

LAB 8B: UC520 Multi-Site Setup

Introduction:

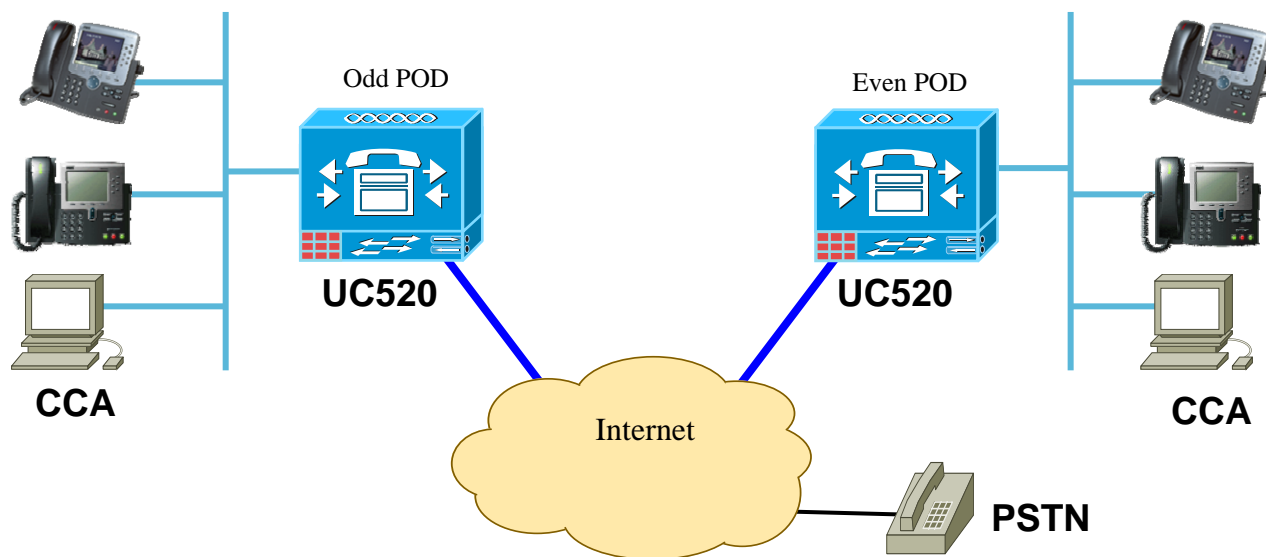
SBCS & UC520 can support a deployment where you network multiple sites together. The maximum number of sites that can be networked is 5 at this time. In a typical multi site deployment, the requirement is to have IPSec VPNs between each site and also setup site to site dialing via 4 or 5 digits. This also supports transfer and conference of calls between sites – since this is a distributed call processing setup, you cannot have a centralized directory and AA for all sites.

Objective:

The main objective of this lab is to configure the basic PBX system, voicemail and Auto Attendant features and then network the UC520s together to support inter site dialing. These features will be configured using Cisco Configuration Assistant (CCA) and command line interface (CLI). After completion of this lab – you will be able to setup the SBCS system in a multi site deployment and call between sites and the PSTN. **This lab will not go over the IPSec VPN setup.**

Note: Lab 8a is the IPSEC VPN configuration lab. However, that configuration is NOT applicable to this Multi-Site configuration lab because the UC520's are already on a private network connection (directly connected).

Topology:

