Deploying Mediatrix® 4400 Digital Gateways with Cisco Unified Communications UC 320W

This document helps you to configure your Cisco UC320W and your Mediatrix® 4400 Series digital gateways to support the use of BRI gateways in the Unified Communications system.

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Contents

Network Setup and Physical Installation

To deploy the Cisco UC320W with a Mediatrix 4400 digital gateway, you must use a Cisco SA500 Series Security Appliance or similar device for Internet access. The security appliance provides DHCP services for all connected devices, NAT traversal from the Internet to your private IP address space, and firewall protection. Both the Cisco UC320W and the Mediatrix 4400 digital gateway must be in the same local network and in the same VLAN. Refer to the example network topology in the following diagram.

Figure 1   Sample Network Topology
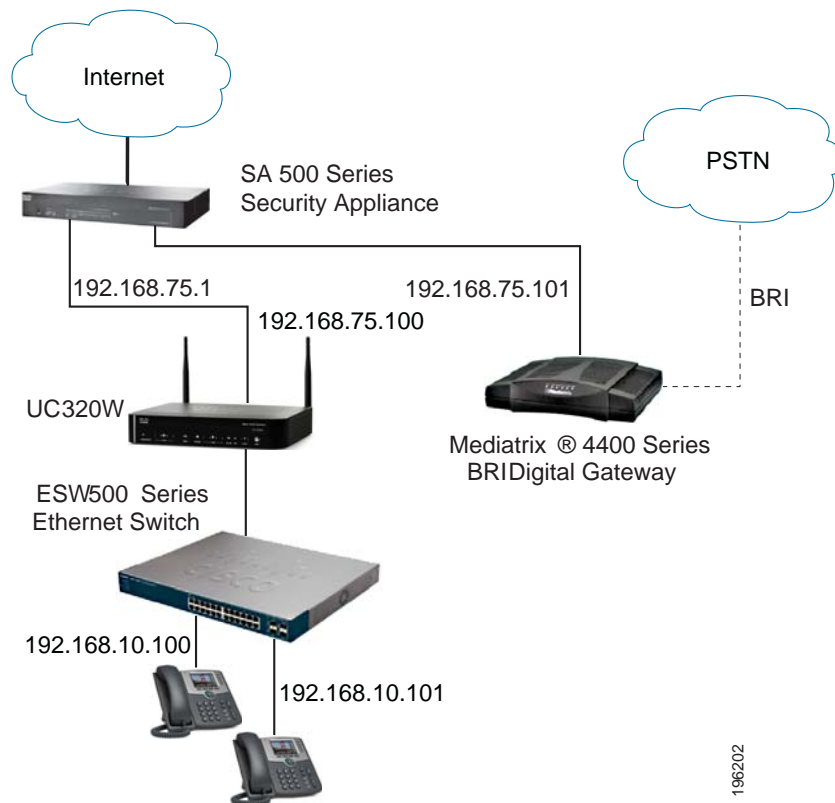
Notes on IP addressing:

- By default, both the Cisco UC320W and the Mediatrix 4400 digital gateway are configured to receive their WAN IP addresses via DHCP. The SA500 acts as the DHCP server for the devices connected to its LAN ports. In our example, the Cisco SA500 security appliance is configured with the default 192.168.75.1 IP address, so the connected devices automatically receive addresses in the 192.168.75.x range. The Cisco UC320W receives

192.168.75.100, and the Mediatrix 4400 Series BRI Digital Gateway receives 192.168.75.101. (Later you will reserve the IP addresses for these devices, to ensure that they always receive the same address from the DHCP server.)

- The Cisco UC320W acts as the DHCP server for the devices that are connected to its LAN ports. By default, computers receive IP addresses in the 192.168.10.1 range (Data VLAN 1). By default, IP phones and Cisco SPA8800 IP Telephony Gateways receive IP addresses in the 10.1.1.x range (Voice VLAN 100).

