
TOMORROW starts here.
cisco
Cisco live!

Best Practices for Upgrading your Unified Communications Environment to Version 10

BRKUCC-2668

Chris Hartley

Network Consulting Engineer

Cisco live!

Agenda

1. Session Objectives and Scope
2. CUCM License and Cisco Prime License Manager (PLM)
3. CUCM 10.X Upgrade Definition and Upgrade Path
4. Virtualised CUCM
5. Prime Collaboration Deployment
6. System Level Upgrade
7. Drive to Collab
8. Q&A

* Cisco Unified Communications Manager = CUCM = Unified CM = CallManager

* Cisco Prime License Manager = PLM = Cisco Enterprise License Manager = ELM

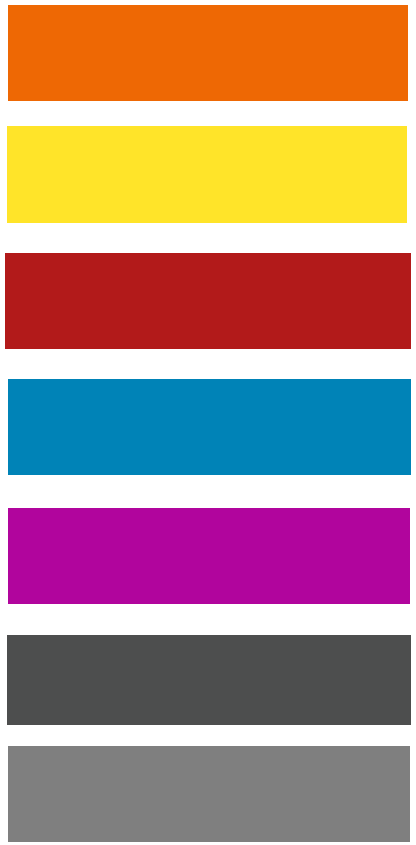



Session Objectives and Scope

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 10.X

Virtualised CUCM 8.X and 9.X

Session Scope

CUCM 6.1(X)

CUCM 7.1(X)

CUCM 8.X

CUCM 9.X

→ **CUCM 10.X**

- Covers in detail selected versions of CUCM that has a direct one step upgrade to CUCM 10.X
- Cover in detail platform conversion from bare metal CUCM to virtualised CUCM

MCS, HP or IBM Servers

Platform Conversion

vmware

TRC

CISCO

Specs-Based

CISCO

hp invent

IBM

DELL

VMware Supported Servers

Cisco Unified Communications Manager Software Compatibility Matrix

http://www.cisco.com/en/US/docs/voice_ip_comm/cucm/compat/10_x/CUCM_BK_CD1DB914_00_compat_matrix.pdf

http://www.cisco.com/en/US/docs/voice_ip_comm/cucm/compat/ccmcompmatr1.pdf

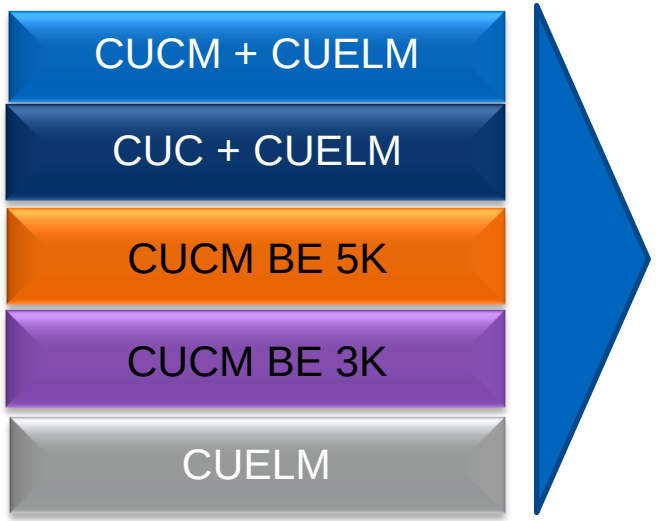
Cisco live!




CUCM License and Cisco Prime License Manager (PLM)

Cisco Enterprise License Manager 9.X (ELM)

UCL-UCM-LIC-K9,
CUWL-LIC-K9



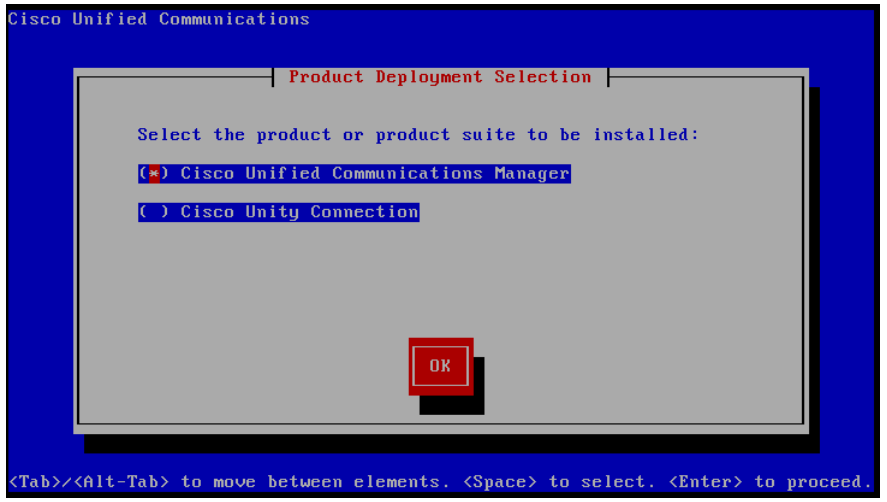
- CUCM 9.X installation DVD consisted of five products including Cisco Enterprise License Manager (ELM) bundled with two UC products or as stand alone deployment
- ELM is a centralised licensing product running on top of Cisco Voice OS (VOS)
- ELM supports Cisco Unified Communications Manager (CUCM) and Cisco Unity Connection (CUC)
- 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 10.0 (PLM)

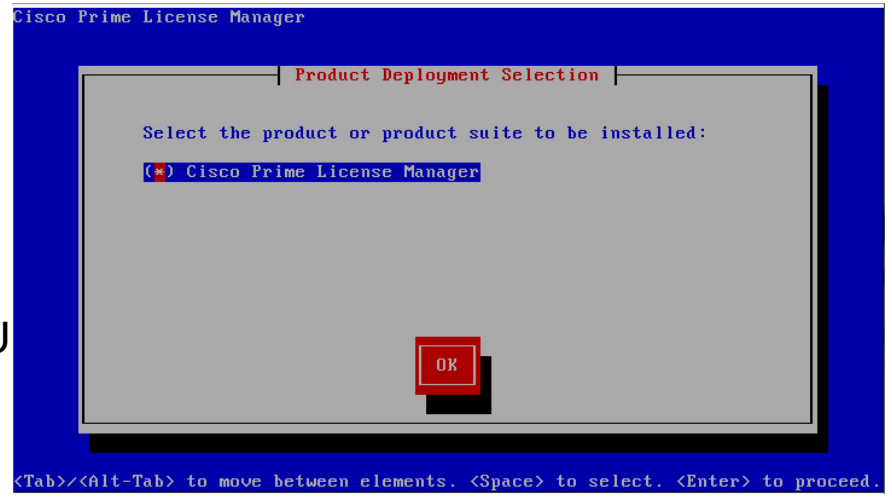
R-UCL-UCM-LIC-K9,
CUWL-LIC-K9

CUCM + Prime LM

CUC + Prime LM

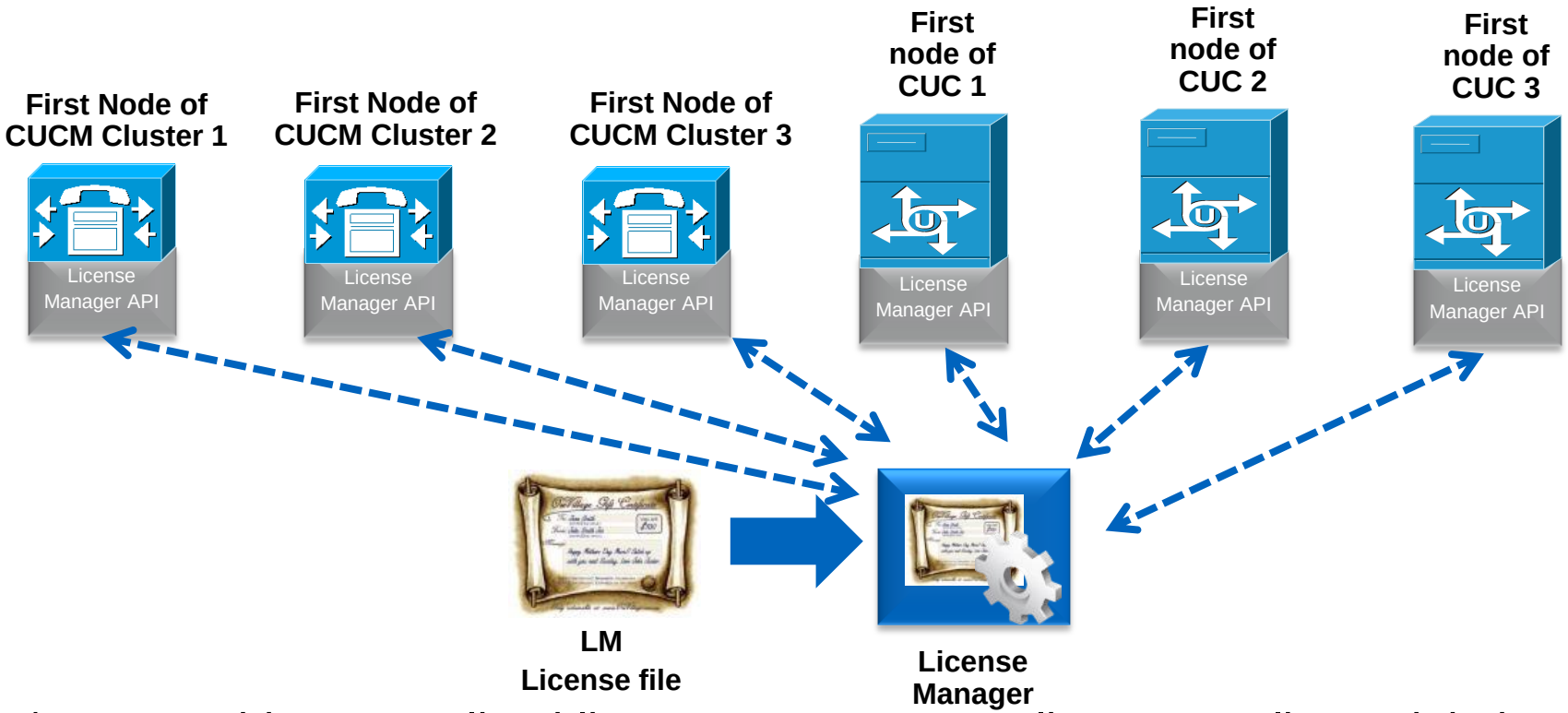


Cisco Prime LM with separate OVA & ISO



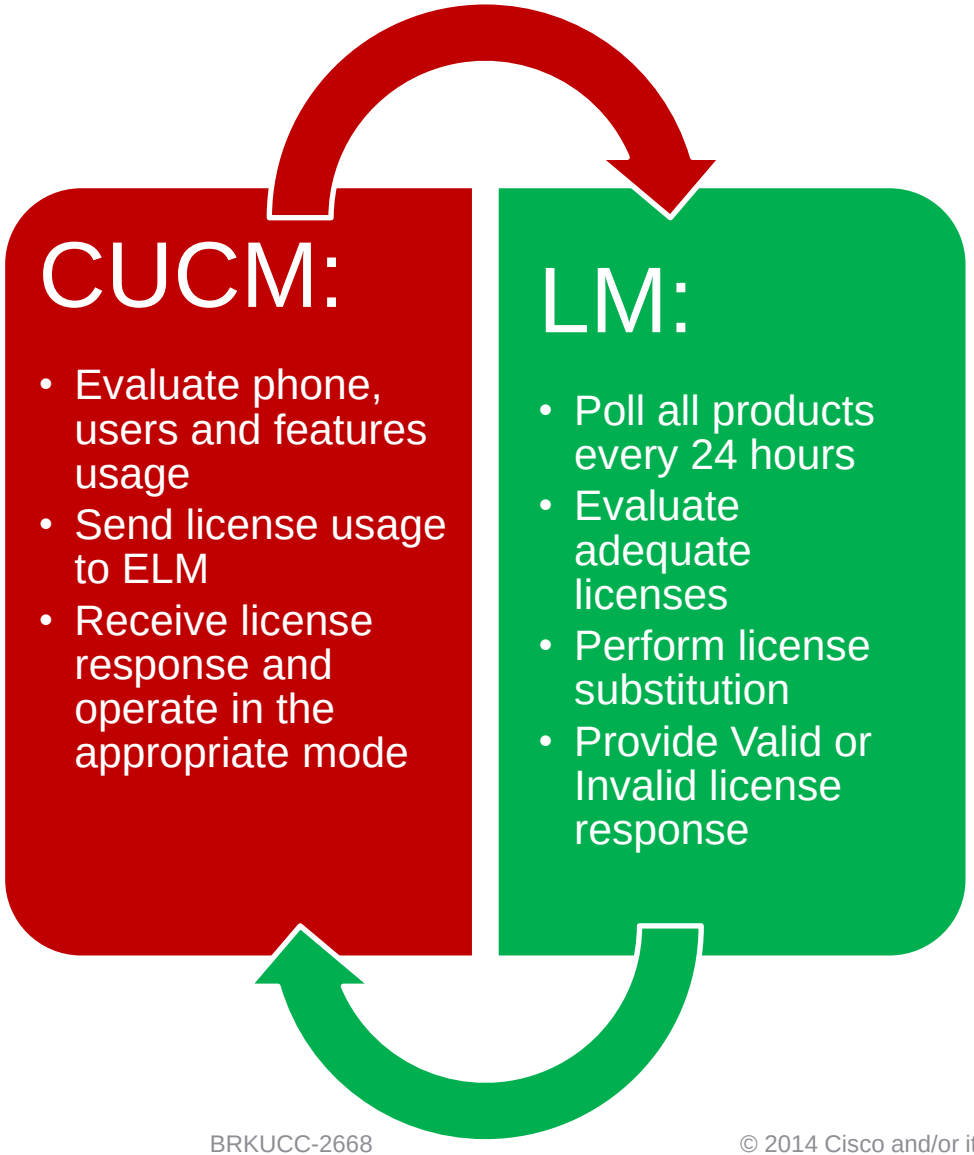
- Standalone Ordered under top-level product SKU
  - Bootable_CiscoPrimeLM_64bitLnx_10.0.1.10000-19.sgn.iso
- Remember to set Static VM MAC Address
- OVA Download via Software Centre
  - Search for Cisco Prime License Manager

License Manager Architecture



- ELM/PLM provides centralised license management, license pooling, minimise re-hosting of license files
- Electronic Fulfillment Supports License Feature and Version Upgrades
- License Manager API added to CUCM 9.0 and CUC 9.0 to interact with ELM for license request and approval
- License Manager API Added to PLM 10.0

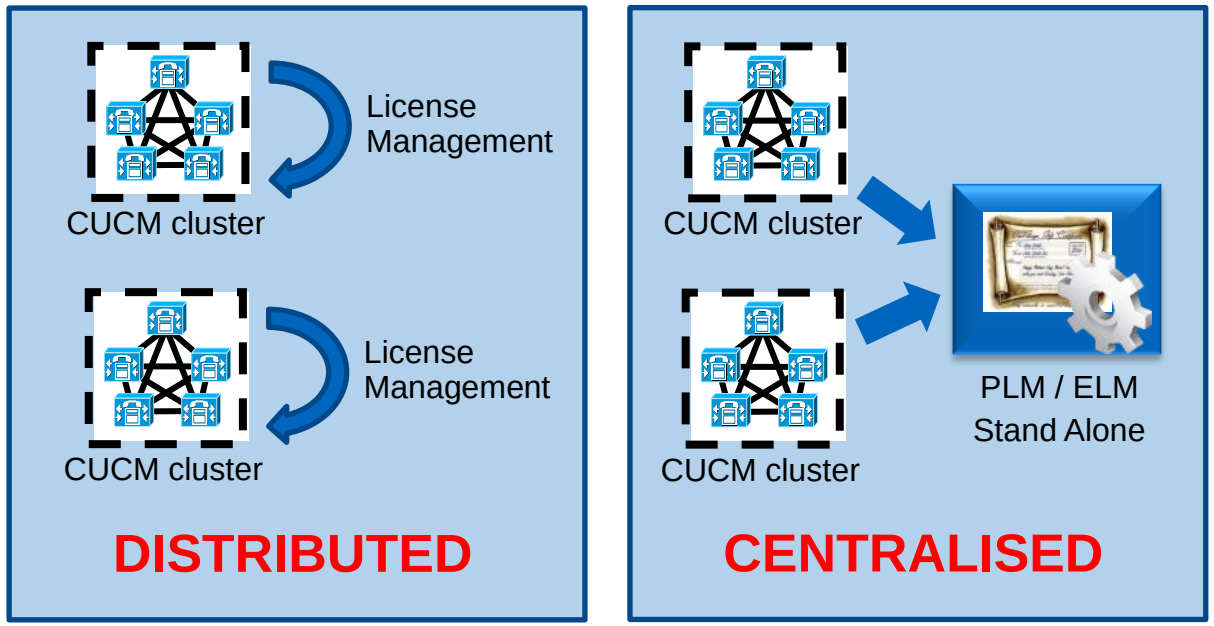
CUCM and License Manager Interaction



- License Manager polls all registered CUCM clusters
- CUCM evaluates license usage and sends license usage back to LM
- LM evaluates all CUCM reports to see if there is adequate licenses for the requested types
- LM performs license substitution when there is inadequate licenses for the requested type
- LM responds back with either valid or invalid (not enough) to all CUCM clusters
- CUCM receives the response and functions accordingly

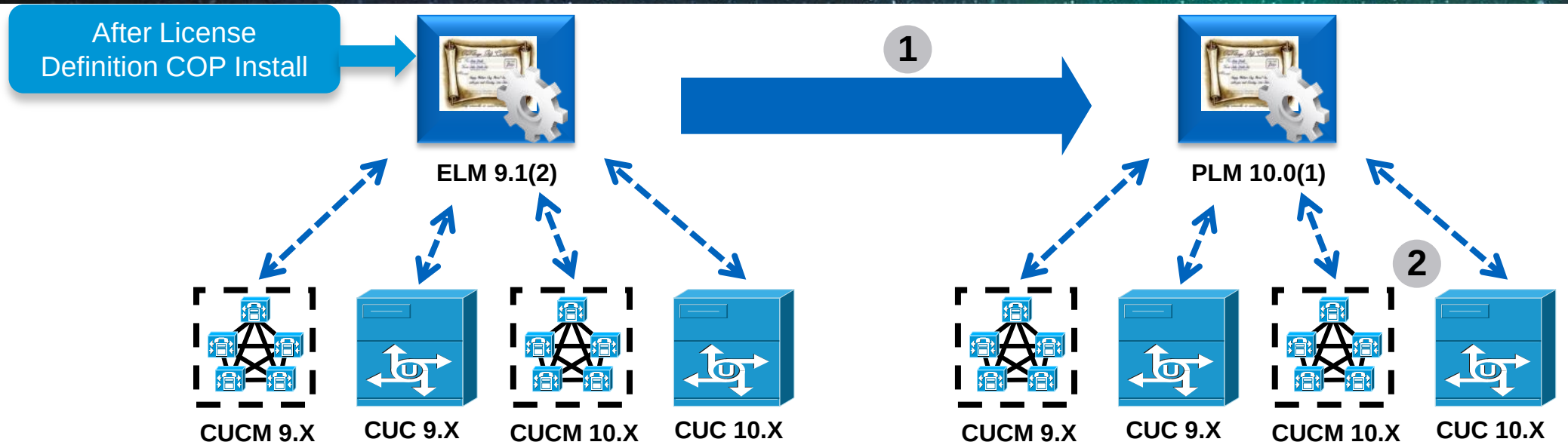
Detailed CUCM and ELM interactions with signalling are in the appendix

License Manager Deployment Models



- LM provides for both distributed and centralised license management model
  - Separate virtual machine for LM (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 LM
  - **To avoid Re-Hosting Use MANUAL/STATIC MAC Address + Backup & Restore**

Planning and Migrating Standalone ELM to PLM



- Changes to Cisco Enterprise License Manager (ELM)
  - Cisco Enterprise License Manager (ELM) 9.X becomes Cisco Collaboration Prime License Manager (PLM) 10.X
  - ELM 9.1.2 Supports CUCM/CUC/CER 10.X after License Definition COP file install
    - elm_LicenseDef_9_1_v1.cop.sgn

- Migrating ELM to PLM
  - PLM 10.X is Virtual ONLY
  - Upgrade ELM 9.1.2 to PLM 10.0(1) via Bootable ISO
    - Bootable_CiscoPrimeLM_64bitLnx_10.0.1.10000-19.sgn.iso
  - Upgrade ELM 9.1.1 to PLM 10.0(1) requires COP File
    - elm_Elm_v9_1_1_PlmUpgrade.cop.sgn
  - Migrate CUCM or CUC to 10.X.
  - Migrate CUCM or CUC license to 10.X

CUCM License Usage

1 User

- Extension mobility users use no license for CUCM 9.1(1a) and later
- Extension mobility user with Unified Mobility feature uses one UCL Basic license

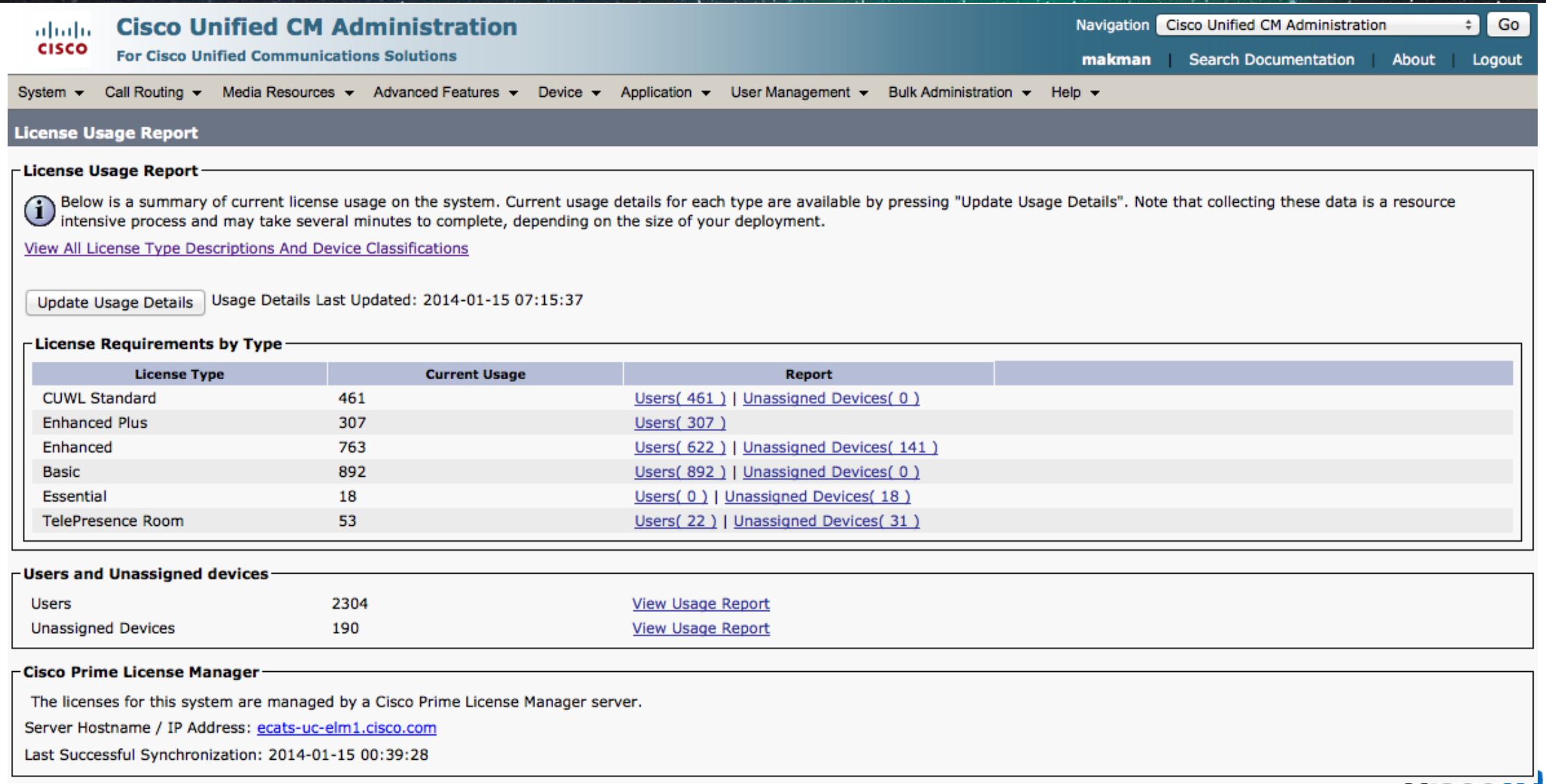
2 Phones

- Phones without Owner User ID association
- Based on the phone model

3 User / Phone

- Phones with Owner User ID association
- Based on the number of phones assigned to the user

Sample CUCM License Usage Sent to LM



Cisco Unified CM Administration
For Cisco Unified Communications Solutions

Navigation: Cisco Unified CM Administration — Go
makman | Search Documentation | About | Logout

System | Call Routing | Media Resources | Advanced Features | Device | Application | User Management | Bulk Administration | Help

License Usage Report

License Usage Report

Below is a summary of current license usage on the system. Current usage details for each type are available by pressing "Update Usage Details". Note that collecting these data is a resource intensive process and may take several minutes to complete, depending on the size of your deployment.

View All License Type Descriptions And Device Classifications

Update Usage Details — Usage Details Last Updated: 2014-01-15 07:15:37

License Requirements by Type

License Type	Current Usage	Report
CUWL Standard	461	Users(461) | Unassigned Devices(0)
Enhanced Plus	307	Users(307)
Enhanced	763	Users(622) | Unassigned Devices(141)
Basic	892	Users(892) | Unassigned Devices(0)
Essential	18	Users(0) | Unassigned Devices(18)
TelePresence Room	53	Users(22) | Unassigned Devices(31)

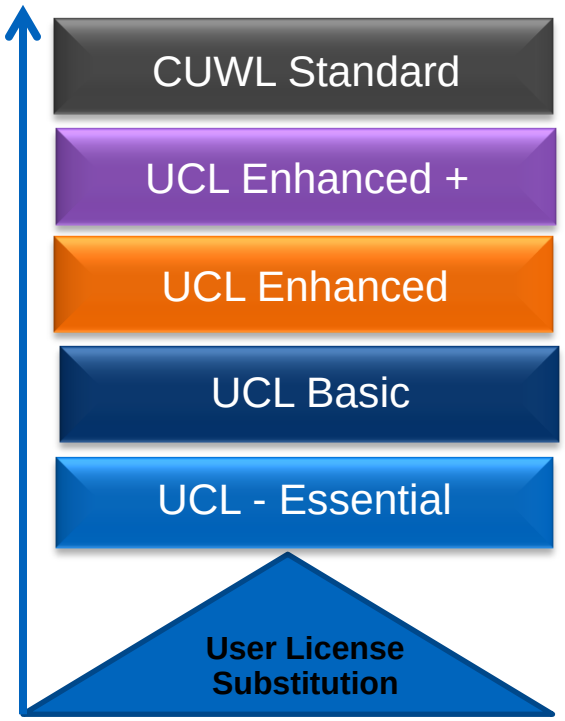
Users and Unassigned devices

Users	2304	View Usage Report
Unassigned Devices	190	View Usage Report

Cisco Prime License Manager

The licenses for this system are managed by a Cisco Prime License Manager server.
Server Hostname / IP Address: ecats-uc-elm1.cisco.com
Last Successful Synchronization: 2014-01-15 00:39:28

LM License Evaluation and License Substitution



- Two license types: User license and Feature license
- 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 Enhanced
  - I.E. UCL Enhanced can be covered by UCL Enhanced Plus (+)
- LM evaluates ALL systems license requirements on a per product (CUCM and CUC) basis and respond back with one consistent response to ALL registered systems
  - VALID: adequate license
  - INVALID: inadequate license
- Centralise and system level licensing view

Enterprise License Manager
http://www.cisco.com/en/US/partner/docs/voice_ip_comm/cucm/srnd/9x/callpros.html#wpxref61870

CUCM License States

Reference

- **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:** W**arning 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 unable 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 Migration

License Migration

When migrating, customers can choose to:

- Keep the same quantity and type of licenses
- Decrease their license quantity and type (without refund)
- Increase their quantity and select additional license types by converting DLUs, or
- Up level their license types using Drive to Collab Promotions

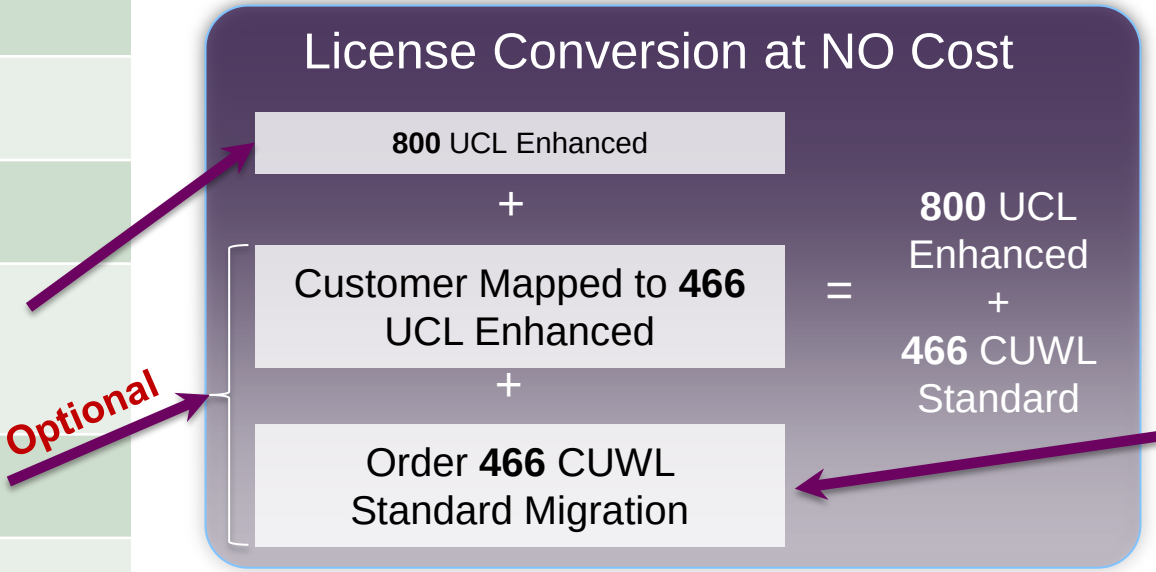
- After the upgrade, customer entitlement record will be locked in moving forward.
- At the time of the next renewal, the terms and price will be based on licenses issued during migration, plus any users purchased after migration. (Exception: Drive to Collab Promotions)

Common Migration Scenario #2

Migrating Unused DLUs or Existing UCL Licenses to 9.1 CUWL User Licenses

Before Migration → During Migration to 9.1 → Jan 2nd, 2014

CUCM SW Version	7.1 (3)
# Server Nodes	5
# of DLUs bought	6000
Used DLUs	800 7960 Phones Configured
Unused DLUs	2800 DLUs
User Licenses	N/A
Service Contract	700 CUCM users on current Contract (Renewal - Jan 2nd, 2014)



To complete the move to CUWL & receive the complete CUWL feature set, purchase the CUWL migration (check available incentives)

Service Contract/Install Base changed to reflect the 800 9.1 UCL Enhanced & 466 CUWL Standard licenses that have been installed

UCSS/ESW contract renewal quote will be for 800 9.1 UCL Enhanced and 466 CUWL Standard licenses

License Migration Process

- Policy – “Customers with UCSS will be assured the same licensing capability and capacity at no cost as they migrate to CUCM 9.1(2) and 10.0”

- GLO is your single point of contact for obtaining License Entitlement & Migration Licenses from pre-9.x (DLU based) to 9.1(2) or 10.0 (user based)

Process to Obtain Licenses (100% Manual Support)

Contact GLO (licensing@cisco.com) for all CUCM Migrations
Response Time: 3-5 Business Days

License Migration Process

Before Upgrading to 9.1(2)/10.0 - Email Subject: **Drive to Collab Pre-Migration Request**

1. "CUCM Upgrade Central" iPad App License Usage or LCU Output (Run on the CUCM Publisher)
2. Mac Address of current Publisher (If available, include all previous Publisher or License Mac)
3. UCSS/ESW information - Optional

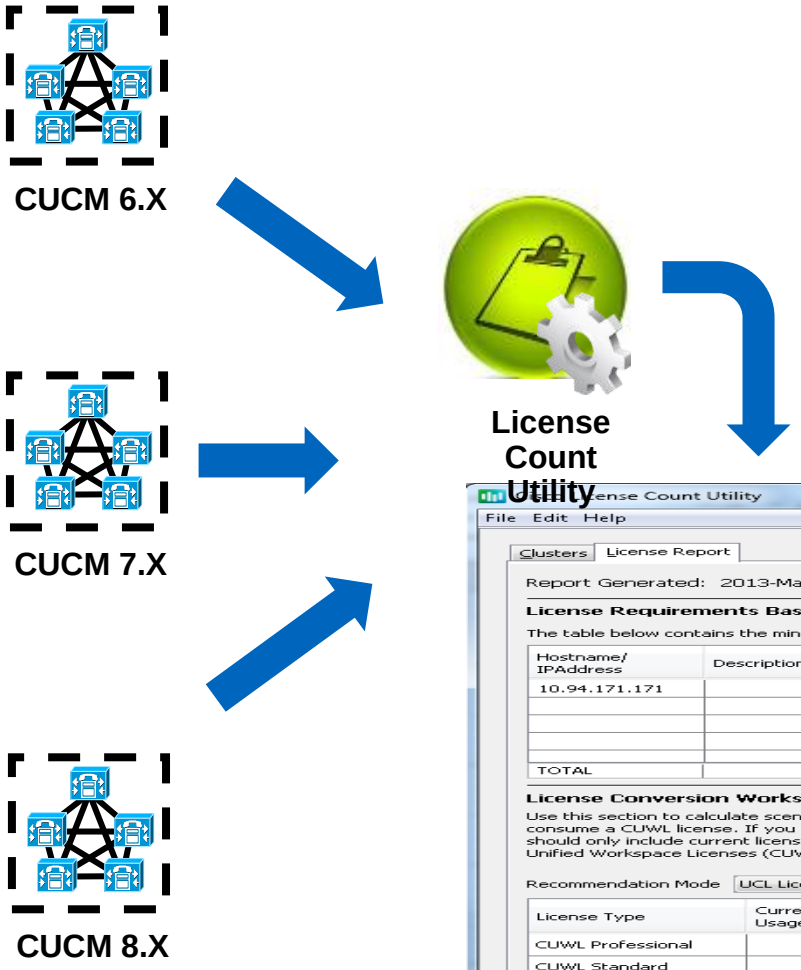
After Upgrading to 9.1(2)/10.0 - Email Subject: **Drive to Collab Post-Migration Request**

