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Approved	Checked	Date	Rev	Reference
UAB/UKH/HRC (Johan Olsson)		2003-09-04	D	1_15181-ROJ208425_1UEN_D

UPGRADING THE BIOS

Abstract

This document describes a way to upgrade the BIOS on the ROJ 208 425/1 processor board by using an IO processor in an existing TSP system. The instruction is also applicable for processor boards ROJ 208 426/1, ROJ 208 427/1, ROJ 208 428/1, ROJ 208 429/1, ROJ 208 425/2, ROJ 208 426/2 and ROJ 208 427/2.

**This procedure may only be used on factory and integration and verification sites.
It must never be used on a site in service.**

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1 GENERAL

This document describes how to upgrade the BIOS on a processor board in a GEM subrack. The instruction is verified for ROJ 208 425/1 but can be used for ROJ 208 426/1, ROJ 208 427/1, ROJ 208 428/1, ROJ 208 429/1, ROJ 208 425/2, ROJ 208 426/2 and ROJ 208 427/2 as well. It may only be used on factory and integration and verification sites.

This instruction is not to be used on live sites.

2 REVISION HISTORY

Revision	Date	Writer	Comment
A	2003-02-05	UABKBD	First version
B	2003-03-14	UABKBD	Direct link to software in GASK
C	2003-03-17	UABKBD	Minor changes
D	2003-09-04	UABKBD	Small corrections

3 CONVENTIONS USED IN THIS DOCUMENT

All commands to be entered by the user are in **bold**.

Example:

```
> cd /opt/telorb
```

Indicates that the “**cd /opt/telorb**” command should be entered.

Changes to be made when editing files are indicated by presenting the new text to be written in **bold**.

Example:

Change:

This is the old text

To:

This is the **new** text

Edit the text so that the new line will read “This is the new text”.

Keystrokes to be entered by the user will be in **bold** and enclosed with “<>”.

Example:

```
Hit return to continue... <RETURN>
```

The user must then press the **RETURN** or **ENTER** key to carry on.

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OVERVIEW

The upgrade is done using the PXE boot loader that usually is used to load the Dicos or Linux operating systems into the traffic processors. Instead of loading these, an image of a DOS diskette is loaded into the RAM on the processor board. This image includes software for installing the BIOS using an upgrade program running in batch mode.

The upgrade of the processor board BIOS is done directly in an existing GEM subrack, using a standard configured TSP4 or later IO processor running Linux and by the means of the DHCP, PXE and TFTP routines normally running. There is only a minimal set of configurations needed in an existing system to make the updating successful.

There are two slightly different ways to upgrade, depending on what it is that should be upgraded. If it is an already configured node, the upgrade of the boards can be done directly in the system, while boards not configured and belonging to a system must be upgraded in some other available system.

The two upgrade paths are:

- Upgrading an existing system
- Upgrading on board level

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PRE-REQUISITES

A 9-pin serial null-modem cable is needed.

Use a minicom or equivalent terminal on an external computer.

If upgrading in an existing system then nothing more is needed. Otherwise a subrack with a working TSP4 or later IO processor must be used. At least one SCB-RP is needed in the subrack to add the necessary power and to connect all the Ethernet connections in the backplane. It doesn't matter if the IO processor is an IO-1 or an IO-2, but check that at least DHCP and PXE services are running without problems on the processor.

The instruction describes the upgrade done on a node in zone 1, but it work on a node in zone 2, if the IP-addresses are change to zone 2 addresses.

It is possible to use an ordinary PC running Linux or a SUN running Solaris instead of the IO processor. How to do this is described in [reference \[1\]](#). Please note that the BIOS software release used in this instruction should be used in that case also.

The editor to be used is for the user to decide. For example, editors like gedit, vi or pico all will be usable. The document indicates with *<editor>* when the editor should be used.

5.1

SOFTWARE REQUIREMENTS

The BIOS software package [190 89 – 2/LZN 901 0420](#) can be downloaded from GASK. This software is referred to as *<BIOS software>*.

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5.2 PREPARATIONS ON THE IO PROCESSOR

If two IO processors exist, the TelORB services on the one not to be used should be turned off.