Required Devices:

- Cisco Unified Communications Cisco UC320W

- Up to two Mediatrix 4400 Series digital gateways

- Cisco SA500 Series Security Appliance (or equivalent router)

- Cisco SPA300 Series and Cisco SPA500 Series IP phones

Optional Devices:

- Cisco SPA8800 IP telephony gateways to provide additional FXS ports for analog devices and additional FXO ports for telephone lines

- Cisco ESW500 Series Ethernet switch to provide additional LAN ports for IP phones and IP telephony gateways

Refer to the following sources for more information:

- Mediatrix documentation and support: www.mediatrix.com

- Cisco UC320W documentation and support: www.cisco.com/go/uc300

- SA500 Series security appliances documentation and support: www.cisco.com/go/sa500

Configuring Reserved IP Addresses on the Security Appliance

Cisco recommends that you reserve IP addresses for the Cisco UC320W and the Mediatrix 4400 digital gateway. By doing so, you ensure that each device is always reachable by the other devices in the system, even if the DHCP server is restarted and new network addresses are assigned to the DHCP clients.

STEP 1 Connect the Cisco UC320W and the Mediatrix digital gateways to the SA500 Series security appliance.

- Connect a cable from the WAN port of the Cisco UC320W to a LAN port of the security appliance.

- Connect the Mediatrix digital gateway to a LAN port of the security appliance. Refer to the Mediatrix documentation as needed.

Note: See **Figure 1 on page 2**.

STEP 2 Power on the devices. **Do not connect any devices to the LAN ports of the Cisco UC320W at this point.**

STEP 3 From a PC on the same LAN as your Cisco SA500, start a web browser and enter the IP address of the security appliance (default **192.168.75.1**).

STEP 4 Log in to the Cisco SA500 Configuration Utility by entering the required username and password.

STEP 5 If you have not already done so, configure the Cisco SA500 to establish your Internet connection. For more information, see the product documentation.

STEP 6 Click **Networking** on the menu bar, and then click **LAN > DHCP Reserved IPs** in the navigation tree.

STEP 7 Add the devices to the Reserved IPs list:

- To add the Cisco UC320W, click **Add**. Enter the MAC address of the Cisco UC320W, and the desired IP address, such as 192.168.75.100. You can find the MAC address on the product label on the bottom panel of the device. Click **Apply** to save your settings.

- To add a Mediatrix 4400 digital gateway, click **Add**. Enter the MAC address of the Mediatrix 4400 digital gateway, and the desired IP address, such as 192.168.75.101. You can find the MAC address on the product label on the bottom panel of the device. Click **Apply** to save your settings. Repeat this step if another Mediatrix 4400 digital gateway is connected.

STEP 8   Restart the Cisco UC320W and the Mediatrix gateway so that they receive the new LAN IP addresses.

You can close the Cisco SA500 Configuration Utility.

Configuring the Cisco UC320W

When configuring the Cisco UC320W, be sure to complete the tasks described below to support your Mediatrix BRI digital gateways.

Follow the on-screen instructions in the web-based configuration utility to configure the Cisco UC320W. For more information, see the Quick Start Guide and the online Help.

After you complete the Getting Started tasks, proceed through the configuration utility. When the *Configuration > Ports and Trunks > SIP/BRI Trunks* page appears, set the **Provider** to Mediatrix BRI Gateway. Then enter the settings.

The **Mediatrix IP Address** is the IP address that you reserved for the Mediatrix 4400 digital gateway (for example, 192.168.75.101). Make a note of the **Local SIP Port**, such as 5060, which will be displayed in the *Settings* area of the configuration page. You will need to know this information when you configure the settings in the Mediatrix configuration utility. If you have a second gateway, you will create two records.

After you apply the configuration, continue to the next procedure in this application note.

Configuring the Mediatrix 4400 Digital Gateway

This section explains how to configure the Mediatrix 4400 digital gateway to interoperate with your Cisco UC320W. It is recommended that you follow these procedures in the order in which they are presented.

NOTE   This document describes manual configuration, although the Mediatrix 4400 digital gateways support remote provisioning. For more information about the remote provisioning feature, contact Mediatrix.

Logging In to the Mediatrix Configuration Utility

To access the Mediatrix configuration utility, complete the following steps.