1. "CUCM Upgrade Central" iPad App License Usage or LCU Output (Run on the CUCM Publisher)
2. Mac Address of the Publisher (If available, include all previous Publisher or License Mac)
3. ELM License Request file (in .txt as an attachment)
4. Site information (name-all name permutations, City, state, country) for contract update
5. UCSS/ESW, Email ID, Unused DLU Allocation – **Optional**

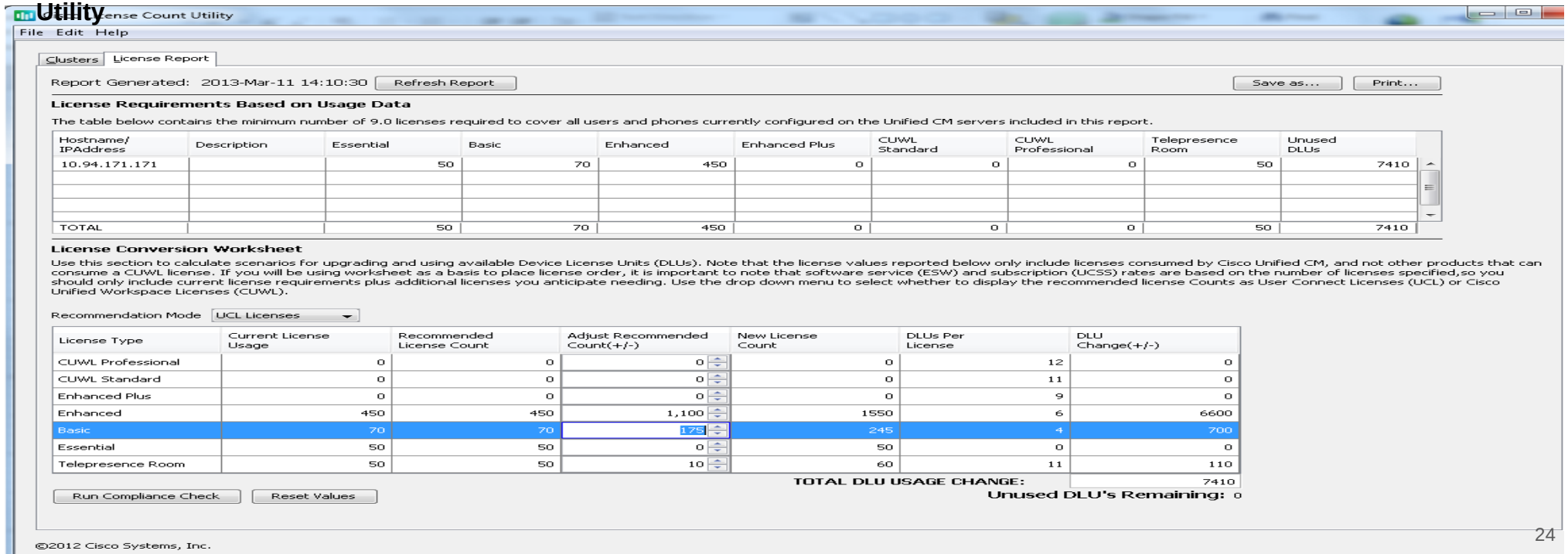
Escalation Process: Call GLO and speak with License Duty Manager

Reference

License Count Utility (LCU) for CUCM 6.X-8.X



- Available on CCO
  - LCUZIP-Ver9.1.2.zip
- Performs 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 generates report



More LCU Screenshots in Appendix

Obtaining UCSS Entitlement Records

To obtain complete UCSS records, in cases where customer has purchased from other partners:

- Get **Letter of Authorisation (LOA)** signed by the customer
- Email **ucss-support@external.cisco.com** for customer's current UCSS Entitlement
- The UCSS team can release all past UCSS information to the current partner

LOA Template: https://communities.cisco.com/docs/DOC-38361




CUCM 10.X 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 ESW contract
- Major version upgrade requires active UCSS contract

* Unique Instance

Sample CUCM Versions and Builds

CUCM Version	CUCM Build	Numbering Convention
10.0(1)	10.0.1.10000-24	(**A.B.C.XYzzz-x**) (A) Major version 8.6.2.20000-2 (B) Minor version 8.6.2.20000-2 (C) Maint. rel. 8.6.2.20000-2 (X) FCS / Respin 8.6.2.10000-2 8.6.2.20000-2 (Y) ES/SU Releases 8.6.2.21zzz-1 8.6.2.2900-1 (ZZZ) FCS, ES, SU 8.6.2.20000-2 8.6.2.21001-1 8.6.2.22900-1
9.1(2)su1	9.1.2.11900-12	
9.1(2)	9.1.2.10000-X	
9.1(1a)	9.1.1.20000-5	
9.1(1)	9.1.1.10000-11	
9.0(1)	9.0.1.10000-37	
8.6(2a)su2	8.6.2.22900-9	
8.6(2a)su1	8.6.2.21900-5	
8.6(2a)	8.6.2.20000-2	
8.5(1)su5	8.5.1.15900-4	
7.1(5b)su6	7.1.5.35900-7	
7.1(3b)su2	7.1.3.32900-4	
6.1(5)su3	6.1.5.13900-4	

CUCM Upgrade Definitions

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 detailed steps in the appendix

L2

L2 Upgrade: Appliance to Appliance 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 to Appliance 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

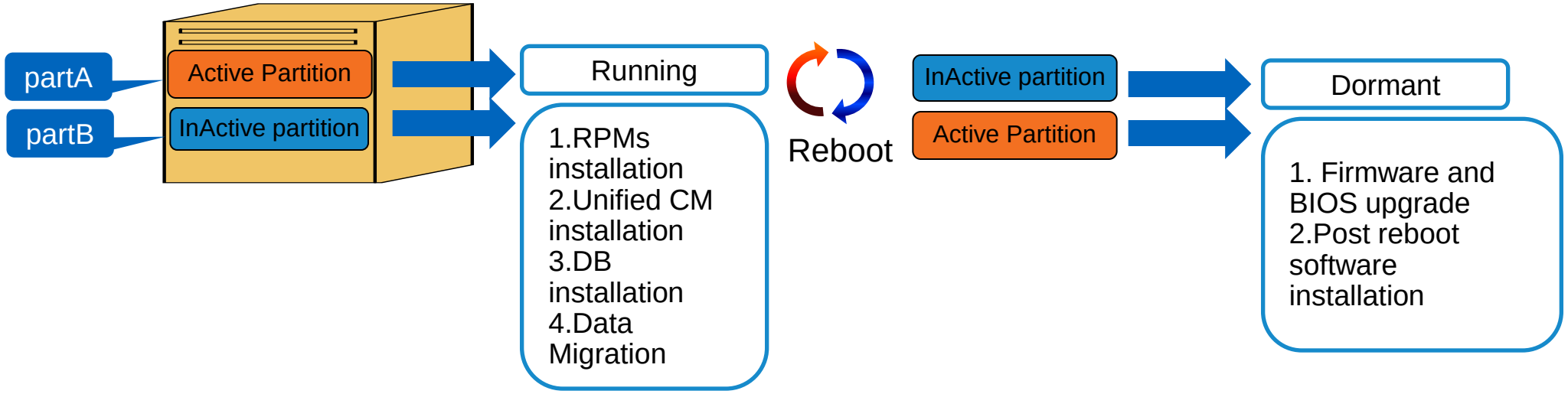
- Active partition is running while upgrade software is being installed on inactive partition
- Low downtime since upgrade can be done while system is functioning

RU Upgrade

- Server is down while upgrade software is being installed
- 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

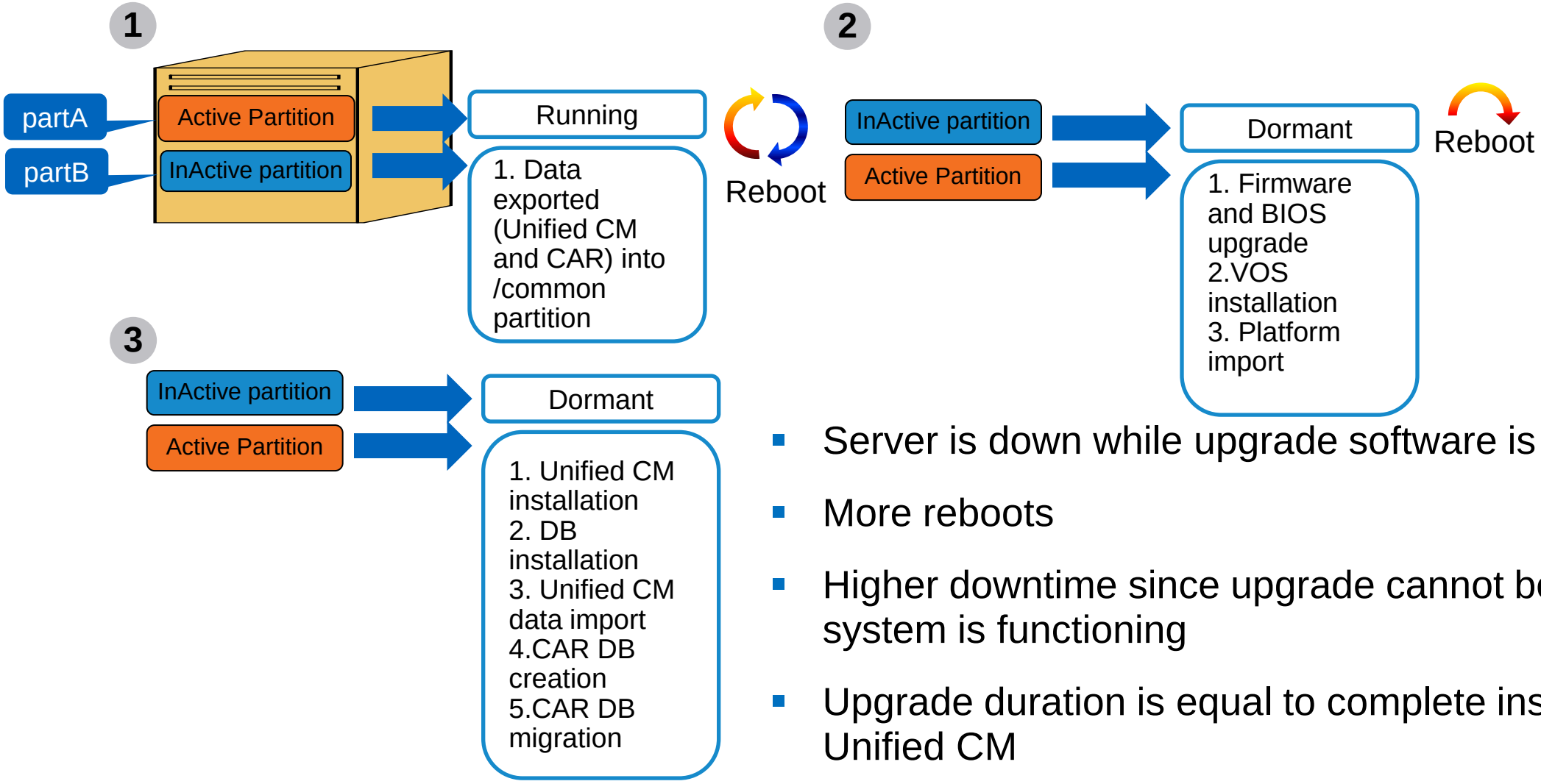
Detailed L2 and RU upgrade processes are in the appendix

L2 Upgrade: Appliance to Appliance model



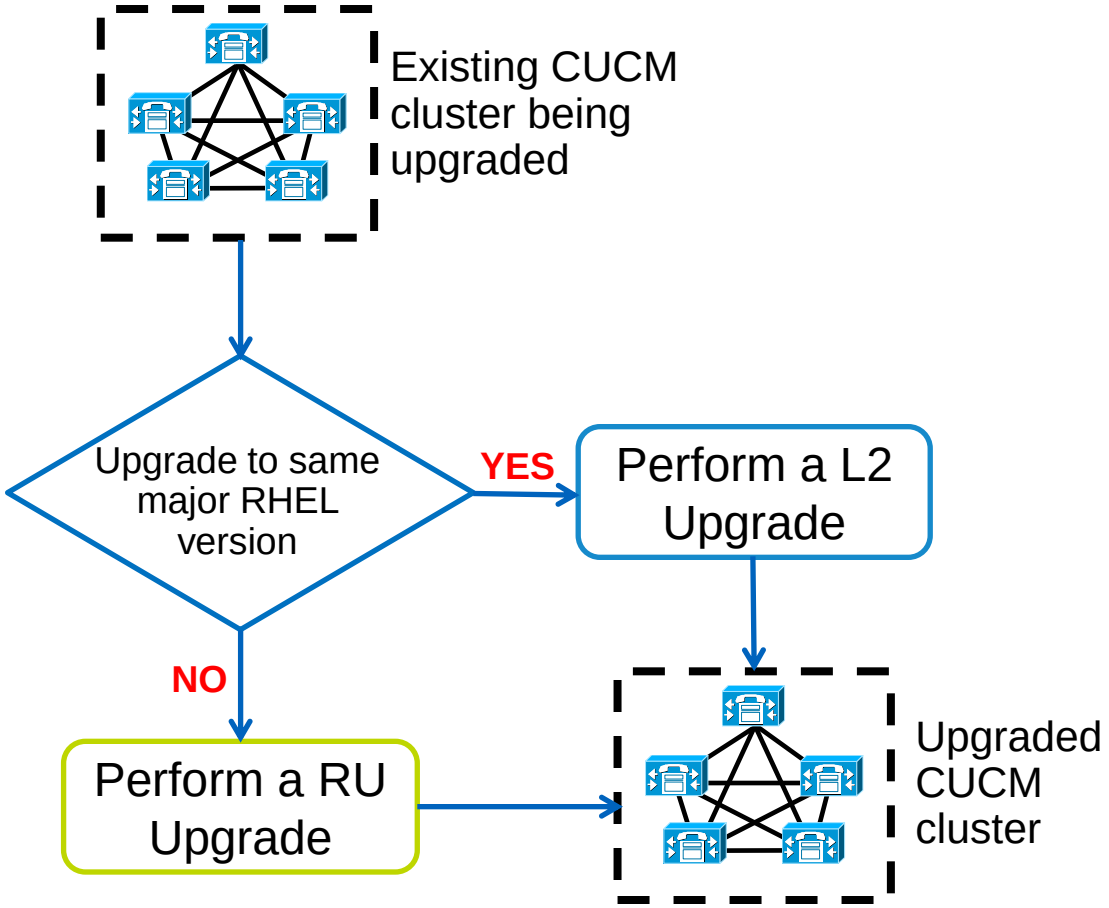
- Active partition is running while upgrade software is being installed on inactive partition
- Short downtime (20-30) min since upgrade can be done while system is functioning

Refresh Upgrade (RU): Appliance to Appliance Model

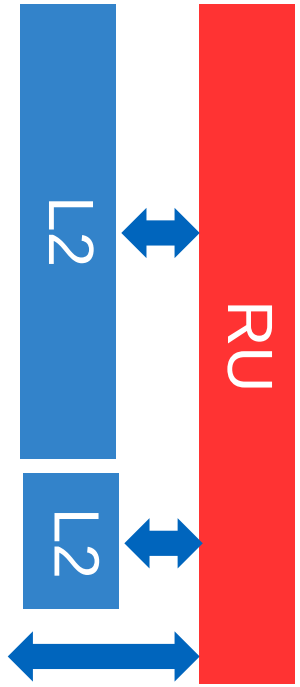


- Server is down while upgrade software is being install
- More reboots
- Higher downtime since upgrade cannot be done while system is functioning
- Upgrade duration is equal to complete installation of Unified CM

L2 and RU Upgrade: Appliance to Appliance Decision Tree



CUCM	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(1)	RHEL 4 Update 7
8.5	RHEL 4 Update 8
8.6	RHEL 5 Update 5
9.X	RHEL 5 Update 7
10.0	RHEL 6 Update 2



Started with CUCM 8.6 or RHEL 5

Refresh Upgrade (RU) Recommendations

- Perform a DRS back up before upgrade
- Install the latest COP (ciscocm.refresh_upgrade_v1.3.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 or first node until completion and then upgrade first set of Subscribers or secondary nodes while leaving some nodes performing call processing
  - Check Automatically switch to new version after successful upgrade

RU only

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)

UP TO 9.1(2)

Jump Jump Upgrade: Physical 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 virtualized)

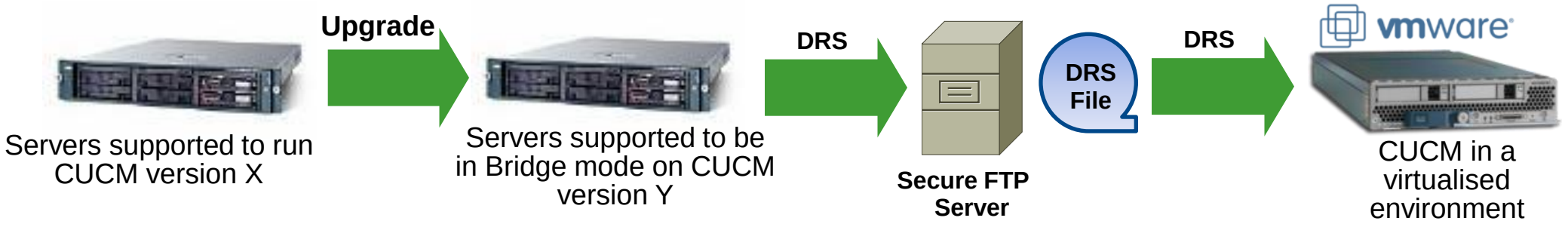
9.1(2)

PC Platform Change: Physical 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 ALLOWED
- MCS to Virtual Automated via Prime Collaboration Deployment

10.0(1) Only w/ PCD

Bridge Upgrade



- 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 physical to physical and physical 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

Bridge Upgrade:

http://www.cisco.com/en/US/docs/voice_ip_comm/cucm/cucos/8_0_2/cucos/iptpch7.html#wp1058411

Jump Upgrade

9.1(2)

Servers that cannot run CUCM 8.0(2) or later

Jump Upgrade Process

vmware

CUCM 9.1(2) in a virtualised environment

- 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)
  - Lab (Dead-Net/Isolated) migration ONLY (No IP/Hostname Change)
- Allows Physical (MCS) CUCM from 6.1(4), 6.1(5), 7.1(3) or 7.1(5) migration to Virtualised CUCM 9.1(2) in the lab.
  - Minimal down time
  - Database lockdown time 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

Cisco live!

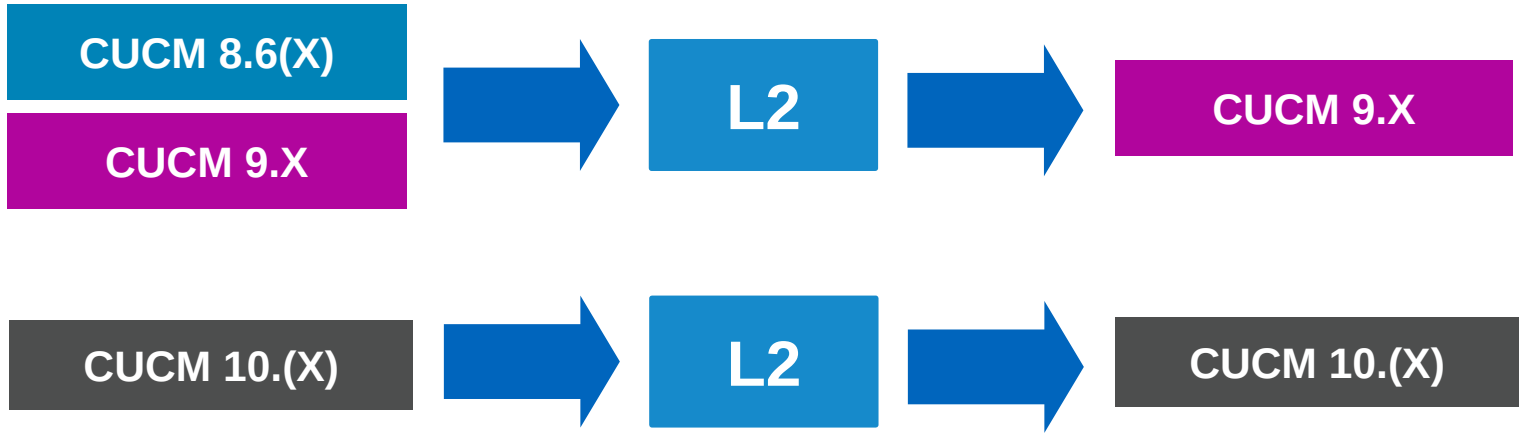
Upgrade Definition Table

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
Jump Upgrade	Servers too old to run CUCM version 8.0(2) or later to virtualised. Virtualised in lab to perform upgrade
Platform Change	Changing servers platform. Typically from bare metal servers to virtualised environment




Upgrade Path

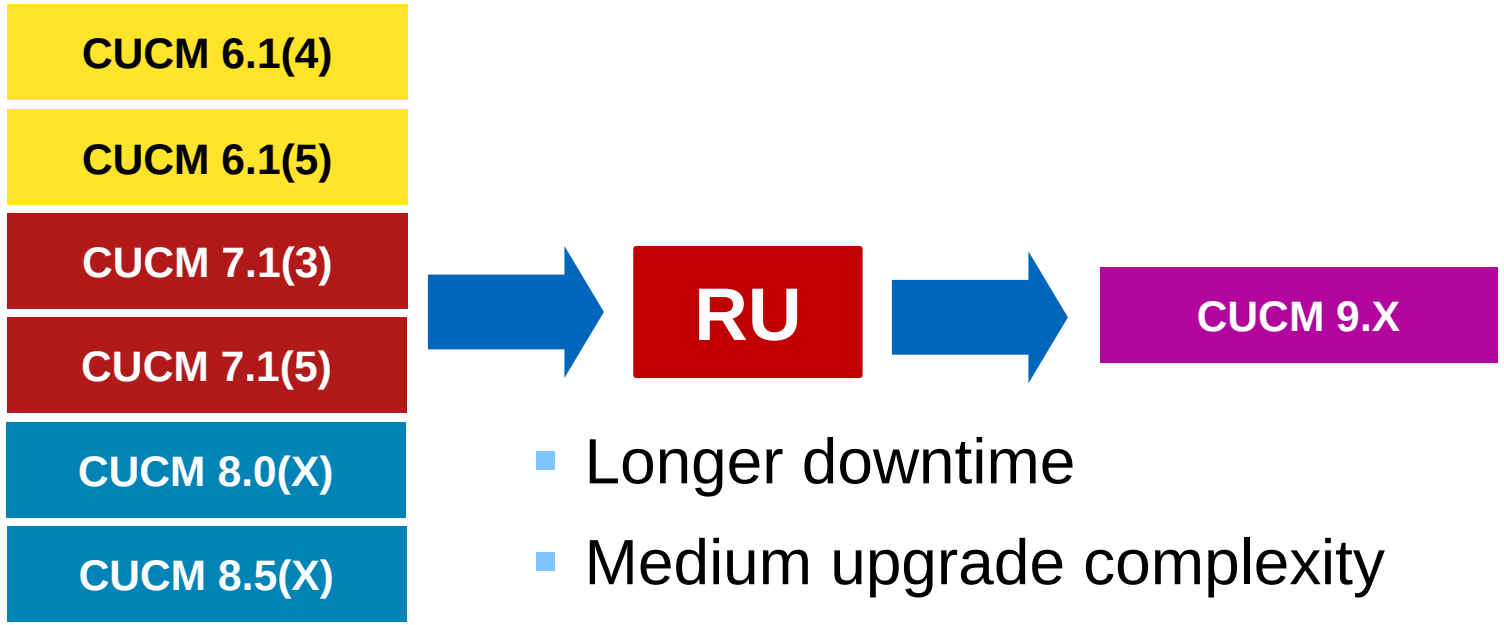
One-Step L2 Upgrades (Appliance)



- The CUCM versions that will support a L2 upgrade to 9.X or 10.x
- Short or minimal downtime

Cisco Unified Communications Manager Software Compatibility Matrix
http://www.cisco.com/en/US/docs/voice_ip_comm/cucm/compat/10_x/CUCM_BK_CD1DB914_00_compat_matrix.pdf
http://www.cisco.com/en/US/docs/voice_ip_comm/cucm/compat/ccmcompmatr1.pdf

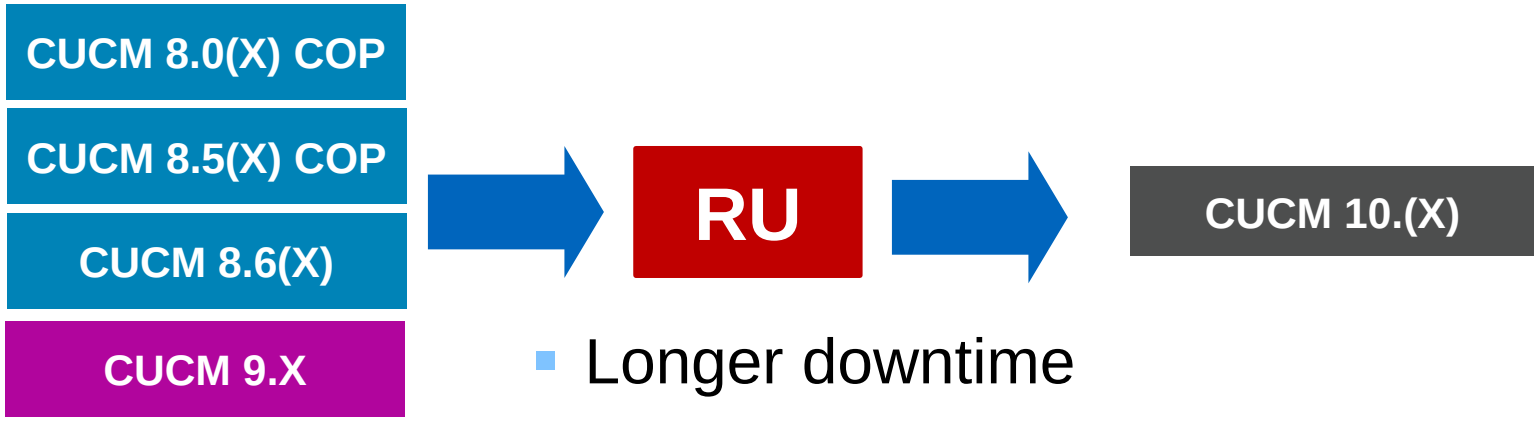
One-Step RU Upgrades (Appliance)



- Longer downtime
- Medium upgrade complexity

Cisco Unified Communications Manager Software Compatibility Matrix
http://www.cisco.com/en/US/docs/voice_ip_comm/cucm/compat/10_x/CUCM_BK_CD1DB914_00_compat_matrix.pdf
http://www.cisco.com/en/US/docs/voice_ip_comm/cucm/compat/ccmcompmatr1.pdf

One-Step RU Upgrades (Virtualised)



- Longer downtime
- Medium upgrade complexity

Cisco Unified Communications Manager Software Compatibility Matrix
http://www.cisco.com/en/US/docs/voice_ip_comm/cucm/compat/10_x/CUCM_BK_CD1DB914_00_compat_matrix.pdf
http://www.cisco.com/en/US/docs/voice_ip_comm/cucm/compat/ccmcompmatr1.pdf

Multi-Step Upgrade to CUCM 9.1: Source

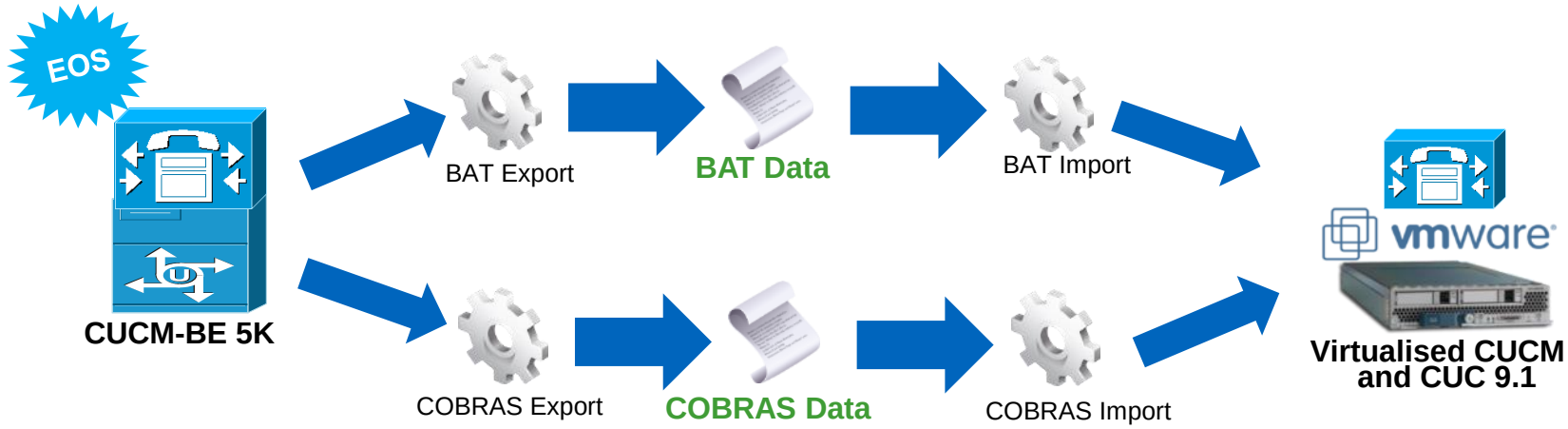
- For end of support and appliance versions of CUCM
- Focus on the interim versions that can be upgraded to 9.X
- Sources for multi-steps upgrade path:
  - Cisco Unified Communications Manager Software Compatibility Matrix - Supported upgrade paths to/from table - http://www.cisco.com/en/US/docs/voice_ip_comm/cucm/compat/ccmcompmatr1.pdf
  - CUCM Upgrade Resource Central - https://communities.cisco.com/community/partner/collaboration/migration

End of Sales Notices for CUCM
http://www.cisco.com/en/US/products/sw/voicesw/ps556/prod_eol_notices_list.html

Multi-Step Upgrade to CUCM 9.1: Interim CUCM Version

- Interim CUCM version reference point:
  - Software Compatibility Matrix outlines all technical possible upgrade paths
  - Direct Upgrade Procedure and High Available Upgrade documents outline specific upgrade paths
- Interim CUCM version selection:
  - Interim CUCM version(s) to upgrade to which allows for eventually to upgrade to the targeted version
  - Minimise major version changes (I.E. 7.0 to 8.0) for features and license requests
  - CUCM versions has patch to provide for stability (latest SU or Security Update)
  - CUCM version that support current server
  - Impact by other UC applications due to dependency

CUCM-BE 5K to CUCM-BE 6K/7K or CUCM/CUC



- Upgrade CUCM-BE to version CUCM-BE 9.1
- 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-BE 5K to CUCM-BE 6K
https://communities.cisco.com/docs/DOC-33988




Virtualised CUCM




Platform Support

Platform Options

1 Tested Reference Configuration (TRC)

CISCO


C220 M3


B200 M3


C240 M3


B230 M2


C260 M2


B440 M2

2 Specs-Based (Software)

CISCO

DELL

hp invent

IBM


VMware Supported Servers

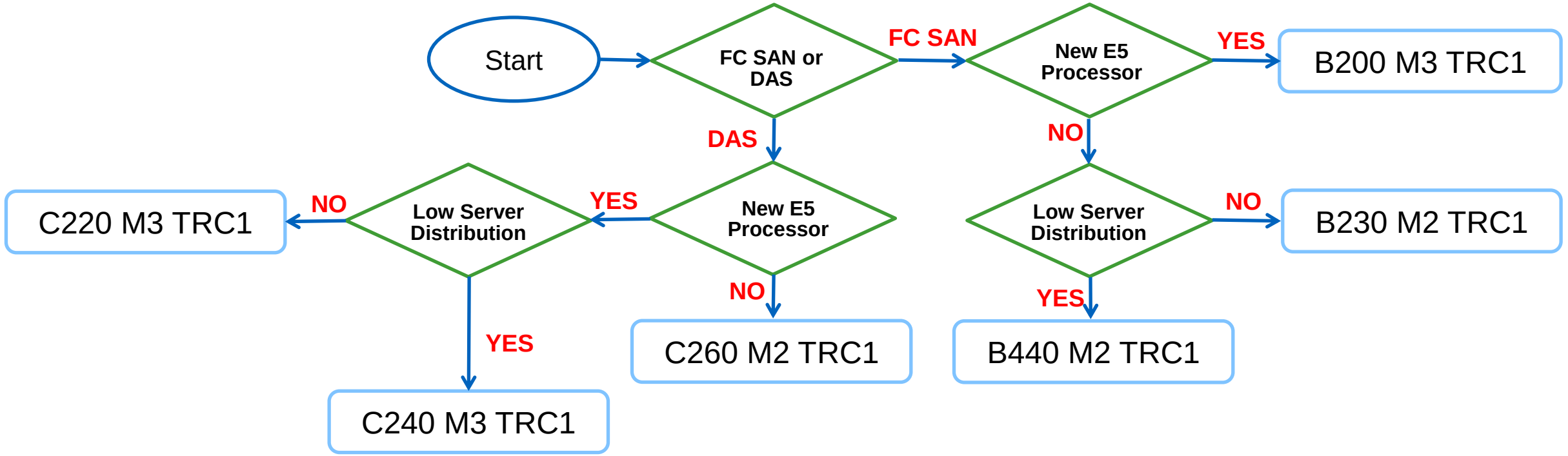
Tested Reference Configurations (TRC)

- Customers with lower virtualisation proficiency
- Cisco prescribed hardware specifications
- Performance guarantee for UC applications
- Tradeoffs to hardware choices
- Chassis based:
  - B200 M3, B230 M2 and B440 M2
  - FC SAN only
  - Full width versus half width blade
- Rack-Mount:
  - C220 M3, C240 M3 and C260 M2
  - DAS only
  - 1 to 2 rack unit

UC Virtualisation Supported Hardware:

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

TRC Based Platform Decision Tree



- FC SAN provides for higher redundancy in terms of storage redundancy and VMware redundancy
- Newer E5 processor for longevity
- Lower server distribution might have larger failure domain

