



Allworx 10x
System Administration Guide
(For Release 5.1)

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1 Introduction

1.1 Who Should Read This Guide

This guide is to be read by people who will be installing and maintaining the Allworx 10x server. The technical background of the administrator is assumed to be greater than that of the system's end users. This is not an end user document. The reader is expected to have a sufficient computer networking and basic telephony background.

1.2 What this Guide Is and What It Is Not

The Allworx 10x web administration interface is designed to be easy to navigate and use. It has built in descriptions, help, and tips on many of its pages. This manual is not a duplication of that information, but is to be used in concert with that. This manual is intended to describe only those features or administration mechanics that are more complex and difficult to understand. Therefore, not all the features or all the parameters of each feature are discussed here. Again, this guide discusses only those features and parameters that require additional explanation beyond what is on the web pages.

This manual is not a tutorial on basic computer networking or telephone systems. Other sources may need to be consulted to supply that information.

2 Connecting to Web Administration

The administrative interface to the Allworx 10x is accessed using a web browser. Assuming the network settings are set to their factory defaults, the steps to connect to this interface are:

1. Plug your PC into one of the server's LAN ports.
2. Set up the PC's network interface to obtain an IP address automatically (using DHCP).
3. You may need to release and renew the PC's IP address to get an address from the server.
4. Verify that the PC has an IP address on the 192.168.2 network.
5. Open your browser and enter the URL of <http://192.168.2.254:8080>.
6. When the Welcome to Allworx page appears, login using the default password of "admin".

3 Getting Started Configuring a New Allworx 10x

Login to the Allworx 10x web administration page. When the **Home** page appears, click on the **Installation Steps** link (on the left hand side) to bring up a new window containing steps necessary to set up a new system. Each brief step description is followed by a link to get to the appropriate administrative web page to execute the step. These steps are ordered to aid in a successful configuration. Most of the web pages to execute each step contain all the descriptions and help necessary to carry out the step. Use this guide to supplement the information on the web pages when necessary.

4 Upgrading Server Software

The software on the Allworx 10x server is upgradable. Before performing an upgrade, be aware that:

- It is highly recommended that you perform an OfficeSafe backup prior to performing the upgrade (see Backing up and Restoring Data).
- An upgrade will require a reboot of the server. So, the system should be idle (no phone or data users) when this is done.

To upgrade the software on the server, go to the **Maintenance / Update** web administration page. (In most cases the web administration pages can be viewed with various web browsers, but for this task it is recommended that you use the Microsoft Internet Explorer browser.) You will see a page like this:

The screenshot shows a web browser window with the URL [Home > Maintenance > Update](#). The page title is "Maintenance". The current version is 5.1.2.6 and the build date is Feb 22 2005, 10:39:00. The page content is as follows:

Two steps are required for installing an Allworx software update:

- 1) Copy Files To Update Area**
The files for the software update must first be copied to the Allworx. To copy files, you may [download from the web](#), or you may drag and drop the update files from an Allworx Software Release CD using an [FTP window](#) as the destination.
- 2) Activate the Update**
After the files have been copied to the update area, they must be activated. Click on the "Activate Update" button to perform this step.

TIP
Copying files from the web may take several minutes depending on the speed of your network connection. Before downloading from the web, you may wish to [check the web now](#) to see if a new software version is available.

[Logout]

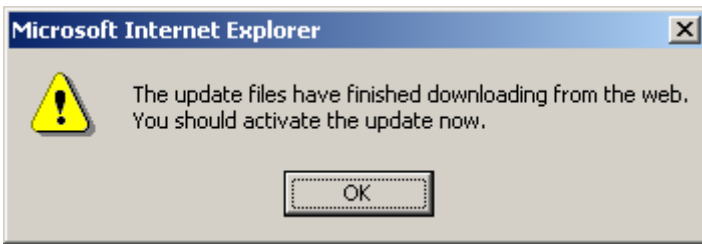
As you can see, there are two steps involved: copying the files to the update area and activating the update.

4.1 Step 1: Copy Files to the Update Area

The copy step allows two alternatives: letting the sever download the software update files from the web or your copying update files that you already have to an FTP window. Let's look at each of these alternatives in more detail.

4.1.1 Alternative 1: Download from the Web

When you click on the **download from the web** link, the server makes a connection to a web site on the Internet that has the software and begins to download it to the server. Of course, if your server can't get to the Internet, this will fail. So, make sure that your Internet connectivity is working. Depending on the performance of your Internet connection, this will take awhile (as of this writing, the download is about 32M bytes). After the download is complete, the web browser will pop up a window like this:



You must continue with the Activate step to complete the software update.

If you do not get this dialog, do not activate the update. Your disk could get corrupted. Reboot the server and use alternative 2 described in the next section.

If this step doesn't seem to work, check the **Reports / System Events** page for any error information.

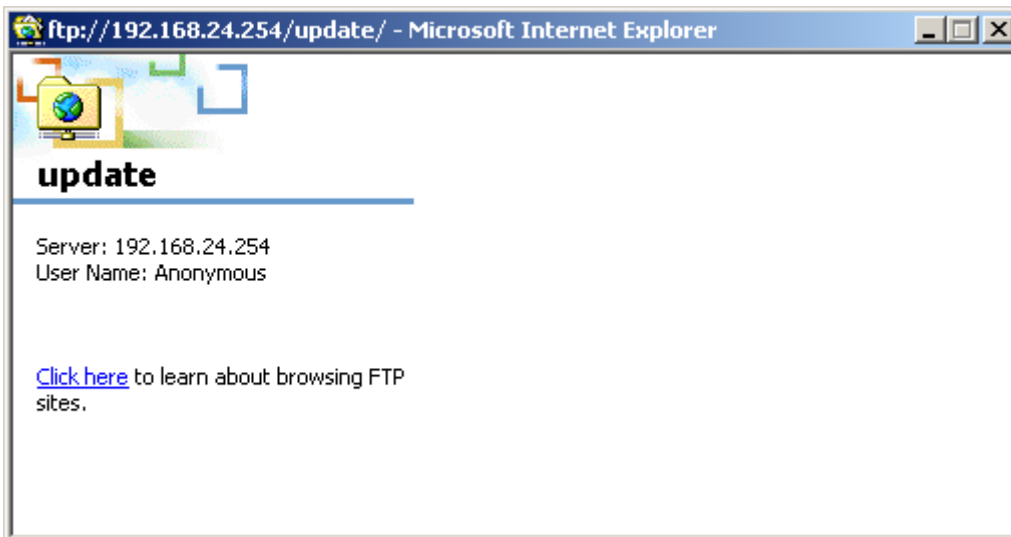
If the download took a long time to complete, your browser's connection to the server web administration may time out. If this happens, you will be asked to login again.

4.1.2 Alternative 2: Use the FTP Window

Instead of having the server download the software update files from the web, you may already have the files on a CD or your PC's hard drive. Ensure that you have these 6 files:

- installFiles.arc
- installFiles.ini
- newFlash.sre
- oisapp
- oisapp.sym
- upgrade.dat

Now you need to transfer them to the server. To do this, click on the **FTP window** link. A window similar to this will appear:



Using Windows Explorer, copy or drag the files from your PC (CD or hard drive) to this **update** window. This will cause the files to be transferred to the server.

After all the files have been copied, continue with the Activate step to complete the software update.

4.2 Step 2: Activate the Update

Once you have copied the software update files to the server, you are ready to tell it to update its software using those files. Just click the **Activate Update** button. This will cause the server to reboot. The web administration will guide you as you wait for the update to be performed.

5 Adding Handsets

5.1 SIP Phones

5.1.1 Plug-and-Play

Some SIP phones are plug-and-play, which means that they will automatically register with the server when they boot up on the network. The following phones are capable of this:

- Allworx 9112
- Cisco models 7905 and 7912 running SIP software versions 1.01 or greater
- Cisco models 7940 and 7960 running SIP software versions POS3-06-3-00 or greater

The means of configuring these phones varies depending on the DHCP configuration on their LAN:

1. If the phone is getting its IP address from the Allworx 10x DHCP server, the phone needs no manual configuration.
2. If the phone is getting its IP address from a non-Allworx 10x DHCP server and the DHCP server sends the phone the Allworx server's IP address as the TFTP boot server (option #66), the phone needs no manual configuration.
3. If the phone is getting its IP address from a non-Allworx 10x DHCP server and the DHCP server doesn't send option #66 to the phone, then the Allworx server's IP address needs to be manually set on the phone as its boot server.
4. If the DHCP server is sending the wrong option #66 IP address,
 - a. For Allworx 9112, the manual setting on the phone will override the value sent by the DHCP server.
 - b. For Cisco phones, the alternate TFTP server should be set on the phone to override the value sent by the DHCP server.
5. If there is no DHCP server, then the phone needs to be manually configured with a static IP address (and netmask and gateway) and Allworx server's IP address as its boot server.

TIP: If you are having trouble getting a phone configured, restore its factory defaults and reapply the desired settings.

When an Allworx 9112 is booted on the network, the Allworx server will automatically prompt you to upgrade its software when it has a newer version available.

When a plug-and-play phone is registered with the server, it will appear on the **Phone System / Handsets** page in the SIP Handsets section. It will show the correct model and the MAC address will be displayed in the Identification column.

Note that a Cisco 7960 will be recognized as a 7940 and will have to be changed to 7960 via the **Phone System / Handsets** page by clicking on the **Modify** link next to the phone entry.

5.1.2 Manual Add

The Allworx 10x supports the manual adding of SIP phones to the system. This may be done because the SIP phone to be added is not a plug-and-play phone or you want to configure the phone without actually plugging it into the network (example, to pre-configure the server before an installation at the customer site).

To manually add a SIP phone, click on the **New SIP Handset** link in the **SIP Handsets** section of the **Phone System / Handsets** page.

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Home > Maintenance > Program > New Handset

Maintenance

New Handset

Owner: {none}

Description: []

Caller ID: []

Extension: --- (optional, see TIP)

TIP

If an *Owner* other than 'admin' is selected the handset will automatically be added to the owner's *In Office* call route.

If an *Extension* is selected, the extension will be created with a call route to ring this handset. This is typically used in the case of a conference room or lab phone that does not require an owner.

Handset Type

Select the handset type:

Analog Phone SIP Phone

Port: 04

Model: Allworx 9112 Number of Lines: 1

Phone must authenticate (register)

Login ID: []

Password: []

Phone can plug-n-play

MAC Address: []

Allworx DHCP Server assigns IP Address

IP Address: []

SIP Protocol Port: 5060

Program Cancel

Select the phone model and fill in the required fields.

If the phone isn't an Allworx 9112 or one of the recognized Cisco phone types, then follow these steps:

1. Change the **SIP Phone Model** to **Generic SIP**. Dismiss the pop-up warning that Generic SIP cannot plug-n-play.
2. Enter a **Login ID** and **Password** for the phone to use to authenticate with the server. Note that the **Login ID** must be unique; cannot use the same **Login ID** on multiple phones.
3. Click the **Program** button to add the new handset to server.
4. Configure the phone (following its particular configuration instructions) with the **User ID** (shown on the updated **Phone System / Handsets** page), **Login ID**, and **Password**.

If the phone is one of the supported plug-and-play types, then follow these steps:

1. Change the **SIP Phone Model** to the appropriate selection for the phone to be configured.
2. Choose **Phone can plug-n-play**.
3. Enter the correct **MAC Address** for the phone. Note if this isn't correct, then when the phone is booted on the network, the server will have a duplicate entry for this phone (because it will plug-n-play register itself with the system at the correct MAC address).
4. Enter the **IP Address** if necessary.
5. Click the **Program** button to add the new handset to server.

When the phone is registered with the server, its entry on the **Handsets** page will indicate that.

5.2 Analog Phones

Plug the phone into one of the server's phone ports reserved for Inside Phone Extensions. It is a good idea to plug the first phone into port 16, the next one into port 15, etc., working backwards toward port 4. Lift the phone receiver so that the phone is "off hook." Click the **Scan For New** link on the **Phone System / Handsets** page in the **Analog Handsets** section. Your phone will now appear in the **Analog Handsets** section of the page. Hang up the phone receiver.

5.3 Testing Phones

Below are some suggested steps for verifying that a phone is set up correctly:

1. Dial 400 for auto attendant.
2. Enter '#7'. The auto attendant will play back information about the phone configuration.
3. Hangup. The phone will ring back.

If any of these steps fail, check:

- Physical wiring between phone and server
- Network settings
- Phone and server configuration

6 SIP Proxy

Note that this is an optional feature that requires a feature key.

Using a SIP Proxy, the Allworx 10x can use an Internet Telephony Service Provider (ITSP) to provide support for dialing and receiving outside calls. To configure the server for your ITSP, go to the **Phone System / Outside Lines** page. In the **SIP Proxies** section, you will see a list of all the SIP Proxies you have configured. To configure a new SIP Proxy, click the **New SIP Proxy** link. You will see a page like this:

The screenshot shows the 'New SIP Proxy' configuration page in the Allworx System Administration interface. The page is titled 'Maintenance' and has a breadcrumb trail: Home > Maintenance > Program > New SIP Proxy. The left sidebar contains a navigation menu with options: About, Phone System, Business, Network, Servers, Reports, Maintenance (selected), Feature Keys, OfficeSafe, Program, Restart, Time, Tools, Update, Installation Steps, and [Logout].