Login on the redundant IO processor as user telorb and stop the services.

```
> cd /opt/telorb/etc
> ./stop_services
> exit
```

Login on the IO processor as user telorb.

Make a new “bios-upgrade” directory if not already done.

```
> mkdir /tftpboot/X86PC/UNDI/bios-upgrade
```

Store the software release file *<BIOS software>* on the IO processor in folder “/tftpboot/X86PC/UNDI/bios-upgrade”.

```
> cd /tftpboot/X86PC/UNDI/bios-upgrade/
> <copy> < BIOS software > .
```

Where *<copy>* means that the file should be copied using an appropriate copying tool like **cp**, **scp**, **rcp** or **ftp** depending on circumstances.

Unpack the file.

```
> gtar -zxvf < BIOS software >
> rm < BIOS software >
```

Copy and save files to be edited.

```
> cd /opt/telorb/etc
> cp pxe.cf pxe.cf.org
> cp dhcpd.pxe.conf dhcpd.pxe.conf.org
```

Edit the PXE configuration file “pxe.cf”.

```
> <editor> pxe.cf
```

Change the following:

```
[Service_Types]
14,Dicos
13,linux-tp
12,linux-install
3328,Dicos
0,BStrap
```

To:

```
[Service_Types]
14,Dicos
13,linux-tp
12,linux-install
```

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11, bios-upgrade

3328, Dicos

0, BStrap

And:

```
[X86PC/UNDI/MENU]
14,Dicos pxe boot
13, Linux pxe boot [XXX.XXX, ...]
12, Linux install boot [XXX.XXX, XXX.XXX]
0, Local Fot
```

To:

```
[X86PC/UNDI/MENU]
14,Dicos pxe boot
13, Linux pxe boot [XXX.XXX, ...]
12, Linux install boot [XXX.XXX, XXX.XXX]
11, BIOS upgrade [0.250, 8.250]
0, Local Fot
```

And add the following pointer for the BIOS upgrade:

```
# Image file name for BIOS dosundi boot server
[X86PC/UNDI/bios-upgrade/ImageFile_Name]
0
1
BIOS
```

Save and exit the editor.

If not updating an existing system then the DHCP configuration file "dhcpd.pxe.conf" must be edited to make the system know about the MAC addresses of the boards. Otherwise, all the board's MAC addresses already exists in the configuration file.

> <editor> dhcpd.pxe.conf

Add the following somewhere in the file if unknown MAC addresses exists:

```
# Define Processor to Upgrade
group {
    host UpgradeProcessor_0 {
        hardware ethernet XX:XX:XX:XX:XX:XX;
        fixed-address      172.16.0.250;
    }

    host UpgradeProcessor_1 {
        hardware ethernet XX:XX:XX:XX:XX:XX;
        fixed-address      172.16.8.250;
    }
}
```

Save and exit the editor.

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6 UPGRADE OF THE BIOS

6.1 UPGRADING IN AN EXISTING SYSTEM

Edit the PXE configuration file "pxe.cf" to instruct the system to upgrade all the processor boards. Locating the IP-addresses of all the processor boards in the system that should be upgraded and writing them under the label "BIOS upgrade" does this. No stopping and starting of the TelORB services need to be done when editing only the "pxe.cf" file.

> <editor> **pxe.cf**

Change the following:

```
[X86PC/UNDI/MENU]
14,Dicos pxe boot
13,Linux pxe boot [XXX.XXX, ...]
12,Linux install boot [YYY.YYY, ...]
11,BIOS upgrade [0.250, 8.250]
0,Local Fot
```

To:

```
[X86PC/UNDI/MENU]
14,Dicos pxe boot
13,Linux pxe boot []
12,Linux install boot []
11,BIOS upgrade [XXX.XXX, YYY.YYY, ZZZ.ZZZ, ...]
0,Local Fot
```

Save and exit the editor.

Connect the serial cable from the processor board to be upgraded to the terminal.

Reset the processor board by pressing the reset button. (It is placed in a hole below the serial connector.)