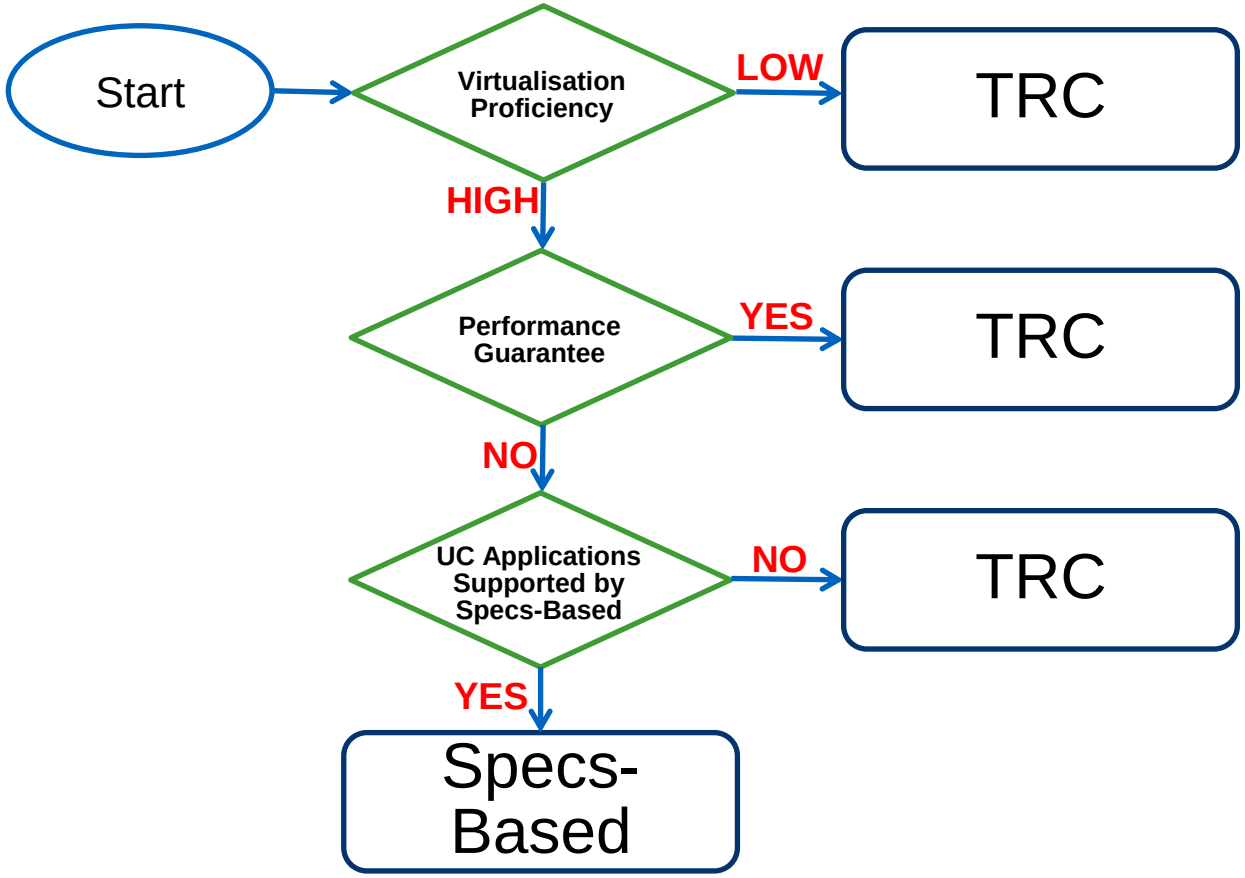
Specs-Based Hardware

- Customers with extensive virtualisation proficiency
- Maximum hardware choices including Cisco, HP, IBM and any servers that are on the VMware Hardware Compatibility list
- Use Tested Reference Configurations (TRC) for guidance
- Cisco is not responsible for UC VM performance
- VMware vCenter is required **VMware vCenter Server**
- CPU requirements
  - Intel Xeon 5600 or 7500 family with minimum physical core speed of 2.53 GHz 
  - Intel Xeon E7-2800, E7-4800 or E7-8800 family with minimum physical core speed of 2.4 GHz 
  - Intel Xeon E5-2600 family with minimum physical core speed of 2.5 GHz 
  - Leverage TRC as a baseline for CPU model
  - DAS only, DAS & FC SAN or FC SAN only

UC Virtualisation Supported Hardware:

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

TRC or Specs-Based Decision Tree



- Evaluation criteria for platform decision between TRC and Specs-Based varies based on organisation priorities
  - Virtualisation proficiency
  - Performance guarantee
  - Platform and vendor choices
  - Differences in supported applications, noticeably
    - Contact Centre
    - TelePresence (CTMS, CTS Manager)
    - Cisco WebEx Meeting Server
- Solution should be consistent, but can be hybrid

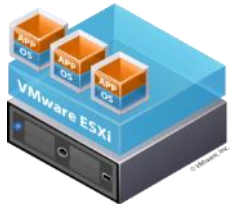
Unified Communications Virtualisation Supported Applications:

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




Virtualisation Support

VMware Sphere Support for CUCM



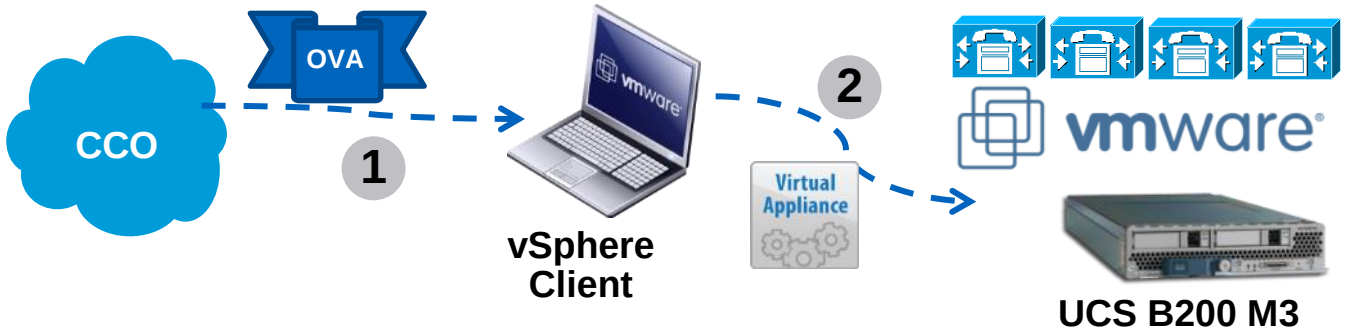
vmware

- ESXi 4.0, 4.1, 5.0, 5.1and 5.5 (with some specific UC application exceptions)
  - VMware vSphere Hypervisor, Essential, Essential Plus, Acceleration Kit, Standard, Enterprise or Enterprise Plus
  - ISO for Cisco UCS and third party for appropriate driver support is at:
    - https://my.vmware.com/web/vmware/info/slug/datacenter_cloud_infrastructure/vmware_vsphere/5_0#drivers_tools
- 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
- VMware Feature Support (vMotion, Snapshot, etc.)
  - Refer to DOCWIKI

Unified Communications VMware Requirements:

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

Cisco Virtual Template (OVA) File



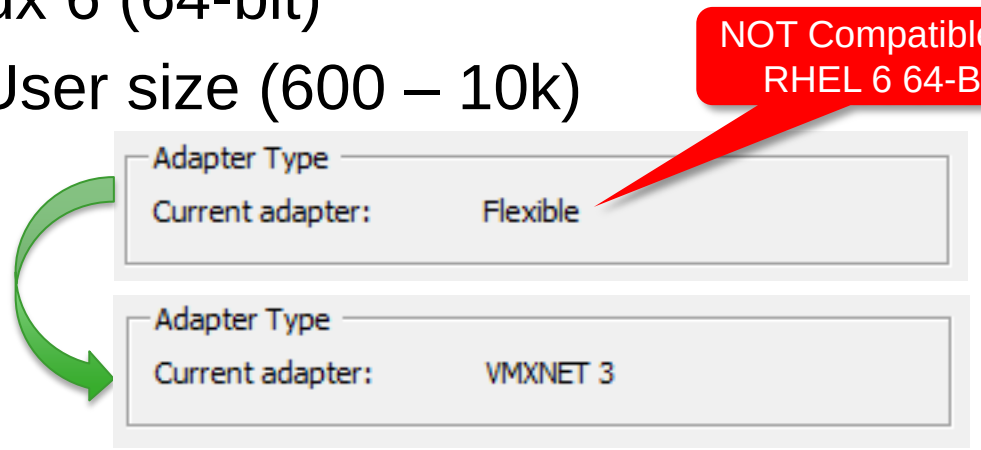
- Open Virtual Archive (OVA): Portable virtual appliance that defines configuration (memory, storage space, etc.) for a virtual machine and is a compressed version of OVF
- Cisco will provide OVA files on CCO for UC applications deployment
- VMware virtual machine hardware version (VMV)
  - VMV 7 = ESXi 4.0, 4.1 or 5.0 E.g cucm_10.0_vmv7_v1.6.ova
  - VMV 8 = ESXi 5.0 (To upgrade, right click and select upgrade virtual hardware). Cannot be downgraded to 7. E.g cucm_10.0_vmv8_v1.6.ova

OVA Files for UC on UCS Deployments:

http://docwiki.cisco.com/wiki/Unified_Communications_Virtualization_Downloads_(including_OVA/OVF_Templates)

CUCM 10.0 OVA Migration Requirements

- DO NOT migrate from 2 x 80GB Disks to 1 x 110GB
  - Can use PCD for migration if you must
- CUCM must be Powered OFF
- Guest OS Change to Red Hat Enterprise Linux 6 (64-bit)
- Memory or CPU reservations dependent on User size (600 – 10k)
  - See cucm_10.0_vmv7_v1.7.ova README
- MUST CHANGE Network Adapter Type
  - Flexible to VMXNET3
  - Modify Options Depends on ESXi License
    - Easy Option via vSphere PowerCLI (http://www.vmware.com/support/developer/PowerCLI/)
      - VMware vSphere Standard Edition, Enterprise Edition, or Enterprise Plus Edition
      - Sample PowerCLI Script in Appendix
    - Manual Option
      - Easy if CUCM VM MAC Address is Manually assigned
      - Complex if CUCM VM MAC Address is Automatically assigned



OVA Files for UC on UCS Deployments:

http://docwiki.cisco.com/wiki/Unified_Communications_Virtualization_Downloads_(including_OVA/OVF_Templates)

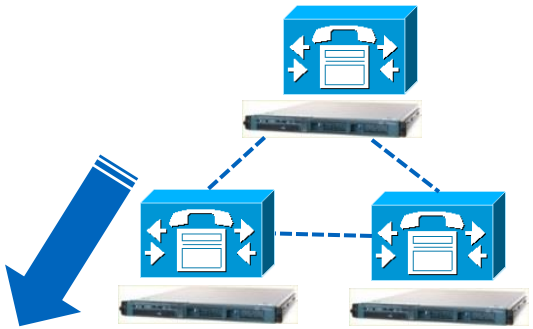



Prime Collaboration Deployment (PCD)

5

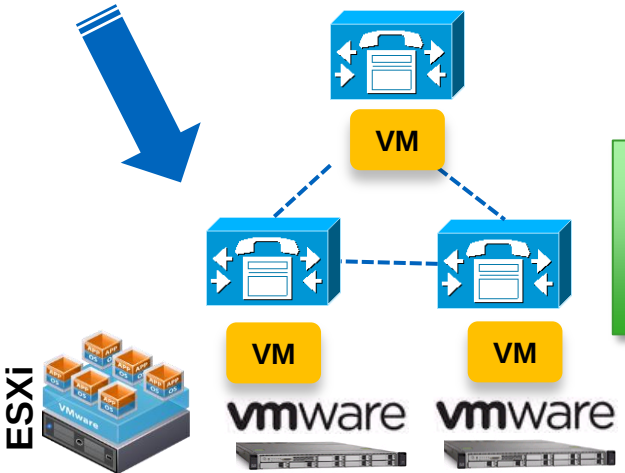
Prime Collaboration Deployment (PCD)

10.X+



UCM 6.1(5)
MCS 7825H-2.2
Pub + 2 Subs
750 users total

PCD



Virtualised UCM 10.0(1)
VMware vSphere 5.1
UCS C220 M3S TRC#2

- PCD is a Virtual only Appliance vApp, OVA provided
- Cluster-wide Scheduling or Orchestrating Features
  - Software upgrades L2 or RU and Fresh Installs, Reboots or Switch Version, IP and/or hostname changes
- SFTP/NFS Storage for ISO, COP & Migration Data
  - Recommend increasing PCD vDisk Size (Default 80GB)
- EMAIL Notification system
  - (when tasks are done, with status, or when there's a problem)
- Direct Migration Support from CUCM versions to CUCM 10.0+
  - 6.1(5), 7.1(3) / 7.1(5), 8.0(1-3), 8.6(1-2), 9.X
- Migration support while
  - … keeping old IP/hostname for all cluster nodes
  - … changing IP/hostname for one or more nodes
  - … using temporary IP/hostname for "testing", then later going back to old IP/hostname

Prime Collaboration Deployment (PCD)

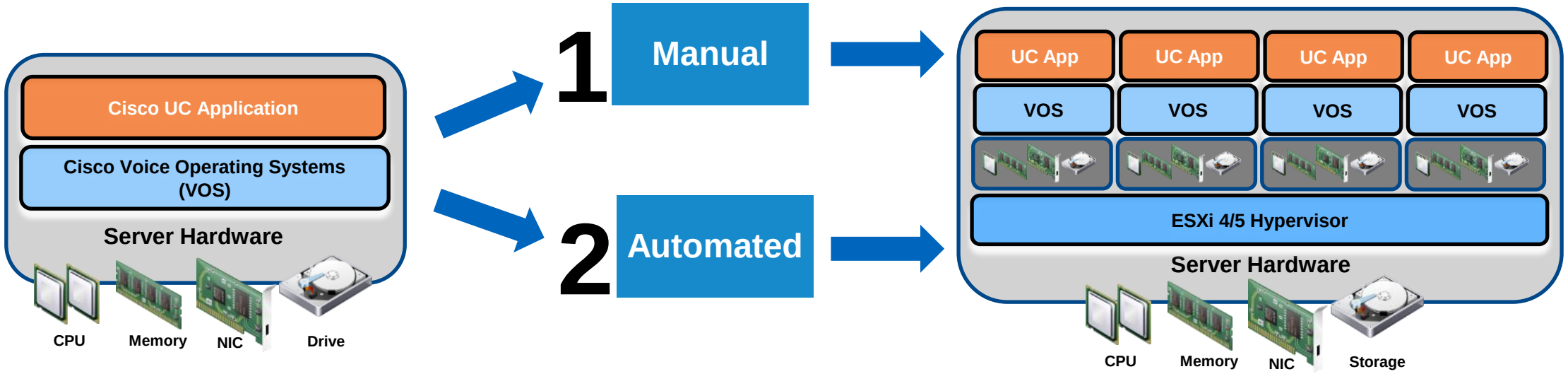
Feature	CUCM 6.1(5)	CUCM 7.1(3)-7.1(5)	CUCM 8.0(1-3)	CUCM 8.5(1)	CUCM 8.6(1-2)	CUCM 9.x	CUCM 10.x
Migration to 10.X	X	X	X	X	X	X	X
Fresh Install							X
Upgrade/COP Install					X	X	X
Switch Version					X	X	X
Reboot					X	X	X
Export Data	X	X	X	X	X	X	X
Hostname/IP Address Change							X

CUCM Platform Conversion

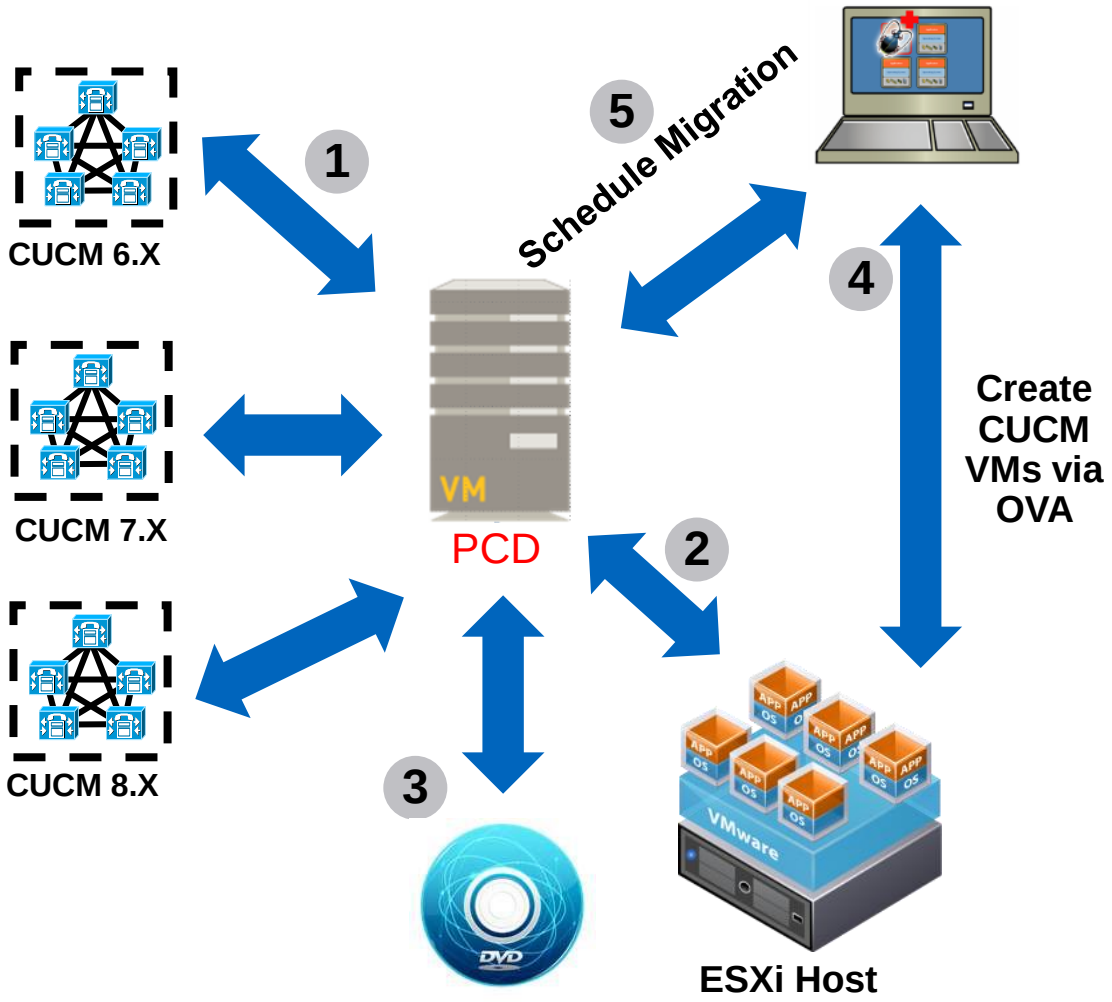
PC

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

- Two approaches to this platform conversion
  1. Manual (Starting with CUCM 8.0(2))
  2. Automated with Prime Collaboration Deployment



Automated Platform Conversion with PCD



- CUCM Software provided to ESXi Hosts via NFS services 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

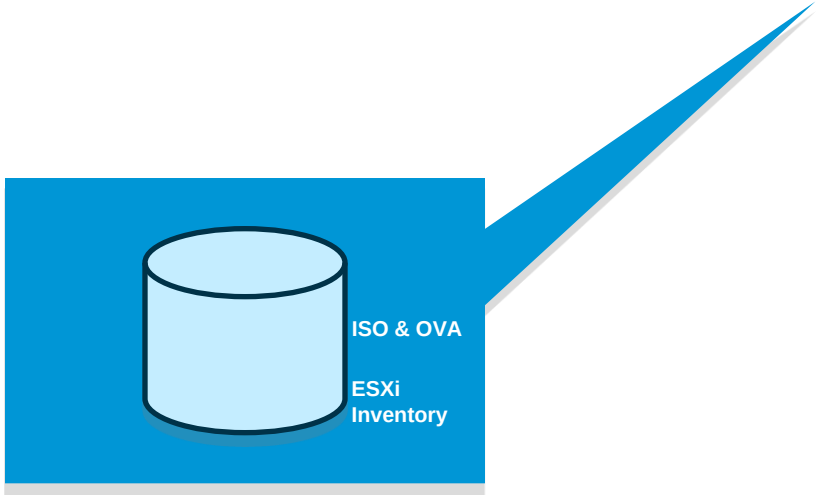



PCD Migration Feature

Setup Process

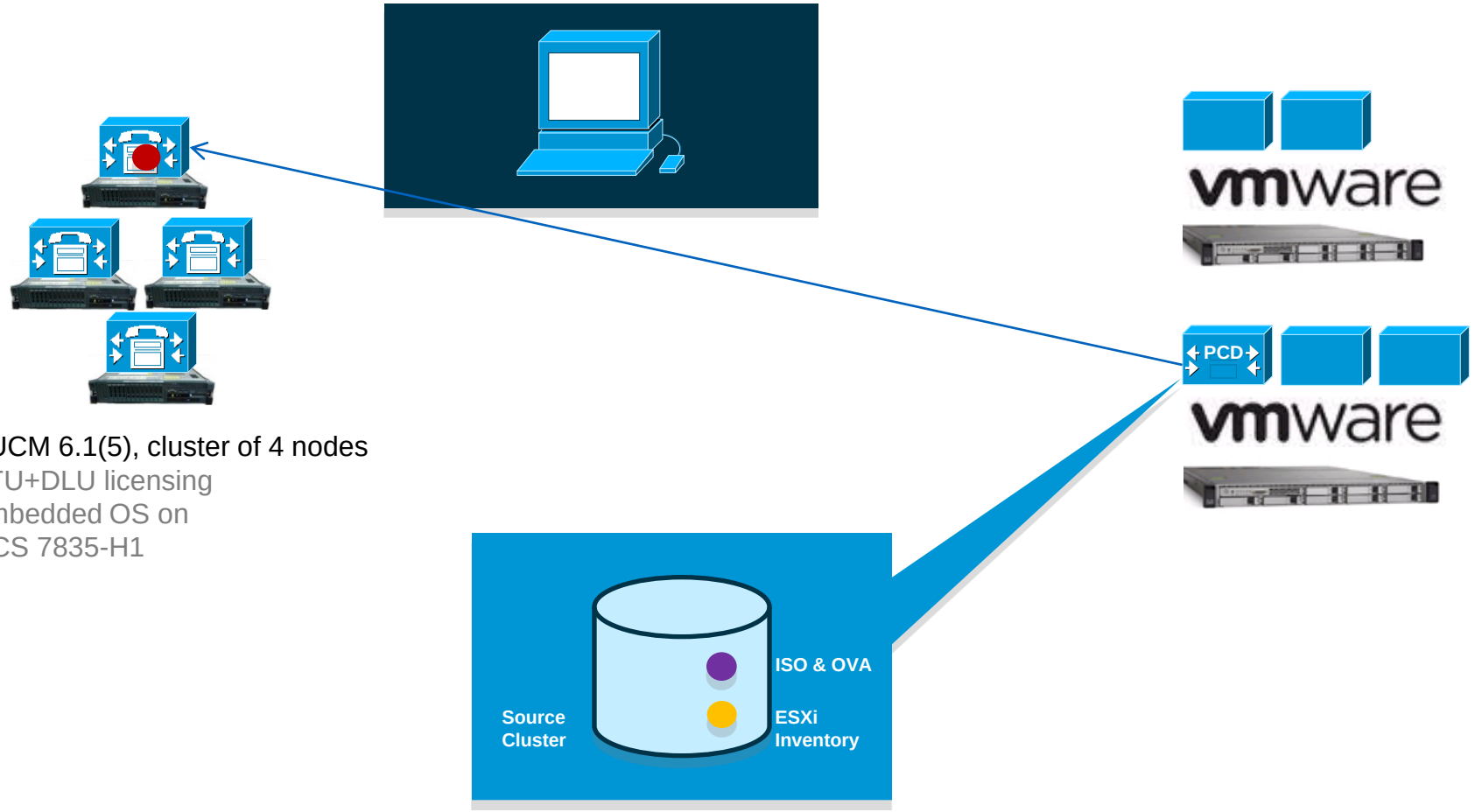
1. Rack/Stack deploy hardware and install ESXi (Vmware)
2. Deploy PCD virtual machine (delivered as virtual appliance)
3. Configure PCD:
   - Download necessary OVA and .ISO images for target release
   - Add ESXi hosts to PCD inventory
4. “Discover Cluster” – PCD connects to source cluster and retrieves cluster information.
5. Create target virtual machines using OVA
6. “Create Migration Cluster” – define the mapping between MCS source nodes and target virtual machines.
7. “Create Migration Task” – choose the iso to install on the new VMs, and choose time the migration will occur (set time, or manual start).

Initial Infrastructure Setup & Config



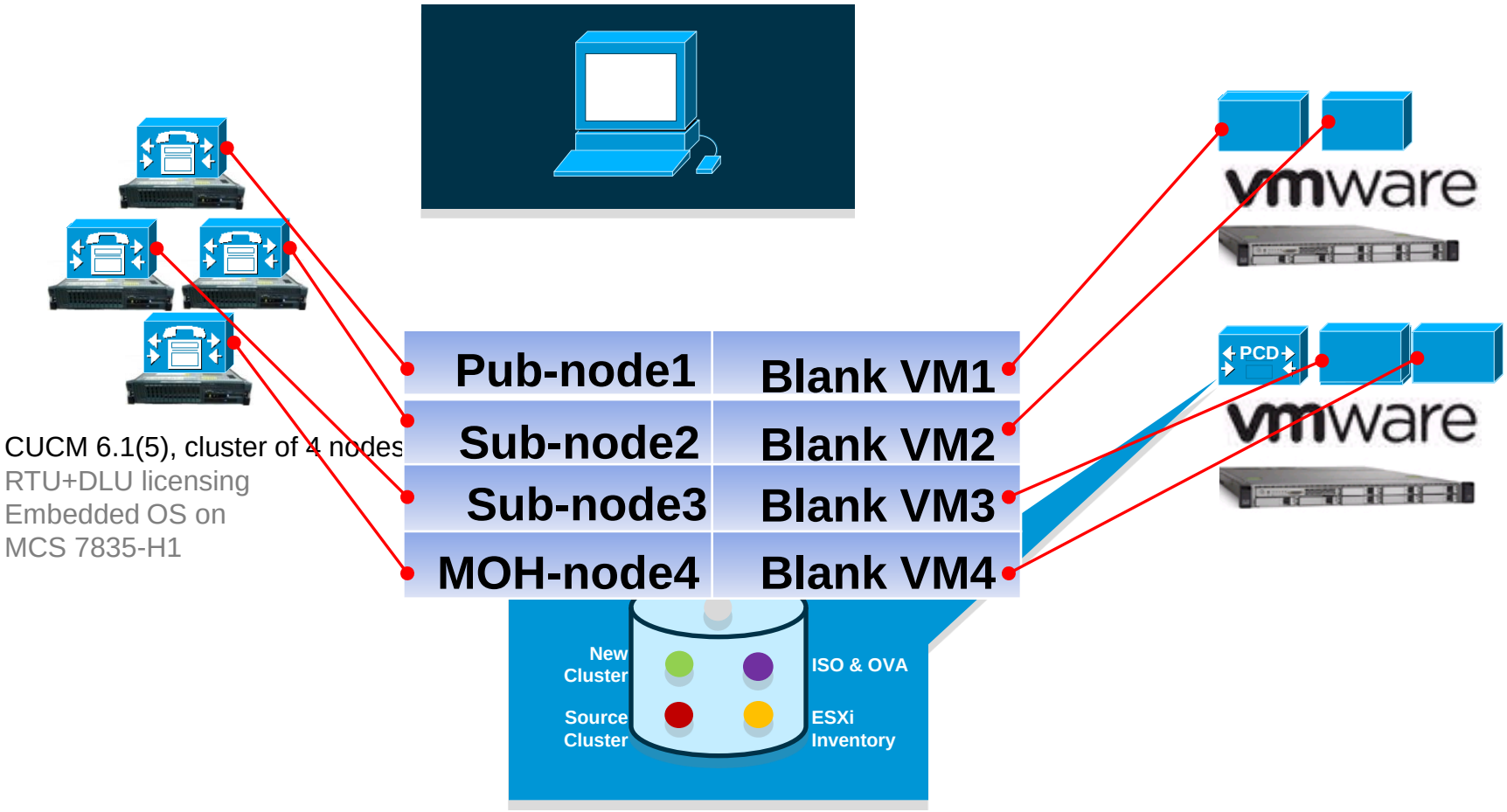
CUCM 6.1(5), cluster of 4 nodes
RTU+DLU licensing
Embedded OS on
MCS 7835-H1

Cluster Discovery



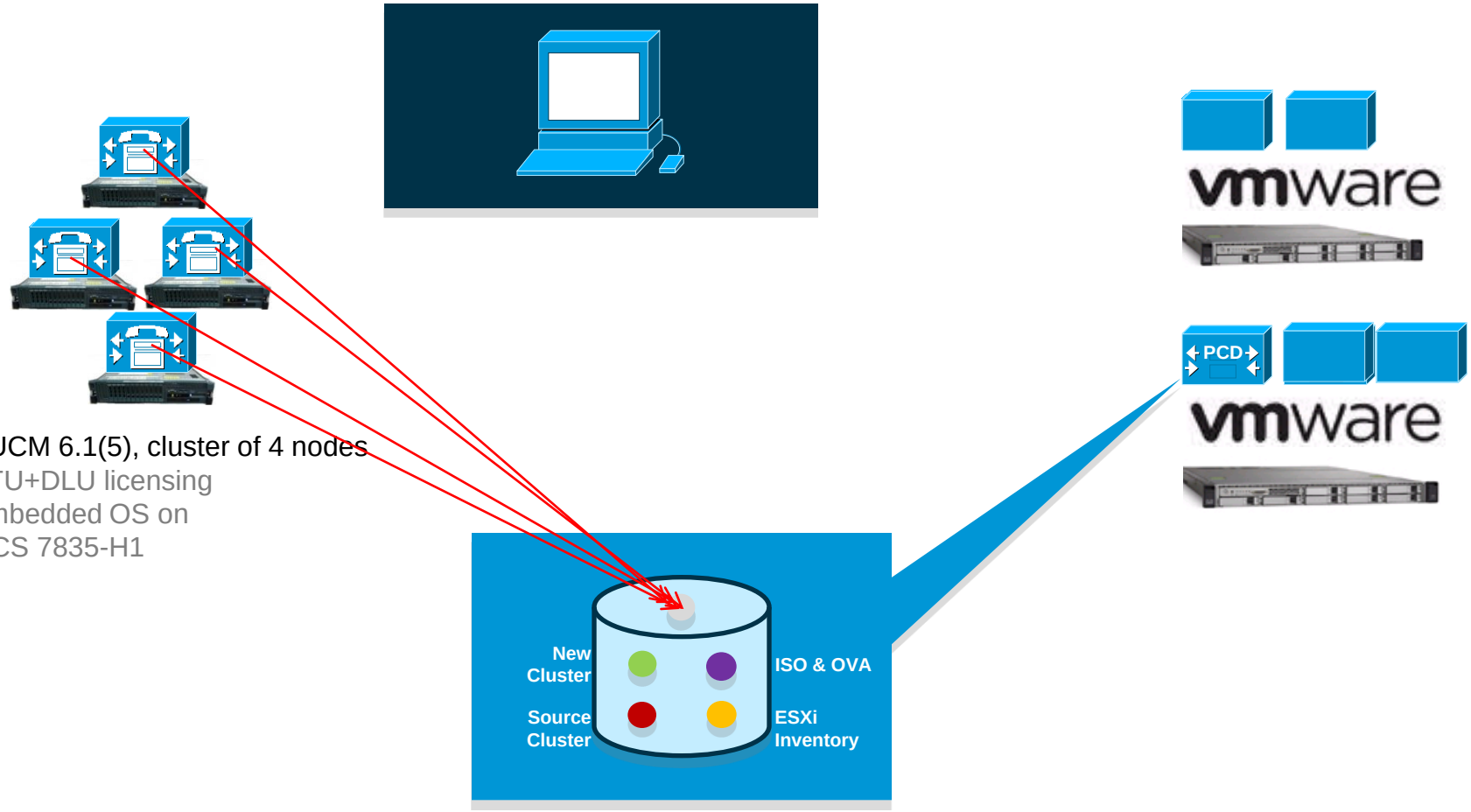
CUCM 6.1(5), cluster of 4 nodes
RTU+DLU licensing
Embedded OS on
MCS 7835-H1

