

Optimum Business Trunking and the Vertical Wave 500 IP PBX Configuration Guide

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1 Overview

The purpose of this configuration guide is to describe the steps needed to configure the Vertical Wave 500 IP PBX for proper operation Optimum Business Sip Trunking.

2 SIP Trunk Adaptor Set-up Instructions

These instructions describe the steps needed to configure the LAN side of the Optimum Business SIP Trunk Adaptor.

Step 1:

Log on to the Optimum Business SIP Trunk Adaptor

1. Connect a PC to port 4 of the Optimum Business SIP Trunk Adaptor, the silver device labeled Edgewater Networks, 4550 series.



2. Open a Web browser and go to IP Address <http://10.10.200.1>. A login box will appear.

3. Enter login and password and click 'OK'.

Login: pbxinstall

Password: slptrunk



Step 2:

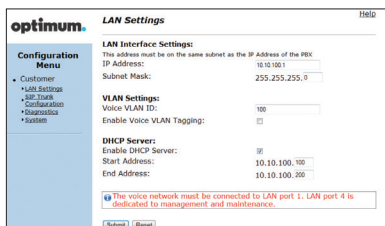
Click on the LAN Settings Link

1. Assign an IP Address to the LAN interface of the SIP Trunk Adaptor. The IP address must be on the same subnet as the IP PBX. This changes the address on port 1 of the Optimum Business SIP Trunk Adaptor.

Note: This will become your local SIP proxy IP address. No other IP addresses will be provided by Cablevision.

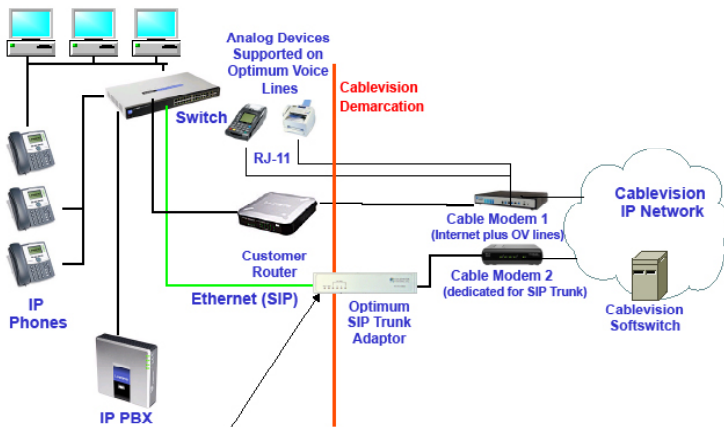
2. Optional: Specify a VLAN for your voice traffic. Click the 'Enable Voice VLAN Tagging' check box. The default VLAN ID is 100.

Note: VLAN 200 should not be used. It is dedicated to port 4 for management.



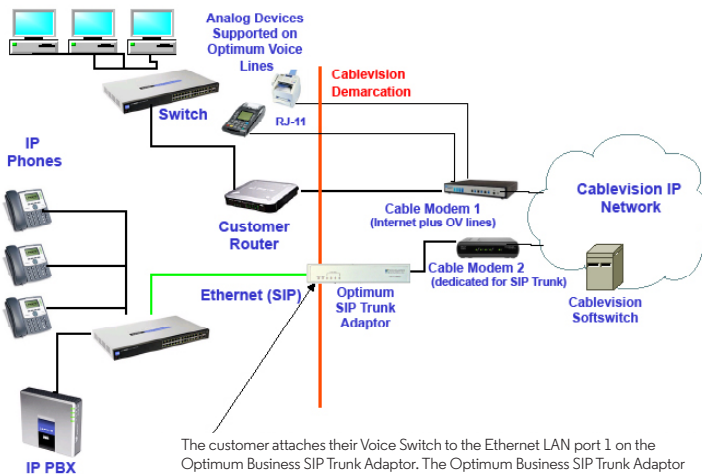
- Optional: Enable the DHCP server. This will allow the SIP Trunk Adaptor to act as a DHCP server, which will provide IP addresses to the voice network, and create a dedicated voice LAN, as per diagram 2.
- Click 'Submit'.

