Cisco TelePresence Microsoft Lync 2010, Cisco VCS and Cisco AM GW

Deployment Guide

Cisco VCS X8.1
Microsoft Lync 2010
Cisco AM GW 1.1

D14652.07

December 2013

Contents

Introduction

The Unified Communications (UC) gateway for Lync is the combination of the “Lync gateway” Cisco TelePresence Video Communication Server (VCS) and the Cisco TelePresence Advanced Media Gateway (Cisco AM GW).

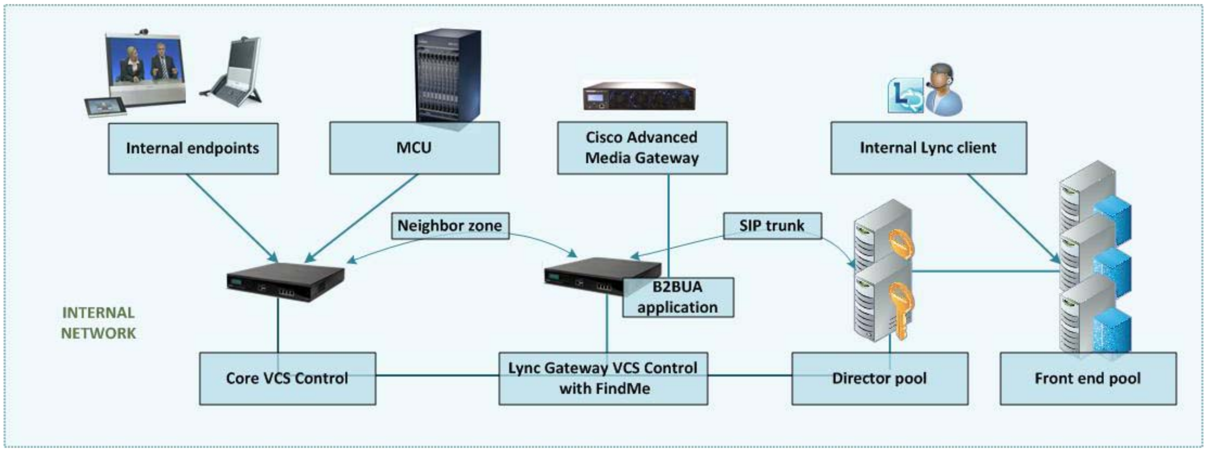
The addition of the Cisco AM GW to the “Lync gateway” VCS allows traditional video codecs such as H.261, H.263 and H.264 to be converted to and from the Microsoft RT Video codec. Use of the RT Video codec allows a Lync client to scale its displayed image from CIF resolution, through VGA to 720p.

The Cisco AM GW enhances the video experience by upscaling the video format sent from Lync clients. Upscaling only occurs if ClearVision is enabled on the Cisco AM GW (it is disabled by default).

Resolution sent from Microsoft client	Upscaled resolution
CIF (352x288)	4CIF (704x576)
VGA (640x480)	XGA (1024x768)
HD (1280x720)	not applicable (remains 1280x720)

Use of the Unified Communications gateway is essential if Communicator for MAC clients is used – MAC clients do not support any traditional video codecs; they only support RT Video, hence to have video communications the Cisco AM GW is needed to transcode the video.

The deployment of the UC gateway should be as shown:



This builds upon the deployment described in Microsoft Lync and VCS Deployment Guide.

For small test and demo systems the “Lync gateway” VCS can be used as the main routing VCS in the video network, though use of a standalone UC gateway is recommended – see the section ‘Why add a “Lync gateway” VCS Control?’ in *Microsoft Lync and VCS Deployment Guide*.

This deployment guide describes how to add the Cisco AM GW to an existing “Lync gateway” VCS deployment. For additional information about the Cisco AM GW see Cisco AM GW Getting Started Guide.

For OCS or non-B2BUA deployments, see *Microsoft OCS 2007, Lync 2010, VCS and Cisco AM GW Deployment Guide*.

Prerequisites to setting up a Cisco AM GW

The prerequisites for setting up a Cisco AM GW are:

- The “Lync gateway” VCS must be running version X5.1.1 or later. Use of VCS X6.1 or later is required for operation with Microsoft Lync 2010. Use of VCS X7.0 or later and the B2BUA is required for operation with Microsoft Edge Server.
- The Cisco AM GW must be running version 1.1 or later.
- The “Lync gateway” VCS can be a VCS Control or a VCS Expressway.
- VCS architecture configured with an “Lync gateway” VCS as described in Microsoft Lync and VCS Deployment Guide.