Define Mapping

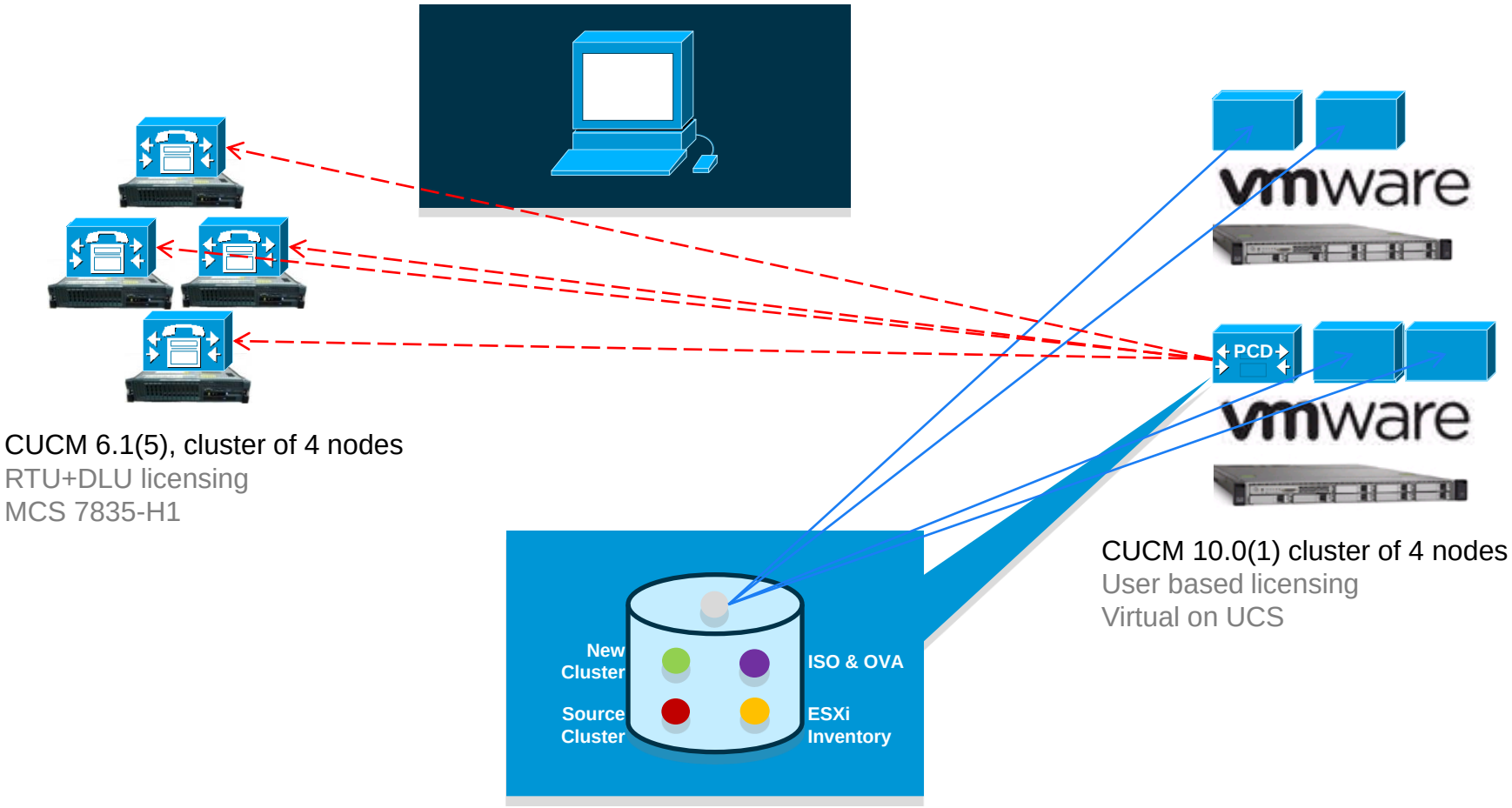


CUCM 6.1(5), cluster of 4 nodes
RTU+DLU licensing
Embedded OS on
MCS 7835-H1

Export Data From Source Cluster



Shutdown Source, Install & Import Data



CUCM 6.1(5), cluster of 4 nodes
RTU+DLU licensing
MCS 7835-H1

CUCM 10.0(1) cluster of 4 nodes
User based licensing
Virtual on UCS




PCD Migration Setup

Prerequisites Checklist

Tasks done outside of PCD – prior to configuring migration

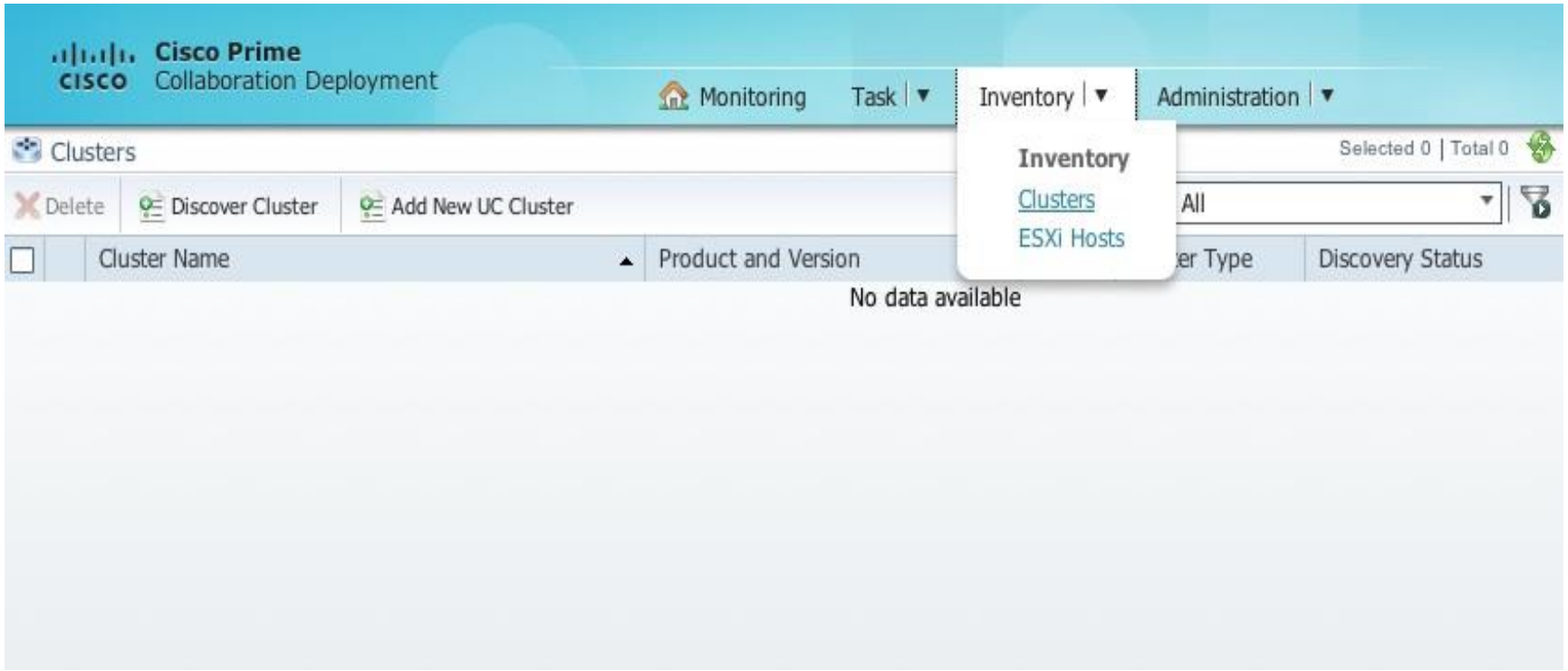
- Download CUCM 10.0.1 OVA file.
- Download CUCM 10.0.1 ISO file.
- Add and setup ESXi host. (Know root credentials)
- Deploy CUCM OVA to create VMs for new machines
  - One VM is created for each destination cluster node. # of source cluster nodes (physical servers) must be equal to # of destination cluster nodes (VMs).
  - Configure network settings of VM accordingly.
  - VMs in power off state.
  - Note the ESXi host the VMs are on, we will add that to PCD inventory later.
- SFTP ISO file to UCMAP server (in fresh_install directory)
  - sftp adminsftp@<IP_of_PCD> put iso file in fresh_install directory

Migration Setup

- Pre - Rack/Stack deploy hardware and install ESXi (Vmware)
- Pre - Deploy PCD virtual machine (delivered as virtual appliance)
- Pre - Download necessary OVA and .ISO images for target release
- Pre - Create target virtual machines using OVA (before step 6)

1. Discover Cluster – PCD connects to source cluster and retrieves cluster information.
2. Add ESXi hosts to PCD inventory
3. Create Migration Cluster – define the mapping between MCS source nodes and target virtual machines.
4. Create Migration Task – choose the iso to install on the new VMs, and choose the time the migration will occur (set time, or manual start).

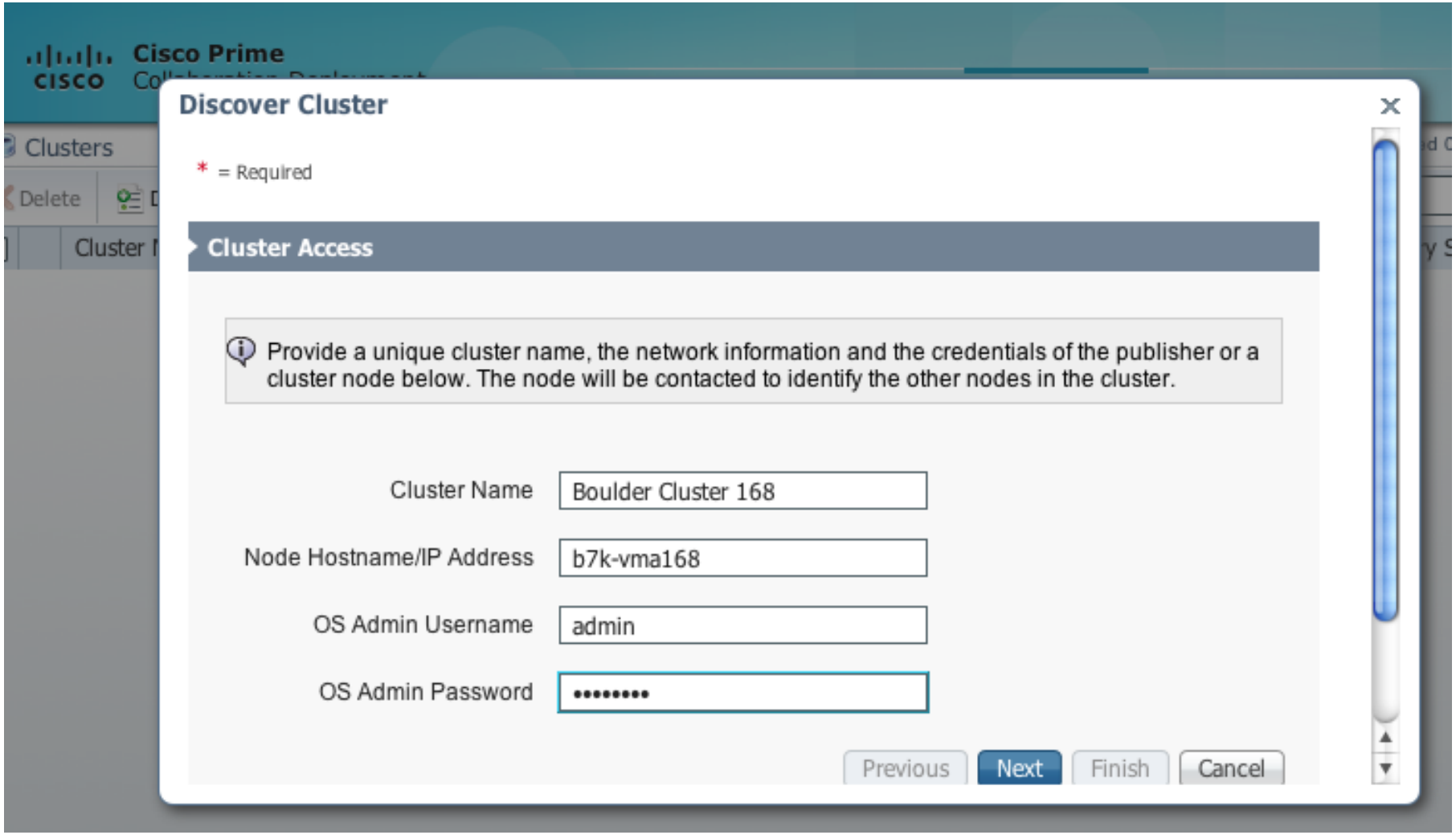
Inventory – Clusters



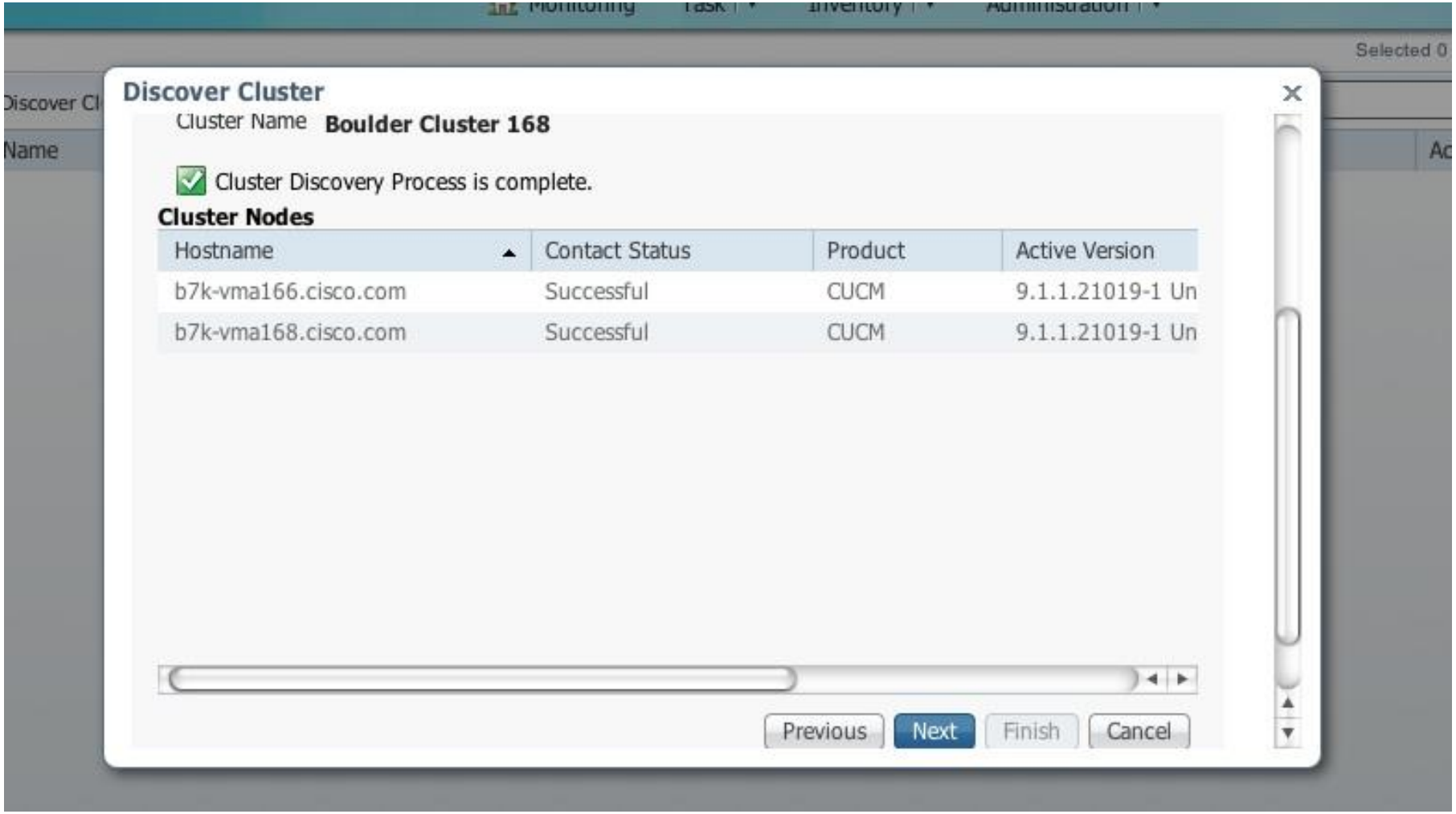
Clusters screen – holds the cluster inventory.

This includes existing clusters (that will be migrated or upgraded),
Cluster definitions to be migrated to, or Cluster definitions to be fresh installed.
To add an existing cluster to your inventory, click on “Discover Cluster” button.

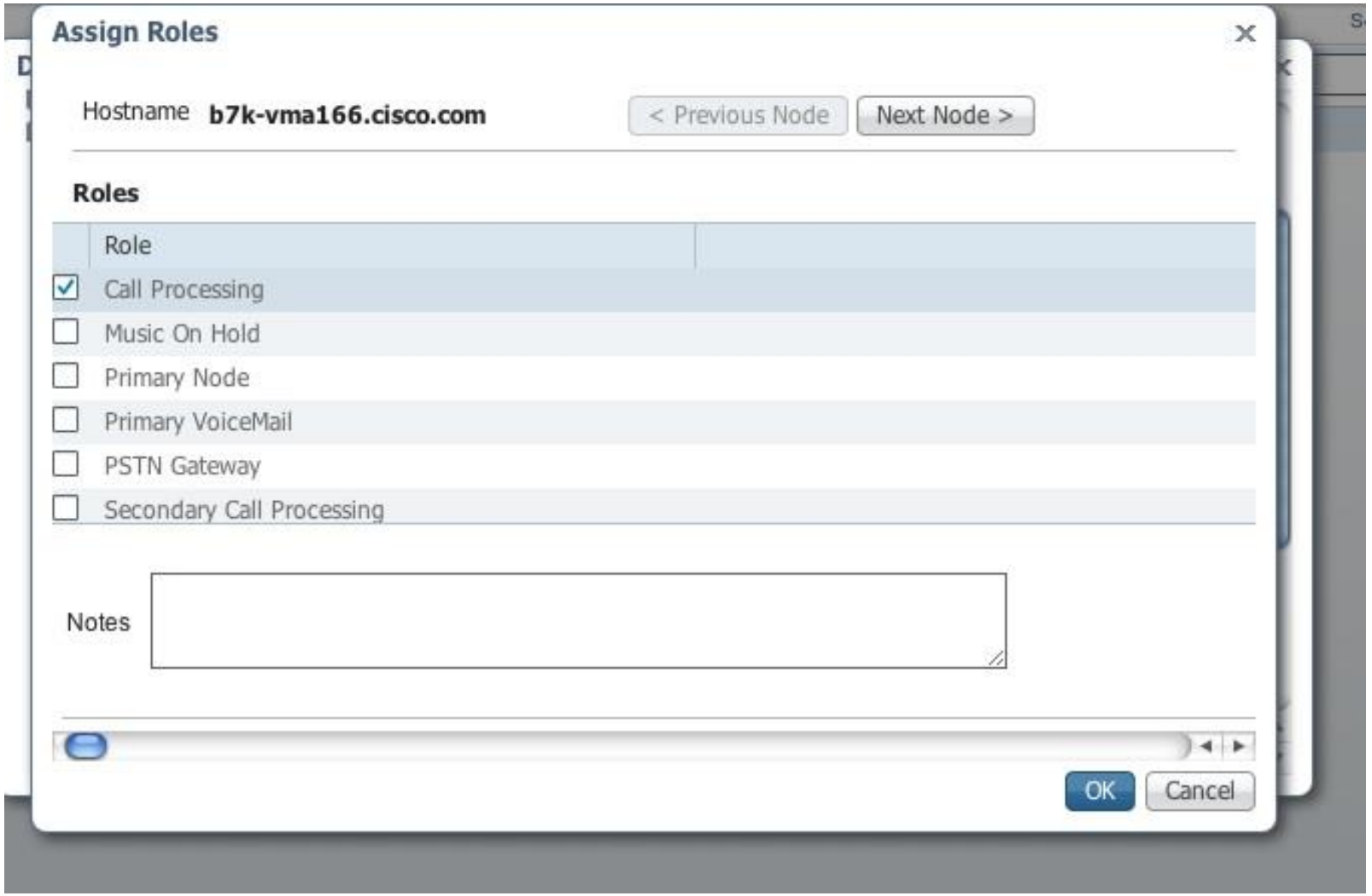
Inventory – Cluster Discovery



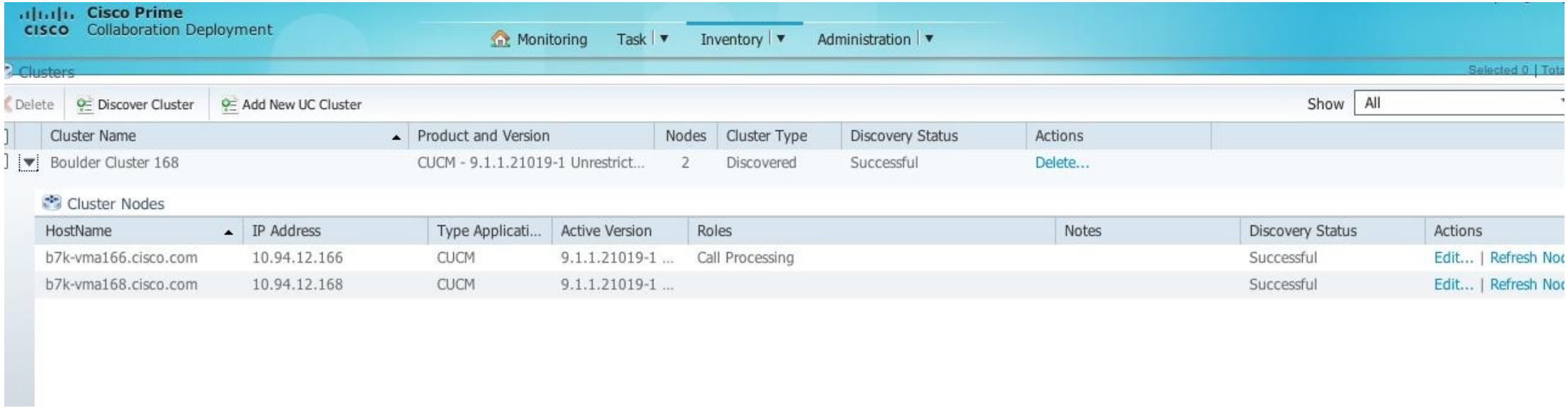
Inventory – Cluster Discovery



Inventory – Cluster Discovery



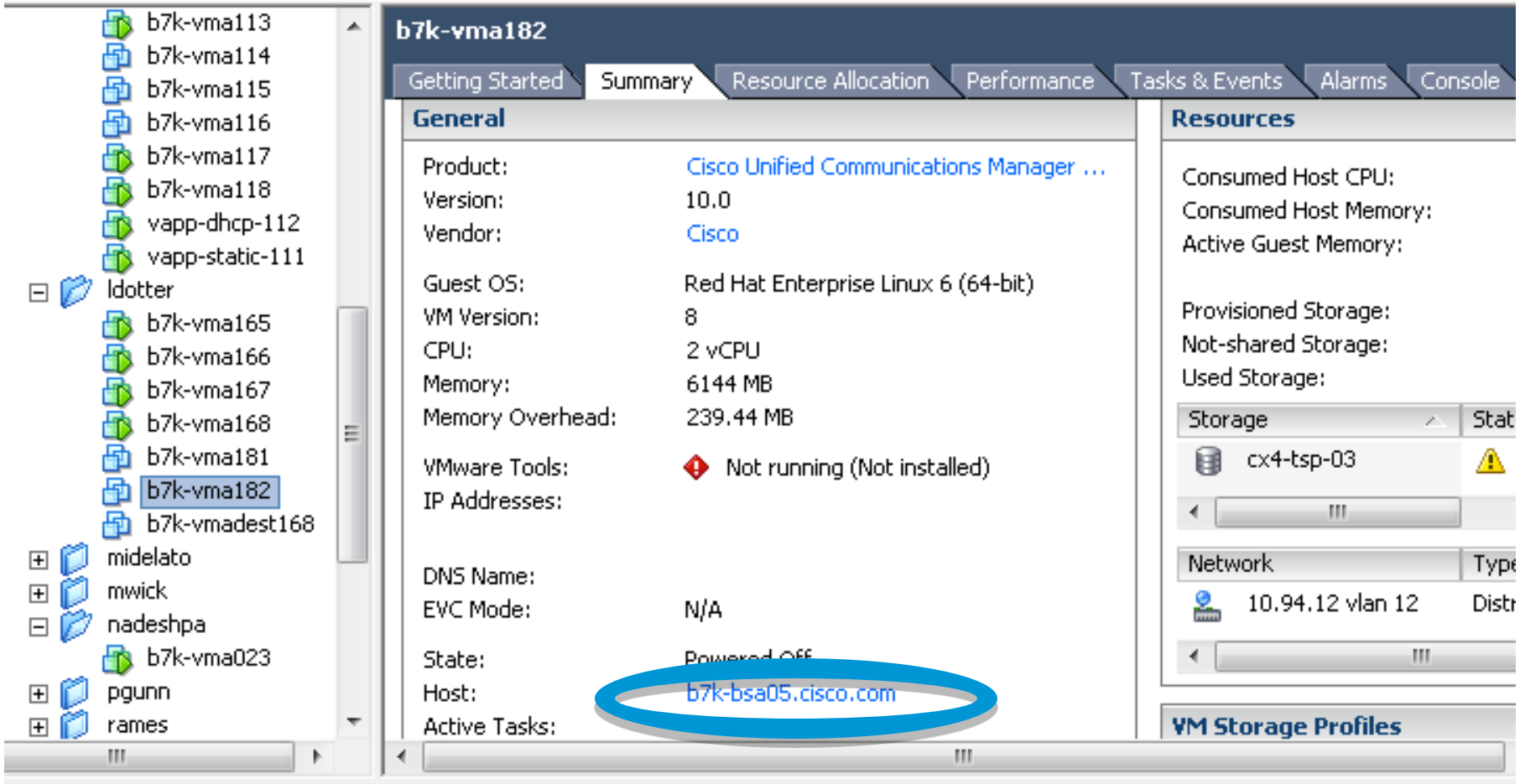
Inventory – Cluster Discovery



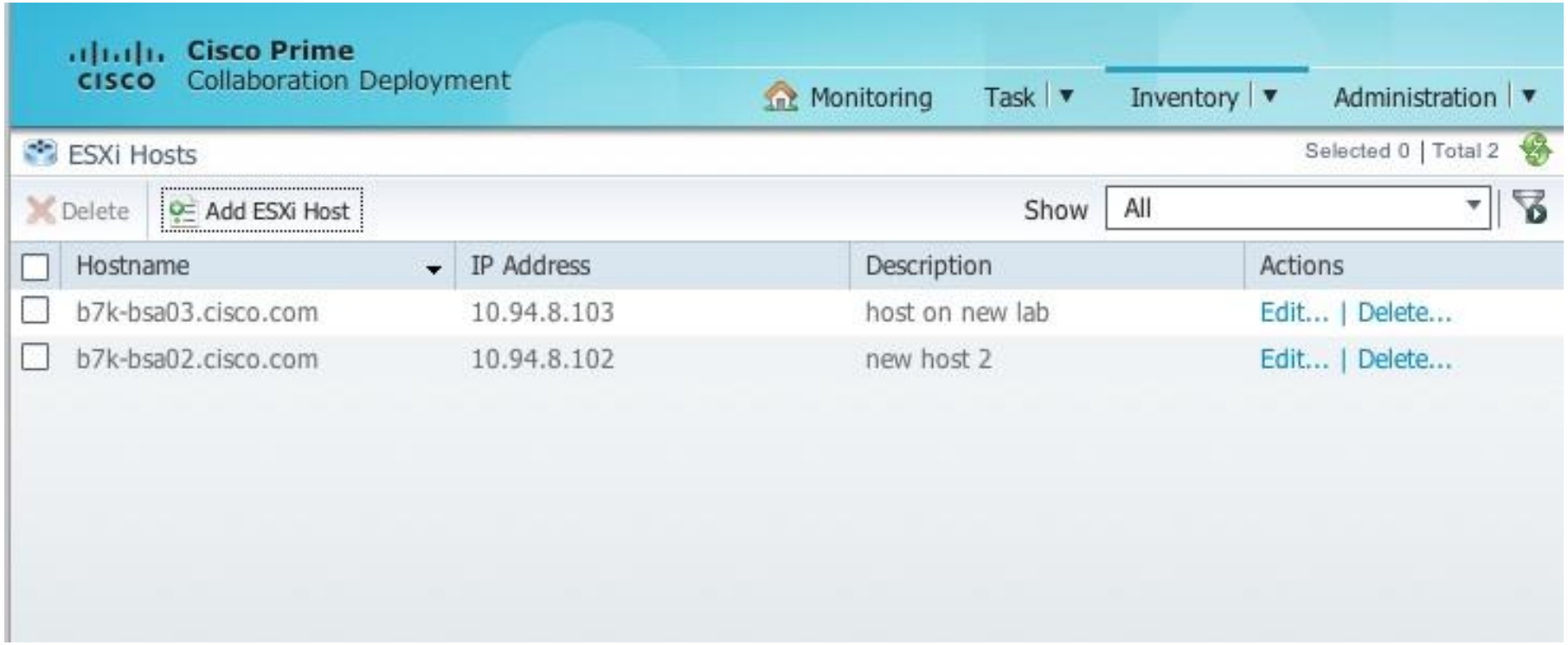
Migration Setup

- Pre - Rack/Stack deploy hardware and install ESXi (Vmware)
- Pre - Deploy PCD virtual machine (delivered as virtual appliance)
- Pre - Download necessary OVA and .ISO images for target release
- Pre - Create target virtual machines using OVA (before step 6)
- 1. Discover Cluster – PCD connects to source cluster and retrieves cluster information.
  2. Add ESXi hosts to PCD inventory
  3. Create Migration Cluster – define the mapping between MCS source nodes and target virtual machines.
  4. Create Migration Task – choose the iso to install on the new VMs, and choose the time the migration will occur (set time, or manual start).

Inventory – ESXi Hosts

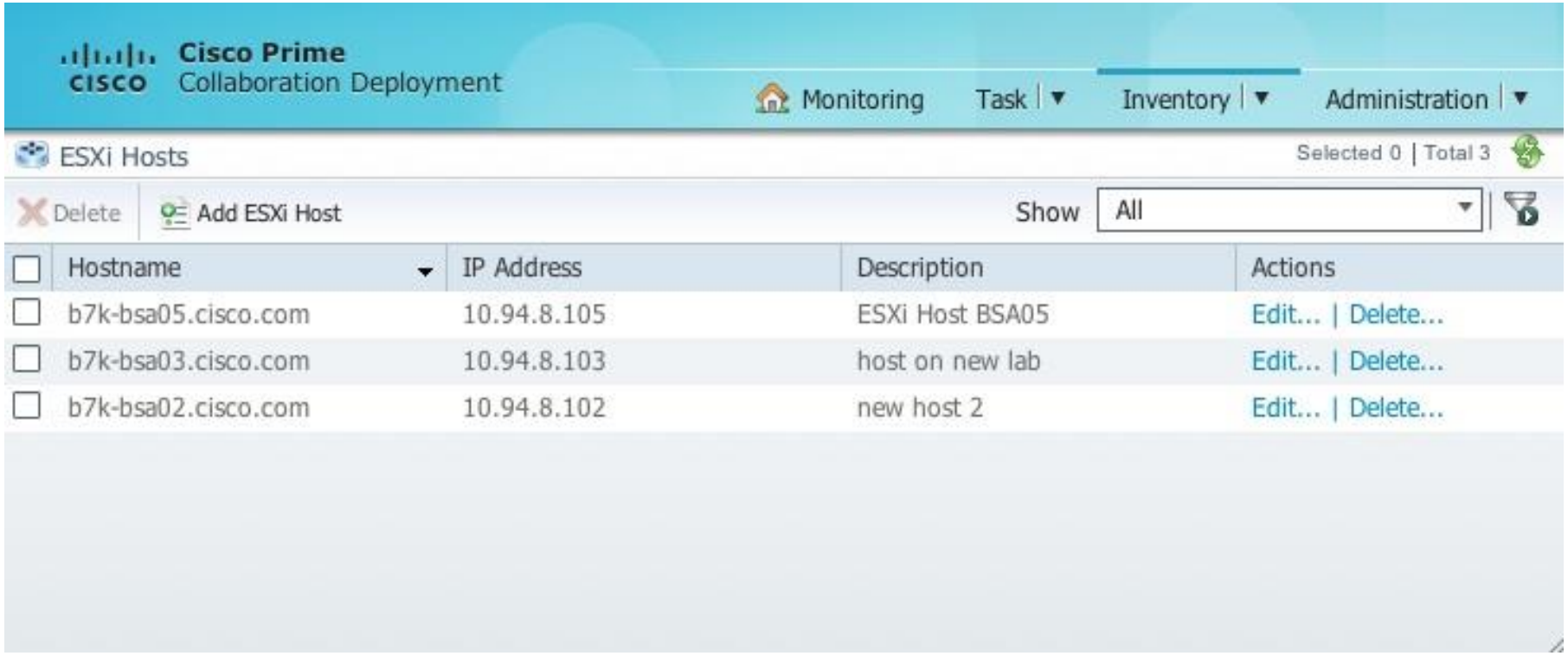


Inventory – ESXi Hosts



Inventory – ESXi Hosts

Inventory – ESXi Hosts



Migration Setup

- Pre - Rack/Stack deploy hardware and install ESXi (Vmware)
- Pre - Deploy PCD virtual machine (delivered as virtual appliance)
- Pre - Download necessary OVA and .ISO images for target release
- Pre - Create target virtual machines using OVA (before step 6)
- 1.Discover Cluster – PCD connects to source cluster and retrieves cluster information.
- 2.Add ESXi hosts (for the VMs you will use) to the PCD inventory

3.Create Migration Cluster – define the mapping between MCS source nodes and target virtual machines.

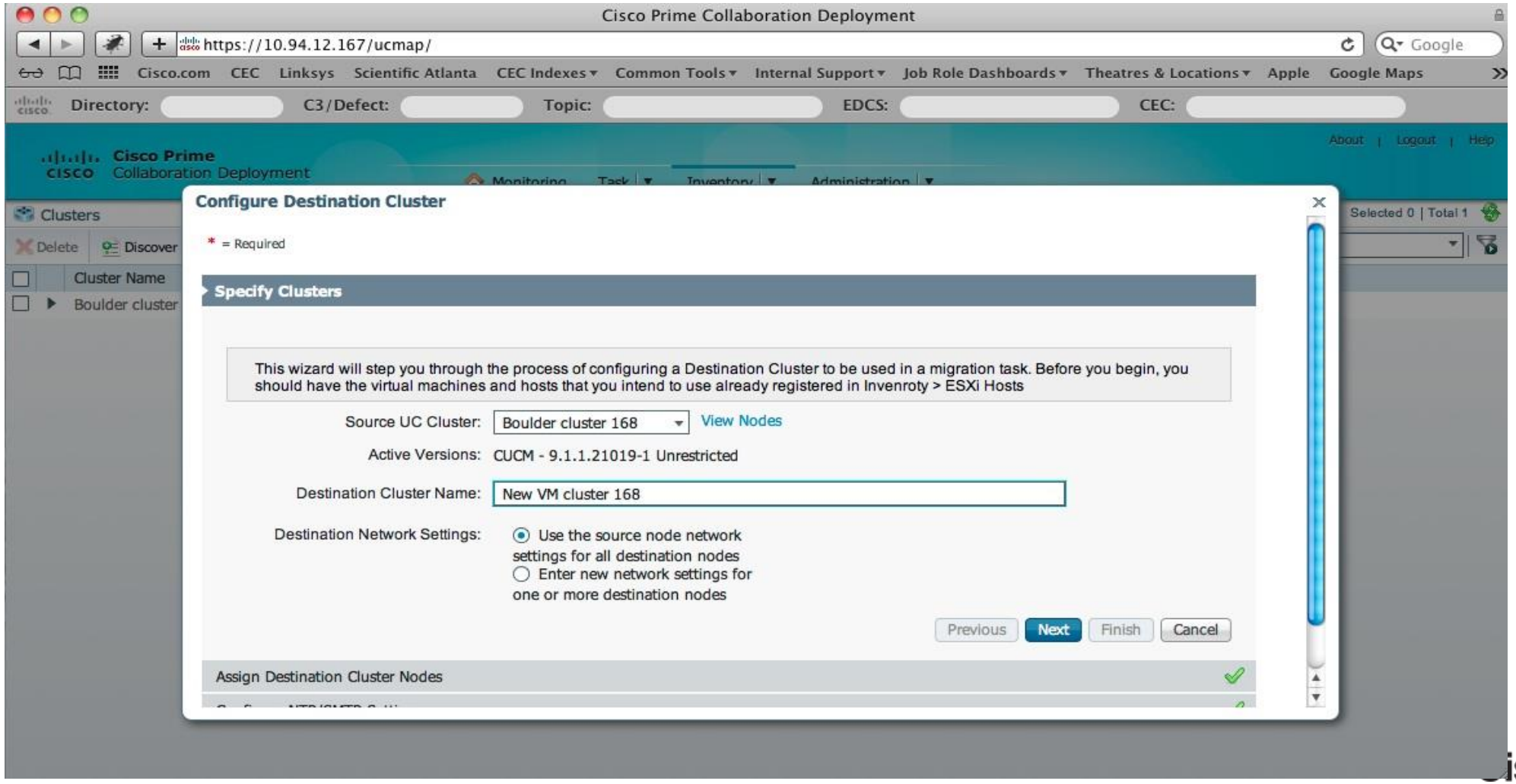
4.Create Migration Task – choose the iso to install on the new VMs, and choose the time the migration will occur (set time, or manual start).

