

# Cisco Unified Communications Manager Solutions

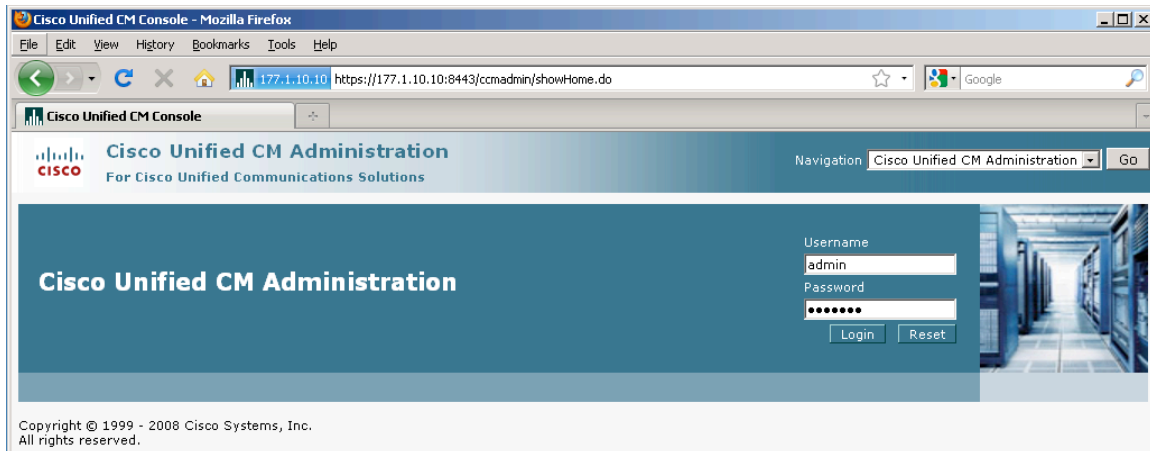
## 2.1 CUCM Navigation and GUI Interface

- Become familiar with the CUCM version 7 GUI interface
- Login to the system using the following credentials:
  - Username: admin
  - Password: cciecisco (lowercase)
- Explore the menu system and learn the locations of configuration pages
- Use the navigation links to move between subsystems
- Use the find function to search within configuration pages
- Use the related links navigation menu

### **Configuration**

Login to the CUCM system through a web browser. (Internet Explorer is the only browser officially supported by Cisco, however Firefox will work) (Complete access details for the servers can be located in the **Rack Rental Users Guide**).

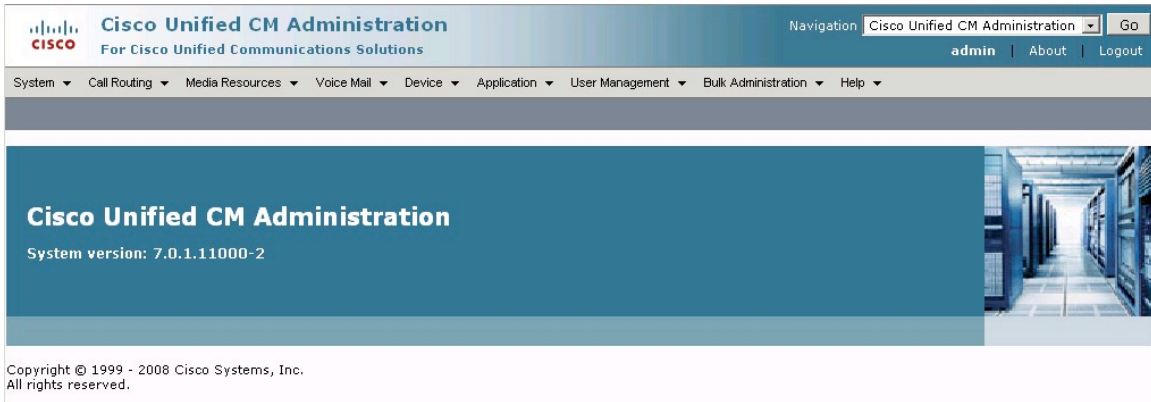
The login page is shown below:



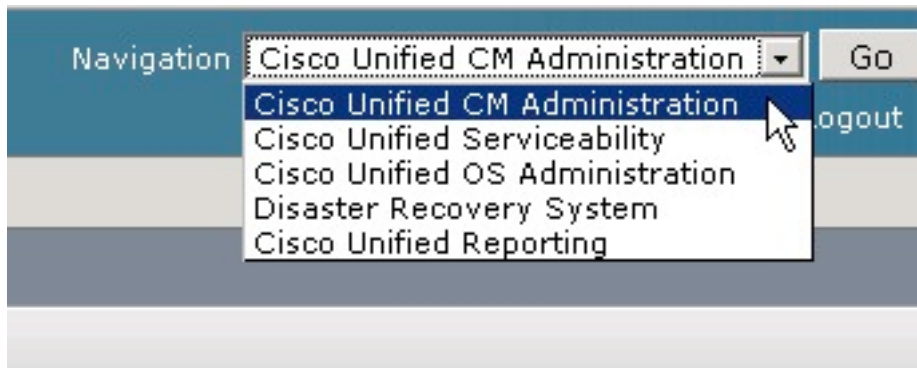
The landing or home page of the CUCM system is shown below. Note the headings listed at the top of the page:

***System / Call Routing / Media Resources / Voice Mail / Device / Application / User Management / Bulk Administration / Help***

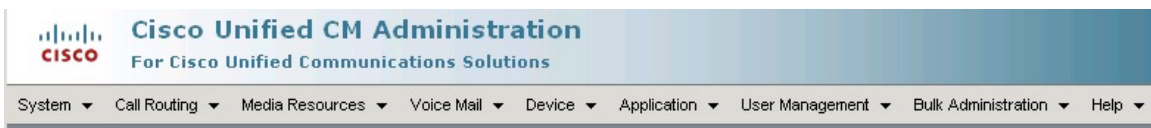
Each heading is a separate menu structure through which configuration pages are accessed. Become familiar with each section, as time management and quick GUI navigation are key aspects to success in the CCIE lab.



The image below is from the top right corner of the CUCM web interface. This menu is always accessible from each page in the interface. The menu is used for navigation between each subsystem within the CUCM interface. Each subsystem and its description are listed below the image:



***Cisco Unified CM Administration:*** Primary configuration location. Used to access configuration pages for the Communications Manager.



**Cisco Unified Serviceability:** The Serviceability subsystem includes Service activation, Control Center, trace settings, and various database management tools.



**Cisco Unified OS Administration:** The OS Administration subsystem includes systems for viewing server parameters and tools for low level server administration such as network parameters.



**Disaster Recovery System:** The Disaster Recovery subsystem is used to create backups and restore the system from them. (This is similar to the BARS system in CCM ver 4 and below)



**Cisco Unified Reporting:** The Unified Reporting subsystem handles all reporting for the server including reporting on the Communications Manager.



***Explanation***

---

The web based gui interface for CUCM ver 7 is designed to be easier to navigate than previous versions, and navigation is supported through the use of related links and aggregation of common systems.

Exploring each menu and subsystem to learn the locations of configuration pages and options will greatly enhance the speed configurations can be completed.

***Verification***

---

To verify the task above, simply ensure that you can reach each page, and become familiar with the navigation and menu structure.

