

# Configuring the LSU-E

OPERATIONALAL DIRECTIONS



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## 1

## LSU-E CONFIGURATION

LSU-E comes out from the factory with a default network configuration:

- IP Address: 192.168.1.1
- Subnet mask: 255.255.255.0
- Default route: 192.168.1.10

It can not be guaranteed to be that the firmware version on the delivered board has a valid revision level.

Before the board will be put into operation it has always to be configured according the actual requirements and it has to be taken care that the board is properly firmware upgraded.

When the board is located in the same subnet as the MX-ONE Service Node, then the board will automatically update once it has got contact with the MX-ONE Service Node which provides the latest firmware anyway.

When the LSU-E should be located in another subnet than the MX-ONE Service Node, the board must have a firmware not older than R4A.

The LSU-E can be configured either via the V.24 interface or the LAN.

## 1.1

## CONNECTION VIA V.24

To configure the LSU-E over the V.24 a special cable TSR 432 97/1000 is required, which converts the board specific V24 plug to the standard female SUB-D plug.

The V.24 port on the LSU-E pin connector is for maintenance only and is used for monitoring during boot and setting a wide range of parameters on the LSU-E board. Any software for serial console communication can be used, for example, Kermit, Hyperterminal...

The communication parameters for the V.24 port on the LSU-E are as the table below:

**Table 1 V24 connection parameters**

Parameter	Value
Bits per second	9600
Data bits	8
Parity	None
Stop bits	1
Flow Control	None

Find below an example configuration of the Kermit terminal program.

Check that the connection configuration file, /root/.kermrc, is present.

The file should contain the following lines:

- `-- start file, this line should not be in the file --#`
- `set line /dev/ttyS0`
- `set speed 9600`
- `set transmit prompt 46`

- set take echo on
- set carrier-watch off
- set flow none
- connect
- `--` end file, this line should not be in the file `--`

For any other terminal program use equivalent configuration parameter values.

## 1.2 CONNECTION VIA LAN

After a boot, LSU-E can be accessible (with the default user/password MDUSER/HELP) from the MX-ONE Service Node or any other terminal, using Telnet. For the first access use the default configuration of the board and remember that the board can not communicate with entities outside the own subnet as long it is not upgraded to the minimum firmware level R4A.

## 1.3 INSTALL LSU-E RPM

**Note:** The installation is normally done when the LSU-E gets in contact with the MX-ONE Service Node. Beneath, the procedure describes how to install the LSU-E software manually.

To install the LSU-E RPM files, **do as follows:**

1. Log in as root user on the MX-ONE Service Node by entering the command `su -`.
2. Download the RPM file. (This file can be obtained from the local vendor.)
3. Check if the LSU-E software package is already installed, enter the command:  
`--rpm -qa | grep -i lsue_sw`
4. If an earlier version LSU-E software package, `lsue_sw-x.y-z.rpm`, is installed then un-install it (erase it) by entering the command  
`--rpm -e lsue_sw`
5. Install the new downloaded RPM, by entering the command.  
`--rpm -ih lsue_sw-1.xx.rpm`
6. Restart the LSU-E by powering off the board (standard case).  
It is also possible to restart the board by using a restart command from a V.24 or telnet console.
7. Wait while the software is updated, which can take several minutes. During the update the red LED flashes. When the update is complete the green LED on the front panel flashes.

## 2

## SPECIAL CONFIGURATION INSTRUCTIONS

Before MX-ONE 4.0 there was always a fix affiliation between a server and a gateway. Therefore it was in most of the installation cases – except network redundancy – not necessary to change the configuration of the LSU-E, because the factory default configuration matched exactly the configuration of the eth1 of the Service Node, which was exclusively reserved for the Service Node to LSU-E communication on a dedicated link, so to say on an isolated network via a crossed LAN cable.

Since MX-ONE 4.0 and newer releases the preferred communication path between the LSU-E and the MX-ONE Service Node uses the eth0 of the server and the LSU-E is connected as any other equipment to the regular customer network. This requires adapting the default configuration to the actual customer network situation. In most cases the ip address, network mask and default route has to be changed, the nfs\_ - server should be changed to a tftp server with the ip address of the controlling Service Node.

The general procedure to change the configuration is:

1. `dispar` - to check the actual parameters.
2. `rmpar` - to remove parameters.
3. `setpar` - to initiate new parameters or change values of existing parameters.
4. `savepar` - to store parameters in non volatile memory.
5. `dispar` - optionally – but strongly recommended – verify the changes.

The syntax is “command” “parameter name” “parameter value”.

When prompted answer with “y” so that the new parameter values can also apply in LSU-application mode. Always answer yes when the network parameters have been changed.

After changing any IP parameter values the board must be restarted to take the new parameters into effect.

## 2.1

## INITIALIZE LSU-E BOOT PARAMETERS

### Do as follows:

1. Connect to the console, using the V.24 connector on the LSU-E board.
2. Put the LSU-E board in the LSU slot, to power-up the board.
3. Press any key to abort when the message "Hit any key before CR to abort!" is displayed.

**Note:** The arrow keys can not be used to get the last entered command, because there is no history buffer. If the arrow keys have been used then you must press the CR key to clear the command line before you type the next command.

4. Check that the parameters are correctly set. Enter the command `dispar`. Parameters may appear as shown in table 2:

**Table 2 Factory Default Parameters**

Parameter	Value
ROF-ser*	T013636149
ROF-rev*	R4B
ROF-info*	ROF1376302/1
eth0_mac*	00:80:37:0C:15:0D
eth0_ip	192.168.1.1/24
def_route	192.168.1.10
nfs_server	192.168.1.10

Board specific parameters marked with a \* (asterix), such as ROFxxx mac address can not be modified.

