Demystifying Video

C-MUG

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Agenda

- Introduction
- Basic Installation
- Conferencing
- Management
- Outside Connections
- Future Technologies

Introduction

THE NEW MILLENNIUM

Where is my jetpack?

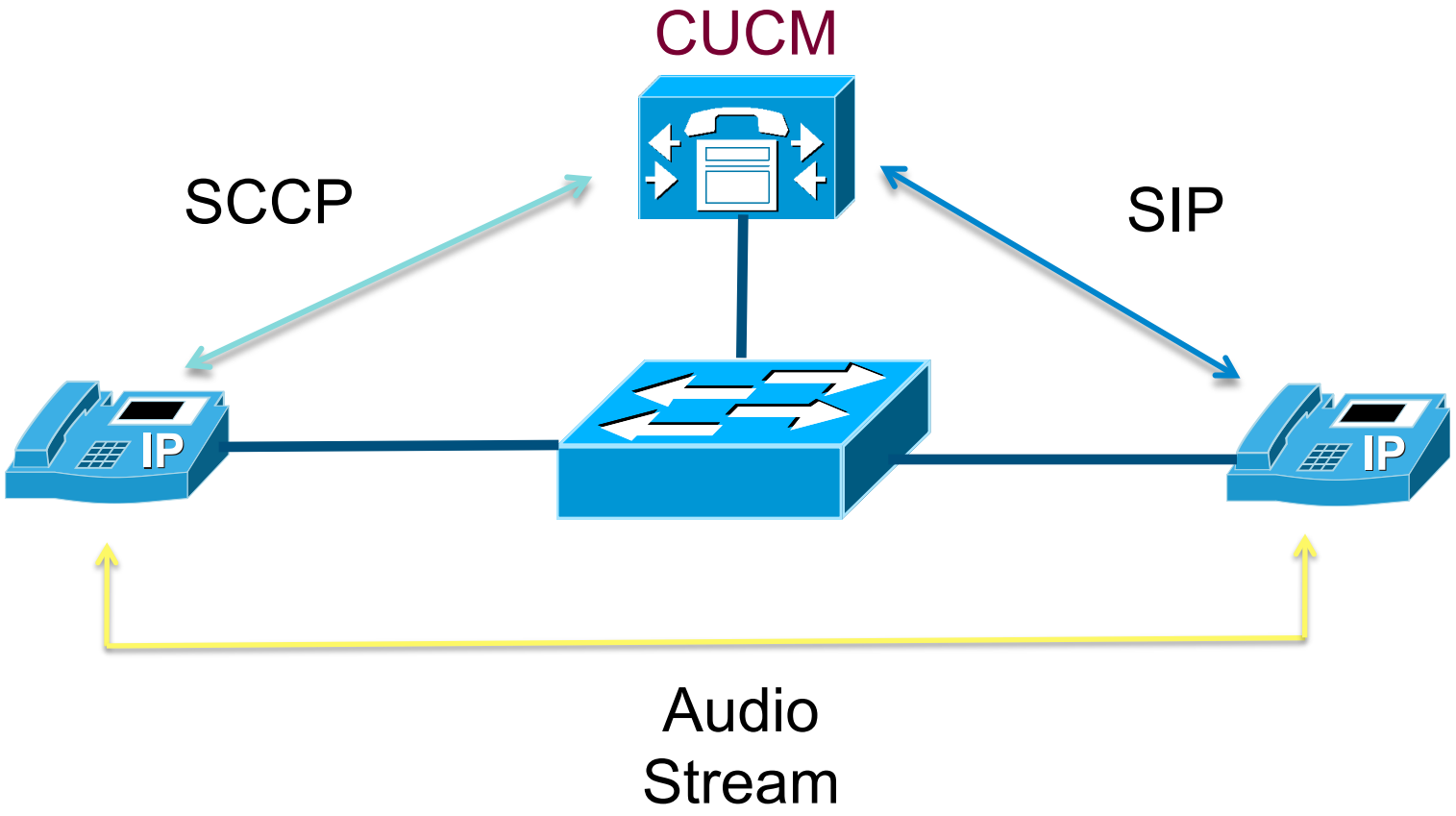
How This Will Work

- Start with the basics
- Explain the hardware involved
- Add more functionality
- Explain that hardware
- Continue until the network is complete
- Use case scenario
- Where we're going

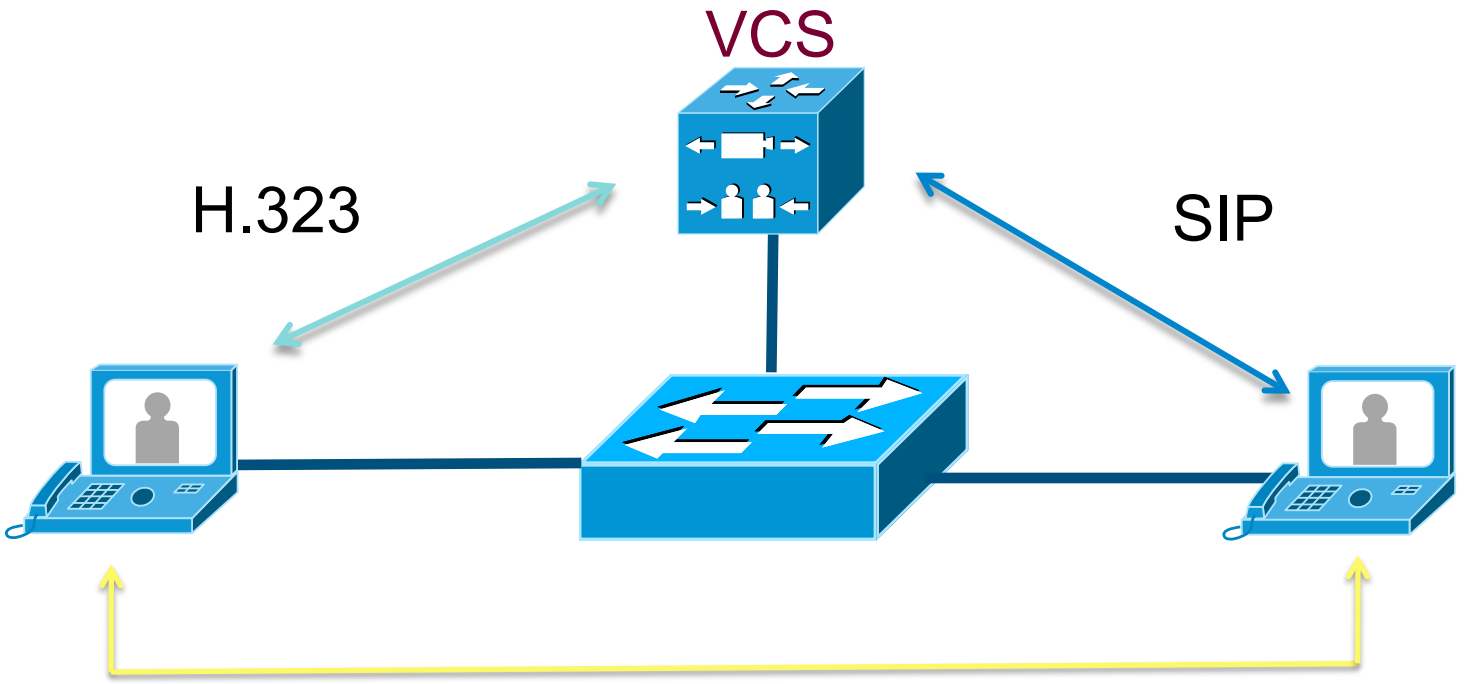
Basic Installation

POINT-TO-POINT VIDEO

Basic Audio



Basic Video



Dial by alias instead of IP

Basic Installation

ENDPOINTS

Personal Endpoints

89XX and 99XX Desk Phones

“E” Desk Phones

“EX” Desk Phones

Room-Sized Endpoints

MX Series Devices

500 Series Devices

Profile Series Devices

Immersive Endpoints

"T" Series and 3000 Series Devices

Codec or Codec?

- **A “Codec” is a compression standard; for example, G.711 for audio, or H.264 for video.**
- **A “Codec” is also a piece of coding and decoding hardware.**

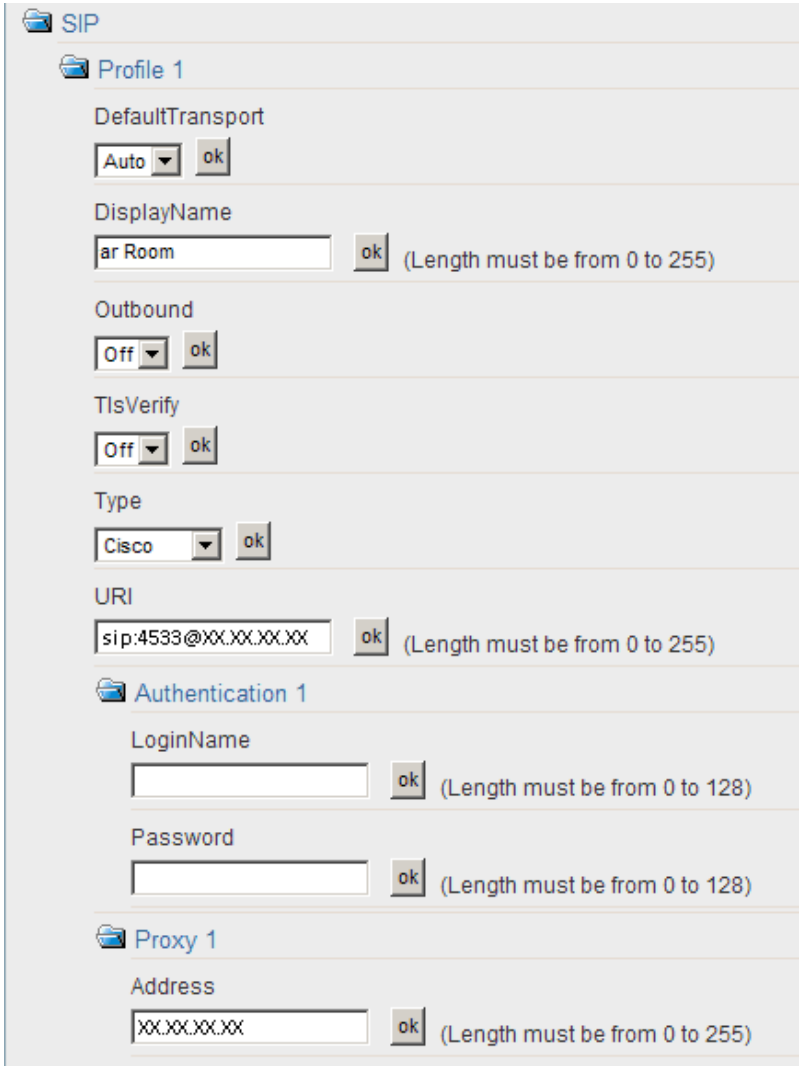
Cisco C90

Endpoint Configuration

Generally endpoints need to be configured to point to the VCS. These devices will have their own configuration web pages.

Endpoint Configuration

For SIP phones, make sure the name of the device, the URI and the address of the proxy (VCS) are listed.



Basic Installation

THE VCS

Video Communication Server

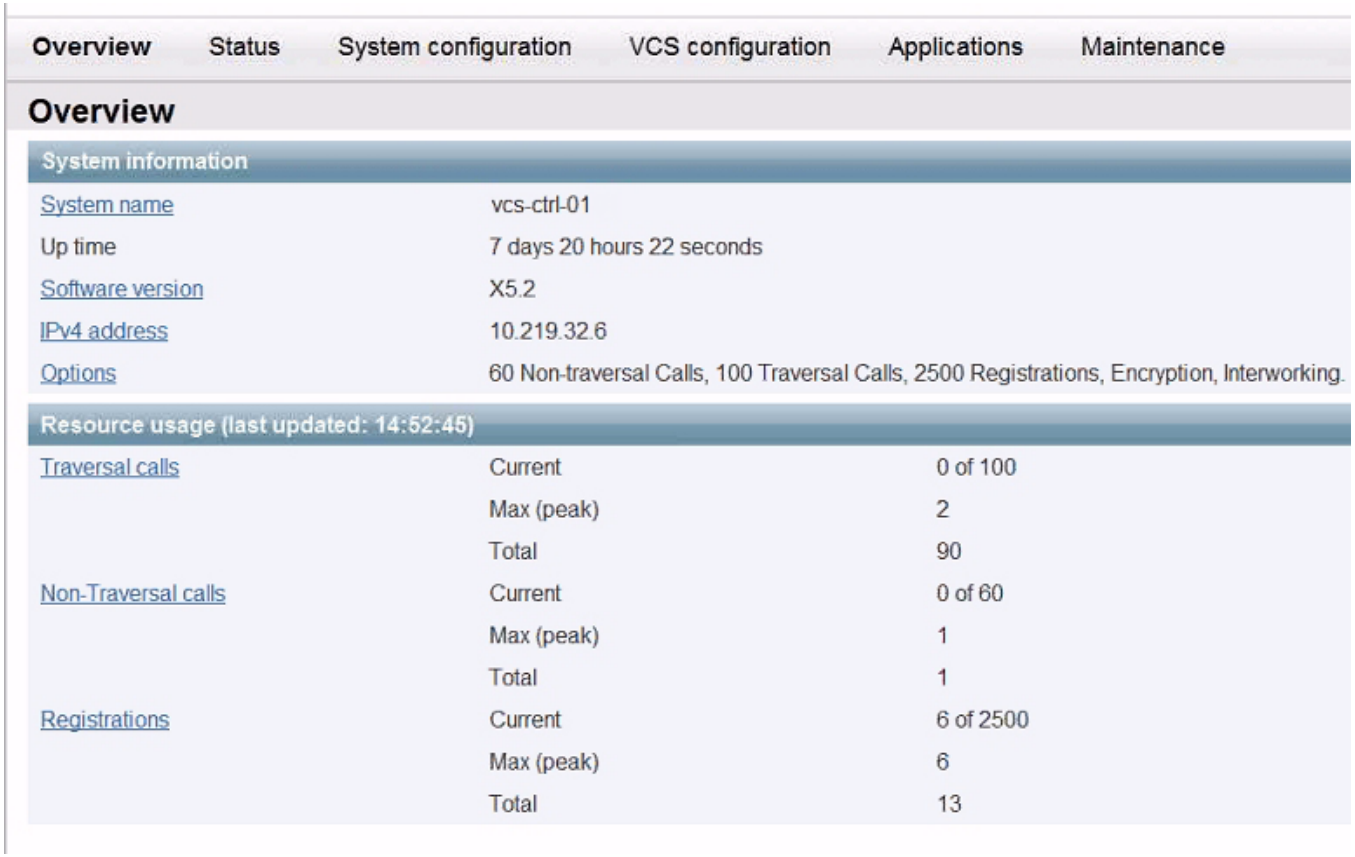
A VCS is like a Gatekeeper/SIP Registrar/CUCM for video. A VCS Control is internal and will…

- **Register H.323 and SIP endpoints**
- **Direct calls between endpoints**
- **(In normal mode) Handles signaling and bandwidth management**

Cisco VCS

Video Communication Server

When you log into the VCS you get an overview of the statistics of the device.

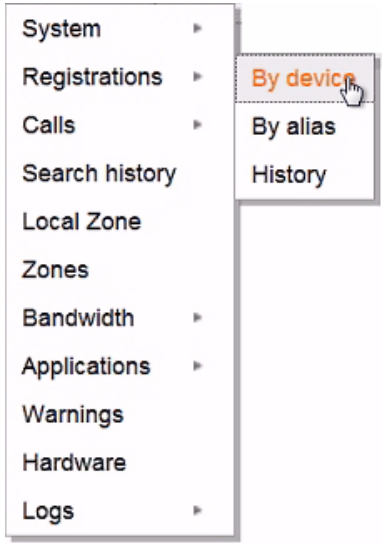


Overview | Status | System configuration | VCS configuration | Applications | Maintenance

Overview

System information		
System name	vcs-ctrl-01	
Up time	7 days 20 hours 22 seconds	
Software version	X5.2	
IPv4 address	10.219.32.6	
Options	60 Non-traversal Calls, 100 Traversal Calls, 2500 Registrations, Encryption, Interworking.	
Resource usage (last updated: 14:52:45)		
Traversal calls	Current	0 of 100
	Max (peak)	2
	Total	90
Non-Traversal calls	Current	0 of 60
	Max (peak)	1
	Total	1
Registrations	Current	6 of 2500
	Max (peak)	6
	Total	13

Video Communication Server



A VCS Control can register up to 2500 endpoints

Overview | **Status** | System configuration | VCS configuration | Applications | Maintenance

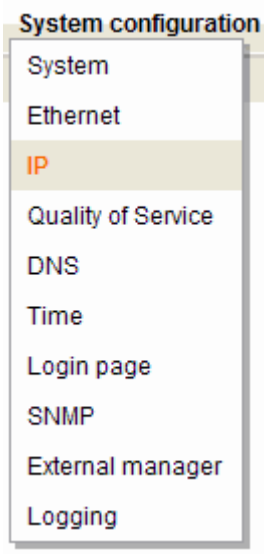
Registrations by device

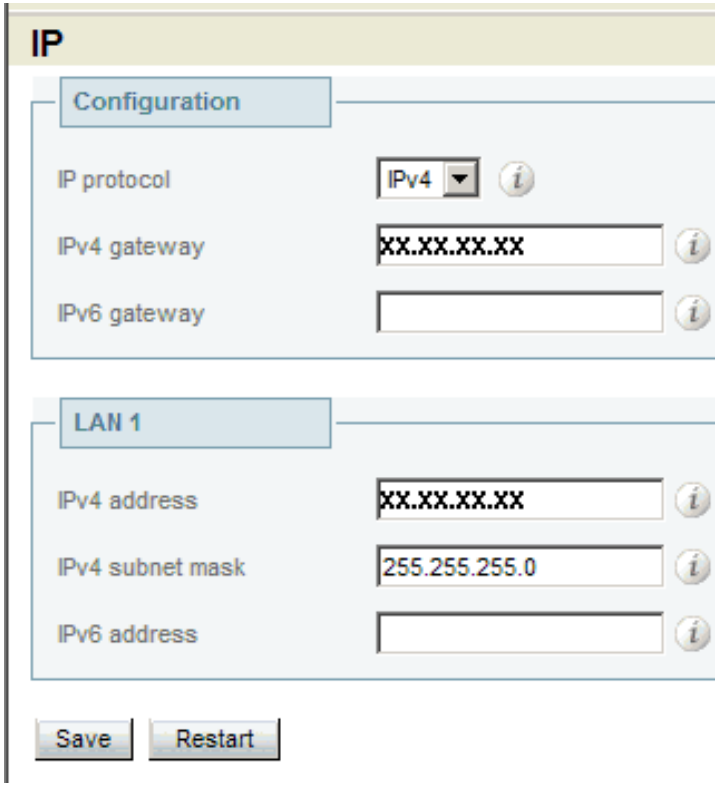
	Name	E.164	Type	Protocol	Creation time	Address
☐	Austin	5122224	Endpoint	H.323	2012-04-05 16:57:49	XX.XX.XX.XX:1719
☐	Codian01	9014622	MCU	H.323	2012-04-07 23:35:55	XX.XX.XX.XX:2222
☐	VPN3-VCS-H323_3		Gateway	H.323	2012-04-05 15:05:30	XX.XX.XX.XX:1719
☐	SOUTH	8165278	Endpoint	H.323	2012-04-10 05:56:55	XX.XX.XX.XX:1719

Unregister | Select all | Unselect all

Video Communication Server

Start the configuration of the VCS by going to System Configuration > IP and fill in the address of the gateway and the Ethernet port.