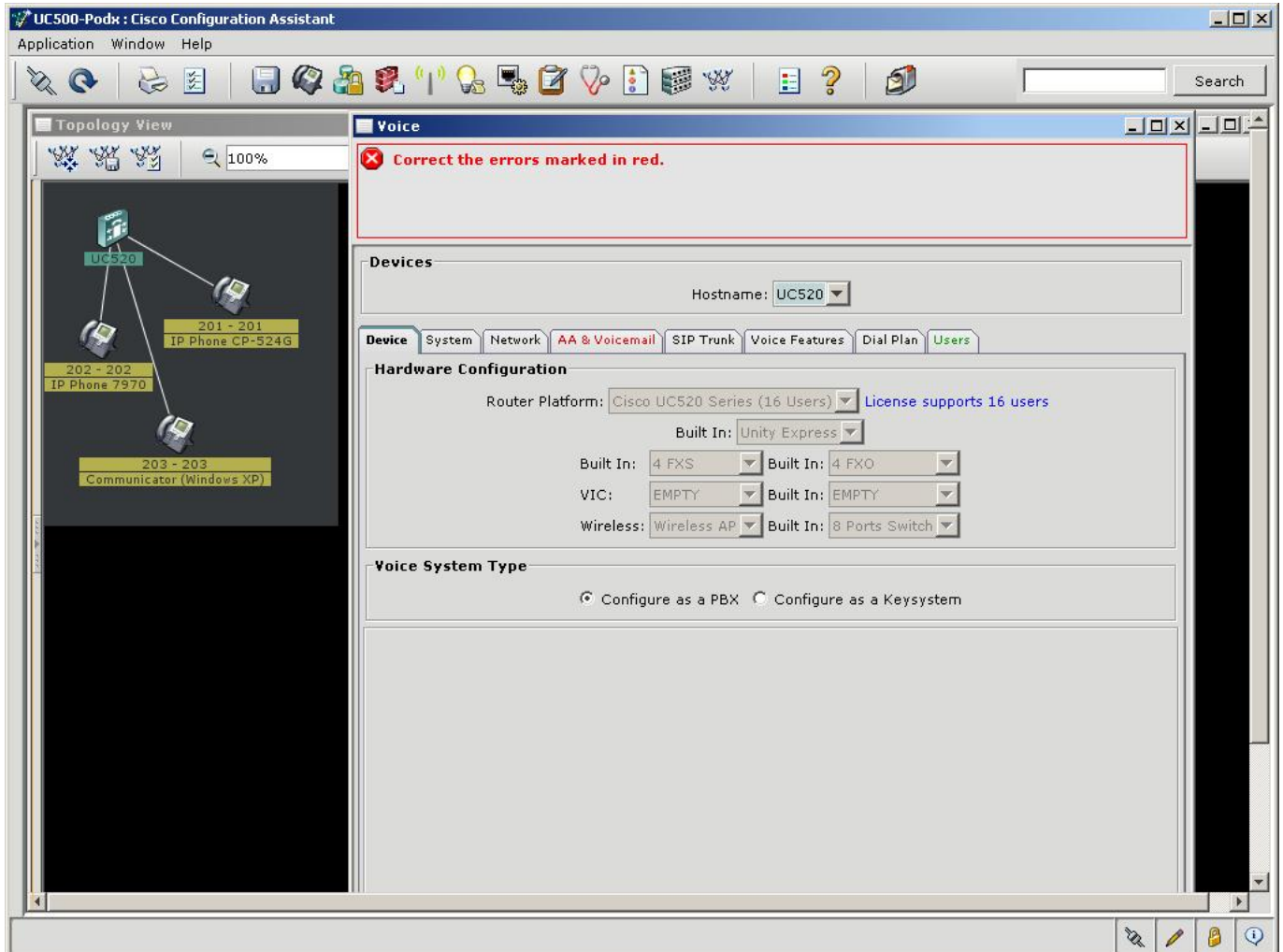


Setup steps:

1. This lab requires you to work with your “buddy” POD. It also assumes that both PODs have been reset to factory defaults. Follow steps 2 – 10 for both PODs – this is the same as you had done for LAB 2 so should be a repeat and simple to complete.
2. Launch CCA, connect to the created community and enter the username and password (cisco/cisco) and let it discover the network and connected devices.
3. Check the topology to ensure all the connected phones are showing up.

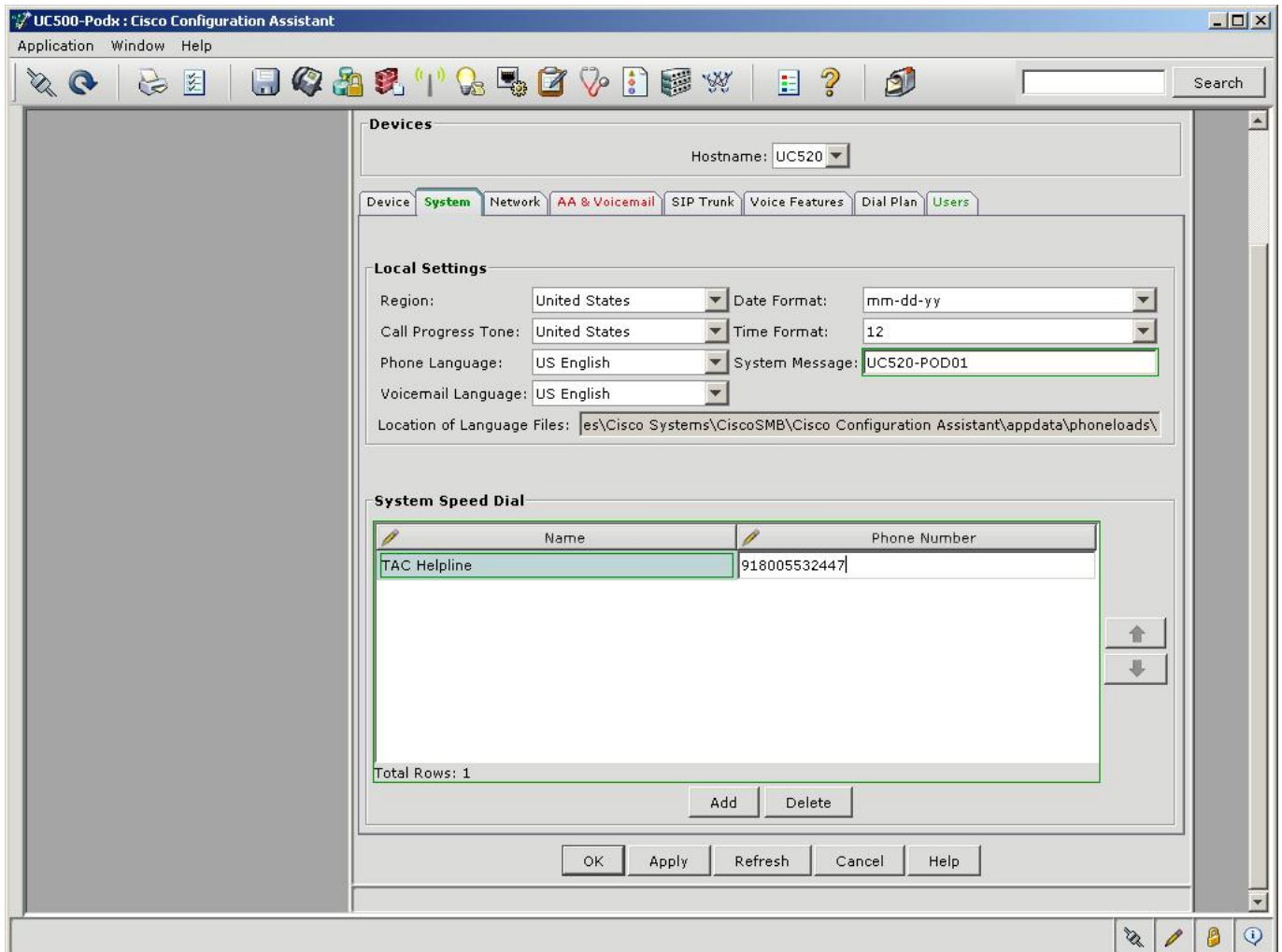
4. Click on “Configuration -> Telephony -> Voice” on the left navigation bar or click on the Phone icon on the top menu bar. Wait until the “Refresh” and “Apply” buttons are enabled before making any changes. In this lab,, we will configure the various tabs - “Device”, “System”, “Dialplan”, “AA & Voicemail”, “SIP Trunking” “Voice Features”, and “Users”.

