



Queues

User Guide

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Overview

Automatic Call Distribution (ACD) or call queuing provides a way for a PBX to queue incoming calls. A queue is a “stack” or “line” of calls that need to be answered. When a call is directed into the queue, by default, the calls are answered in a first in, first out order. Call queues are useful for when you have more callers than people available to answer calls. Callers placed into a queue will hear music or advertising until someone is available to answer their call. The Queues module allows you to create and design queues that allow callers to speak with agents as quickly and painlessly as possible.

Queues Consist of:

- **Callers**- Incoming calls being placed in the queue
- **Agents**- Members that answer the queue calls (extensions or users that login as agents)
- **Ring Strategy**- A strategy for how to handle the queue and divide calls between queue members
- **MoH**- Music or advertisements played for callers while waiting in the queue
- **Announcements**- Played for callers and members

Logging In

- Log into the Queues module and you should see a screen like this. A list of all existing queues will be shown on the right side and you can click on any of them to edit or remove.

Add Queue

Add Queue

Queue Number: ⓘ

Queue Name: ⓘ

Queue Password: ⓘ

Generate Device Hints: ⓘ ☐

Call Confirm: ⓘ ☐

Call Confirm Announce: ⓘ Default ▼

CID Name Prefix: ⓘ

Wait Time Prefix: ⓘ No ▼

Alert Info: ⓘ

Static Agents: ⓘ

Extension Quick Pick: ⓘ (pick extension) ▼

Dynamic Members: ⓘ

Extension Quick Pick: ⓘ (pick extension) ▼

Restrict Dynamic Agents: ⓘ Yes No

Agent Restrictions: ⓘ Call as Dialed ▼

Add Queue

4500:FS-Support

4501:FS-Admin

4600:SC-Sales

4601:SC-Support

4602:SC-Emergency

4610:Test


4611:tony test


4612:Customer Service


Adding a Queue


Add Queue


Add Queue


Queue Number: 


Queue Name: 


Queue Password: 


Generate Device Hints:  ☐


Call Confirm:  ☐


Call Confirm Announce: 


CID Name Prefix: 


Wait Time Prefix: 


Alert Info: 


Static Agents: 

Extension Quick Pick: 

Dynamic Members: 

Extension Quick Pick: 

Restrict Dynamic Agents: 

Agent Restrictions: 

- **Queue Number-** Use this number to dial into the queue or transfer callers to this number to put them into the queue.
 - **Agent Queue Login in Toggle Mode-** Agents can log into all queues in which they are members by dialing “*45” and dialing it again to log out. The system will give them voice prompts to the status of their queue login.
 - ***45 = Log in to all queues**
 - ***45 = Log out of all queues**
- **Queue Name-** Give the queue a brief name to help you identify it.
- **Queue Password-** (Optional) You can require agents to enter a password before they can log in to this queue. The password is only used when logging in with the legacy queue * code. When using the toggle codes, you must use the “Restrict Dynamic Agents” option in conjunction with the dynamic members list to control access.
- **Generate Device Hints-** If checked, individual hints and dialplans will be generated for each SIP and IAX2 device that could be part of this queue. These are used in conjunction with programmable BLF phone buttons to log in and out of a queue and generate BLF status as to the current state. The format is:

- 45ddd*qqq
- Where “45” is the currently defined toggle feature code, “ddd” is the device number (typically the same as the extension number) and “qqq” is this queue’s number.
- By default this should be off unless you are using non Aastra phones and want to program BLF buttons that will let you log in and out of the queue. With Aastra phones, this is handled through a XML application on your phone called “ACD Agents.” This option is not required to be on. If enabled, it will add more time to reloads and can affect large call centers with more overhead.
- **Call Confirm-** If checked, any queue member that is actually an outside telephone number, any extensions Follow-Me or call forwarding that are pursued and leave the PBX will be forced into call confirmation mode where the member must acknowledge the call before it is answered and delivered.
- **Call Confirm Announce-** Announcement played to the queue member announcing the queue call and requesting confirmation prior to answering. If set to default, the standard call confirmation default message will be played unless the member is reached through a Follow-Me and there is an alternate message provided in the Follow-Me. This message will override any other message specified. To add additional recordings please use the “System Recordings” MENU.
- **CID Name Prefix-** You can optionally prefix the caller ID name of callers to the queue. ie: If you prefix with “Sales:,” a call from John Doe would display as “Sales:John doe” on the extensions that ring.
- **Wait Time Prefix-** When set to “Yes,” the CID name will be prefixed with the total wait time in the queue so the answering agent is aware how long they have been waiting. It will be rounded to the nearest minute, in the form of “Mnn:” where “nn” is the number of minutes. If the call is subsequently transferred, the wait time will reflect the time since it first entered the queue or reset if the call is transferred to another queue with this feature set.
- **Alert Info-** This can be used for distinctive ring with SIP devices.
- **Static Agents-** Static agents are extensions that are assumed to always be in the queue. Static agents do not need to “log in” to the queue, and cannot “log out” of the queue.
 - List extensions to ring, one per line.
 - You can include an extension on a remote system or an external number (outbound routing must contain a valid route for external numbers). You can put a “,” after the agent followed by a penalty value.
 - An advanced mode has been added which allows you to prefix an agent number with S,X,Z,D or A. This will force the agent number to be dialed as an Asterisk device of type SIP, IAX2, XAP, or DAHDI respectively. This mode is for advanced users and can cause known issues in the PBX as you are by-passing the normal dialplan. If your “Agent Restrictions” are not set to “Extension Only” you will have problems with subsequent transfers to voicemail. Other issues may also exist.

- **Extension Quick Pick-** Choose an extension to append to the end of the static agents list above.
- **Dynamic Members-** Dynamic members are extensions or callback numbers that can log in and out of the queue. When a member logs in to a queue, their penalty in the queue will be specified here. Extensions included here will NOT automatically be logged in to the queue.
- **Extension Quick Pick-** Choose an extension to append to the end of the dynamic member list above.
- **Restrict Dynamic Agents-** Restrict dynamic queue member logins to only those listed in the dynamic members list above. When set to “Yes,” members not listed will be DENIED ACCESS to the queue.

Agent Restrictions

- When set to “Call as Dialed,” the queue will call an extension just as if the queue were another user. Any Follow-Me or call forward states active on the extension will result in the queue call following these call paths.
 - When set to “No Follow-Me or Call Forward,” all agents that are extensions on the system will be limited to ringing their extensions only. Follow-Me and call forward settings will be ignored. Any other agent will be called as dialed. This behavior is similar to how extensions are dialed in ring groups.
 - When set to “Extensions Only,” the queue will dial extensions as described for “No Follow-Me or Call Forward.” Any other number entered for an agent that is NOT a valid extension will be ignored. No error checking is provided when entering a static agent or when logging on as a dynamic agent. The call will simply be blocked when the queue tries to call it. For dynamic agents, see the “Agents Regex Filer” to provide some validation.

General Queue Options

General Queue Options

Ring Strategy: ?	ringall ▼
Autofill: ?	<input type="checkbox"/>
Skip Busy Agents: ?	No ▼
Queue Weight: ?	0 ▼
Music on Hold Class: ?	inherit ▼ MoH Only Agent Ringing Ring Only
Join Announcement: ?	None ▼ Always When No Free Agents When No Ready Agents
Call Recording: ?	No ▼
Recording Mode: ?	Include Hold Time ▼
Caller Volume Adjustment: ?	No Adjustment ▼
Agent Volume Adjustment: ?	No Adjustment ▼
Mark calls answered elsewhere: ?	<input type="checkbox"/>

- **Ring Strategy**

- **ringall**- Ring all available agents until someone answers (default). If using penalties, all agents will start with a penalty of 0 for the defined ring time as defined in the “Agent Timeout” setting below. Then all agents with a 1,2,3 and so forth.
- **leastrecent**- Ring agent who was least recently called by this queue.
- **fewestcalls**- Ring the agent with the fewest completed calls from this queue.
- **random**- Ring random agent.
- **rrmemory**- Round robin with memory (remember where we left off last ring pass).
- **rrordered**- Same as rrmemory, except the queue member order from config file is preserved.
- **linear**- Rings agents in the order specified (for dynamic agents in the order they logged in).
- **wrandom**- Random, using the member’s penalty as a weighting factor.

- **Autofill**- If this is checked, and multiple agents are available, the PBX will send one call to each waiting agent (depending on the ring strategy). Otherwise, it will hold all calls while it tries to find an agent for the top call in the queue making other calls wait.

- **Skip Busy Agents**

- When set to “**Yes**,” agents who are on an occupied phone will be skipped as if the line were returning busy. This means that call waiting or multi-line phones will not be presented with the call. In various hunt style ring strategies, the next agent will be attempted.
- When set to “**Yes + (ringinuse=no)**,” the queue configuration flag “ringinuse=no” is set for this queue in addition to the phone’s device status being monitored. This results in the queue tracking remote agents (agents who are a remote PSTN phone, called through Follow-Me and other means) as well as PBX connected agents. So, the queue will not attempt to send another call if they are already on a call from any queue.
- When set to “**Queue calls only (ringinuse=no)**,” the queue configuration flag “ringinuse=no” is set for this queue also, but the device status of locally connected agents is not monitored. The behavior is to limit an agent belonging to one or more queues to a single queue call. If they are occupied from other calls, such as outbound calls they initiated, the queue will consider them available and ring them since the device state is not monitored with this option.
- **WARNING**: When using the setting that set the “ringinuse=no” flag, there is a NEGATIVE side effect. An agent who transfers a queue call will remain unavailable by any queue until that call is terminated as the call still appears as “inuse” to the queue UNLESS “Agent Restrictions” is set to “Extensions Only.”

- **Queue Weight**- Gives queues a “weight” option to ensure calls waiting in a higher priority queue will deliver its calls first if there are agents common to both queues.

- **Music on Hold Class**- MoH played to the caller while they wait in line for an available agent. Choose “inherit” if you want the MoH class to be what is currently selected, such as by the inbound route. “MoH Only” will play music until the agent answers. Agent ringing will play MoH until an agent’s phone is presented with the call and is ringing. If they don’t answer, MoH will return. “Ring Only” makes callers hear a ringing tone instead of MoH, ignoring any MoH class selected as well as any configured periodic announcements. This music is defined in the “Music

on Hold” menu.

- **Join Announcement-** Announcement played to callers prior to joining the queue. This can be skipped if there are agents ready to answer a call (meaning they still may be wrapping up from a previous call) or when they are free to answer the call right now. To add additional recordings please use the “System Recordings” menu.
- **Call Recording-** List recording format options.
 - **wav49**- Small size, good quality, format will have a .WAV extension
 - **wav**- An uncompressed sound format with a .wav extension, file is very large
 - **gsm**- About the same file size and audio quality as wav49, may not be supported on many devices
 - **No**- No recording action will be defined here
- **Recording Mode-** Choose to “Include Hold time” in the recording so it starts as soon as they enter the queue, or to defer recording until “After Answered” and the call is bridged with a queue member.
- **Caller Volume Adjustment-** Adjust the recording volume of the caller +4 to -4.
- **Agent Volume Adjustment-** Adjust the recording volume of the agent +4 to -4.
- **Mark Calls Answered Elsewhere-** Enable this option and all calls will be marked as “answered elsewhere” when cancelled. The effect is that missed queue calls are NOT shown on the phone (if the phone supports it).

Timing & Agent Options

Timing & Agent Options

Max Wait Time: ?	Unlimited
Max Wait Time Mode: ?	Strict
Agent Timeout: ?	15 seconds
Agent Timeout Restart: ?	No
Retry: ?	5 seconds
Wrap-Up-Time: ?	0 seconds
Member Delay: ?	0 seconds
Agent Announcement: ?	None
Report Hold Time: ?	No
Auto Pause: ?	No
Auto Pause on Busy: ?	No
Auto Pause on Unavailable: ?	No
Auto Pause Delay: ?	0

- **Max Wait Time-** Defines the maximum number of seconds a caller can wait in a queue before being pulled out. (0 for unlimited).
- **Max Wait Time Mode-** Set the PBX time out priority. In “Strict” mode, when the “Max Wait Time” of a caller is hit, they will be pulled out of the queue immediately. In “Loose” mode, if a queue member is currently ringing with this call, then the PBX will wait until the queue stops ringing this queue member or otherwise the call is rejected by the queue member before taking the caller out of the queue. This means that the “Max Wait Time” could be as long as “Max Wait Time” + “Agent Timeout” combined.
- **Agent Timeout-** The number of seconds an agent’s phone can ring before we consider it a timeout. Unlimited or other timeout values may still be limited by system ringtime or individual extension defaults.
- **Agent Timeout Restart-** If “timeoutrestart” is set to “Yes,” then the timeout for an agent to answer is reset if a BUSY or CONGESTION is received. This can be useful if agents are able to cancel a call with reject or similar.
- **Retry-** The number of seconds we wait before trying all the phones again. Choosing “No Retry” will exit the queue and go to the failover destination as soon as the first attempted agent times-out. Additional agents will not be attempted.
- **Wrap-Up-Time-** After a successful call, how many seconds to wait before sending a potentially free agent another call (default is 0, or no delay). You can also set the “Honor Wrapup Time” across queues on the Advanced Setting page so that this is honored across queues for members logged on to multiple queues.
- **Member Delay-** If you wish to have a delay before the member is connected to the caller (or before the member hears any announcement messages), set this to the number of seconds to delay.
- **Agent Announcement-** Announcement played to the agent prior to bridging in the caller.
 - Example: “The following call is from the Sales Queue” or “This call is from the Technical Support Queue.”
 - To add additional recordings, please use the “System Recording” MENU. Compound recordings composed of 2 or more sound files are not displayed as options since this feature cannot accept such recordings.
- **Report Hold Time-** If you wish to report the caller’s hold time to the caller before they are connected, set this to “Yes.”
- **Auto Pause-** Auto pause an agent in this queue (or all queues they are a member of) if they don’t answer a call. Specific behavior can be modified by the “Auto Pause Delay” as well as “Auto Pause Busy/Unavailable” settings.

- **Auto Pause on Busy-** When set to “Yes,” agents’ devices that report busy upon a call attempt will be considered as a missed call and auto paused immediately or after the auto pause delay, if configured.
- **Auto Pause on Unavailable-** When set to “Yes,” agents’ devices that report congestion upon a call attempt will be considered as a missed call and auto paused immediately or after the auto pause delay if configured.
- **Auto Pause Delay-** This setting will delay the auto pause of an agent by auto pause delay seconds from when it last took a call. For example, if this is set to 2 minutes and a new call is presented to the agent 1.5 minutes after they last took a call, they will not be auto paused if they don’t answer the call. If presented with a call 2 minutes or later after answering the last call, they will then be auto paused. If they have taken no calls, this will have no affect.

Capacity Options

Capacity Options

Max Callers: ?	<input type="text" value="0"/>
Join Empty: ?	<input type="text" value="Yes"/>
Leave Empty: ?	<input type="text" value="No"/>
Penalty Members Limit: ?	<input type="text" value="Honor Penalties"/>

- **Max Callers-** Define the maximum number of people waiting in the queue (0 for unlimited).
- **Join Empty-** Determines if new callers will be admitted to the queue. If not, the fail over destination will be immediately pursued. The options include:
 - **Yes-** Always allows the caller to join the queue.
 - **Strict-** Same as “Yes,” but more strict. Simply speaking, if no agent could answer the phone then don’t admit them. If agents are inuse or ringing someone else, the caller will still be admitted.
 - **Ultra Strict-** Same as “Strict” plus a queue member must be able to answer the phone NOW to let them in. Simply speaking, available agents that could answer but are currently on the phone or ringing on behalf of another caller will be considered unavailable.
 - **No-** Callers will not be admitted if all agents are paused, show an invlaid state for their device or have penalty values less then “QUEUE_MAX_PENALTY” (not currently set in PBX dialplan).
 - **Loose-** Same as “NO,” except callers will be admitted if there are paused agents who could become available.
- **Leave Empty-** Determines if callers should be exited prematurely from the queue in situations where it appears no one is currently available to take the call. The options include:

- **Yes**- Callers will exit if all agents are paused, show an invalid state for their device or have penalty values less than “QUE_MAX PENALTY” (not currently set in PBX Dialplan).
 - **Strict**- Same as “Yes,” but more strict. Simply speaking, if no agent could answer the phone, then have them leave the queue. If agents are in use or ringing someone else, the caller will still be held.
 - **Ultra Strict**- Same as “Strict” plus a queue member must be able to answer the phone NOW to let them remain. Simply speaking, any available agents that could answer but are currently on the phone or ringing on behalf of another caller will be considered unavailable.
 - **Loose**- Same as “Yes,” except callers will remain in the queue if there are paused agents who could become available.
 - **No**- Never have a caller leave the queue until the “Max Wait Time” has expired.
- **Penalty Members Limit**- A limit can be set to disregard penalty settings, allowing all members to be tried, when the queue has too few members. No penalty will be weighed in if there are only “X” or fewer queue members.

Caller Position Announcements

Caller Position Announcements

Frequency: ?	0 seconds
Announce Position: ?	No
Announce Hold Time: ?	No

- **Frequency**- Define how often to announce queue position and estimated holdtime (0 to disable announcements).
- **Announce Position**- Announce position of caller in the queue.
- **Announce Hold Time**- Include the estimated hold time in position announcements: either “Yes,” “No” or “Only once.” Hold time will not be announced if <1 minute.

Periodic Announcements

Periodic Announcements

IVR Break Out Menu: ?	None
Repeat Frequency: ?	0 seconds

- **IVR Break Out Menu**- You can optionally present an existing IVR as a “Break Out” menu.
 - This IVR must only contain single-digit “dialed options.” The recording set for the IVR will be played at intervals specified in “Repeat Frequency” below.

- **Repeat Frequency-** How often to announce a voice menu to the caller (0 to disable announcements).

Events Stats and Advanced Options

Events, Stats and Advanced

Event When Called: ?	No ▾
Member Status Event: ?	No ▾
Service Level: ?	60 seconds ▾
Agent Regex Filter: ?	<input type="text"/>

- **Event When Called-** When this option is set to “Yes,” the following manager events will be generated: AgentCalled, AgentDump, AgentConnect and AgentComplete. This is needed if you want to use QXact Reports, Xactview or iSymphony.
- **Member Status Event-** When set to “Yes,” the following manager event will be generated: QueueMemberStatus.
- **Service Level-** Used for service level statistics (calls answered within service level time frame).
- **Agent Regex Filter-** Provides an optional regex expression that will be applied against the agent callback number. If the callback number does not pass the regex filter, then it will be treated as invalid. This can be used to restrict agents to extensions within a range, not allow callbacks to included keys like “*” or any other use that may be appropriate. An example input might be:
 - **^([2-4][0-9]{3})\$**- This would restrict agents to extensions 2000-4999.
 - **^([0-9]+)\$**- This would allow any number of length, but restrict the * key.
 - **WARNING:** Make sure you understand what you are doing or otherwise leave this blank!

XactView/iSymphony

iSymphony

Add to iSymphony ? ☒

- **Add to XactView/iSymphony-** Makes the queue available in iSymphony or XactView.

Fail Over Destinations

Fail Over Destination

== choose one == ▾

- **Fail Over Destination-** Define a destination to send the caller when the call times out or exited by a rule from above.
- **Submit Changes**

Submit Changes

Example

- **Example Overview**

In this example, we have a sales team that is made up of 3 primary sales people and 2 backup managers that can also answer sales calls. We want to route all sales calls to the queue and then attempt to reach the 3 normal sales reps first. If they are on a call already, then we will fail over to the backup managers. After 3 minutes of trying to reach an agent if no one answers the call we will send the caller to a sales voicemail box.

- **Example Configuration**

The first 2 things we need to setup are the name and unique number associated with the queue. We will use “Sales” and “4700” as the number.

