For Small Business

cisco

UC 320 Hands On Training

David Harper (dharper@cisco.com)

Small Business Technology Group

Course Outline

- UC320 Overview
- Configuration Maximums
- Initial Configuration Walkthrough
- Lab 1 – Initial Configuration
- Lab 2 – Adding SPA8800 Gateway (Optional)
- Lab 3 – Phone Configuration
- Lab 4 – Call Routing
- Appendix (Platform Modification Files, FXO Impedance, Mediatrix Gateway, SIP Options)

UC320 Overview

Agenda – UC320W Sales Training

- UC320W Overview
- Selling and Positioning UC320W
- Competitive
- Resources
- Q&A

Cisco's Unified Communications Network Enhances Customer Productivity

UC – Small Business Options

Hosted

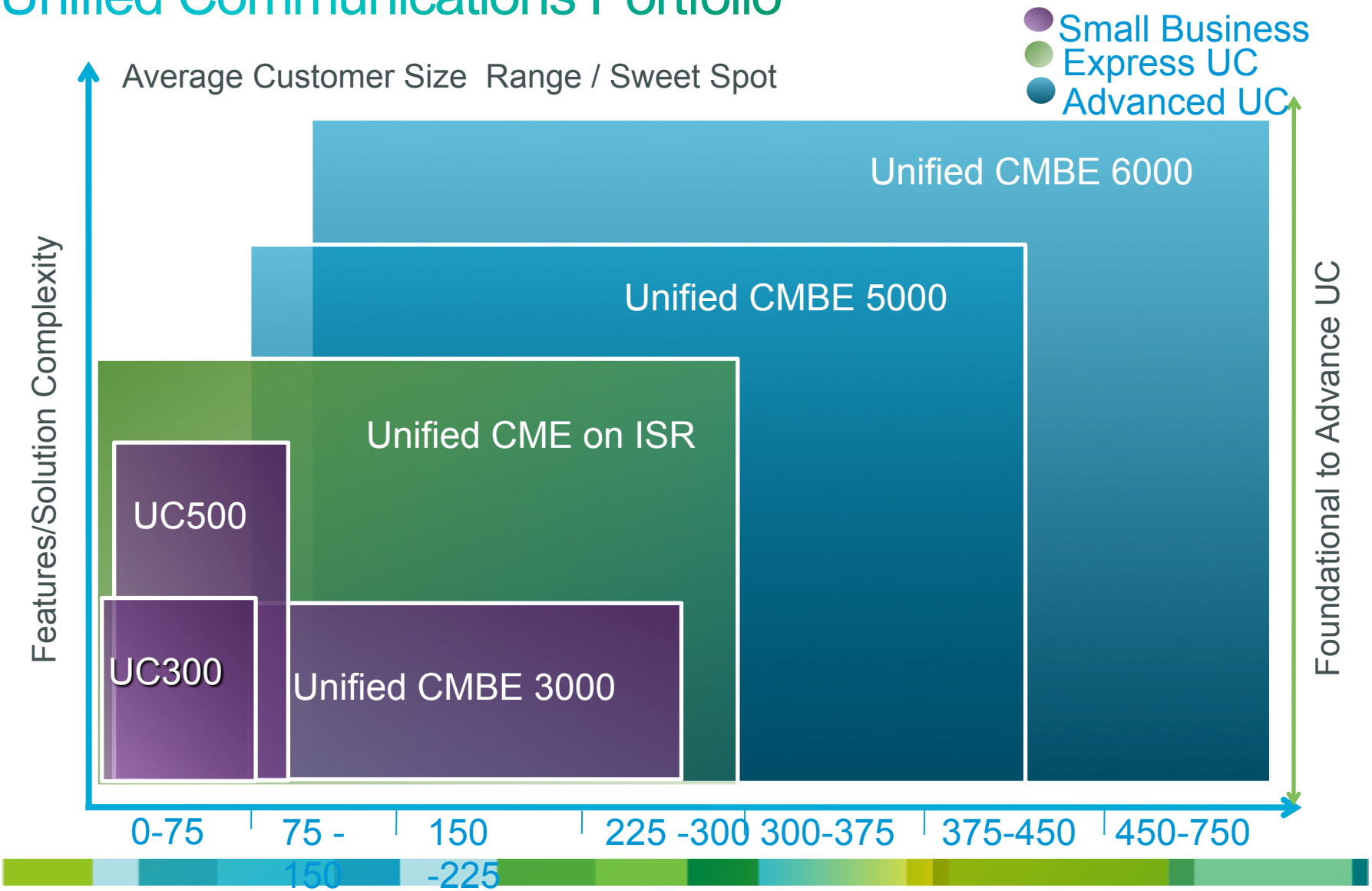
Service Provider Hosts Call Control
(BroadSoft, Metaswitch)

On Premise

Premises-based Call Control
(e.g. UC 500 on Premise)
+ Service Provider “Enhanced Trunking”

Common Benefits for Both Solutions

Small and Midsized Business
Unified Communications Portfolio



Cisco UC Portfolio for SMB – Overview

Cisco Unified Communications 300 Series	Cisco Unified Communications 500 Series	Cisco Unified CM Express	Cisco Unified CM Business Edition 3000	Cisco Unified CM Business Edition 5000/6000
4-24 users Standard hybrid voice, messaging, data, Wi-Fi FXO, FXS, SIP	8-104 users Voice, messaging, video, data, Wi-Fi FXO, BRI, T1/E1, FXS, SIP Basic VPN, firewall	5 – 450 users Voice, messaging, video, mobility Integrated TDM/IP GW Optional; VPN, firewall	75-300users 400 total devices 10 sites Voice, messaging, mobility, TI/EIGW, GUI Management FY12	50-1000users Voice, messaging, mobility, video Advanced UC applications
SPA 300, 500 Series	SPA 300, 500 Series 6900, 7900	3900, 6900, 7900, 8900, 9900 Series	7937, 3905, 6900 Series	3900, 6900, 7900, 8900, 9900 Series
				
UC320W	UC540 / 560	ISR G1 & G2	MCS 7816/7890	MCS 7828/UCS C200M2

Cisco UC Portfolio for SMB – At a Glance





Platform	Cisco Unified Communications 300 Series	Cisco Unified Communications 520	Cisco Unified Communications 540	Cisco Unified Communications 560	Cisco Unified Communications Manager Express	Cisco Unified Communications Manager Business Edition 3000
Hardware	All-in-one appliance; desktop or wall mount. Optional rack mount	All-in-one appliance; desktop or wall mount. Optional rack mount	All-in-one appliance; desktop or wall mount. Optional rack mount	All-in-one appliance; rack mount	Modular Integrated Services Router (ISR), rack mount	Combines single server and 2 integrated T1/E1 gateway ports
Call control	Unified Communications 300 Series	Unified Communications 500 Series	Unified Communications 500 Series	Unified Communications 500 Series	Unified Communications Manager Express	Unified Communications Manager Business Edition 3000 (special build of Unified Communications Manager)
Supported phones	SPA300, SPA500 Series	SPA300, SPA500 Unified IP Phones 6900, 7900 Series	SPA300, SPA500, Unified IP Phones 6900, 7900 Series	SPA300, SPA500, Unified IP Phones 6900, 7900 Series	Unified IP Phones 6900, 7900, 8900, 9900 Series	Unified IP Phones 3905, 6900 Series, 7937
Call model	Single site	Distributed, networked	Distributed, networked	Distributed, networked	Distributed, networked	Centralized
Number of sites	1	Up to 5	Up to 5	Up to 5	Unlimited	Up to 10
Scalability	1 to 24 seats	1 to 64 seats	8 to 32 seats	16 to 104 seats	1 to 450 seats	Up to 300 seats
Support	Small Business Support Service	Cisco SMARTnet® Service	Small Business Support Service	Small Business Support Service	SMARTnet, Software Application Support Plus Upgrades (SASU)	Cisco SMARTnet Service
Partner specialization	Small Business	Small Business	Small Business	Small Business	Express Unified Communications	Small Business

UC320 – Target Customer Profile

- SOHO/SB: 1 – 24 users (sweet spot 4 - 16 users)
- Requires a basic telephone system - KTS or PBX
  - Greenfield or KTS replacement, many Y2K
- May require voicemail, hunt group or auto attendant
- May require data integration (wired and wireless)
- ***Key purchase decision factor is price and service***

"I see the UC320 as a great product and perfect for the average small to medium business type."

Frank Lofreso – Multi-Tech Solutions Corp. Market Test September 2010

UC300 - Customer Benefits

- Designed and built specifically for Small Business
- A unified communications system that brings together voice, data, and wireless communications
- Comes with an enhanced communications feature set at no extra charge
- Affordable, easy to install and use
- Delivers reliable, business-class performance
- Delivered and supported by Cisco, a trusted brand and the world leader in networking and communications

UC300 - Partner Benefits

- Cisco Unified Communications 300 Series is a competitively priced unified communications system with features and pricing appropriate for small business
  - Provides opportunity to re-engage with customers who may be undecided or hesitant to buy converged voice and data
- Offers a way to move your customer to a converged network (data and voice)
  - An entry point to collaboration solutions
- Easy to sell and install system reduces your costs through a shorter sales cycle, fewer training requirements, and minimal post-deployment support
- Easy installation could improve your installation margins
- Helps you develop a profitable small business voice practice
- Delivered and supported by Cisco, a trusted brand and the world leader in networking and communications

UC320 Overview

- Up to 24 users
- Up to 12 trunks (PSTN &/or SIP)
  - Up to 4 SIP accounts
  - Lifeline (FXS – FXO failover)
  - Auto 911/POTS even with SIP
- 2 USB, back up VM & config
- Small business firewall
- Support for SPA300 & SPA500 wired and wireless phones

Internal Voicemail, 20h capacity

Integrated Auto-attendant

Music on Hold

Paging out

4 Gb LAN ports

4 FXO/Line ports (universal config)

1 FXS port for Phone/fax

Up to 1 Gb WAN Ethernet; Remote access

Cisco UC 320 Premise Mode
Software Feature Summary

- **1 to 24 IP Telephones**
  - Base config with 8 users
  - Licenses in 4 users increase (16)
- **Up to 4 SIP accounts**
- **Up to 12 PSTN trunks (4 built-in)**
  - Up to two SPA8800 for FXS & FXO
- **Mediatrix 4400 for BRI Gateway**
- **SIPv2 Call Control Configuration**
  - Key System (Square) or PBX mode
  - Day/Night Ring mode
- **Automated Attendant (2x9 menu)**
  - Pre-recorded Customizable
- **Internal Voice Mail**
  - Pre-recorded Customizable
- **Music on Hold**
  - Internal, external or Network Based
  - Pre-recorded customizable MOH file

- **Business Call Control Features**
  - Shared Line Call Appearance
  - Call Forwarding (All, Busy, NA)
  - Call Transfer - Attended and blind
  - Call Pickup - Selective and Group
  - Intercom and paging (5 groups)
  - Do Not Disturb
  - Three Party Conference Calling
  - Call Park and Retrieve
  - Extension status monitoring
  - Call Hunt Groups
  - Direct Inward Dialing
- **Corporate directory**
- **Embedded configuration utility**
- **Secure Remote Provisioning**

Industry Leading Configuration Utility

- Intuitive, easy to use User Interface
- Takes away the complexity and reduces time to deploy solution
- Intro video allows you to get started quickly
- Guides partner through the install with a step by step wizard

1
Connectivity and Basic Settings

2
Updates

3
Local Network

4
Configure Telephony

- Backup/Save and continue install at your convenience
- Comprehensive context sensitive Help built into the UI

UC320W Supported IP Phones

Features

SPA 301

- 1 line
- No speakerphone
- 1 10/100 port

SPA 303

- 3 lines
- Monochrome display
- 1 10/100 PC port

SPA 501G

- 8 lines
- 4 fixed function keys
- No display
- PC port
- PoE

SPA 502G

- 1 line
- Backlit display
- PC port
- PoE

SPA 504G

- 4 lines
- Backlit display
- PC port
- PoE

SPA 508G

- 8 lines
- Backlit display
- PC port
- PoE

SPA 509G

- 12 lines
- Backlit display
- PC port
- PoE

SPA 525G

- 5 lines
- Color display (hi-res)
- Wi-Fi client
- Bluetooth (headset)
- PC port
- PoE

SPA 500S

- Sidecar for SPA 500 Series phones
- 32 programmable keys
- No display (paper)
- Up to 2 supported per SPA 500/phone
- Powered by IP phone

UC320W Supported Switches

Recommended switch models after
June 2011 (when Smart Ports become available) are the
SF302-08P and SF300-24P

Current Recommendation: ESW 520P 8/24 port
Features: POE, PC Port (Voice Vlan),
QoS and Plug ‘n Play (Default Vlans & CDP)

Full Featured Value Option: SRW208/224 - 8/24 port
Features: POE, PC port (Voice Vlan) and QoS. No Plug n Play.

Value Option: SD208T/SR224T
Features: Unmanaged, No POE, Voice only (No data + voice QoS)
Note: This option is only for very price sensitive customers with No PCs or Data network and simply want a phone system.

UC320W Supported Gateways

SPA 8800

- SIP only
- 4 FXO Ports
- 4 FXS Port
- 1 Ethernet port (10/100)
- 1 AUX Ethernet port (not used)

Mediatrix® 4400 Series BRI Digital Gateway

- SIP only
- 1, 2, or 4 BRI ports
- 1 Ethernet port (10/100)

UC320 List Pricing

UC320 SKUs	Description	List ($USD)
UC320W-FXO-K9	UC320 base unit with 24 users	$ 995

Solution Components

SPA8800	4FXO/4FXS gateway	$600
SF302-08P	8-port 10/100 PoE Switch w/Gig Uplinks	$387
SF300-24P	24-port 10/100 PoE Switch w/Gig Uplinks	$725
SF300-24	24-port 10/100 Switch with Gigabit Uplinks	$333
SPA502G	1 line display phone	$164
SPA504G	4 line display phone	$189
SPA508G	8 line display phone	$225
SPA525G2	Multiline Color Wireless/wired desk phone	$430
SPA303G	3 Line Greyscale display	$125
SPA301G	Basic Set, no display	$89
3 Year Support	Next Business Day Replacement	$149

12 User System:

$241 per user

16 User System:

$218 per user

UC320 System List Pricing

12 User System

UC320	Unified Communications, simplistic set up	$995
SF302-08P	8-port 10/100 PoE Switch w/Gig Uplinks	$387
SPA301 * 10 Units	Basic Set, no display	$830
SPA508 * 2 Units	8 line display phone	$450
3 Year Support	Next Business Day replacement	$149

System Total: $2,888

12 User System:

$234 per user

16 User System - Value

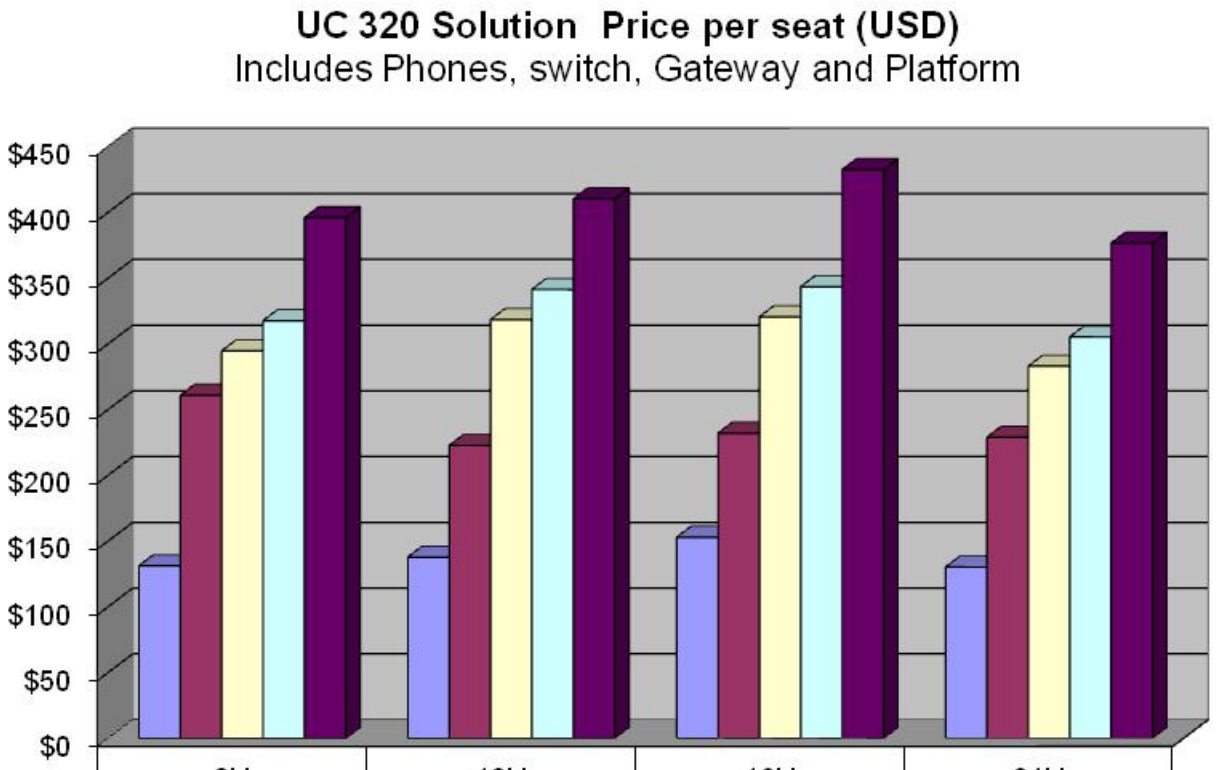
UC320	Unified Communications, simplistic set up	$995
SF300-24P	24-port 10/100 PoE Switch w/Gig Uplinks	$725
SPA301*14 Units	Basic Set, no display	$1,162
SPA508 * 2 Units	8 line display phone	$450
3 Year Support	Next Business Day replacement	$149

System Total: $3,481

16 User System:

$218 per user

UC 320 End user Solution price per seat



	8U	12U	16U	24U
All Analog	$131	$138	$153	$130
Hybrid	$261	$223	$232	$229
IP Low	$295	$318	$321	$283
IP Med	$318	$341	$343	$305
IP High	$396	$410	$433	$377

All Analog is Phase 2 item (future)

Price per seat is estimated. Based on standard pricing and 25% partner uplift

UC320 + SIP = Significant $$ Savings (NZ)

- SIP Trunks offer significant cost savings on monthly telecommunications charges over traditional analog phone lines
- Annual savings for a small business more than pays for their UC320 voice platform

Traditional Phone Lines and Broadband Internet Service			SIP Trunking and Broadband Internet Service	
Landline Plan with national calling (BusinessTime Plan)	$ 51.95		SIP Service with national calling	$ 12.00
1000 min Local Calling @ 12c pm	$ 120.00		1000 min Local Calling @ 5c pm	$ 50.00
High Speed Internet for Data (60GB) (Business Broadband ADSL)	$ 97.73		High Speed Internet for Data (50GB)	$ 82.50
Monthly Charges:	*$ 269.68*		*Monthly Charges:*	*$ 144.50*
Annual Cost:	*$ 3,236.00*		*Annual Cost:*	*$ 1,734.00*
			Annual Cost Savings with SIP	*$ 1,502.00*

