

# **Allworx**

# **Queuing and Automated Call Distribution Guide**

(Release 7.2.3.x)



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## 1 Introduction

### 1.1 Feature History

7.1	Initial release of ACD feature
7.2	New ACD features: <ul style="list-style-type: none"><li>• Busy Handset Option</li><li>• Agent Temporary Logout</li><li>• All Agents Busy Option</li><li>• Display ACD Description when ACD Appearance is ringing</li></ul>

### 1.2 Who Should Use This Guide

This guide is intended for those who will be configuring, managing and using Allworx queuing.

### 1.3 Overview

Call Queues are useful when incoming calls are too numerous to immediately answer or when calls are to be distributed to a particular set of users. The incoming calls go into a queue and *agents* (users responsible for servicing calls from a queue) then answer calls in first-in-first-out (FIFO) order. The Allworx system offers two methods for call queuing:

- Ring All - will ring the stations of all available agents.
- Automated Call Distribution (ACD) - will direct calls to specific agents.

Call queuing has been designed to work with Allworx IP phones. No other phones can support Allworx Call Queue features, therefore use Allworx IP phones to experience all available queuing features..

Queuing is an optional feature and requires a feature key. The Call Queuing feature key activates Ring All queuing. The Automatic Call Distribution Feature Key activates both Ring All and ACD queuing.

Available features:

- Call Queues provide the following feedback to callers:
  - A greeting message when calls enter the queue.
  - Periodic status messages while waiting to be serviced. The interval between status messages is configurable.
  - Customizable default greeting and status messages.
  - As an alternative to the messages, ringing can be provided for customers to hear while waiting in the queue.
- Using an Allworx IP phone, agents can:
  - Log in and out of queues.
  - Receive calls from or answer calls in a queue.
  - Configure the conditions under which agents will receive calls.
  - Monitor the status of the queues.
- Queues can be configured with a maximum call wait time after which a call can be hung up or transferred to: an Auto Attendant, an extension, another queue or a user's voicemail.

- Callers can exit the queue at any time by pressing zero (0). Different exit routes can be set up for each queue.
- Statistics for all queues are available from My Allworx Manager, as an export file and streamed to a PC on the network using a TCP streaming port number as configured on the Allworx server.
- Number of queues and calls supported on the Allworx servers:
  - 24x, 48x, and 10x: Up to 16 calls in one queue and a total of 32 calls in all queues
  - 6x: Up to eight (8) calls in one queue and a total of 16 calls in all queues.

## 2 Ring All Queues

The “Ring-All” distribution mechanism rings all phones logged into the queue simultaneously. In effect, if there are any callers pending in the queue, then all available phones shall be ringing according to their configured behavior. Caller ID information during inbound ringing and statistics related to specific agents are not available for this mode of operation.

Perform the following steps to enable a Ring All queue. :

1. Configure the queue in the Web Admin (Distribution Mode set to Ring All)
2. Assign Queue Appearance PFK to phones assigned/available to agents
3. Agents log into queue with Queue Appearance PFK (by default, Queue Appearance PFKs are set to automatically log in when the phones start up)
4. Assign the optional Queue Alarm PFK to any Allworx phones

Detailed procedures for performing the steps above are provided in the sections that follow:

### 2.1 Configuring a Queue

The first step in using Call Queues is to configure the queues. Go to the Phone System / Call Queues page.

The screenshot shows the 'Call Queues' configuration page. At the top, there is a title 'Call Queues' and a brief description: 'The table below displays the current settings for the Call Queues. You can also [manage](#) the custom recordings played by the Call Queues.' Below this is a link: '[View](#) and manage the Language settings for the Call Queues.' The main part of the page is a table with two columns: 'Queue' and 'Action'. The table lists queues 0 through 9, each with a 'Modify' link. At the bottom, there is a section for 'ACD Streaming Settings' with a 'modify' link. This section contains two rows: 'ACD Streaming Mode' with the value 'Do not stream ACD information' and 'ACD Streaming Port' with the value '16367'.

Queue	Action
0 Queue 0	<a href="#">Modify</a>
1 Queue 1	<a href="#">Modify</a>
2 Queue 2	<a href="#">Modify</a>
3 Queue 3	<a href="#">Modify</a>
4 Queue 4	<a href="#">Modify</a>
5 Queue 5	<a href="#">Modify</a>
6 Queue 6	<a href="#">Modify</a>
7 Queue 7	<a href="#">Modify</a>
8 Queue 8	<a href="#">Modify</a>
9 Queue 9	<a href="#">Modify</a>

**ACD Streaming Settings** [modify](#)

<b>ACD Streaming Mode</b>	Do not stream ACD information
<b>ACD Streaming Port</b>	16367

Click the [Modify](#) link of the queue to configure. The following window will be displayed:

These features are available for Ring All queuing:

- Description – textual description of queue (e.g. Sales, Tech Support). This description will be displayed in other parts of the system (e.g. Statistics, handset display screen, etc).
- Distribution Mode –algorithm used to ring agents phones, in this case Ring All.
- Replay Status Message –period between successive status update messages in seconds. Zero will disable the status message.
- Maximum Wait –number of minutes callers can wait in a queue; after this period is exceeded, the call is bumped from the queue. Zero will allow the caller to wait without a limit.
- When queue answers call –Plays queue prompts or continues to ring at callers' end.
- Queue Alarm Threshold levels –threshold values that will trigger the Queue Alarm PFK to yellow and red alarm levels. Threshold levels can be set for longest wait time and number of calls in the queue. See *Monitoring Queues with PFK* section of this document for more details.
- When caller leaves the queue – calls exit the queue when they are in the queue for more than the Maximum Wait or when callers press zero. Select one of the following routes:
  - Hang up
  - Specify forwarding extension
  - Specify forwarding queue
  - Specify Voice Mail Box.