## 2.2 CUCM CLI Interface

- Become familiar with the CUCM version 7 CLI interface
- Login to the system using the following credentials through SSH:
  - Username: admin
  - Password: cciecisco (lowercase)
- Explore the command line interface
- Learn the help system for command reference
- Learn useful show commands
- Explore the utils commands
- Restart the CUCM Pub server

### Configuration

---

```
computer_prompt$ ssh admin@177.1.10.10
admin@177.1.10.10's password:
Last login: Fri May 29 16:28:35 2009
```

```
Welcome to the Platform Command Line Interface
WARNING, VMware Virtual Environment Detected!
VMware is NOT a supported platform!
```

**(Note: This warning will not affect your lab session)**

```
admin:?
  delete*
  file*
  help
  quit
  run*
  set*
  show*
  unset*
  utils*
```

```
admin:utils system restart
```

```
Do you really want to restart ?
```

```
Enter (yes/no)? yes
```

```
Appliance is being Restarted ...
Warning: Restart could take up to 5 minutes.
Shutting down Service Manager will take some time..
\ Service Manager shutting down services... Please Wait
DONE!!!!
```

```
Broadcast message from root (Thu Jun 11 14:26:15 2009):
The system is going down for reboot NOW!
Waiting .
Operation succeeded
restart now.
```

### ***Explanation***

---

CUCM version 7 is a linux based server platform as are Unity Connections and Unified Presence (CUPS). While the CLI is accessible, it's command structure is limited to basic system administration tasks, and cannot be used for administration of the actual Communications Manager system. Access is only through SSH, as telnet is not supported. The same username and password used for the GUI interface are used to access the CLI interface.

Once logged in through SSH, a prompt will appear denoting that you are an admin user. "**admin:**" From this prompt, typing a question mark "?" will load the text based help system similar to the question mark in the IOS CLI on routers and switches. The commands available are shown above in the configuration section. Each command has a submenu which can also be referenced for help using the "?".

The primary use of the CLI interface is low level system administration. The servers network configuration can modified here, various parameters can be set, configuration details and database status can be verified, and the system can be controlled through the **utils** commands.

Note the messages displayed after the **utils system restart** command is issued. The time required for the system to reboot can be significant, however the command line interface is the easiest location to do so.

### ***Verification***

---

To verify this section, simply ensure that you are able to complete all parts of this task: logging in, using CLI based commands and using the help structure.

## 2.3 Communications Manager Initialization

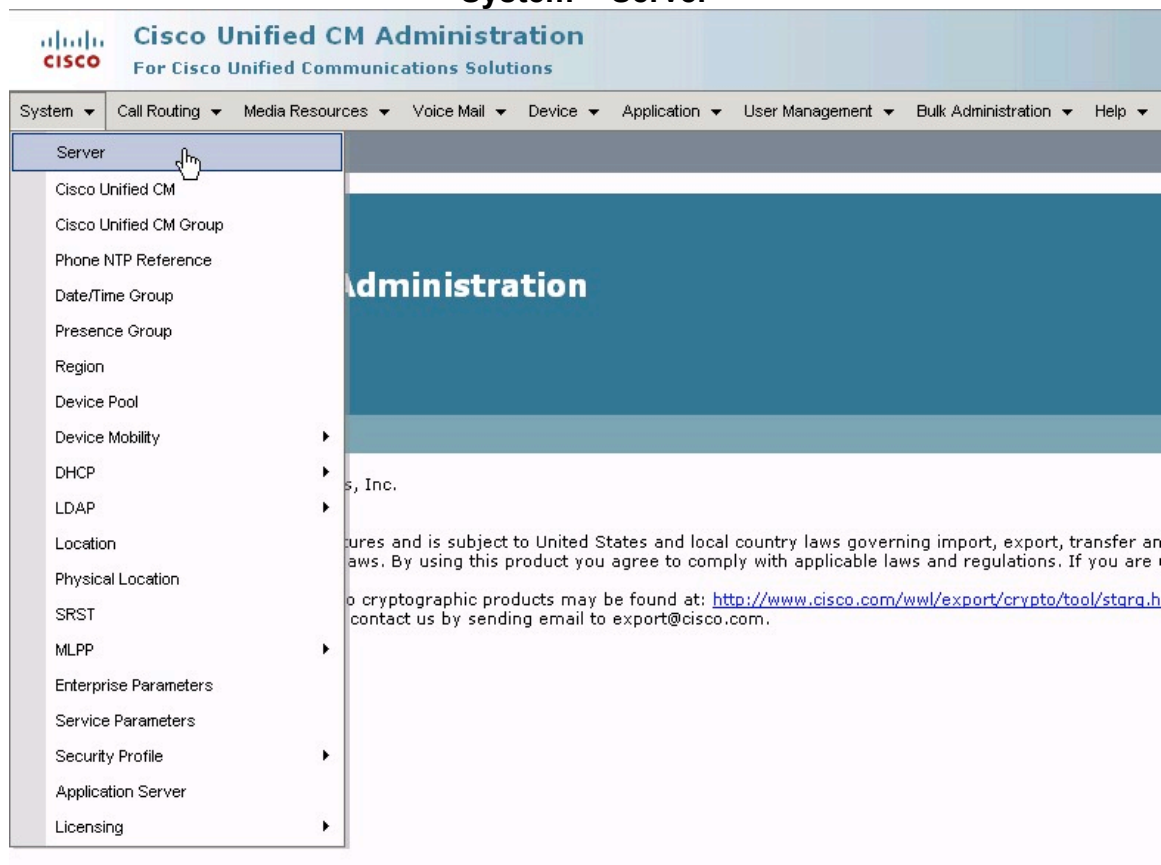
- Change Server Hostnames to IP Addresses
- Ensure auto registration is enabled
- Activate both CUCM systems
- Add the CUCM-SUB to the CUCM Group
- Change Phone reference URLs to reflect the hostname change