Source: Cost analysis is based on traditional phone lines with local/long distance rates from Telecom NZ, and SIP Service and High Speed Internet charges from Digital Island in the NZ Area in NZD$

UC320 + SIP = Significant $$ Savings (AU)

- SIP Trunks offer significant cost savings on monthly telecommunications charges over traditional analog phone lines
- Annual savings for a small business more than pays for their UC320 voice platform

Traditional Phone Lines and Broadband Internet Service			SIP Trunking and Broadband Internet Service	
Basic Plan with 22c local calls (BusinessLine Choice Plan)	$ 39.95		SIP Service with 15c local calls	$ 9.95
1000 min Local Calling	$ 220.00		1000 min Local Calling	$ 150.00
High Speed Internet for Data (200GB) (Business Broadband ADSL)	$ 80.00		High Speed Internet for Data (200GB)	$ 79.95
Monthly Charges:	*$ 339.95*		*Monthly Charges:*	*$ 239.90*
Annual Cost:	*$ 4,079.00*		*Annual Cost:*	*$ 2,878.00*
			Annual Cost Savings with SIP	*$ 1,201.00*

Source: Cost analysis is based on traditional phone lines with local/long distance rates from Telstra, and SIP Service and High Speed Internet charges from iiNet in the AU Area in AUD$

UC320 Vs. Key System Comparison

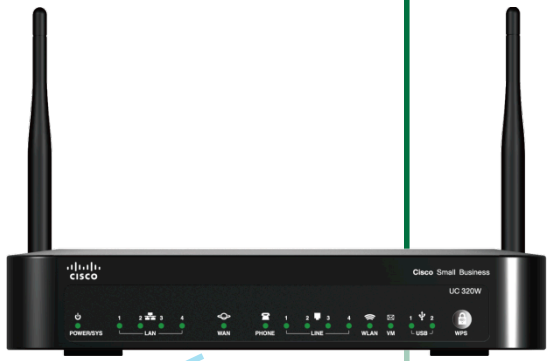
	Typical Key System	Cisco UC320
Key System Functionality	✓	✓
PBX System Functionality	?	✓
Wireless Voice Network	Extra $	✓
Integrated Voice Mail	Extra $	✓
Integrated Auto Attendant	Extra $	✓
Advanced UC Messaging/Applications		✓
Data Network		✓
Add'l UC Features Downloaded, No Hardware		✓
Wireless Data Network		✓
Simplified GUI for Setup (60 minutes setup)		✓
Price	$ - $$	**$**

UC320 Easily Beats Key Systems

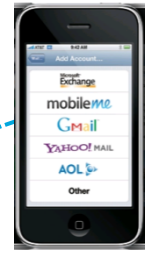
Available Today

Voice & Data Network

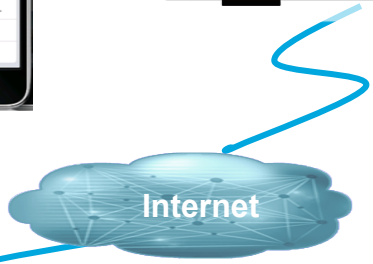
Access news & weather (RSS)



Voicemail to Email



Remote Access



Working in the Lab

Surveillance

3G Wireless redundancy

Soft Phone

Android & iPhone Mobile Clients

Competitive Summary

	Cisco® UC320	Avaya IP Office	LG-Nortel Aria 24IPE	Panasonic KX-TDA30	NEC DSX 40/80	NEC SV 8100	Toshiba CIX 40	Toshiba CIX 100	Samsung OfficeServ 7030	Samsung OfficeServ 7100	Mitel 3000	Mitel 3300
One Box – Voice, Data	G	G	R	R	R	G	R	G	R	G	R	G
Web UI for Configuration	G	R	R	R	R	R	G	G	R	R	R	R
Integrated Voicemail/ and Auto Attendant	G	G	G	Y	Y	Y	Y	Y	G	G	Y	G
Integrated Voicemail to Email	G	Y	R	Y	Y	Y	Y	Y	Y	G	Y	G
Integrated Data Switching and Routing	G	G	R	R	R	G	R	G	R	G	Y	G
Wireless LAN	G	R	R	R	R	Y	R	R	Y	Y	Y	Y
Wireless Phones	G	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
SIP Trunking	G	Y	R	Y	R	Y	Y	Y	Y	Y	Y	Y
Remote Web Access for Maintenance and Administration	G	R	R	R	R	Y	G	G	R	R	R	R
Investment Protection	G	Y	Y	G	R	G	G	G	G	G	G	G
One Vendor - Switching, Routing, Security, Wireless & Voice	G	R	R	R	R	R	R	R	R	R	R	R
Street Price *(w/ VM based on 10 users)*	**$750 (Street)**	**$756** (no cards)	**$1,287**	**$1,593**	**$1,100**	**$2,455**	**$ 1,219**	**$2,657**	**$1,900**	**$2,300**	**$1,518**	**$3,515**

G Feature available

Y Feature available with limitation/ requires additional module/cost

R Feature not available

Based on information available at time of publication

Competition

Competitor	Model(s)	Strength	Weakness
Panasonic	KX-TA824 KX-TDA50/50G	Market share leader - known for reliability and simplicity of operation. KX-TA824 is a competitively priced key system. KX-TDA50 has advanced features for small businesses: DECT phones, cordless and cellular mobility and SIP trunking.	Voice centric products - lack support for data switching, routing and WLAN. Voice mail, auto attendant, caller ID, and video camera/ surveillance are optional at additional cost.
NEC	DSX-40/80 SV-8100	DSX is a strong seller in the small business segment due to aggressive pricing and loyal dealers/resellers. Attractive install base of 100,000 customers to upsell larger more expensive SV8100 with data switching, routing and mobility options.	No SIP trunking available on the DSX. Voicemail and auto attendant functionality are optional add-ins at additional cost. No investment protection when you upgrade from the DSX to the larger SV-8100 – most phones will not be usable.
Avaya	IP Office (Essential Edition) BCM50	Avaya has 1.5 million key systems installed over and above the BCM base and claims 25% lower TCO than any vendor. Aggressively priced Essential Edition includes data switching, routing and firewall protection built in. IP Office supports key system features from the older Partner System and Partner system phones	No WLAN capability. Avaya plans to end of life BCM50 – further investment in BCM is risky. Migration options from BCM 50 to IP Office are limited Upgrading older Avaya systems is also known to be expensive.
Mitel	3000 3300	The Mitel 3000 is a voice centric solution with PBX, voicemail, and contact center functionality. Optional Broadband module provides Ethernet switch, WAN port and 802.11g wireless access point and SIP trunking. The larger 3300 system provides wide range of advanced voice features and networking capability.	Both the 3000 and the 3300 systems are designed for the larger SMBs. Smaller customer with 4-16 lines will find the Mitel solutions pricier and much too large for their needs. Requirement for optional Broadband module for the 3000 adds another dimension of complexity and cost for small customers.
Toshiba	Strata CIX40 Strata CIX100	Known for dependability and extensive calling features. CIX40 is a price competitive package with features and upgrade flexibility for up to 24 users. The larger CIX 100 provides data switching and routing capability with optional UC modules.	Toshiba has no expertise in data communications or security. CIX 40 lacks data support and WLAN Old-world voice centric technology when compared to UC320.
Samsung	OfficeServ 7030 OfficeServ 7100	Strong products with aggressive pricing for the SMB market. The OfficeServ 7030 includes advanced features such as Wi-Fi telephony, SIP trunking out of the box. The OfficeServ Connect application offers dual homing (desk and mobile phone ring simultaneously).	OfficeServ 7030 does not include an integrated data switch. OfficeServ 7100 does not include an integrated WLAN access point.

Why Cisco for Small Business

- Cisco Focus
- Attention
- Breadth – All gear one vendor
- Education/Training
- Scale
- Support
- Marketing

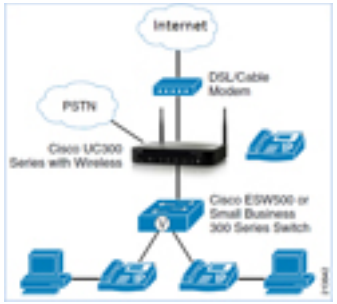
UC320W References

- UC300 on Cisco.com: http://www.cisco.com/go/uc300
- UC 300 Administration Guide: http://www.cisco.com/en/US/partner/products/ps10782/prod_maintenance_guides_list.html
- UC300 Release Notes: http://www.cisco.com/en/US/partner/products/ps10782/prod_release_notes_list.html
- UC300 Quick Start Guide: http://www.cisco.com/en/US/partner/products/ps10782/prod_installation_guides_list.html
- UC 300 Cisco Small Business support community: https://supportforums.cisco.com/community/netpro/small-business/voiceandconferencing/uc300
- Cisco Small Business Support Community – Voice and Video Conferencing: https://supportforums.cisco.com/community/netpro/small-business/voiceandconferencing
- Cisco SMART Designs for Small Business Solution: http://www.cisco.com/go/smartdesigns
- Cisco SMART Designs for UC300 Solutions: http://www.cisco.com/go/smartdesigns/uc300

UC300 Series SMART Design

Objective: Provide a predictable and profitable design and implementation guidance for partners selling UC320.

Scope: Design guidance cover a single site deployment for:
1) New install
2) Integrating UC320 into an existing network.



Products: UC320W and …
Switches: Sx300 & ESW-500
Gateways: SPA8800 (FXS/FXO) & Mediatrix 4402 (BRI)
End-points: SPA300 & SPA500

Deliverables: SMART Design for UC320 will include:
- Solution overview & bill of materials
- Technical presentation (with webinars for partner SEs)
- Design Guide
- Configuration guides (for Sx300 & ESW-500)
- Application Notes:
  - SIP Trunking configuration
  - Adding FXS/FXO ports using SPA8800
  - BRI connectivity using Mediatrix 4402

Availability: 01/25/11 - Solution overview, BOM and Technical Presentation
02/22/11 - Design & Implementation guides, App. Notes
http://www.cisco.com/web/partners/sell/smb/tools_and_resources/unified_communications_300.html

Configuration Maximums

Call Volume Limitations

- Max external calls = 12 (SIP / FXO combined)
- Max calls on each extension = 2
- Max simultaneous calls to voicemail = 4 (increase to 8 on roadmap)
- Max simultaneous calls to AA = 8

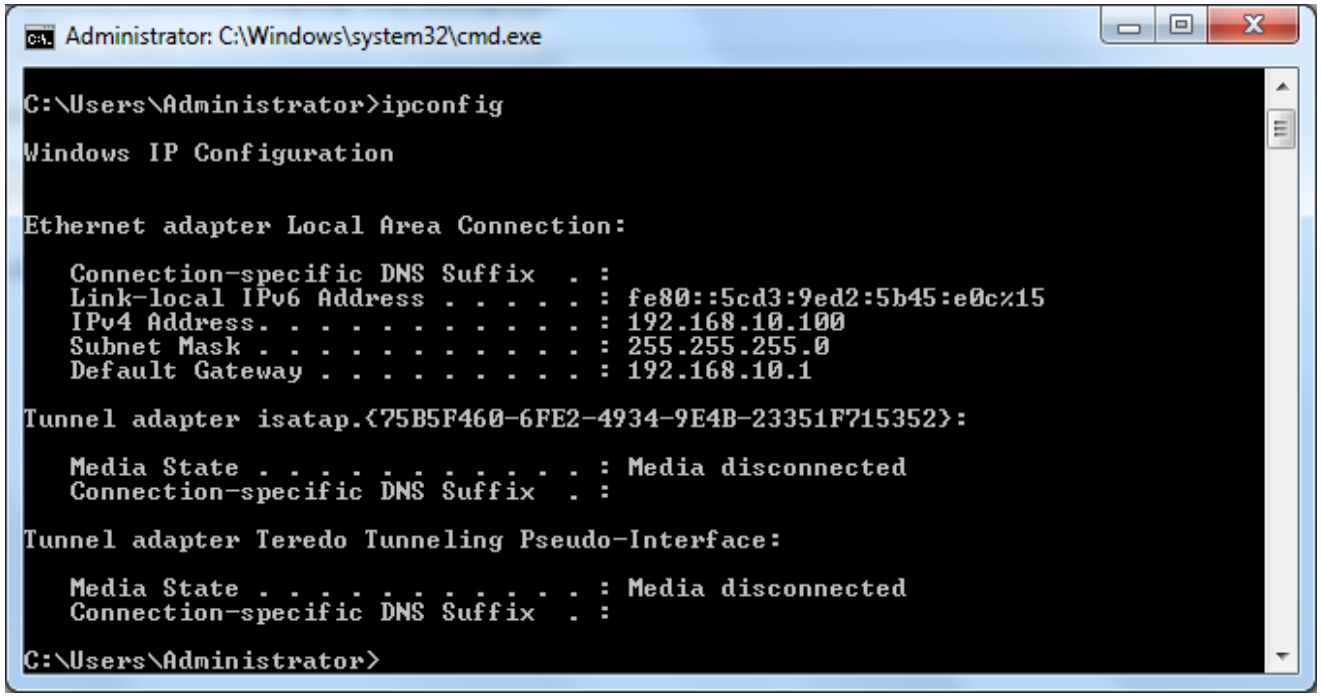
Device Limitations

- Max No of Phones = 25 (1 built in FXS + 24 Phones). The 24 phones could be any combination of IP and Analog phones.
- Max analog lines (FXO) = 12
- Max analog phones (FXS) = 9 (with 2 SPA 8800s)
- Max Wifi Phones = 8
- Max SPA8800 gateways = 2
- Max Mediatrix gateways = 2
- Max external directory entries = 100

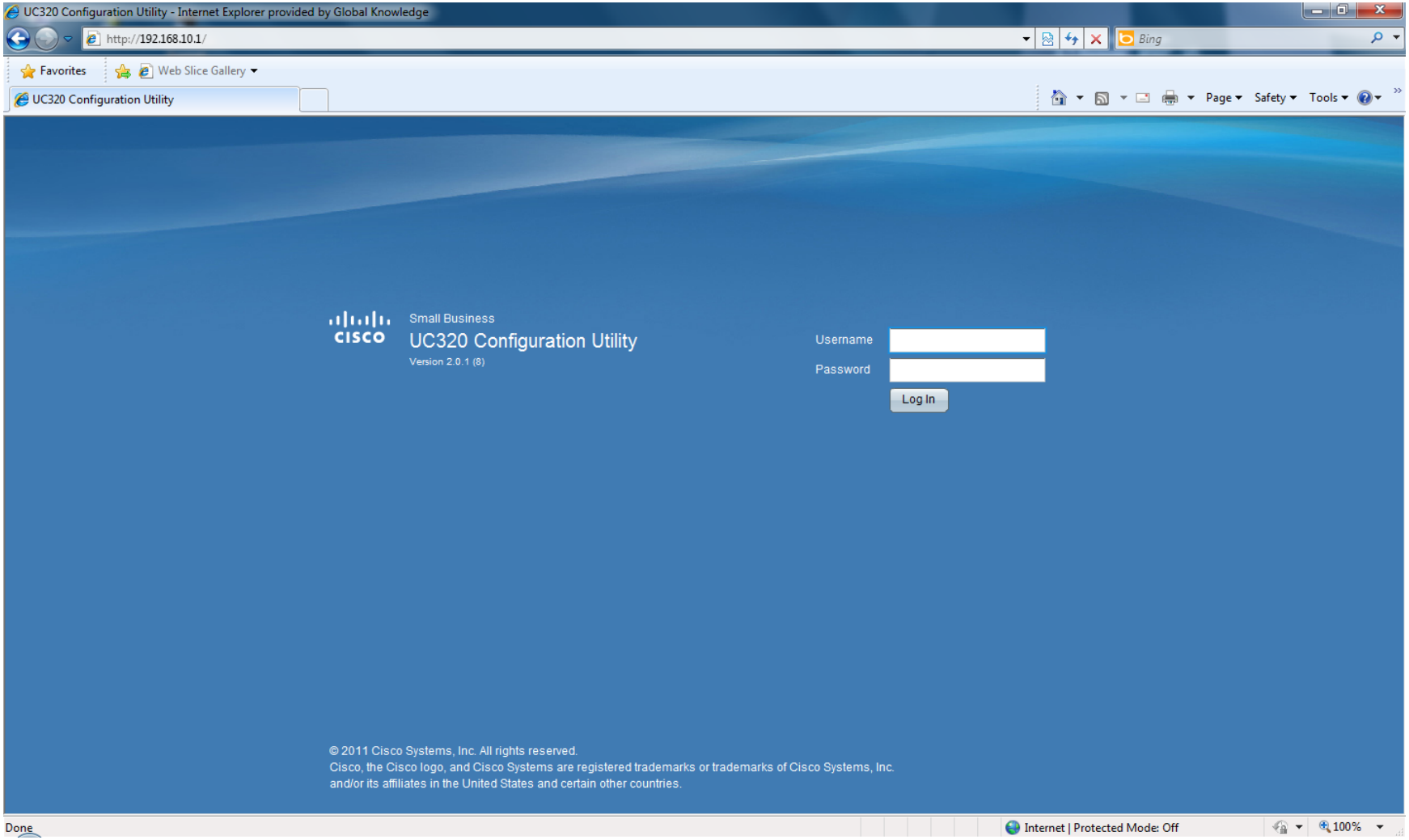
Initial Configuration Walkthrough

Check IP Configuration

Once you have plugged the management PC into Port 4, you should receive an address via DHCP. Verify this by issuing the "ipconfig" command from the Windows command prompt. This will also allow you to verify the default IP address of the UC320 - which is also the default gateway.



