



ศูนย์เทคโนโลยีสารสนเทศและการสื่อสาร สบ.มท.  
Information and Communication Technology Center.

**SAMART**

## IP Telephony

*Cisco Unified Communications Manager*

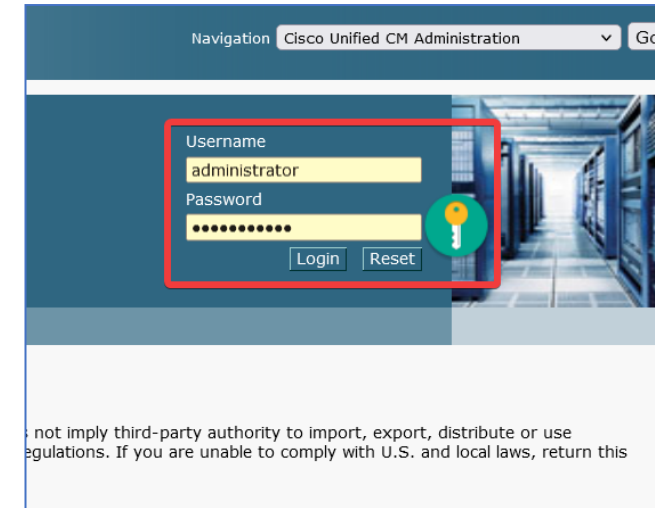
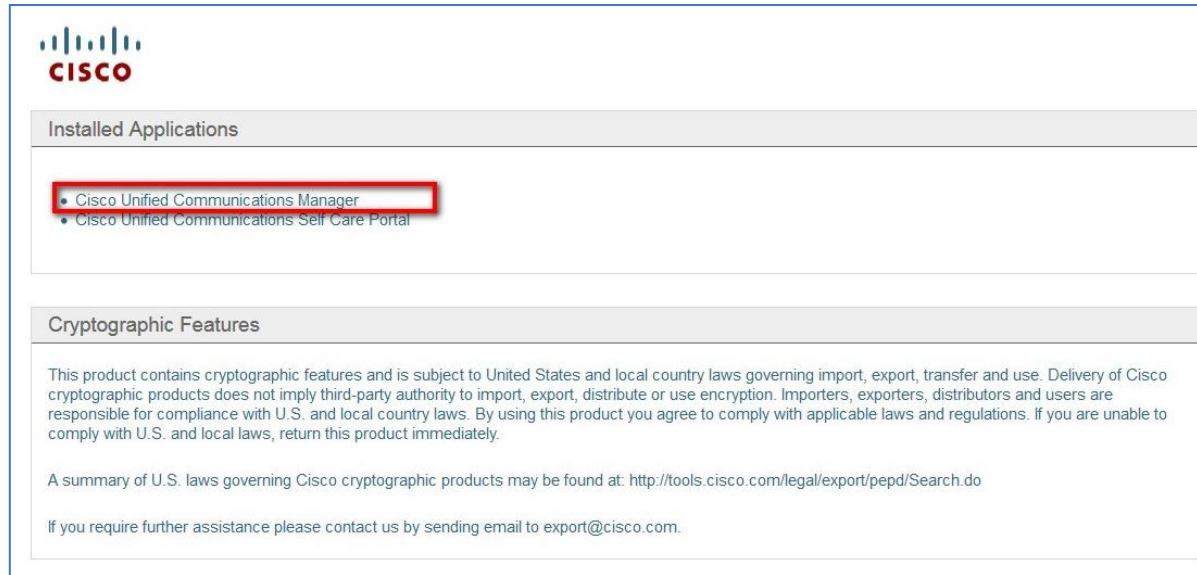
สำนักงานปลัดกระทรวงดิจิทัลฯ



## Installed Applications

- Cisco Unified Communications Manager
- Cisco Unified Communications Self Care Portal

- **Cisco Unified Communications Manager:** ใช้ในการเข้าถึงระบบ CUCM เพื่อ เพิ่ม, ลบ หรือปรับปรุงแก้ไข ค่าพารามิเตอร์ต่างๆ และจัดการระบบ
- **Cisco Unified Communications Self Care Portal:** ผู้ใช้สามารถปรับแต่งคุณสมบัติและการตั้งค่าสำหรับโทรศัพท์ของตนได้ ในฐานะผู้ดูแลระบบ



- Login Cisco Unified Communication Manager และเลือกที่หัวข้อ Cisco Unified Communication Manager

- ใส่ Username และ Password และกด Login



- Navigation (Cisco Unified CM Administration)

**Cisco Unified CM Administration**  
For Cisco Unified Communications Solutions

Navigation: Cisco Unified CM Administration Go

administrator | About | Logout

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

**Cisco Unified CM Administration**

System version: 12.5.1.13900-152

VMware Installation: 4 vCPU Intel(R) Xeon(R) Gold 6132 CPU @ 2.60GHz, disk 1: 110Gbytes, 8192Mbytes RAM, Partitions aligned

Last Successful Backup: 0 day(s) ago

User administrator last logged in to this cluster on Saturday, July 1, 2023 2:50:36 PM ICT, to node 10.230.1.21, from 10.252.0.133 using HTTPS

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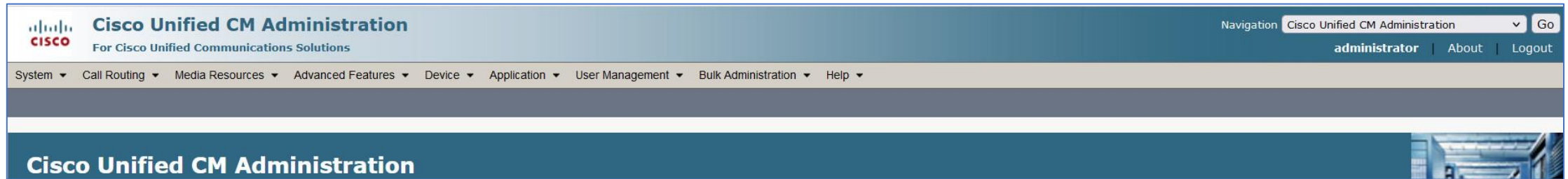
A summary of U.S. laws governing Cisco cryptographic products may be found at our [Export Compliance Product Report](#) web site.

For information about Cisco Unified Communications Manager please visit our [Unified Communications System Documentation](#) web site.

For Cisco Technical Support please visit our [Technical Support](#) web site.

- เป็น Interface การดูแลระบบและการกำหนดค่าหลักสำหรับ Cisco Unified Communications Manager คุณสามารถใช้ Cisco Unified CM Administration เพื่อกำหนดค่ารายการต่างๆ รวมถึง general system components, features, server settings, call routing rules, phones, end users, and media resources

- Configuration Menus (Cisco Unified CM Administration)



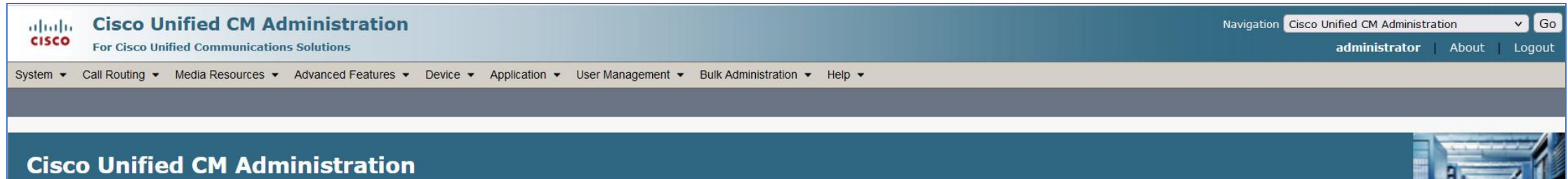
**System** — ใช้หน้าตาการกำหนดค่าภายใต้เมนูนี้เพื่อกำหนดการตั้งค่าระบบทั่วไป เช่น server information, NTP settings, Date and Time groups, Regions, DHCP, LDAP integration, และ enterprise parameters

**Call Routing** — ใช้หน้าตาการกำหนดค่าภายใต้แท็บนี้เพื่อกำหนดค่ารายการที่เกี่ยวข้องกับ Cisco Unified Communications Manager routes calls, รวมถึง route patterns, route groups, hunt pilots, dial rules, partitions, calling search spaces, directory numbers, and transformation patterns

**Media Resources** — ใช้หน้าตาการกำหนดค่าภายใต้แท็บนี้เพื่อกำหนดค่ารายการต่างๆ เช่น media resource groups, conference bridges, annunciators, และ transcoders

**Advanced Features** — ใช้หน้าตาการกำหนดค่าภายใต้แท็บนี้เพื่อกำหนดค่าคุณลักษณะต่างๆ เช่น voice-mail pilots, message waiting และ call control agent profiles

- Configuration Menus (Cisco Unified CM Administration)



**Device** — ใช้หน้าต่าการกำหนดค่าภายใต้แท็บนี้เพื่่อตั้งค่าอุปกรณ์ เช่น phones, IP phone services, trunks, gateways, softkey templates และ SIP profiles

**Application** — ใช้หน้าต่าการกำหนดค่าภายใต้แท็บนี้เพื่่อ download และ install plug-ins เช่น Cisco Unified JTAPI, Cisco Unified TAPI และ Cisco Unified Real-Time Monitoring Tool

**User Management** — ใช้หน้าต่าการกำหนดค่าใต้แท็บ User Management เพื่่อกำหนดค่า end user และ application users สำหรับระบบ

**Bulk Administration** — ใช้ Bulk Administration Tool เพื่่อ import และ configure end users หรือ devices จำนวนมาก ๆ ในแต่ละครั้ง

**Help** — คลิกเมนูนี้เพื่่อเข้าถึงระบบวิธีใช้ออนไลน์ ระบบช่วยเหลือออนไลน์ประกอบด้วยเอกสารที่ จะช่วยในการกำหนดการตั้งค่า สำหรับหน้าต่าการกำหนดค่าต่าง ๆ ในระบบ

- Navigation (Cisco Unified Reporting)

**Cisco Unified Reporting**  
For Cisco Unified Communications Solutions

Navigation Cisco Unified Reporting Go

administrator | About | Logout

System Reports Help

## Cisco Unified Reporting

System version: 12.5.1.13900-152

User administrator last logged in to this cluster on Saturday, July 1, 2023 2:50:36 PM ICT, to node 10.230.1.21, from 10.252.0.133 using HTTPS

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เว็บแอปพลิเคชันสร้างรายงานรวมสำหรับการแก้ไขปัญหาหรือตรวจสอบข้อมูลคลัสเตอร์



- Navigation (Disaster Recovery System)

The screenshot shows the web interface for the Disaster Recovery System. At the top left is the Cisco logo and the text "Disaster Recovery System For Cisco Unified Communications Solutions". On the top right, there is a navigation menu with "Disaster Recovery System" selected, a "Go" button, and the user "administrator" with links for "About" and "Logout". Below the navigation bar are dropdown menus for "Backup", "Restore", and "Help". The main content area has a dark blue header with the title "Disaster Recovery System", the system version "12.5.1.13900-152", and the VMware installation details: "4 vCPU@ Intel(R) Xeon(R) Gold 6132 CPU @ 2.60GHz, disk 1: 110Gbytes, 8192Mbytes RAM, Partitions aligned". To the right of this text is an image of a server room. Below the header, a message states: "User administrator last logged in to this cluster on Thursday, June 8, 2023 4:41:59 PM UTC, to node 10.230.1.21, from 10.230.1.21 using HTTPS". At the bottom, there is a copyright notice for Cisco Systems, Inc. (1999-2020), a disclaimer about cryptographic features, and a link to the "Export Compliance Product Report" website.

Disaster Recovery System ช่วยให้สามารถทำการสำรองข้อมูลโดยอัตโนมัติตามเวลาที่กำหนดหรือตามที่ใช้เรียกใช้



- Navigation (Cisco Unified Serviceability)

**Cisco Unified Serviceability**  
For Cisco Unified Communications Solutions

Navigation: Cisco Unified Serviceability [Go]

administrator | About | Logout

Alarm | Trace | Tools | Snmp | CallHome | Help

## Cisco Unified Serviceability

System version: 12.5.1.13900-152

VMware Installation: 4 vCPU Intel(R) Xeon(R) Gold 6132 CPU @ 2.60GHz, disk 1: 110Gbytes, 8192Mbytes RAM, Partitions aligned

User administrator last logged in to this cluster on Saturday, July 1, 2023 3:41:39 PM ICT, to node 10.230.1.21, from 10.252.0.133 using HTTPS

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เครื่องมือแก้ไขปัญหาวงเว็บที่ให้บริการ การแจ้งเตือน และเครื่องมือต่างๆ ที่ช่วยผู้ดูแลระบบในการจัดการระบบ

- Navigation (Cisco Unified OS Administration)

**Cisco Unified Operating System Administration**  
For Cisco Unified Communications Solutions

Navigation: Cisco Unified OS Administration Go

administrator | About | Logout

Show Settings Security Software Upgrades Services Help

**Cisco Unified Operating System Administration**  
System version: 12.5.1.13900-152  
VMware Installation: 4 vCPU Intel(R) Xeon(R) Gold 6132 CPU @ 2.60GHz, disk 1: 110Gbytes, 8192Mbytes RAM, Partitions aligned

User administrator last logged in to this cluster on Saturday, July 1, 2023 3:52:01 PM UTC, to node 10.230.1.21, from 10.252.0.133 using HTTPS

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ช่วยให้คุณสามารรถดำเนินการดูแลระบบเหล่านี้ได้: ตรวจสอบสถานะซอฟต์แวร์และฮาร์ดแวร์, ตรวจสอบและอัปเดต IP Address, Ping อุปกรณ์เครือข่ายอื่นๆ, จัดการ Server NTP, Upgrade system software และ options, จัดการความปลอดภัยของ Node รวมถึง IPsec และ certificates, Manage remote support accounts, รีเซ็ตระบบ

- Navigation (Cisco Unified IM and Presence Reporting)

**Cisco Unified IM and Presence Reporting**  
For Cisco Unified Communications Solutions

Navigation Cisco Unified IM and Presence Reporting Go

administrator | About | Logout

System Reports Help

## Cisco Unified IM and Presence Reporting

System version: 12.5.1.13900-17

User administrator last logged in to this cluster on Monday, April 17, 2023 7:21:04 AM ICT, to node 10.230.1.22, from 10.230.2.22 using HTTPS

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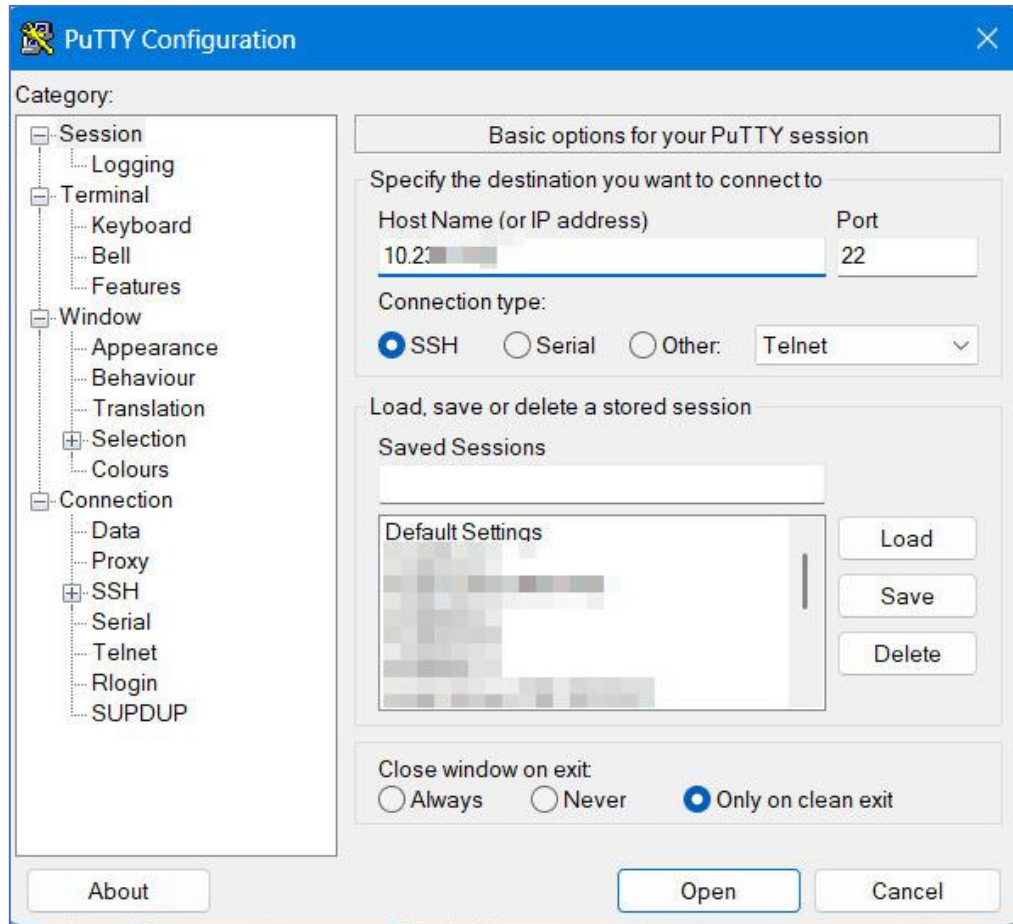
A summary of U.S. laws governing Cisco cryptographic products may be found at our Export Compliance Product Report web site.

For information about Cisco Unified CM IM and Presence please visit our [IM and Presence Documentation](#) web site.

For Cisco Technical Support please visit our [Technical Support](#) web site.

เว็บแอปพลิเคชัน Cisco Unified Reporting ซึ่งเข้าถึงได้ที่คอนโซล Cisco Unified Communications Manager และ Cisco Unified Communications Manager IM and Presence Service สร้างรายงานรวมสำหรับการแก้ไขปัญหาหรือตรวจสอบข้อมูล Cluster

- Accessing the Administration CLI



- Log in using platform administrator account

login as: administrator

administrator@10.230.1.21's password:

Command Line Interface is starting up, please wait ...

Welcome to the Platform Command Line Interface

VMware Installation:

4 vCPU: Intel(R) Xeon(R) Gold 6132 CPU @ 2.60GHz

Disk 1: 110GB, Partitions aligned

8192 Mbytes RAM

admin:



- Accessing the Administration CLI

```
admin:?  
  help  
  quit  
  show*  
  set*  
  delete*  
  unset*  
  file*  
  utils*  
  run*  
admin:utils ?  
  utils reset_ui_administrator_password  
  utils reset_ui_administrator_name  
  utils iothrottle*  
  utils network*  
  utils ntp*  
  utils service*  
  utils system*  
  utils remote_account*  
  utils disaster_recovery*  
admin:show ?  
  show status  
  show logins  
  show hardware  
  show workingdir  
  show web-security  
  show smtp  
  show myself  
  show account  
  show registry  
  show trace  
  show ups*  
  show environment*  
  show memory*  
  show open*  
  show timezone*  
  show cert*  
  show ipsec*  
  show version*  
  show packages*
```

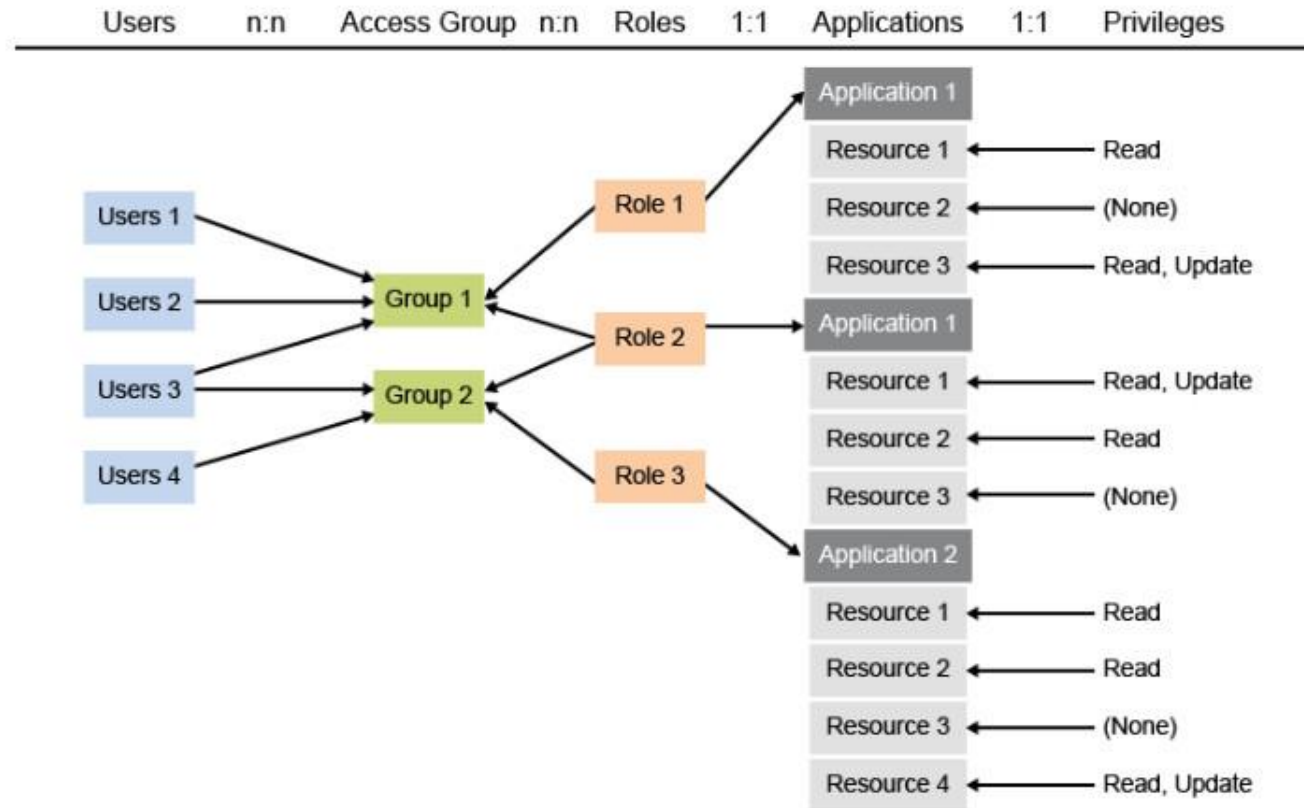
- Accessing the Administration CLI

## Allows platform administrators to complete these tasks:

- Display platform information such as, product version, CPU, memory, disk usage, platform hardware, serial number, etc.
- Display network, process, and load information
- Configure additional platform administrator accounts
- Change platform administrator account and security passwords
- Perform disaster recovery tasks
- Use tools such as ping, traceroute, and packet capture
- Change network configuration settings
- Start, stop, and restart services
- Perform system restarts, shutdowns, and switch versions

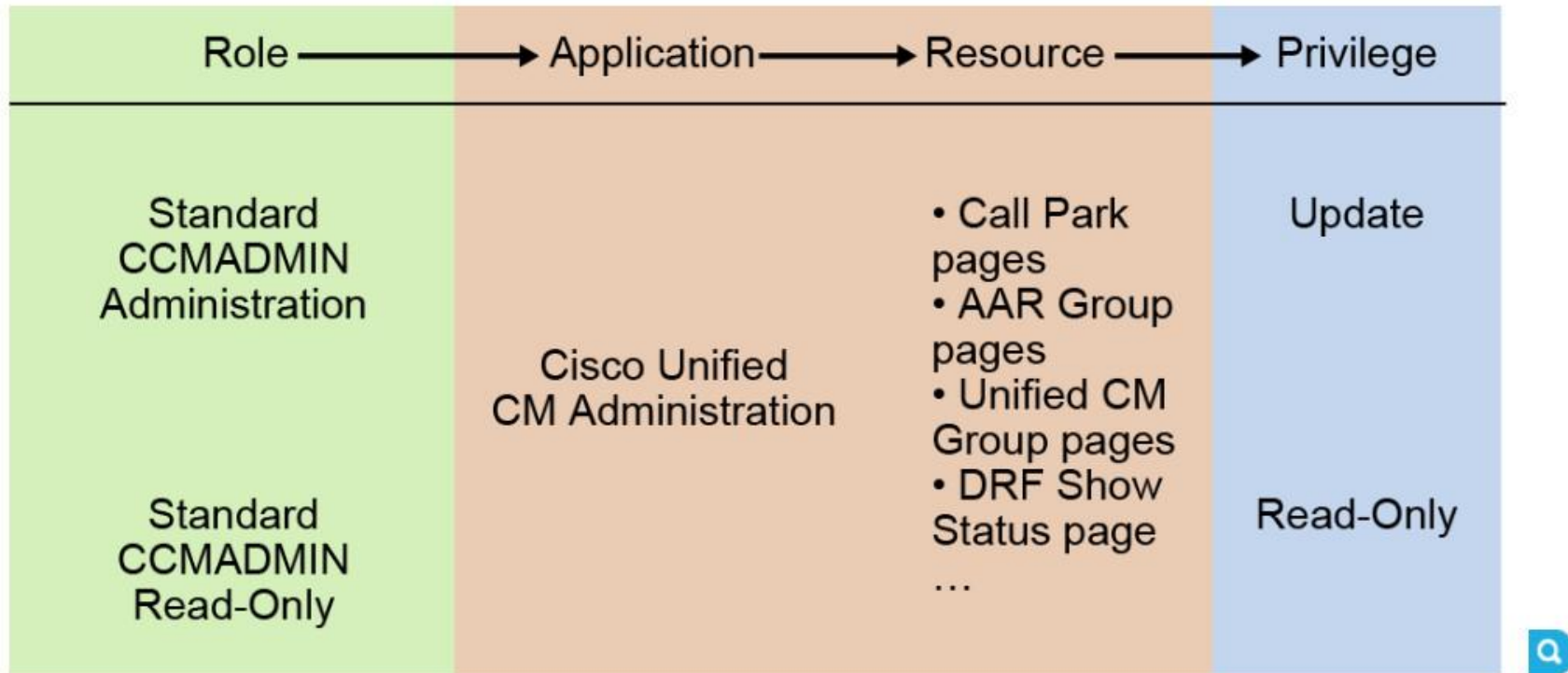
- User Access Overview

You can manage user access to Cisco Unified Communications Manager by assigning your end users to access control groups that are associated with roles.