## 2.2 Configuring the Phone

An Allworx IP phone Programmable Function Key (PFK) can be configured as a Queue Appearance. This PFK can monitor the status of a queue and be used to answer calls in the queue. To configure the PFK:

1. Go to the Phone System / Handsets page and click on the View Configuration link of the phone to configure.
2. Click the Modify link in the Programmable Function Keys section.
3. For the desired PFK, choose Queue Appearance from the drop down menu.
4. Click the define link that appears.

The *define* window is displayed below:

Queue Appearance

Call Queue

Login to queue when phone reboots

Ring Type

The handset will ring when any caller has been in the queue for the specified *Wait Period*, or when there are at least a certain *Number of Callers* in the queue. After hanging up a call, the handset will not ring again for this queue for a period known as the *Rest Time*.

Wait Period  (0 to 600 seconds)

Number of Callers  (1 to 10 callers)

Rest Time  (0 to 600 seconds)

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

Configure settings for the Queue Appearance PFK:

- Call Queue: select the call queue.
- Login to queue when phone reboots: enable or disable for automatic login.
- Ring Type:
  - A unique ring type can be selected to distinguish calls to this PFK from other calls to the phone.
  - When set to *No Ring*, the Queue Appearance will never ring. The agent can use the LED to monitor when there are calls in the queue. The next call in the queue can be serviced by pressing the PFK.
  - When set to ring (Ring Type set to any select other than No Ring) the following fields are enabled. They control when the Queue Appearance rings:
    - Wait Period: number of seconds a call must be in a queue before the Queue Appearance will start to ring.
    - Number of Callers: number of calls that must be in a queue before the Queue Appearance will start to ring.
    - Rest Time: number of seconds the Queue Appearance will wait before ringing again, after the previous call ends.

The following conditions must be met for a Queue Appearance to ring:

- Station is Logged in
- Queue Appearance is idle
- Wait Period or Number of Callers has been reached
- Agent is not in the Rest Time period.

The agent can log in and log out by holding the Queue Appearance PFK down for five seconds and then releasing it. Agents can still service calls in the queue while logged out by pressing the PFK.

The following table describes the Call Queue PFK LED behavior:

<b>Color</b>	<b>Description</b>
OFF	Logged In – station is logged in to queue
SOLID GREEN	Active Call – station is servicing queue call
SLOW BLINKING GREEN	Hold – queue call is on hold
FAST BLINKING GREEN	Ringing – call in queue
SOLID RED	Logged Out – station is logged out
SLOW BLINKING RED	Logged Out Ringing – stations is logged out and there is a call in the queue. Station will not ring. Agent is able to retrieve queue call by pressing PFK.

### 3 Automated Call Distribution Queues

When a queue is configured as an Automatic Call Distribution (ACD) queue, each call in the queue is directed to one specific agent. The distribution of the calls to the agents is based on one of the algorithm described in this section.

There are three ACD call distribution algorithms. Queues are referred to as ACD queues if they use one of these three distribution modes: Linear Priority, Sequential Round Robin or Fairness – Longest Idle. Ring All queues are not referred to as ACD queues.

- The **Linear Priority** algorithm distributes calls based on a prioritized list of agents. The priority is set by the queue supervisor that assigns a unique ranking to each agent. As each call comes in, it is distributed to the available agent with the highest priority ranking.
- The **Sequential Round-Robin** algorithm distributes calls in a circular manner to the logged-in agents. The objective is to evenly distribute the calls so that all agents will have the opportunity to answer roughly the same number of calls.

The sequential distribution mechanism maintains a list of available agents. When a call gets to the front of the queue, the next agent on the list receives it. After the last agent on the list receives a call, the distribution mechanism goes back to the top of the list. If the agent that is supposed to receive the next call is already busy with another queue call, the call is sent to the next agent on the list. The agent who was busy and missed the call will be moved down on the list of agents in order to get the next call once they are available. When agents log in, they are put at the bottom of the list. Agents cannot move ahead in line by logging out and then back in.

- The **Fairness – Longest Idle algorithm** distributes calls to logged-in agents that have been idle for the longest time. The objective is to evenly distribute the calls so that all agents will spend roughly the same amount of time on calls.

The fairness distribution mechanism maintains a list of all available agents. When a call gets to the front of the queue, the next agent on the list receives it. When agents log in, they are placed at the top of the list. After completing a call, agents are moved to the bottom of the list. Agents cannot move to the bottom of the list by logging out and then back in.

Perform the following steps to enable ACD queuing:

1. Configure queue in the Web Admin
2. Assign a system user as queue supervisor (the *admin* user is a queue supervisor)
3. Queue supervisor assigns agents to single or multiple queues in My Allworx Manager
4. Assign an ACD Appearance PFK to the Allworx IP phone used by agents (Allworx IP phones are required for ACD queuing)
5. Agents log into queue with ACD Appearance PFK

#### 3.1 Configuring a Queue

The first step in using ACD Queues is to configure the queues. Go to the Phone System / Call Queues page.

**Call Queues**

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

[View](#) and manage the Language settings for the Call Queues.