STEP 1 Connect a PC to the same LAN as your Cisco UC320W and Mediatrix 4400 digital gateway.

STEP 2 Start a web browser and enter the LAN IP address that you reserved the Mediatrix digital gateway.

STEP 3 When the login window appears, enter the default user name: **public**

STEP 4 Leave the **Password** field empty for the default login. Be sure to set a secure password later to complete the configuration process.

STEP 5 Click the **Login** button. The main configuration window appears.
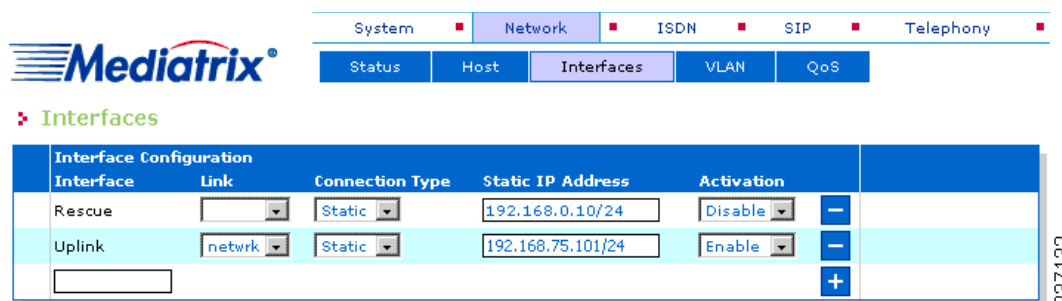
Configuring a Static IP Address on the Mediatrix 4400 Digital Gateway

To set a static IP address on the Mediatrix 4400 digital gateway, complete the following steps.

STEP 1 Click **Network > Interfaces** in the menu. The *Interfaces* window appears.

STEP 2 Under **Interface Configuration**, find the **Uplink** row. Enter the following settings:

- **Link:** Choose **netwrk** for a network link.

- **Connection Type:** Choose **Static**.

- **Static IP Address:** Type the static IP address and network mask. This example uses 192.168.75.101/24.

- **Activation:** Choose **Enabled**.

STEP 3 To complete the configuration, click **Submit**. The unit reconfigures to its new IP address.

STEP 4 To recover access to the configuration utility, enter the new IP address in your web browser, and then log in.

Configuring the SIP Port for Call Routing to the Cisco UC320W

This process specifies the gateway SIP port that the gateway will use to route incoming ISDN calls and to receive outgoing call requests. The specified SIP port must match the configuration on the Cisco UC320W.

NOTE If you need to look up the Local SIP Port that the Cisco UC320W assigned to your Mediatrix BRI digital gateway, start the Cisco UC320W Configuration Utility, and navigate to the *Trunks > SIP/BRI* page. Click **Settings** to display the information for each gateway that you configured. Refer to the *Local SIP Port* field.

STEP 1 In the Mediatrix configuration utility, click **SIP** in the menu bar, and then click **Gateways**. The *Gateways* page appears.

STEP 2 In the *SIP Port* field, type the SIP port number, for example, 5060.


STEP 3 Click **Submit.**

Restarting the Gateway

You need to restart the affected services on the gateway after you make configuration changes. A message appears near the top of the screen when this operation is required. This message includes a link to the Services table, which you can use to restart the specified services.

To restart the Mediatrix 4400 digital gateway services after making configuration changes, complete the following steps.

STEP 1 Click the **Services** link in the message near the top of the page. (Or click **System > Services** in the menu.) The *Services* window appears.

STEP 2 Scroll down to **SIP Endpoint**, and select **Restart** from the Action list.
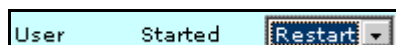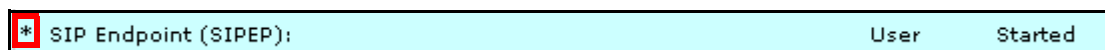
The service restarts immediately.

STEP 3 To verify, click **SIP > Gateways**. The State is Ready.

