



NetVanta Unified Communications Technical Note

Configuring the Dialogic Media Gateway

Introduction

The Dialogic® 1000 Media Gateway (DMG1000) series and Dialogic 2000 Media Gateway (DMG2000) series allow integration of an existing private branch exchange (PBX) with the NetVanta Unified Communications (UC) Server. The Dialogic media gateways support PBX systems from many different manufacturers including Alcatel, Avaya, Ericsson, Fujitsu, Hitachi, Intercom, Mitel, NEC, Nortel, Rohm, Siemens, and Toshiba, allowing you to bridge unified communications capability with your existing Internet Protocol (IP) telephony system. This guide will assist you in configuring your media gateway and provide guidance on integrating your existing PBX system for IP telephony.

Integration Topology

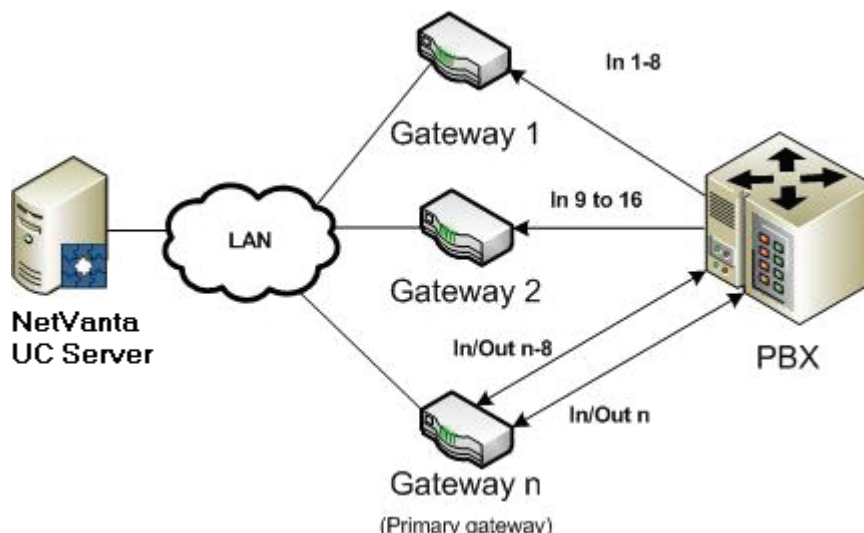
Dialogic media gateways use Session Initiation Protocol (SIP) to communicate with NetVanta UC Server and proprietary techniques to integrate with traditional PBXs. NetVanta UC Server can support multiple media gateways simultaneously to increase the number of channels available to integrate with the PBX. The type and methods of integration can be found on the Dialogic website at <http://www.dialogic.com/support/helpweb/mg/integration.htm>.

The SIP media gateway used by NetVanta UC Server is configured to have the primary media gateway domain/IP address. The primary media gateway provides the following capabilities:

1. Message waiting indicator
2. Outgoing calls
 - Active Message Delivery
 - Pager notification
 - Outbound faxing
 - Outbound notification

If you are using only one media gateway, it is a best practice to configure the media gateway to assign incoming calls (from the PBX) to media gateway ports in the direction opposite the one used by NetVanta UC Server for outgoing calls. That is, incoming calls (from the PBX) should be assigned on the media gateway in a linear, ascending fashion, while outgoing calls (from NetVanta UC Server) should be assigned in a linear, descending fashion.

Multiple Media Gateways



If you require more than one media gateway to support the number of simultaneous calls for your application, you must take into consideration the PBX hunting type. Hunting type refers to the ordering technique (linear, circular, most-idle, etc.) the PBX uses to present incoming calls to NetVanta UC Server and the specific sequence (ascending or descending) that the PBX uses to send calls to NetVanta UC Server.

When configuring multiple media gateways, it is best to do the following:

1. Configure the media gateways to assign incoming calls (from the PBX) to media gateway ports in the direction opposite the one used by NetVanta UC Server for outgoing calls. That is, incoming calls should be assigned beginning on the first media gateway (non-primary) in a linear, ascending fashion across all media gateways and outgoing calls assigned beginning on the last media gateway (primary) in a linear, descending fashion. This reduces the possibility of collisions (glare) between incoming and outgoing calls.



At a minimum, you must configure the incoming calls from the PBX to terminate on a non-primary media gateway first.

2. Configure as many ports on the primary media gateway as possible. That is, if the application requires fewer ports than the total number of ports on the media gateways (for example, the application requires 12 ports but you have enough ports to configure 16), make sure that the last media gateway (primary) has all ports provisioned.

Supported Features

The following features are supported by the integration of NetVanta UC Server with a Dialogic media gateway:

- Call forwarding to personal greeting
 - Busy

- Ring-no-answer
 - Unconditional
 - Direct call to manage messages (the user is prompted for their voicemail password)
 - Transfer capabilities
 - Blind transfers¹
 - Supervised/assisted transfers¹
 - Message waiting indicators²
 - Caller ID (if supplied by the PBX)
 - Notification Services
 - Active Message Delivery
 - Pager notification
 - Email notification
 - Fax support
 - Incoming fax
 - Incoming direct inward dialing (DID) fax (direct to user's mailbox)
 - Outgoing fax (desktop fax)
 - Fax-on-demand
 - Outbound notification (database integration with outbound notification)
1. During blind transfers and supervised/assisted transfers, the media gateway attempts to use the same channel/port for performing transfers (if these types of transfers are supported by the PBX). This minimizes the number of ports required for transfer applications like automated attendants.
 2. Some PBX integrations require that the same ports be used to turn on and off MWIs. The Dialogic media gateways remember which port turned on an MWI for an extension. However, this information is lost if the media gateway is reset.

PBX Compatibility

Dialogic media gateways support a number of protocols, providing compatibility with a wide variety of PBX systems, for example: analog dual-tone multi-frequency (DTMF), serial (RS-232), channel-associated signaling (CAS), and Q signaling (QSIG).

Dialogic media gateways are compatible with more than 20 PBX systems from several manufacturers. Specific configuration of these PBX systems is provided by Dialogic. Refer to the *Dialogic DMG1000 and DMG2000 Media Gateway Integration Notes* available from the Dialogic website (<http://www.dialogic.com/support/>) for compatibility and PBX configuration guides.

The PBX integration configuration settings vary depending on the PBX manufacturer, PBX model and version, and integration type. For specific instructions, refer to the appropriate Dialogic configuration guide for the PBX model and integration type.

Dialogic has PBX-specific configuration files that can be imported into the media gateway to ensure that the PBX-specific settings are configured correctly. The media gateway software available from the *Dialogic Service Center* (<http://www.dialogic.com/support/>) contains the latest version of configuration files for the PBXs that they support.

Configuring the Dialogic Media Gateway

The following configuration steps are required to configure the Dialogic media gateway for integration with NetVanta UC Server:

1. [Accessing the Media Gateway on page 4](#)
2. [Configuring the SIP Parameters on page 6](#)
3. [Configuring the Routing Tables on page 7](#)
4. [Configuring VoIP Media Settings on page 14](#)
5. [Configuring the Media Gateway for Specific PBX Integrations on page 15](#)

Accessing the Media Gateway

There are two methods of configuration: serial interface or the Web interface using Hypertext Transfer Protocol (HTTP). Detailed instructions can be found in the *Dialogic 1000 and 2000 Media Gateway Series Getting Started Guide* shipped with your media gateway or from the Dialogic website. A summary is provided for convenience.

- **Serial Interface:** Using the serial port, you can run the basic configuration and set the parameters for both the media gateway and PBX. Refer to [Accessing and Performing the Initial Configuration for the DMG1000 Series Using the Serial Interface on page 4](#) for the DMG1000 series or [Accessing and Performing the Initial Configuration for the DMG2000 Series using the Serial Interface on page 5](#) for the DMG2000 series.
- **Web configuration:** The default IP address of the Dialogic media gateway is **10.12.13.74**. To access the configuration menus, configure a local computer with an IP address on the same subnet (for example, **10.12.13.75**) and, using a Web browser, navigate to **http://10.12.13.74**.

Accessing and Performing the Initial Configuration for the DMG1000 Series Using the Serial Interface

To access and perform the initial configuration for the DMG1000 series using the serial interface, follow these steps:

1. Connect the serial cable to the serial connector labeled **Diagnostics** on the back of the unit, and connect the other end to the serial connector on your PC.
2. Using a terminal emulation program such as HyperTerminal, create a connection using the following parameters:
 - **Baud rate:** 38400
 - **Parity:** None
 - **Data Bits:** 8
 - **Stop Bits:** 1
 - **Hardware Flow Control:** Off
3. Select **Connect**.