Create Migration Cluster (to Cluster)

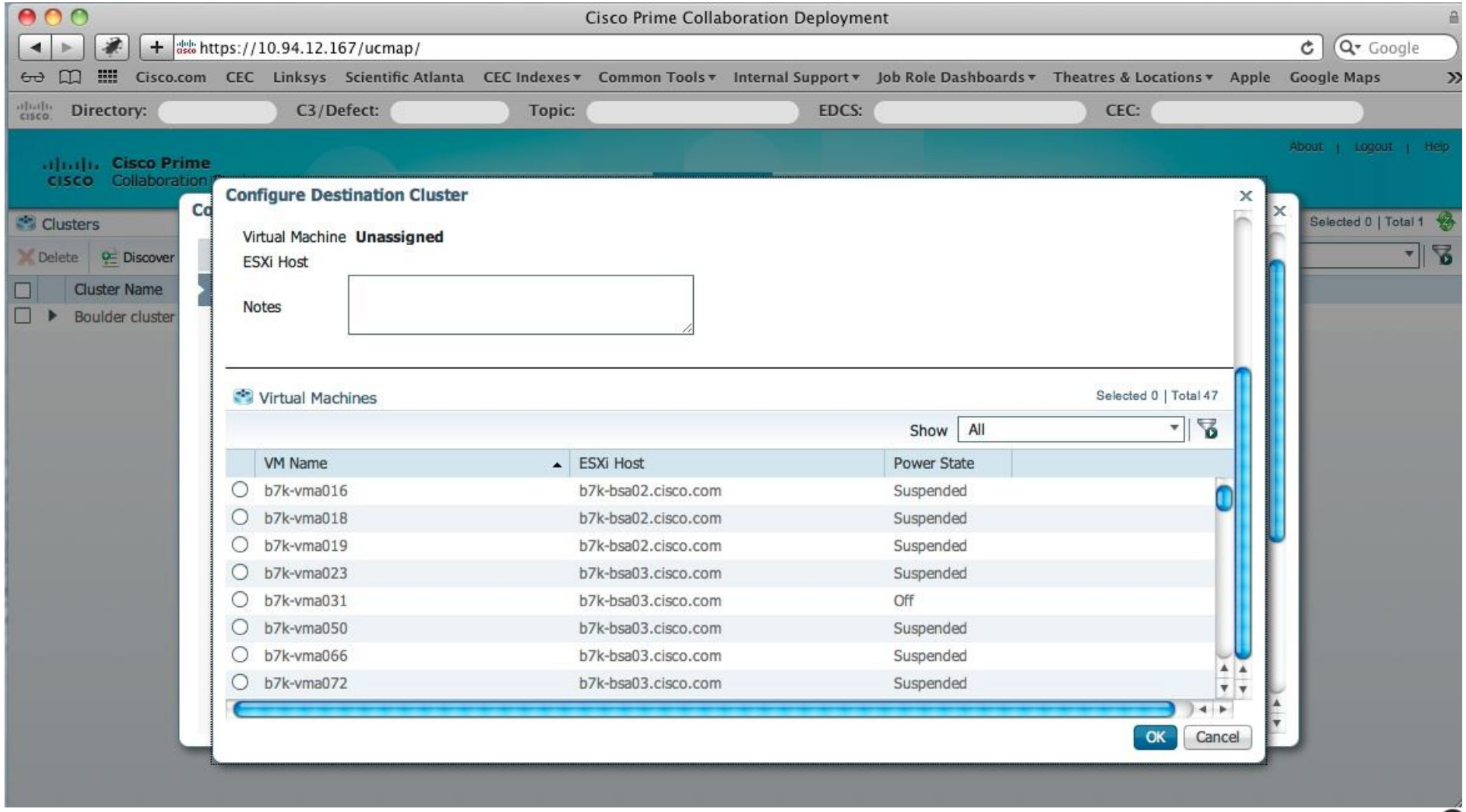
- Inventory -> Clusters
- Click "Define Migration Destination Cluster"
- If Simple Migration choose “Use the source node network settings for all destination nodes” option when creating the migration cluster.
- If Migration with Network Migration, choose “Enter new network settings for one of more destination nodes”. Then, on subsequent screens, you will be allowed to change hostname, IP, subnet mask, and gateway for the new server.

Configure Destination Cluster Wizard

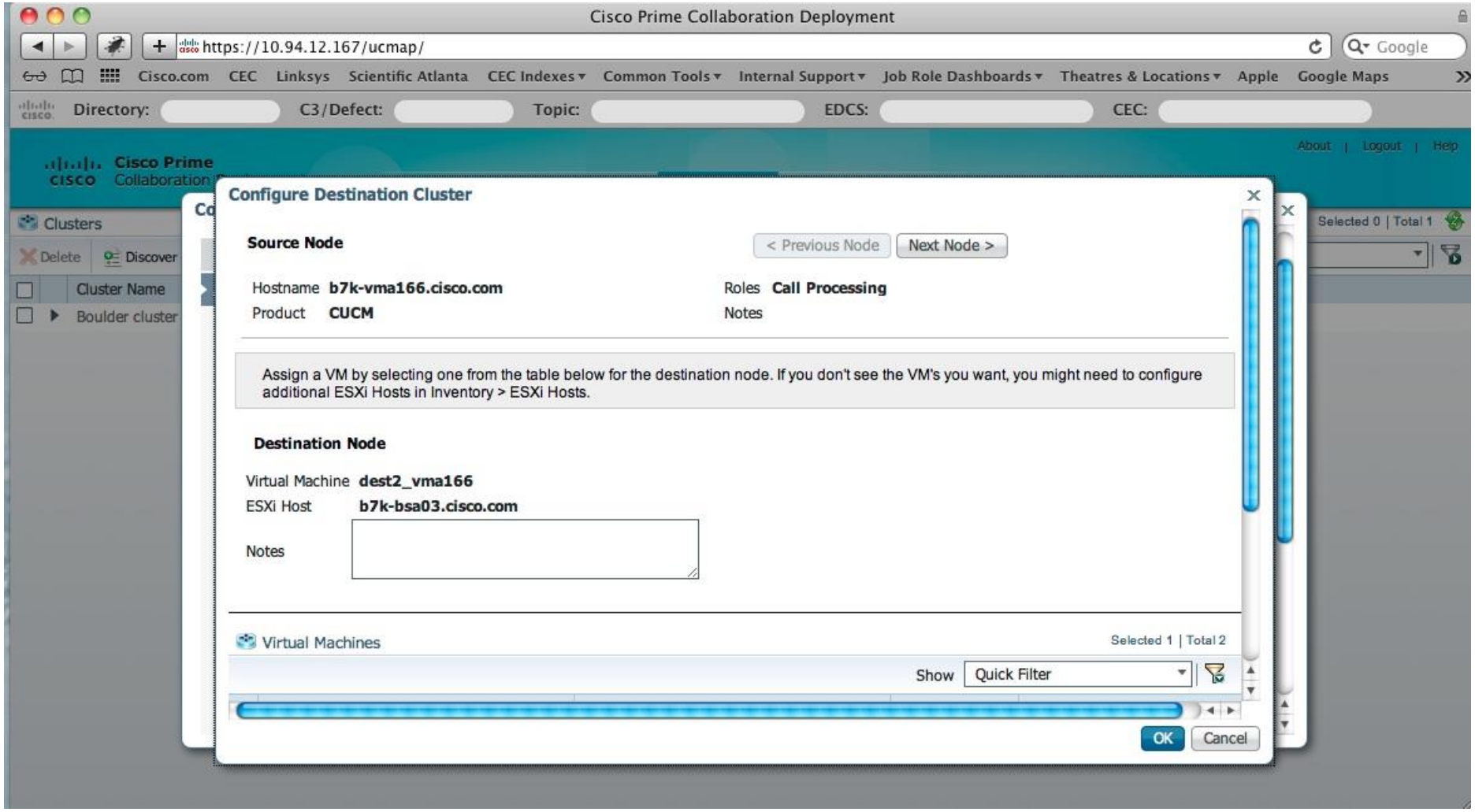
- Go to Inventory -> Clusters page. Click “Define Migration Destination Cluster”



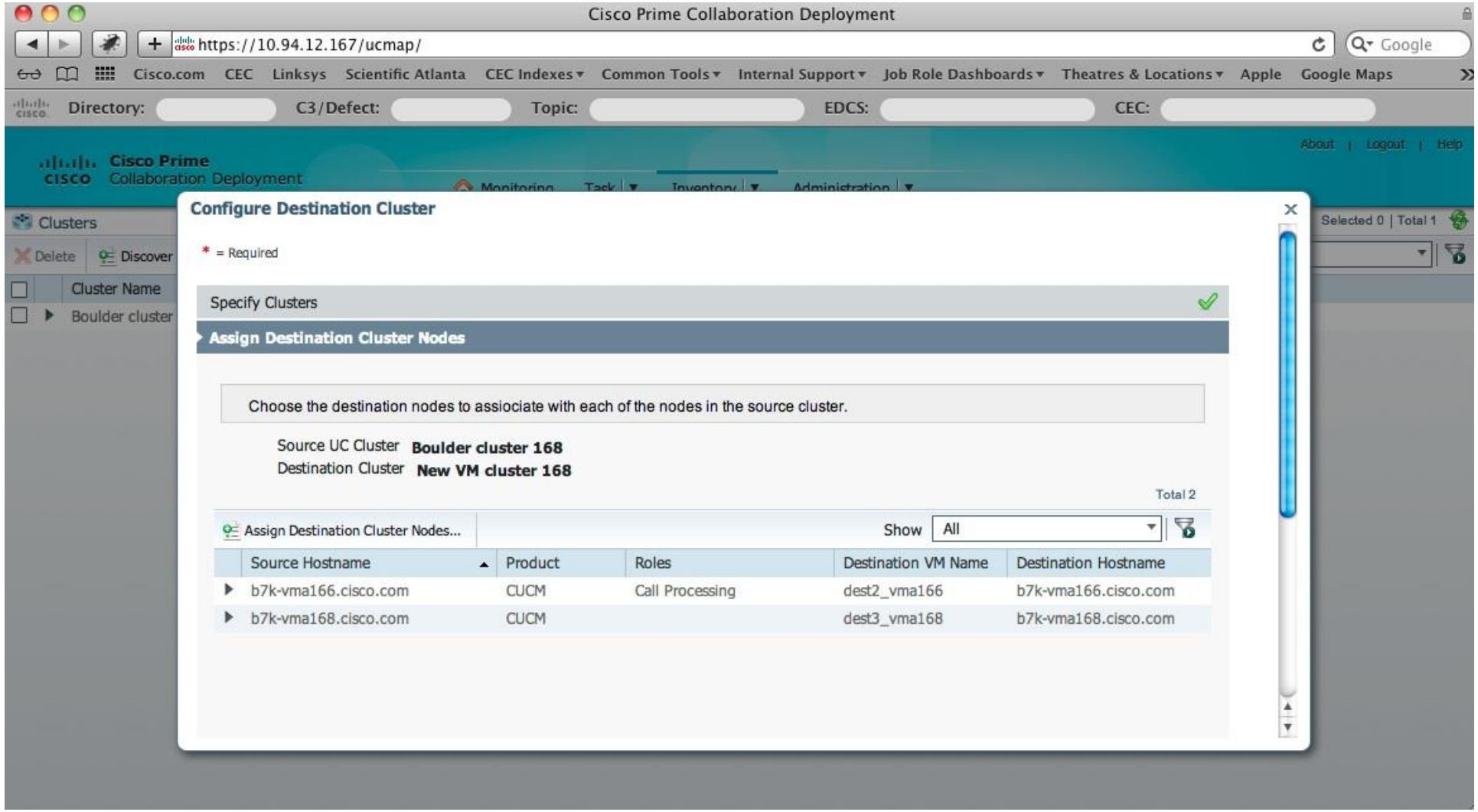
Configure Destination Cluster Wizard



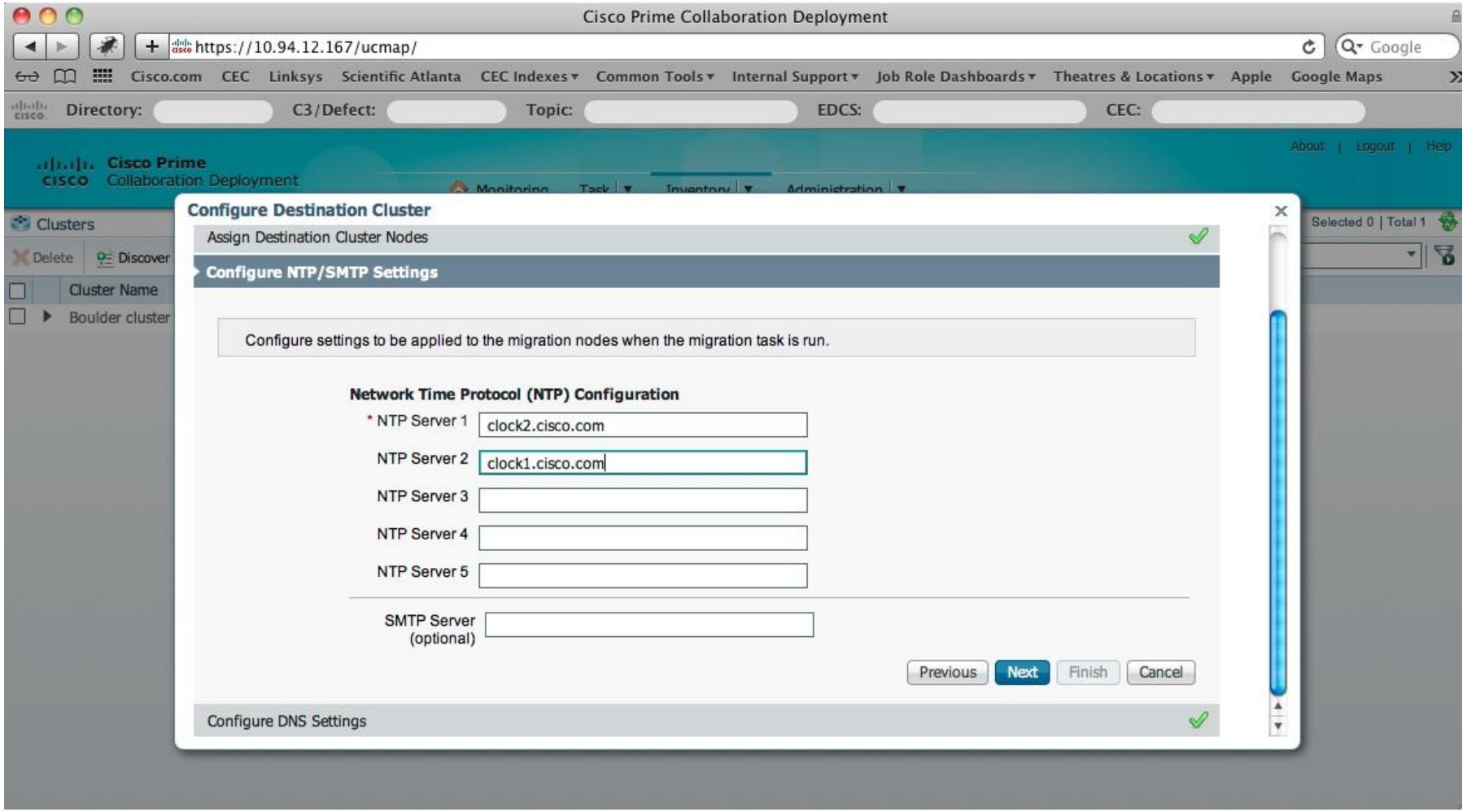
Configure Destination Cluster Wizard



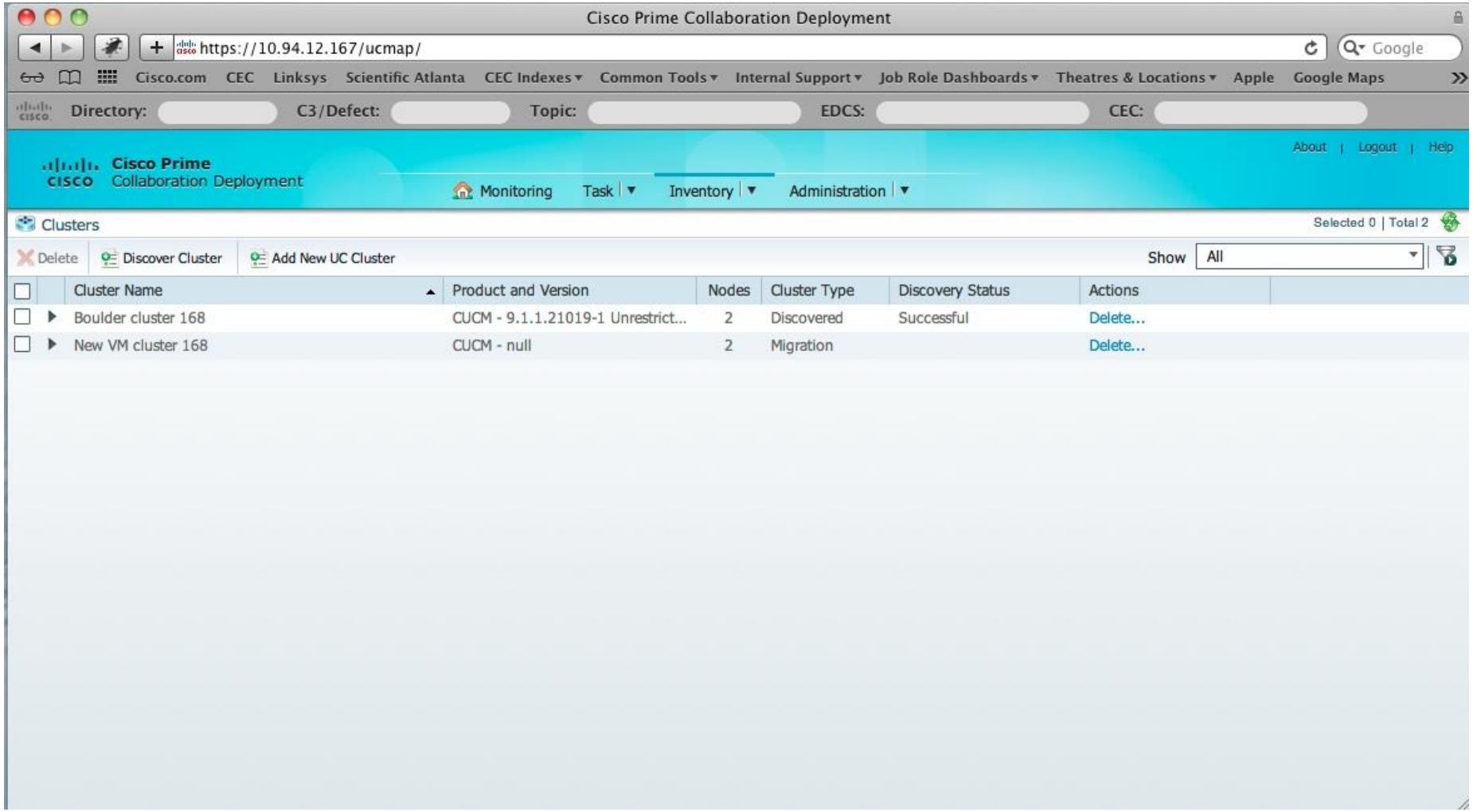
Configure Destination Cluster Wizard



Configure Destination Cluster Wizard



Configure Destination Cluster Wizard

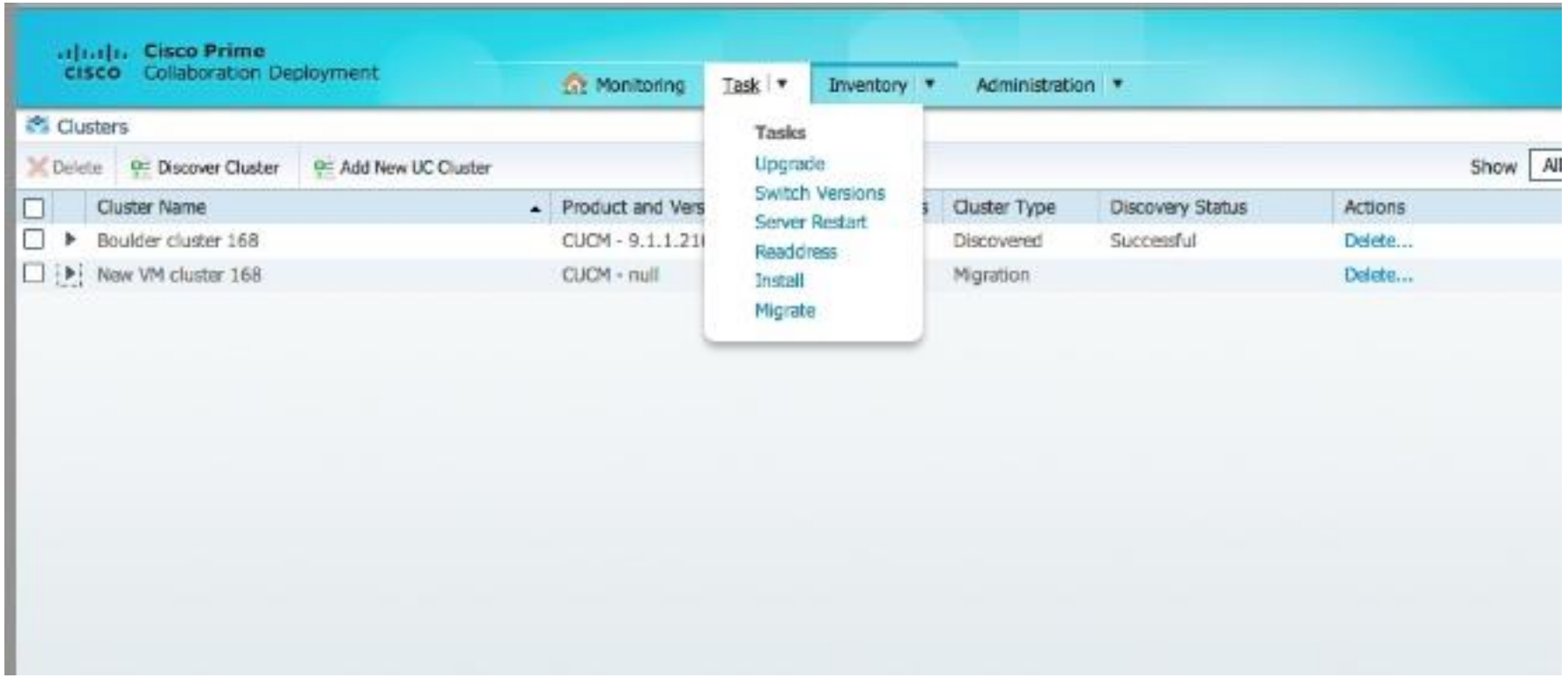


Migration Setup

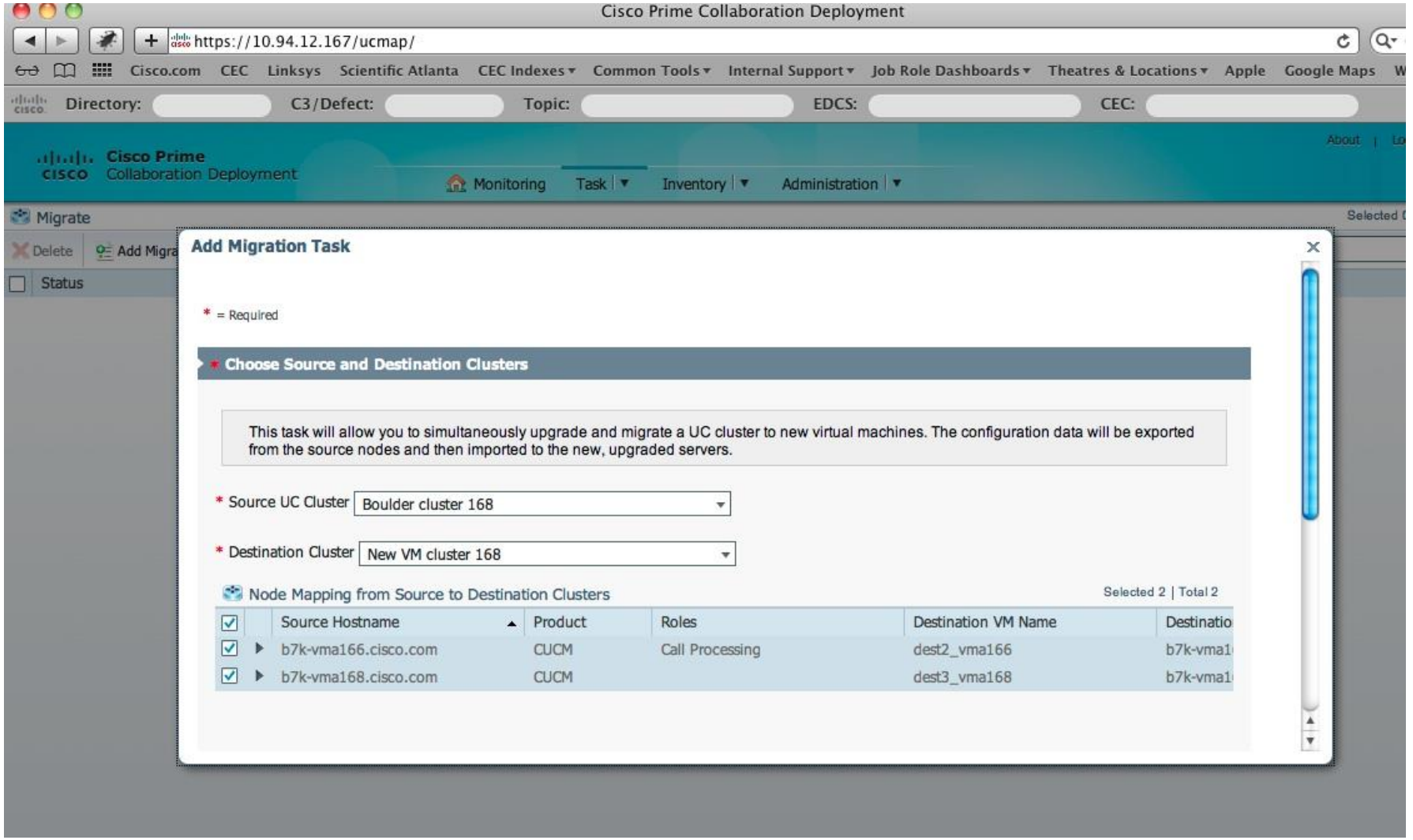
- Pre - Rack/Stack deploy hardware and install ESXi (Vmware)
- Pre - Deploy PCD virtual machine (delivered as virtual appliance)
- Pre - Download necessary OVA and .ISO images for target release
- Pre - Create target virtual machines using OVA (before step 6)
- 1.Discover Cluster – PCD connects to source cluster and retrieves cluster information.
- 2.Add ESXi hosts to PCD inventory
- 3.Create Migration Cluster – define the mapping between MCS source nodes and target virtual machines.

  4.Create Migration Task – choose the iso to install on the new VMs, and choose the time the migration will occur (set time, or manual start).

