Application Note

ShoreTel®

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ShoreTel integration with Microsoft OCS via AudioCodes TDMA:

Integrate the ShoreTel UC System with Microsoft Office Communications Server 2007 R1 via AudioCodes Mediant 1000 Gateway

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Overview

The purpose of this application note is to illustrate how to integrate the ShoreTel unified communications (UC) system with Microsoft's Office Communications Server (OCS) 2007, and deliver voice calls between the two systems. This integration enables users to place phone calls between the Microsoft Office Communicator and ShoreTel UC system.

This application note **does not** cover the following integration features:

- Remote Call Control (CSTA)
- Unified Messaging-Exchange Voicemail
- Instant Messaging
- Presence Integration

Benefits

The Microsoft OCS tied into the ShoreTel UC system combines the power of both systems: Microsoft OCS users can communicate with ShoreTel users or any ShoreTel resources from PSTN to other solution integrations. End users can place or transfer phone calls from Microsoft Office Communicator to a ShoreTel phone and vice versa.

Known Limitations

- The caller's name does not display between the Microsoft Office Communicator and a ShoreTel phone.
- Limited conferencing: Microsoft Office Communicator cannot add another Microsoft or ShoreTel phone to a conference. This is a Microsoft OCS 2007 R1 limitation.
- Limited Forking

AudioCodes Mediant 1000 Gateway Product Overview

ShoreTel has collaborated with Microsoft and AudioCodes to provide customers with a smooth migration from the world of separate telephony and IT environments, to the world of unified communications. ShoreTel offers enterprises a key component in the unified telephony network, the Media Gateway that connects the ShoreTel system with Microsoft OCS 2007.

AudioCodes Mediant Media Gateways are cost-effective voice over IP (VoIP) media gateways that use the latest technology. Intelligently packaged in a stackable 1U chassis, they are designed to interface between enterprise legacy telephony and IP networks. In addition, the AudioCodes Mediant 1000 and the Mediant Media Gateways can be ordered as basic hybrid gateways, supporting an integrated Microsoft Mediation Server, with up to 16 and 120 RTA channels respectively.

> Note: Please read this before you proceed:
>
> *This document is for informational purposes only and is provided "AS IS." Information herein is subject to change. Microsoft and its partners, including ShoreTel, cannot verify the accuracy of this information and take no responsibility for the content of this document. To the extent permitted by law, Microsoft makes no warranties of any kind, disclaims all express, implied and statutory warranties, and assumes no liability to you for any damages of any type in connection with the content of this document.*

Intended Audience

The information provided in this document has been provided by Microsoft partners or equipment manufactures and is provided "AS IS". This document contains information about how to modify the configuration of your PBX or VoIP gateway. Improper configuration may result in the loss of service of the PBX or gateway. Microsoft is unable to provide support or assistance with the configuration or troubleshooting of components described within. Microsoft recommends readers to engage the service of a Microsoft Office Communications Specialist or the manufactures of the equipment(s) described within to assist with the planning and deployment of Microsoft OCS 2007.

Architecture
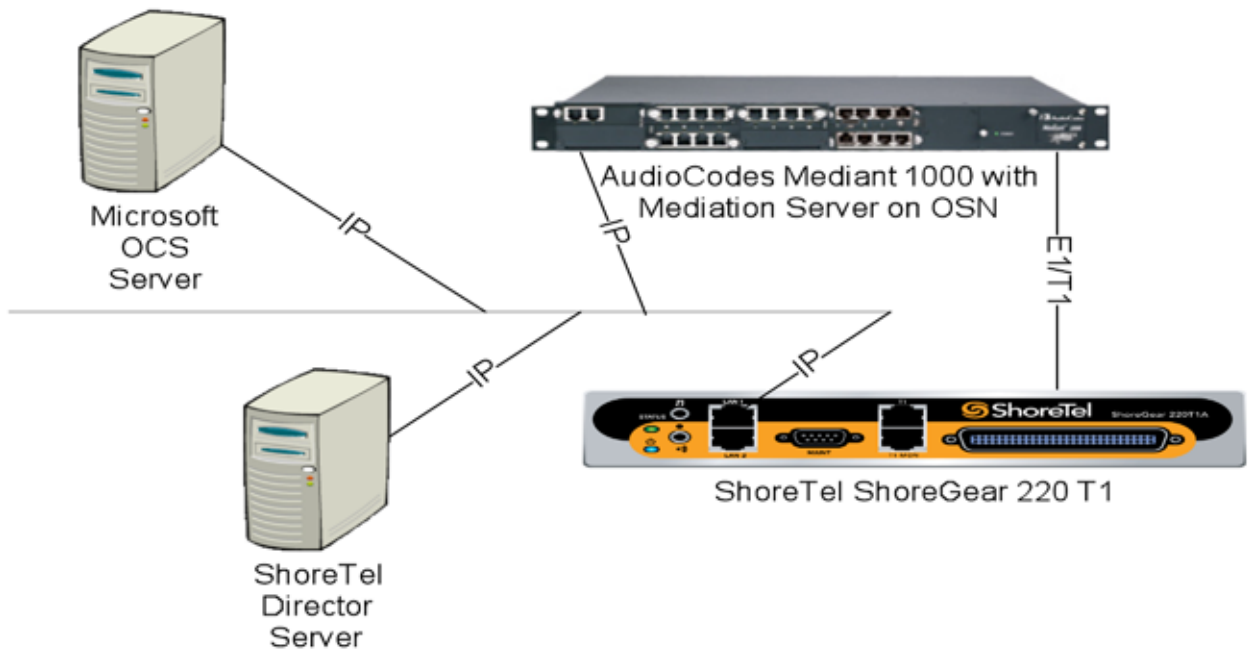
Option 1: Example with AudioCodes OSN Gateway (Microsoft Mediation Server built in)
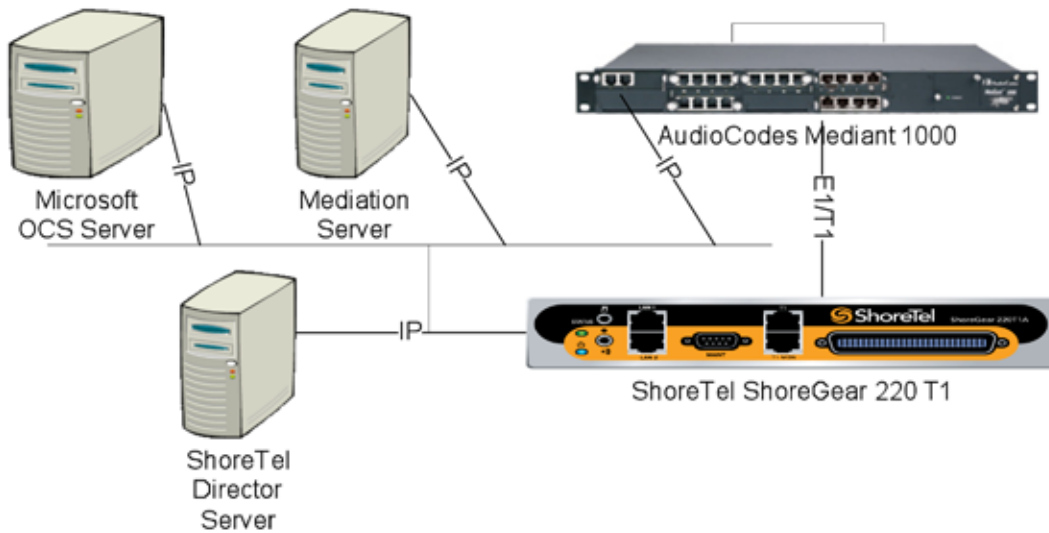
Option 2: Example topology with separate Microsoft Mediation Server

Requirements

The following requirements are necessary to integrate the AudioCodes Mediant 1000 gateway to the ShoreTel UC system:

Hardware

ShoreWare® Director (Server Software)

ShoreGear T-1 or E-1 switch (Call Controller)

E-1 / T-1 cross over cable

AudioCodes Mediant 1000 gateway

Microsoft Office Communications Server(s) See URL for more details http://www.microsoft.com/downloads/details. aspx?familyid=8CDE0C3A-042E-445B-A514-2D12ED5B2AC2&displaylang=en

Software

ShoreTel	Release 8.1 as of build 13.23.6910.0
AudioCodes	Mediant 1000 version 5.40A.032.004
Microsoft	Office Communications Server 2007 3.0.6362.0

ShoreTel Configuration

Please follow the steps in the *ShoreTel Planning and Installations Guide* to add your new ShoreGear T-1 switch to the system. You must use the following configuration under the new T-1 switch in the ShoreTel Director:

Configuring the T-1 Switch

Layer 3

Protocol Type: ISO QSIG User

Layer 2

Clock Source: Slave   (AudioCodes Clock Master must be set as "Generated")

Framing Format   ESF

Line Code   B8ZS

Line Build Out   .05db (0-100 feet)

Configuring the new trunk group

The following steps describe how to configure the trunk for integrating the Microsoft OCS and the ShoreTel UC system. Some steps are optional, depending on the types of services desired as summarized above.

To create a new trunk group:

Step 1   In ShoreWare Director, select **Trunk Groups** from the navigation frame to open the **Trunk Groups list** page.

Step 2   Select the site where the trunk will be integrated and the type of trunk to configure - Digital Wink Start for T1 or PRI for PRI - and select **Go**. The new trunk group is created and the **Trunk Group Edit** page appears.

Step 3   Click **Save** to store the trunk group configuration changes.

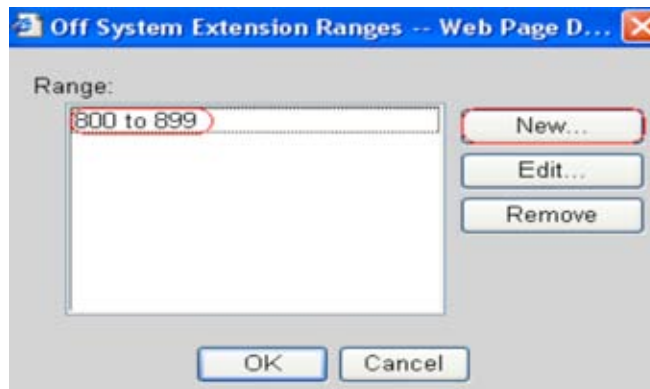**To configure inbound services with extension routing:**

Step 1   In ShoreWare Director, open the **Trunk Group edit page** for the tie trunk.

Step 2   Configure the number of digits received to match the number of digits sent by the remote PBX. This must match the extension length.

Step 3   Enable **Extension Routing** by checking the box. This directs all the received calls to the configured ShoreTel 7 extension that matches the received DNIS digits.

Step 4   Select a **Destination** to provide a back-up when the received digits do not match an extension in the ShoreTel 7 system.

Step 5   Click **Save** to save the trunk group configuration.
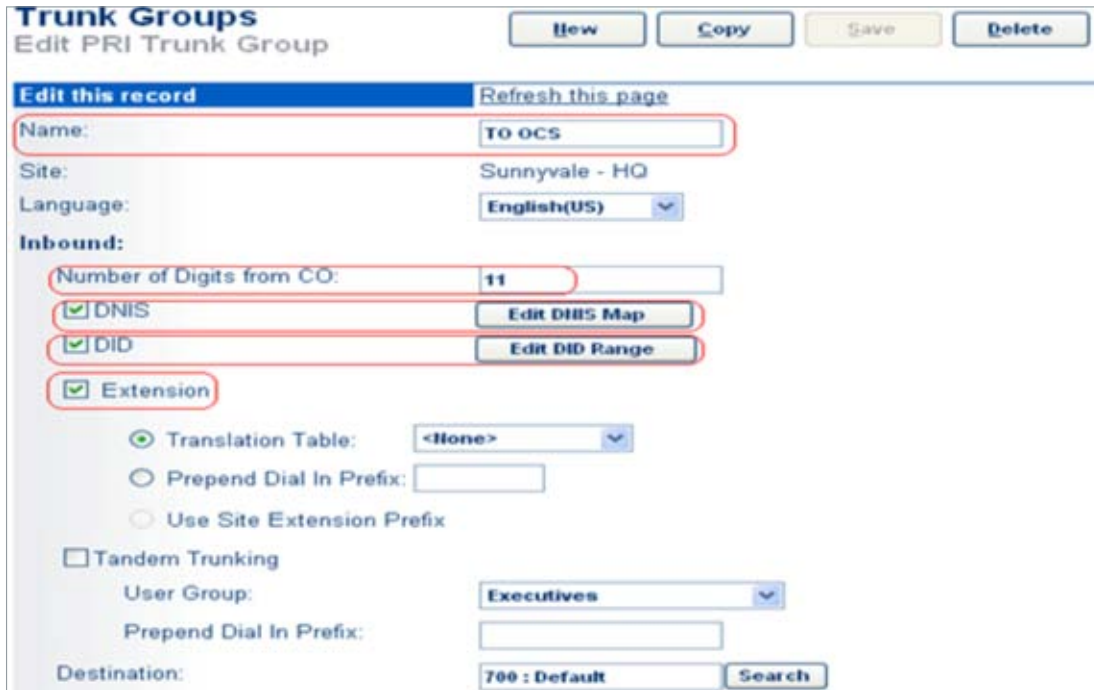
To configure off system extensions:

Here is where you define the range of extensions used for Microsoft Office Communicator softphone users.

Step 1   In ShoreWare Director; open the **Trunk Group** edit page for the tie trunk.

Step 2   Select the **Edit** button by the off system Extensions. The **Off Systems Extension Range** dialog is displayed.

Step 3   Click **New** and define the extension ranges for the extension of the OCS user(s). See section on OCS for more below.

Step 4   Click **Save** to save the trunk group Configuration.

To configure outbound call routing (via the remote PBX):

Step 1   In ShoreWare Director, open the **Trunk Group** edit page for the tie trunk.

Step 2   Enable outbound services by selecting the **Outbound** check box.

Step 3   Configure the access code and areas codes for the trunk to match the PSTN connection of the remote PBX.

Step 4   Select the desired trunk services to match the services provided via the remote PBX.

Step 5   Select the desired **Trunk Digit Manipulations** to match the tie trunk and the required dialing for the PSTN connection to your legacy PBX.

Step 6   As needed, configure the local prefixes and pre-pend digits to match the tie trunk and the required dialing for the PSTN connection to your legacy PBX. For additional information on trunk configuration and options, refer to the *ShoreTel Administration Guide.*

Assign your new trunk group to the new T-1 switch

Go to Switches and select the new T-1 switch you created. Then select the port type to trunk and select the new trunk group you just created. If you're using all channels of the T1/E1, select fill down from the right-hand side.

Channel	Port Type	Trunk Group	Description	Jack Number	Tx Gain (dB)	Rx Gain (dB)
1 Edit	Trunk	OCS Trunk Group	ch		0	0
2 Edit	Trunk	OCS Trunk Group	ch (2)		0	0
3 Edit	Trunk	OCS Trunk Group	ch (3)		0	0
4 Edit	Trunk	OCS Trunk Group	ch (4)		0	0
5 Edit	Trunk	OCS Trunk Group	ch (5)		0	0
6 Edit	Trunk	OCS Trunk Group	ch (6)		0	0
7 Edit	Trunk	OCS Trunk Group	ch (7)		0	0
8 Edit	Trunk	OCS Trunk Group	ch (8)		0	0
9 Edit	Trunk	OCS Trunk Group	ch (9)		0	0
10 Edit	Trunk	OCS Trunk Group	ch (10)		0	0
11 Edit	Trunk	OCS Trunk Group	ch (11)		0	0
12 Edit	Trunk	OCS Trunk Group	ch (12)		0	0
13 Edit	Trunk	OCS Trunk Group	ch (13)		0	0
14 Edit	Trunk	OCS Trunk Group	ch (14)		0	0
15 Edit	Trunk	OCS Trunk Group	ch (15)		0	0
16 Edit	Trunk	OCS Trunk Group	ch (16)		0	0
17 Edit	Trunk	OCS Trunk Group	ch (17)		0	0
18 Edit	Trunk	OCS Trunk Group	ch (18)		0	0
19 Edit	Trunk	OCS Trunk Group	ch (19)		0	0
20 Edit	Trunk	OCS Trunk Group	ch (20)		0	0
21 Edit	Trunk	OCS Trunk Group	ch (21)		0	0
22 Edit	Trunk	OCS Trunk Group	ch (22)		0	0
23 Edit	Trunk	OCS Trunk Group	ch (23)		0	0
24	Unavailable	Unavailable			.0	.0

Create or modify a User Group.

See the *Administration Guide* for more details on adding new user groups. Once you have created a new user group, review the "Outgoing trunk Groups (Access Code)" settings and add the new trunk group to the user group. For testing, assign this new user group to only a few test users before allowing access to all users. See next diagram.

