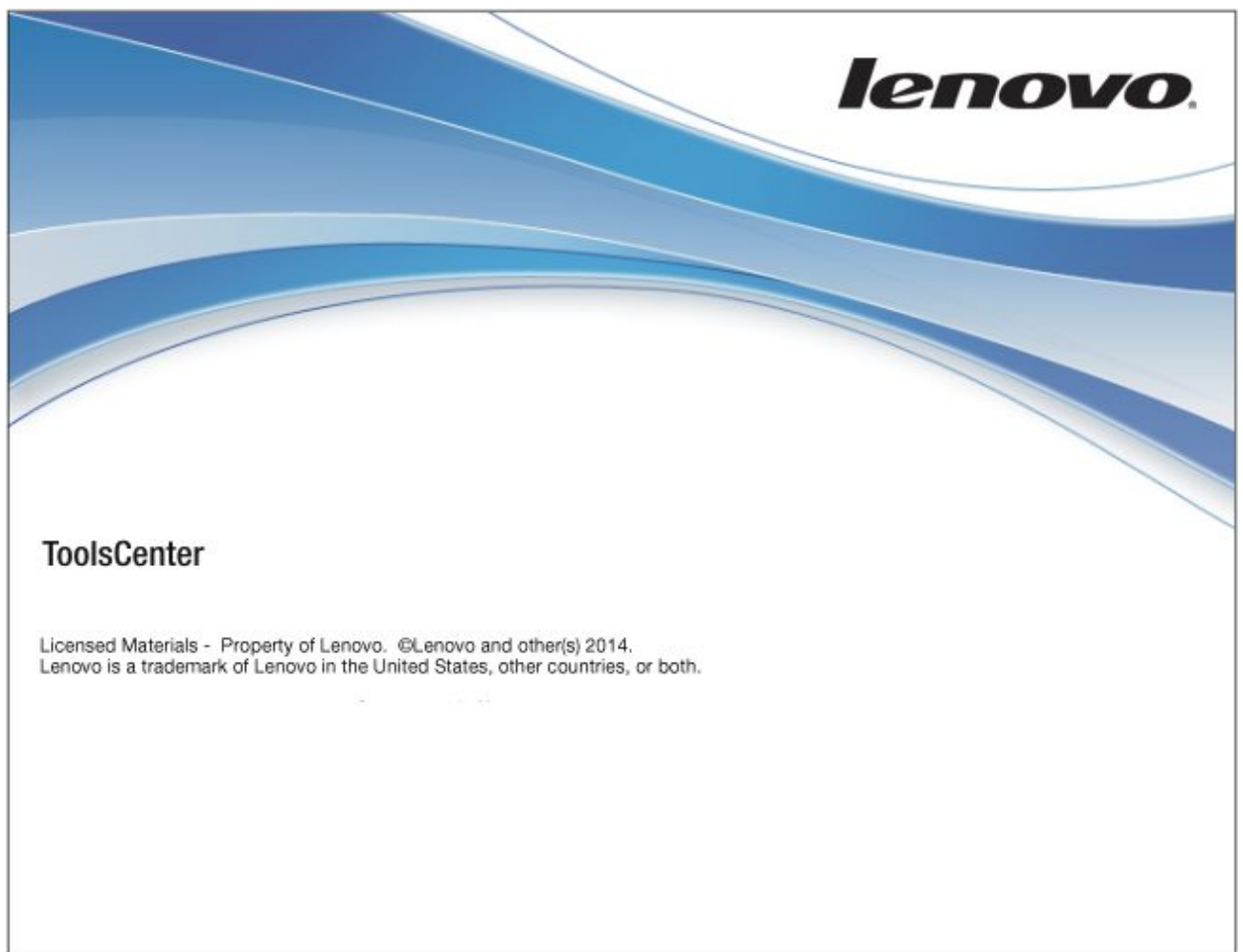


IBM / Lenovo System x3650 M4

Missing ServeRAID M5110e SAS/SATA Controller

Updating the Programmable System-on-Chip firmware with the Lenovo ToolsCenter Bootable Media Creator Software



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1 Important

The PSoC code update is mandatory for all System x3650 M4 servers except for those where the system board FRU indicates that the update is not necessary. For additional details refer to Chapter "[4 Affected and non-affected System boards](#)".

Parts replacement

No parts are to be replaced for the M5110e disappearing from the x3650 M4 host server.

Additional information

You cannot apply the Programmable System-on-Chip (PSoC) update in either Linux or Windows operating systems when the OS has been booted off the internal server hard disk drives. During the code update the PSoC update will reset and all drives will disappear for a short period of time. This will cause the operating system to go down.

The only exception would be if the disks drives from which the operating system has booted and is running from are not attached to the M5110e RAID controller.

The only tested Programmable System-on-Chip code update method is via Bootable Media Creator Tool (BoMC). Thus the use of the BoMC environment is mandatory.

Note: Using the media created with the Bootable Media Creator tool will always attempt to update the PSoC irrespective to whether the PSoC code is up-to-date or not. It cannot detect the currently installed PSoC code level.

The following tools are also not able to report the currently installed PSoC code level:

- DSA
- FFDC

The currently installed version of the PSoC code can be verified by using the IPMItool for Linux or Windows. For further information refer to Chapter "[5 Verifying currently installed PSoC code](#)".

Obsoleted confidential tips

The following two IBM confidential tips do not apply anymore:

- H206209
- H213402

2 Affected Servers

The following servers are affected by this code update:

- IBM System x3650 M4, MT 7915
- Lenovo logoed System x3650 M4, MT 7915

3 Preface

This document explains on how to update the Programmable System-on-Chip – in short PSoC - firmware in order to resolve the missing onboard ServeRAID M5110e SAS/SATA controller after restarting the host server.

This document explains the steps using the Windows based Lenovo ToolsCenter Bootable Media Creator software package – in short BoMC.

Additionally further tips will be discussed where the server shows similar symptoms, that is the ServeRAID M5110e disappears, which are however not related to the PSoC code update.

4 Affected and non-affected System boards

The following table lists the replacement part numbers of system boards that are affected by this issue and those that are not affected by this issue.

Affected system board	Not affected system board
00Y8457	00MV221, Vali FRU planar Volterra P0/P2/PSoC (SNB CPU)
00Y8499	00MV220, Vali FRU planar Volterra P2/PSoC (SNB CPU)
00AM209	00MV219, Vali system FRU planar Ref3 (SNB/IVB CPU)

Notes:

- The above table is only for guidance. It **does not** imply that the affected system board **is to** be replaced by the non-affected system board!
- The list of affected system boards only reflect those boards which are directly replaced by the boards in the column "Not affected system board"
- All system boards must be upgraded except the ones listed in the column "Not affected system board"

5 Verifying installed PSoC code level

5.1 Steps to verify the PSoC code level

Verifying which version of PSoC code level is installed requires at a maximum four steps:

- a) Check what system board installed, see also "4 Affected and non-affected System boards"
- b) I2C write to the MUX chipset on the system board to select the PSoC
- c) I2C write to set PSoC I2C address index to zero
- d) I2C Read command which reads 9 bytes from psoc starting at address zero which allows to determine the current PSoC level installed

Note: Only newer versions of the x3650 M4, 7915, have an I2C MUX chipset onboard. Using the command to select the PSoC via the MUX chipset will lead to an error message that can be safely ignored.

5.2 Tools that can be used

There are two tools that can be used for verifying the PSoC code level installed and which system board is in the System x3650, M4:

- a) IPMITool, available via <http://sourceforge.net/projects/ipmitool/>
- b) IPMIutil, available via <http://ipmiutil.sourceforge.net/>

5.3 Which tool to use

The IPMITool is available only as source code for the Linux platforms. It is part of most mainstream Linux distributions. A windows pre-compiled version is not easy to be found.

The IPMIutil is available as source code and precompiled for Linux, Windows, Solaris, FreeBSD, and MacOS.

It does not matter which tool is being used. The result is always the same.

5.4 Paramaters that always must be used

The following parameters are always to be used with either the IPMITool or the IPMIutil:

host_ip_addr	IP address of the x3650 M4 server to be checked
imm_user_id	The IMM2 User ID for logging on to the x3650 M4 as administrator
imm_admin_pw	The IMM2 administrator password

With the help of the `grep` utility the output can be reduced significantly by issuing the following command:

```
ipmitool -I lanplus -H <IMM IP> -U <USERID> -P <PASSWORD> fru | grep "Board Extra"
```

[illegible]

Note: A Windows port of the grep utility is available via e.g.

<http://unxutils.sourceforge.net/>

in the file [UnxUpdates.zip](#).

5.5.2 Selecting the PSoC

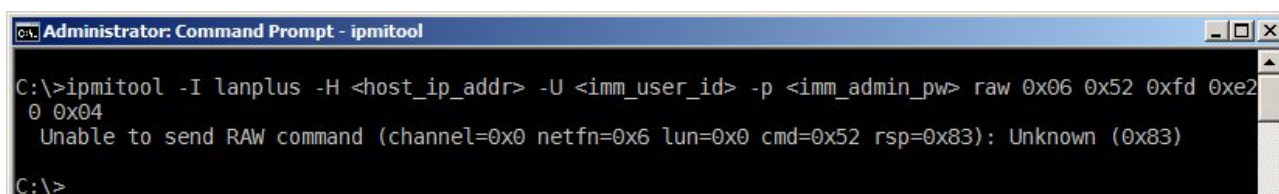
Warning! The below command must be executed exactly as shown. Incorrect parameters in the write command can lead to damage to the system board!

An I2C write to the MUX chipset on the system board in order to select the PSoC. This is accomplished with the command:

```
ipmitool -I lanplus -H <host_ip_addr> -U <imm_user_id> -p <imm_admin_pw>
raw 0x06 0x52 0xfd 0xe2 0 0x04
```

- Notes:**
- The above command is to be issued as one command on the command line
 - The parameters in the arrow brackets are mandatory

If there is no MUX chipset on the system then the IPMITool will issue an error message similar to the one below:



This error message can safely be ignored.

5.5.3 Setting the I2C address index to zero

Warning! The below command must be executed exactly as shown. Incorrect parameters in the write command can lead to damage to the system board!