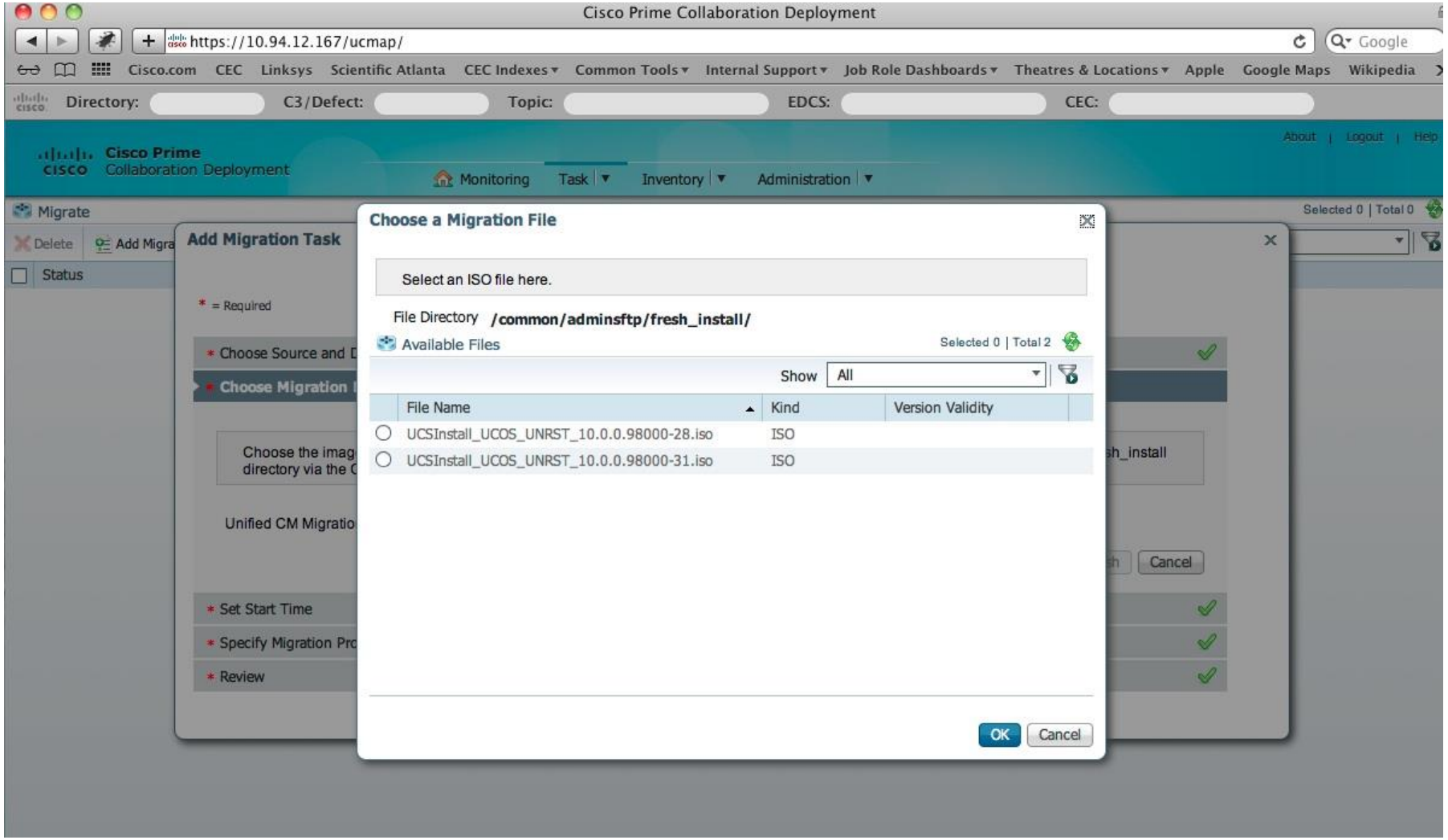
Create Migration Task



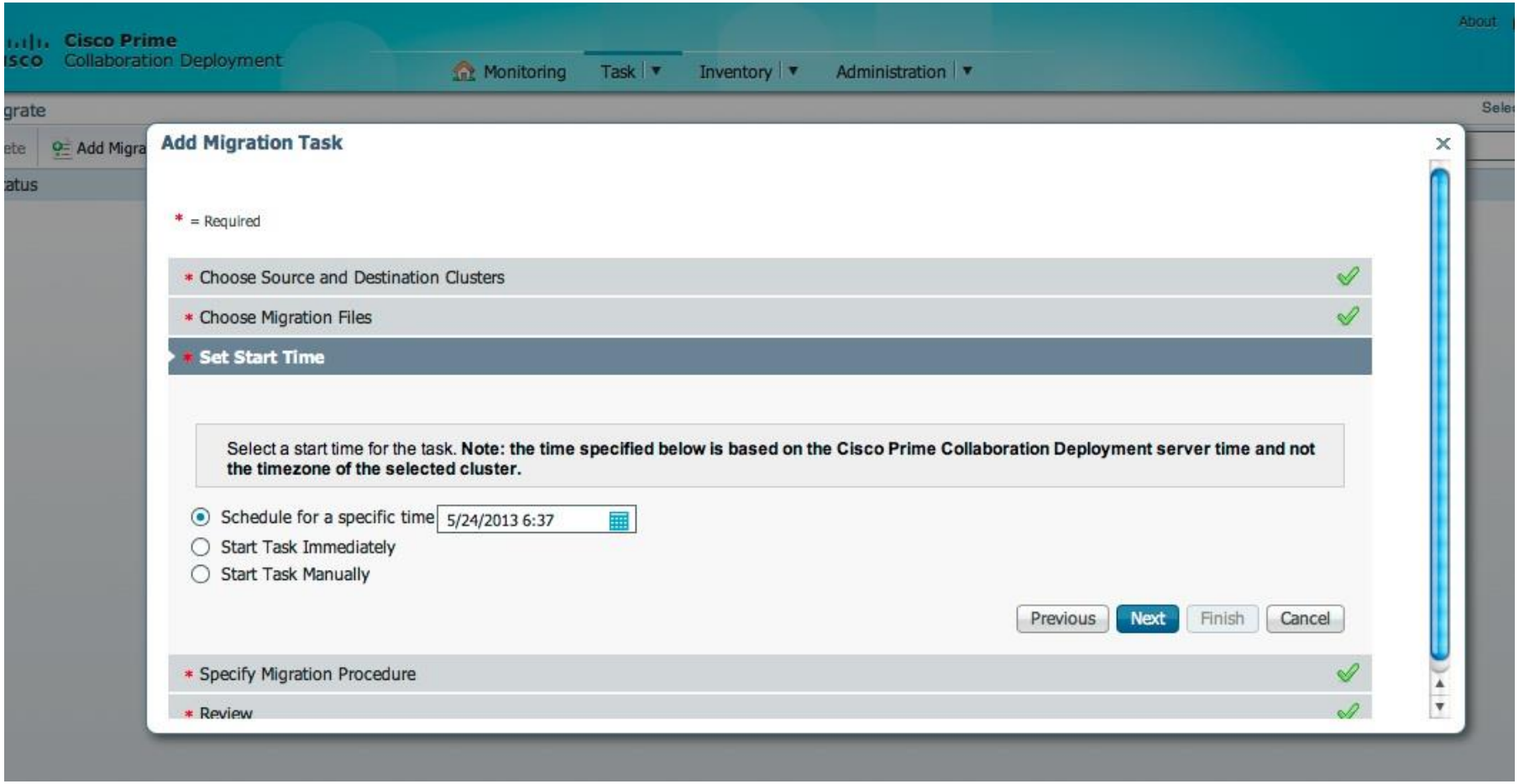
Create Migration Task



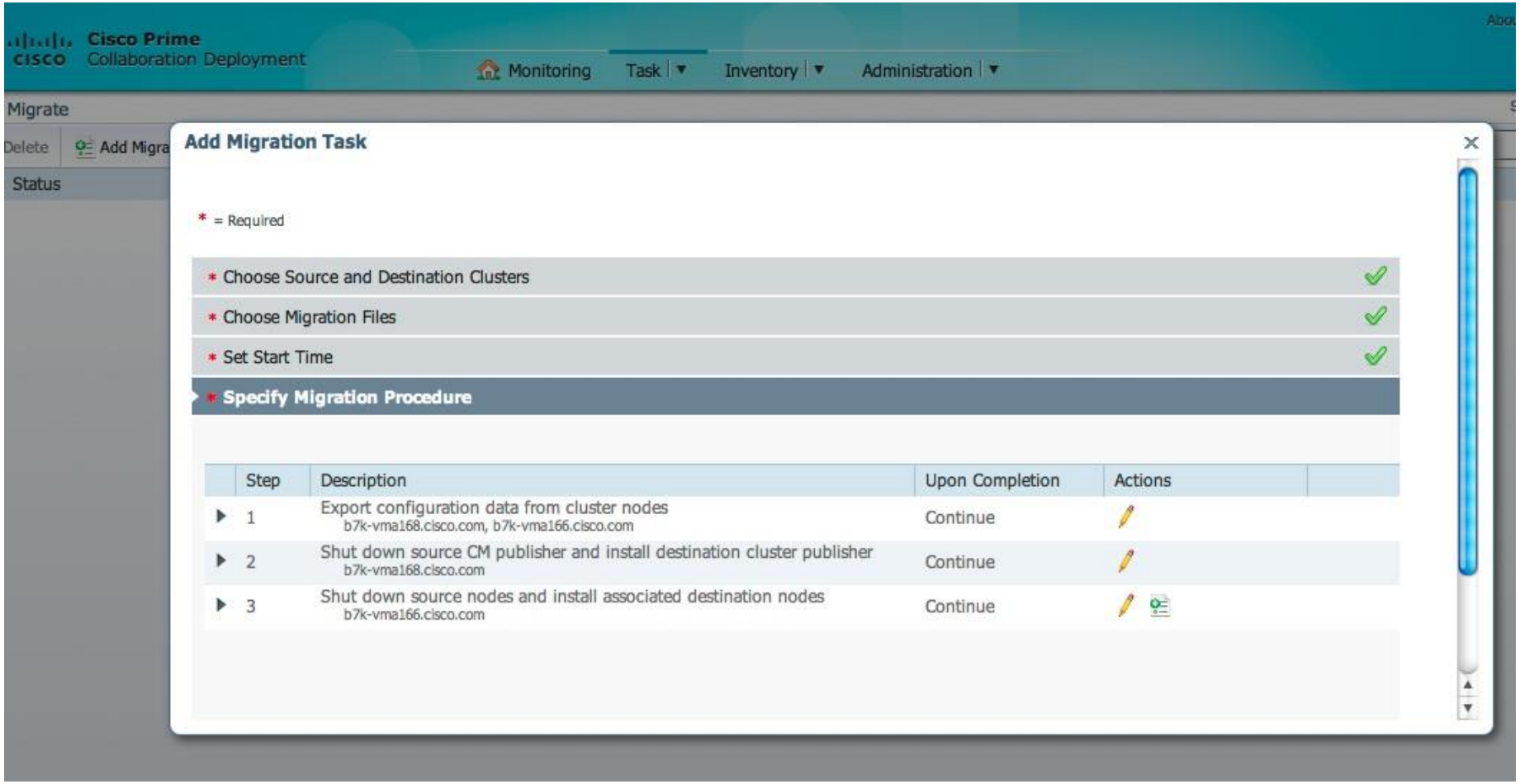
Create Migration Task – Choose iso file



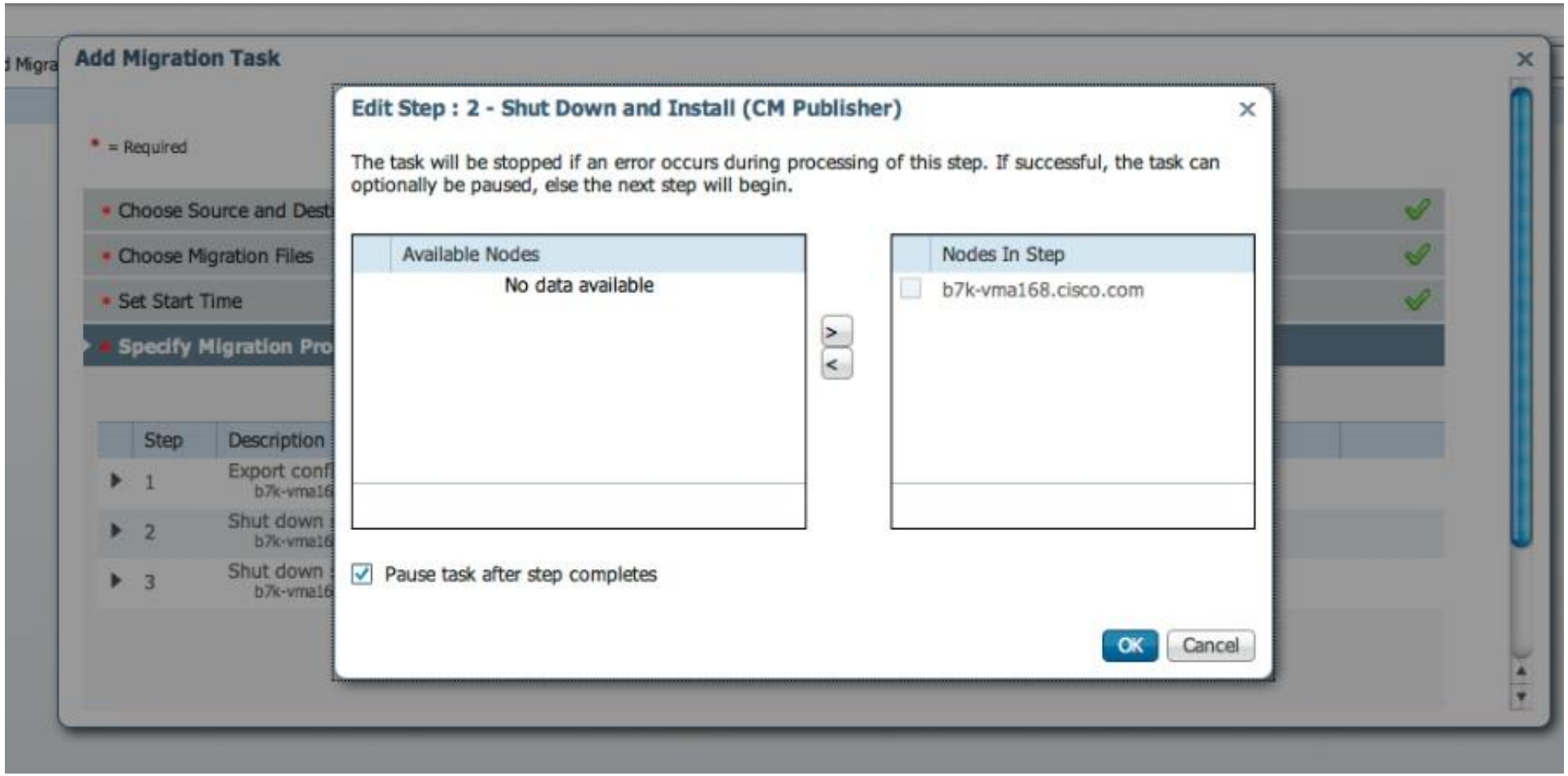
Create Migration Task – Choose Start Time



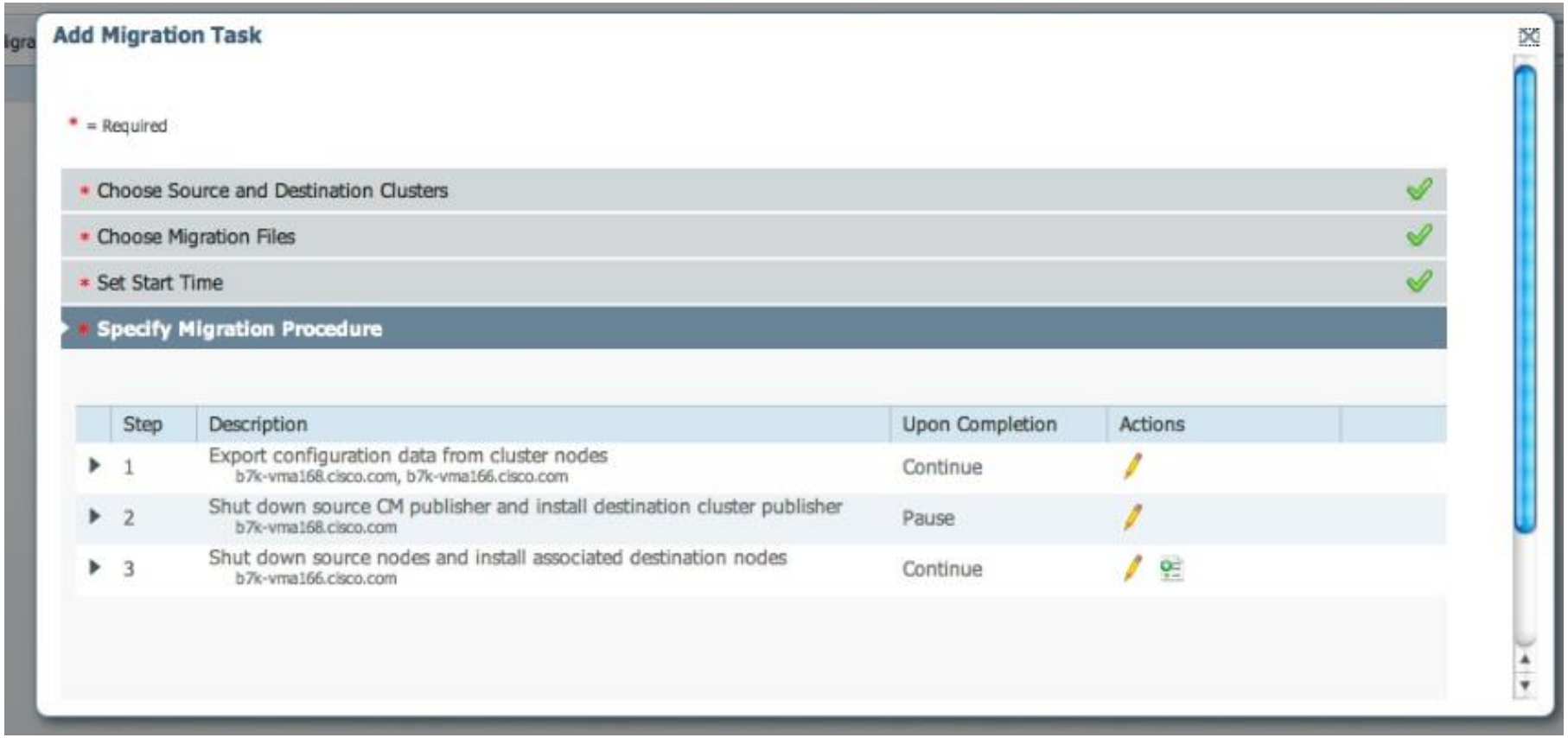
Create Migration Task – Sequence



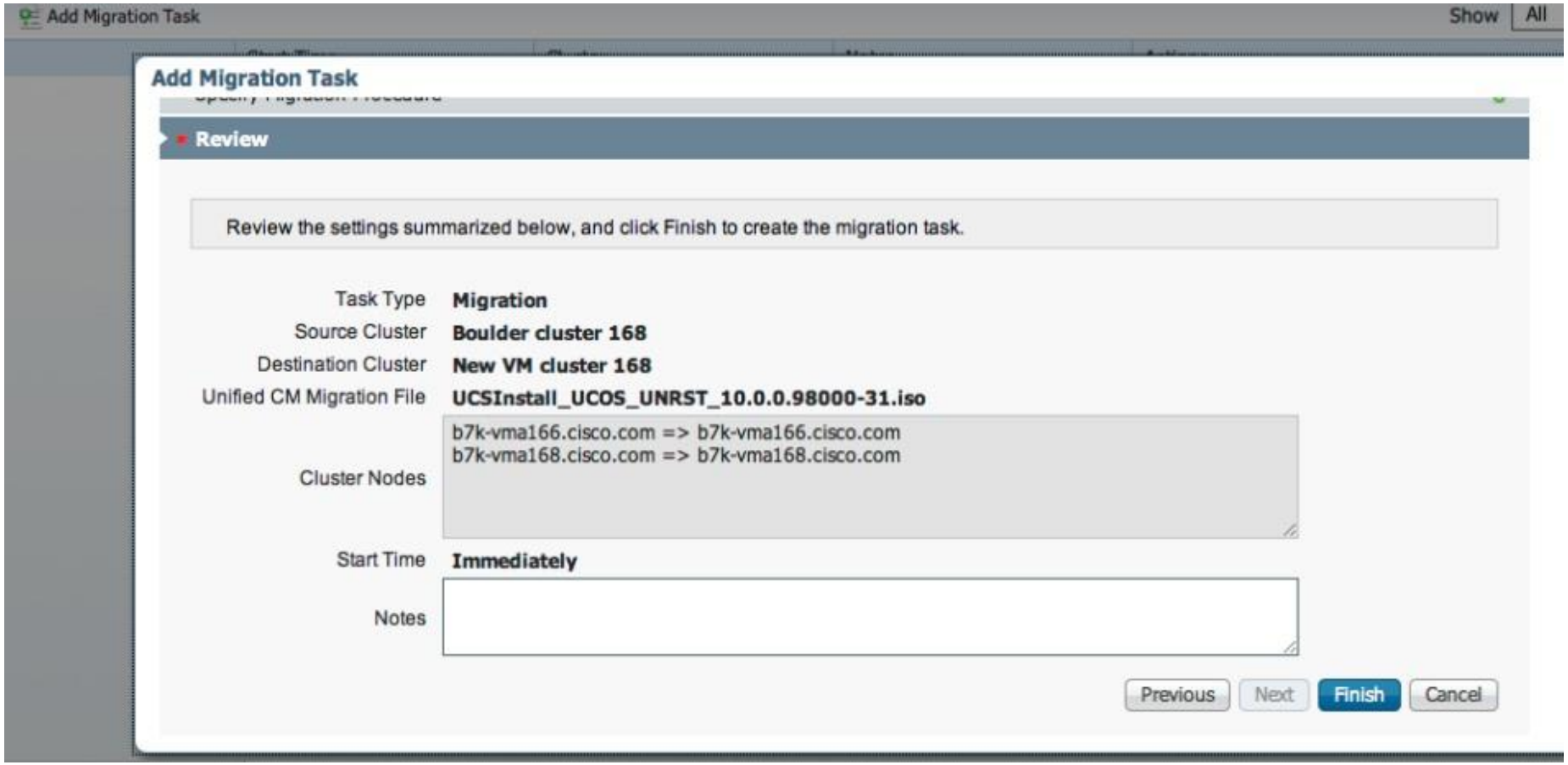
Create Migration Task – Edit Sequence



Create Migration Task – Sequence



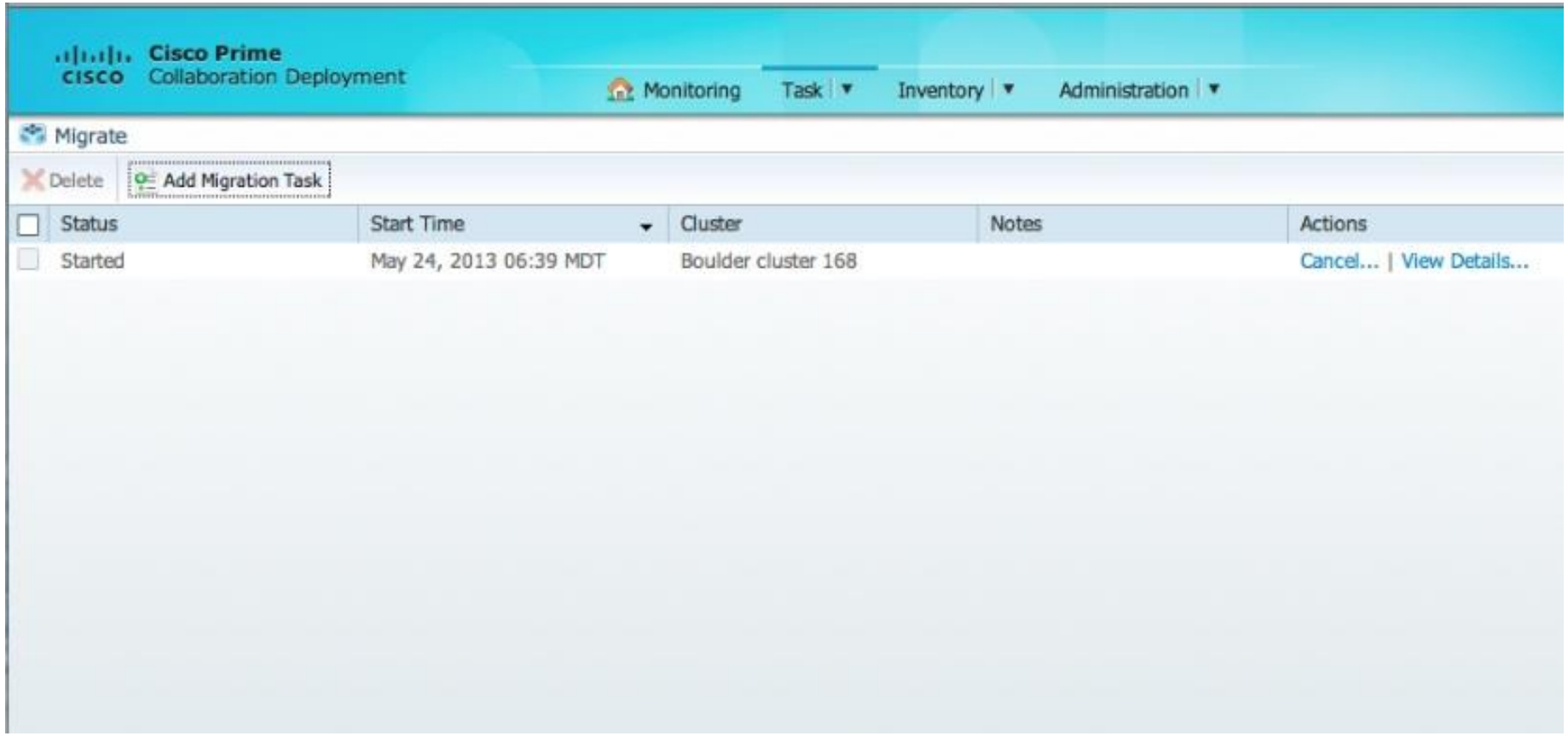
Create Migration Task – Review



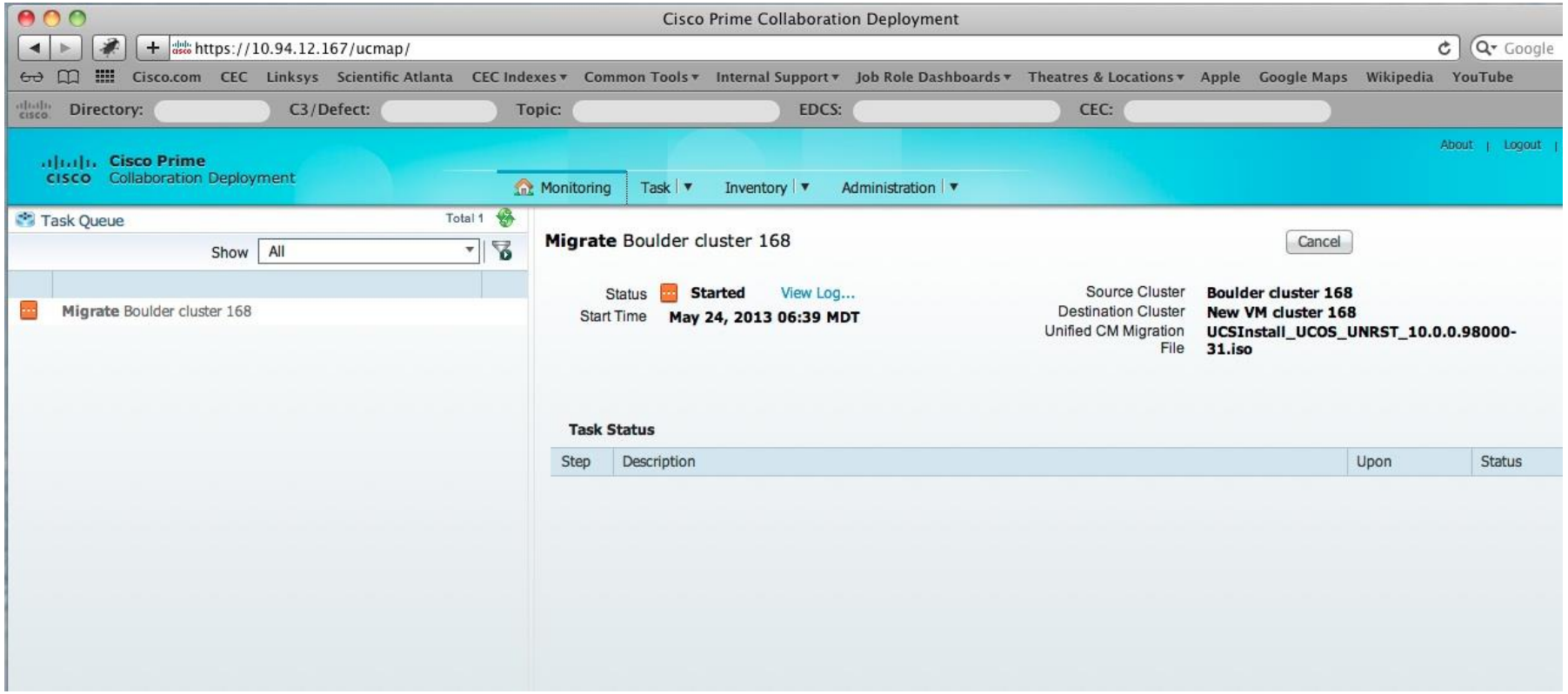
Migration Setup

- Pre - Rack/Stack deploy hardware and install ESXi (Vmware)
- Pre - Deploy PCD virtual machine (delivered as virtual appliance)
- Pre - Download necessary OVA and .ISO images for target release
- Pre - Create target virtual machines using OVA (before step 6)
- 1.Discover Cluster – PCD connects to source cluster and retrieves cluster information.
- 2.Add ESXi hosts to PCD inventory
- 3.Create Migration Cluster – define the mapping between MCS source nodes and target virtual machines.
- 4.Create Migration Task – choose the iso to install on the new VMs, and choose the time the migration will occur (set time, or manual start).

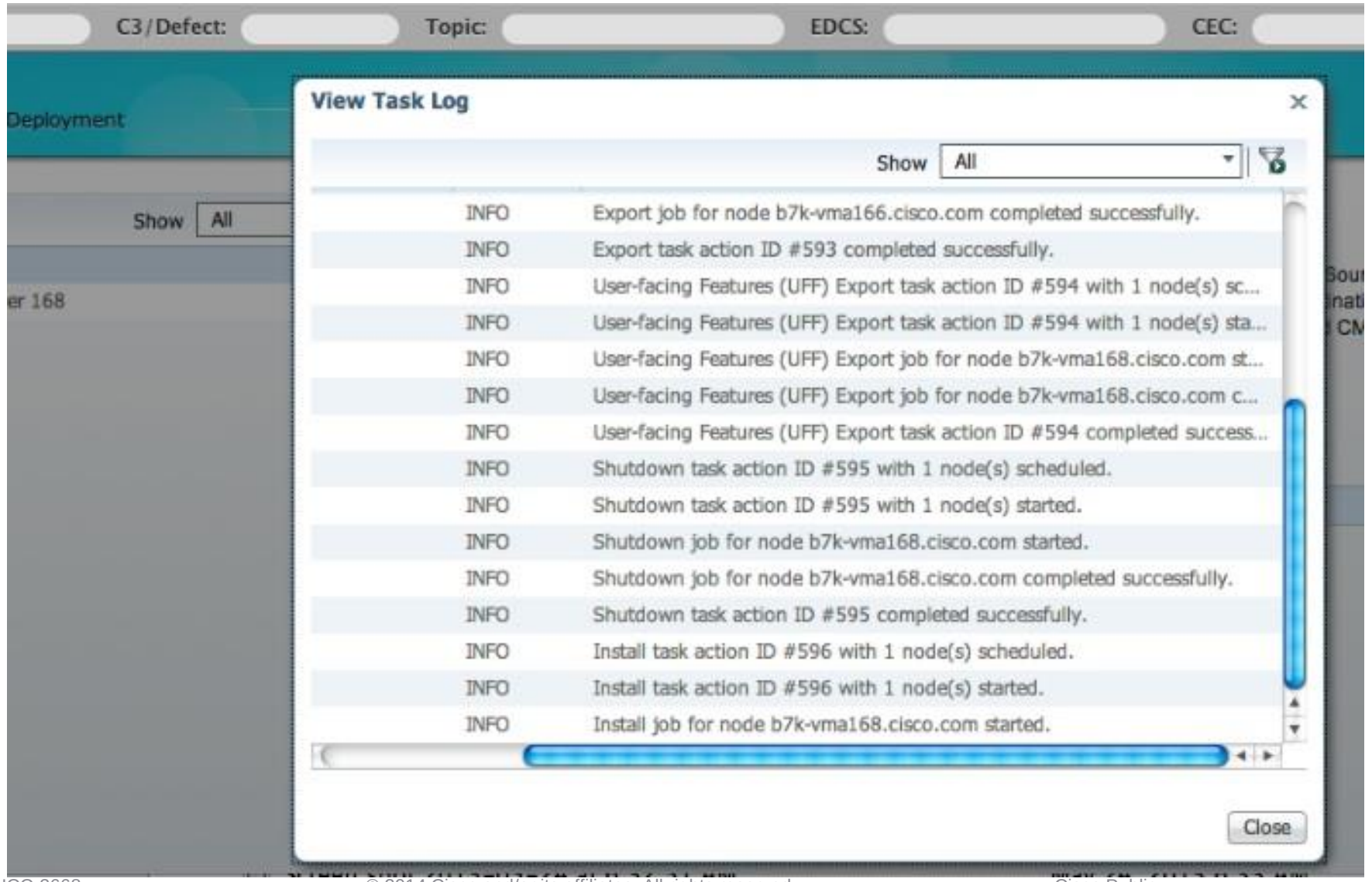
Create Migration Task – Task list



Dashboard Screen



Dashboard Screen – View Task Log

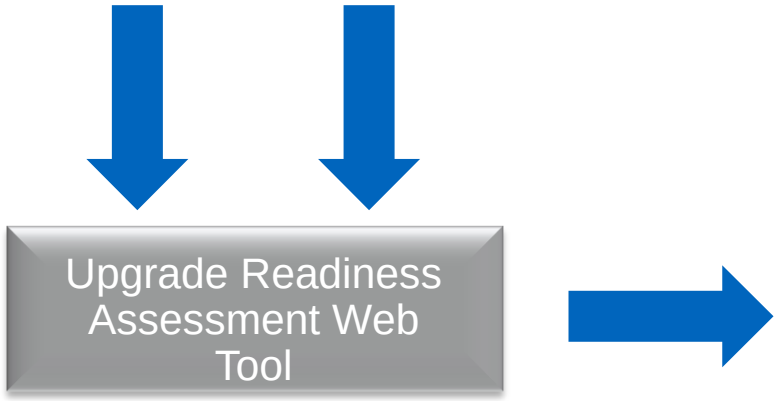





System Level Upgrade

Upgrade Readiness Assessment Web Tool

Input Mode	CUCM	Gateway	Unity/Unity Connection
Automated	CURT Reports	NA	NA
Manual	Version and server model	Router model	Version and server model



- Hardware for potential server replacement
- Baseline for upgrade path with detailed steps
- Does not check with compatibility matrix
- Send results for proactive TAC case
- CUCM Upgrade Central iPad application

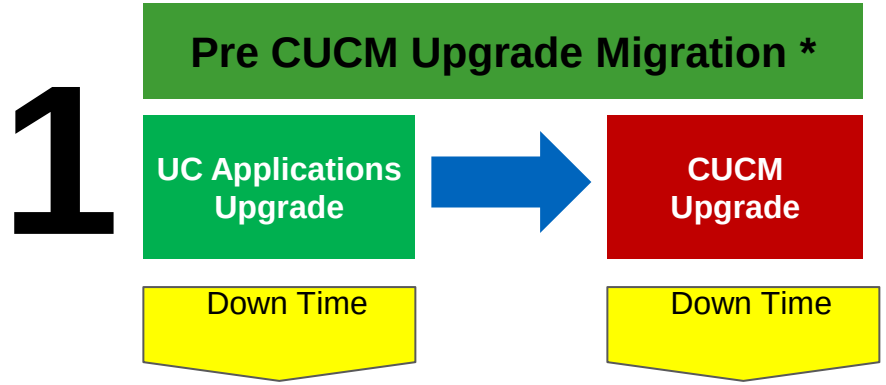
Output	CUCM	Gateway	Unity/Unity Connection
Readiness Summary	Software and hardware compatibility	Software and hardware compatibility	Software and hardware compatibility
Customised Upgrade Procedures	Upgrade guide	NA	Upgrade guide

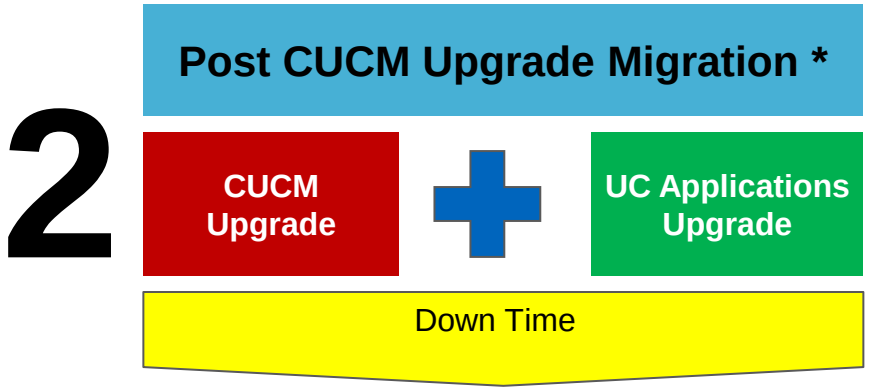
Upgrade Readiness Assessment Web Tool
http://tools.cisco.com/cucst/upgrade/index.jsp

UC Application Upgrade / Migration Definition

Upgrade Time Increases with Various Dependencies

UC Applications	Migration Strategy
CER	1
CUCCE	1
CUCCX	1
CUP	1
MP	1
MPE	1
Unity Connection	1
Unity	1

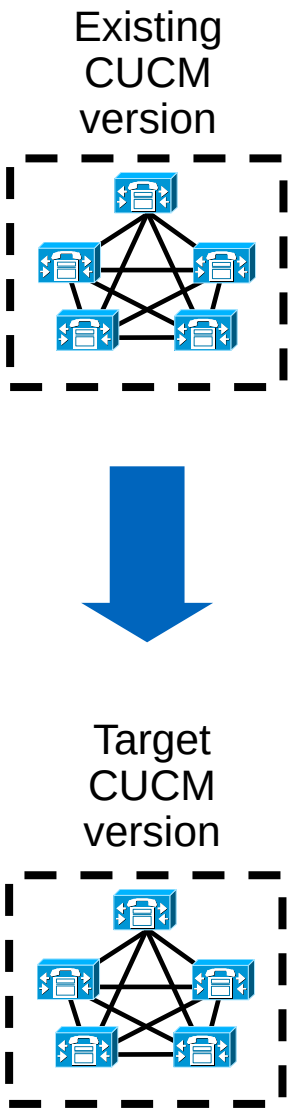




* Some UC Application Requires a Complete Reinstall for Upgrade

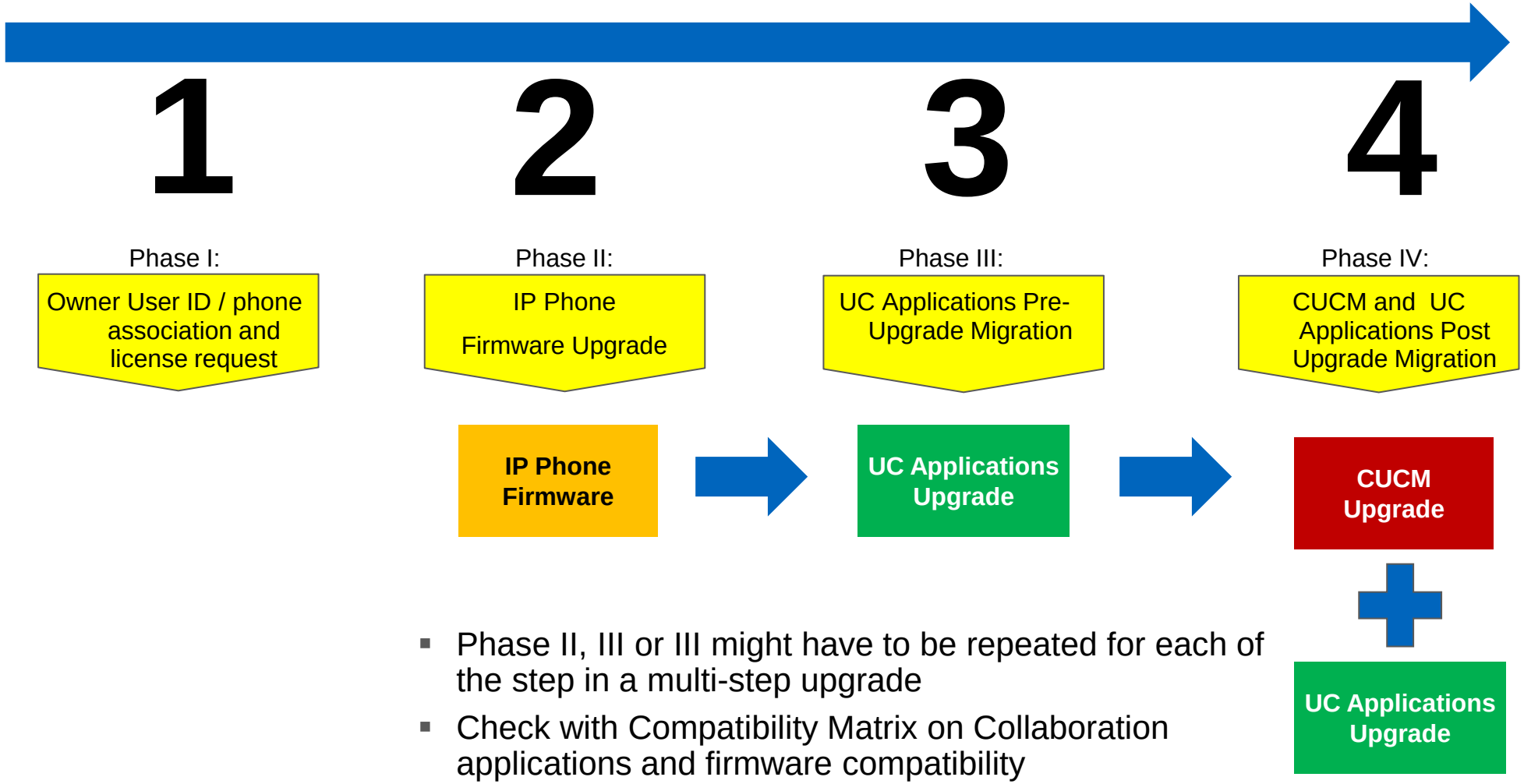
Replacing a Cisco Unified Communications Manager Software Compatibility Matrix:
http://www.cisco.com/en/US/docs/voice_ip_comm/cucm/compat/ccmcompmatr.html

