



*TOMORROW
starts here.*

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Staying Current: How to Ensure You Successfully Upgrade to the Latest Communications Platform

BRKUCC-2668

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#clmel

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Agenda

1. Session Objectives and Scope
 2. CUCM 10.5 Upgrade Definition and Upgrade Path
 3. CUCM License and Prime License Manager (PLM)
 4. Virtualised CUCM
 5. System Level Upgrade
- Q&A



A long-exposure photograph of a city street at night. The foreground is dominated by vibrant, multi-colored light trails from moving vehicles, creating a sense of motion and energy. In the background, a modern pedestrian bridge with blue lighting spans across the street. Tall buildings with illuminated windows and balconies line the street, and several flags are visible on the left side. The overall scene is a dynamic and colorful urban nightscape.

Session Objectives and Scope

Session Highlights

CUCM Migration

- Traditional manual process
- Automated process with PCD

Licensing and License Migration

- Manual process
- Automated process








Prime Collaboration Deployment (PCD)

- CUCM Orchestration tool for operational tasks
- Migrations, Upgrade, COP file installation, fresh installation or hostname/IP Address change

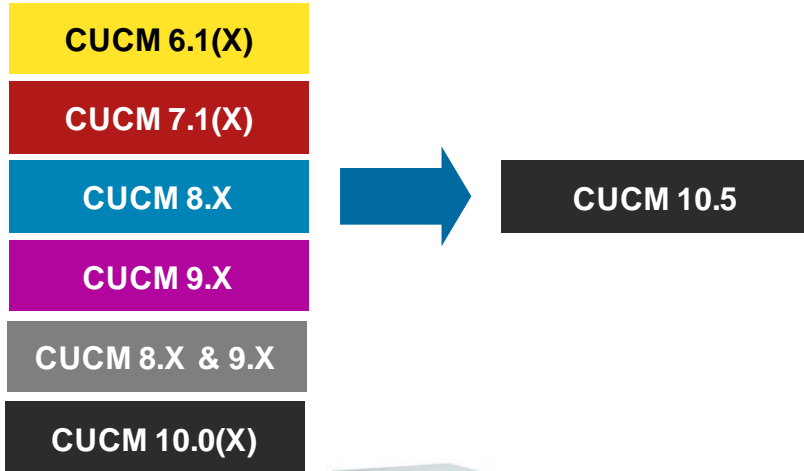
CUCM 10.X Virtualised only

- Platform conversion via PCD

Colour Code for Versions of CUCM

	CUCM 5.X
	CUCM 6.X
	CUCM 7.X
	CUCM 8.X
	CUCM 9.X
	Virtualised CUCM 8.X and 9.X
	Virtualised CUCM 10.X

Session Scope



- System level approach to upgrade or migrate to CUCM 10.5
- Platform conversion from bare metal CUCM to virtualised CUCM



Platform Conversion



Specs-Based



MCS, HP or IBM Servers

Compatibility Information for Cisco Unified Communications Manager Release 10.x
http://www.cisco.com/c/en/us/td/docs/voice_ip_comm/cucm/compat/matrix/10_x/CUCM_BK_CD1DB914_00_compat_mat



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)
4.3-10.5

License Manager

Enterprise License Manager
(ELM)
9.0 – 9.1

Prime License Manager
(PLM)
10.0-10.5

A nighttime photograph of a city street. In the foreground, there are long, curved light trails from cars, primarily in shades of yellow and orange. In the middle ground, a pedestrian bridge with a blue light strip runs across the street. In the background, there are several tall buildings with lit windows and some flags on poles. The overall scene is illuminated by city lights.




CUCM 10.5 Upgrade Definition and Upgrade Path



Upgrade Definition


CUCM Major/Minor Version

CUCM Major Version	CUCM Minor Version
10.0	10.5
9.0	9.1
8.0	8.5 and 8.6
7.0	7.1
6.0	6.1
5.0	5.1

- 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
 - http://www.cisco.com/web/about/doing_business/legal/service_descriptions/docs/esw_ucss_eol_announcement.pdf
- UCSS and ESW are merging into one service offer named Cisco Software Support Service (SWSS) 
 - <http://www.cisco.com/web/partners/services/downloads/software-support-service-overview.pdf>
- Long Life Release
 - Final release on major train
 - Last release to go End of Support

Sample CUCM Versions and Builds

Reference

CUCM Version	CUCM Build	Numbering Convention
10.5(2) 	10.5.2.10000-5	(A.B.C.XYzzz-x)
10.5(1)	10.5.1.10000-7	(A) Major version (License) 8.6.2.20000-2
10.0(1)su2	10.0.1.12900-2	(B) Minor version (Long Life Release) 8.6.2.20000-2
10.0(1)	10.0.1.10000-24	(C) Maintenance release (Patch and/or Features) 8.6.2.20000-2
9.1(2)su2a	9.1.2.12901-3	(X) Build (Patch) 8.6.2.10000-2
9.1(2)	9.1.2.10000-28	8.6.2.20000-2
9.1(1a)	9.1.1.20000-5	(Y) FCS:0, ES or SU: 1-9 8.6.2.10000-30 (FCS)
9.1(1)	9.1.1.10000-11	8.6.2.2900-1 (ES or SU look at last three digits)
9.0(1)	9.0.1.10000-37	(zzz) FCS:000, ES: 001-899, SU: 900-999 8.6.2.20000-2 (FCS)
8.6(2a)su5	8.6.2.25900-8	8.6.2.21001-1 (ES)
8.6(2a)su1	8.6.2.21900-5	8.6.2.22900-1 (SU)
8.6(2a)	8.6.2.20000-2	
8.6(2)	8.6.2.10000-30	

CUCM Upgrade Definition

W1

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))

Not covered in detail in this session. More detail steps in the appendix

L2

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 7.1(5) to 8.5 or CUCM 8.6 to 9.1)

RU

RU (Refresh Upgrade): Appliance/Virtual to Appliance/Virtual model with **major** RHEL version change (starting with RHEL 5)

- Medium complexity with possible longer downtime
- From CUCM versions 6.X, 7.X, 8.0 or 8.5 to 8.6, 9.X and 10.X
- (e.g. CUCM 8.5 to 8.6 or CUCM 9.1 to 10.0)

L2 Versus RU Upgrade

L2 Upgrade

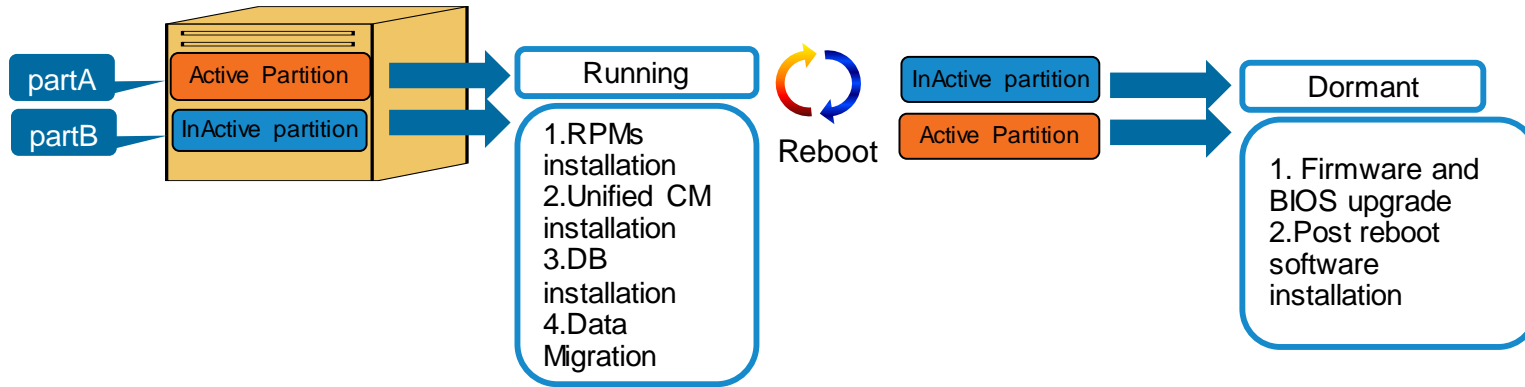
- Active partition is running while upgrade software is being install on inactive partition
- Low downtime since upgrade can be done while system is functioning

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

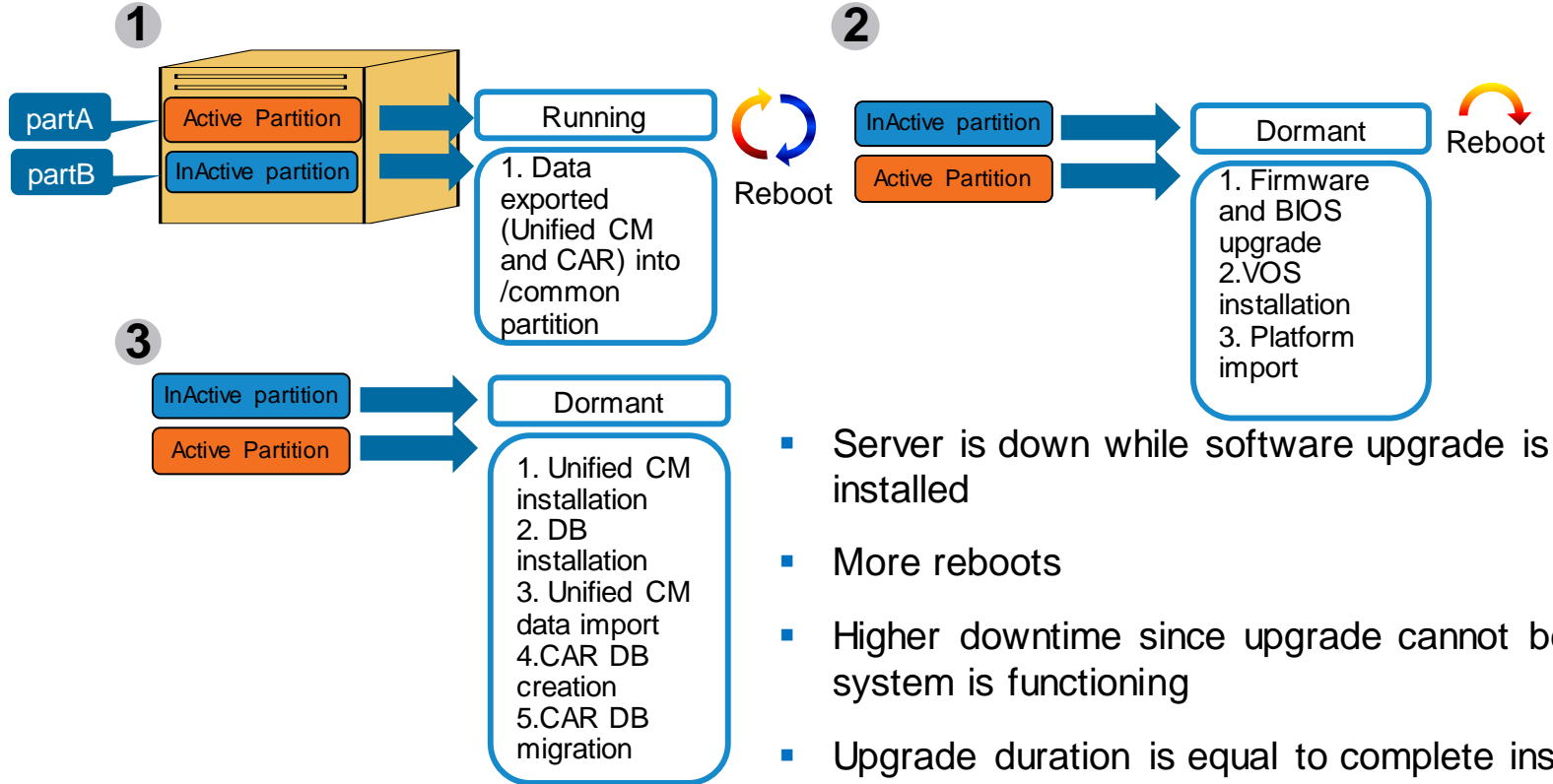
Detailed L2 and RU upgrade process are in the appendix

L2 Upgrade



- Active partition is running while upgrade software is being installed on inactive partition
- Short downtime (20-30) min since upgrade can be done while system is functioning

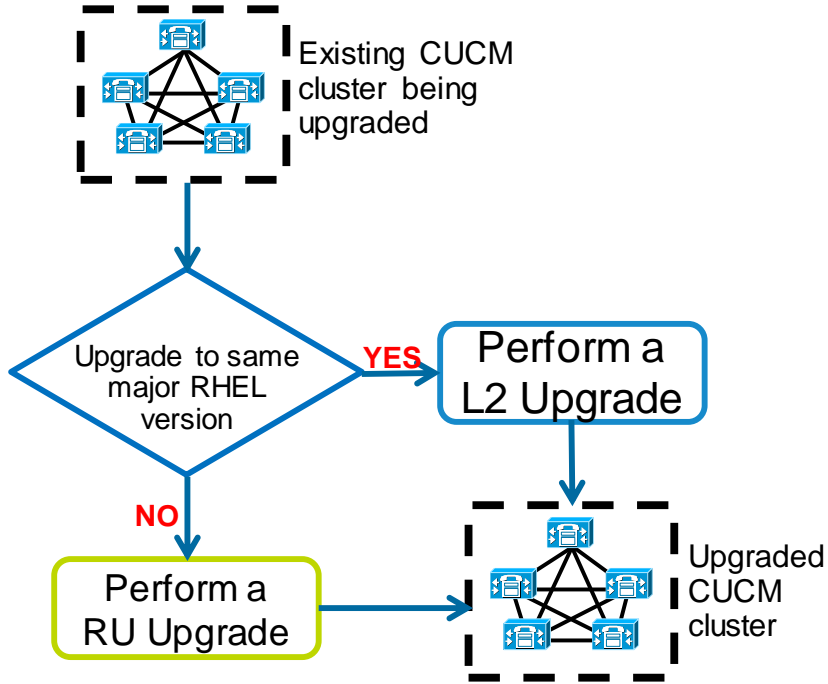
Refresh Upgrade (RU)



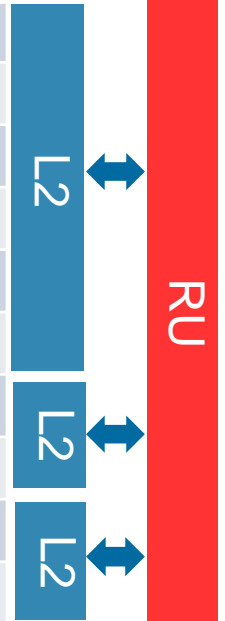
- Server is down while software upgrade is being installed
- More reboots
- Higher downtime since upgrade cannot be done while system is functioning
- Upgrade duration is equal to complete installation of Unified CM

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L2 and RU Upgrade Decision Tree



CUCM Version	RHEL Release
5.0(4)	RHEL 3 Update 6
5.1(x) & 6.X	RHEL 3 Update 8
7.0(1)	RHEL 4 Update 4
7.1(2)	RHEL 4 Update 6
7.1(3) & 8.0(x)	RHEL 4 Update 7
8.5	RHEL 4 Update 8
8.6*	RHEL 5 Update 5
9.X	RHEL 5 Update 7
10.0(1)*	RHEL 6 Update 2
10.5(2)	RHEL 6 Update 5



* RU starts with CUCM 8.6 or RHEL 5 for CUCM.

