# SIP Trunking using the Optimum Business SIP Trunk Adaptor and the Digium IP-PBX

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# 1 Overview

The purpose of this configuration guide is to describe the steps needed to configure the Digium 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.

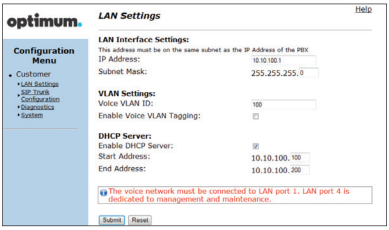
3. Enter login and password and click 'OK'.
   Login: pbxinstall
   Password: s1ptrunk


### 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.



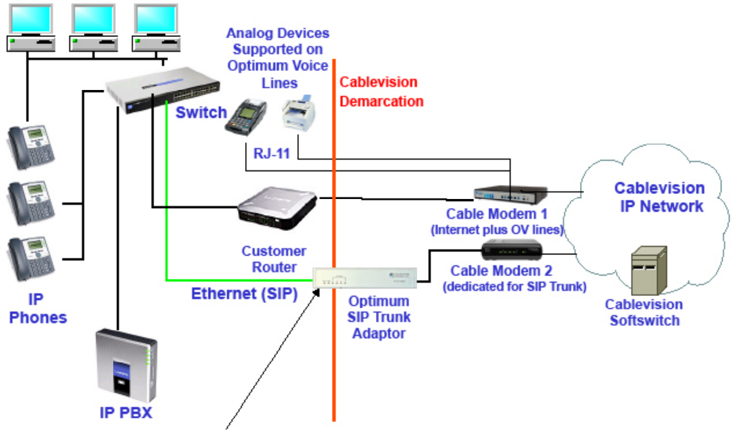

2. Optional: Specify a VLAN for your voice traffic. Click the 'Enable Voice VLAN Tagging' check box. The default VLAN ID is 100.

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

3. 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.

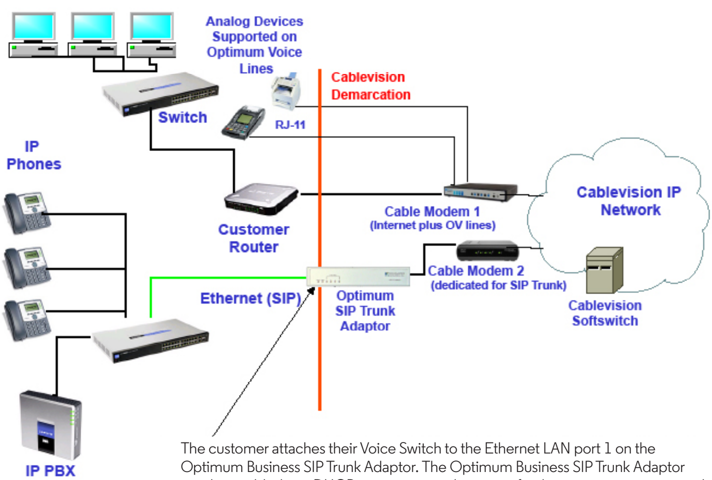
4. Click 'Submit'.

## 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.

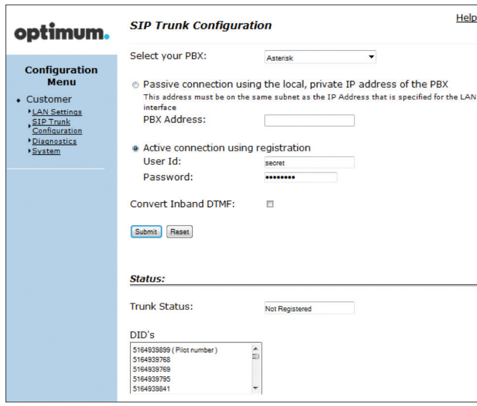
## Diagram 2 SIP Trunk Adaptor for IP-PBXs Example: Separate Voice and Data Networks Configuration




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.