Initial Login (cisco/cisco)



Reset Admin Credentials

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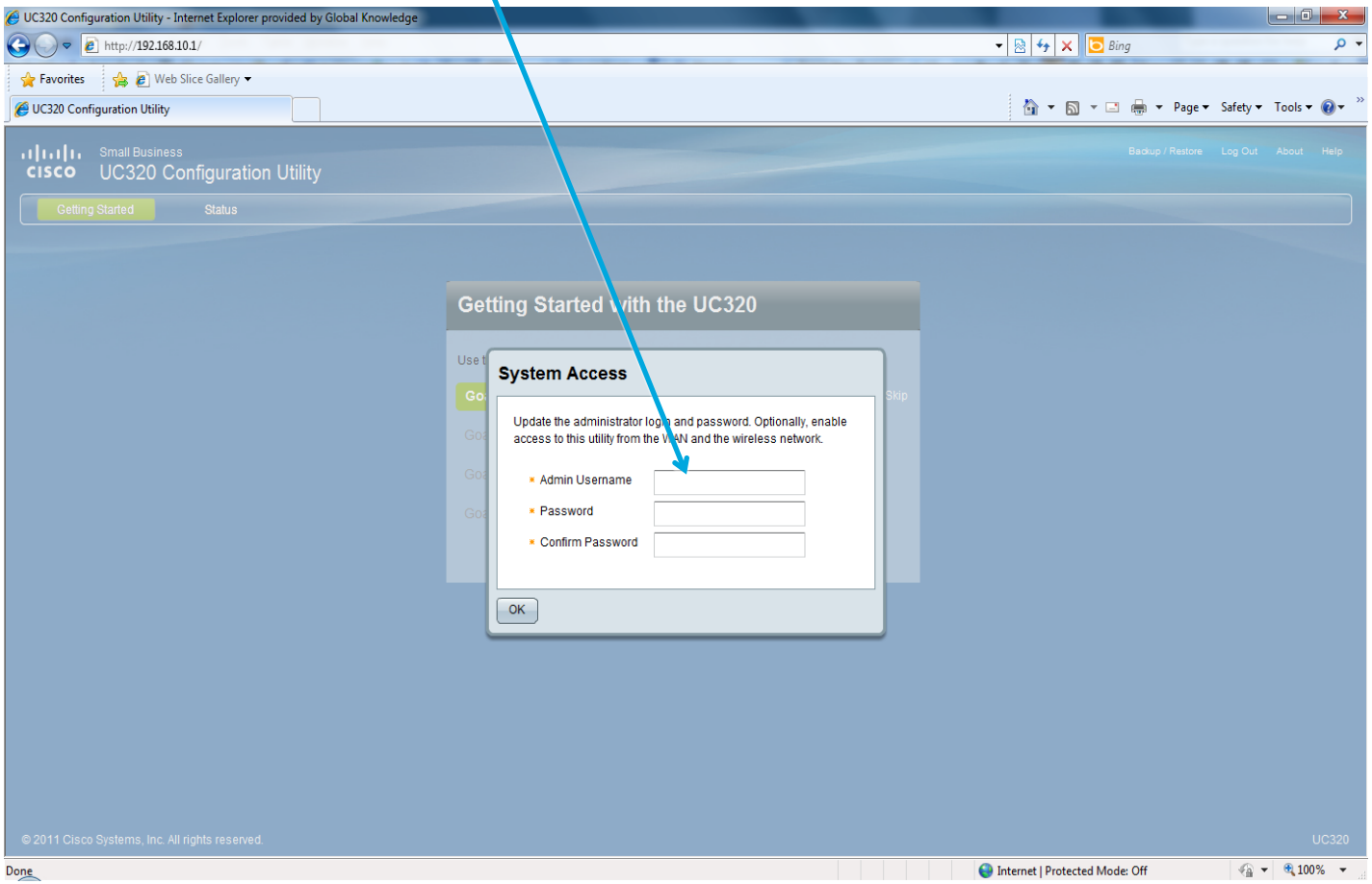
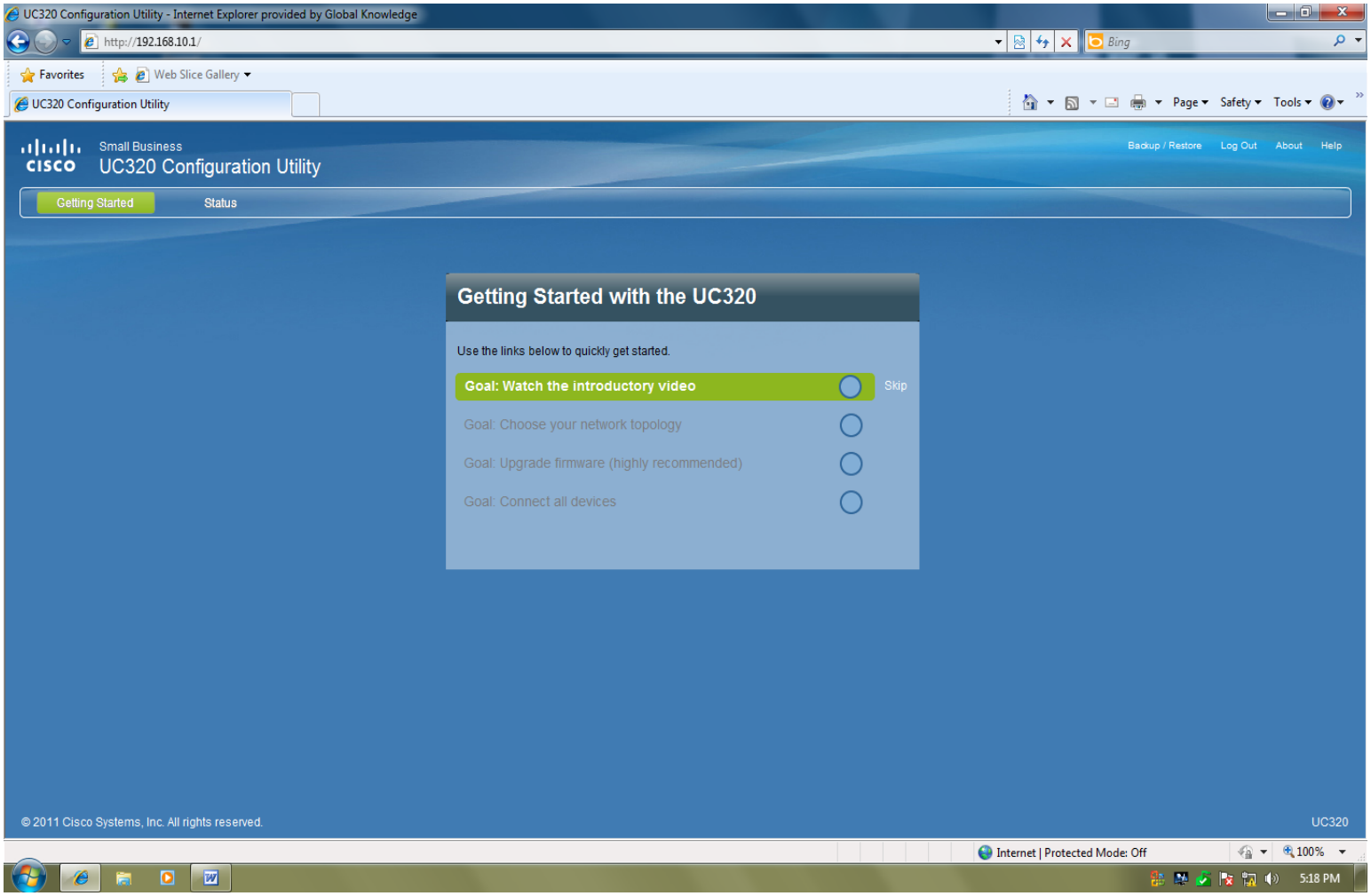


Getting Started Help

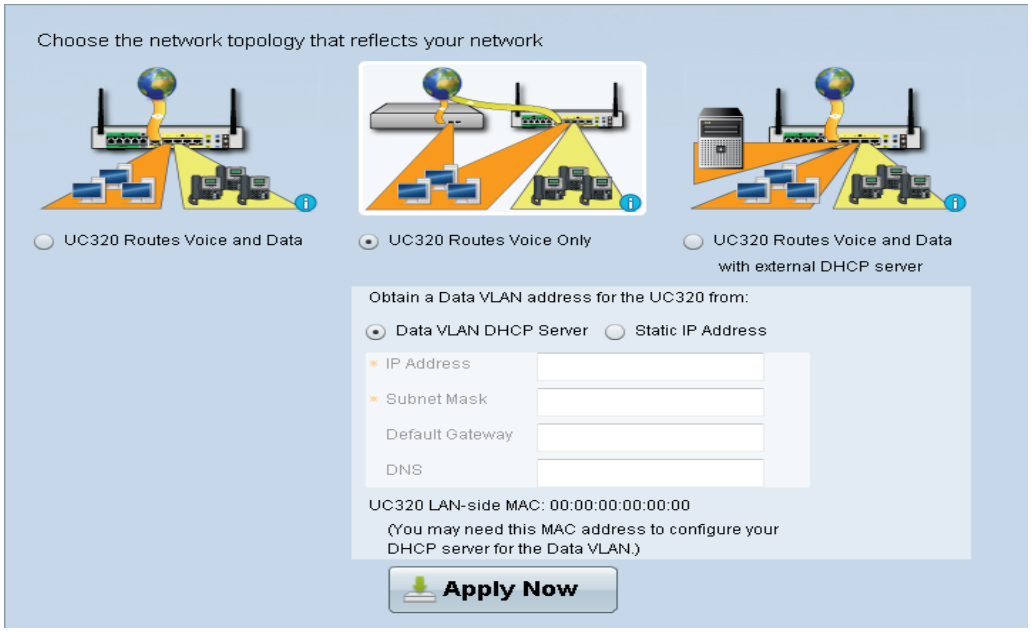


Getting Started Goals – All Goals must be completed before plugging into customer network

Caution: It is important to follow the instructions on when to connect equipment to the network. Connecting equipment prematurely in some scenarios may cause DHCP conflict problems.

Goal 1: The video describes how to navigate the UC320 Configuration Utility . Connect all devices goal shows all the devices that are available. On brand new installations this will takes several minutes as devices upgrade firmware and install a default configuration. After all devices have upgraded and updated, hit Begin configuration to begin building a UC320 configuration. (this is also called a day 0 configuration)

Choose Network Topology

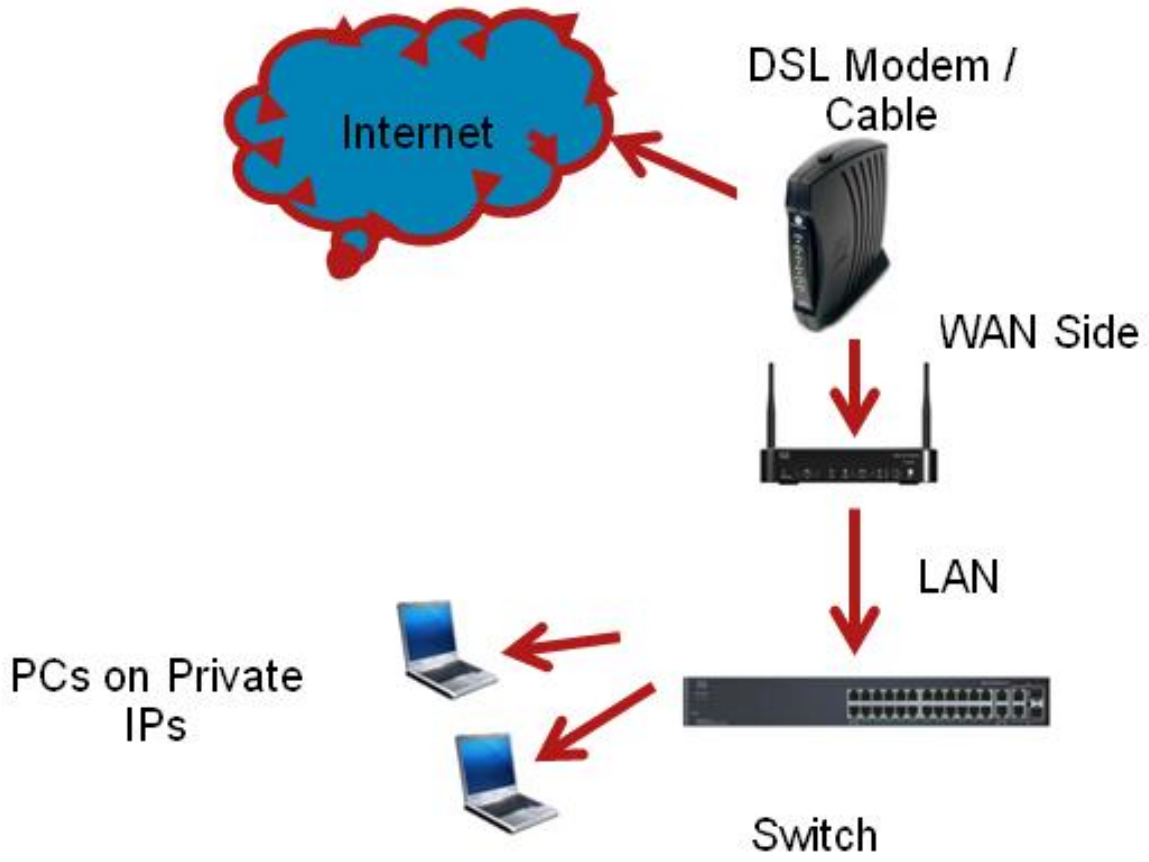


Caution: You will lose access to the admin page on choosing an option where DHCP server is turned off.

User would need to choose a static or a DHCP reserved address for the LAN side of the UC320. A consistent address is required to connect to the UC320

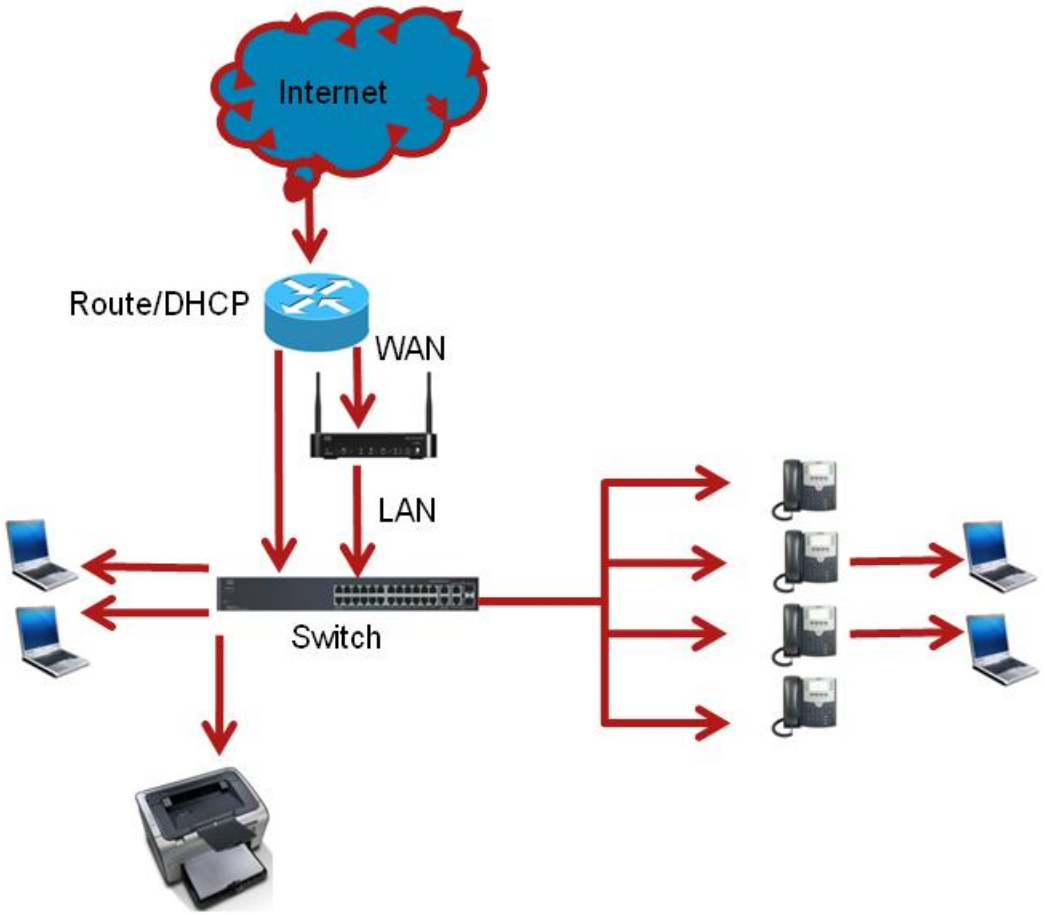
- Please refer slide with Greenfield and Greyfield requirements of details on what to choose.
- Option chosen will determine weather DHCP server is on or off for the Data VLAN
- Recommendation: Cisco strongly recommends using a Static IP here.

Green Field : Simple Greenfield Deployment Scenario



- UC320 acts as the Voice and Data DHCP Server
- The UC320 routes both voice and data

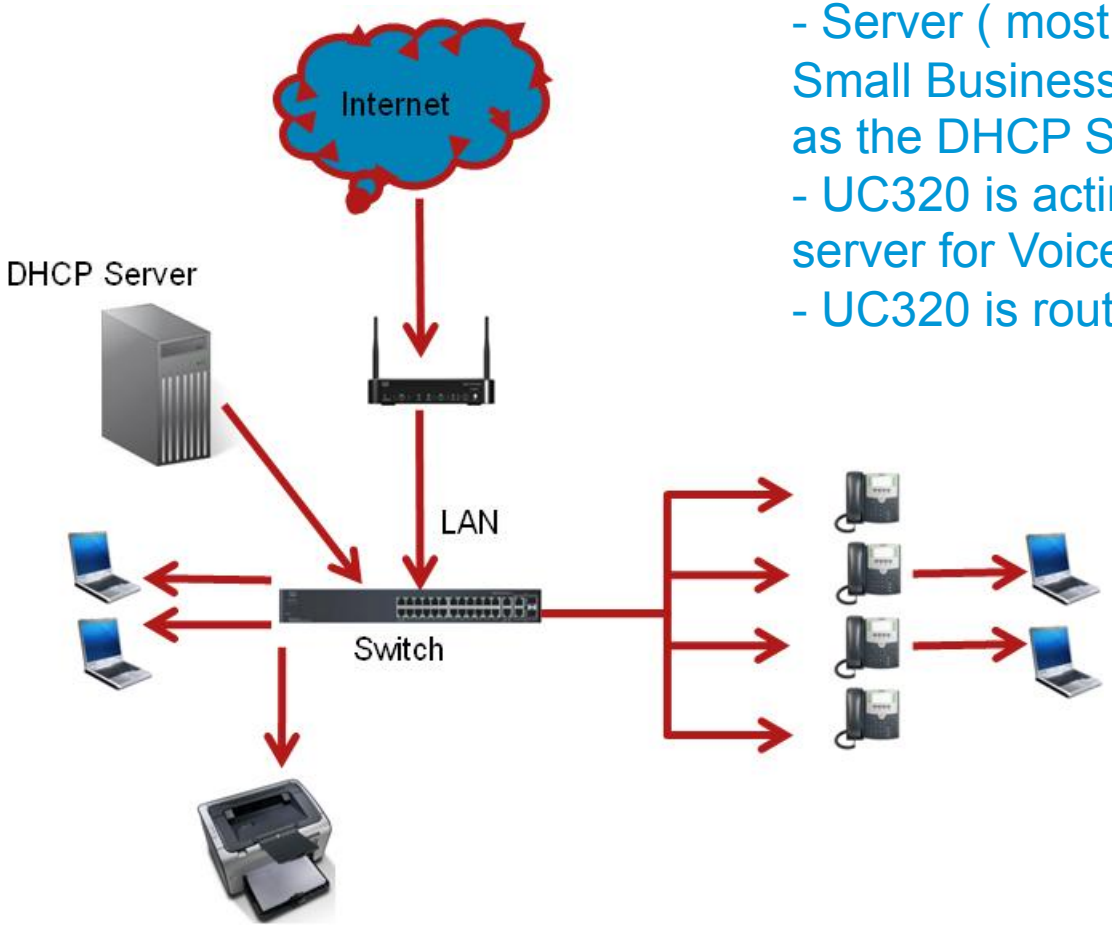
Greyfield: Deployment Scenario with Router as DHCP



Characteristics:
-Router is acting as the DHCP Server for Data
-UC320 is acting as the DHCP server for Voice
-Router is routing Data.
-UC320 is routing Voice back to the router.
-SA 500 series is the Cisco Recommended Router.

Requirements
•Router must have two routed interfaces one for Data and one for Voice.
•Create Separate Subnet for Data Router to UC320 connectivity
•CDP should be disabled on the Router. CDP on Router could cause Phones to not register and get wrong IPs.

Greyfield: Deployment Scenario with DHCP Server – UC320 as Router for Data and Voice



Characteristics:
- Server (most likely a Microsoft Small Business Server) is acting as the DHCP Server for Data
- UC320 is acting as the DHCP server for Voice
- UC320 is routing Voice and Data.

