

MiVoice MX-ONE

Extension Groups - Description

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# General

This document describes Extension Groups.

In the MX-ONE Service Node there are several types of Extension Groups, but this document describes two of them:

- Group Call Pick-up
- Group Hunting

The features are applicable for voice calls only.

**NOTE:** For the ACD/CTI-groups, Common Bell/Night Bell and the Group Do Not Disturb feature see separate documents.

## Glossary

For a complete list of abbreviations and glossary, see the description for *ACRONYMS, ABBREVIATIONS AND GLOSSARY*.

# Group Call Pickup

## Facilities

An extension can answer any call to another extension within its own group by dialing a service code. The service code used is defined by a Market Dependent Parameter (MDP) or by I/O command.

## Group Call Pick-up Group and its Members

A group call pick-up group consists of a number of extensions that have been assigned to a specific answering group.

The group does not have a directory number. Analog extensions, IP extensions and Remote Extensions can be members of a group. An extension can only be member of one group.

## Alternative Answer Groups

Up to four other group call pick-up groups can be affiliated to the group. Calls to these alternative answer groups can be answered, by dialing the service code, if there are no calls to the own group.

## Call to a Pickup Group

As there is no directory number associated with the group, the call is seen as a normal call to an internal party. This internal party however is a member of a group call pick-up group, and the call can be picked up by any other member within the group.

## Display/Tone and Key Functions for Other Group Members

For pickup group members that are SIP extensions there is optional BLF supervision functionality which can provide caller identity display and number of waiting group calls, and after a certain delay time, a “reminder tone” if the call has not been picked/answered within e.g. 20 seconds. A dedicated key for group call pickup is used.

The display function can be turned on/off by the administrator.

One member extension is alerted, as usual, but all other members in the group can (if they are SIP extensions and support the BLF supervision function) get display/tone information for the oldest waiting (alerting, but not yet picked/answered) call. Thus the other member extensions do not need to hear the ringing of the alerted extension, to know there is a waiting call.

**NOTE:** The system will send both calling and called party number and name to the terminal, but what information is displayed depends on the phone model. Some terminals may only show the calling party information, or may not support the function. See QRGs and User Guides for details on the relevant SIP terminal model's support of BLF keys.

The function is only available for the main group, not for alternative groups.

For pick up group members (that are IP extensions), there is an optional BLF supervision functionality provided, which can delay the presentation of a call, and can limit the time of a call that is presented. A dedicated key for Group Call Pickup is used for SIP extensions.

The delayed presentation time of a call can be configured by the administrator.

## Answering Procedure

This topic provides information on various answering procedures.

### Answering Calls to Own Group

The answering party dials the service code, while the call is ringing. If the answering party is a SIP extension that supports the optional display and key function, it can also answer in a simpler way, by pressing the key instead of using the service code.

The call cannot be picked-up if any of the following apply:

- the call is a call-back recall
- both calling and answering parties have a parked party
- category check (MDP) does not permit connection

If the checks permit pick-up, the answering party will be connected to the calling party, and the called extension stops ringing and is released.

The call which has waited the longest time will be answered first.

When the answering party is an operator, the display will show both the dialed and connected number, that is, the calling party's.

When the answering party is an IP extension or, the connected party number (optional) will be sent to the user (unless the number is not restricted).

### Answering Calls to Alternative Answer Group

The priority for answering calls is:

- calls to own group
- calls to alternative answer group 1
- calls to alternative answer group 2
- calls to alternative answer group 3
- calls to alternative answer group 4

If there were no calls to the own group, calls to one of the alternative answer groups will be answered. The same procedure as above is used. Within each group the call which has waited the longest will be answered first.

### Rejection at Attempted Answer

If all members of the group are free and one member (by mistake) attempts to answer a call to a party outside the group the result will be a no-progress message being sent to the answering party. The same

applies if several parties attempt to pick up the same call to the group (no other waiting calls). One will be able to answer it and the others will receive no-progress message.

## Administration

Commands are used to initiate and remove - members in a group - alternative answer groups to a main group.

The following data can be printed:

- the group and its members
- an extension and the group it belongs to
- a group's alternative answer groups and the main group, if the group itself is an answer group.

The optional display and tone functions for SIP extension members can also be managed through commands.

## Configuration

**Table 2.1:** Service code for pick up

Range (with MDP):	0 - #####
Recommended value:	*0#

## Capacity and Limitations

The optional display, tone and key function for other pickup group members, is only supported for SIP terminals.

For information, see the description for *CAPACITIES*.



# Group Hunting

This chapter provides information on the various group hunting scenarios.

## Facilities

A Group hunting group consists of a group with its own directory number and a number of extensions affiliated as members.

## Hunt Group Members

An extension can be a member of up to 4 groups.

A group can consist of a mix of extension types, for example analog, digital, cordless and IP extensions simultaneously.

A group can consist of any mix of the following types of extensions:

- IP extensions (both H.323 and SIP, including “automatic registration without HW”),
- analog extensions (primary),
- digital extensions (ODN and ADN for hunt group, only ODN for cascade ring group),
- remote extensions (RXN), and
- cordless DECT extensions simultaneously.

During clerical time, the member is *“busy in the group, but available to answer ordinary individual calls”*.

## Overflow

An overflowed call is a call to a hunt group number which is diverted one time or more due to group hunting congestion.

The call can be overflowed to an:

- Internal or private network destination.  
The call is treated as if a normal diversion has occurred but consecutive overflows are allowed. Simultaneous overflows are allowed.
- External destination  
The call is treated as if External Follow-Me has occurred but simultaneous overflows are allowed, for example, more than one call can be overflowed at the same time.

## Clerical Time

Clerical-time is a configurable time (default 5 seconds), which can be set per group. After a group call is ended, the member will have a clerical time before it is reported free to the group.

When a group member rejects a group call (only possible for certain types of extension), the call will re-queue the group, and try to distribute to another member if possible, or otherwise follow the group's distribution configuration.

During clerical-time the member will be in the state *“busy in the group, but available to answer ordinary individual calls”*. A group hunting member will be selectable according to the defined principle after the expiry of the clerical timer. A cascade ring group member will be called again if there is a call waiting in queue at the expiry of the clerical time.

# Call to a Hunt Group with Free Members

A hunt group is called by dialing its directory number.

If both the calling party and the group lack clear signal, no-progress message will be sent to the calling party.

# Selection of Free Member

There are four principles for selecting a member - load sharing, load sharing via/through group only, sequential selection and simultaneous ringing.

The following information is only valid for the first three principles for selecting a member, not for simultaneous ringing.

After a free member has been found, the selected extension will start to ring. Ringing will continue until the call is answered, or ring supervision times out. At time out no further search by means of group hunting is done for non-generic extensions. For generic extensions, the call will continue and try to ring on another group member.

When the selected generic extension member does not answer the call within a predetermined time (MDP), the member will be temporarily excluded from all the groups where it is member, for a time period of 3 minutes. If this is repeated 5 times in sequence, the member will be temporarily excluded for a longer period of 1 hour.

When the selected member permits diversion to an individual diverted position on no answer the call will be diverted after a predetermined time. The member will be temporarily excluded from or retained in the group when diversion on no answer takes place depending on the value of an MDP (see configuration chapter for a detailed description).

In both cases mentioned above the member will reenter the group the next time his telephone is used.

## Load Sharing

Using the load sharing principle the member which has been free the longest is selected. If the extension should become busy during selection, the search will advance to the next free member.

The sequence in which members are searched is initially that in which they were affiliated to the group.

## Load Sharing through Group Only

Using the load sharing via/through group only principle the member which has been free the longest is selected. Only calls via/through the group to the member change the member's position in the free-list.

If the extension should become busy during selection, the search will advance to the next free member.

The sequence in which members are searched is initially that in which they were affiliated to the group.

## Sequential Selection

Sequential selection implies that the search for a free member starts at a specific member and follows a pre-defined sequence. The search is started at the first member affiliated to the group and continues in the order of affiliation.

If the extension should become busy during selection, the search will advance to the next free member.

## Simultaneous Ringing

Simultaneous ringing implies that incoming call to the group is distributed at the same time to all the available members of the group. The order in which they ring depends on the initiation sequence of the member i.e., first initiated member rings first. The first answering member is connected and rest of the members become available for the next call.

An extension can be member of up to four cascade ring groups or group hunt groups, also mixed.

## Calls to a Hunt Group with Generic Extension as Member

This is only valid for calls to a Hunt Group, not for calls to a Cascade Ring Group.

When a generic extension selected for the group call fails to be seized, is later found to be busy/unavailable, rejects the call, or does not answer the call, the group call queue is re-activated under the following conditions (repeated maximum five times per call, if seized member is busy the counter is not increased):

- Calling party is operator/trunk-line/tie-line and the queue is not full.
- Calling party is an extension and internal calls can be queued (group category set).

A group call cannot have the queue re-activated if no queue positions have been defined for the group, or the maximum number of calls in the queue has been reached. During these conditions, if overflow is configured for the group, an incoming call to the hunt group is deflected to the overflow position, else call and the calling party would be released.

When the extension is found busy (that is, a remote extension which is busy in PSTN/PLMN network), the extension will be made 'not available to answer any hunt group or cascade ring group calls' for 60 seconds. Then the extension automatically becomes available for selection again.

**NOTE:** If the extension member is in both ordinary hunt group and cascade ring group, it will be made 'not available for selection in the group' for all groups.

When that longer timer expires, the extension becomes available to answer group calls again. If the extension changes state to idle state from some other state, while the 3 minutes or 60 minutes timer is running, the timer is stopped, and the extension member will become available for selection in (all) its group(s) again.

If the extension is involved in a private call (non group call) while the group timers are running, and then becomes free (idle), it will also become available for selection in the group(s).

## Log-out From or Log-in on a Specific Hunt or Cascade Ring Group

A group member can leave the group by executing the procedure #FC\*Group Number# on the member. When a member executes \*FC\*Group Number#, member will be logged on to the group.

An extension which is member of several hunt or cascade ring groups should be able to log out of one specific group, while remaining logged on in the other groups.

The default behavior should be that extension members should be logged in to all its groups when it is idle.

# Call to a Hunt Group when all Members are Busy

A hunt group is defined as busy if all its members are busy but at least one is available to answer calls. With available means that a busy member is able to answer a call when he/she becomes free.

When the calling party is trunk or tieline, the call is automatically queued. A call progress message is sent to the calling party.

Operator calls are automatically queued. If a call is extended, the extended party will take the operator's queue position and a call progress message is sent to it.

Internal calls will be queued or receive busy message. The handling is selectable per hunt group by I/O command. An internal call which receives busy can then invoke Call Back.

When a member becomes free (after clerical time), it is called by the first call in the queue. There is one queue subdivided into two queues with the following priority:

- 1 - operator, trunk and tie-line calls, automatically queued internal calls
- 2 - internal calls (call back queue)

As long as there are calls in queue 1, these will be selected first.

# Calls to a Congested Hunt Group

A hunt group is defined as congested if no members are available to answer the call and the call cannot be queued, either because no queue positions have been defined for the group, or the maximum number of calls in the queue has been reached.

During these conditions the incoming calls to the hunt group can overflow to another destination. The destination can either be an internal number (for example, another hunt group), a private network number or an external destination (stored as a common abbreviated number). At overflow to an external destination, the call will be treated as if external Follow-Me has occurred and the overflowed hunt group will be charged.

Multiple overflow attempts are allowed for a hunt group call, that is, a call to a hunt group which is overflowed to another hunt group can continue overflowing if the next hunt group also fulfills the overflow conditions.

At maximum number of overflow attempts or there is no overflow position programmed a NOPROGRESS message is sent to the calling party and suffix usage is not possible.

The possibility to divert calls to a congested hunt group is described in the section [Diversion of Hunt Group](#).

# Calls to a Hunt Group without Available Members

A group member can temporarily leave the group by invoking Follow Me, direct diversion, message diversion or when DND is active. A member is automatically excluded from or retained in a group if diversion at no answer has occurred depending on an MDP (see configuration chapter for a detailed description).

In the cases above the member is defined as *“not selectable”*.

When calling a group without selectable members, the calling party will receive no progress message. The possibility to divert calls to a hunt group without available members is described in section “Diversion of hunt group”.

A member can reenter the group by deactivating the diversion or the DND. Generic extensions can also reenter the group by making/answering a new call or by a location-registration.



# Number and Name Display Handling

This section provides information on number and name display handling for calling/connected party.

## Call to Group, the Call is Queued

The group number and name (if any) will be used as connected number and name for the calling party.

## Call to Group, Member is Selected

The COS is only valid if the selected member is a generic extension. For non-generic extension the selected member's number and name are always used.

## Direct Call to Hunt Group Member

If the called PBX group member is a non-generic extension, the member's number and name will be used as connected number and name.

If the called PBX group member is a generic extension, the member's number and name or selected PBX group number and name (extension COS and service code) will be used as connected number and name.

Set/select/activate which PBX group the member shall represent (the member must be a member of the actual group):

**\*FC\*group\_number#**

**NOTE:** The setting/activating above has no influence if the member does not have the right extension COS.

Remove/de-select/deactivate representing of group:

**#FC#**

## Call from a Hunt Group Member

If the calling PBX group member is a non-generic extension, the member's number and name will be used as calling number and name.

If the calling PBX group member is a generic extension, the member's number and name or selected PBX group number and name will be used as calling number and name.

Set which PBX group the member shall represent (the member must be a member of the actual group, and note that the extension can be member of several groups):

**\*FC\*group\_number#**

Remove the representing of group:

**#FC#**

## Diversion of Hunt Group

A hunt group number can be diverted. A hunt group can have several external follow-me calls in progress at the same time.

A member of hunt group can be allowed (by COS) to activate/deactivate follow me and external follow me for the group number. Otherwise remote programming of diversion category for an extension or master extension category is required to allow it.

## Group Member Availability Led Key (For SIP Extensions)

The user can activate/deactivate a group member availability visibility function (through key) for hunt group member extensions. The availability of the member, whether the member is logged in to the group and available for group calls, or if the member is not logged in to the group, can be seen on a terminal (key LED). One key must be assigned per group which the extension is member of.

## Diversion to a Hunt Group

It is possible to activate/deactivate diversion no answer or busy to a hunt group. The diversion on busy/no answer calls shall be queued in the hunt group queue, if there are no free members.

The call towards the originally dialed (wanted) party will be released, if diversion due to no answer is executed.

## Recorded Voice Announcements for Hunt Group

It is possible and often recommended for group calls (that can be queued) to activate and use the optional RVA feature, to provide for example welcome, queue, repeated queue or continuous (e.g. music on wait) announcements.

See the description for *RECORDED VOICE ANNOUNCEMENTS* for details.

# Multiple Terminal Service

## In Group Hunting or Cascade Ring Group

### Group Hunting

The main extension of a seizure list for **Parallel Ringing** can be defined to be a member of a group-hunting group. When there is a call to a group hunting group, the main extension of a seizure list may be selected for call distribution using the group hunting principles.

The status of the secondary extensions is not checked while selecting a main extension. If a main extension is selected, the call is distributed to the main extension only.

The secondary numbers are treated like any normal directory number and they do not affect the main number or the other secondary numbers. Thus, it is not recommended to have an extension with Parallel ringing as hunt group member.

An extension with Multiple Terminal Service Forking can be member of a hunt group. In case of a group call, all logged-on forked terminals are alerted, except if the Terminal Selection service is active, in which case, alerting will be done only on the selected terminal.

An extension with Multiple Terminal Service with both Forking and Parallel Ringing, can be defined as a member of a group hunting group.

For a call to a group hunting group, the main extension (forked terminals) of a seizure list may be selected for call distribution using the group hunting principles. The statuses of the secondary extensions are not checked while selecting a main extension. If a main extension is selected, the call is distributed to the main extension only (that is, all forked terminals).

The secondary numbers are treated like any normal directory number and they do not affect the main number, nor the other secondary numbers. Thus, it is not recommended to have an extension with both Forking and Parallel ringing defined as hunt group member.

A hunt group number cannot be defined to be a member in a multiple terminal service seizure list.

### Cascade Ring Group

A seizure list for Parallel Ringing main or secondary extensions can be defined as members of a cascade ring group. Only the directory numbers defined as group members will ring for calls to the group.

An extension with Multiple Terminal Service Forking can be member in a cascade ring group. A group call will ring on all forked terminals, except if the Terminal Selection service is active, in which case alerting will be done only on the selected terminal. When the last terminal logs off, the user will become unavailable to the group.

A cascade ring group number cannot be defined as a part in a multiple terminal service seizure list.

# Administration

Hunt groups and its members are defined by means of I/O commands.

## Group Definition

Commands are used to initiate, change and terminate group data, which includes the following:

- group's directory number
- open or not for DID calls
- whether recall to the operator is permitted for calls extended to the group
- traffic category
- maximum number of calls which can be queued
- maximum waiting time in queue
- whether overflow is permitted or rejected
- selection principle
- if internal calls towards the group shall be queued or not
- customer number
- follow me and external follow-me programming option
- **false B-answer** option in queuing/ringing states
- number and name options (for display purposes, generic extensions)
- automatic extending permission for busy group
- clerical time settings
- whether the group is permitted to program follow me for itself
- whether the group is permitted to program external follow me (ECF) for itself

**NOTE:** All the data can be printed.

## Member Definition

Commands are used to initiate and terminate member affiliation. The group and all its members can be printed.

# Configuration

An MDP states whether a member of a group shall be excluded from its group or not after diversion on no answer has been done.

Service code for selection of number to show to connected parties when making a call from a hunt group member (when active, the group number will be shown, instead of the individual extension number):

Range (with MDP):	0 - #####
Recommended value:	*89

Service code for a group member to logoff/logon from a particular group when part of a multiple groups. The default behavior is extension members are logged in to all its groups when it is idle.

For logoff:	#29*
Recommended value:	*29*

# Capacity and Limitations

For information, see the description for *CAPACITIES*.

A cascade ring group cannot have the Emergency Notification function.

The clerical time has a maximum of 999 seconds (16.6 minutes).

Forking and Parallel ringing are not recommended functions for hunt group member extensions.