Queue	Action
0 Queue 0	<a href="#">Modify</a>
1 Queue 1	<a href="#">Modify</a>
2 Queue 2	<a href="#">Modify</a>
3 Queue 3	<a href="#">Modify</a>
4 Queue 4	<a href="#">Modify</a>
5 Queue 5	<a href="#">Modify</a>
6 Queue 6	<a href="#">Modify</a>
7 Queue 7	<a href="#">Modify</a>
8 Queue 8	<a href="#">Modify</a>
9 Queue 9	<a href="#">Modify</a>

**ACD Streaming Settings** [modify](#)

<b>ACD Streaming Mode</b>	Do not stream ACD information
<b>ACD Streaming Port</b>	16367

Click the [Modify](#) link of the queue. When the Distribution Mode is set to something other than Ring All, the queue modification window will change. See below:

**Call Queue**

**Description** Support Level A

**Distribution Mode** Fairness - Longest Idle

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

**Maximum Wait** 10 (1 - 120 minutes, 0 = wait forever)

**When queue answers call** Play queue prompts

**Queue Depth Yellow Alarm Threshold** 3 (1-16 callers, 0 = no alarm)

**Queue Depth Red Alarm Threshold** 5 (1-16 callers, 0 = no alarm)

**Wait Time Yellow Alarm Threshold** 120 (0-7200 seconds)

**Wait Time Red Alarm Threshold** 240 (0-7200 seconds)

**Maximum Rings (before agent is logged out)** 4 (1 - 100 rings)

**Wrap-up time** 20 (0 - 3600 seconds)

**When no agents are logged in** Allow callers to wait in queue

**When calls are received with all agents busy** Allow callers to enter queue

**Last Agent in queue** Is allowed to logout of queue

**Distribute calls to busy handsets** Disabled

**When caller leaves queue** (After maximum wait time, caller presses 0, or no agents logged in)

Hang up  
 Transfer to extension 0 - Operator  
 Transfer to voicemail for user Al One (u6x\_01)  
 Transfer to Call Queue Queue 2 - Support Level B

Update Start Over Cancel

The following features are available for the ACD queuing modes:

- Description – textual description of queue (e.g. Sales, Tech Support). This description will be displayed in other parts of the system (e.g. Statistics, handset display screen, etc).
- Distribution Mode – algorithm used to ring agents phones, for ACD choose Fairness – Longest Idle, Linear Priority, or Sequential Round Robin.
- Replay Status Message – period between successive status update messages in seconds. Zero to disable status message.
- Maximum Wait – number of minutes callers can wait in a queue; after this period is exceeded, the call is bumped from the queue. Zero will allow the caller to wait without a limit.
- When queue answers call – plays queue prompts or continues to ring at callers' end.
- Queue Alarm Threshold levels – threshold values that will trigger the Queue Alarm PFK to yellow and red alarm levels. Threshold levels can be set for longest wait time and number of calls in the queue. See *Monitoring Queues with PFK* section of this document for more details.
- Maximum Rings – maximum number of rings that agents will have to answer a call. If the agent does not answer the call before the maximum number of rings, the agent will be logged out and the call will be returned to the front of the queue. The call will then ring the next available agent.  
Note: agents will be logged out for not answering calls from an ACD queue even while on another call.
- Wrap Up Time – number of seconds an agent has after ending a call before the system makes them available to receive subsequent ACD queue calls. Agents can dismiss/end the wrap up time from the handset. Agents' phones must be rebooted to apply changes to wrap up time.
- When no agents are logged in – Allows callers to wait in the queue or forces callers to leave queue immediately.
- When calls are received with all agents busy – Allows callers to either enter the queue or immediately leave the queue.
- Last Agent in queue – Determines whether the last logged in agent is allowed to log out of the queue or not.  
Note: If the last agent that is servicing a queue does not pick up a call within the maximum number of rings, they will be logged out. Queue supervisors can log out any agent, regardless of this setting.
- Distribute calls to busy handset – Enable or disable calls from being distributed to agent handsets that are currently busy with non-ACD calls.
- When caller leaves the queue – calls exit the queue when: calls are in the queue for more than the Maximum Wait, no agents are logged in with the queue set to force calls to leave, or callers press zero (0). Select one of the following:
  - Hang up
  - Specify forwarding extension
  - Specify forwarding queue
  - Specify Voice Mail Box.

## 3.2 Call Queue Supervisor and Assigning Agents

Call queue supervisors are system users with the authority to manage ACD queues. The System Administrator designates users as call queue supervisors by modifying the users' setting from the Business / Users Web Admin page. By default, the System Administrator (*admin*) is a call queue supervisor. See the *Allworx System Administrator's Guide* for details on modifying user settings.

Queue supervisors manage ACD queues from the Call Queues tab of My Allworx Manager. See the *User's Guide* for details on using My Allworx Manager. The queue supervisor can perform the following:

- Select agents for the ACD queues
- Set agent priority for linear priority distribution queues
- Modify queue settings:
  - Maximum rings before an agent is logged out
  - Wrap-up time
  - Queue alarm threshold levels
  - Action to take when no agents are logged in
  - Whether the last agent is allowed to logout
- View agent login and status (busy vs. idle)
- Log out agents from ACD queues
- View, export and reset queue statistics

To assign agents to a queue, select the Call Queues tab from within My Allworx Manager and then click the [view administration](#) link for the desired queue. The following is an example of the view administration screen for a queue:

Zero - Fair (Fairness - Longest Idle) [view\\_agents](#) [hide\\_administration](#) [reset\\_stats](#)

Maximum Rings (before agent is logged out)	<input type="text" value="6"/> (1 - 100 rings)
Wrap-up time	<input type="text" value="30"/> (0 - 3600 seconds)
Queue Depth Yellow Alarm Threshold	<input type="text" value="3"/> (1-16 callers, 0 = no alarm)
Queue Depth Red Alarm Threshold	<input type="text" value="6"/> (1-16 callers, 0 = no alarm)
Wait Time Yellow Alarm Threshold	<input type="text" value="0"/> (0-7200 seconds)
Wait Time Red Alarm Threshold	<input type="text" value="0"/> (0-7200 seconds)
When no agents are logged in	Force callers to leave queue immediately ▼
Last Agent in queue	Is allowed to logout of queue ▼

Agents [hide](#)

Select box to include the user as an agent in the queue.