The main configuration area is titled 'SIP Proxy' and contains the following fields and options:

- Description:** Text input field.
- User ID:** Text input field.
- Proxy IP Address:** Text input field.
- Proxy Port:** Text input field with value '5060'.
- SIP Proxy Server requires SIP registration**
- Login ID:** Text input field.
- Password:** Text input field.
- Registrar IP Address and Port are different from Proxy settings**
- Registrar IP Address:** Text input field.
- Registrar Port:** Text input field with value '5060'.
- Digits Sent:** Dropdown menu with 'all 11 digits' selected. A note in parentheses says '(digits from the full number, 1-XXX-XXX-XXXX, to send to the proxy)'. Below this is a **Maximum Active Calls** field with value '1'.

A red warning box in the top right corner contains the text: 'EVALUATION PURPOSES ONLY. The Allworx engineering team is currently certifying SIP Proxy providers. This release supports SIP Proxies for evaluation purposes only. For more information please email support@allworx.com.'

Below the main configuration area are two sections:

- Default Auto Attendant:** Select the attendant used to answer when calls received from this source are routed to an Auto Attendant. A dropdown menu shows 'Auto Attendant (x431)'.
- Call Route:** Calls received from this SIP Proxy go to:
 - Extension:** choose an extension (dropdown menu)
 - Auto Attendant**
 - Voicemail for user:** Joseph Andrews (joe) (dropdown menu)
 - Routed using DID Block:** assign DID Block Later (dropdown menu)

At the bottom of the form are two buttons: 'Program' and 'Cancel'.

Note that this feature is still for evaluation purposes only.

Here is some additional info on particular parameters:

- **Description:** This can be any text useful to the server administrator. Example: "Starship".
- **User ID:** This is assigned by the ITSP. It is typically a phone number.
- **Proxy IP Address:** This is the IP address of the ITSP's server. Get this from the ITSP.
- **Proxy Port:** The default value is typical. Verify with the ITSP.

- If your **SIP proxy server requires SIP registration**, check the box indicating this and fill in the **Login ID** and **Password** assigned by the ITSP. If the ITSP uses a registrar server that is different than the SIP proxy server, check the appropriate checkbox and enter the address of this server in the **Registrar IP Address** field.
- **Digits Sent:** This is the number of dialed DTMF digits to be sent to the ITSP when making a call. If the number specified is less than the number dialed, the trailing digits are the ones sent. The default value is typical.
- **Maximum Active Calls:** The Allworx server will use this number to limit the total of the incoming and outgoing active calls with this SIP Proxy. This is useful for controlling the network bandwidth used.

There are a few additional parameters that can be set after creating the new SIP Proxy and then clicking its **Modify** button on the **Phone System / Outside Lines** page. Here is the **Modify SIP Proxy** page:

The screenshot displays the 'Modify SIP Proxy' configuration page within the Allworx system. The breadcrumb trail at the top reads: Home > Phone System > Outside Lines > Modify SIP Proxy. The main content area is titled 'Phone System' and contains several sections:

- SIP Proxy:** Fields for Description (My ITSP), User ID (5551212), Proxy IP Address (192.168.1.10), and Proxy Port (5060). A checkbox for 'SIP Proxy Server requires SIP registration' is checked. Below it are fields for Login ID (myid) and Password (*****). An unchecked checkbox indicates 'Registrar IP Address and Port are different from Proxy settings', with corresponding fields for Registrar IP Address (192.168.1.10) and Registrar Port (5060).
- Advanced Settings:** Includes DTMF Payload (96), Pad DTMF RTP Packets (unchecked), and Call Transfer Method (SIP Hold).
- Default Auto Attendant:** A dropdown menu set to 'Auto Attendant (x431)'.
- Call Route:** Radio buttons for routing calls to an Extension, Auto Attendant (selected), Voicemail for user (Joseph Andrews (joe)), or Routed using DID Block (assign DID Block Later).
- Other Fields:** Digits Sent (all 11 digits) and Maximum Active Calls (1).

A red warning box in the top right corner states: 'EVALUATION PURPOSES ONLY. The Allworx engineering team is currently certifying SIP Proxy providers. This release supports SIP Proxies for evaluation purposes only. For more information please email support@allworx.com.'

The only difference between this page and the one for creating a new SIP Proxy is the **Advanced Settings** section.

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The specifics of what values to enter for each of the advanced settings parameters vary with different ITSP's. Consult with your ITSP for this information.

7 Configuring Allworx 9112 Phones

7.1 Introduction

To configure Allworx 9112 phones, go to the **SIP Handsets** section of the **Phone System / Handsets** page.

SIP Handsets					
Handset	Line	Owner	Caller ID	Identification	Action
					New SIP Handset
Allworx 9112	View	Configuration	Add Call Appearance	Reboot Phone	Replace Phone
Susan Bell	1	susan	Susan Bell	MAC: 00-0A-DD-81-00-7A User ID: 5100 Login ID: 5100 (expires: APR 07, 2005 11:19 AM) 192.168.24.1:5060	Modify Delete Ring

This shows a list of all Allworx 9112 phones known by the Allworx server. As you can see, a number of functions are available by clicking on per phone links.

Per Phone Functions:

- **View Configuration** – This allows you to view and modify the phone configuration.
- **Add Call Appearance** – This allows you to create another call appearance for this phone. Multiple call appearances allow a single phone to handle calls for multiple extensions.

Example: Administrative Assistant

The office administrative assistant, Susan Bell, wants to be able to optionally answer the phones of two executives: Tom Brown and Joe Andrews. Here are the steps to accomplish this:

1. The assistant will already have one call appearance on her phone for her own calls. New call appearances will be added for each executive. The first new call appearance description could be changed from “Susan Bell (L2)” to “Susan Bell (Tom)”. The second description could be changed similarly.
2. The call routes for the executives would be set to ring their own handset and the assistant’s handset in parallel. However, by setting it to ring the call appearance on Susan’s phone that is designated for that executive, she’ll know who the call is for and can answer accordingly (“Good morning, Tom Brown’s office...”).

Note that the procedures in this example could be applied to other scenarios like one person answering calls to “sales” as well as “support”. By sending each of those calls to distinct call appearances, the answering person can greet the caller appropriately.

- **Reboot Phone** – Reboot the phone. The reboot will occur after a short delay on an idle phone. If the phone is in-use, the reboot will wait until the phone is idle.
- **Replace Phone** – This allows the phone to be replaced by another while automatically transferring all the configuration parameters and settings to the new phone.
- **Modify** – This allows for the modification of handset call appearance parameters.

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- **Delete** – Delete the phone (so the server no longer knows about it).
- **Ring** – Ring the phone. This is useful to verify connectivity.

The phones must be rebooted before any configuration changes will take affect.

The phone configuration parameters are available by clicking on the **View Configuration** link.

Home > Phone System > Handsets > View Configuration

allworx About

Phone System

- [Audit PIN Codes](#)
- [Auto Attendants](#)
- [Call Blocking](#)
- [Call Queues](#)
- [Dist. Rules](#)
- [Extensions](#)
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[Logout]

Phone System

Allworx 9112
 MAC: 00-0a-dd-81-00-7a
 Call Appearances:
 Susan Bell

Template Options

Save save this handset configuration in a template

Apply apply the selected template to this handset configuration
 9112 (Factory - Key)

NOTE
 It is necessary to reboot this Allworx phone for changes to take effect.
[Reboot phone now](#)

Programmable Function Keys
 Station Mode: PBX Behavior

Key	Type	Action
12	(not defined)	Modify
11	(not defined)	
10	(not defined)	
9	(not defined)	
8	(not defined)	
7	(not defined)	
6	(not defined)	
5	(not defined)	
4	(not defined)	
3	(not defined)	
2	Call Appearance Susan Bell, Ring Type: AUTO	
1	Call Appearance Susan Bell, Ring Type: AUTO	

Phone Options
 Values marked with * may be overridden by the user of the phone. These values are restored when the user of the phone restores factory defaults.

	Value	Action
Call History Size	99 *	Modify
Clock Mode	12 Hour *	
Codec Preference Order	G.711, G.729A	
Daylight Saving Time	on (U.S. rules)	
Hold Reminder Mode	Timer *	
Hold Reminder Timeout	300 *	
Message Waiting Indication	Visual	
Off Hook Digits Dialed		
Paging Mode	Pages always accepted *	
Paging Zones	0	
Redial Memory	Forever *	
RTP Media Port Range	16384 to 32767	
SIP NAT Keep-alive Interval	30	
SIP Port	5060	
Time Zone	Use current server setting	
Audible Dialing	enabled *	
Auto On Hold	disabled *	
Auto Retrieve Calls	enabled *	
Call Timer Display	enabled *	
Caller ID Display	enabled	
Configuration Menu	enabled	

This page contains a number of functional sections: Programmable Function Keys, Template Options, and Phone Options. Each one will be examined in the sections below.


7.2 Programmable Function Keys (PFK's)

Look at the Programmable Function Keys section on the View Configuration page.

Programmable Function Keys		
Station Mode: PBX Behavior		
Key	Type	Action
12	(not defined)	Modify
11	(not defined)	
10	(not defined)	
9	(not defined)	
8	(not defined)	
7	(not defined)	
6	(not defined)	
5	(not defined)	
4	(not defined)	
3	(not defined)	
2	Call Appearance Susan Bell, Ring Type: AUTO	
1	Call Appearance Susan Bell, Ring Type: AUTO	

This section is used to show and modify the configuration of the individual PFK's on a particular handset. To modify the configuration, click the **Modify** link.

Home > Phone System > Handsets >


Phone System

Phone System

- [Audit PIN Codes](#)
- [Auto Attendants](#)
- [Call Blocking](#)
- [Call Queues](#)
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[Logout]

Allworx 9112

MAC: 00-0a-dd-81-00-7a

Call Appearances:
Susan Bell

NOTE

It is necessary to reboot the Allworx handset for changes to take effect.

TIP

Outside Lines that are enabled for Line Appearance can be automatically assigned to Programmable Function Keys on the phone. Click the button below to assign the Outside Lines.

Programmable Function Keys

Station Mode

Key	Type	Type
12	<input type="text" value="Not Used"/>	
11	<input type="text" value="Not Used"/>	
10	<input type="text" value="Not Used"/>	
9	<input type="text" value="Not Used"/>	
8	<input type="text" value="Not Used"/>	
7	<input type="text" value="Not Used"/>	
6	<input type="text" value="Not Used"/>	
5	<input type="text" value="Not Used"/>	
4	<input type="text" value="Not Used"/>	
3	<input type="text" value="Not Used"/>	
2	<input type="text" value="Call Appearance"/>	Susan Bell Ring Type: AUTO change
1	<input type="text" value="Call Appearance"/>	Susan Bell Ring Type: AUTO change

Notice the **Station Mode** selection. It can be set to **PBX Behavior** or **Key System Behavior**. This selection is used to change the way some of the PFK functions work. These changes will be specified below when the functions are described.

To set the function for a particular PFK, click the drop down arrow and choose one of the functions.

7.2.1 PFK Function Selections

Busy Lamp Field (BLF) PFK Type – Monitors and dials another phone. The other phone is specified when setting up the BLF function. When the PFK is pressed, the behavior of this function is dependent upon the **Station Mode** selection.

- When **Station Mode** is set to **PBX Behavior**, the extension of the owner of the designated phone is dialed.
- When **Station Mode** is set to **Key System Behavior**, an intercom connection is made to the designated phone.

Call Appearance PFK Type – The PFK can be mapped to one of the phone's call appearances. This allows calls to be placed or received using this call appearance. Additional notes:

- Recall that a phone can have multiple call appearances. This allows for each call appearance to be distinctly used in call routing and for those calls to be managed independently and concurrently on the same phone.
- Mapping more than one PFK to the same call appearance allows multiple calls to that call appearance to be active at the same time. The call appearance won't appear busy to the call route (see Call Routing) until all the PFK's defined for this call appearance are in use.

Example: Busy Receptionist

Requirements:

Susan works as a receptionist at a busy office. She gets many phone calls each hour. She wants to be able to answer each call while minimizing the possibility of any caller getting a busy signal.

Phone Configuration:

She has one call appearance defined on her phone. She sets up 8 of her phone's PFK's so that they map to her phone's call appearance. (She wants to use the remaining PFK's for other functions).

Discussion:

When the first phone call comes in, her phone will ring and the first of the call appearance PFK's blink green. While talking with the first caller, a second call comes in. Her phone rings again and the second of the call appearance PFK's blinks green. She puts the first caller on hold by pressing the Hold button on her phone and picks up the second caller by pressing the second call appearance PFK. She continues to put callers on hold and answer new calls just as described. She terminates calls by switching to another call appearance PFK.

Function PFK Type – The PFK can be set to perform one of a specified set of functions. Allowable functions are:

- **Centrex Flash** – Sends a flash signal out the analog CO line. This is ignored if not connected to an analog CO line.
- **Headset** – Turns the headset (if one is plugged in) on and off. If a headset is plugged in and the handset is off-hook, then this button toggles the audio between the headset and the handset. (If a headset PFK isn't defined, the phone's speaker button will be used to operate the headset).
- **Personal Speed Dial** – Dials a Personal Speed Dial Number that is programmed directly on the phone. The mapping of Personal Speed Dial PFK's and Personal Speed Dial Numbers defined in the handset is as follows. Starting with the uppermost PFK on the phone, count each Personal Speed Dial PFK beginning with 0. This number determines which handset defined Personal Speed Dial Number the PFK dials.

- **Redial** – Redials the last dialed number. Only call appearance (not line appearance) dialed calls can be redialed.

Line Appearance PFK Type – Monitor the status of an outside line, answer an incoming call on that line, and select the line for outbound calls. The line is specified when setting up this function for this PFK. For outside lines to be available for selection, they must be enabled on the **Phone System / Outside Lines / Modify** page by checking the **Enable Line Appearance** checkbox. Any number dialed on a line appearance bypasses dialing rules, service groups, call history, and the handset's **Outside Line Connection** parameters (**Phone System / Handsets / Modify Handset**).