4. Press the ENTER key until the following prompt appears:
PIMG>
5. At the prompt, enter **pwd** and press the ENTER key.
6. When prompted, enter the password for the administrator (the default is **IpodAdmin**) and press the ENTER key.
7. At the resulting prompt, enter **quickcfg** and press the ENTER key.
8. Enter the following parameters when you are prompted:
 - **Client IP address:** Enter the IP address that you want to assign to the media gateway.
 - **Client Subnet Mask:** Enter the subnet mask that you want to assign to the media gateway.
 - **Default Network Address:** Enter the IP address of the default network router.
 - **Select Operating Mode:** Enter SIP.
 - **PBX Type:** Enter the value that corresponds to your PBX.
9. Enter **restart** at the PIMG> prompt and press the ENTER key.

Accessing and Performing the Initial Configuration for the DMG2000 Series using the Serial Interface

To access and perform the initial configuration for the DMG2000 series using the serial interface, follow these steps:

1. Connect the serial cable to the **COM 2** connector on the media gateway, and connect the other end to the serial connector on your PC.
2. Using a terminal emulation program such as HyperTerminal, create a connection using the following parameters:
 - **Baud rate:** 115200
 - **Parity:** None
 - **Data Bits:** 8
 - **Stop Bits:** 1
 - **Hardware Flow Control:** Off
3. Select **Connect**.
4. Press the ENTER key until the following prompt appears:
PIMG>
5. At the prompt, enter **pwd** and press the ENTER key.
6. When prompted, enter the password for the administrator (the default is **IpodAdmin**) and press the ENTER key.
7. At the resulting prompt, enter **quickcfg** and press the ENTER key.
8. Enter the following parameters when prompted:
 - **Client IP address:** Enter the IP address that you want to assign to the media gateway.
 - **Client Subnet Mask:** Enter the subnet mask that you want to assign to the media gateway.
 - **Default Network Address:** Enter the IP address of the default network router.

- **Select Operating Mode:** Enter **SIP**.
 - **Line Mode:** Enter **T1** for a T1 digital link and **E1** for an E1 digital link.
 - **Signaling Mode:** You can enter either **CAS** or **ISDN** depending on the type of digital link.
 - If you enter **T1** for the line mode and **CAS** for the signaling mode, you are prompted to select the **Loop Start** protocol.
 - If you enter **ISDN**, you are prompted to specify the T1 protocol to be used.
9. Enter **restart** at the **PIMG>** prompt.

Accessing the Dialogic Media Gateways Using the Web Interface

To access and begin configuring the media gateway using the Web interface, follow these steps:

1. Open a Web browser, enter the IP address of your media gateway in the address bar, and press the ENTER key.
2. When the login prompt appears, enter **admin** in the **Username** field and **IpodAdmin** in the **Password** field.

Configuring the SIP Parameters

The SIP parameters ensure that the media gateway uses the appropriate configuration parameters to integrate with NetVanta UC Server. Any parameters not listed below must be left as the provided default value or set as recommended by the appropriate PBX integration guide provided by Dialogic.

Navigate to **Configuration > VoIP > General** and ensure the following parameters are configured:

- **User-Agent**
 - **Host and Domain Name:** Enter the IP address or fully qualified domain name (FQDN) of the NetVanta UC Server computer in the field.
 - **Transport Type:** Select **UDP** using the drop-down menu (to match the transport type of NetVanta UC Server port).
 - **Call as Domain Name:** Select **No** using the drop-down menu.
 - **SIP URI Scheme Enabled:** Select **No** using the drop-down menu.
 - **Invite Expiration (sec):** Enter **120** in the field.
- **Server**
 - **DNS Server Address:** Enter the IP address of the domain naming system (DNS) server used for the network.
 - **Registration Server Address:** Leave blank.
- **TCP/UDP**
 - **UDP/TCP Transport enabled:** Select **Yes** using the drop-down menu.
 - **TCP/UDP Server Port:** Enter **5060** in the field.
 - **TCP Inactivity Timer (sec):** Enter **30** in the field.
- **TLS**
 - **TLS Transport Enabled:** Select **No** using the drop-down menu.
- **Proxy**
 - **Primary Proxy Server Address:** Leave blank.

- **Backup Proxy Server Address:** Leave blank.
- **Monitoring**
 - **Monitor Call Connections:** Select **No** using the drop-down menu.

Configuring the Routing Tables

The routing table describes a set of rules used to define the characteristics of a call routed through the media gateway. The primary characteristics include the destination address and the calling party identification (CPID) information. The routing table affects calls originating from the Voice over Internet Protocol (VoIP) side, and calls originating from the time-division multiplexing (TDM) (T1, E1, analog, etc.) side. The following steps are required to configure the routing tables:

1. [Configuring the TDM Trunk Group on page 7](#)
2. [Configuring a VoIP Host Groups on page 8](#)
3. [Configuring the Inbound TDM Rules on page 9](#)
4. [Configuring the Inbound VoIP Rules on page 12](#)

Configuring the TDM Trunk Group

The TDM trunk group will be used to route calls between the attached PBX and NetVanta UC Server. Using regular expressions or wildcard characters you can define the range of ports that you will use for the TDM trunk group.

To configure the TDM trunk group, follow these steps:

1. Using the menu on the left, navigate to **Configure > Routing Table**. The **Router Configuration** menu will appear.
2. Select the **TDM Trunk Groups** radio button.

The screenshot shows the 'Router Configuration' window with the 'TDM Trunk Groups' radio button selected. Below the navigation tabs, there is a table with the following data:

TDM Trunk Groups				
	Name	Selection Direction	Selection Mode	Port/Channel Content
Delete	Voice	Ascending	Linear	*
Delete	TDMandMWI	Descending	Linear	*

Below the table is an 'Add Trunk Group' button. At the bottom of the window, a text box displays the following information:

The selected Trunk Group is referenced by the following rules:
 [Inbound TDM] To/From PBX (match Trunk Group)
 [Inbound VoIP] To/From UC Server (Primary Route)

3. Ensure there is an entry for both voice and message waiting ports. If the entries do not exist, select the **Add Trunk Group** button to add new trunk groups.

- Use the fields and drop-down menus to assign the values in the table below to the trunk group entries.

Table 1. Voice and Message Waiting Values

Option Name	Voice	Message Waiting
Name	Voice	TDMandMWI
Selection Direction	Ascending	Descending
Selection Mode	Linear	Linear
Port/Channel Content	* (all channels)	* (all channels)

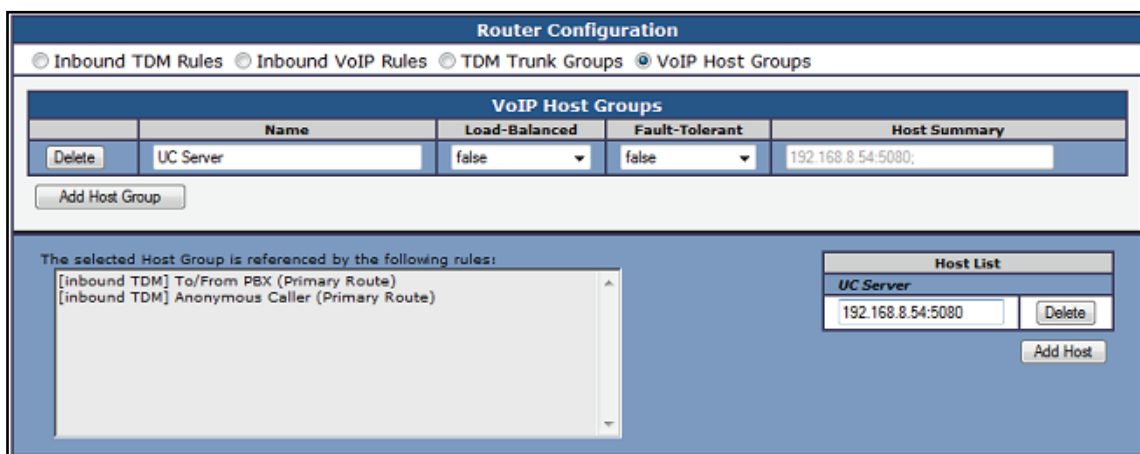
NOTE *The **Port/Channel Content** can also include a restricted range of ports. The default configuration is the * character (for all channels).*

- Select **Submit** at the bottom of the menu to save the settings.