An I2C write to set PSoC I2C address index to zero needs to be issued. This is accomplished with the command:

```
ipmitool -I lanplus -H <host_ip_addr> -U <imm_user_id> -p <imm_admin_pw>
raw 0x06 0x52 0xfd 0xb0 0 0x00
```

- Notes:**
- The above command is to be issued as one command on the command line
 - The parameters in the arrow brackets are mandatory

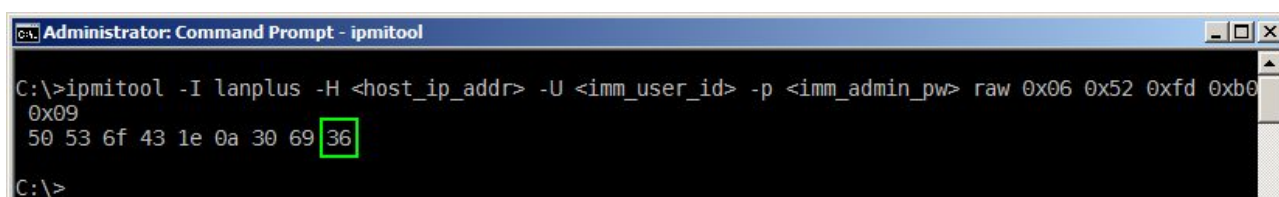
5.5.4 I2C read of the first 9 bytes of the PSoC

An I2C Read command has to be issued which reads 9 bytes from psoc starting at address zero. This allows to determine the current PSoC level installed. This is accomplished with the command:

```
ipmitool -I lanplus -H <host_ip_addr> -U <imm_user_id> -p <imm_admin_pw>
raw 0x06 0x52 0xfd 0xb0 0x09
```

- Notes:**
- The above command is to be issued as one command on the command line
 - The parameters in the arrow brackets are mandatory.

The result is a sequence of hex data of which the last indicates the PSoC code level installed:



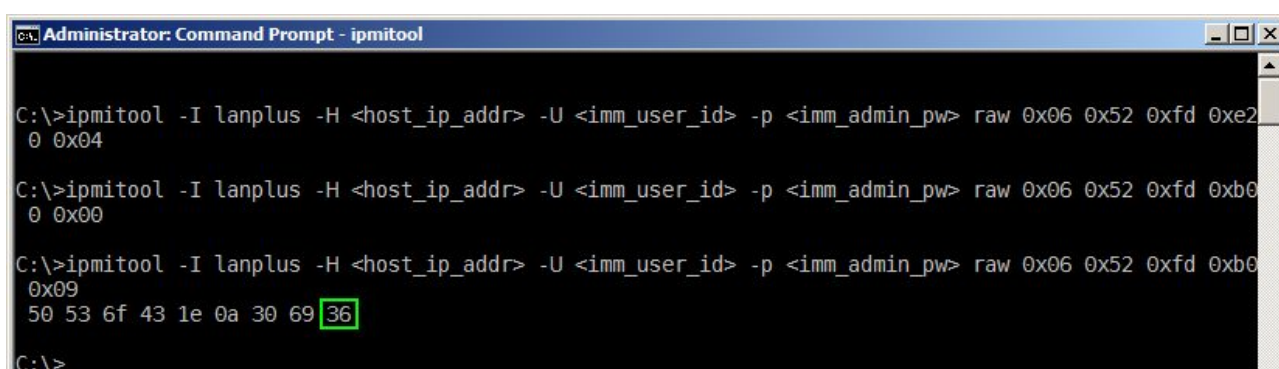
```

Administrator: Command Prompt - ipmitool
C:\>ipmitool -I lanplus -H <host_ip_addr> -U <imm_user_id> -p <imm_admin_pw> raw 0x06 0x52 0xfd 0xb0
0x09
50 53 6f 43 1e 0a 30 69 36
C:\>

```

5.5.5 Command timing

It is important that the commands for selecting the PSoC, setting the index address to zero and reading the first nine bytes of the PSoC are executed straight after each other **without** delays. A delay during these commands can result in the MUX does not switch the connection off to the PSoC. **It is best to put all commands into a single batch file and execute that batch file:**



```

Administrator: Command Prompt - ipmitool
C:\>ipmitool -I lanplus -H <host_ip_addr> -U <imm_user_id> -p <imm_admin_pw> raw 0x06 0x52 0xfd 0xe2
0 0x04
C:\>ipmitool -I lanplus -H <host_ip_addr> -U <imm_user_id> -p <imm_admin_pw> raw 0x06 0x52 0xfd 0xb0
0 0x00
C:\>ipmitool -I lanplus -H <host_ip_addr> -U <imm_user_id> -p <imm_admin_pw> raw 0x06 0x52 0xfd 0xb0
0x09
50 53 6f 43 1e 0a 30 69 36
C:\>

```

5.5.6 Sample Windows batch file

Below is an example how a windows batch file looks like for executing the above IPMITool commands. This batch file works if the IMM2 Administrator log on credentials - Username and password - have not been changed, else the user name and passwords must be adapted.

```

@Echo off

:Start

Echo Enter imm IP Please

set /P "imm_ip_addr="
Echo on

:init

    ipmitool -H %imm_ip_addr% -U USERID -P PASSWORD raw 0x06 0x52 0xfd 0xe2 0 0x04
    ipmitool -H %imm_ip_addr% -U USERID -P PASSWORD raw 0x06 0x52 0xfd 0xb0 0 0x00
    ipmitool -H %imm_ip_addr% -U USERID -P PASSWORD raw 0x06 0x52 0xfd 0xb0 0x09

:end

```


5.5.7 Interpreting the last hex value

The below table allows to determine to what PSoC code level is installed and if the PSoC requires updating:

Last hex value	Meaning
33	Initial PSoC code release
35	Ivy-Bridge CPU PSoC code release
36	PSoC code level that fixes M5110e disappearing issue

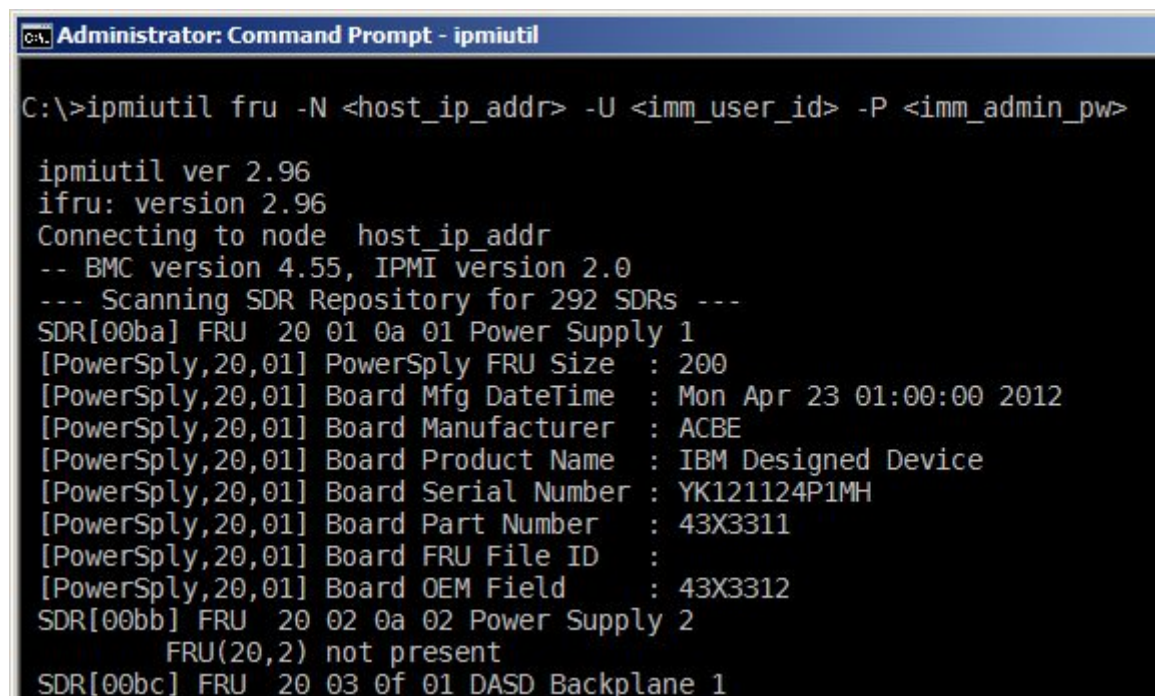
5.6 IPMIutil

5.6.1 Verifying installed system board FRU

Issue the following command from a command prompt:

```
ipmiutil fru -N <host_ip_addr> -U <imm_user_id> -P <imm_admin_pw>
```

Note: The parameters in the arrow brackets are mandatory.

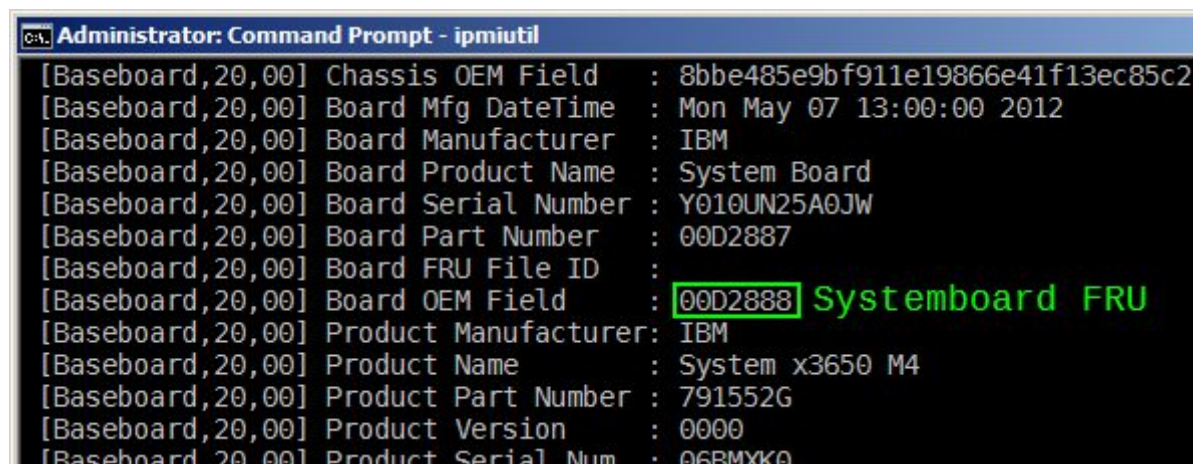


```
Administrator: Command Prompt - ipmiutil

C:\>ipmiutil fru -N <host_ip_addr> -U <imm_user_id> -P <imm_admin_pw>

ipmiutil ver 2.96
ifru: version 2.96
Connecting to node host_ip_addr
-- BMC version 4.55, IPMI version 2.0
--- Scanning SDR Repository for 292 SDRs ---
SDR[00ba] FRU 20 01 0a 01 Power Supply 1
[PowerSply,20,01] PowerSply FRU Size : 200
[PowerSply,20,01] Board Mfg DateTime : Mon Apr 23 01:00:00 2012
[PowerSply,20,01] Board Manufacturer : ACBE
[PowerSply,20,01] Board Product Name : IBM Designed Device
[PowerSply,20,01] Board Serial Number : YK121124P1MH
[PowerSply,20,01] Board Part Number : 43X3311
[PowerSply,20,01] Board FRU File ID :
[PowerSply,20,01] Board OEM Field : 43X3312
SDR[00bb] FRU 20 02 0a 02 Power Supply 2
FRU(20,2) not present
SDR[00bc] FRU 20 03 0f 01 DASD Backplane 1
```