### Configuration

#### Step 1:

From the CM Administration page, navigate to the Server configuration page:

**System > Server**



Next click on the CUCM7-PUB server link:

**Find and List Servers**

+ Add New

**Status**

i 2 records found

**Servers (1 - 2 of 2)**

Find Servers where Host Name/IP Address begins with Find Clear Filter + -

<input type="checkbox"/>	Host Name/IP Address ^
<input type="checkbox"/>	<a href="#">177.1.10.20</a>
<input type="checkbox"/>	<a href="#">CUCM7-PUB</a>

Add New

Change the Host Name to the IP address of the Publisher Server (177.1.10.10). Next add a description with the Host Name:

**Server Configuration**

Save Delete Add New

**Status**

i Status: Ready

**Server Information**

Database Replication Publisher

Host Name/IP Address\* 177.1.10.10

MAC Address

Description CUCM7-PUB

Ensure you click the save button which is located at both the top and bottom of the configuration pages. A warning window will appear, which must be accepted:

The page at https://177.1.10.10:8443 says:

? Changing the name/IP Address of the server may cause problems with Cisco Unified CallManager. Are you sure that you want to continue?

OK Cancel



Repeat this step for the Subscriber Server, replacing the Host Name with IP Address (177.1.10.20). Next, confirm both servers through the find page:

Find and List Servers

+ Add New

Status

2 records found

Servers (1 - 2 of 2)

Find Servers where Host Name/IP Address begins with Find Clear Filter

<input type="checkbox"/>	Host Name/IP Address ^	Description
<input type="checkbox"/>	177.1.10.10	CUCM7-PUB
<input type="checkbox"/>	177.1.10.20	CUCM7-SUB

**Step 2:**

Navigate to **System > Cisco Unified CM:**



Click the find button to display all CM systems:

Find and List Cisco Unified CMs

Cisco Unified Communications Managers


Find Cisco Unified Communications Managers where Cisco Unified Communications Manager Name begins with Find

No active query. Please e

Click the CUCM7-PUB link:

**Find and List Cisco Unified CMs**

**Status**


 2 records found

**Cisco Unified Communications Managers (1 - 2 of 2)**

Find Cisco Unified Communications Managers where



[CM 177.1.10.20](#)

[CM\\_CUCM7-PUB](#)