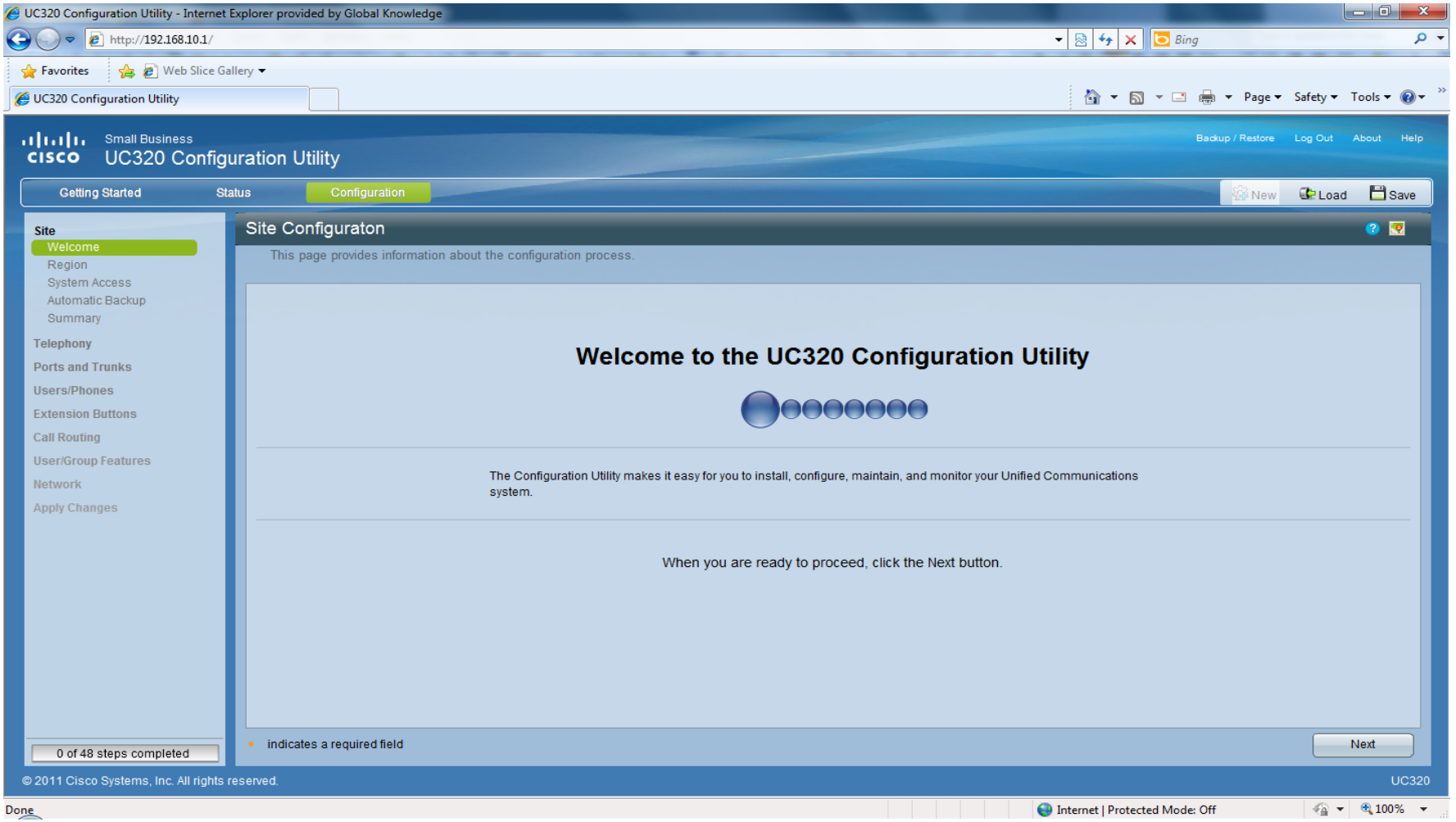
UC320W Reference

- Quick Start Guide
- Phone Quick Reference Doc
- Administration Guide
- Cisco SMART Designs for Small Business Solutions—http://www.cisco.com/go/smartdesigns
- Cisco SMART Designs for UC300 Solutions—http://www.cisco.com/go/smartdesigns/uc300
- Cisco Small Business support community—http://www.cisco.com/go/smallbizsupport

UC320W Reference

Support	
Cisco Small Business Support Community	www.cisco.com/go/smallbizsupport
Cisco Small Business Support and Resources	www.cisco.com/go/smallbizhelp
Phone Support Contacts	www.cisco.com/go/sbsc
Cisco Small Business Firmware Downloads	www.cisco.com/go/software
Product Documentation	
Unified Communications UC320W	www.cisco.com/go/uc300
Smart Designs	www.cisco.com/go/partner/smartdesigns
SPA300 Series IP Phones	www.cisco.com/go/300phones
SPA500 Series IP Phones	www.cisco.com/go/spa500phones
SA500 Series Security Appliances	www.cisco.com/go/sa500
ESW500 Ethernet Switches	www.cisco.com/go/esw500help
SPA8800 IP Telephony Gateway	www.cisco.com/go/gateways
Cisco Small Business	
Cisco Partner Central for Small Business (Partner Login Required)	www.cisco.com/web/partners/sell/smb
Cisco Small Business Home	www.cisco.com/smb

Configuration Utility Welcome Page

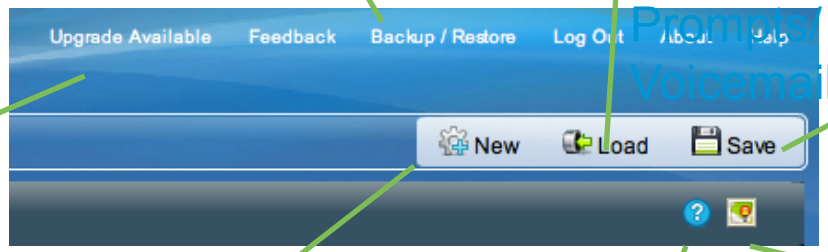


UC320 Configuration Utility – Features

Full Site Backup – Backs-up and restore Config, Voicemail, prompts and all user information including speed dials.

Restore Configuration Only. No Prompts/ Voicemail

Save the UC320 master configuration file only



Link appears when there is a more recent firmware version available.

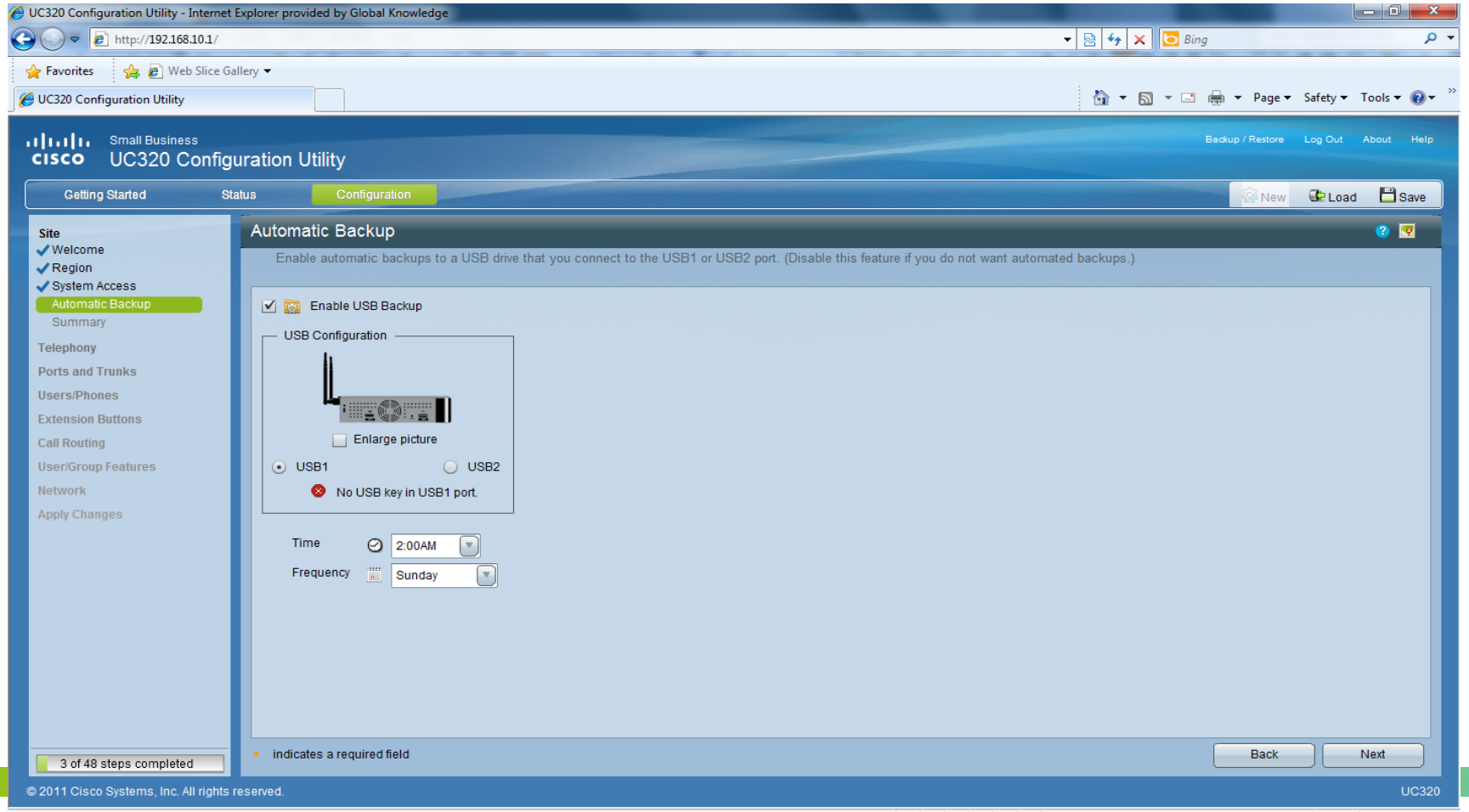
Start with new configuration

Context Sensitive Help. Entire Admin Guide loaded into interface.

Pictorial View of connections and what is being configured.

Backup Using the USB Port

The UC320 is looking for a USB drive to backup the configuration and setting a automatic backup schedule.



Saving and Backup Options

As you are navigating the configuration utility, the configuration is saved automatically as you “next” past each section.

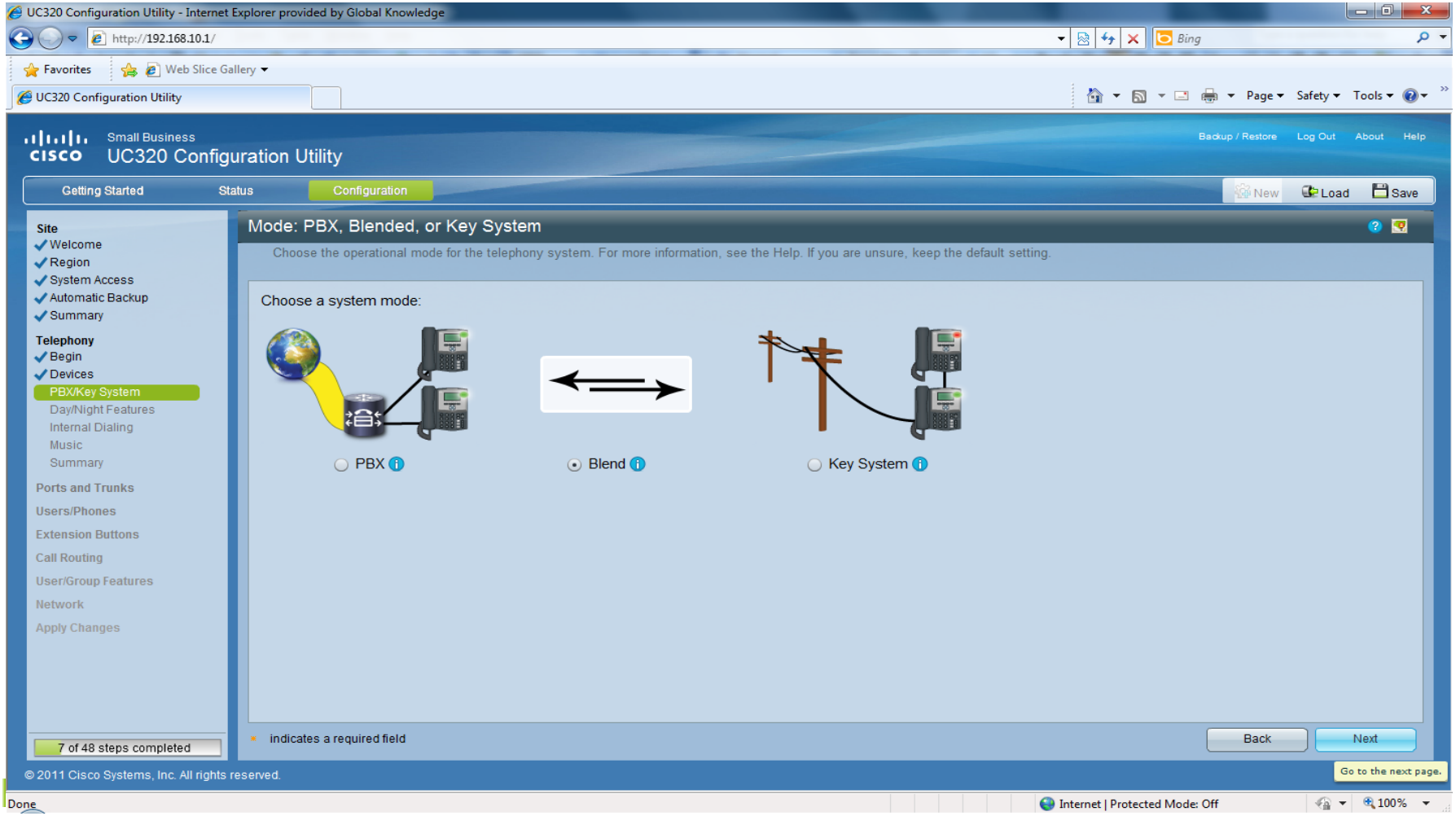
You can manually save at any time.

Saving the configuration does NOT store voicemail, or backup AA prompts.

You must perform a full backup to backup all files.

Setting the Mode

"Blend" provides the most flexible configuration. Mode differences are broken down on the next three slides.



Modes Explained - PBX

PBX

In PBX mode, users have no direct access to choose a phone line; instead, a trunk is selected from the pool of available trunks. When placing an outbound call, you must first press an outbound dialing digit such as 9. There are no shared FXO (analog) lines (as described for Key System). When you choose PBX mode, the following features are affected:

- **Trunks:** Phone service can be provided by SIP/BRI trunks (Voice over IP service) and FXO (analog) lines.
- **Shared FXO Lines:** You cannot configure Shared FXO Lines. **Note:** If you previously configured your system in another mode, any existing Shared FXO Lines will be removed.
- **Outbound Dialing:** You can use personal extensions to place calls to an external number.
- **Internal Dial Plan:** You need to specify the digit that is required for outbound dialing. If you have more than one trunk, you can specify a different digit for each trunk.

Modes Explained - Key System

Key System

In Key System mode, users can directly choose an analog phone line by pressing a shared line button on the phone. All users can monitor all calls on all lines. If a call is placed on hold by one user, it can be resumed by any other user. When a user presses a shared line button, the line is immediately seized for an outbound call; you do not have to enter an outbound dialing digit, such as 9. When you choose Key System mode, the following features are affected:

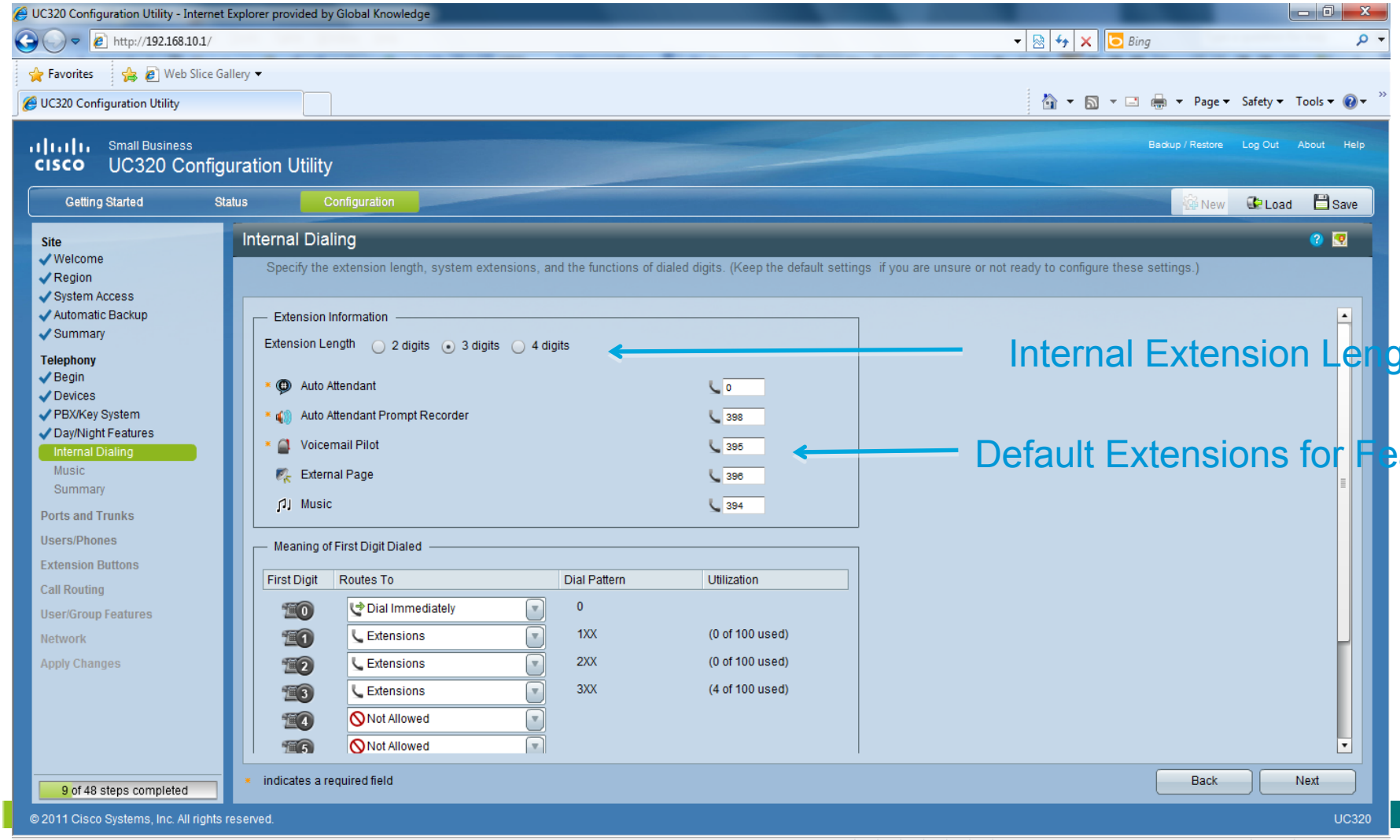
- **Trunks:** Phone service is provided by FXO (analog) lines. You cannot configure SIP/BRI trunks (Voice over IP service). **Note:** If you previously configured your system in another mode, any existing SIP/BRI trunks will be removed.
- **Outbound dialing:** You cannot use a personal extension to place a call to an external number. Extensions are for internal calls. For outbound calls, use a shared line button.
- **Internal Dial Plan:** No outbound dialing digit is required. For example, you do not have to dial 9 to get an outside line. Simply select a shared line button.
- **Inbound Routing:** Configure inbound routing for each trunk on the Shared FXO Lines page. The Inbound Calls page is unavailable.