Diagram 1 SIP Trunk Adaptor for IP-PBXs
Example: Single LAN Configuration



Using a connection from the customer's LAN, the SIP Trunk Adaptor's address can be a statically assigned private IP address. It may not be assigned a Public IP address.

Diagram 2 SIP Trunk Adaptor for IP-PBXs
Example: Separate Voice and Data Networks Configuration



The customer attaches their Voice Switch to the Ethernet LAN port 1 on the Optimum Business SIP Trunk Adaptor. The Optimum Business SIP Trunk Adaptor can be enabled as a DHCP server to provide routing for the separate voice network.

Step 3:

Click on the SIP Trunk Configuration Link

1. Select your IP PBX make and model from the drop-down menu.
2. Specify how the IP PBX will register to the Optimum Business SIP Trunk Adaptor.
3. The Cablevision network only supports Inband DTMF. Click on the check box next to "Convert Inband DTMF" if you cannot configure your IP PBX to send out Inband DTMF. The DTMF tone duration generated by the phones and/or PBX may need to be increased from their default setting. Some phones and/or PBX have a default setting between 180ms to 200ms. This setting is too low. The recommended setting is 600ms.
4. Click 'Submit'.

The screenshot shows the 'SIP Trunk Configuration' page. On the left is a 'Configuration Menu' with links: Customer, LAN Settings, SIP Trunk Configuration (selected), Diagnostics, and System. The main content area has a 'Select your PBX:' dropdown menu with 'Asterisk' selected. Below this are two radio button options: 'Passive connection using the local, private IP address of the PBX interface' (selected) and 'Active connection using registration'. The 'Active connection' section includes fields for 'User Id:' (set to 'secret') and 'Password:' (masked with asterisks). There is a checkbox for 'Convert Inband DTMF:' which is currently unchecked. Below these are 'Submit' and 'Reset' buttons. A 'Status:' section shows 'Trunk Status:' as 'Not Registered' and a list of 'DID's' (0164030809, 0164030760, 0164030769, 0164030765, 0164030841).

Step 4:

Diagnostics Link

You can make a test call directly from your phone or use the test call application under the Diagnostics link.

The screenshot shows the 'Network Test Tools' page. On the left is the same 'Configuration Menu' as in Step 3, with 'Diagnostics' now selected. The main content area has a title 'Network Test Tools' and a description: 'A network administrator may use the test tools on this page to verify connectivity of the System and trace the path of data throughout the network.' Below this are three test sections: 1. 'Outbound Call Test:' with a description 'This test will place a call to the provided telephone number and play a series of tones for 30 seconds.' and fields for 'Pilot Number:' and 'Telephone Number:' (both containing '0164030809'), with 'Call' and 'Reset' buttons. 2. 'Inbound Call Test:' with a description 'When this test is enabled calls received for the pilot number are diverted to the internal Test UK for 15 minutes, after this elapsed time the test is automatically disabled.' and radio buttons for 'Enabled' (selected) and 'Disabled', with a 'Submit' button. 3. 'Ping Test:' with a description 'IP Address to Ping:' and a 'Ping' button. 4. 'Traceroute Test:' with a description 'IP Address to Trace:' and a 'Traceroute' button.

Step 4 continued

Field	Description
Outbound Call Test TelephoneNumber	Specifies an outside phone number to which an outbound call will be initiated. The pilot telephone number of the SIP Trunk will be prepopulated.
Pilot Number	Displays the provisioned pilot number, which is used for outbound and inbound call tests.
Call	Initiates a call outbound to a telephone number entered or inbound to the pilot number displayed.
Inbound Call Test (radio button)	Indicates whether inbound test call will be enabled or disabled. If inbound test calls are enabled, calls made to the pilot number will be redirected to the test UA for fifteen minutes. When the pilot number is dialed, you will hear a test message play.
Submit	Enables or disables the inbound call test.
IP Address to Ping	Verifies basic connectivity to a networking device. Successful ping test results indicate that both physical and virtual path connections exist between the system and the test IP address.
Ping Button	Sends a ping to the IP address specified in the field "IP Address to Ping".
IP Address to Trace	Tracks the progress of a packet through the network. The packet can be tracked through the WAN or LAN interfaces of the adaptor.
Interface (radio button)	Indicates whether a packet will be tracked through the LAN or the WAN.
Traceroute Button	Initiates a traceroute to the specified IP address on either the LAN or the WAN.
Reset	Clears all fields and selections and allows you to enter new information. Reset applies to outbound call test, ping and traceroute.