On-Net Calls

Once the VCS has an IP and the phones are configured to find it, phones will register with the VCS and internal calling will be possible (including interworking).

The Environment

Behave like you're a TV studio engineer…

- **Lighting**
  - Top lighting for main illumination
  - Front lighting to soften features and cut shadows
  - Back lighting (off to the side) to make subject stand out from the background
- **Microphones**
  - Unidirectional
  - Omnidirectional

The Environment

- **Background**
  - Neutral color
  - Flat backdrop
  - No patterns
  - Nothing glittery

- **Speakers and Acoustics**
  - Need to keep echo in mind

Basic Installation

CALL ROUTING

Connections to Another Device

- Besides the limit in the number of devices a VCS Control server can register, it can also handle only 500 concurrent calls (100 interworking calls). Large networks will probably need more than one.
- Registered devices have phone numbers so the VCS knows how to route calls to them.
- The VCS does not know about the phone numbers for devices registered to another VCS or to CUCM.

What to do?

Call Routing Decisions

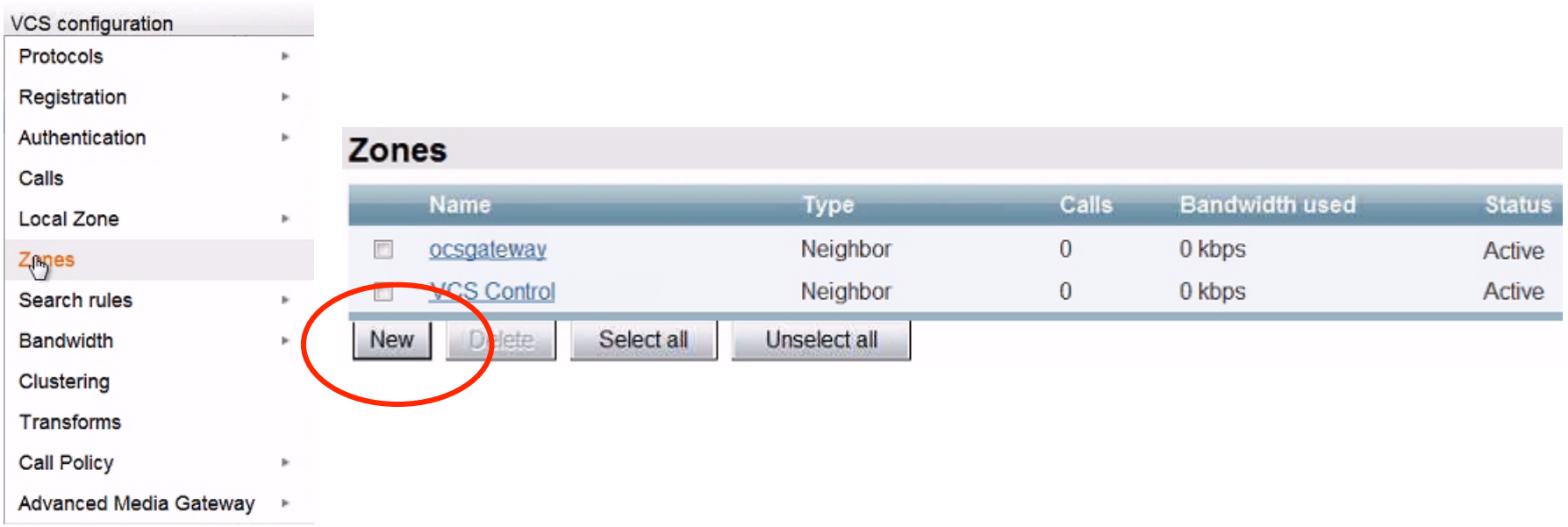
- **CUCM** – gateway/trunk object, route patterns
- **Gatekeeper** – zones, zone prefixes
- **VCS** – zones, search rules

Zone status

Name	Type	Calls	Bandwidth used	Status
DefaultZone	DefaultZone	0	0 kbps	Active
VCS Control	Neighbor	0	0 kbps	Active
Memphis CUCM	Neighbor	0	0 kbps	Active
cucTAM	Neighbor	0	0 kbps	Failed

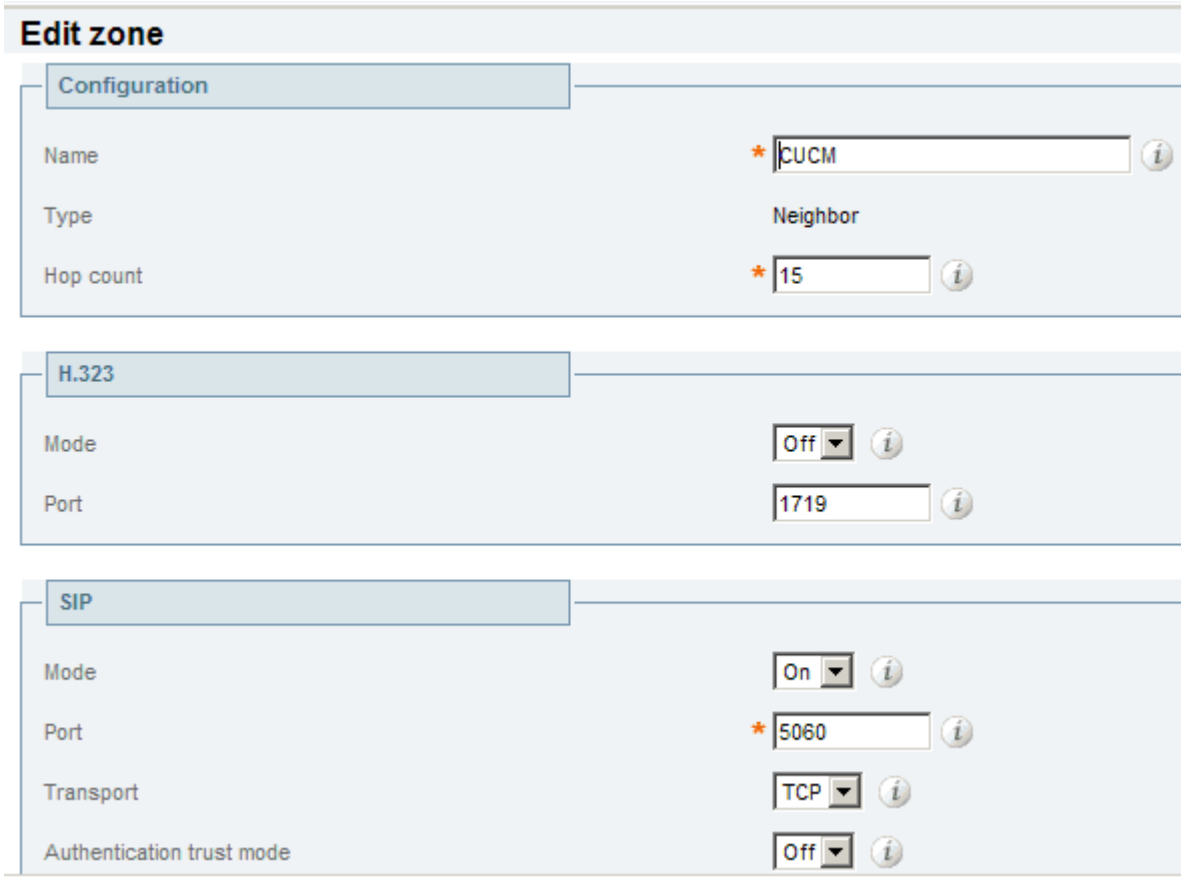
Configure a Zone

Start by adding a new zone…



Configure a Zone

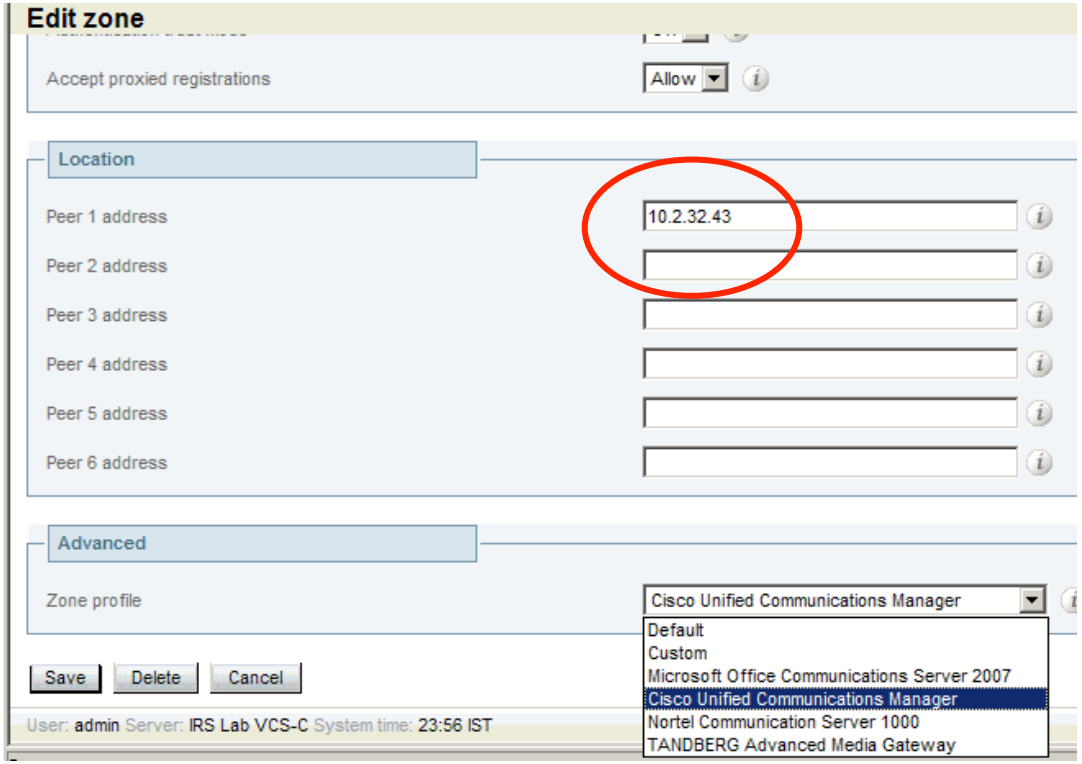
Fill in the details (most defaults are OK)…



Configure a Zone

Fill in the details…

…add the IP of the device in the other zone…

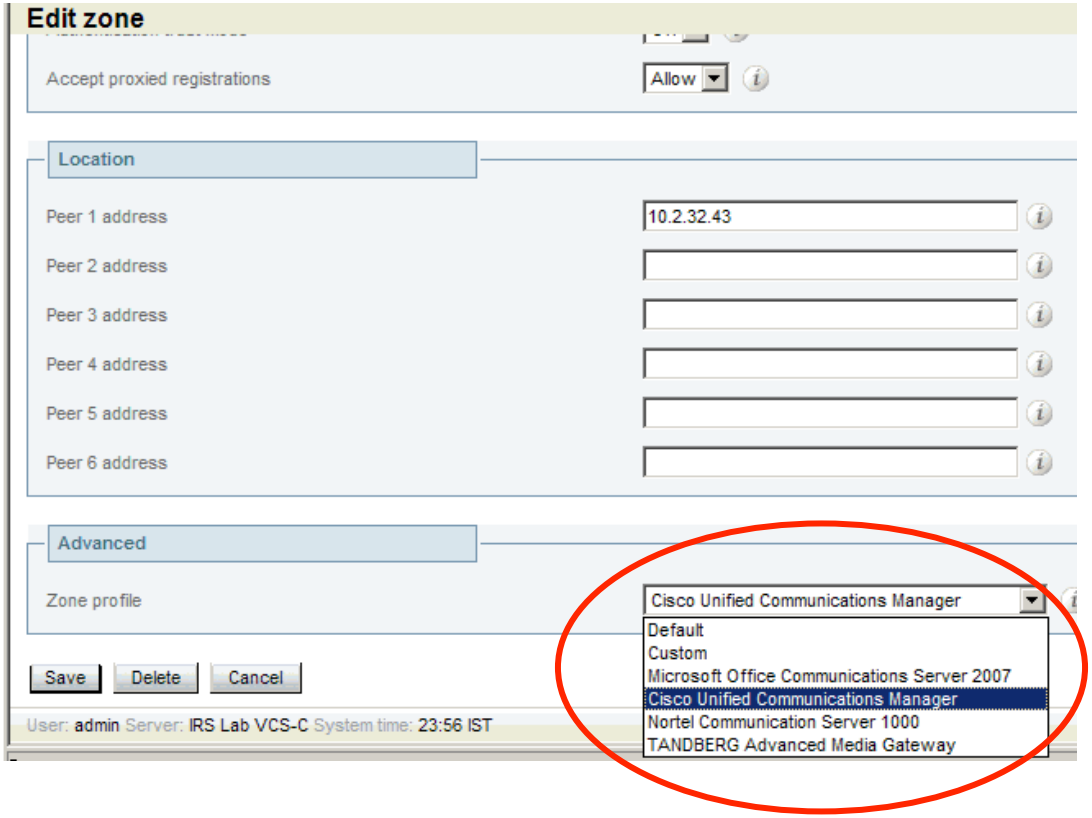


Configure a Zone

Fill in the details…

…add the IP of the device in the other zone…

…and define the type of zone.



Then create a search rule.

Search Rules

Regex (Regular Expression) Wildcards

. (a dot) = any single character

d = any decimal 0-9

[] = a single character within a specified range

\ = precedes an expression

() = a group of digits or letters

? = 0 or 1 repetitions of previous

* = 0 or more repetitions of previous

+ = 1 or more repetitions of previous

Search Rules

Examples:

…. = exactly 4 numbers or characters

g… = exactly 4 numbers or characters beginning with "g"

[2479]… = 4 numbers or characters beginning with 2, 4, 7, or 9

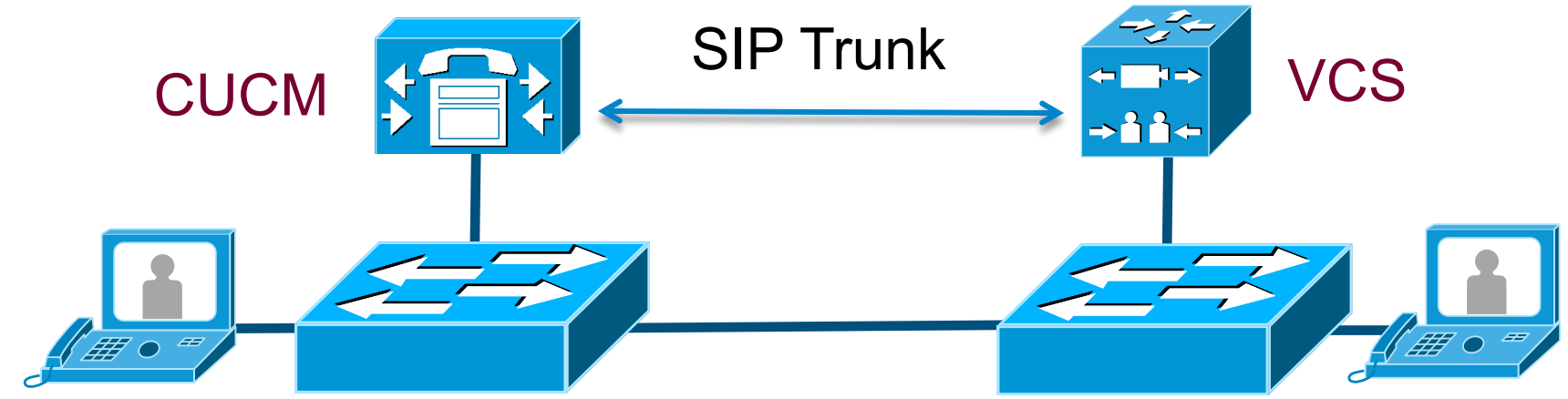
.* = any length string of digits or characters

\d+ = any length string of at least 2 digits

(.*)(@netcraftsmen\.net)? = any length string, the suffix may or may not be part of the string

Transforms

Dial strings sent to the VCS often need to be modified before they can be matched.

