbody>
</table>

- Change the Guest OS from RHEL 5 (32 bit) to Guest OS 6 (64 bit)
- Change Network adapter type from Flexible to VMXNET3
  - Automatic MAC: Edit VMX file in the VM machine directory. Instruction in link below
  - VMware vSphere PowerCLI for both automatic and manual MAC. Instruction in link below

CUCM 10.0 OVA:
http://www.cisco.com/web/software/283088407/108296/cucm_10.0_vmv8_v1.7.ova.README.txt
CUCM 11.X OVA vRAM Change

<table>
<thead>
<tr>
<th>Product</th>
<th>Scale (users)</th>
<th>vCPU</th>
<th>vRAM (GB)</th>
<th>vDisk (GB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CUCM 10.X</td>
<td>10,000</td>
<td>4</td>
<td>6</td>
<td>1 x 110</td>
</tr>
<tr>
<td></td>
<td>7,500</td>
<td>2</td>
<td>6</td>
<td>1 x 110</td>
</tr>
<tr>
<td></td>
<td>2,500</td>
<td>1</td>
<td>4</td>
<td>1 x 80</td>
</tr>
<tr>
<td></td>
<td>1,000</td>
<td>2</td>
<td>4</td>
<td>1 x 80</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Product</th>
<th>Scale (users)</th>
<th>vCPU</th>
<th>vRAM (GB)</th>
<th>vDisk (GB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CUCM 11.X</td>
<td>10,000</td>
<td>4</td>
<td>8</td>
<td>1 x 110</td>
</tr>
<tr>
<td></td>
<td>7,500</td>
<td>2</td>
<td>8</td>
<td>1 x 110</td>
</tr>
<tr>
<td></td>
<td>2,500</td>
<td>1</td>
<td>6</td>
<td>1 x 80</td>
</tr>
<tr>
<td></td>
<td>1,000</td>
<td>2</td>
<td>6</td>
<td>1 x 80</td>
</tr>
</tbody>
</table>

- Shutdown CUCM
- Change vRAM for the virtual machine
- Power up
- Upgrade to 11.0
- Large deployment have seen memory usage being high

CUCM 10.0 OVA:
http://docwiki.cisco.com/wiki/Virtualization_for_Cisco_Unified_Communications_Manager_(CUCM)

New 11.X

Cisco Live!
System Level Upgrade
Overall Upgrade Strategy to Minimizing Down Time

1. Phase I: Owner User ID / phone association and license request
2. Phase II: IP Phone Firmware Upgrade
3. Phase III: Proactive Replacement
4. Phase IV: UC Applications Pre-Upgrade Migration
5. Phase V: Prepare CUCM for Upgrade
6. Phase VI: CUCM and UC Applications Post Upgrade Migration

- Phase II, IV or V might have to be repeated for each of the step in a multi-step upgrade
- Check with Compatibility Matrix on Collaboration applications and firmware compatibility
Migration Recommendations

• Develop a comprehensive plan for the migration
• Partners can use PDI Helpdesk for migration plan review
  • http://www.cisco.com/web/partners/tools/pdihd.html
• Break the upgrade into phases to minimize downtime
• Open a Global Licensing Operations (GLO) case with specific tags for fast results
  • https://communities.cisco.com/community/partner/collaboration/migration/blog/2013/05/30/how-to-get-the-efficient-support-for-drive-to-9
• Open a proactive TAC case for the upgrade
  • http://cisco.com/tac/caseopen
• Check Unified Communications Virtualization docwiki often due to frequent changes
Questions ?
Complete Your Online Session Evaluation

• Give us your feedback to be entered into a Daily Survey Drawing. A daily winner will receive a $750 Amazon gift card.

• Complete your session surveys though the Cisco Live mobile app or your computer on Cisco Live Connect.

