

SIP Trunking using the
Optimum Business
SIP Trunk Adaptor
and the Grandstream
UCM6102 IP-PBX

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Goal

The purpose of this configuration guide is to describe the steps needed to configure the Grandstream UCM6102 IP-PBX for proper operation with Optimum Business SIP Trunking.

Prerequisites

Please follow the instructions in the Optimum Business SIP Trunk Set-up Guide. The Set-up Guide was left by the Optimum Business technician at installation. If you do not have the Set-up Guide, go to www.optimumbusiness.com/SIP to download a copy.

This knowledge base solution provides the configuration steps for both PBX registration and static or non-registration modes of PBX operation.

PBX Information

Manufacturer:	Grandstream Networks
Model:	UCM6102
Software Version:	1.0.4.7
Does the PBX send SIP Registration messages (Yes/No)?	Yes

Grandstream UCM6102 Configuration

The steps below describe the basic configuration required to enable the Grandstream UCM6102 IP-PBX to use Optimum Business SIP trunking for inbound and outbound calling. Please refer to the Grandstream UCM6102 documentation for 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 Grandstream UCM6102 version 1.0.4.7.

Network Access

The default IP of the LAN port of the PBX was 192.168.2.1 /24 and was unchanged. As for the WAN port, it was given a static IP address of 10.10.154.11 /24 with the Optimum Business SIP Trunk Adaptor being 10.10.154.1 /24. SIP traffic flow was via the WAN port.

The default username/password of the device was admin/admin. The IP address of the PC managing the device should fall in network 192.168.2.0/24. Once configured with an appropriate PC IP, the device can be configured via a Web browser through its LAN IP address.



Username:
admin

Password:
.....

Login English ▾

To configure network settings navigate to **Settings ▶ Network Settings ▶ Basic Settings**. Under **Basic Settings** next to **Method** select **Route**. Under **WAN**, first enter **Static** next to **IP Method**. Enter the address of the Optimum Business SIP Trunk Adaptor next to **Gateway IP** and the address of the PBX next to **IP Address**. Under **LAN**, enter the address of the PBX's LAN port next to the **IP Address** field. For the phones, the DHCP range must be specified in the **Allow IP Address From** and **Allow IP Address To** fields.

The screenshot shows the configuration interface for the UCM6102 IP PBX. On the left is a sidebar with navigation options: Network Settings (selected), - Basic Settings, - 802.1X, - Port Forwarding, Firewall, Change Password, LDAP Server, HTTP Server, Email Settings, Time Settings, and NTP Server. The main area is titled 'Basic Settings' and is divided into three sections: Basic Settings, WAN, and LAN.

Basic Settings

- Method:
- Preferred DNS Server:

WAN

- IP Method:
- Gateway IP:
- Subnet Mask:
- IP Address:
- DNS Server 1:
- DNS Server 2:
- Layer 2 QoS 802.1Q/VLAN Tag:
- Layer 2 QoS 802.1p Priority Value:

LAN

- IP Address:
- Subnet Mask:
- DHCP Server Enable:
- DNS Server 1:
- DNS Server 2:
- Allow IP Address From:
- Allow IP Address To:
- Default IP Lease Time:

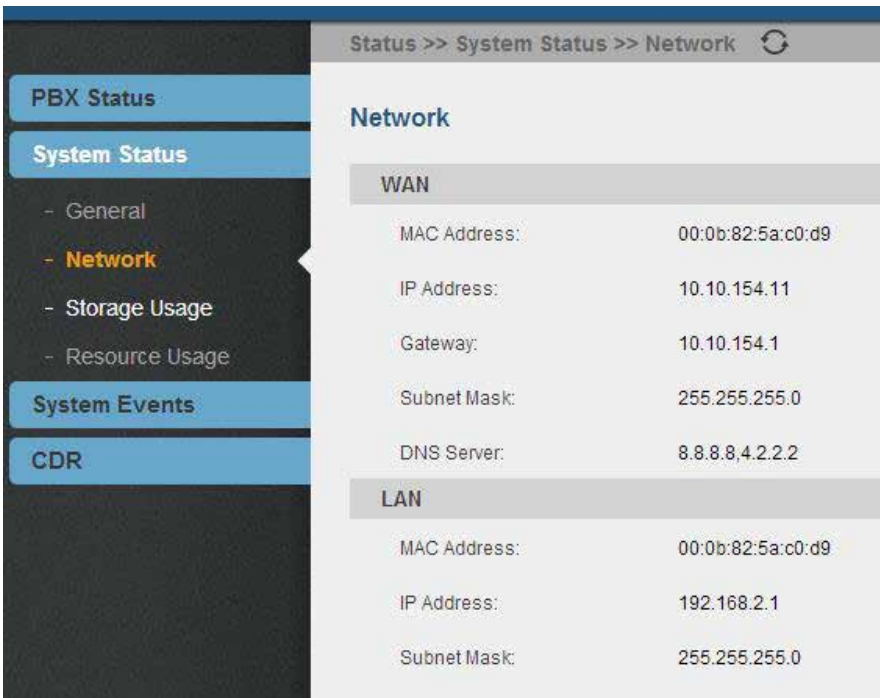
At the bottom right, there are 'Cancel' and 'Save' buttons.