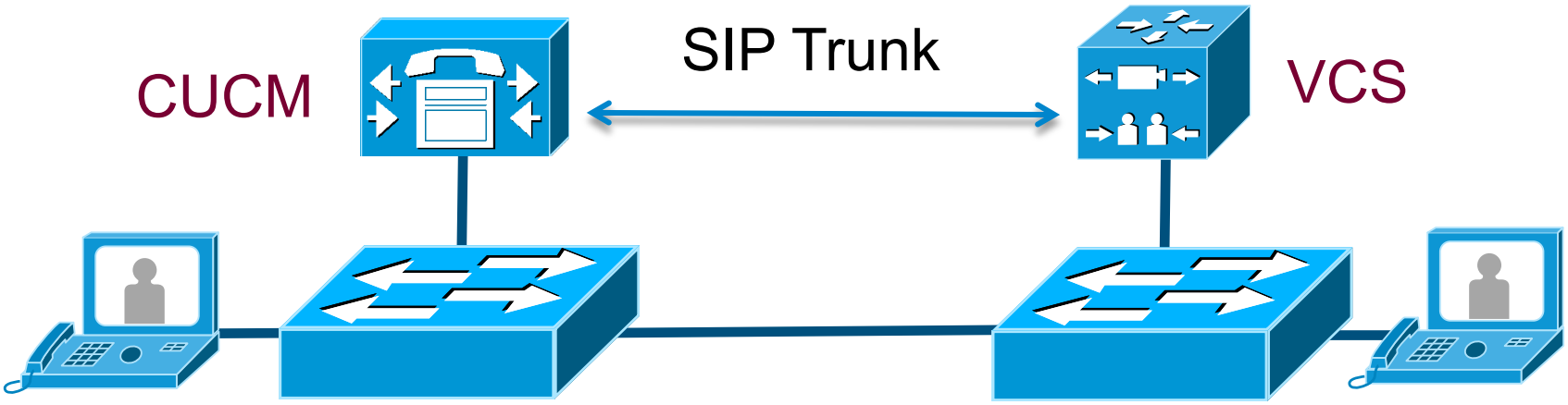


Dials 0056789 → Sends 0056789@netcraftsmen.net → Registered as 2023456789

Transforms

Search rule = (00)(\d+)(@netcraftsmen\.net)?

Replace = 20234\2

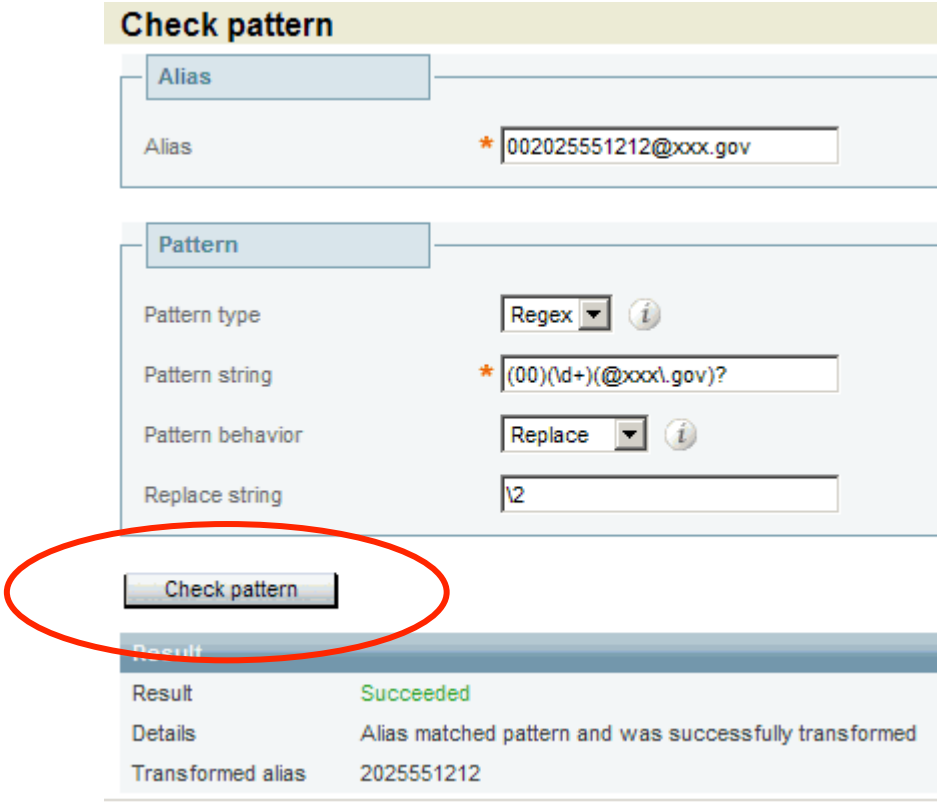


Dials 0056789 → Sends 0056789@netcraftsmen.net → Registered as 2023456789

There is a link to test replacements

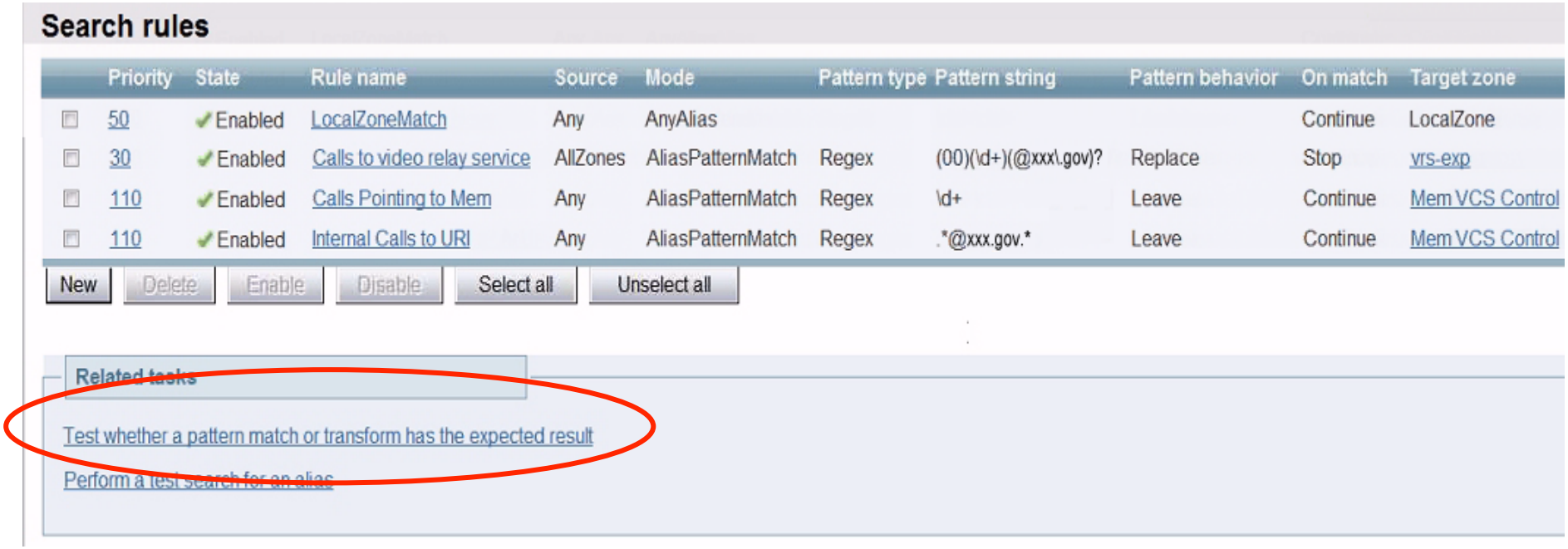
Search Rules on VCS

You can put in an alias (something that's dialed), put in the search rule, and then see what the output will be…



Search Rules on VCS

Search rules are numbered. Lowest are checked first. Matching numbered rules query zones simultaneously. Rules are checked until there is a match or until a "Stop" is hit.

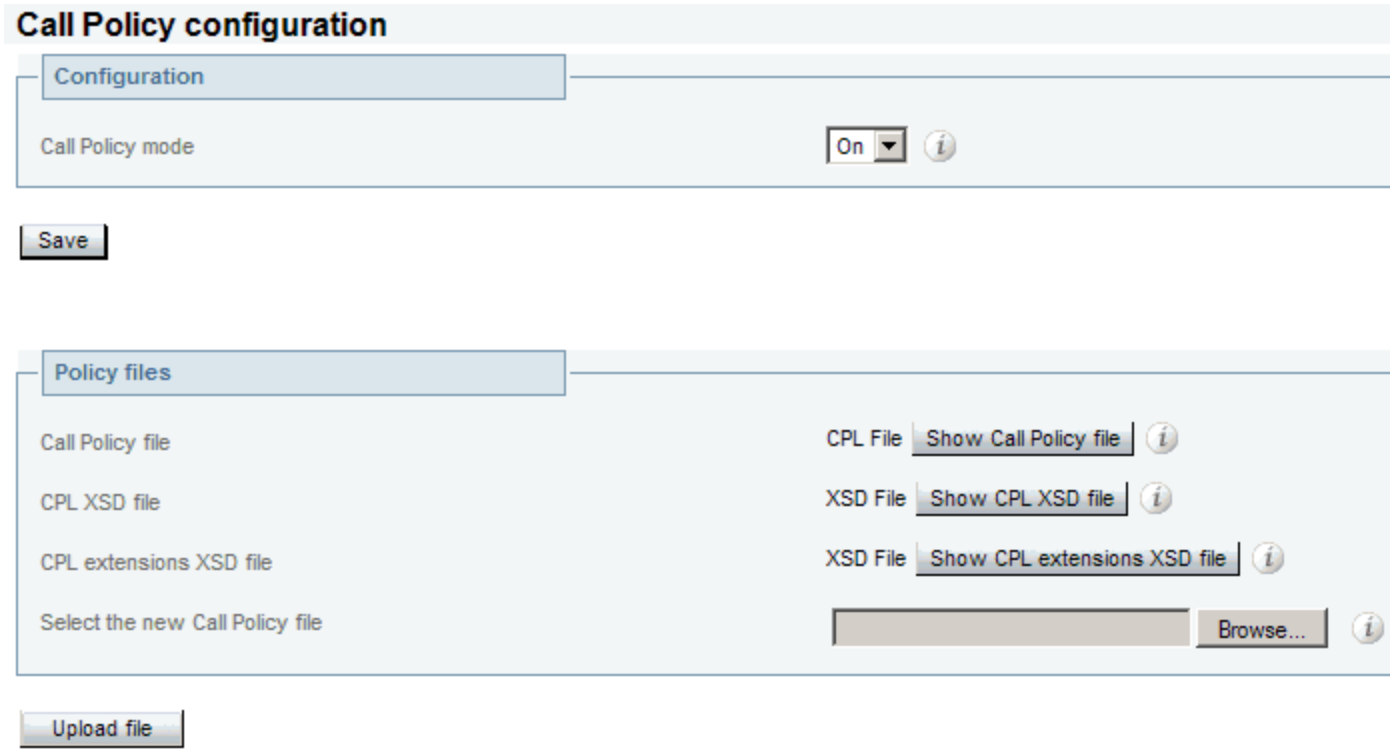


Class of Restriction

- Class of Restriction is allowing some people to use some search rules and not others. Controls access to long distance calling, controls who can be called, etc.
- In CUCM Class of Restriction is done with Partitions and CSSs.
- In a VCS, Class of Restriction is done with call policies

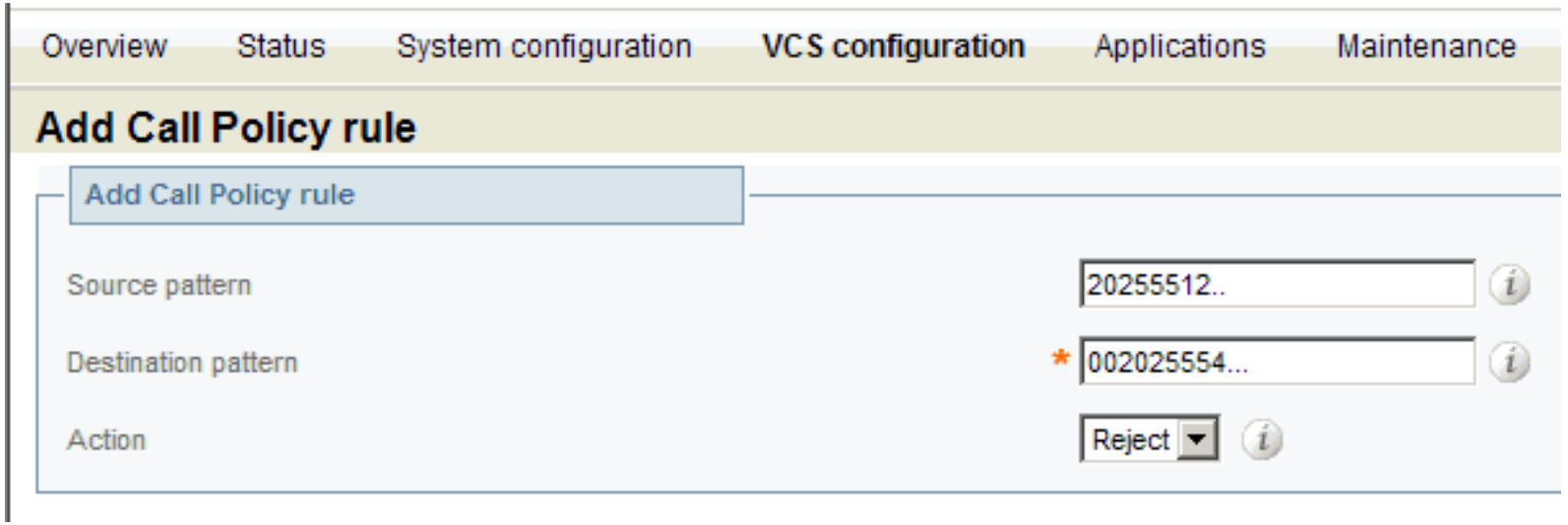
Class of Restriction

Call Policies must be enabled. CPL (Call Processing Language) scripts can be uploaded…



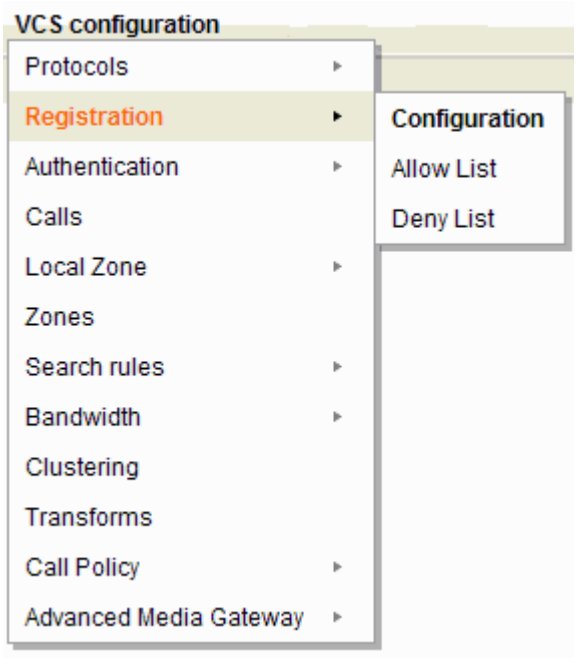
Class of Restriction

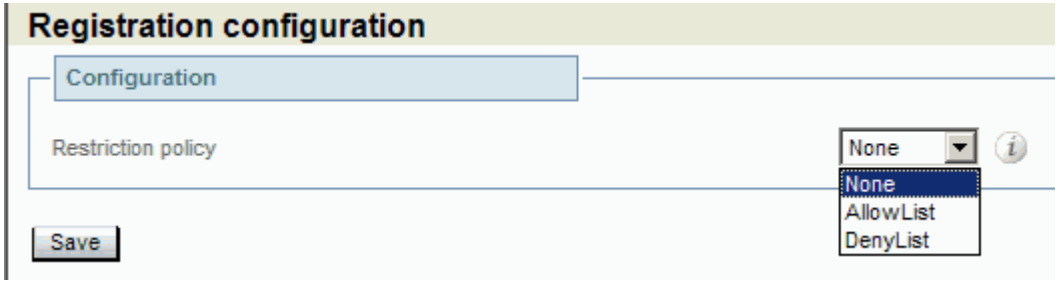
…or scripts can be created by making Call Policy rules.



Additional Security

To register, endpoints can be forced to fit a naming convention.

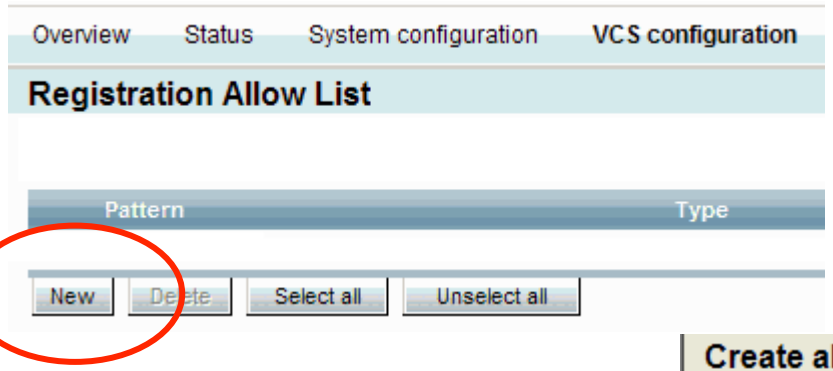


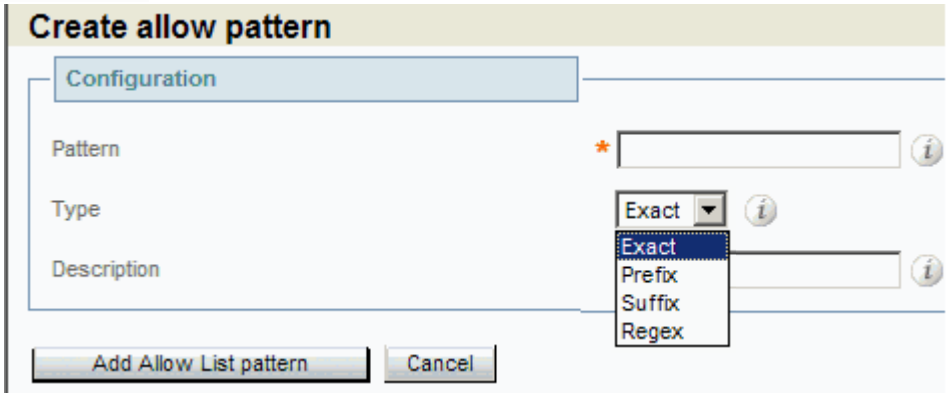


Can have Allow or Deny lists but not both.

