

SIP Trunking using the Optimum Business SIP Trunk Adaptor and the Allworx 6x IP-PBX

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1 Overview

The purpose of this configuration guide is to describe the steps needed to configure the Allworx 6x PBX for proper operation with Optimum Business SIP Trunking.

2 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.

SIP authentication credentials

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

Table 1 – PBX Information

Manufacturer:	Allworx
Model:	Allworx 6x
Software Version:	8.0.7.6
Does the PBX send SIP Registration messages (Yes/No)?	Yes
Vendor Contact:	www.allworx.com

3 Allworx 6x 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 Allworx 6x product documentation for more information on advanced PBX feature configuration.

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 Allworx 6x version 8.0.7.6.

3.1 SIP Configuration

To configure SIP, navigate to **Home→Phone System→Outside Lines** and click **add new SIP Proxy** under **SIP Proxies** below.

▼ SIP Proxies ⓘ [add new SIP Proxy](#)

Enter a description for the Optimum Business SIP Trunk Adaptor next to **Description**. Enter the Pilot DID next to **User ID**. Enter the Optimum Business SIP Trunk Adaptor's IP address next to **SIP Server** and **Outbound Proxy** followed by port **5060**. This is the same IP Address assigned to the Optimum Business SIP Trunk Adaptor in step 2 of the Optimum Business SIP Trunk Set-Up Guide.

Check **SIP Registration required**. Enter the same Pilot DID next to **Login ID** followed by a password. The login and password must match what was configured in the Optimum Business SIP Trunk Adaptor. This was step 3 in the Optimum Business Sip Trunk Set-Up Guide.

In fields **Maxium Active Calls** and **Number of Line Appearances** enter **10**. Check **Send digits as dialed** and select all digits next to **Digits Sent**.

SIP Proxy ⓘ

Description

EM-4552

User ID

6314488988

SIP Server
(customer domain/realm)

10.10.107.1
(enter IP Address or Domain Name)

Port

5060

Outbound Proxy
(if different from SIP Server)

10.10.107.1
(enter IP Address or Domain Name)

Port

5060

☒ **SIP Registration required**

Login ID

6314488988

Password

(6 to 40 characters)

Registrar
(if different from Outbound Proxy)

(enter IP Address or Domain Name)

Port

Caller ID Name

☐ Use External Caller ID Name from handset (if specified)

☐ Use Caller ID Name from external sources (if received)

Caller ID Number

☐ Use External Caller ID Number from handset (if specified)

☐ Use Caller ID Number from external sources (if received)

Maximum Active Calls

10
(1 to 99, should not exceed proxy capabilities or available bandwidth)

Number of Line Appearances

10
(0 to Maximum Active Calls)

☐ **Append Enterprise Prefix to Dialback number for incoming calls**

☒ **Send digits as dialed** (without deleting, inserting, or appending per External Dialing Rules)

Digits Sent

all digits
(digits from the processed dialed number to send to the proxy)

Default Auto Attendant

Select the attendant used to answer when calls received from this source are routed to an Auto Attendant.

Auto Attendant 1 (x*431) ▼

Under **Advanced Settings** check **Enable Early Media**. Set **Obtain DID/DNIS** number from to **SIP To:header field**. Enter **dialed number** after **Use**.

Advanced Settings ⓘ

- ☐ Pad DTMF RTP Packets
- ☒ **Enable Early Media** (allow audio from 183 Session Progress responses)
- ☐ Supports SIP REFER (when calls from this proxy are transferred back to this proxy)
- ☐ Supports SIP Redirect (when call requests from this proxy are routed back to the proxy)
- ☐ Use E.164 format for phone numbers
- ☐ Offer '100rel' support (RFC 3262 - PRACK)
- ☐ Supports Symmetric Response Routing (RFC 3581 - include "rport" in requests)
- ☐ Allow SIP P-Asserted-Identity (RFC 3325 - Adds device to the Trust Domain)
- ☒ Use Proxy Caller ID Name

Caller ID Name
 User ID
 Domain

Send SIP Diversion header **never** (RFC 5806 - Diversion Indication in SIP)

Obtain DID/DNIS number from **SIP To: header field**

Use **dialed number** in Request URI of outbound calls

A DID Block needs to be configured for **Call Route** below. Navigate to **Home→Phone System→Outside Lines** and next to **Direct Inward Dial Blocks** click **add new DID Block**. Specify the Pilot DID next to **Starting Phone Number** and enter the number of DID's next to **Total number of phone numbers in DID Block**. Leave **DID Routing Plan** to **Routing Plan 1**. When done click **Update**.

DID Block

Starting Phone Number (include Area Code and Exchange)

Total number of phone numbers in DID Block

DID Routing Plan **Routing Plan 1**

Update **Cancel**

Navigate back to **Home→Phone System→Outside Lines** and click **Modify** under **SIP Proxies**. Under **Call Route** check **Routed using DID Block:** and select the configured DID Block.