When done click **Save**. Thereafter there will be a prompt to restart the device for the network settings to take effect.



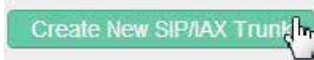
Click **OK** and upon restart the new settings will take effect.

Once the system has restarted, the new network configuration can be viewed by navigating to **Status** ▶ **System Status** ▶ **Network** as shown.



SIP Trunk

To register the Optimum Business SIP Trunk Adaptor to the PBX, navigate to **PBX ▶ Basic/Call Routes ▶ VoIP Trunks** and click on **Create New SIP/IAX Trunk**.



Select **Register SIP Trunk** next to **Type**. Enter a name for the Optimum Business SIP Trunk Adaptor next to **Provider Name** (EM-4552 was use in this example). The **Host Name** field should follow the address of the Optimum Business SIP Trunk Adaptor. **Keep Trunk CID** was left unchecked and is optional. If checked the Pilot DID will be the Caller ID for the calls. The **Username, Password** and **AuthID** will be the given credentials between the PBX and the Optimum Business SIP Trunk Adaptor. The **Outbound Proxy** should also be the address of the Optimum Business SIP Trunk Adaptor. **Auto Record** is optional.

Field	Value
Type	Register SIP Trunk
Provider Name	EM-4552
Host Name	10.10.154.1
Keep Trunk CID	<input type="checkbox"/>
Username	4085551234
Password	*****
AuthID	4085551234
Outbound Proxy	10.10.154.1
Auto Record	No

When done click **Save** then **Apply Changes** from above.



For Static Mode select **Peer SIP Trunk** instead next to **Type**. Enter a name for the Optimum Business SIP Trunk Adaptor next to **Provider Name** and enter the address of the Optimum Business SIP Trunk Adaptor next to **Host Name** as shown.



More details will be shown when editing trunk.

Type: Peer SIP Trunk

Provider Name: EM-4552

Host Name: 10.10.154.1

Keep Trunk CID:

Auto Record: No

Cancel Save

When done click **Save** then **Apply Changes** from above.

DID/Extensions

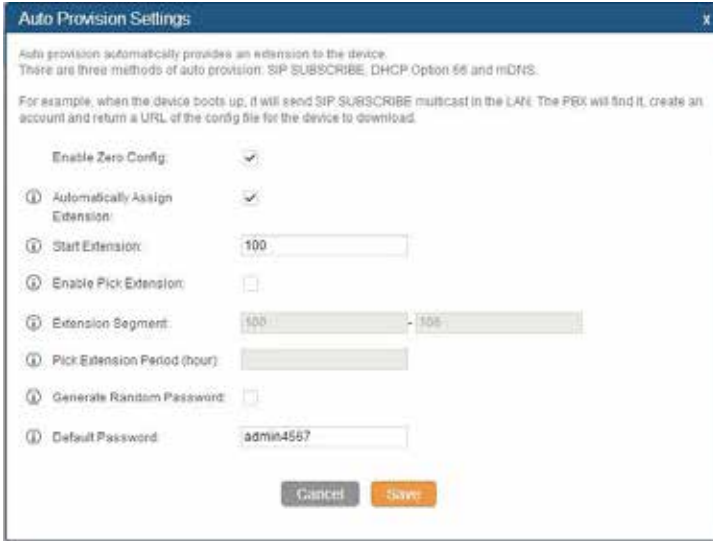
To provision phones and assign extensions, navigate to **PBX ▶ Basic/Call Routes ▶ Extensions** and click **Create New User**. Here the basic settings for a phone can be configured. Under **General**, the **Extension** field specifies the extension for the phone. **CallerID Number** and **CallerID Name** will be the DID number that will be mapped to this extension. **Permission** is the permission level the user will have for outgoing calls. **Internal** was used for all extensions. Under **Technology** check **SIP**. Under **SIP Settings** enter the user's DID next to **AuthID** and set **DTMF Mode** to **Inband** as shown. All other settings can be configured according to preference.