Don’t forget: Cisco Live sessions will be available for viewing on-demand after the event at CiscoLive.com/Online
Continue Your Education

- Demos in the Cisco Campus
- Walk-in Self-Paced Labs
- Table Topics
- Meet the Engineer 1:1 meetings
Thank you
CISCO  TOMORROW starts here.
Appendix

- W1 Upgrade
- Bridge Upgrade
- Jump Upgrade
- License Acquisition
- L2 and RU Upgrade in Detail
- CDetailed ELM/PLM License
- User Count Tool
- License Conversion
- Phone and License Usage
Appendix

- ELM 9.1
- PLM 10.X
- Previous Methods for Owner User ID
- License Management Models with PLM
- Refresh Upgrade (RU) for MCS 7825 and MCS 7828
- L2 and RU Upgrades for CUCM 9.X and CUCM 10.X
- RU Upgrades for CUCM 11.X
Appendix

- RU COP File
- RSA COP File
- Detailed PCD
- CUCM-BE5K Migration
W1 Upgrade: Windows to Appliance Model

1. Back Up With BARS
2. Install and Run Upgrade Utility on All Servers
3. Download Upgrade Utility From CCO
4. Install, Run, and Download DMA from Publisher
5. Install CUCM 7.1
6. Upload DMA File

- CUCM 7.1 software availability can be an issue since CUCM 7.1 has EOS (End of Sales)
CUCM Migration Definition

**Bridge Upgrade:** Appliance to Appliance model
- Upgrade is allowed with Cisco CallManager service “Not Running”
- Long downtime due to non-functional system and a platform change
- (e.g. Older servers that cannot newer version of CUCM)

**Jump Upgrade:** Appliance to Virtualized model
- Virtualized CUCM with 6.1(4), 6.1(5), 7.1(3) and 7.1(5) for lab upgrade
- Minimal downtime due to lab upgrade
- (e.g. Older servers that cannot upgrade to 8.0(3) or later to virtualized)
Bridge Upgrade

- Server platform change for discontinued servers that cannot run latest CUCM version
  - Allows for a successful upgrade with Cisco CallManager service in in “Not Running” state
  - Platform change is done with DRS backup and restore
  - Use case include appliance to appliance and appliance to virtualized
- Requires rehost of license file due to MAC or License MAC change caused by server change
  - For a virtualized environment, use Answer File Generator to proactively obtain license file

Bridge Upgrade

Jump Upgrade

Servers that cannot run CUCM 8.0(2) or later to virtualized

Jump Upgrade Process

Virtualized CUCM 9.1(2)

• Upgrade process of multiple steps:
  - Upgrade from CUCM 6.1(4), 6.1(5), 7.1(3) or 7.1(5) ONLY
  - Upgrade to CUCM 9.1(2) ONLY
  - Lab migration ONLY

• Allows bare metal CUCM at version 6.1(4), 6.1(5), 7.1(3) or 7.1(5) migrating to virtualized CUCM at version 9.1(2)
  - Minimal down time
  - Database lockdown time (i.e. No MACD)
  - No license required for interim upgrades
Jump Upgrade Process

1. **DRS Backup**
   - **sFTP Server**
   - **CUCM 6.x or 7.X ISO Image**

2. **Build same CUCM version**
   - **sFTP Server**
   - **CUCM 6.x or 7.X ISO Image**

3. **DRS Restore**
   - **sFTP Server**
   - **CUCM 6.x or 7.X ISO Image**

4. **Upgrade to CUCM 9.1(2)**
   - **sFTP Server**
   - **CUCM 9.1(2) ISO Image**

5. **DRS Backup**
   - **sFTP Server**
   - **CUCM 9.1(2) ISO Image**

6. **Build new CUCM 9.1(2)**
   - **sFTP Server**
   - **CUCM 9.1(2) ISO Image**

7. **DRS Restore**
   - **sFTP Server**
   - **CUCM 9.1(2) ISO Image**
License Acquisition with CUCM 5.X to 8.X

- Product License Registration site = [https://tools.cisco.com/SWIFT/LicensingUI/Home](https://tools.cisco.com/SWIFT/LicensingUI/Home)
- License files are uploaded and managed on the first node or Publisher of the cluster
- License files are locked to the MAC address of the first node or Publisher of the cluster
- License enforcement is perform on CUCM
L2 Upgrade: Appliance to Appliance Model

- Active partition is running while upgrade software is being install on inactive partition
- Low downtime since upgrade can be done while system is functioning
Refresh Upgrade (RU): Appliance to Appliance Model

- Server is down while upgrade software is being install
- More reboots
- Higher downtime since upgrade cannot be done while system is functioning
- Upgrade is equal to complete installation of CUCM

1. Data exported (CUCM and CAR) into /common partition
2. Firmware and BIOS upgrade
3. VOS installation
4. Platform import
5. CUCM installation
6. DB installation
7. CUCM data import
8. CAR DB creation
9. CAR DB migration
Cisco Unified Enterprise License Manager