Configuring a VoIP Host Groups

The VoIP host group identifies NetVanta UC Server in the Dialogic media gateway as the VoIP host. To configure a VoIP host group for the NetVanta UC Server, follow these steps:

- Using the menu on the left, navigate to **Configuration > Routing Table**. The **Router Configuration** menu will appear.
- Select the **VoIP Host Groups** radio button.



3. Create a VoIP host group using the **Add Host Group** button, and configure the VoIP host group with the characteristics in the table below.

Table 2. NetVanta UC Server VoIP Host Group Entry

Option Name	NetVanta UC Server
Name	UC Server
Load-Balanced	false
Fault-Tolerant	false
Host List	<p><IP address of NetVanta UC Server>:<DMG port></p> <p>The <IP address of NetVanta UC Server> variable is the IP address of the physical NetVanta UC Server computer.</p> <p>The <DMG port> variable is the port of the Dialogic media gateway object in NetVanta UC Server. By default, this port should be specified as 5080.</p>

4. Select **Submit** to save the settings.

Configuring the Inbound TDM Rules

Inbound TDM rules are used to route calls originating from the TDM interface (T1, E1, analog, etc.). To configure the inbound TDM rules, follow these steps:

1. Using the menu on the left, navigate to **Configure > Routing Table**.

2. Select the **Inbound TDM Rules** radio button.

The screenshot shows the 'Router Configuration' window with the 'Inbound TDM Rules' radio button selected. The 'Inbound TDM Rules' table contains the following data:

Select	Enable	Rule Label	Request Type	Trunk Group
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Anonymous Caller	Call	Voice
<input type="checkbox"/>	<input checked="" type="checkbox"/>	To/From PBX	Call	Voice
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Message Waiting	Message	TDMandMWI

Below the table are 'Add Rule' and 'Delete Rule' buttons. The 'Detailed Configuration for Inbound TDM Rule: To/From PBX' section includes:

- Inbound TDM Request Matching (CPID Matching):** Fields for Calling Number, Called Number, Redirect Number, Calling Name, Called Name, and Redirect Name.
- Outbound Routes (Device Selection):** Fields for Outbound Destination (VoIP), Host Group (UC Server), and Route Method (Bridged).
- Outbound Routes (CPID Manipulation):** Fields for Calling Number (S), Called Number (D), Redirect Number (R), Calling Name (S), Called Name (D), and Redirect Name (R).
- Select Primary / Alternate Route:** Radio buttons for Primary, Alt-1, Alt-2, Alt-3, and Alt-4, along with 'Add Alternate Route' and 'Delete' buttons.

3. Create three inbound TDM rules using the **Add Rule** button.
4. Configure the **Rule Label**, **Request Type**, and **Trunk Group** of each newly created inbound TDM rule with the values in the following table:

Table 3. Inbound TDM Rules

Enable	Rule Label	Request Type	Trunk Group
Yes	Anonymous Caller	Call	Voice (created in <i>Configuring the TDM Trunk Group on page 7</i>)
Yes	To/From PBX	Call	Voice
Yes	Message Waiting	Message	TDMandMWI (created in <i>Configuring the TDM Trunk Group on page 7</i>)

5. In the **Inbound TDM Rules** section, highlight the **Anonymous Caller** rule.

6. In the **Detailed Configuration for Inbound TDM Rule: Anonymous Caller** section, configure the rule using the information in the following table:

Table 4. Anonymous Caller Detailed Configuration

Inbound TDM Request Matching					
CPID Matching					
Calling Number	Unknown	Called Number	*	Redirect Number	*
Calling Name	Unknown	Called Name	*	Redirect Name	*
Outbound Routes					
Device Selection					
Outbound Destination	VoIP	Host Group	UC Server	Route Method	default
CPID Manipulation					
Calling Number	Unknown Number	Called Number	D	Redirect Number	R
Calling Name	Unknown Number	Called Name	D	Redirect Name	R

7. In the **Inbound TDM Rules** section, highlight the **To/From PBX** rule.
8. In the **Detailed Configuration for Inbound TDM Rule: To/From PBX** section, configure the rule using the information in the following table:

Table 5. To/From PBX Detailed Configuration

Inbound TDM Request Matching					
CPID Matching					
Calling Number	*	Called Number	*	Redirect Number	*
Calling Name	*	Called Name	*	Redirect Name	*
Outbound Routes					
Device Selection					
Outbound Destination	VoIP	Host Group	UC Server	Route Method	default
CPID Manipulation					
Calling Number	S	Called Number	D	Redirect Number	R
Calling Name	S	Called Name	D	Redirect Name	R

9. In the **Inbound TDM Rules** section, highlight the **Message Waiting** rule.

10. In the **Detailed Configuration for Inbound TDM Rule: Message Waiting** section, configure the rule using the information in the following table:

Table 6. Message Waiting Detailed Configuration

Inbound TDM Request Matching					
CPID Matching					
Calling Number	*	Called Number	*	Redirect Number	*
Calling Name	*	Called Name	*	Redirect Name	*
Outbound Routes					
Device Selection					
Outbound Destination	VoIP	Host Group	UC Server	Route Method	default
CPID Manipulation					
Calling Number	S	Called Number	D	Redirect Number	R
Calling Name	S	Called Name	D	Redirect Name	R

11. If the **Anonymous Caller** rule is listed below the **To/From PBX** rule in the list of inbound TDM rules, highlight the Anonymous Caller rule and use the **Up** button to position it higher than the **To/From PBX** rule.
12. Select **Apply Changes**.

Configuring the Inbound VoIP Rules

The Inbound VoIP Rules is the main routing table used to route calls originating from the VoIP interface. This is applicable for outbound fax, outbound interactive voice response (IVR), and supervised (assisted) transfers.

To configure VoIP call routing, follow these steps

- Using the menu on the left, navigate to **Configuration > Routing Table**.

2. Select the **Inbound VoIP Rules** radio button.

The screenshot displays the 'Router Configuration' window with the 'Inbound VoIP Rules' section selected. It shows a table of rules and a detailed configuration for the 'To/From UC Server' rule.

Select	Enable	Rule Label	Request Type	Originating VoIP Host Address
<input type="checkbox"/>	<input checked="" type="checkbox"/>	To/From UC Server	Call	*
<input type="checkbox"/>	<input checked="" type="checkbox"/>	InboundVoipMwi	Message	*

Detailed Configuration for Inbound VoIP Rule: To/From UC Server

Inbound VoIP Request Matching

CPID Matching					
Calling Number	*	Called Number	*	Redirect Number	*
Calling Name	*	Called Name	*	Redirect Name	*

Outbound Routes

Device Selection		
Outbound Destination	TDM	Trunk Group
		Voice
		Route Method
		Bridged

CPID Manipulation

Calling Number	S	Called Number	D	Redirect Number	R
Calling Name	S	Called Name	D	Redirect Name	R

Select Primary / Alternate Route

Primary Alt-1 Alt-2 Alt-3 Alt-4

Buttons: Delete, Delete, Delete, Delete, Add Alternate Route

3. Create two inbound VoIP rules using the **Add Rule** button.
4. Configure the **Rule Label**, **Request Type**, and **Originating VoIP Host Address** of the two newly-created inbound VoIP rules with the values in the following table.:

Table 7. Inbound VoIP Rules

Enable	Rule Label	Request Type	Originating VoIP Host Address
Yes	To/From UC Server	Call	*
Yes	InboundVoipMwi	Message	*

5. In the **Inbound VoIP Rules** section, highlight the **To/From UC Server** rule.

6. In the **Detailed Configuration for Inbound VoIP Rule: To/From UC Server** section, configure the rule using the information in the following table:

Table 8. To/From UC Server Detailed Configuration

Inbound TDM Request Matching					
CPID Matching					
Calling Number	*	Called Number	*	Redirect Number	*
Calling Name	*	Called Name	*	Redirect Name	*
Outbound Routes					
Device Selection					
Outbound Destination	TDM	Trunk Group	Voice	Route Method	default
CPID Manipulation					
Calling Number	S	Called Number	D	Redirect Number	R
Calling Name	S	Called Name	D	Redirect Name	R

7. In the **Inbound VoIP Rules** section, highlight the **InboundVoipMwi** rule.
8. In the **Detailed Configuration for Inbound VoIP Rule: InboundVoipMwi** section, configure the rule using the information in the following table:

Table 9. InboundVoipMwi Detailed Configuration

Inbound TDM Request Matching					
CPID Matching					
Calling Number	*	Called Number	*	Redirect Number	*
Calling Name	*	Called Name	*	Redirect Name	*
Outbound Routes					
Device Selection					
Outbound Destination	TDM	Trunk Group	TDMandMWI	Route Method	default
CPID Manipulation					
Calling Number	S	Called Number	D	Redirect Number	R
Calling Name	S	Called Name	D	Redirect Name	R

9. Select **Submit** to save the changes.

Configuring VoIP Media Settings

To disable voice activity detection in **VoIP Media Settings**, follow these steps:

- Using the menu on the left, navigate to **Configuration > VoIP > Media**.
- Under the **Audio** section in **VoIP Media Settings**, select **Off** using the **Voice Activity Detection** drop-down menu.