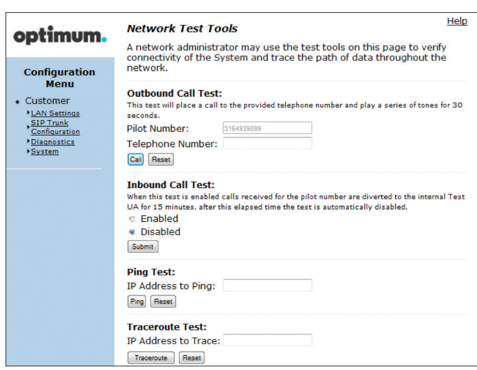
3. The Cablevision network only supports Inband DTMF. Click on the check box next to "Convert Inband DTMF" if you cannot configure your IP PBX to send out Inband DTMF. The DTMF tone duration generated by the phones and/or PBX may need to be increased from their default setting. Some phones and/or PBX have a default setting between 180ms to 200ms. This setting is too low. The recommended setting is 600ms.

4. Click 'Submit'.

### Step 4:

#### Diagnostics Link

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



Step 4 continued

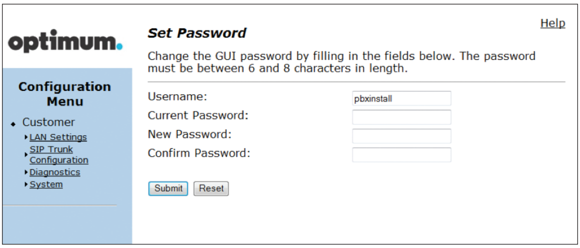
| Field | Description |
|---|---|
| Outbound Call Test TelephoneNumber | Specifies an outside phone number to which an outbound call will be initiated. The pilot telephone number of the SIP Trunk will be prepopulated. |
| Pilot Number | Displays the provisioned pilot number, which is used for outbound 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


| 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



| 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 Digium 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 Digium IP PBX version 5.11.1. In this document the address of the Digium is 10.10.108.11 /24 and the Optimum Business SIP Trunk Adaptor (EdgeMarc 4552) is 10.10.108.1 /24.

**Table 1 – PBX Information**

| | |
|---|---|
| **Manufacturer:** | Digium |
| **Model:** | Digium Switchvox |
| **Version:** | 5.11.1 |
| **Does the PBX send SIP Registration messages (Yes/No)?** | Yes |
| **Vendor Contact:** | www.digium.com |