- Alice Zero (u000)
- Biff One (u001)
- Cate Two (u002)
- Ann Three (u103)
- John Zero (u100)
- Sue Four (u004)
- System Administrator (admin)

For Linear Priority mode, the agent selection check boxes are replaced by input boxes. The input boxes are used to assign agent priority. Enter an integer starting at one for highest priority; the lower the number, the higher the priority. Duplicate values are not allowed. The following is an example of the Linear Priority selection screen:

Enter # to specify agent order in queue. Leave blank to exclude the user as an agent in the queue.

1	Alice Zero (u000)
2	Ellen Four (u004)
3	Fred Five (u005)
4	Dave Three (u003)
	Bev One (u001)
	Cathy Two (u002)
	System Administrator (admin)

### 3.3 Configuring the Phone

Agents log into ACD queues using an ACD Appearance Programmable Function Key (PFK) configured on Allworx IP phones. Assign ACD Appearance PFKs to all phones used by ACD queue agents. Only one ACD Appearance can be assigned per station, therefore a phone can service only one ACD call at a time. See the *Allworx System Administrator's Guide* for details on configuring PFKs.

Typically a Queue Appearance PFK, as described in the Ring All section, is not used for ACD queues. However, a Queue Appearance PFK can be used in conjunction with ACD Appearances. Queue Appearance PFKs can be used to indicate calls in the queue. It can only retrieve calls while they are still in the queue, before they have been distributed to agents. When a call from an ACD queue rings an agent's ACD Appearance, the call is no longer in the queue and cannot be retrieved by a Queue Appearance PFK.

### 3.4 Login and Logout of ACD Queue

An agent must be logged into an ACD Queue in order to receive calls from the queue. The ACD Appearance PFK is used to log in and out of queue(s):

The ACD Appearance PFK LED is solid red when the agent is logged out of all ACD queues.

1. Press and hold the PFK for five seconds. The login prompt will appear. Release the button.
2. Enter agent's extension – if a user has been assigned to the phone, the user's extension is displayed. Use phone's dial pad and softkey buttons to enter and edit extension, as needed.

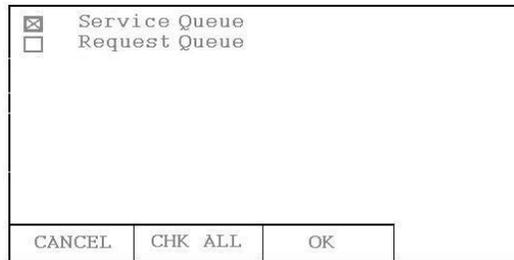
-ACD Login -

Please Enter User Ext.

102\_

CANCEL CLEAR OK

3. Select the ACD queue to log into – this step is skipped if there is only one ACD queue assigned to the agent. Use the phone's select, scroll and softkey buttons to select queue(s).



4. Enter the agent's password. Use the station's dial pad and softkeys buttons to enter and edit password.



The ACD Appearance PFK LED will turn off when the agent is logged in and ready to receive calls. The PFK is amber when the queue is idle and the agent is the only one logged in.

To log out or change queues:

1. Press and hold the PFK for five seconds. The ACD queue list is displayed.
2. Deselect/select queue. To log out, deselect all queues.
3. Enter the agent's password.

The ACD Appearance PFK LED will turn to solid red when the agent is logged out of all queues.

To check which queues an agent is logged into (agent must be logged into at least one queue):

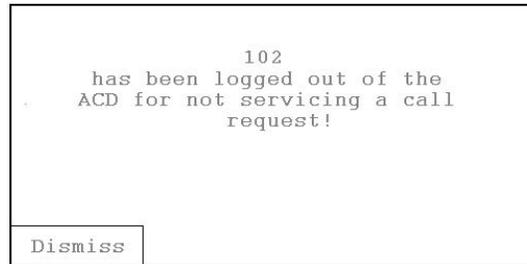
1. Press and hold PFK for five seconds. The ACD queue list is displayed.
2. Press the Cancel softkey to dismiss the screen.

Agents can log into any phone with an ACD Appearance PFK. Agents can only be logged onto one phone at a time. If an agent logs onto a second phone, then that agent is logged off the first phone.

Agents are logged out by the system when:

- Agents fail to pick up call within the maximum number of rings
- Queue supervisor logs agent out
- Agents log into second phone

The following screen is displayed when agents are logged out by the system:



In addition, the ACD Appearance PFK will be blinking red when the system logs the agent off.

A logged-in agent can temporarily log out by pressing and releasing the ACD Appearance PFK; the PFK will slowly blink red. This will put the agent into a busy state and no calls will be distributed. Press and release the PFK again to log back in; the PFK LED will change accordingly.