Modes Explained - Blend

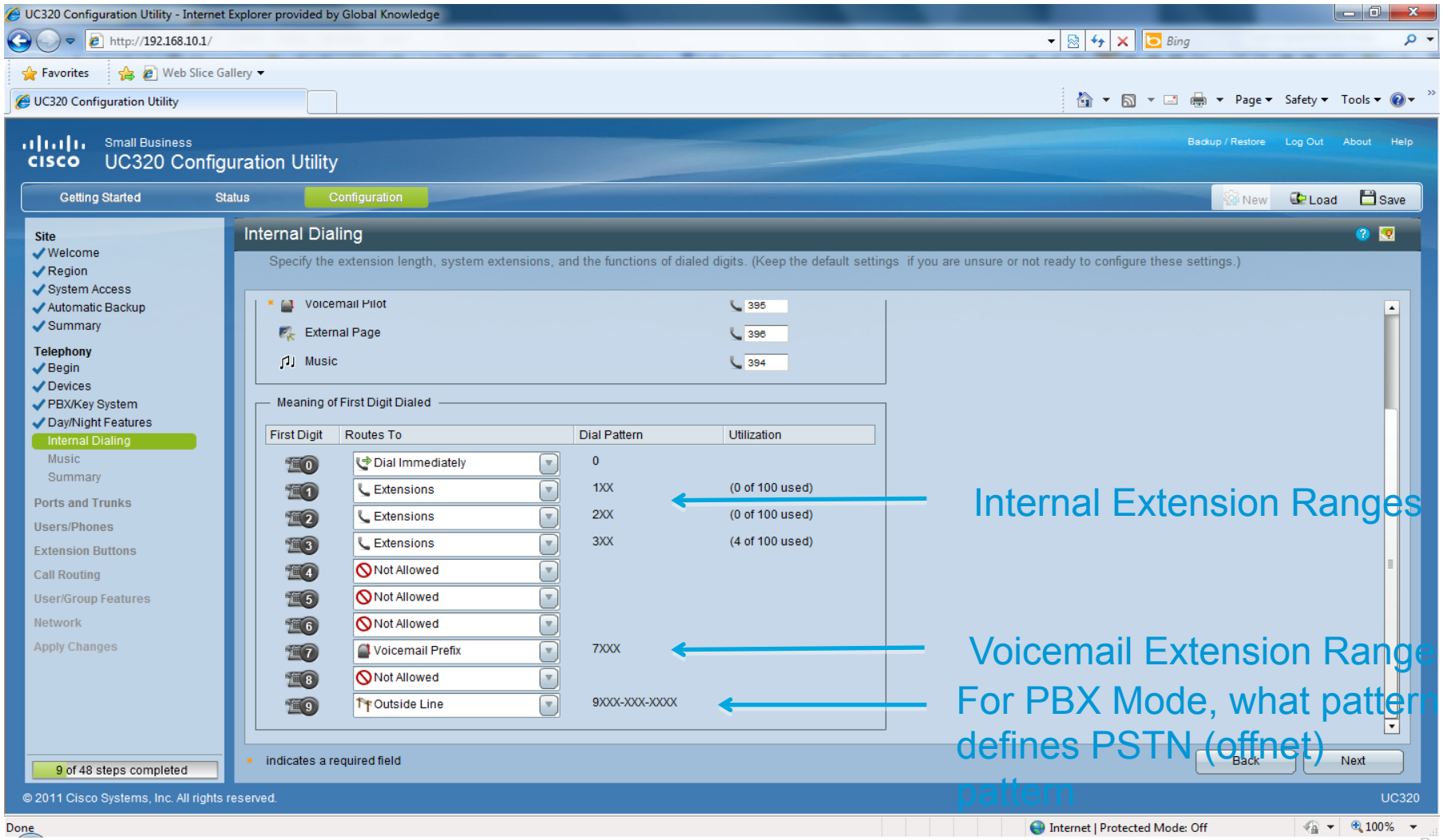
Blend

The system functions like a PBX, as described above, but allows the configuration of shared FXO (analog) lines, as in a Key System. Outbound calls require a steering digit except when a Shared FXO Line is selected by pressing a shared line button on a phone. Both FXO (analog) lines and SIP/BRI trunks may be used. All features are available for configuration.

Setting the Internal Extensions (features)

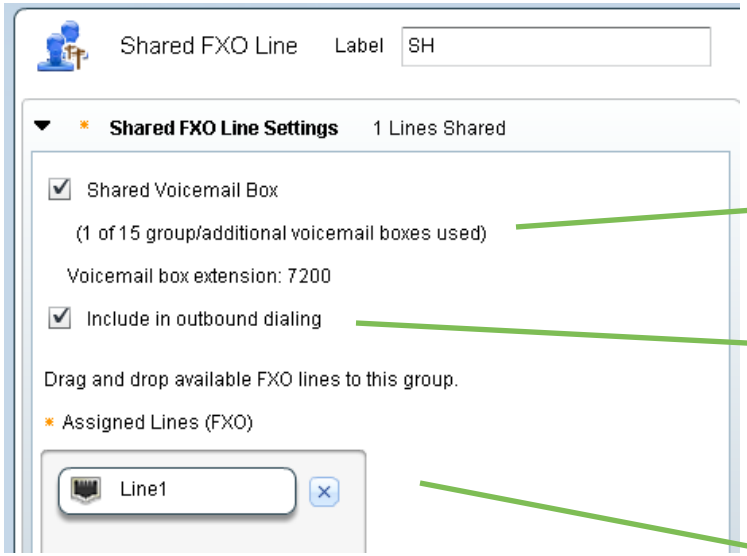


Defining Digit Patterns



Shared FXO

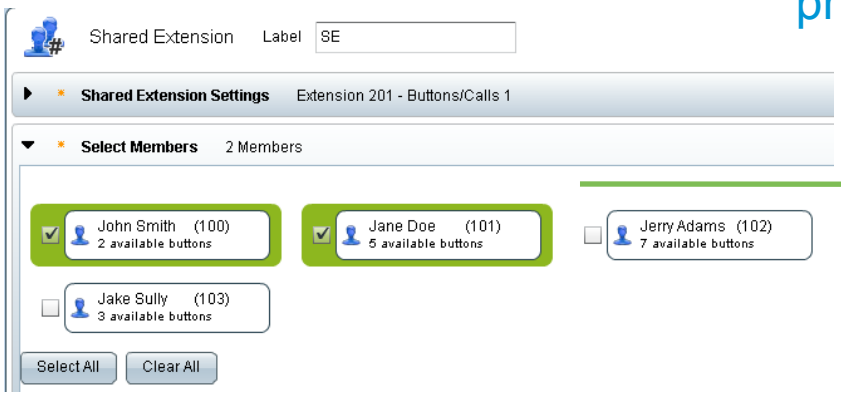
Shared FXO Typically are used in the Key System Mode. Shared FXO create a line button for every FXO line that is configured.



Create a Single Group Voicemail box for this Shared FXO

This can be used only in the Blend Mode. This allows extension to use the FXO lines too

Each line selected here will map to a button on the phone

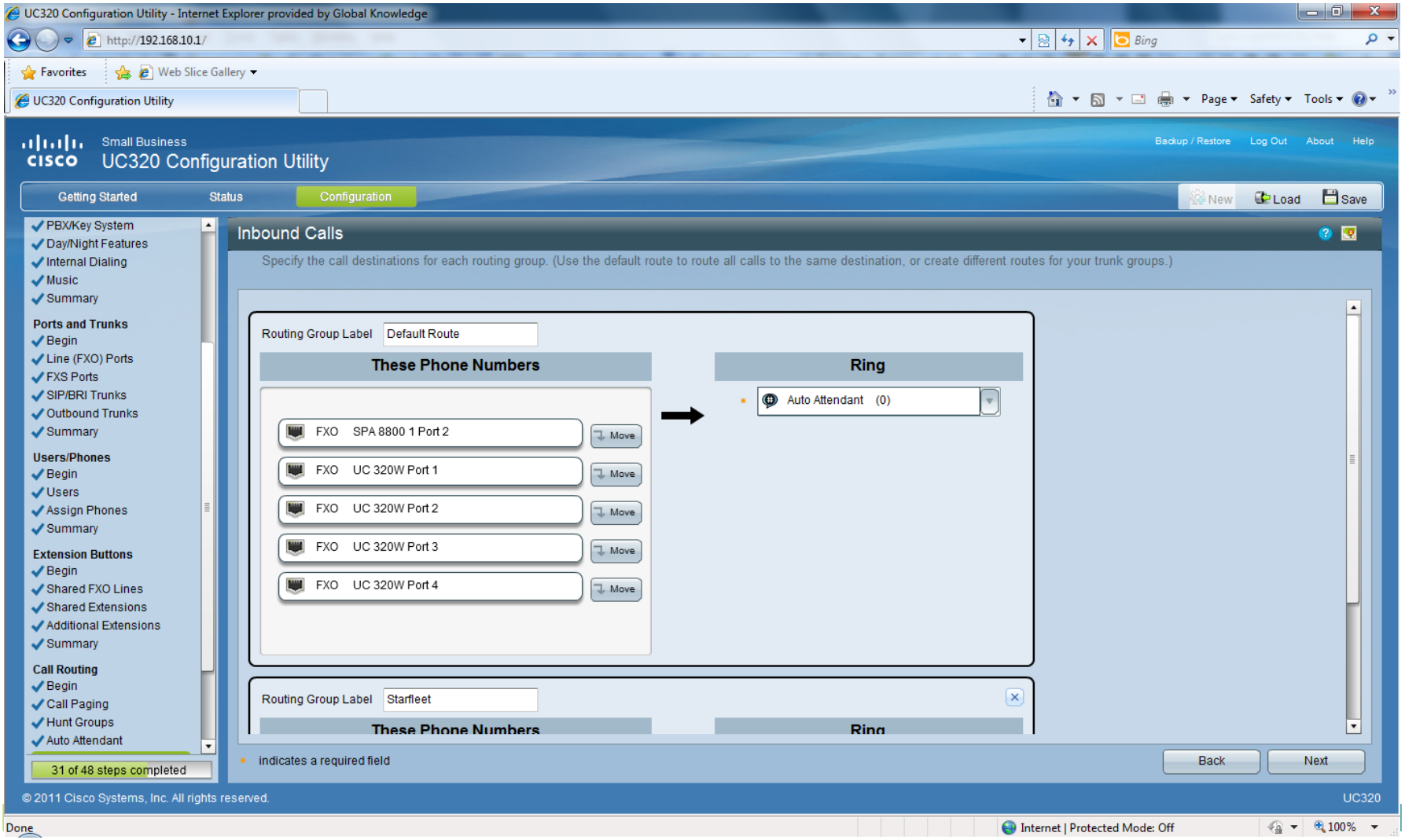


Add all the phones that will have this button mapped on them

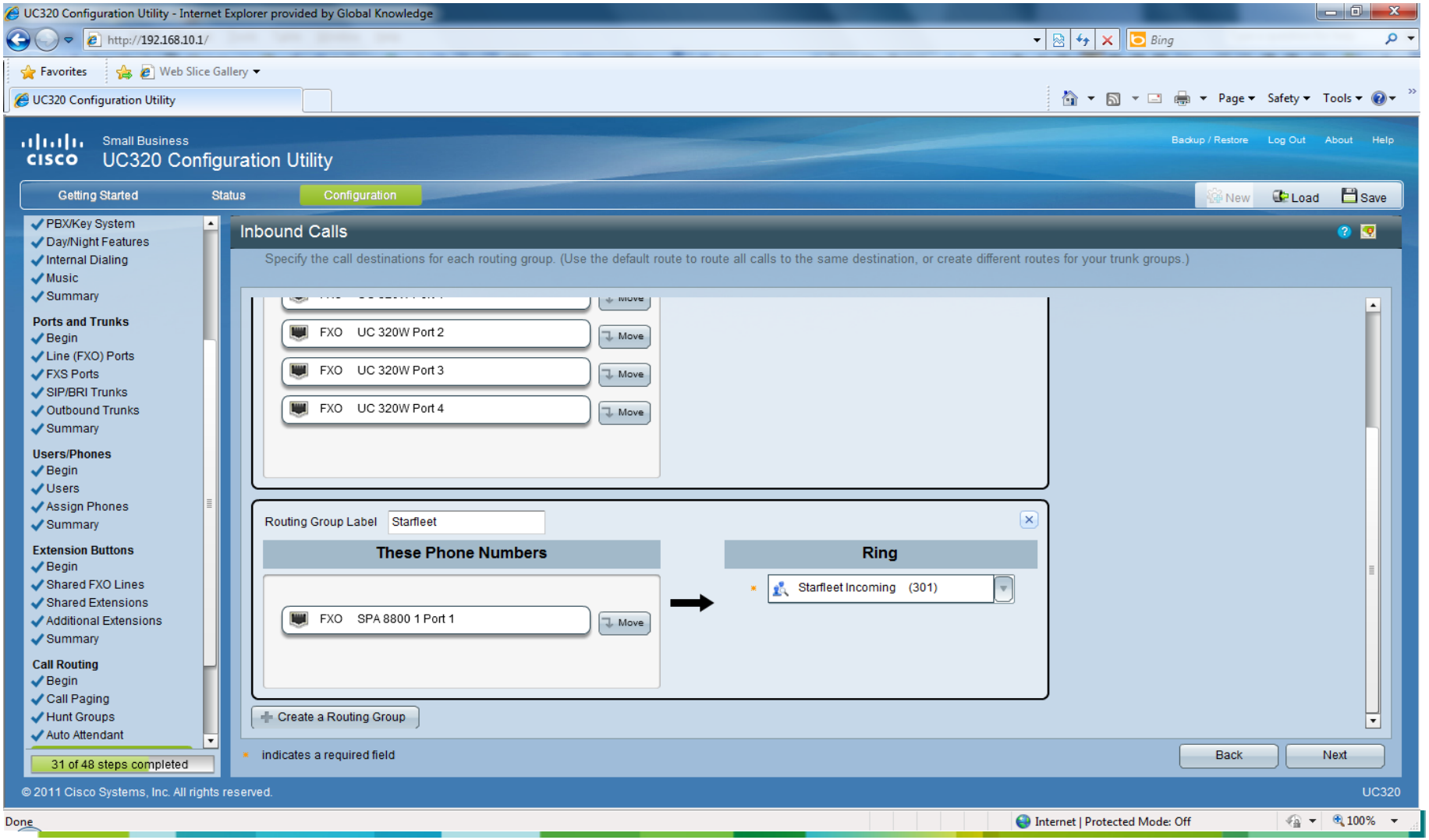
Note: Single Line phones and FXS cannot use this feature

Configuring Inbound Call Routing

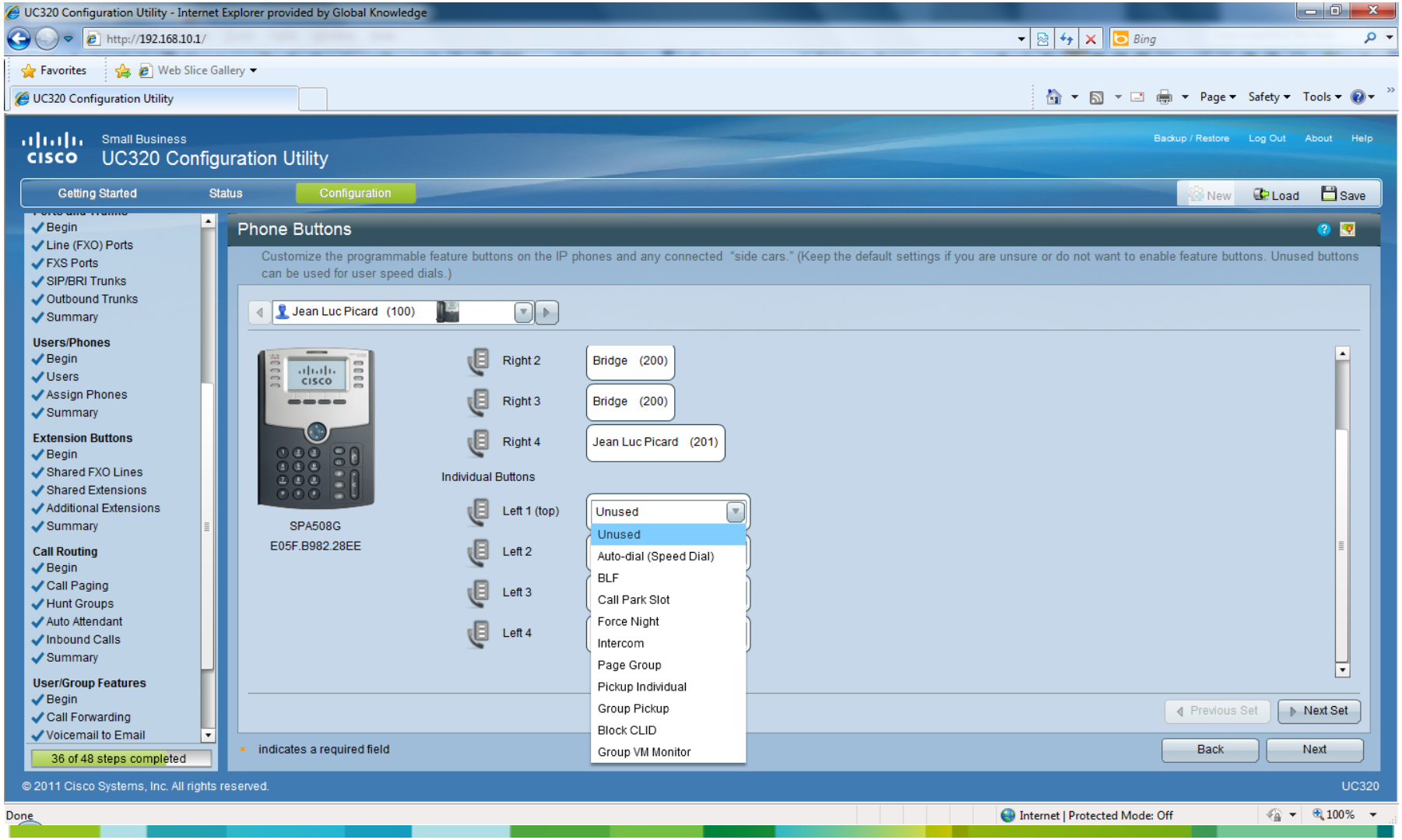
Set the port assignments for inbound calls



Configuring Inbound Call Routing (cont)



Customizing Phone Buttons



Button Definitions

- **Unused:** This button is not configured. **Tip:** You may wish to leave a button unconfigured so the user can add a personal speed dial. To do so, the user presses and holds the unused button for 3 to 4 seconds. Then the user enters a name and phone number. **Note:** A personal speed dial button can be overwritten if you change the phone button settings in the configuration utility.
- **Auto-Dial (speed dial):** Dials a specified number. After you choose this option, choose Internal or External. For internal numbers, choose from the drop-down list. For an external number, specify the digit that is required to get an outside line, and then enter the phone number. Digits for outside lines are specified on the Internal Dialing page. **Tip:** This feature is useful if a user frequently calls or transfers calls to another user or group.