- Roles Overview

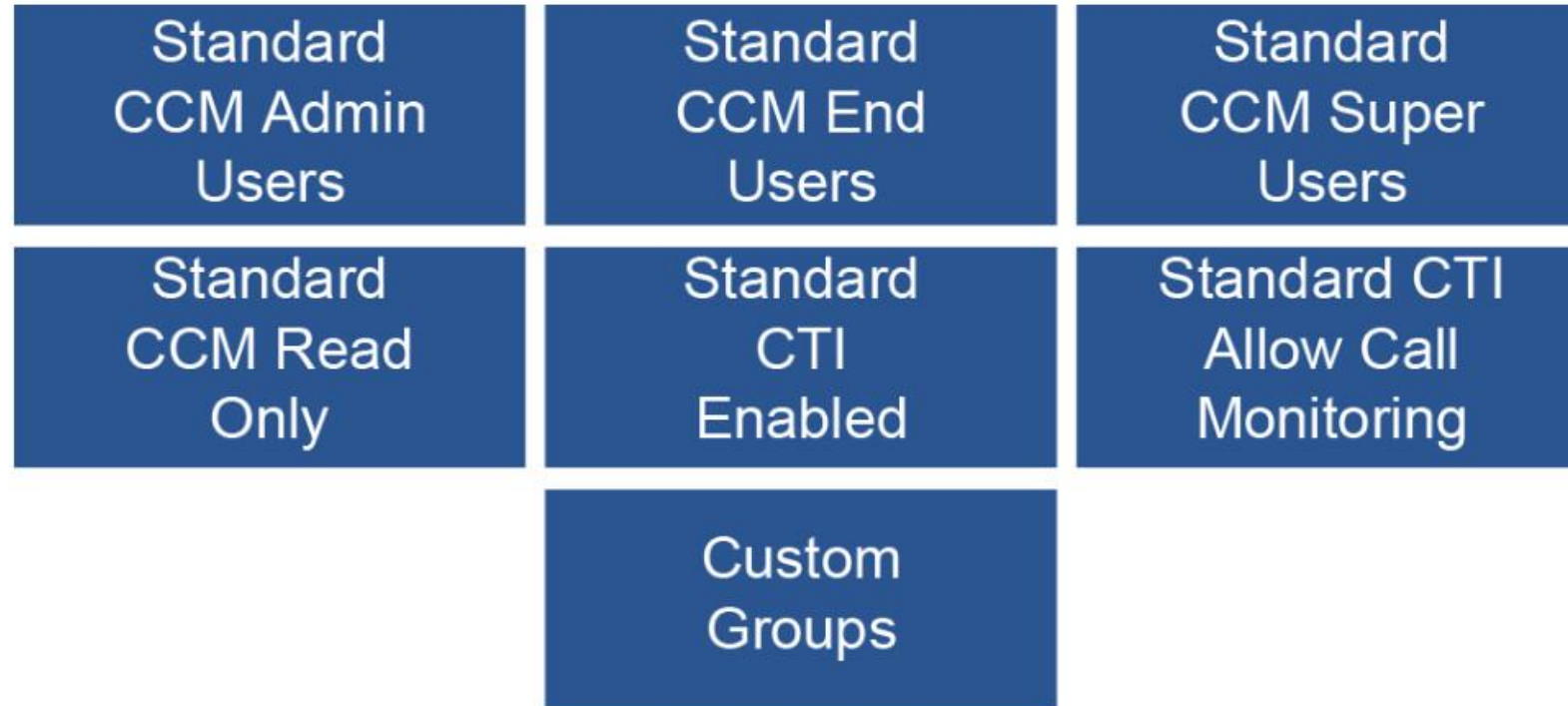
Before provisioning end users for your system, be sure to review the standard roles and access control groups that are configured by default on a system installation. You must decide if the standard roles meet your deployment needs or if you must create new roles and new access control groups.





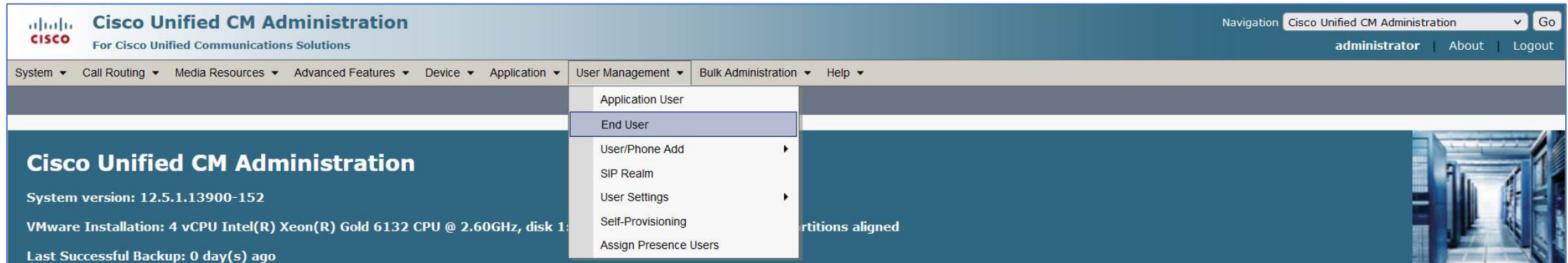
- Access Control Groups

You can use access control groups along with roles to quickly assign network access permissions to a group of users with similar access requirements.

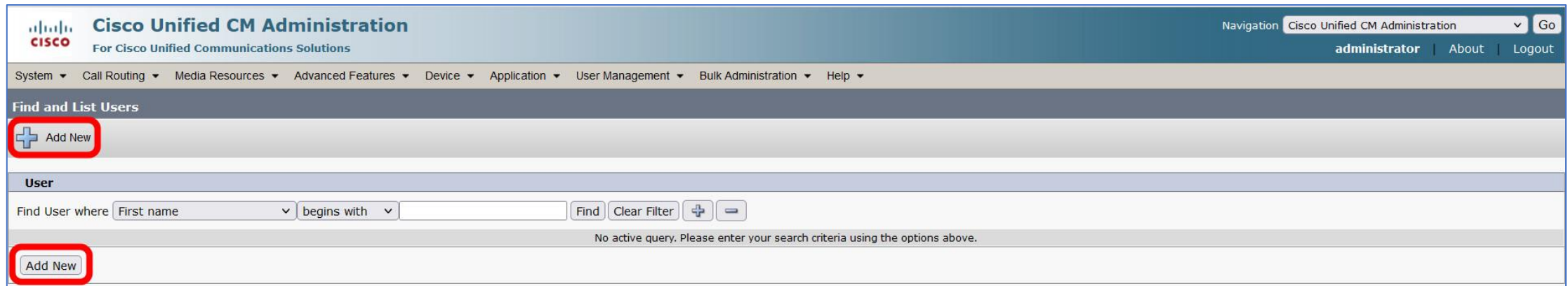


# Create User for login Cisco Unified Communications Manager

- Create User for login Cisco Unified Communications Manager



- เลือก User Management > End User



- เลือก Add New

# Create User for login Cisco Unified Communications Manager

The screenshot shows the Cisco Unified CM Administration interface. At the top, there is a navigation bar with the Cisco logo and the text "Cisco Unified CM Administration For Cisco Unified Communications Solutions". Below this is a menu bar with options: System, Call Routing, Media Resources, Advanced Features, Device, and Application. The main content area is titled "End User Configuration". A "Save" button is highlighted with a red box. Below the "Save" button is a "Status" section showing "Status: Ready". The "User Information" section contains several fields, with a red box highlighting the "User ID\*", "Password", "Confirm Password", "PIN", "Confirm PIN", and "Last name\*" fields. The "User ID\*" field contains the value "userrg01". The "Password" and "Confirm Password" fields contain six dots. The "PIN" and "Confirm PIN" fields contain six dots. The "Last name\*" field contains the value "userrg01".

| User Status          | Enabled Local User |
|----------------------|--------------------|
| User ID*             | userrg01           |
| Password             | ••••••             |
| Confirm Password     | ••••••             |
| Self-Service User ID |                    |
| PIN                  | ••••••             |
| Confirm PIN          | ••••••             |
| Last name*           | userrg01           |
| Middle name          |                    |

- ใส่ข้อมูลดังนี้
  - User ID\*
  - Password
  - Confirm Password
  - PIN
  - Confirm PIN
  - Last name\*
  - เลือก Save

The screenshot shows the Cisco Unified CM Administration interface. At the top, there is a navigation menu with options: System, Call Routing, Media Resources, Advanced Features, Device, Application, User Management, and Bulk. Below the navigation menu is the "End User Configuration" section. In this section, there are three buttons: "Save" (with a floppy disk icon), "Delete" (with a red X icon), and "Add New" (with a plus icon). The "CAPF Information" section contains a text box for "Associated CAPF Profiles" and a "View Details" link. The "Permissions Information" section contains two text boxes: "Groups" and "Roles", each with a "View Details" link. To the right of the "Groups" text box, there are two buttons: "Add to Access Control Group" (highlighted with a red circle) and "Remove from Access Control Group".

- เลือก Add to Access Control Group



# Create User for login Cisco Unified Communications Manager

**Find and List Access Control Groups**

**Access Control Group**

Find Access Control Group where Name begins with  **Find** Clear Filter + -

No active query. Please enter your search criteria using the options above.

- เลือก Find

# Create User for login Cisco Unified Communications Manager

**Find and List Access Control Groups**

Select All Clear All **Add Selected** Close

**Status**  
31 records found

**Access Control Group (1 - 31 of 31)** Rows per Page 50

Find Access Control Group where Name begins with Find Clear Filter

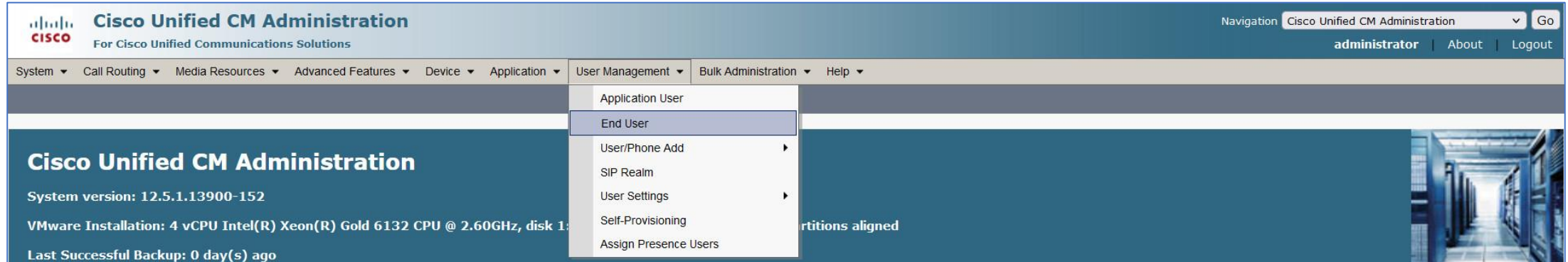
| <input type="checkbox"/> | Name                                | Rank |
|--------------------------|-------------------------------------|------|
| <input type="checkbox"/> | AXL Access                          | 1    |
| <input type="checkbox"/> | Admin-3rd Party API                 | 1    |
| <input type="checkbox"/> | Application Client Users            | 1    |
| <input type="checkbox"/> | MOI Standart User Group             | 1    |
| <input type="checkbox"/> | Standard Audit Users                | 1    |
| <input type="checkbox"/> | Standard CAR Admin Users            | 1    |
| <input type="checkbox"/> | Standard CCM Admin Users            | 1    |
| <input type="checkbox"/> | Standard CCM End Users              | 1    |
| <input type="checkbox"/> | Standard CCM Gateway Administration | 1    |
| <input type="checkbox"/> | Standard CCM Phone Administration   | 1    |
| <input type="checkbox"/> | Standard CCM Read Only              | 1    |
| <input type="checkbox"/> | Standard CCM Server Maintenance     | 1    |
| <input type="checkbox"/> | Standard CCM Server Monitoring      | 1    |
| <input type="checkbox"/> | Standard CCM Super Users            | 1    |
| <input type="checkbox"/> | Standard CTI Allow Call Monitoring  | 1    |

- เลือก Access Control Group ที่ปรากฏขึ้น เช่น กรณีที่ต้องการให้ User สามารถดูข้อมูลได้อย่างเดียวให้เลือก Standard CCM Read Only และเลือก Add Selected

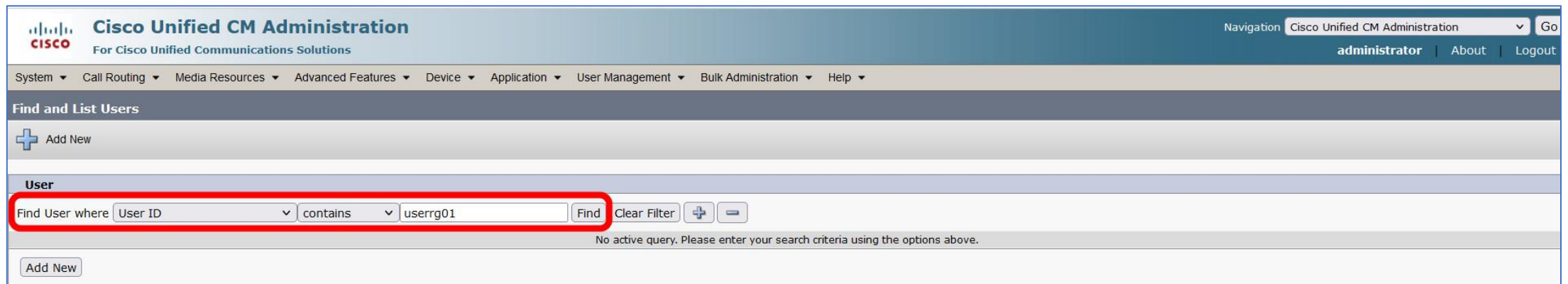
The screenshot shows the Cisco Unified CM Administration interface. At the top, there is a navigation menu with options like System, Call Routing, Media Resources, Advanced Features, Device, Application, and User Management. Below this is the 'End User Configuration' section. In this section, there are three buttons: 'Save' (highlighted with a red circle), 'Delete', and 'Add New'. Below the buttons, there are two main sections: 'CAPF Information' and 'Permissions Information'. The 'CAPF Information' section has a text input field for 'Associated CAPF Profiles' and a 'View Details' link. The 'Permissions Information' section has a 'Groups' field containing 'Standard CCM Read Only', a 'Roles' field, and two buttons: 'Add to Access Control Group' and 'Remove from Access Control Group'. There are also 'View Details' links for both the Groups and Roles fields.

- เลือก Save และทดสอบ login Cisco Unified Communications Manager ด้วย User ที่สร้าง

# Delete User for login Cisco Unified Communications Manager



- เลือก User Management > End User



- ใส่ User ที่ต้องการลบและเลือก Find



# Delete User for login Cisco Unified Communications Manager

The screenshot shows the Cisco Unified CM Administration interface. At the top, there is a navigation bar with the Cisco logo and the text "Cisco Unified CM Administration For Cisco Unified Communications Solutions". On the right, it says "Navigation Cisco Unified CM Administration Go" and "administrator | About | Logout". Below this is a menu bar with options: System, Call Routing, Media Resources, Advanced Features, Device, Application, User Management, Bulk Administration, and Help.

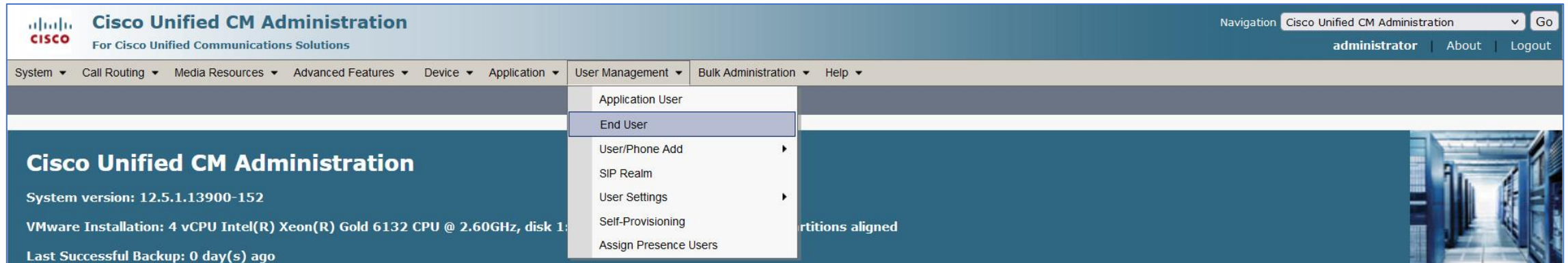
The main section is titled "Find and List Users". It contains several buttons: "Add New", "Select All", "Clear All", and "Delete Selected". The "Delete Selected" button is highlighted with a red circle. Below this is a "Status" section that says "1 records found".

Below the status section is a table with the following columns: User ID, Meeting Number, First Name, Last Name, Department, Directory URI, User Status, and User Rank. The table contains one row with the following data: User ID: userrg01, Meeting Number: (empty), First Name: (empty), Last Name: userrg01, Department: (empty), Directory URI: (empty), User Status: Enabled Local User, User Rank: 1. The "Delete Selected" button is also highlighted with a red circle.

At the bottom of the table, there are buttons: "Add New", "Select All", "Clear All", and "Delete Selected".

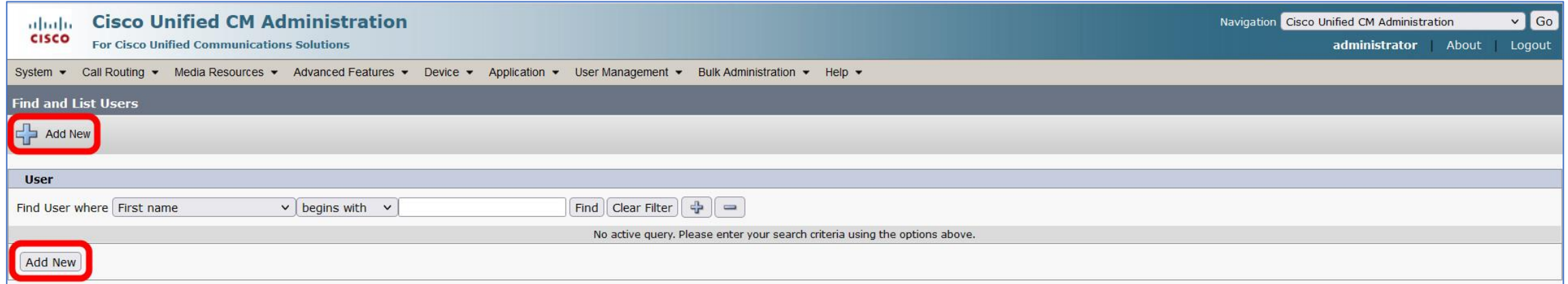
- เลือก User ที่ต้องการลบและเลือก Delete Selected

# Create User for login Application



The screenshot shows the Cisco Unified CM Administration web interface. The top navigation bar includes the Cisco logo, the title "Cisco Unified CM Administration", and the subtitle "For Cisco Unified Communications Solutions". On the right, there is a "Navigation" dropdown menu set to "Cisco Unified CM Administration" and a "Go" button. Below the navigation bar, there is a menu with options: System, Call Routing, Media Resources, Advanced Features, Device, Application, User Management, Bulk Administration, and Help. The "User Management" menu is expanded, showing sub-options: Application User, End User (highlighted), User/Phone Add, SIP Realm, User Settings, Self-Provisioning, and Assign Presence Users. The main content area displays "Cisco Unified CM Administration" with system version "12.5.1.13900-152" and other system information. A "partitions aligned" message is visible on the right side of the main content area.

- เลือก User Management > End User



The screenshot shows the "Find and List Users" section of the Cisco Unified CM Administration interface. The top navigation bar is the same as in the previous screenshot. Below the navigation bar, there is a "Find and List Users" section. On the left side of this section, there is a red-bordered button with a plus sign and the text "Add New". Below this, there is a "User" section with a search form. The search form has a "Find User where" label, a dropdown menu for "First name", a dropdown menu for "begins with", and a text input field. There are "Find", "Clear Filter", and two small icons (plus and minus) next to the input field. Below the search form, there is a message: "No active query. Please enter your search criteria using the options above." At the bottom of the search form, there is another red-bordered button with the text "Add New".

- เลือก Add New

# Create User for login Application

The screenshot shows the Cisco Unified CM Administration interface for creating a user. The 'Save' button is highlighted with a red circle. The 'User Information' section contains several fields, with a red box highlighting the 'User ID\*', 'Password', 'Confirm Password', 'PIN', 'Confirm PIN', 'Last name\*', and 'Telephone Number' fields. The 'Telephone Number' field is also highlighted with a red circle.

| User Status          | Enabled Local User |
|----------------------|--------------------|
| User ID*             | u90000             |
| Password             | ••••               |
| Confirm Password     | ••••               |
| Self-Service User ID |                    |
| PIN                  | ••••               |
| Confirm PIN          | ••••               |
| Last name*           | 90000              |
| Middle name          |                    |
| First name           |                    |
| Display name         |                    |
| Title                |                    |
| Directory URI        |                    |
| Telephone Number     | 90000              |
| Home Number          |                    |

- ใส่ข้อมูลดังนี้
  - User ID\*
  - Password
  - Confirm Password
  - PIN
  - Confirm PIN
  - Last name\*
  - Telephone Number

# Create User for login Application

The screenshot shows the Cisco Unified CM Administration web interface. At the top, there is a navigation menu with options: System, Call Routing, Media Resources, Advanced Features, Device, Application, User Management, Bulk Administration, and Help. Below this is the 'End User Configuration' section. A 'Save' button is highlighted with a red circle. The 'Service Settings' section is also highlighted with a red border and contains the following configuration options:

- Home Cluster
  - Enable User for Unified CM IM and Presence (Configure IM and Presence in the associated UC Service Profile)
    - Include meeting information in presence(Requires Exchange Presence Gateway to be configured on CUCM IM and Presence server)
- UC Service Profile: COPI-ServiceProfile (dropdown menu) [View Details](#)

- Service Settings เลือกข้อมูลดังนี้
  - Home Cluster
  - Enable User for Unified CM IM and Presence (Configure IM and Presence in the associated UC Service Profile)
  - UC Service Profile
- เลือก Save



# Create User for login Application

The screenshot displays the Cisco Unified CM Administration web interface. At the top, the navigation menu includes System, Call Routing, Media Resources, Advanced Features, Device, Application, User Management, and Bulk. The main section is titled "End User Configuration" and contains three primary areas:

- CAPF Information:** Includes a field for "Associated CAPF Profiles" and a "View Details" link.
- Permissions Information:** Contains two main sections:
  - Groups:** A list box for selecting groups, with a "View Details" link and two buttons: "Add to Access Control Group" (highlighted with a red circle) and "Remove from Access Control Group".
  - Roles:** A list box for selecting roles, with a "View Details" link.

- เลือก Add to Access Control Group

# Create User for login Application

Find and List Access Control Groups

**Access Control Group**

Find Access Control Group where Name begins with  **Find** Clear Filter + -

No active query. Please enter your search criteria using the options above.

- เลือก Find

# Create User for login Application

**Find and List Access Control Groups**

Select All Clear All **Add Selected** Close

**Status**  
31 records found

**Access Control Group (1 - 31 of 31)** Rows per Page 50

Find Access Control Group where Name begins with Find Clear Filter

|                          | Name ^                              | Rank |
|--------------------------|-------------------------------------|------|
| <input type="checkbox"/> | AXL Access                          | 1    |
| <input type="checkbox"/> | Admin-3rd Party API                 | 1    |
| <input type="checkbox"/> | Application Client Users            | 1    |
| <input type="checkbox"/> | MOI Standart User Group             | 1    |
| <input type="checkbox"/> | Standard Audit Users                | 1    |
| <input type="checkbox"/> | Standard CAR Admin Users            | 1    |
| <input type="checkbox"/> | Standard CCM Admin Users            | 1    |
| <input type="checkbox"/> | Standard CCM End Users              | 1    |
| <input type="checkbox"/> | Standard CCM Gateway Administration | 1    |
| <input type="checkbox"/> | Standard CCM Phone Administration   | 1    |
| <input type="checkbox"/> | Standard CCM Read Only              | 1    |
| <input type="checkbox"/> | Standard CCM Server Maintenance     | 1    |
| <input type="checkbox"/> | Standard CCM Server Monitoring      | 1    |
| <input type="checkbox"/> | Standard CCM Super Users            | 1    |
| <input type="checkbox"/> | Standard CTI Allow Call Monitoring  | 1    |

- Access Control Group ให้เลือก MOI Standart User Group และเลือก Add Selected

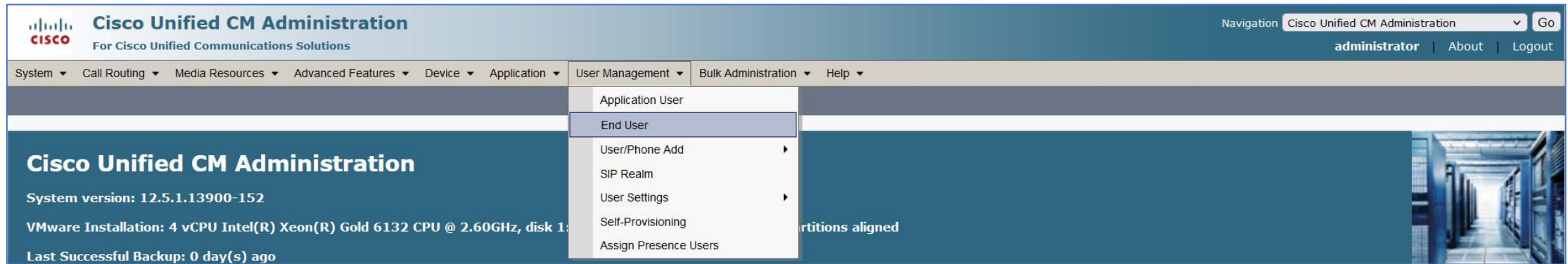
# Create User for login Application

The screenshot shows the Cisco Unified CM Administration interface. At the top, there is a navigation menu with options: System, Call Routing, Media Resources, Advanced Features, Device, Application, and User Management. Below this is the 'End User Configuration' section. In this section, there are three buttons: 'Save' (highlighted with a red circle), 'Delete' (with a red X icon), and 'Add New' (with a plus icon). Below the buttons, there are two main sections: 'CAPF Information' and 'Permissions Information'. The 'CAPF Information' section has a text area for 'Associated CAPF Profiles' and a 'View Details' link. The 'Permissions Information' section has a 'Groups' text area containing 'MOI Standart User Group', a 'Roles' text area, and two buttons: 'Add to Access Control Group' and 'Remove from Access Control Group'. There are also 'View Details' links for both the Groups and Roles sections.

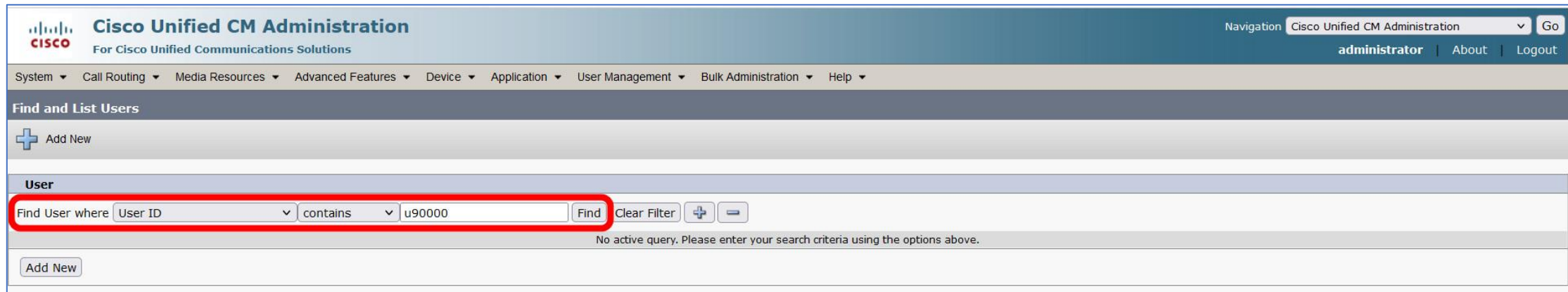
- เลือก Save



# Delete User for login Application



- ใส่ User ที่ต้องการลบและเลือก Find



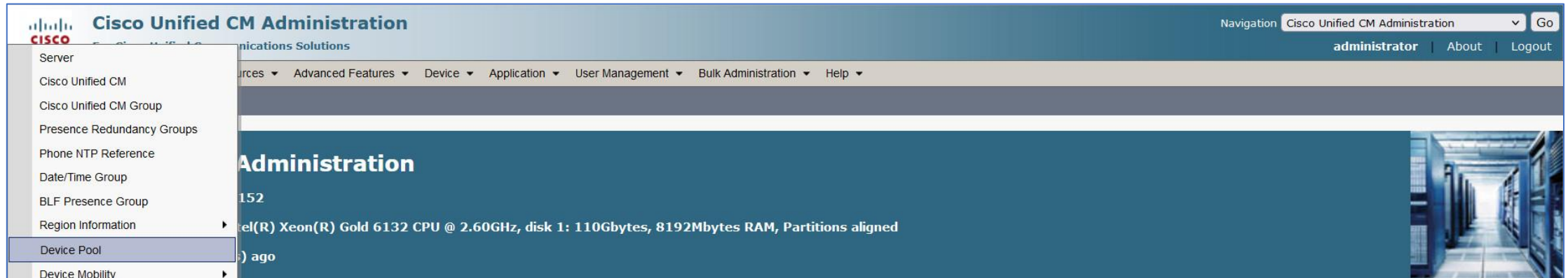
- ใส่ User ที่ต้องการลบและเลือก Find

# Delete User for login Application

The screenshot shows the Cisco Unified CM Administration interface. At the top, there is a navigation bar with the Cisco logo and the text "Cisco Unified CM Administration For Cisco Unified Communications Solutions". The user is logged in as "administrator". Below the navigation bar, there are several menu items: System, Call Routing, Media Resources, Advanced Features, Device, Application, User Management, Bulk Administration, and Help. The main content area is titled "Find and List Users". It contains a toolbar with buttons for "Add New", "Select All", "Clear All", and "Delete Selected". The "Delete Selected" button is highlighted with a red circle. Below the toolbar, there is a "Status" section indicating "1 records found". A search bar is present with the text "Find User where User ID contains u90000". Below the search bar, there is a table with the following columns: User ID, Meeting Number, First Name, Last Name, Department, Directory URI, User Status, and User Rank. The table contains one row with the following data: User ID: u90000, Meeting Number: (empty), First Name: (empty), Last Name: 90000, Department: (empty), Directory URI: (empty), User Status: Enabled Local User, and User Rank: 1. The "Delete Selected" button is also highlighted with a red circle. At the bottom of the table, there are buttons for "Add New", "Select All", "Clear All", and "Delete Selected".

- เลือก User ที่ต้องการลบและเลือก Delete Selected

- Device pools มีชุดการกำหนดค่าทั่วไปเช่น Cisco Unified Communications Manager Group, Date/Time Groups, Regions, Media Resource Group List และ SRST Reference ให้กับอุปกรณ์ต่างๆ เช่น phones, gateways, trunks และ CTI route points โดย Device Pool สามารถเข้าถึงได้จากเมนูดังนี้
- เลือก System > Device Pool



- เลือก Find

The screenshot shows the Cisco Unified CM Administration web interface. At the top, there is a navigation bar with the Cisco logo and the text 'Cisco Unified CM Administration For Cisco Unified Communications Solutions'. On the right, it shows 'Navigation Cisco Unified CM Administration' with a dropdown arrow and a 'Go' button. Below this, the user is logged in as 'administrator' with links for 'About' and 'Logout'. A main navigation menu includes 'System', 'Call Routing', 'Media Resources', 'Advanced Features', 'Device', 'Application', 'User Management', 'Bulk Administration', and 'Help'. The main content area is titled 'Find and List Device Pools' and contains an 'Add New' button with a plus icon. Below this is a section for 'Device Pool' with a search form. The form includes a dropdown for 'Device Pool Name', a dropdown for 'begins with', an empty search input field, and a 'Find' button which is circled in red. Other buttons in the search bar include 'Clear Filter', a plus icon, and a minus icon. Below the search bar, a message states: 'No active query. Please enter your search criteria using the options above.' At the bottom left of the search area, there is another 'Add New' button.



- เลือก Device Pool Name ที่ปรากฏ

The screenshot shows the Cisco Unified CM Administration interface. The top navigation bar includes the Cisco logo and the text "Cisco Unified CM Administration For Cisco Unified Communications Solutions". The user is logged in as "administrator". The main menu includes System, Call Routing, Media Resources, Advanced Features, Device, Application, User Management, Bulk Administration, and Help.

The "Find and List Device Pools" section is active. It includes buttons for "Add New", "Select All", "Clear All", and "Delete Selected". A status box indicates "7 records found".

The "Device Pool (1 - 7 of 7)" table is displayed with the following columns: Name, Cisco Unified CM Group, Region, Date/Time Group, and Copy. The table lists seven device pools, each with a checkbox for selection.

| <input type="checkbox"/> | Name ^                    | Cisco Unified CM Group  | Region                        | Date/Time Group         | Copy |
|--------------------------|---------------------------|-------------------------|-------------------------------|-------------------------|------|
| <input type="checkbox"/> | <a href="#">01-RG1-DP</a> | <a href="#">Default</a> | <a href="#">01-RG1-Region</a> | <a href="#">CMLocal</a> |      |
| <input type="checkbox"/> | <a href="#">02-AYA-DP</a> | <a href="#">Default</a> | <a href="#">02-AYA-Region</a> | <a href="#">CMLocal</a> |      |
| <input type="checkbox"/> | <a href="#">03-SUP-DP</a> | <a href="#">Default</a> | <a href="#">03-SUP-Region</a> | <a href="#">CMLocal</a> |      |
| <input type="checkbox"/> | <a href="#">04-SAR-DP</a> | <a href="#">Default</a> | <a href="#">04-SAR-Region</a> | <a href="#">CMLocal</a> |      |
| <input type="checkbox"/> | <a href="#">05-ATH-DP</a> | <a href="#">Default</a> | <a href="#">05-ATH-Region</a> | <a href="#">CMLocal</a> |      |
| <input type="checkbox"/> | <a href="#">06-SIB-DP</a> | <a href="#">Default</a> | <a href="#">06-SIB-Region</a> | <a href="#">CMLocal</a> |      |
| <input type="checkbox"/> | <a href="#">Default</a>   | <a href="#">Default</a> | <a href="#">Default</a>       | <a href="#">CMLocal</a> |      |

At the bottom of the table, there are buttons for "Add New", "Select All", "Clear All", and "Delete Selected".

- Device Pool Config ของ 02-AYA-DP

The screenshot displays the Cisco Unified CM Administration web interface for configuring a Device Pool. The page title is "Device Pool Configuration" and the device pool name is "02-AYA-DP" with 242 members. The interface is divided into three main sections: Status, Device Pool Information, and Device Pool Settings.

**Status:** Ready

**Device Pool Information:** Device Pool: 02-AYA-DP (242 members\*\*)

**Device Pool Settings:**

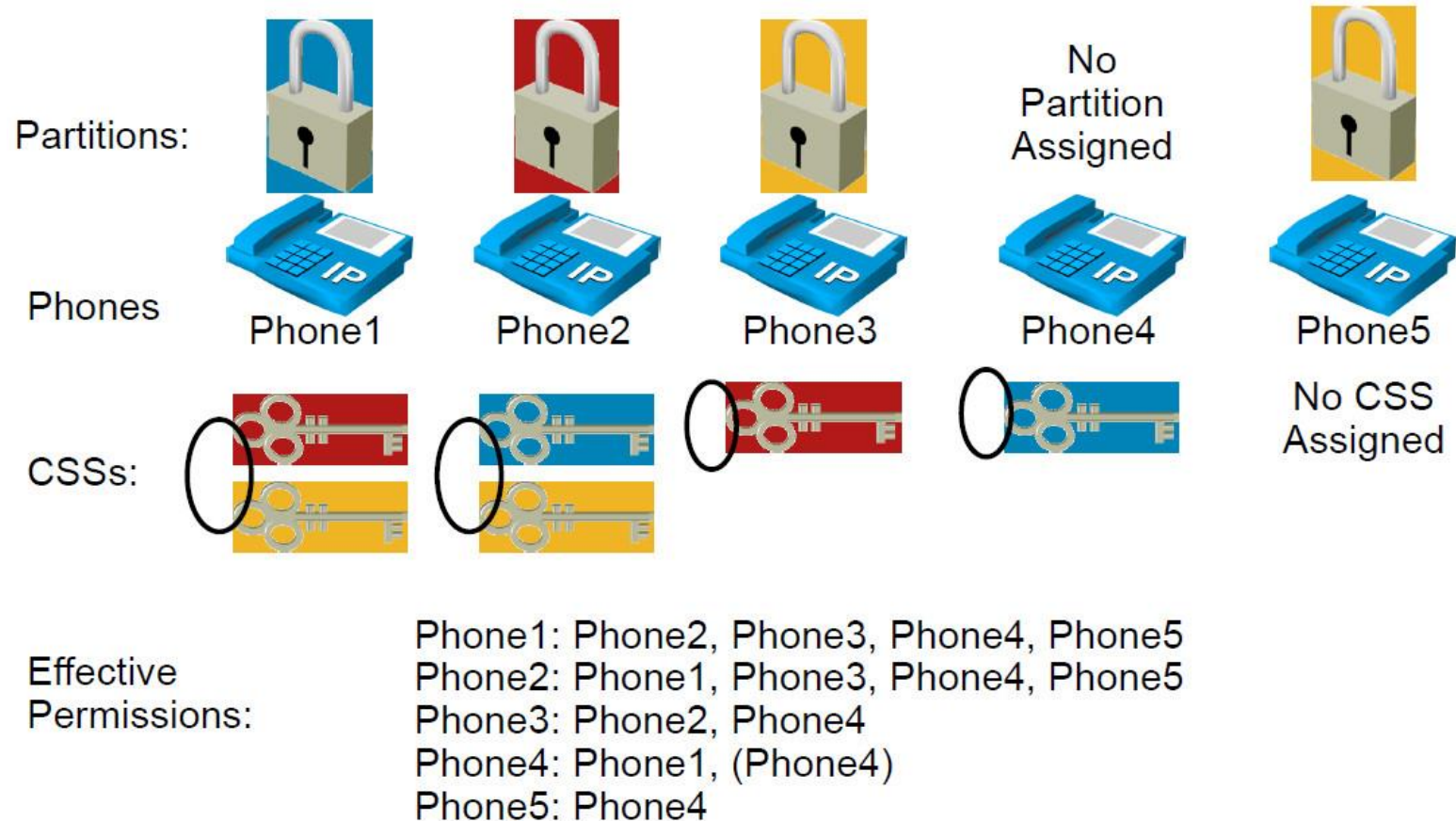
|   |           |
|---|-----------|
| Device Pool Name*                           | 02-AYA-DP |
| Cisco Unified Communications Manager Group* | Default   |
| Calling Search Space for Auto-registration  | < None >  |
| Adjunct CSS                                 | < None >  |
| Reverted Call Focus Priority                | Default   |
| Intercompany Media Services Enrolled Group  | < None >  |
| MRA Service Domain                          | < None >  |

**Roaming Sensitive Settings:**

|                                |               |
|--------------------------------|---------------|
| Date/Time Group*               | CMLocal       |
| Region*                        | 02-AYA-Region |
| Media Resource Group List      | 02-AYA-MRGL   |
| Location                       | < None >      |
| Network Locale                 | < None >      |
| SRST Reference*                | 02-AYA-SRST   |
| Connection Monitor Duration*** |               |

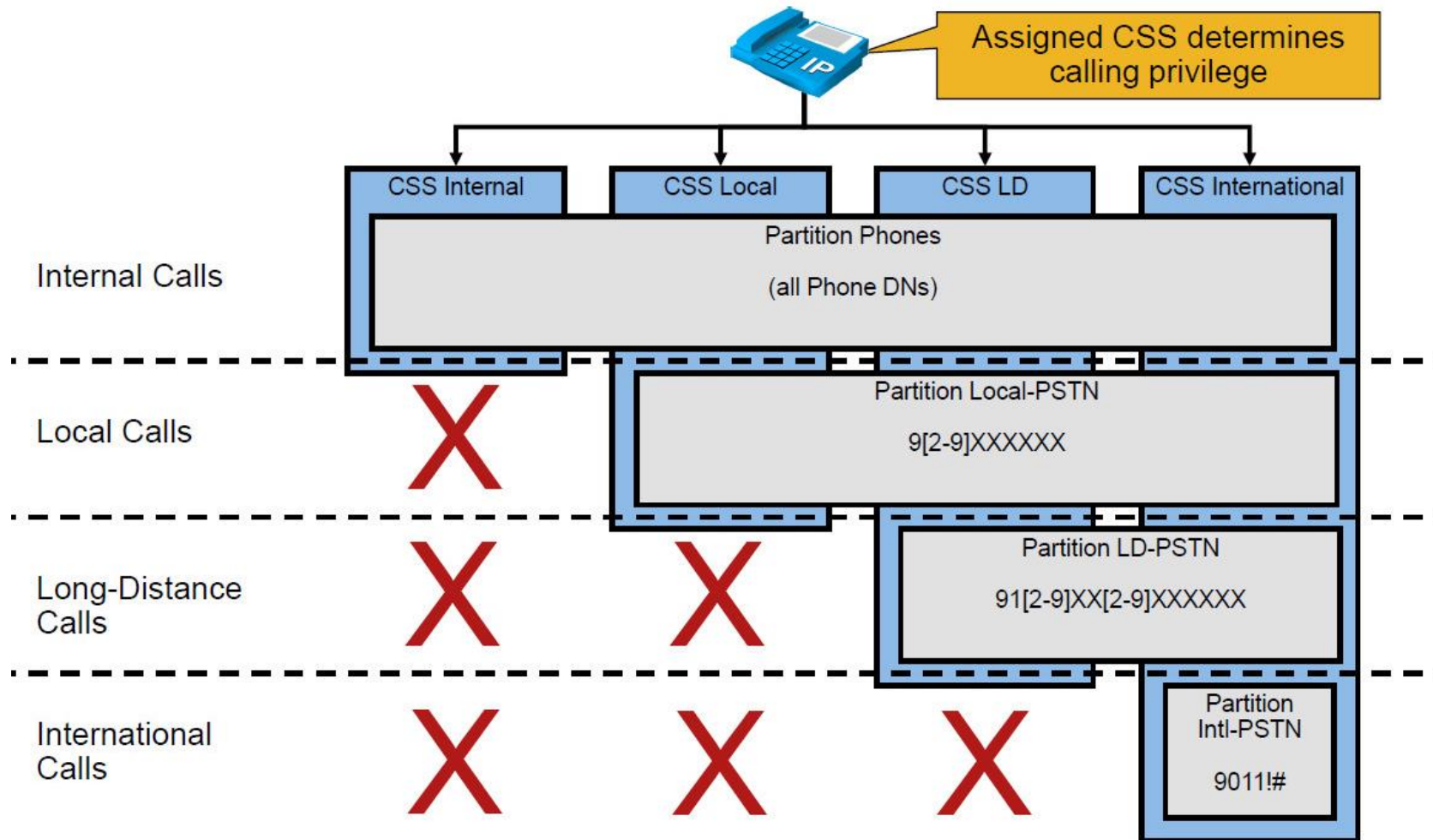
- A partition is a group of numbers with same reachability.
  - Any dialable patterns can be part of a partition (directory numbers, route patterns, translation patterns, voice-mail ports, Meet-Me conference numbers, etc.).
- Calling search space is a list of partitions and includes the partitions that are accessible by this CSS.
  - A device can call only those numbers located in the partitions that are part of its calling search space.
  - Assigned to any entity that can generate a call routing request, including phones, phone lines, gateways, and applications.

## ❖ Analogy: Locks and Key Rings





## ❖ Class of Service Sample Scenario

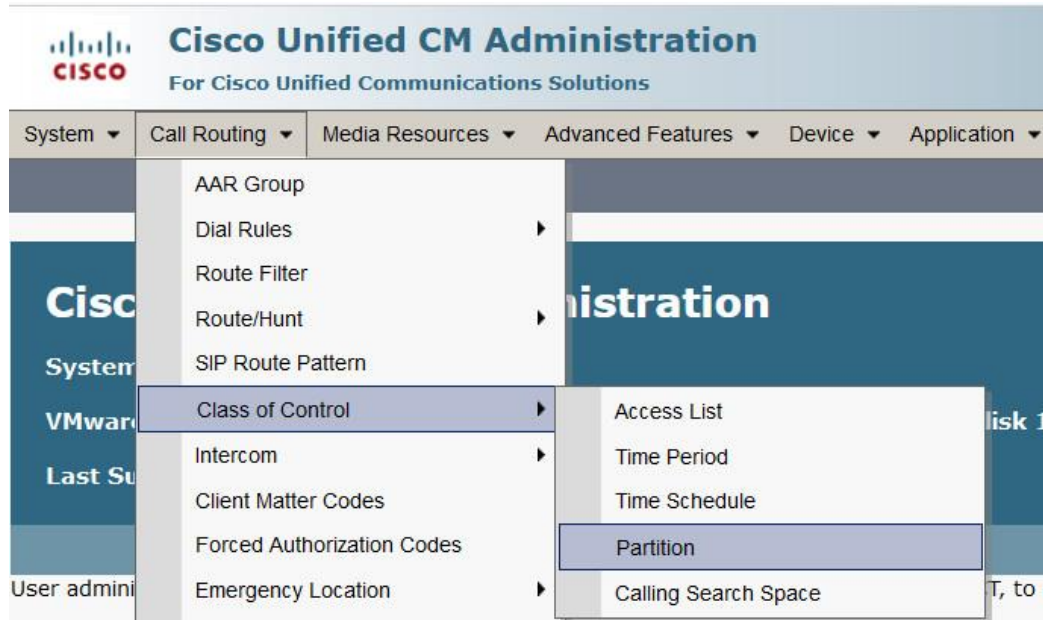


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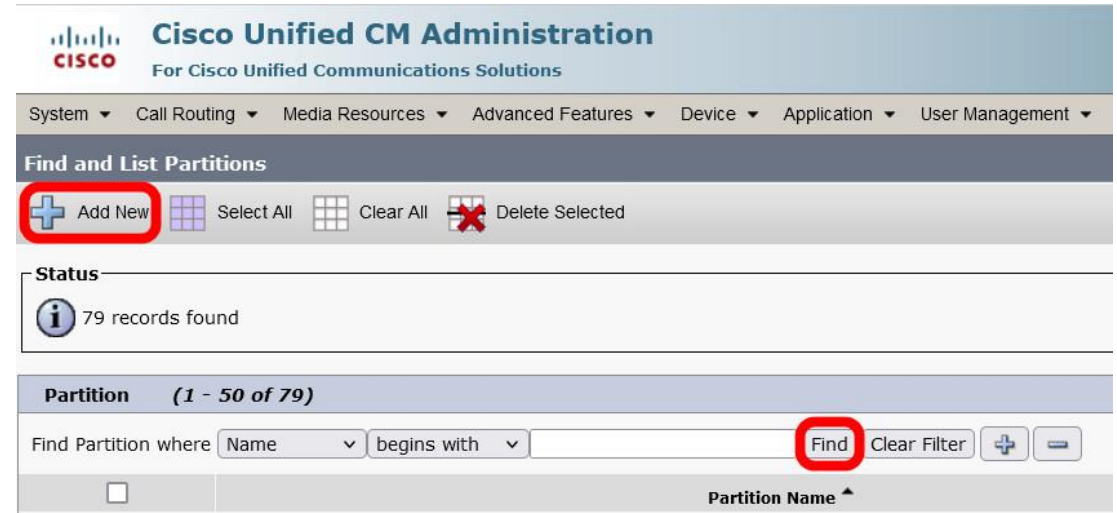
CIPT1 v6.0--2-154

- Create Partition

- เลือก Call Routing > Class of Control > Partition



- เลือก Find เพื่อตรวจสอบ Partition ที่มีและเลือก Add New



**Cisco Unified CM Administration**  
For Cisco Unified Communications Solutions

System ▾ Call Routing ▾ Media Resources ▾ Advanced Features ▾ Device ▾ Application ▾ User Management ▾

### Partition Configuration

Save

**Status**

Status: Ready

**Partition Information**

To enter multiple partitions, use one line for each partition entry. You can enter up to 75 partitions; the names and descriptions can have up to a total of 1475 characters. The partition name cannot exceed 50 characters. Use a comma (,) to separate the partition name and description on each line. If a description is not entered, Cisco Unified Communications Manager uses the partition name as the description. For example:  
<< partitionName >> , << description >>  
CiscoPartition, Cisco employee partition  
DallasPartition

Name\*

Save

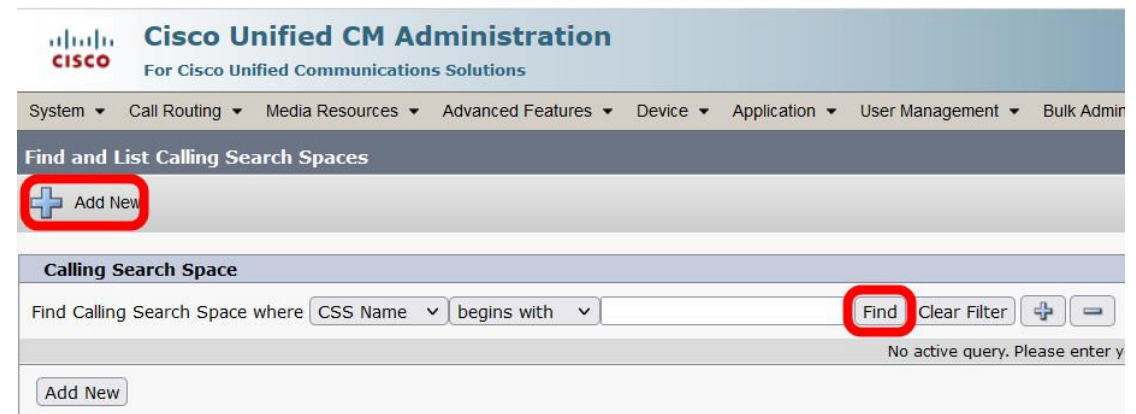
\*- indicates required item.

- ใส่ชื่อ Partition

- Create Calling Search Space

- เลือก Call Routing > Class of Control > Calling Search Space

- เลือก Find เพื่อตรวจสอบ Calling Search Space ที่มีและเลือก Add New



**Cisco Unified CM Administration**  
For Cisco Unified Communications Solutions

System ▾ Call Routing ▾ Media Resources ▾ Advanced Features ▾ Device ▾ Application ▾

### Calling Search Space Configuration

**Save**

**Status**  
Status: Ready

**Calling Search Space Information**

Name\* 02\_AYA\_Communication\_CSS  
Description

**Route Partitions for this Calling Search Space**

Available Partitions\*\*  
06\_SIB\_ViceGovernor2\_PT  
06\_SIB\_ViceGovernor3\_PT  
07\_COPI\_Local\_PT  
AYA\_Communication\_PT  
Directory URI

Selected Partitions

- Name\*: ใส่ชื่อของ Calling Search Space
- Available Partitions\*\*: Partition ที่มีอยู่ในระบบ
- Selected Partitions: Partition ที่เลือกใช้
- เลือก Save

**Route Partitions for this Calling Search Space**

Available Partitions\*\*  
04\_SAR\_Governor\_PT  
04\_SAR\_International\_PT  
04\_SAR\_Local\_PT  
04\_SAR\_Mobile\_PT  
04\_SAR\_Transform\_PT

Selected Partitions  
AYA\_Communication\_PT  
Internal\_PT

**Save**



## ❖ Gateway Protocols

- เกตเวย์ของ Cisco ส่วนใหญ่มีตัวเลือกการปรับใช้หลายตัวและสามารถปรับใช้ได้โดยใช้โปรโตคอลตัวใดตัวหนึ่ง ขึ้นอยู่กับเกตเวย์ที่คุณต้องการปรับใช้ เกตเวย์ของคุณอาจกำหนดค่าได้โดยใช้โปรโตคอลการสื่อสารใดๆ ต่อไปนี้:
  - Media Gateway Control Protocol (MGCP)
  - Skinny Call Control Policy (SCCP)
  - Session Initiation Protocol (SIP)
  - H.323
- Vendor Interface Cards

ต้องติดตั้ง Vendor Interface Card (VIC) บนเกตเวย์เพื่อให้อินเทอร์เฟซการเชื่อมต่อสำหรับเครือข่ายภายนอก เกตเวย์ส่วนใหญ่มีตัวเลือก VIC หลายตัว และแต่ละ VIC อาจมีพอร์ตและประเภทการเชื่อมต่อที่แตกต่างกันมากมายสำหรับการเชื่อมต่อทั้งแบบอนาล็อกและดิจิทัล

## ❖ Media Gateway Control Protocol MGCP

Media Gateway Control Protocol (MGCP) เป็น client/server protocol ที่อนุญาตให้ call agent (CA) เข้าควบคุม Gateway endpoint (Port) เฉพาะ MGCP มีข้อได้เปรียบของการบริหารเกตเวย์แบบรวมศูนย์ใน CUCM โดย CUCM จะควบคุมสถานะของแต่ละพอร์ตบน Gateway endpoint, MGCP สามารถควบคุมได้ในระดับต่อจุดสิ้นสุด (พอร์ต TDM) แต่ H.323 และ SIP ไม่สามารถทำได้

MGCP Support ใน CUCM รวมถึงอินเทอร์เฟซแบบอนาล็อกและดิจิทัลที่หลากหลาย ซึ่งสามารถใช้ได้กับเราเตอร์และสวิตช์ของ Cisco หลายแพลตฟอร์มได้แก่ FXO, FXS, T1-CAS, T1-PRI, E1-CAS, E1-PRI แต่พอร์ตเสียงบางพอร์ตไม่รองรับโดย MGCP เช่น พอร์ตเสียง E&M โดย CUCM จะดำเนินการกำหนดค่าเกตเวย์ Cisco IOS MGCP จากเซิร์ฟเวอร์ Cisco TFTP ไปยังเกตเวย์เมื่อมีการกำหนดค่าอัตโนมัติ

## ❖ Port and Trunk Connection Types

ต่อไปนี้เป็นประเภทการเชื่อมต่อพอร์ตหลักที่คุณสามารถกำหนดค่าบนเกตเวย์ได้

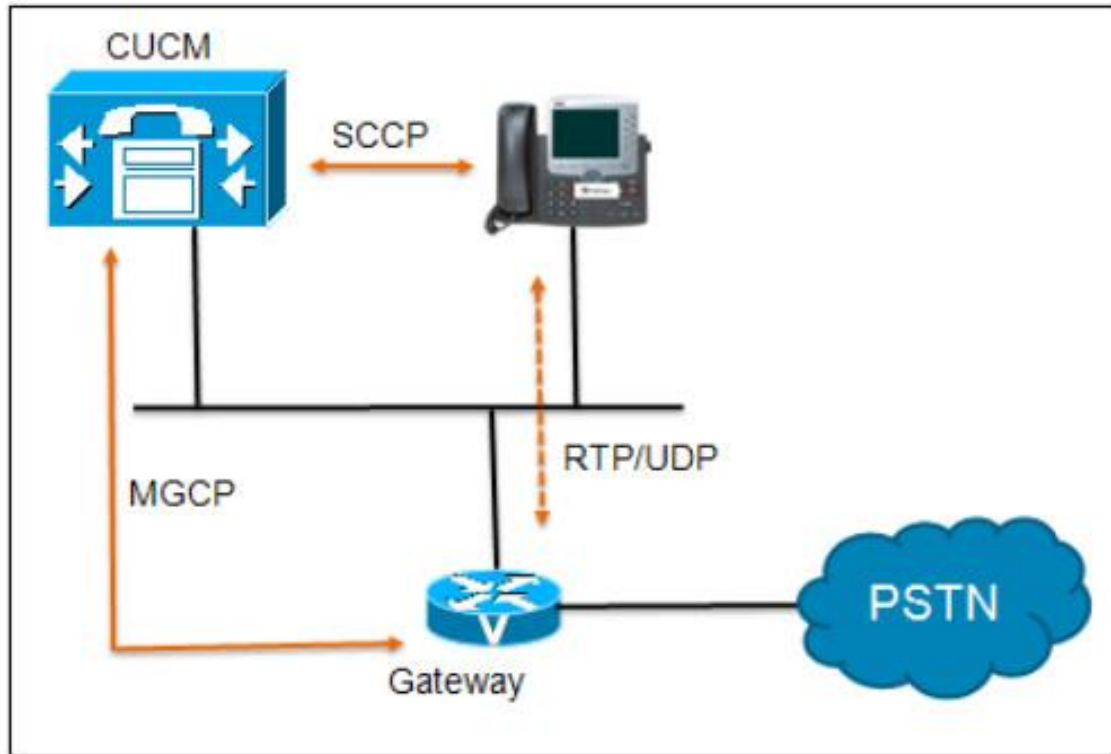
**Foreign Exchange Station (FXS)**—พอร์ต FXS นำเสนอการเชื่อมต่อกับสถานีอนาล็อก เช่น โทรศัพท์อนาล็อก สปีกเกอร์โฟน หรือระบบฝากข้อความเสียงแบบเดิม

**Foreign Exchange Office (FXO)**—พอร์ต FXO ให้การเชื่อมต่อแบบอนาล็อกกับ PSTN หรือ PBX รุ่นเก่า T1 Channel

**Channel Associated Signaling (T1/E1 CAS)** —การเชื่อมต่อ T1/E1 CAS ให้การเชื่อมต่อสายสัญญาณดิจิทัลไปยังสำนักงานกลาง PBX หรืออุปกรณ์อนาล็อกอื่นๆ

**Primary Rate Interface (T1/E1 PRI)**— การเชื่อมต่อ PRI การเข้าถึงแบบดิจิทัลใช้กันอย่างแพร่หลายในการสื่อสารขององค์กร T1 PRI ใช้กันอย่างแพร่หลายในอเมริกาเหนือและญี่ปุ่น และนำเสนอ B-channels 23 ช่องสำหรับเสียงและข้อมูล และ D-channel หนึ่งช่องสำหรับการส่งสัญญาณทั่วไปที่อัตรา 1.544 Mb/s E1 ใช้กันอย่างแพร่หลายในยุโรป โดยนำเสนอ B-channels 30 ช่องสำหรับเสียงและข้อมูล, D-channel หนึ่งช่องสำหรับการส่งสัญญาณทั่วไป และหนึ่งช่องสัญญาณเฟรม การใช้ E1 อัตรา 2.048 Mb/s

## ❖ MGCP Call Flow



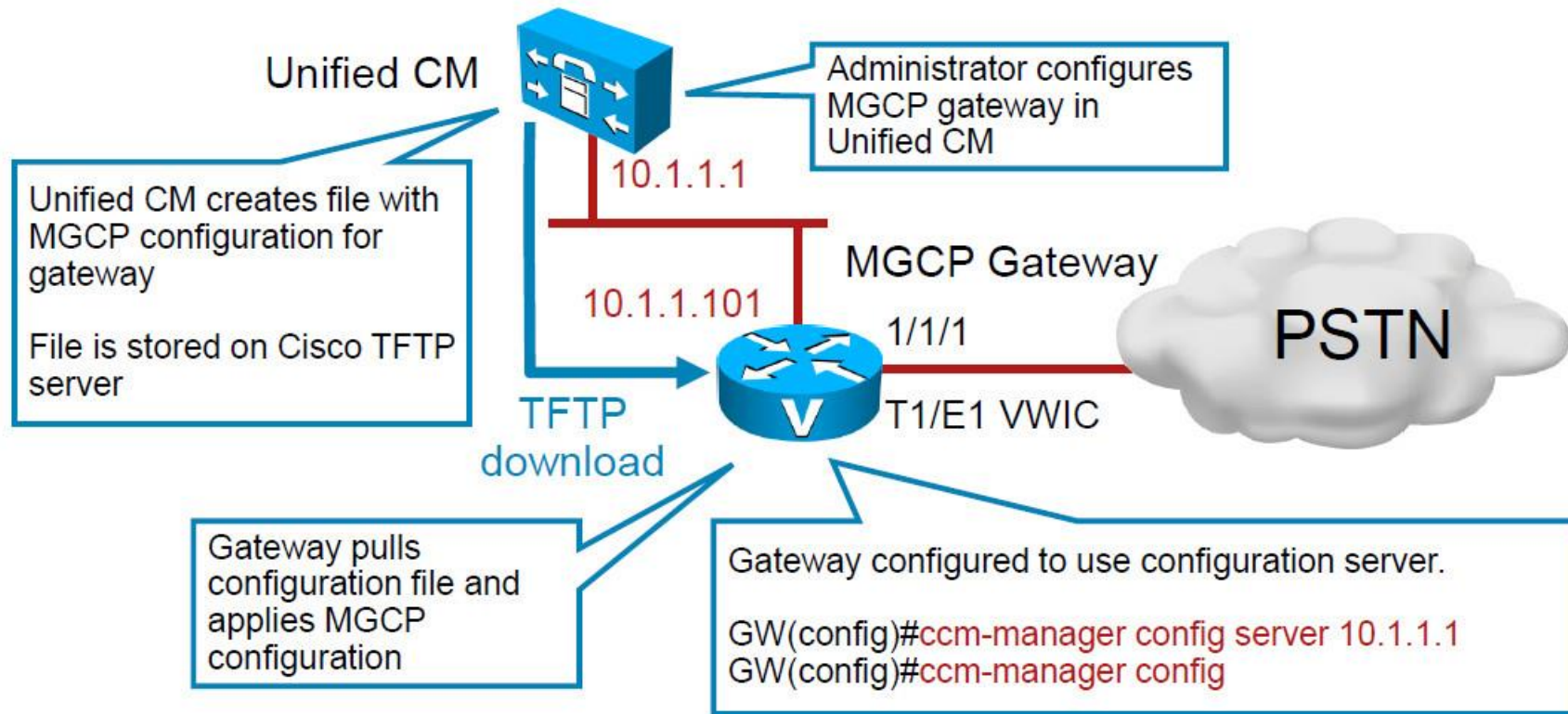
- Cisco IP phones use SCCP to communicate with Unified CM
- Unified CM uses MGCP to control the gateway
- Actual voice data is through RTP directly between the two devices

## ❖ MGCP Support in Cisco Unified Communications

- Wide range of supported Cisco IOS router platforms
- Wide range of supported analog and digital interfaces
- Wide range of analog and digital features
- Cisco Unified Communications Manager configuration server
  - Cisco IOS MGCP gateway can pull its configuration from Cisco Unified Communications TFTP server
  - Eliminates the need for manual gateway configuration
- PRI backhaul support
  - For Cisco IOS gateways with ISDN PRIs
  - Cisco Unified Communications Manager takes control of ISDN D channel



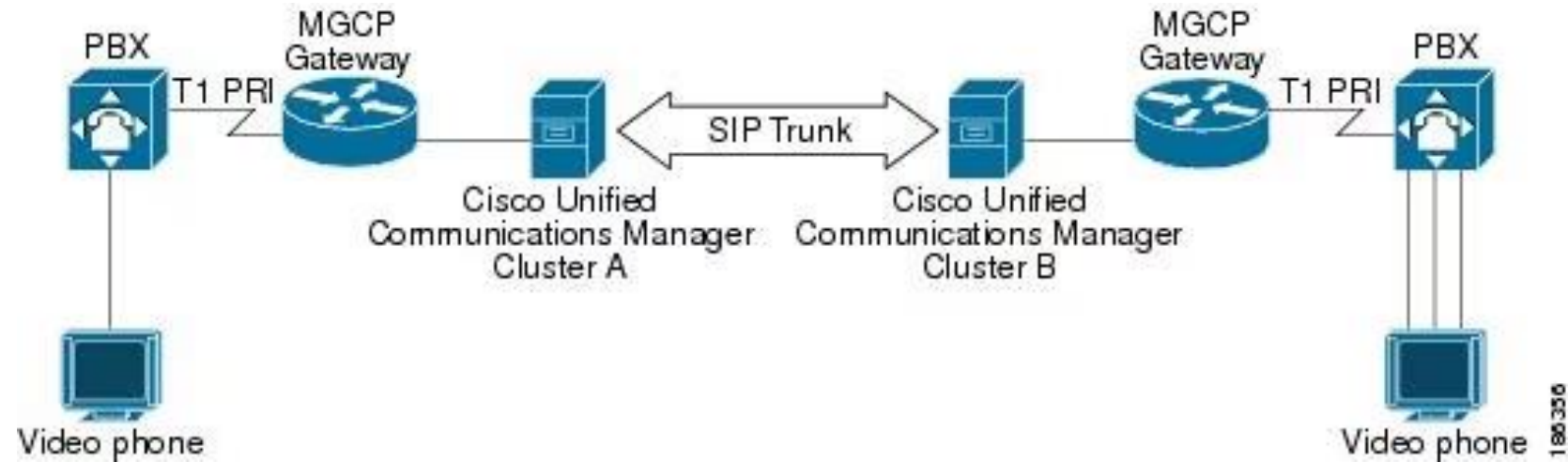
## ❖ Cisco Unified Communications Manager Configuration Server (MGCP)

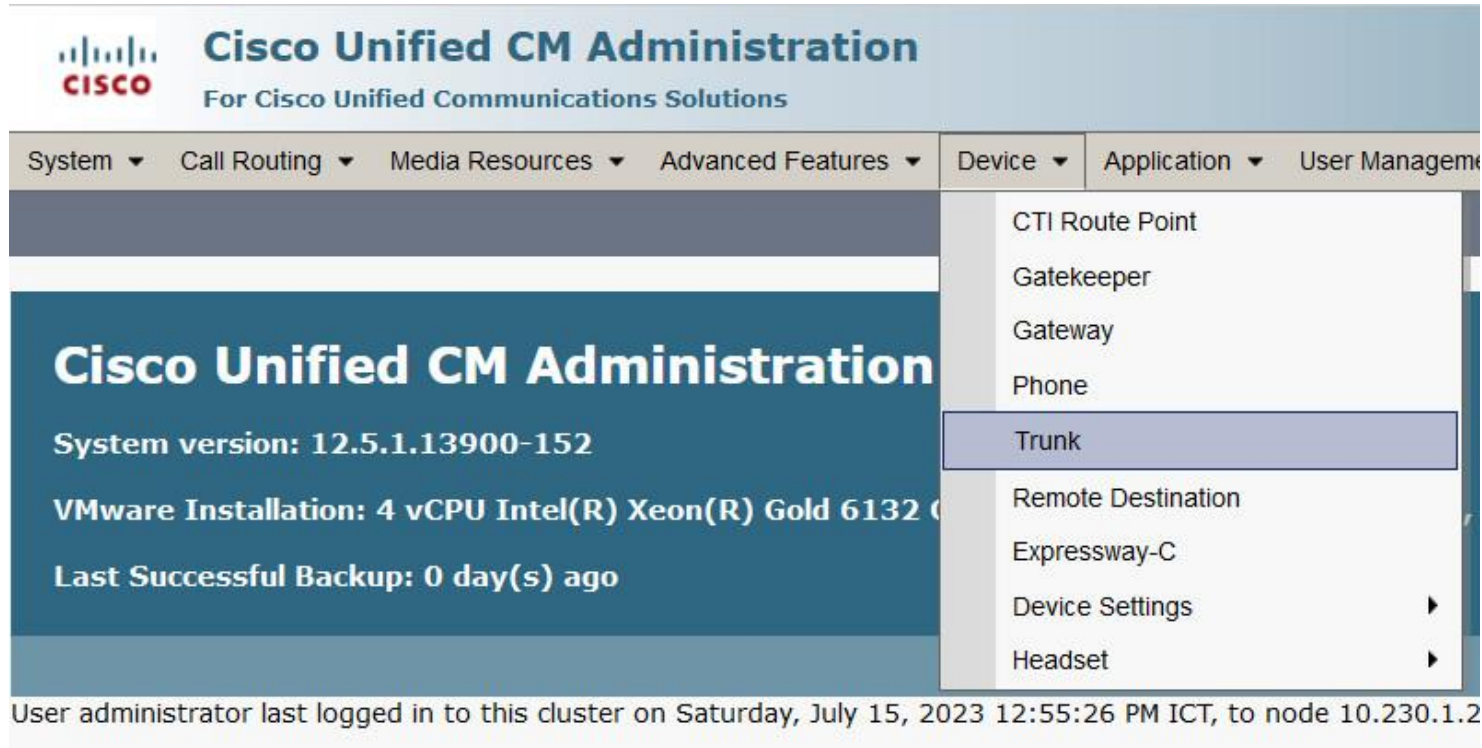


## ❖ Path Selection Configuration Process

1. Add Devices (gateways and trunks).
2. Build route groups from available devices.
3. Build route lists from available route groups.
4. Build route patterns pointing to route lists.

- ใช้ SIP trunks เพื่อเชื่อมต่อ Cisco Unified Communications Manager กับอุปกรณ์ภายนอก เช่น SIP gateways, SIP Proxy Servers, Unified Communications applications, conference bridges, remote clusters, or a Session Management Edition





- เลือก Device > Trunk

- เลือก Find เพื่อค้นหา Trunk ที่มีในระบบ
- เลือก Add New

The screenshot shows the Cisco Unified CM Administration interface. At the top, there is a navigation menu with options like System, Call Routing, Media Resources, Advanced Features, Device, Application, User Management, Bulk Administration, and Help. Below this is the 'Find and List Gateway' section. A red circle highlights the '+ Add New' button. Underneath, the 'Gateways' section is visible, featuring a search filter. The search criteria are set to 'Name' and 'begins with'. A search input field is present, and a red circle highlights the 'Find' button. Below the search input, there is a dropdown menu with the text 'Select item or enter search text'. At the bottom of the search section, there is a message: 'No active query. Please enter your search criteria using the options above.' and another 'Add New' button.



**Cisco Unified CM Administration**  
For Cisco Unified Communications Solutions

System ▾ Call Routing ▾ Media Resources ▾ Advanced Features ▾ Device ▾

### Trunk Configuration

**Next**

**Status**

*i* Status: Ready

**Trunk Information**

Trunk Type\*  ▾

Device Protocol\*  ▾

Trunk Service Type\*  ▾

**Next**

*i* \*- indicates required item.

- Trunk Type\*: เลือกชนิด Trunk
- Device Protocol\*: เลือก Protocol
- Trunk Service Type\*: เลือก None(Default)
- เลือก Next

**Cisco Unified CM Administration**  
For Cisco Unified Communications Solutions

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

### Trunk Configuration

Save

**Status**  
Status: Ready

**Device Information**

|                             |                      |
|-----------------------------|----------------------|
| Product:                    | SIP Trunk            |
| Device Protocol:            | SIP                  |
| Trunk Service Type          | None(Default)        |
| Device Name*                | COPI-SIP-Trunk-Test  |
| Description                 | COPI-SIP-Trunk-Test  |
| Device Pool*                | 01-COPI-DP ▾         |
| Common Device Configuration | < None > ▾           |
| Call Classification*        | Use System Default ▾ |
| Media Resource Group List   | 01-COPI-MRGL ▾       |
| Location*                   | Hub_None ▾           |
| AAR Group                   | < None > ▾           |
| Tunneled Protocol*          | None ▾               |
| QSIG Variant*               | No Changes ▾         |
| ASN.1 ROSE OID Encoding*    | No Changes ▾         |
| Packet Capture Mode*        | None ▾               |
| Packet Capture Duration     | 0                    |

Media Termination Point Required  
 Retry Video Call as Audio

- Device Name\*: ใส่ชื่อ Trunk
- Description: ใส่คำอธิบายเพิ่มเติม
- Device Pool\*: เลือก Device Pool
- Media Resource Group List: เลือก Media Resource Group

System ▾ Call Routing ▾ Media Resources ▾ Advanced Features ▾ Device ▾ Application ▾

### Trunk Configuration

Save

**Inbound Calls**

Significant Digits\*

Connected Line ID Presentation\*

Connected Name Presentation\*

Calling Search Space

AAR Calling Search Space

Prefix DN

Redirecting Diversion Header Delivery - Inbound

- Inbound Calls

- Calling Search Space: เลือก Calling Search Space

System ▾ Call Routing ▾ Media Resources ▾ Advanced Features ▾ Device ▾ Application ▾ Use ▾

### Trunk Configuration

Save

**Outbound Calls**

Called Party Transformation CSS

Use Device Pool Called Party Transformation CSS

Calling Party Transformation CSS

Use Device Pool Calling Party Transformation CSS

Calling Party Selection\*

Calling Line ID Presentation\*

Calling Name Presentation\*

Calling and Connected Party Info Format\*

Redirecting Diversion Header Delivery - Outbound


Redirecting Party Transformation CSS

- Outbound Calls

- Calling Search Space: เลือก Calling Search Space

System ▾ Call Routing ▾ Media Resources ▾ Advanced Features ▾ Device ▾ Application ▾ User Management

### Trunk Configuration

 Save

#### SIP Information

##### Destination

Destination Address is an SRV

| Destination Address | Destination Address IPv6 |
|---------------------|--------------------------|
| 1* 10.251.11.254    |                          |

MTP Preferred Originating Codec\* 711ulaw ▾

BLF Presence Group\* Standard Presence group ▾

SIP Trunk Security Profile\* Non Secure SIP Trunk Profile ▾

Rerouting Calling Search Space < None > ▾

Out-Of-Dialog Refer Calling Search Space < None > ▾

SUBSCRIBE Calling Search Space < None > ▾


SIP Profile\* Standard SIP Profile ▾ [View Details](#)

DTMF Signaling Method\* No Preference ▾

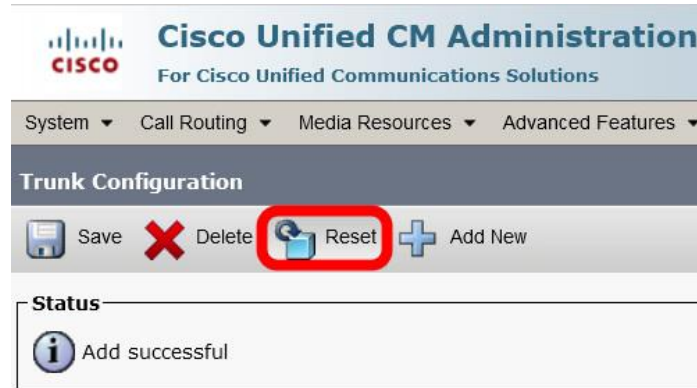
- Destination Address: ใส่ IP ที่ใช้เชื่อม SIP
- SIP Trunk Security Profile\*: เลือก SIP Trunk Security Profile
- SIP Profile\*: เลือก SIP Profile
- เลือก Save

🌐 10.230.1.21

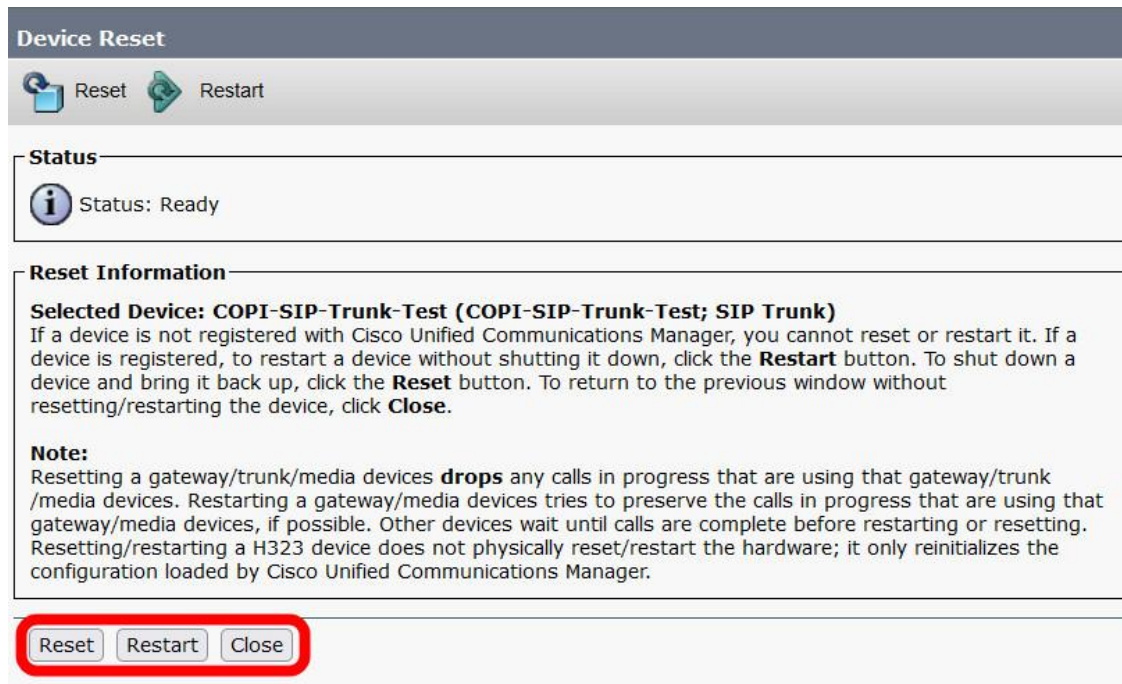
The configuration changes will not take effect on the trunk until a reset is performed. Use the Reset button to execute the reset.



- เลือก OK



- เลือก Reset



- เลือก Reset
- เลือก Restart
- เลือก Close

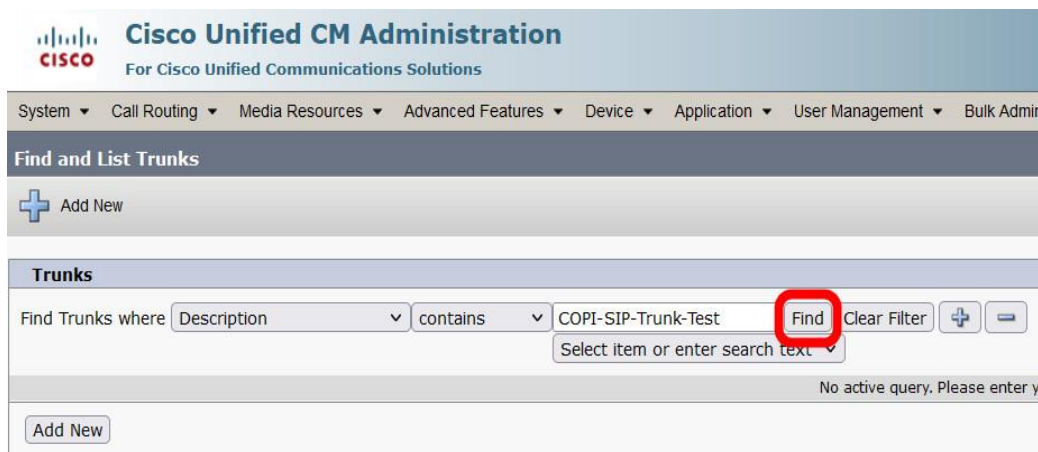


# Delete SIP Trunk

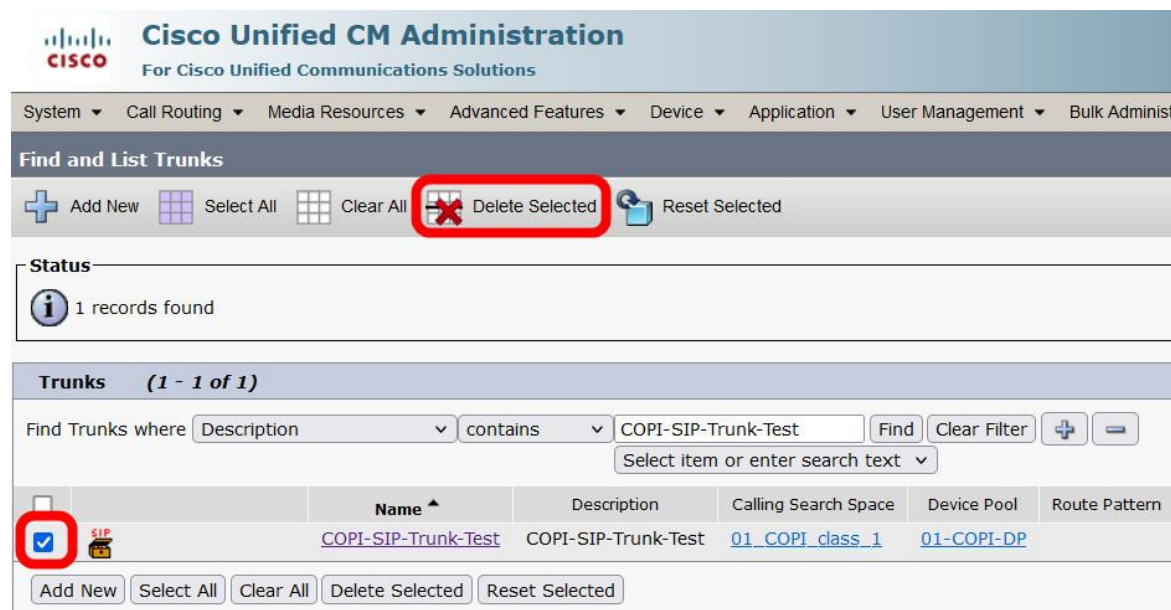
The screenshot shows the Cisco Unified CM Administration web interface. The top navigation bar includes 'System', 'Call Routing', 'Media Resources', 'Advanced Features', 'Device', 'Application', and 'User Management'. The 'Device' menu is open, displaying a list of options: CTI Route Point, Gatekeeper, Gateway, Phone, Trunk (highlighted), Remote Destination, Expressway-C, Device Settings, and Headset. The main content area displays system information: 'Cisco Unified CM Administration', 'System version: 12.5.1.13900-152', 'VMware Installation: 4 vCPU Intel(R) Xeon(R) Gold 6132 C', and 'Last Successful Backup: 0 day(s) ago'. At the bottom, a status message reads: 'User administrator last logged in to this cluster on Saturday, July 15, 2023 12:55:26 PM ICT, to node 10.230.1.2'.

- เลือก Device > Trunk

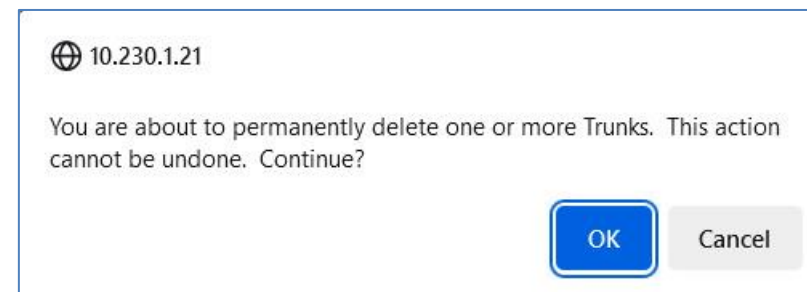
# Delete SIP Trunk



- ใส่ SIP Trunk ที่ต้องการลบและกด Find

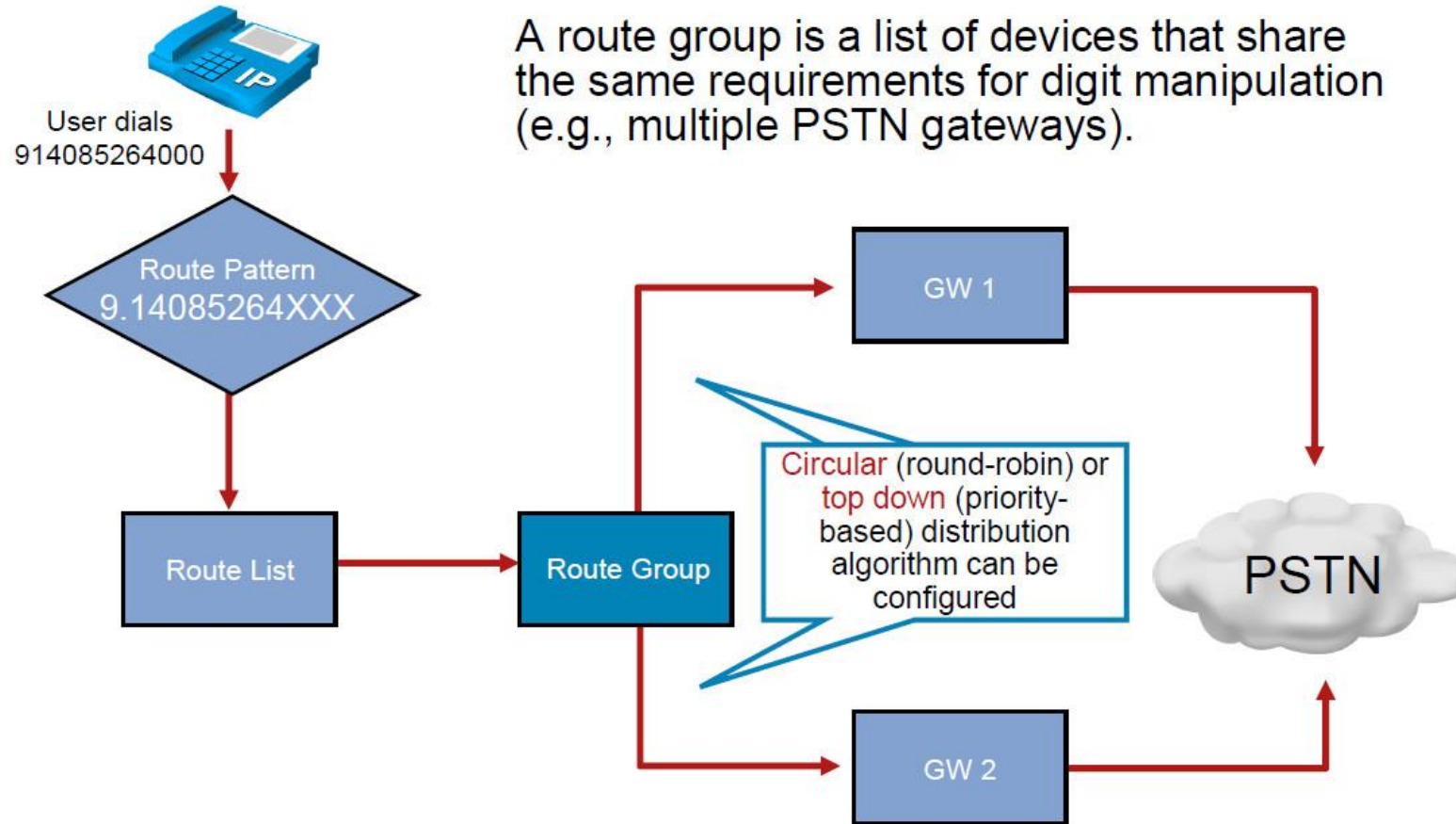


- เลือก SIP Trunk ที่ต้องการลบ และเลือก Delete Selected

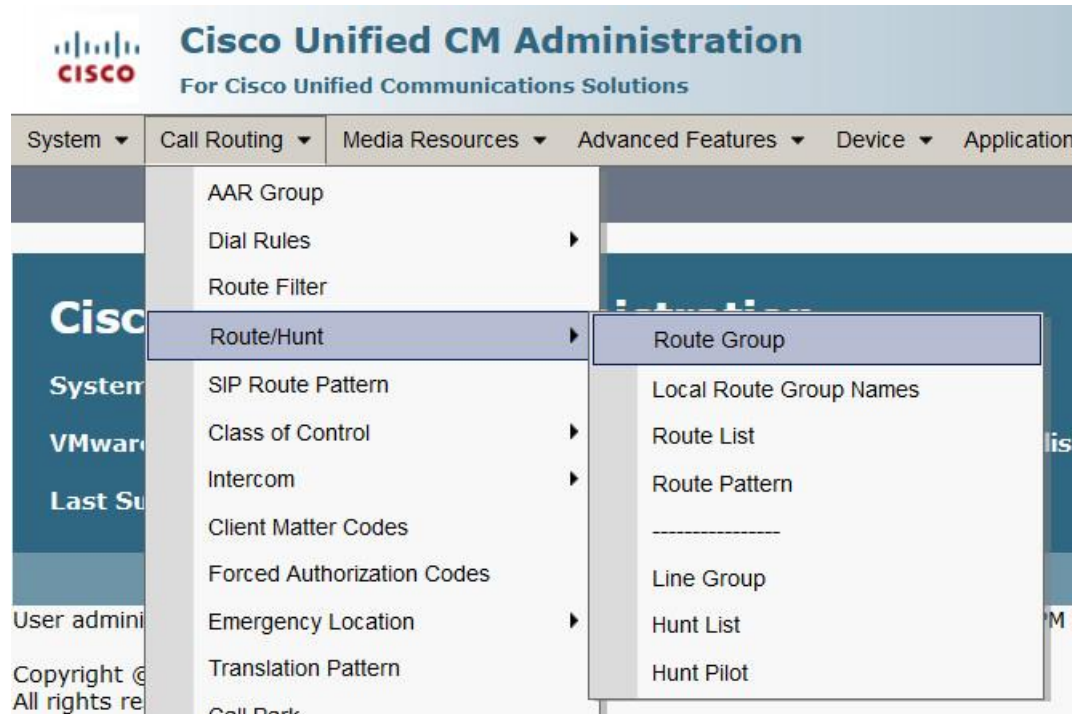


- เลือก OK

- Route Group Configuration



A route group is a list of devices that share the same requirements for digit manipulation (e.g., multiple PSTN gateways).



- สร้าง Route Group ทำได้ดังนี้
  - เลือก Call Routing > Route/Hunt > Route Group

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

### Route Group Configuration

Save Delete Add New

Status: Ready

#### Route Group Information

Route Group Name\*

Distribution Algorithm\*

#### Route Group Member Information

##### Find Devices to Add to Route Group

Device Name contains

Available Devices\*\*

- AALN/S0/1@COPI-VOIP-FAX-FL2.moi.go.th
- AALN/S0/1@copi-voip-vg202xm09.moi.go.th
- AALN/S0/1@copi-voip-vg202xm12.moi.go.th
- AALN/S0/SU1/0@copi-voip-voicegw01.moi.go.th
- AALN/S0/SU1/0@copi-voip-voicegw02.moi.go.th

Port(s)

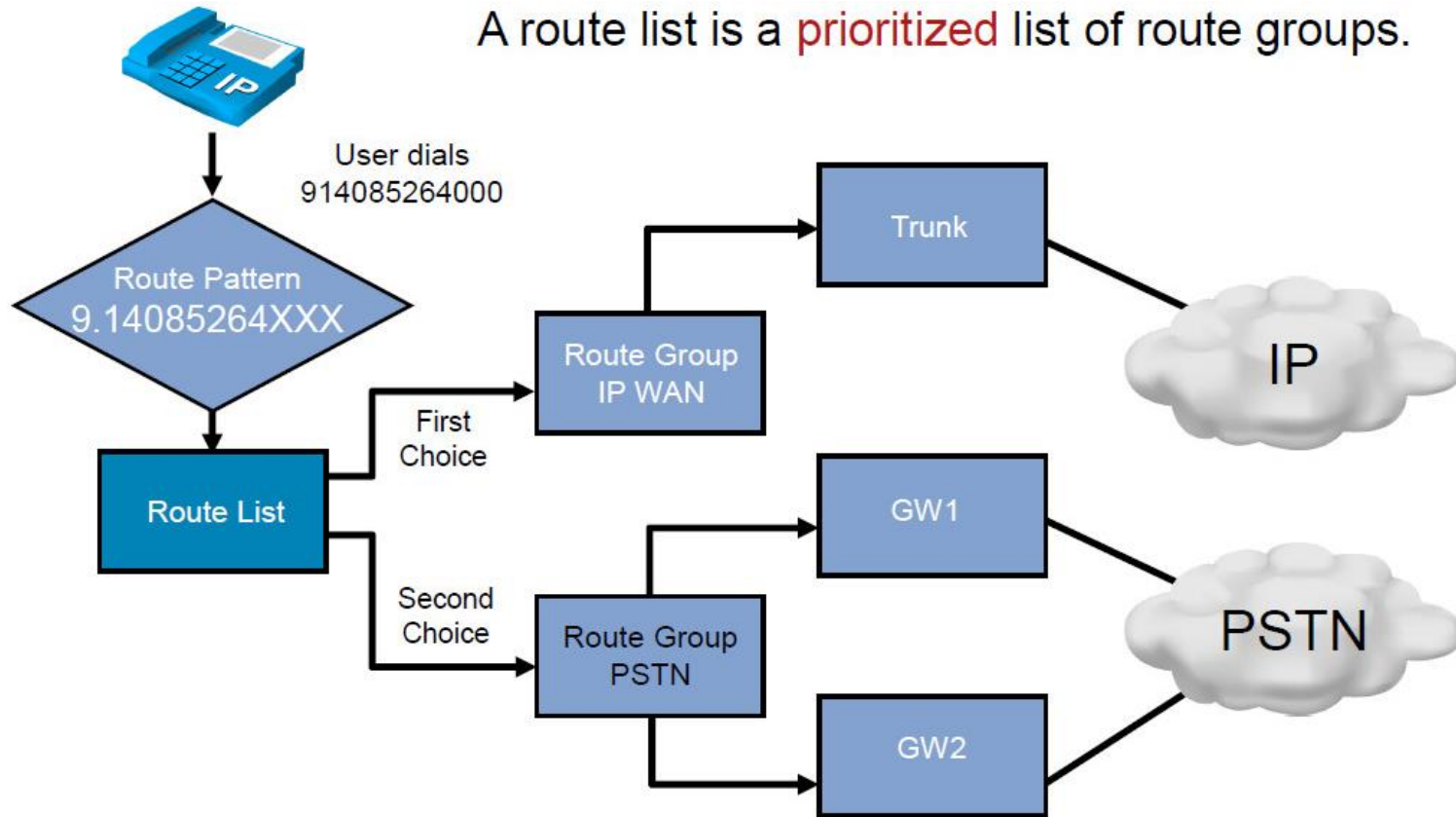
#### Current Route Group Members

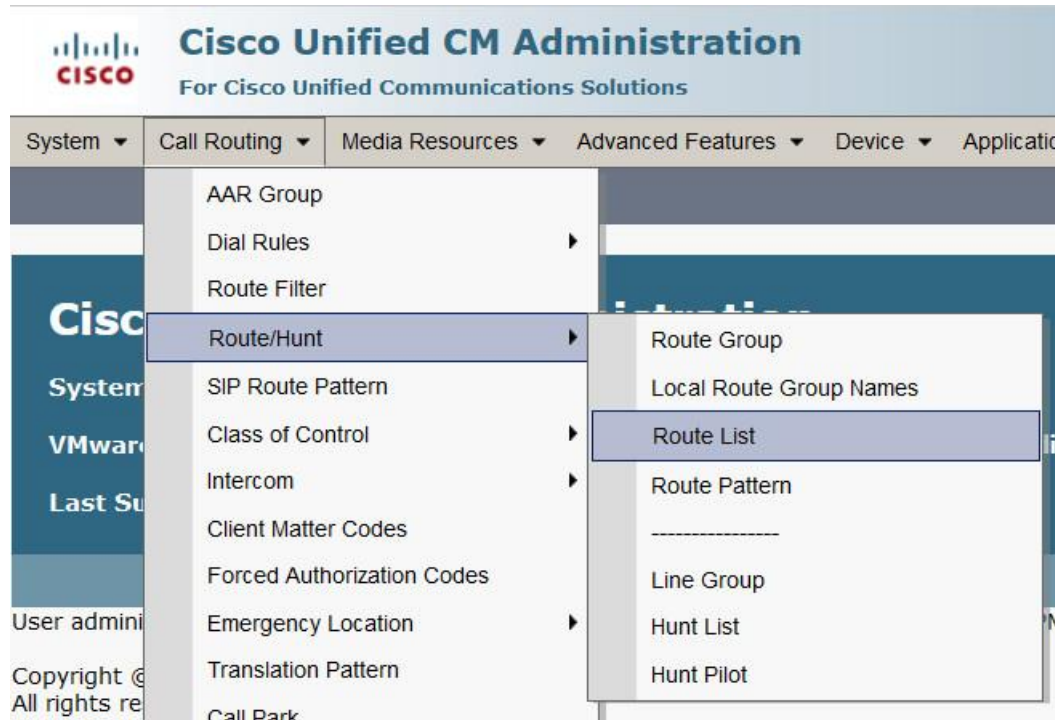
Selected Devices (ordered by priority)\*

- AALN/S0/SU1/1@copi-voip-voicegw07.moi.go.th (All P...

- Route Group Name\*: ใส่ชื่อ
- Distribution Algorithm\*: เลือก Distribution Algorithm
- Available Devices\*\*: เลือก Device และเลือก Add to Route Group
- Selected Devices (ordered by priority): รายการ Device ที่ถูกเลือก
- เลือก Save







- สร้าง Route Lite ทำได้ดังนี้
  - เลือก Call Routing > Route/Hunt > Route List

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

### Route List Configuration

Save Delete Copy Reset Apply Config Add New

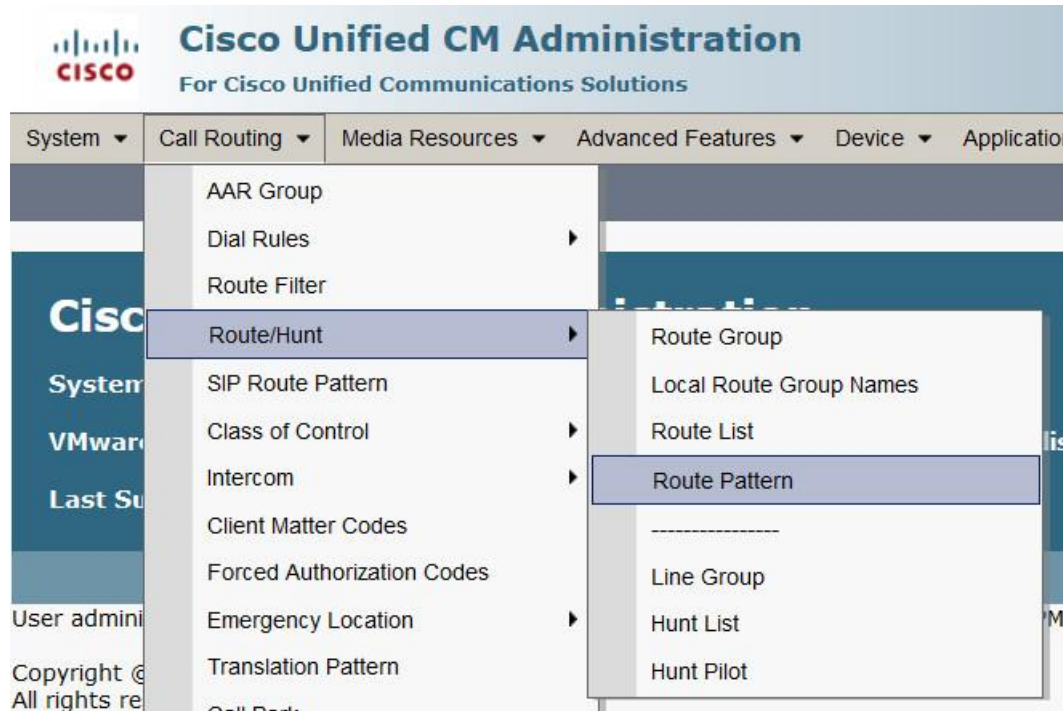
**Status**  
Status: Ready

**Route List Information**  
Registration: Registered with Cisco Unified Communications Manager copi-voip-cucm02.moi.go.th  
IPv4 Address: 10.230.1.24  
 Device is trusted  
Name\* 01\_COPI\_022826581\_RL  
Description  
Cisco Unified Communications Manager Group\* 01-COPI-CM\_Group  
 Enable this Route List (change effective on Save; no reset required)  
 Run On All Active Unified CM Nodes

**Route List Member Information**  
Selected Groups\*\* 01\_COPI\_022826581\_RG  
Removed Groups\*\*\*

▼ Add Route Group ▲

- Device is trusted Name\*: ใส่ชื่อ Route List
- Cisco Unified Communications Manager Group\*: เลือกกลุ่ม CUCM
- Add Route Group: เลือก Route Group
- Selected Groups\*\*\*: รายการ Route Group ที่ถูกเลือก
- เลือก Save



- สร้าง Route Pattern ทำได้ดังนี้
  - เลือก Call Routing > Route/Hunt > Route Pattern

System ▾ Call Routing ▾ Media Resources ▾ Advanced Features ▾ Device ▾ Application ▾ User Management ▾ Bu

### Route Pattern Configuration

Save Delete Copy Add New

**Status**

Status: Ready

**Pattern Definition**

|   |   |
|---|---|
| Route Pattern*  | <input type="text" value="0[23457]XXXXXXX"/>  |
| Route Partition   | <input type="text" value="01_COPI_022826581_PT"/>   |
| Description   | <input type="text" value="COPI-FXO"/>   |
| Numbering Plan  | <input type="text" value="-- Not Selected --"/>   |
| Route Filter  | <input &gt;")"="" none="" type="text" value("&lt;=""/>  |
| MLPP Precedence*  | <input type="text" value="Default"/>  |
| <input type="checkbox"/> Apply Call Blocking Percentage | <input type="text"/>  |
| Resource Priority Namespace Network Domain              | <input &gt;")"="" none="" type="text" value("&lt;=""/>  |
| Route Class*  | <input type="text" value="Default"/>  |
| Gateway/Route List*                                     | <input type="text" value="01_COPI_022826581_RL"/>   |
| Route Option  | <input checked="" type="radio"/> Route this pattern<br><input type="radio"/> Block this pattern <input type="text" value="No Error"/> |

[\(Edit\)](#)

- Route Pattern\*: ใส่ Pattern สำหรับโทรออก
- Route Partition: เลือก Route Partition
- Gateway/Route List\*: เลือก Route List
- เลือก Save



- Route Pattern (Wildcard)

| Wildcard    | Description  |
|-------------|--|
| x           | Single digit (0–9, *, #)   |
| @           | North American Numbering Plan  |
| !           | One or more digits (0–9)   |
| [x-y]       | Generic range notation   |
| [^x-y]      | Exclusion range notation   |
| .           | Terminates access code   |
| #           | Terminates interdigit timeout  |
| <wildcard>? | Matches zero or more occurrences of any digit that matches the previous wildcard |
| <wildcard>+ | Matches one or more occurrences of any digit that matches the previous wildcard  |

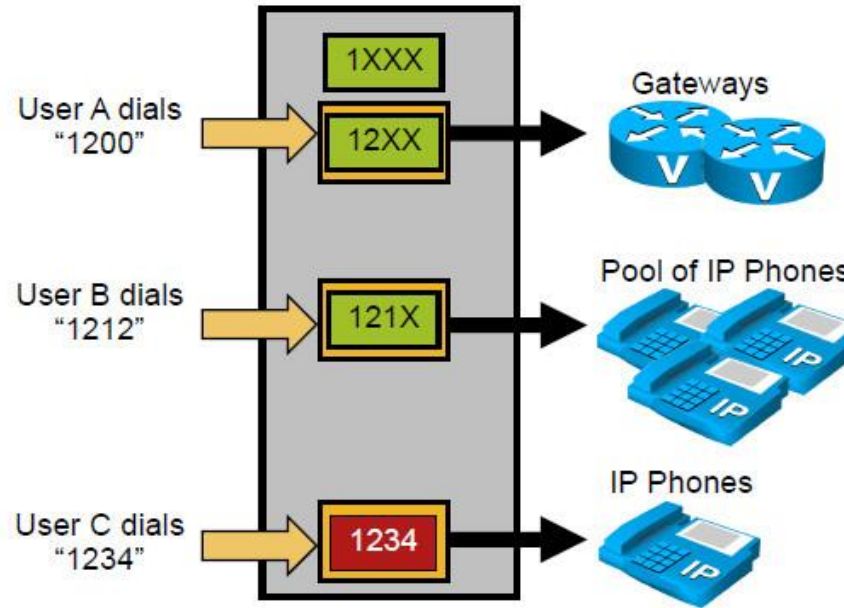
- Route Pattern (Wildcard)

| Pattern   | Result  |
|-----------|---|
| 1234      | Matches 1234  |
| 1*1x      | Matches numbers from 1*10 to 1*19   |
| 12xx      | Matches numbers from 1200 to 1299   |
| 13[25-8]6 | Matches 1326, 1356, 1366, 1376, 1386  |
| 13[^3-9]6 | Matches 1306, 1316, 1326, 13*6, 13#6  |
| 13!#      | Matches any number that begins with 13, is followed by one or more digits, and ends with #; 135# and 13579# are example matches |

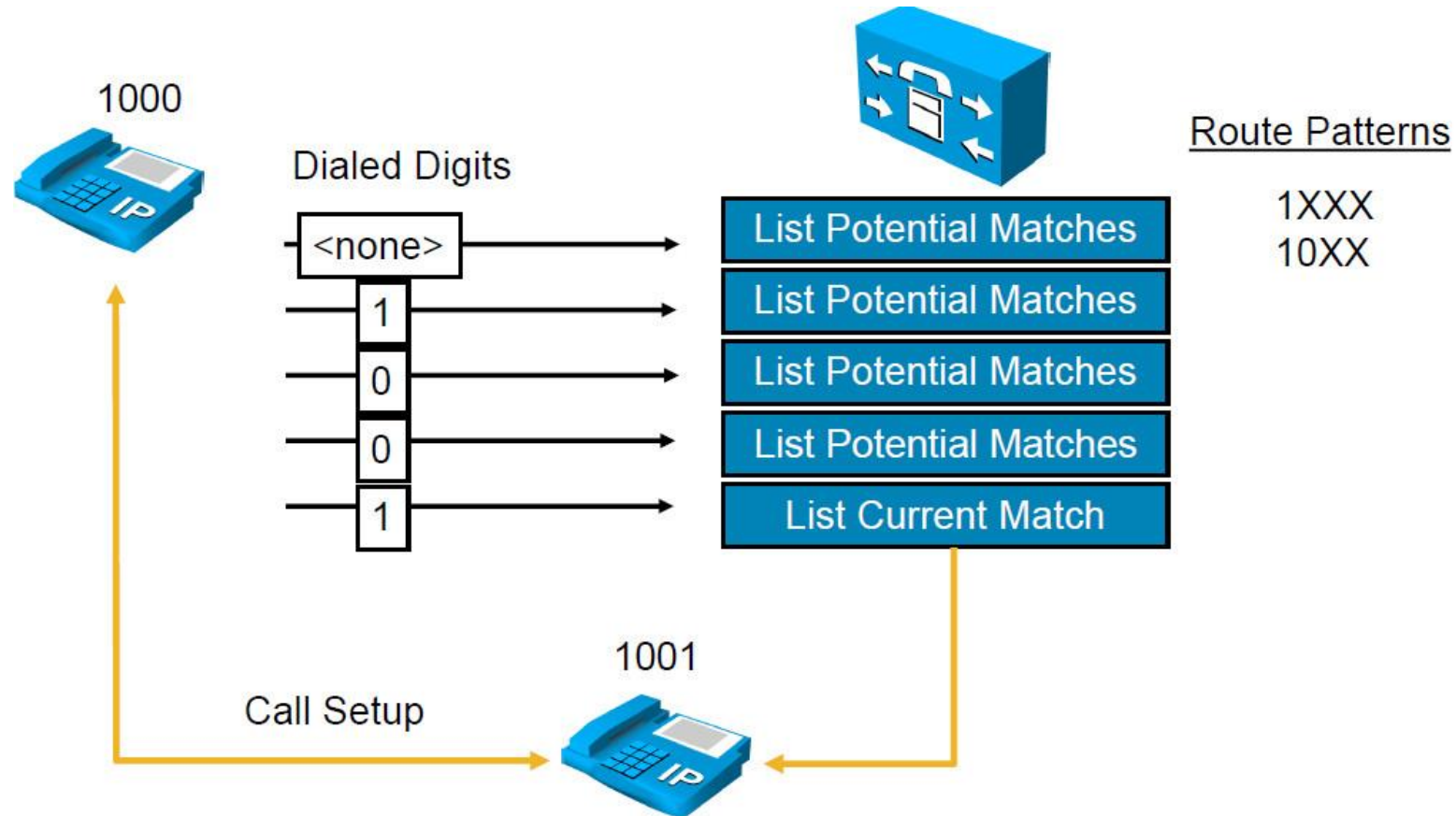
- Call Routing Logic

- Unified CM uses **closest-match** logic to select the best pattern.
- When multiple matching patterns are present, the best pattern is selected based on:
  1. It matches the dialed string.  
AND
  2. It matches the fewest strings other than the dialed string.

Unified CM Call Routing Logic Example



- Digit-by-digit Analysis



- Digit Collection

User dial string:

1111

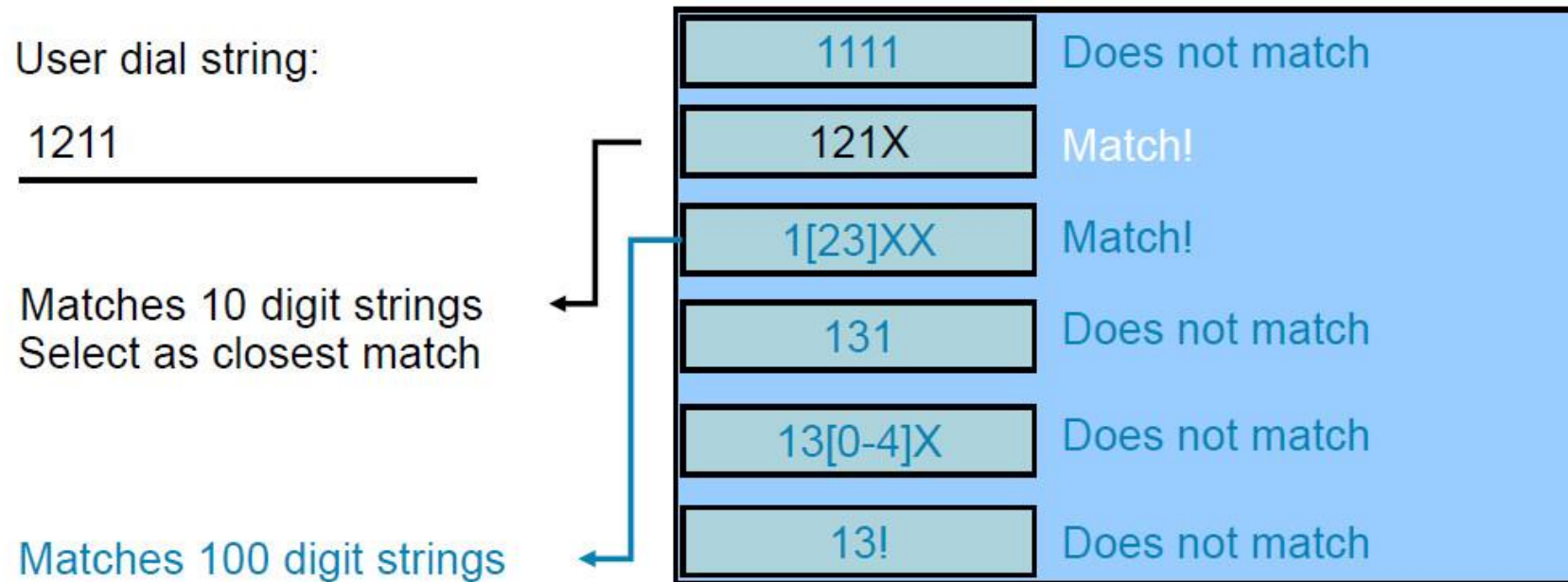
Cisco Unified CM actions:

No other patterns could match; extend call.

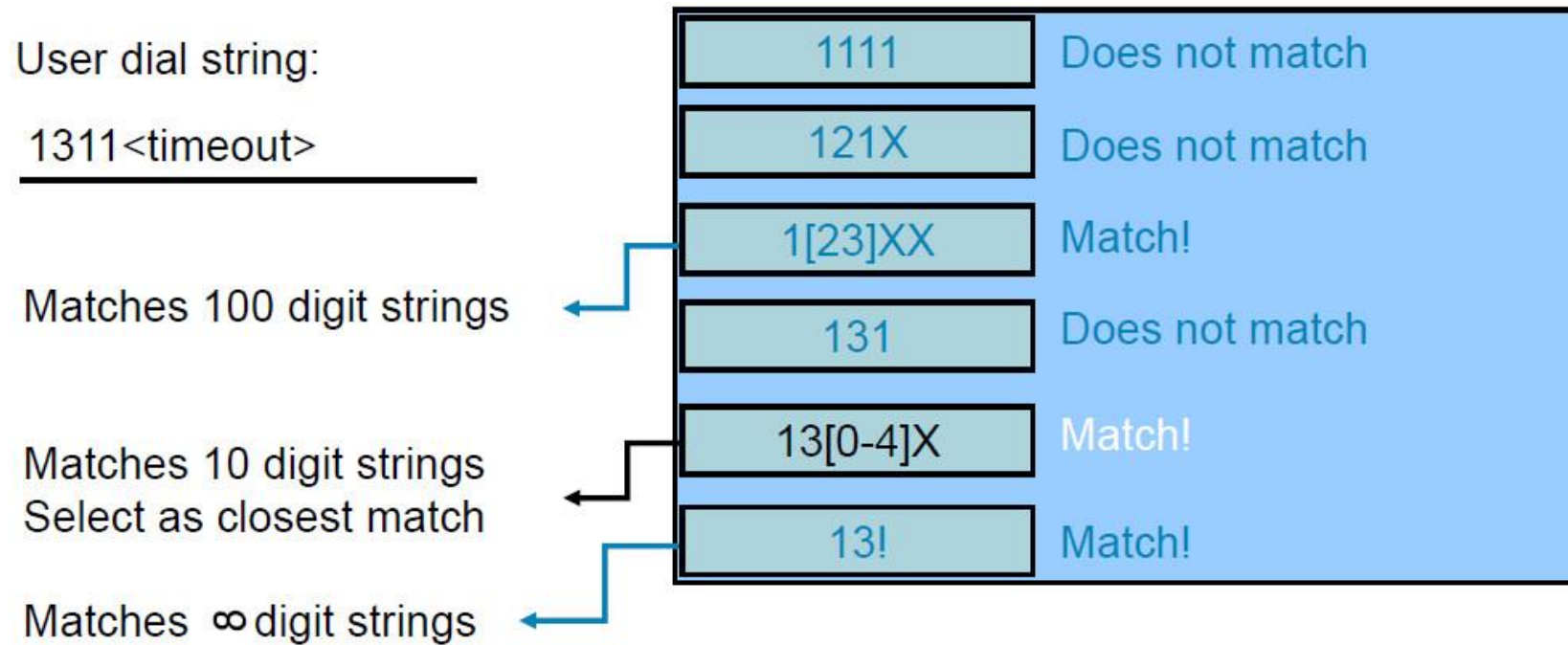
|          |                |
|----------|----------------|
| 1111     | Match!         |
| 121X     | Does not match |
| 1[23]XX  | Does not match |
| 131      | Does not match |
| 13[0-4]X | Does not match |
| 13!      | Does not match |

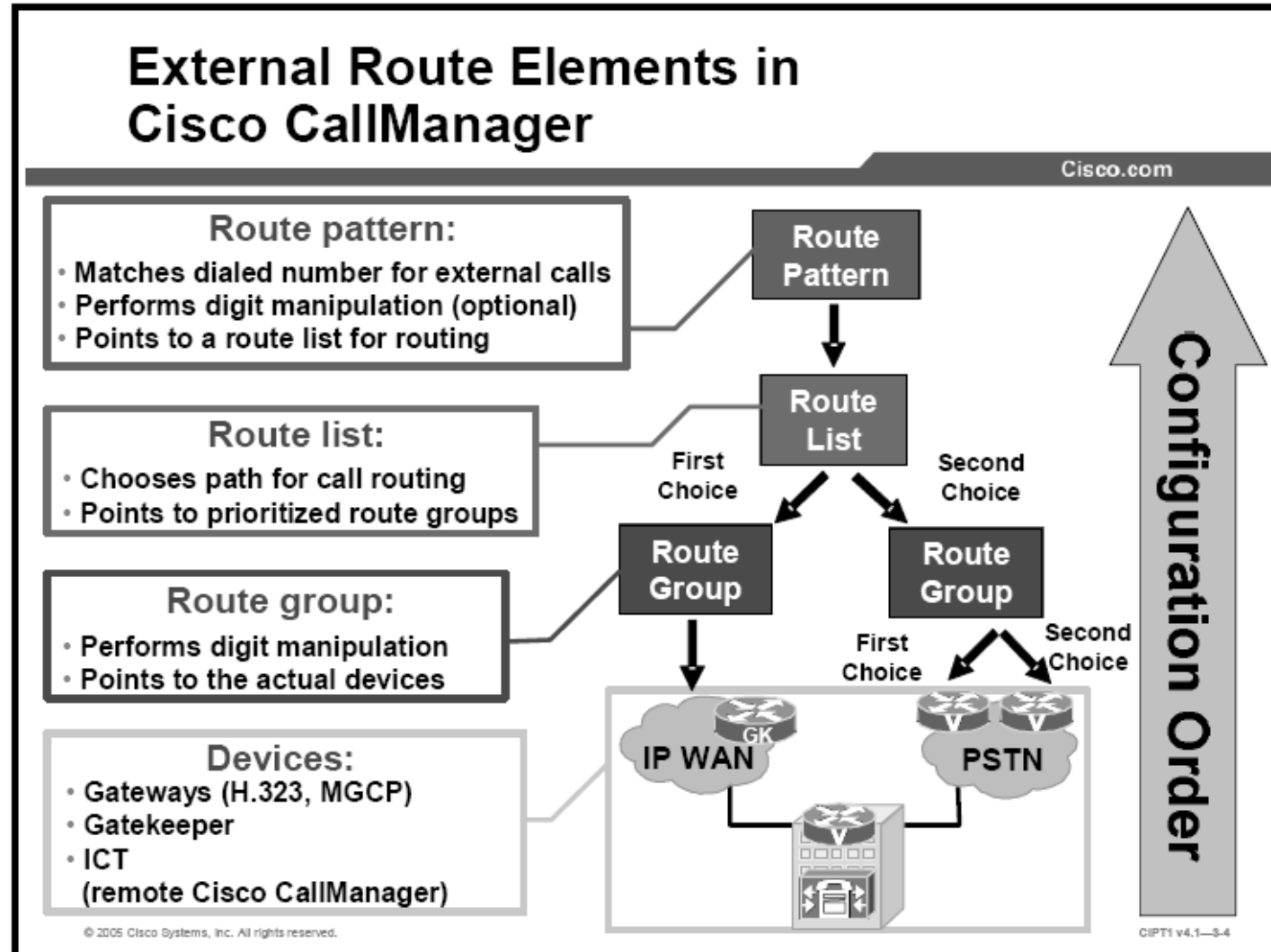


- Closest Match Routing

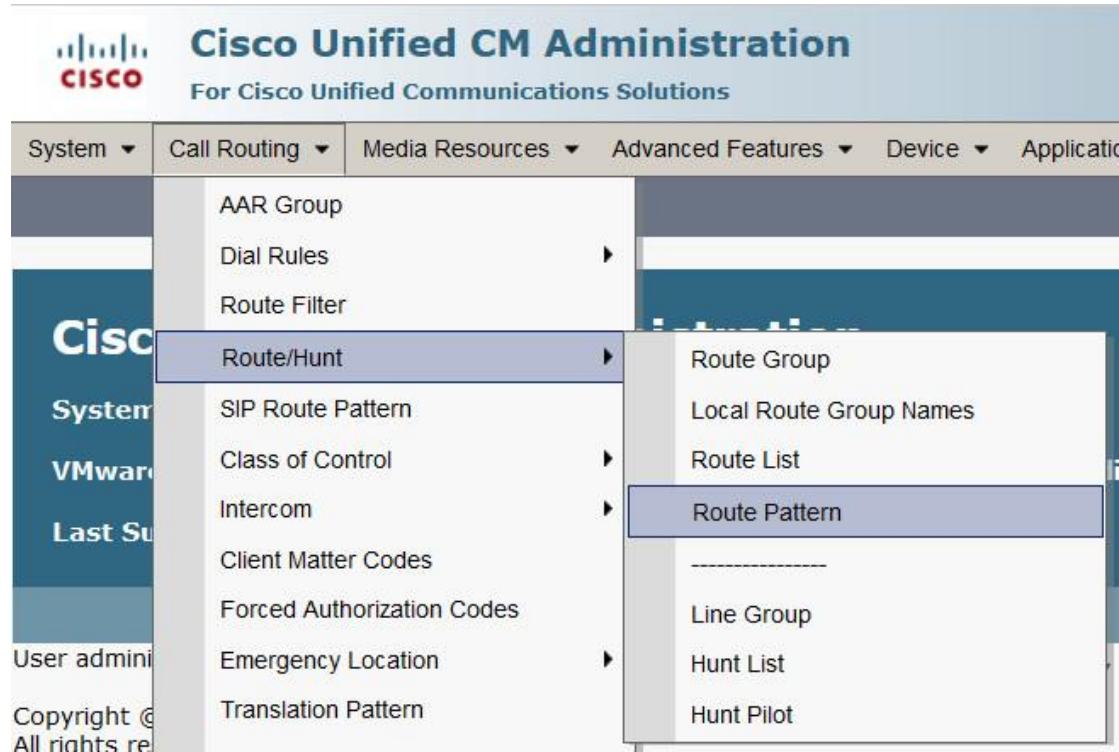


- Interdigit Timeout





- Create Route Patterns (Access Code)



- เลือก Call Routing > Route/Hunt > Route Pattern

- เลือก Find เพื่อตรวจสอบ Route Patterns ที่มีในระบบ และเลือก Add New

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

### Find and List Route Patterns

**+ Add New**

#### Route Patterns

Find Route Patterns where  ▾ begins with ▾  **Find** Clear Filter

No active query. Please enter your search criteria using



System ▾ Call Routing ▾ Media Resources ▾ Advanced Features ▾ Device ▾ Application ▾ User M

### Route Pattern Configuration

Save

**Status**

Status: Ready


**Pattern Definition**

|   |   |
|---|---|
| Route Pattern*  | 8.93939   |
| Route Partition   | 01_COPI_022826581_PT ▾  |
| Description   |   |
| Numbering Plan  | -- Not Selected -- ▾  |
| Route Filter  | < None > ▾  |
| MLPP Precedence*  | Default ▾   |
| <input type="checkbox"/> Apply Call Blocking Percentage |   |
| Resource Priority Namespace Network Domain              | < None > ▾  |
| Route Class*  | Default ▾   |
| Gateway/Route List*                                     | 01_COPI_022826581_RL ▾  |
| Route Option  | <input checked="" type="radio"/> Route this pattern<br><input type="radio"/> Block this pattern <span>No Error ▾</span> |

- Route Pattern\*: ใส่ Route Pattern
- Route Partition: เลือก Route Partition
- Gateway/Route List\*: เลือก Route List

System ▾ Call Routing ▾ Media Resources ▾ Advanced Features ▾ Device ▾ Applica

### Route Pattern Configuration

 Save

Prefix Digits (Outgoing Calls)

Calling Line ID Presentation\*

Calling Name Presentation\*

Calling Party Number Type\*

Calling Party Numbering Plan\*

---

#### Connected Party Transformations

Connected Line ID Presentation\*

Connected Name Presentation\*

---

#### Called Party Transformations

Discard Digits

Called Party Transform Mask

Prefix Digits (Outgoing Calls)

Called Party Number Type\*

Called Party Numbering Plan\*

- Discard Digits: เลือกเงื่อนไขการตัด Digit
- เลือก Save

🌐 10.230.1.21

The Authorization Code will not be activated.  
Press OK if you want to proceed and activate it at a later time.  
Press Cancel and check the Force Authorization Code checkbox if you want to activate it now.

- เลือก OK

🌐 10.230.1.21

Any update to this Route Pattern automatically resets the associated gateway or Route List

Don't allow 10.230.1.21 to prompt you again

- เลือก OK

- Delete Route Patterns



- เลือก Call Routing > Route/Hunt > Route Pattern

- ใส่ข้อมูล Route Patterns ที่ต้องการลบ และเลือก Find

The screenshot shows the Cisco Unified CM Administration interface. At the top, there is a navigation menu with options: System, Call Routing, Media Resources, Advanced Features, Device, Application, User Management, Bulk Administration, and Help. Below this is a section titled 'Find and List Route Patterns'. There is an 'Add New' button with a plus icon. The main section is titled 'Route Patterns'. It contains a search form with the text 'Find Route Patterns where'. The search criteria are: 'Pattern' (selected from a dropdown), 'contains' (selected from a dropdown), and '8.93939' (entered in a text field). The 'Find' button is highlighted with a red circle. To the right of the 'Find' button are 'Clear Filter', '+', and '-' buttons. Below the search form, there is a message: 'No active query. Please enter your search criteria usir'. At the bottom left of the form, there is an 'Add New' button.

- Route Group / Route List / Route Pattern

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

**Find and List Route Patterns**

+ Add New    Select All    Clear All    **Delete Selected**

**Status**

1 records found

**Route Patterns (1 - 1 of 1)** Rows per Page 50 ▾

Find Route Patterns where  contains

| <input type="checkbox"/>            | Pattern ^               | Description | Partition                            | Route Filter | Associated Device                    | Copy |
|-------------------------------------|-------------------------|-------------|--------------------------------------|--------------|--------------------------------------|------|
| <input checked="" type="checkbox"/> | <a href="#">8.93939</a> |             | <a href="#">01_COPI_022826581_PT</a> |              | <a href="#">01_COPI_022826581_RL</a> |      |

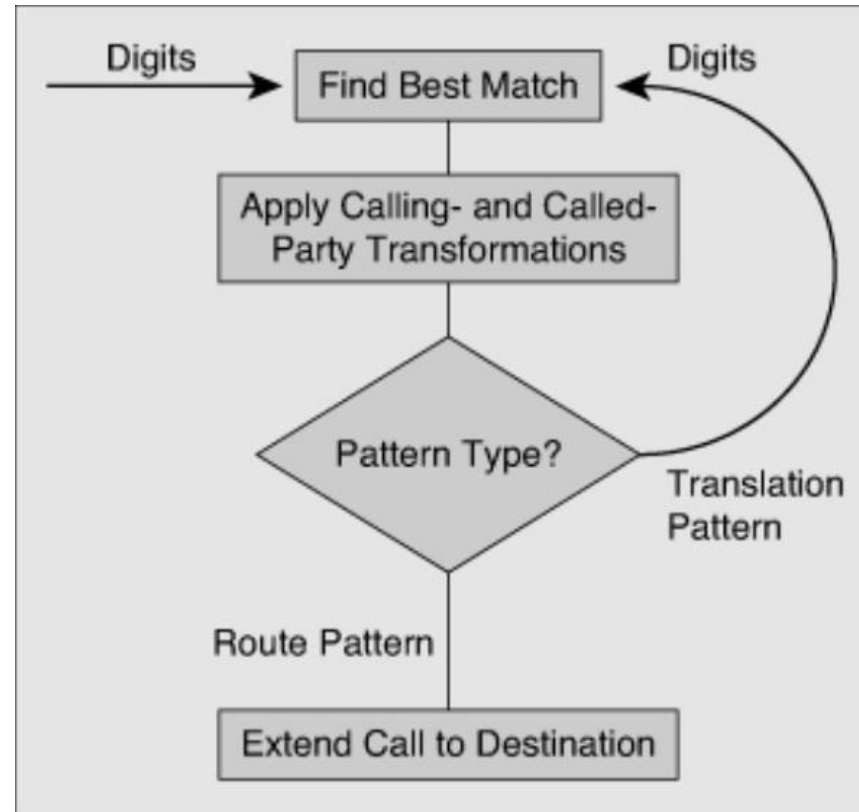
10.230.1.21

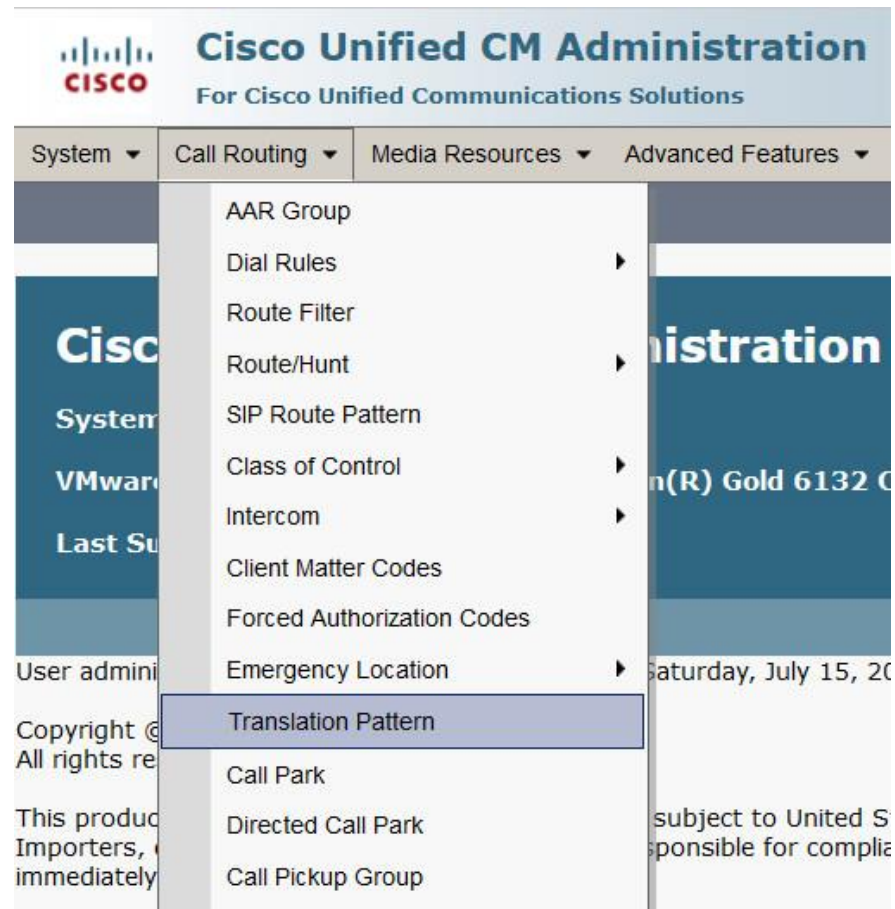
You are about to permanently delete one or more Route Pattern. This action cannot be undone. Continue?

เลือก OK



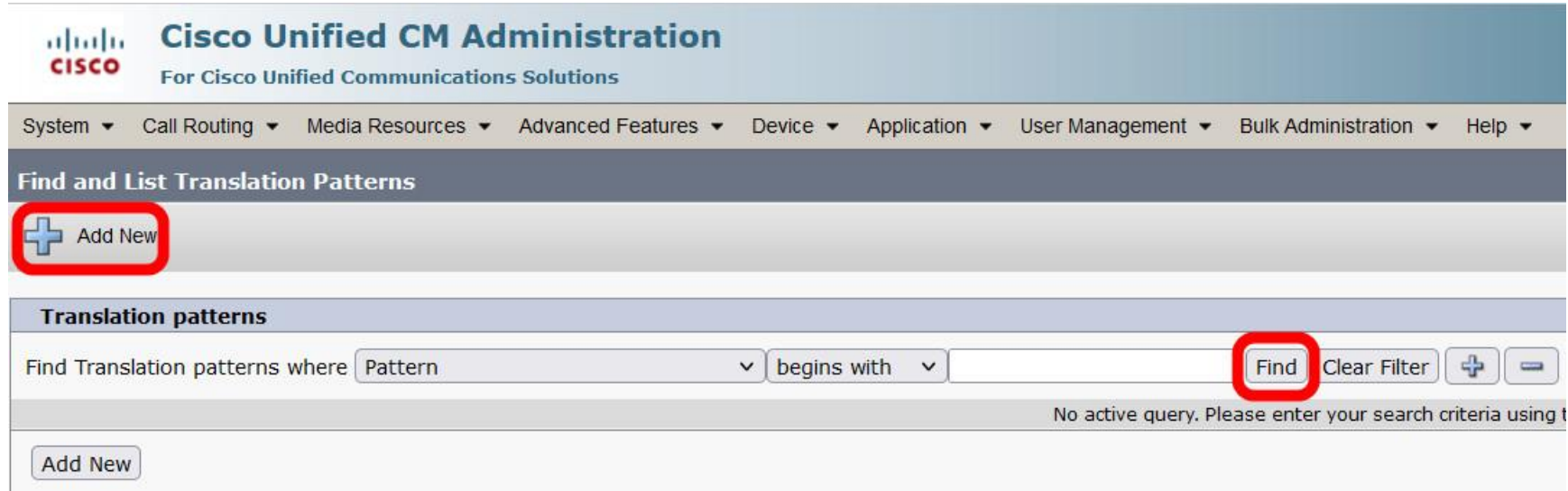
- CUCM ใช้รูปแบบการแปลเพื่อจัดการตัวเลขก่อนที่จะโอนสาย โดยปกติรูปแบบการแปลจะต้องพยายามวิเคราะห์ตัวเลขอีกครั้ง รูปแบบการแปลและรูปแบบเส้นทางสามารถใช้เพื่อบล็อกรูปแบบ แต่การดำเนินการเริ่มต้นคือพยายามกำหนดเส้นทางการโทร





- เลือก Call Routing > Translation Pattern

- เลือก Find เพื่อตรวจสอบ Translation pattern ที่มีในระบบ และเลือก Add New



The screenshot displays the Cisco Unified CM Administration web interface. At the top, the Cisco logo and the text 'Cisco Unified CM Administration For Cisco Unified Communications Solutions' are visible. Below this is a navigation menu with items like System, Call Routing, Media Resources, Advanced Features, Device, Application, User Management, Bulk Administration, and Help. The main content area is titled 'Find and List Translation Patterns'. A red circle highlights a blue plus icon followed by the text 'Add New'. Below this is a search bar with the text 'Find Translation patterns where' followed by a dropdown menu showing 'Pattern' and another dropdown showing 'begins with'. To the right of the search bar is a 'Find' button, also circled in red, along with 'Clear Filter', a plus icon, and a minus icon. At the bottom of the search bar area, there is a message: 'No active query. Please enter your search criteria using t'. Below the search bar is another 'Add New' button.

System ▾ Call Routing ▾ Media Resources ▾ Advanced Features ▾ Device ▾ Application ▾ User M

### Translation Pattern Configuration

Save Delete Copy Add New

**Status**

Status: Ready





**Pattern Definition**

|  |                   |
|--|-------------------|
| Translation Pattern                        | 021669511         |
| Partition                                  | Internal_PT ▾     |
| Description                                | 021669511-51452   |
| Numbering Plan                             | < None > ▾        |
| Route Filter                               | < None > ▾        |
| MLPP Precedence*                           | Default ▾         |
| Resource Priority Namespace Network Domain | < None > ▾        |
| Route Class*                               | Default ▾         |
| Calling Search Space                       | 01_COPI_class_1 ▾ |

- Translation Pattern: ใส่หมายเลขที่ต้องการนำมาแปล
- Partition: เลือก Partition
- Description: ใส่คำอธิบายเพิ่มเติม
- Calling Search Space: เลือก Calling Search Space

System ▾ Call Routing ▾ Media Resources ▾ Advanced Features ▾ Device ▾ Applicatio

### Translation Pattern Configuration

 Save  Delete  Copy  Add New

Do Not Wait For Interdigit Timeout On Subsequent Hops  
 Route Next Hop By Calling Party Number

#### Calling Party Transformations

Use Calling Party's External Phone Number Mask

Calling Party Transform Mask

Prefix Digits (Outgoing Calls)

Calling Line ID Presentation\*

Calling Name Presentation\*

Calling Party Number Type\*

Calling Party Numbering Plan\*

#### Connected Party Transformations

Connected Line ID Presentation\*

Connected Name Presentation\*

#### Called Party Transformations

Discard Digits

Called Party Transform Mask

Prefix Digits (Outgoing Calls)

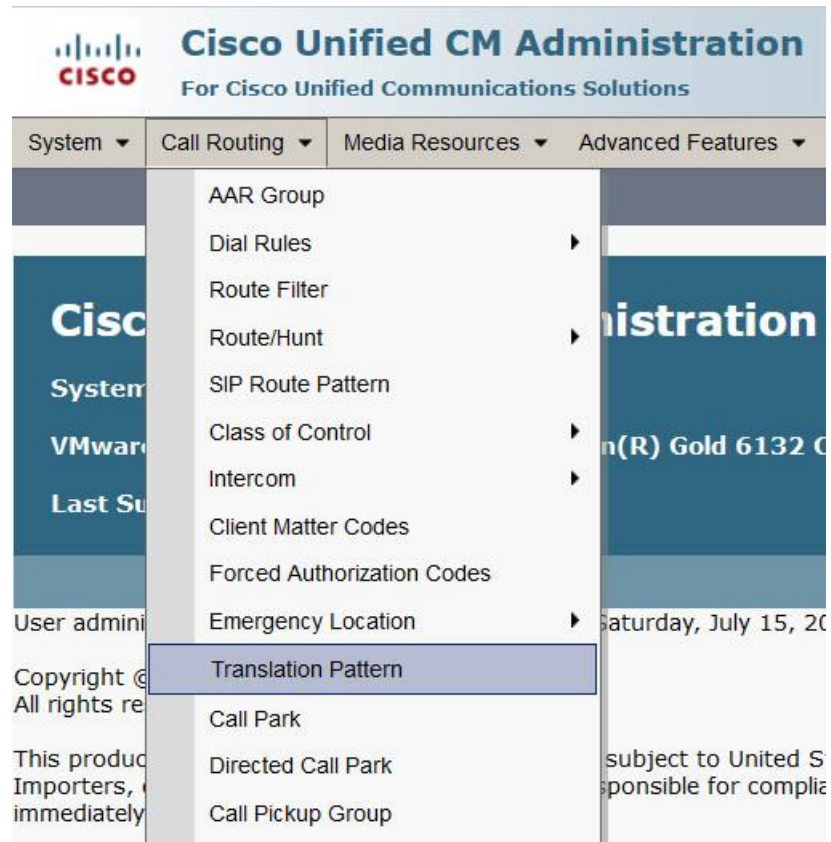
Called Party Number Type\*

Called Party Numbering Plan\*

- Called Party Transform Mask: ใส่หมายเลขที่ต้องการใช้งานหลังจากแปลเลขหมายแล้ว
- เลือก Save



- Delete Translation patterns



- เลือก Call Routing > Translation Pattern

- ใส่ข้อมูล Pattern ที่ต้องการลบ และเลือก Find

The screenshot shows the Cisco Unified CM Administration interface. At the top, there is a navigation menu with options: System, Call Routing, Media Resources, Advanced Features, Device, Application, User Management, Bulk Administration, and Help. Below this is a section titled "Find and List Translation Patterns". There is a "+ Add New" button. The main section is titled "Translation patterns" and contains a search form. The search form has a dropdown menu set to "Pattern", a dropdown menu set to "contains", and a text input field containing "021669511". The "Find" button is highlighted with a red circle. To the right of the "Find" button are "Clear Filter", "+", and "-" buttons. Below the search form, there is a message: "No active query. Please enter your search criteria using the options above." and an "Add New" button.

- เลือก Pattern ที่ต้องการลบ และเลือก Delete Selected

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

### Find and List Translation Patterns

+ Add New  Select All  Clear All  Delete Selected

Status  
1 records found

#### Translation patterns (1 - 1 of 1)

Find Translation patterns where Pattern contains 021669511 Find Clear Filter

| <input type="checkbox"/>            | Translation Pattern | Partition   | Description     | Route Filter | Copy |
|-------------------------------------|---------------------|-------------|-----------------|--------------|------|
| <input checked="" type="checkbox"/> | 021669511           | Internal_PT | 021669511-51452 |              |      |

Add New Select All Clear All Delete Selected

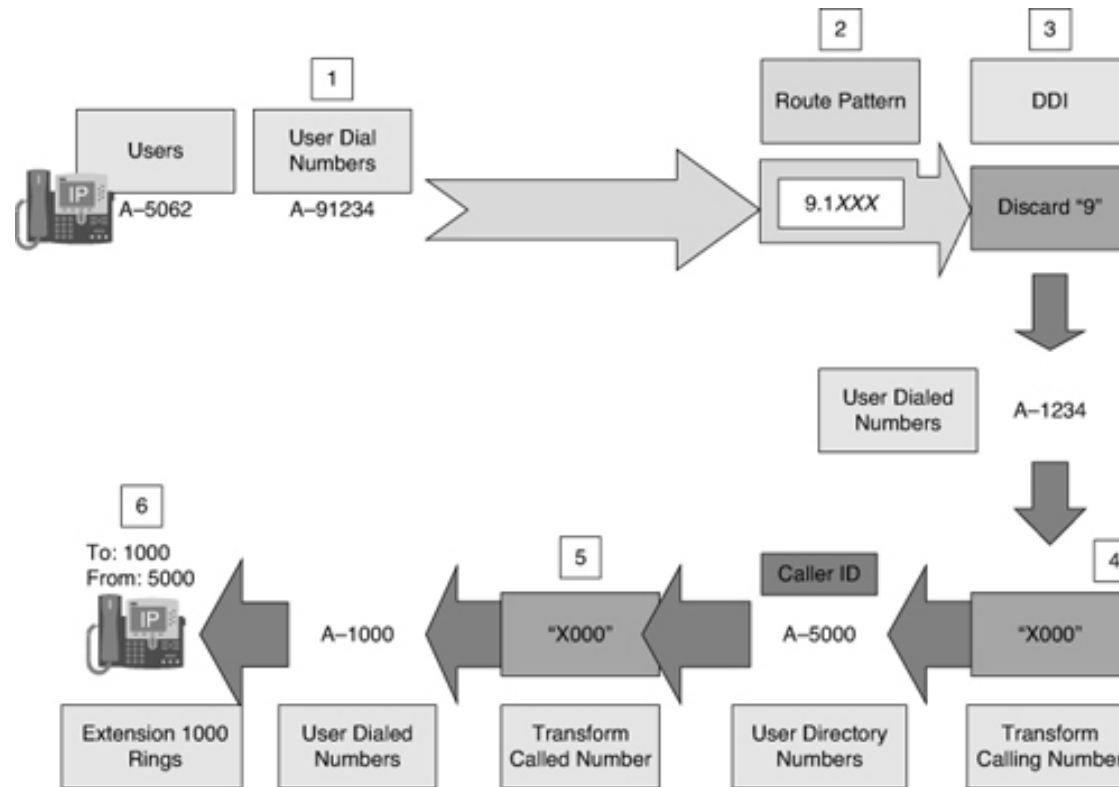
10.230.1.21

You are about to permanently delete one or more Translation Patterns. This action cannot be undone. Continue?

OK Cancel

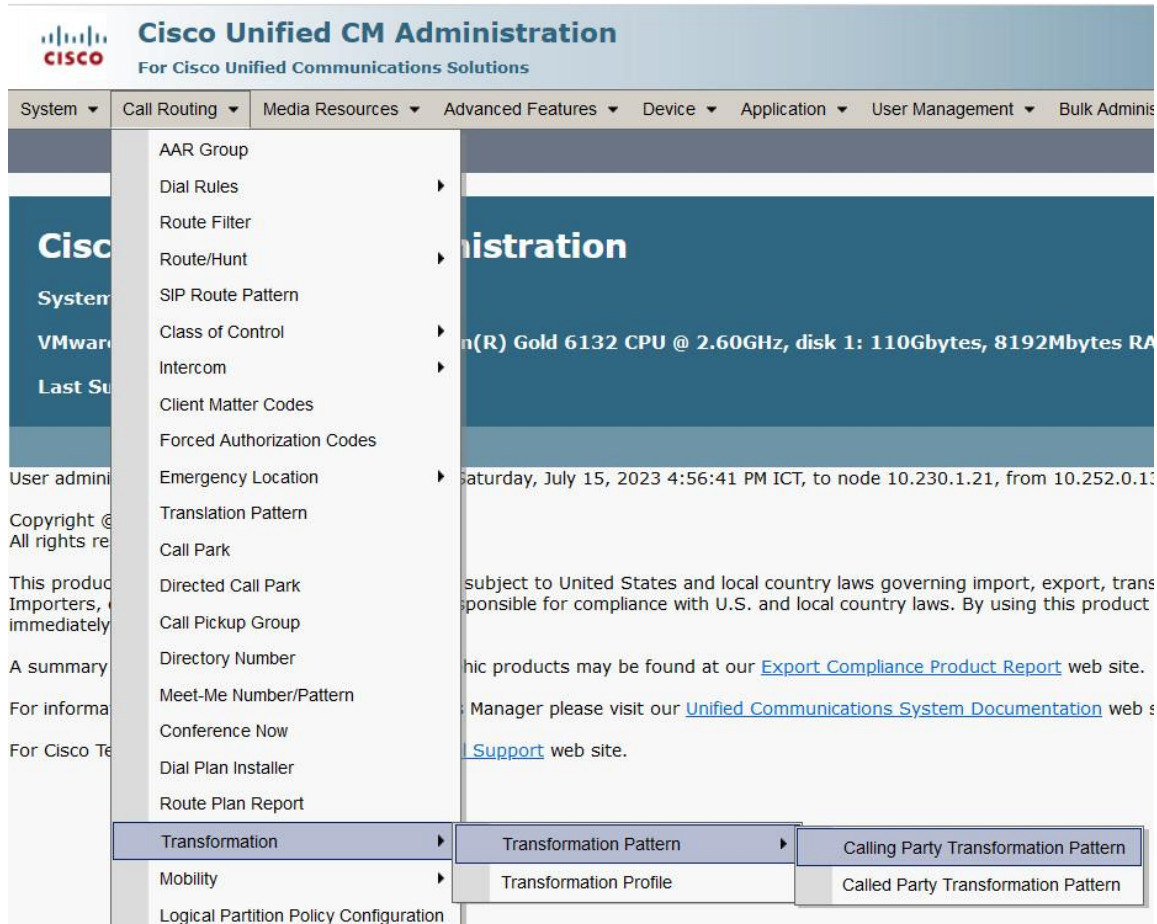
- เลือก OK

- การแปลงหลายอย่างสามารถเกิดขึ้นได้เมื่อโทรออก มาสก์หมายเลขโทรศัพท์ภายนอกจะสั่งการกำหนดเส้นทางการโทรของ CUCM เพื่อใช้มาส์กหมายเลขโทรศัพท์ภายนอกกับ Directory Number ของฝ่ายที่โทร (DN) เพื่อส่งข้อมูล ID ผู้โทรเมื่อมีการกำหนดเส้นทางการโทรผ่านเกตเวย์ไปยัง PSTN มาสก์หมายเลขโทรศัพท์ภายนอกจะใช้ในแต่ละบรรทัดผ่านการกำหนดค่า DN



Complex Digit Manipulation

- Calling Party Transformation Pattern



- เลือก Calling Routing > Transformation > Transformation Pattern > Calling Party Transformation Pattern



- เลือก Find เพื่อตรวจสอบ Calling Party Transformation Pattern ที่มีในระบบ และเลือก Add New

The screenshot shows the Cisco Unified CM Administration interface. At the top, there is a navigation menu with options like System, Call Routing, Media Resources, Advanced Features, Device, Application, User Management, Bulk Administration, and Help. Below this, the main heading is "Find and List Calling Party Transformation Patterns". A red circle highlights the "+ Add New" button. Below the heading, there is a search filter section titled "Calling Party Transformation Pattern". The search criteria are set to "Pattern" and "begins with". A red circle highlights the "Find" button. Below the search filter, there is a message: "No active query. Please enter your search criteria using". At the bottom left, there is another "Add New" button.

**Cisco Unified CM Administration**  
For Cisco Unified Communications Solutions

System ▾ Call Routing ▾ Media Resources ▾ Advanced Features ▾ Device ▾ Application ▾

### Calling Party Transformation Pattern Configuration

**Save** **Delete** **Copy** **Add New**

**Status**  
Status: Ready

**Pattern Definition**

Pattern\* 51451  
Partition 01\_COPI\_Transform\_PT  
Description 51451-021669512  
Numbering Plan < None >  
Route Filter < None >  
 Urgent Priority  
 MLPP Preemption Disabled

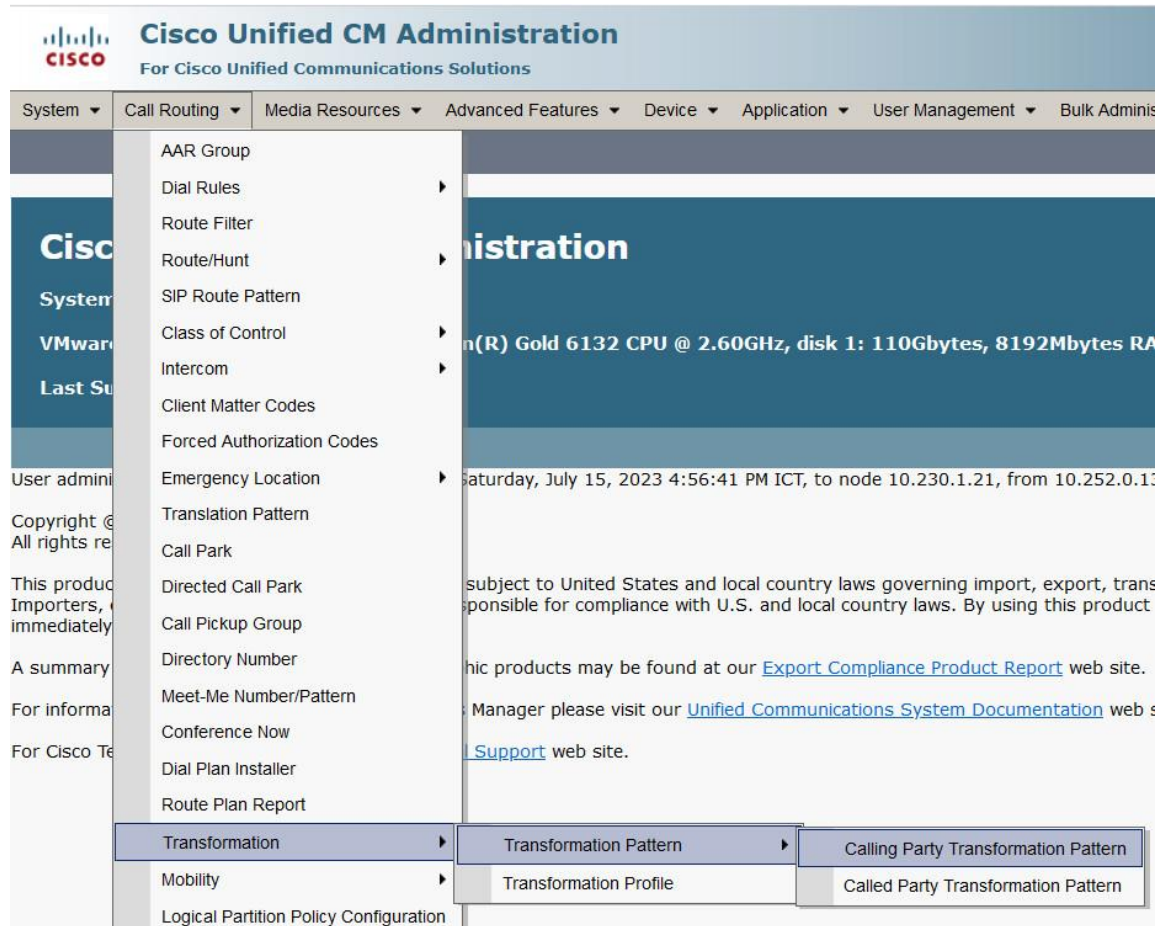
**Calling Party Transformations**

Use Calling Party's External Phone Number Mask  
Discard Digits < None >  
Calling Party Transformation Mask 021669512  
Prefix Digits  
Calling Line ID Presentation\* Default  
Calling Party Number Type\* Cisco CallManager  
Calling Party Numbering Plan\* Cisco CallManager

**Save** **Delete** **Copy** **Add New**

- Pattern\*: ใส่ Pattern ที่ต้องการแปลงหมายเลข
- Partition: เลือก Partition
- Description: ใส่คำอธิบายเพิ่มเติม
- Calling Party Transformation Mask: ใส่ Transformation Mask
- เลือก Save

- Delete Calling Party Transformation Pattern



- เลือก Calling Routing > Transformation > Transformation Pattern > Calling Party Transformation Pattern

- ใส่ Calling Party Transformation Pattern ที่ต้องการลบ และเลือก Find

The screenshot shows the Cisco Unified CM Administration interface. The main heading is "Cisco Unified CM Administration" with the Cisco logo. Below the heading is a navigation menu with items: System, Call Routing, Media Resources, Advanced Features, Device, Application, User Management, Bulk Administration, and Help. The current page is titled "Find and List Calling Party Transformation Patterns". There is an "Add New" button with a plus icon. Below this is a search section titled "Calling Party Transformation Pattern". The search criteria are: "Find Calling Party Transformation Pattern where" followed by a dropdown menu set to "Pattern", another dropdown menu set to "begins with", and a text input field containing "51451". The "Find" button is highlighted with a red circle. To the right of the "Find" button are "Clear Filter", a plus icon, and a minus icon. Below the search section, there is a message: "No active query. Please enter your search criteria us". At the bottom left of the search section, there is an "Add New" button.

- เลือก Calling Party Transformation Pattern ที่ต้องการลบ และเลือก Delete Selected

The screenshot shows the Cisco Unified CM Administration interface. The main heading is "Cisco Unified CM Administration For Cisco Unified Communications Solutions". Below the navigation menu, the page title is "Find and List Calling Party Transformation Patterns". In the toolbar, the "Delete Selected" button is highlighted with a red box. Below the toolbar, the status indicates "1 records found". The table below shows one record with the pattern "51451" and description "01\_COPI\_Transform\_PT". The checkbox for this record is also highlighted with a red box.

| Pattern | Partition            | Description     |
|---------|----------------------|-----------------|
| 51451   | 01_COPI_Transform_PT | 51451-021669512 |

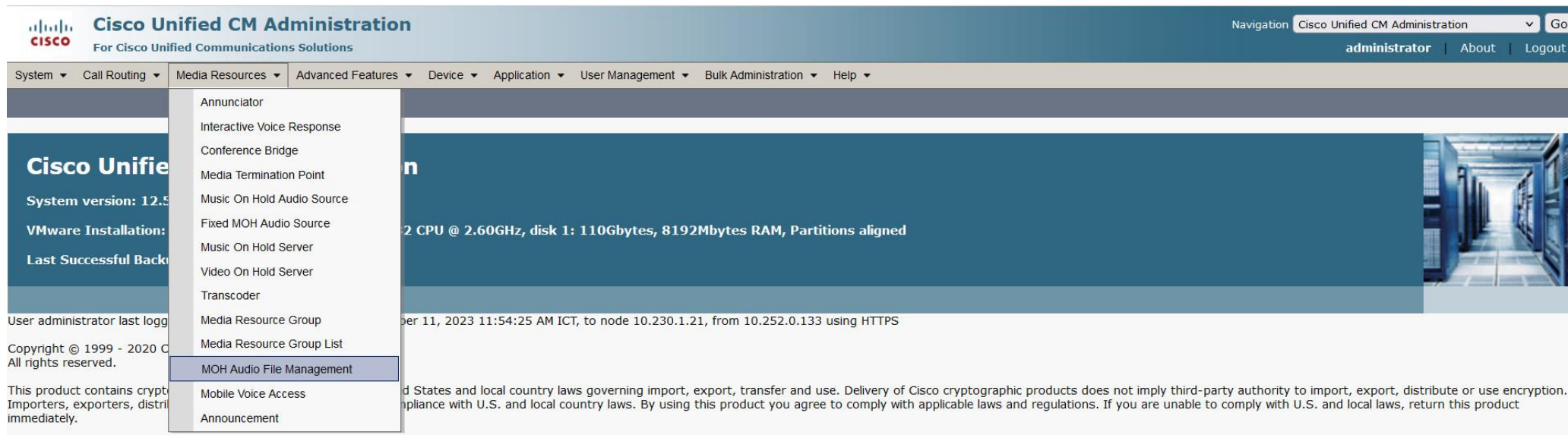
10.230.1.21  
You are about to permanently delete one or more Calling Party Transformation Patterns. This action cannot be undone. Continue?

OK Cancel

- เลือก OK



- Step1. เตรียมไฟล์เสียง Music on Hold ใส่รูปแบบของ .wav
  - ตัวอย่าง input audio source files ที่สามารถใช้งานได้มีดังนี้:
    - 16-bit PCM .wav file
    - Stereo or mono
    - Sample rates of 48 kHz, 44.1 kHz, 32 kHz, 16 kHz, or 8 kHz
- Step2. ไปที่ Media Resources > MOH Audio File Management



- Step3. กดปุ่ม Upload file MOH

**Cisco Unified CM Administration**  
For Cisco Unified Communications Solutions

Navigation: Cisco Unified CM Administration | Go  
administrator | About | Logout

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

### Find and List Music On Hold Audio Files

Select All | Clear All | Delete Selected | **Upload File**

**Status**  
4 records found, 3000 minutes available

|                          | File Name          | Length       | File Status          |
|--------------------------|--------------------|--------------|----------------------|
| <input type="checkbox"/> | Announce_Recording | 0 min 13 sec | Translation Complete |
| <input type="checkbox"/> | SampleAudioSource  | 5 min 38 sec | In Use               |
| <input type="checkbox"/> | SilenceAudioSource | 0 min 30 sec | Translation Complete |
| <input type="checkbox"/> | ToneOnHold         | 0 min 11 sec | Translation Complete |

Select All | Clear All | Delete Selected | Upload File

**Upload File**  
Upload File | Close

**Status**  
Status: Ready

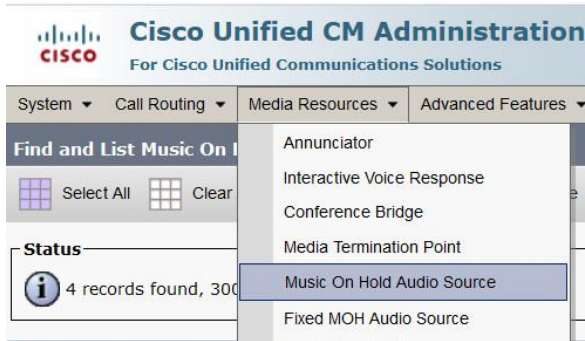
**Upload File**  
Upload File \* **Browse...** No file selected. (Note: The custom announcement wav file being uploaded must also be uploaded to each CUCM server in the cluster.)

Upload File | Close

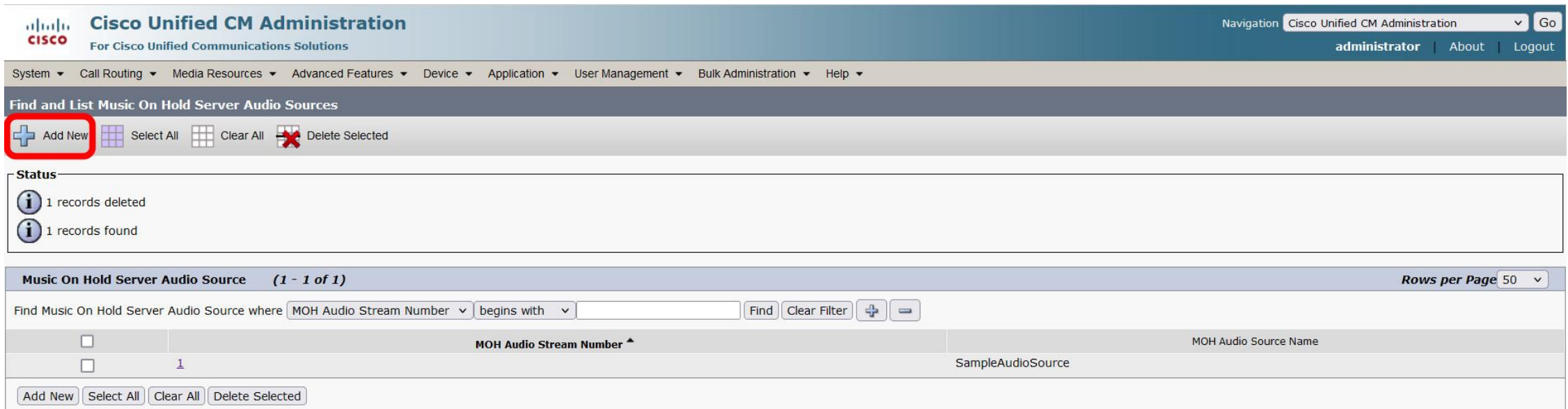
\* - indicates required item.

- Browse... ไปยังไฟล์ที่ต้องการใช้งาน และเลือก Upload File

- Step4. ไปที่ Media Resources > Music On Hold Audio Source



- เลือก Add New



**Cisco Unified CM Administration**  
For Cisco Unified Communications Solutions

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

### Music On Hold Audio Source Configuration

Save Upload File

**Status**  
Status: Ready

**Music On Hold Server Audio Source Information**

MOH Audio Stream Number\* 2 ▾

MOH Audio Source Name\* Test

Allow Multi-casting

Use MOH WAV file source

MOH Audio Source File\* original ▾

Redroadcast External Multicast Source

Source IPv4 Multicast Address\* 239. [ ] . [ ] . [ ]

Source Port Number\* [ ]

- MOH Audio Stream Number\*: ลำดับหมายเลขที่ต้องการใช้งาน
- MOH Audio Source Name\*: กำหนดชื่อให้กับ MOH
- Use MOH WAV file Source: เลือก ไฟล์ .wave ที่ได้ upload เข้ามา
- เลือก Save





ศูนย์เทคโนโลยีสารสนเทศและการสื่อสาร สป.มท.  
Information and Communication Technology Center.

**SAMART**

Thanks and Regards.

สำนักงานปลัดกระทรวงดิจิทัล  
ICTC