Additional Security

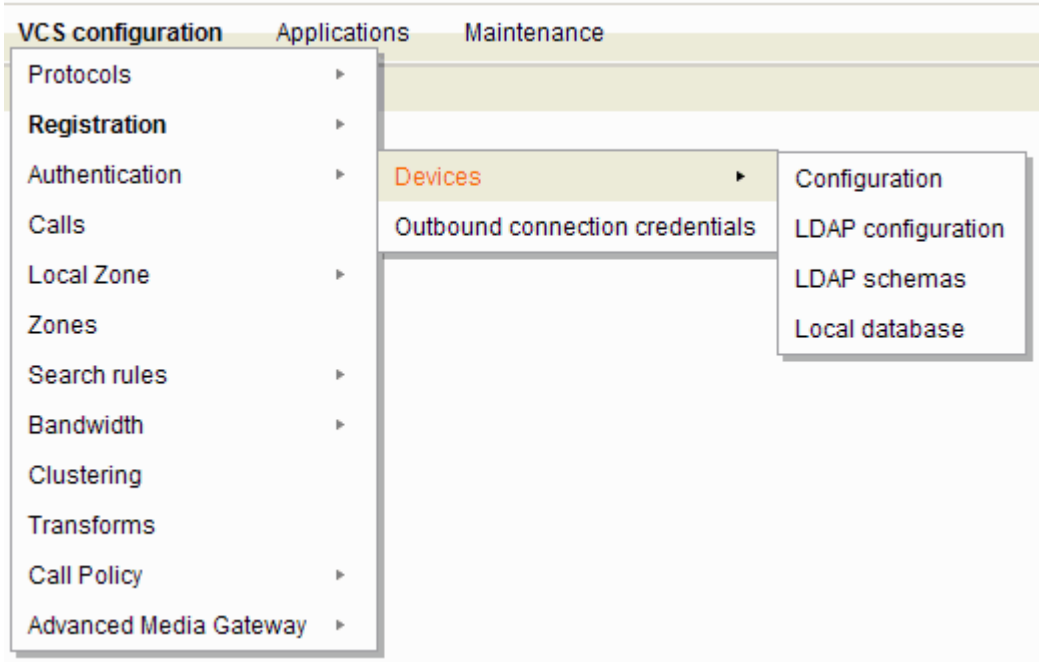
When the type of registration is chosen, create the parameters that must be met.





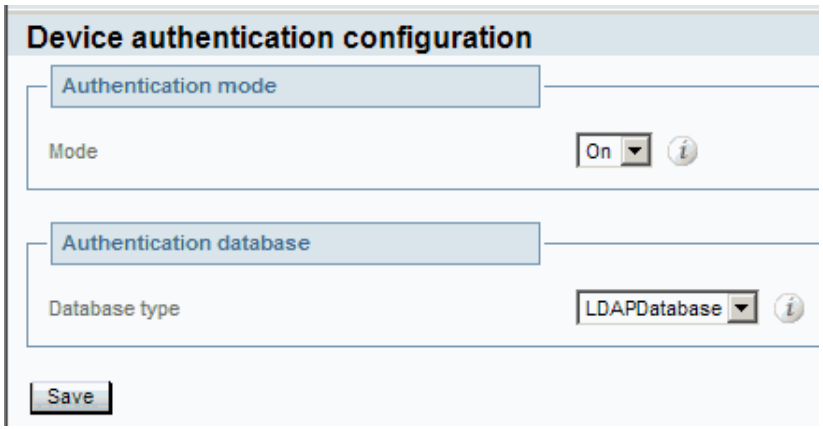
Additional Additional Security

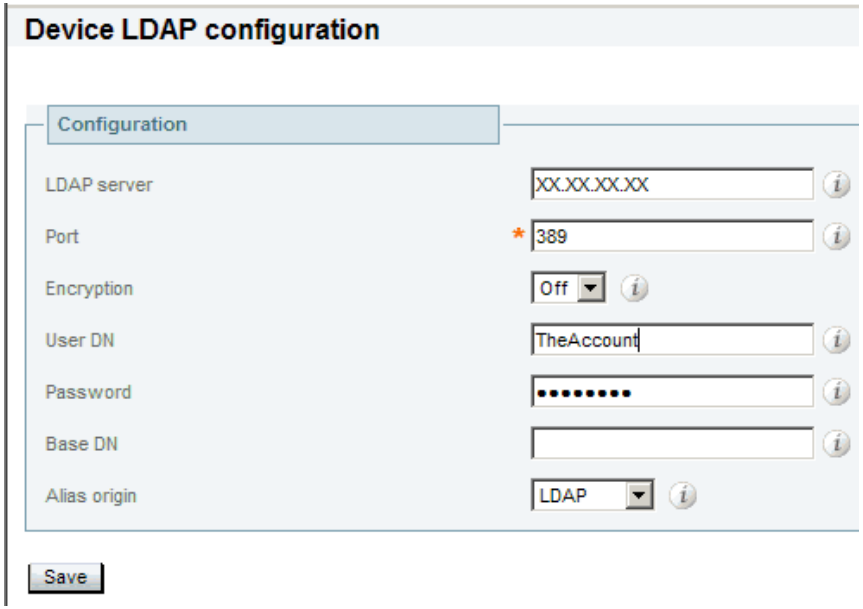
Can also authenticate against usernames and passwords stored in a local database or in LDAP.



Additional Additional Security

Authentication must be on or off for everyone.





Conferencing

MULTIPOINT CONTROL UNITS

MCU

Video conferences are done with an MCU

- **Users can create "multiway" calls with Join.**
- **Can also create a "conference room"; users dial conference number to take part.**
- **MCUs take audio and video streams, mix them, and deliver content based on policies.**
- **Desktop content sharing using H.239 and BFCP protocols.**
- **MCUs register with the VCS.**

MCU

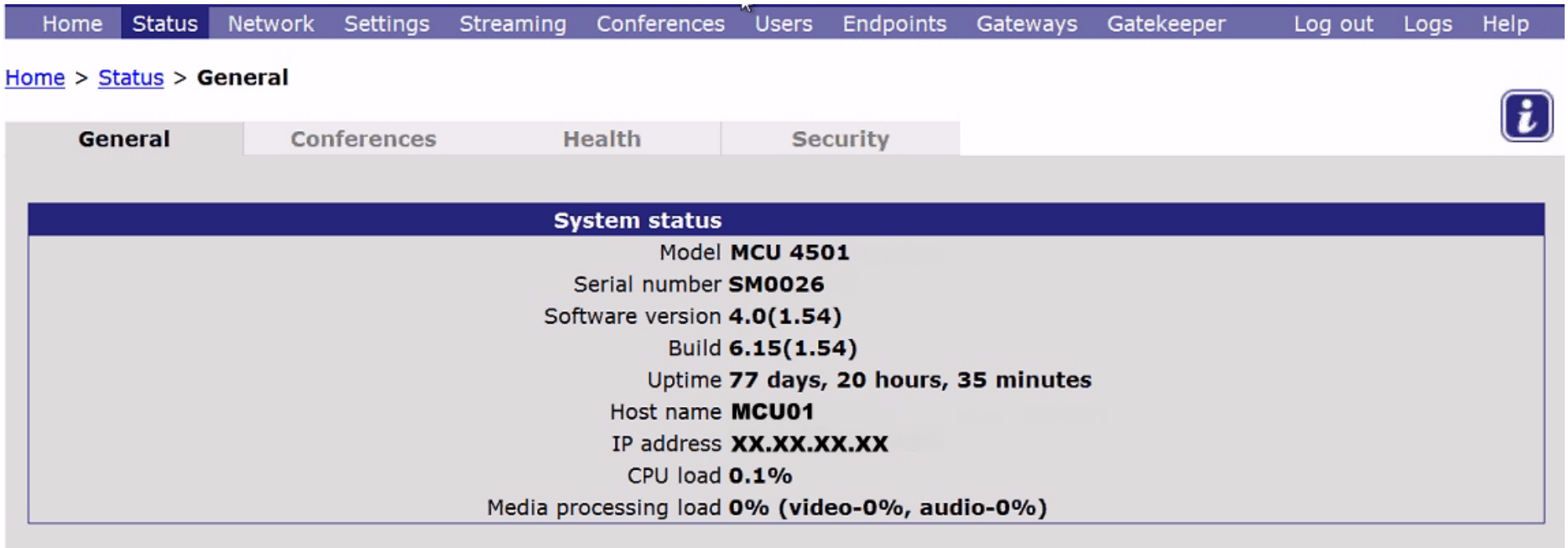
- The smallest MCUs are built into some video endpoints. They can handle up to 4 people in a conference.
- Next step up are the 4XXX devices
  - 4200 – 40 SD connections
  - 4501 – 6 HD or 12 SD connections (upgrade to 12, 24)
  - 4500 Series – Up to 40 HD (or SD) connections

MCU

- **MCUs can also be blades in an 8000 chassis.**
  - **8510 Blade – 20 HD or 80 SD connections**
  - **8710 Blade – immersive conferences**
  - **Other blades for management of chassis, and for gateways**

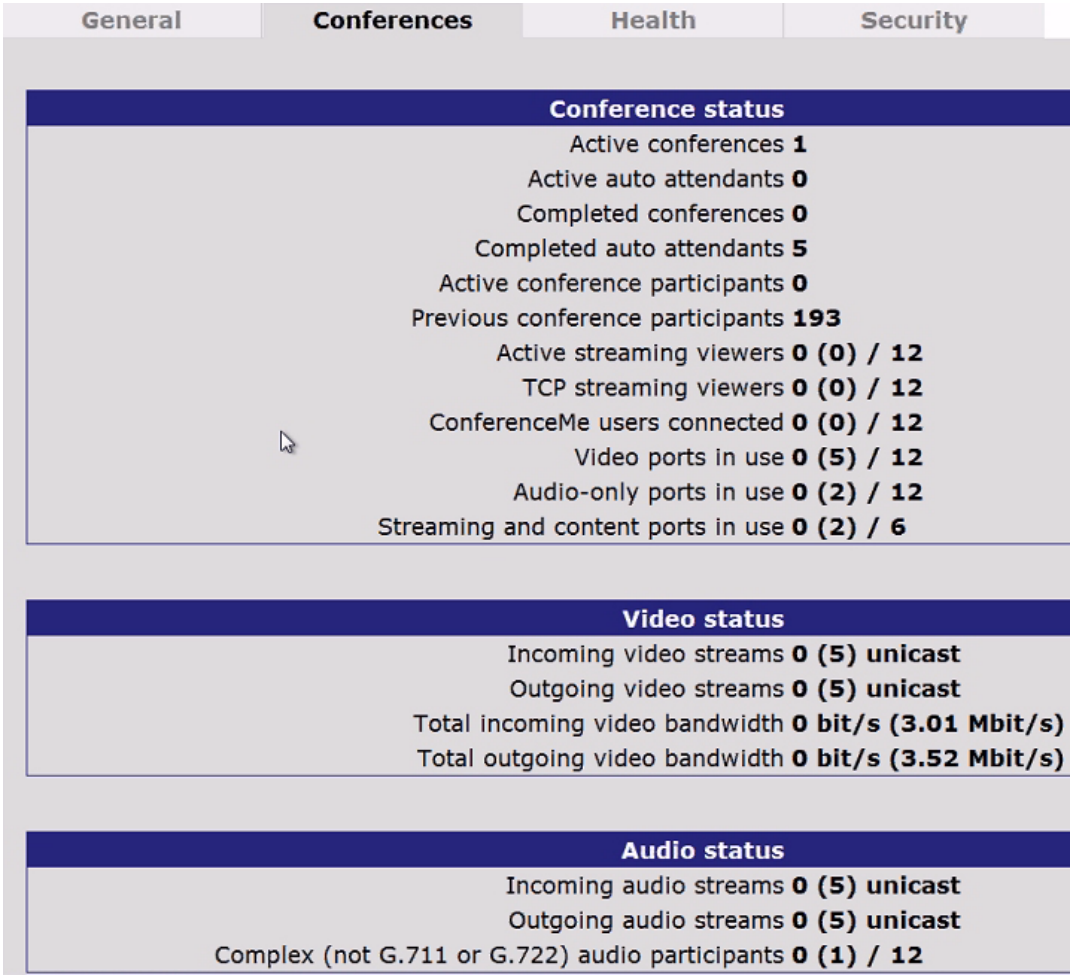
MCU

Log into an MCU and see general statistics about the device.



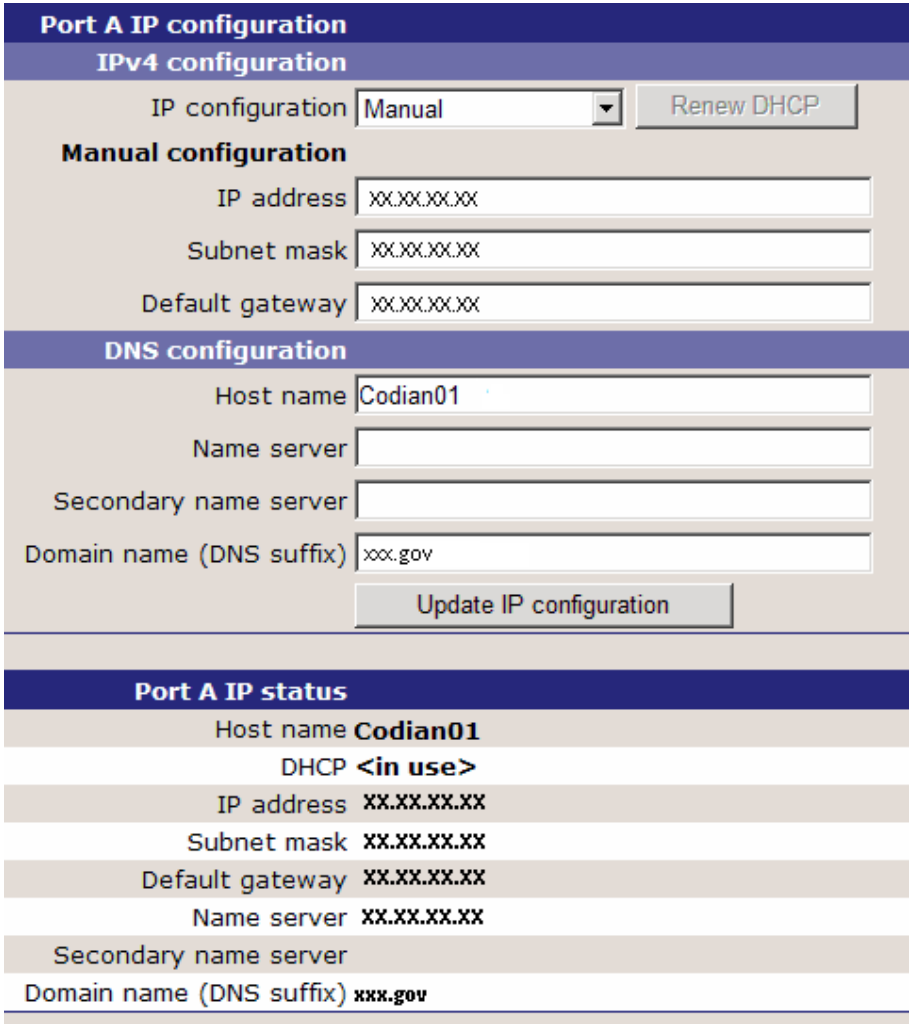
MCU

As well as stats. about conferences



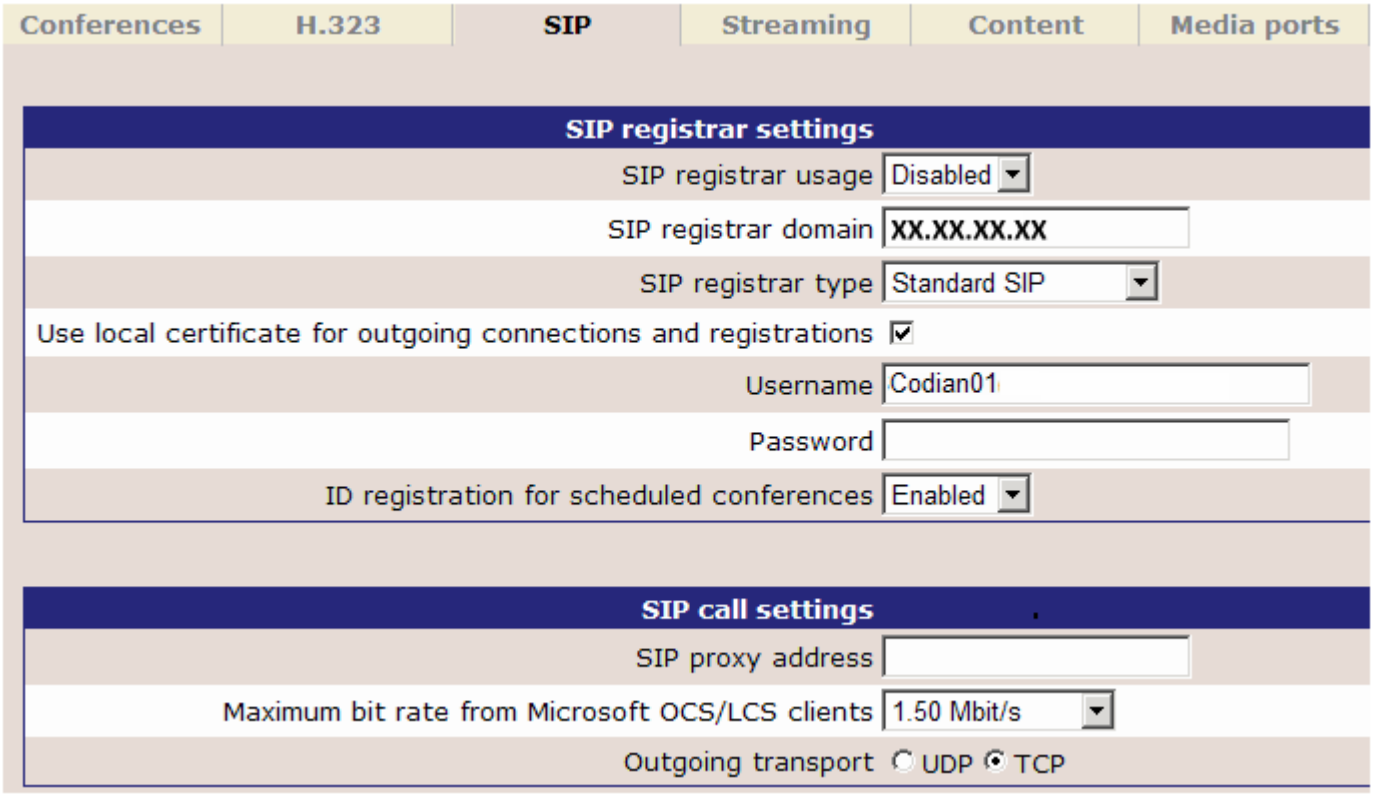
MCU

Under Network, configure the Ethernet information.



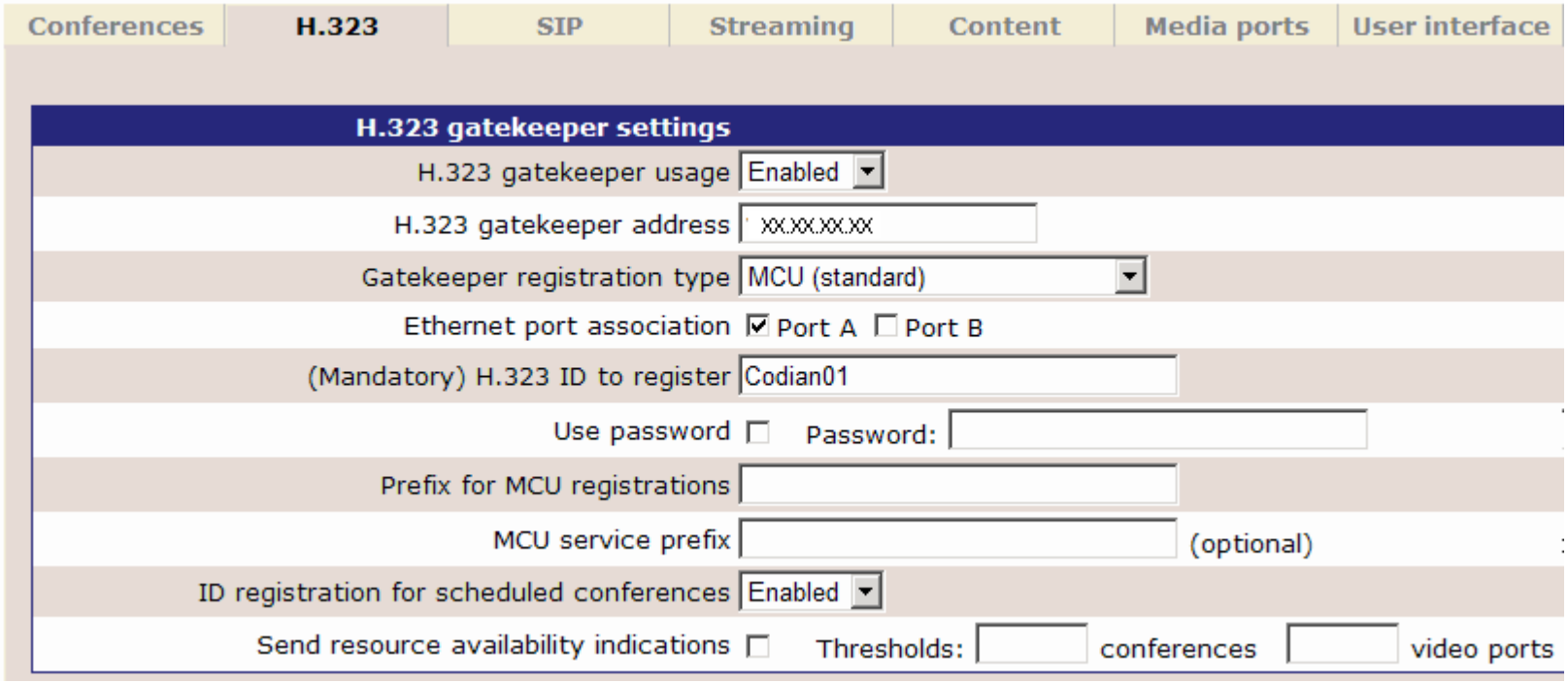
MCU

Configure the SIP Registrar Information…



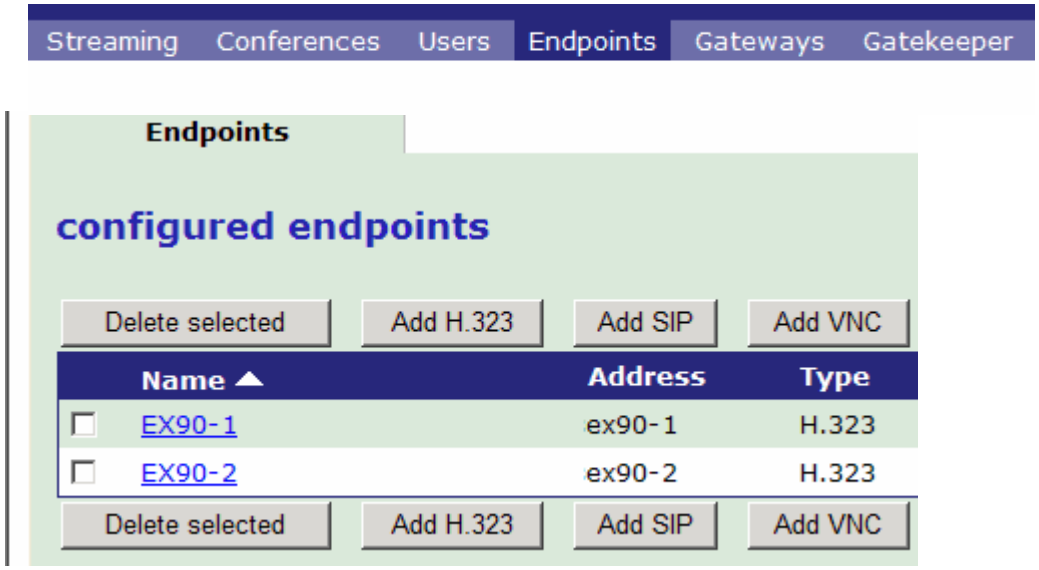
MCU

…or the H.323 Gatekeeper settings (or both)



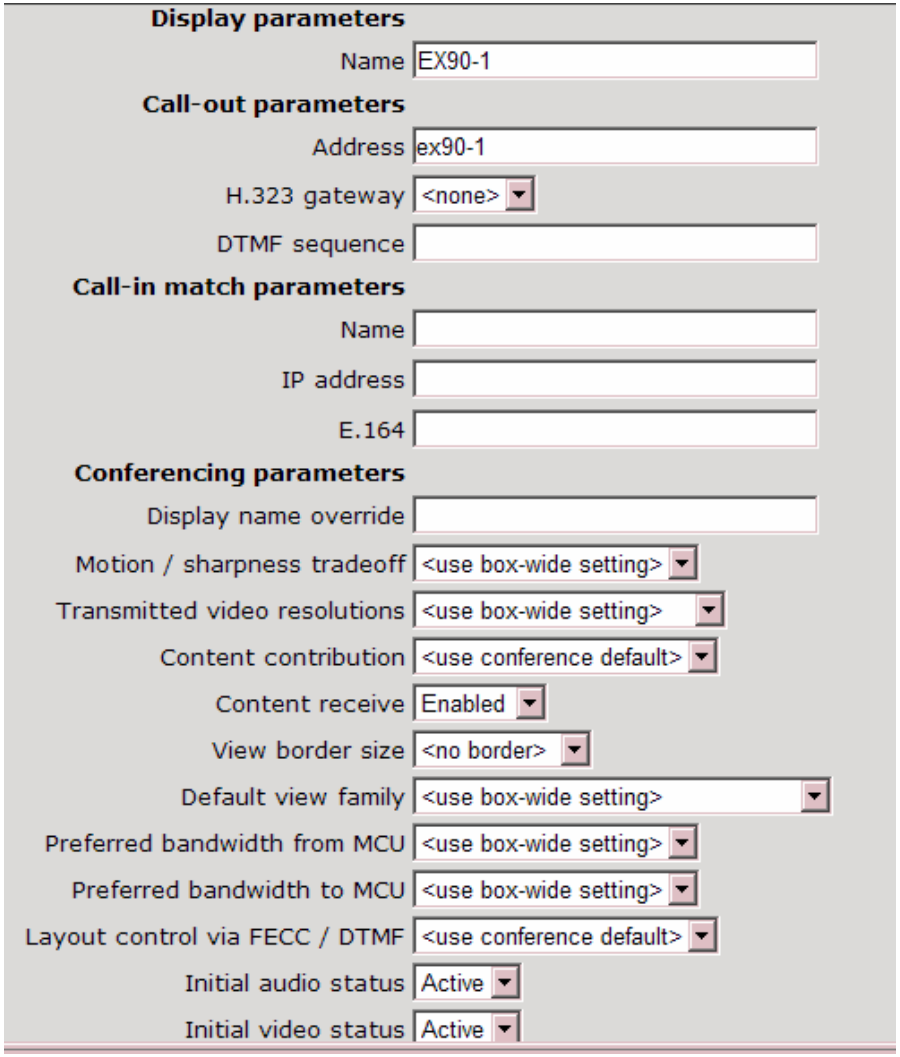
MCU – Adding Endpoints

Need to add the devices that will be using the MCU. Add either an H. 323 or a SIP device.



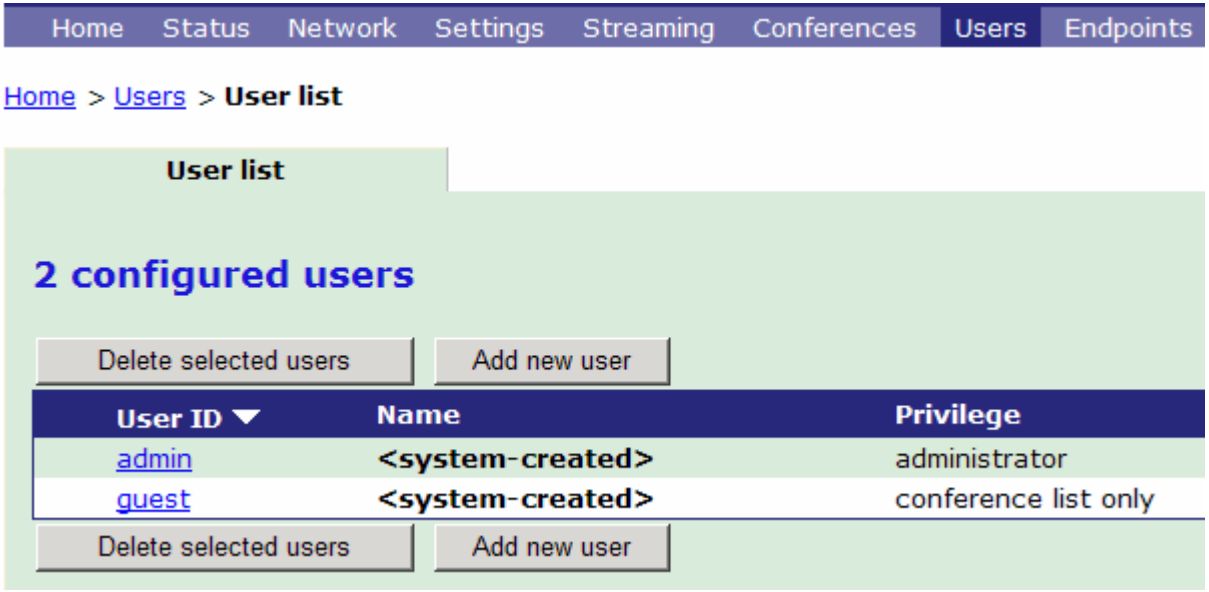
MCU – Adding Endpoints

The device will need a name and address at least. Other parameters can be configured.

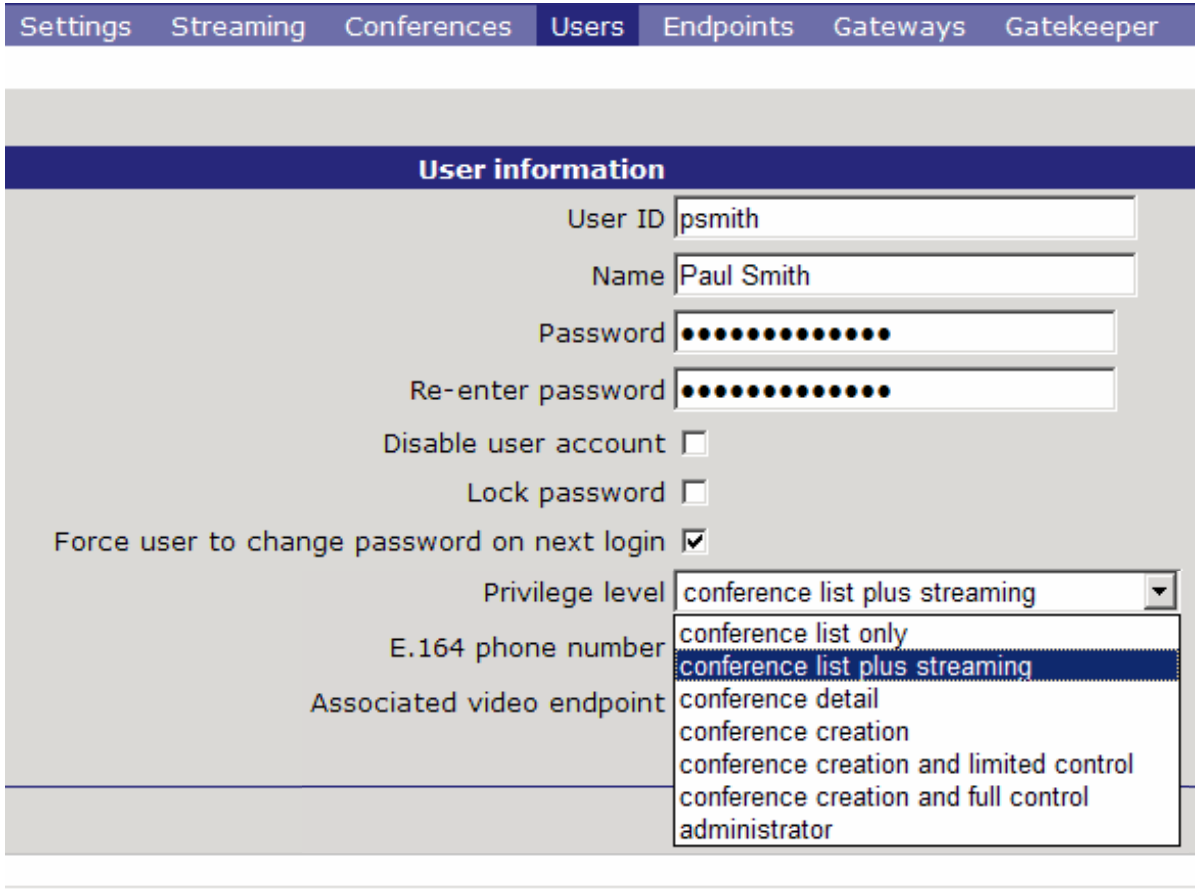


MCU – Adding Endpoints

Users also need to be created. You can give users administrative rights here, but also rights to create a new conference.



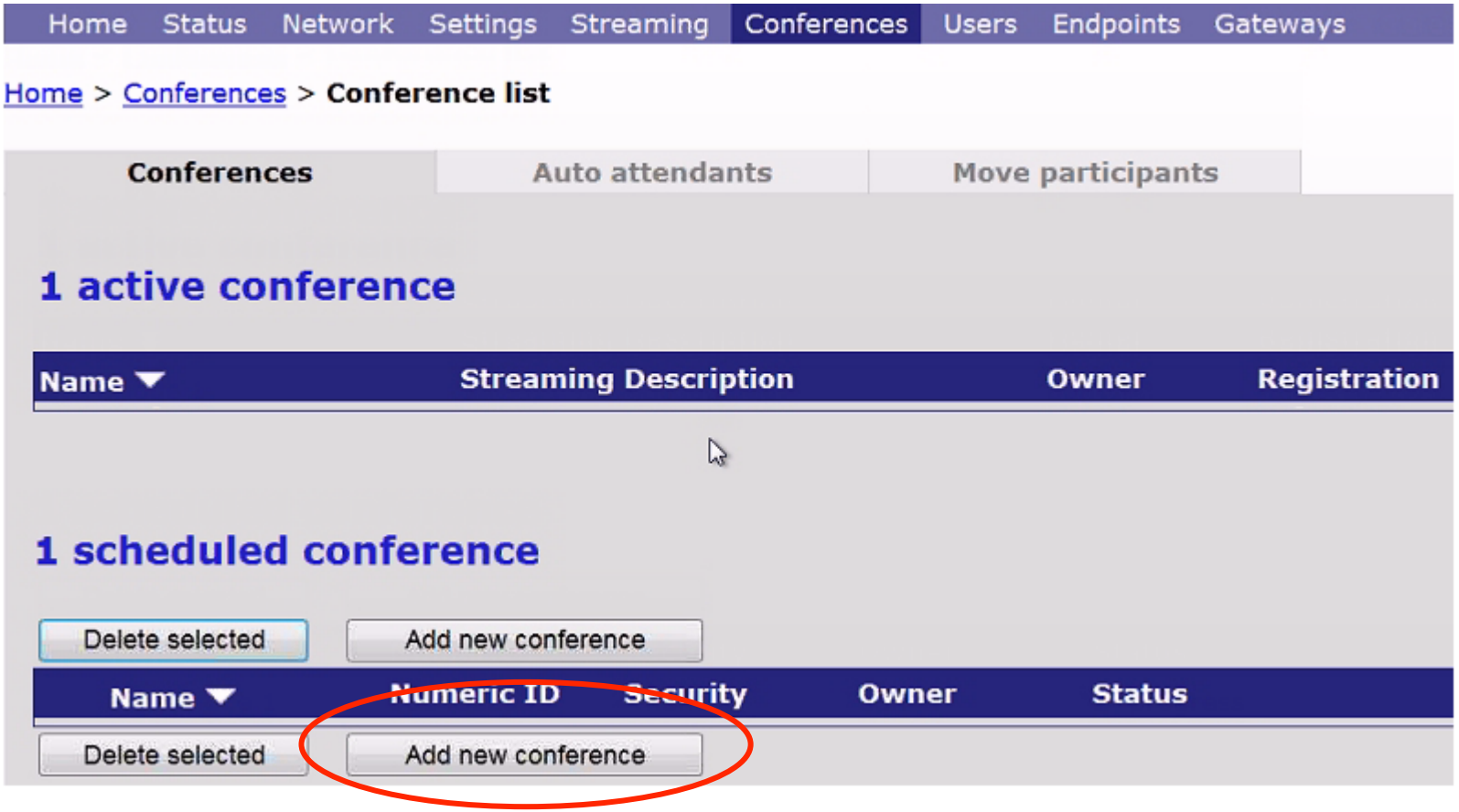
MCU – Adding Endpoints



Information and rights are configured here.