AudioCodes Installation

AudioCodes provides an Open Solutions Network (**OSN**) optional card which can act as a mediation server. AudioCodes enables you to run the Microsoft server 2003 OS and Mediation server role inside the Mediant 1000 Gateway on the OSN card. Please refer to the *Audio Codes Mediant 1000 MEGACO-SIP Installation Manual* Ver 5.4 for steps on setting up the device and setting the IP address located in Chapters 2 and 3. Two options are listed below. **Option 1** allows you to use the OSN of the AudioCodes Gateway to host the Microsoft Mediation Server. **Option 2** allows the use of an existing Microsoft Mediation server.

Option 1: Using AudioCodes OSN to host the Microsoft Mediation Server

Assigning an IP Address Using HTTP

1. Connect the Mediant to your PC using a standard network switch.

    a. Connect the network interface on your PC to a port on the network switch.

    b. Use a second standard Ethernet cable to connect the Mediant to another port on the same network switch.

2. Change your PC's IP address to be 10.1.10.16 with subnet mask 255.255.255.0.

3. Change the Mediant's IP address using the Web interface, by performing the following:

    a. Access the device's Web interface (default factory address: http://10.1.10.10). Username and password are both "Admin".

    b. Open the 'IP Settings' page, (**Configuration** tab > **Network Settings** menu > **IP Settings** page item).

    c.   Define the device's IP address, subnet mask, and default Gateway IP address so that they correspond to your network IP scheme.

    d.   Click **Submit**.

    e.   If browser can still access http://10.1.10.10 then restart step 3.

    f.   Open Remote Desktop Connection to IP Address: 10.1.10.12
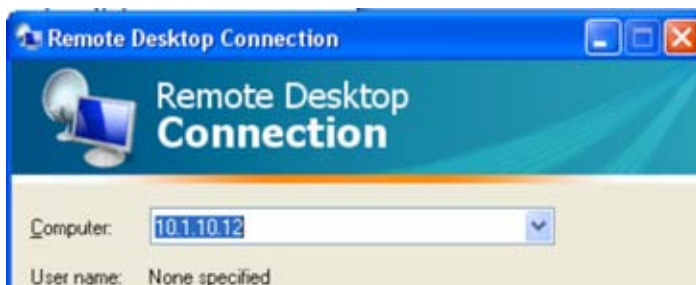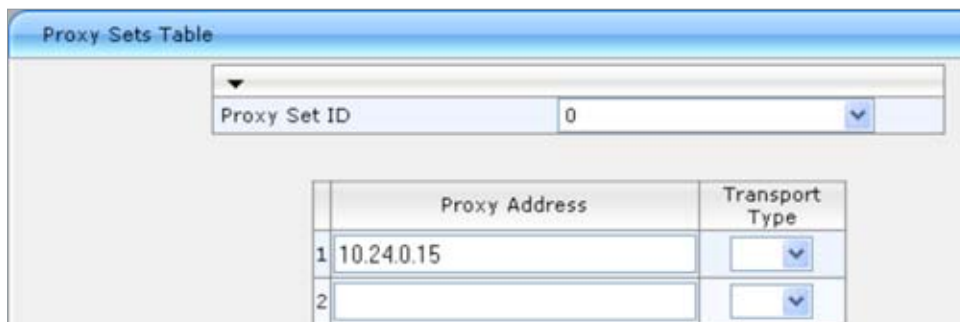

    g.   Log in to Windows Server:
          User: administrator
          Password: 1234

    h.   Define the device's IP address, subnet mask, and default Gateway IP address so that they correspond to your network IP scheme.

    i.   Reboot.

4.   Restore the PC's IP address and subnet mask to the original numbers. If necessary, restart the PC.

5.   Reconnect the Mediant and PC (if necessary) connected to the network. Access the Mediant via the Embedded Web Server with its new assigned IP address.

6.   Save your settings to the flash memory (click **Burn** button).

AudioCodes Configuration for Option 1:

1. Download the INI file from our Web site to your PC. This file streamlines the process of provisioning the Mediant gateway.

2. Load the INI file from the PC to the Mediant:

    a. Click **Device Actions** > **Load Configuration File**

    b. Click **Browse**

    c. Select file downloaded in step #1 above

    d. Click **Load INI File**

    e. Click **OK** to prompt for "The device resets after file download."

3. After device resets, browse to device:

    a. Click **Protocol Configuration** > **Protocol Definition** > **Proxy Sets Table**

    b. Change the Proxy Address to the IP address of the Mediation Server – e.g.:

    c. If multiple E1/T1 spans are connected to the GW:

        i. Click **Full**

        ii. Click **Protocol Configuration** > **Trunk/IP Group** > **Trunk Group**

        iii. Set **To Trunk** column to be the number of E1/T1 spans connected

    d. Click **Burn**

Option 2: Configuring AudioCodes using your own Microsoft Mediation Server

1. Connect the Mediant to a network by connecting the network interface on the PC to a port on the network switch.

2. Change the PC's IP address to be 10.1.10.16 with subnet mask 255.255.255.0.

3. Change the Mediant's IP address using the Web interface, by performing the following:

    a. Access the device's Web interface (factory default address: http://10.1.10.10).

    b. Open the 'IP Settings' page, (**Configuration tab** > **Network Settings** menu > **IP Settings** page item).
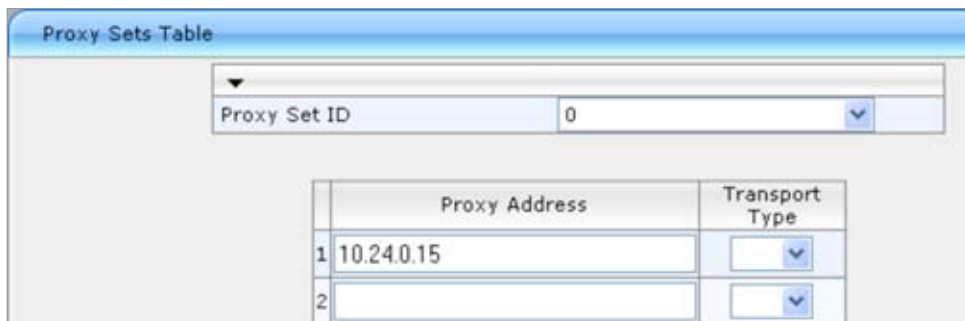

    c. Define the device's IP address, subnet mask, and default Gateway IP address so that they correspond to the network IP scheme.

    d.   Click **Submit**.

    e.   If browser can still access http://10.1.10.10 then restart step 3.

4.   Disconnect your PC from the Mediant or from the hub/switch (depending on the connection method used in Step 1).

5.   Restore the PC's IP address and subnet mask to what they originally were. If necessary, restart the PC.

6.   Reconnect the Mediant and PC (if necessary) to the network. Access the Mediant via the Embedded Web Server with the new assigned IP address.

7.   Save your settings to the flash memory (click **Burn** button).

AudioCodes Configuration for Option 2:

1.   Download the INI file from our Web site to your PC. This file streamlines the process of provisioning the Mediant gateway.

2.   Load the INI file from the PC to the Mediant:

    a.   Click **Device Actions** > **Load Configuration File**

    b.   Click **Browse**

    c.   Select file downloaded in step #1 above

    d.   Click **Load INI File**

    e.   Click **OK** to prompt for "The device resets after file download."

3.   After device resets, browse to device:

    a.   Click **Protocol Configuration** > **Protocol Definition** > **Proxy Sets Table**

    b.   Change the Proxy Address to the IP address of the Mediation Server, e.g:

    c.   If multiple E1/T1 spans are connected to the GW:

        i.   Click **Full**

        ii.   Click **Protocol Configuration** > **Trunk/IP Group** > **Trunk Group**

        iii.   Set **To Trunk** column to be the number of E1/T1 spans connected

    d.   Click **Burn.**

## Office Communications Server 2007- Mediation Server Configuration

Microsoft recommends engaging the service of a Microsoft Office Communications Specialist or the manufactures of the equipment(s) described within to assist with the planning and deployment of Microsoft OCS 2007.

Provisioning AudioCodes OSN based Mediation Server

1. Use Remote Desktop Connection to OCS

2. Setup OCS next hop to be the Mediation Server

    a. Run mmc

   b. Click **OCS** > **Mediation Server** right click **M1k**:
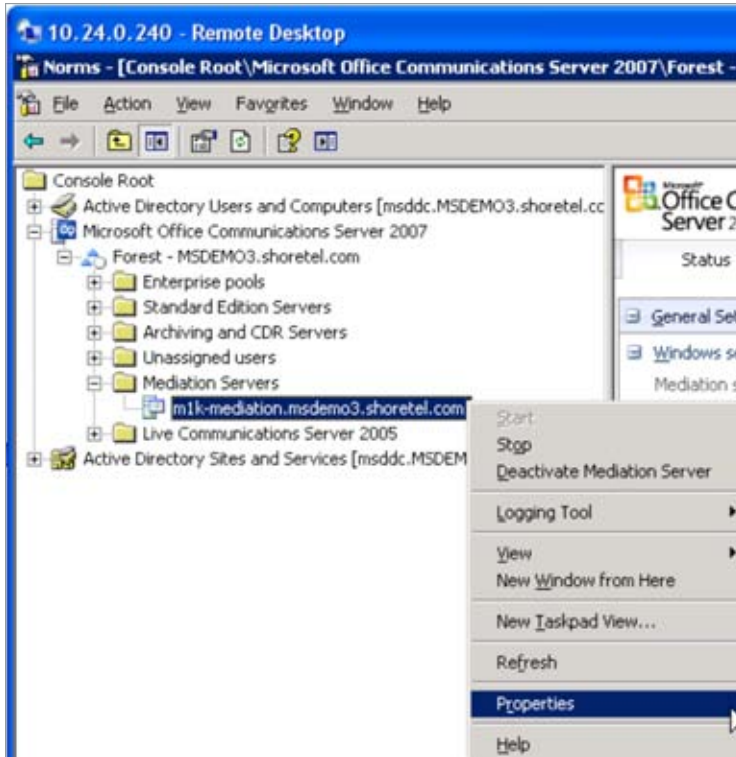
c.   Click Next Hop Connection tab and set PSTN Gateway next hop to be the IP address of the Mediant gateway:
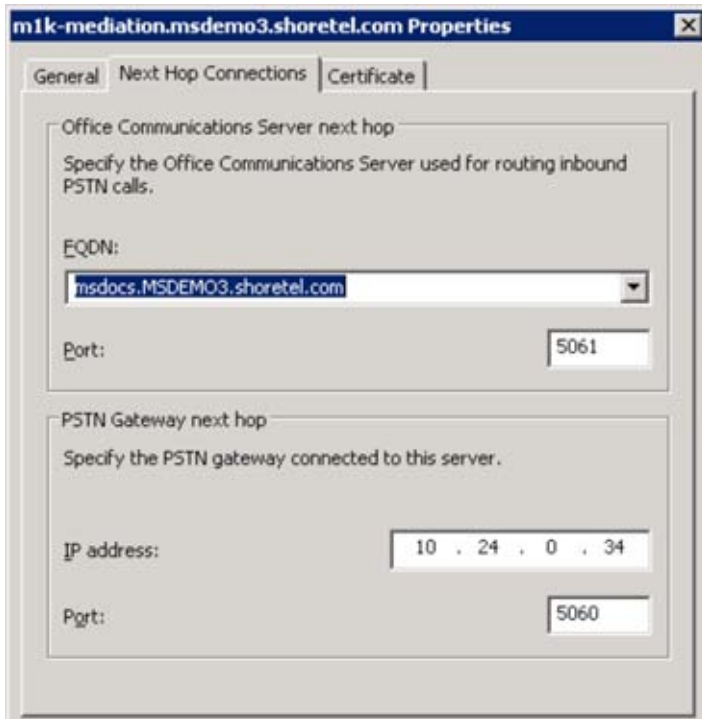
Configuring the MOC user extension or line URI