The output of this command is quite long and the information required is quite at the end of the output:

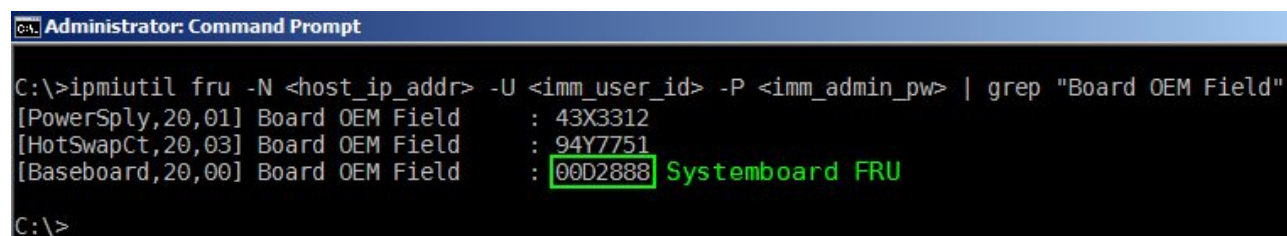


```
Administrator: Command Prompt - ipmiutil

[Baseboard,20,00] Chassis OEM Field : 8bbe485e9bf911e19866e41f13ec85c2
[Baseboard,20,00] Board Mfg DateTime : Mon May 07 13:00:00 2012
[Baseboard,20,00] Board Manufacturer : IBM
[Baseboard,20,00] Board Product Name : System Board
[Baseboard,20,00] Board Serial Number : Y010UN25A0JW
[Baseboard,20,00] Board Part Number : 00D2887
[Baseboard,20,00] Board FRU File ID :
[Baseboard,20,00] Board OEM Field : 00D2887 Systemboard FRU
[Baseboard,20,00] Product Manufacturer: IBM
[Baseboard,20,00] Product Name : System x3650 M4
[Baseboard,20,00] Product Part Number : 791552G
[Baseboard,20,00] Product Version : 0000
[Baseboard,20,00] Product Serial Num : 06BMXK0
```

With the help of the grep utility the output can be reduced significantly by issuing the following command:

```
ipmiutil fru -N <host_ip_addr> -U <imm_user_id> -P <imm_admin_pw> | grep "Board OEM Field"
```



```
C:\>ipmiutil fru -N <host_ip_addr> -U <imm_user_id> -P <imm_admin_pw> | grep "Board OEM Field"
[PowerSply,20,01] Board OEM Field      : 43X3312
[HotSwapCt,20,03] Board OEM Field      : 94Y7751
[Baseboard,20,00] Board OEM Field      : 00D2888 Systemboard FRU
C:\>
```

Note: A Windows port of the grep utility is available via e.g.

<http://unxutils.sourceforge.net/>

in the file [UnxUpdates.zip](#).

5.6.2 Selecting the PSoC

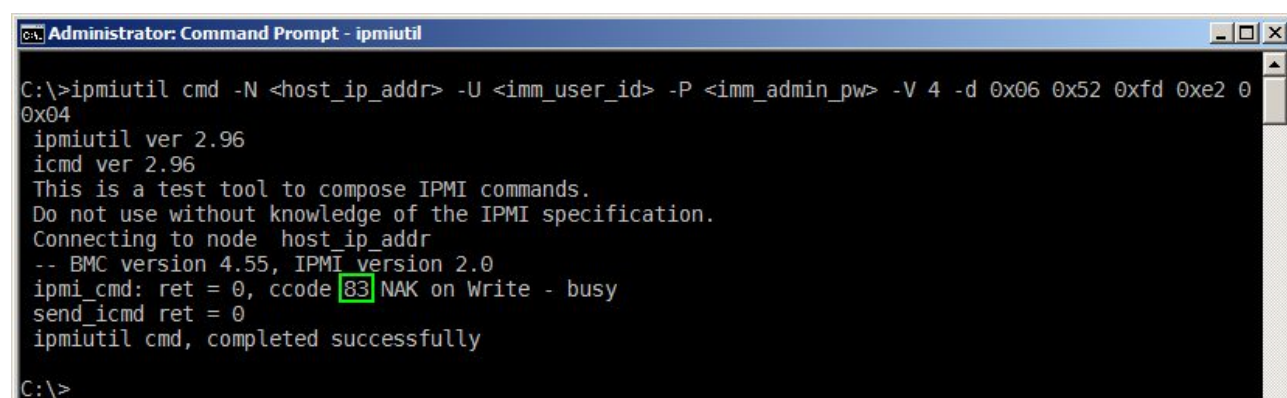
Warning! The below command must be executed exactly as shown. Incorrect parameters in the write command can lead to damage to the system board!

An I2C write to the MUX chipset on the system board in order to select the PSoC. This is accomplished with the command:

```
ipmiutil cmd -N <host_ip_addr> -U <imm_user_id> -P <imm_admin_pw> -V 4 -d 0x 06 0x52 0xfd 0xe2 0 0x04
```

- Notes:**
- The above command is to be issued as one command on the command line
 - The parameters in the arrow brackets are mandatory

If there is no MUX chipset on the system then the IPMIutil will issue an error message similar to the one below:



```
C:\>ipmiutil cmd -N <host_ip_addr> -U <imm_user_id> -P <imm_admin_pw> -V 4 -d 0x06 0x52 0xfd 0xe2 0 0x04
ipmiutil ver 2.96
icmd ver 2.96
This is a test tool to compose IPMI commands.
Do not use without knowledge of the IPMI specification.
Connecting to node host_ip_addr
-- BMC version 4.55, IPMI version 2.0
ipmi_cmd: ret = 0, ccode 83 NAK on Write - busy
send_icmd ret = 0
ipmiutil cmd, completed successfully
C:\>
```

This error message can safely be ignored.

5.6.3 Setting the I2C address index to zero

Warning! The below command must be executed exactly as shown. Incorrect parameters in the write command can lead to damage to the system board!

An I2C write to set PSoC I2C address index to zero needs to be issued. This is accomplished with the command:

```
ipmiutil cmd -N <host_ip_addr> -U <imm_user_id> -p <imm_admin_pw> -V 4-d 0x06 0x52 0xfd 0xb0 0
```

- Notes:**
- The above command is to be issued as one command on the command line
 - The parameters in the arrow brackets are mandatory

5.6.4 I2C read of the first 9 bytes of the PSoC

An I2C Read command has to be issued which reads 9 bytes from psoc starting at address zero. This allows to determine the current PSoC level installed. This is accomplished with the command:

```
ipmiutil -N <host_ip_addr> -U <imm_user_id> -p <imm_admin_pw> -V 4 -d 0x06 0x52 0xfd 0xb0 0x09
```

- Notes:**
- The above command is to be issued as one command on the command line
 - The parameters in the arrow brackets are mandatory

The result is a sequence of hex data of which the last indicates the PSoC code level installed:

```
C:\>ipmiutil -H <host_ip_addr> -U <imm_user_id> -p <imm_admin_pw> raw 0x06 0x52 0xfd 0xb0 0x09
ipmiutil ver 2.96
icmd ver 2.96
This is a test tool to compose IPMI commands.
Do not use without knowledge of the IPMI specification.
Connecting to node host_ip_addr
-- BMC version 4.55, IPMI version 2.0
respData[len=9]: 50 53 6f 43 1e 0a 30 69 36
send_icmd ret = 0
ipmiutil cmd, completed successfully
C:\>
```

5.6.5 Command timing

It is important that the commands for selecting the PSoC, setting the index address to zero and reading the first nine bytes of the PSoC are executed straight after each other **without** delays. A delay during these commands can result in the MUX does not switch the connection off to the PSoC. **It is best to put all commands into a single batch file and execute that batch file:**

- ipmiutil cmd -N <host_ip_addr> -U <imm_user_id> -P <imm_admin_pw> -V 4 -d 0x 06 0x52 0xfd 0xe2 0 0x04
- ipmiutil cmd -N <host_ip_addr> -U <imm_user_id> -p <imm_admin_pw> -V 4-d 0x06 0x52 0xfd 0xb0 0
- ipmiutil -N <host_ip_addr> -U <imm_user_id> -p <imm_admin_pw> -V 4 -d 0x06 0x52 0xfd 0xb0 0x09

5.6.6 Sample Windows batch file

Below is an example how a windows batch file looks like for executing the above IPMutil commands. This batch file works, if the IMM2 Administrator log on credentials - Username and password - have not been changed, else the user name and passwords must be adapted.

```
@Echo off

:Start

Echo Enter imm IP Please

set /P "imm_ip_addr="
Echo on

:init

ipmiutil cmd -N %imm_ip_addr% -U USERID -P PASSWORD -V 4 -d 0x 06 0x52 0xfd 0xe2 0 0x04
ipmiutil cmd -N %imm_ip_addr% -U USERID -p PASSWORD -V 4-d 0x06 0x52 0xfd 0xb0 0
ipmiutil -N %imm_ip_addr% -U USERID -p PASSWORD -V 4 -d 0x06 0x52 0xfd 0xb0 0x09

:end
```

5.6.7 Interpreting the last hex value

The below table allows to determine to what PSoC code level is installed and if the PSoC requires updating:

Last hex value	Meaning
33	Initial PSoC code release
35	Ivy-Bridge CPU PSoC code release
36	PSoC code level that fixes M5110e disappearing issue

6 Issue and Code package



After a system restart, the onboard ServeRAID M5110e SAS/SATA Controller may disappear from the Unified Extensible Firmware Interface (UEFI) or in Human Interface Infrastructure (HII) utility on a System x3650 M4, causing access to the local disks to be lost.

For further details refer to Retain tip [H213425](#) per support bulletin [MIGR-5096525](#) available via:

<http://www.ibm.com/support/entry/portal/docdisplay?Indocid=MIGR-5096525>

On IBM FixCentral - <http://www.ibm.com/support/fixcentral/> - the only code update package available is `ibm_fw_psoc3_m5110e-36_linux_32-64`.

SAS

-  1. [Firmware Update for ServeRAID M5110e PSoC3](#) 
`ibm_fw_psoc3_m5110e-36_linux_32-64`

Dec 4, 2014

No other operating systems (OS) are supported.

The code package can only be installed by using the Lenovo ToolsCenter Bootable Media Creator software package. The reason for this is that the ServeRAID card must be disconnected from the OS running on the internal disk drives.