Not Used PFK Type – No action. This function is selected when the PFK should not perform any action.

Queue Appearance PFK Type – Monitor the status of a Call Queue and answer calls in the queue. See Call Queues for more information on configuring phones for this use.

Speed Dial PFK Type – Automatically dials an extension. The extension is specified when setting up the Speed Dial function for this PFK.

7.3 Phone Options

Look at the Phone Options section on the View Configuration page.

Phone Options		
Values marked with * may be overridden by the user of the phone. These values are restored when the user of the phone restores factory defaults.		
	Value	Action
Call History Size	99 *	Modify
Clock Mode	12 Hour *	
Codec Preference Order	G.711, G.729A	
Daylight Saving Time	on (U.S. rules)	
Hold Reminder Mode	Timer *	
Hold Reminder Timeout	300 *	
Message Waiting Indication	Visual	
Off Hook Digits Dialed		
Paging Mode	Pages always accepted *	
Paging Zones	0	
Redial Memory	Forever *	
RTP Media Port Range	16384 to 32767	
SIP NAT Keep-alive Interval	30	
SIP Port	5060	
Time Zone	Use current server setting	
Audible Dialing	enabled *	
Auto On Hold	disabled *	
Auto Retrieve Calls	enabled *	
Call Timer Display	enabled *	
Caller ID Display	enabled	
Configuration Menu	enabled	
DTMF Playout	enabled	
Intercom Auto Answer	enabled *	
Keypad Dialing	enabled	
Off Hook Ringing	enabled *	
On Hook Dialing	enabled *	
Visual Ringing	enabled *	

This section is used to show and modify the phone options for a particular handset. To modify the configuration, click the **Modify** link.

allworx Home > Phone System > Handsets > Modify Handset

Phone System

Allworx 9112
MAC: 00-0a-dd-81-00-7a
Call Appearances:
Susan Bell

NOTE
It is necessary to reboot this Allworx handset for changes to take effect.

Phone Options
Fields marked with * may be overridden by the user of the phone. These fields are restored when the user of the phone restores factory defaults.

Call History Size* 99 (0 - 99, calls kept in history)

Clock Mode* 12 Hour

Codec Preference Order G.711, G.729A

Daylight Saving Time on (U.S. rules)

Hold Reminder Mode* Timer

Hold Reminder Timeout* 300 (1 - 600 seconds)

Message Waiting Indication Visual

Off Hook Digits Dialed

Paging Mode* Pages always accepted

Paging Zones 0 (comma separated list of zones from 0 through 9)

Redial Memory* Forever (length of time last number dialed is stored)

RTP Media Range (Port to Port) 16384 to 32767 (typically 16384 to 32767)

SIP NAT Keep-alive Interval 30 (10 - 300 seconds) for remote phones behind NAT (firewall)

SIP Port 5060 (typically set to 5060, change if necessary for firewall)

Time Zone use current server setting

Enable Audible Dialing* (tone heard when key pressed)

Enable Auto On Hold*

Enable Auto Retrieve Calls*

Enable Call Timer Display*

Enable Caller ID Display

Enable Configuration Menu (CONFIG softkey enabled on phone)

Enable DTMF Playout (DTMF sent in outbound RTP packet)

Enable Intercom Auto Answer* (speakerphone activates automatically)

Enable Keypad Dialing (typically enabled)

Enable Off Hook Ringing* (phone rings when new call received while off hook)

Enable On Hook Dialing* (speakerphone activated when number dialed)

Enable Visual Ringing*

Update Start Over Cancel

Many of these options are easily understood from the web page. However, some of the more complicated ones will be described next.

7.3.1 Description of Options

Codec Preference Order – Sets the preferred codec order in the phone. The codec is the method of encoding/decoding the audio sent to and received by the phone. The two possible codec's are G.711 and G.729A. G.711 preserves voice quality, but takes more bandwidth. G.729A takes less bandwidth, but reduces voice quality. Note that this only sets the preferred codec order. Not all codec's are supported for all call types (for example, accessing the server auto attendant requires G.711). To maintain operability, the phone will use whichever codec is required to support the call. This means that your preferred codec won't always be the one used.

Off Hook Digits Dialed – Enables the phone to automatically dial some digits whenever the phone is taken off hook.

- An example of this is a service phone placed at a locked door or loading dock where all dialing is disabled and want the phone to automatically dial a predefined number when it is taken off hook.
- Another example might be to have the phone automatically dial '9' (or '8' + PIN Code) to get an outside line. Note that these digits will always be dialed when the phone is taken off hook, so this might interfere with other uses of the phone. For example, if the phone is configured to automatically dial '9', the user will not be able to use PBX features that don't start with '9' (Call Park, Call Forwarding, etc.).

Paging Zones – Sets the list of paging zones that the phone will participate in. For example, if the sales team uses zone 3 for pages to the entire team, then this option on the team member's phones must be set to include zone 3.

SIP NAT Keep-alive Interval – Some NAT firewalls will automatically timeout connections. If a remote phone is behind such a firewall, then this setting allows a keep-alive packet to be sent from the phone to the Allworx server at the frequency specified. When set to an interval more frequent than the firewall timeout, this will prevent the firewall from timing out the connection.

Enable Auto On Hold – When one call is active on the phone and another call comes in (with a free Call/Line Appearance PFK), if the PFK for the new call is pressed, the first call is automatically put on hold instead of terminated.

Enable Auto Retrieve Calls – When the phone is on hook and a call is on hold, then when the phone is taken off hook, the on hold call is automatically retrieved. When this is not enabled, the phone gets an open line (if available) when taken off hook.

Enable DTMF Playout – DTMF digits are allowed to be sent during an active call.

Enable Keypad Dialing – If not enabled, the keypad cannot be used to initiate or transfer a call. This does not prevent the keypad from functioning during an active call. It prevents the use of the keypad to initiate any functions directly with the Allworx server (for example: dial number, Call Park, etc.).

Enable On Hook Dialing – On hook dialing means that the handset doesn't have to be picked up (nor the speakerphone button hit) before dialing a number on the keypad. When the phone is on hook and a digit is dialed on the keypad, the phone will automatically go off hook to the speaker phone.

7.4 Configuration Templates

Configuring many phones can be time consuming and error prone. To improve this, the Allworx 10x provides templates that store a phone configuration. The system provides a factory default template for each phone type. However, the administrator can create his own unique templates as well.

A list of all the templates known by the system is in the **Handset Configuration Templates** section of the **Phone System / Handsets** page.

Home > Phone System > Handsets

allworx
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Phone System
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Phone System

Analog Handsets					Scan For New	Handset Configuration Templates		
Handset	Owner	Caller ID	Port	Action		Model	Description	Action
10			10	Modify Delete Ring		Allworx 9112	9112 (Factory - Key)	Activate
11			11	Modify Delete Ring		Allworx 9112	9112 (Factory - PBX)	* active *
Thomas Brown	tom	Thomas Brown	15	Modify Delete Ring		Allworx 9102	9102 (Factory)	* active *
Joseph Andrews	joe	Joseph Andrews	16	Modify Delete Ring				
			04	New Handset				
			05	New Handset				
			06	New Handset				
			07	New Handset				
			08	New Handset				
			09	New Handset				
			12	New Handset				
			13	New Handset				
			14	New Handset				

SIP Handsets					
Handset	Line	Owner	Caller ID	Identification	Action
					New SIP Handset
Allworx 9112					View Configuration Add Call Appearance Reboot Phone Replace Phone
Susan Bell	1	susan	Susan Bell	MAC: 00-0A-DD-81-00-7A User ID: 5100 Login ID: 5100 (expires: APR 07, 2005 10:20 AM) 192.168.24.1:5060	Modify Delete Ring

7.4.1 Default Templates

The current default template for each phone type is listed as *** active *** in the list of **Handset Configuration Templates**. To make another template the default, click its **Activate** link. The current active templates are used for configuring phones during plug-n-play.

7.4.2 Viewing a Template's Configuration

To view a template's phone configuration, click on the template **Description** in the list of **Handset Configuration Templates**.

7.4.3 Creating a New Template

New templates can be created from any phone's configuration. Creating a new template has a few steps:

1. Click **View Configuration** on an existing phone.
2. Change the configuration according to the requirements for the new template.
3. Save the current configuration as a template.

To perform the last step, notice the **Template Options** section of the **View Configuration** page.

Template Options	
Save	save this handset configuration in a template
Apply	apply the selected template to this handset configuration
	9112 (Factory - Key) ▼

When you click the **Save** button, a pop-up window prompts you to enter the description for the new configuration. After clicking **OK** in the pop-up window, the template is saved and will now appear in the list of **Handset Configuration Templates**.

7.4.4 Applying a Template to a Phone's Configuration

To apply a template to a phone's configuration, follow these steps:

1. Click **View Configuration** on the phone to be changed.
2. Using the **Template Options** section, select the template to be applied from the drop down list.
3. Click the **Apply** button.

7.4.5 Editing a Template's Configuration

To edit a template's configuration, a phone's configuration must be edited and then re-saved to the template that you want to change. There is no way to edit the template configuration directly.

7.4.6 Deleting a New Template

The factory provided templates cannot be deleted. To delete an administrator created template, click its **Delete** link in the **Handset Configuration Templates** section of the **Phone System / Handsets** page.

8 Dialing Rules and Service Groups

8.1 Background Information

8.1.1 Dialing Rules

As a user dials digits on a phone, the system collects the digits one at a time. How does it know when it should wait for more digits (because the user is dialing slowly) or when it should take the digits it has and try to make a call with them? The server's rules for this are called Dialing Rules. Dialing rules specify to the Allworx server what digit sequences are valid to be dialed out on the public phone network.

Examples:

- When dialing a "local" number, you don't normally dial 1 and the area code. So, the system should collect the first 7 digits dialed and then try to make the call. It shouldn't wait for more.
- When you dial a long distance number, you normally dial 1 plus the area code and then the 7 digit local number. The system needs to recognize this case distinctly from the "local" number case and know to collect all 11 digits before trying to make the call.

In addition, some local calling areas require an area code to be dialed without the 1 prefix in order to properly dial some numbers. This implies that these rules may vary dependant on the local calling area where the Allworx server is installed.

8.1.2 Home Area Code

Some features of the Allworx server and phones (example: redial from call history) require the knowledge of the home area code. So this information is a required part of the dialing rules.

8.1.3 Service Groups

The server can use a variety of services to place outside calls: CO lines, SIP Gateways, and SIP Proxies. Some of these services may be optimum for particular types of calls. For example, your SIP Proxy might be the least expensive way to make long distance calls, yet your CO lines are best for local calls.

A Service Group is a collection of services that can be used to place outside calls. Three service groups are created automatically by the server:

- All CO Lines
- All CO Lines & SIP Gateways
- All CO Lines, SIP Gateways, and SIP Proxies

8.1.4 Exceptions

Dialing rules and service groups are only used for call appearance calls, not for line appearance calls. (This is because line appearance calls access the outside line directly).

Only the North American Numbering Plan (NANP) is supported by the server dialing rules. If your Allworx server is located in an area that does not support NANP, then you can gain direct access to an outside line by using a line appearance PFK or dialing '9#'.

8.2 Configuring Service Groups

Dialing rules, home area code, and service groups are all configured using the **Phone System / Dialing Rules** page.

The screenshot shows the 'Phone System' configuration page for 'Dialing Rules'. The breadcrumb trail is 'Home > Phone System > Dialing Rules'. The left sidebar contains a navigation menu with categories: Phone System (Audit PIN Codes, Auto Attendants, Call Blocking, Call Queues, **Dialing Rules**, Extensions, Handsets, Outside Lines, Speed Dial), Business, Network, Servers, Reports, Maintenance, and Installation Steps. A [Logout] link is at the bottom left.