Change the CM name to CM\_177.1.10.10. Next define the starting and ending directory number which will later be used for auto-registration. Uncheck the Auto-registration Disabled box. This will enable Auto-registraton for the Publisher server:

Cisco Unified CM Configuration

 Save  Reset

---

**Status**

 Status: Ready

---

**Cisco Unified Communications Manager Information**

Cisco Unified Communications Manager: CM\_177.1.10.10 (used by 10 devices)

---

**Server Information**

CTI ID	1
Cisco Unified Communications Manager Server*	177.1.10.10
Cisco Unified Communications Manager Name*	<input type="text" value="CM_177.1.10.10"/>
Description	<input type="text" value="CUCM7-PUB"/>

---

**Auto-registration Information**

Starting Directory Number*	<input type="text" value="1001"/>
Ending Directory Number*	<input type="text" value="1010"/>
Partition	<input type="text" value=" &lt; None &gt;"/>
External Phone Number Mask	<input type="text"/>

Auto-registration Disabled on this Cisco Unified Communications Manager

Finally, confirm the name change on the Find and List page:

Find and List Cisco Unified CMs

**Status**

 2 records found

---

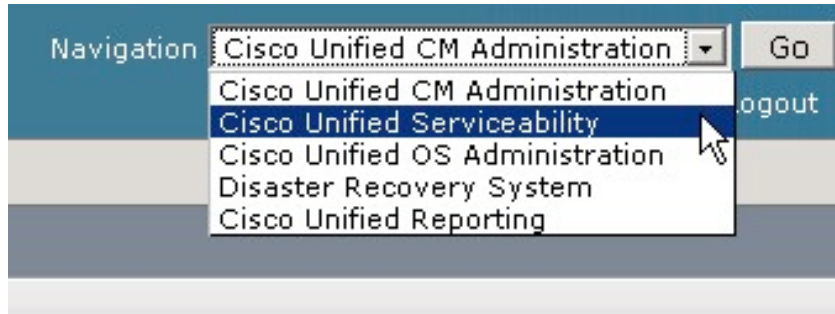
**Cisco Unified Communications Managers (1 - 2 of 2)**

Find Cisco Unified Communications Managers where  begins with

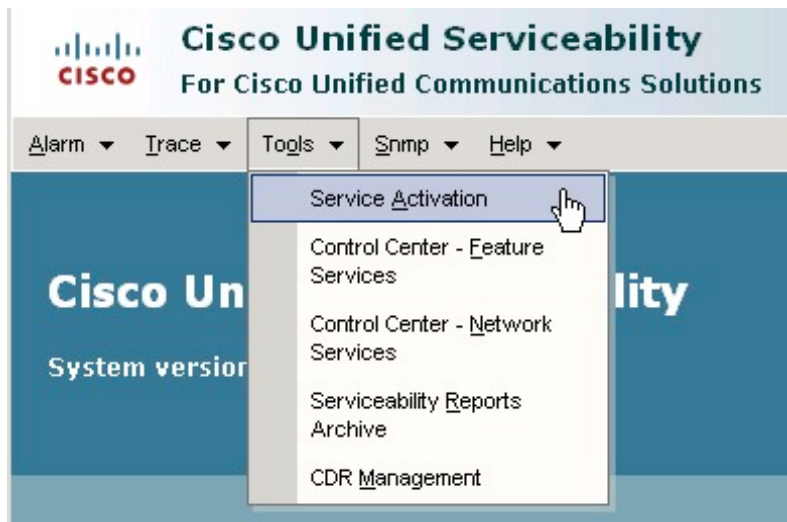
Name ^
<a href="#">CM_177.1.10.10</a>
<a href="#">CM_177.1.10.20</a>