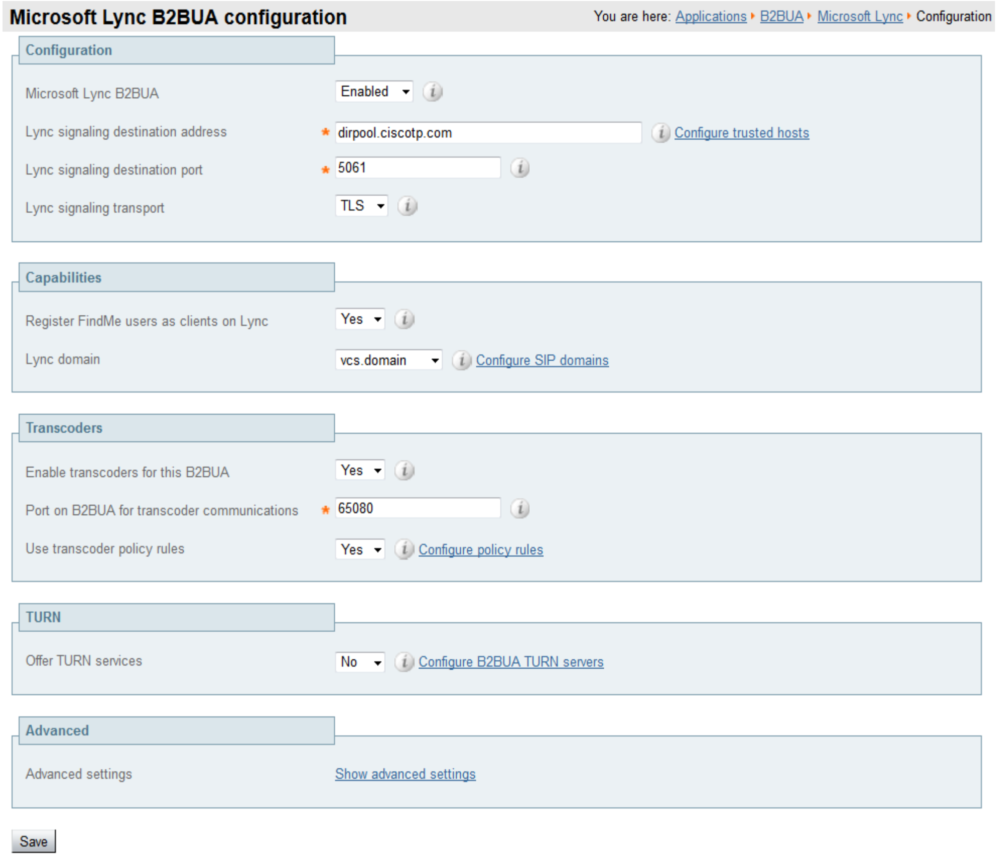
Required configuration information

Item	Notes for your reference
Address of one or more Cisco AM GWs – IP address or DNS name	
List of URIs allowed to use the Cisco AM GW to get enhanced video (if there is to be a limit on personnel using this resource)	
IP address of Cisco AM GW	
Subnet mask for Cisco AM GW	
Default gateway address for Cisco AM GW	
IP address of DNS server for Cisco AM GW	
NTP (time) server address – IP address or DNS name	
IP address or DNS name of “Lync gateway” VCS - standalone VCS or cluster peer 1	
IP address or DNS name of “Lync gateway” VCS - cluster peer 2 (if it exists)	
IP address or DNS name of “Lync gateway” VCS - cluster peer 3 (if it exists)	
IP address or DNS name of “Lync gateway” VCS - cluster peer 4 (if it exists)	
IP address or DNS name of “Lync gateway” VCS - cluster peer 5 (if it exists)	
IP address or DNS name of “Lync gateway” VCS - cluster peer 6 (if it exists)	

Configuring the VCS

Enable transcoders (Cisco AM GWs) for the B2BUA

1. Go to **Applications > B2BUA > Microsoft Lync > Configuration**.
2. Ensure that **Enable transcoders for this B2BUA** and **Use transcoder policy rules** in the **Transcoders** section have been enabled.



Microsoft Lync B2BUA configuration

You are here: Applications ▸ B2BUA ▸ Microsoft Lync ▸ Configuration

Configuration

Microsoft Lync B2BUA: Enabled

Lync signaling destination address *: dirpool.ciscotp.com

Lync signaling destination port *: 5061

Lync signaling transport: TLS

Capabilities

Register FindMe users as clients on Lync: Yes

Lync domain: vcs.domain

Transcoders

Enable transcoders for this B2BUA: Yes

Port on B2BUA for transcoder communications *: 65080

Use transcoder policy rules: Yes

TURN

Offer TURN services: No

Advanced

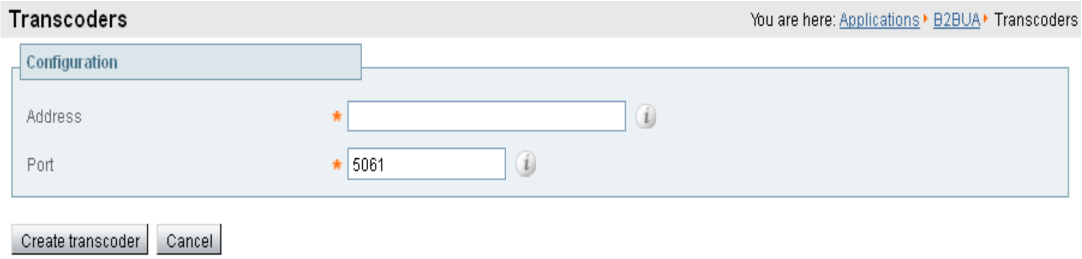
Advanced settings: Show advanced settings

Specify the Cisco AM GWs

1. Go to **Applications > B2BUA > Transcoders** and click **New**.
2. Configure the fields as follows:

Address	IP address or FQDN of the Cisco AM GW.
Port	IP port on the Cisco AM GW – typically 5061 (for TLS). This port should match the **Encrypted SIP (TLS)** port configured on the **Network > Services** page on the Cisco AM GW.

3. Click **Create transcoder**.
4. Repeat for all transcoders that the VCS will use (up to a total of 6 transcoders).



Transcoders

You are here: Applications ▸ B2BUA ▸ Transcoders

Configuration

Address *	
Port *	5061

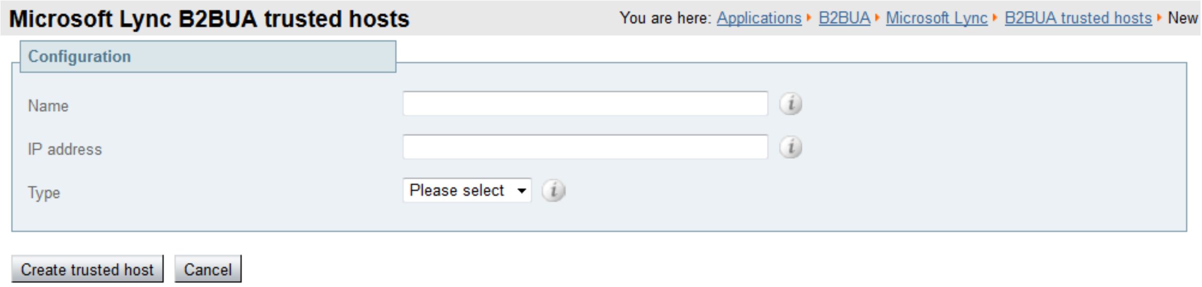
Note that if the Cisco AM GWs (transcoders) reach their capacity, any calls that would normally route via the Cisco AM GW will not fail but will be routed directly. Any calls that are routed directly will not be able to support the higher resolutions in Lync client.