3 Additional Set-up Information

Systems

optimum.

- Customer
 - LAN Settings
 - SIP Trunk Configuration
 - Diagnostics
 - System

System [Help](#)

Software Version:
Version 11.6.14.1 -- Fri Jan 4 17:49:28 PST 2013

Hostname:
5164939899

Model:
EdgeMarc 4552

Vendor:
Cablevision

LAN Interface MAC Address:
A8:70:A5:00:D8:18

Registration Status:
The ALG feature is registered. View [license key](#).

System Date:
02/29/2016 15:03:40 UTC

Change Password:

- [pbxinstall](#)

Field	Description
Pbxinstall Link	Select to change the default password for the pbxinstall login ID. Only the password can be changed. The login ID cannot be changed.

Password

optimum.

- Customer
 - LAN Settings
 - SIP Trunk Configuration
 - Diagnostics
 - System

Set Password [Help](#)

Change the GUI password by filling in the fields below. The password must be between 6 and 8 characters in length.

Username:

Current Password:

New Password:

Confirm Password:

Field	Description
Username	Specifies the username for which the password can be changed.
Current Password	Specifies the current password.
New Password	Specifies the new password.
Confirm Password	Confirms the new password.
Submit	Applies the settings configured on this page.
Reset	Clears all fields and selections and allows you to enter new information.

4 International Calling

Optimum Voice Business Trunking offers an optional International Calling Service for direct-dialed calls made from the Customer's business or from any phone via the Optimum Voice International Calling remote access number to destinations outside of the United States, Puerto Rico, Canada and the U.S. Virgin Islands at per minute rates. The Customer must login to the Optimum Business Account Center and activate the service on the Optimum Business Trunk Pilot telephone number to activate the service and manage the monthly International spending limit for the account.

Activating International calling on the Pilot TN will enable International calling for all Direct Inward Dial (DIDs) telephone numbers as well. Blocking International calling for one or more DIDs is managed by the customer directly from the PBX phone system configuration. To minimum the exposure to fraudulent calling, It is recommended to limit International calling capability to those DID's that require it and set up an account spending limit that reflects what is necessary to run the business.

It is the Customer (and/or the Customer Agent's) responsibility to properly secure the customer's PBX to prevent the PBX from being compromised and fraudulent calls from being made by unauthorized (internal or external) users. If fraudulent calls are detected, Cablevision reserves the right to disable International Calling until the PBX is properly secured by the customer.

5 PBX Configuration

The steps below describe the minimum configuration required to enable the PBX to use Optimum Business SIP trunking for inbound and outbound calling. Please refer to the Wave 500 product documentation for more information on other advanced PBX features.

The configuration described here assumes that the PBX is already configured and operational with station side phones using assigned extensions or DIDs. This configuration is based on Wave 500 IP PBX version 4.5.

The Wave 500 Phone System is a hardware-based VoIP IP-PBX the Optimum Business Sip Trunk Adaptor's (Edgewater Networks) LAN port and the PBX's Ethernet port have been assigned with IP addresses of 10.10.126.1 and 10.10.126.11 respectively.