a. Go to Active Directory Users and Computers and right click on the user. Go to properties and select the Communications tab. Under Additional Options select the configure button.
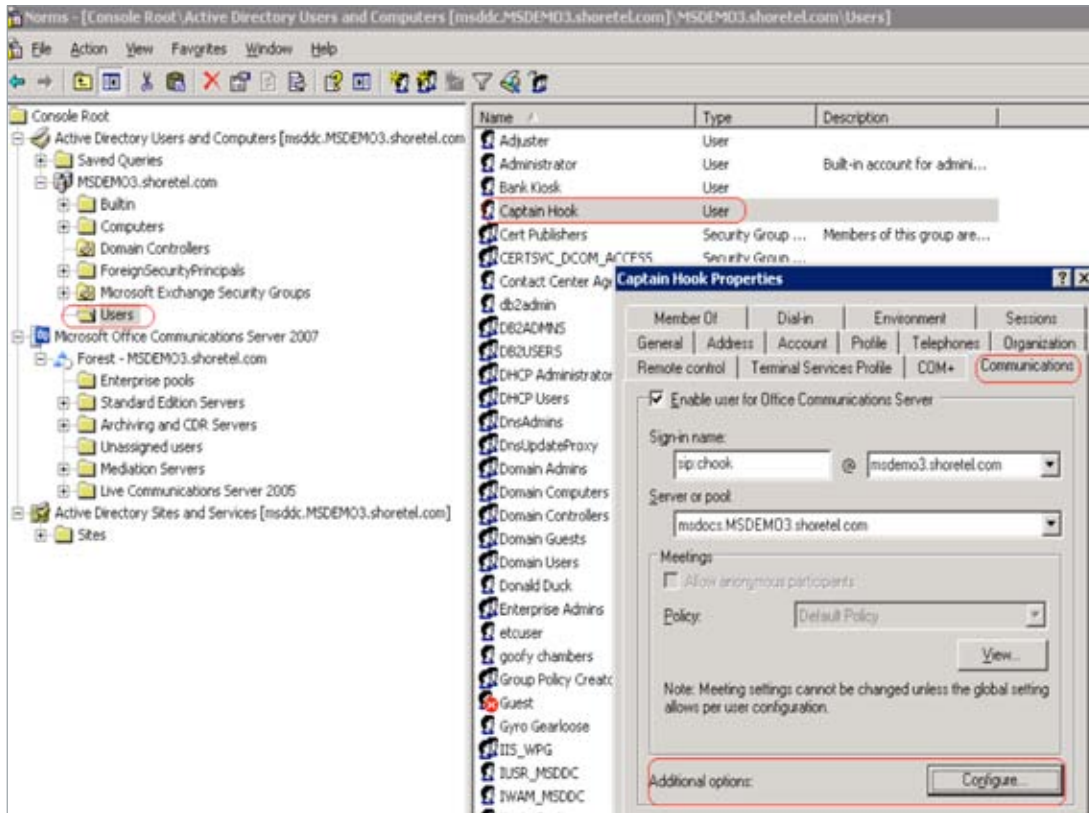
To enable testing of the enterprise voice and PBX integration on the test user account(s), you must specify the Server URI and the Line URI. Make sure the line URL is in the conical format. See example below:
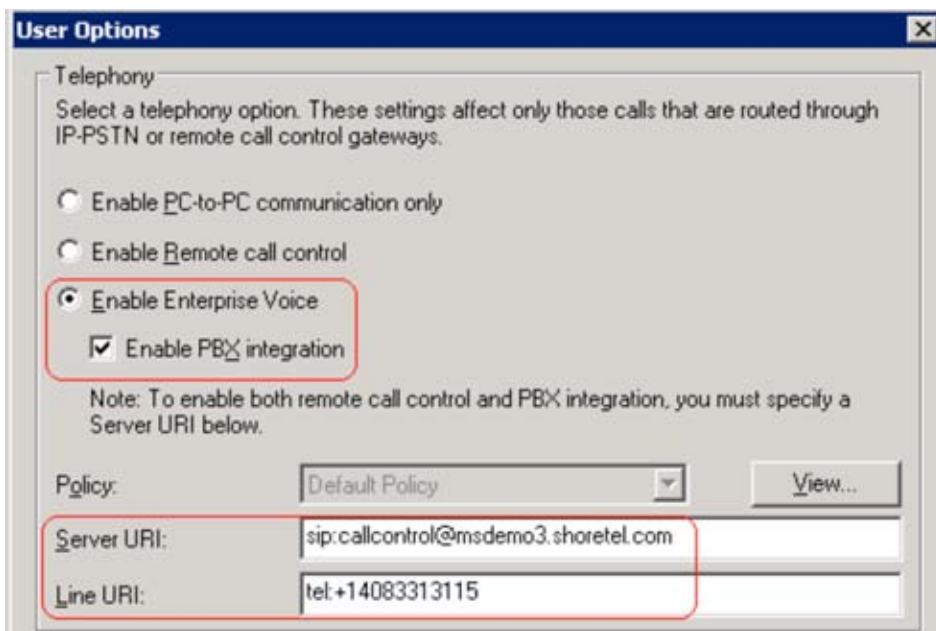
The system should now be ready to place test calls between a Microsoft Office Communicator and a ShoreTel phone.

Reference Documents:

Office Communications Server 2007 Document: Integrating Telephony with Office Communications Server 2007

- http://www.microsoft.com/downloads/details.aspx?familyid=8CDE0C3A-042E-445B-A514-2D12ED5B2AC2&displaylang=en

Issue	Author	Reason for Change	Date
1.0	Norm Jones	Initial Release	2/23/09