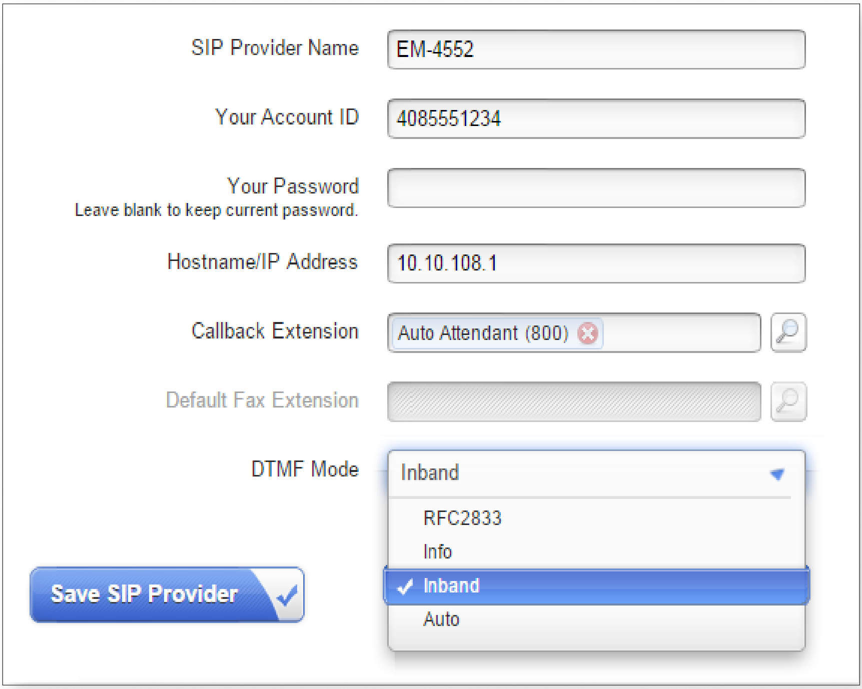
## 5.1 SIP Trunking

To configure SIP, navigate to **Setup→Call Routing→VoIP Providers** and click **Create SIP Provider**. Under **SIP Provider Information** enter the relevant information required between the PBX and the Optimum Business SIP Trunk Adaptor. Enter a descriptive name next to **SIP Provider Name** (EM-4552 used for this test). Enter the Pilot DID next to **Your Account ID** along with the password next to **Your Password**.

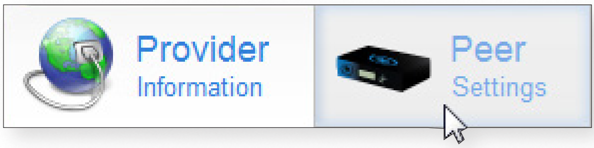
This must match the User ID and Password configured on Optimum Business SIP Trunk Adaptor. This is step 3 of the Optimum Business Set-up Guide.

Next to **Hostname/IP Address** enter the Optimum Business SIP Trunk Adaptor's IP address. The IP address was assigned in step 2 of the Optimum Business SIP Trunk Set-up Guide.

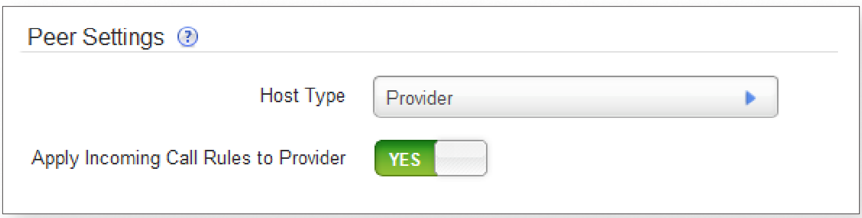
Enter **800** in the **Callback Extension** field which essentially will be the extension for the Auto Attendant. Select **Inband** in the **DTMF Mode** field. **Important:** Only Inband DTFM is supported with Optimum Business Sip Trunking.



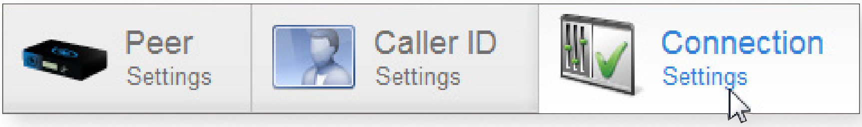
Next, from above click on **Peer Settings**.

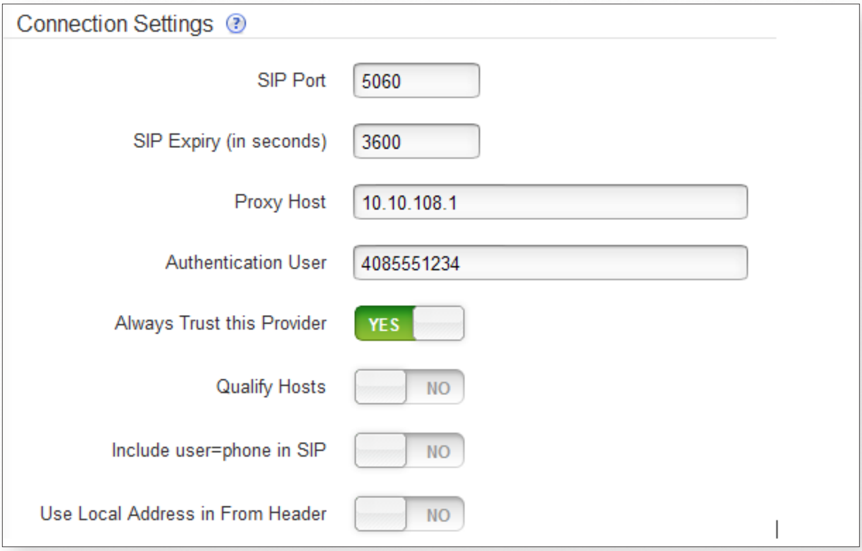



**Provider** needs to be selected next to **Host Type** and **YES** should be selected next to **Apply Incoming Call Rules to Provider**.