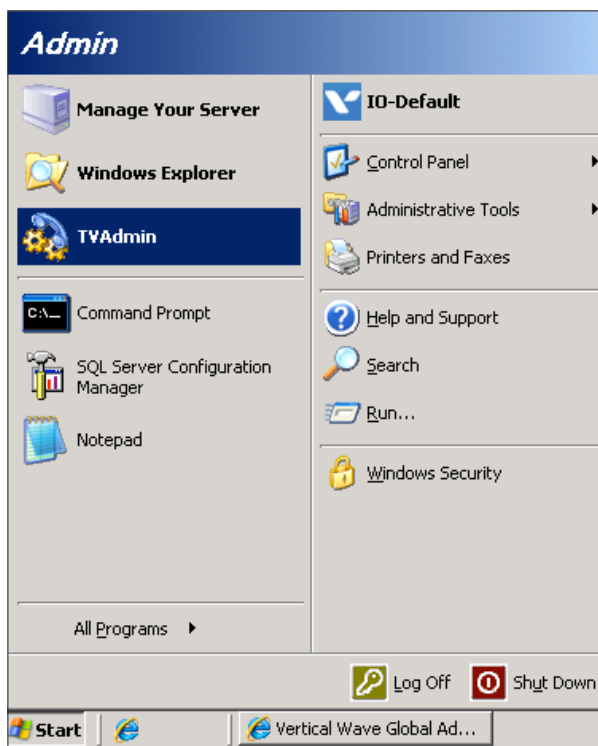
This configuration guide provides the configuration steps for both PBX registration and static IP or non-registration modes of PBX operation.

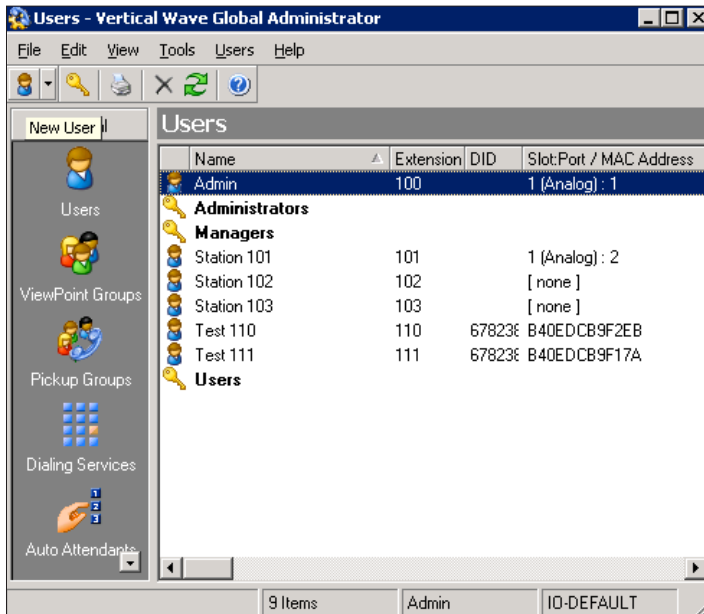
PBX Information

Manufacturer:	Vertical
Model:	Wave 500
Software Version:	v4.5
Does the PBX send SIP Registration messages (Yes/No)?	Yes
Vendor Contact:	www.vertical.com

6 Creating Extensions

Start configuring the PBX by navigating to **Start → TVAdmin → Users** and click **New User** to start setting up extensions for the phone.





In the **User** tab, enter the first name of the user in the **First Name** field, enter the last name of the user in the **Last Name** field, enter a password in the **Password** field, and enter the desired extension in the **Extension** field. Under **Associated Device** select the radial next to **IP phone MAC address** and enter the phone's MAC address. Select the telephone type from the drop-down menu and set the **Access Profile** to **Unrestricted**.

Untitled - User

Category

- User
 - Details
 - Account Codes
 - Call Log
 - External Caller ID
 - Numbers
 - VPN
- Voice Mail
- Phone
- Audio
- Security
- Queue
 - Dial-by-name Directory
 - ViewPoint
- Sharing

User

First name: Test

Last name: User

Title:

Extension: 100

DID number:

Password: Confirmation:

Associated device

☐ Slot port No slot selected No port selected

☒ IP phone MAC address:

Telephone type: IP Edge 5000i-8

Access profile: Unrestricted

OK Cancel Help

Select the **Phone** tab then select **SIP**. Under **SIP authentication password** enter a password.