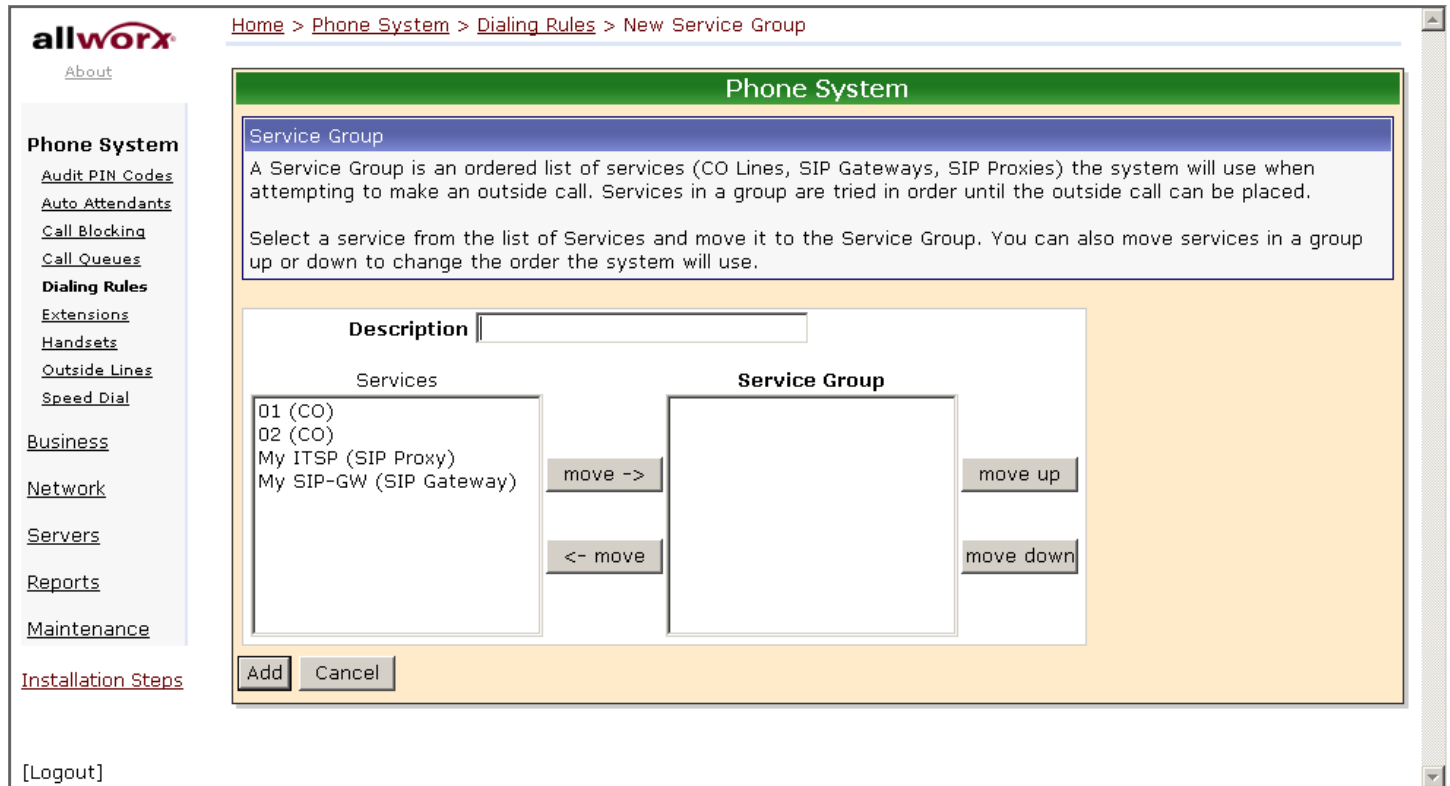
The main content area is titled 'Phone System' and contains three tables:

Dial 9 - Service Groups			
Area Code	Dial Method	Service Group	Action
any	1 + Area Code dialed	All CO Lines & SIP Gateways	Modify

Dial 8+PIN - Service Group	
Service Group	Action
All CO Lines & SIP Gateways	Modify

Service Groups		
Group	Service(s)	Action
		New Service Group
All CO Lines	02 (CO) 01 (CO)	
All CO Lines & SIP Gateways	02 (CO) 01 (CO) My SIP-GW (SIP Gateway)	
All CO Lines, SIP Gateways & SIP Proxies	02 (CO) 01 (CO) My SIP-GW (SIP Gateway) My ITSP (SIP Proxy)	

The first step in configuring this area is to set up the desired service groups. If one of the pre-configured service groups satisfies your requirements, you have nothing more to do. If not, click **New Service Group** to create your own.



Enter a **Description** for this service group. Then, move the services required for this group into the new service group.

When an outbound call is initiated using the service group, the services in the group will be tried in top-down order until an idle service is found. The call will be made using the first idle service in the list. So, the last step in setting up a service group is to ensure that the order of the services reflects your preferred priority of use. Regarding service selection when one of the services in the group is a SIP proxy, the SIP proxy will continue to be considered idle until its maximum active calls setting has been reached.

8.3 Configuring Home Area Code and Dialing Rules

The configuration of dialing rules, home area code, and dial 9 service groups are all done together. The dial 8 + PIN service group is done separately.

8.3.1 Dialing Rules, Home Area Code, and Dial 9 Service Groups

To configure the dialing rules, home area code, and dial 9 service groups, click on the **Modify** link in the **Dial 9 – Service Groups** section of the **Phone System / Dialing Rules** page.

Home > Phone System > Dialing Rules > Modify Dial 9

Phone System

Area Code	Dial Method	Service Group
Home <input type="text"/>	1 + Area Code dialed <input type="text"/>	All CO Lines & SIP Gateways <input type="text"/>
<input type="text"/>	1 + Area Code dialed <input type="text"/>	All CO Lines & SIP Gateways <input type="text"/>
<input type="text"/>	1 + Area Code dialed <input type="text"/>	All CO Lines & SIP Gateways <input type="text"/>
<input type="text"/>	1 + Area Code dialed <input type="text"/>	All CO Lines & SIP Gateways <input type="text"/>
all others	1 + Area Code dialed	All CO Lines & SIP Gateways <input type="text"/>

NOTE

Seven digit phone numbers (###-####) and phone services such as 911, 411, etc. will be routed using the Home Area Code Service Group if the Home Area Code has been set. These numbers and services will be routed using the "All CO Lines, SIP Gateways & SIP Proxies" service group if the Home Area Code has *not* been set.

TIP

Additional Area Codes can be added by filling in all the Area Codes entries on this page, clicking on Update, then clicking Modify to return to this page. Area Codes can be deleted by clearing the Area Code box then clicking on Update.

Home Area Code: This is the implied area code for 7 digit phone numbers.

Configuration Steps

1. Enter your **Home Area Code** and set the **Dial Method**. Most local calling areas will set the **Dial Method** to **Area Code NOT dialed** (i.e. 7-digit dialing). This sets up the dialing rule for local calls.
2. Notice the **all others** area code entry. Its **Dial Method** is permanently set to **1 + Area Code dialed**. This sets up the dialing rule for most long distance calling.
3. Set up any additional area codes where you must dial the area code, but not a 1 prefix.
4. Choose the desired **Service Group** for each of the area code entries.
5. If there are any additional area codes with unique service group requirements, enter it in an empty **Area Code** row, select its **Dial Method**, and choose the **Service Group**.

8.3.2 Dial 8 + PIN Service Group

To configure the **Dial 8 + PIN Service Group**, click on the **Modify** link in the **Dial 8 + PIN – Service Group** section of the **Phone System / Dialing Rules** page.

Home > Phone System > Dialing Rules > Modify Dial 8+PIN

Phone System

Dial 8+PIN - Service Group

Select the Service Group used when 8+PIN code is used for accessing Outside Lines

Service Group All CO Lines & SIP Gateways

Update Cancel

[Logout]

Choose the desired **Service Group** to use for all 8 + PIN calls.

8.4 Interaction Between Service Groups and Handset Outside Line Restrictions

As stated above, service groups are used to direct the placement of outbound calls to particular services and the service chosen for a particular call is the first idle service in the group. There is one exception to this. A handset can be configured to restrict its use of any CO Line, SIP Gateway, or SIP Proxy when placing an outside call. The rule for resolving this is as follows:

1. According to the number dialed, the configured service group is found for a particular outbound call.
2. When the first idle service in the group is found, the list of handset restrictions is checked. If the found service is restricted for the handset, then the next idle service is found and the handset check is made again. This continues until a non-restricted idle service is found to place the call. If none is found, the caller hears a fast busy signal indicating that no available outside lines were found.

9 Unified Messaging

The Allworx 10x supports unified messaging such that a user's voicemail and email messages are combined into one "inbox" in the system. Because voicemail and email are stored together and because voicemail can be accessed both as voicemail on the phone and as email on a PC, unified messaging may behave in unexpected ways. Here are some of the important properties of the unified messaging feature:

- Voicemail and email are stored in one inbox on the server (hence, "unified" messaging!). Messages from this inbox can be forwarded to another email account or POP'd to an email client.
- Using a phone, the voicemail messages can be listened to, deleted, etc. When a voicemail message is deleted via a phone, it is deleted from the inbox on the server
- When unified messages are deleted off the server because of a POP or a mail forward, the voicemail is deleted as well. So it is no longer available on a phone.

9.1 Access Mechanisms

The two main mechanisms to access your voicemail and email messages from the server are:

- Forwarding messages to another email account
- Using a POP email client to transfer the messages to your PC.

9.1.1 Forwarding

Using the server message aliases feature (**Business / Message Aliases** page), you can forward any incoming message (voicemail or email) for a user to an external (non-Allworx 10x) email account. This is done by entering the user's Allworx login name as the email alias and the external email address in the members list. If you want to save a copy of the message on the Allworx server, also enter the user's login name in the members list.

If you save a copy on the server, eventually the user may exceed his inbox quota on the server. To avoid this, the user's messages must be periodically deleted from the server.

Common Error

A common error is assigning the Allworx server's domain name to be that of an existing domain name.

Example:

MyCompany pays an Internet hosting service to provide email for all their employees at user@mycompany.com. The employees get their email by configuring their email application to POP the email off the hosting service's email server. When the Allworx server is installed, it is given a domain name of mycompany.com.

This creates a problem where the Internet DNS servers are configured such that mail for user@domainname is to be sent to the external hosting service's IP address, but the Allworx DNS server has been configured to think it is responsible for handling email for the same domain name. Then when putting user@domainname in the members list, the Allworx server says "that's me!" and sends the email to himself instead of to the external IP address. The solution is to not use the same domain name for both.

9.1.2 POP

Using the **POP3 Mail Transfers** section of the **Business / Users / Modify User** page, each Allworx user can be configured so that a POP request to transfer email to a POP client will transfer: email and voicemail messages; email messages only; or no messages. Only the first option will transfer voicemail messages to the PC email application's inbox.

Each user's PC email application needs to be configured so it can talk to the Allworx server to send and receive messages. The precise details depend on the application, but here is the required server information:

- Enter the IP address of the Allworx 10x server's **LAN TCP/IP Address** (from the **Network / Addresses** page) as the incoming POP3 server address.
- Enter the same address as the outgoing SMTP server address.
- Enter the user's server login name and password as the POP3 user and password.
- Do not use Secure Password Authentication (SPA).
- Do not use SSL to communicate with the Allworx 10x server.
- Do not use authentication for the outgoing server.

In addition, most popular email applications allow the messages to be left on the server when they are transferred to the PC. Using this feature, the user may eventually exceed his inbox quota on the server. To avoid this, it is recommended that you enable your email application to either delete all the server email after N days or to delete it when it is deleted on the PC.

9.2 Access Examples

9.2.1 Example 1

Requirements:

Tom (login name "tom") doesn't expect to get email at his Allworx 10x address, but instead uses an external email account (tom@yahoo.com). His Allworx 10x voicemail should be sent to the external email account. Voicemail should also be available from his phone.

Configuration:

Set up an Allworx 10x message alias for Tom to forward all his messages to his external email account as well as keep a copy on the Allworx server. Create a new message alias such that:

- **Email Alias** is set to "tom".
- **Members** is set to "tom" and "tom@yahoo.com".

Commentary:

Tom will use his phone to delete old voicemail messages. If any email is sent to his Allworx 10x account, it will be forwarded to his external account, leaving a copy on the Allworx server. If email accumulates on the server, he will need to periodically connect with a POP email client to delete those old email messages.

9.2.2 Example 2

Requirements:

Tom is a remote user of the system. He doesn't have a phone. His extension is configured to send all calls directly to his voicemail. He doesn't want to call in to get his voicemail, but instead wants all email and voicemail messages to be sent directly to his external email account (tom@yahoo.com).

Configuration:

Set up an Allworx 10x message alias for Tom to forward all his messages to his external email account. Create a new message alias such that:

- **Email Alias** is set to "tom".
- **Members** is set to "tom@yahoo.com".

Commentary:

Tom will get all his email and voicemail messages using his external email account. Since the system will delete the messages off the server as soon as they are forwarded, he doesn't need to periodically delete anything left there.

9.2.3 Example 3

Requirements:

Tom will use the Allworx 10x for his email. He wants to use his phone to listen to voicemail messages, but doesn't want those messages sent to his email account.

Configuration:

- Set up Tom's Allworx 10x **POP3 Mail Transfers** configuration to transfer only email messages.
- Set up Tom's PC email application to POP email off the Allworx 10x without leaving a copy on the server.

Commentary:

Tom's email messages will be deleted off the server as soon as they are POP'd to his PC email application. Voicemail messages will be kept on the server until he deletes them via his phone.

9.2.4 Example 4

Requirements:

Tom will use the Allworx 10x for his email. He wants to use his phone to listen to voicemail messages and wants those messages sent to his email account as well.

Configuration:

- Set up Tom's Allworx 10x **POP3 Mail Transfers** configuration to transfer both email and voicemail messages.
- Set up Tom's PC email application to POP email off the Allworx 10x while leaving a copy on the server until he deletes the message on his PC.

Commentary:

Tom will be able to listen to his voicemail messages on his phone or on his PC (via email). If he deletes a voicemail message using his phone, it will not be deleted on his PC. However, if he deletes a voicemail from his PC, it will be deleted from the server, making it no longer available on his phone. He will have to periodically delete messages from his PC so that he doesn't exceed his message quota on the server.