The following table describes the ACD Appearance PFK LED behavior:

Color	Description
OFF	Logged In – an agent is logged in and idle.
SOLID GREEN	Active Call – station is servicing an ACD call.
SLOW BLINKING GREEN	Hold – ACD call is on hold.
FAST BLINKING GREEN	Ringing – incoming ACD call.
SOLID RED	Logged Out – no agent is logged in.
SLOW BLINKING RED	Wrap-Up Time or agent temporarily logged out – no calls will be distributed to the agent at this time.
FAST BLINKING RED	Auto-Logged Out – agent was logged out by the server.
SOLID YELLOW	Last Logged in Agent – agent using this station is the last agent logged in and the queue is idle.
FAST BLINKING YELLOW	ERROR (e.g. HTTP timeout, subscription failure, loss of contact with server)

### 3.5 Agent Servicing ACD Call

Calls in an ACD queue will be directed to the ACD Appearance of the next available agent’s phone. This section outlines what occurs when an agent services a call:

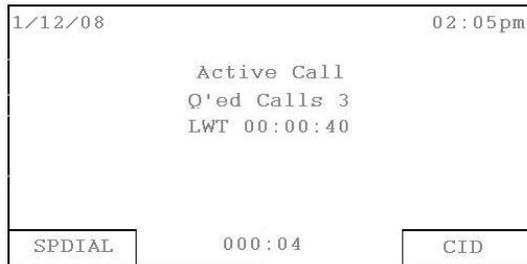
1. The call will ring the ACD Appearance and the phone displays *Inbound Call* along with the caller ID. If the agent is logged into more than one ACD queue, then the queue description will also be displayed.

The agent can press *Silent* to stop the ringing or *Ignore* to stop the ringing and remove the inbound call information from the phone’s display. If the agent does not answer the call within the maximum number of rings, then the agent is automatically logged out by the system.

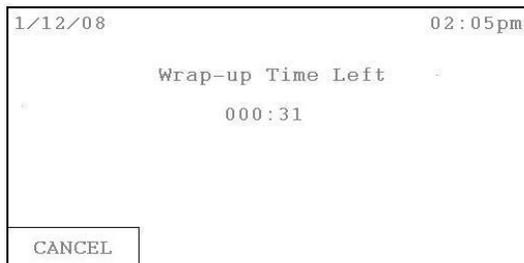
2. When the agent answers the call, the phone displays the active call:



3. With the phone's softkeys, the agent can toggle between the active call's caller ID (*CID*) and the queue's status information (*QSTAT*). The queue status information replaces caller ID when a new call enters the queue.



4. After the call ends and if the queue is configured with a wrap up time, the phone displays the following while in the wrap up period:



The agent can receive and place calls while in the wrap up period. The agent can end the wrap up by pressing the CANCEL softkey.

## 4 Managing Custom Queue Message Content

The system provides default greeting and periodic status messages to callers for all queues. These messages can be customized by recording new messages directly into the system or by transferring audio files to the server. The instructions can be found on the Admin page, by clicking on the manage link near the top of the Phone System / Call Queues page.

Follow these steps to record a new greeting:

1. Dial an Auto Attendant extension (431-439<sup>†</sup>). You will hear the Auto Attendant greeting.  
Note: If the system is configured for Dual Language Support, the new queue greetings and messages will be associated with the current language of the Auto Attendant. To record greetings and messages for an alternate language, dial ‘##’ to switch languages before proceeding to the next step.
2. Dial # and 9.
3. After the beep, enter the Admin password.
4. Dial 4 to choose Manage Call Queues.

Dial	Greeting
1	Day Mode Greeting
2	Night Mode Greeting
3	Custom Message
4	Manage Call Queues
#	Return to the Previous Menu
*	Replay the options

5. Enter the number of the Call Queue to manage (0 through 9).
6. Dial (1) for greeting message or (2) for status message to record/manage.

Dial	Greeting
1	Manage Call Queue Greeting
2	Manage Call Queue Status Message
#	Return to the Auto Attendant
*	Replay the options

7. Dial 2 to start recording. Begin speaking after the beep. Dial # when you are finished. Then, select from the following options:

<sup>†</sup> Extensions may vary per system. If you are using a non-default Internal Dial Plan, consult the Phone Features tab of the My Allworx Manager page to determine what extensions are being used for the corresponding feature.

Dial	Task
1	Save the greeting
2	Change the greeting
3	Review the greeting
#	Cancel the changes
*	Replay the options

## 5 Configuring Calls to Route to a Queue

Calls enter a queue when routed by an extension. This is done by defining the final call route of user or system extension to a queue (will refer to this extension as the “queue extension”). Next, configure the system to direct inbound calls to the queue:

- Route outside calls directly to the queue extension.
- Route calls to an Auto Attendant that has a menu shortcut that dials the queue extension.

See the Call Routing section in the *Allworx System Administrator's Guide* for information on setting up call routes.

Go to the Phone System / Auto Attendants page to set up an Auto Attendant menu shortcut.

### 5.1 Example 1: Call Routing To Auto Attendant and Then Call Queue

Inbound calls come into an Auto Attendant. The Auto Attendant custom greeting includes: “For Customer Support, press 2.” After pressing 2, the caller hears the queue greeting and is placed in the queue.

Configuration:

1. Define the call route of the outside line to direct calls to the Auto Attendant.
2. Create a Customer Support system extension. Define the call route to immediately transfer calls to the Customer Support queue.
3. Record an Auto Attendant custom greeting that instructs the callers to press 2 to reach Customer Support.
4. Configure the Auto Attendant menu shortcut for digit 2 to transfer calls to the Customer Support system extension.

### 5.2 Example 2: Call Routing Directly to Call Queue

Inbound calls, are directly placed into the queue.

Configuration:

1. Create a Customer Support system extension. Define the call route to immediately transfer calls to the Customer Support Call Queue.
2. Define the call route of the outside line to direct calls to the Customer Support system extension.

## 6 Monitoring Queues with PFK

With the Queue Alarm Programmable Function Key (PFK), any Allworx IP phone can display alerts of a given queue’s activity levels. The Queue Alarm PFK monitors threshold values for longest wait time and/or number of calls in the queues. It signals green, yellow and red alarm levels. Green is the lowest level and red is the highest level. The thresholds are defined by the System Administrator or the queue supervisor.

To set up the PFK:

1. Go to the Phone System / Handsets page and click on the View Configuration link for the phone you want to configure.
2. Click the Modify link in the Programmable Function Keys section.
3. For the desired PFK, click the drop down arrow and select Queue Alarm for this PFK’s function.
4. Now click the define link that appears.

The define window is displayed below:

5. Select the queue to monitor.
6. Select whether to enable or disable the audible alarm. It is enabled by default.

Queue alarm threshold levels are set on the Queue configuration page. For ACD queues, queue supervisors can set these values from the Call Queues tab of My Allworx Manager.

- Queue Depth Yellow and Red Alarm Thresholds: number of calls in the queue that triggers the yellow and red alarms, respectively. The value can be set from 1 to 16 callers. Zero (0) sets it to no alarm. The yellow threshold cannot exceed the red threshold unless red is set to zero.
- Wait Time Yellow and Red Alarm Thresholds: elapsed time a call has been in the queue that triggers the yellow and red alarms respectively. The values can be set from 0 to 7200 seconds. The yellow threshold cannot exceed the red threshold.

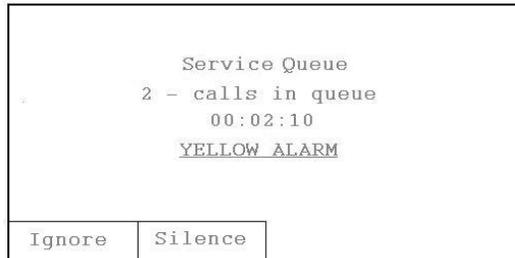
The following table describes the Queue Alarm PFK LED display:

Color	Description
GREEN	Both alarm levels are less than the yellow threshold values
YELLOW	Either alarm level reaches the yellow threshold value and neither have reach the red threshold value OR When no agents are logged into the queue and if the queue is set to force callers to leave the queue when no agents are logged in.

RED	Either alarm levels reach the red threshold value OR When no agents are logged into the queue and a call enters the queue
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The Queue Alarm PFK has an optional audible alarm. The audible alarm is triggered when threshold levels change from green to yellow or from yellow to red. The audible alarm includes a visual alarm with the phone's LCD screen displaying: queue description, number of calls in the queue, longest wait and the alarm level.

Audio/visual alarms can be Ignored (dismissed) or Silenced with the phone's softkeys.



## 7 Additional information

### 7.1 Alternative Methods for Servicing Queue Calls

- Calls in a queue can be serviced by dialing 441x<sup>†</sup>, where the last digit is the queue number (0-9).
- Call Assistant can be used to answer calls in the queues from the Call Queue tab.

### 7.2 Last agent logged out will force caller to leave queue

If the only agent logged into a queue fails to answer an ACD call, then the agent is logged out. In addition, if the queue is set to *force callers to leave queue immediately* when no agents are logged in, then this call will be exited from the queue and follow the defined exit routing.

### 7.3 Last agent cannot log out

When ACD queues are set to not allow the last agent to log out and the last agent must log out for any reason, a queue supervisor must log the agent out. The agent can also be logged out by allowing an ACD call to exceed the maximum rings.

### 7.4 Agents cannot bypass ACD calls

When ACD queue calls are directed to agents, the agents must answer the calls or they will be logged out. The agent will not be logged out if the caller hangs up prior to the maximum number of rings. For example, using the IGNORE or SILENT softkeys will not prevent the agent from being logged out. There is no mechanism for agents to pass on queue calls without being logged out.

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<sup>†</sup> Extensions may vary per system. If you are using a non-default Internal Dial Plan, consult the Phone Features tab of the My Allworx Manager page to determine what extensions are being used for the corresponding feature.

## 8 Queue Statistics

Allworx Queuing offers a rich variety of statistics to monitor, track and analyze queue activity. The statistics are available in three ways:

- View via My Allworx Manager
- Export to XLS file from My Allworx Manager
- Stream to an external device connected to the LAN port of the server

### 8.1 Queue Statistics Report

All system users can view call queue statistics. Go to the Call Queue tab of My Allworx manager.

Call Queue Statistics <a href="#">reset all stats</a> <a href="#">help</a>			
<a href="#">Refresh Stats</a>		<a href="#">Export XLS Report</a>	
Zero - Fair (Fairness - Longest Idle) <a href="#">hide agents</a> <a href="#">view administration</a> <a href="#">reset stats</a>			
<b>u001 (Logged Out)</b> <a href="#">reset stats</a>	Total Serviced	0	
Average Service Time n/a	Total Service Time	0 s	
Average Answer Time n/a	Longest Answer Time	0 s	
Total Missed 0	Total Logged In Time	17 s	
Load Factor 0%			
<b>u002 (Logged Out)</b> <a href="#">reset stats</a>	Total Serviced	0	
Average Service Time n/a	Total Service Time	0 s	
Average Answer Time n/a	Longest Answer Time	0 s	
Total Missed 0	Total Logged In Time	13 m 52 s	
Load Factor 0%			
Calls Received	34	Collection Period	2 d
Average Time to Service	18 s	Calls Serviced	16
Abandoned (short)	4	Abandoned (long)	12
Exit Key Pressed	0	Timed Out	2
Total Wait Time	4 m 55 s	Longest Wait Time	57 s
Maximum Calls In Queue	2	Average Hold Time before abandoned	38 s
Call Volume (calls per hour)	0.04	Total Agent Time	5 m 11 s
Total Call Time	10 m 6 s	Caller Efficiency	105%
Average Agent Time	19 s	Average Call Time	37 s

The statistics available for queues are based on whether the queue is a Ring All queue or an ACD queue.