Category

- User
- Voice Mail
- Phone
 - Call Handling
 - Station Features
 - Ring Patterns
 - SIP**
 - Softphone
 - Networking
 - Automatic Log Out
 - Wave Phonebook
- Audio
- Security
- Queue
 - Dial-by-name Directory
 - ViewPoint
- Sharing

Phone \ SIP

SIP Authentication Settings

SIP authentication username:

SIP authentication password: Confirmation:

Registration Settings

Expiration:

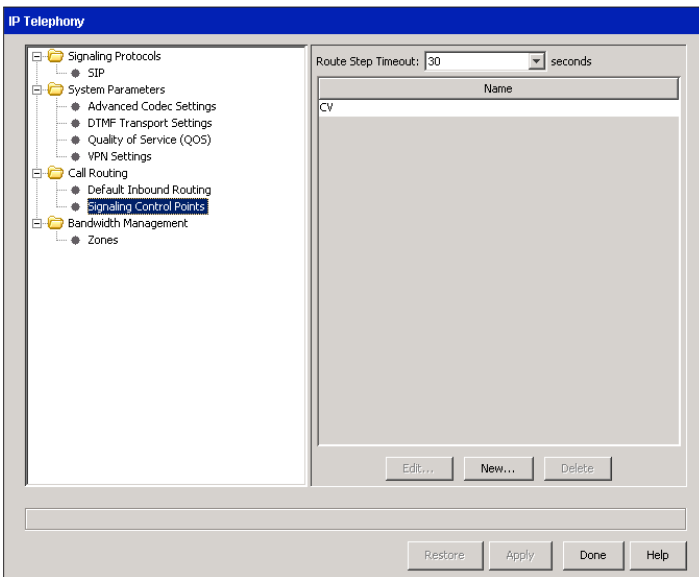
☒ Default ☐ Custom: 0 seconds

Previous Next OK Cancel Help

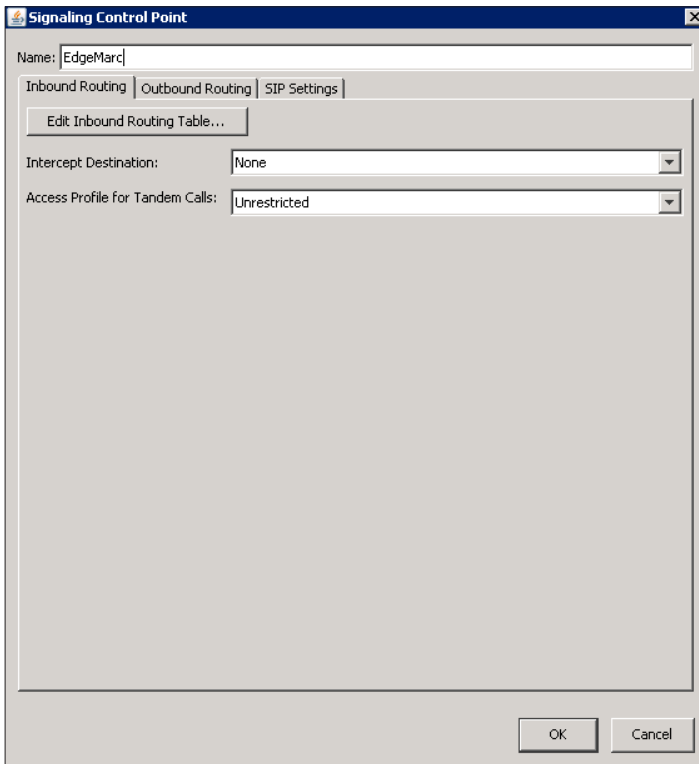
7 Inbound/Outbound Call Routing

To allow the PBX to make outbound calls, the Optimum Business Sip Trunk Adaptor needs to be set as a **Signaling Control Point**.

To set the Optimum Business Sip Trunk Adaptor as a **Signaling Control Point** log in to the **Wave Global Administrator Management Console**, go to **IP Telephony**, and select **Signaling Control Points** under **Call Routing**.