7 Software needed

In order to update the PSoC firmware of the IBM / Lenovo System x3650 M4 one of the following BoMC software packages is required:

- BoMC for Windows
- BoMC for Linux

For the currently available BoMC packages see support document [Invo-bomc](#) located at

<http://www.ibm.com/support/entry/portal/docdisplay?Indocid=Invo-bomc>

The BoMC documentation is available in support document [LNVO-BOMCUG](#) located at

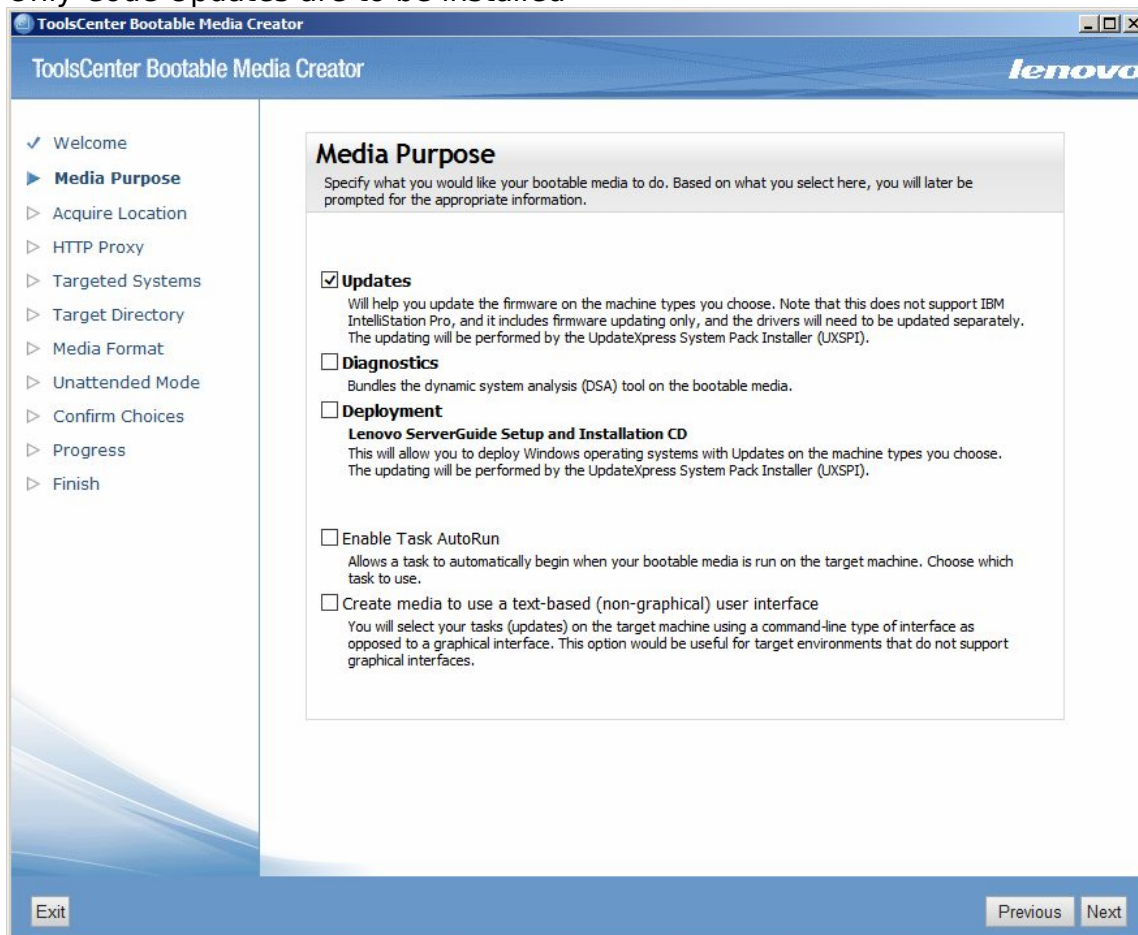
<http://www.ibm.com/support/entry/portal/docdisplay?Indocid=LNVO-BOMCUG>

In later chapters a procedure is discussed for only updating the PSoC firmware.

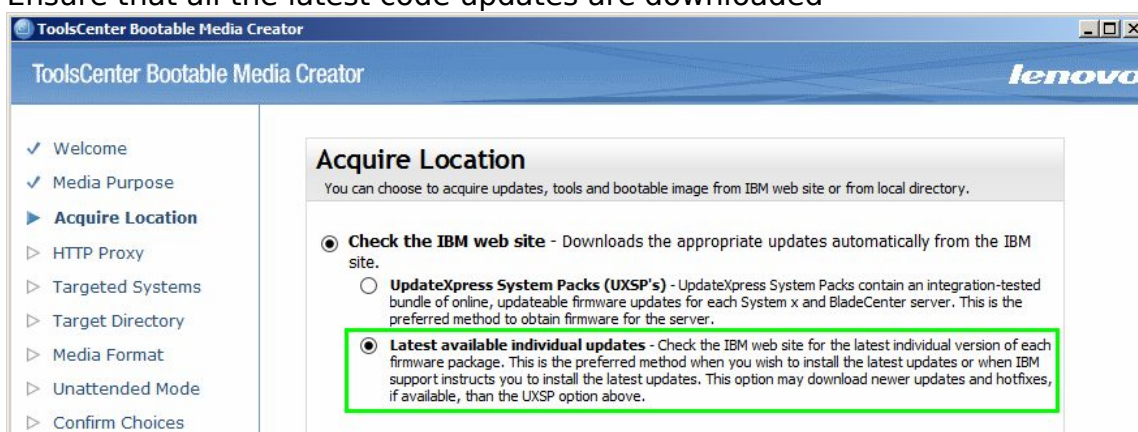
8 Creating the Update ISO image with BoMC

This chapter details how to download all code updates for the IBM / Lenovo System x3650 M4 using the Windows BoMC.

1. Launch the BoMC tool, in this case Invgy_utl_bomc_10.0_windows_i386
2. Read and accept the Software License Agreement
3. Only Code Updates are to be installed

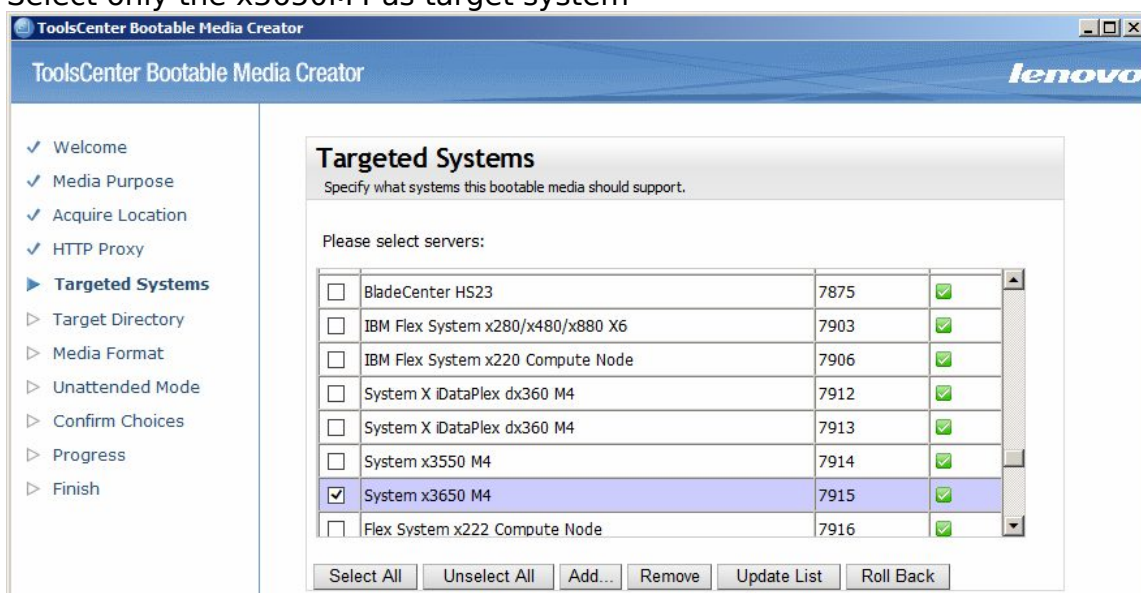


4. Ensure that all the latest code updates are downloaded



5. Set the correct HTTP Proxy Settings

6. Select only the x3650M4 as target system



7. Select the Target Directory into which the code packages are downloaded by BoMC

8. For Media Format it is recommended to create an ISO image file which then can be burned later.

9. It is also possible to directly write to a CD/DVD medium, a USB memory key or into a PXE file that can be transferred to the target server(s). The target media needs to be blank.

Media Format

Select the options for the type of media that you wish to create. For CD and DVD devices, the image file format will be ISO.

Device type:

☐ Write directly to device *Preferred method*
☒ Write to image file

Other possible selections, below display examples

Device type: Disk:

☒ Write directly to device
 Device type: Disk:

☒ Write directly to device
 Device type:

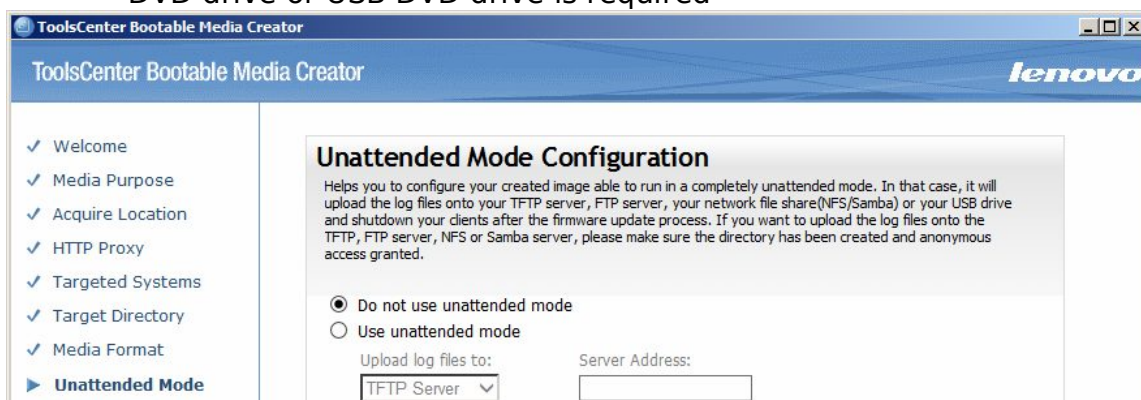
Directory to write PXE files to:
 The PXE files will be placed in the directory that you specify here. After the bootable files are created, you will need to transfer the files from this directory to your PXE server.

PXE TFTP server address:
 Enter the IP address of your PXE TFTP server. When the media boots via PXE, it will look at the IP address specified here. Note that the bootable files will not automatically be copied to this TFTP server; you will need to do this manually prior to using your media. The default value is 9.123.196.61.