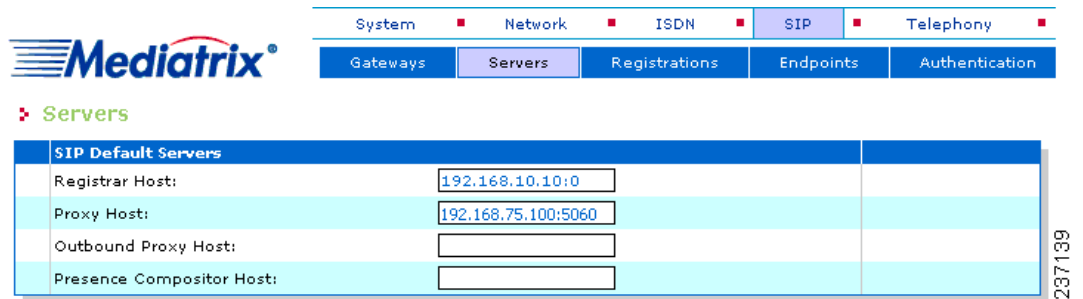## Configuring Communication to the Cisco UC320W SIP Proxy Server

You need to configure the communication from the gateway to the SIP proxy server that will be used to route VoIP calls. You need to identify the Cisco UC320W by its WAN IP address, and you need to specify the SIP port that the Cisco UC320W assigned to the Mediatrix 4400 digital gateway.

In the example for the following procedure, the Mediatrix 4400 digital gateway is configured to communicate with a Cisco UC320W at 192.168.75.100, using port 5060.

To configure communication to the SIP Proxy Server for the Cisco UC320W, complete the following steps.

STEP 1   Click **SIP** in the menu bar, and then click **Servers**. The *Servers* window appears.

STEP 2   In the **Proxy Host** field, enter the static IP address of the Cisco UC320W and the Local SIP Port, such as 192.168.75.100:5060.

STEP 3   Click **Submit**.

Configuring ISDN Connectivity

After the ISDN line is connected to the BRI1 port (and the BRI2 port, if applicable), complete the following steps to configure ISDN settings.

STEP 1   Click **ISDN** in the menu bar, and then click **Basic Rate Interface.** The *Basic Rate Interface* page appears.

STEP 2   Enter the following settings:

- **Endpoint Type:** Select **TE** for Terminal Emulation.

- **Connection Type:** Select **Point to Multipoint**.

STEP 3   In the **Apply to the Following interfaces** area, click **Check All** to ensure that these settings are applied to all of the BRI interfaces of this gateway.

STEP 4   Click **Submit**.

STEP 5 Restart the ISDN service by completing the following tasks:

    a. Click the **Services** link in the message near the top of the page. (Or click **System > Services** in the menu.)

    b. Scroll down **Integrated Services Digital Network (ISDN)** in the table.

    c. Choose **Restart** from the **Action** drop-down list. The service restarts.

    d. To verify that the service is started, you can click the "click here" link.

Configuring Call Routing

This section describes how to define the gateway function. In our example, the Mediatrix 4400 digital gateway routes all incoming ISDN calls from the BRI ports to the Cisco UC320W, and directs call requests from the Cisco UC320W to ISDN.

This section also describes how to define a hunt group that groups the BRI1 and BRI2 ports on the Mediatrix 4402 digital gateway for outbound calls. This feature enables the Cisco UC320W to use any BRI port to choose an available circuit for the outbound call.

To configure call routing, complete the following steps.

STEP 1 Click **Telephony** in the menu bar, and then click **Call Routing Config**. The *Call Routing Config* window appears.

STEP 2 Scroll down to the **Hunt Index** table, and then click the **+** icon in the bottom right corner. Or, if you are configuring a Mediatrix 4401 digital gateway, go to **Step 7 on page 12**. (You do not need to define a hunt group if you are using the Mediatrix 4401 digital gateway, which has only one BRI port.)

STEP 3 In the *Configure Hunt End* window, enter the following information:

    ▪ **Name:** Enter a name for the hunt group. In the example, the name is *hunt_isdn*.