Refresh Upgrade (RU) and COP File



- Perform a DRS back up before upgrade
- Install the latest COP (ciscocm.refresh_upgrade_v1.5.cop.sgn) file on CUCM version 8.5 or earlier to allow for successful upgrade and limit switch version after upgrade
 - COP file is **NOT** required for CUCM version 8.6 or later to upgrade to 9.X +
- Track console to monitor progress of upgrade – IP KVM, HP ILO, or IBM RSA for bare metal server or virtual machine console
- To minimise downtime, upgrade Publisher until completion, followed by dedicated MOH/TFTP servers and then backup Subscribers or secondary nodes and finally the primary Subscriber servers
 - Check **Automatically switch to new version after successful upgrade**



Refresh Upgrade (RU) for MCS 7825 and MCS 7828 (CUCM 8.6 & 9.X Upgrade)



MCS-7825 H3/H4
MCS-7825-I3/I4/I5
MCS-7828-H3
MCS-7828-I3/I4/I5



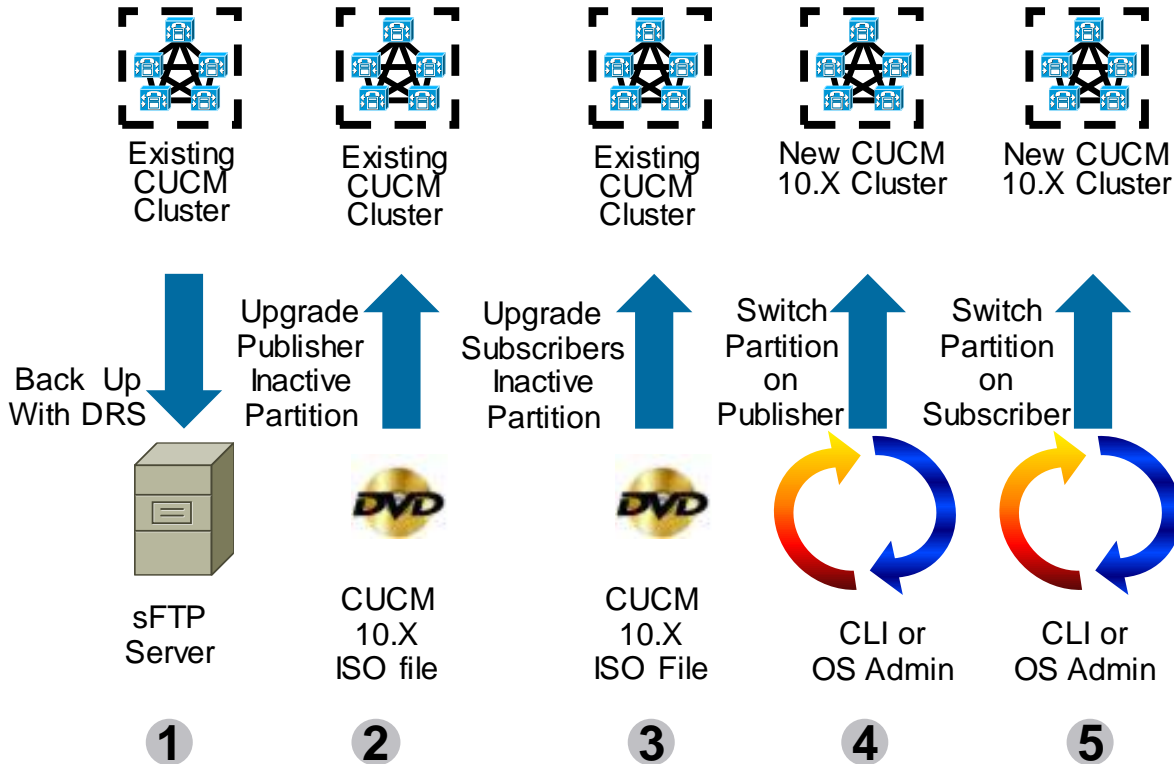
RU



MCS-7825 H3/H4
MCS-7825-I3/I4/I5
MCS-7828-H3
MCS-7828-I3/I4/I5

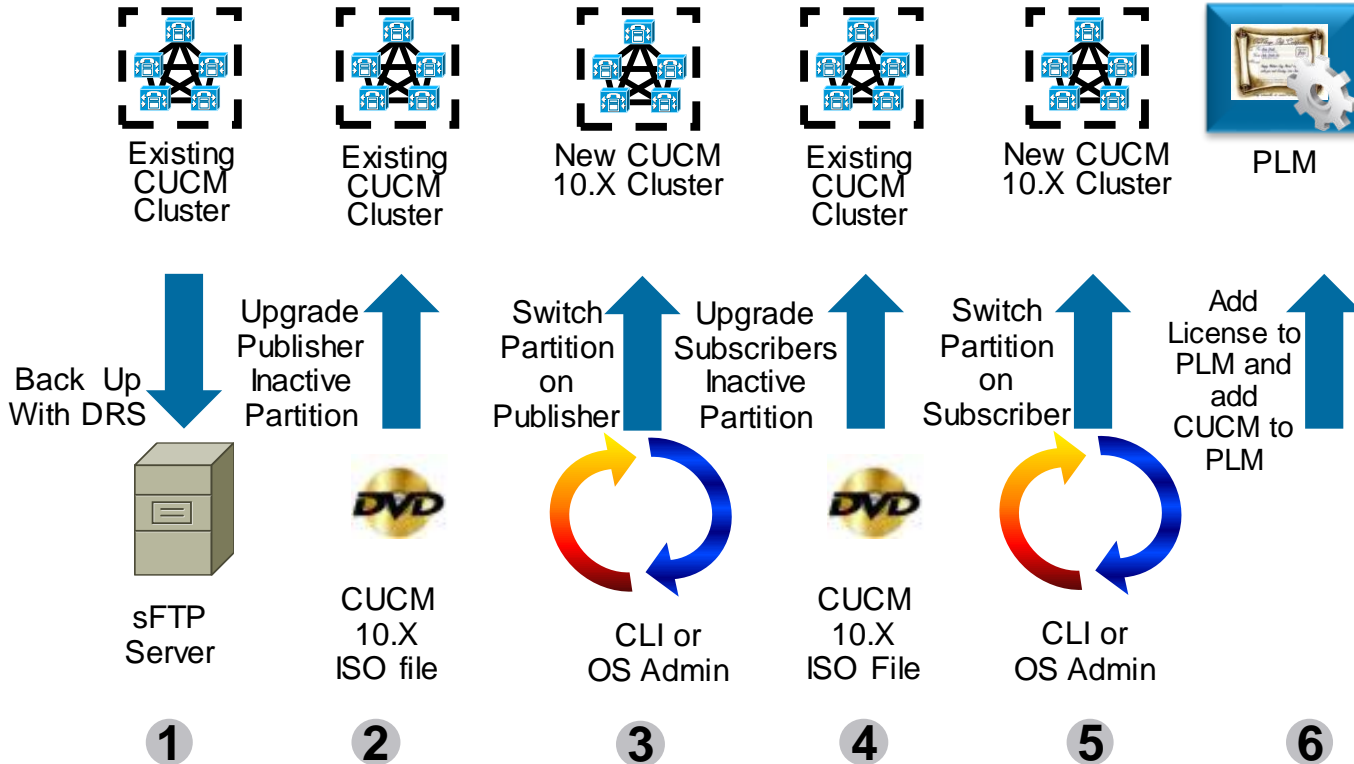
- Software raid and OS reinstallation by RHEL 5 requires USB key
 - CUCM- 16 GB USB drive. CUC and CUCM BE 5000 – 128 GB USB drive
 - External power USB drive. One per server. Do not remove until upgrade completes
- DRS back up before upgrade. USB data cannot be restore from new installation
- Reinstallation and DRS restore as the only reversion method
- Check memory required per server (MCS7825 – 4GB, MCS7828 – 6GB) before upgrade
- Recommend to virtualise at this point if possible

In-Place L2 Upgrade Process



- 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 virtualised CUCM only
- For 10.X to 10.5, upgrade IM&P after CUCM cluster is upgraded

In-Place RU Upgrade Process



- 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 virtualised CUCM only
- For 9.X to 10.X, upgrade IM&P after CUCM cluster is upgraded

CUCM 10.5 Pre-Upgrade COP File



Show ▾ Settings ▾ Security ▾ Software Upgrades ▾ Services ▾ Help ▾

Software Installation/Upgrade

Install Another

Installation Status

File	ciscocm.version3-keys.cop.sgn
Start Time	Tue May 13 23:39:41 EDT 2014
Status	Locale /common/download//ciscocm.version3-keys.cop Successfully installed

Installation Log

```
installdb Success[-x]

(3429) Tue May 13 23:41:34 EDT 2014
Successful final run of installdb

(3429) Tue May 13 23:41:34 EDT 2014
Successful running of copstart for option /common/download//ciscocm.version3-keys.cop.

(3429) Tue May 13 23:41:34 EDT 2014
Locale /common/download//ciscocm.version3-keys.cop Successfully installed
```

Install Another

- 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 automatically install this COP
- Install RU COP file prior to the Pre-Upgrade COP

Pre-Upgrade COP File

<http://software.cisco.com/download/release.html?mdfid=284603137&flowid=47762&softwareid=282204704&release=COP-Files&relind=AVAILABLE&relifecycle=&reltpe=latest>

CUCM Migration Definitions

Bridge

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
- (e.g. Older servers that cannot run newer version of CUCM)



Jump


Jump Upgrade: Appliance to Virtualised model

- CUCM 6.1(4), 6.1(5), 7.1(3) and 7.1(5) MCS to Virtual via lab (dead-net) upgrade
- Minimal downtime due to lab upgrade
- NO IP/Hostname Change
- (e.g. Older servers that cannot upgrade to 8.0(3) or later to virtualised)



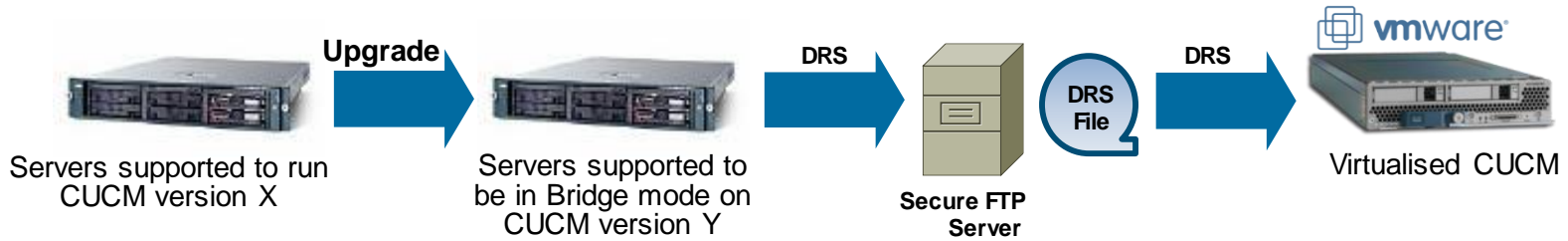
PC/M1

Platform Change (M1): Appliance to Virtualised model

- Low complexity with minimal downtime
- From CUCM 6.1(5), 7.1(3), 7.1(5), 8.0(1-3), 8.5(1), 8.6(1-2), 9.0.(1), 9.1(1), 9.1(2), 10.x
- **IP/Hostname Change** 
- **NAT support for Migration M1** with PCD 10.5(2)



Bridge Upgrade



To
8.0(2) -
9.1(2)

10.X

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

Jump Upgrade



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



Virtualised CUCM 9.1(2)

To
9.1(2)
Only

- 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 virtualised CUCM at version 9.1(2)
 - Minimal down time
 - Database lockdown time (i.e. No MACD)
 - No license required for interim upgrades

CUCM Upgrade Resource Central:

<http://communities.cisco.com/community/partner/collaboration/migration>

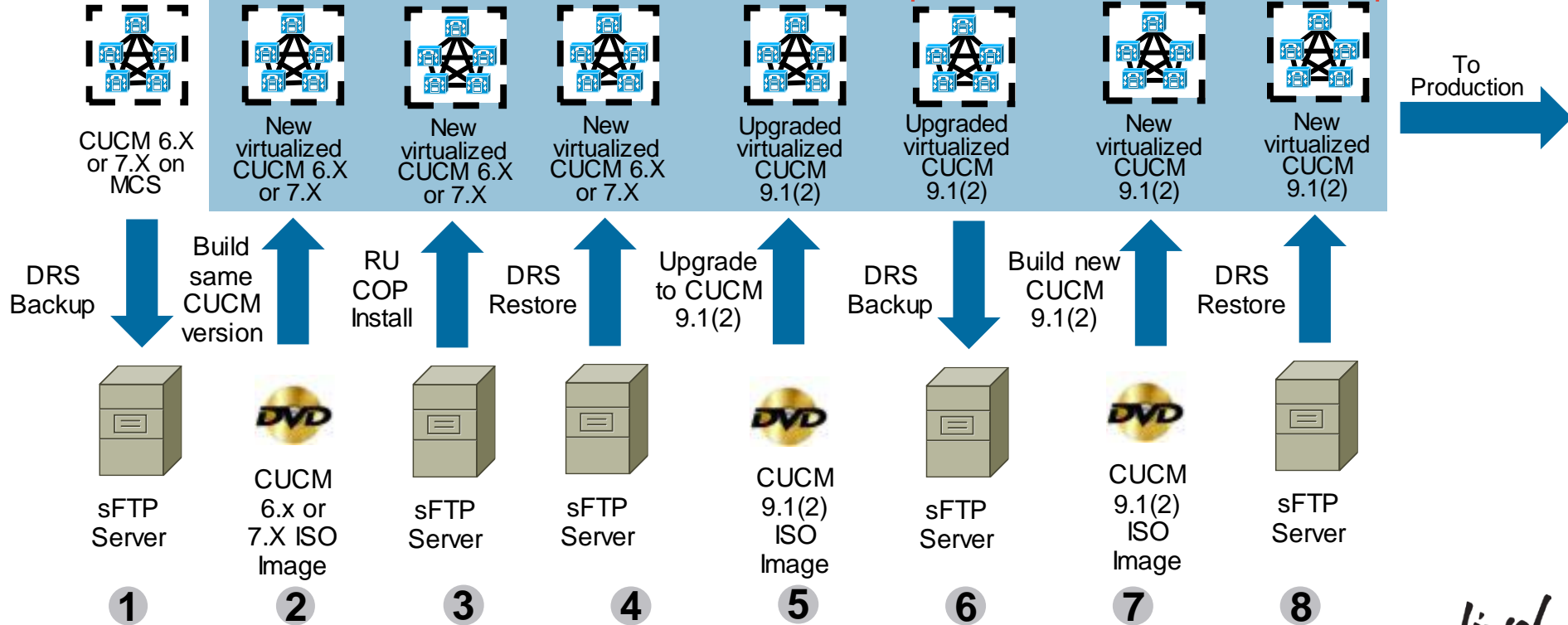
<https://itunes.apple.com/us/app/id650114526?mt=8>

Jump Upgrade Process

To
9.1(2)
Only

LAB

Disk Alignment

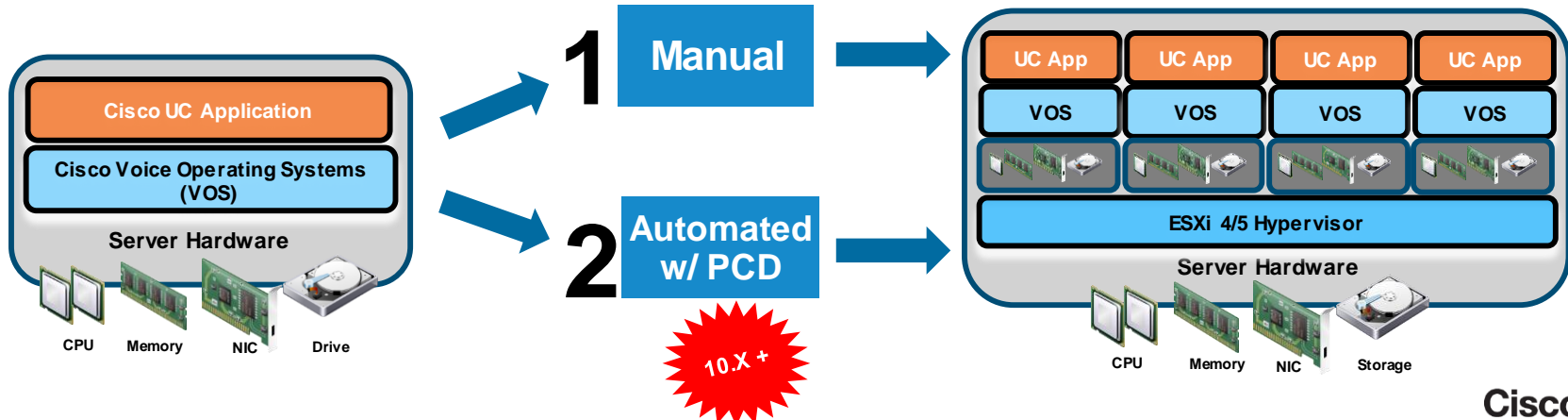


CUCM Platform Conversion

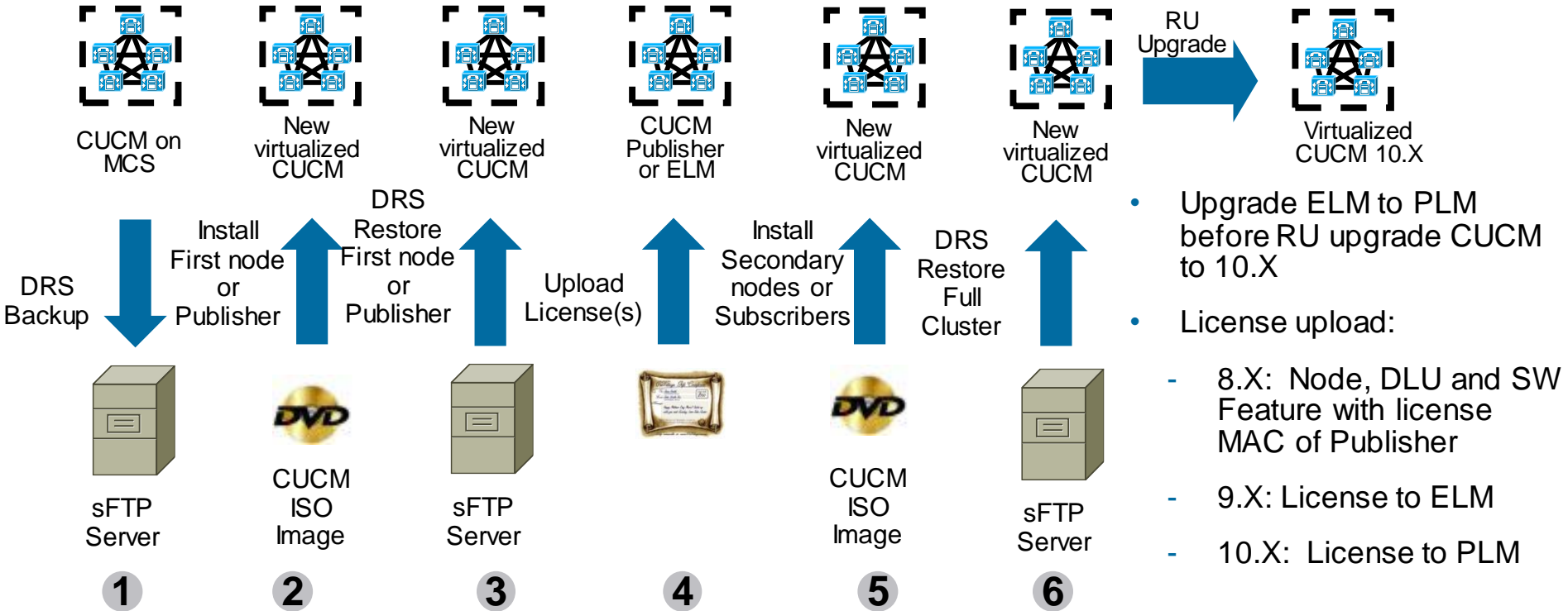


Platform Conversion: Bare metal CUCM to virtualised CUCM
(Required for CUCM 10.X)

- Two approaches to this platform conversion
 1. Manual
 2. Automated with CUCM 10.X+ or later and Prime Collaboration Deployment (PCD)
- E.g. Bare metal server to virtualised CUCM with VMware



1. Manual Platform Conversion/Upgrade for 8.0(2) - 9.1(2)



Replacing a Single Server or Cluster for Cisco Unified Communications Manager:

http://www.cisco.com/c/en/us/sdtd/docs/voice_ip_comm/cucm/inst/all/9_1_1/replace/CUCM_BK_R1B1A464_00_replace-server-cluster-cucm-91.html

1. Manual Platform Conversion/Upgrade for 6.1(4), 6.1(5), 7.1(3) or 7.1(5)

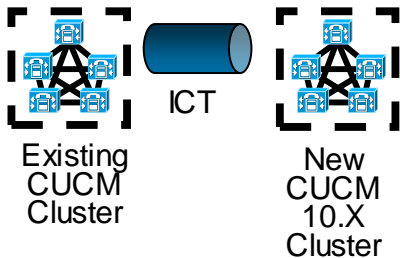


- Leverage Jump Upgrade to by-pass MCS server limitation on running CUCM 8.X or later to get to CUCM version 9.1(2)
- RU upgrade to CUCM version 10.X

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

1. Manual Platform Conversion Using New Cluster Option for 6.X, 7.X, 8.X, 9.X and 10.X



- New cluster:
 - Existing data with DRS restore with same CUCM version
 - New data without DRS restore and at any CUCM version *
- Other use case:
 - Platform conversion for earlier releases that Jump Upgrade does not support
 - Cluster consolidation *
 - Controlled migration of large deployment *

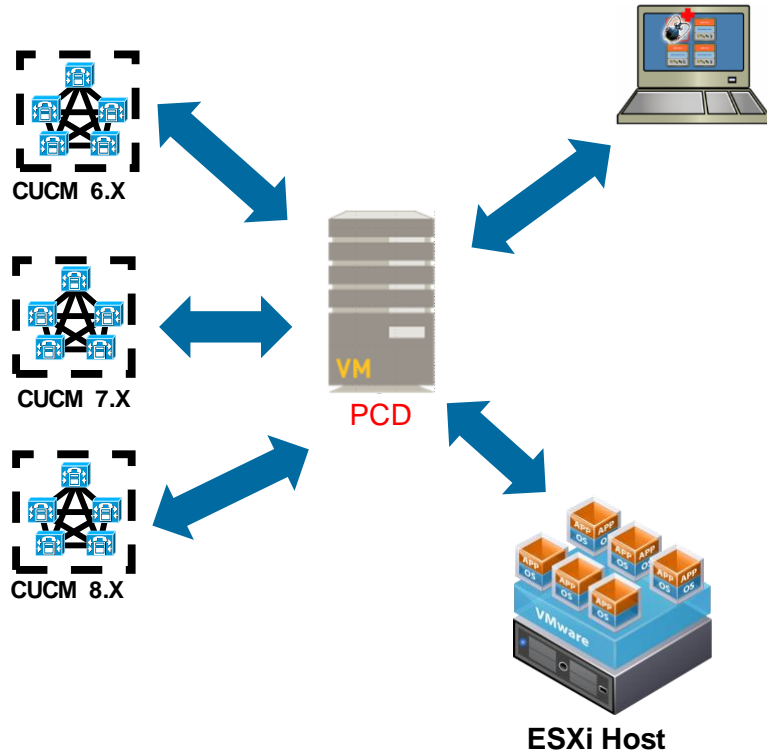
* Phones certificates will need to be consolidated with Bulk Certificate Export/Import

Bulk Certificate Export:

http://www.cisco.com/c/en/us/sd/docs/voice_ip_comm/cucm/security/9_1_1/secugd/CUCM_BK_C0395F44_00_cucmsecurityguide-91.html

Prime Collaboration Deployment (PCD)


New
10.X



- 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)
 - `pcd_vApp_UCOS_10.5.2.10000-5_vmv7_v1.2.ova`
 - Available via PUT or TAC **NOT on CCO**

PCD Versions and Builds

Reference

PCD Version	PCD Build
10.5(2) 	10.5.2.10000-5
10.5(1)	10.5.1.10000-6
10.0(1)	10.0.1.10000-14

CUCM Supported Tasks by PCD 10.5

Feature	CUCM 6.1(5)	CUCM 7.1(3), 7.1(5)	CUCM 8.0(1-3)	CUCM 8.5(1)	CUCM 8.6(1-2)	CUCM 9.x	CUCM 10.X
Migration to 10.X	X	X	X	X	X	X	X
Fresh Install							X
Upgrade (also COP Installation)					X	X	X
Switch Version					X	X	X
Restart					X	X	X
Readdress (Hostname/IP Address Change)							X

Capability for other collaboration applications:

http://www.cisco.com/c/en/us/sd/docs/voice_ip_comm/cu/cm/pcdadmin/10_5_1/CUCM_BK_U35347D2_00_pcd-administration-guide-1051.pdf

CUP\IM&P Supported Tasks by PCD 10.5

Feature	8.5(4)	8.6(3-5)	9.x	10.X
Migration to 10.X	X	X	X	X
Fresh Install				X
Upgrade (also COP Installation)		X	X	X
Switch Version		X	X	X
Restart		X	X	X
Readdress (Hostname/IP Address Change)				

Capability for other collaboration applications:

http://www.cisco.com/c/en/us/sd/docs/voice_ip_com/m/cu/cm/pcd/admin/10_5_1/CUCM_BK_U35347D2_00_pcd-administration-guide-1051.pdf

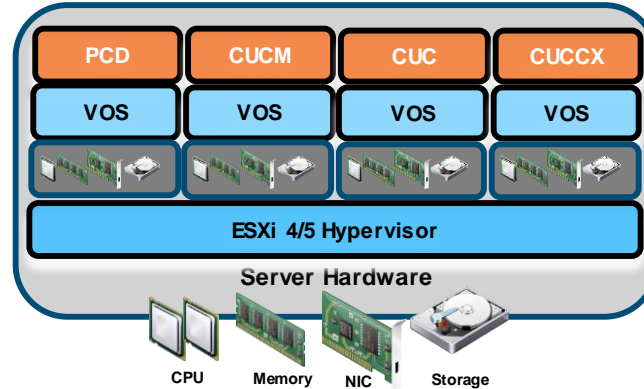
PCD Requirements

- Virtual machine virtual requirements

- 2 vCPU
- 4 GB vRAM
- 80 GB vDisk (Can be Increased)

- VMware requirements

- ESXi 4.1, 5.0, 5.1 and 5.5
- VMware API:
 - Cisco UC Virtualization Foundation, VMware vSphere Foundation, Standard Edition, Enterprise Edition, or Enterprise Plus Edition



Product: VMware vSphere 5 Enterprise Plus Licensed
License Key: [REDACTED]
Expires: [REDACTED]

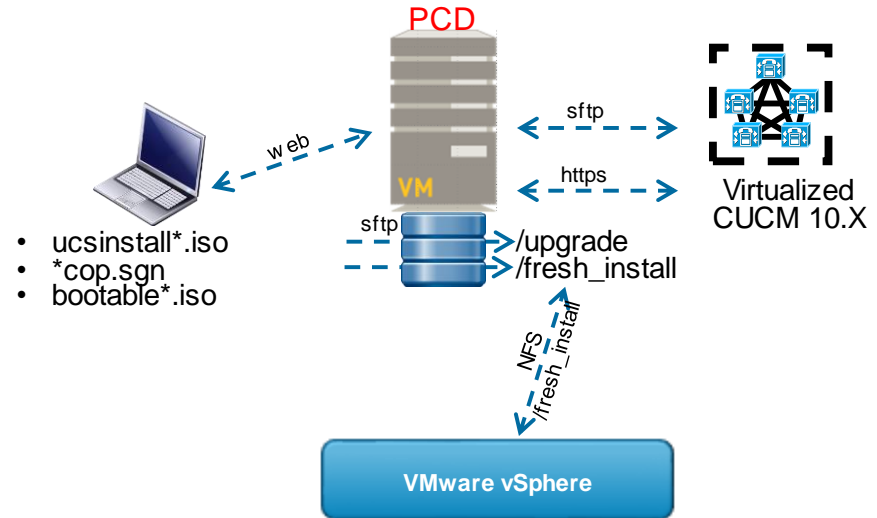
Product Features:
Unlimited virtual SMP
vCenter agent for VMware host
Reliable Memory
vShield Endpoint
vSphere Replication
SR-IOV
vSphere API
Storage APIs
VMsafe
vSphere HA
Hot-Pluggable virtual HW
vSphere vMotion
vSphere FT
vSphere Data Protection
vShield Zones
vSphere DRS
vSphere Storage vMotion
MPIO / Third-Party Multi-Pathing
vSphere Distributed Switch
vSphere Host Profiles
Remote virtual Serial Port Concentrator
vSphere Storage I/O Control
Direct Path vMotion
vSphere Storage APIs for Array Integration
Shared Smart Card Reader
vSphere Storage DRS
vSphere Profile-Driven Storage
vSphere vMotion Metro
vSphere Auto Deploy
vSphere View Accelerator
vSphere App HA
vSphere Flash Read Cache

PCD Interactions with External Components

- PCD and VMware ESXi communication
 - ESXi host root credential
 - NFS mount PCD /fresh_install directory
 - Data centre or server team coordination
- PCD and CUCM communication
 - CUCM OS admin credential
 - SFTP access for Upgrade/COP/Export
 - Platform API for Upgrade/Switchover/Reboot
- Management laptop and PCD
 - Web for GUI admin
 - SFTP Client to upload ISOs and COP files to PCD adminsftp datastores

View: Datastores Devices

Datastores	
Identification	Device
datastore1	Local LSI Disk (naa.60030130f09000001ae2452c...
datastore2	Local LSI Disk (naa.60030130f09000001ae2452c...
pcd-10-83-113-237_NFS (read only)	10.83.113.237:/common/adminsftp/fresh_install/



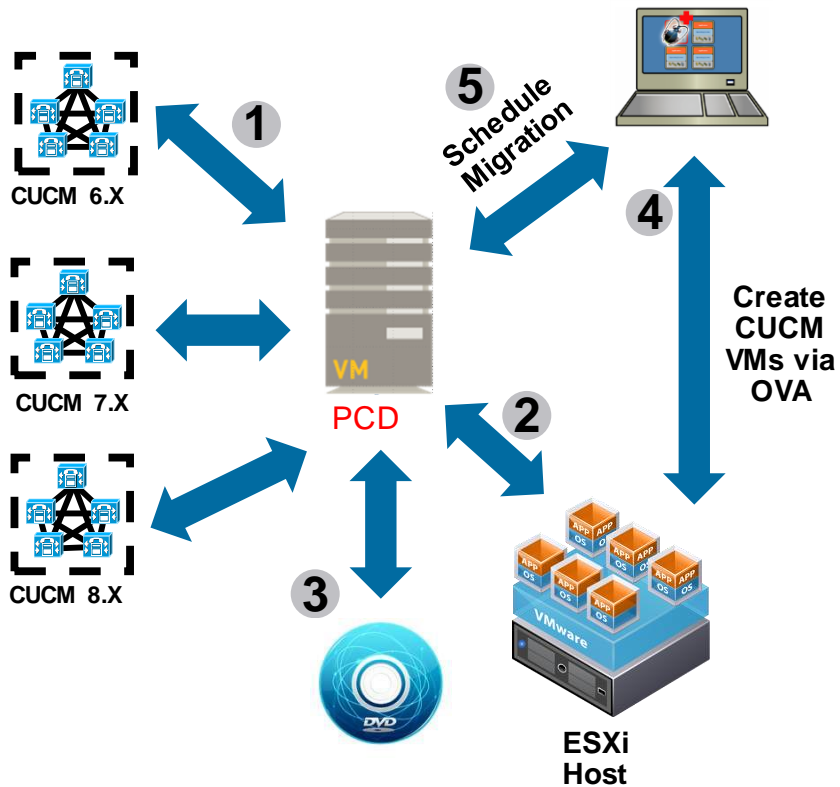
2. Automated Platform Conversion with PCD



- Bare metal CUCM to virtualised CUCM (P2V)
 - Installs ciscocm.ucmap_platformconfig.cop file to the source servers to export data
 - Builds a new migration cluster
 - Exports and Imports data
- Same or different destination IP address and/or hostname
- Source or Destination Migration Cluster can be behind NAT
- Scheduled or immediate execution



2. Automated Platform Conversion with PCD



- CUCM Bootable ISO provided to ESXi Hosts via NFS service running on PCD
- Migration (M1) Steps
 1. Add CUCM Clusters to PCD Inventory
 2. Add ESXi Hosts to PCD Inventory
 3. Add CUCM 10.X ISOs to PCD SFTP Server
 4. Deploy Empty CUCM VM on ESXi Hosts via OVA
 5. Map Physical Nodes to Virtual VMs and Schedule Migration Tasks

PCD Considerations and Planning

- Root access to ESXi host
- ESXi Host Automatically Mounts PCD Install Datastore via NFS
 - Ensure Bootable ISO images have Group and Other Users Read Access before Uploading to PCD

```
-rwxr-xr-x. 1 adminsftp download 5143754752 Jan  8 07:02 Bootable_UCSInstall_UCOS_10.5.2.10000-5.sgn.iso
```

- Bi-Directional Mapping Required for NAT Support
 - Inside to Outside – Outside to Inside
- L2 and RU upgrade tasks does not automatically Install these COP files
 - ciscocm.version3-keys.cop.sgn
 - ciscocm.refresh_upgrade_v1.5.cop.sgn
- Might do a hybrid of manual and PCD upgrade due other applications
- Inspect PCD logs via activelog tomcat/logs/ucmap/log4j/ucmap*.log

Upgrade and Migration Definition Table

Upgrade Definition	Scenario
W1 Upgrade	Windows to appliance upgrade up to CUCM 7.1(5)
L2 Upgrade	Appliance to appliance upgrade within same major RHEL release (before CUCM 8.6)
RU Upgrade	Appliance to appliance upgrade between major RHEL releases (starting with CUCM 8.6)
Bridge Upgrade	Servers too old to run latest CUCM version. Use DRS file to change platform to continue upgrade. Up to 9.1(2)
Jump Upgrade	Servers too old to run CUCM version 8.0(2) or later to virtualised. Virtualised in lab to perform upgrade. To 9.1(2) only.
Manual Platform Change	Changing servers platform. Typically from bare metal servers to virtualised environment. Might be multiple steps.
Automated Platform Change w/ PCD (M1)	Automated Migration. Potential data centre access and storage standard concerns.