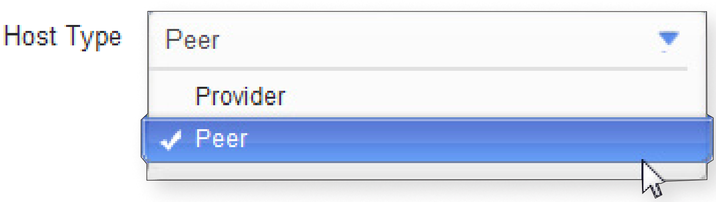

Under **Connection Settings** enter **5060** next to **SIP Port** and **3600** next to **SIP Expiry**. The Optimum Business Sip Trunk Adaptor's IP address should be entered next to **Proxy Host** and the Pilot DID should again be entered next to **Authentication User**. Select **YES** next to **Always Trust this Provider**.





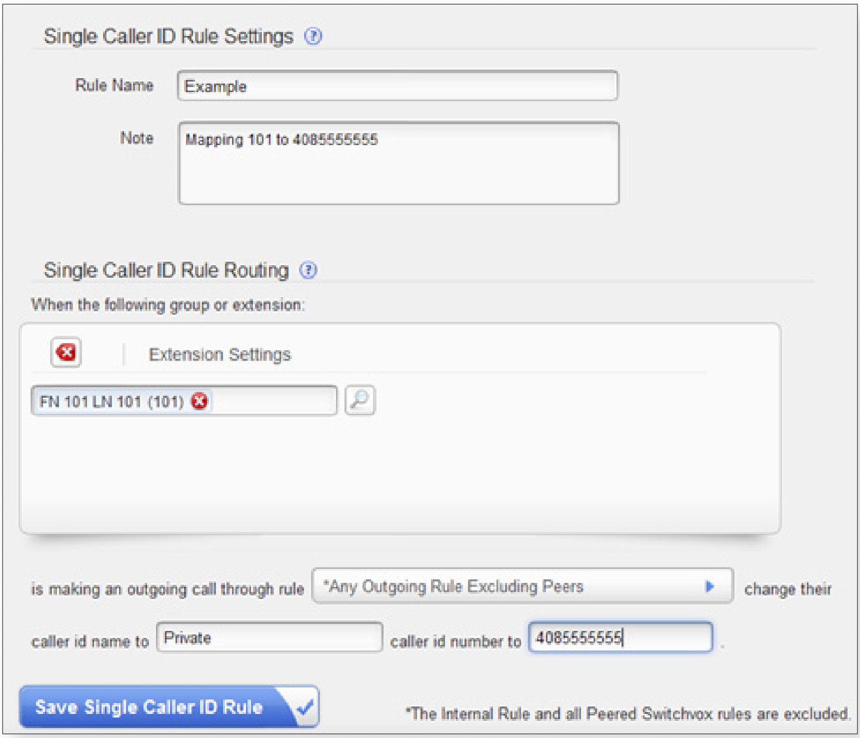

When done click **Save SIP Provider**.

To configure Static Mode, under **Peer Settings** select **Peer** instead of **Provider**.