5. Click on the “Device” tab & select the System Type as a “PBX”.



6. Click on “System” tab:
 - o Change the System Message to “UC520-PODxx”
 - o Configure a system-wide speed dial. Click on the “Add” button and configure a name and a corresponding number (eg. “TAC Helpline”, Number: 918005532447). Remember to include the PBX Access code and the long distance prefix for the speed-dial. These parameters are defaulted to 9 and 1 respectively for North American dialing and can be changed in the “Dial Plan” tab.

Note: Don't click on “OK” or “Apply” until you have configured all the voice tabs



7. Click on the “AA & Voicemail” tab:

- Set the AA Access Extension as 400 & the AA PSTN number as 4085xx1200
- For the Auto Attendant script, select the aa_transfer.aef
- For the Menu Prompt, select “AAWelcome.wav”
- Set the following parameters for the Auto Attendant script:
 - Option 0: 203
 - Option 1: 201
 - Option 2: 202
 - Option 9: 401
- Set the VoiceMail Access Extension to 401 & the VM PSTN number to 4085xx1209

Note: The pull-down menu assists by showing the existing extensions on the system. In addition, you can configure any number by overwriting “None”

The screenshot shows the configuration interface for the 'AA & Voicemail' tab. The 'Auto Attendant' section is configured with the following values:

Field	Value
Auto Attendant Extension	400
Auto Attendant PSTN Number	4085011200
Auto Attendant Script	aa_transfer.aef

The 'Script Parameters' section is configured as follows:

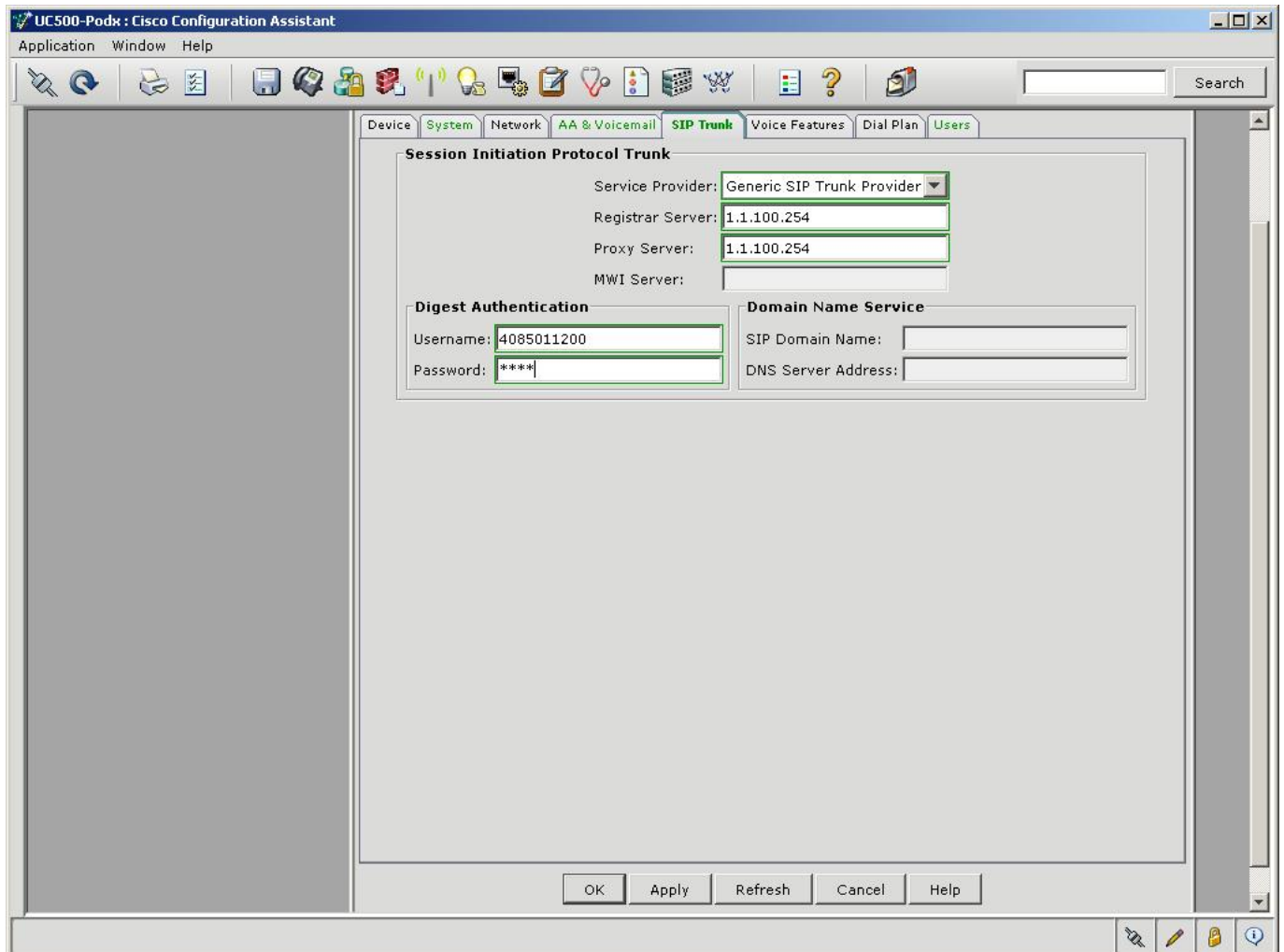
Option	Value
Option 0	203
Option 1	201
Option 2	202
Option 3	None
Option 4	None
Option 5	None
Option 6	None
Option 7	None
Option 8	None
Option 9	401

The 'Voicemail' section is configured with the following values:

Field	Value
Voicemail Access Extension	401
Voicemail Access PSTN Number	4085011209

Note: For options on recording new menu prompts, refer to Lab 3.