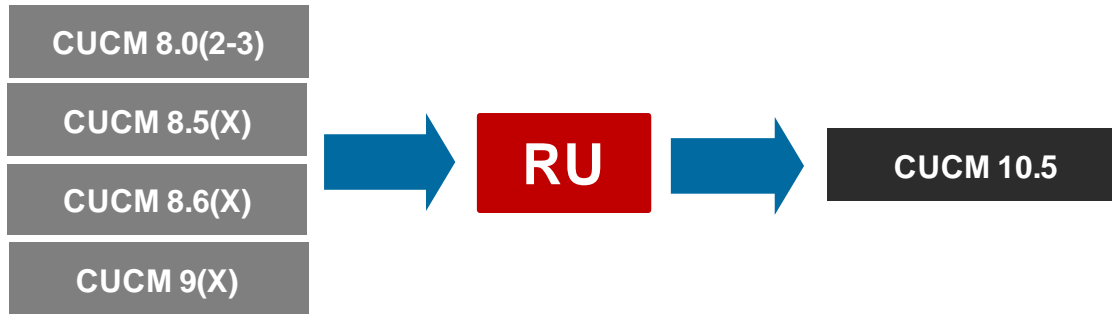
Upgrade Path

One-Step L2 Upgrades (Virtualised)



- The CUCM versions that will support a L2 upgrade to 10.5
- Short or minimal downtime
- Pre-upgrade RSA keys COP file (ciscocm.version3-keys.cop.sgn) not required

One-Step RU Upgrades (Virtualised)



- 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_v1.5.cop.sgn) is required for CUCM 8.5 or earlier

Supported Cisco Unified Communications Manager Releases by Server:

http://www.cisco.com/en/US/partner/prod/collateral/voicesw/ps6790/ps5748/ps378/prod_brochure0900aecd8062a4f9.html

Upgrade and Platform Migration to Virtualised CUCM 10.5

Reference

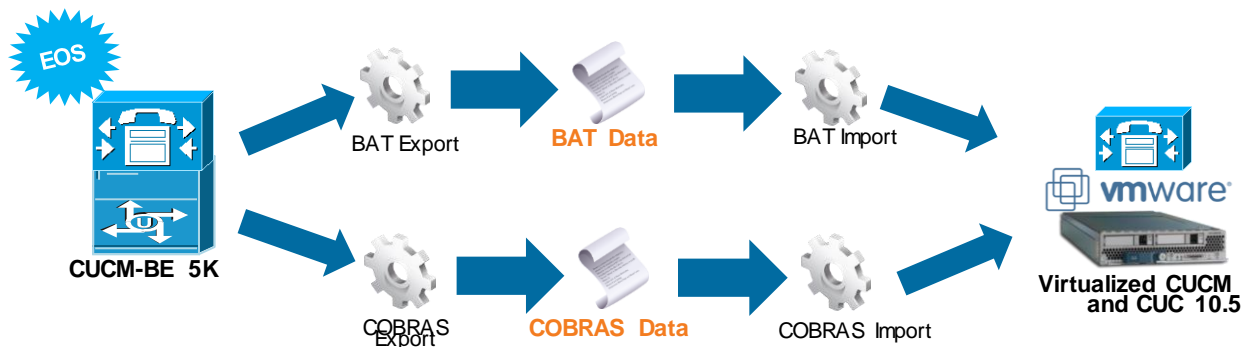
Platform Number	Supported Normal Mode	Supported Bridge	Not Supported	Upgrade Strategy
1	6.1-7.1	8.0	8.5-9.1	PCD, Jump Upgrade or manual PC at 8.0 then L2/RU to 10.5
2	6.1-7.1	8.0-8.5	8.6-9.1	PCD, Jump Upgrade or manual PC at 8.5 then L2/RU to 10.5
3	6.1-8.0	NA	8.5-9.1	PCD, Jump Upgrade or manual PC at 8.0 then L2/RU to 10.5
4	6.1-8.0	8.5	8.6-9.1	PCD, Jump Upgrade or manual PC at 8.0 then L2/RU to 10.5
5	6.1-8.0	8.5-9.1	10	PCD, Jump Upgrade or manual PC at 8.0 then L2/RU to 10.5
6	6.1-8.5	8.5-9.1	10	PCD, Jump Upgrade or manual PC at 8.5 then L2/RU to 10.5
7	7.1-9.1	NA	10	PCD, Jump Upgrade or manual PC at 9.1 then L2/RU to 10.5

- Use PCD unless challenged by data centre team, server team, complex hybrid migration, etc.
- For manual platform conversion (PC), try to stay with Normal Mode that can be virtualised

Supported Cisco Unified Communications Manager Releases by Server:

http://www.cisco.com/en/US/partner/prod/collateral/voicesw/ps6790/ps5748/ps378/prod_brochure0900aecd8062a4f9.html

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 virtualised CUCM and CUC
- Import data:
 - BAT for CUCM and COBRAS for CUC

Migration CUCM-BE5K to CUCM-BE 6K:

<https://communities.cisco.com/docs/DOC-33988>

A nighttime photograph of a city street. In the foreground, there are long, curved light trails from cars, primarily in shades of yellow and orange. In the middle ground, a pedestrian bridge with a glass railing spans across the street. The background features several modern buildings with lit windows and some flags on poles. The overall scene is illuminated by city lights, creating a vibrant urban atmosphere.

CUCM License and Cisco Enterprise License Manager (ELM)

A nighttime photograph of a city street. In the foreground, there are long, curved light trails from cars, primarily in shades of yellow and orange. In the middle ground, a pedestrian bridge with blue lighting spans across the street. In the background, there are several tall buildings with lit windows and some flags on poles. The overall scene is illuminated by city lights.

Foundational Knowledge of CUCM 8.X and Earlier License

CUCM 5.0 to 7.1(3) License Types

TECHNICAL	ORDERING	Description
Node	Node	Number nodes per cluster
DLU	DLU	Number of phones, type of phones, mobility feature and presence users
SW Feature	ESW/UCSS	Maintenance for minor and major version upgrade

- 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

TECHNICAL	ORDERING	Description
Node	UCL/CUWL	Number nodes per cluster
DLU	UCL/CUWL	Number of phones, type of phones, mobility feature and presence users
SW Feature	ESW/UCSS	Maintenance for minor and major version upgrade

- 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 virtualised 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 and DLU (CUCM 8.6 and earlier)

Reference

LICENSE TYPE	DLU	Comments
CUWL Pro	17/12	Prior to January 2012/After January 2012
CUWL Standard	11/8	Prior to January 2012/After January 2012
CUWL Entry	9	Migrate to UCL Enhance Plus in CUCM 9.X and later
CUWL Analog	2	Migrate to UCL Essential in CUCM 9.X and later
CUWL Public Space	5	Migrate to UCL Enhance in CUCM 9.X and later
UCL Enhanced	6	
UCL Basic	4	
UCL Essential	0	
UCL Public Space	5	Migrate to UCL Enhance in CUCM 9.X and later
UCL Adjunct	5	Migrate to UCL Enhance in CUCM 9.X and later
UCL TP Single/Multi-screen	6	Migrate to TP Room in CUCM 9.X and later

A nighttime photograph of a city street. In the foreground, there are long, curved light trails from cars, primarily in shades of yellow and orange. In the middle ground, a pedestrian bridge with blue lighting spans across the street. In the background, there are several tall buildings with lit windows and some flags on poles. The overall scene is illuminated by city lights.

CUCM 10.X License Conversion

License Manager Versions and Builds


License Manager

Enterprise License Manager (ELM)
9.0 – 9.1

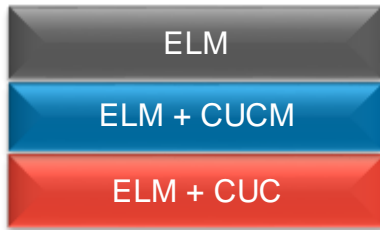
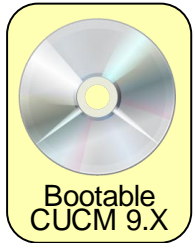
Prime License Manager (PLM)
10.0-10.5

- ELM is built into CUCM ISO
- PLM is built into CUCM ISO or as independent ISO with standalone deployment

Version	Build
Same as CUCM	Same as CUCM
e.g. 9.1(2)	9.1.2.10000-28

Version	Build
10.5(2) 	10.5.2.10000-6
10.0(1)	10.0.1.1000-19
Co-Resident Same as CUCM	Co-Resident Same as CUCM

Enterprise License Manager (ELM)



ELM Implementation	Products
Standalone	ELM
Co-resident w ith CUCM	ELM + CUCM
Co-resident w ith CUC	ELM + CUC

- ELM is a centralised 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)



Cisco Prime License Manager (PLM)



PLM



PLM + CUCM
PLM + CUC

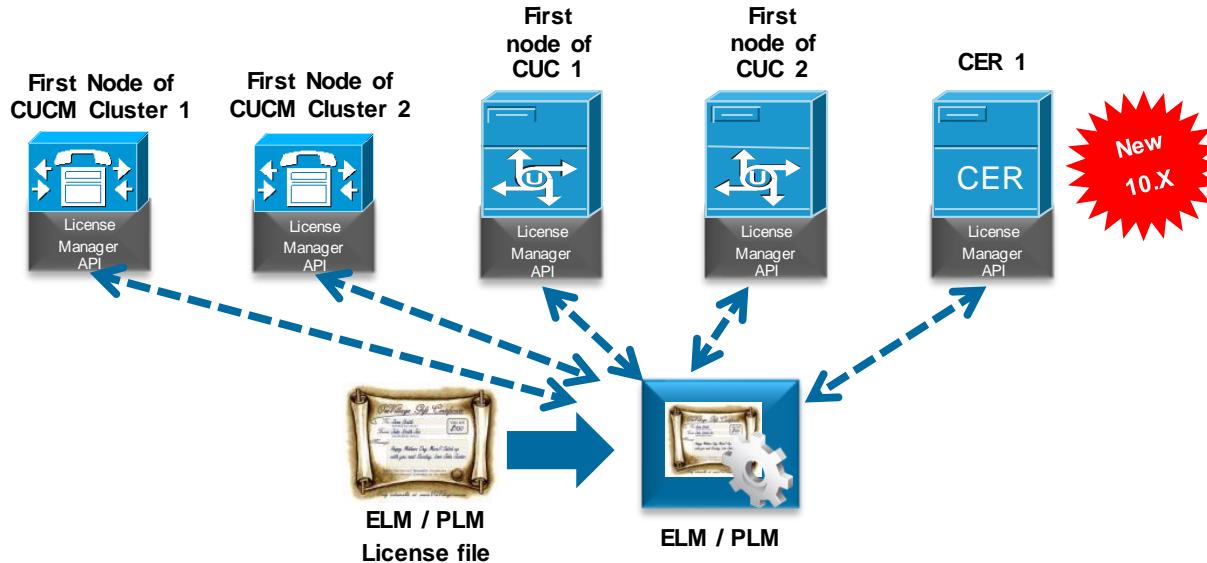
ELM Implementation	Products
Standalone	PLM
Co-resident w ith CUCM	PLM+ CUCM
Co-resident w ith CUCMBE 6K	PLM+ CUCMBE 6K
Co-resident w ith CUC	PLM+ CUC

- PLM is a centralised enterprise-wide license management solution for Cisco collaboration applications
 - CUCM, **CUCM SME** and **CUCMBE 6K** (standalone)
 - Cisco Unity Connection (CUC)
 - **Cisco Emergency Responder (CER)**
- PLM deployment can be standalone or co-resident with CUCM, CUCM-BE 6K or CUC

Cisco Prime License Manager User Guide:

http://www.cisco.com/c/en/us/std/docs/voice_ip_comm/cucm/plm/10_5_1/userguide/CPLM_BK_UD_1156AD_00_user-guide-rel-1051.html

License Manager Architecture 9.X and 10.X



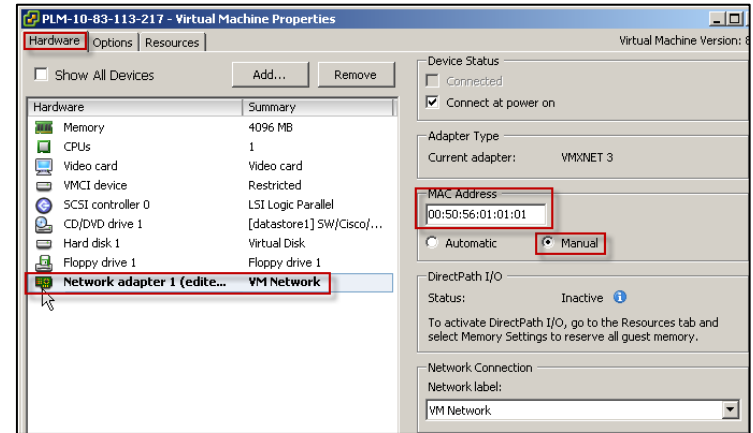
- License Manager API added to CUCM 9.X/10.X and CUC 9.X/10.X to interact with ELM / PLM for license request and approval
- License Manager API added to CER 10.X to interact with PLM for license request and approval
- Electronic fulfillment supports License Feature and Version Upgrades in PLM 10.X

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License Manager Product Support and Usage

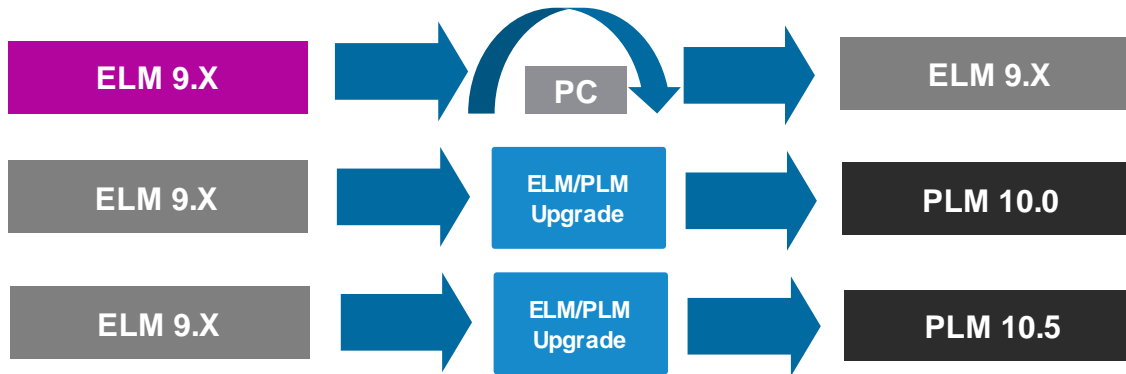
Product Version	ELM (Bare Metal or Virtualized)	PLM (Virtualized)
CUCM 9.X	Yes	Yes
CUC 9.X	Yes	Yes
CUCM 10.X	Yes w/ License Definition	Yes
CUC 10.X	Yes w/ License Definition	Yes
CER 10.X	No	Yes