Note: DTMF tone duration cannot be configured on the PBX.

When done click **Save** then **Apply Changes** from above.

The devices can also use Auto Provisioning where the PBX will discover a device upon boot up, automatically assign it an extension, and return a URL of the config file for the device to download.

To do this, from **Basic/Call Routes** navigate to **Zero Config** and click **Auto Provision Settings**. Once here check **Enable Zero Config**. Check **Automatically Assign Extension** and specify the beginning extension next to **Start extension**. A default password can also be set next to **Default Password**.



When done click **Save** then **Apply Changes** from above.

By clicking on Auto Discover, the PBX can automatically discover the device using a specific Scan Method of **Ping**, **ARP**, or **SIP-Message**. Once that is selected the **Scan IP** field can be filled to scan the entire network segment by entering **255**.



When done click **Save** and a message will be presented prompting to check the result.



Click **OK** and the result will be displayed.

No.	MAC Address	IP Address	Extension	Version	Model	Connection Status	Create Config	Actions
1	B82E2-4A0F	192.168.2.100	extension 1-100		Grandstream GXP 1400	Connected	Yes	

A user may also manually enter device information prior to performing the Auto Discover step above. This can be done by clicking on **Create New Device**. Here an extension may be entered along with a MAC and IP Address of the device.

Create New Device

Enable Hot-Desking:

① MAC Address:

① IP Address:

① Version:

① Model:

① Account Select: Account 1: None ▼

When done click **Save** then **Apply Changes** from above.

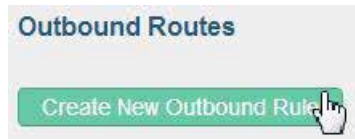
By going back to **Extensions** the status of this discovered phone can be viewed. It now shows green which implies that it is registered and free.

No.	IP Address	Extension	Technology	Brand/Model	Connection Status	Actions
1	192.168.2.100	100	IP	Grandstream GXP 1400	Connected	

When finally done click **Save** then **Apply Changes** from above.

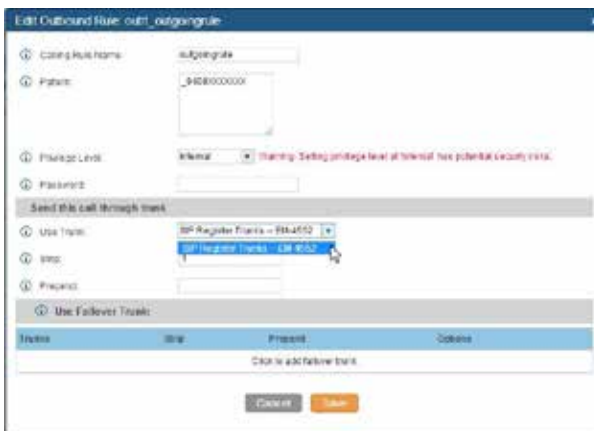
Dial Plan

To configure Dial Plan, Outbound and Inbound routes need to be configured. First navigate to **PBX ▶ Basic Call Routes ▶ Outbound Routes** and click **Create New Outbound Rule**.



Initially, a rule name needs to be given. Next to **Pattern** is where the dial pattern needs to be entered. All patterns are prefixed by “_”: Entering “[12345]” allows any single digit within these brackets. “N” allows any digit between 2 and 9. The “.” character matches one or more digits. The “!” character matches zero or more digits. “X” allows any digit between 0 and 9 and finally “Z” allows any digit between 1 and 9.