Button Definitions

- **BLF:** Busy Lamp Field. Monitors the status (ringing, on a call, or on hold) of another extension. (Not available for FXS phones and system extensions such as Auto Attendant.) You can use this button to pick up a call that is ringing on the monitored extension. You also can press this button to speed-dial the number. After you choose this option, choose the Target User and the Target Extension (a user may have more than one extension). **Tip:** This feature is useful for an administrative assistant who monitors the phone of an executive, and for co-workers who back up one another during breaks.
- **Block CLID:** Blocks the caller ID from a call. To use this feature, the user presses the button and then dials the number. Caller ID is blocked for the current call only. **Tip:** This feature is useful for users who frequently use star codes to block the CLID for calls; time is saved by not entering star codes.

Button Definitions

- **Call Park Slot:** Works like a speed dial to the specified call park slot (numbered 1 through 10). During an active call, a user presses this button to place the call on hold in the specified call park slot. To retrieve the call, the user can press this button again. Alternatively, the call can be unparked from any IP phone by using the softkeys or star codes, as described in the phone user guide. (Soft keys are not available on all phone models.) **Tip:** This feature is useful if a user frequently parks calls; time is saved by not using softkeys or star codes, or entering a park slot number. This feature is especially helpful if a user parks calls on one phone and retrieves them from another phone; there is no need to memorize a park slot number.

Button Definitions

- **Force Night:** The function depends on the Call Scheduling settings and Schedule Behavior settings on the Day/Night Features page. With a manually operated schedule, a user presses this button when the office closes, activating the specified Night settings. When the business opens, the user presses the button to return to the Day settings. With an automated schedule, a user presses this button to override the Day schedule and immediately implement the Night settings. For example, this step would be needed if the office normally closes at 5 but is closing at noon on the day before a holiday. Be aware, the button cannot be used to override the automated Night schedule with the Day settings. **Tip:** This feature is helpful if a user is responsible for opening and closing the office.

Button Definitions

- **Group Pickup:** Displays a list of ringing calls on the phone screen. The user can choose a call to answer. **Tip:** This feature is useful in a busy office in which it is important to quickly answer calls.

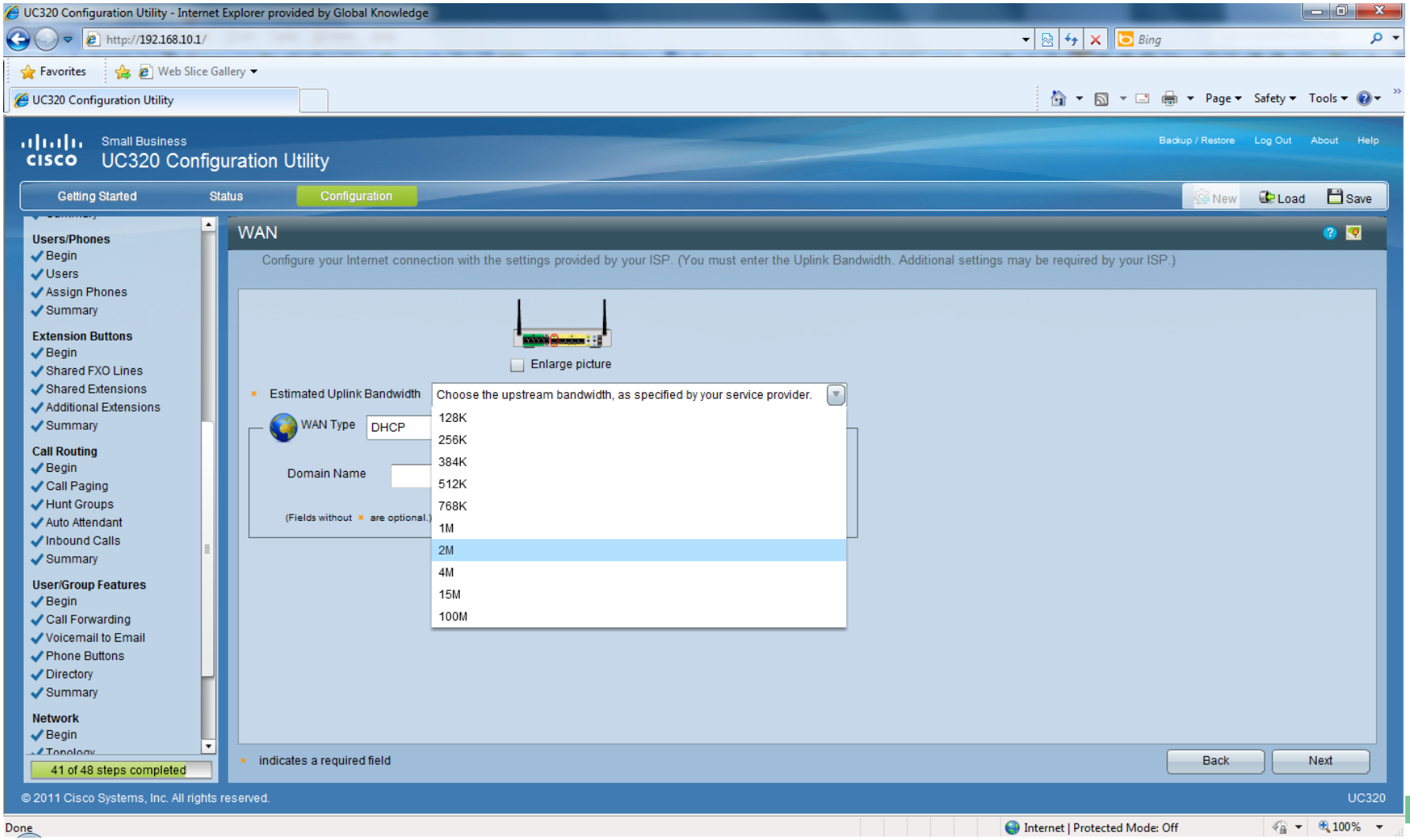
- **Group VM Monitor (phones only):** Adds a line button that indicates when new messages are available in the specified group voicemail box. The button acts as a speed dial to the voicemail box. After you choose this option, select a voicemail box to monitor. **Tip:** This feature is useful if a user is responsible for managing the voicemail messages for a hunt group or for a group of which he/she is not a member. **Note:** It is not necessary to add a Group VM Monitor to monitor a Shared FXO Line or a Shared Extension of which the user is a member. For these features, the line button displays an envelope icon to indicate new messages.

Button Definitions

- **Intercom:** Initiates a two-way intercom call to the specified user through the speaker of the assigned phone. After you choose this option, choose the user from the drop-down list. **Tip:** This feature is useful for an executive who needs to communicate frequently with an assistant.
- **Page Group:** Initiates a one-way call to all members of a paging group by using the speakers of the members' phones. After you choose this option, choose the page group from the drop-down list. **Tip:** This feature is useful for a user who frequently pages a particular group; time is saved by not having to dial the paging group extension number.
- **Pickup Individual (call pickup):** Picks up a call that is ringing on a specified personal extension. If multiple calls are ringing, the first received call is picked up. This feature is helpful for co-workers who frequently answer calls for one another during breaks and busy calling periods. After you choose this option, choose the target user from the drop-down list. (Not available for shared lines, groups, system extensions, or FXS phones.) **Tip:** This feature is useful if a user is responsible for backing up another user during breaks.

Setting Internet Upstream Speed

Obtain this setting from your provider. This enables some automatic traffic shaping.

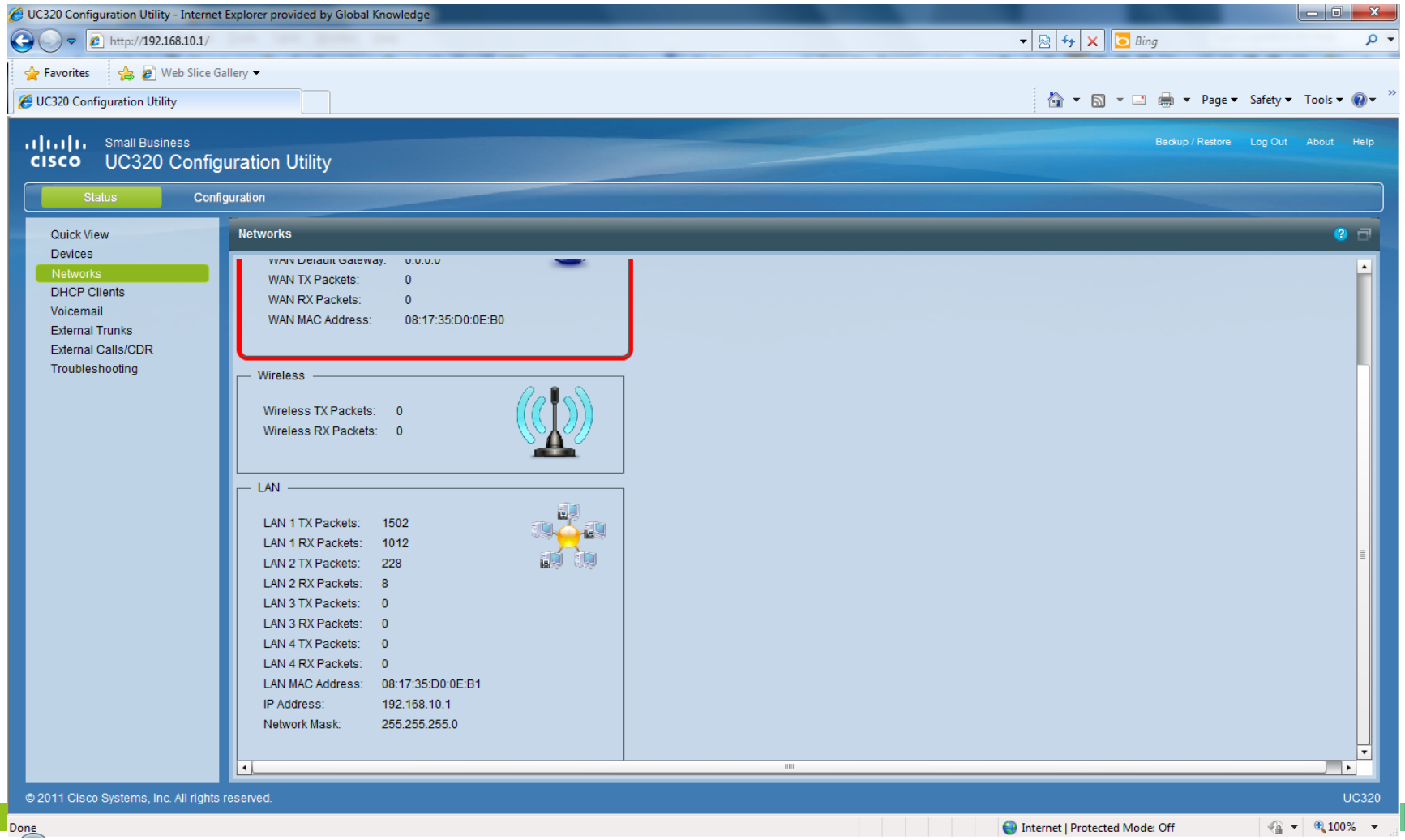


Reviewing the Status

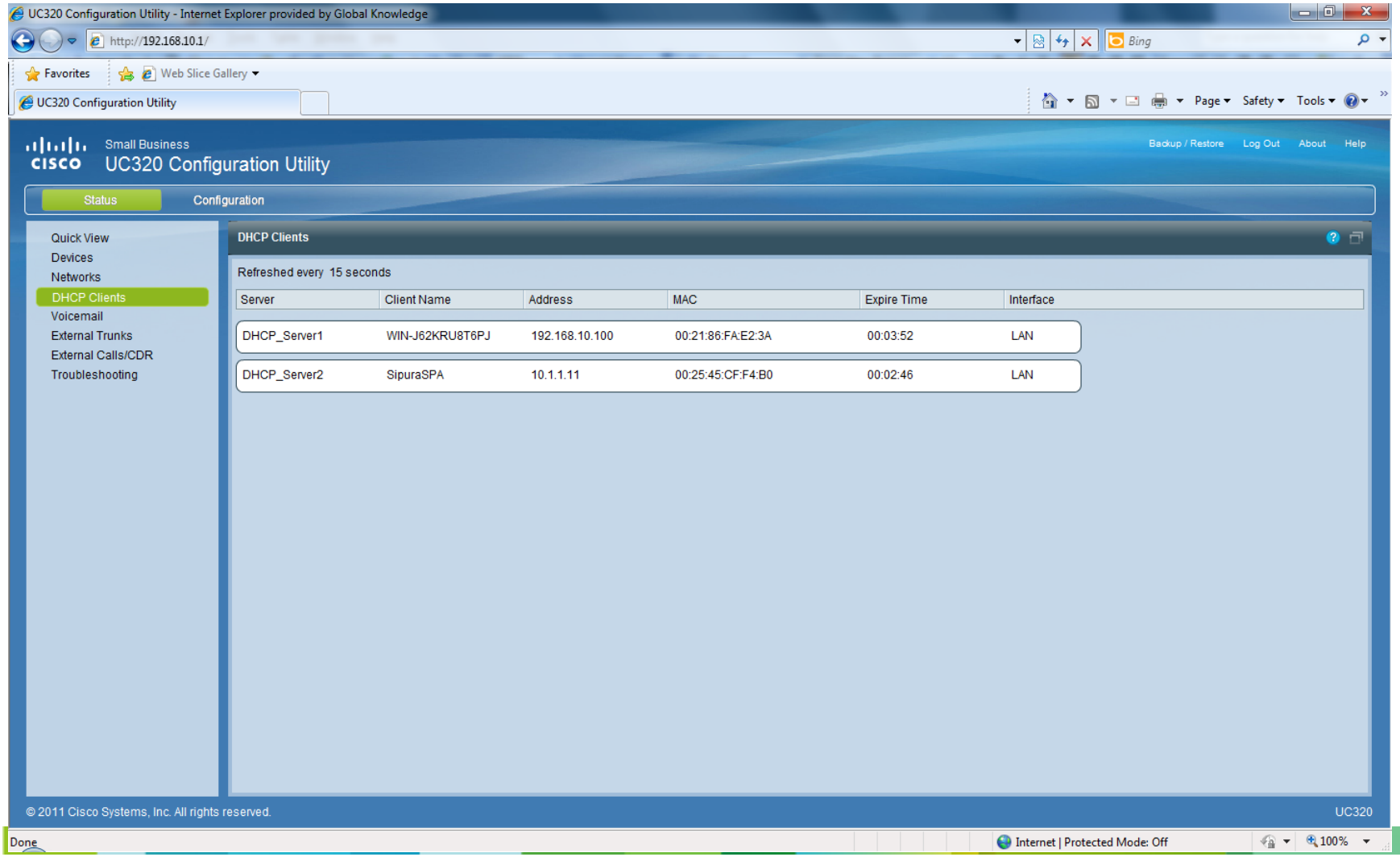
In this example, everything is configured, but since the phones are not powered, they are not “green” in the registered column.

Reviewing the Status (cont)

View network statistics

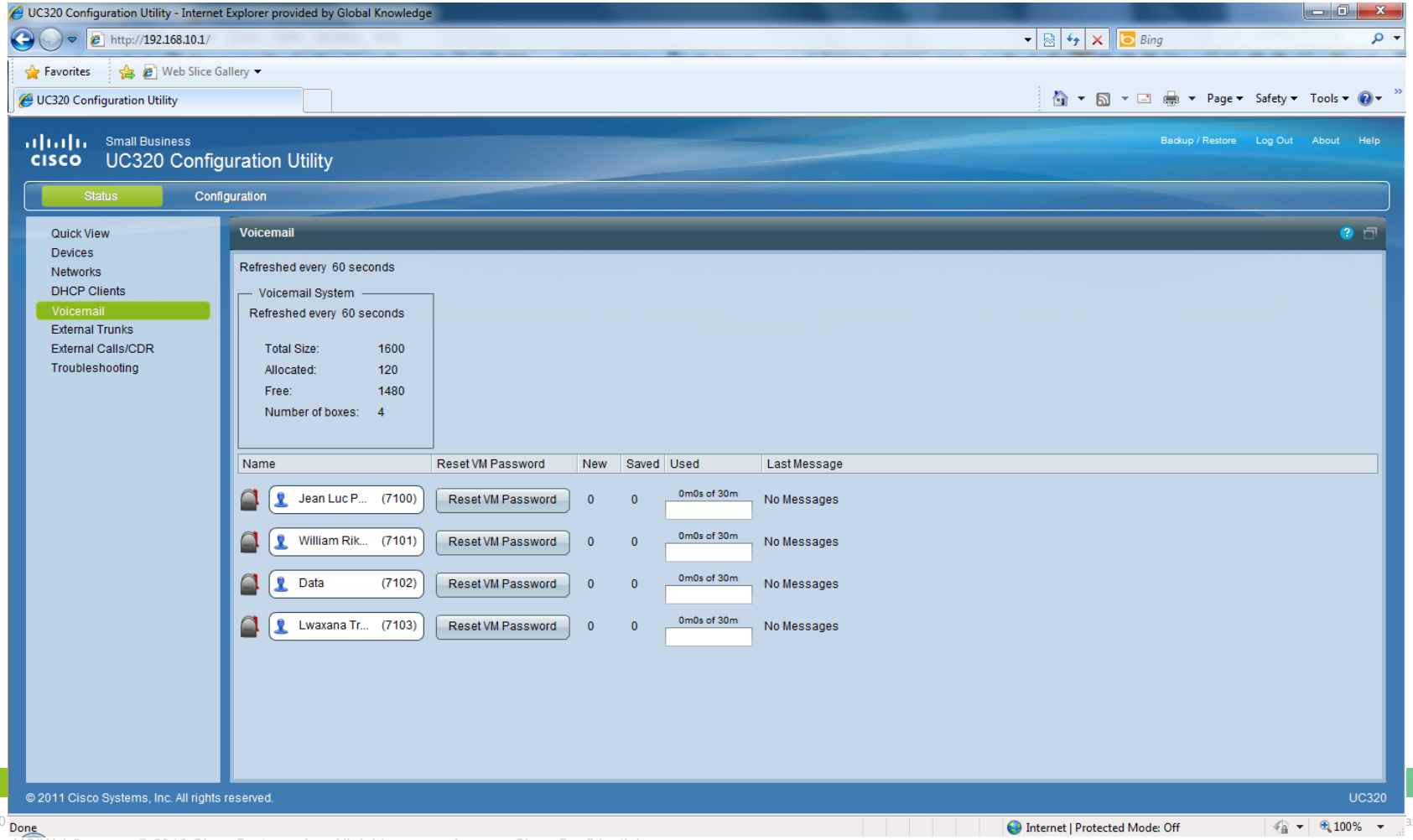


Reviewing the Status - (cont)