License Definition = elm_LicenseDef_9_1_v1.cop.sgn



- For CER 10.X support, use PLM
- For bare metal environment, use ELM
- For virtualised PLM and virtualised 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(s)

ELM to PLM Upgrade

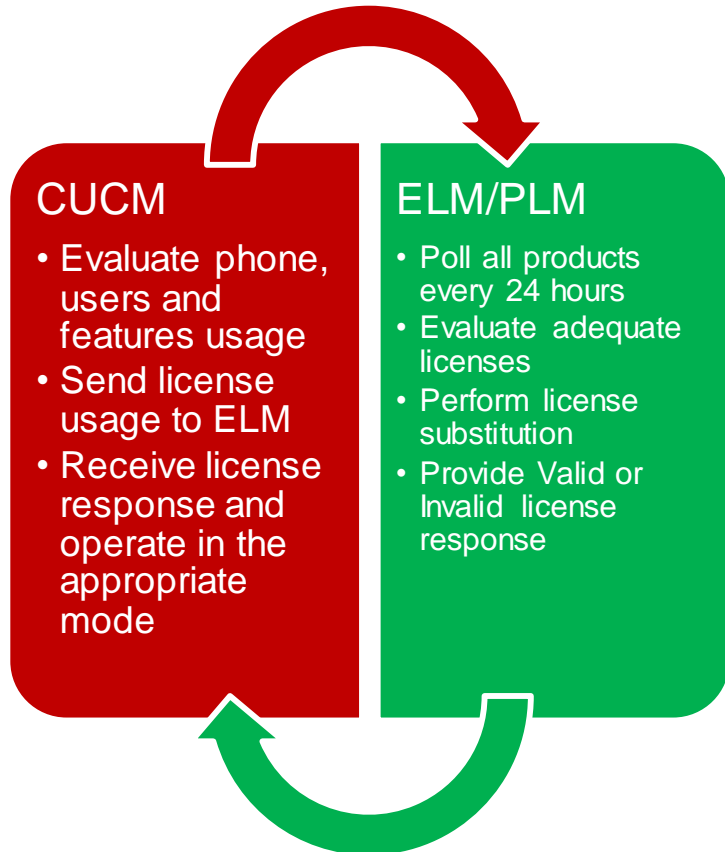


- Use “Replacing a Single Server for Cisco Unified Communications Manager” procedure to change from bare metal ELM to virtualised ELM
- Use ELM/PLM upgrade COP file (elm_Elm_v9_1_1_PlmUpgrade.cop.sgn) to allow for ELM to PLM upgrade
- Use pre-upgrade RSA keys COP file (ciscocm.version3-keys.cop.sgn) to upgrade to PLM 10.5

Replacing a Single Server or Cluster for Cisco Unified Communications Manager:

http://www.cisco.com/c/en/us/solutions/voice_ip_com/cu/cm/inst/all/9_1_1/replace/CUCM_BK_R1B1A464_00_replace-server-cluster-cu-cm-91.html

CUCM and ELM/PLM Interaction

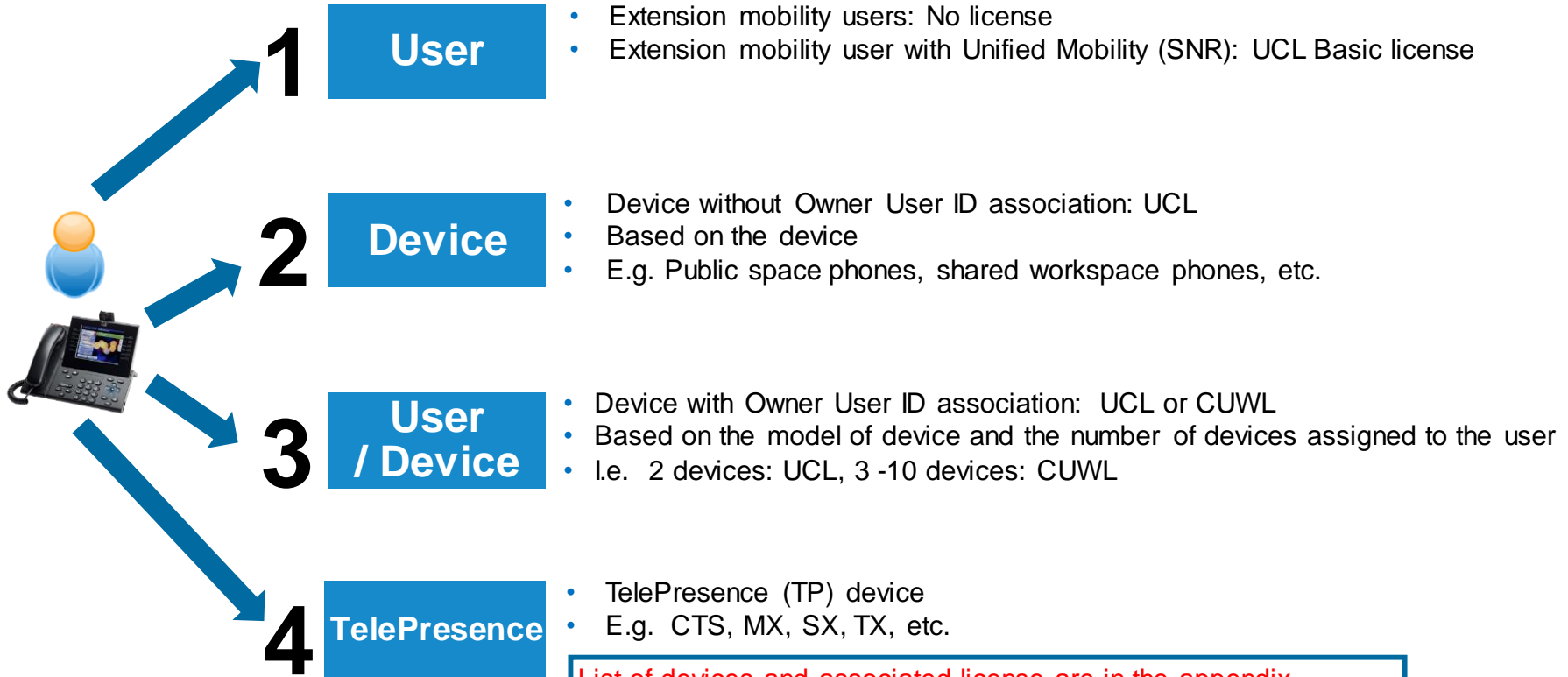


- ELM/PLM polls all registered CUCM clusters
- CUCM evaluates license usage and sends license usage back to ELM/PLM
- ELM/PLM evaluate all CUCM responses to see if there is adequate licenses for the requested types
- ELM/PLM performs license substitution if does not have adequate license of the requested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

Detailed CUCM and ELM/PLM interactions with signalling are in the appendix

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CUCM License Usage



List of devices and associated license are in the appendix

Device and Owner User ID Association

Device > Phone > Device Name

Device Information

Registration	Unknown
IP Address	Unknown
<input checked="" type="checkbox"/> Device is Active	
<input checked="" type="checkbox"/> Device is trusted	
MAC Address*	483758236298
Description	SEP483758236298
Device Pool*	Default
Common Device Configuration	< None >
Phone Button Template*	Standard 8945 SCCP
Softkey Template	< None >
Common Phone Profile*	Standard Common Phone Profile
Calling Search Space	< None >
AAR Calling Search Space	< None >
Media Resource Group List	< None >
User Hold MOH Audio Source	< None >
Network Hold MOH Audio Source	< None >
Location*	Hub_None
AAR Group	< None >
User Locale	< None >
Network Locale	< None >
Built In Bridge*	Default
Privacy*	Default
Device Mobility Mode*	Default
Owner User ID	bta

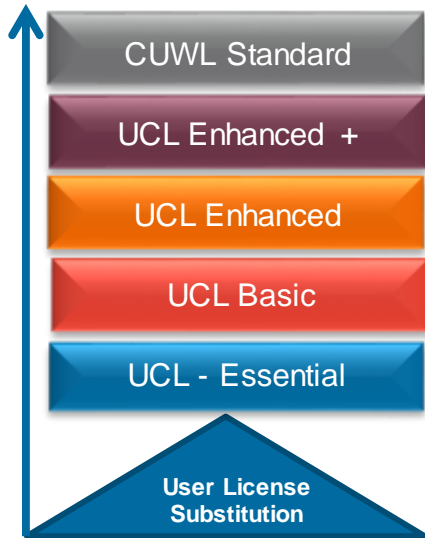
- Device with Owner User ID field configured potentially uses less licenses
 - I.E. Extension mobility user with Unified Mobility feature and a phone uses one license
 - I.E. Multiple phones with the same Owner ID field

Number of Phones	Type of License
1	Based on the model of phone
2	Enhanced UCL Plus
3-10	CJWL Standard

Recommend to perform before upgrading to CUCM 9.X or 10.X. BAT export and import can be use. New association tool is slated for Q4 CY 2014.

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ELM/PLM License Substitution

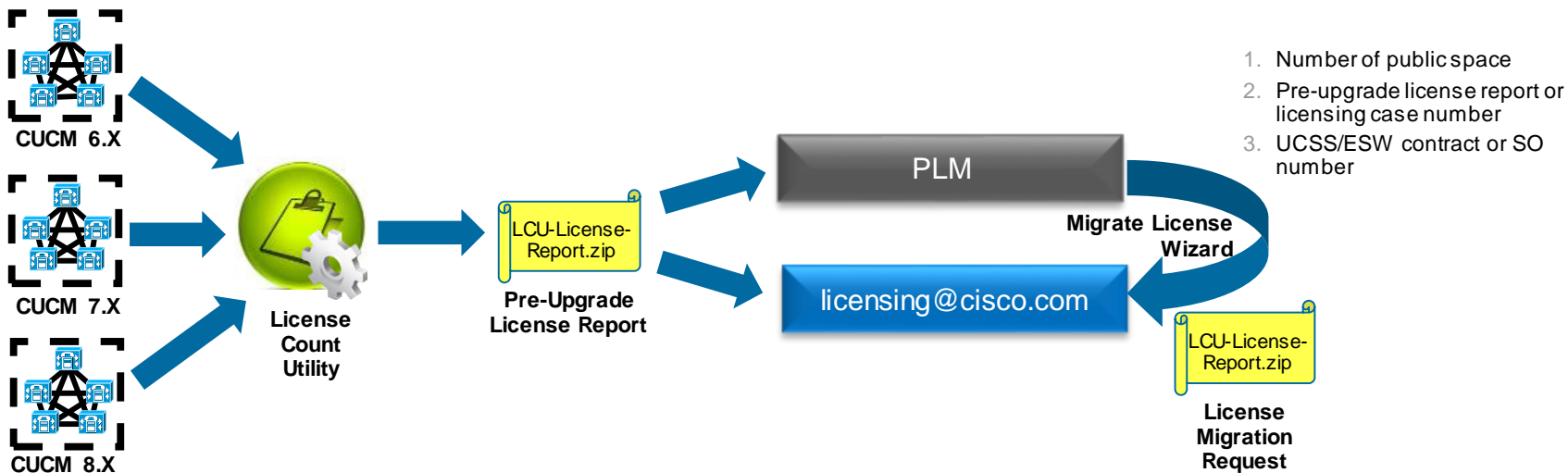


- Licenses are based on hierarchical model where lower feature license can be covered by a higher feature license
 - I.E. UCL Basic can be covered by UCL Enhance
 - I.E. UCL Enhance can be covered by UCL Enhance Plus
- ELM/PLM evaluates ALL system license requirements on a per product (CUCM, CUC and CER) basis and respond back with one consistent response to ALL registered systems
 - VALID: adequate license
 - INVALID: inadequate license
- Centralise and enterprise-wide licensing view per product

CUCM License States

- **Demo:** Warning displayed : The system is operating on demo licenses that will expire in <7> days. Add this system to an Enterprise License Manager and install sufficient licenses to cover its usage before expiration in order to avoid losing the ability to provision users and devices. Demo is 60 days.
- **No Provisioning: Warning displayed:** The system is operating without any valid licenses. Configure licenses on the system in order to restore the ability to provision users and devices.
- **Overage: Warning displayed:** The system is operating with an insufficient number of licenses. If additional licenses to cover the shortage are not configured in your Enterprise License Manager within <7> days, you will no longer be able to provision users and devices.
- **Lost connection to ELM:** Warning displayed: The system has not synchronised successfully with Enterprise License Manager for <7> days. If successful synchronisation does not occur within the next <60-7> days, you will no longer be able to provision users and devices.
- **Security mismatch with ELM:** Warning displayed: Due to a certificate mismatch, the system has not synchronised successfully with Enterprise License Manager for <7> days. If successful synchronisation does not occur within the next <60-7> days, you will no longer be able to provision users and devices.
- **Grace: Warning displayed:** The system is operating under a licensing grace period that will expire in 1 day. Install sufficient licenses in the Enterprise License Manager for this system to cover its usage in order to avoid losing the ability to provision users and devices. If licenses for this system are not already being managed by an Enterprise License Manager server, the system must first be added to one.

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 or use with PLM Migrate License wizard
- Include number of public space, pre-upgrade license report / license case number / MAC address and UCSS/ESW or SO number, if send directly to licensing@cisco.com

License Count Utility (LCUZIP-Ver9.1.2.zip):

<http://software.cisco.com/download/release.html?mdfid=284603137&flowid=47762&softwareid=282204704&release=COP-Files&relind=AVAILABLE&relifcy=cle&reltpe=latest>

Opening Licensing Case

Web

- <https://tools.cisco.com/RUServiceRequestTool/create/launch.do>
- Type of problem = Licensing