- ELM can be stand alone or bundle with CUCM or CUC. Interaction is a logical flow
- CUCM and CUC sends license usage to ELM
- ELM handles the license grant or revoke based licensing logic
- CUCM and CUC perform license enforcement based ELM response
- CUCM and CUC enforcement rules are different

How and what do CUC, CUCM and ELM communicate?
Process of CUCM and ELM Communications

- 1. CUCM evaluates users to phones usage and feature usage to derives at UCL/CUWL usage
- 2. CUCM sends UCL/CUWL usage to ELM
- 3. ELM evaluates license request, perform evaluation and license substitution before sending a respond to CUCM (VALID or INVALID)
- Next slides will go over the HOW CUCM and ELM know how to evaluates license usage in details

How does CUC, CUCM and ELM know what to communicate?
Using User Count Tool as Planning Tool to Migrate

1. Cluster > Add: Add system in User Count Tool (UCT) using IP/hostname of system and AXL credential
2. Cluster: Ensure that system connected successfully
3. Check versions of CUCM that the tool detects
License Conversion

1. Manual
   - For CUCM, CUC included with CUWL or standalone CUC
   - Work with Global License Operation (GLO) licensing@cisco.com
   - Manually provide data of current system to get new license file from GLO
   - Documentation of process at: https://communities.cisco.com/docs/DOC-33804

2. Automated
   - Standalone CUC
   - Upgrade CUC to 9.X
   - Self service license request using Product License Registration
License Count Utility (UCT) for CUCM 6.X-8.X

- Available on CCO
- Perform AXL calls to existing CUCM clusters for licensing information, recommends CUCM 9.X license usage, provides option for unused DLU to CUCM 9.X license and generate report.

Detailed screen capture of UCT are in the appendix
1. Data for Manual License Migration

- Working with Global Licensing Operation (GLO) at licensing@cisco.com
- Provide current system usage
  - Migrated system(s): ELM Usage Report
  - CUCM 6.X to 8.X: License Report with License Count Utility (UCT)
  - CUCM 3.X to 5.X: Print screen of system usage
- Provide
  - Active ESW/UCSS contract number
  - Site information
  - Contact information for email and support contract
  - MAC Address/License MAC from current CUCM system
  - ELM generated license request
  - Email to send licenses or software with contact information
  - Intended CUCM 9.X user count and features for unused DLU
2. Automated License Migration with ELM

- Log into Product Upgrade Tool site = [http://tools.cisco.com/gct/Upgrade/jsp/index.jsp](http://tools.cisco.com/gct/Upgrade/jsp/index.jsp) to order upgrade kit
- Obtain upgrade software. There is an electronic version for download
- Upgrade CUCM cluster to 9.X and run licenses in Overage mode for 60 days before license is required for ELM
2. Automated License Migration with ELM

- 1. In ELM, add the new upgraded CUC 9.X and get upgrade license request
- 2. In ELM Upgrade wizard: License Management > Add or Upgrade Licenses > Upgrade Licenses
  - Go through license planning for UCL and CUWL request based on DLU
  - Capture license request text
- 3. Go to:
  - Product License Registration site = https://tools.cisco.com/SWIFT/LicensingUI/Home
  - Go to Migration License section and select Register for Upgrade/Migrate License
Overview of CUCM 9.1 Installation

1. Upgrade During Installation i.e., 9.1(1a) to 9.1(2)
2. New Installation, New Server—Flash Cut or New Server—Migration

INSTALLATION PROCESS (PROCEED)

CUCM 9.X DVD KIT

MCS-781X
MCS7825
MCS7828
MCS7835
MCS7845

Apply SR, ES or SU

Basic Install
Installation Logs

• To capture installation logs failure, a USB key is required for physical servers
  ▪ Plug USB key into the physical server
  ▪ Accept dumping of logs

• In a virtualized environment, dump logs is via serial port of VM
  ▪ Add serial port when VM is off before CUCM 8.X installation
  ▪ On failure, edit guest OS to connect to a temporary file to virtual serial port
  ▪ Accept dumping of logs
  ▪ Download 7zip from [http://www.7-zip.org/download.html](http://www.7-zip.org/download.html) to unzip the tar file
  ▪ Remove serial port after a successful installation of Unified CM 8.X
# CUCM 9.X Phone License