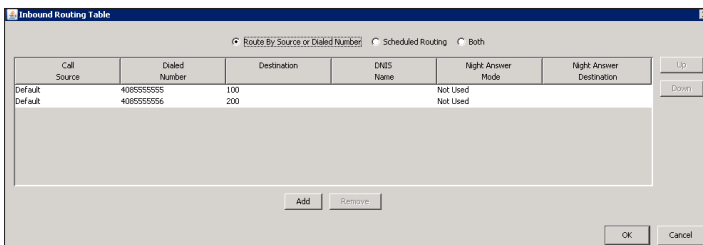


Select **New**, the **Name** given in this example is “Edgemarc”.



The image shows a window titled "Signaling Control Point" with a close button (X) in the top right corner. Inside the window, there is a text field labeled "Name:" containing the text "EdgeMarc". Below this, there are three tabs: "Inbound Routing", "Outbound Routing", and "SIP Settings". The "Inbound Routing" tab is selected. Under this tab, there is a button labeled "Edit Inbound Routing Table...". Below the button, there are two dropdown menus. The first is labeled "Intercept Destination:" and has "None" selected. The second is labeled "Access Profile for Tandem Calls:" and has "Unrestricted" selected. At the bottom right of the window, there are two buttons: "OK" and "Cancel".

Select **Unrestricted** from the **Access Profile for Tandem Calls** drop-down menu then select **Edit Inbound Routing Table**.



The image shows a window titled "Inbound Routing Table" with a close button (X) in the top right corner. At the top, there are three radio buttons: "Route By Source or Dialed Number" (which is selected), "Scheduled Routing", and "Both". Below the radio buttons is a table with the following columns: "Call Source", "Dialed Number", "Destination", "DNS Name", "Night Answer Mode", and "Night Answer Destination". The table contains two rows of data:

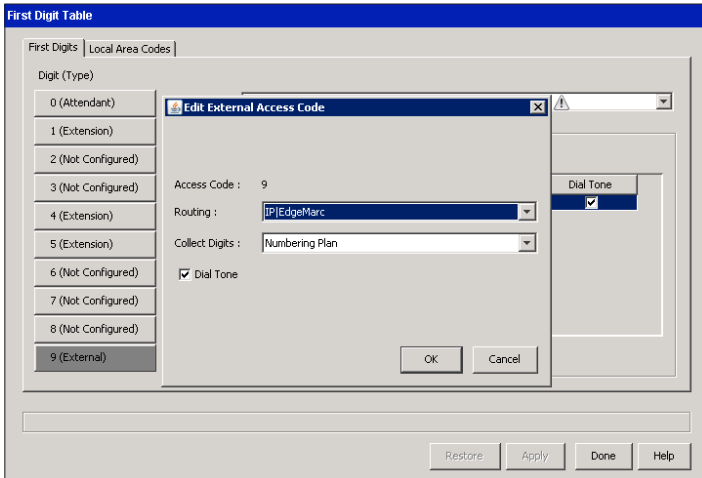
Call Source	Dialed Number	Destination	DNS Name	Night Answer Mode	Night Answer Destination
Default	4085555555	101		Not Used	
Default	4085555556	200		Not Used	

Below the table, there are two buttons: "Add" and "Remove". At the bottom right of the window, there are two buttons: "OK" and "Cancel".

Select **Add** to create a new inbound routing rule. When done, click **OK**. Select the **Outbound Routing** tab and click the radial next to **Use External Caller ID from User Configuration**. Select the **SIP Settings** tab and enter the Optimum Business SIP Trunk Adaptor's IP address in the **Proxy Server** field and **5060** in the **Port** field. Set the **Preferred DTMF Transport** to **Inband** and click **OK** when finished. Please note that the Cablevision network only supports **Inband** DTMF.