Email

- licensing@cisco.com

Phone

- 1-800-553-2447
- Option 3, License Support

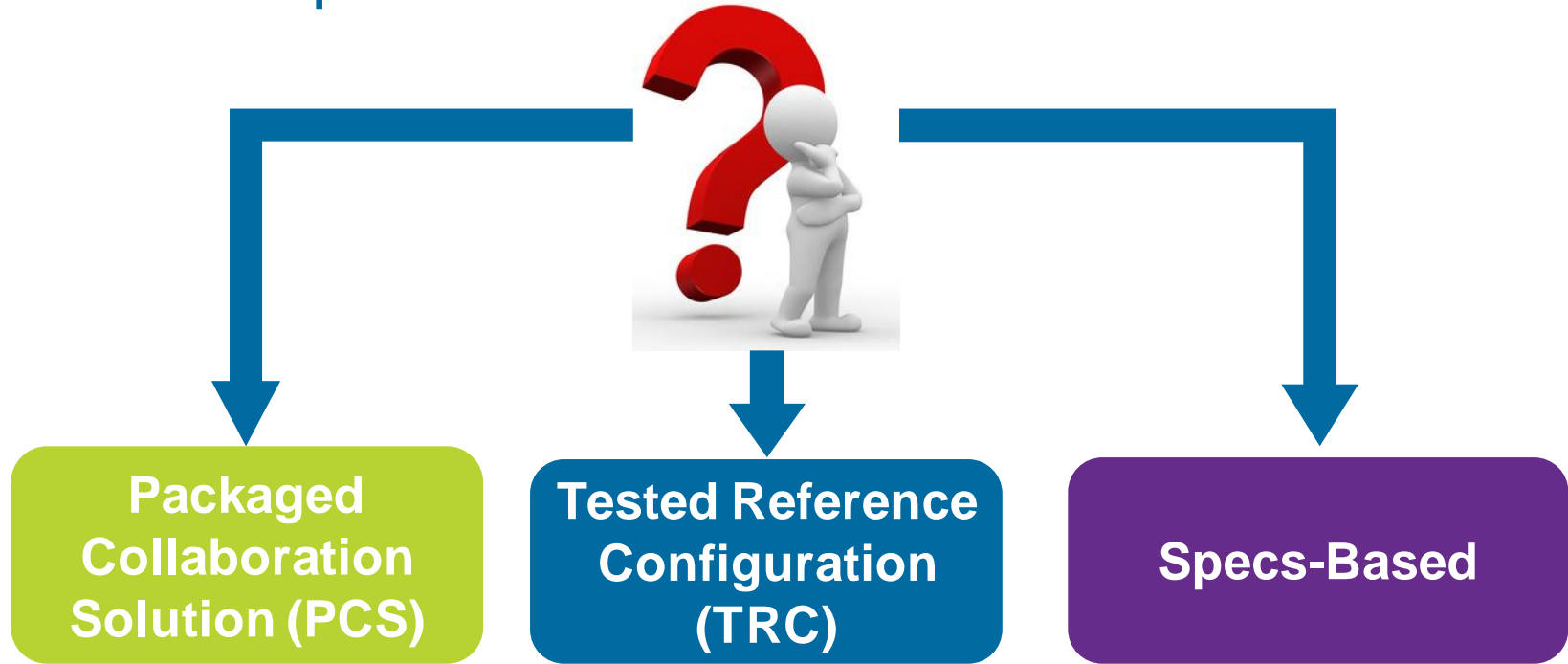


Virtualised CUCM



Platform Support

Platform Options

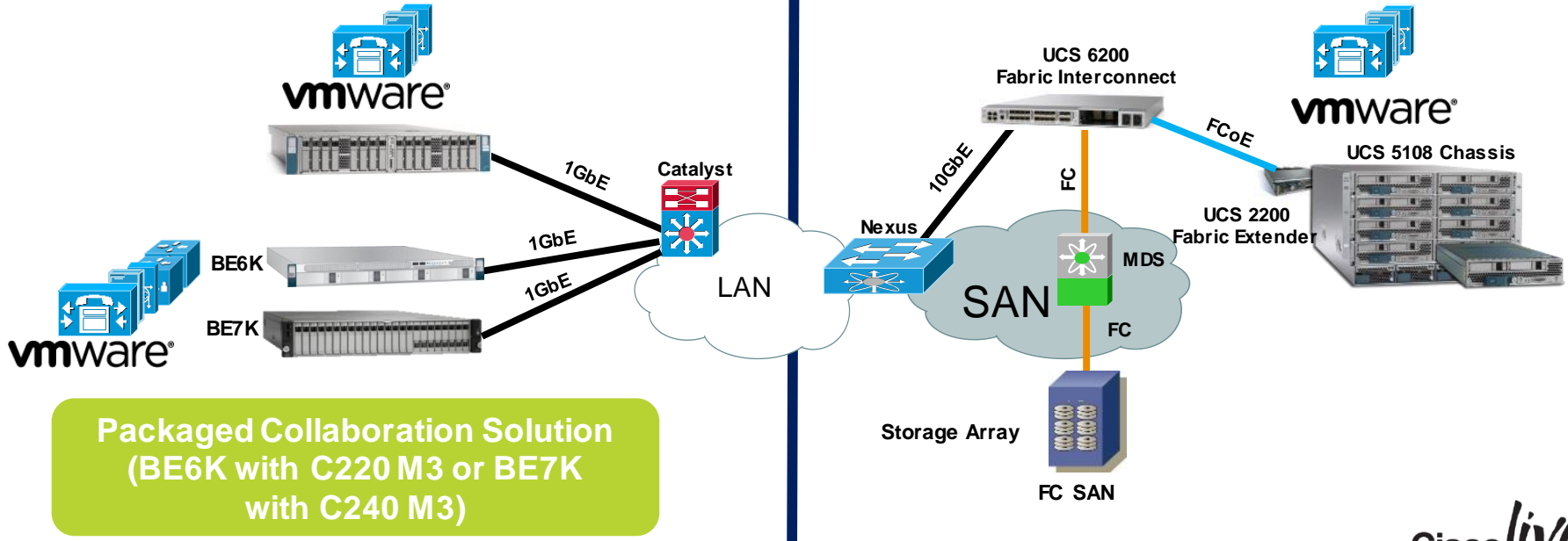


Any vendor
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Cisco UCS Architecture Overview

UCS C-series TRC's
(C220 M3, C240 M3, C260 M2)

UCS B-series TRC's
(B200 M3, B230 M2, B440 M2)



Packaged Collaboration Solution
(BE6K with C220 M3 or BE7K
with C240 M3)

Tested Reference Configurations (TRC)

T Tested

- Tested by Cisco
- Guaranteed Application Performance

R Reference

- “One size fits all” for all the Collaboration apps
- Reference for Specs-Based

C Configuration

- Fixed-Configuration from Cisco
- Fixed HW configurations

TRC

UC on UCS



- Chassis Based: FC SAN only, Full or Half-width blade
- Rack Mount Based: DAS only, 1 to 2 Rack Unit

PCS

Business Edition 6000



Business Edition 7000

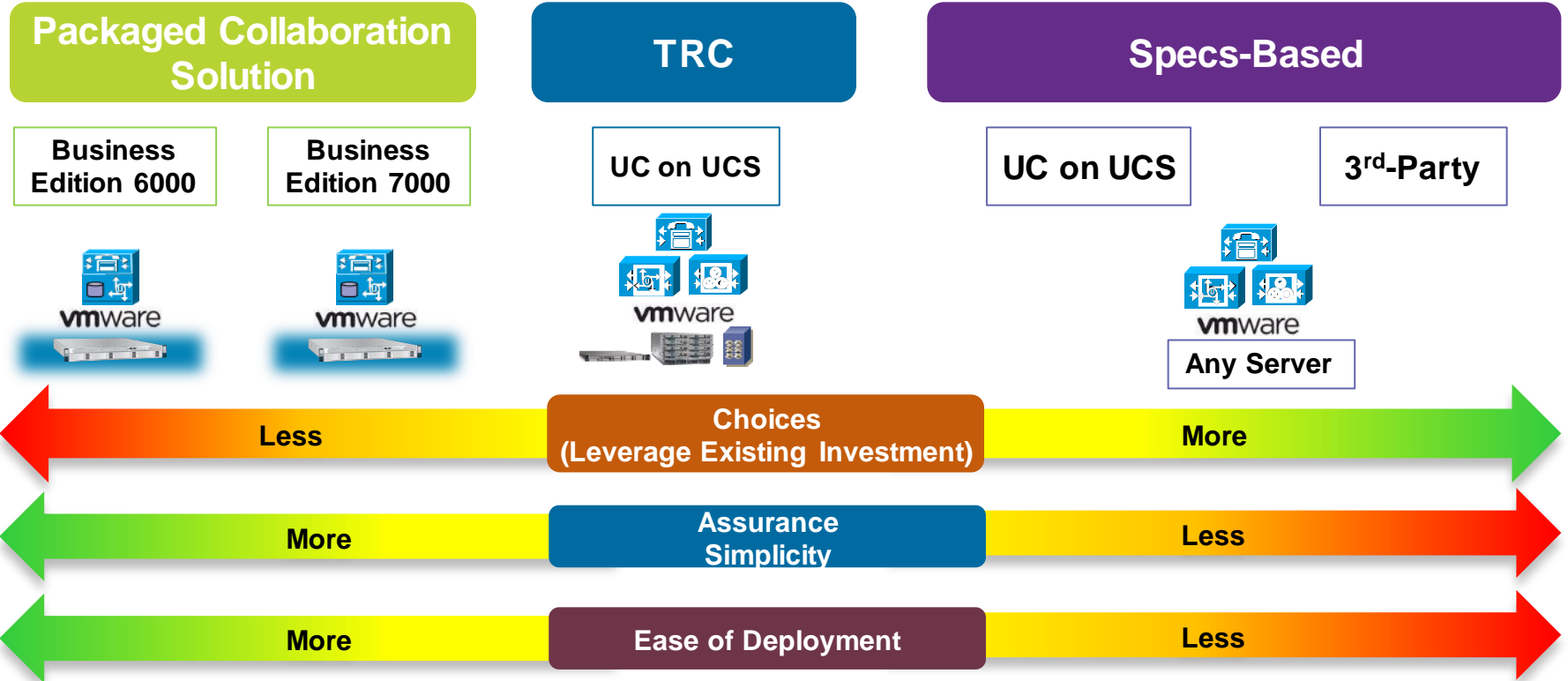


- Software and Hardware Bundle for ease of deployment
- Rack Mount Based: DAS only, 1 or 2 Rack Unit depending on BE6K versus BE7K

Tested Reference Configurations (TRC):

[http://docwiki.cisco.com/wiki/Tested Reference Configurations \(TRC\)](http://docwiki.cisco.com/wiki/Tested_Reference_Configurations_(TRC))

TRC vs. Specs-Based



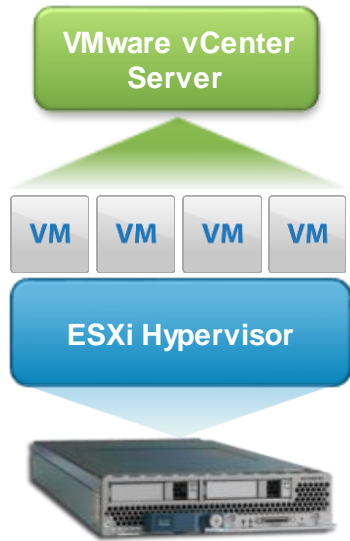
TAC Notes
http://www.cisco.com/en/US/customer/products/ps6884/products_tech_note09186a0080bf23f5.shtml





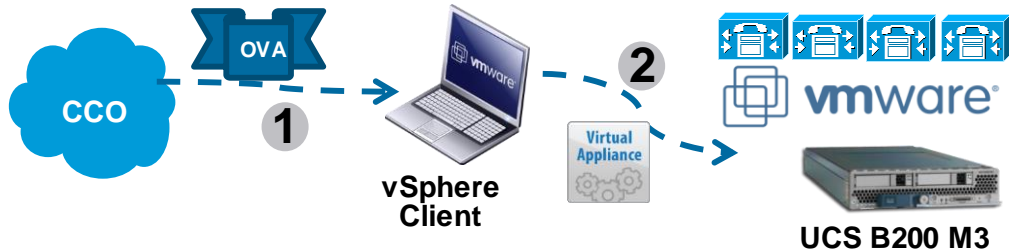
Virtualisation Support

VMware Sphere Support



- ESXi Hypervisor: 4.0, 4.1, 5.0, 5.1 and 5.5 (with some specific UC application exceptions)
- ESXi Edition: VMware vSphere Hypervisor, Cisco UC Virtualisation Hypervisor, VMware vSphere Hypervisor Foundation, Cisco UC Virtualisation Foundation, Standard, Enterprise or Enterprise Plus
- VMware vCenter: Essential, Foundation or Standard
 - Recommended for large deployment. centralise management, license management, etc.
 - Mandatory for Specs-Based deployment
- VMware acquisition: Cisco, Partner or VMware
 - https://www.vmware.com/files/pdf/vsphere_pricing.pdf

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

ESXi and Collaboration OVA Version

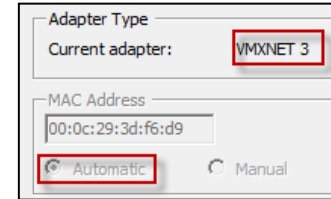
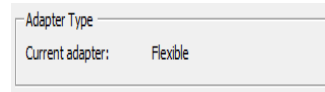
ESXi Version	VMware Virtual Machine Hardware Version (VMV)	Recommended Cisco OVA VMV Version
4.0	7	7
4.1	7	7
5.0	8	8
5.1	9	8
5.5	10	8

Collaboration Application	Collaboration Application Version	VMV Version	Cisco OVA Version
cucm_10.5_vmv8_v1.8.ova			
CUCM	10.5	8	1.8

- 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

CUCM 9 to CUCM 10 OVA Change

Features	CUCM 9.X	CUCM 10.X
RHEL Guest OS	5 (32bit)	6 (64 bit)
Adapter Type	Flexible	VMXNet3



- Change the Guest OS from RHEL 5 (32 bit) to RHEL 6 (64 bit)
- Change Network adapter type from Flexible to VMXNET3
 - Manual MAC: Delete existing Network adapter then add new Ethernet Adapter with type of VMXNET 3
 - 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

Migration Option with VM Templates (OVA)

Reference

Product	Scale (users)	vCPU	vRAM (GB)	vDisk (GB)
Unified CM 9.1	10,000	4	6	1 x 110
	7,500	2	6	1 x 110
	2,500	1	4	1 x 80
	1,000	2	4	1 x 80
Unity Connection 9.x	20,000	7	8	2 x 300/500
	10,000	4	6	2 x 146/300/500
	5,000	2	6	1 x 200
	1,000	1	4	1 x 160
Unified IM & Presence 9.x	15,000 full UC	4	6	2 x 80
	1,000 full UC	1	2	1 x 80
Unified CCX 9.x	400 agents	4	8	2 x 146
	300 agents	2	4	2 x 146
	100 agents	2	4	1 x 146



Server / virtual machine consolidation and re-sizing opportunity

Bare Metal Versus Virtualisation Support



Feature	Bare Metal	Virtual
Music on Hold (live source)	USB audio (unicast and multicast)	IOS or Barix (multicast only)
Install and upgrade error logs	USB	Virtual serial port
Answerfile (platformConfig.xml)	USB	Virtual floppy
UPS via USB	APC UPS via USB	UPS on UCS/ESXi
Back up	Tape	Secure ftp
eToken encryption key	USB on client and not server	USB on client and not server
SMDI	Serial port	NA

- Take these support into consideration and deploy prior to virtualising
- For CUCM 8.X and 9.X MCS server can be use for MOH and SMDI

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System Level Upgrade



System Level Upgrade or Migration

Overall Upgrade Strategy to Minimising 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:
CUCM and UC
Applications Post
Upgrade Migration

IP Phone
Firmware



Replacement



UC Applications
Upgrade



CUCM
Upgrade



UC Applications
Upgrade

- 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

IP Phone Firm ware for 10.X:

http://www.cisco.com/c/en/us/td/docs/voice_ip_comm/cucm/compat/matrix/10_x/CUCM_BK_CD1DB914_00_compat_mat

NEW

Phase I: Device and Owner User ID Association

Device > Phone > Device Name

Device Information

Registration	Unknown
IP Address	Unknown
<input checked="" type="checkbox"/> Device is Active	
<input checked="" type="checkbox"/> Device is trusted	
MAC Address*	483758236298
Description	SEP483758236298
Device Pool*	Default
Common Device Configuration	< None >
Phone Button Template*	Standard 8945 SCCP
Softkey Template	< None >
Common Phone Profile*	Standard Common Phone Profile
Calling Search Space	< None >
AAR Calling Search Space	< None >
Media Resource Group List	< None >
User Hold MOH Audio Source	< None >
Network Hold MOH Audio Source	< None >
Location*	Hub_None
AAR Group	< None >
User Locale	< None >
Network Locale	< None >
Built In Bridge*	Default
Privacy*	Default
Device Mobility Mode*	Default
Owner User ID	bta

- 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

Number of Phones	Type of License
1	Based on the model of phone
2	Enhanced UCL Plus
3-10	CUWL Standard

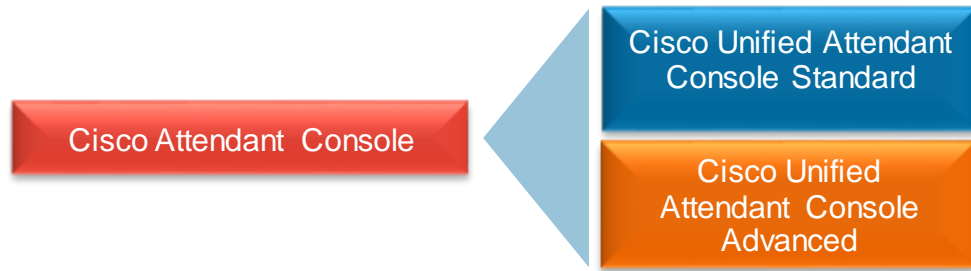
Recommend to perform before upgrading to CUCM 9.X or 10.X. BAT export and import can be use. New association tool is slated for Q4 CY 2014.