Configuring the Media Gateway for Specific PBX Integrations

Refer to the Dialogic website at <http://www.dialogic.com/support/helpweb/mg/integration.htm> for specific integration instructions for your PBX.

Resetting Message Waiting Indicators

Because NetVanta UC Server replaces an existing voicemail system, the PBX's MWI statuses can become out of sync. If this is the case, follow the appropriate instructions provided by the PBX manufacturer to reset the MWIs.

Accessing PBX Trunk Facilities for Outgoing Calls

You must configure the PBX according to the vendor's instructions to allow the following NetVanta UC Server features to work correctly.

- Outgoing fax
- Active Message Delivery
- Pager notification
- Transfer to external telephone numbers (including trunk-to-trunk connections)

The PBX and NetVanta UC Server must be configured as a system to eliminate toll fraud.

Outgoing PBX Feature Access Codes

NetVanta UC Server must be configured with the appropriate dialing plan feature access codes to dial external telephone numbers. Most PBXs require an external dialing access code (for example, 9) for accessing outgoing lines.

Trunk-to-Trunk Connectivity

If there is a requirement to be able to transfer incoming external calls to an external telephone number, the PBX must be configured to allow this capability. Consult the instructions provided by the PBX manufacturer to allow trunk-to-trunk connections.

In integrations using digital trunk-based facilities, such as T1/E1 CAS, PRI, or QSIG, trunk-to-trunk connectivity **MUST** be enabled on the PBX for outgoing calls to succeed.

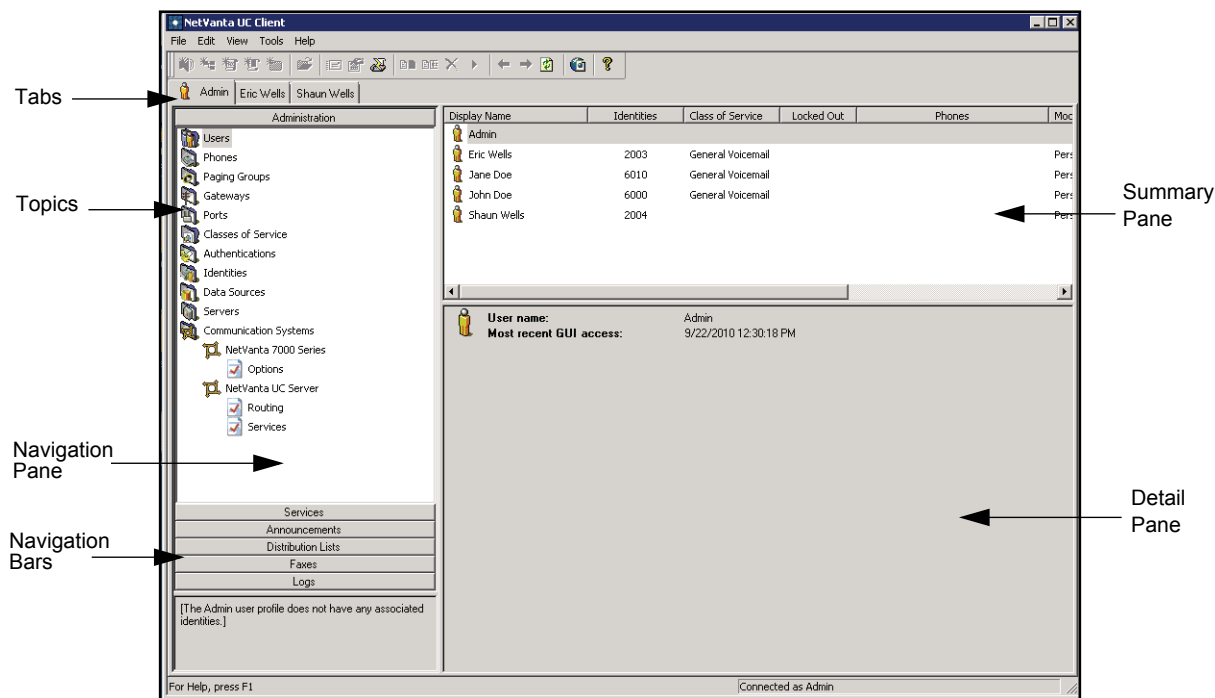
Integrating the Dialogic Media Gateway

NetVanta UC Server must be configured to integrate with the Dialogic media gateway. The media gateway communicates with NetVanta UC Server on port 5080 for voicemail and related services.

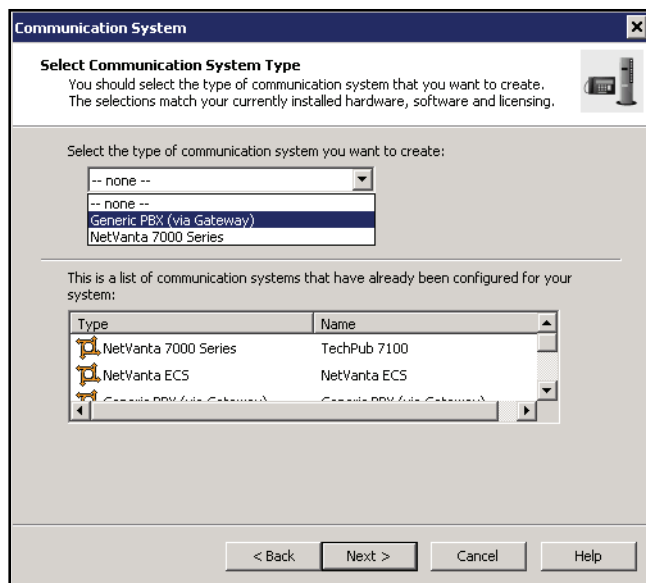
To integrate the Dialogic media gateway using the Communication System Wizard in the NetVanta UC Client administrator interface, follow these steps:

1. Launch the NetVanta UC Client application, and log in as an administrator when prompted.

2. In the **Administration** navigation pane, select **Communication Systems**.



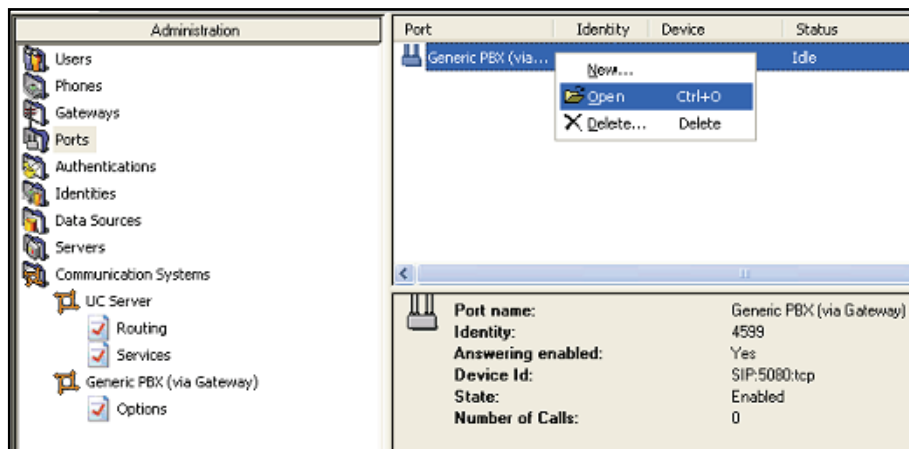
3. Right-click in the **Communication Systems** summary pane, and select **New** from the menu that appears. The **Communication System Wizard** will appear.
4. Select **Next** in the **Communication System Wizard** welcome window.
5. From the drop-down menu in the **Select Communication System Type** window that appears, select **Generic PBX (via media gateway)** from the list of supported communications systems, and select **Next**. The **Communication System Details** window will appear.



- In the provided field, enter the desired name for the PBX (the default is **Generic PBX (via media gateway)**).