- Notes:**
- The hardware devices – DVD/CD writer with blank media inserted or USB memory key – must be attached to the system prior to launching BoMC as else these media will not be recognised
 - All downloads for the System x3650 M4 server will require a DVD due to the size of the code packages
 - ISO Images can be mounted remotely to the System x3650 M4 server when the Feature on Demand Key for full remote Management is installed, the IBM Integrated Management Module Advanced Upgrade software feature for remote presence. See also <http://www.redbooks.ibm.com/abstracts/tips0850.html>, table 22

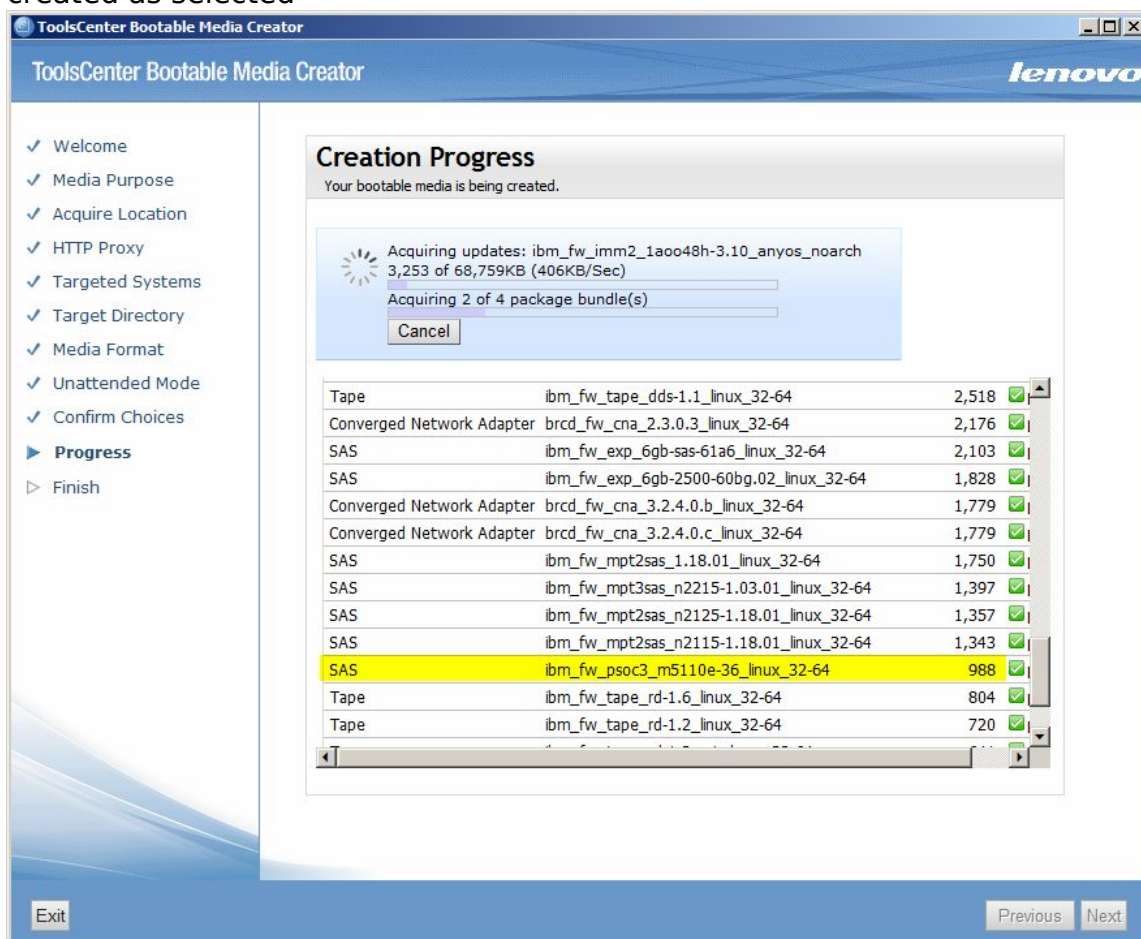
10. Unattended Mode is not desired as else the PSoC can not be updated

Note: If the Integrated Management Module Advanced Upgrade software feature has not been installed then either an internal System x3650 M4 DVD drive or USB DVD drive is required



11. Confirm the selected choices

12. Wait until all code has been downloaded and the ISO image file or media is created as selected

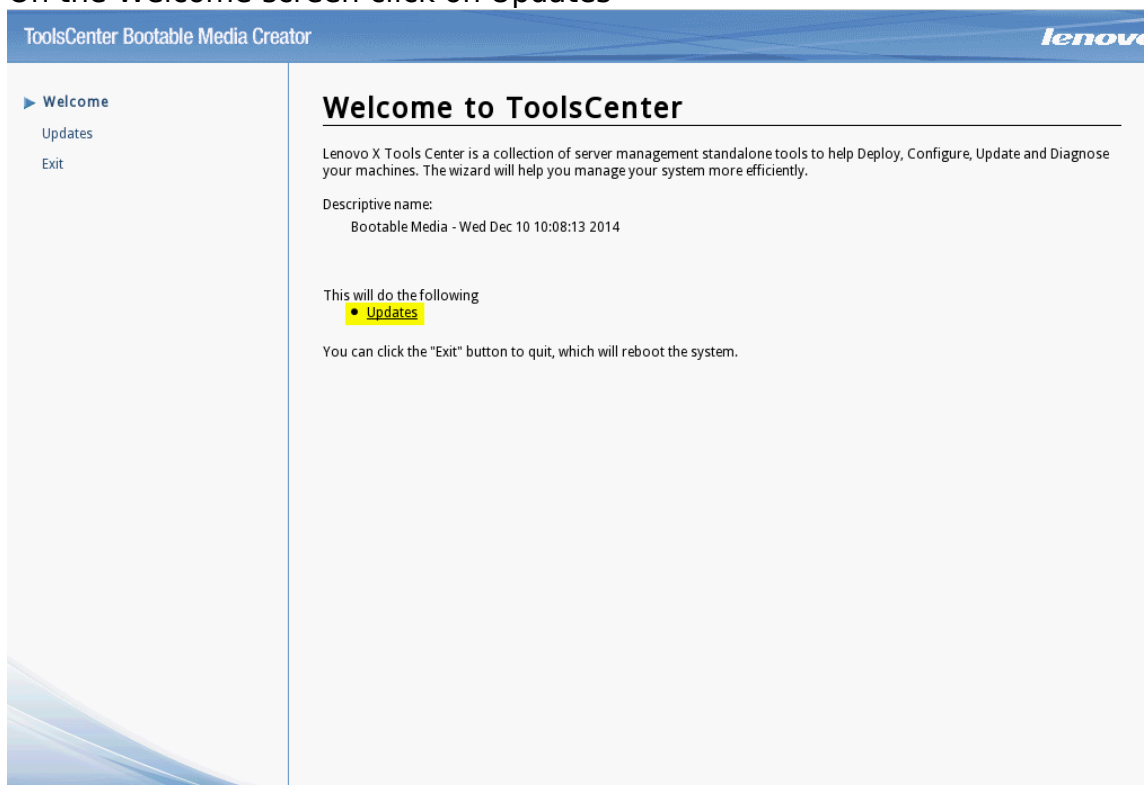


13. Once all has been completed, click the "Finish" button

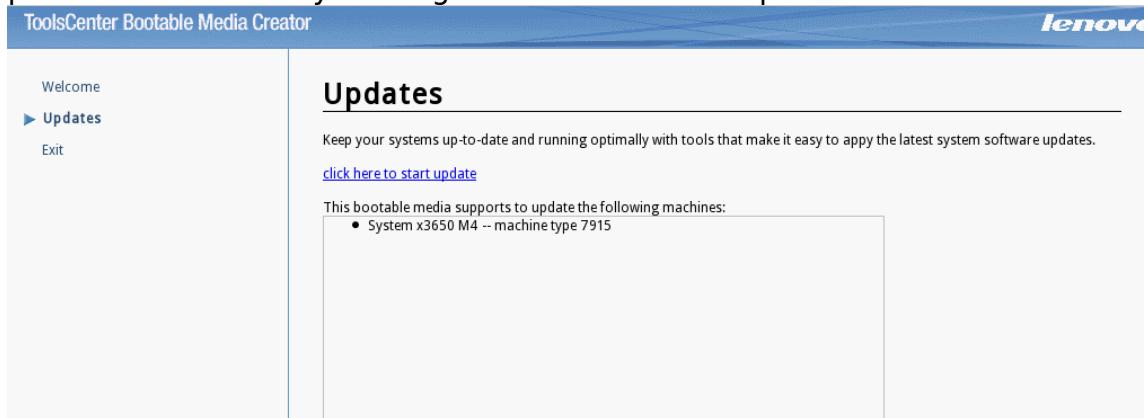
If an ISO image has been created burn it now.

9 Update the System x3650 M4 server

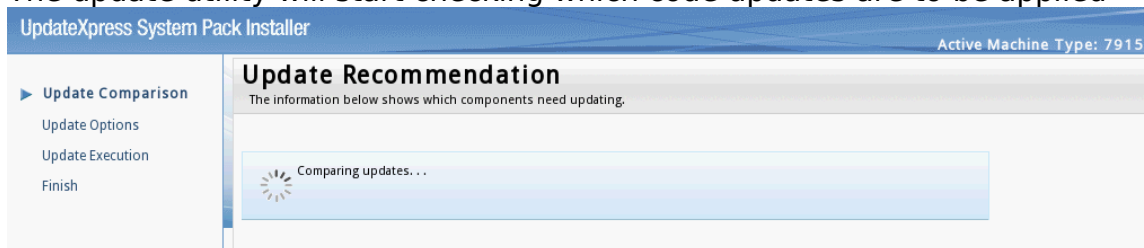
1. Boot the System x3650 M4 off the created media, e.g. DVD
2. On the Welcome screen click on Updates