When done click **Update**.

To configure Static mode leave fields as is except uncheck **SIP Registration required**.

When done click **Update**.

3.2 Extensions/DID

To create DIDs for the extensions navigate to **Home→Phone System→Outside Lines** and next to **Direct Inward Dial Blocks** click **add new DID Block**.

▼ Direct Inward Dial Blocks [add new DID Block](#)

Enter the Pilot DID next to **Starting Phone Number** then specify the amount of numbers within this DID block next to **Total number of phone numbers in DID Block**. Leave **DID Routing Plan** to **Routing Plan 1**. When done click **Update**.

DID Block	
Starting Phone Number	(408) 555-5555 (include Area Code and Exchange)
Total number of phone numbers in DID Block	5
DID Routing Plan	Routing Plan 1 ▼
<input type="button" value="Update"/> <input type="button" value="Cancel"/>	

To map the created DID block to extensions navigate to **Home→Phone System→Outside Lines** and under **Direct Inward Dial Routing Plans** click on **Details**.

▼ Direct Inward Dial Routing Plans	
Routing Plan	Action
Routing Plan 1	Details Delete

By clicking **Modify** next to each DID, specific extensions may be assigned as shown.

Routing Plan Information modify	
Description	Routing Plan 1
Default Extension	0 - Operator
Default DNIS Name	{none}
DID Blocks using this plan	(408) 555-5555 / 5 numbers

Phone Number to Extension Mapping			
<input type="text" value="Search term"/> match Phone Number, Extension, DNIS Name, or Default Prompt Language			
► Bulk Edit			
▲ Phone Number	Extension	DNIS Name	Action
(408) 555-5555	278 - Qa User 01	{none}	Modify
(408) 555-5556	256 - Qa User 02	{none}	Modify
(408) 555-5557	*431 - Auto Attendant 1	{none}	Modify
(408) 555-5558	108 - fax fax fax	{plan default}	Modify
(408) 555-5559	{plan default}	{plan default}	Modify

Navigate to **Home→Phone System→Handsets** and click on **Modify** next to a user.

► **Analog Handsets** (116 handsets may be added to the system)

▼ **SIP Handsets** [reboot Allworx handsets](#) (116 handsets may be added to the system)

[add new Allworx Handset](#)
[add new Allworx Reach Handset](#) (1 Allworx Reach handset may be added to the system)
[add new Generic SIP Handset](#) (6 Generic SIP handsets may be added to the system)

Show: ☒ Allworx Handsets ☒ Allworx Reach Handsets ☒ Generic SIP Handsets

► **Bulk Edit**

Handset	Line	Owner	Caller ID	Identification	Action
Allworx 9212 PBX Station (Default) MAC: 00-0A-DD-83-07-7C 10.10.107.17:5060 View Configuration Add Call Appearance Reboot Replace					
Qa User 01	1	qauser01 (x278)	Qa User 01	User ID: *5100, Login ID: 5100 (expires: Aug 11, 2015 07:42 pm)	Modify Delete Ring Modify phone
Allworx 9212 PBX Station (Default) MAC: 00-0A-DD-83-05-F1 10.10.107.18:5060 View Configuration Add Call Appearance Reboot Replace					
Qa User 02	1	qauser02 (x256)	Qa User 02	User ID: *5101, Login ID: 5101 (expires: Aug 11, 2015 07:42 pm)	Modify Delete Ring

Make sure the user's DID is specified under **External Caller ID Number**.

Call Appearance

Call Forwarding: disabled

Phone Type: SIP Model: Allworx 9212
 MAC Address: 00-0A-DD-83-07-7C

Owner: Qa User 01 (qauser01)

Internal Caller ID Name: Qa User 01 up to 47 characters: letters digits , \ _ ' -

Internal Caller ID Number: use owner's extension

External Caller ID Name: 4085555556 up to 47 characters: letters digits , \ _ ' -

External Caller ID Number: 4085555556 (up to 24 digits)

Emergency Caller ID Number: not specified

Description: Qa User 01

Dialing Privileges Group: Dialing Privileges (Default)

SIP Registration

User ID: *5100
 Binding: *5100@10.10.107.17:5060
 Login ID: 5100
 (expires: Aug 11, 2015 07:42 pm)

Call Appearance Features

Hold Music Selection: Use Handset Preference Group Setting

☒ Can Place Calls
☒ Can Receive Calls

[Update](#) [Cancel](#)

To configure Call Forward for a user navigate to **Home→Phone System→Users** and click **Modify** next to a user. As an example this user's presence will be changed to **Busy**. In a similar way change the user to a desired status other than **In Office**.

Ext.	▲ Name	Presence	Site	Action
278	01, Qa User (qauser01)  •	In Office	(local)	Modify Delete more...

Presence

Currently

- ☐ In Office
- ☐ At A Meeting
- ☐ On Vacation
- ☐ On Business Trip
- ☐ At Home
- ☐ Away
- ☒ **Busy**

When done click **Update**.


Next navigate to **Phone System→Extensions** and click **View Call Routes** for that specific user and **Active** should appear under **Busy**.

Presence: Busy [ACTIVE] [add new Call Route](#)

On calls from all callers:

dial 9 (408) 555-5559

Click **Modify** next to **Presence: Busy** and under **Call Route** enter the number to be forwarded to next to **Dial number**.

Call Route 

[add a connection attempt](#)

- ☐ Hang up
- ☐ Transfer to Auto Attendant *400 - Default Auto Attendant ▼
- ☐ Transfer to Call Queue Queue 0 ▼
- ☐ Transfer to Voicemail for user Qa User 01 (qauser01) ▼
- ☒ **Dial number** 9 (408) 555-5559

When done click **Update**.

For Call Park the number to dial upon pushing park from the phone will be displayed on the screen. The parking location will be a number between 701 and 709. This number should then be dialed from a different phone for Call Retrieve.

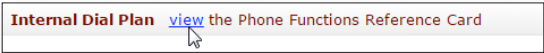
3.3 Dial Plan

To configure Dial Plan navigate to **Home→Phone System→Dial Plan** and here is where dialing rules may be added or changed. Click **modify** next to **Internal Dial Plan** to change Dial Plan settings.

Note: It is required to reboot the phones for new settings to take effect.

☑ Use Extension Mode		
	Plan	
9 ▼	9 + external number	External Call access (follows External Dialing Rules below)
0 ▼	0	Operator
	1xx 2xx 3xx 4xx 5xx 6xx 7xx 8xx	User and System Extensions
	*8 + enterprise number	Enterprise calling
	*5nnn	Internal station access (reserved for system)
	*250- *299 *24nnn	Speed dial numbers
	*6 + user extension	Message Center
	*700 call park *701- *709 call retrieve *7xxx call pickup *79 + audit pin code	Call Functions (park/pickup/audit pin code)
	*3 + user extension	Leave a voicemail for extension
	*403 door relay *408 conference center *42n do not disturb *43n auto attendants *44nn call queues *4950- *4999 call retrieve *45xxx call forwarding *46n paging	PBX Functions

Clicking **view** next to **Internal Dial Plan** displays the Phone Functions Reference Card that will reveal PBX features invoked by the Allworx phones.



To enable NANPA click **Modify** under **External Dialing Rules** then check the box just above. When done click **Update**.

External Dialing Rules
☒ **Enable North American Number Plan Administration (NANPA)**
The system routes calls using the Service Group that has been assigned to the type of number dialed. When NANPA is enabled or disabled it changes the types of numbers dialed that the system supports. The table below displays the types supported based on the NANPA setting.

Type	Number dialed
Long Distance	9+1nnnnnnnnnn
Emergency	9+911
Phone Services (211,311,411,511,611,711,811)	9+n11
Operator	9+0
Long Distance Services	9+1010...
International Calls	9+011...
Public SIP Directory	*8+nnnn (4 digits)
PIN Code	*79+nnnnn (5 digits)
Outside Line Seizure	9#

NANPA is typically enabled for installations in North America.

Update **Cancel**

To set an area code to allow 7-digit dialing click **Modify** next to **Home Area Code**.

North American Numbering Plan Administration (NANPA)	enabled	Modify
Home Area Code	408	Modify

An area code may then be entered as shown.

Home Area Code Used for local calling

Update **Cancel**

When done click **Update**.

Under **Automatic Route Selection** outgoing calls may be created to prepend leading digits such as 9 and control the way digits are sent out. To do so click **add new rule** and enter as desired.

Automatic Route Selection [add new rule](#)

Number Dialed	Output Dial String	Service Group	Action
9+nnnnnnnn	1408+nnnnnnnn	All SIP Proxies	Modify Delete
9+1nnnnnnnnnn	1nnnnnnnnnn	All SIP Proxies	Modify
9+1408nnnnnnnn	1408nnnnnnnn	All SIP Proxies	Modify Delete

n - number (0-9)

A service group is a group assigned a specific set of services. The Optimum Business SIP Trunk Adaptor will need to be assigned into a service group and this service group should be designated under **Services** in the next section. To map the Optimum Business SIP Trunk Adaptor to a service group click **add new Service Group**. In this case the Optimum Business SIP Trunk Adaptor which is the SIP Proxy is designated in service groups **All Trunk Devices** and **All SIP Proxies**.