8. Click on the SIP Trunk tab and setup the UC520 for SIP trunking to a Service Provider for PSTN access
 - o Select “Generic SIP Trunk Provider” from the Service Provider pull down menu
 - o Set the Registrar Server and Proxy server fields with: 1.1.100.254 which is the SIP PSTN network setup in the lab
 - o Under Digest Authentication, set username to 4085xx1200 & password to 1234

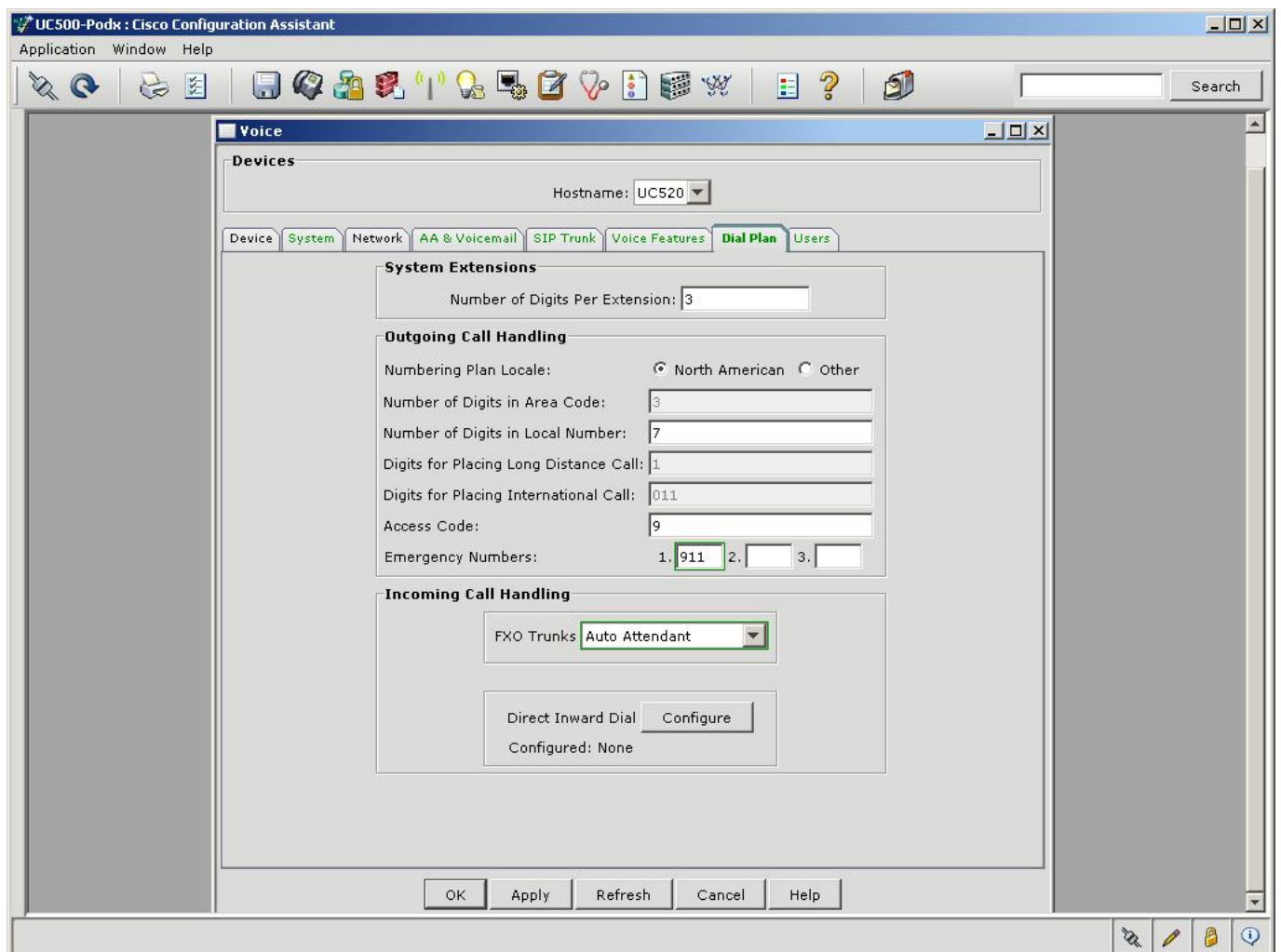


9. Click on the “Dial Plan” tab:

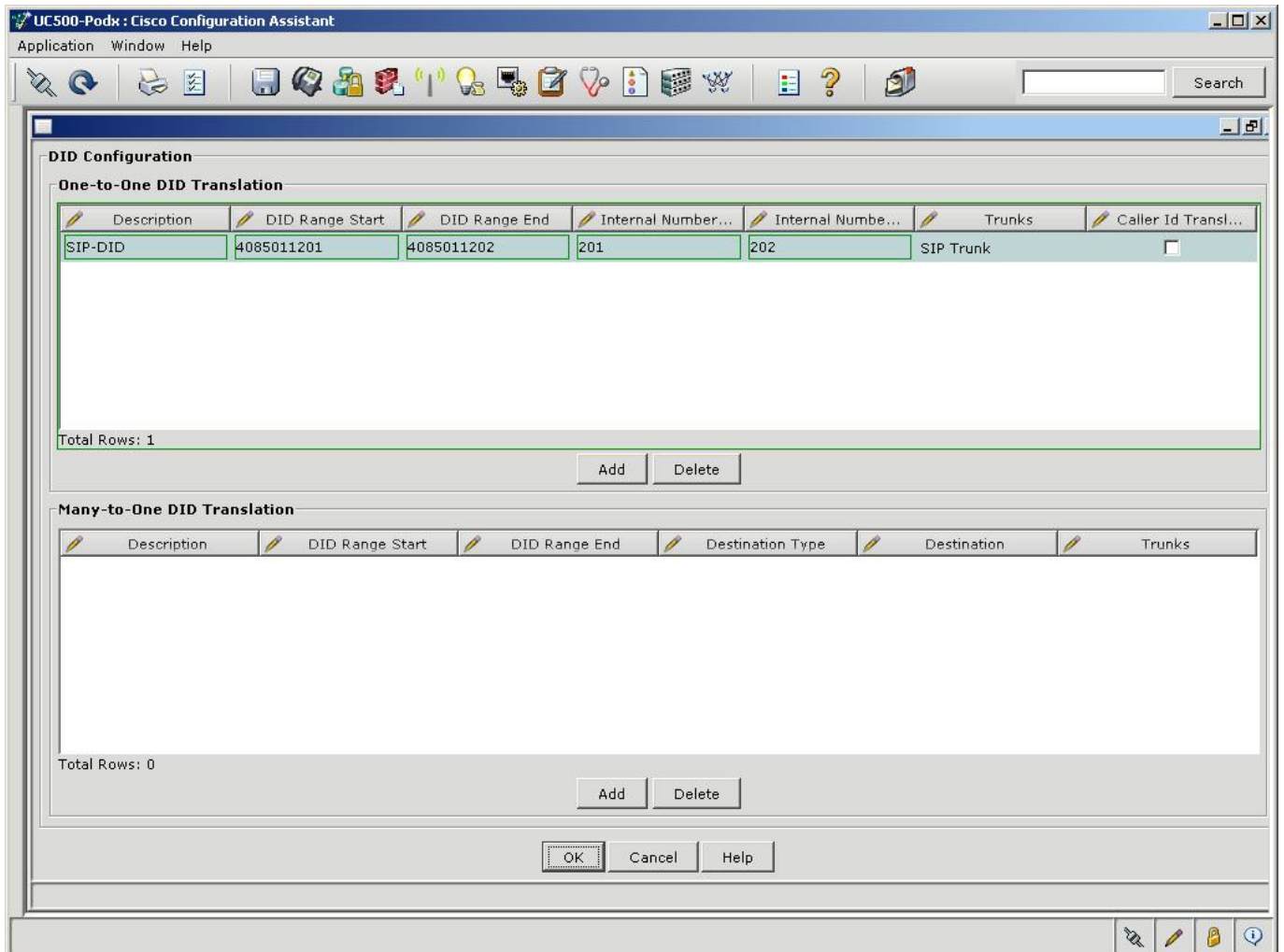
- o Ensure the following defaults are set for North American dialing:

Number of digits per Extension	3
Number of digits in Area Code	3
Number of digits in Local Number	7
Digits for placing Long Distance calls	1
Digits for placing International calls	011
Access code	9

- o Configure the “Emergency Number” to be “911”
- o For “Incoming Call Handling”, note that the “FXO Trunks” can be changed from “Custom Configuration” to “Auto Attendant” or “Operator”. When you select “Operator”, you get an option to configure the Operator’s extension. For this lab, choose “Auto Attendant” from the pull-down menu.