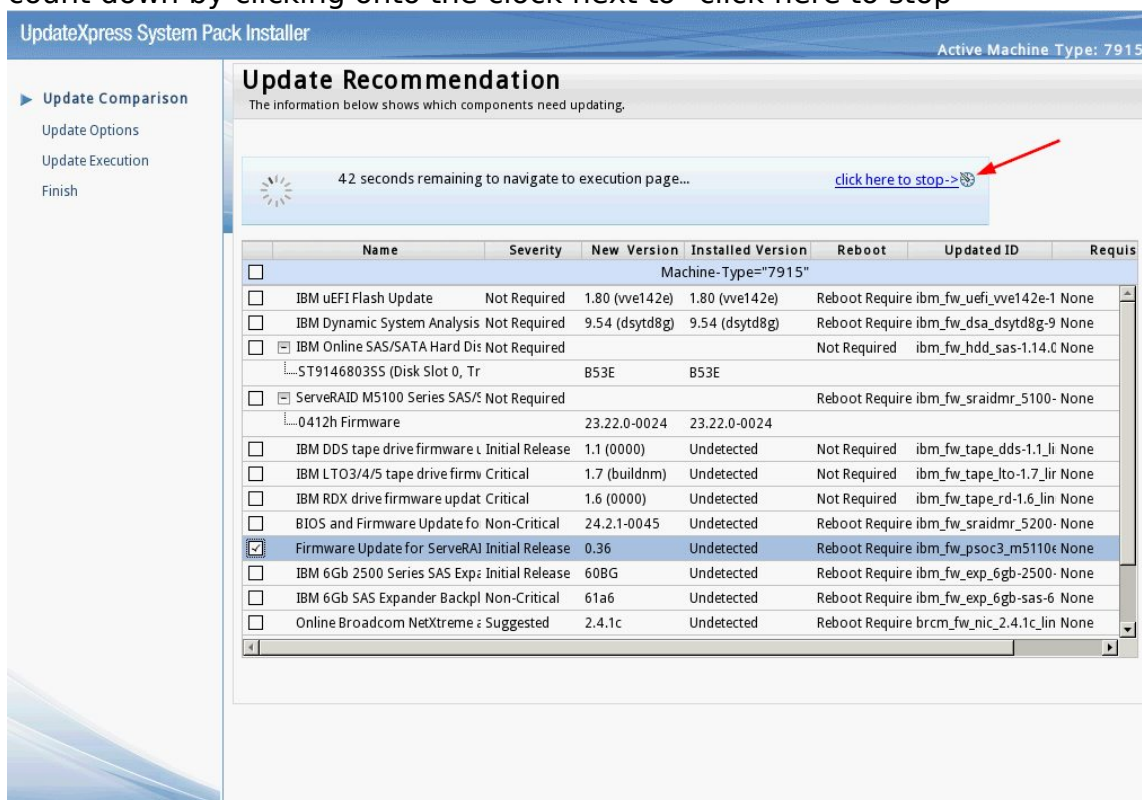
3. The media will indicate for which system the updates are and the update process is initiated by clicking "click here to start update"



4. Accept the Software License Agreement
5. The update utility will start checking which code updates are to be applied



6. Once the comparison has completed, a list of applicable updates will be displayed. In order to verify the list of updates it is recommended to stop the count down by clicking onto the clock next to "click here to stop"

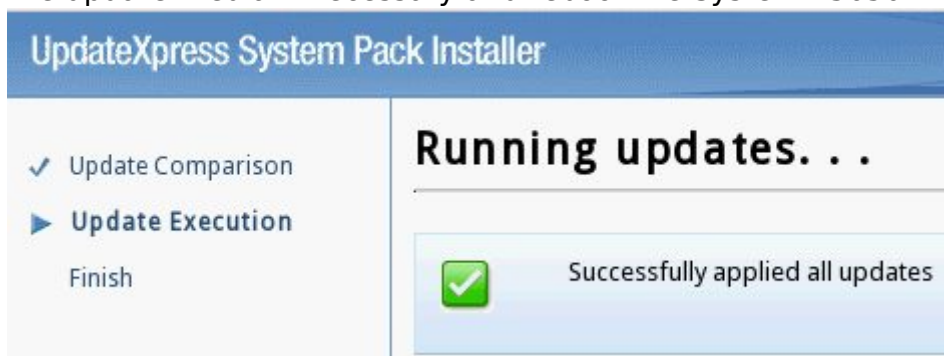


Notes:

- All updates that are recognised automatically and are necessary will be automatically selected, e.g. if the IBM uEFI Flash Update was required there will be a tick in the box left to it
- The update utility cannot recognise whether the PSoC update has to be applied. Because of this this specific update has to be selected manually as shown in the above and below graphics. If it is not selected it will **not** be applied. This means that the PSoC code update can be applied repeatedly to the same sever
- If the count down clock has been stopped, the update has to be initiated manually – else the update utility will commence the update automatically including the PSoC update

☒ Firmware Update for ServeRAI Initial Release 0.36 Undetected Reboot Require ibm_fw_psoc3_m5110e None

7. After the update has been completed click on "Finish" and follow any instructions to complete the update process, exit the update media , remove the update media if necessary and reboot the System x3650 M4 server



10 Updating only PSoC firmware with BoMC

This chapter discusses how to only update the PSoC without updating any other System x3650 M4 code using the BoMC software.

- Note:**
- If any of the below listed packages are not available for download anymore, then please contact your local IBM or Lenovo support centre. They can provide the packages if required.
 - Alternatively create a full System x3650 M4, 7915, update DVD image and copy the files needed for creating the PSoC only update package.

10.1 Code packages needed

In order to create the update package – CD / DVD, USB Memory, PXE, ISO image – the following code packages have to be downloaded:

- [Bootable Media Creator Software](#),
- [UpdateXpress System Pack Installer](#)
- [MCP Common Image](#)
- [Firmware Update for the ServeRAID M5110e PSoC3](#)

10.2 Downloading the software

All packages listed in Chapter "[10.1 Code packages needed](#)" are available via IBM FixCentral, a direct download link is provided in Chapter "[10.1 Code packages needed](#)".

- Note:** It is important that **all** files are downloaded as else the creation of the update medium and the update itself may not work at all.

Before each download ensure that prerequisite and co-requisite fixes are included in the download.

CAUTION: Do not assume that Fix Central will show you all the prerequisites you need.

Be sure to always click the **More information** link for additional prerequisite and other important fix information. Click [here](#) for an explanation of what prerequisites you can expect Fix Central to provide.

☒ Include prerequisites and co-requisite fixes (you can select the ones you need later)

10.2.1 Download the MCP common image

Invgy_utl_boot_tools-7.42_anyos_x86-64

MCP Common Image

The following files implement this fix.

↓ [Invgy_utl_boot_tools-7.42_anyos_x86-64.xml](#) (23.46 KB)

↓ [Invgy_utl_boot_tools-7.42_anyos_x86-64.zip](#) (200.26 MB)

↓ [Invgy_utl_boot_tools-7.4_anyos_x86-64.chg](#) (253 bytes)

↓ [Invgy_utl_boot_tools-7.4_anyos_x86-64.txt](#) (63 bytes)

10.2.2 Download the UpdateXpress System Pack Installer

Invgy_utl_uxspi_10.0_anyos_x86-64

UpdateXpress System Pack Installer

The following files implement this fix.

↓ [Invgy_utl_uxspi_10.0_anyos_noarch.chg](#) (9.17 KB)

↓ [Invgy_utl_uxspi_10.0_anyos_noarch.txt](#) (63.68 KB)

↓ [Invgy_utl_uxspi_10.0_anyos_x86-64.bin](#) (57.37 MB)

↓ [Invgy_utl_uxspi_10.0_anyos_x86-64.xml](#) (24.28 KB)

10.2.3 Download the Firmware Update for SR M5100e PSoC3

ibm_fw_psoc3_m5110e-36_linux_32-64

Firmware Update for ServeRAID M5110e PSoC3

The following files implement this fix.

↓ [ibm_fw_psoc3_m5110e-36_linux_32-64.bin](#) (976.51 KB)

↓ [ibm_fw_psoc3_m5110e-36_linux_32-64.chg](#) (418 bytes)

↓ [ibm_fw_psoc3_m5110e-36_linux_32-64.txt](#) (3.44 KB)

↓ [ibm_fw_psoc3_m5110e-36_linux_32-64.xml](#) (8.36 KB)

10.3 Directory structure for downloads

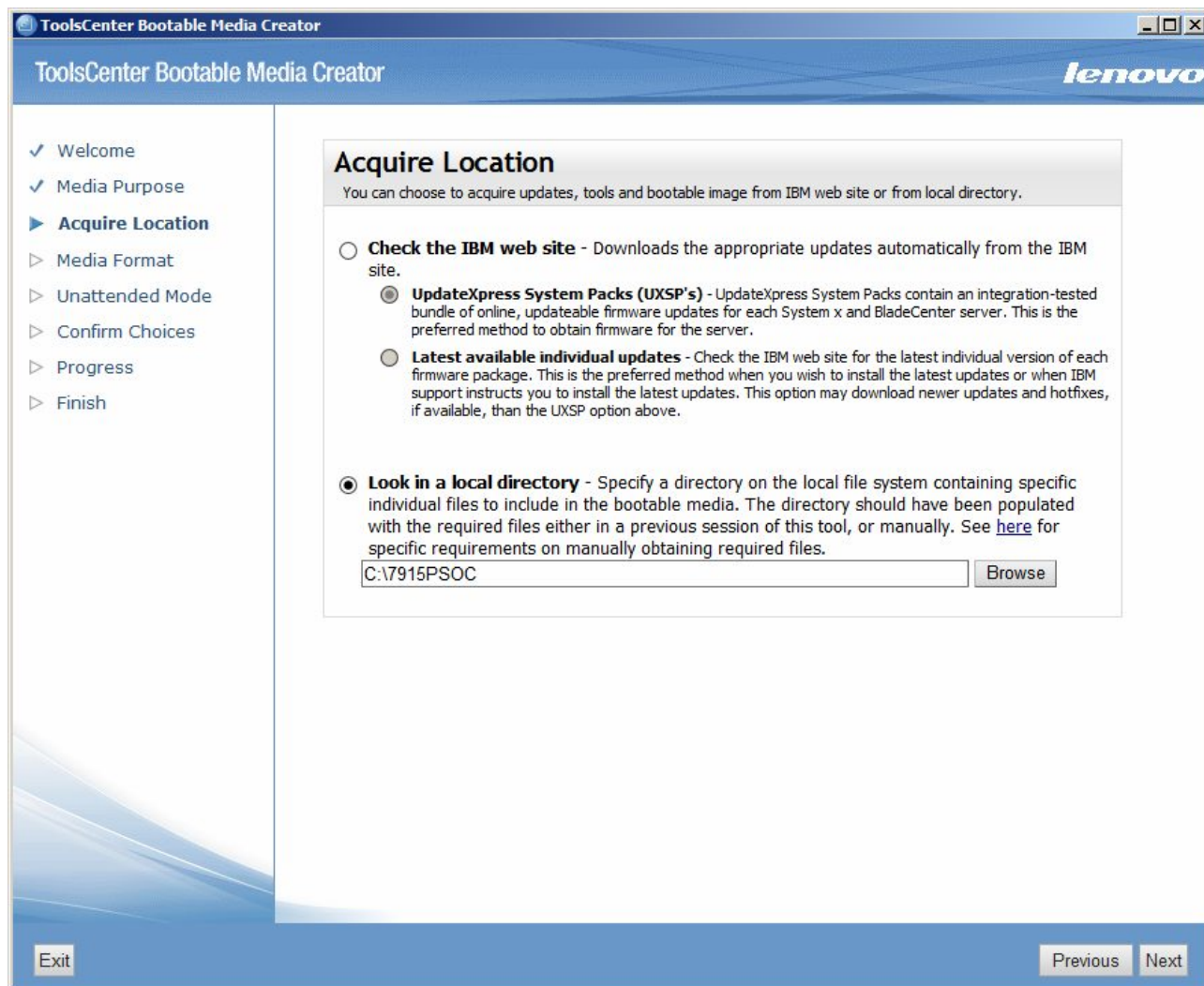
In order for the BoMC software to create the downloaded code packages need to be placed into a specific directory structure. For example if all code is located in the directory C:\7915PSOC then the downloaded files are to be placed into this directory as follows:

```
C:\7915PSOC
|   ibm_fw_psoc3_m5110e-36_linux_32-64.bin
|   ibm_fw_psoc3_m5110e-36_linux_32-64.chg
|   ibm_fw_psoc3_m5110e-36_linux_32-64.txt
|   ibm_fw_psoc3_m5110e-36_linux_32-64.xml
|   lnvgy_utl_boot_tools-7.42_anyos_x86-64.xml
|   lnvgy_utl_boot_tools-7.42_anyos_x86-64.zip
|   lnvgy_utl_boot_tools-7.4_anyos_x86-64.chg
|   lnvgy_utl_boot_tools-7.4_anyos_x86-64.txt
|
\---uxspi
    lnvgy_utl_uxspi_10.0_anyos_noarch.chg
    lnvgy_utl_uxspi_10.0_anyos_noarch.txt
    lnvgy_utl_uxspi_10.0_anyos_x86-64.bin
    lnvgy_utl_uxspi_10.0_anyos_x86-64.xml
```