If upgrading one of the processor boards ROJ 208 425/2, ROJ 208 426/2 or ROJ 208 427/2, the BIOS must be told to boot from the LAN instead of from flash disk. Also if upgrading one IO processor, the BIOS setup must be changed. How this is done is explained in [Booting From LAN](#).

The processor will now reboot and start in MS-DOS mode.

You will get an output on the terminal screen that looks something like this:

```
Transferring control to DOS boot diskette image...
Starting ...
```

```
.
.
.
```

```
#####
#
# The BIOS update on your MXS64GX board was successful.
# As an indication the blue LED is turned on.
#
```

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```
# You now have to power off the board!                                     #
# (A reset is not enough!!!)                                              #
#                                                                           #
#####
```

A:\>

When the blue LED is turned on, power off the board by pulling it out from the subrack and leave it unconnected for at least five (5) seconds.

Insert the processor board again.

If upgrading one of processor boards ROJ 208 425/2, ROJ 208 426/2 or ROJ 208 427/2, the BIOS setup must be restored so that the board boots from flash disk. See [Bootling From Compact Flash](#) for instruction.

If upgrading an IO processor, the BIOS setup must be restored to the status where it boots from the SCSI disk. See [Bootling From The SCSI Disk](#).

Update the marking on the board with the appropriate revision.

The BIOS is now upgraded on this processor board. Repeat this instruction with the next board until all boards are upgraded.

6.2 UPGRADING ON BOARD LEVEL

Stop TelORB services if not already done.

```
> cd /opt/telorb/etc
> ./stop_services
```

Insert the processor board to be updated into the subrack.

Connect the serial cable from the processor board to the terminal.

Reset the processor board by pressing the reset button. (It is placed in a hole below the serial connector.)

If upgrading one of the processor boards ROJ 208 425/2, ROJ 208 426/2 or ROJ 208 427/2, the BIOS must be told to boot from the LAN instead of from flash disk. Also if upgrading one IO processor, the BIOS setup must be changed. How this is done is explained in [Bootling From LAN](#).

The processor will now reboot. If the processor board not is known to the system, the "dhcpd.pxe.conf" file must be updated with the correct MAC-addresses to the board.

The MAC-addresses are displayed during the start-up of the processor and should be transferred to the "Upgrade_processor_0" and "Upgrade_processor_1" sections in the "dhcpd.pxe.conf" file.

That means, edit the "dhcpd.pxe.conf" file:

```
> <editor> dhcpd.pxe.conf
```

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Change the following:

```
# Define Processors to Update
group {

    host UpdateProcessor_0 {
        hardware ethernet XX:XX:XX:XX:XX:XX;
        fixed-address      172.16.0.250;
    }

    host UpdateProcessor_1 {
        hardware ethernet XX:XX:XX:XX:XX:XX;
        fixed-address      172.16.8.250;
    }
}
```

To:

```
# Define Processors to Update
group {

    host UpdateProcessor_0 {
        hardware ethernet <MACADDRESS 0>;
        fixed-address      172.16.0.250;
    }

    host UpdateProcessor_1 {
        hardware ethernet <MACADDRESS 1>;
        fixed-address      172.16.8.250;
    }
}
```

Save and exit the editor.

Continue here if MAC-addresses are OK.

Start the TelORB services.

> ./start_services

The board will reboot and should start in MS-DOS mode. If not, try to switch the two MAC-addresses in the "dhcpd.pxe.conf" file. Don't forget to stop and start the TelORB services.

You will get an output on the terminal screen that looks something like this:

```
Transferring control to DOS boot diskette image...
Starting ...
```

```
.
.
.
#####
#
# The BIOS update on your MXS64GX board was successful. #
# As an indication the blue LED is turned on.           #
# You now have to power off the board!                   #
# (A reset is not enough!!!)                             #
```

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#####

A:\>

When the blue LED is turned on, power off the board by pulling it out from the subrack and leave it unconnected for at least five (5) seconds.

Insert the processor board again.

If upgrading one of processor boards ROJ 208 425/2, ROJ 208 426/2 or ROJ 208 427/2, the BIOS setup must be restored so that the board boots from flash disk. See [Booting From Compact Flash](#) for instruction.

If upgrading an IO processor, the BIOS setup must be restored to the status where it boots from the SCSI disk. See [Booting From The SCSI Disk](#).

Pull out the processor board.

Update the marking on the board with the appropriate revision.

The BIOS is now upgraded on this processor board. Repeat this instruction with the next board until all boards are upgraded.

7 RESTORING THE IO PROCESSOR

Stop TelORB services if not already done.