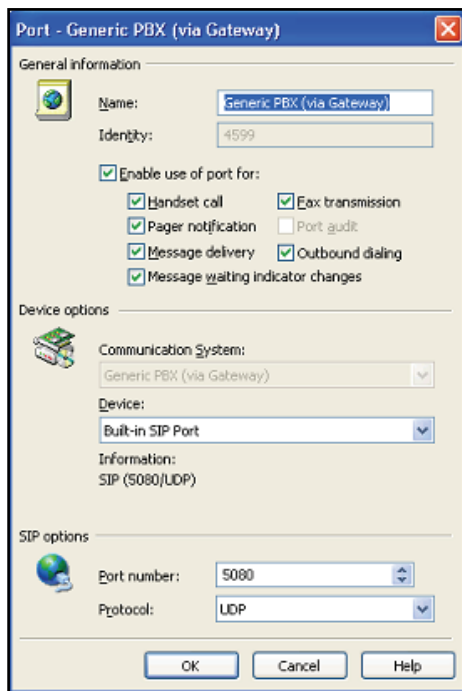
- In the provided field, enter the desired answering group number. This is the number that a user dials to retrieve voice messages.
- Using the drop-down menus, select the appropriate **Group name** and **Priority**. Leaving the **Group name** blank specifies that the communication system does not belong to a group.
- Select **Next**, then select **Submit** to create the generic PBX.
- In the **Administration** navigation pane under **Communication Systems**, select **Options** under the **Generic PBX (via gateway)** you created in the previous steps.
- In the generic PBX **Options** summary pane, enter the IP address or FQDN and port of the Dialogic media gateway in the provided fields. If you have configured more than one Dialogic media gateway, ensure that the media gateway that you select during this step will be used for message waiting and outgoing call requests (that is, Active Message Delivery, outgoing fax, pager notification, and outbound notification requests).

12. In the **Administration** navigation pane, select **Ports**.



13. Right-click on **Generic PBX (via media gateway)** in the Ports summary pane, and select **Open** from the drop-down menu that appears.

14. Under **SIP Options**, ensure the media gateway is configured to match the NetVanta UC Server answering **Port number** and the transport **Protocol**. By default, UDP port 5080 is recommended.



If you change the port number or protocol options, the NetVanta UC Server Application Services must be restarted from the Windows Services control panel.

15. Select **OK** to save the configured port settings.

Configuring the DMG2000 Series for Hybrid Operation

This section provides additional instructions for using a single DMG2000 series media gateway with NetVanta Enterprise Communication Server to provide voicemail and extension-to-extension dialing between PBX users and NetVanta Enterprise Communication Server users.



Every trunk configured on a Dialogic media gateway must use the same signaling protocol. For example, one trunk cannot be set to QSIG and another to PRI.

Supported Integrations

The following DMG2000 series configuration is supported:

- DMG2000 series configured as PRI with a serial link for sending MWI (but not for receiving calls).

Potentially Supported Integrations

The following integration should be supported but should be validated in the lab or field:

- DMG2000 series configured as PRI or T1/E1 with a serial link for sending MWI and receiving calls.

Non-supported Integrations

The following integrations do not support the combined function of voicemail integration and PBX internetworking capabilities:

- Station-side Dialogic media gateways (for example, models DMG1008LS and DMG1008DNI)
- Dialogic xPCI Cards

Station-side integrations do not provide the level of flexibility required for transparent dialing.

Configuring the TDM Trunk Group for Hybrid Operation

The TDM trunk group will be used to route calls between the attached PBX and NetVanta UC Server. Using regular expressions or wildcard characters you can define the range of ports that you will use for the TDM trunk group.

To configure the TDM trunk group, follow these steps:

1. Using the menu on the left, navigate to **Configure > Routing Table**. The **Router Configuration** menu will appear.
2. Select the **TDM Trunk Groups** radio button.
3. Select the **Add Trunk Group** button to add a new TDM trunk group.

- Use the fields and drop-down menus to assign the values in the table below to the trunk group entry.

Table 10. Voice and Message Waiting Values

Option Name	Value
Name	TdmAll
Selection Direction	Ascending
Selection Mode	Linear
Port/Channel Content	* (all channels)

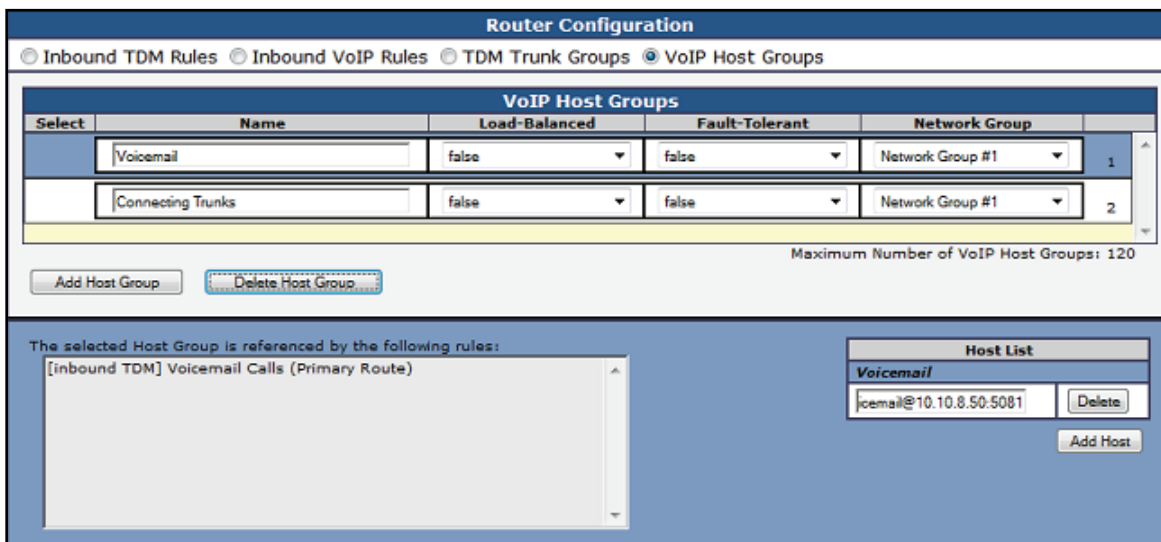
NOTE *The **Port/Channel Content** can also include a restricted range of ports. The default configuration is the * character (for all channels).*

- Select **Submit** at the bottom of the menu to save the settings.

Configuring VoIP Host Groups for Hybrid Operation

To provide voicemail and extension-to-extension dialing, additional VoIP host groups must be created. To create an additional VoIP host group, follow these steps:

- Using the menu on the left, navigate to **Configure > Routing Table**. The **Router Configuration** menu will appear.
- Select the **VoIP Host Groups** radio button.



3. Create a VoIP host group using the **Add Host Group** button, and configure the VoIP host group with the characteristics in the table below.

Table 11. Voicemail VoIP Host Group Entry

Option Name	NetVanta UC Server
Name	Voicemail
Load-Balanced	false
Fault-Tolerant	false
Host List	<p>voicemail@<IP address of NetVanta UC Server>:<DMG port></p> <p>The <IP address of NetVanta UC Server> variable is the IP address of the physical NetVanta UC Server computer.</p> <p>The <DMG port> variable is the port of the Dialogic media gateway object in NetVanta UC Server. The value of this port can be found in the NetVanta UC Client by selecting the Ports topic in the Administration navigation pane and opening the Dialogic media gateway port object in the Ports summary pane. The Dialogic media gateway port object will be labeled as a Generic PBX (via Gateway) under the Ports column in the Ports summary pane. Once the object is opened, the Port number is located in the SIP options section. Refer to Step 14 on page 18 for an illustration.</p>

4. Create another VoIP host group for extension-to-extension dialing using the **Add Host Group** button, and configure the newly created VoIP host group with the characteristics in the table below.