Add Queue

Queue Number: ?

4700

Queue Name: ?

Sales

We will also tell the system to “Generate Device Hints” so the system is aware of which agents are on a call. We will also do a “CID Name Prefix” of “Sales:,” which will prepend the caller ID of the caller when they call the agents. This will show as “Sales: caller ID name and number.” This way we know the call is from the “Sales” queue just by looking at the caller ID on our phone.

Generate Device Hints: ?



Call Confirm: ?



Call Confirm Announce: ?

Default

CID Name Prefix: ?

Sales:

Wait Time Prefix: ?

No

Alert Info: ?

We now have the option of listing our agents who will be part of the queue. We have 2 options:

- **Static**- Static agents are agents that are always logged into the queue and cannot log themselves out. They can pause themselves using XactView or the “ACD Agents” button on their phone.
- **Dynamic**- Dynamic agents are agents that can log in and out of the queue. They can also pause and unpause themselves. There are numerous ways to log in and out of a queue.

In our Example, to keep it simple, we are going to use static agents. Now we will also use agent penalties to group our 2 different sales agents into a normal sales group and then the managers group. In the example below, we can see that agents “1001,” “1002” and “1002” all have a penalty of “0” and agents “2001” and “2002” have a penalty of “1.” The basics of how queues work with penalties is the PBX will attempt to call all agents starting with a “0” penalty and work up to the highest number which is “99.”

Static Agents: ?

1000, 0
1001, 0
1002, 0
2000, 1
2001, 1

Extension Quick Pick: ?

(pick extension) 

Under “Agent Restrictions,” we are going to set this to “No Follow-Me or Call Forward.” This tells the queue to ignore any call forwarding or Follow Me rules that an agent might have setup and to only call their extension.

Agent Restrictions: ?

No Follow-Me or Call Forward 

Now we are going to set our “Max Wait Time” to be 3 minutes, our “Ring Strategy” to be “ringall” and the “Agent Timeout” to be 20 seconds. The default behavior of “ringall” is to ring all the phones with a penalty of “0” for the agent timeout setting and then ring all phones with the next penalty and so forth. This continues until it gets through all the agents, the call is answered or the “Max Wait Time” is met.

We will also tell this queue to skip any agent that is busy, which means on another call to “yes+(ringinuse=no)” option.

We’ll enable “Autofill,” which means if we have more than 1 caller waiting in a queue and we have more than 1 available agent, the system will send more than 1 call to agents at a time. This can cause callers who have not been waiting in a queue as long as other callers to be answered first.

Queues

User Guide

Ring Strategy: ?	ringall
Autofill: ?	<input checked="" type="checkbox"/>
Skip Busy Agents: ?	Yes + (ringinuse=no)
Queue Weight: ?	0
Music on Hold Class: ?	inherit MoH Only Agent Ringing Ring Only
Join Announcement: ?	None Always When No Free Agents When No Ready Agents
Call Recording: ?	wav49
Recording Mode: ?	After Answered
Caller Volume Adjustment: ?	No Adjustment
Agent Volume Adjustment: ?	No Adjustment
Mark calls answered elsewhere: ?	<input type="checkbox"/>
Max Wait Time: ?	3 minutes
Max Wait Time Mode: ?	Loose
Agent Timeout: ?	20 seconds

Since we are using XactView on this system, we will set the following options:

- **Event When Called**- Yes
- **Member Status Event**- Yes
- **Service Level**- 60 seconds (means that all calls should be answered within 60 seconds, useful for stats in QXact and XactView)

Event When Called: ?	Yes
Member Status Event: ?	Yes
Service Level: ?	60 seconds

Lastly we will add this queue to XactView so we can manage it and we will set our “Fail Over Destination” to be the “Sales VoiceMail <3000>” box.

XactView	
Add to XactView: ?	<input checked="" type="checkbox"/>
Fail Over Destination	
Voicemail Blasting	SalesVoiceMail <3000>

- To submit this queue and save your changes, press the “Submit Changes” button. Then press the “Apply Config” button at the top of the page.

Submit Changes

Apply Config



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