<table>
<thead>
<tr>
<th>License</th>
<th>Phone Type (2)</th>
<th># of Devices (3)</th>
<th>Features (1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Essential UCL</td>
<td>Analog, 3905, 6901, VGC Phone, ATA186, ATA187</td>
<td>1</td>
<td>EM</td>
</tr>
<tr>
<td>Basic UCL</td>
<td>6911, 6921, CUC-RTX, Analog, 3905, 6901, VGC Phone, ATA186, ATA187</td>
<td>1</td>
<td>EM, SNR</td>
</tr>
<tr>
<td>Enhance UCL</td>
<td>12S, 12SP, 12SP+, 30SP+, 30VIP, 3911, 3951, 6941, 6945, 6961, 7902, 7905, 7906, 7910, 7911, 7912, 7920, 7921, 7925, 7926, 7931, 7935, 7936, 7937, 7940, 7941, 7941G-GE, 7942, 7945, 7946, 7948, 7961, 7961G-GE, 7962, 7963, 7965, 7970, 7971, 7975, 7985, 8941, 8945, 8961, 9951, 9971, Cius, E20, ISDN BRI Phone, Third-party SIP Device, CIPC, CUPC, CIM, CSF, EX60, EX90, Jabber (Android/iPhone/iPad), CUMC, IIM, Nokia S60, H.323 Client, VXC 6215, 6911, 6921, CUC-RTX, Analog, 3905, 6901, VGC Phone, ATA186, ATA187, Analog, 3905, 6901, VGC Phone, ATA186, ATA187</td>
<td>1</td>
<td>EM, SNR</td>
</tr>
<tr>
<td>Enhance UCL Plus</td>
<td>Same as Enhance UCL</td>
<td>2</td>
<td>EM, SNR</td>
</tr>
</tbody>
</table>
# CUCM 9.X Phone License

<table>
<thead>
<tr>
<th>License</th>
<th>Phone Type (2)</th>
<th># of Devices (3)</th>
<th>Features (1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CUWL Standard</td>
<td>12S, 12SP, 12SP+, 30SP+, 30VIP, 3911, 3951, 6941, 6945, 6961, 7902, 7905, 7906, 7910, 7911, 7912, 7920, 7921, 7925, 7926, 7931, 7935, 7936, 7937, 7940, 7941, 7941G-GE, 7942, 7945, 7960, 7961, 7961G-GE, 7962, 7965, 7970, 7971, 7975, 7985, 8941, 8945, 8961, 9951, 9971, Cius, E20, ISDN BRI Phone, Third-party SIP Device, CiPC, CUPC, CIM, CSF, EX60, EX90, Jabber (Android/iPhone/iPad), CUMC, IIM, Nokia S60, H.323 Client, VXC 6215, 6911, 6921, CUC-RTX, Analog, 3905, 6901, VGC Phone, ATA186, ATA187, Analog, 3905, 6901, VGC Phone, ATA186, ATA187</td>
<td>10</td>
<td>EM, SNR</td>
</tr>
<tr>
<td>TelePresence</td>
<td>TelePresence</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>
CUCM 10.0 Licensing Summary Cont.

UCL Enhanced / Enhanced Plus
CUWL Standard
CUWL Professional

UCL Basic

Fax
Analog

3905
6901
6921
7821
69xx
78xx
79xx
792x
99xx

Jabber Desktop
Jabber Mobile
Third Party SIP

TelePresence Room
TX / CTS / T Series
MX / Profile Series
System Codecs and Quickset Platforms
Enterprise License Manager (ELM)

- ELM is a centralized enterprise-wide license management solution for Cisco collaboration applications
  - CUCM
  - Cisco Unity Connection (CUC)
- ELM deployment can be standalone or co-resident with CUCM or CUC with the same ISO file
- License file is uploaded onto ELM instead of CUCM or CUC and is based on ELM MAC address and host ID
- License file is cumulative and is based on products (CUCM or CUC)
License Manager Architecture 9.X and 10.X

- License Manager API added to CUCM 9.X/10.X and CUC 9.X/10.X to interact with ELM / PLM for license request and approval
- License Manager API added to CER 10.X to interact with PLM for license request and approval
- Electronic fulfillment supports License Feature and Version Upgrades in PLM 10.X
Previous Methods for Owner User ID