In this example “9408XXXXXX” was entered to allow all numbers beginning with area code 408. The digit “9” was entered in the beginning and will be stripped by entering “1” next to **Strip. Internal** was selected next to **Privilege Level** and next to **Use Trunk** the trunk for the Optimum Business SIP Trunk Adaptor was selected, in this case “EM-4552”.

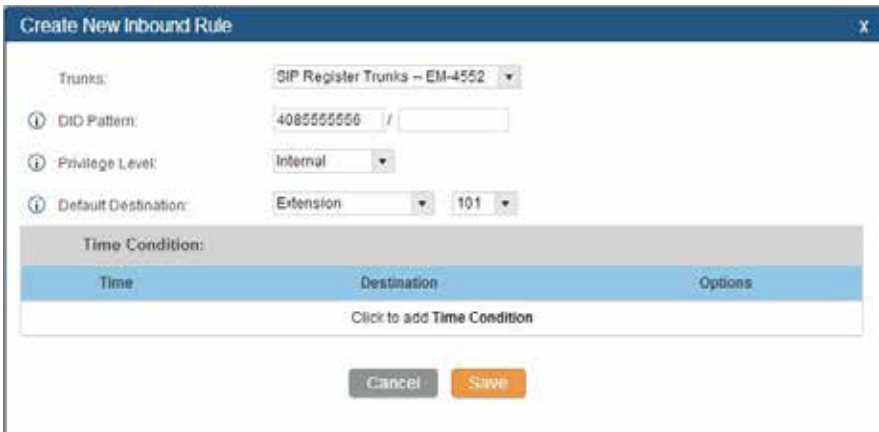


When done click **Save** then **Apply Changes** from above. Other outbound rules may be configured in a similar manner.

As for inbound rules, click on **Inbound Routes** and then **Create New Inbound Rule**.



First select the trunk for the Optimum Business SIP Trunk Adaptor next to **Trunks**. With the same character values as outbound rules, enter a pattern next to **DID Pattern**. In this example, “408555556” was entered to permit a call to extension 101. **Internal** was again selected next to **Privilege Level**. **Extension** was selected next to **Default Destination** following the extension this rule is to be forwarded to, in this case 101. Other extensions may be configured similarly.



When done click **Save** then **Apply Changes** from above.

Auto Attendant

To configure Auto Attendant navigate to **PBX ▶ Call Features ▶ IVR** and click on **Create New IVR**. Enter a name next to **Name** and a valid extension number next to **Extension**. **Welcome Prompt** may be left as is or manually created by clicking on **Prompt**. A customized recording may be uploaded here. Below under **Key Pressing Events** is where an extension can be matched to a specific digit. In this example digit 1 was mapped to extension 100. The rest of the fields may be configured according to preference. When done click **Save** then **Apply Changes** from above.

Edit IVR: Sally		
Name:	Sally	
Extension:	7000	
Dial Other Extensions:	<input type="checkbox"/>	
Dial Trunk:	<input type="checkbox"/>	
Permission:	Internal	
Welcome Prompt:	welcome Prompt	
Digit Timeout:	5	
Response Timeout:	10	
Response Timeout Prompt:	iv-create-timeout	
Invalid Prompt:	invalid	
Response Timeout Repeat Loops:	3	
Invalid Repeat Loops:	3	
Language:	Default	
Key Pressing Events		
Press 0:	Select an Option	
Press 1:	Extension	Extension - 100
Press 2:	Select an Option	
Press 3:	Select an Option	
Press 4:	Select an Option	
Press 5:	Select an Option	
Press 6:	Select an Option	
Press 7:	Select an Option	
Press 8:	Select an Option	
Press 9:	Select an Option	
Press *:	Select an Option	
<input type="button" value="Cancel"/> <input type="button" value="Save"/>		

Backup/Restore

To back up or restore the configuration file, navigate to **Maintenance ▶ Backup ▶ Local Backup**. Here the option of **Create New Backup** and **Upload Backup File** will be displayed. If **Create New Backup** is selected, a window will prompt for a file name. When entered simply click **Backup**.



If **Upload Backup File** is selected, a window will prompt for a file to upload. When entered simply click **Upload**.