Configure the Cisco AM GWs as trusted hosts

1. Go to **Applications > B2BUA > Microsoft Lync > B2BUA trusted hosts** and click **New**.
2. Configure the fields as follows:

IP Address	IP address of the Cisco AM GW (must not be an FQDN).
Type	Transcoder

3. Click **Create trusted host**.
4. Repeat for all transcoders that the VCS will use (up to a total of 6 transcoders).



Microsoft Lync B2BUA trusted hosts

You are here: Applications ▸ B2BUA ▸ Microsoft Lync ▸ B2BUA trusted hosts ▸ New

Configuration

Name	
IP address	
Type	Please select

Specify the Cisco AM GW routing policy

This is where you can set up policy rules to control which calls can use the Cisco AM GW.

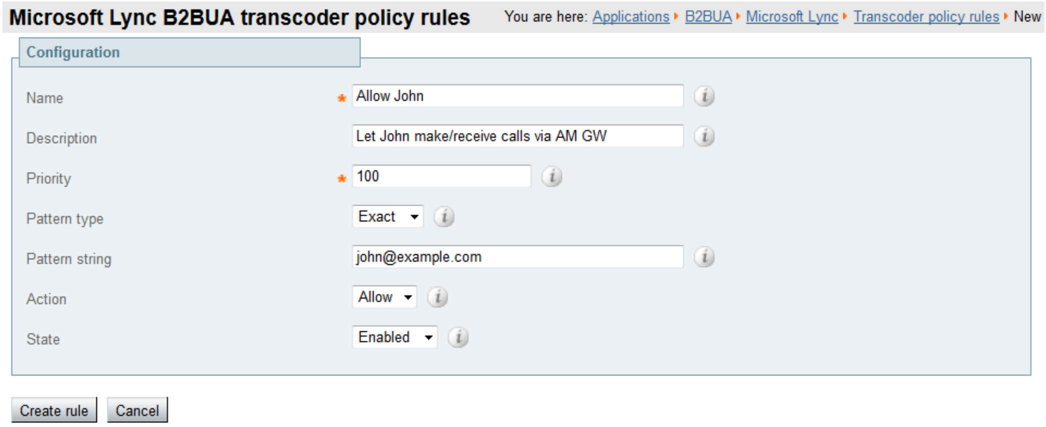
1. Go to **Applications > B2BUA > Microsoft Lync > Transcoder policy rules** and click **New**.
2. Configure the fields as follows:

	Allow rule (for example, allow john@example.com to use the Cisco AM GW)	**Deny rule (for example, deny all)**
Name	As required, for example “Allow John”	As required, for example “Deny All”
Description	Descriptive text as required	Descriptive text as required
Priority	100 for example	500 for example

	Allow rule (for example, allow john@example.com to use the Cisco AM GW)	Deny rule (for example, deny all)
Pattern type	*Exact*	*Regex*
Pattern string	john@example.com for example	.* for example
Action	*Allow*	*Deny*
State	*Enabled*	*Enabled*

When using policy, it is usual to set up a set of allow rules for allowed personnel, then at the lowest priority set up a “Deny all” rule (**Pattern type** = *Regex*, **Pattern string** = .*)

3. Click **Create rule**.



Microsoft Lync B2BUA transcoder policy rules

You are here: Applications ▸ B2BUA ▸ Microsoft Lync ▸ Transcoder policy rules ▸ New

Configuration

Name	Allow John
Description	Let John make/receive calls via AM GW
Priority	100
Pattern type	Exact
Pattern string	john@example.com
Action	Allow
State	Enabled

What should I allow?

The Advanced Media Gateway policy rules match against dialed URIs and caller IDs, i.e. both the called and calling parties.

- If Lync client and video endpoints dial FindMe IDs then the FindMe IDs must be included in the “allowed” policy rules.
- If Lync client and video endpoints are dialed directly then the Lync client and video endpoint IDs must be included in the “allowed” policy rules.
- If Lync clients are included as devices in FindMe profiles then the Lync client URI must be included in the “allowed” policy rules (as FindMe will fork the call before the Cisco AM GW policy checks the dialed URI).
- If the VCS’s FindMe configuration has **Caller ID** set to *FindMe ID* then the FindMe IDs must be included in the “allowed” policy rules. If **Caller ID** is set to *Incoming ID* then the video endpoint IDs must be included in the “allowed” policy rules.

Note: if the FindMe configuration on VCS has **Caller ID** set to *FindMe ID*, we recommend that Lync clients are not included as devices in FindMe profiles – the “Lync gateway” VCS registering FindMe users to Lync allows Lync client and video endpoints to be called simultaneously by calling a single URI.