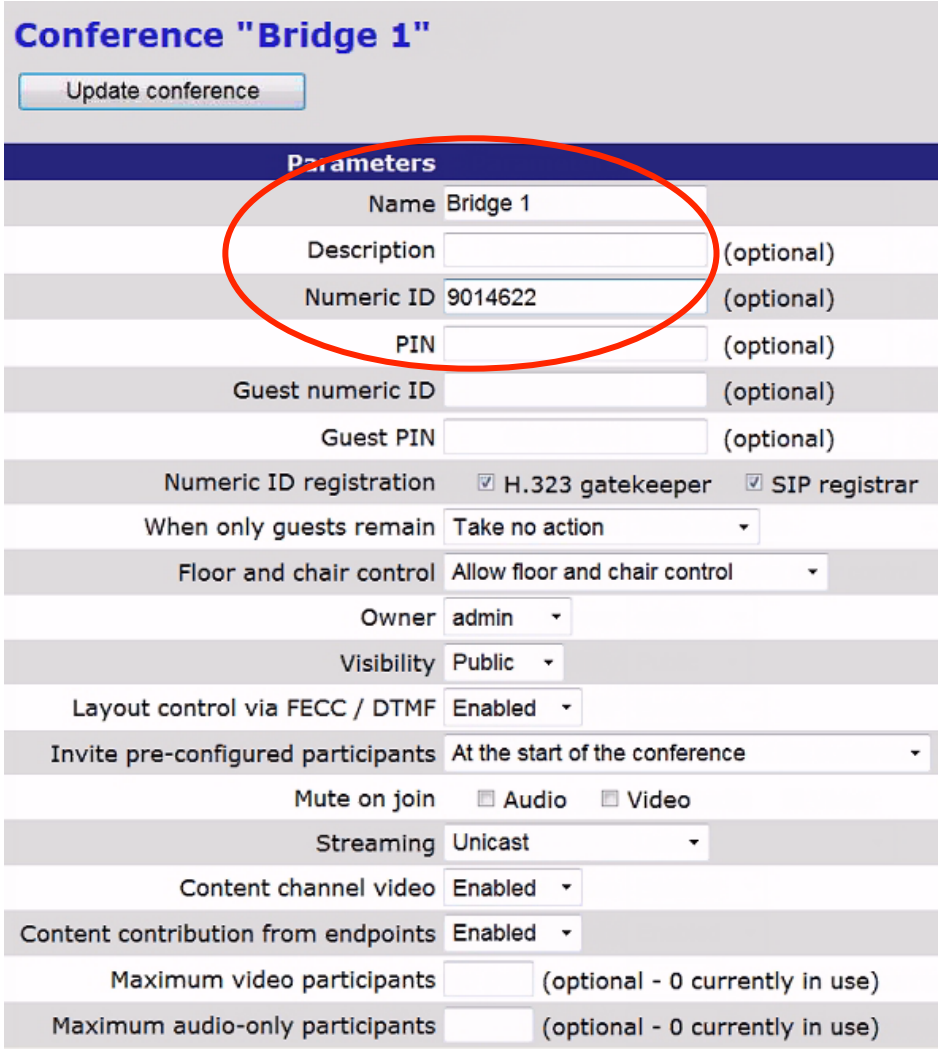
Don't worry, there's an easier way to do this.

MCU – Conference Creation and Management



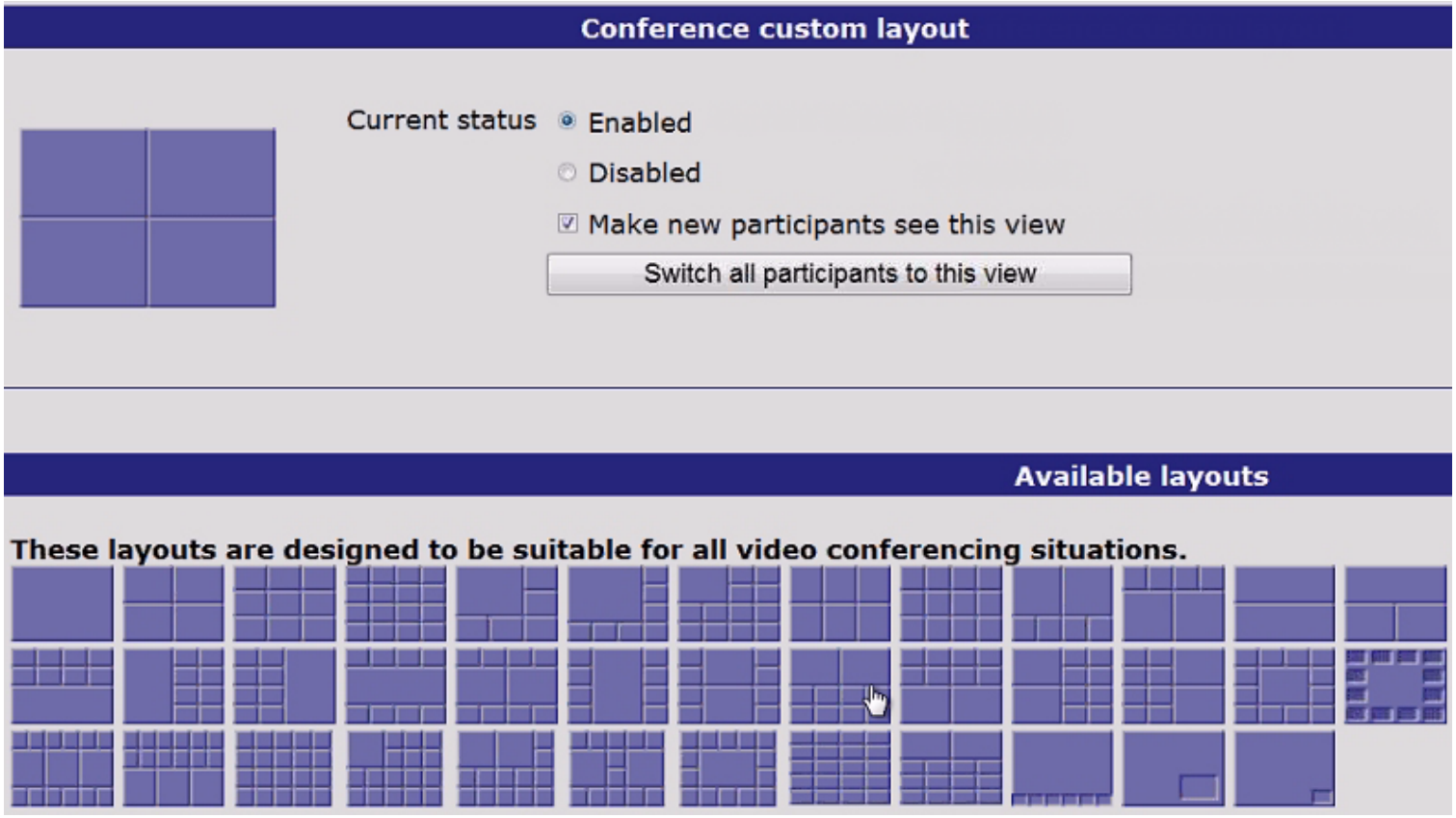
MCU – Conference Creation and Management

Give the bridge a name and a number and fill in whatever other configurations you want. Or accept the defaults.



MCU – Conference Creation and Management

Configure the layout of the panes. Within conference select Custom Layouts.



Cisco MCU Highpoints

- Works with endpoints from different vendors (Polycom, OCS) including compatibility with standards that allow for supplemental services.
- Can be set up as a Media Resource in CUCM.
- New MCUs feature dynamic video ports which can be grabbed when needed (without reservation). Good for multiway conferences. Also makes it easier for MCU to be registered with CUCM and with a VCS at the same time.
- Auto-Attendant can be set

Cisco MCU Limitations

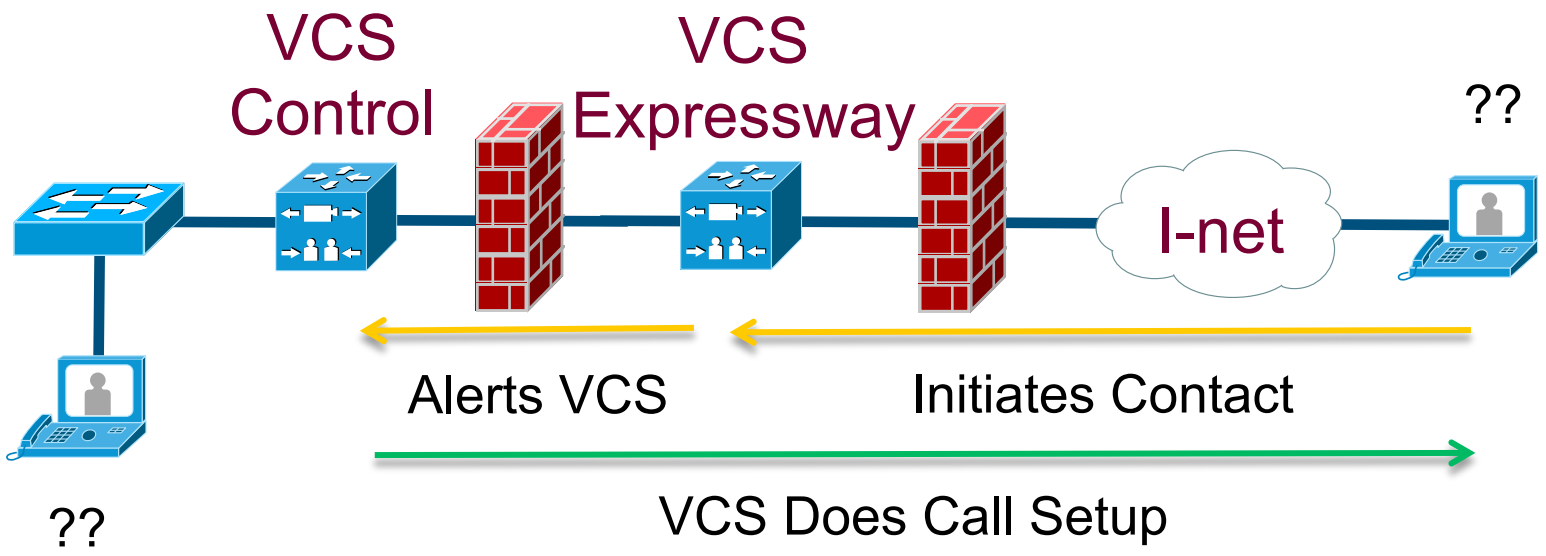
- No bulk import of users or endpoints
- Scheduling of conferences can be done by users, but kind of clunky and no calendar integration.
- No alerts can be sent.

Outside Connections

VCS EXPRESSWAY

The Outside World

Firewalls keep out both the good and the bad. Opening a hole in the firewall for the traffic you want could also allow traffic you don't want. Solution: NAT. Problem: NAT.

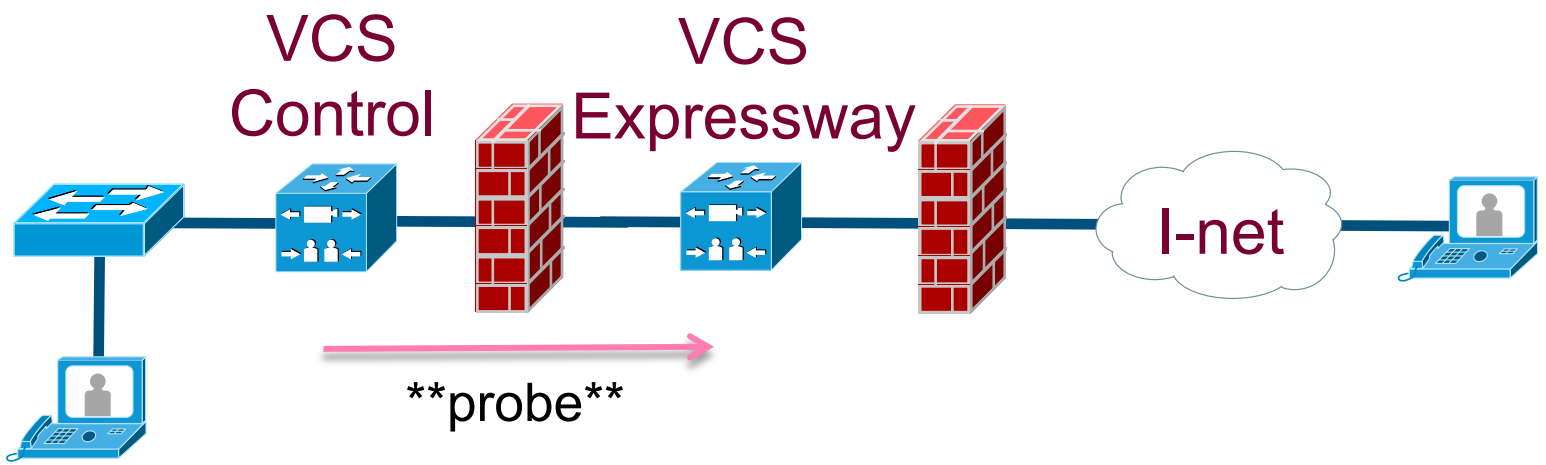


The Outside World

- The VCS Control (traversal client) and the VCS Expressway (traversal server) are configured in the same way using zones and search rules.
- Outside devices (road warriors, home users, 3rd party business partners) register with the VCS Expressway.
- Each VCS server is configured with a traversal zone for communication through the firewall.

The Outside World

The Client maintains a link by regularly sending packets to the Server. If a call is initiated, the Server uses the open connection to get the Client to start the connection.

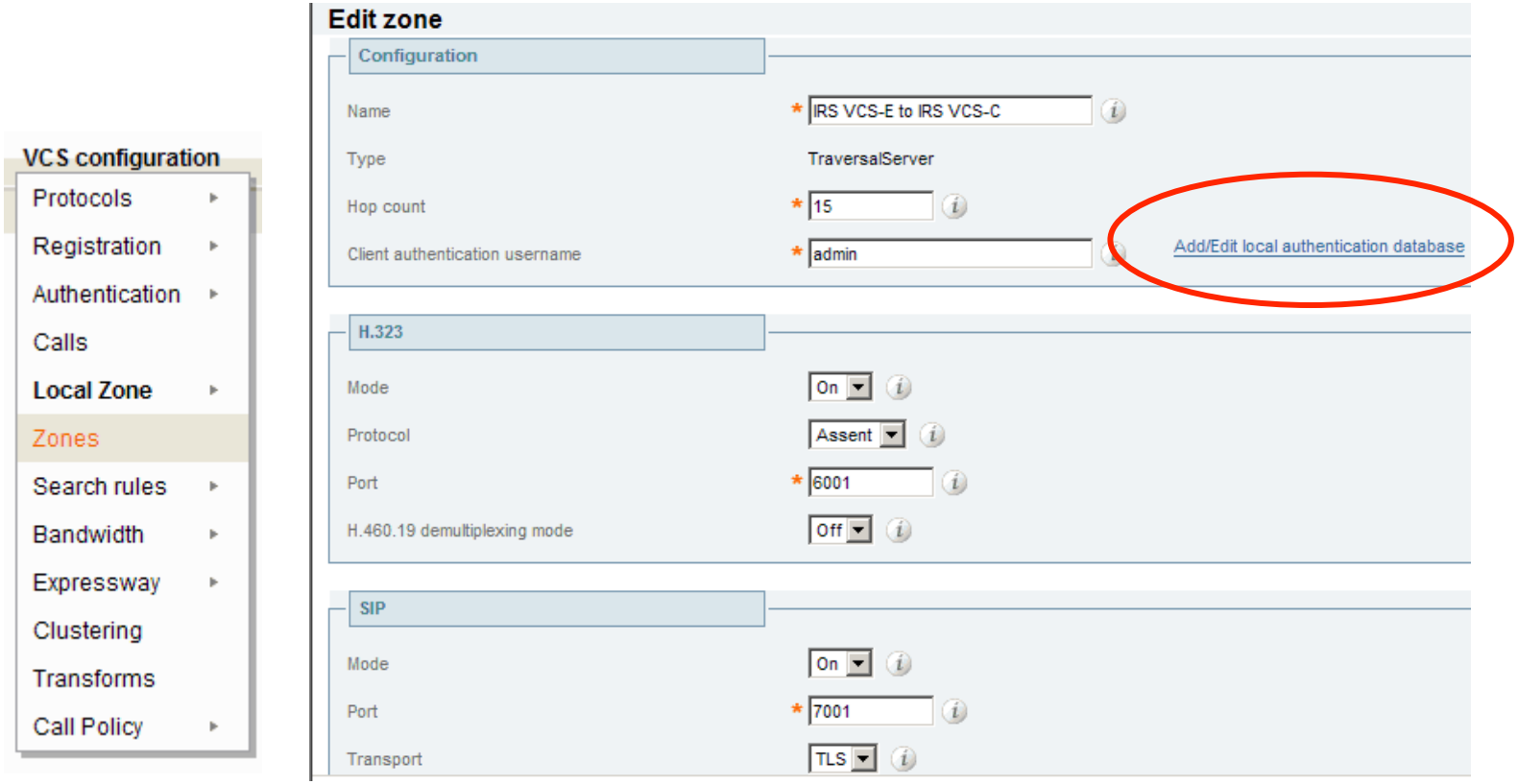


The Outside World

- The VCS Expressway is configured with a traversal zone and a specific port for the VCS Control.
- The VCS Control is then configured with a traversal zone and the same port.
- If more than one Control is used, it must have a unique zone and a unique port.
- The VCS Control can handle up to 500 simultaneous calls, but the Expressway can handle only 100.