5. Check the net parameters in use with the commands:

**start net – ifinfo 0 1** where 0 defines interface eth0.

Adapt the network parameter according the customer situation.

Take care that parameter names are correctly spelled. There is no syntax check for parameter names and an incorrectly spelled parameter name will be interpreted as a new parameter, useable or not, and the old one will not be changed.

**Note:** Using the second LAN interface of the server (eth1) exclusive for communication with the gateway is not appreciated anymore and also not supported from the server installation script. ETH1 is in standard configuration only used for network redundancy, when it should be used for exclusive communication between the Service Node and the LSU-E it has to be manually configured.

## 2.2

## LSU-E IN A REMOTE SUBNET

If the LSU-E board is located in another subnet than the controlling MX-ONE Service Node, then the "nfs\_server" has to be replaced by the "tftp\_server" address. For this it is mandatory that the LSU-E firmware is minimum R4A, which is equivalent with lsu\_sw 1.5\_0-1, but preferably the latest version of LSU-E firmware should be loaded.

To check the firmware level on the LSU-E, use command "board\_sw" when the LSU-E has contact to the MX-ONE Service Node, otherwise when directly connected to the LSU-E via V.24 or telnet use the LSU-E command "apprev".

If the LSU-E must be upgraded the simplest way is to configure the LSU-E to a server in the same subnet. The board will take the latest SW and then it will be possible to configure the LSU-E as remote gateway. Another option would be to provide the LSU-E rpm on any tftp server which the board can reach in the own subnet.

After the board has been upgraded to the latest firmware version – always available on the latest release of the MX-ONE Service Node – the parameters can be changed. Assuming an existing configuration as on the example in table 2, the procedure to change could be like this.

#### **rmpr nfs\_server**

setpar eth0\_ip 10.105.120.143/24

setpar def\_route 10.105.120.254

setpar tftp\_server 10.14.27.34

savepar

#### **remove the nfs server**

set the ip address to 10.105.120.143 with 24 bit subnet mask

set the default gateway address

set the address of the tftp server – typically the controlling MX-ONE Service Node

Note: To make the changes permanent the new parameters and values must be saved in the flash!

## 2.3

## DOWNLOAD THE LSU-E MODULE BINARIES AND START LSU-E APPLICATION

Start the LSU-E, or if logged in type boot shell:

### **restart**

The boot and application binaries from the /tftpboot/lse directory on the MX-ONE Service Node will be automatically updated.

**Note:** This function can, if needed, be turned off by using:

**setpar autoupdate no** followed by **savepar**

There are two methods to manually load the LSU-E module binaries, which is normally done automatically. Use method 1 first and if this fails try method 2.

### 2.3.1

### MODULE LOAD METHOD 1

- Start the network module so that the boot module can be loaded.  
Enter the command:  
**start net**
- The LSU-E SW modules are divided into the LSU-E factory (boot net pbist) and the LSUmodules (lsf.bin lm-fpga.bin).
- To load the LSU modules into flash memory in one command from boot mode, enter the command:  
**update -s <Server\_ip\_address> -t lsw\_modules.upd**
- To load the factory modules into flash memory in one command from boot mode, enter the command:  
**update -s <Server\_ip\_address> -t lsw\_factory\_modules.upd**
- To update one or more modules, use the update command:

**update -s <Server\_ip\_address> <path/module1> [<path/module2>.....]**

- The root path directory is /tftpboot. To load, for example, a module that resides in /tftpboot/lsue/test.bin, enter the command:

**update -s 10.10.1.10 lsue/test.bin**

### 2.3.2

#### MODULE LOAD METHOD 2

- Use the tget command by loading and starting the net memory:  
**listmod Flash** (looks for the net.bin modules flash and code address)  
**loadmod Flash <net module Flash address>**  
**listmod Flash <net module code start address>**
- If any of the following commands does not load properly, check /tftpboot/lsue, where the binary files are stored, to see if the file names match. In the following tget commands, note that the IP address will be the address of the (tftp) host where the lsue\_sw RPM is normally installed.
- Download the boot.bin, with command:  
**tget boot.bin 1800000 192.168.1.10**  
**savemod 1800000**
- Download the net.bin, with command:  
**tget net.bin 1800000 192.168.1.10**  
**savemod 1800000**
- Download the fpga.bin, with command:  
**tget lm-fpga.bin 1800000 192.168.1.10**  
**savemod 1800000**
- Download the lsue monolith, with command:  
**tget lsf.bin 1800000 192.168.1.10**  
**savemod 1800000**
- Power cycle the LSU-E board, or enter the restart command:  
**restart**
- The LSU-E board will now load the fpga code and start the lsf applications.



## 3

## AVAILABLE COMMANDS

Table 3 Available commands in LSU-E

Command name	Description
setpar	To set parameter value.
dispar	Print present configuration.
rmpar	Remove parameter.
savepar	Save changes in configuration.
restart	Restart LSU-E from console.
listmod	List module addresses.
loadmod	Load module from Flash memory.
startmod	Start net module.
savemod	Save module binaries.
apprev	Shows the current firmware revision.
lfilter <yes/no>	Hide the LSU-E on the network. If set to <b>y</b> or yes the LSU-E will only communicate with the specified nfs-server. This will increase the security, as the LSU-E board will be invisible on the LAN except for the specified nfs-server.
Keepalive <value>	Waiting time in seconds for server response. Decimal number. The value specifies the number of seconds before the LSU-E will close the TCP connection on an idle line, i.e. no messages are received from the Server during the keep alive time. When the connection has been closed, LSU-E will wait for a new connection to be established from the Server. A reasonable keep alive value could be between 60 and 120 seconds.
help	Shows more available commands.