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Phase II: Phone Firmware Distribution

- Peer-to-Peer Image Distribution (PPID):
 - Configurable via AXL script with Unified 4.1 and later using CCMPPID.exe. (Readme in notes section)
 - Configurable via CM Administration or BAT from version 5.0 and later
 - Default is disable PPID on all phones models
- Change TFTP service parameter for dedicated TFTP server on CUCM 5.1(1c) or later:
 - System > Service Parameter > Cisco TFTP (Advance)
 - Maximum Serving Count (default is 200 for Windows and 500 for appliance)
 - 1,500 for single processor dedicated TFTP server and 3,000 for dual processors dedicated TFTP server

Phase III: Attendant Console Considerations for CUCM 10.X



- No embedded Cisco Attendant Console (CAC) with CUCM 8.0 or later
- Migrate to one of the two attendant console solutions prior to CUCM migration

End-of-Sale and End-of-Life Announcement for the Cisco Unified Attendant Console:

http://www.cisco.com/en/US/prod/collateral/voicesw/ps6789/ps7046/ps7282/end_of_life_notice_c51-499091.html

Phase III: Proactive Replacement

EOS Solution	Current Solution
MeetingPlace Express	WebEx Centre
CUMC/CUMA	Jabber Mobile
ATA (EOS)	ISR G2
Personal Assistant (PA)	Unified Mobility

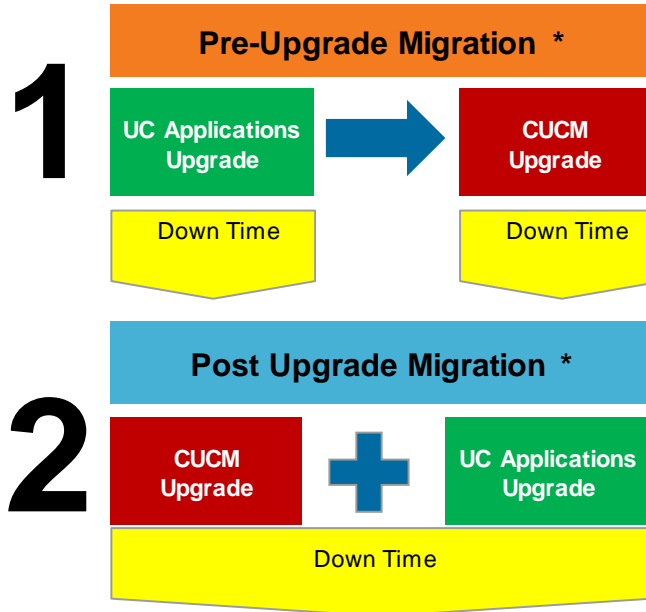
- End of Support product
- Product with limited life span

Phase IV & V: UC Application Upgrade / Migration Definition

Upgrade Time Increases with Various Dependencies



CER	CUCCE
CUCCX	CUP
MP	MPE
Unity Connection	Unity



* Some UC Application Requires a Complete Reinstall for Upgrade

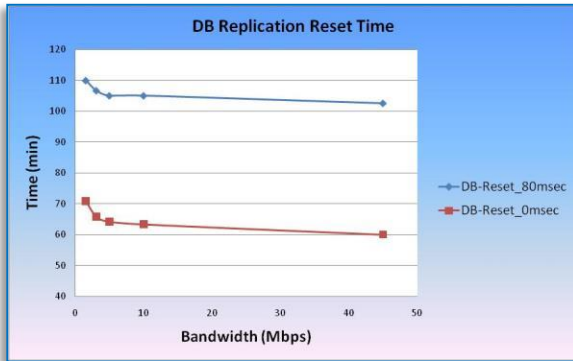
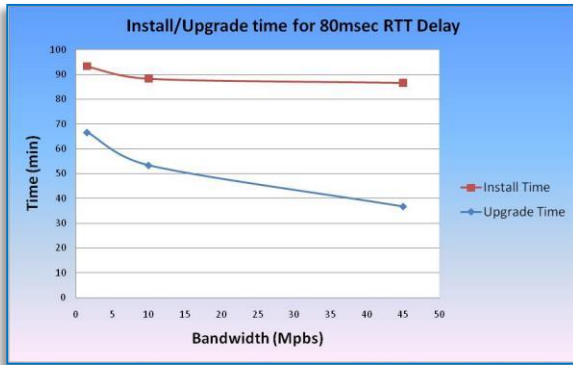
CUCM Upgrade

- Clear out logs in /common partition for upgrade
- If virtual resize drive for CUCM with COP file
 - `ciscocm.free_common_space_v1.0.cop.sgn`
 - `ciscocm.vmware-disk-size-reallocation-1.0.cop.sgn`
- Disable extension mobility
- Minimise CAR Database to reduce upgrade time
- For large high availability upgrade, increase “maximum number of registered devices to 7500 or 10000”
- Check for DB replication state “`utils dbreplication runtimestate`” before and after upgrade

L2 Upgrade Issue:

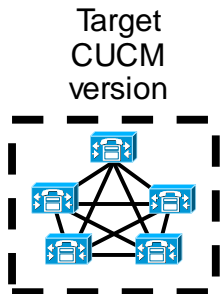
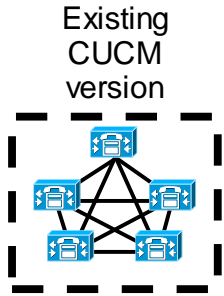
http://docwiki.cisco.com/wiki/Unified_CM_L2_Upgrade_Disk_Space_issues

CUCM Upgrade Consideration



- Clustering over the WAN (COW) can increase time for installation, upgrade and database (DB) replication by 40%–50%
- Firewall between Unified CM servers
- After upgrade, check for the following using CLI, RTMT and Unified Reporting (details in notes section)
 - DB replication state

Developing Upgrade Path



- Interim versions for multi-hop upgrades
 - Supported upgrade paths in compatibility matrix
 - Customise Upgrade Procedures from Upgrade Readiness Assessment Web Tool
 - UC applications dependencies
- Selecting an upgrade method
 - Jump upgrade
 - Manual method with L2 and RU
 - Migration
 - PCD

Migration Recommendations for CUCM Upgrade

- 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 minimise 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 Virtualisation docwiki often due to frequent changes

Call to Action

- Visit the World of Solutions for
 - Cisco Campus
 - Walk in Labs
 - Technical Solution Clinics
- Meet the Expert
- DevNet zone related labs and sessions
- Recommended Reading: for reading material and further resources for this session, please visit www.pearson-books.com/CLMilan2015



Q & A

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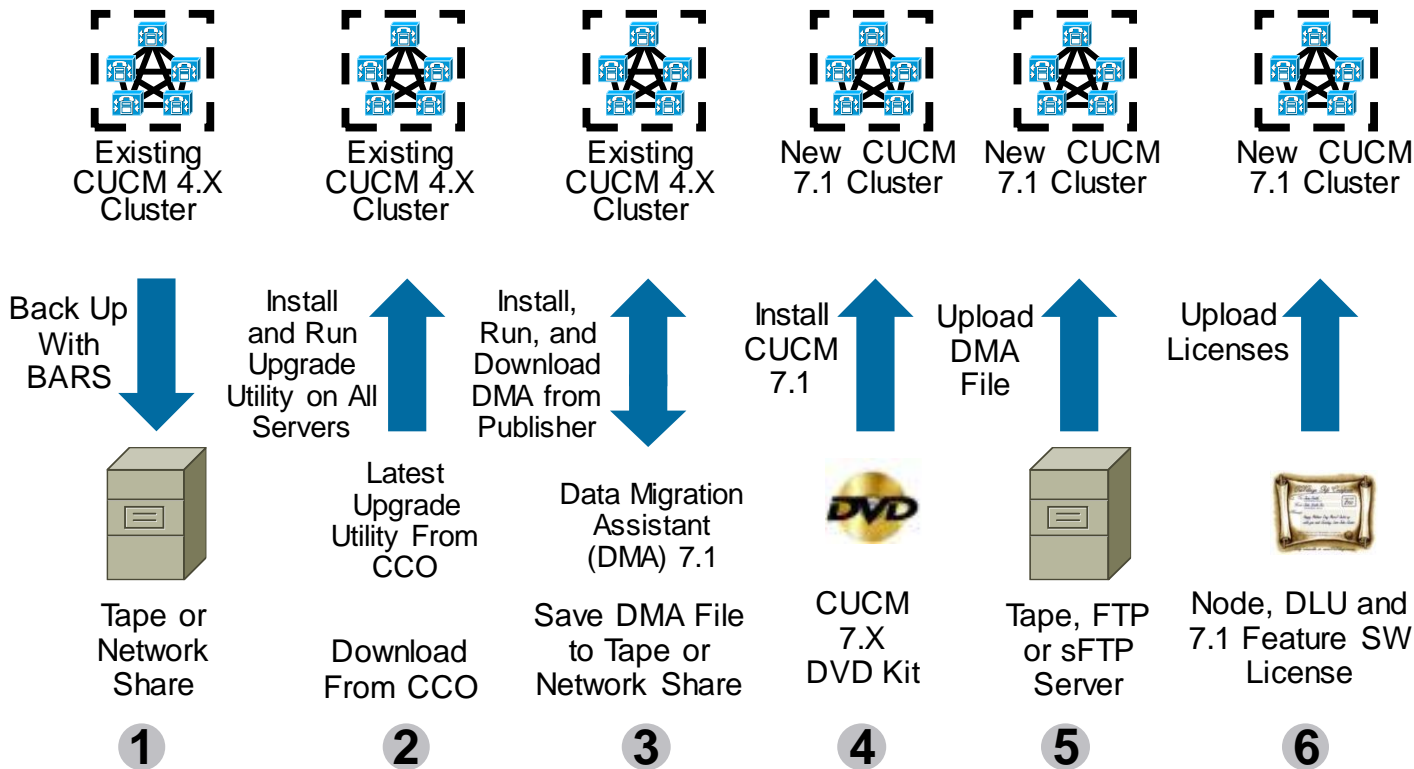
Thank you.

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CISCO

W1 Upgrade: Windows to Appliance Model

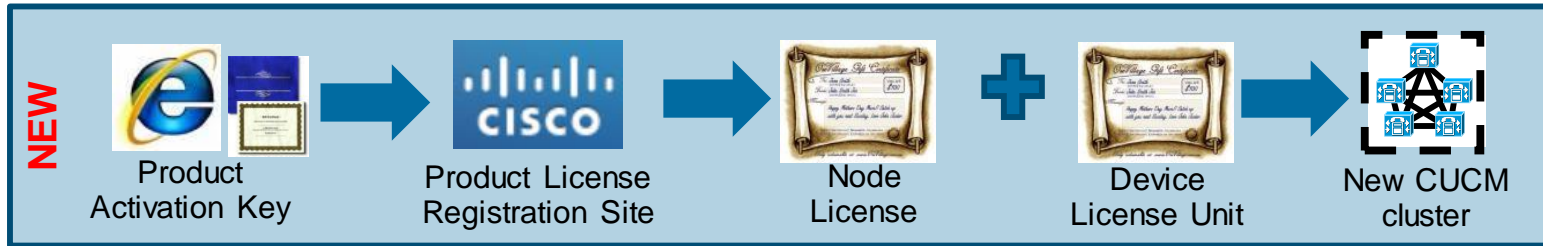


Not covered in detail in this session

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

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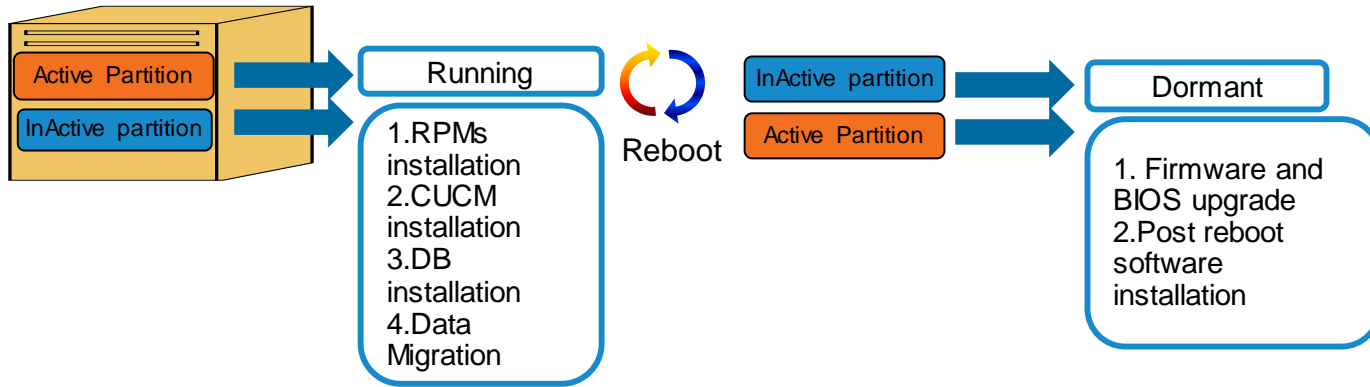
License Acquisition with CUCM 5.X to 8.X



- Product Upgrade Tool site = <http://tools.cisco.com/gct/Upgrade/jsp/index.jsp>
- Product License Registration site = <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 performed on CUCM

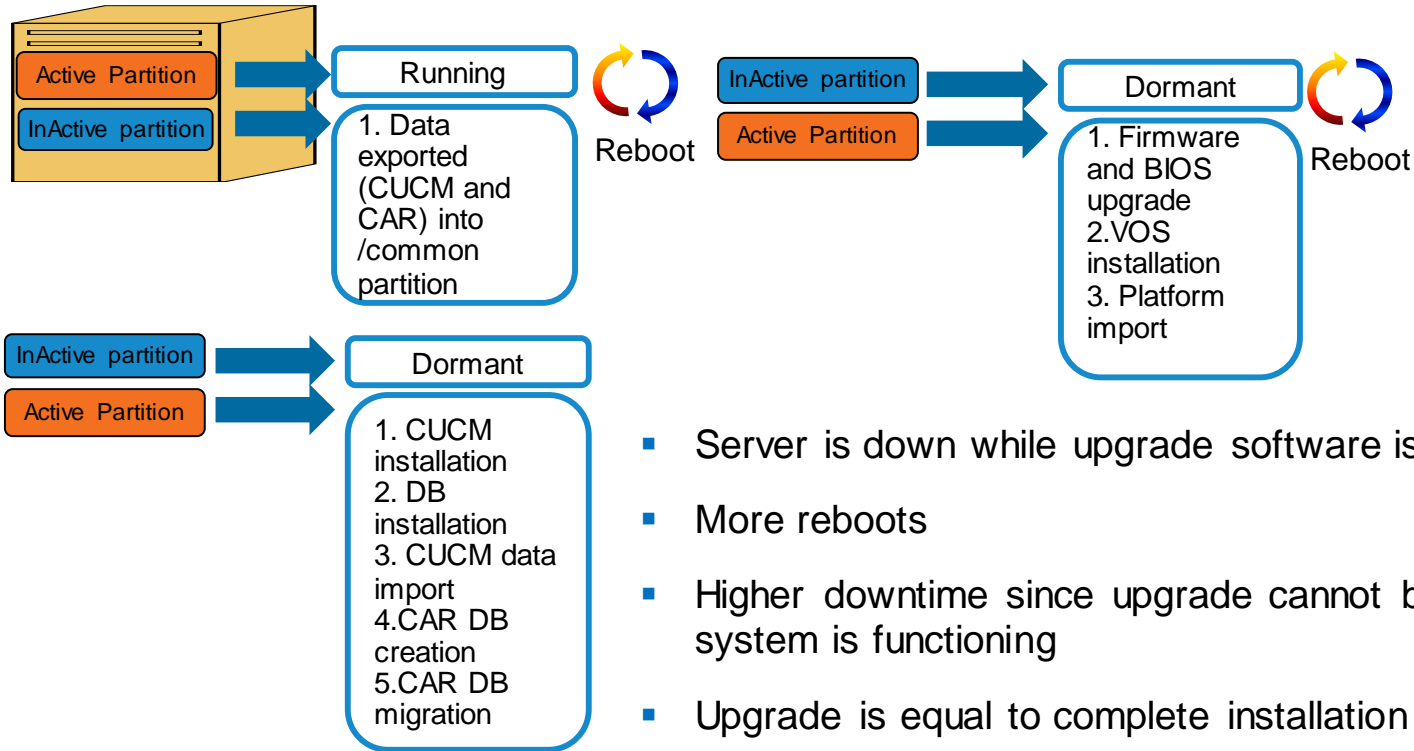
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L2 Upgrade: Appliance to Appliance Model



