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PRODUCT  
GUIDE

# MiVoice MX-ONE

## System Redundancy - Operational Directions

Release 7.5

171/15431-ANF 901 14 Uen A 2023-01-09

January 2023

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This document describes system redundancy and how to configure it in MX-ONE. System redundancy is achieved by adding one dedicated alternate system to the network. The alternate system has the ability to take over the tasks of the faulty primary system.

The document is intended for those who want to know more about the functionality as well as technicians that want to learn about certain procedures and specific behavior of the function.

## Maintenance Utility

The MX-ONE Maintenance Utility. As user mxone\_admin do *sudo -H mxone\_maintenance* to start the utility.

## Redundancy Utility

MX-ONE Maintenance Utility of System Redundancy. Always executed in LIM 1 in alternate system. See the chapter [Execution](#) for details.

This chapter contains the following sections:

- [Other Considerations](#)

For prerequisites and limitations that apply for the System Redundancy feature, see the *MiVoice MX-ONE System Redundancy - Description* document and the following chapters:

- Prerequisites
- Capacity and Limitations

In addition to the prerequisites and limitations described in these chapters, the following apply for the configuration of system redundancy:

- The master IP address of the primary system must be known for configuring the alternate system.
- The system version of the alternate system must be the same as the system version of the primary system at configuration.
- The servers in the alternate system must have the same (or better) capacity as the corresponding servers in the primary system.
- The LIM 1 server in the alternate system must have enough free hard disk space to store three exchange data mirrors from the primary system.
- There must be enough bandwidth between the primary and alternate system for efficient transfer of exchange data mirrors to the LIM 1 server in the alternate system from the active LIM 1 in the primary system.
- In case server redundancy is used for LIM 1 in the primary system, the active LIM 1 in the primary system must be running on the regular LIM server and not on the standby server.

## 3.1 Other Considerations

### 1+1 Server Redundancy

If automatic takeover by the primary system is to be used, fallback type for the cluster(s) in the primary system must be set to automatic. For more information, see *MiVoice MX-ONE Server Redundancy Operational Directions*.

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This chapter contains the following sections:

- [Primary System](#)
- [Prepare Alternate System](#)
- [Configuring System Redundancy](#)
- [Re-configuration of Primary System](#)
- [Exchange Data in Primary System](#)
- [Exchange Data in the Alternate System](#)
- [Removing System Redundancy](#)
- [System Redundancy Maintenance](#)

## 6.1 Primary System

The primary system must be installed and configured before configuring System Redundancy. All configurations involving IP addresses (LIMs, media gateways, IP trunks, IP extensions, and so on) must be completed before configuring System Redundancy.

Make sure that a valid data backup is made with all configuration changes.

## 6.2 Prepare Alternate System

Install the alternate system. See the *Prerequisites* chapter in the *MiVoice MX-ONE System Redundancy - Description* document. There is no need to initiate; for example, extensions, because exchange data from the primary system will be copied to the alternate system and will overwrite existing exchange data.

## 6.3 Configuring System Redundancy

Configuration is performed after the primary system is set up (see [Primary System](#)) and the alternate system is prepared (see [Prepare Alternate System](#)). Execute configuration preferable in low traffic time. Configuration is performed in LIM 1 in the alternate system. See chapter [Execution](#), select *configure* as wanted action.

A system reload is performed in the alternate system in order to apply exchange data from the primary system to the alternate system.

The Redundancy Utility will ask for the following:

1. Master IP address of the primary system

Use the command `serverConfigTool getMasterAddress` in the primary system to list the master IP address. The master IP address is listed in CIDR notation. Enter the IP address without the slash character (/) and the ending decimal number.

2. Network control address

An address in the network that is used to verify connectivity to terminals, trunks, and other clients. A network control address can be the default gateway of a subnet where IP endpoints are connected.

3. Translation of IP addresses

The IP translation table is used to translate IP addresses used in the primary system to IP addresses to be used in the alternate system when applying exchange data from the exchange data mirror into the alternate system.

IP addresses not belonging to the primary system (for example, SIP route destination or where to stream WAV file from) will be listed and can be changed if they are not applicable for use also by the alternate system.

IP addresses belonging to the primary system (for example, media gateway IP addresses) that cannot be used by the alternate system will be listed and must be changed.

## 6.4 Re-configuration of Primary System

If any re-configuration (cluster, see below) must be performed when System Redundancy is being configured, do the following:

1. Remove the system redundancy feature from the alternate system. See the chapter [Removing System Redundancy](#).
2. Perform all actions in both the primary system and the alternate system. Example: add the LIM in the primary system, and also add the LIM (the LIM number must be the same as that of the LIM added in the primary system) in the alternate system.
3. Configure the system redundancy feature again.

Re-configuration cases:

- Addition of a LIM
- Removal of a LIM

- Addition of a media gateway
- Removal of a media gateway
- Addition of a Media Server in the primary system either as co-located with LIM or as standalone
- Addition of Media Server in the alternate system either as co-located with LIM (if co-located in primary system) or standalone (if standalone in primary system)
- Removal of a Media Server

If any cluster re-configuration must be performed when System Redundancy is being configured, do the following:

1. Remove the System Redundancy feature from the alternate system. See chapter [Removing System Redundancy](#).
2. Perform the action in the primary system.
3. Configure the System Redundancy feature again.

Cluster re-configuration cases:

- Addition of a cluster
- Removal of a cluster
- Addition of a LIM to a cluster
- Removal of a LIM from a cluster

## 6.5 Exchange Data in Primary System

If any change is made to the primary system (other than changes listed under [Re-configuration of Primary System](#)) that would add/change/remove an IP address (e.g. sip\_route), do the following:

1. Perform the action in the primary system. Make a data backup.
2. Select 'settings' and then 'translation' as wanted action, see the chapter [Execution](#). Change the IP addresses that are not applicable for use by the alternate system. Confirm the addresses in alternate system. Next time exchange data is applied into the alternate system from the primary system, the updated IP translation table is used.

Exchange data must be saved to backup regularly. See the chapter *Backup and Restore* in the *MiVoice MX-ONE Administrator Guide - Operational Directions*.

The alternate system will not perform a data backup in the primary system.

The alternate system will copy exchange data from current backup in the primary system.

## 6.6 Exchange Data in the Alternate System

Exchange data must not be changed manually in the alternate system.

Exchange data must be copied from the primary system and loaded into the alternate system. The Redundancy Utility must be used to perform this.

It is recommended to schedule an automatic job once in every 24-hour period that copies exchange data from the primary system (when active system) to the alternate system (when passive system) and loads the data into the alternate system. See the chapter [Execution](#), select 'data' and then 'auto' and then 'create' as wanted action to set up automatic exchange data handling. If the alternate system is active, no exchange data is copied from the primary system to the alternate system.

The alternate system will not perform a data backup of the primary system.

The alternate system will copy exchange data from current backup in the primary system.

There is no procedure to copy and load exchange data from the alternate system to the primary system.

## 6.7 Removing System Redundancy

See the *MiVoice MX-ONE System Redundancy - Description* document, and the *Removing System Redundancy* chapter.

The Redundancy Utility must be used to perform this.

At removal, current traffic status for the primary system and the alternate system is shown, and there is an option to continue removal or to cancel removal if manual takeover needs to be performed to select the system that should become the active system. See the chapter [Execution](#), select 'manual-takeover' as wanted action.

If system redundancy is removed and configured again, remember that system reload is performed in the alternate system at configuration. To prevent the active system from being reloaded, remove system redundancy when the primary system is active and the alternate system is passive.

When system redundancy is not configured, it is possible to use the Maintenance Utility to handle iptables rules to block/allow traffic in a system. Select 'more\_configuration', then select 'iptables', and finally select 'remove' (or 'add') to remove or add iptables rules. Adding rules will block traffic while removing rules will allow traffic.

## 6.8 System Redundancy Maintenance

System redundancy maintenance is performed using the Redundancy Utility.

The following actions can be performed using the Redundancy Utility:

- List configuration
- Show status, traffic allowed/blocked in the primary/alternate system
- Configure system redundancy
- Remove system redundancy
- Manage settings, such as takeover options
- Manual takeover
- Handle exchange data

For all actions:

- On LIM 1 in the alternate system, log in as user **mxone\_admin**.
- Run the `mxone_system_redundancy` command to start the Redundancy Utility.
- Select wanted action. Follow the on-screen instructions for the procedure.

Many of the dialog boxes display a **Help** button, pressing the button opens online help.

Currently, the System Redundancy feature does not send any MX-ONE alarms.

There are MX-ONE alarms that will be sent due to system redundancy.

The following alarms can appear in the passive system:

- SIP trunk heart beat failed
- Information Computer, Faulty communication channel
- CSTA, Faulty communication channel

The following alarms appear in the alternate system when exchange data is copied from the primary system and loaded into the alternate system:

- Exchange data reloaded
- Rollback of database data successful
- LIM reloaded and restarted

Consider the following when terminating system redundancy:

What is the current traffic status in primary and alternate system?

Which system should be active?

What is the reason to terminate?

The following utilities should be used to perform removal:

- Redundancy Utility
- Maintenance Utility

For the actions 1 through 5 of the following procedure for terminating system redundancy, see the following examples that illustrate what actions must be performed.

## Example 1

Terminating system redundancy when the primary and the alternate systems are up and running.

Perform all five actions.

## Example 2

Terminating system redundancy when the primary system is up and running but the alternate system is wiped out due to a building fire on the alternate system site.

Perform action 3. Use the Maintenance Utility to handle iptables rules to allow traffic in case the primary system was passive when the alternate system was lost.

## Example 3

Terminating system redundancy when the alternate system is up and running but the primary system is wiped out due a building fire on the primary system site.

Perform all actions except 4. Use the Maintenance Utility to handle iptables rules to allow traffic in case the alternate system was passive when the primary system was lost.

## Procedure

To terminate system redundancy, do the following if applicable:

**1.** Set the takeover method to be manual for both directions. Use the Redundancy Utility.

- a.** Select 'settings', then select 'takeover', then select 'alternate-from-primary' and finally select 'manual' and click **OK**.
- b.** Select 'settings', then select 'takeover', then select 'primary-from-alternate' and finally select 'manual' and click **OK**.

**2.** Perform manual takeover, so the required system is active.

Use the Redundancy Utility. Select 'manual-takeover' and then select either 'traffic-in-alternate' or 'traffic-in-primary' depending of which system should become the active system.

**3.** Remove redundancy settings from IP endpoints.

This ensures that only the active system appears in the configuration for IP endpoints.

**4.** Uninstall the passive system. Use the Maintenance Utility.

**5.** Remove the System Redundancy feature by using the Redundancy Utility. Select 'remove' as wanted action.

It is possible to use the Maintenance Utility to handle iptables rules to block/allow traffic. Select 'more\_configuration', then select 'iptables', and finally select 'remove' (or 'add') to remove or add iptables rules. Adding rules will block traffic, while removing rules will allow traffic.

See the *MiVoice MX-ONE System Redundancy- Description* document, chapter *Capacity and Limitations*.