Table 12. Connecting Trunks VoIP Host Group Entry

Option Name	NetVanta UC Server
Name	Connecting Trunks
Load-Balanced	false
Fault-Tolerant	false
Host List	<p><IP address of NetVanta UC Server>:<ECS port></p> <p>The <IP address of NetVanta UC Server> variable is the IP address of the physical NetVanta UC Server computer.</p> <p>The <ECS port> variable is the port assigned to NetVanta Enterprise Communication Server (ECS) object in NetVanta UC Server. The value of this port can be found in the NetVanta UC Client by selecting the Ports topic in the Administration navigation pane and opening the NetVanta ECS port object in the Ports summary pane. Once the object is opened, the Port number is located in the SIP options section. Refer to Step 14 on page 18 for an illustration.</p>

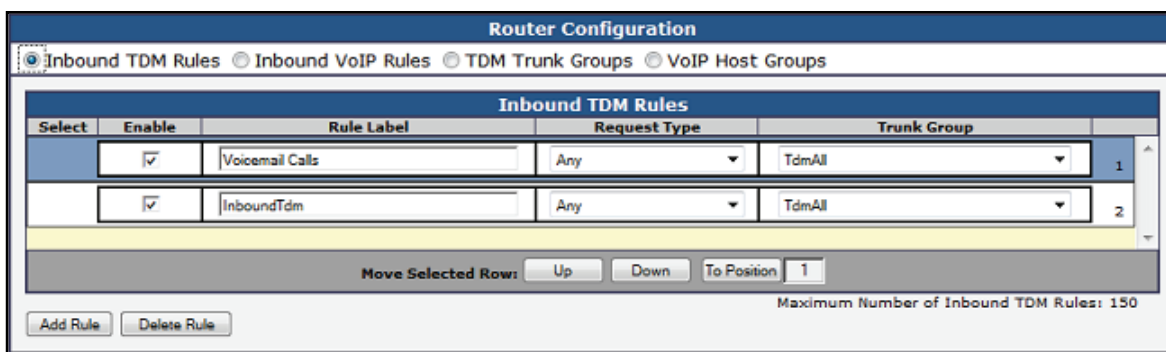
5. Select **Submit** to save the settings.

Configuring the Inbound TDM Rules for Hybrid Operation

For hybrid operation, two inbound TDM rules must exist, one for voicemail and one for all other call traffic.

To configure the inbound TDM rules for voicemail and other call traffic, follow these steps:

1. Using the menu on the left, navigate to **Configure > Routing Table**.
2. Select the **Inbound TDM Rules** radio button.



3. Use the **Add Rule** button to create two inbound TDM rules, one for voicemail and the one for other call traffic.
4. Configure the **Rule Label**, **Request Type**, and **Trunk Group** of each inbound TDM rule with the values in the following table:

Table 13. Inbound TDM Rules for Hybrid Operation

Enable	Rule Label	Request Type	Trunk Group
Yes	Voicemail Calls	Any	TdmAll (created in Configuring the TDM Trunk Group for Hybrid Operation on page 19)
Yes	InboundTdm	Any	TdmAll (created in Configuring the TDM Trunk Group for Hybrid Operation on page 19)

5. In the **Inbound TDM Rules** section, highlight the **Voicemail Calls** rule. The **Detailed Configuration for Inbound TDM Rule: Voicemail Calls** section will appear.

6. In the **Detailed Configuration for Inbound TDM Rule: Voicemail Calls** section, configure the rule using the information in the following table:

Table 14. Voicemail Calls Detailed Configuration

Inbound TDM Request Matching					
CPID Matching					
Calling Number	*	Called Number	<voicemail number>	Redirect Number	*
Calling Name	*	Called Name	*	Redirect Name	*
Outbound Routes					
Device Selection					
Outbound Destination	VoIP	Host Group	Voicemail	Route Method	default
CPID Manipulation					
Calling Number	S	Called Number	D	Redirect Number	R
Calling Name	S	Called Name	D	Redirect Name	R

The <voicemail number> variable is the number of the voicemail identity in NetVanta UC Server.

7. In the **Inbound TDM Rules** section, highlight the **InboundTdm** rule. The **Detailed Configuration for Inbound TDM Rule: InboundTdm** section will appear.
8. In the **Detailed Configuration for Inbound TDM Rule: InboundTdm** section, configure the rule using the information in the following table:

Table 15. Inbound TDM Detailed Configuration

Inbound TDM Request Matching					
CPID Matching					
Calling Number	*	Called Number	*	Redirect Number	*
Calling Name	*	Called Name	*	Redirect Name	*
Outbound Routes					
Device Selection					
Outbound Destination	VoIP	Host Group	Connecting Trunks	Route Method	default
CPID Manipulation					
Calling Number	S	Called Number	D	Redirect Number	R
Calling Name	S	Called Name	D	Redirect Name	R

9. Select **Submit** to save the settings.

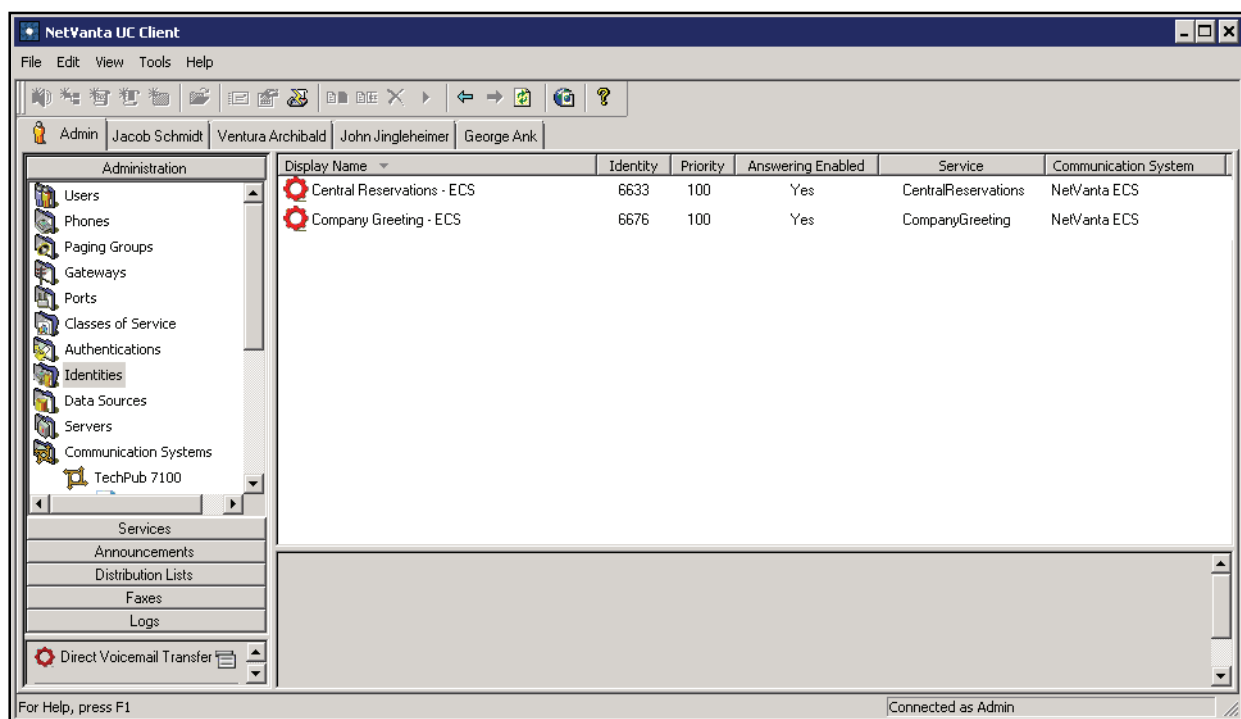
Additional Auto Attendant Configurations for Hybrid Operation

In order for auto attendants to successfully transfer calls in some hybrid deployments, all auto attendant identities must be duplicated in NetVanta UC Server on both the NetVanta ECS communication system and the Generic PBX (via Gateway) communication system (the PBX integrated using the DMG2000). Also, these auto attendant identities must be routed to the voicemail trunk in the DMG2000 using inbound TDM rules. The following sections provide instructions for duplicating the auto attendant identities and configuring the inbound TDM rules for the identities in the DMG2000.

Duplicating the Auto Attendant Identities

To duplicate the existing auto attendant identities in NetVanta UC Server, follow these steps:

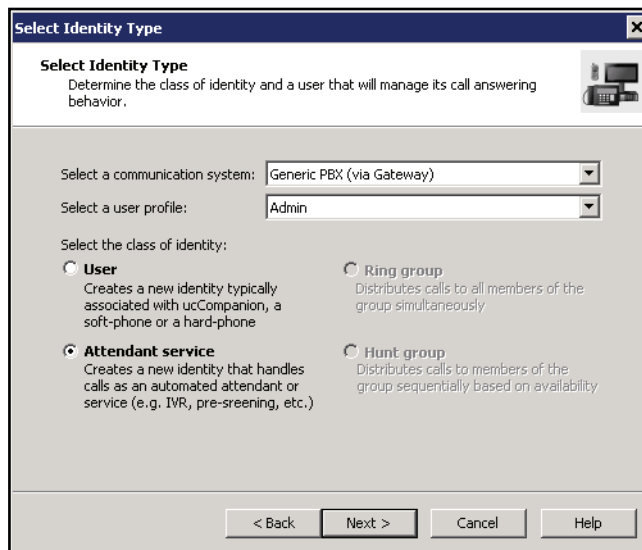
1. In the **Administration** navigation pane, select the **Identities** topic.