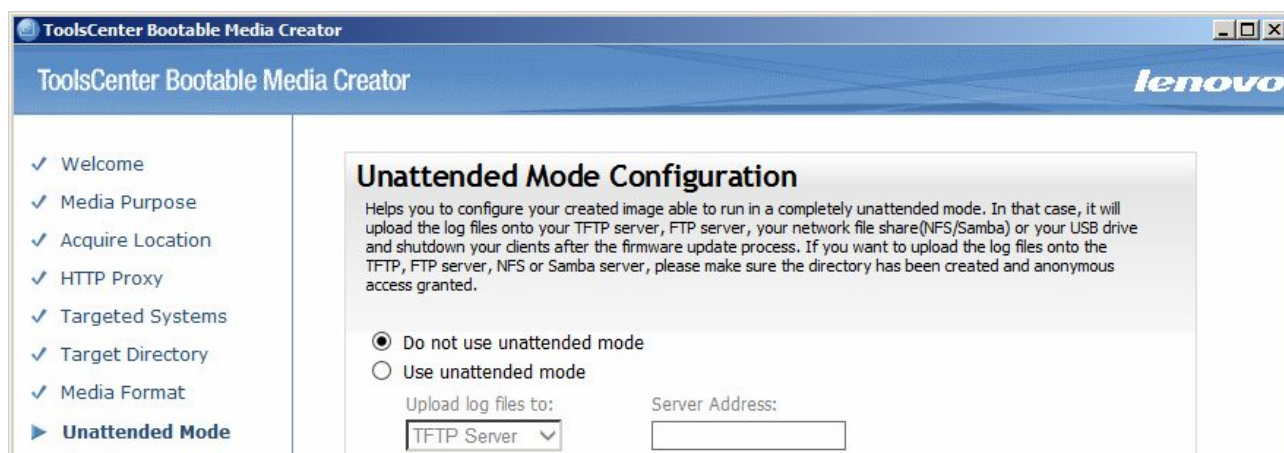
10.4 Running BoMC to create the update Media

For more detailed information see also Chapter "[8 Creating the Update ISO image with BoMC](#)".

The only change when creating the bootable media is selecting the directory containing the updates files in the "Acquire Location" section of the BoMC software:



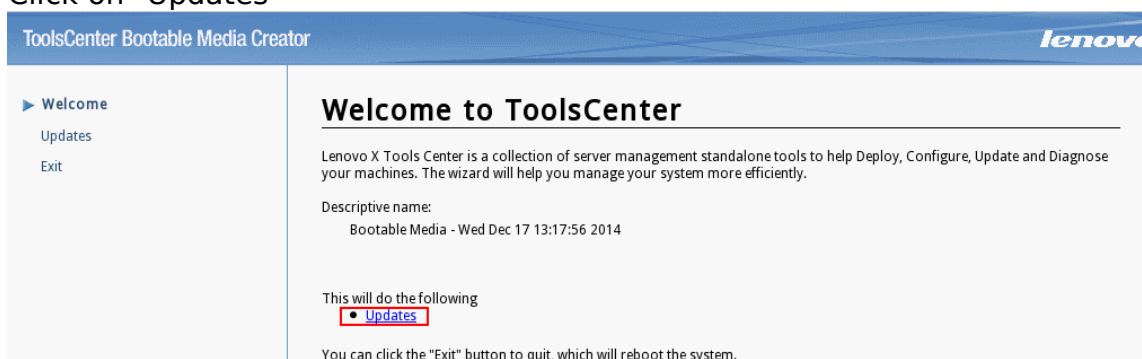
Chose "Do not use unattended mode" in order to be able to update the PSoC:



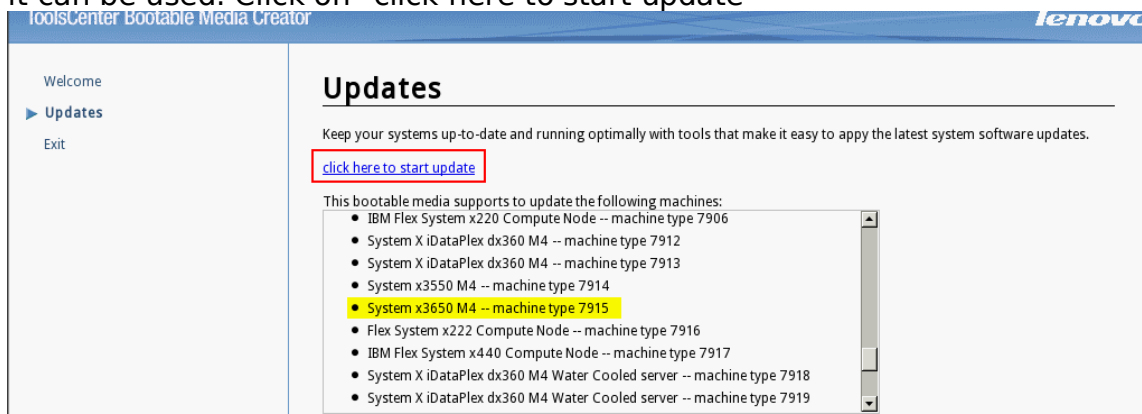
10.5 Performing the PSoC update

For more detailed information see also chapter "[9 Update the System x3650 M4 server](#)".

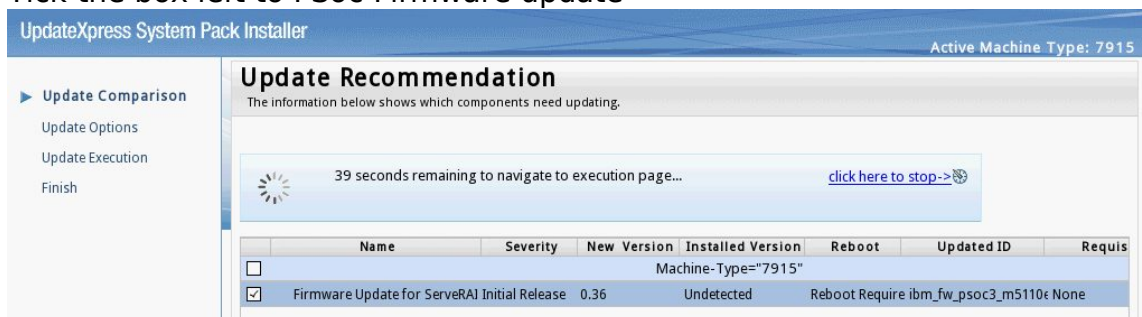
1. Boot off the update media
2. Click on "Updates"



3. The "Updates" window provides some general information and for what systems it can be used. Click on "click here to start update"



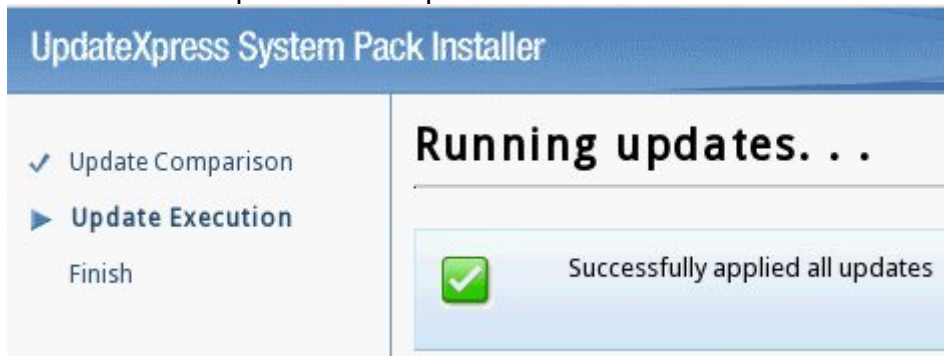
4. Tick the box left to PSoC Firmware update



Note: The update utility cannot recognise whether the PSoC update has to be applied. Because of this, this specific update has to be selected manually as shown in the above and below graphics. If it is not selected it will **not** be applied. This means that the PSoC code update can be applied repeatedly to the same sever

<input checked="" type="checkbox"/>	Firmware Update for ServerAI Initial Release	0.36	Undetected	Reboot Require	ibm_fw_psoc3_m5110e	None
-------------------------------------	--	------	------------	----------------	---------------------	------