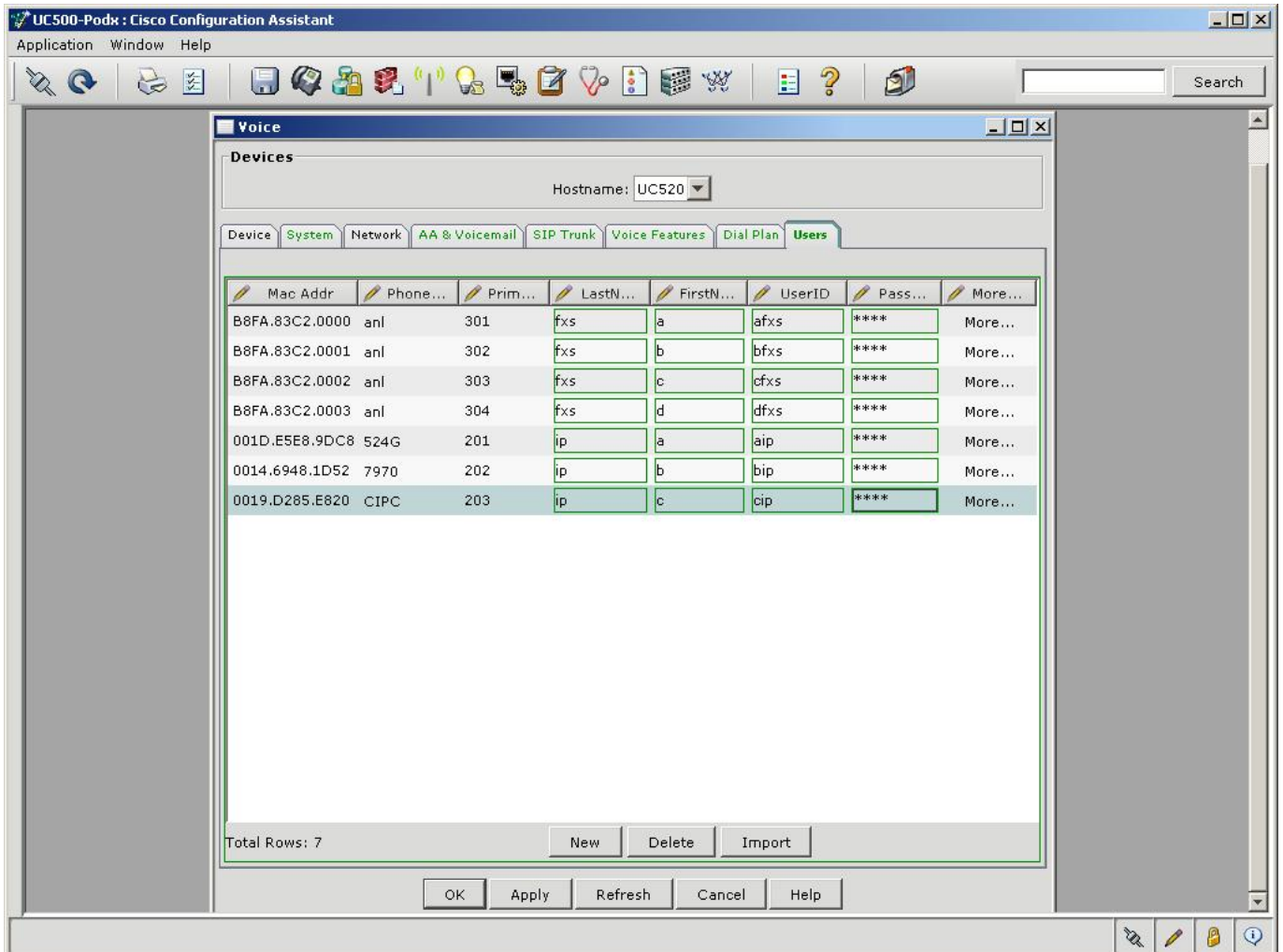


- Click on the “Configure” button for Direct Inward Dial. We will use this feature to add PSTN DID numbers to 2 of the IP phone users.
 - Click on Add range for “One-to-One DID Translation”
 - Enter a description such as SIPPSTN
 - Enter starting DID range as 4085xx1201 and ending as 4085xx1202
 - Enter starting Internal Extension range as 201 and ending as 202
 - Choose SIP Trunk from the trunk pulldown
 - Do not Check Caller ID and then click OK



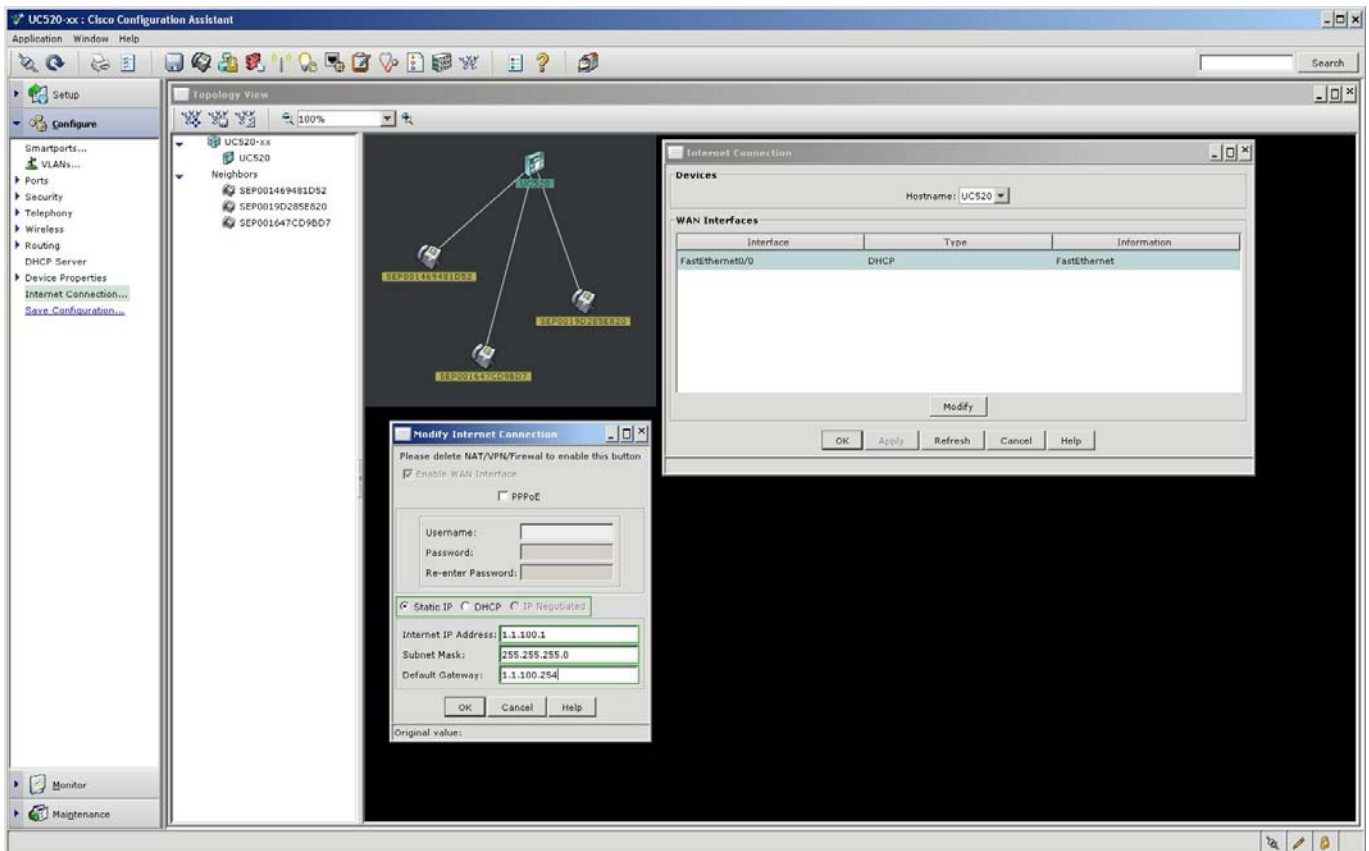
10. Click on the “Users” tab:

- For all the Analog Phones (none connected but configured by default on the UC520):
 - i. Configure the LastName for all Analog phones as fxs
 - ii. Configure the FirstName as a, b, c, d.
 - iii. Configure the userid as afxs, bfxs, cfxs, dfxs.
 - iv. Set the passwords to 1234.
- For all the IP Phones:
 - i. Configure the LastName for all IP phones as ip
 - ii. Configure the FirstName as a, b, c.
 - iii. Configure the userid as aip, bip, cip.
 - iv. Set the passwords to 1234.