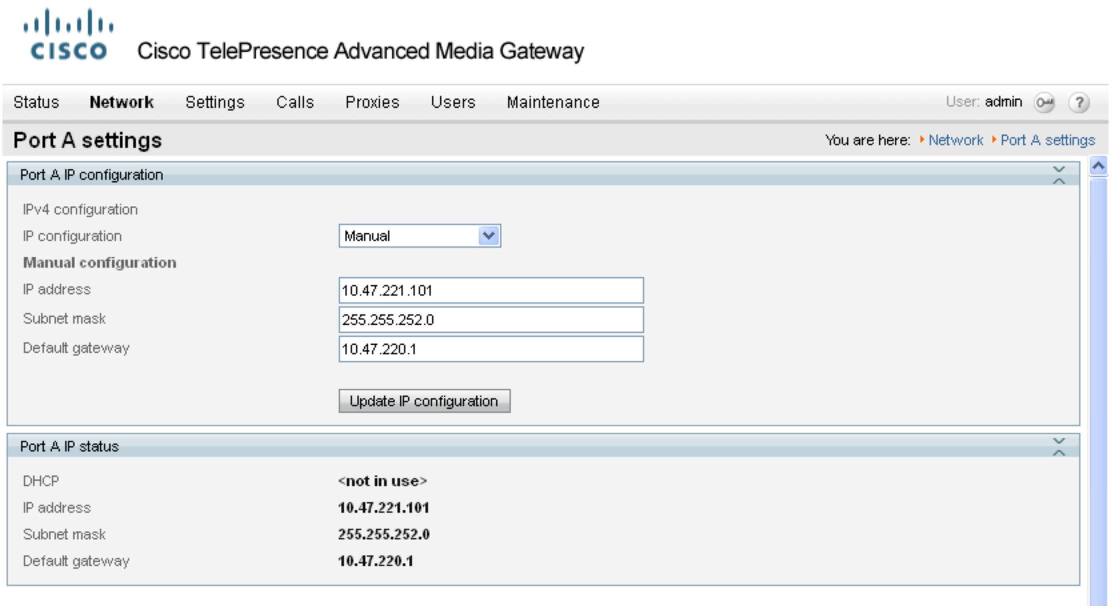
Configuring the Cisco AM GW

Network port A settings

1. Go to **Network > Port A settings**.
2. Configure the fields as follows:

IP configuration	*Manual*
IP address	Required IP address for this Cisco AM GW
Subnet mask	Subnet mask for the subnet
Default gateway	Default gateway for the subnet

3. Click **Update IP configuration**.



Port A IP configuration

IPv4 configuration

IP configuration: Manual

Manual configuration

IP address: 10.47.221.101

Subnet mask: 255.255.252.0

Default gateway: 10.47.220.1

Port A IP status

DHCP: <not in use>

IP address: 10.47.221.101

Subnet mask: 255.255.252.0

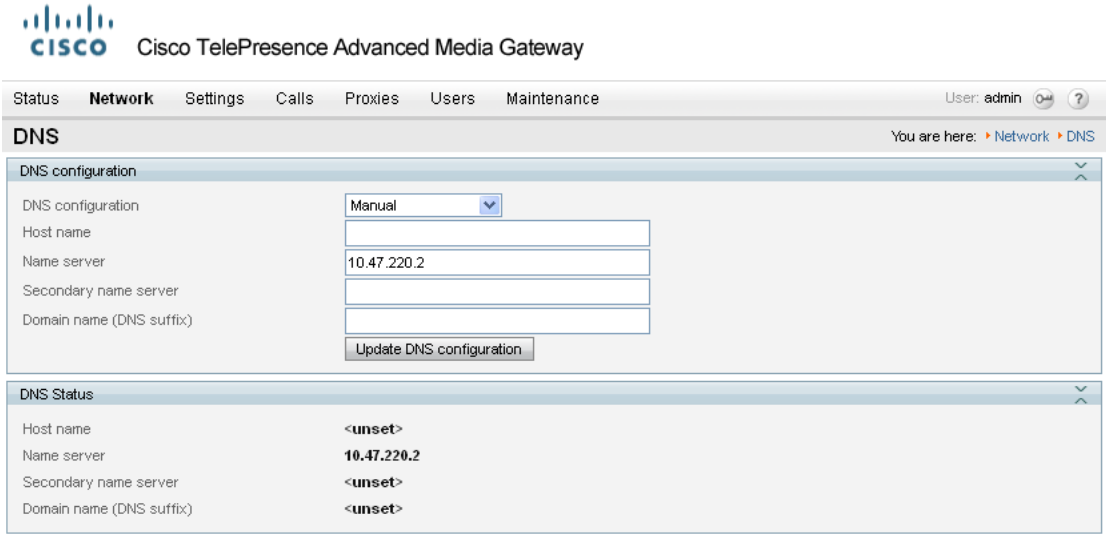
Default gateway: 10.47.220.1

DNS settings

1. Go to **Network > DNS**.
2. Configure the fields as follows:

Host name	Hostname of the Cisco AM GW (optional)
Name server	IP address of DNS server
Secondary name server	Secondary DNS server IP address (optional)
Domain name (DNS Suffix)	DNS suffix to add to a hostname to make it an FQDN (optional)

3. Click **Update DNS configuration**.


Cisco TelePresence Advanced Media Gateway
Status
Network
Settings
Calls
Proxies
Users
Maintenance
User: admin
You are here: Network DNS

DNS

DNS configuration

DNS configuration	Manual
Host name	
Name server	10.47.220.2
Secondary name server	
Domain name (DNS suffix)	