The screenshot shows the 'Signaling Control Point' configuration window with the 'SIP Settings' tab selected. The 'Name' field is 'EdgeMarc'. The 'Inbound Routing' tab is also visible. The 'User Name' field is empty. The 'Proxy Server' field contains '10.10.126.1' and the 'Port' field contains '5060'. Under 'Inbound/Outbound Settings', the checkbox 'SCP is located outside of Wave's network' is unchecked. The 'This SCP will:' section has two radio buttons: 'Receive registration from Contact' (selected) and 'Register with a Proxy/Registrar'. The 'Authentication Settings' section includes a dropdown for 'Authentication' set to 'Not Required', an unchecked 'Authenticate Register' checkbox, and 'Optionally Authenticate' checkboxes for 'Invite', 'Re-Invite', and 'BYE'. Below these are fields for 'Authentication Name', 'Password', and 'Verify Password'. The 'Registration Settings' section has an unchecked 'Registration Required' checkbox and a 'Registration Expires (secs)' section with 'Use System Default' selected and a 'Custom' option set to '300'. The 'Preferred DTMF Transport' dropdown is set to 'Inband'. An 'Advanced Settings...' button is at the bottom left. 'OK' and 'Cancel' buttons are at the bottom right.

From the **Wave Global Administrator Management Console** select **First Digit Table**. Select **9 (External)** and click **Edit....** From the Routing drop-down select **IP|EdgeMarc** (this will be IP|Name given to the signaling control point) then click **OK** and apply the changes.



From the **Wave Global Administrator Management Console** select **General Settings** and go to the **PBX (Advanced)** tab. Check the box next to **Allow Trunk-to-Trunk Connections** and apply the settings.

8 Registration Parameters

Navigate to **IP Telephony → Signaling Control Point → Edit → SIP Settings** and check the radial net to **Register with a Proxy/Registrar**. Check the box next to **Authentication Required** and **Registration Required**. Enter the authentication and registration information and click **OK**. The authentication name and password must match what was entered the Optimum Business Sip Trunk Adaptor. This was configured in step 3 of the Optimum Business Sip Trunk Set-Up Guide.

The screenshot shows the 'Signaling Control Point' dialog box with the 'SIP Settings' tab selected. The 'Name' field contains 'EdgeMarc'. The 'Inbound Routing' tab is also visible. The 'User Name' field is empty. The 'Proxy Server' field contains '10.10.126.1'. The 'Port' field contains '5060'. The 'Inbound/Outbound Settings' section has a checkbox for 'SCP is located outside of Wave's network' which is unchecked. Below this, 'This SCP will:' has two radio buttons: 'Receive registration from Contact' (unchecked) and 'Register with a Proxy/Registrar' (checked). The 'Authentication Settings' section has a checked 'Authentication Required' checkbox. It contains three fields: 'Authentication Name' with '4085555555', 'Password' with '*****', and 'Verify Password' with '*****'. The 'Registration Settings' section has a checked 'Registration Required' checkbox. It contains two fields: 'Registrar Server' with '10.10.126.1' and 'Registrar Port' with '5060'. Below these, 'Registration Expires (secs)' has two radio buttons: 'Use System Default' (checked) and 'Custom' (unchecked) with a value of '300'. At the bottom, 'Preferred DTMF Transport' is set to 'Inband' via a dropdown menu. There is an 'Advanced Settings...' button and 'OK' and 'Cancel' buttons at the bottom right.

Signaling Control Point

Name: EdgeMarc

Inbound Routing | Outbound Routing | SIP Settings

User Name:

Proxy Server: 10.10.126.1

Port: 5060

Inbound/Outbound Settings

☐ SCP is located outside of Wave's network

This SCP will:

☐ Receive registration from Contact

☒ Register with a Proxy/Registrar

Authentication Settings

☒ Authentication Required

Authentication Name: 4085555555

Password: *****

Verify Password: *****

Registration Settings

☒ Registration Required

Registrar Server: 10.10.126.1

Registrar Port: 5060

Registration Expires (secs)