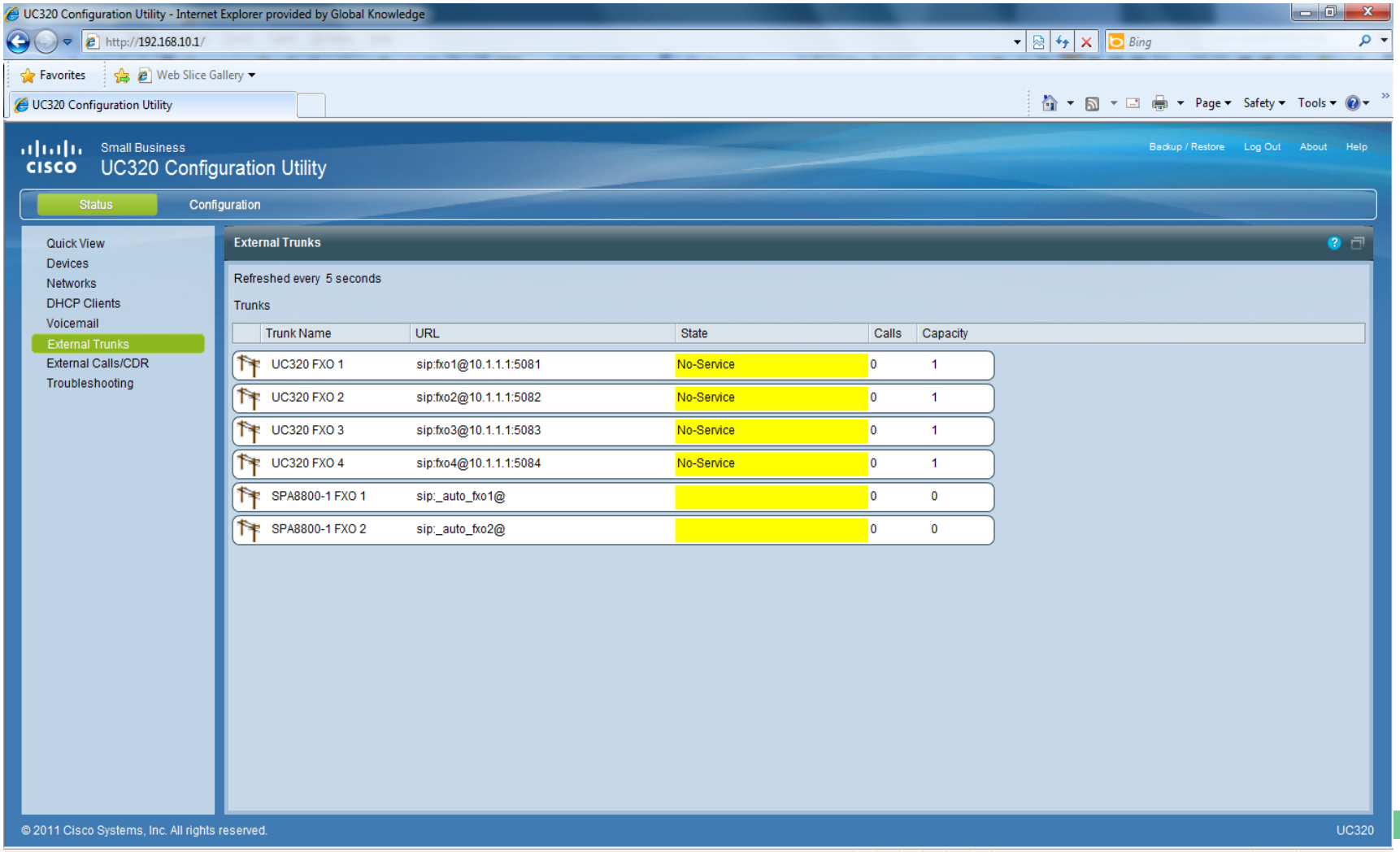
Reviewing the Status - (cont)

View the voicemail status



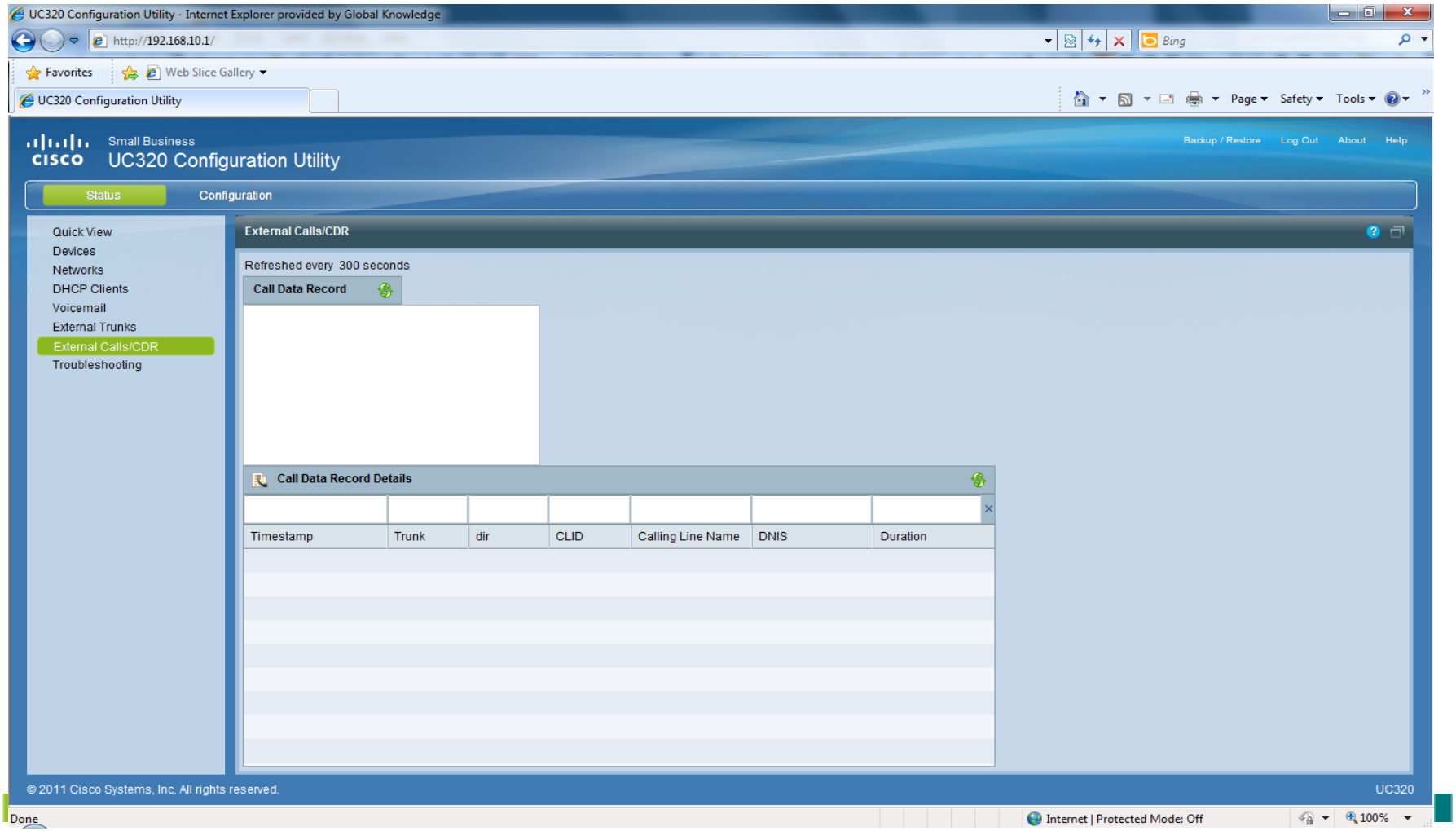
Reviewing the Status - (cont)

Here the FXO lines are NOT connected

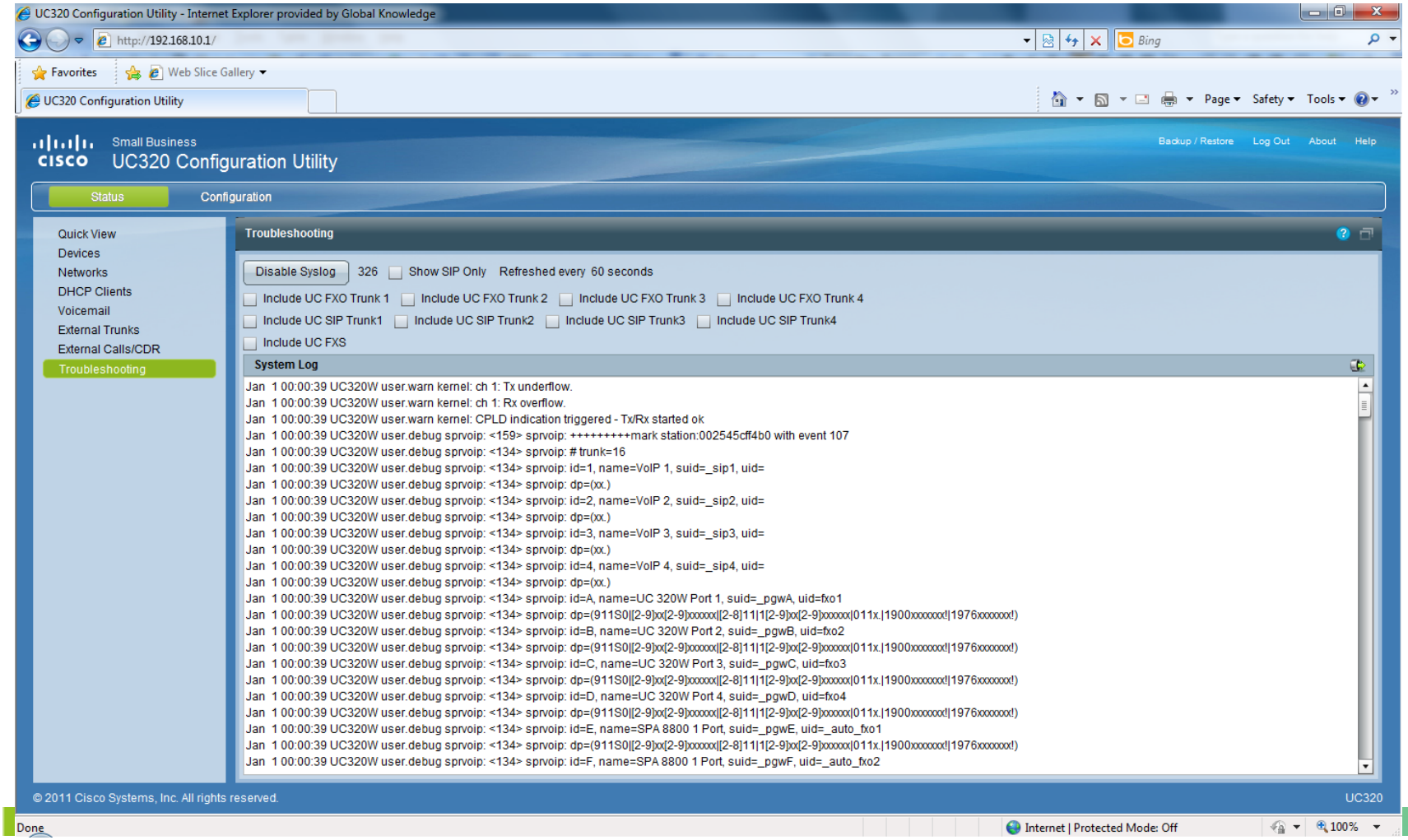


Call Detail Records

No calls have been made on the UC320 yet.



Viewing the Log Messages (troubleshooting)



Wrap Up

- Now that you have been introduced to the configuration settings of the UC320, you will complete lab exercises to get your UC320 up and running.
- Selecting the Configuration Tab will return you to configuration mode and allow you to setup features you to elected to skip during initialization, change settings or add new devices.
- Thank You!!

Appendix

Topics Covered

- PMF Files
- FXO Impedance Matching
- ISDN BRI Support
- SIP Trunking

PMF (Platform Modification Files) Types

- Two Types: Pre-PMF and Post-PMF.

  Pre-PMF changes default values that the UC320 Configuration Utility writes. For example, hook flash timing.

  Post-PMF must be used to override values that the UC320 Configuration Utility calculates or determines from a dependency. For example, using G.711u in a Locale that normally offers G.711a.

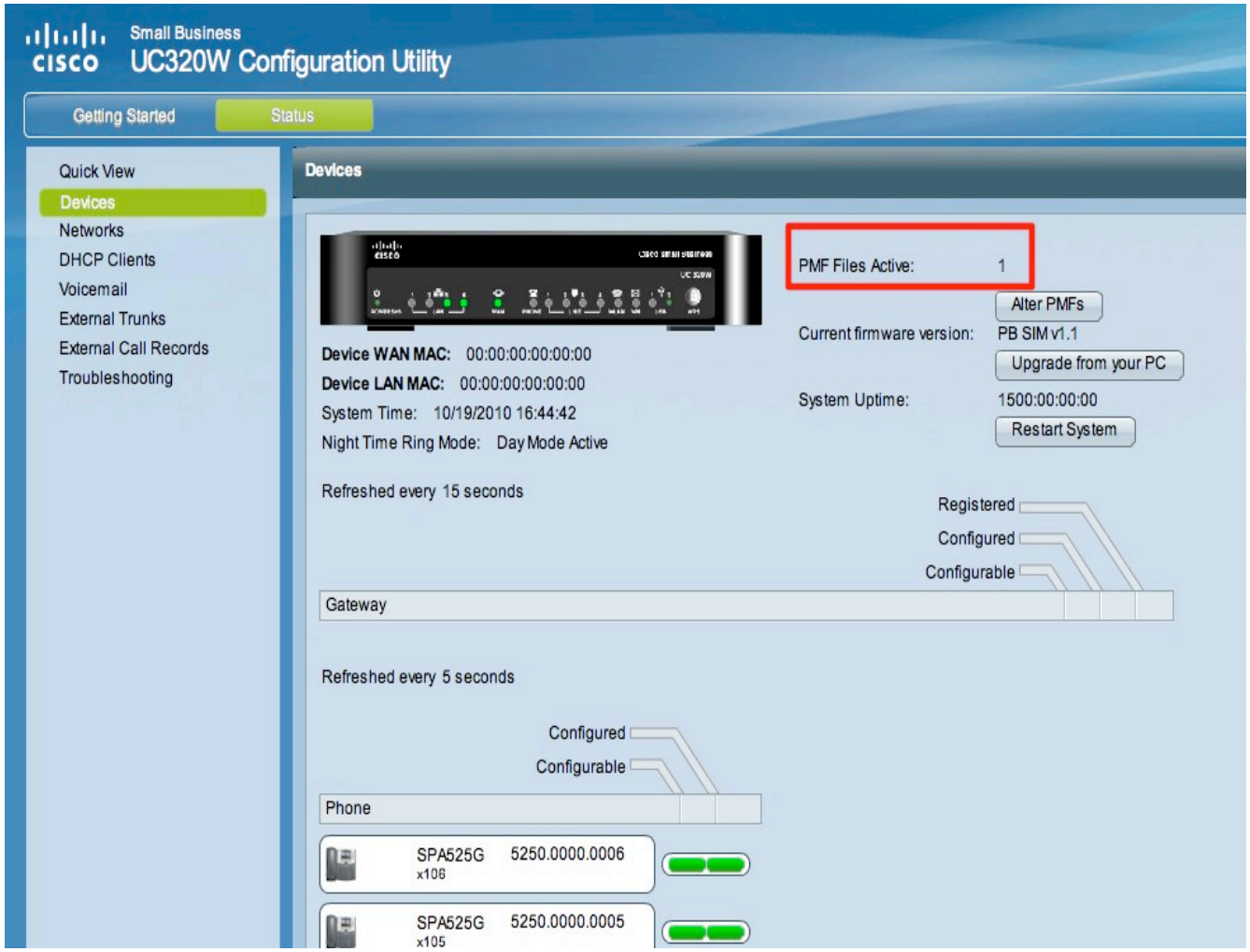
- Two Scopes: Specific or Generic.

  A Specific PMF changes an individual phone or gateway by including the MAC address in the PMF.

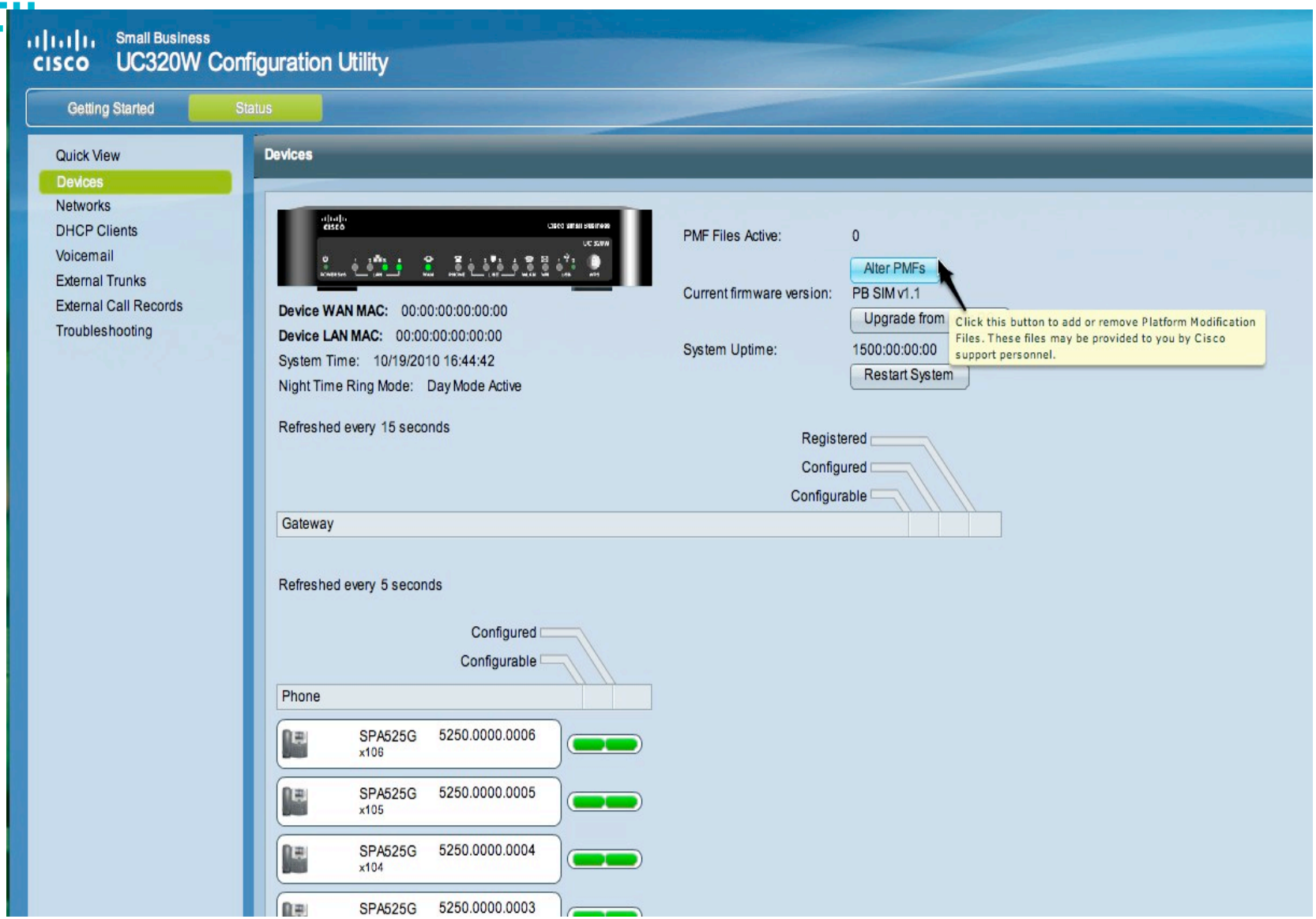
  A Generic PMF affects configuration of all objects of a class (e.g. phones)

  Generic, Pre-PMF files are the most reusable.

To Know if PMF Files are Installed and active



To Install/Uninstall/Enable/Disable PMF Fi



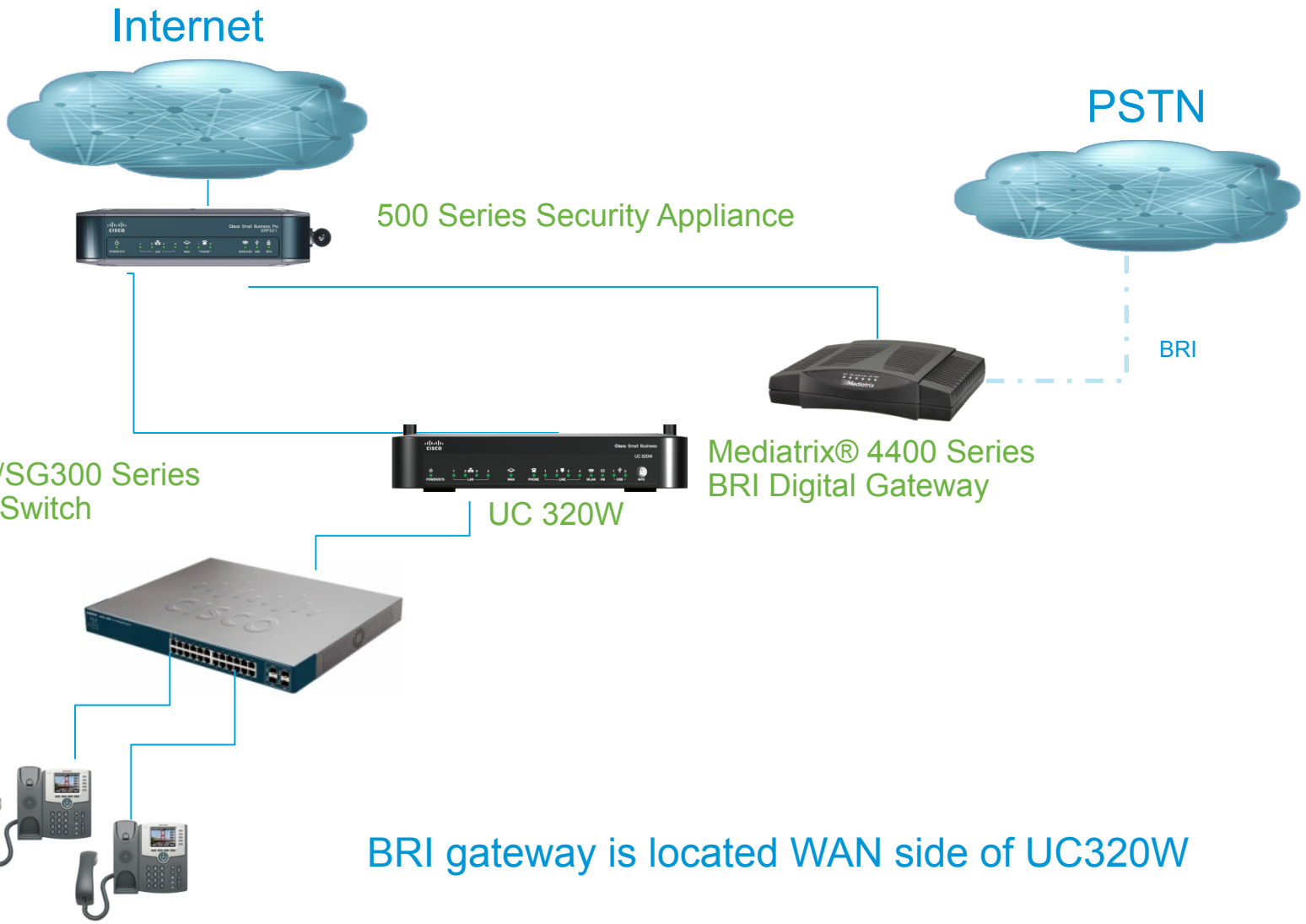
When to use PMF files

- Examples:
- A particular SIP provider requires an advanced SIP timer to be set to work correctly.
- A particular advanced page setting has shown to resolve an issue and a configuration change is required for a severe problem. (Problem may or may not be fixed in a future maintenance release firmware version)
- Want to keep a set of customers on a particular version of firmware.

FXO Impedance Matching

- The UC320 makes a call to a specified number. The target IP address should be known good Landline.
- Pickup the phone and put it on mute.
- The UC320 then plays a sequence of tones and listens to the echo coming back.
- The UC320 then tries several settings (combination of Impedance, Capacitance and Inductance) on the FXO until it finds the optimal value.
- It then displays that most appropriate Value.
- Set the UC320 FXO port to have that Value. Your lines are now optimally matched.

Mediatrix BRI gateway deployment



BRI gateway is located WAN side of UC320W

Requirements for Deployment

- Mediatrix 4400 ISDN digital GW (4401, 4402 or 4404)
- 1 WAN router, e.g. SA500 or SRP500 (Mediatrix connects to the UC320 via WAN)
- ISDN BRI line(s)

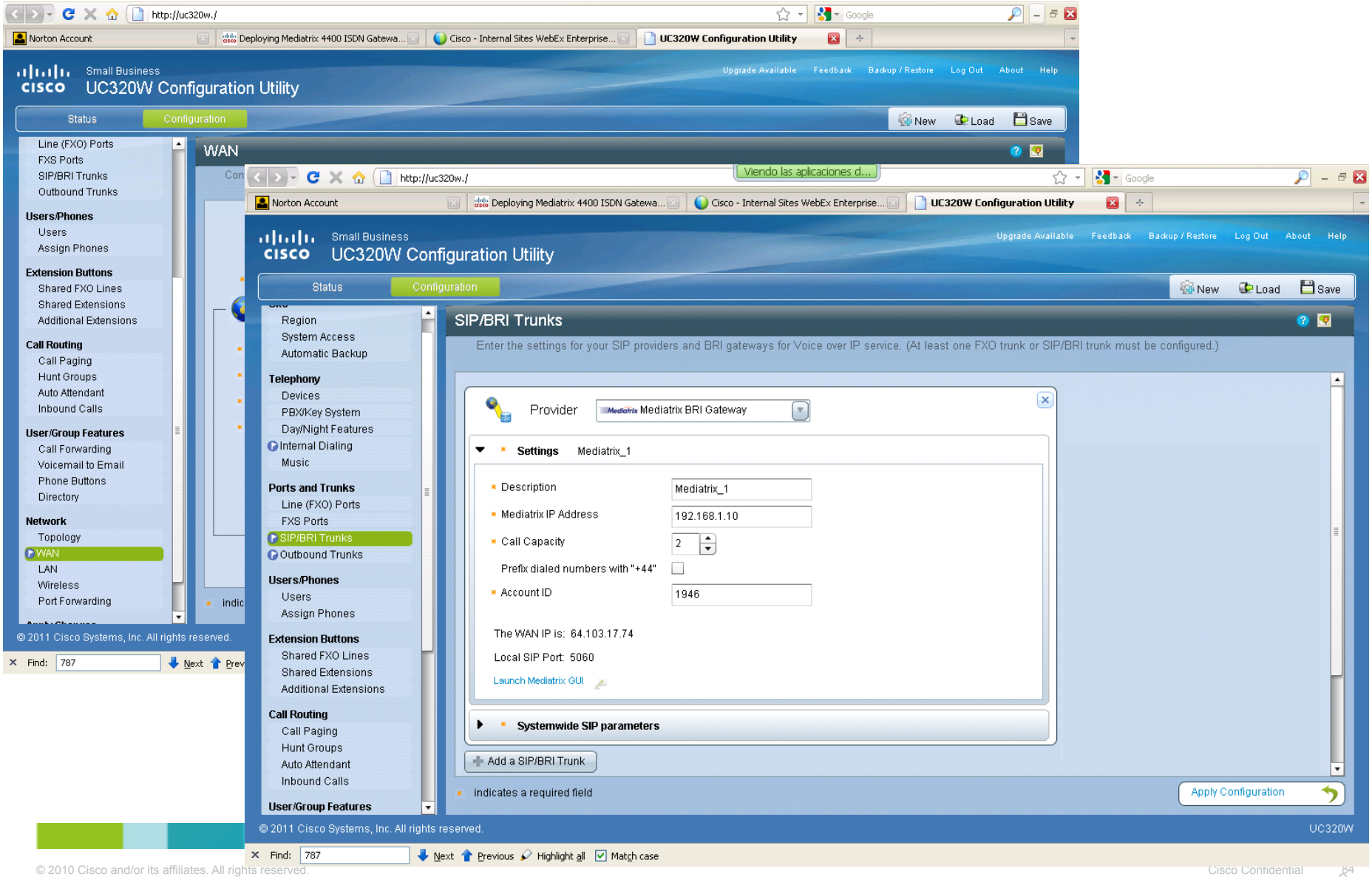
Resources

- Mediatrix integration with UC300 Application Note
- https://supportforums.cisco.com/docs/DOC-14795

Configuration steps

1. Configure network
   - Reserve IP addresses for Mediatrix and UC320 from the router DHCP pool
2. Configure UC300
3. Configure Mediatrix ISDN Gateway
4. Test the setup
5. Make calls!

Configuration steps (UC300)



Configuration steps (Mediatrix)

1. Login (user: public, leave password blank)
2. Configure Static IP address (Network > Interfaces)

   On the uplink row
   - Link: netwrk
   - Connection Type: static
   - Static IP address: <UC300_WAN>/24 (e.g. 192.168.1.2/24)
   - Activation: enabled

   Submit
3. Configure SIP port for call routing (SIP > Gateways)
   - On the SIP port field, enter the UC320 SIP trunk port (check on Config Utility)
   - Submit
4. Restart the Gateway (Services, restart SIP Endpoint)
   - After restart verify state: SIP > Gateways, should show Ready

Configuration steps (Mediatrix)

5. Configure SIP trunk (SIP > Servers)
   - Proxy Host : <UC300_IPaddress>:<local_Port> (192.168.1.2:5060)
   - Submit
6. Connect the BRI line(s)
7. Configure ISDN connectivity (ISDN > Basic Rate Interface)
   - Endpoint Type: TE
   - Connection Type: Point to Multipoint
   - Apply to the following interfaces, click Check All
   - Submit
   - Restart the ISDN Service (System > Services, restart Integrated Service Digital Network (ISDN))
   - Verify the service is started (click here)

Configuration steps (Mediatrix)

8. Configure ISDN call routing (Telephony > Call Routing Config)

Configure hunt group (only if 4402 or 4404)

- In Hunt Index, click “+” icon, configure Hunt End window appear
- Name: hunt_isdn (can be anything else)
- Select isdn-bri1 (repeat for the rest of active/used bri ports)
- Submit

Configure Routing criteria (Route table, click “+”, Configure Route End appear)

- Source: sip_default
- Destination: hunt_isdn or isdn-BRI1 (4401 only)
- Submit
- Apply (at bottom of page)
- Restart services (all services with a * should be restarted)

9. Configure DTMF transport (Telephony > Codecs)

- Misc section, DTMF transport, Transport Method: Out-of-Band using RTP
- Submit

YOU ARE DONE WITH CONFIGURATION

Checking Connection

- Mediatrix (System status, Network and ISDN)

1. Review the status of network connectivity
2. Review the status of ISDN lines

- Test the system:

1. Use an IP phone to make an external call to the ISDN network (according to outbound rules configured on UC500), e.g. to your cellphone.
2. Make an incoming call to the ISDN telephone number from your cellphone

- Check: Call progress, Caller ID, audio, DTMF and disconnect from both sides

Debugging connection

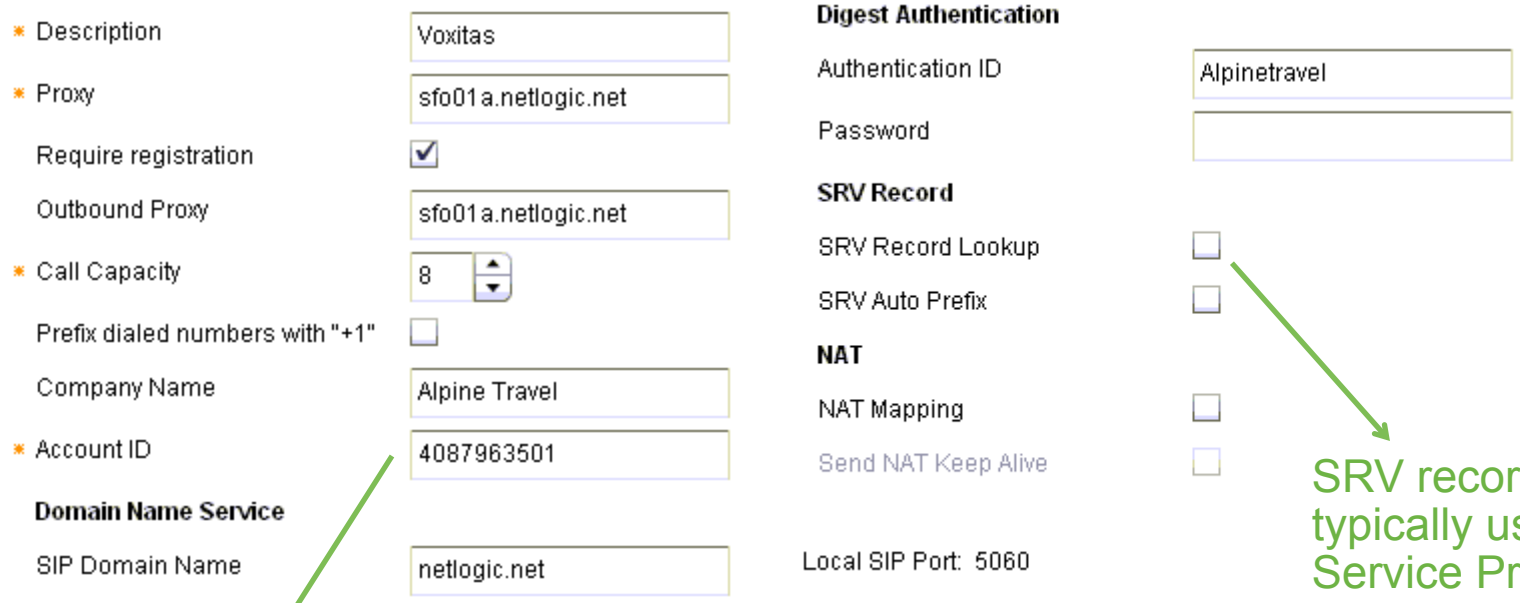
Our debugging is limited to the UC320 box

1. Check network diagram and topology, ensure (by asking the customer) whether Mediatrix has IP and ISDN connectivity
2. Check configuration is according to the app note

   Note SIP connectivity cannot be checked without making calls.There is no registration between the devices, as it is a peer-to-peer SIP trunk
3. Check SIP trunk logs, similar to any other SIP trunk call

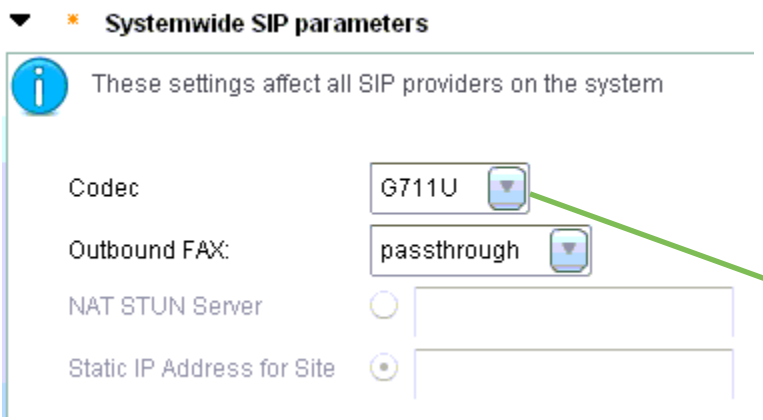
   Calls can be identified by the UC320 Authentication ID configured

SIP Trunk



Account DID is the one DID that will used by the SIP Provider for Authentication. A typical service provider will not allow calls to originate from any other DID.

SRV records are typically used by Service Providers that provide redundant proxies using one single hostname.



Sets the preferred (not only supported) CODEC.

SIP trunk - NAT Traversal

When a SA500 or another router is used in the path between the UC320 and the Service Provider, the Layer 3 IP addresses and SIP IP (Layer 5) addresses do not match.

The following methods are used to mitigate the problem

1. SBC: Most Service Providers have a Session Border Controller. If this is the case then, nothing needs to be done on the UC320.
2. Alternatively the Service Provider might have a STUN server. In that case enter the STUN server IP address in the UC320.
3. On the premise, if you are using a SIP Application Level Gateway like the SA500, then the ALG feature could be enabled.
4. If none of the above options are available, enter the external WAN Static IP address in the UC320.

SIP Trunk Support Strategy

- There are many National and Regional SIP providers all over the world. In the short term UC320 will not have any SIP providers in the drop down box as UC500 provides.

- There will be a SIP trunk section is the support community where there will be several postings regarding how to configure various SIP Trunks. SBSC engineers are strongly urged to participate in these forums and contribute towards these.

SIP Trunk Troubleshooting

- Signaling – Calls
  - Inbound calls receive 486 BUSY from UC320– Check the contact list and ensure there is a valid destination based upon the address found in the SIP “TO: “ field. -- default behavior if a destination can not be determined
  - Inbound calls don’t work – Turn on SIP debugging on Troubleshooting page of UC320 Configuration Utility. Check to see if invite is even seen by UC320. If no INVITE is seen, check to see if there are other routers WAN side of the UC320.– NAT pinhole may have closed. SIP ALG may be causing problems. May need to configure NAT or STUN settings.
  - Outbound calls fail to connect – SIP trunk may register correctly, but the TO: address may not be in a format the SIP provider requires example: expecting a different address length we sent 10 digits when expected 7 or may require 1 or +1 and the rest of address (in USA)

SIP Trunk Troubleshooting

- Media (Voice Path) – One way
  - Check for SIP ALG or NAT enabled in device that is WAN side of UC320 NOTE: SIP ALG in SA 500 should be OK enabled.
  - Look at the IP addresses and IP port numbers in the SIP INVITE and the 200 OK (with SDP (Session Description Protocol)). (Enable SIP debug in UC320 Configuration Utility) You may need to enable port mirroring on a switch to look at the IP and port used in the RTP packets (media)

SIP Trunk Troubleshooting

- Media (Voice Path) – choppy/distorted voice
  - If using Mediatrix ensure that the Preferred CODEC aligns with the BRI encoding example: Mediatrix BRI circuit is configured to use Mu-Law and UC320 Configuration Utility is configured to use G.711a (A-law).
  - Ensure site network is fully switched (no hubs)
  - Ensure QoS is configured (DiffServ and WAN uplink rate limiting) on any WAN routers – network congestion
  - If WiFi connection to phone ensure the signal strength is good, Voice SSID is enabled and phone is associated with voice SSID
  - Determine the direction that the voice is bad

Thank you.