- CLI SQL on logged in users:
  https://crystalclearinsanity.wordpress.com/2014/03/07/cucm-set-device-owner-id-to-em-logged-in-user-id-via-sql/

- CLI SQL: http://pandaeatsbamboo.blogspot.com/2014/01/associate-existing-phones-to-users-with.html

License Management Models with PLM

- PLM provides for both distributed and centralized license management model
  - Separate virtual machine for ELM (recommended)
  - Separate virtual machines based on UC applications, site or line of business
  - Co-resident to CUCM or CUC corporate wide or based on UC applications, site or line of business

- Consideration when designing a licensing solution
  - 60 days overage and redundancy/re-host (registration ID and MAC) of ELM
Refresh Upgrade (RU) for MCS 7825 and MCS 7828 (CUCM 8.6 & 9.X Upgrade)

- Software raid and OS reinstallation by RHEL 5 requires USB key
  - CUCM- 16 GB USB drive.  CUC and CUCM BE 5000 – 128 GB USB drive
  - External power USB drive.  One per server.  Do not remove until upgrade completes

- DRS back up before upgrade.  USB data cannot be restore from new installation

- Reinstallation and DRS restore as the only reversion method

- Check memory required per server (MCS7825 – 4GB, MCS7828 – 6GB) before upgrade

- Recommend to virtualize at this point if possible
TOMORROW starts here.
## Upgrade and Migration Caveats with Diskspace

<table>
<thead>
<tr>
<th>Upgrade Definition</th>
<th>Scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td>W1 Upgrade</td>
<td>Windows to appliance upgrade up to CUCM 7.1(5)</td>
</tr>
<tr>
<td>L2 Upgrade</td>
<td>Appliance to appliance upgrade within same major RHEL release (before CUCM 8.6)</td>
</tr>
<tr>
<td>RU Upgrade</td>
<td>Appliance to appliance upgrade between major RHEL releases (starting with CUCM 8.6)</td>
</tr>
<tr>
<td>Bridge Upgrade</td>
<td>Servers too old to run latest CUCM version. Use DRS file to change platform to continue upgrade</td>
</tr>
<tr>
<td>Jump Upgrade</td>
<td>Servers too old to run CUCM version 8.0(2) or later to virtualized. Virtualized in lab to perform upgrade</td>
</tr>
<tr>
<td>Manual Platform Change</td>
<td>Changing servers platform. Typically from bare metal servers to virtualized environment</td>
</tr>
<tr>
<td>Automated Platform Change w/ PCD</td>
<td></td>
</tr>
</tbody>
</table>
In-Place L2 Upgrade Process

1. Back Up With DRS
2. Upgrade Publisher Inactive Partition
3. Upgrade Subscribers Inactive Partition
4. Switch Partition on Publisher
5. Switch Partition on Subscriber
6. Add License to ELM and add CUCM to ELM

- Version 9 of license manager is Enterprise License Manager (ELM)
- ELM license is required only when going from 8.X or earlier to 9.X
- This scenario applies to both bare metal and virtualized CUCM
In-Place RU Upgrade Process

1. Back Up With DRS
2. Upgrade Publisher Inactive Partition
3. Switch Partition on Publisher
4. Upgrade Subscribers Inactive Partition
5. Switch Partition on Subscriber
6. Add License to ELM and add CUCM to ELM

- Version 9 of license manager is Enterprise License Manager (ELM)
- ELM license is required only when going from 8.X or earlier to 9.X
- This scenario applies to both bare metal and virtualized CUCM
In-Place L2 Upgrade Process

1. Back Up With DRS
   - Existing CUCM Cluster

2. Upgrade Publisher Inactive Partition
   - Upgrade CUCM 10.X Cluster
   - sFTP Server

3. Upgrade Subscribers Inactive Partition
   - Switch Partition on Publisher
   - CUCM 10.X ISO File

4. Switch Partition on Subscriber
   - CLI or OS Admin

5. Add License to PLM and add CUCM to PLM
   - Existing CUCM Cluster

6. New CUCM 10.X Cluster
   - New CUCM 10.X Cluster
   - Existing CUCM Cluster

- Version 10 of license manager is Prime License Manager (PLM)
- PLM license is required only when going from 9.X or earlier to 10.X
- This scenario applies to virtualized CUCM only
- For 10.X to 10.5, upgrade IM&P after CUCM cluster is upgraded