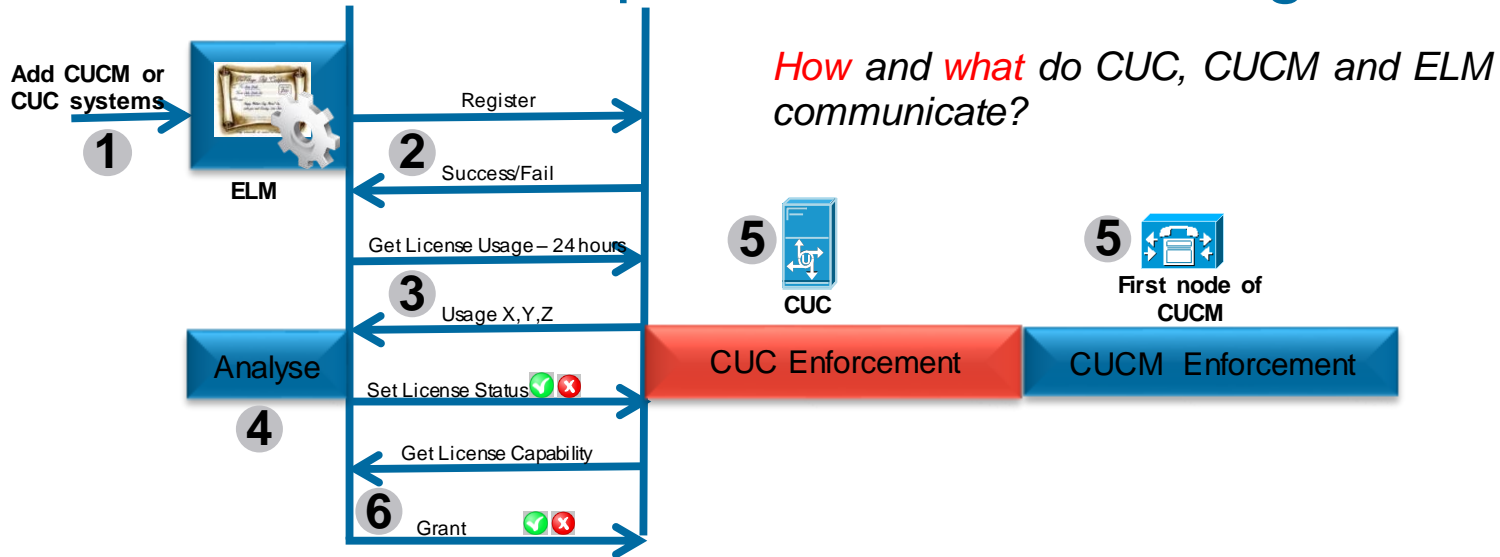
- Active partition is running while upgrade software is being install on inactive partition
- Low downtime since upgrade can be done while system is functioning

Refresh Upgrade (RU): Appliance to Appliance Model



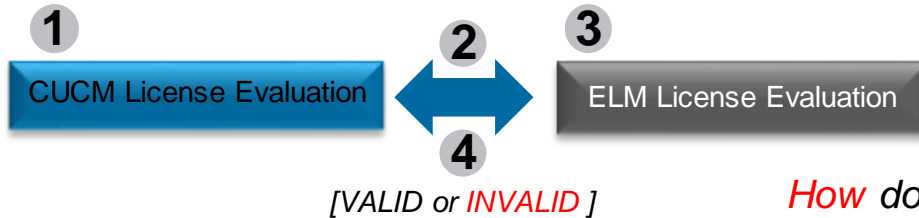
- Server is down while upgrade software is being install
- More reboots
- Higher downtime since upgrade cannot be done while system is functioning
- Upgrade is equal to complete installation of CUCM

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

Process of CUCM and ELM Communications

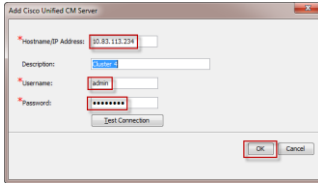


How does CUC, CUCM and ELM know what to communicate?

- 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

Using User Count Tool as Planning Tool to Migrate

1



2

Clusters **License Report**

Welcome to the Cisco License Count Utility. This utility will connect to the Cisco Unified CM servers you define below and generate a report of license usage that can be viewed, printed or saved. Begin by adding servers-- if you have clusters, only add the publishers-- and then press Generate Report.

Add... Edit Delete... Generate Report

Hostname/IP address	Description	Version (Last Known)	Last Connection Status	Include in Report
10.83.113.231	Cluster 1	8.6.2	Successful	<input type="checkbox"/>
10.83.113.232	Cluster 2	9.0.0	Successful	<input checked="" type="checkbox"/>
10.83.113.233	Cluster 3	7.1.5	Successful	<input checked="" type="checkbox"/>
10.83.113.234	Cluster 4	6.1.5	Successful	<input checked="" type="checkbox"/>

- 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
- Check versions of CUCM that the tool detects

Using User Count Tool as Planning Tool to Migrate

Clusters License Report

Report Generated: 2012-Apr-05 13:53:21 Refresh Report Save as... Print...

License Requirements Based on Usage Data

The table below contains the minimum number of 9.0 licenses required to cover all users and phones currently configured on the Unified CM servers included in this report.

Hostname/ IPAddress	Description	Essential	Basic	Enhanced	Advanced	CUWL Standard	CUWL Premium	CUWL Professional	Telepresence Room	Unused DLUs
10.83.113.231	Cluster 1	0	0	1	0	0	0	0	0	142
10.83.113.232	Cluster 2	0	0	1	0	0	0	0	0	150
10.83.113.233	Cluster 3	0	0	1	0	0	0	0	1	140
10.83.113.234	Cluster 4	0	0	0	0	0	0	0	0	50
TOTAL		0	0	3	0	0	0	0	1	482

License Conversion Worksheet

Use this section to calculate scenarios for upgrading and using available Device License Units (DLUs). Note that the license values reported below only include licenses consumed by Cisco Unified CM, and not other products that can consume a CUWL license. If you will be using worksheet as a basis to place license order, it is important to note that software service (ESW) and subscription (UCSS) rates are based on the number of licenses specified, so you should only include current license requirements plus additional licenses you anticipate needing. Use the drop down menu to select whether to display the recommended license counts as User Connect Licenses (UCL) or Cisco Unified Workspace Licenses (CUWL).

Recommendation Mode: **CUWL Licenses** Public Space Phones: 0

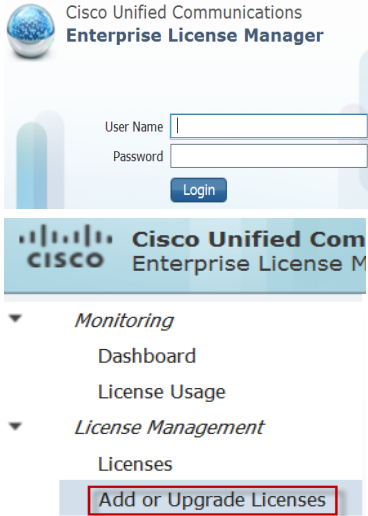
License Type	Current License Usage	Recommended License Count	Adjust Recommended Count(+/-)	New License Count	DLUs Per License	DLU Change(+/-)
CUWL Professional	0	0	0	0	0	17
CUWL Premium	0	0	0	0	0	17
CUWL Standard	0	3	0	3	3	11
Advanced	0	0	0	0	0	9
Enhanced	3	0	0	0	0	6
Basic	0	0	0	0	0	4
Essential	0	0	0	0	0	0
Telepresence Room	1	1	0	1	1	11
TOTAL DLU USAGE CHANGE:						0

Run Compliance Check Reset Values **Unused DLUs Remaining: 482**

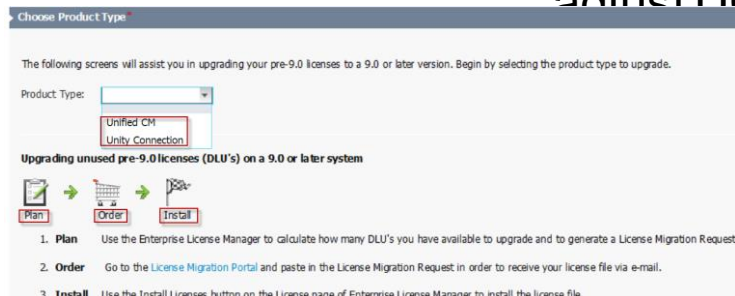
- The resulted UCL and CUWL will be the basis for ESW and UCSS renewal for next renewal cycle
- Use this planning tool to perform proactive license resolution prior to the actual upgrade
- Save the report(s) in csv format so that they can be use in the actual conversion in ELM during upgrades:
 - Per systems
 - Migration phase(s)

- Cluster > Generate Report: Generate report of ALL systems and the corresponding UCL/CUWL usage
- UCL and CUWL mode
- CUWL mode has Public Space Phones
- Adjustment can and should be perform to reflect the migrated systems entitled licenses
- Remain DLU does not need to be zero

Use ELM Upgrade Wizard for License Upgrade



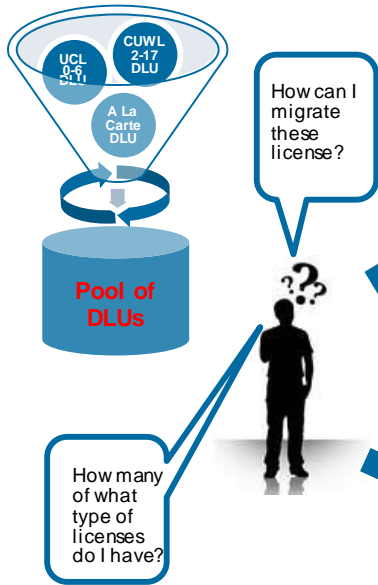
- Upgrade License Wizard: License Management > Add or Upgrade License > Upgrade License
 - Plan, Order and Install
- Plan:
 - Select CUCM or CUC for migration
 - Select what systems to migrate
 - Conversion is exactly like UCT so use saved UCT reports to adjust UICL/CUWL requirements



for license acquisition by capturing text from ELM
install the license file

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License Conversion



1 Manual

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

2 Automated

- Standalone CUC
- Upgrade CUC to 9.X
- Self service license request using Product License Registration
- Documentation of process at: http://www.cisisco.com/en/US/products/ps6509/products_tech_note09186a0080bf5921.shtml

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



Cisco License Count Utility

File Edit Help

Clusters License Report

Report Generated: 2013-Mar-11 14:10:30 Refresh Report Save as... Print...

License Requirements Based on Usage Data
The table below contains the minimum number of 9.0 licenses required to cover all users and phones currently configured on the Unified CM servers included in this report.

Hostname/ IPAddress	Description	Essential	Basic	Enhanced	Enhanced Plus	CUWL Standard	CUWL Professional	Telepresence Room	Unused DLUs
10.94.171.121		50	70	450	0	0	0	50	7410
TOTAL		50	70	450	0	0	0	50	7410

License Conversion Worksheet
Use this section to calculate scenarios for upgrading and using available Device License Units (DLUs). Note that the license values reported below only include licenses consumed by Cisco Unified CM, and not other products that can consume a CUWL license. If you will be using worksheet as a basis to place license order, it is important to note that software service (ESW) and subscription (UCSS) rates are based on the number of licenses specified, so you should only include current license requirements plus additional licenses you anticipate needing. Use the drop down menu to select whether to display the recommended license counts as User Connect Licenses (UCL) or Cisco Unified Workspace Licenses (CUWL).

Recommendation Mode: UCL Licenses

License Type	Current License Usage	Recommended License Count	Adjust Recommended Count(+/-)	New License Count	DLUs Per License	DLU Change(+/-)
CUWL Professional	0	0	0	0	12	0
CUWL Standard	0	0	0	0	11	0
Enhanced Plus	0	0	0	0	9	0
Enhanced	450	450	1,100	1550	6	6600
Basic	70	70	245	315	4	700
Essential	50	50	0	50	0	0
Telepresence Room	50	50	10	60	11	110
TOTAL DLU USAGE CHANGE:						7410
Unused DLU's Remaining:						0

Run Compliance Check Reset Values

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1. Data for Manual License Migration

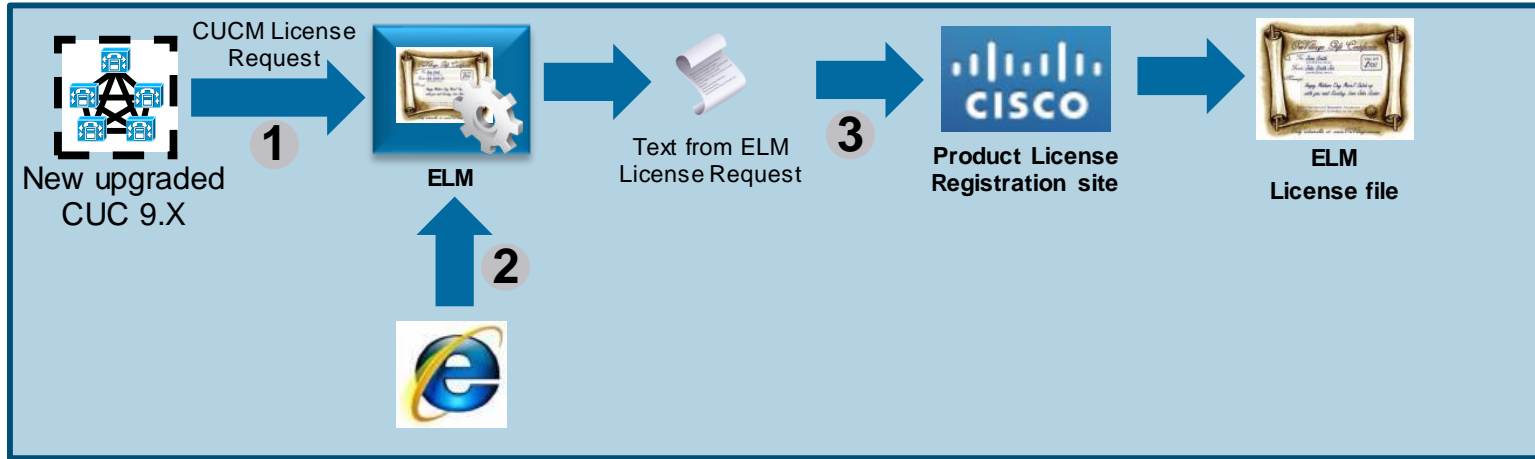
- Working with Global Licensing Operation (GLO) at licensing@cisco.com
- Provide current system usage
 - Migrated system(s): ELM Usage Report
 - CUCM 6.X to 8.X: License Report with License Count Utility (UCT)
 - CUCM 3.X to 5.X: Print screen of system usage
- Provide
 - Active ESW/UCSS contract number
 - 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> 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

**CUCM
9.X DVD KIT**



MCS-781X
MCS7825
MCS7828
MCS7835
MCS7845

INSTALLATION PROCESS (PROCEED)

1

Apply SR, ES or SU

**Upgrade During
Installation
i.e., 9.1(1a) to 9.1(2)**

2

Basic Install

**New Installation, New
Server—Flash Cut or
New Server—Migration**

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 virtualised 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> to unzip the tar file
 - Remove serial port after a successful installation of Unified CM 8.X

CUCM 9.X Phone License

License	Phone Type (2)	# of Devices (3)	Features (1)
Essential UCL	Analog, 3905, 6901, VGC Phone, ATA186, ATA187	1	EM
Basic UCL	6911, 6921, CUC-RTX, Analog, 3905, 6901, VGC Phone, ATA186, ATA187	1	EM, SNR
Enhance UCL	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/iPpad), 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	1	EM, SNR
Enhance UCL Plus	Same as Enhance UCL	2	EM, SNR

CUCM 9.X Phone License

License	Phone Type (2)	# of Devices (3)	Features (1)
CUWL Standard	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/iPpad), 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	10	EM, SNR
TelePresence	TelePresence	1	

CUCM 10.0 Licensing Summary Cont.

UCL **Enhanced / Enhanced Plus**
 CUWL **Standard**
 CUWL **Professional**

UCL **Basic**

UCL **Essential**



Fax



Analog



3905



6901



6911



6921



7821



69xx



78xx



79xx



792x



7937 / 8831



89xx



99xx



DX650



EX60 / EX90



Jabber Desktop



Jabber Mobile



Third Party
SIP

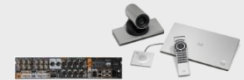
TelePresence
Room



TX / CTS / T Series



MX / Profile Series



System Codecs and
Quickset Platforms



CISCO