Service Groups [add new Service Group](#)

Group	Service(s)	Action
All CO Lines	(no services)	Copy
All CO Lines & SIP Gateways	(no services)	Copy
All SIP Gateways	(no services)	Copy
All SIP Proxies	EM-4552 (SIP Proxy)	Copy
All Trunk Devices	EM-4552 (SIP Proxy)	Copy

Now under **Services** click **Modify** and this will specify which service groups can use listed services. In this example **All Trunk Devices** was chosen for desired services. Doing this allows the current extensions to call these numbers.

External Dialing Rules

Description	Number Dialed	Service Group
Phone Services (211,311,411,511,611,711,811)	9+n11	All Trunk Devices ▼
Operator	9+0	All Trunk Devices ▼
Long Distance Services	9+1010...	No Devices ▼
International Calls	9+011...	All Trunk Devices ▼
Public SIP Directory	*8+4 <input type="text"/> digits	All SIP Proxies ▼
PIN Code	*79+5 <input type="text"/> digits	All CO Lines ▼
Outside Line Seizure	9#	No Devices ▼

When done click **Update**.

Click **View** under **Dialing Privileges Groups**.

Dialing Privileges Groups	
Name	Action
Dialing Privileges (Default)	View Copy

If needed certain calls may be allowed or denied by clicking **Modify** next to **Toll Restriction**.

Toll Restriction [Modify](#)

Blocked Numbers
No phone numbers have been added.

Exceptions to Blocked Numbers
No phone numbers have been added.

IMPORTANT:

The Cablevision network only supports inband DTMF tones. The Allworx PBX only supports sending out-of-band DTMF tones. In order for the Allworx PBX to operate correctly with the Cablevision network, the Optimum SIP Trunk Adaptor must be enabled to convert out-of-band DTMF tones sent by the Allworx PBX to inband DTMF tones. To enable this conversion, log into the Optimum SIP Trunk Adaptor using the login and password specified in the Optimum SIP Trunk Adaptor Set-up Guide. On the **SIP Trunk Configuration** page, you **must** check the **Convert Inband DTMF** checkbox, and click the **Submit** button to update this setting, as shown below. Tone duration cannot be changed on the system nor on the phones.

Optimum Business SIP Trunk Adaptor - Configuration Step 3

Configuration Menu

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

[Help](#)

SIP Trunk Configuration

Select your PBX: Allworx 6x/24x ▼

☒ Passive connection using the local, private IP address of the PBX
 This address must be on the same subnet as the IP Address that is specified for the LAN interface
 PBX Address: 192.168.1.10

☐ Active connection using registration
 User Id:
 Password:

Convert Inband DTMF: ☒

Submit Reset

Status:

Trunk Status: Registered

DID's

6316769522 (Pilot number)
 6316769523
 6316769524
 6316769525

3.4 Auto Attendant

To configure Auto Attendant simply map its extension to an available DID like previous extensions by navigating to **Home→Phone System→Outside Lines→DID Routing Plan**.

▲ Phone Number	Extension	DNIS Name	Action
(408) 555-5555	278 - Qa User 01	{none}	Modify
(408) 555-5556	256 - Qa User 02	{none}	Modify
(408) 555-5557	*431 - Auto Attendant 1	{none}	Modify
(408) 555-5558	{plan default}	{plan default}	Modify
(408) 555-5559	{plan default}	{plan default}	Modify

Once the Auto Attendant extension is mapped to a DID, the Auto Attendant menu can be created by navigating to **Home→Phone System→Auto Attendants**. In this example extension 278 was mapped to digit 1 and extension 256 was mapped to digit 2.

▼ x*431 - Auto Attendant 1 [modify](#) [reset](#) Night P

Schedule: Schedule - 0

Include Remote Users: disabled

Dial-By-Name Menu (#1): enabled

Dial-By-Name Prompt: play

Dial-By-Name Spell Option: spell first or last name

Dial-By-Directory Menu (#2): enabled

Dial-By-Directory Prompt: play

Dial-By-Directory List Order: list in name order

Dial It Now Prompt: play

Repeat Menu Behavior: replay Custom Message only

Repeat Options Prompt: play

Speed Dial Numbers: not allowed

After 8 seconds with no input: replay menu

Menu Shortcuts									
0	1	2	3	4	5	6	7	8	9
0	278	256	---	---	---	---	---	---	---

3.5 Backup/Restore

To backup or restore the configuration navigate to **Home→Maintenance** and click on **Import/Export**. Under **Export Configuration** simply right click **View** and save.

Export Configuration

[View](#) (right-click to save) the configuration file saved on Wed Oct 02 04:15:27pm 2013 .

[Delete](#) this configuration file from the server.

To restore click **Choose File** under **Import Configuration** and locate the configuration file for restoration.

Import Configuration

A configuration file has not been loaded onto the server.

Before you can Import configuration settings, you must first Load, then Process, a configuration file.

[Choose file](#) No file selected

[Load](#) (it may take a few minutes to load a configuration file)