#### 8.1.1 Standard Queue Statistics

The following statistics are available for all queues (Ring All and ACD queues):

- Calls Received – number of calls placed into the queue.
- Collection Period – elapsed time statistics have been captured since the last reset or the Allworx service rebooted.
- Average Time to Service – average time before all calls were serviced.
- Calls Serviced - number of calls serviced.
- Abandoned (short) - number of calls in the queue where the caller hung up within 10 seconds.
- Abandoned (long) - number of calls in the queue where the caller hung up after 10 seconds.
- Exit Key Pressed - number of calls where the caller pressed an exit key to leave the queue.
- Timed Out - number of calls where the caller waited the maximum time before the system removed the call from the queue.
- Total Wait Time – total wait time experience by all the callers before being serviced.

- Longest Wait Time – longest period of time any single call waited in the queue.
- Maximum Calls in Queue – highest number of calls waiting in the queue at one time.
- Average Hold Time before abandoned – total wait time of all Abandoned (long) calls divided by the number of such calls.

## 8.1.2 ACD Queue Statistics

The following queue statistics are based on agent data and therefore only available for ACD queues:

- Call Volume – average numbers of calls handled per hour during all periods where there is at least one agent logged in.
- Total Agent Time – total time agents spent on active calls.
- Total Call Time – total Wait Time plus Total Agent Time.
- Caller Efficiency – total Agent Time divided by Total Wait Time.
- Average Agent Time – total Agent Time divided by number of calls serviced.
- Average Call Time – total Call Time divided by number of calls serviced.

## 8.1.3 ACD Agent Queue Statistics

For each ACD queue, the following statistics are available for each agent that has logged in. These statistics are listed by Agent (user login name) and are reset individually, for each agent. The queue supervisor can view these statistics using the view agents link:

- Serviced Calls – number of calls serviced by the agent.
- Missed Calls – number of calls directed to the agent, but not answered. The agent was logged out.
- Total Service Time – total time spent servicing calls, excluding ringing time.
- Average Service Time – total Service Time divided by Serviced Calls.
- Average Answer Time – average number of seconds to answer a call.
- Longest Answer Time – maximum number of seconds to answer a call.
- Total Time logged into Queue – total time the agent was logged into the queue.
- Load Factor – total Service Time plus wrap-up allowance divided by total logged in time. The wrap-up allowance is the queue wrap-up time multiplied by the number of serviced calls for this queue.

## 8.1.4 Resetting Statistics

Queue supervisors have the ability to reset queue statistics:

- Reset All Stats (will not reset agent statistics)
- Reset Stats per queue (will not reset agent statistics)
- Reset Stats per agent

## 8.2 Queue Statistics Export Report

Any system user can export all queue statistics to a XML-based spreadsheet file (Supported by Excel 2003 or later).

1. Press the **Export XLS Report** button
2. Select **Open** (to launch XML based spreadsheet program) OR **Save** spreadsheet file to PC (the default filename is cqr.xls)

## 8.2.1 Queue Statistics

The spreadsheet contains a tab for each queue for which statistics are available. The following statistics are included :

- ID – queue number (0 – 9).
- Name – queue description.
- Average Time to Service – average time before all calls were serviced.
- Collection Period – elapsed time that statistics have been captured since the last reset or since the Allworx server was rebooted.
- Calls Received – number of calls placed into the queue.
- Calls Serviced – number of calls serviced.
- Abandoned (short) – number of calls in the queue where the caller hung up within 10 seconds.
- Abandoned (long) – number of calls in the queue where the caller hung up after 10 seconds.
- Abandoned (total) – total number of calls where the caller hung up.
- Exit Key Pressed – number of calls where the caller pressed an exit key to leave the queue.
- Timed Out – number of calls where the caller waited the maximum time before the system removed the call from the queue.
- UTC Start Time – timestamp (in seconds) of when the collection of statistics started.
- UTC Report Time – timestamp (in seconds) of the time when the report was created.
- Total Wait Time – total wait time experienced by all callers before being serviced.
- Longest Wait Time – longest period of time that any single call waited in the queue.
- Maximum Calls in Queue – highest number of calls waiting in the queue at one time.
- Average Hold Time before abandoned – total wait time of all Abandoned (long) calls divided by the number of such calls.
- Total Agent Time – total active call time handled by the agents.
- Total Time Agents Logged In – the sum of how long each agent is logged into the queue.