```
> cd /opt/telorb/etc  
> ./stop_services
```

Restore the saved files.

```
> cp pxe.cf.org pxe.cf  
> cp dhcpd.pxe.conf.org dhcpd.pxe.conf
```

(Reinsert all the boards into the subrack.)

Start the TelORB services. (On both IO processors.)

```
> ./start_services
```

8 BIOS SETUP INSTRUCTIONS

8.1 BOOTING FROM LAN

Enter the "CMOS SETUP UTILITY" menu by pressing the <DEL> key on the terminal during the booting of the processor. (On some terminals the <BACKSPACE> key is used instead of the <DEL> key.)

Go to the "BIOS FEATURES SETUP" menu ("Virus Protection, Boot Sequence...") by using the cursor keys and then pressing <ENTER>.

Select "Boot From LAN First".

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Change “Boot From LAN First” to “**LAN 1-2**” by pressing the <+> or <-> keys.

Quit the “BIOS FEATURES SETUP” menu by pressing the <Esc> key.

Go to the “SAVE & EXIT SETUP” menu (“Save Data to CMOS & Exit SETUP”).

Answer <y> to “SAVE to CMOS and EXIT (Y/N)? ” and press <ENTER>.

8.2

BOOTING FROM COMPACT FLASH

Enter the “CMOS SETUP UTILITY” menu by pressing the <DEL> key on the terminal during the booting of the processor. (On some terminals the <BACKSPACE> key is used instead of the <DEL> key.)

Go to the “BIOS FEATURES SETUP” menu (“Virus Protection, Boot Sequence...”) by using the cursor keys and then pressing <ENTER>.

Select “Boot From LAN First”.

Change “Boot From LAN First” to “**None**” by pressing the <+> or <-> keys.

Select “Boot Sequence”.

Change “Boot Sequence” to “**C only**”.

Quit the “BIOS FEATURES SETUP” menu by pressing the <Esc> key.

Go to the “SAVE & EXIT SETUP” menu (“Save Data to CMOS & Exit SETUP”).

Answer <y> to “SAVE to CMOS and EXIT (Y/N)? ” and press <ENTER>.

8.3

BOOTING FROM THE SCSI DISK

Enter the “CMOS SETUP UTILITY” menu by pressing the <DEL> key on the terminal during the booting of the processor. (On some terminals the <BACKSPACE> key is used instead of the <DEL> key.)

Go to the “INTEGRATED PERIPHERALS” menu (“Onboard I/O, IRQ, DMA Assignment...”) by using the cursor keys and then pressing <ENTER>.

Select “Onboard PCI SCSI BIOS”.

Change “Onboard PCI SCSI BIOS” to “**Enabled**” by pressing the <+> or <-> keys.

Quit the “Onboard PCI SCSI BIOS” menu by pressing the <Esc> key.

Go to the “BIOS FEATURES SETUP” menu (“Virus Protection, Boot Sequence...”).

Select “Boot From LAN First”.

Change “Boot From LAN First” to “**None**”.

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Select "Boot Sequence".

Change "Boot Sequence" to "**SCSI,C,A**".

Quit the "BIOS FEATURES SETUP" menu by pressing the <Esc> key.

Go to the "SAVE & EXIT SETUP" menu ("Save Data to CMOS & Exit SETUP") and by using the cursor keys and then pressing <ENTER>.

Answer <y> to "SAVE to CMOS and EXIT (Y/N)? " and press <ENTER>.

9

REFERENCES

- [1] 2/151 81-ROJ 208 405/1 Revision A. Updating BIOS on a Teknor compactPCI MXP64GX board.