**Step 3:**

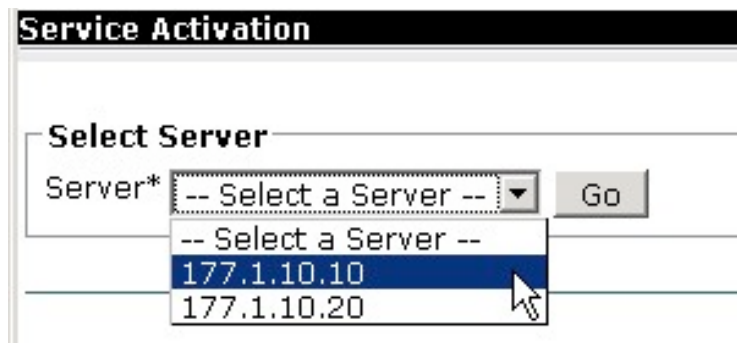
Use the subsystem navigation menu and navigate to the **Serviceability** System:  
 (Note that you will be required to login to the system, using the same credentials to access the CM Administration system)



Navigate to Tools > Service Activation:



Next, select the Publisher Server:



From the service activation page, activate all necessary services:  
 Notice that the services are grouped into categories, unlike the CCM 4.X servers.

Activate each service in the screenshots below that show a checked box:  
*(Note that not all services will be activated, as they are not required for the lab environment. These include the Messaging Interface, Webdialer Service, CTL Provider, and the Certificate Authority Proxy Function.)*

**Service Activation**
Related Links: [Control](#)

Save Set to Default Refresh

**Status**

Status : Ready

**Select Server**

Server\*

Check All Services

**CM Services**

	Service Name	Activation Status
<input checked="" type="checkbox"/>	Cisco CallManager	Deactivated
<input checked="" type="checkbox"/>	Cisco Tftp	Deactivated
<input type="checkbox"/>	Cisco Messaging Interface	Deactivated
<input checked="" type="checkbox"/>	Cisco Unified Mobile Voice Access Service	Deactivated
<input checked="" type="checkbox"/>	Cisco IP Voice Media Streaming App	Deactivated
<input checked="" type="checkbox"/>	Cisco CTIManager	Deactivated
<input checked="" type="checkbox"/>	Cisco Extension Mobility	Deactivated
<input checked="" type="checkbox"/>	Cisco Extended Functions	Deactivated
<input checked="" type="checkbox"/>	Cisco Dialed Number Analyzer	Deactivated
<input checked="" type="checkbox"/>	Cisco DHCP Monitor Service	Deactivated

**CTI Services**

	Service Name	Activation Status
<input checked="" type="checkbox"/>	Cisco CallManager Attendant Console Server	Deactivated
<input checked="" type="checkbox"/>	Cisco IP Manager Assistant	Deactivated
<input type="checkbox"/>	Cisco WebDialer Web Service	Deactivated

CDR Services		
	Service Name	Activation Status
<input checked="" type="checkbox"/>	Cisco SOAP - CDRonDemand Service	Deactivated
<input checked="" type="checkbox"/>	Cisco CAR Web Service	Deactivated

Database and Admin Services		
	Service Name	Activation Status
<input checked="" type="checkbox"/>	Cisco AXL Web Service	Deactivated
<input checked="" type="checkbox"/>	Cisco Bulk Provisioning Service	Deactivated
<input checked="" type="checkbox"/>	Cisco TAPS Service	Deactivated

Performance and Monitoring Services		
	Service Name	Activation Status
<input checked="" type="checkbox"/>	Cisco Serviceability Reporter	Deactivated
<input checked="" type="checkbox"/>	Cisco CallManager SNMP Service	Deactivated

Security Services		
	Service Name	Activation Status
<input type="checkbox"/>	Cisco CTL Provider	Deactivated
<input type="checkbox"/>	Cisco Certificate Authority Proxy Function	Deactivated

Directory Services		
	Service Name	Activation Status
<input checked="" type="checkbox"/>	Cisco DirSync	Deactivated

Finally, ensure you click save, and accept the prompt window that will appear:



To verify that the services have been activated, navigate to **Tools > Control Center – Feature Services**, and also **Control Center – Network Services**. From these windows, you should see a service status of **Started** and a Activation Status of **Activated** next to each service you activated on the previous window:

**Control Center - Feature Services** Related Links: Service Activation

Status  
 ⓘ Status : Ready

Select Server  
 Server\*

Database and Admin Services					
	Service Name	Status*	Activation Status	Start Time	Up Time
<input type="radio"/>	Cisco AXL Web Service	Started	Activated	Thu Jun 11 09:39:12 2009	0 days 00:08:21
<input type="radio"/>	Cisco Bulk Provisioning Service	Started	Activated	Thu Jun 11 09:39:12 2009	0 days 00:08:21
<input type="radio"/>	Cisco TAPS Service	Started	Activated	Thu Jun 11 09:39:43 2009	0 days 00:07:50

Performance and Monitoring Services					
	Service Name	Status*	Activation Status	Start Time	Up Time
<input type="radio"/>	Cisco Serviceability Reporter	Started	Activated	Thu Jun 11 09:39:43 2009	0 days 00:07:50
<input type="radio"/>	Cisco CallManager SNMP Service	Started	Activated	Thu Jun 11 09:39:59 2009	0 days 00:07:34

Repeat the process for the Subscriber server, activating the same services except for the TFTP service, as the Publisher will act as the only TFTP server.

**Step 4:**

Navigate back to the **CM Administration** subsystem. Next, navigate to **System > Cisco Unified CM Group**. Click find, and click the link for the group named **Default**. Change the name of the group to CUCM-GROUP, and add the Subscriber server to the group using the arrow below the selection window:

**Step 5:**

Navigate to **System > Enterprise Parameters**. Under the **Phone URL Parameters** section, change all hostnames in the URLs to the IP addresses of the publisher server

Phone URL Parameters	
<a href="#">URL Authentication</a>	http://177.1.10.10:8080/ccmcip/authenticate.jsp
<a href="#">URL Directories</a>	http://177.1.10.10:8080/ccmcip/xmldirectory.jsp
<a href="#">URL Idle</a>	
<a href="#">URL Idle Time</a>	0
<a href="#">URL Information</a>	http://177.1.10.10:8080/ccmcip/GetTelecasterHelpText.js
<a href="#">URL Messages</a>	
<a href="#">IP Phone Proxy Address</a>	
<a href="#">URL Services</a>	http://177.1.10.10:8080/ccmcip/getservicesmenu.jsp



### Explanation

In order to implement any configuration, the Communications Manager servers must be enabled, and the basic configuration must be applied. This process includes service activation, and changing basic parameters such as hostnames, adding all applicable servers to the CUCM group, and enabling options such as Auto Registration.


Although Auto Registration is not required for functionality, it is recommended for the lab environment, as the time savings it offers is extremely valuable.

The process outlined in this task is in a specific order, as certain tasks, such as service activation must take place before the Subscriber server can be added to the CUCM group, and will be recognized as a CallManager by the Publisher.

### Verification

Verification for this task is included in the configuration steps above. Ensure each step is completed, and displayed on the configuration page.

Finally, Navigate to the **OS Reporting** subsystem, and click **System Reports > Unified CM Cluster Overview**. Generate a new report, and ensure the report is successfully generated, the Publisher server is recognized, and both servers are recognized in the group.

 OK: Report generated successfully.

#### Unified CM Cluster Overview

Provides an overview of the Unified CM cluster.  
Created on Tue Jun 16 10:32:04 PDT 2009

##### Unified CM Cluster Name

Lists the cluster name from the Enterprise Parameter and the publisher server name/IP.

Cluster Name	Publisher Name/IP
StandAloneCluster	CUCM7-PUB

##### Unified CM Provisioned Servers

Lists all servers in the cluster by either name or IP as provisioned in the database and whether the server is installed or not, from the host file on the local server.

Name	Description	IP Address
177.1.10.10	CUCM7-PUB	177.1.10.10
177.1.10.20	CUCM7-SUB	177.1.10.20

## 2.4 Verifying Database Replication

- Verify the database replication between the Publisher and Subscriber Servers
- Use the GUI reporting system to verify the replication
- User the CLI show commands to verify the replication
- Check configuration pages on the Subscriber server

### Configuration

#### Step 1:

Navigate to the **OS Reporting** subsystem. Click **System Reports > Unified CM Database Status**. Generate a new report, and ensure the database replication is working correctly:

**Unified CM Cluster Name**

Lists the cluster name from the Enterprise Parameter and the publisher server name/IP.

Cluster Name	Publisher Name/IP
StandAloneCluster	CUCM7-PUB

**Unified CM Database Access**

For every server, shows if you can read from the local and publisher databases.

Local and publisher databases accessible.

[View Details](#)

Server	Publisher DB Reachable	Local DB Reachable
177.1.10.10	true	true
177.1.10.20	true	true

Ensure the replication count is the same on both servers (Note that the replication count can be any value, as long as both servers match)

**Unified CM Database Status**

Shows if replication is good or bad.  
RTMT Counter Information

- ✓ All servers have a replication count of 412.
- ✓ All servers have a good replication status.

[View Details](#)

Server	Number of Replicates Created	Replicate State
177.1.10.10	412	2 - good
177.1.10.20	412	2 - good

⚠ See also Database Summary Screen in RTMT.  
⚠ Run CLI command (show tech dbstateinfo) for more detail.  
Replication Server List (cdr list serv) from every server for debugging purposes only.

[View Details](#)

Server	cdr list serv					
SERVER	ID	STATE	STATUS	QUEUE	CONNECTION	CHANGED
177.1.10.10	g_cucm7_pub_ccm7_0_1_11000_2	2	Active	Local		0
	g_cucm7_sub_ccm7_0_1_11000_2	3	Active	Connected		0 Jun 11 14:28:41
177.1.10.20	g_cucm7_pub_ccm7_0_1_11000_2	2	Active	Connected		0 Jun 11 14:28:42
	g_cucm7_sub_ccm7_0_1_11000_2	3	Active	Local		0

**Step 2:**

SSH to the Publisher server, and perform the following steps:

```
admin:utils dbreplication status
*****
*****
This command reads and writes database information from all machines
and will take quite some time...please be patient.
*****
*****
```

```
----- utils dbreplication status -----
Output is in file
cm/trace/dbl/sdi/ReplicationStatus.2009_06_16_10_47_17.out
```

```
Please use "file view activelog
cm/trace/dbl/sdi/ReplicationStatus.2009_06_16_10_47_17.out " command to
see the output
admin:file view activelog
cm/trace/dbl/sdi/ReplicationStatus.2009_06_16_10_47_17.out
```

SERVER	ID	STATE	STATUS	QUEUE	CONNECTION	CHANGED
g_cucm7_pub_ccm7_0_1_11000_2	2	Active	Local			0
g_cucm7_sub_ccm7_0_1_11000_2	3	Active	Connected			0 Jun 11

No Errors or Mismatches found.  
Replication status is good on all available servers.

**Step 3:**

Login to the Publisher server and ensure previous configuration applied on the Publisher server is present. This can be verified through any of the configuration pages, such as the CUCM group page.

***Explanation***

---

Checking the database replication between servers is a critical task before beginning your lab. Although it is rare that there is an issue, the consequences of not checking could be a failed CCIE lab.

Each method can be used for checking the replication status, and is simply a matter of preference. A simple verification through the configuration pages should also be completed, to ensure configuration applied to the Publisher is written to the Subscriber server.

If any status does not show a good replication status, a reboot will often fix the problem. If you find that the replication is not working in the CCIE lab, immediately notify the proctor.

***Verification***

---

The verification procedure for this task is included in the above configuration section. Simply ensure that all output shows a good replication status.