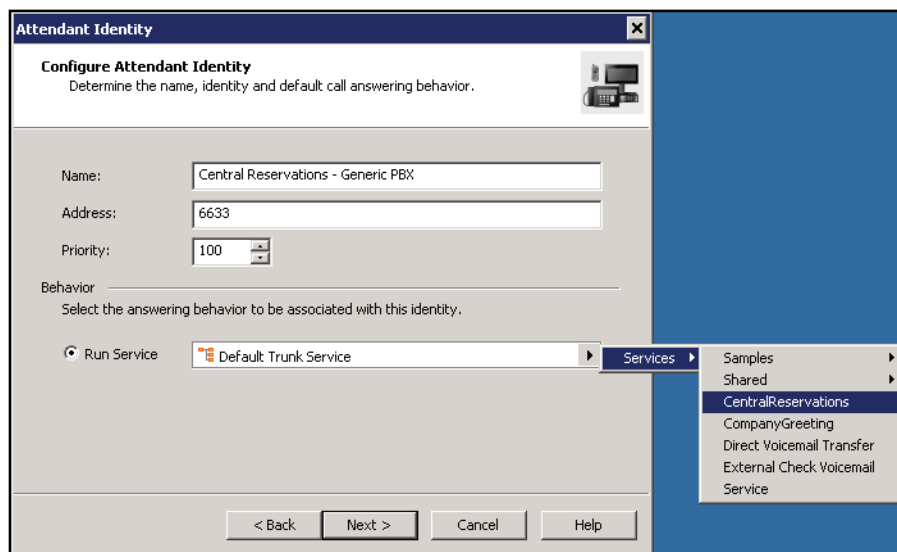
2. In the **Identities** summary pane, note the identity, service, and communication system to which the existing auto attendant identities are assigned. This information will be located in the **Identity**, **Service**, and **Communication System** columns, respectively. For example, in the figure above, the **Central Reservations - ECS** auto attendant is assigned to the **6633** identity, the **CentralReservations** service, and the **NetVanta ECS** communication system.
3. Right-click in the **Identities** summary pane, and select **New Identity** from the drop-down menu. The **New Identity Wizard** will appear.
4. Select **Next** to begin configuring a new auto attendant identity. The **Select Identity Type** window will appear.
5. In the **Select Identity Type** window, use the **Select a communication system** drop-down menu to select the appropriate communications system. If, for example, you are duplicating an auto attendant configured on the **NetVanta ECS** communication system, you should choose the communication

system associated with the DMG2000. By default, the communication system is labeled **Generic PBX (via Gateway)**; however, the name will differ depending on what the communication system was named when it was created.

Use the **Select a user profile** drop-down menu to select **Admin**, and select the **Attendant service** radio button. Then, select **Next**. The **Configure Attendant Identity** menu will appear.



6. In the **Configure Attendant Identity** window, enter the desired name of the auto attendant identity in the **Name** field, and enter the extension of the identity you are duplicating in the **Address** field. For example, if you were duplicating the **Central Reservations - ECS** from *Step 1 on page 24*, you would enter **6633** in the **Address** field. Select the **Run Service** radio button, and use the adjacent drop-down menu to select the service used by the auto attendant you are duplicating. For example, if you were duplicating the **Central Reservations - ECS** from *Step 1 on page 24*, you would select the **CentralReservations** service. When the configuration is complete, select **Next**

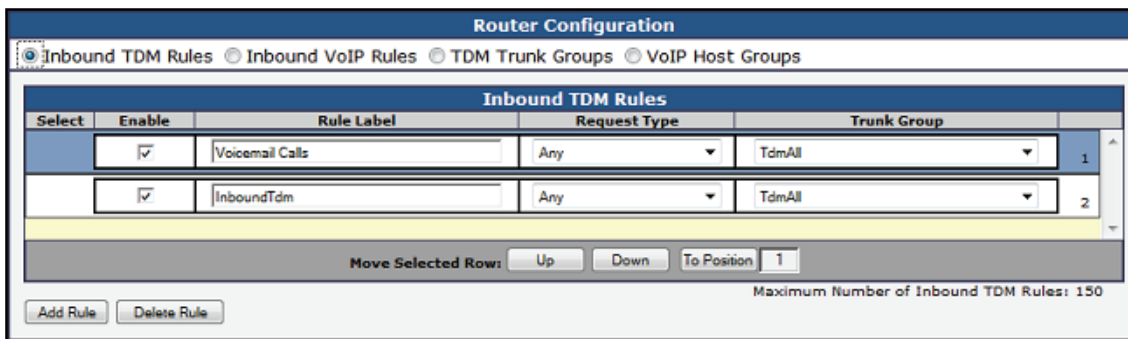


7. Select **Finish** to add the duplicated auto attendant.
8. Repeat Steps 1 through 7 for each auto attendant that exists on the system.

Configuring the Auto Attendant Inbound TDM Rules

To route the auto attendant identities to the voicemail trunk in the DMG2000 using inbound TDM rules, follow these steps:

1. Using the menu on the left, navigate to **Configure > Routing Table**.
2. Select the **Inbound TDM Rules** radio button.

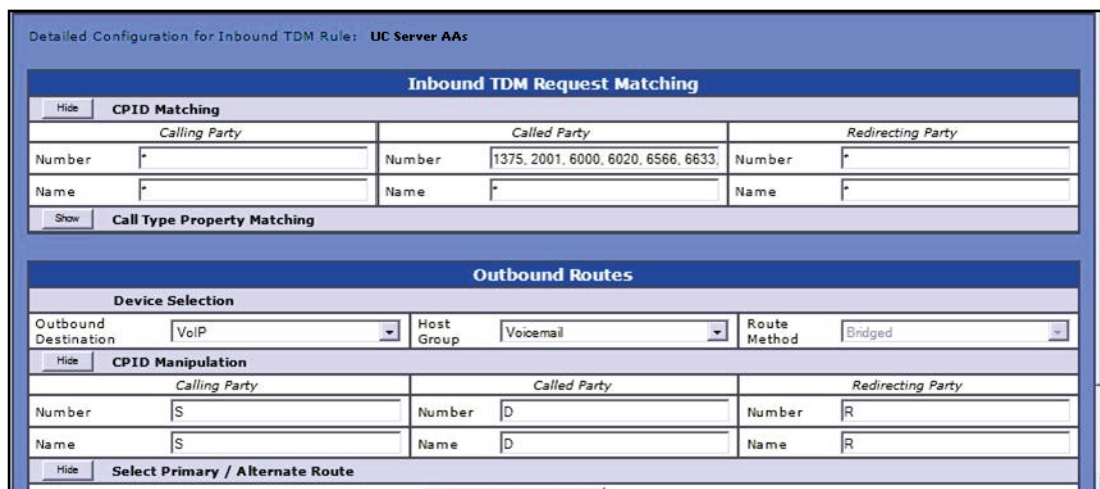


3. Use the **Add Rule** button to create an inbound TDM rule for the NetVanta UC Server auto attendants.
4. Configure the **Rule Label**, **Request Type**, and **Trunk Group** of the inbound TDM rule with the values in the following table:

Table 16. Auto Attendant Inbound TDM Rules for Hybrid Operation

Enable	Rule Label	Request Type	Trunk Group
Yes	UC Server AAs	Any	TdmAll (created in Configuring the TDM Trunk Group for Hybrid Operation on page 19)

5. In the **Inbound TDM Rules** section, highlight the newly created **UC Server AAs** rule. The **Detailed Configuration for Inbound TDM Rule: UC Server AAs** section will appear.



6. In the **Detailed Configuration for Inbound TDM Rule: UC Server AAs** section, configure the rule using the information in the following table:

Table 17. To/From PBX Detailed Configuration

Inbound TDM Request Matching					
CPID Matching					
Calling Number	*	Called Number	<aa extensions>	Redirect Number	*
Calling Name	*	Called Name	*	Redirect Name	*
Outbound Routes					
Device Selection					
Outbound Destination	VoIP	Host Group	Voicemail	Route Method	default
CPID Manipulation					
Calling Number	S	Called Number	D	Redirect Number	R
Calling Name	S	Called Name	D	Redirect Name	R

The <aa extensions> variable is the list (in comma separated value format) of all auto attendant extensions on the NetVanta UC Server system. The auto attendant extensions can be found in the **Identities** summary pane in NetVanta UC Server when logged in as an administrator.