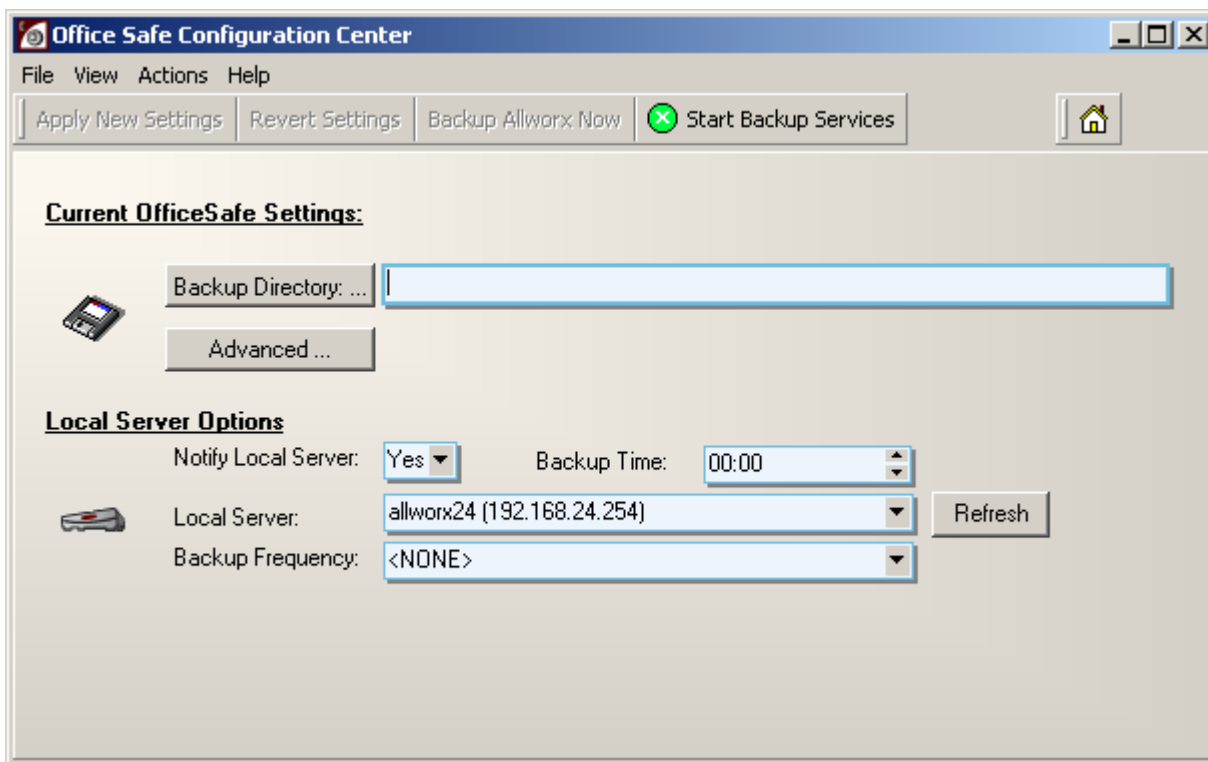
10 Backing up and Restoring Data

It's a good idea to back up your Allworx 10x server data. In the event of a server failure, you can restore your data from the backup. You can set up the Allworx OfficeSafe Application to create the backup as frequently as you need. Take a few minutes to assess how much data you would be willing to lose in case you need to restore the system from a backup.

OfficeSafe is optimized for restoring the entire Allworx server disk. It is not possible to restore only a particular file.

10.1 How to Create a Backup

1. Double-click **OfficeSafe** on your desktop or select **Programs>Allworx>OfficeSafe**.



2. Click **Backup Directory** to select where the backup should be created.
NOTE: Using the Advanced button, you can set the Allworx port for the backup server connection and the maximum size of the backup file. It is recommended that you call Customer Support before using these features.
3. Select **Yes** for **Notify Local Server**.
4. Select a **Backup Time** to have the backup performed automatically at the same time every day.
5. Select the **Local Server** to backup. Click **Refresh** to scan the network for Allworx 10x servers.
NOTE: If your Allworx server is not found, you can “ping” the server to make sure it is connected and/or on the same local subnet.
6. Select the **Backup Frequency**. More frequent updates mean that, in case of a disk failure, you will lose less data when you restore from the last backup.

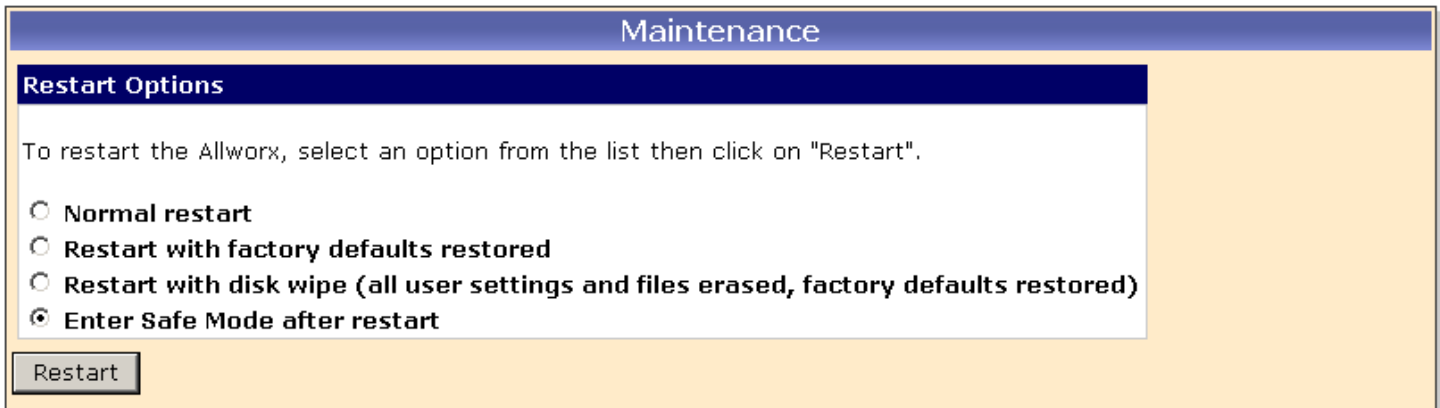
NOTE: You must select a Backup Frequency even if the frequency you want is already selected (If this is the case, select it again).

7. Click **Apply New Settings** to save your changes.
8. Click **Backup Now** or click **Start Backup Services** for the backup to begin at the time you selected. **Do not close the OfficeSafe window. The OfficeSafe application must be running on the PC whenever a backup is performed.** You may, however, minimize the window.
9. When the backup has completed, a message appears: "Backup operation completed normally." You can save the Backup Log (as it appears in the OfficeSafe window by selecting **File>Save as**).

10.2 How to Restore Data

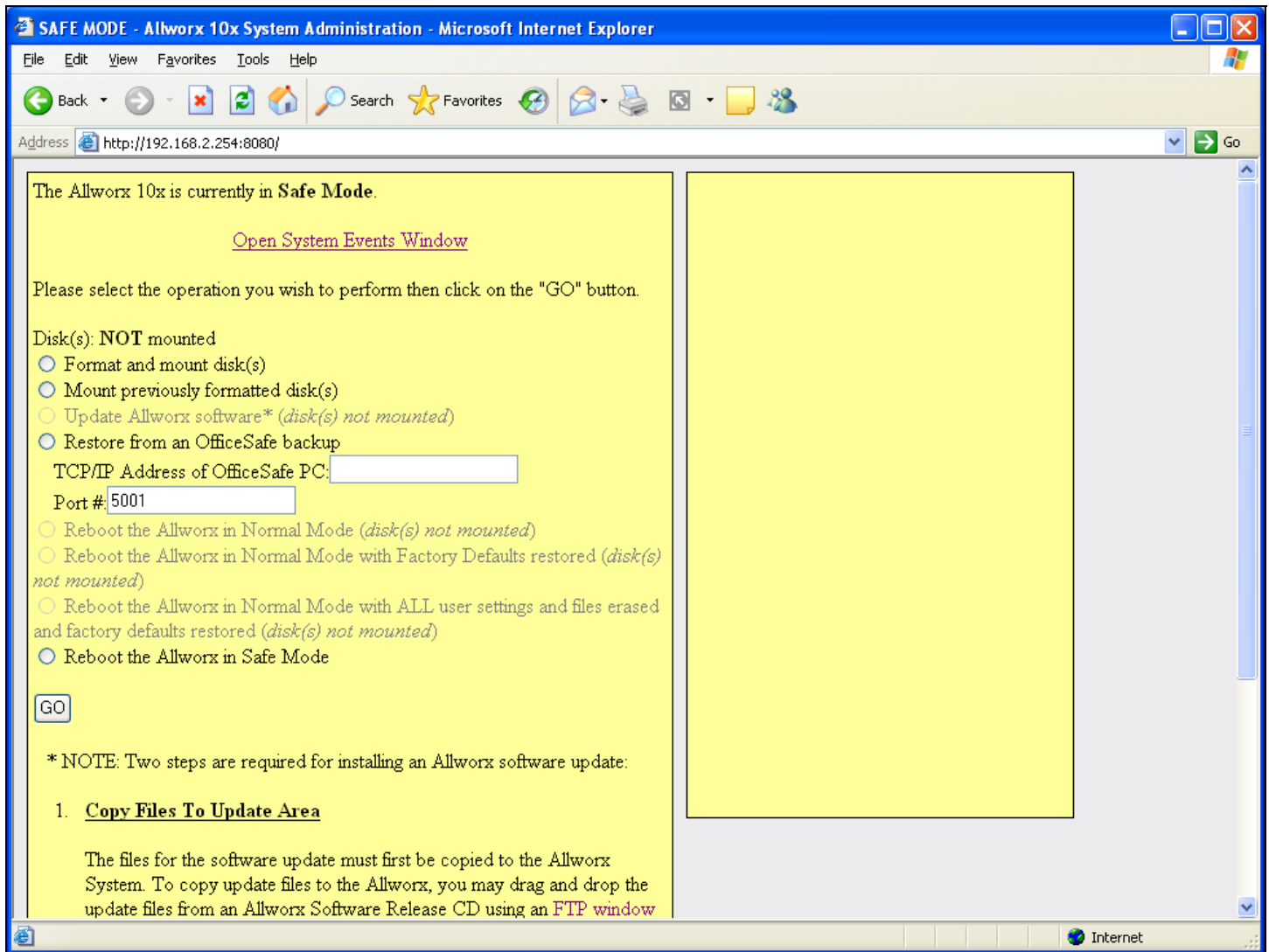
Use this procedure to restore backed up data to the Allworx 10x server. The procedures described here assume that your server can still boot. You must restore the data while the Allworx server is in Safe Mode. When in Safe Mode, the server will always use the factory default IP address (192.168.2.254) with DHCP enabled. In order to avoid IP address conflicts on the network, it is recommended that all the LAN connections be unplugged and to plug in only the OfficeSafe PC used for configuring the restore.

1. Expand **Maintenance** and click **Restart**.



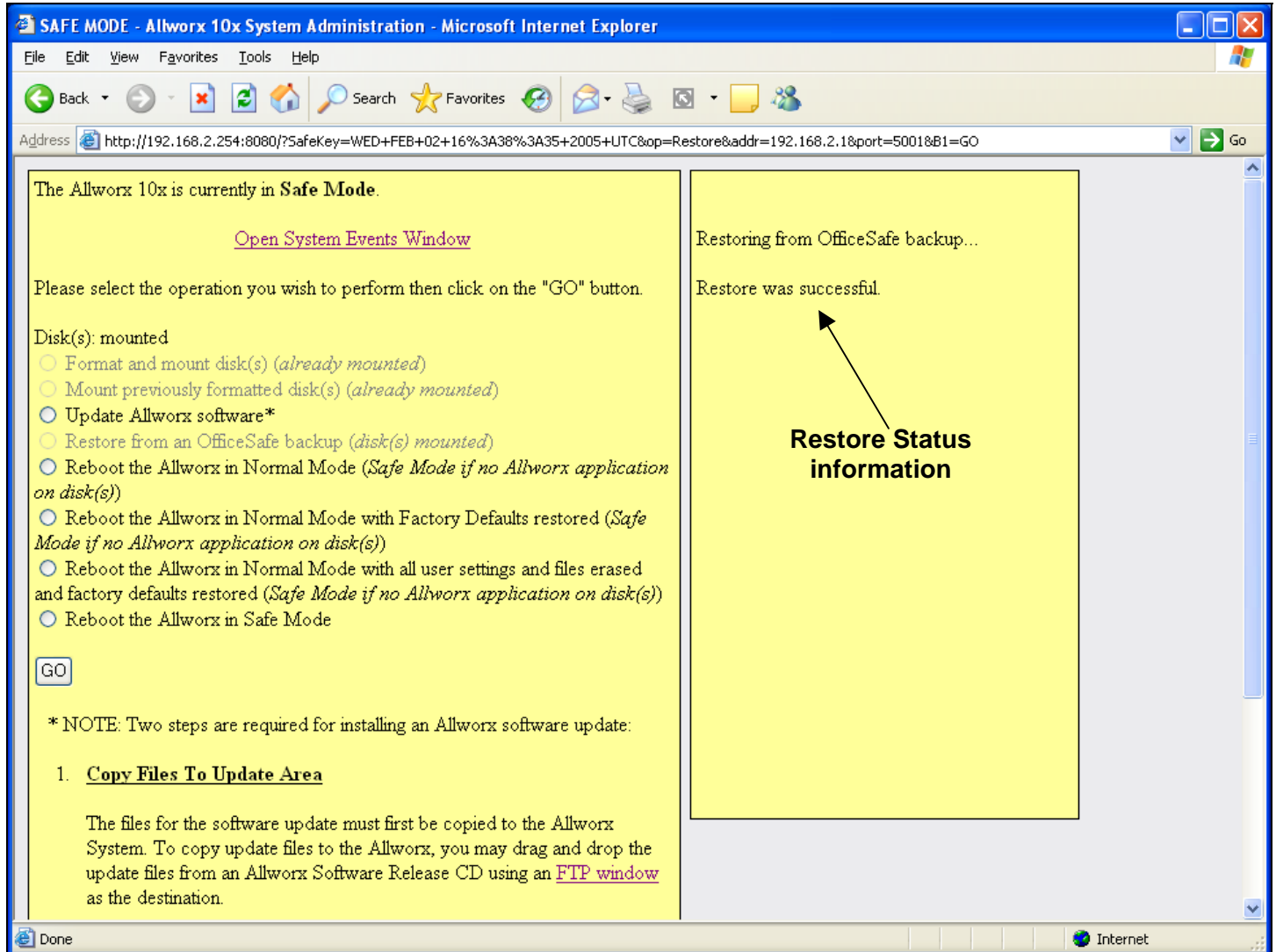
2. Select **Enter Safe Mode after restart**.
3. Click **Restart**.
4. Type "SAFEMODE" into the pop-up browser window.

5. The Allworx server will power down and then power back up in Safe Mode.



6. Select Restore from an OfficeSafe backup.
7. Enter the IP Address of the computer where OfficeSafe is running (and where the backup data is located).
8. Click **Go**. If necessary, confirm the information.

9. Watch the **Status** pane on the right-hand side of the **Safe Mode** page. Depending on the size of the backup data (and the performance of your network and OfficeSafe PC), it may take several minutes or longer for the backup to be restored. You will see a **Restore was successful** message in the **Status** pane when complete.



10. Select Reboot the Allworx 10x in Normal Mode.
CAUTION: Do NOT select Reboot the Allworx 10x in Normal Mode with Factory Defaults restored.
11. Click **Go**.
12. When the Allworx server has restarted, log in.
13. Verify that the data has been restored successfully.

11 Remote IP Phone

A remote IP phone is one where the phone's local area network (LAN) is not the same as the Allworx server's LAN. An example of this scenario is where the Allworx server is set up at the company's main office, but an employee wants to be able to have an office phone at home such that calls to/from that phone work just as though the employee was at the company's main office.

11.1 General Network Configuration Requirements

To support remote IP phone usage, the following general network configuration requirements must be met:

1. The Allworx server's wide area network (WAN) port must be directly connected to a publicly routable IP address on the Internet. It cannot be behind an external NAT firewall. The server's WAN cannot be in "Use PPPoE" mode. Bottom line: the IP address that the server thinks is its WAN address must be the same address that other hosts on the Internet would use to get to it. External NAT and PPPoE don't meet this test.
2. The remote phone must have Internet access to the Allworx server. It is allowed to be behind a single NAT firewall.

Note: Allworx cannot guarantee proper operation of 3rd party networking products. However, Allworx expects this to work with typical firewalls and tests against several brands. Some NAT/Firewall configuration may be required.

11.2 Remote Allworx 9112 Phone

11.2.1 Configuration

Configuration of the remote phone requires setting two configuration parameters in the phone itself. Both are found in the **Config / Network Settings** menu on the phone.

The first is **Boot Server IP**. This is the IP address of the Allworx server's WAN port. This can be obtained from the server's **WAN TCP/IP Address** parameter on the **Network / Addresses** page.

The second is **Remote Plug and Play Key** (called **Remote Plug 'n' Play** on the phone menu). This key is also gotten from the Allworx server. Go to the **Servers / VOIP Server** page. You will see a page like this:

The screenshot shows the Allworx System Administration interface. The breadcrumb path is Home > Servers > VOIP Server. The main content area is titled 'Servers' and contains a table for 'VOIP Server' configuration. The table has three columns: 'Parameter', 'Current Value', and 'Action'. The parameters listed are BLF Port (2088), BLF Secure (disabled), Plug 'n' Play Secret Key (836867928), Maximum Active Remote Calls (8), Paging Base IP Addr (239.255.10.0), Paging Port (56586), and Paging Max Hop Count (1). A 'Modify' link is visible in the Action column for the Maximum Active Remote Calls parameter. The left sidebar contains navigation links for About, Phone System, Business, Network, Servers (with sub-links for DHCP, DNS, Email, File, VOIP, and Web Servers), Reports, Maintenance, Installation Steps, and a [Logout] button.

VOIP Server		
	Current Value	Action
BLF Port	2088	
BLF Secure	disabled	
Plug 'n' Play Secret Key	836867928	
Maximum Active Remote Calls	8	Modify
Paging Base IP Addr	239.255.10.0	
Paging Port	56586	
Paging Max Hop Count	1	

The **Plug 'n' Play Secret Key** is what should be entered into the phone.

After entering these two parameters into the phone, save the settings (the phone will automatically prompt you to do that when you exit out of the configuration menu) and then reboot the phone.

At this point the remote phone generally operates the same as any other phone on the server's LAN.

TIP: If this doesn't seem to work, restore the phone's factory defaults and re-apply the required settings.

11.2.2 Limitations

While connecting the Allworx 9112 phone to a network behind a NAT firewall works well, there are a few limitations.

1. While intercom works fine, paging functions usually do not. More specifically, sending pages from the remote phone always works, but neither zoned nor overhead pages will be heard at the remote phone.

Solution:

Paging is implemented using IP multicasting. If all the routers between the Allworx server and the remote phone can be configured to pass multicast packets, then this limitation can be eliminated. Setting up a VPN between the Allworx server and the remote phone may be used to enable this functionality. A full discussion of the general networking details and the configuration of various router brands is beyond the scope of this document. However, here are the Allworx server details necessary to accomplish this.

On the **Servers / VOIP Server** page of the Allworx server, there are three parameters used to configure where the server transmits zoned pages:

Paging Base IP Addr – This is the multicast base IP address used by the system. Each paging zone uses the base address plus an offset. Zone 0 (the overhead zone), uses an offset of 0, zone 1 uses an offset of 1, etc. For example, if the base address was set to 239.255.10.0, then zone 2 would use multicast IP address 239.255.10.2.

Paging Port – This is the UDP port number that the packets are sent to. All zones use the same port number (but each have their own multicast IP address).

Paging Max Hop Count – This value controls the time-to-live (TTL) count in the IP header of all paging UDP/RTP frames. Typically this value is set to 1 such that the packet won't be sent beyond the local subnet. However, if you have multiple subnets with phones on them, this value will need to be increased.

2. When there is more than one remote phone behind the same NAT firewall, there may be problems passing audio between them when one calls another. This is due to restrictions that the firewall places on the communication between the phones and the Allworx server.

Solution 1:

Install an Allworx 10x at the remote site and configure it as a remote server in cooperation with the first server.

Solution 2:

Place the phones (and only the phones, for security reasons) on the network outside the NAT firewall such that they are directly on the Internet. They must have an IP address that can be reached directly from the Internet (no NAT; the phone must be ping'able from the Allworx server).

3. When there are multiple phones each at different remote locations and all behind their own NAT firewalls, there may be problems passing audio between them when one calls another.

Solution:

Statically map (one to one) the remote phone's RTP ports through the NAT firewall. This requires two steps.

The first step is to identify and possibly change the RTP ports used by the phone. Normally, a large range of ports are used. Because setting up a one to one mapping in the firewall may be a time consuming manual operation, you will want to reduce the number of ports used.

Go to the **Phone Options** section of the **Phone System / Handsets / View Configuration** page for the Allworx 9112 remote phone. The **RTP Media Port Range** parameter is the range of ports to be used by this phone.

This is configurable. Two ports are required for each active "conversation" on the phone. The phone's intercom capability counts as a "conversation". A conference call uses two ports for each remote caller.

There are reasons why having a bigger range than absolutely necessary is good. However, when you have to manually map the ports through a firewall, you'll want to dramatically reduce

the large default range to something you are willing to type into your firewall configuration. A suitable number would be 10 ports.

Modify the **Phone Options** to change the **RTP Media Port Range** parameter to reduce the maximum range.

The second step is to modify the NAT firewall configuration. You want to one-to-one map each of the RTP ports through the firewall such that packets arriving at those ports on the firewall's WAN interface are routed to the phone that is inside the NAT firewall. The directions for doing this are unique to each NAT firewall product and therefore beyond the scope of this description.

4. Internet Telephony Service Provider (ITSP) services configured on the Allworx server may not be accessible from remote phones that are behind NAT firewalls.

Solution:

Statically map (one to one) the remote phone's RTP ports through the NAT firewall. This requires the same two steps as described in limitation 3 above.

11.3 Remote Non-Allworx 9112 Phone

In addition to support for the Allworx 9112 phone, the Allworx server supports other remote SIP phones as well. Steps for configuring these are unique to each phone model and brand.

12 Call Routing

12.1 Call Routing Concepts

12.1.1 Introduction

When we think of calling an extension, we think of the system causing a particular phone to ring. Thus, if I tell you that my office extension is 106, you expect my office phone to ring when you dial it. Yet, we can imagine some circumstances under which my phone will not ring when you dial 106. For example, if I'm already on the phone, the system may send your call directly to my voicemail rather than give you a busy signal. The Allworx 10x call routing feature allows a call to an extension to be flexibly directed in this as well as other ways. Some of these other ways are:

- Two phones might ring at the same time with either being able to answer the call.
- One phone might ring for 4 rings; then if no answer, another phone will ring.
- The call will be sent to a particular user's voice mail.
- The call will be sent to an auto attendant.
- The call will be sent to a call queue.
- The call will be routed differently depending on who the caller is (using CallerID).
- The call will be routed differently if the person being called is in their office vs. at a meeting.

In this section, we will explain the concepts necessary to understand how to configure these capabilities.

12.1.2 Connection Attempt

Suppose that I have an administrative assistant, that I am expecting an important phone call, and that I don't want the caller to have to leave a voicemail message. I'd like to tell the system to first attempt to reach me by ringing my office phone. If I don't answer in 4 rings, then I want the system to call my assistant's phone (using a distinctive ring so she'll know it is a call for me). The Allworx 10x calls each of these attempts to reach someone a "connection attempt." In this example, the system will be instructed to make two connection attempts. The first connection attempt is to ring my office phone 4 times. If no answer, then it should initiate a second connection attempt that will call my assistant.

One connection attempt can ring more than one phone. Suppose that during my work day, I often move back and forth between my office and my lab. I don't want to miss any calls, so I would like the system to ring both phones at the same time and let me answer the call from either one. This would be set up as one connection attempt, but with two phones in it.

12.1.3 Finally Clause

If the system can't get someone to answer the phone in any of the connection attempts, then we might like the call to be directed to our voicemail (or the auto attendant or to another dialed number or ...). This last direction for the call is called the "finally" clause. It tells the Allworx server what to finally do after all connection attempts have failed. If no connection attempts are defined, then the call is immediately directed to the finally clause.

12.1.4 Primary Route, On-Busy Route, and Call Route

We have seen how the system seeks to find someone to answer a call. It does this by following the directions specified in a series of connection attempts and a finally clause. The Allworx 10x refers to this as a "primary route".

What should the system do with the call if a particular connection attempt in a primary route is busy (the phone is busy)? Normally, the system will consider the attempt failed and go on to the next connection attempt (or the finally clause). This is the same action taken as if the phones weren't answered. What if I want to take a different action if the phones are busy? This can be specified via an optional "on-busy route". Just like the primary route, it is made up of connection attempts and a finally clause. The system uses it to direct a call whenever a connection attempt in the primary route is busy.

The combination of a primary route and an optional on-busy route forms a "call route".

12.1.5 CallerID Dependant Call Routes

Suppose that I want to ensure that all calls from a VIP reach me. If my office phone doesn't answer, I want the system to call my cell phone. I can set the finally clause to dial my cell phone, but can I do this only if the VIP is calling? The Allworx 10x supports multiple call routes where the call route to use for a given call can depend on a CallerID pattern match. For example, if the VIP's phone is 585-123-4567, then I can create a unique call route that will only be used when the incoming CallerID matches that number. One call route is always designated to be used for non-CallerID-dependant calls.

12.1.6 Presence

I would like to easily change my call route depending on where I am. If I'm in a meeting, I don't want to waste my caller's time waiting for my phone to ring 4 times when I know I won't be there to answer it. If I'm on a business trip, I may want my calls to immediately call my cell phone. The Allworx 10x remembers each user's presence. Each presence can have one or more call routes associated with it. So, when I tell the server that my presence has changed, it immediately begins to use the call routes that are set for my new presence. I don't need to take the time to reconfigure my call routes, just change my presence.

12.1.7 User Extensions and System Extensions

The Allworx 10x has two types of extensions: user and system. Only a user has a presence. A system extension has call routes without any presence setting.

12.1.8 Concept Summary

User Extension

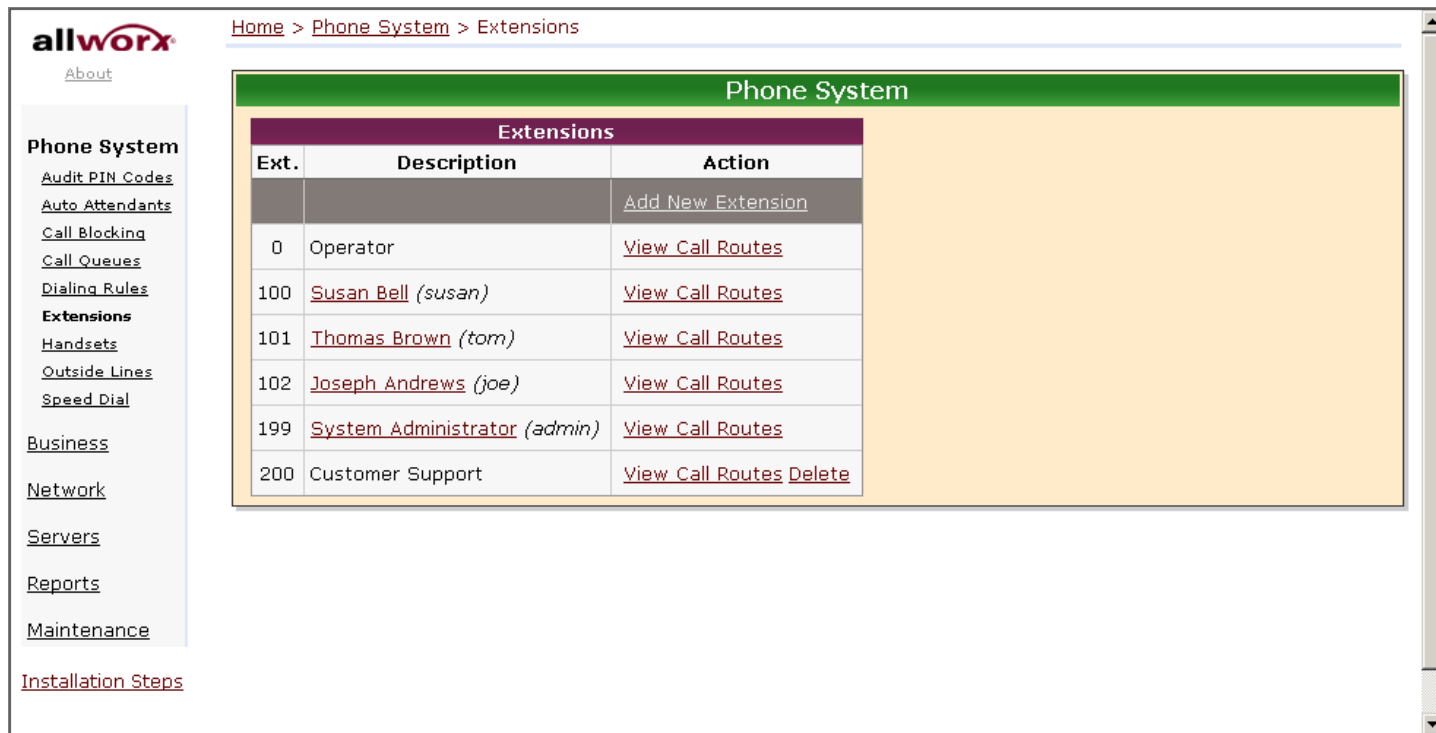
- Every user extension has a presence setting.
- Each possible presence has one or more call routes associated with it.
- The selection of which call route to use can depend on the incoming call's CallerID. One call route is independent of the incoming call's CallerID.
- Each call route contains a primary route and an optional on-busy route.
- Each route contains a series of zero or more connection attempts followed by a finally clause.
- Each connection attempt can ring one or more phones.
- The finally clause is executed when all connection attempts have failed to find someone to answer the call. It directs the call to voicemail, the auto attendant, dial a new number, etc.

System Extension

- Each system extension has one or more call routes associated with it. There is no presence setting to choose a set of call routes.
- In all other ways, it behaves exactly like a user extension.

12.2 View and Change a Call Route

The first step to changing a call route is to select the extension whose call routes you wish to change. Go to the **Phone System / Extensions** page.




The screenshot displays the 'Phone System' interface with a navigation menu on the left and a main content area. The main content area is titled 'Phone System' and contains a table of 'Extensions'. The table has three columns: 'Ext.', 'Description', and 'Action'. The 'Action' column contains links for 'View Call Routes' and 'Delete'.

Extensions		
Ext.	Description	Action
		Add New Extension
0	Operator	View Call Routes
100	Susan Bell (<i>susan</i>)	View Call Routes
101	Thomas Brown (<i>tom</i>)	View Call Routes
102	Joseph Andrews (<i>joe</i>)	View Call Routes
199	System Administrator (<i>admin</i>)	View Call Routes
200	Customer Support	View Call Routes Delete

Click on the **View Call Routes** link of the extension you want to change.

Home > Phone System > Extensions > Call Routes



About

Phone System

- [Audit PIN Codes](#)
- [Auto Attendants](#)
- [Call Blocking](#)
- [Call Queues](#)
- [Dialing Rules](#)
- Extensions**
- [Handsets](#)
- [Outside Lines](#)
- [Speed Dial](#)

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- [Servers](#)
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[Installation Steps](#)

[Logout]

Phone System

Call Routes For Extension 100 - Susan Bell (susan)

Presence: In Office --- Active ---	New Call Route
On calls from (585) 555-1212	
transfer to Voice Mail for Joseph Andrews (joe)	Modify Delete
On calls from all other callers	
First connection attempt: Susan Bell (Login ID:5100) for 4 rings (Ring Type 5)	Modify
Finally: transfer to Voice Mail for Susan Bell (susan)	Modify

Presence: At A Meeting	New Call Route
On calls from all callers	
transfer to Voice Mail for Susan Bell (susan)	Modify

Presence: On Vacation	New Call Route
On calls from all callers	
transfer to Voice Mail for Susan Bell (susan)	Modify

Presence: On Business Trip	New Call Route
On calls from all callers	
transfer to Voice Mail for Susan Bell (susan)	Modify

Presence: At Home	New Call Route
On calls from all callers	
transfer to Voice Mail for Susan Bell (susan)	Modify

Presence: Away	New Call Route
On calls from all callers	
transfer to Voice Mail for Susan Bell (susan)	Modify

Presence: Busy	New Call Route
On calls from all callers	
transfer to Voice Mail for Susan Bell (susan)	Modify

Notice that each presence has its own set of call routes. If there is only one call route defined for a presence, it applies to all incoming calls. If more than one is defined, all but one has a CallerID pattern to match incoming calls against.

The system must always have a call route that is independent of the incoming call's CallerID. It creates a default call route for this when the extension is created. This call route may not be deleted (notice that no **Delete** link is offered). There can only be one call route like this for each presence. So, when creating a new call route, it must be one that is CallerID dependent. These call routes can be deleted.

To change a particular call route, click its **Modify** link.

Home > Phone System > Extensions > Modify Call Route

Phone System

Modify Call Route For Extension 100 - Susan Bell (susan)

Presence: In Office apply these changes to *all* the user's presences

Call Route Selection

On calls from all other callers:

Modify Primary Route

Modify On Busy Route (used if a Primary Route connection attempt is busy)

Call Route ?

First connection attempt [add a phone](#) [delete this attempt](#)

Susan Bell (Login ID: 5100) for 4 rings (Ring Type 5)

[add a connection attempt](#)

Finally...

Hang up

Transfer to Auto Attendant

Transfer to Call Queue Customer Support

Transfer to Voicemail for user Susan Bell (susan)

Dial number

Most of the configuration options on this page should be comprehensible after reading the Call Routing Concepts section above. Some additional explanation follows.

Notice the current presence setting displayed near the top of the page. Next to it is a checkbox to apply changes made here to all presences. If this call route has no CallerID pattern specified (it is the “all calls” call route), then this call route is copied to the “all calls” call route in all the other presences. If this call route has a CallerID pattern specified, it is copied to the same CallerID patterned call routes in the other presences, creating new call routes if necessary.

To delete a phone from a connection attempt, choose “no selection” from the call appearance drop down list.

Recall that the on-busy route is optional. An inactive on-busy route is one with no connection attempts and a finally clause set to **Hang up**. To make it active, add one or more connection attempts and/or change the finally clause. To make it inactive again, just change it back to the inactive state (delete all connection attempts and set the finally clause to **Hang up**).

12.3 Changing a User’s Presence Setting

12.3.1 Changing Presence Vian Allworx 9112 Phone

A user’s presence can be changed via an Allworx 9112 phone. When the **Mute/DND** button is held down for greater than 1 second, a presence menu will appear. See the “User Guide – Allworx 9112” for more information.

12.3.2 Changing Presence Via Any Phone

A user's presence can be changed using any phone connected to an Allworx 10x by accessing the user's message center inbox. See the "Phone and Voice Mail Guide" for more information.

12.3.3 Changing Presence Via Administrative Web Page

Although users can change their own presence setting, the Allworx 10x system administrator can change a user's presence by going to the **Business / Users** page, clicking on the **Modify** link of the user to change, and changing the **User Presence** setting.

The screenshot shows the 'Business' administrative interface for modifying a user. The breadcrumb trail is 'Home > Business > Users > Modify User'. The user's name is Susan. The 'User Presence' dropdown menu is set to 'In Office' and is highlighted with a black arrow. Other settings include 'Phone Extension' (100), 'Maximum size Universal Inbox' (200 MBytes), and 'Enable Voicemail' (checked). A red 'NOTE' box states: 'The VPN Password must be 14 characters long, contain at least one letter and at least one digit, and contain only letters (A-Z,a-z) and digits (0-9)'. The 'External POP3 Accounts' section has a 'Poll Period (minutes)' of 10 and empty fields for 'Mail Server', 'Username on Mail Server', and 'Password'. Buttons for 'Update', 'Start Over', and 'Cancel' are at the bottom.

12.4 Outside Line Call Routing

Outside lines (of any type: CO line, SIP Proxy, SIP GW, DID Block) have a call route associated with them. Go to **Phone System / Outside Lines** and click the **Modify** link on one of the CO lines.

Home > Phone System > Outside Lines > Modify Outside Line

Phone System

Outside Line

Description: 01 (typically enter phone number of line connected to the Allworx)

Port: 01

Enable Line Appearance

Features

Enable Caller ID Detection

Enable Loop Filters (typically checked, unchecked to improve echo performance on short loops)

Prefix Digits: (digits dialed by the Allworx after it seizes the line, before user dials)

Default Auto Attendant

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

Auto Attendant (x431)

Call Route

Calls received from this CO line go to:

Extension choose an extension

Auto Attendant

Voicemail for user Joseph Andrews (joe)

Update Start Over Cancel

[Logout]

The Call Route section determines how a call coming into the system on this CO line is directed. The options shown are mostly self-explanatory. Below is some additional information.

The Allworx 10x supports multiple auto attendants. When a call is routed to an auto attendant, it goes to the designated default auto attendant for this outside line.

To use the full flexibility of the Allworx 10x call routing for any call from an outside line, set the outside line's call route to go to a system extension. Then configure whatever routing is desired for the system extension. Using this, outside calls can be directed in ways such as:

- Route to one phone and then another
- Route to multiple phones concurrently
- Route to a call queue

12.5 Example Call Route Configurations

12.5.1 Example 1: Ring 1 Phone, Then Voicemail

Requirements:

When Susan is in her office and a call is made to her extension, her phone should ring distinctively for inside vs. outside calls (an inside call makes a single ring and an outside call makes a double ring). If she doesn't answer in 4 rings, the call should be directed to her voicemail.

Configuration:

Modify the CallerID independent call route associated with Susan's In Office presence such that it has:

- One connection attempt where:
 - The phone is Susan's office phone

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- The number of rings is 4
- The ring type is **Single (int), Double (ext)**
- Finally clause set to transfer the call to Susan's voicemail

12.5.2 Example 2: Ring 1st Phone, Then ring 2nd Phone, Then Voicemail

Requirements:

Irregardless of Susan's presence, when a call is made to her extension, her phone should ring. If she doesn't answer in 4 rings, then her administrative assistant's phone should ring with a distinctive ring so he knows it is a call for Susan. If he doesn't answer in 4 rings, the call should be directed to Susan's voicemail.

Configuration:

Modify the CallerID independent call route associated with Susan's In Office presence such that it has:

- First connection attempt where:
 - The phone is Susan's office phone
 - The number of rings is 4
 - The ring type is **Single (int), Double (ext)**
- Second connection attempt where:
 - The phone is Susan's assistant's office phone
 - The number of rings is 4
 - The ring type is **Ring Type 4**
- Finally clause set to transfer the call to Susan's voicemail
- Select the checkbox to apply these changes to all Susan's presences

12.5.3 Example 3: CO Line Rings 2 Phones, Then ring 3rd Phone, Then Voicemail

Requirements:

Instead of having calls from a CO line go to the auto attendant, the calls should be answered live whenever possible. Tom and Joe work in telephone sales and are responsible for talking with customers. Their manager, Susan, will talk with customers if both Tom and Joe are busy. If no one answers the call, it should be transferred to Tom's voicemail.

Configuration:

Create a system extension for sales. Change the CO line's call route so that incoming calls go to the sales extension. Modify the sales extension call route such that it has:

- First connection attempt where 2 phones are specified:
 - The 1st phone is Tom's office phone, 4 rings, ring type is **Ring Type 4**
 - The 2nd phone is Joe's office phone, 4 rings, ring type is **Ring Type 4**
- Second connection attempt where:
 - The phone is Susan's office phone, 4 rings, ring type is **Ring Type 4**
- Finally clause set to transfer the call to Tom's voicemail

13 Call Queues

Note that this is an optional feature that requires a feature key.

Call queues are useful when incoming calls may not be able to be immediately answered “live”, but will be able to be answered after some delay. The incoming calls go into a “hold” queue and agents (people responsible for answering calls from a queue) can answer each call in first-in-first-out (FIFO) order. The Allworx 9112 phone provides rich support for working with call queues. All other phones provide only very limited ability to work with this feature.

Some of the available features are:

- The caller will hear an initial greeting message when entering the queue. In addition, a status message will replay periodically to all calls in the queue. The replay interval can be configured. These messages can be system default messages or custom messages.
- Using an Allworx 9112 phone, an agent can login (or logout) his phone to the group responsible for handling a particular call queue. Once logged in, his phone may ring when calls are in the queue, he can monitor the status of the queue, and he can answer calls in the queue. The conditions under which the agent’s phone will ring can be configured, thus providing significant flexibility in managing the call queue.
- A queue can be configured with a maximum call wait time after which a call can be hung up, transferred to an auto attendant, or transferred to a specified user’s voice mail.

To be able to use call queues:

- The feature key must be installed.
- The queue must be configured.
- The agent’s Allworx 9112 phone must be configured.
- The agent must login his phone and answer calls in the queue.
- The system must be configured to route calls to the queue.

13.1 Configuring a Queue

The first step in using call queues is to configure one of the queues. Go to the **Phone System / Call Queues** page. You will see a page like this:

Home > [Phone System](#) > Call Queues

allworx[®]
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Phone System

The table below displays the current settings for the Call Queues.
You can also [manage the content](#) of the messages played by the Call Queues.

Call Queues				
Queue	Replay Status Message (secs)	Max. Wait (minutes)	After maximum wait is reached...	Action
0 Customer Support	60	30	transfer caller to Default Auto Attendant	Modify
1 Queue 1	60	30	transfer caller to Default Auto Attendant	
2 Queue 2	60	30	transfer caller to Default Auto Attendant	
3 Queue 3	60	30	transfer caller to Default Auto Attendant	
4 Queue 4	60	30	transfer caller to Default Auto Attendant	
5 Queue 5	60	30	transfer caller to Default Auto Attendant	
6 Queue 6	60	30	transfer caller to Default Auto Attendant	
7 Queue 7	60	30	transfer caller to Default Auto Attendant	
8 Queue 8	60	30	transfer caller to Default Auto Attendant	
9 Queue 9	60	30	transfer caller to Default Auto Attendant	

The system supports 10 queues. To configure a queue, click the **Modify** link. Then click the **change** link on the queue you want to configure. This brings up a browser pop-up like this:

Queue Termination Option - Microsoft Internet Explorer

Call Queue

Description

Replay Status Message (30 - 600 seconds, 0 = no status)

Maximum Wait (1 - 120 minutes, 0 = wait forever)

After maximum wait time, then:

Hang up

Auto Attendant

Voice mail for user

[Done](#) [Cancel](#)

Change **Description** to something meaningful to you as the system administrator (example: "Customer Support"). The number in the **Replay Status Message** parameter is the interval, in seconds, between replays of the queue status message to waiting callers. The **Maximum Wait** parameter is the maximum time, in minutes, that a call will wait in the queue (unanswered) before moving to one of the final dispositions shown.

Note that if the caller presses 0 while in the queue, the call exits the queue just as if the maximum wait time was reached. This is especially useful if the final disposition of a call is **Auto Attendant** or **Voice mail** since the caller can exit the queue early without hanging up. When recording a custom queue greeting or status message (see [Managing Custom Queue Message Content](#)), you may want to mention this feature so your callers know about it.

When finished with the configurations on this page, click the **Done** link and then the **Update** button on the previously waiting page (**Phone System / Call Queues / Modify**).

13.1.1 Managing Custom Queue Message Content

The server comes with default messages for the initial greeting when a call enters a queue and the status message that is replayed periodically. To customize these messages, you can either record new messages directly into the server using the phone or record them via some other means and transfer the audio files to the server. The instructions for doing this can be found by clicking on the **manage the content** link near the top of the **Phone System / Call Queues** page.

13.2 Servicing a Queue with an Allworx 9112 Phone

13.2.1 Configuring the Phone

An Allworx 9112 phone can be configured such that one of its programmable function keys (PFK) can monitor the status of a queue and allow the user to answer a waiting call. This type of PFK is called a “queue appearance”. To configure the PFK, go to the **Phone System / Handsets** page and click on the **View Configuration** link for the phone you want to configure. You will see a page like this:

The screenshot shows the Allworx web interface for configuring a phone. The breadcrumb trail is: Home > Phone System > Handsets > View Configuration. The page title is "Phone System".

Allworx 9112

MAC: 00-0a-dd-81-00-7a
 Call Appearances:
 Susan Bell

Template Options

Save: save this handset configuration in a template
 Apply: apply the selected template to this handset configuration
 9112 (Factory - Key) [v]

NOTE
 It is necessary to reboot this Allworx phone for changes to take effect.
[Reboot phone now](#)

Programmable Function Keys

Station Mode: PBX Behavior

Key	Type	Action
12	(not defined)	Modify
11	(not defined)	
10	(not defined)	
9	(not defined)	
8	(not defined)	
7	(not defined)	
6	(not defined)	
5	(not defined)	
4	(not defined)	
3	(not defined)	
2	Call Appearance Susan Bell, Ring Type: AUTO	
1	Call Appearance Susan Bell, Ring Type: AUTO	


Phone Options

Values marked with * may be overridden by the user of the phone. These values are restored when the user of the phone restores factory defaults.

	Value	Action
Call History Size	99 *	
Clock Mode	12 Hour *	
Codec Preference Order	G.711, G.729A	

Click the **Modify** link in the **Programmable Function Keys** section. You will see a page like this:

Home > Phone System > Handsets >


Phone System

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Phone System

Allworx 9112

MAC: 00-0a-dd-81-00-7a

Call Appearances:
Susan Bell

NOTE

It is necessary to reboot the Allworx handset for changes to take effect.

TIP

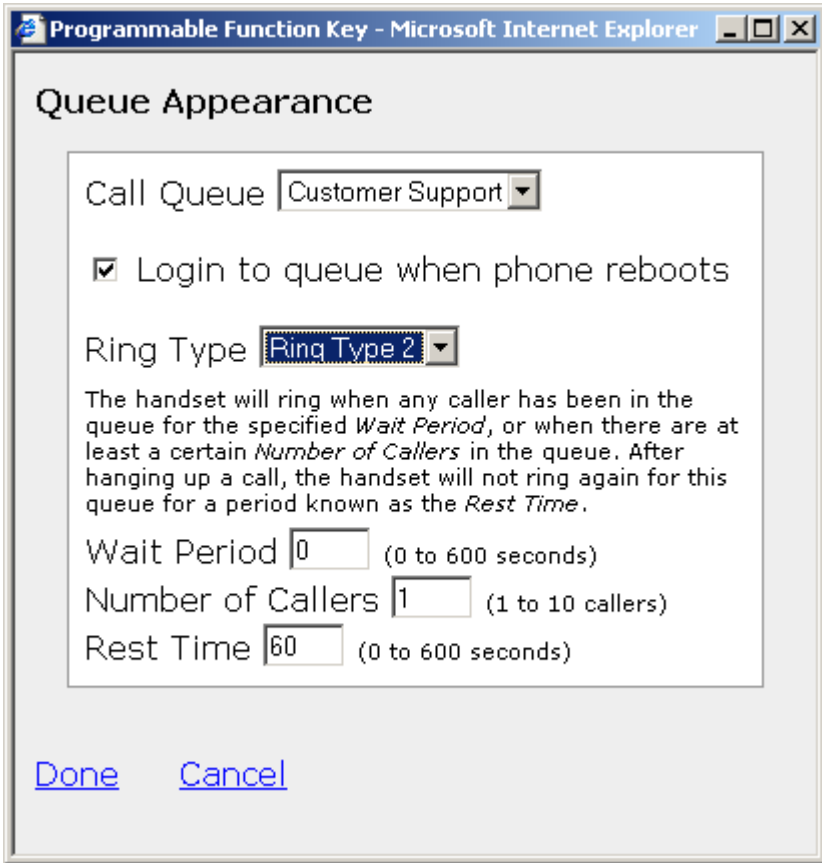
Outside Lines that are enabled for Line Appearance can be automatically assigned to Programmable Function Keys on the phone. Click the button below to assign the Outside Lines.

Programmable Function Keys

Station Mode

Key	Type	Type
12	<input type="text" value="Not Used"/>	<input type="text"/>
11	<input type="text" value="Not Used"/>	<input type="text"/>
10	<input type="text" value="Not Used"/>	<input type="text"/>
9	<input type="text" value="Not Used"/>	<input type="text"/>
8	<input type="text" value="Not Used"/>	<input type="text"/>
7	<input type="text" value="Not Used"/>	<input type="text"/>
6	<input type="text" value="Not Used"/>	<input type="text"/>
5	<input type="text" value="Not Used"/>	<input type="text"/>
4	<input type="text" value="Not Used"/>	<input type="text"/>
3	<input type="text" value="Not Used"/>	<input type="text"/>
2	<input type="text" value="Call Appearance"/>	Susan Bell Ring Type: AUTO change
1	<input type="text" value="Call Appearance"/>	Susan Bell Ring Type: AUTO change

Select a PFK to designate for this queue, click the drop down arrow, and select **Queue Appearance** for this PFK's function. Then click the **define** link that appears. This will bring up a browser pop-up like this:



On this page, the first selection is to choose the particular **Call Queue** to be designated for this PFK. Next is a checkbox to specify that the phone should automatically **Login** to the agent group responsible for servicing the queue. The **Ring Type** might be set to a unique type for this phone so that the agent can easily distinguish calls in the queue from other calls to his phone.

As you can see, the page contains a description of most of the parameters. These parameters control the ring behavior for this agent's phone when a call is in the queue. Using this, you can configure the handling of calls in a flexible manner.

13.2.2 Agent Phone Configuration Example

Requirements:

Suppose you have 3 agents to handle calls in a Customer Support queue. You desire Agent 1 and Agent 2 to answer most of the calls, while allowing calls to “overflow” to Agent 3 when necessary. Furthermore, you want to give each agent 2 minutes to finish updating a log about the previous call before their phone will ring with a new call in the queue. You can achieve this by configuring each of the agent's phones as follows:

Agent Phone Configurations:

	Wait Period	Number of Callers	Rest Time
Agent 1	0 seconds	1	120 seconds
Agent 2	0 seconds	1	120 seconds
Agent 3	180 seconds	5	120 seconds

Commentary:

Agent 3's phone will ring when any call has been in the queue for 3 minutes (or 5 or more callers are in the queue). This might happen because Agents 1 and 2 are:

- Already talking to other callers in the queue.
- Away from their desk.
- Have finished with their previous call, but are in their 2 minute rest interval.
- Are ignoring their ringing Customer Support queue appearance because they are on another phone call, talking with someone in their office, etc.

13.2.3 Logging in and out of the Queue

When an agent's phone is not logged in to the agent group responsible for handling calls from a queue, the queue appearance button will be red and the agent's phone will not ring when a call is in the queue.

While not logged in to the agent group for the queue, the queue appearance PFK will flash red when a call is in the queue. If the agent momentarily hits the queue appearance PFK while flashing red, he can answer the next call in the queue.

To login to the agent group for that queue, hold down the queue appearance button for 1 ½ seconds. The light on the button will then either go out if there are no calls in the queue or flash green if there are waiting calls.

To logout, hold the queue appearance button for 1 ½ seconds and the button will change to red indicating that you are logged out.

Note that the auto-login checkbox can be checked on the queue appearance PFK configuration page so that the agent's phone is automatically logged in when the phone is rebooted. Then, unless the agent logs out, his phone will always be in the agent group responsible for handling calls in that call queue.

13.3 Servicing a Queue with a Non-Allworx 9112 Phone

As stated earlier, the call queue feature is designed to be used with Allworx 9112 phones and all other phones provide only a very limited ability to work with this feature. The only function a non-Allworx 9112 phone can participate in is answering a call that is in the queue. Any phone can do this by dialing 441X, where the last digit is the queue number (0-9). The phone will never ring indicating that a call is waiting in the queue.

13.4 Configuring Calls To Route To the Queue

A call enters a call queue when it is routed from a system or user extension. Therefore, configuring the server so that inbound calls enter a call queue is little different from configuring it for any inbound call routing. The same features for the handling of any inbound call can be used to route a call to a call queue:

- The outside call can be sent to the auto attendant or route directly to the queue extension.
- If the call goes to the auto attendant, an auto attendant menu short cut can be set up to route the call to the queue extension.

See the Call Routing section in this document for information on setting up call routes. Both user extensions and system extensions can be set up so the call will route to a call queue.

Go to the **Auto Attendant – Menu Shortcuts** section of the **Phone System / Auto Attendants** page to set up an auto attendant menu shortcut.

13.4.1 Example 1: Call Routing To Auto Attendant and Then Call Queue

Requirements:

The inbound call will come in to the auto attendant. The custom auto attendant greeting will include, "For customer support, press 2." When the caller presses 2, they will hear the customer support queue greeting and be placed in the queue.

Configuration:

1. The inbound call will come in on an outside line. The outside line's call route is set to route calls to the auto attendant.
2. An auto attendant custom greeting is recorded that tells the callers to press 2 to reach customer support.
3. A system extension is created for customer support. Its call route is configured so that calls are immediately transferred to the customer support call queue.
4. An auto attendant menu shortcut is configured so that digit 2 calls the customer support system extension.

13.4.2 Example 2: Call Routing Directly to Call Queue

Requirements:

The inbound call will come in directly to the queue.

Configuration:

1. A system extension is created for customer support. Its call route is configured so that calls are immediately transferred to the customer support call queue.
2. The inbound call will come in on an outside line. The outside line's call route is set to route calls directly to the customer support system extension.

13.4.3 Example 3: Call Routing To Auto Attendant, Live Answer User Extension, and Then Call Queue

Requirements:

The inbound call will come in to the auto attendant. The custom auto attendant greeting will include, "For customer support, press 2." When the caller presses 2, the customer support person's phone will ring. This allows the call to be answered live, if possible, rather than hearing the queue greeting message. If the call isn't answered after 4 rings, the call will route to the customer support queue and the caller will hear the customer support queue greeting and be placed in the queue.

Configuration:

1. The inbound call will come in on an outside line. The outside line's call route is set to route calls to the auto attendant.
2. An auto attendant custom greeting is recorded that tells the callers to press 2 to reach customer support.
3. A system extension is created for customer support. The call route for this is set so the call:
 - a. Rings the customer support person's phone 4 times.
 - b. Then if no answer, the call is transferred to the customer support call queue.
4. An auto attendant menu shortcut is configured so that digit 2 calls the customer support system extension.