## 8.2.2 Queue Statistics

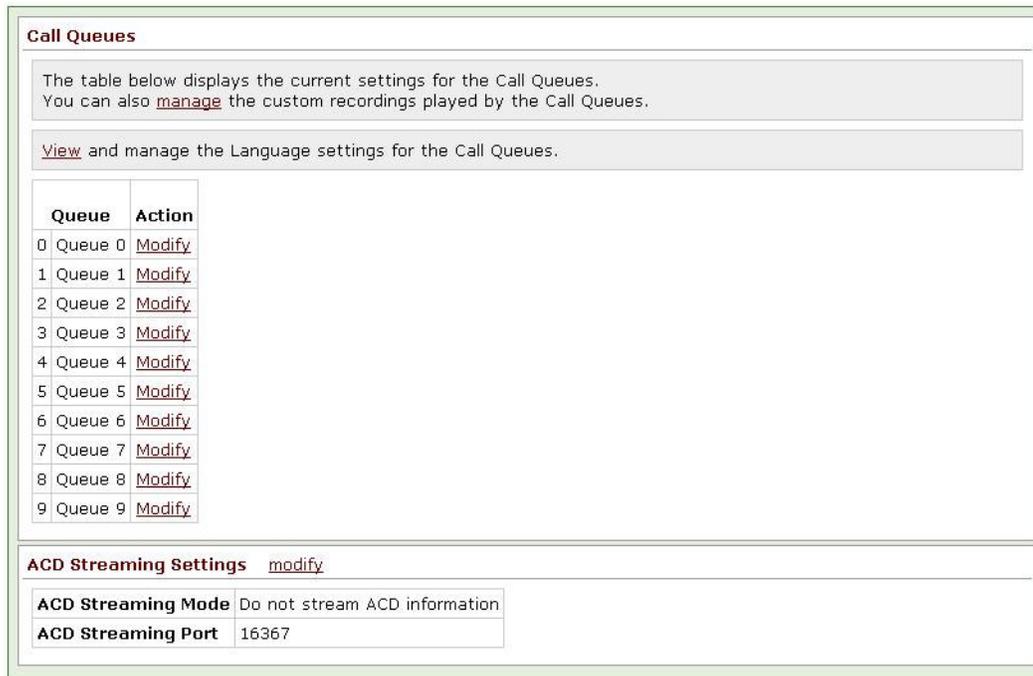
The spreadsheet contains an agent tab for each ACD queue for which agent statistics are available. There is an entry for each agent who has logged into the queue. The follow statistics are included:

- ID – queue number (0 – 9).
- Name – agent's username.
- Serviced Calls – number of calls serviced by the agent.
- Missed Calls – number of calls directed to the agent, but not answered. The agent was logged out.
- Total Service Time – total time spent servicing calls, excluding ringing time.
- Longest Answer Time – maximum number of seconds taken to answer a call.
- Logged in Time – total time the agent was logged into the queue.
- Total Time to Answer – total time it took for agent to answer all serviced calls.

## 8.3 Streaming Queue Statistics

Call Queue statistics can be monitored in real-time by streaming the data to a client application connected to a specified TCP port on the Allworx service's LAN interface. This feature provides a mechanism for the development of a third party wallboard application.

To enable streaming of queue statistics, go to the Phone System / Call Queues page and select the modify link for ACD Streaming Settings:



**Call Queues**

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

[View](#) and manage the Language settings for the Call Queues.

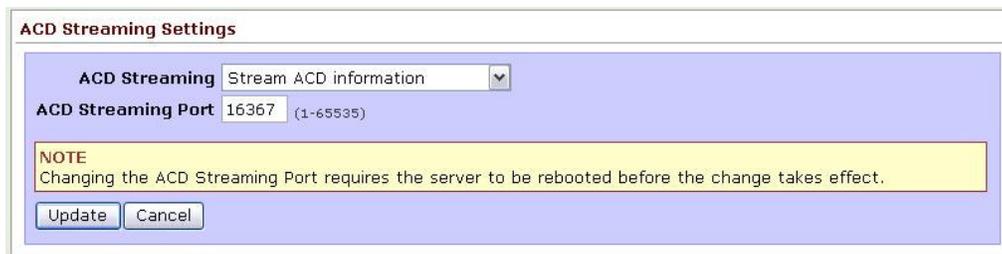
Queue	Action
0 Queue 0	<a href="#">Modify</a>
1 Queue 1	<a href="#">Modify</a>
2 Queue 2	<a href="#">Modify</a>
3 Queue 3	<a href="#">Modify</a>
4 Queue 4	<a href="#">Modify</a>
5 Queue 5	<a href="#">Modify</a>
6 Queue 6	<a href="#">Modify</a>
7 Queue 7	<a href="#">Modify</a>
8 Queue 8	<a href="#">Modify</a>
9 Queue 9	<a href="#">Modify</a>

**ACD Streaming Settings** [modify](#)

<b>ACD Streaming Mode</b>	Do not stream ACD information
<b>ACD Streaming Port</b>	16367

Set up streaming queue data:

1. Set ACD Streaming field to: Stream ACD information
2. Set ACD Streaming Port to appropriate TCP port setting (1 – 65535; default is 16367)
3. Press **Update** button
4. Reboot Allworx server if the port setting is changed



**ACD Streaming Settings**

**ACD Streaming** Stream ACD information

**ACD Streaming Port** 16367 (1-65535)

**NOTE**  
Changing the ACD Streaming Port requires the server to be rebooted before the change takes effect.

Data is streamed whenever there is any queue activity (e.g. callers enter, are serviced, exit queues or agent logs in or out, etc). Each record is a complete XML file. See the *Allworx ACD Statistics Collection Internet Interface* document for a complete definition of the record layout. One way to receive and view this data is using a telnet application (e.g. HyperTerminal) configured to log data from the TCP port that was configured on the server for ACD data streaming. The number of client connections is limited to 16.