    ▪ **Destination:** Select ISDN-BRI1 from the **Suggestion** drop-down menu. Repeat for each BRI interface. The selected interfaces are added to the *Destinations* list.

STEP 4 Keep the defaults for the other settings.

STEP 5 Click **Submit**. The *Call Routing Config* page reappears.

Next, you will configure the gateway routing criteria. The Mediatrix 4400 digital gateway will route incoming ISDN calls from the specified BRI port to the VoIP interface, and direct outgoing calls to the BRI port.

STEP 6 In the **Route** table at the top of the page, click the plus sign (+) in the bottom right corner to add a new route. The *Configure Route End* window appears.

STEP 7 To create the inbound SIP route from the Cisco UC320W to the BRI interfaces, enter the following information:

- **Source:** From the **Suggestion** list, choose **sip-default**.

- **Destination:** From the **Suggestion** list, choose the hunt group that you created.
  —OR— If you are using a Mediatrix 4401 digital gateway, choose **isdn-Bri1**.

STEP 8 Click **Submit**. The *Call Routing Config* page reappears.

STEP 9 Create the outbound SIP route (inbound BRI) from the BRI interfaces to the Cisco UC320W:

    a. Enter the following information.

       ▪ **Source:** From the **Suggestion** list, choose the hunt group that you created before (hunt-hunt_isdn in the example).
         —OR— If you are using a Mediatrix 4401 digital gateway, choose isdn-Bri1.

       ▪ **Destination:** From the **Suggestion** list, choose **sip-default**.

    b. Click **Submit**. The *Call Routing Config* page reappears.

STEP 10 Click **Apply** at the bottom of the page.

STEP 11 Restart the affected services by completing the following tasks:
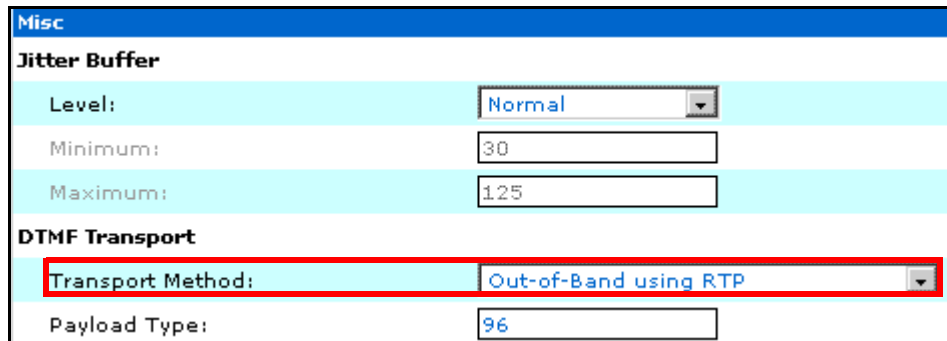
    a. Click the **Services** link in the message near the top of the page. (Or click **System > Services** in the menu.)

    b. Find any starred items (*) in the table.

    c. Choose **Restart** from the Action drop-down list. The service restarts.

Configuring DTMF Transport

You must configure DTMF transport in the Mediatrix 4400 digital gateway to guarantee that DTMF tones are properly sent to the Cisco UC320W. DTMF tones are used with Auto Attendants, voicemail, and similar interactive services. DTMF is sent through RTP using the out-of-band method.

To configure DTMF transport, complete the following steps.

STEP 1 Click **Telephony** in the menu bar, and then click **CODECS**.

STEP 2 In the **Misc** section, under **DTMF Transport**, use the **Transport Method** drop-down list to choose **Out-of-Band using RTP**.

STEP 3 Click **Submit**.

From this point, your system is configured and should be able to receive and originate calls to and from the ISDN.

To review the status of network connectivity and ISDN line(s) and of the Mediatrix 4400 digital gateways, choose **System Status** in the navigation pane.

STEP 4 To verify that your service is working, use an IP phone to place a call to an external number, such as your cell phone. Also place an inbound call from an external number to one of the phone numbers that you configured for this gateway.

Where To Go From Here

Cisco provides a wide range of resources to help you and your customer obtain the full benefits of the Cisco UC320W.

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

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