- PLM Version 10 of license manager is Prime License Manager (PLM)
- Version 10 of license manager is Prime License Manager (PLM)
- PLM license is required only when going from 9.X or earlier to 10.X
- This scenario applies to virtualized CUCM only
- For 10.X to 10.5, upgrade IM&P after CUCM cluster is upgraded
In-Place RU Upgrade Process

1. **Back Up With DRS**
2. **Upgrade Publisher Inactive Partition**
3. **Switch Partition on Publisher**
4. **Upgrade Subscribers Inactive Partition**
5. **Switch Partition on Subscriber**
6. **Add License to PLM and add CUCM to PLM**

**Existing CUCM Cluster**

**New CUCM 10.X Cluster**

**PLM**

- **Version 10 of license manager is Prime License Manager (PLM)**
- **PLM license is required only when going from 9.X or earlier to 10.X**
- **This scenario applies to virtualized CUCM only**
- **For 9.X to 10.X, upgrade IM&P after CUCM cluster is upgraded**

- **sFTP Server**
- **CUCM 10.X ISO file**
- **CLI or OS Admin**
- **CUCM 10.X ISO File**
- **CLI or OS Admin**
In-Place RU Upgrade Process

1. Back Up With DRS
2. Upgrade Publisher Inactive Partition
3. Switch Partition on Publisher
4. Upgrade Subscribers Inactive Partition
5. Switch Partition on Subscriber
6. Add License to PLM and add CUCM to PLM

- Add version 11 of license for the appropriate ELM or PLM
- For 9.X to 11.X, upgrade IM&P after CUCM cluster is upgraded
- This scenario applies to virtualized CUCM only
Refresh Upgrade (RU) and COP File

- Perform a DRS back up before upgrade
- Install Refresh Upgrade COP file v1.5 (ciscocm.refresh_upgrade_v1.5.cop.sgn) file on all CUCM servers. Also for CUC, CUCM-BE 5K and IME
  - Active version is CUCM 8.5 or earlier (i.e. No need for CUCM 8.6, 9.X or 10.X)
  - Upgrade to CUCM version 8.6 or later (e.g. Required for upgrade from CUCM version 8.5 to 10.5)
  - No reboot is required
  - Installation fails if changes are already in CUCM code (e.g. ES that already have this code change)
  - CLI: “show version active” or OS Admin: “Show > Software” to see installed COP file(s)
- Track console of server to monitor progress of upgrade – IP KVM, HP ILO, or IBM RSA for bare metal server or virtual machine console for virtual machine
- CUCM RU COP file is for CUCM version 8.5 or earlier. Other collaboration solutions RU might be at a different release (e.g. CUP 8.6(1) to CUP 8.6(4) requires CUP RU COP file v1.01)
- * RU COP file might be use once for older releases while RU can occur several times due to change in RHEL version
CUCM 10.5 Pre-Upgrade COP File

- Pre-Upgrade RSA keys Cisco Options Package (COP) file (ciscocm.version3-keys.cop.sgn) for software integrity protection

- Install Pre-Upgrade COP file (ciscocm.version3-keys.cop.sgn) file on all CUCM servers. Also for IM&P 10.5 and PLM 10.5
  - Active version is 9.1(2) or earlier (i.e. No need for CUCM 10.0)
  - Upgrade to CUCM version 10.5 or later (e.g. Required for upgrade from CUCM version 8.6 to 10.5)
  - No reboot is required
  - CLI: “show version active” or OS Admin: “Show > Software” to see installed COP file(s)

- PCD does not automate this COP file installation

- Install RU COP file prior to the Pre-Upgrade COP
2. Automated Platform Conversion with PCD

- Bare metal CUCM to virtualized CUCM (P2V)
  - Install `ciscocm.ucmap_platformconfig.cop` file to the source servers to export data
  - Build new cluster
  - Import data
- Same or different destination IP address and/or hostname
- Scheduled or immediate execution
CUCM-BE 5K to CUCM-BE 6K or CUCM/CUC

- Upgrade CUCM-BE to version CUCM-BE 10.5
- Export data:
  - BAT for call control and COBRAS for messaging
- Build virtualized CUCM and CUC
- Import data:
  - BAT for CUCM and COBRAS for CUC

Migration CUCM-BE 5K to CUCM-BE 6K:
https://communities.cisco.com/docs/DOC-33988