11. Click on “ok” button at the bottom of the screen and observe the progress bar. Click OK when the “Configuration successfully sent to UC520” message pops up. It may take several minutes for the configuration to be applied to the UC500.

12. Configure the WAN Connectivity. On the left pane go to Internet Connections
 - a. Click on FastEthernet 0/0 and hit Modify
 - b. Click on Static IP radio button
 - c. Enter IP address as 1.1.100.xx (xx is POD # - drop the leading 0, only enter 1 for POD 01)
 - d. Enter Subnet mask as 255.255.255.0
 - e. Enter Default Gateway as 1.1.100.254
 - f. Click on OK to apply changes



13. Once both PODs are setup – we now need to define the dialplan for each site. In this lab – we will use the below dialplan:

Odd POD	Prefix 81xxx where xxx are the local extensions
Even POD	Prefix 82xxx where xxx are the local extensions

14. To create the intersite dialplan, you will need to use CLI. For CLI access you open a telnet session to UC500 at 192.168.10.1. Use cisco/cisco for username/password. Make sure you get into the enable mode by typing in “enable”, the enable password is cisco. Note this is done by each POD individually.

15. To configure the dialplan, add the below CLI on the **EVEN POD ONLY**

```
voice translation-rule 82
  rule 1 /^82(...)\$/ ^1/
!
voice translation-profile evenpod
  translate called 82
!
dial-peer voice 81000 voip
  destination-pattern 81...
  session protocol sipv2
  dtmf-relay rtp-nte
  codec g711ulaw
  no vad
  session target ipv4:1.1.100.xx
!where xx is the WAN IP address of the ODD POD
!
dial-peer voice 82000 voip
  incoming called-number 82...
  session protocol sipv2
  dtmf-relay rtp-nte
  codec g711ulaw
  no vad
  translation-profile incoming evenpod
```

```
ca Telnet 192.168.10.1
User Access Verification
Username: cisco
Password:
UC520#
UC520#
UC520#config terminal
Enter configuration commands, one per line. End with CNTL/Z.
UC520(config)#voice translation-rule 82
UC520(cfg-translation-rule)# rule 1 /^82\(...)\$/ ^1/
UC520(cfg-translation-rule)#!
UC520(cfg-translation-rule)#voice translation-profile evenpod
UC520(cfg-translation-profile)# translate called 82
UC520(cfg-translation-profile)#!
UC520(cfg-translation-profile)#dial-peer voice 81000 voip
UC520(config-dial-peer)# destination-pattern 81...
UC520(config-dial-peer)# session protocol sipv2
UC520(config-dial-peer)# dtmf-relay rtp-nte
UC520(config-dial-peer)# codec g711ulaw
UC520(config-dial-peer)# no vad
UC520(config-dial-peer)# session target ipv4:1.1.100.11
UC520(config-dial-peer)#!where xx is the WAN IP address of the ODD POD
UC520(config-dial-peer)#!
UC520(config-dial-peer)#dial-peer voice 82000 voip
UC520(config-dial-peer)# incoming called-number 82...
UC520(config-dial-peer)# session protocol sipv2
UC520(config-dial-peer)# dtmf-relay rtp-nte
UC520(config-dial-peer)# codec g711ulaw
UC520(config-dial-peer)# no vad
UC520(config-dial-peer)# translation-profile incoming evenpod
UC520(config-dial-peer)#
```

Annotations in the screenshot:

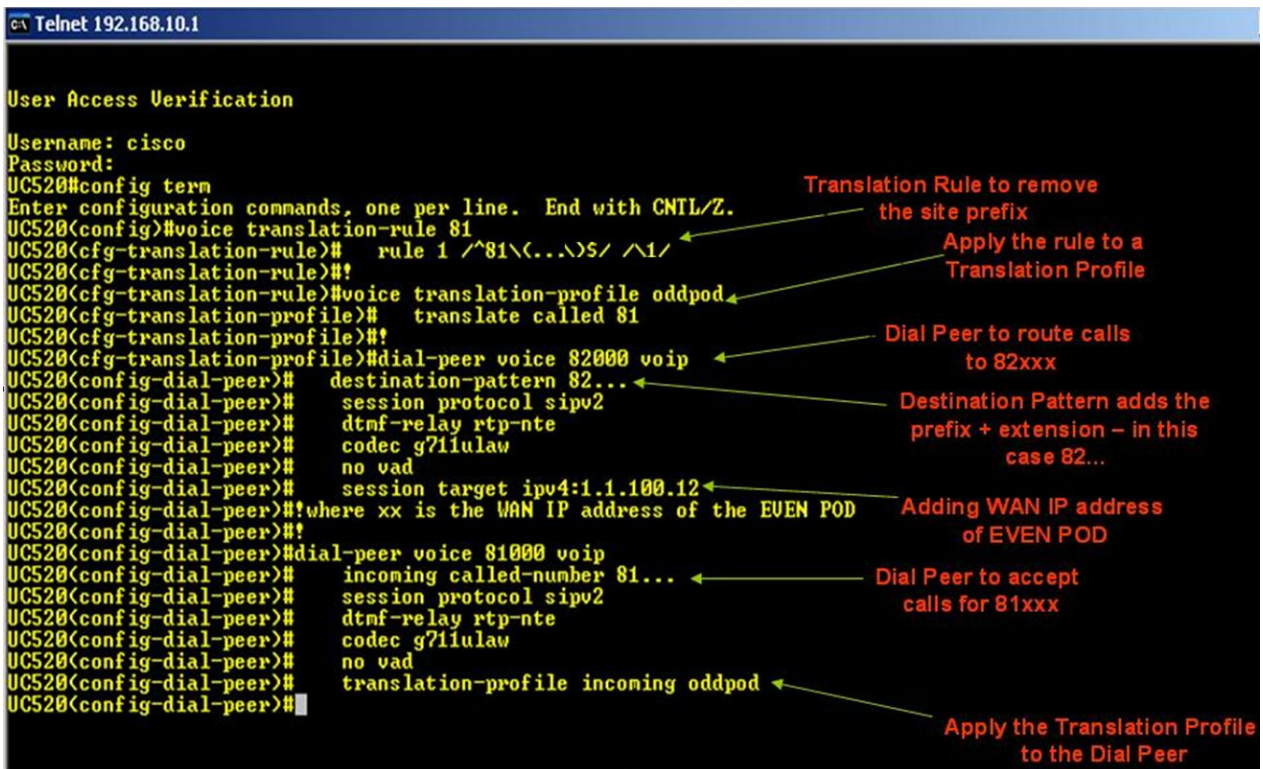
- Translation Rule to remove the site prefix (points to rule 1)
- Apply the rule to a Translation Profile (points to voice translation-profile evenpod)
- Dial Peer to route calls to 81xxx (points to dial-peer voice 81000)
- Destination Pattern adds the prefix + extension – in this case 81... (points to destination-pattern 81...)
- Adding WAN IP address of ODD POD (points to session target ipv4:1.1.100.11)
- Dial Peer to accept calls for 82xxx (points to dial-peer voice 82000)
- Apply the Translation Profile to the Dial Peer (points to translation-profile incoming evenpod)

16. To configure the dialplan, add the below CLI on the **ODD POD ONLY**

```

voice translation-rule 81
  rule 1 /^81(\...)\$/ ^1/
!
voice translation-profile oddpod
  translate called 81
!
dial-peer voice 82000 voip
  destination-pattern 82...
  session protocol sipv2
  dtmf-relay rtp-nte
  codec g711ulaw
  no vad
  session target ipv4:1.1.100.xx
!where xx is the WAN IP address of the EVEN POD
!
dial-peer voice 81000 voip
  incoming called-number 81...
  session protocol sipv2
  dtmf-relay rtp-nte
  codec g711ulaw
  no vad
  translation-profile incoming oddpod

```



17. For this lab, you will need to modify the access-list on the WAN interface to allow access from the partner site. You can do so by following the CLI below. You first need to a) remove the access-list from the interface, b) delete the access-list, c) re-add the access-list with your Partner PoD's IP address, and finally d) reapply the access-list to the WAN interface.

Part a)

```
UC520(config)#interface FastEthernet0/0
UC520(config-if)#no ip access-group 104 in
UC520(config-if)#end
```

Part b) and c)

```
UC520#config t
UC520(config)#no access-list 104
UC520(config)#access-list 104 remark auto generated by SDM firewall configuration
UC520(config)#access-list 104 remark SDM_ACL Category=1
UC520(config)#access-list 104 deny ip 10.1.10.0 0.0.0.3 any
UC520(config)#access-list 104 deny ip 192.168.10.0 0.0.0.255 any
UC520(config)#access-list 104 deny ip 10.1.1.0 0.0.0.255 any
UC520(config)#access-list 104 permit icmp any host 1.1.100.1 echo-reply
UC520(config)#access-list 104 permit icmp any host 1.1.100.1 time-exceeded
UC520(config)#access-list 104 permit icmp any host 1.1.100.1 unreachable
UC520(config)#access-list 104 permit udp any any eq 5060
UC520(config)#access-list 104 permit udp any eq 5060 any
UC520(config)#access-list 104 permit udp any any range 16384 32767
UC520(config)#access-list 104 permit udp host 63.203.35.55 eq domain any
UC520(config)#access-list 104 deny ip 10.0.0.0 0.255.255.255 any
UC520(config)#access-list 104 deny ip 172.16.0.0 0.15.255.255 any
UC520(config)#access-list 104 deny ip 192.168.0.0 0.0.255.255 any
UC520(config)#access-list 104 deny ip 127.0.0.0 0.255.255.255 any
UC520(config)#access-list 104 deny ip host 255.255.255.255 any
UC520(config)#access-list 104 deny ip host 0.0.0.0 any
UC520(config)#access-list 104 permit ip 1.1.100.xx 0.0.0.255 any ← Partner's IP
UC520(config)#access-list 104 deny ip any any
UC520(config)#end
```

Part d)

```
UC520#conf t
UC520(config)#interface FastEthernet0/0
UC520(config-if)#ip access-group 104 in
UC520(config-if)#end
```

Verify Steps:

1. On the IP Phones, make sure the FirstName and the LastName is visible.
2. Call the voicemail access number (401) & Auto Attendant (400) internally and test if calls work. Make sure the AA transfers the call as configured.
3. Press the 'Messages' key on each phone and enroll the users. Use "789" as a password.
4. Place calls between IP Phones and ensure that calls roll over to VM when not answered.
5. Check that the MWI light turns on when a message is left and check messages.
6. On the EVEN POD, on x201 dial 81201 – this should ring x201 on the ODD POD. Make sure you can answer the call and talk both ways.
7. Try the call the other way – on the ODD POD from x201, call 82201 – this should ring x201 on the EVEN POD.