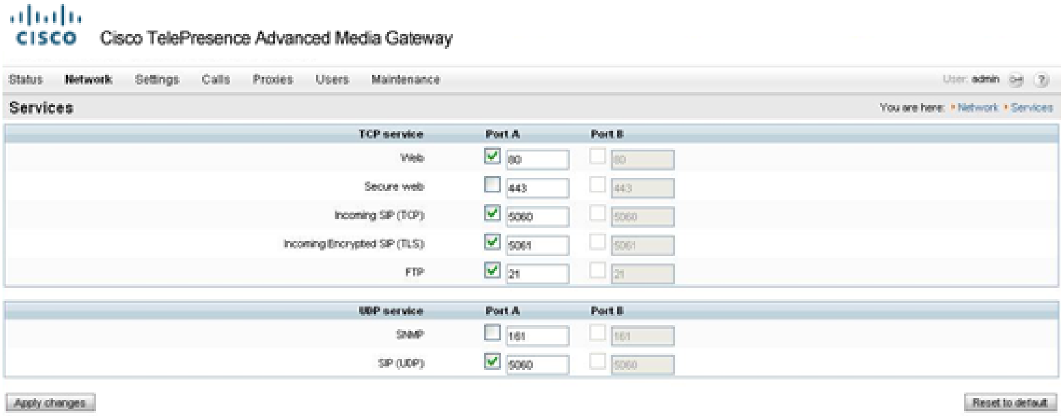
Update DNS configuration

DNS Status

Host name	<unset>
Name server	10.47.220.2
Secondary name server	<unset>
Domain name (DNS suffix)	<unset>

Network services

1. Go to **Network > Services**.
2. Ensure that **Incoming Encrypted SIP (TLS)** is selected and **Port A** = 5061.
3. If any modification was required, click **Apply changes**.


Cisco TelePresence Advanced Media Gateway
Status
Network
Settings
Calls
Proxies
Users
Maintenance
User: admin
You are here: Network Services

Services

TCP service	Port A		Port B	
Web	☑	80	□	80
Secure web	□	443	□	443
Incoming SIP (TCP)	☑	5060	□	5060
Incoming Encrypted SIP (TLS)	☑	5061	□	5061
FTP	☑	21	□	21

UDP service	Port A		Port B	
SNMP	□	161	□	161
SIP (UDP)	☑	5060	□	5060

Apply changes

Reset to default

Note: if the **Incoming Encrypted SIP (TLS)** option is not displayed, obtain the "**Encryption**" option for the Cisco AM GW and update the features in the **Feature management** section of the **Upgrade** page (**Maintenance > Upgrade**).

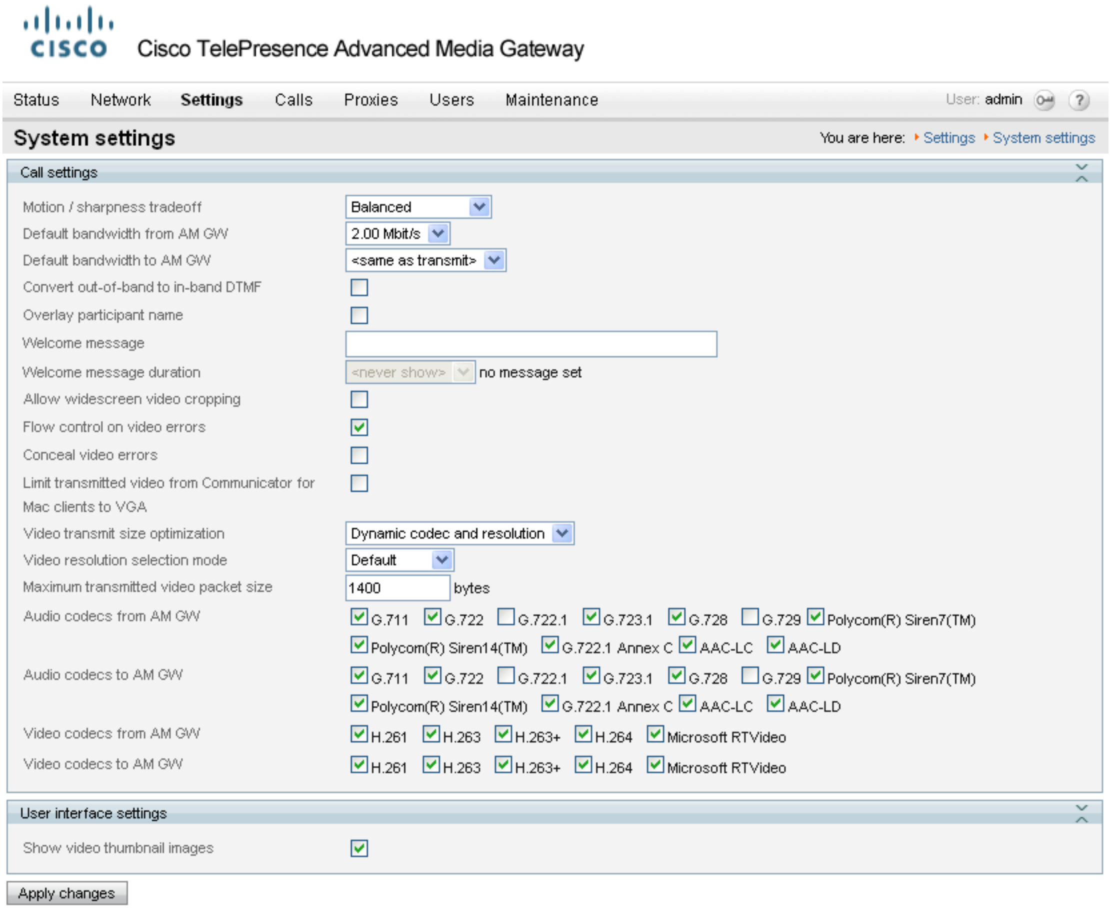
System settings

1. Go to **Settings > System settings**.
2. Configure the fields as follows:

Motion / sharpness tradeoff	As required, for example *Balanced*
Default bandwidth from AM GW	As required, for example 2.00 Mbit/s

Default bandwidth to AM GW	<same as transmit>
<other parameters>	As required

3. Click **Apply changes**.



Call settings

Motion / sharpness tradeoff	Balanced
Default bandwidth from AM GW	2.00 Mbit/s
Default bandwidth to AM GW	<same as transmit>
Convert out-of-band to in-band DTMF	□
Overlay participant name	□
Welcome message	
Welcome message duration	<never show> no message set
Allow widescreen video cropping	□
Flow control on video errors	☑
Conceal video errors	□
Limit transmitted video from Communicator for Mac clients to VGA	□
Video transmit size optimization	Dynamic codec and resolution
Video resolution selection mode	Default
Maximum transmitted video packet size	1400 bytes
Audio codecs from AM GW	☑ G.711 ☑ G.722 □ G.722.1 ☑ G.723.1 ☑ G.728 □ G.729 ☑ Polycom(R) Siren7(TM) ☑ Polycom(R) Siren14(TM) ☑ G.722.1 Annex C ☑ AAC-LC ☑ AAC-LD
Audio codecs to AM GW	☑ G.711 ☑ G.722 □ G.722.1 ☑ G.723.1 ☑ G.728 □ G.729 ☑ Polycom(R) Siren7(TM) ☑ Polycom(R) Siren14(TM) ☑ G.722.1 Annex C ☑ AAC-LC ☑ AAC-LD
Video codecs from AM GW	☑ H.261 ☑ H.263 ☑ H.263+ ☑ H.264 ☑ Microsoft RTVideo
Video codecs to AM GW	☑ H.261 ☑ H.263 ☑ H.263+ ☑ H.264 ☑ Microsoft RTVideo

User interface settings

Show video thumbnail images	☑

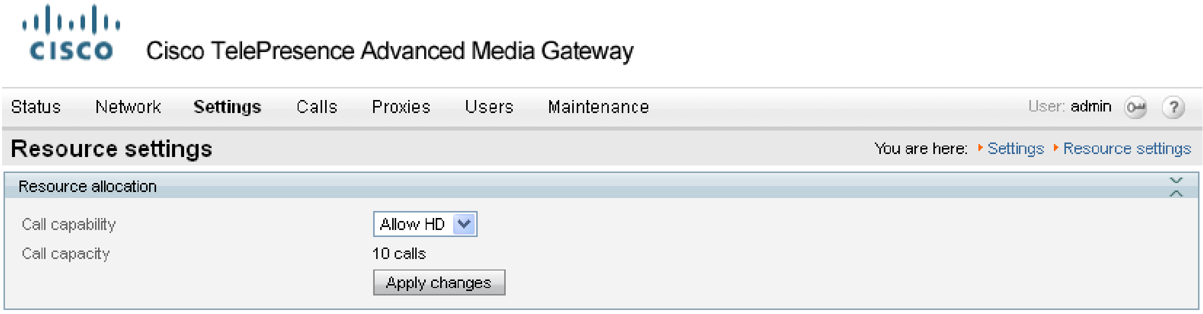
Note: some endpoints and network equipment do not support as many codecs as the Cisco AM GW can offer. For best interoperation we recommend that at least one audio codec is left unselected in the **Audio codecs from AM GW** and **Audio codecs to AM GW** sections.

Resource settings

1. Go to **Settings > Resource settings**.
2. Configure the fields as follows:

Call capability	*Allow HD* – supports high definition video calls at up to 720p at 30fps *SD only* – supports calls at up to w448p at 30fps The number of calls supported in the selected mode is shown. This depends on the model of Cisco AM GW you are using.

3. Click **Apply changes**.



Cisco TelePresence Advanced Media Gateway

Resource settings

Resource allocation

Call capability: Allow HD

Call capacity: 10 calls

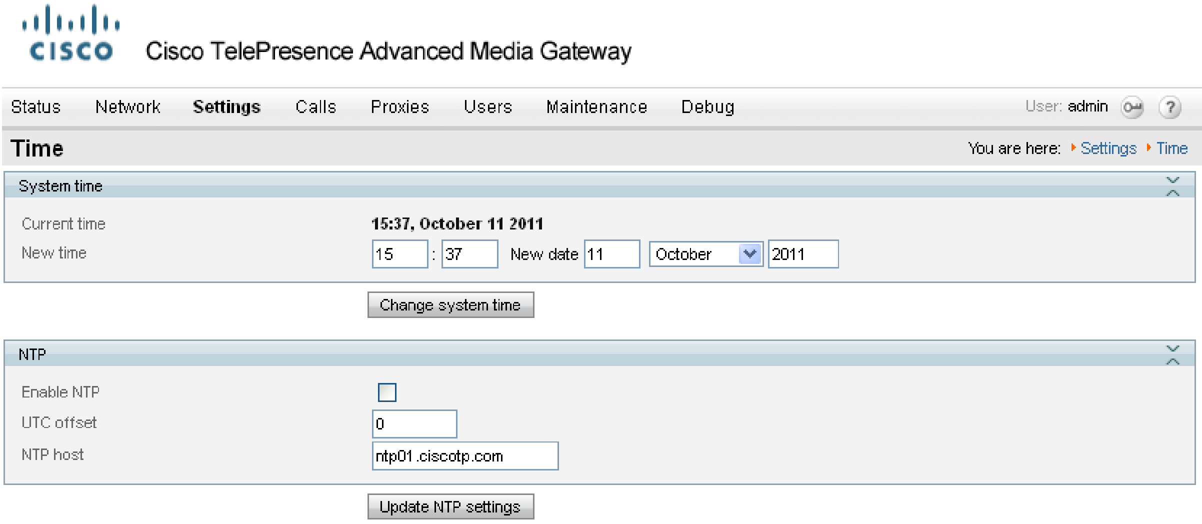
Note: if this setting is changed the Cisco AM GW will need to be shut down and restarted (see Shut down and restart the Cisco AM GW [p.13]).