☒ Use System Default

☐ Custom 300

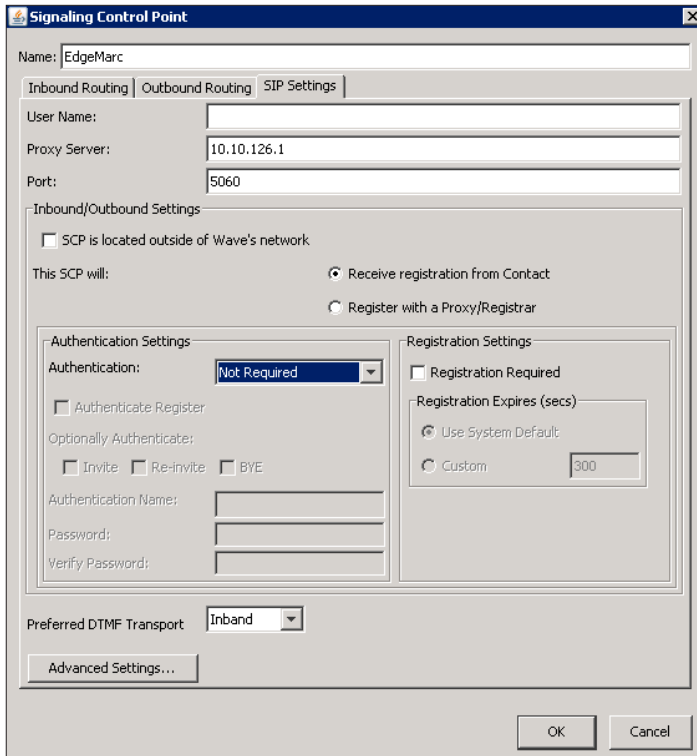
Preferred DTMF Transport: Inband

Advanced Settings...

OK Cancel

9 Static IP mode

Navigate to **IP Telephony → Signaling Control Point → Edit → SIP Settings** and check the radial net to **Receive Registration from Contact**. Make sure the drop-down under **Authentication Settings** is set to **Not Required**.



Signaling Control Point

Name: EdgeMarc

Inbound Routing | Outbound Routing | **SIP Settings**

User Name:

Proxy Server: 10.10.126.1

Port: 5060

Inbound/Outbound Settings

☒ SCP is located outside of Wave's network

This SCP will:

☒ Receive registration from Contact

☐ Register with a Proxy/Registrar

Authentication Settings

Authentication: **Not Required**

☐ Authenticate Register

Optionally Authenticate:

☐ Invite ☐ Re-invite ☐ BYE

Authentication Name:

Password:

Verify Password:

Registration Settings

☐ Registration Required

Registration Expires (secs)

☒ Use System Default

☐ Custom

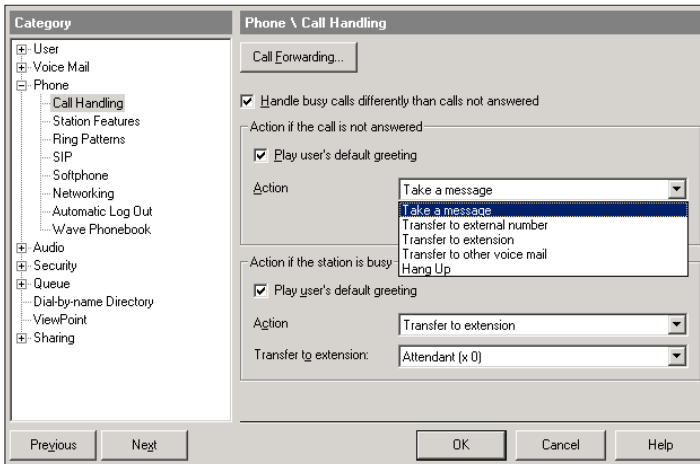
Preferred DTMF Transport: **Inband**

Advanced Settings...

OK Cancel

10 Call Forward

From the **TVAdmin** console select the desired extension. Go to **Phone** then **Call Handling**. Check the box next to **Handle busy calls differently than calls not answered**. Select the desired action from the drop-down menu and click **OK**.



11 Backup/Restore

To Backup/Restore, from the **Wave Global Administrator Management Console** select **System Backup/Restore**. Select the radial next to **Backup** and click **Apply**. To restore, click the radial next to **Restore** and click **Apply**.

System Backup/Restore

Operation

☐ Backup
 ☒ Restore

Options

☐ Remove Previous Backup (preserves disk space)
 ☒ Include Voice Mail Messages and Music On Hold Files

FTP Directory Name:

Log: