

# Replacing Miscellaneous Hardware

OPERATIONAL DIRECTIONS



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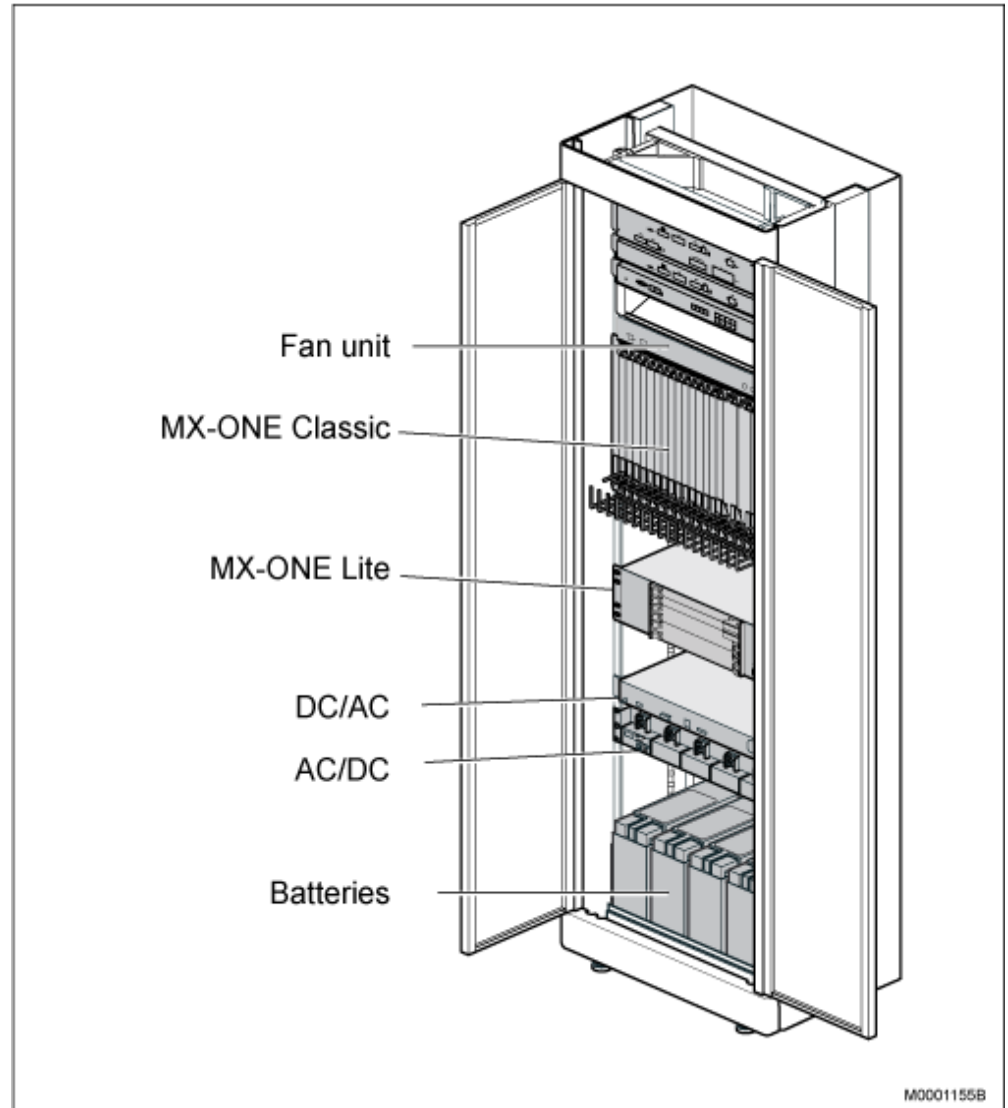
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## 1

## GENERAL

This document describes the procedures to replace different hardware parts of an MX-ONE.



**Figure 1: Parts of an MX-ONE**

The procedures are written for the ideal cases where the system is functional and responds to commands. If that is not the case try to follow the main outline of the procedures to ensure minimal risks of harmful effects on the system.

## 2 PREREQUISITES

### 2.1 CONDITIONS

The following conditions must apply before this procedure can be completed:

- It has been established that there is a need to replace the hardware in question.
- This procedure should preferably be performed at low traffic.
- The needed spare parts with the correct software content are available.
- An experienced technician is available on site.
- The technician has the adequate system privilege for the task to be performed.

The commands are normally entered in an mdsh shell.

If possible, backup your system before replacing any hardware, see operational directions for *ADMINISTRATOR USER'S GUIDE*.

### 2.2 DATA

The following data must be known to complete this procedure:

- What type of MX-ONE Service Node that is used.

## 3 TOOLS

- VGA screen, USB keyboard
- Recovery Image
- USB reader (for the Recovery Image)
- Grounding wrist strap (LYB 250 01/14 or equivalent)
- LSA 126 11/8 Screwdriver (Torx T-8)
- LSA 126 11/20 Screwdriver (Torx T-20)
- LSA 126 11/30 Screwdriver (Torx T-30)
- Board puller LTD 117 02

## 4 SAFETY

To ensure personal safety, see the description for *SAFETY*.

## 5 EXECUTION

First isolate the part to be replaced, then perform the replacement, and finally to verify that the replacement was successful.

### 5.1 GENERAL

A grounding wrist strap must be worn whenever boards are handled in the system.

To remove a board first unscrew the screws that holds the board to the subrack. To replace a board means that after insertion the new board should be fixed to the subrack by tightening the same screws.

Always when a board is inserted **be very careful** to align it properly mechanically. Press it into the subrack with an even pressure on the front cover, in order not to bend any pins in the backplane contacts.

**Note:** The lever at the lower end of the boards should only be used to release the board when it should be pulled out of the subrack. Do not use it for pressing in the board. (It may only be used to press in the board for the very final millimeters.)

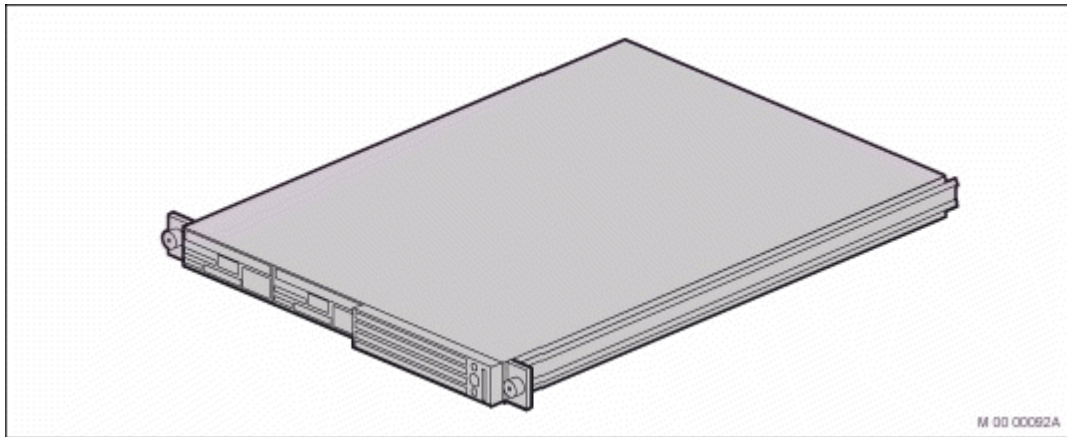
**Note:** Any time a server is to be replaced or the power to the server is to go down it is necessary to first shutdown the server to halt. If that is not done, its file system will most likely be corrupt and all software has to be reinstalled before the server can be put back in operation.

### 5.2 REPLACING MX-ONE SERVICE NODE

#### 5.2.1 GENERAL

This procedure applies to the stand-alone unit, which functions as a MX-ONE Service Node. The unit can either be a Standard Server or an MX-ONE Server. For the Mitel ASU Lite, ASU or Mitel ASU-II board, see the operational directions for *REPLACING BOARDS IN MX-ONE MEDIA GATEWAYS*.

When a MX-ONE Service Node is replaced it is necessary to install the Linux Operating System, OS and the MX-ONE Service Node software to ensure that the new unit runs on the same software as the replaced one. This is handled by the system.



**Figure 2: Standard Server**

The MX-ONE service Node is either accommodated in the Standard Server, placed in a standard cabinet, or in the MX-ONE Service Node, which is placed in the narrower BYB 501 cabinet.



**Figure 3: MX-ONE Service Node**

The Standard Server and the MX-ONE Service Node have the same width and they fit in 19 inch racks.

## 5.2.2

## PREREQUISITES

The following items are needed to complete this procedure:

- A valid Safety Backup is needed when Server 1 is to be replaced. This backup must be restored to another MX-ONE Service Node, which is of the same type. See the operational directions for *ADMINISTRATOR USER'S GUIDE*, section Backup and Restore.
- The network configuration file, */etc/eri\_ts.conf*, or its content. This file is only needed if the MX-ONE Service Node that is being replaced is Server 1. See installation instructions for *INSTALLING AND CONFIGURING MIVoice MX-ONE*.

## 5.2.3

## EXECUTION

### 5.2.3.1

### *Remove Unit*

1. Stop the system fault supervision.  
Key command *recoverymode -manual*.

2. Block all traffic.  
Key command *block -lim*.  
If the MX-ONE Service Node is malfunctioning (not responding to commands) go to step 5.
3. Has all traffic ceased? When the traffic has ceased continue with the next step.  
Key command *switch\_connection\_list*.
4. Shutdown the Server.  
Root privilege is needed. Wait for the system to stop, which is indicated by the green LED or LEDs on the front of the server turning off.  
Key command *shutdown -h now*
5. If cables are connected to the front of the unit, note how they are mounted and then remove them.
6. Pull out the Server.

### 5.2.3.2

#### *Insert Unit*

1. Replace the Server with the spare unit.
2. Reconnect all cables to their previous locations on the unit.  
The unit will start when power is applied.
3. Install and configure the server.  
See the installation instructions for *INSTALLING AND CONFIGURING MIVOICE MX-ONE*.
4. On Lim 1 log in as user *mxone\_admin*.
5. Key command *sudo -H /opt/mxone\_install/bin/mxone\_maintenance* to start MX-ONE maintenance utility.
6. Repair LIM by choosing option Repair LIM and ssh keys in system.
7. Enable fault supervision.  
Key command *recoverymode -system*.

**Note:** If there is a fault in the repair LIM execution an error description will give advice. For example, the Secure Shell (SSH) operation might react on a lost key. MX-ONE Service Node 1 has ssh keys to all MX-ONE Service Nodes. In that case perform an *su -* command to root. In the file */.ssh/known\_hosts* remove the line for the IP address to the replaced Server.

The procedure is complete. Next, go to 6 Termination on page 15 .

## 5.3

## REPLACING MX-ONE LITE

### 5.3.1

#### GENERAL

These instructions concerns replacing an MX-ONE Lite unit, which is equipped with a processor board; with another MX-ONE Lite unit ( that also is equipped with a processor board).

The MX-ONE Lite always has an MGU board installed and often a TMU. The remaining slots can be used by different boards and unused slots should be covered. When the unit contains an Mitel ASU Lite, ASU or Mitel ASU-II board processor board, this server must be properly shutdown before any power is removed. See “Execution” on page 8.



**Figure 4: MX-ONE Lite**

### 5.3.2

#### PREREQUISITES

- A valid Safety Backup is needed when the server of a MX-ONE Lite is used as Server 1 and this unit is to be replaced. This backup must be restored to another MX-ONE Service Node. See the operational directions for *ADMINISTRATOR USER'S GUIDE*, section Backup and Restore.
- The OS and the MX-ONE Service Node application is loaded but not configured on the spare unit. For OS and server application installation, see the chapter Using the Recovery Image in the operational directions for *ADMINISTRATOR USER'S GUIDE*.

**Note:** Do not remove the power supply before a proper shutdown has been done on the Mitel ASU Lite, ASU or Mitel ASU-II server. See “Execution” on page 8.

**Note:** There can be one or two power supply connections, either -48 V DC, or a mains supply to the back, or both.

**Note:** The Mitel ASU Lite, ASU or Mitel ASU-II board requires forced cooling. The MX-ONE Lite has fan, on its left side. The horizontal air flow must not be obstructed.

**Note:** The MX-ONE Lite has fuses on the -48 V power supplies. The fuses can be replaced.

### 5.3.3

#### EXECUTION

1. Block all traffic to the unit.  
Key command *block* with *-bpos* or *-equ*.
2. Has all traffic ceased? When the traffic has ceased continue with the next step.  
Key command *switch\_connection\_list*.
3. Stop the system fault supervision.  
Key command *recoverymode -manual*.
4. Shutdown the Server.



Root privilege is needed. Wait for the system to stop, which is indicated by the green LED or LEDs on the front of the server turning off.

Key command *shutdown -h now*

5. Disconnect all cables from all boards in the unit. Remove power. Replace the unit with the replacement unit. Reconnect all cables. Connect power.
6. The server will power up. Wait for the power LED to turn green.
7. Install and configure the server.

See the installation instructions for *INSTALLING AND CONFIGURING MIVOICE MX-ONE*.

8. On Lim 1 log in as user *mxone\_admin*.
9. Key command *sudo -H /opt/mxone\_install/bin/mxone\_maintenance* to start MX-ONE maintenance utility.
10. Repair LIM by choosing option Repair LIM and ssh keys in system.
11. Verify from the printout that all boards of the MX-ONE Lite are properly registered in the MX-ONE Service Node of the unit.

Key command *board\_config -scan*.

12. Enable system fault supervision

Key command *recoverymode -system*.

The procedure is complete. Next, go to 6 Termination on page 15.

## 5.4 REPLACING MX-ONE 1U



**Figure 5: MX-ONE 1U chassis**

### 5.4.1 PREREQUISITES

How to replace MX-ONE 1U, see section Prerequisites for MX-ONE Lite.

### 5.4.2 EXECUTION

How to replace MX-ONE 1U, see section Execution for MX-ONE Lite.

## 5.5 REPLACING MX-ONE CLASSIC SUBRACK

### 5.5.1 GENERAL

The subrack is a rack-wide compartment that contains hardware units. It is used for the MX-ONE Classic media gateway. The MX-ONE Classic with the MGU only has one subrack, while the Media Gateway Classic with LSU-E (no longer supported) could have one or two subracks, A and B. The upper subrack, A, contained the LSU-E and the Mitel ASU Lite, ASU or Mitel ASU-II processor board. It also contained one or two sets of device boards that each was controlled by a Distributed Switch Unit (DSU).

The lower subrack, B, contained one or two sets of device boards that each was controlled by a DSU. Each subrack was powered by a DC/DC unit, which was located at the far right in each subrack. For more information, see installation instructions for *HARDWARE INSTALLATION* section *INSTALLING MX-ONE CLASSIC*.

If the lower subrack is to be replaced the processor in the upper subrack could remain in operation but for reasons of personal safety it is recommended that both subracks are powered down when any subrack needs to be replaced.

Always start by doing a proper shutdown of the Mitel ASU Lite, ASU or Mitel ASU-II server board. See “Execution” on page 10.

### 5.5.2 PREREQUISITES

The following item is needed to complete this procedure:

- A valid safety backup.

### 5.5.3 EXECUTION

1. Block all traffic.  
Key command *block -lim*.
2. Has all traffic ceased? When the traffic has ceased continue with the next step.  
Key command *switch\_connection\_list*.
3. Stop the system fault supervision.  
Key command *recoverymode -manual*.
4. Shutdown the Server.  
Root privilege is needed. Wait for the system to stop, which is indicated by the green LED or LEDs on the front of the server turning off.  
Key command *shutdown -h now*
5. On the AC/DC unit, which supplies this subrack with power, if possible, put the power circuit breakers to the Off position.
6. Remove the -48 V power supply cable from the DC/DC unit in the subrack.
7. Remove all cables and boards.
8. Replace with the spare subrack. Insert all boards and cables.
9. Put the circuit breakers on the AC/DC unit to the On position.  
The system will start automatically.

10. Enable system fault supervision  
Key command *recoverymode -system*.

The procedure is complete. Next, go to 6 Termination on page 15 .

## 5.6 REPLACING LBP22 BACKPLANE

### 5.6.1 GENERAL

The backplane is the inner interconnection between the printed circuit boards in the same subrack. It distributes power from the DC/DC unit to the boards in the subrack.

### 5.6.2 PREREQUISITES

All circuit boards have been removed from the subrack, which preferably remains in the rack.

### 5.6.3 EXECUTION

- From the front of the rack, unscrew the eight screws, which holds the backplane in place.
- Carefully lift out the backplane. Replace it.
- Tighten the eight screws.
- Insert all the circuit boards. Take the proper precautions, see 5.1 General on page 5.

The procedure is complete. Next, go to 6 Termination on page 15.

## 5.7 REPLACING FAN UNIT

### 5.7.1 GENERAL

The fan unit is located in the upper part of the rack. See 1 Parts of an MX-ONE on page 3. It cools one or two MX-ONE Classic media gateways. The system will continue to work as long as the ambient temperature in its rack is within the system requirements. See the description for *MIVOICE MX-ONE SYSTEM DESCRIPTION* section *ENVIRONMENTAL CONDITIONS*.

### 5.7.2 PREREQUISITES

No special data is needed to complete this procedure.

### 5.7.3 EXECUTION

- Switch off the power to the fan unit by removing the power supply cables from the front of the unit.

- Remove the unit from the subrack and replace it with the spare unit. See installation instructions for *HARDWARE INSTALLATION* section *INSTALLING THE FAN UNIT*.
- Connect the power supply cables.

The procedure is complete. Next, go to 6 Termination on page 15.

## 5.8 REPLACING AC/DC UNIT

### 5.8.1 GENERAL

The AC/DC unit supplies -48 V to the DC/DC power supply units in the subracks of the MX-ONE 1U, MX-ONE Lite and MX-ONE Classic, and charges the backup batteries. It is functionally placed between the batteries and the system.

It is not possible to replace the whole AC/DC unit while maintaining a -48 V power supply to the units that it supplies, so these units must be powered down in the replacement procedure. (Note that the AC/DC unit can supply power to units in other racks.)

It is possible to replace the individual AC/DC plug-in units while the system runs on battery power and while the MX-ONE AC/DC unit remains installed in the rack.



**Figure 6: AC/DC unit**

### 5.8.2 PREREQUISITES

**Note:** Only authorized personnel are allowed to work with the mains electricity supply. For more information, see the description for *SAFETY*.

**Note:** First shutdown all servers that are powered from the unit.

### 5.8.3 EXECUTION

1. Block all traffic to the servers that are affected.  
Key command *block -lim*.
2. Has all traffic ceased? When the traffic has ceased continue with the next step.  
Key command *switch\_connection\_list*.
3. Stop the system fault supervision.  
Key command *recoverymode -manual*.

4. Shutdown the media gateway.  
Key command *media\_gateway\_start -mgw -shutdown*
5. Shutdown all servers that are powered from this AC/DC unit.  
Root privilege is needed. Wait for the system to stop, which is indicated by the green LED or LEDs on the front of the server turning off.  
Key command *shutdown -h now*
6. Put the circuit breakers on the unit to the Off position.
7. Remove the outgoing -48 V power cables that go to the DC/DC unit, from the AC/DC unit.
8. Disconnect the incoming mains power from the AC/DC unit.
9. Disconnect the battery power cables.
10. Replace the AC/DC unit. Put the circuit breakers on the new unit to the Off position.
11. Connect the AC mains line. Connect the power cables to the battery unit.
12. Connect the -48 V cables to the DC/DC units in the rack.
13. Set All circuit breakers to the On position. Verify that the LEDs in the AC/DC unit show green lights.  
The MX-ONE in this rack will start.
14. Enable system fault supervision  
Key command *recoverymode -system*.

The procedure is complete. Next, go to 6 Termination on page 15 .

## 5.9 REPLACING BATTERY

### 5.9.1 GENERAL

Batteries have a limited service-time and might need to be renewed. For the backup batteries used in the MX-ONE, consult the manufacturers specifications. The BKB 201 003 has an expected service-time longer than 12 years.

### 5.9.2 PREREQUISITES

The AC/DC unit must be working while the battery replacement is performed.

Only authorized personnel are allowed to work with the mains electricity supply.

All batteries should be regarded as fully charged. Making a battery short circuit will give an extremely high current that can result in molten metal being hurled around. This can cause burn and eye injuries. Only persons that are aware of these risks and how to avoid them may work with batteries and with circuits connected to batteries. Batteries contain lead, lead compounds, and chemicals, which can cause cancer. Personal care should be maintained.

As power to the system mainly is supplied by the AC/DC unit the power cables to the battery unit normally carry a low current. Removing and connecting the battery supply cables therefore will have a minor impact on the system.

## 5.9.3

## EXECUTION

1. Switch off the fuses for the batteries on the AC/DC unit.
2. Disconnect the power cables on the battery unit.
3. Replace the battery unit.
4. Connect the power cables on the battery unit.
5. Switch on the fuses for the batteries on the AC/DC unit.

## 6 TERMINATION

Conclude the replacement procedure by clearing the possible alarms that were generated for the unit that was replaced.

- Key command *alarm* to erase (reset) alarms in the alarm log.
- Verify that no new alarms have been generated for the unit. Key command *alarm* to print (list) alarms in the alarm log.