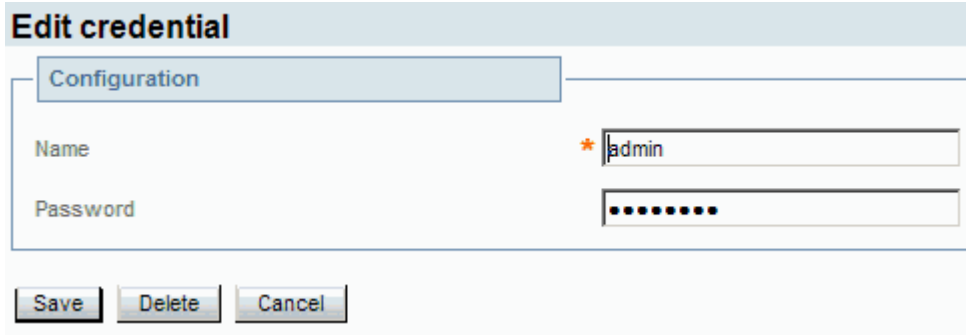
Client and Server Configuration

The traversal zone on VCS Expressway is configured first.



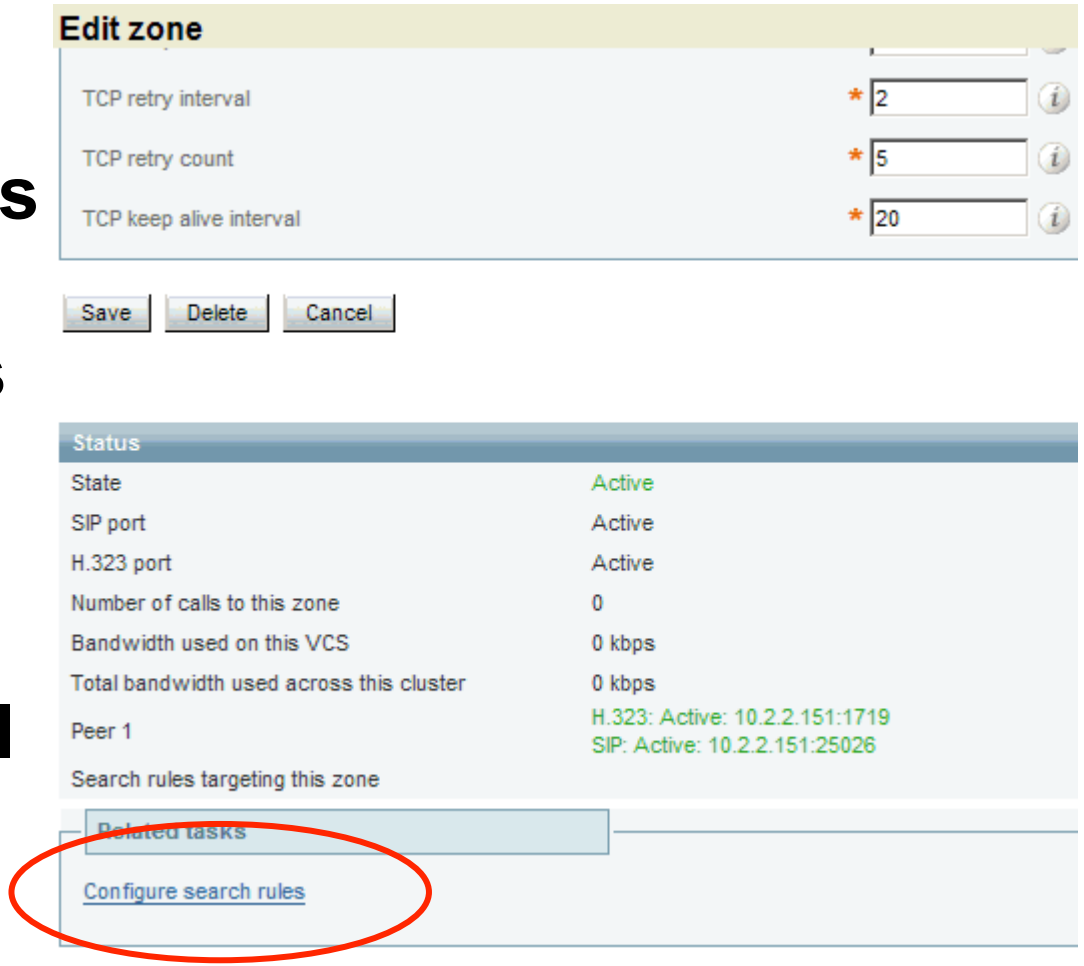
Client and Server Configuration

Make sure the username and password are in the database or else the registration won't be completed.



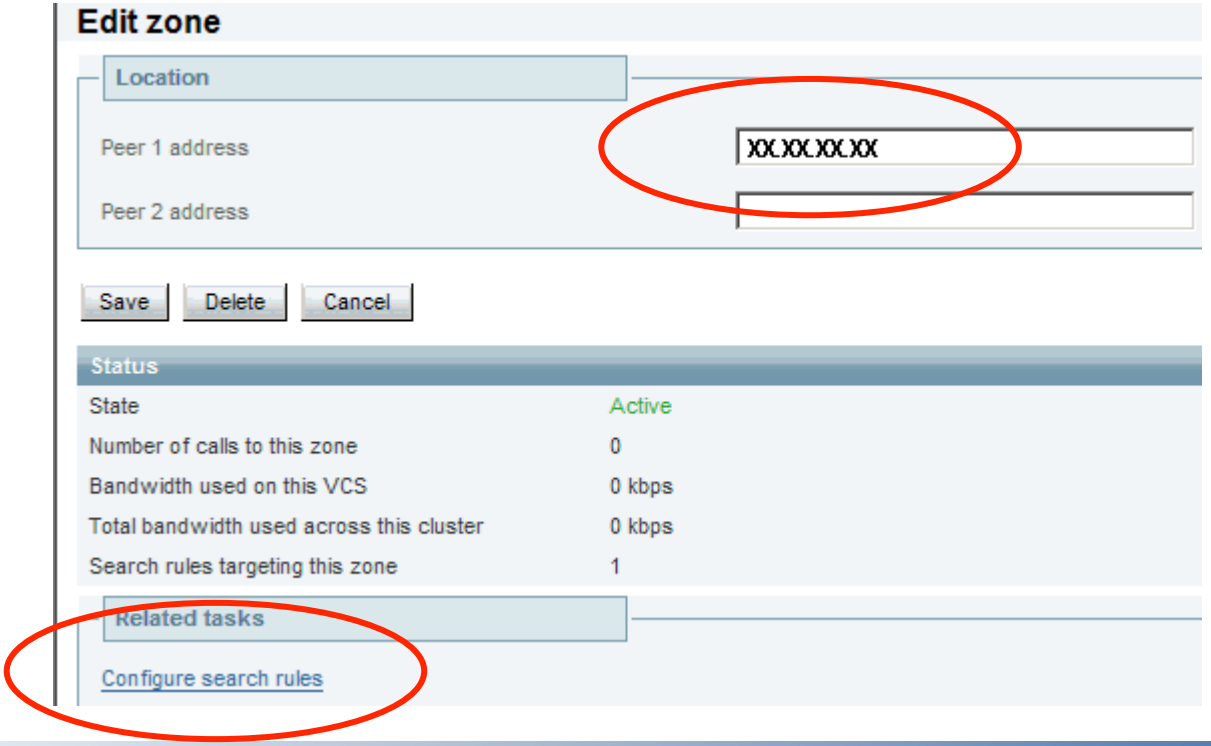
Client and Server Configuration

When the rest of the configurations are done, make sure search rules are created pointing to the devices both inside the firewall and outside.



Client and Server Configuration

The VCS Server is configured pretty much the same. The only difference is the addition of the IP of the Expressway.



Additional Options

DO MORE WITH YOUR NETWORK

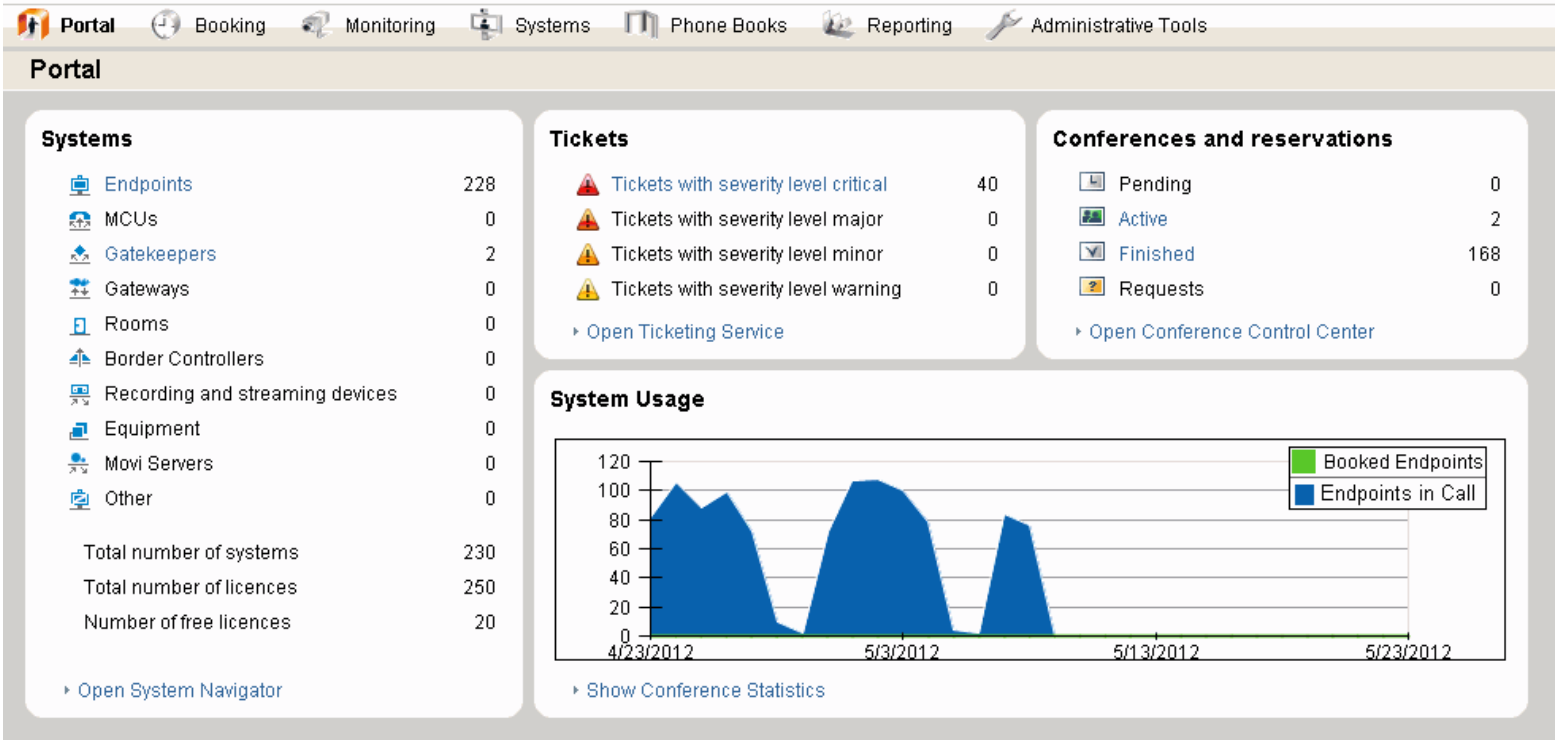
TelePresence Management System

TMS centralizes everything

- **Management of all systems and endpoints as well as provisioning of users and endpoints in one spot**
- **Active Directory integration**
- **Diagnostics of system**
- **Reporting**
- **A convenient interface for booking conferences**

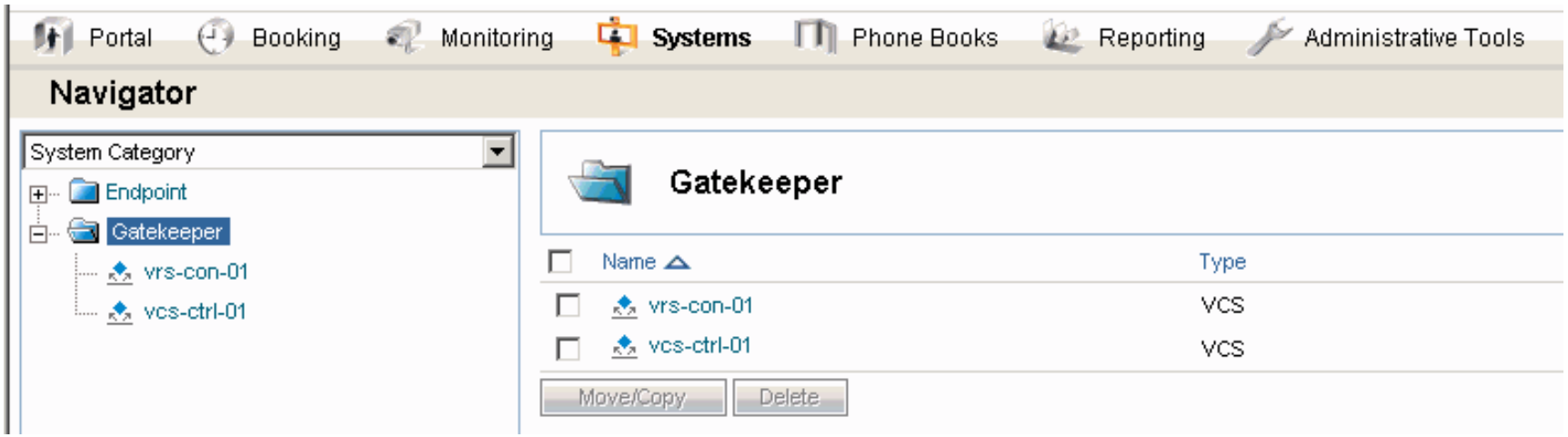
TelePresence Management System

TMS comes as a pre-loaded appliance or as an application on a Windows server. SQL 2005 is the back end.

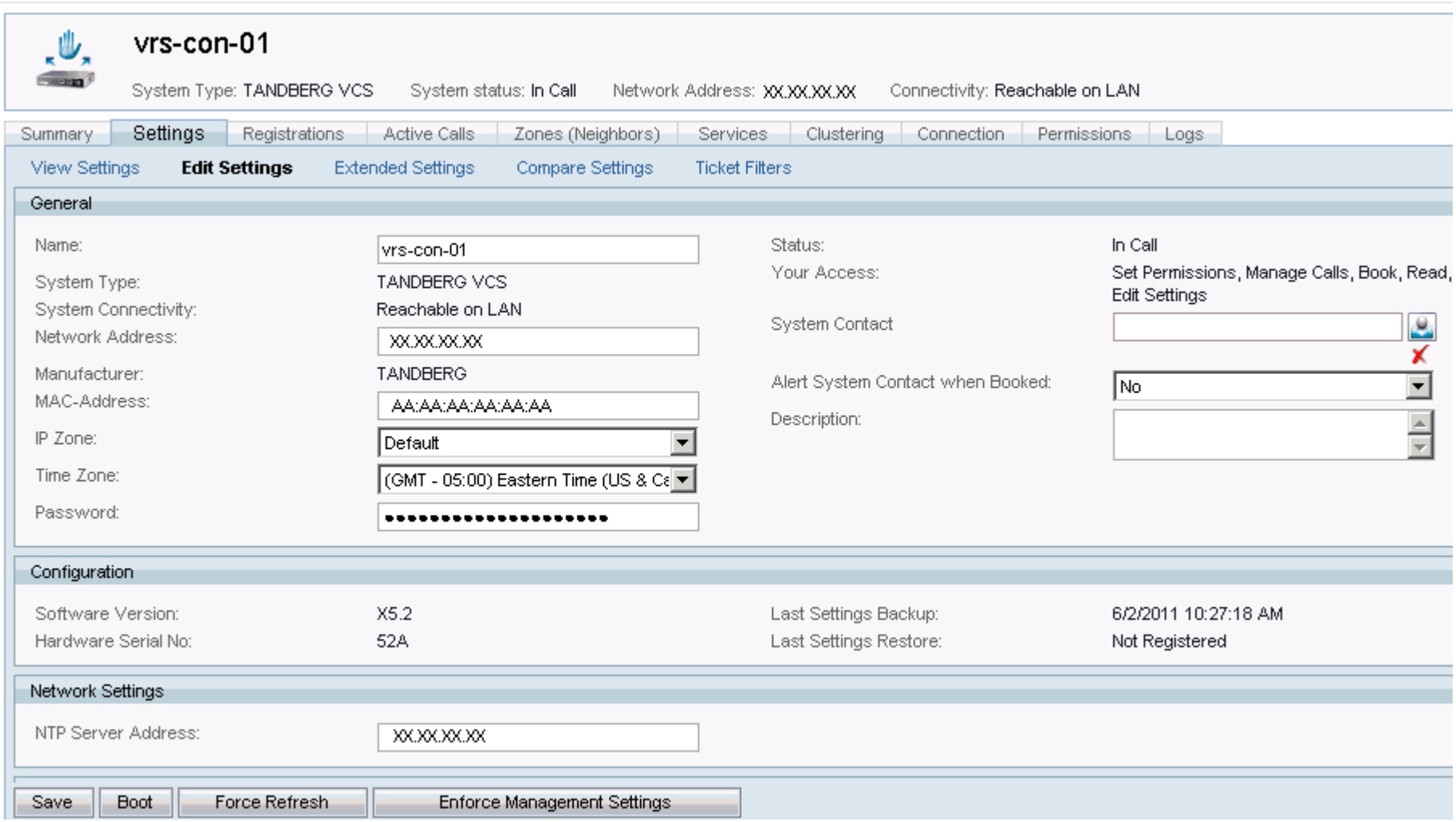


TelePresence Management System

Endpoints and all of the rest of the devices on the video network will show up in TMS. Handy for medium to large organizations.

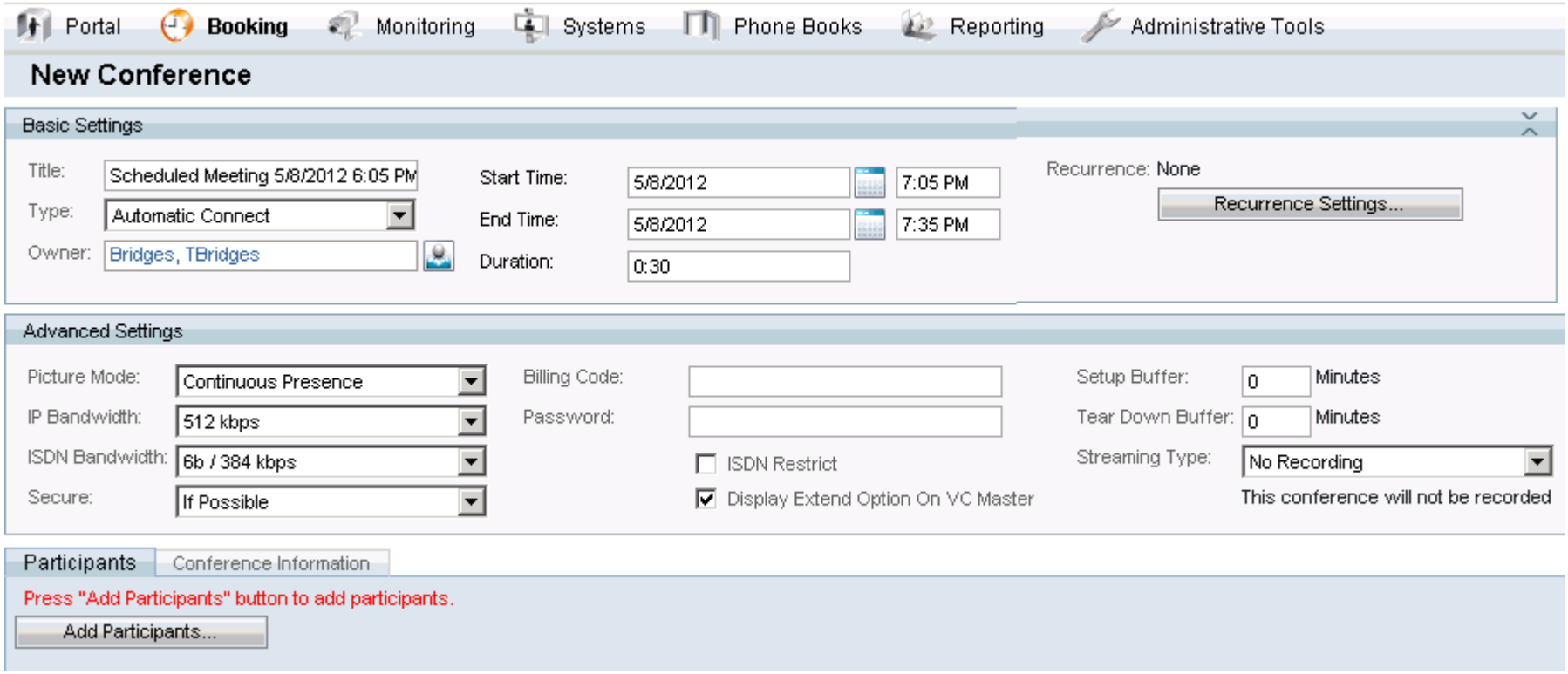


TelePresence Management System



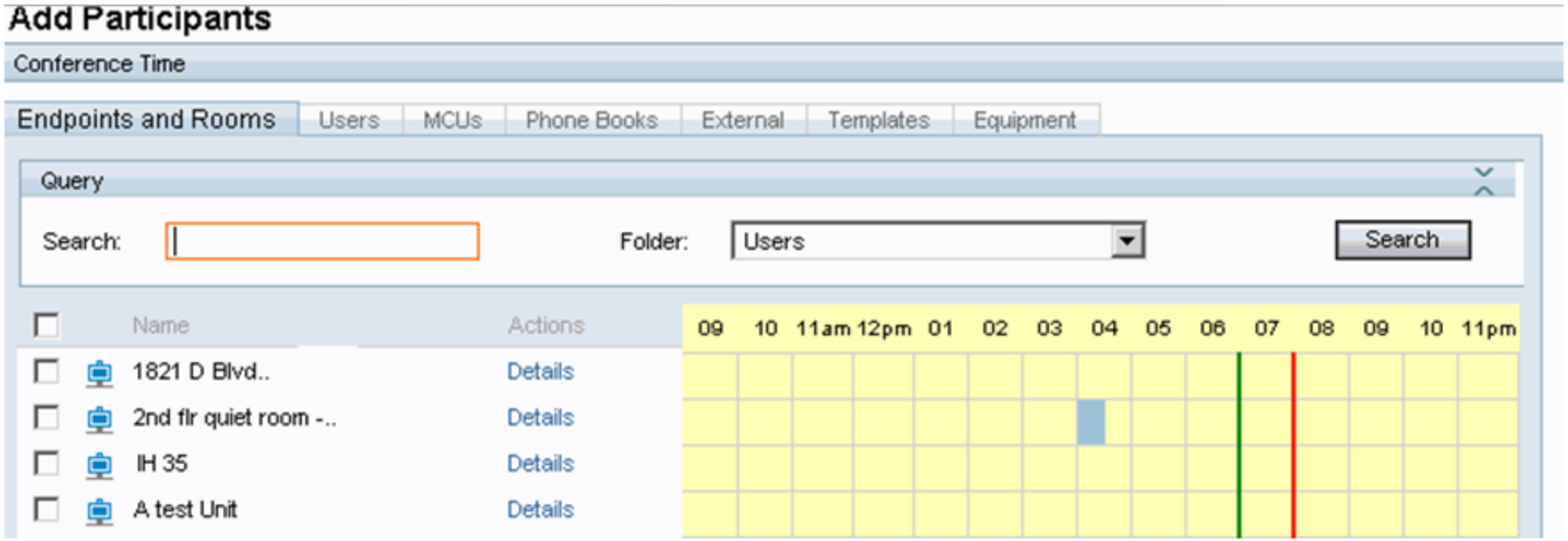
TelePresence Management System

Another big plus, conference scheduling.



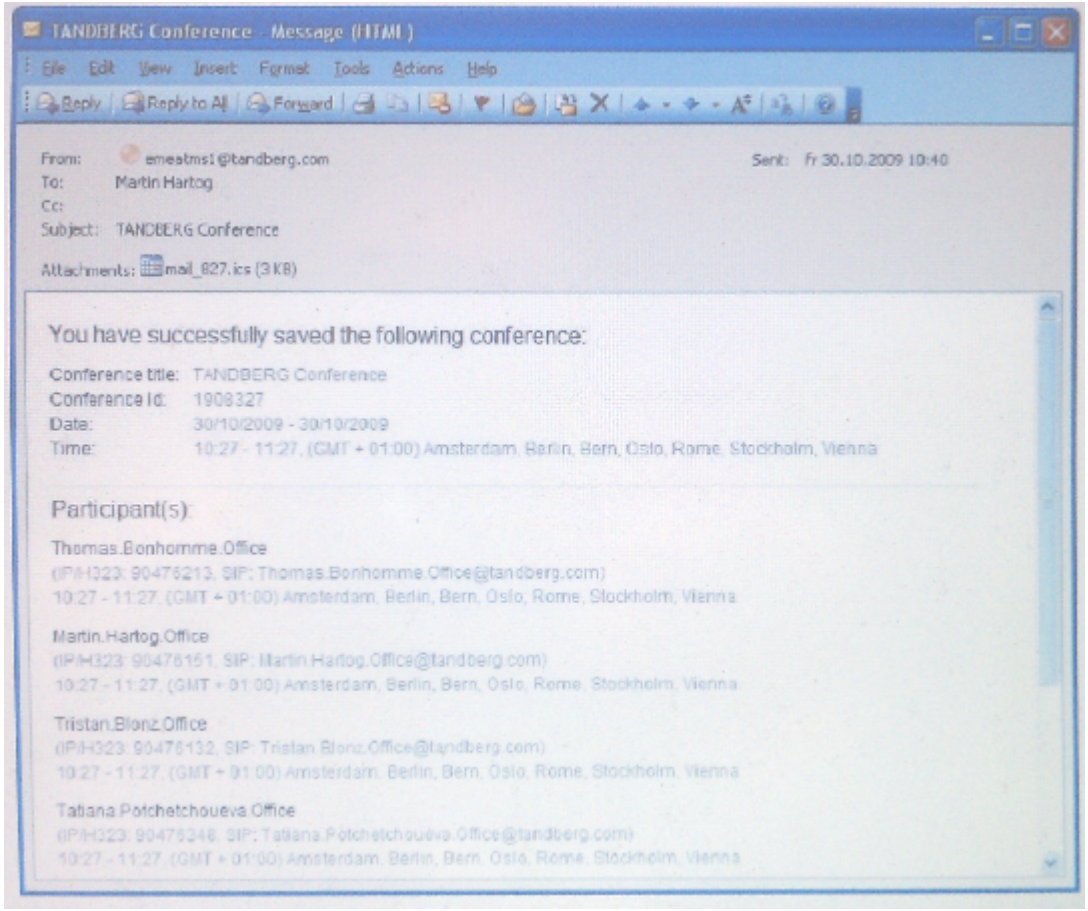
TelePresence Management System

Adding attendees



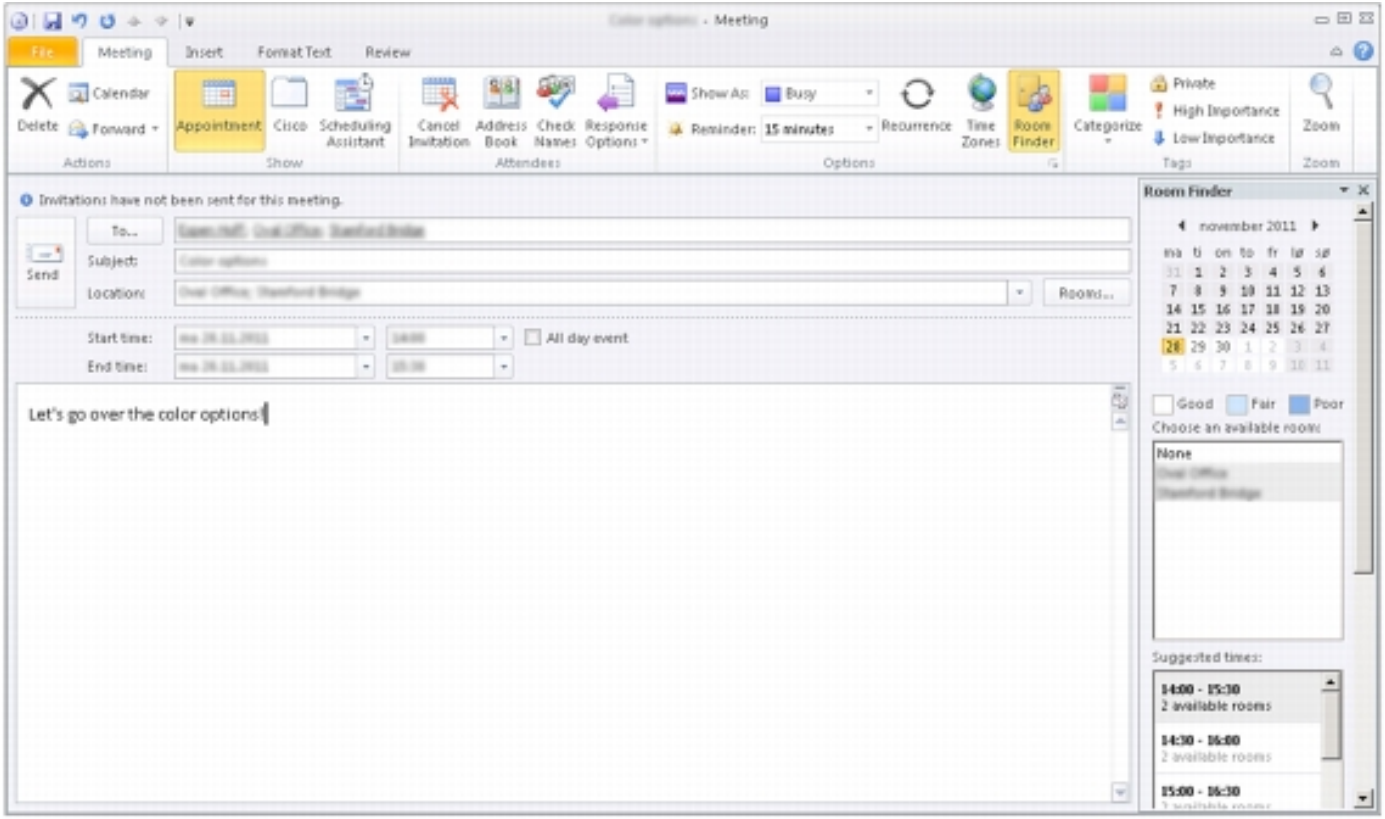
TelePresence Management System

An email is sent to conference creator.



TelePresence Management System

TMS Extension for Exchange (TMSXE) adds the ability to schedule conferences from Outlook.



Gateways

There are also gateways that can be added to connect to outside systems coming in through an ISDN connection.

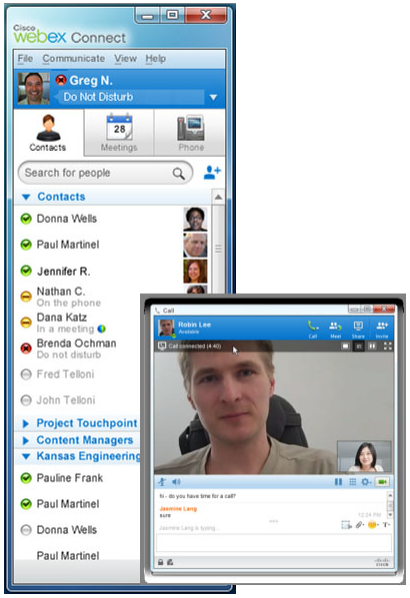
ISDN GW 3241

ISDN GW 8321

WebEx

WebEx moves conferencing to the cloud…

- **Voice, video and data collaboration done with a WebEx subscription.**
- **Can also have a WebEx Connect server on-site.**



- **High-quality video for internal conferences**
- **Scheduling and management still done in the cloud**
- **Connections to outside users also done in cloud.**

Future Technologies

WHERE WE'RE GOING

Incorporating CUCM

Currently possible to natively register many video endpoints to CUCM.

- **Requires CUCM 8.6**
- **Endpoints must be running SIP and using appropriate firmware (5.x)**
- **MCUs can also register as conferencing devices in Media Resources.**

Final Words on the VCS

"The VCS isn't going anywhere. Not in the short term or the long term."

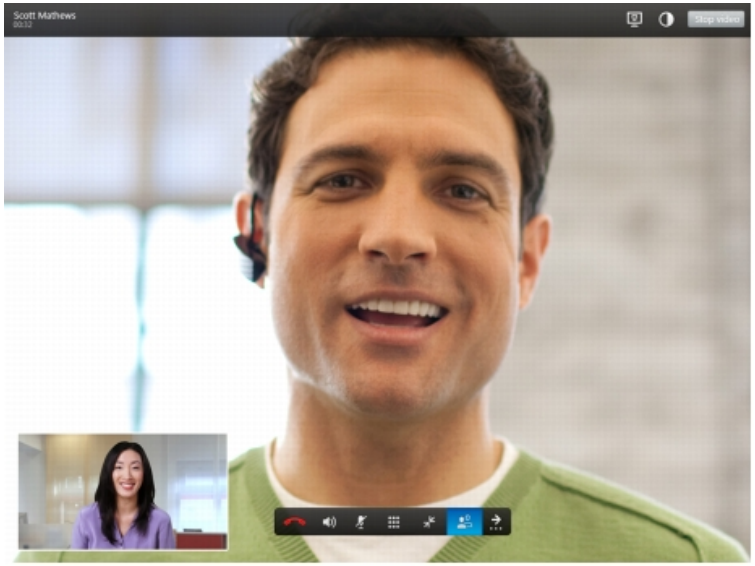
- **There are no plans to change the firewall traversal method.**
- **CUCM will never register H.323 devices.**
- **Some endpoints can't do supplementary services without a VCS.**
- **CUCM cannot do video encryption (yet).**
- **There are many Cisco Telepresence customers who don't have Cisco phones.**

Jabber for “N”

Everything software-related is rebranded as Jabber for something

- **MOVI is now Jabber Video**
- **Mobility clients are Jabber for iPhone and Jabber for Android.**
- **CUPC client is now Jabber for Windows or Jabber for MAC**

But Jabber Video is the only one including video…



Shameless Promotion

Cisco has announced "Jabber for Everyone"

- **If you're an existing CUCM 7.0+ customer you'll get IM/Presence Jabber clients for free.**
- **Still need a Presence server, but licensing will be included. Enough for all users in your organization.**
- **Existing maintenance contracts will cover it. Zero licensing or support costs.**

Shameless Promotion

"Jabber Video Guest Access"

- **DOES involve the old MOVI.**
- **Can sign up for the limited-functionality version for free.**
- **Paid version includes custom domain names, video conferencing, and support.**

Wrap Up

QUESTIONS

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