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

Overall Upgrade Strategy to Minimising Down Time



- Phase II, III or III 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

Cisco IP Phone Firmware by CUCM Releases:
http://www.cisco.com/en/US/docs/voice_ip_comm/cucm/compat/ccmcompmatr.html

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 PPID disabled on all phones models
- Change TFTP service parameter on dedicated TFTP servers:
  - System > Service Parameter > Cisco TFTP (Advanced)
    - Maximum Serving Count: *
  - Default Maximum Serving Count is 500
  - Can be increased up to 5000 on Dedicated TFTP servers

Peer-to-Peer Image Distribution (PPID):
http://www.cisco.com/en/US/docs/voice_ip_comm/cucmbe/admin/8_5_1/ccmsys/a08ipph.html#wp1141991

Phase II: Phone Upgrade Caveat

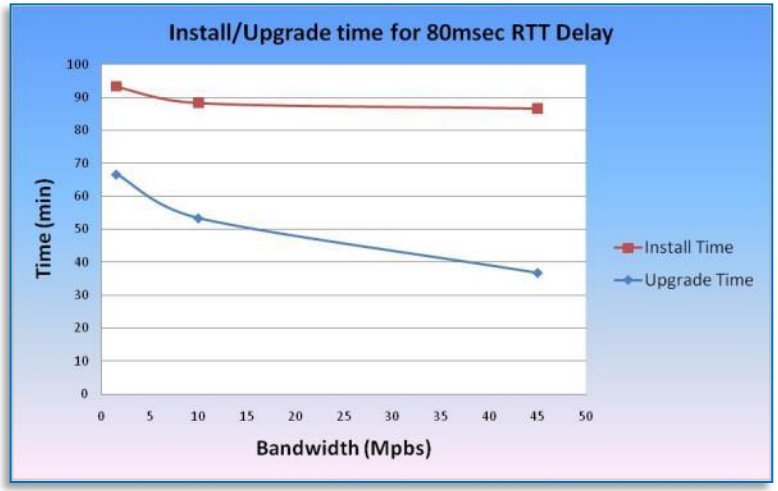
- If possible, choose final CUCM version default or recommended firmware. Avoid multiple upgrade and downgrades
- Some third-generation IP phones (7971G-GE, 7970G, 7961G-GE, 7961G, 7941G-GE, 7941G, 7911G, and 7906G):
  - Firmware release 6.0(1) or earlier needs to upgrade to 7.0(3)
  - CUCM 4.1(2) or earlier
- All third-generation IP phones:
  - Firmware release 8.3(2)SR1 or earlier must upgrade to 8.5(2) before upgrading to 8.5(2)SR1 or later
  - Factory phones or phones taken off another CUCM cluster

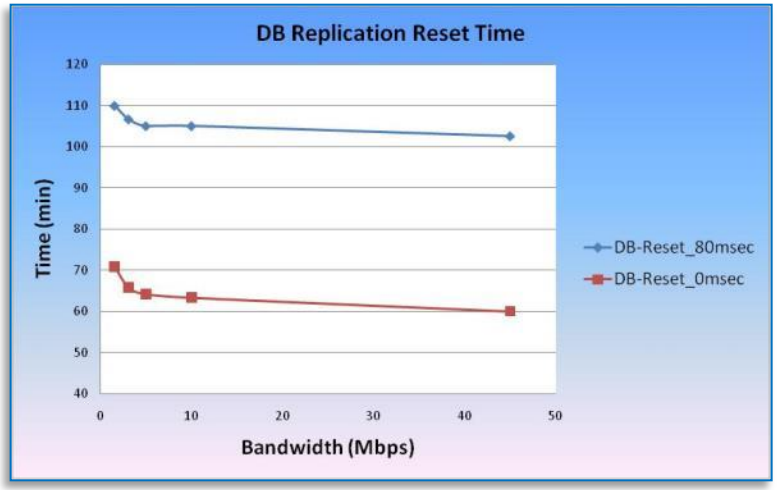
Firmware Release Notes 8.5(2)SR1:
http://www.cisco.com/en/US/docs/voice_ip_comm/cuipph/firmware/8_5_2/english/release/notes/7900_852SR1.html

Phase II: CUCM Upgrade

- Clear out logs in /common partition for upgrade
- Minimise or if possible disable extension mobility
- Minimise CAR Database to reduce upgrade time
- Starts secondary nodes or Subscribers when Publisher logs indicate that upgrade can start on secondary nodes or Subscribers
- Upgrade secondary nodes or Subscribers at the same time (15 minutes delay in between nodes)
- For large high availability upgrade, increase “maximum number of registered devices to 7500 or 10000”
- Check for DB replication via “utils dbreplication runtimestate” before and after upgrade

Phase III: CUCM Upgrade Consideration

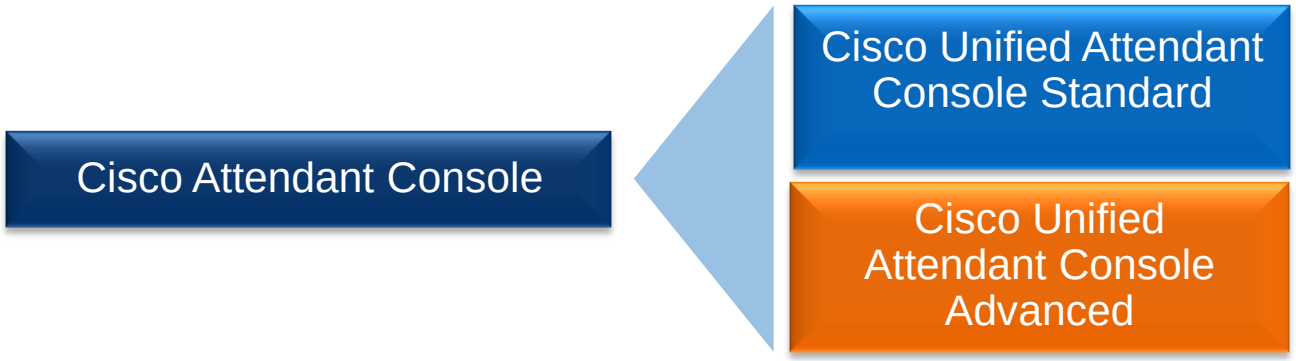




- Clustering over the WAN (COW) can increase time for installation, upgrade and database (DB) replication by 40%–50%
  - With CUCM 9.1+ Use
  - ”utils dbreplication setprocess 40”
- Firewall between Unified CM servers
- After upgrade, check for the following using CLI, RTMT and Unified Reporting
  - DB replication state

CUCM SRND:
www.cisco.com/go/ucsrnd

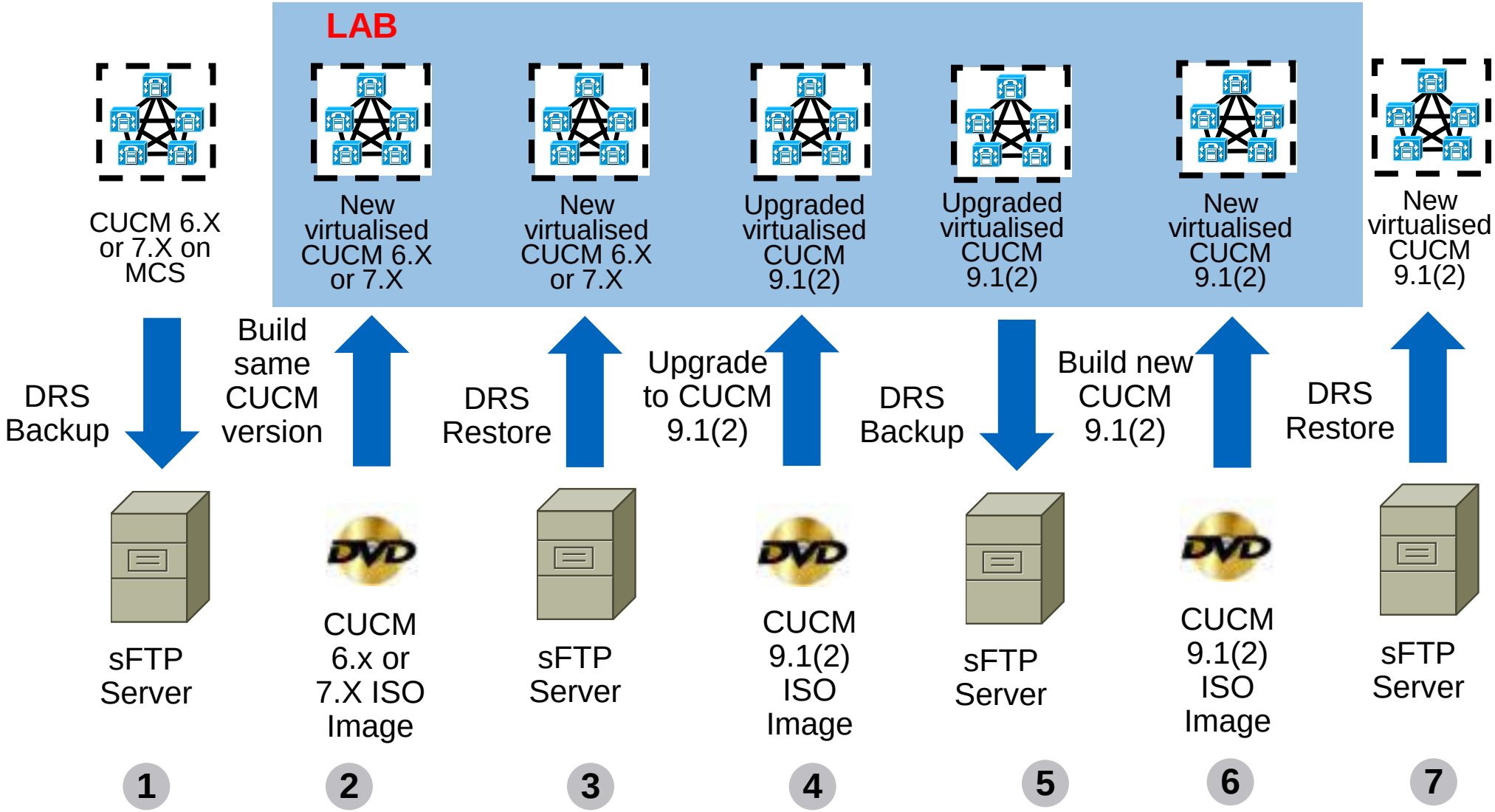
Attendant Console Considerations for CUCM 9.1 / 10.0



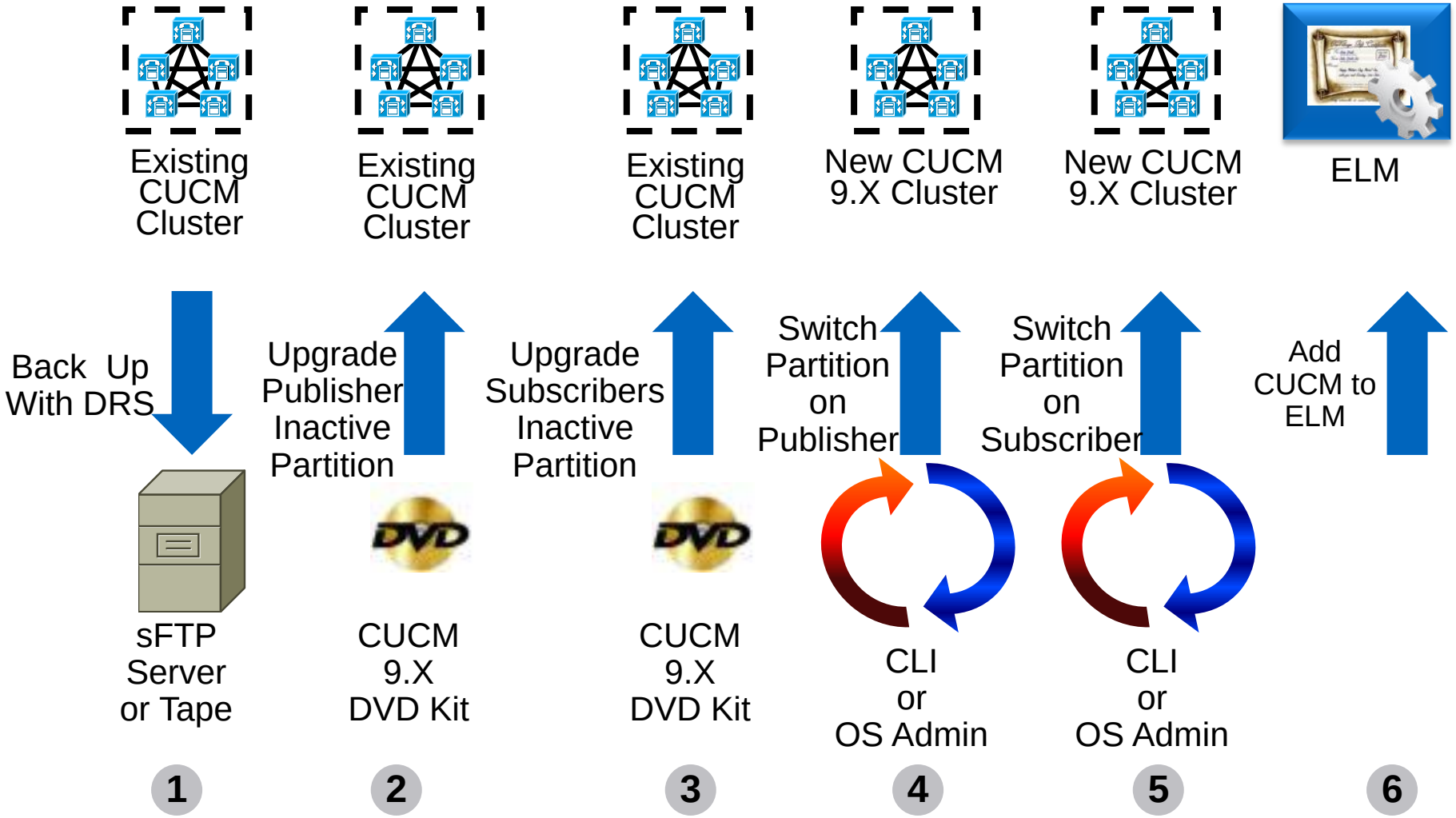
- No embedded Cisco Attendant Console (CAC) with CUCM 8.0 or later
- Migrate to one of the two attendant console solutions prior to CUCM migration

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

Jump Upgrade Process

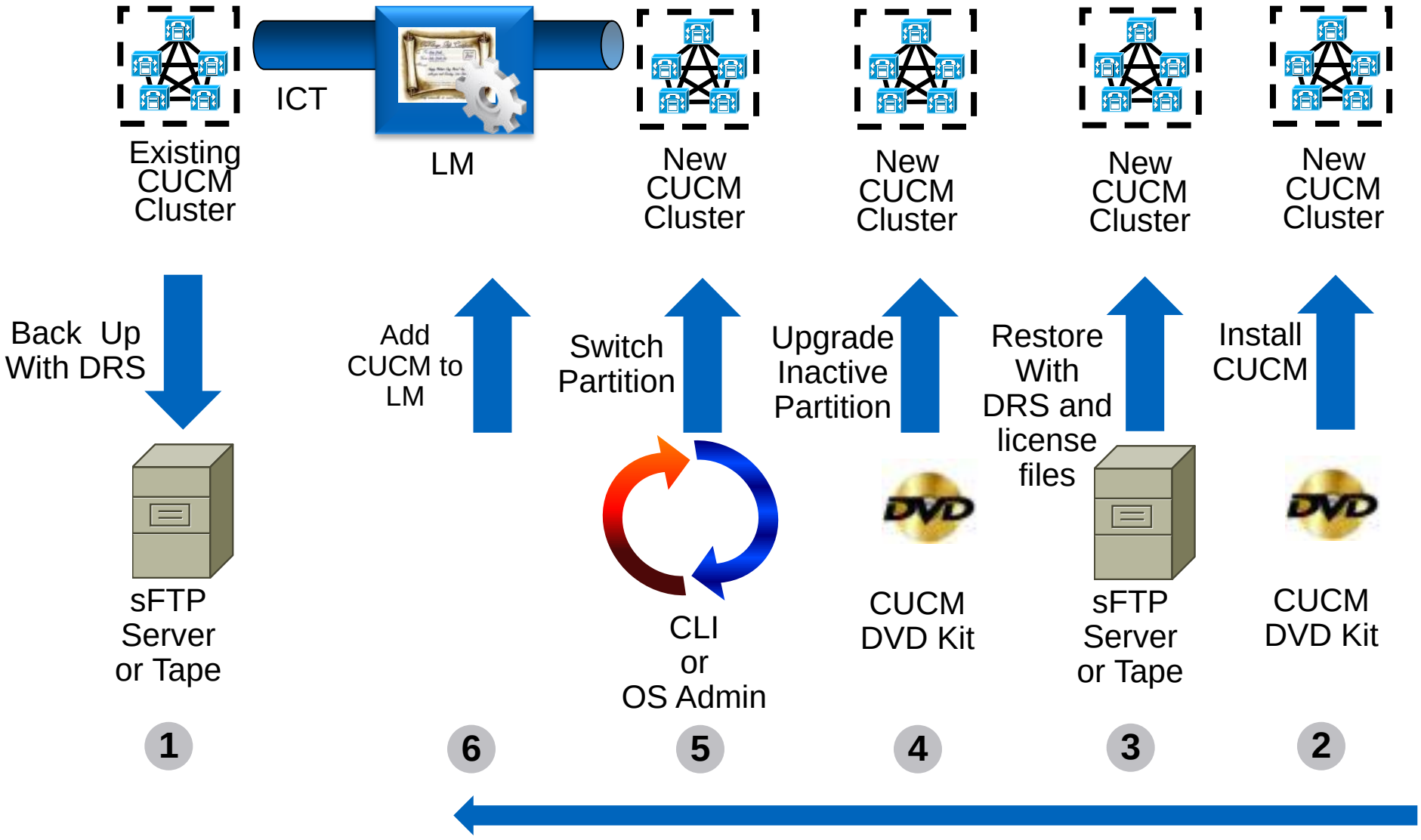


In-Place L2 or RU Upgrade Process



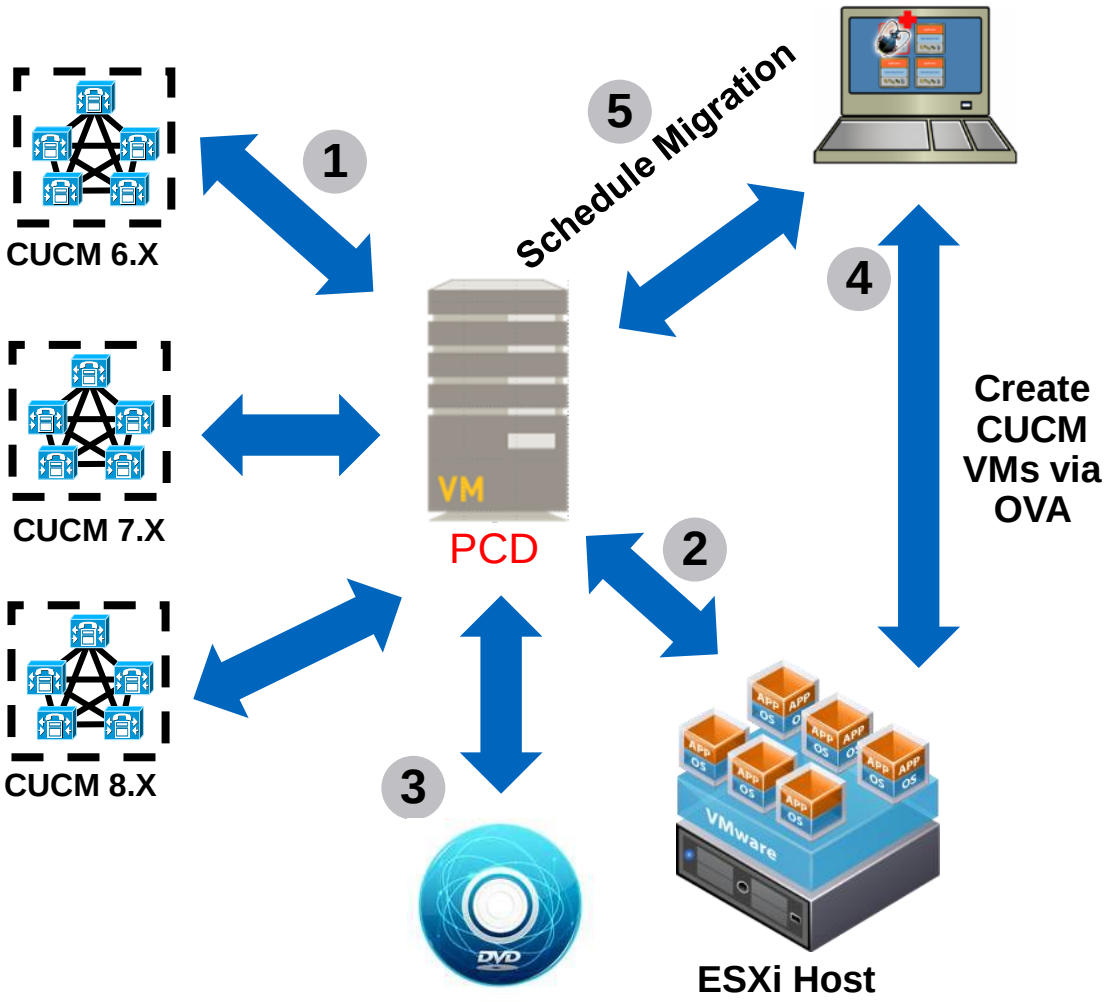
- High availability upgrade guide provides detailed steps to minimise outage

Migration Option with L2, RU or Jump Upgrade



To minimise outage and allows for migration of large deployment

Automated Migration with PCD



- CUCM Software provided to ESXi Hosts via NFS services 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

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




Drive to Collab

“Drive to 9” is now “Drive to Collab”…

✓ Rebranded
✓ Expanded

Drive to Collab

Migration

On-Prem Upgrades & Cloud Migrations to CUCM 9.1 or 10.0

Displacement

Competitive Displacement in Focused Markets

Adoption

Accelerate Consumption of Collaboration Solution

Drive to Collab: Migration Program

Includes CUCM 9.1 & 10.0

Simplified Upgrade Process

- Readiness Assessment Tools
- License Migration Process
- Jump Upgrade, PCD & Collateral

Compelling Offers

- Licensing & Services
- Servers, Endpoints & Application
- Video Velocity Bundles

Drive to Collab Migration

Comprehensive Support

- Drive to Collab TAC (24x7)
- Global Licensing Operations (24x7)
- PDI Help Desk

Focused Enablement

- Training & workshops
- e-Learning modules
- VODs

Video | BYOD | Cloud/B2B | Virtualisation | Mobility | Contact Centre

Drive to Collab - Resources

Landing Page for All Drive to Collab Resources:

Customer Landing Page: http://www.cisco.com/go/cucmupgrade

Partner Landing Page: http://cisco.com/go/driveto9

Support Alias for Drive to Collab Questions

Drive to Collab Program Team: ask-drive-to-9@cisco.com
Licensing Support: licensing@cisco.com **&** vtglicensingops@external.cisco.com
Collaboration Breakaway Plus Team: cbplus@cisco.com
Software Services (UCSS) Support Team: ucss-support@external.cisco.com




Q & A

Complete Your Online Session Evaluation

Give us your feedback and receive a Cisco Live 2014 Polo Shirt!

Complete your Overall Event Survey and 5 Session Evaluations.

- Directly from your mobile device on the Cisco Live Mobile App
- By visiting the Cisco Live Mobile Site www.ciscoliveaustralia.com/mobile
- Visit any Cisco Live Internet Station located throughout the venue

Polo Shirts can be collected in the World of Solutions on Friday 21 March 12:00pm - 2:00pm

Learn online with Cisco Live!

Visit us online after the conference for full access to session videos and presentations.
www.CiscoLiveAPAC.com


CISCO
TM




Appendix




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

Reference

License MAC with CUCM 8.X in Virtualised Environment

- License MAC is 12 digits HEX values based on the hash of these 10 Unified CM settings

1. Certificate Information (Organisation, Unit, Location, State, Country)
2. Hostname
3. IP Address or dhcp
4. IP Mask or dhcp
5. Gateway Address or dhcp
6. NIC speed auto
7. NTP server 1
8. Primary DNS
9. SMTP server or none
10. Time zone

- Changes in any of the 10 values will start the 30 days grace period on the existing valid license file which require rehosting to the new license MAC. Login will alert the amount of days left before expiring
- To reset the 30 days timer, change back to original settings and then back to the desired settings
- If grace period is expired, then CM service still stop and license file is invalidated for good
- Use Cisco Unified Communications Answer File Generator proactively
- Cisco Unified OS Administration: Show > Status or Show > Network
- CLI: show status

Cisco Unified Communications Answer File Generator for License MAC:
http://www.cisco.com/web/cuc_afg/index.html

License Type and DLU (CUCM 8.6 and earlier)

LICENSE TYPE	DLU	Comments
CUWL Pro	17/12	Prior to January 2668/After January 2668
CUWL Standard	11/8	Prior to January 2668/After January 2668
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 Enhance	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

CUCM 9.X Phone License

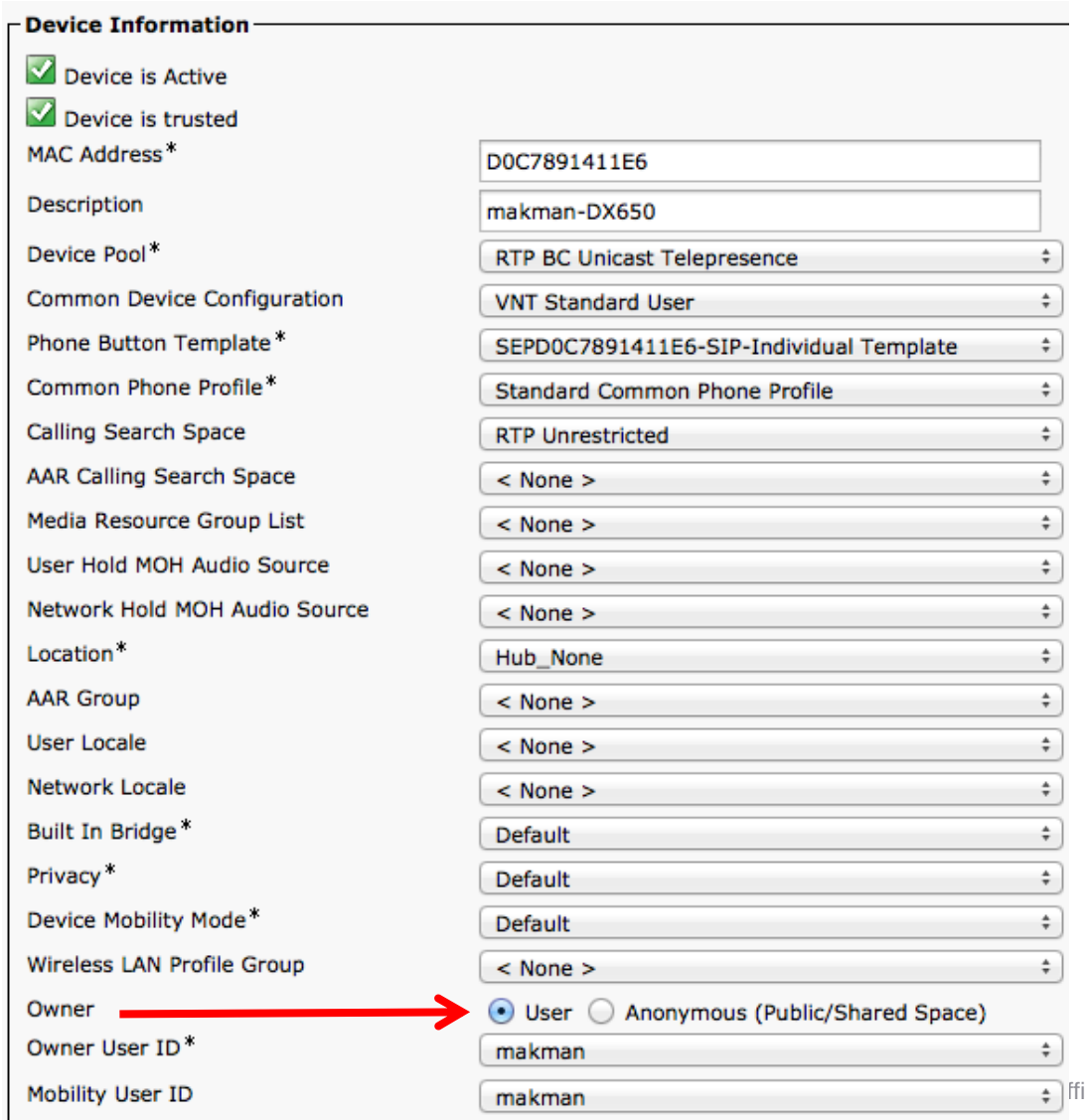
License	Phone Type (2)	# of Devices (3)	Features (1)
Essential UCL	Analog, 3905, 6901, VGC Phone, ATA186, ATA187	1	EM
Basic UCL	6911, 6921, CUC-RTX, Analog, 3905, 6901, VGC Phone, ATA186, ATA187	1	EM, SNR
Enhance UCL	12S, 12SP, 12SP+, 30SP+, 30VIP, 3911, 3951, 6941, 6945, 6961, 7902, 7905, 7906, 7910, 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	

Phones and Owner User ID Association

Device > Phone > Device Name

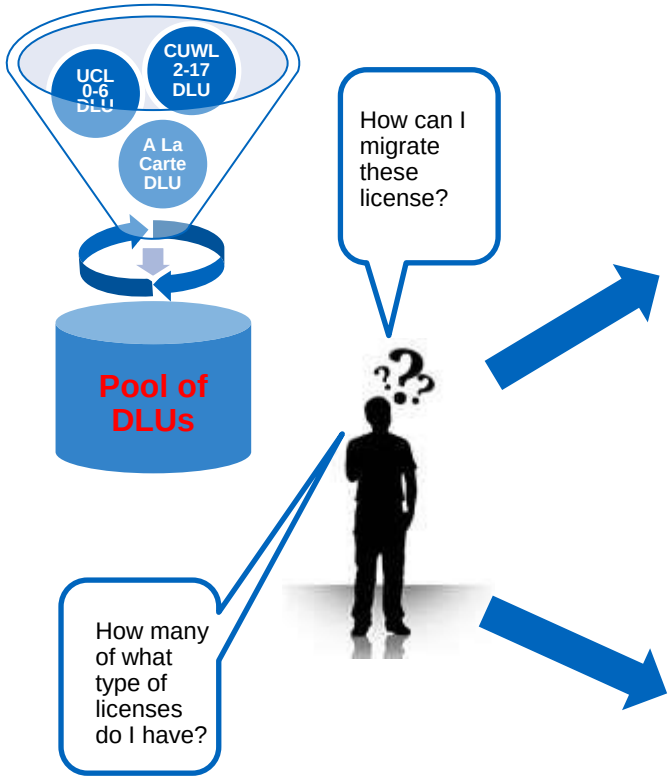


- Phones with Owner User ID field configured potentially uses less licenses
  - I.E. Extension mobility user with Unified Mobility feature and a phone uses one license
  - I.E. Multiple phones with the same Owner ID field

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

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

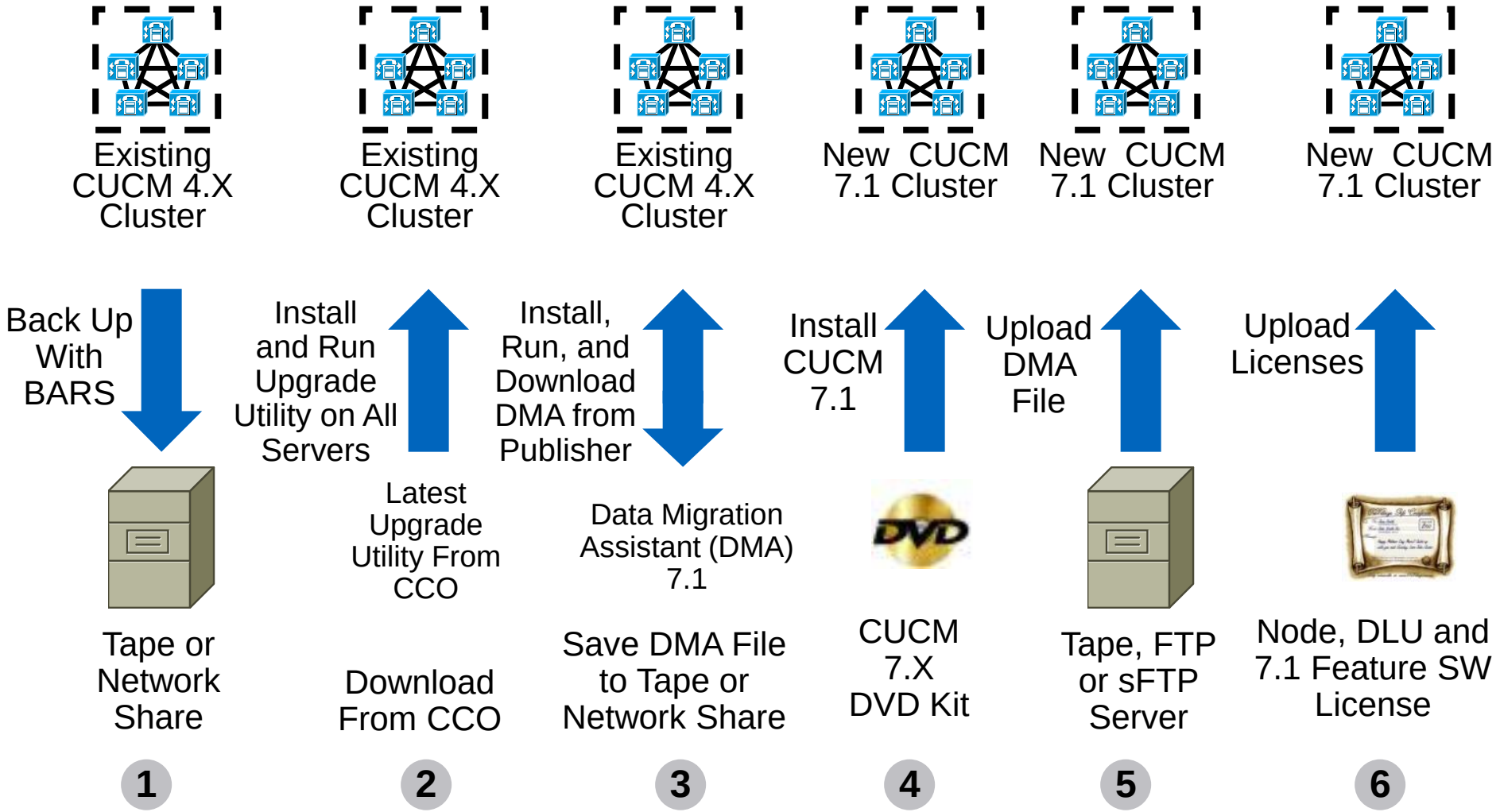
2 Automated

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

Detailed automated process in the appendix

License Count Tool (UCT):
http://software.cisco.com/download/release.html?mdfid=283782839&softwareid=282204704&release=UCT&relind=AVAILABLE&rellifecycle=&reltype=latest