Time

1. Go to **Settings > Time**.
2. Configure the fields as follows:

Enable NTP	Select this option
UTC offset	Configure as required for local time zone
NTP host	IP address or DNS name of NTP (time) server

3. Click **Update NTP settings**.



Cisco TelePresence Advanced Media Gateway

Time

System time

Current time: 15:37, October 11 2011

New time: 15 : 37 New date 11 October 2011

NTP

Enable NTP: □

UTC offset: 0

NTP host: ntp01.ciscotp.com

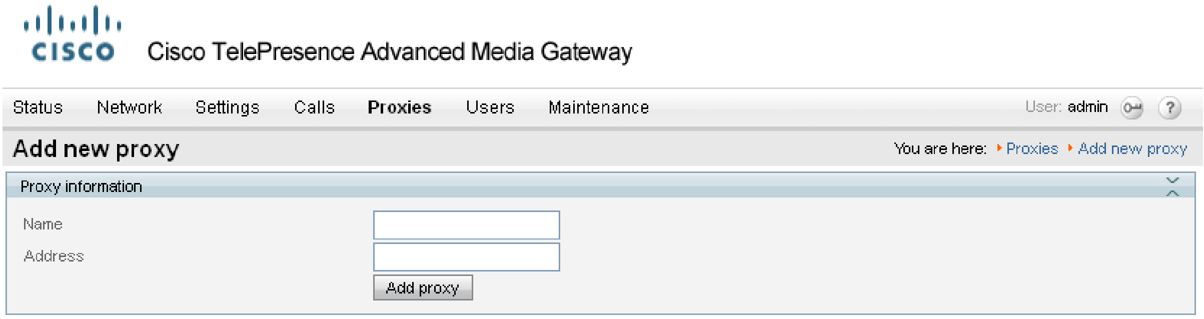
Proxies

1. Go to **Proxies > Proxies**.
2. Click **Add new proxy**.

3. Configure the fields as follows:

Name	Descriptive name (for display purposes only)
Address	Enter the IP address of the VCS in the form n.n.n.n:65080 The address must include the VCS port number (as configured in **Port on B2BUA for transcoder communications** on the VCS, typically 65080).
Outgoing transport (AM GW 1.0 only)	*TLS* • If the *TLS* option is not displayed, obtain the “Encryption” option for the Cisco AM GW and update the features in the **Feature management** section of the **Upgrade** page (**Maintenance > Upgrade**). • Cisco AM GW 1.1 uses the same transport for outgoing messages as the transport used in the received messages.

4. Click **Add proxy**.



If the Cisco AM GW is connected to a cluster of VCSs then set up proxy entries for each VCS peer in the cluster.

Shut down and restart the Cisco AM GW

The Cisco AM GW only needs to be shut down and restarted if the HD / SD setting on the **Resource settings** page has been changed. If it has been changed:

1. Go to **Maintenance > Shutdown**.
2. Click **Shutdown AM GW** and then click **Confirm AM GW shutdown**.
   A red banner will appear confirming “AM GW SHUT DOWN. Restart required”.
3. Click **Restart AM GW**.
   “AM GW RESTART IN PROGRESS” will confirm that a restart is occurring.

If the confirm is not carried out immediately the system may timeout and the procedure above will have to be repeated.

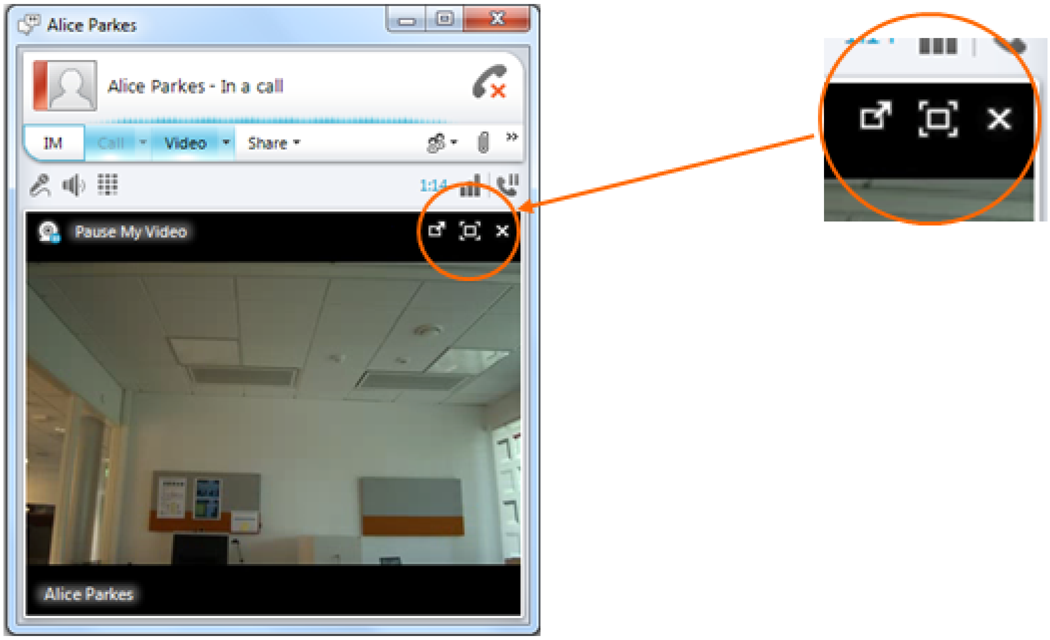
Lync client requirements and usage

PC requirements

To support 720p RT Video operation, the Lync client needs to be running on a quad core processor PC. A dual core processor will support up to VGA resolution. Single core supports only CIF resolution.

Increasing the resolution of a Lync client call

When in a call, the resolution of the image (size of the picture seen on the screen) can be altered. The user can choose to pop out the video or view full screen.



When the Lync video window is resized, Lync will appropriately ask the remote endpoint to send a higher resolution.

Appendix 1: Troubleshooting

Calls between endpoints and Lync via the UC gateway where the Cisco AM GW is not involved consist of a single call with two call legs.

- Leg a) between the endpoint and VCS
- Leg b) between VCS and Lync

Calls between endpoints and Lync via the UC gateway where the Cisco AM GW is involved consist of two calls and four call legs.

- Leg a) between the endpoint and VCS
- Leg b) between VCS and the Cisco AM GW
- Leg c) between the Cisco AM GW and VCS
- Leg d) between VCS and Lync

VCS and Lync

Troubleshooting calls between VCS and Lync is very much the same as troubleshooting any VCS / Lync call scenario. See the Troubleshooting section in Microsoft Lync and VCS Deployment Guide.

VCS search history and Status > Calls

As a starting point, consider **Search history** and **Status > Calls** on the VCS.

Check that the calls are being made as expected.

Lync client debug

This will give the Lync client client's view of the call.

Lync debug

This will provide Lync's view of communications between Lync and VCS, and Lync and Lync Client.

VCS / Cisco AM GW

VCS search history and Status > Calls

As a starting point, consider **Search history** and **Status > Calls** on the VCS.

Check that the calls are being made as expected.

Cisco AM GW Event log

The **Event log** (**Maintenance > Logs > Event log**) shows key events including incoming calls, connecting calls and disconnecting calls and error events.

Note that the oldest event information is shown on page 1 – the opposite order to the event information on VCS where page 1 is the most recent information.

The level of tracing (to save more or less information in the Event log) can be configured in the **Event capture filter** page (**Maintenance > Logs > Event capture filter**).

When displaying the Event log, this information or a subset of it can be displayed. In the **Event display filter** page (**Maintenance > Logs > Event capture filter**) filters can be set to remove information from the displayed log, to enable the reader to focus in on the most relevant information.

Cisco AM GW SIP log

The Cisco AM GW can perform SIP level logging. On the **SIP log** page (**Maintenance > Logs > SIP log**) select **Enable SIP logging**. Refresh the page to see the log.

Cisco AM GW CDRs

The Cisco AM GW can perform CDR logging. On the **CDR log** page (**Maintenance > Logs > CDR log**) select **Enable CDR logging**. Refresh the page or click **Update display** to see the log.

The main view shows four messages per call:

- Participant "<caller id 1>" initiated a call >>
  - clicking >> provides details of the destination of that call
- Participant "<caller id 1>" (<IP>) disconnected >>
  - clicking >> provides details of the media codecs, bandwidth and resolution used
- Participant "<caller id 2>" (<IP>) disconnected >>
  - clicking >> provides details of the media codecs, bandwidth and resolution used
- Call terminated after <time> >>
  - clicking >> provides the disconnect reason

Check Cisco AM GW proxy configuration

When configuring the Cisco AM GW proxy to the VCS, ensure that the IP address of the VCS includes the VCS port number (as configured in **Port on B2BUA for transcoder communications** on the VCS, typically 65080).

Appendix 2: Known limitations

See also the “Known limitations” section in Microsoft Lync and VCS Deployment Guide.

Restrictions

Duo Video

Duo Video is not supported into the Microsoft Lync environment (with or without the Cisco AM GW).

Simultaneous answer

Multiple answer is not supported – it is not recommended to have auto-answer with the same timeout enabled on multiple endpoints in any FindMe account location.

AVMCU / livemeeting calls

Calls to / from AVMCU and livemeeting are not supported.

Removed restrictions

Some restrictions have been removed with the upgrade of Cisco AM GW from version 1.0 to 1.1, others are removed with the use of the VCS B2BUA mode.

Lync Edge Server

Calls to / from Lync client clients registered to Lync through an Edge Server are supported only if the VCS has the **Microsoft Interoperability** option key installed.

Encrypted calls

Encrypted calls between Lync and the Cisco AM GW are supported from AM GW 1.1 – see the configuration required in Microsoft Lync and VCS Deployment Guide. The VCS must have the **Microsoft Interoperability** option key installed.

Appendix 3: Additional information

Reaching Cisco AM GW capacity

If the call capacity of the Cisco AM GWs is reached, new calls to and from Lync will be routed directly between VCS and Lync.

The calls will succeed, but the image resolution will be limited to CIF in both directions, from Lync client to video endpoint and from video endpoint to Lync client, whatever the image size selected on Lync client.

Bandwidth control

Bandwidth can be controlled using pipes over links to the “To Microsoft Lync Server via B2BUA” neighbor zone.

Call license usage

Call type	Traversal call licenses	Non-traversal call licenses
SIP to Lync call via Cisco AM GW	0	1
H.323 to Lync call via Cisco AM GW	1	0
SIP to Lync direct from VCS	0	1
H.323 to Lync direct from VCS	1	0

Endpoint specific configuration

See the endpoint specific configuration appendix in document Microsoft Lync and VCS Deployment Guide for general settings for use of video endpoints with VCS and Lync.

Communicator for MAC

Low power MAC machines may experience high resource consumption when handling calls with video endpoints. Cisco AM GW has a configuration to limit video communications from Communicator for MAC to VGA to avoid this excessive resource usage.

To limit Communicator for MAC calls to only use VGA:

1. Go to **Settings > System Settings**.
2. Ensure that **Limit transmitted video from Communicator for MAC clients to VGA** is selected.
3. Click **Apply changes**.

Note that this will affect the video quality of calls with all Communicators for MAC.

Document revision history

The following table summarizes the changes that have been applied to this document.

Revision	Date	Description
7	December 2013	Updated for X8.1.
6	December 2012	Updated to emphasize that when defining the Cisco AM GW proxy to the Cisco VCS, the IP address of the Cisco VCS must include the port number.
5	August 2012	Updated for Cisco VCS X7.2. Removed references to OCS and non-B2BUA mode operation.
4	October 2011	Major revision to cover Cisco VCS X7.0 (including B2BUA), Microsoft Lync 2010 and Cisco AM GW 1.1.
3	February 2011	Updated for Cisco VCS X6.1.
2	November 2010	New document styles applied.
1	April 2010	Initial release.

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