7. Because the number of characters allowed in the **Called Number** field is restricted, additional inbound TDM rule entries may be required for remaining auto attendant extensions. These entries should have identical settings in all fields except the **Rule Label** field and the **Called Number** field. The **Called Number** field should contain the remaining auto attendant extensions used by the NetVanta UC Server. This process can be repeated for additional auto attendant extensions until all of the extensions have been added to an inbound TDM rule.

Testing the Configuration

You can test the Dialogic media gateway configuration to ensure that it is functioning properly.

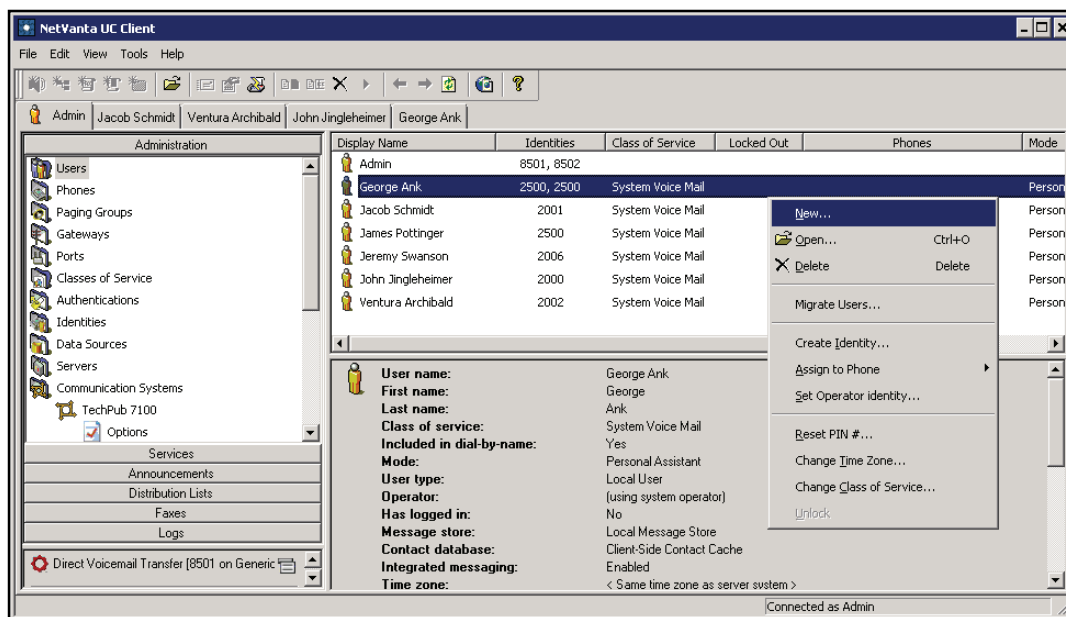
To test the media gateway, you must create at least two users on the PBX and the NetVanta UC Server, create an identity for the users, and create an auto attendant identity to test the incoming calls. Refer to the documentation provided by your PBX manufacturer for information on creating users on the PBX. Use the instructions in the sections below to complete each of the following steps:

1. Create at least two users on the PBX and NetVanta UC Server.
2. Create an identity for the users created on the NetVanta UC Server.
3. Create an auto attendant identity to test incoming calls.

Creating a New Local User on the NetVanta UC Server

To create a new user on the NetVanta UC Server, follow these steps:

1. In the Administration navigation pane, select **Users**.
2. Right-click anywhere in the Users summary pane, and select **New** from the drop-down menu. The **New User Wizard** welcome menu will appear.



3. In the **New User Wizard** welcome menu, select **Next** to begin adding a new user.
4. Select the **Local User** radio button, and select **Next**.
5. In the **User Information (Local)** menu, enter the following new user information in the provided fields:
 - **First name**
 - **Last name**
 - **Display name**
6. If you want the user included in the dial by name directory, select the **Include in dial by name directory** check box. The **Include in dial by name directory** check box is checked by default.

7. Enter the desired extension number for the user in the **Identity #** field, and use the adjacent communication system drop-down menu to select the communication system with which the identity will be associated. Select **Next**. The **Authentication (local)** menu will appear.
8. In the **Authentication (Local)** menu, in the **Password** field, enter a login password for the user.
9. In the **Confirm** field, reenter the login password.
10. In the **PIN** field, enter a numerical telephone access personal identification number (PIN) for the user.
11. In the **Confirm** field, reenter the telephone access PIN, and select **Next**.
12. On the **Messaging** menu, select the **Local Message Store** storage type from the **E-mail Storage** drop-down menu, and select **Next**.
13. In the **Call Answering menu**, select one of the following call answering modes:
 - **Personal Assistant**—provides standard voicemail features and is the default call answering mode
 - **Personal Business Assistant**—provides more advanced features for the user who wants to create personalized services and announcements
14. In the **Call Answering menu**, select one of the following operators:
 - **System**—the general operator, typically a company receptionist, where calls are directed to when a caller presses “0” in a voicemail greeting
 - **Personal operator**—a specific operator, for example a personal receptionist or an individual user in a particular department or location, where calls are directed to when a caller presses “0” in a voicemail greeting
15. If you selected **Personal operator**, enter the operator’s extension number in the field. Select **Next**. The **Summary** menu will appear.
16. Review the summary of the information for the new user.
17. Select **Submit** to create the new user profile.
18. In the window that appears, select **Finish** to create the new user identity.

Creating an Identity for a User on the NetVanta UC Server

1. In the Administration navigation pane, select **Users**.
2. In the Users summary pane, right-click the user to which you would like to add an identity, and select **Create Identity** from the drop-down menu. The **New Identity Wizard** welcome menu will appear. Select **Next**. The **Select Identity Type** menu will appear.
3. Use the **Select a communications system** drop-down menu to select the generic PBX you created in *Integrating the Dialogic Media Gateway on page 15*.
4. Select **User** as the new identity type, and select **Next**. The **Configure User Identity** menu will appear.
5. In the **Configure User Identity** menu, the **Name** field should already be populated with the user’s display name. You can change this name if desired.

6. In the **Address** field, type an address for the new user. The address is typically an extension number.



Ensure that you do not add an extension that is restricted in the dial plan. For example, by default the NetVanta UC Server restricts the following dialing prefixes: 0, 1, 411, 611, 911, 1900, and 1976. If a call is routed to an extension number beginning with one of these restricted numbers, then the call will not be completed.

7. In the **Behavior** section, ensure that the **Voice Mail** radio button is selected, and select **Next**.
8. In the window that appears, select **Finish** to create the new user identity.

Creating an Attendant Identity on the NetVanta UC Server

1. In the Administration navigation pane, select **Users**.
2. In the Users summary pane, right-click the user with which you would like to associate the auto attendant, and select **Create Identity** from the drop-down menu. The **New Identity Wizard** welcome menu will appear. Select **Next**. The **Select Identity Type** menu will appear.
3. Use the **Select a communications system** drop-down menu to select the generic PBX you created in [Integrating the Dialogic Media Gateway on page 15](#).
4. Select **Attendant Server** as the new identity type, and select **Next**. The **Configure Attendant Identity** menu will appear.
5. Using the **Select a communications system** drop-down menu, select a communication system.
6. From the **Select a user profile** drop-down menu, select a user profile to which you want to associate the identity. The user whose profile you select is able to manage the behavior of this identity.
7. Select **Attendant** as the new identity type.
8. On the **Configure Attendant Identity** menu, enter a name for the new attendant identity in the **Name** field.
9. In the **Address** field, enter an address for the new attendant identity. An address is typically an extension number.
10. From the **Run service** drop-down menu, choose the attendant service that you want to assign to the new attendant identity, then select **Next**.
11. In the menu that appears, select **Finish** to create the new user identity.

Testing Procedures

1. **Internal Direct – Call to voicemail**
Place a call to the voicemail access number and set the voicemail password for that user.
2. **Forwarded Call**
Place a call from one user to another, and then transfer the call to an external number.
3. **Leave a voicemail**
Place a call from one user to another and wait for the call to be transferred to voicemail. Leave a message and check that the message waiting indicator light is turned on.

4. Listen to voicemail

Place a call to voicemail from the user for whom you left a message. Listen to the message and delete it when prompted. Check that the message waiting indicator light is turned off.

5. Transfer from auto attendant

Call into the auto attendant and transfer to an extension. Make sure the call is transferred and the destination is ringing. Check that you verify all the possible failure conditions:

- a. Transfer to valid extension
- b. Transfer to invalid number
- c. Transfer to busy number