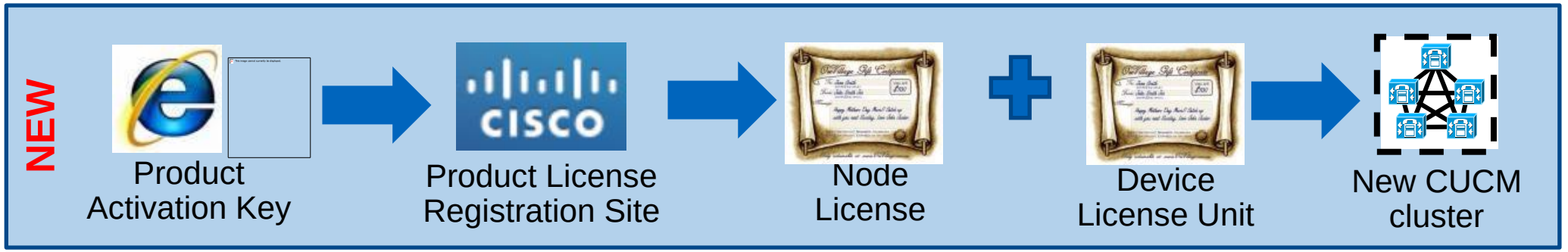
W1 Upgrade: Windows to Appliance Model



Not covered in detail in this session

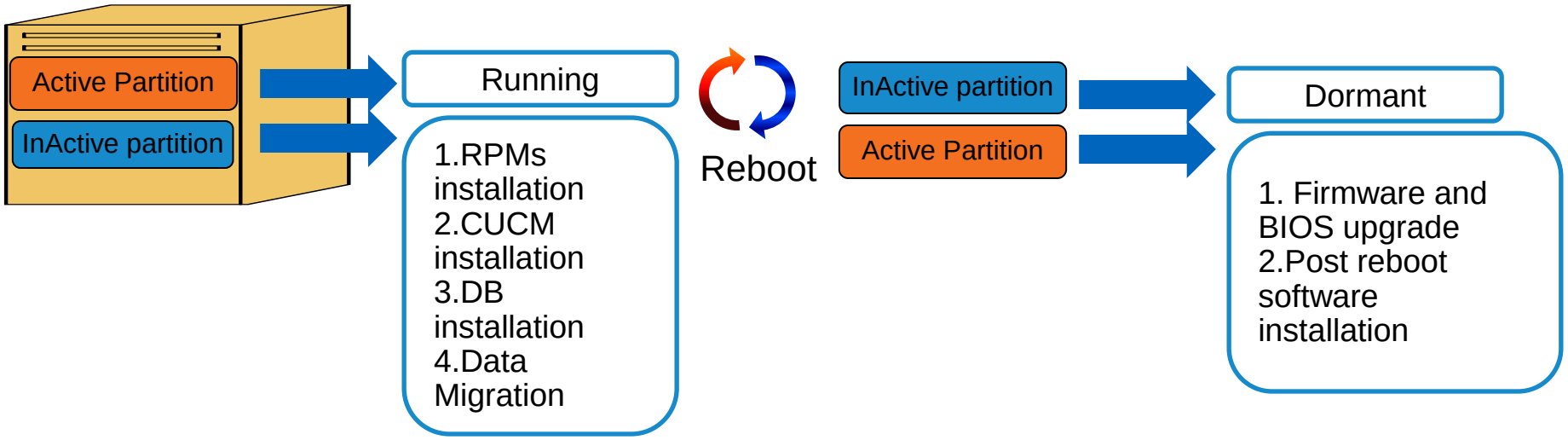
- CUCM 7.1 software availability can be an issue since CUCM 7.1 has EOS (End of Sales)

License Acquisition with CUCM 5.X to 8.X



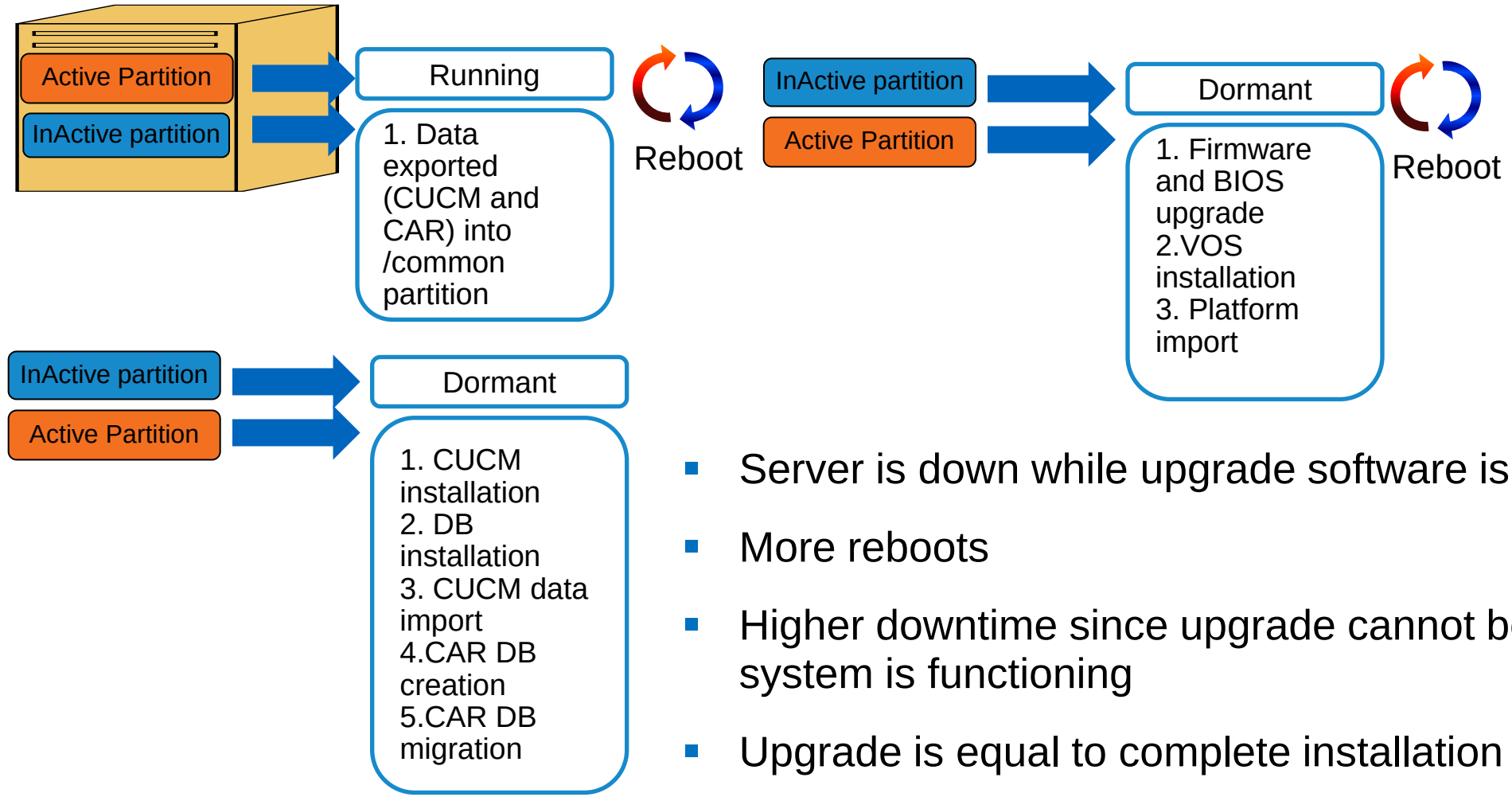
- Product Upgrade Tool site = http://tools.cisco.com/gct/Upgrade/jsp/index.jsp
- Product License Registration site = https://tools.cisco.com/SWIFT/LicensingUI/Home
- License files are uploaded and managed on the first node or Publisher of the cluster
- License files are locked to the MAC address of the first node or Publisher of the cluster
- License enforcement is perform on CUCM

L2 Upgrade: Appliance to Appliance Model



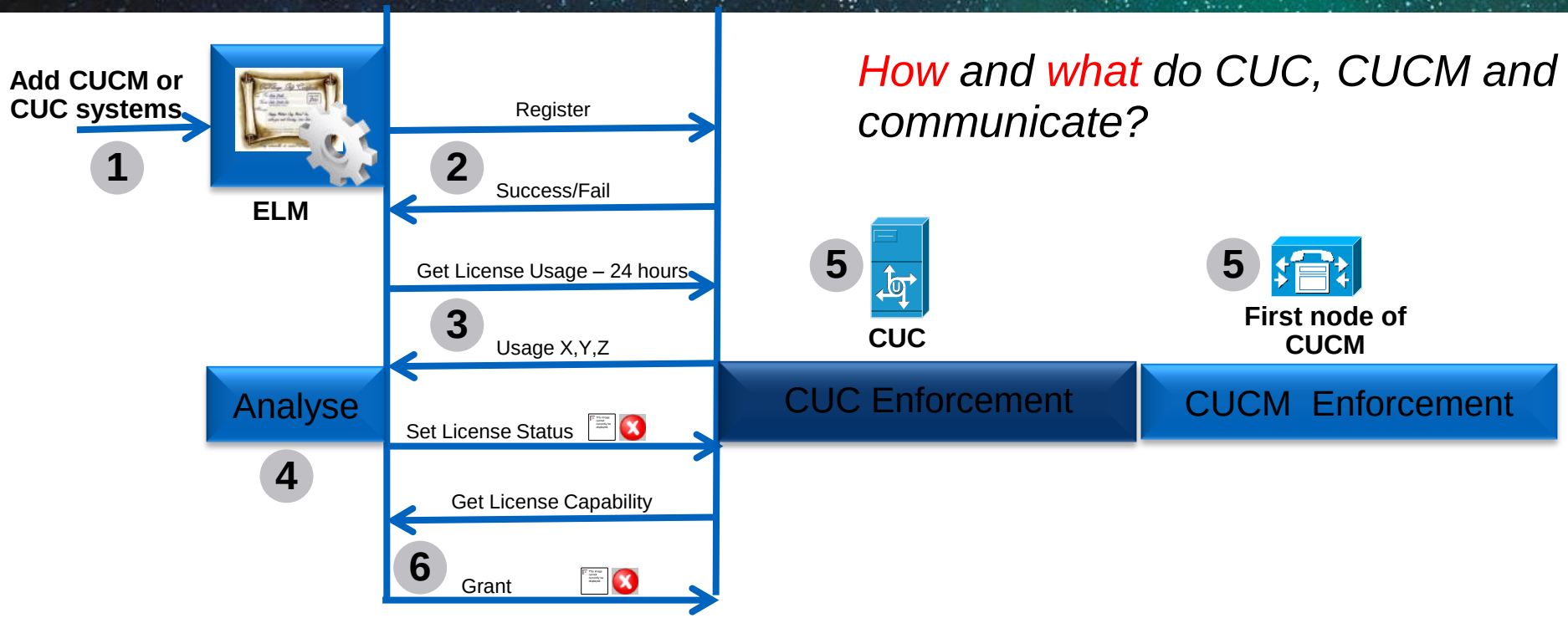
- Active partition is running while upgrade software is being install on inactive partition
- Low downtime since upgrade can be done while system is functioning

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

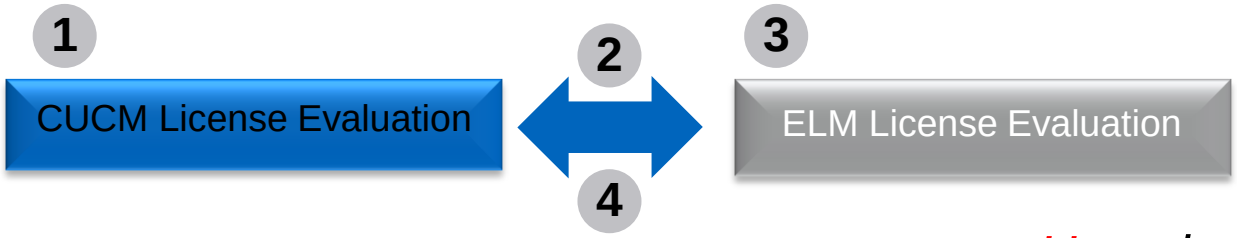
Cisco Unified Enterprise License Manager



How and what do CUC, CUCM and ELM communicate?

- 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

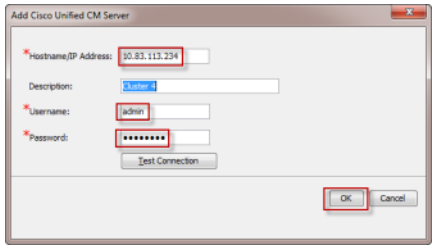


How does CUC, CUCM and ELM know what to communicate?

- 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

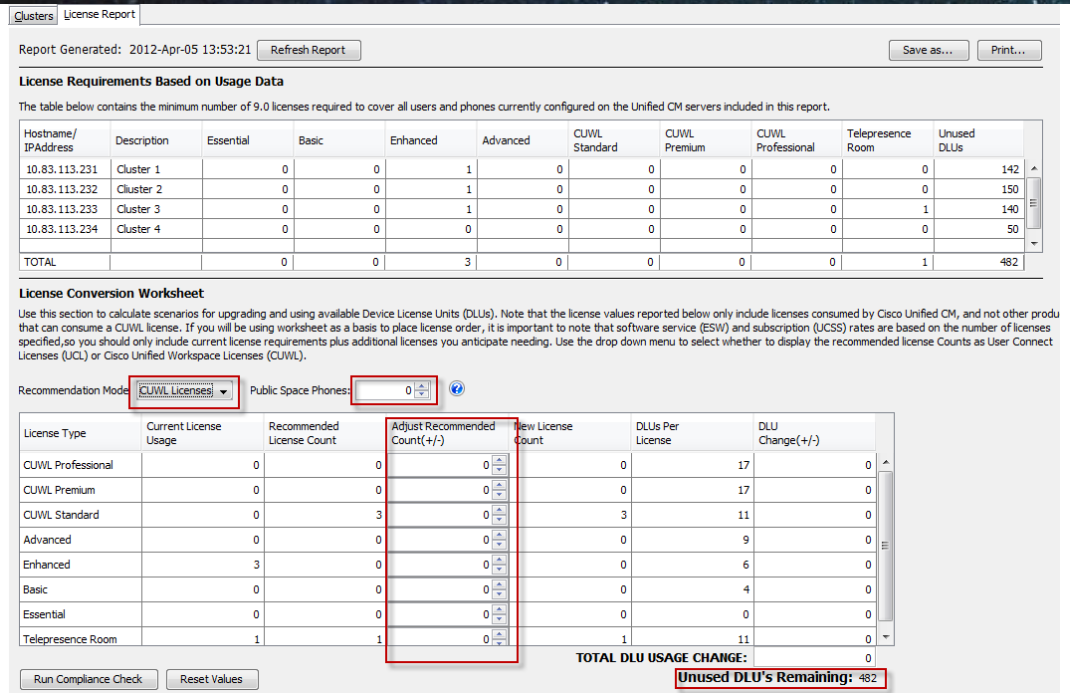
Welcome to the Cisco License Count Utility. This utility will connect to the Cisco Unified CM servers you define below and generate a report of license usage that can be viewed, printed or saved. Begin by adding servers- if you have clusters, only add the publishers-- and then press Generate Report.

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	☑
10.83.113.232	Cliuster 2	9.0.0	Successful	☑
10.83.113.233	Cluster 3	7.1.5	Successful	☑
10.83.113.234	Cluster 4	6.1.5	Successful	☑

- 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 produ 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

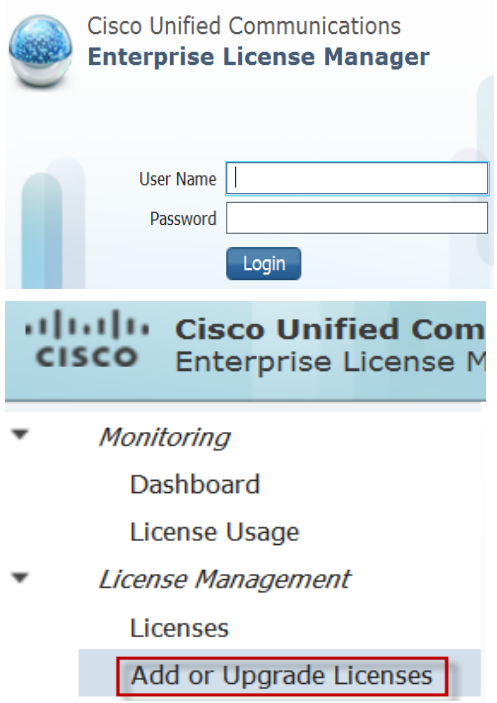
License Type	Current License Usage	Recommended License Count	Adjust Recommended Count(+/-)	New License Count	DLUs Per License	DLU Change(+/-)
CUWL Professional	0	0	0	0	17	0
CUWL Premium	0	0	0	0	17	0
CUWL Standard	0	3	0	3	11	0
Advanced	0	0	0	0	9	0
Enhanced	3	0	0	0	6	0
Basic	0	0	0	0	4	0
Essential	0	0	0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

[Run Compliance Check] [Reset Values] **Unused DLU's Remaining:** 482

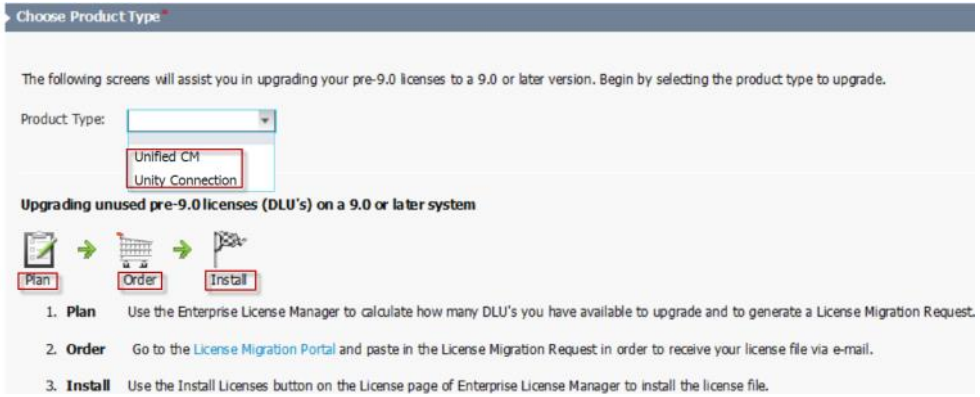
- Cluster > Generate Report: Generate report of ALL systems and the corresponding UCL/CUWL usage
- UCL and CUWL mode
- CUWL mode has Public Space Phones
- Adjustment can and should be perform to reflect the migrated systems entitled licenses
- Remain DLU does not need to be zero

- 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)

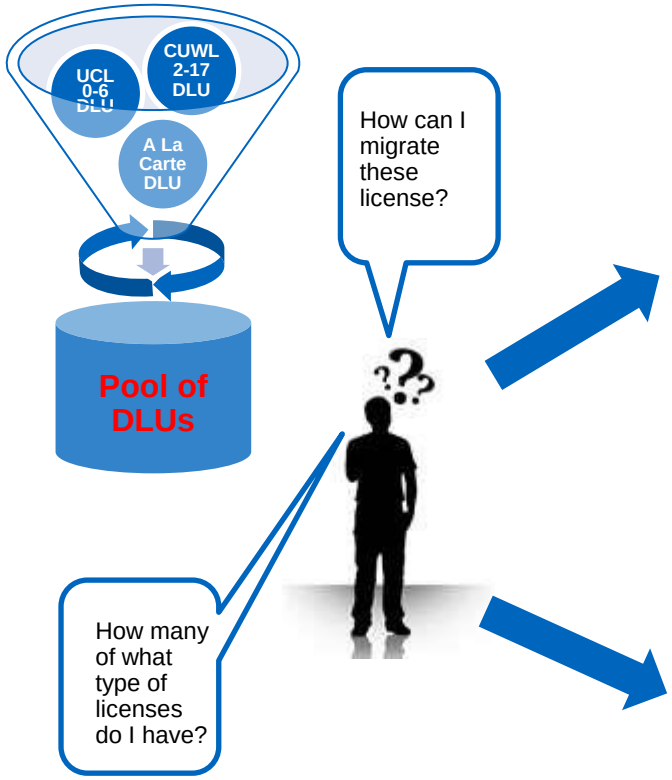
Use ELM Upgrade Wizard for License Upgrade



- 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 UCL/CUWL requirements
- Order allows for license acquisition by capturing text from ELM
- Install is to install the license file



License Conversion



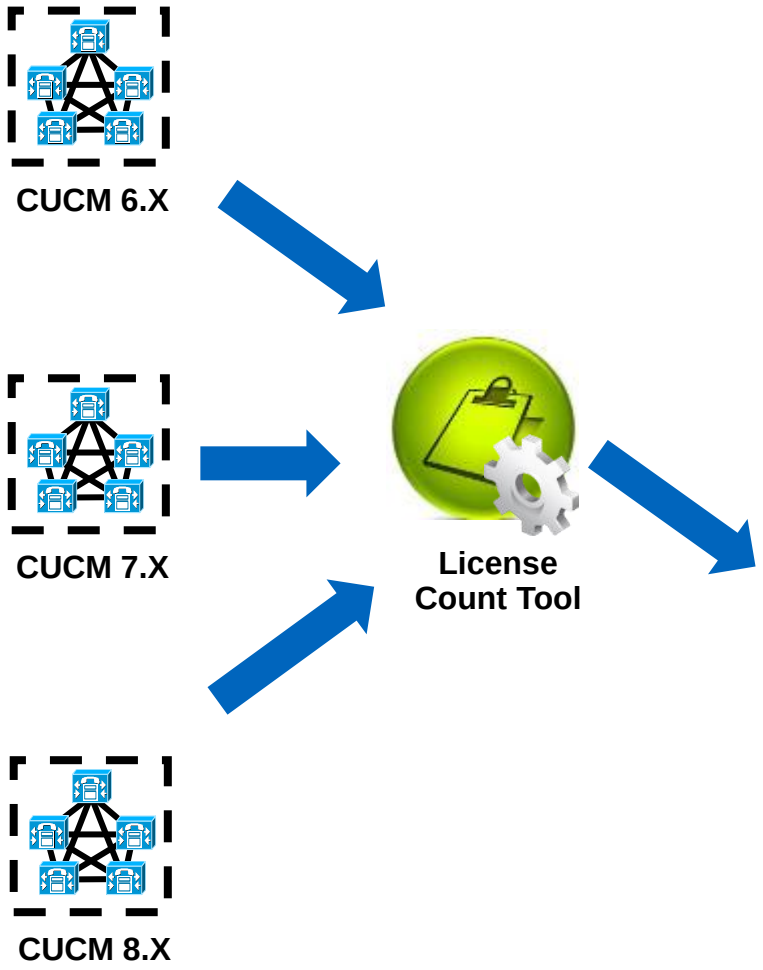
1 Manual

- 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

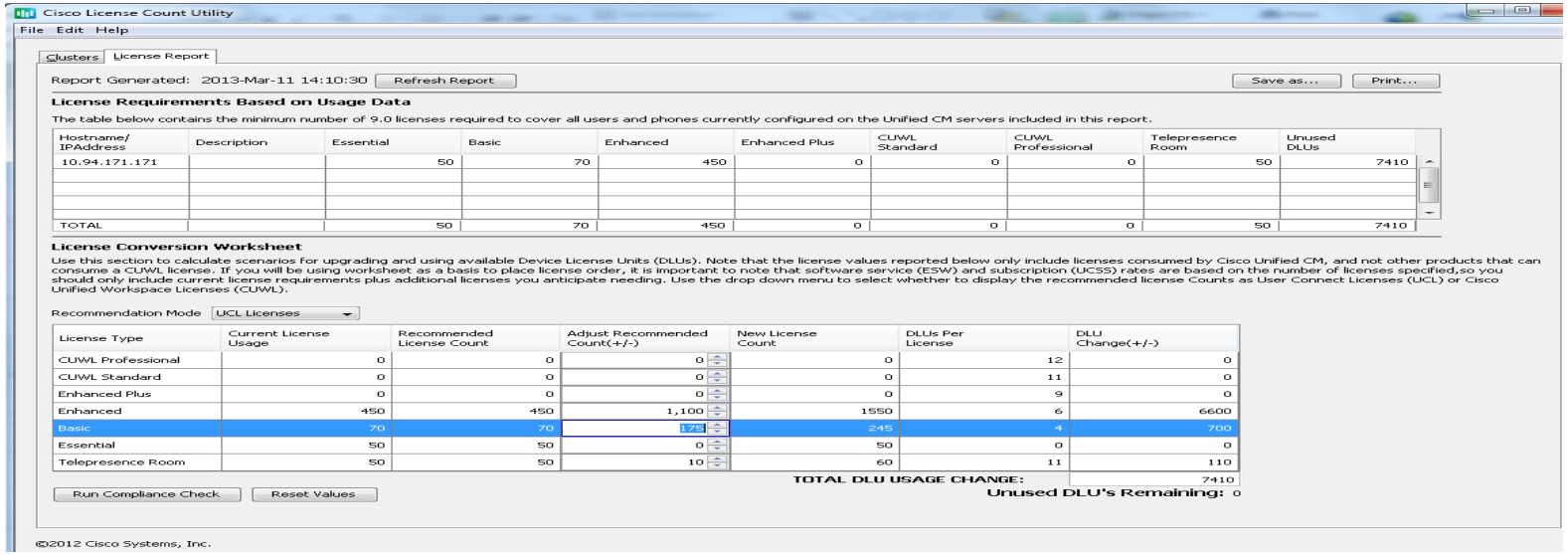
- Standalone CUC
- Upgrade CUC to 9.X
- Self service license request using Product License Registration
- Documentation of process at: http://www.cisco.com/en/US/products/ps6509/products_tech_note09186a0080bf5921.shtml

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



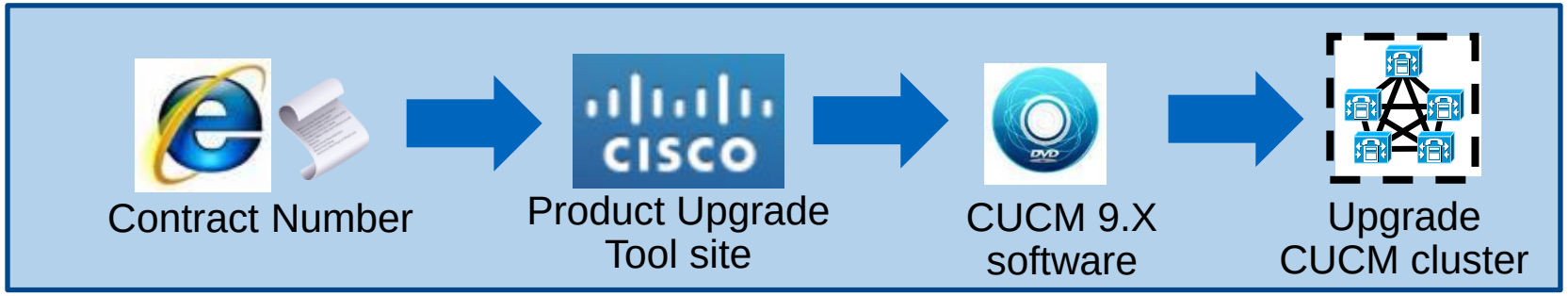
1. Data for Manual License Migration (recommended)

- 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 pertinence license information:
  - 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

1. Data for Manual License Migration

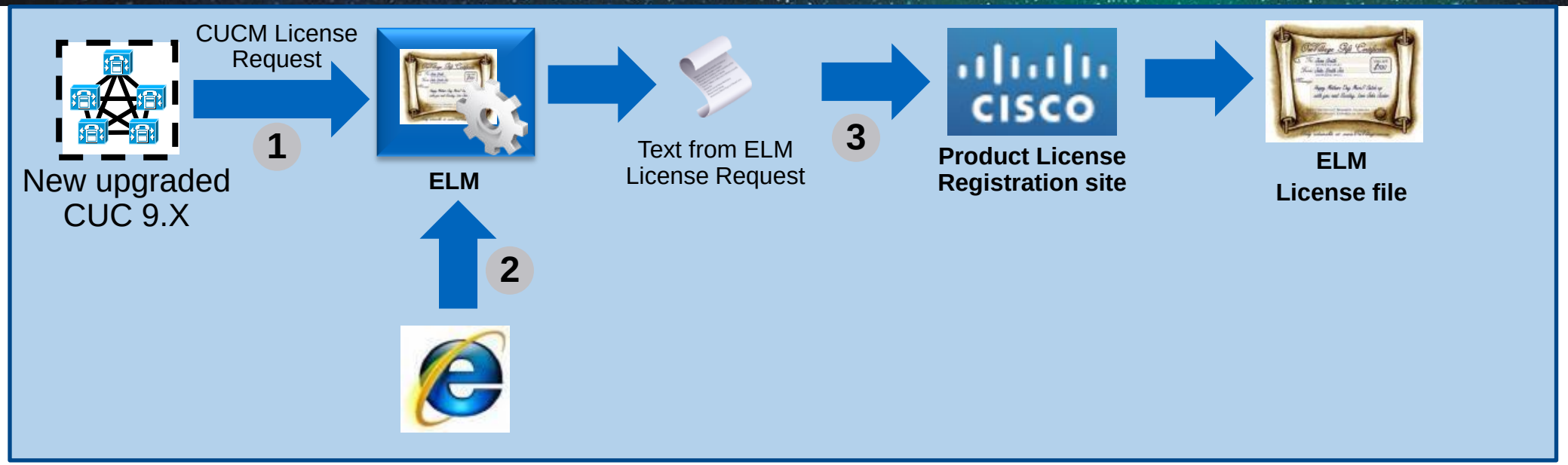
- Working with Global Licensing Operation (GLO) at licensing@cisco.com
- Provide current system usage
  - Migrated system(s): ELM Usage Report
  - CUCM 6.X to 8.X: License Report with License Count Utility (UCT)
  - CUCM 3.X to 5.X: Print screen of system usage
- Provide
  - Active ESW/UCSS contract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

CUCM 10.0 Licensing Summary

Personal Multiparty

Allows for up to 4 parties in a video conference; included in CUWL Pro

WebEx Conferencing

One Named User license for both WebEx Meeting Centre (1 year) **AND** WebEx Meetings Server; included in CUWL Pro

Expressway Remote Worker

Firewall traversal for voice and video; included in UCL Enhanced & above

---

Firewall traversal for IM&P; included with all UCM licenses

Prime Collaboration

Cisco Prime Collaboration Standard; included with CUCM

	CUWL Professional	CUWL Standard	UCL Enhanced Plus / Enhanced	UCL Basic	UCL Essential
Personal Multiparty	✓	+	+	+	+
WebEx Conferencing	✓	+	+	+	+
Unity Connection	✓	✓	+	+	+
Expressway	✓	✓	✓	N/A	N/A
Jabber UC	CPE & Hosted ✓	CPE & Hosted ✓	✓	N/A	N/A
Jabber IM/P	✓	✓	✓	✓	✓
Prime Collaboration	✓	✓	✓	✓	✓
# of Devices Supported	Multiple	Multiple	One / Two	One	One

✓ = included w/ license
+ = optional add-on
N/A = not available w/ license

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

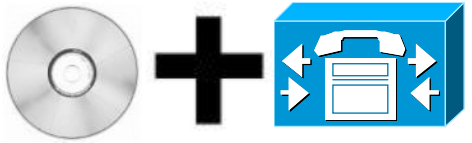

TX / CTS / T Series


MX / Profile Series


System Codecs and Quickset Platforms

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

Platform Migration to Virtualised CUCM 9.1(2)

Platform Number	Supported Normal Mode	Supported Bridge	Not Supported	Upgrade Strategy
1	6.1-7.1	8.0	8.5-9.1	Jump upgrade
2	6.1-7.1	8.0-8.5	8.6-9.1	Jump upgrade
3	6.1-8.0	NA	8.5-9.1	Jump upgrade or upgrade to 8.0 to change platform
4	6.1-8.0	8.5	8.6-9.1	Jump upgrade or upgrade to 8.0 to change platform
5	6.1-8.0	8.5-9.1	NA	Jump upgrade or upgrade to 8.0 to change platform
6	6.1-8.5	8.5-9.1	NA	Jump upgrade or upgrade to 8.0 to change platform
7	7.1-9.1	NA	NA	Jump upgrade or upgrade to 9.1 to change platform

Supported Cisco Unified Communications Manager Releases by Server:
http://www.cisco.com/en/US/partner/prod/collateral/voicesw/ps6790/ps5748/ps378/prod_brochure0900aecd8062a4f9.html

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

Virtualisation CUCM Implications

- Serial support for SMDI
- USB for UPS
- Alternative to USB live audio source as music on hold (MOH):
  - Enable multicast on network
  - Leverage Land Mobile Radio (LMR) to the multicast audio source
  - Enable multicast MOH on CUCM

Sample PowerShell Script to update CUCM 10.0 Virtual Machines

```
$vCenter = ”vcenter1.cisco.com"
$vFolder = ”UCM10"

Get-vc -server $vCenter

Get-Folder $vFolder | get-vm | Set-VM -GuestID "rhel6_64Guest" -confirm:$false
Get-Folder $vFolder | get-vm | get-networkadapter | set-networkadapter -type "vmxnet3" -confirm:$false
$folder = Get-Folder $vFolder | Get-View
Get-View -SearchRoot $folder.MoRef -ViewType VirtualMachine | %{$_.reload()}
```


CISCO
TM