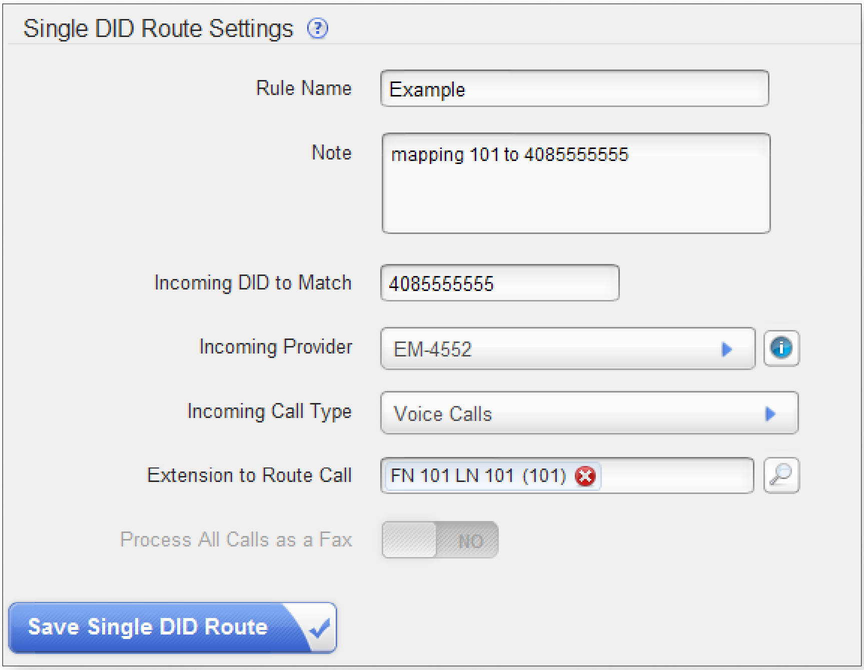


## 5.2 Extensions/DID

Navigate to **Setup→Call Routing→Outgoing Calls** and select **Caller ID**. Click on **Create Single Rule** and provide it a name. Under **Single Caller ID Rule Routing** select **Extension**. Under **Extension Settings** the desired extension needs to be entered. In this case extension “101” was entered. Enter a name next to **caller id name to** and its corresponding DID next to **caller id number to**. When done click **Save Single Caller ID Rule** below.

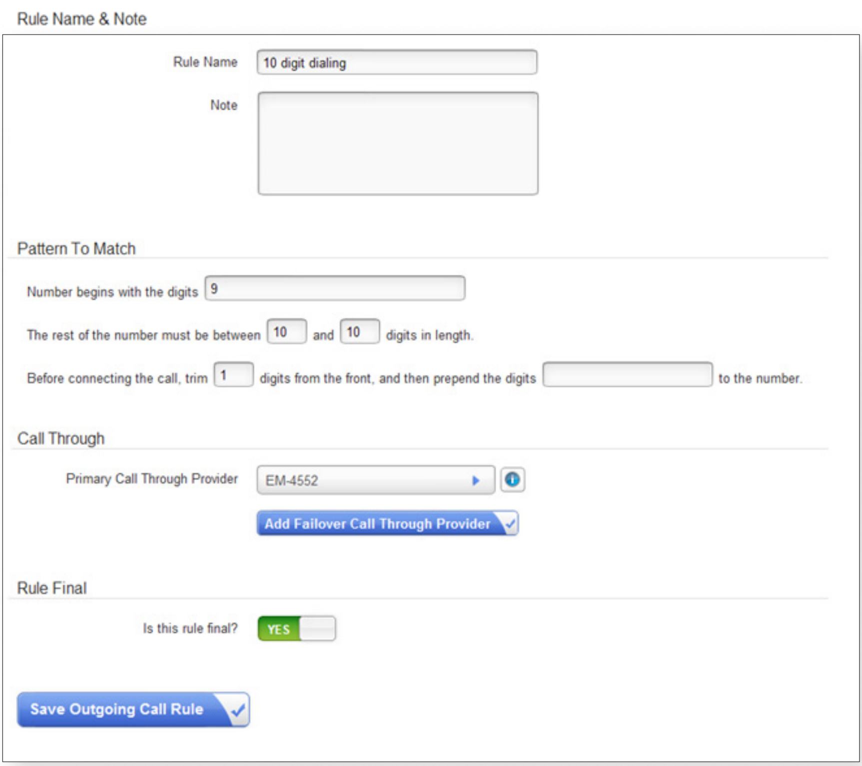


Next, navigate to **Setup→Call Routing→Incoming Calls** and click **Create Single DID Route**. In a similair way enter a rule name and next to **Incoming DID to Match** enter a DID to be mapped to this specific extension. The extension can be selected below next to **Extension to Route Call** which in this case is "101" again. Enter the Provider name created earlier for SIP next to **Incoming Provider. Incoming Call Type** should be set to **Voice Calls**. When done click **Save Single DID Route**.



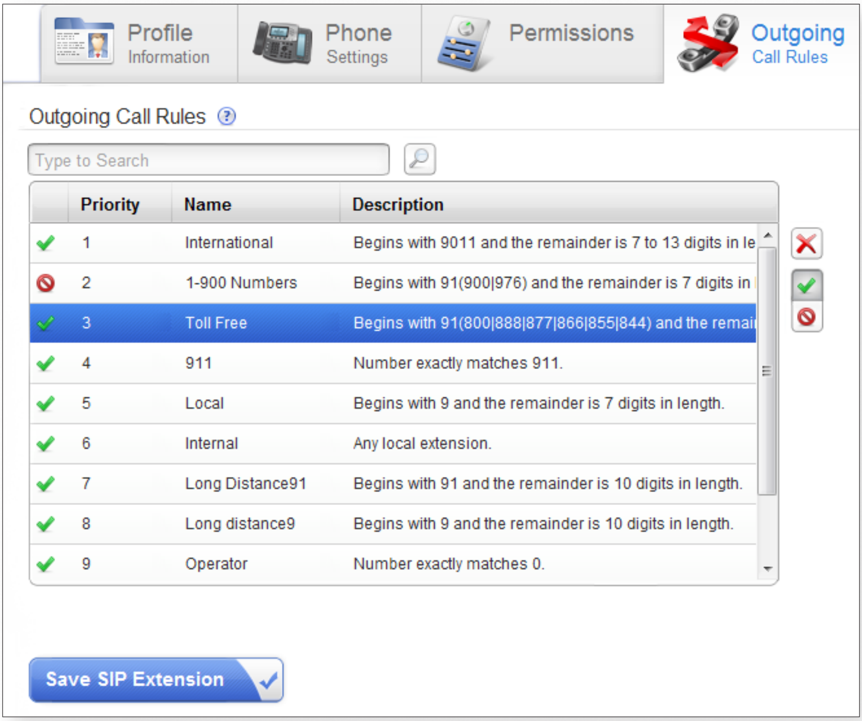
## 5.3 Dial Plan

To configure Dial Plan navigate to **Setup→Call Routing→Outgoing Calls** and under **Outgoing Call Rules** click on **Create Outgoing Call Rule**. Here an example rule was created allowing 10 digit calls to be prepended by 9. Any name may be given. **Pattern To Match** effectively defines the behavior of this rule. The number “9” was entered next to **Number begins with the digits** to prepend before the dialed call. To strictly allow only 10 digits to be dialed, enter “10” followed by “10” in the second line below to essentially define the digit range. Entering “1” next to **Before connecting the call**, **trim** allows the 9 to be trimmed. The next field was simply left empty. Under **Call Through** the Provider’s name which is the EM-4552 in this case needs to be selected and under **Rule Final** select **YES**. Other rules may be configured accordingly. When done click **Save Outgoing Call Rule**.



To decide which of these rules each phone can utilize, navigate to **Setup→Extensions→Manage**. Click the Modify icon next to an extension under **Actions**.

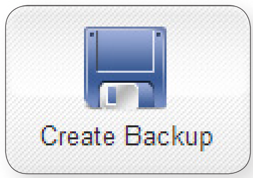

Under **Outgoing Call Rules** is where a specific rule can be allowed or denied to the user using the buttons displayed on the right.



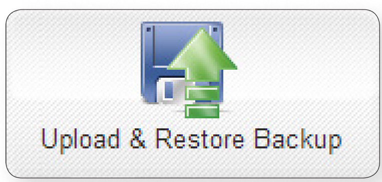

When done click **Save SIP Extension** below.

## 5.4 Backup/Restore

To backup the configuration navigate to **Server→Backups**. Here a backup file may be created by selecting **Create Backup**.




To restore select **Upload & Restore Backup**.




After the file has been chosen click **Upload and Restore Backup** to restore the file.