5. Wait until the update is completed



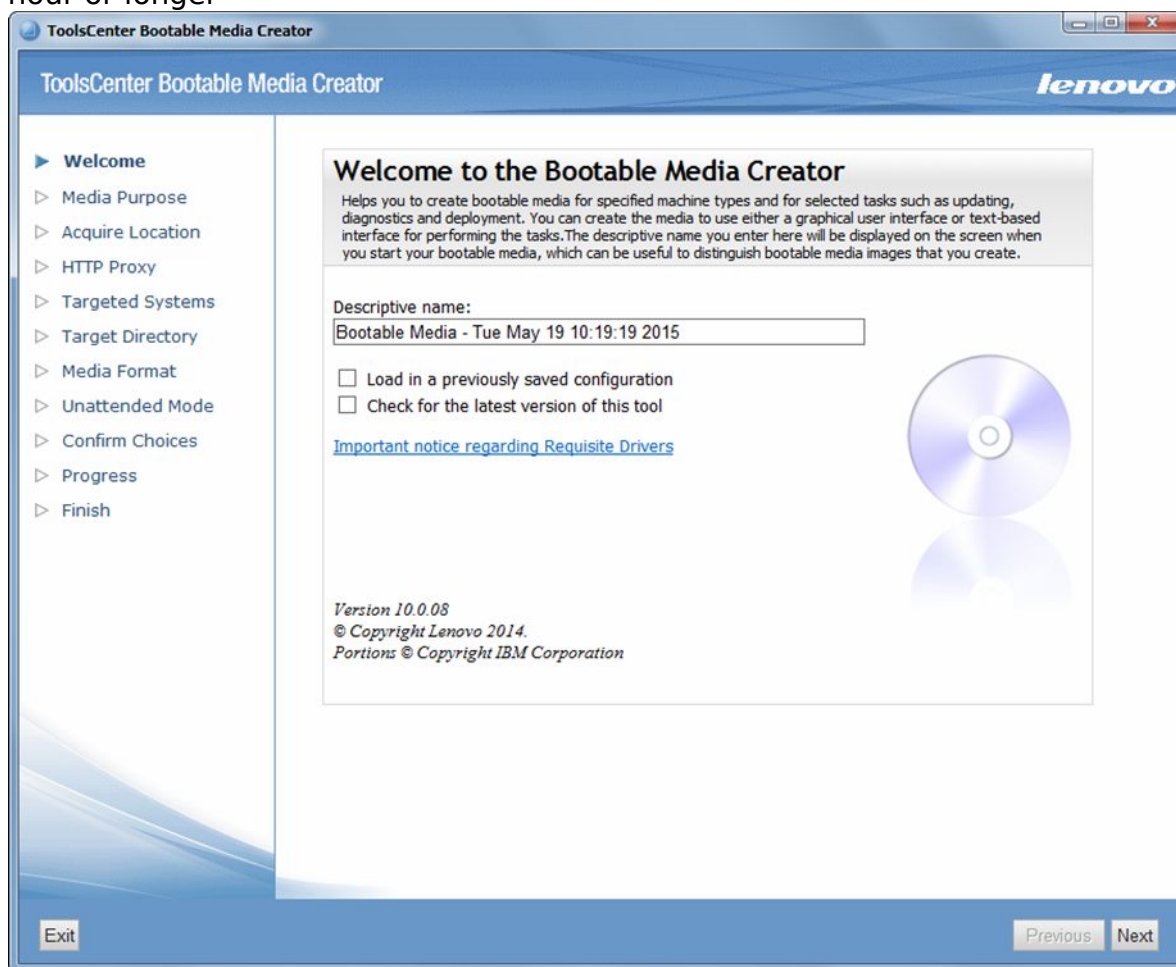
6. Click on "Finish" and follow any instructions to complete the update process, exit the update media , remove the update media if necessary and reboot the System x3650 M4, server

11 Updating the PSoC using a USB memory key

The following is a way to update the PSoC manually by using a USB memory key attached to a local laptop computer. A remote session to the System x3650 M4 will be established with this laptop computer.

Note: For remote access to the IMM2 of the System x3650 M4 the Integrated Management Module Standard Upgrade Feature on Demand key must be installed on the target IMM2 of the server.

1. Install formatted USB memory key into your laptop
2. Using BoMC creator generate a local bomc usb image. This can take at least one hour or longer



3. Once the key is created edit the start.sh file on the USB memory key with the following string:

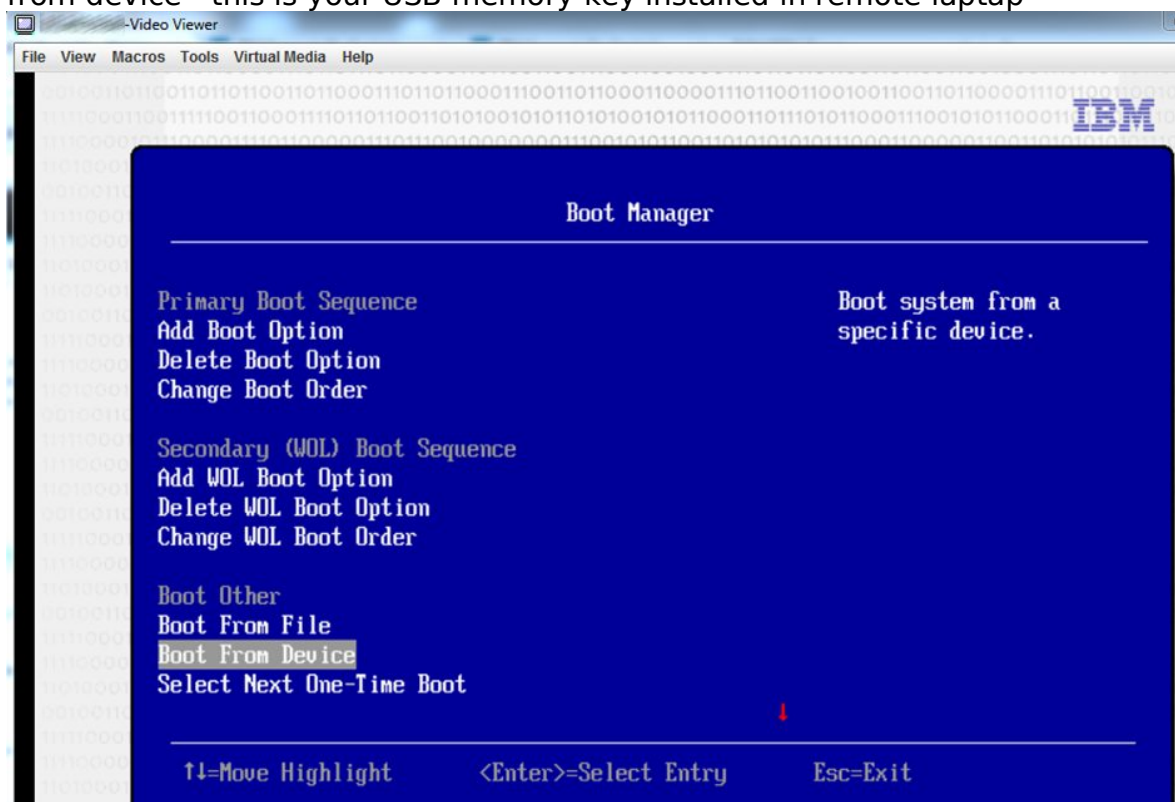
```
cd /toolscenter/
chmod -R +x * /dev/null 2>/dev/null
dos2unix /toolscenter/bomc.config > /dev/null 2>&1
cp -f /toolscenter/bomc.config /tmp/bomc.config
#disable Ctrl+z and Ctrl+c
trap "" 2 20
sh <----- enter sh string here ----->
BOMC_MENU=/toolscenter/menu/show_menu.sh
BOMC_LOG_FILE=/tmp/bomc.log
BOMC_REMOTE_CHECK=/toolscenter/menu/check_remote.sh
```

4. This sh will break out of the complete BoMC image and leave us with a MCP linux read only shell

5. If not present on the USB memory key copy `ibm_fw_psoc3_m5110e-36_linux_32-64.xml` and `ibm_fw_psoc3_m5110e-36_linux_32-64.xml` files to USB memory key

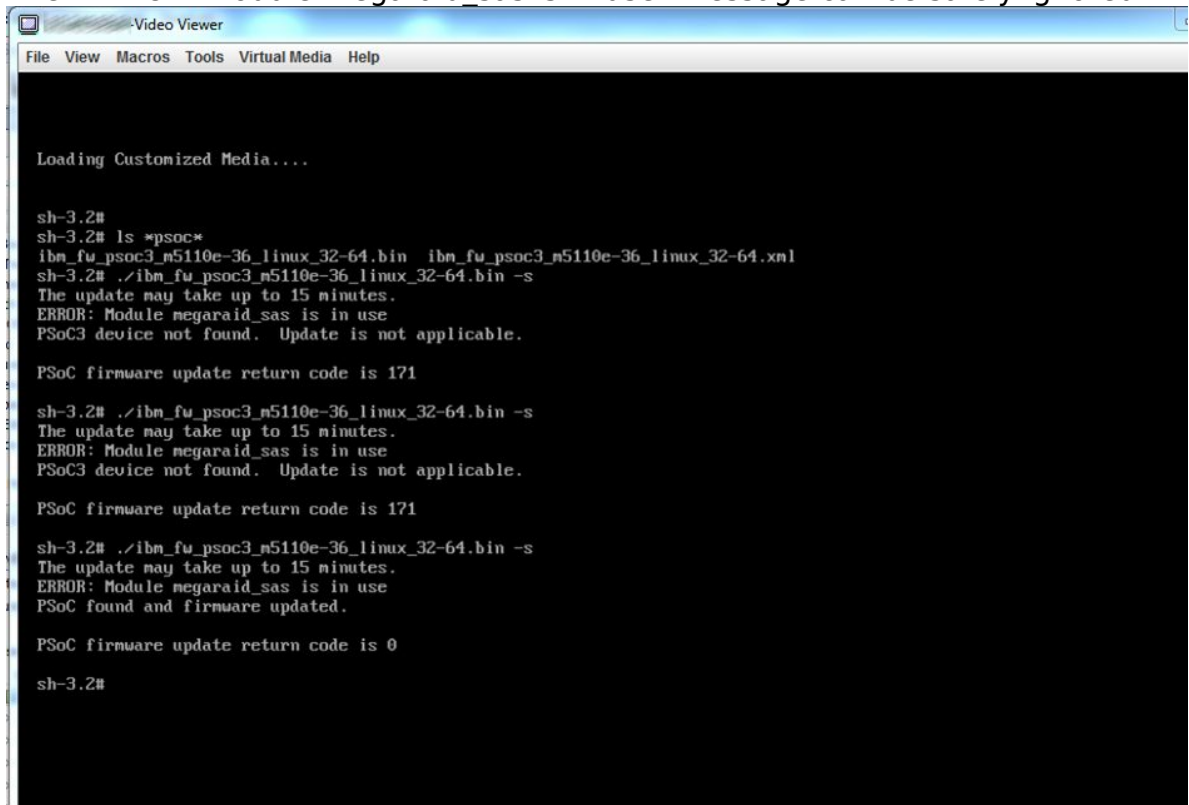
Now we are ready to remote boot the key.

1. Remote boot the system via the IMM2, press F2 during post and select boot from device - this is your USB memory key installed in remote laptop



2. Select imm remote storage boot option and wait for the linux kernel to load
3. Enter `./ibm_fw_psoc <hit tab> .bin -s`
Note: The tab key will automatically fill in the rest of name, that is autocomplete the name.

4. The "ERROR: Module megaraid_sas is in use" message can be safely ignored



```
Video Viewer
File View Macros Tools Virtual Media Help

Loading Customized Media....

sh-3.2#
sh-3.2# ls *psoc*
ibm_fw_psoc3_m5110e-36_linux_32-64.bin  ibm_fw_psoc3_m5110e-36_linux_32-64.xml
sh-3.2# ./ibm_fw_psoc3_m5110e-36_linux_32-64.bin -s
The update may take up to 15 minutes.
ERROR: Module megaraid_sas is in use
PSoC3 device not found. Update is not applicable.

PSoC firmware update return code is 171

sh-3.2# ./ibm_fw_psoc3_m5110e-36_linux_32-64.bin -s
The update may take up to 15 minutes.
ERROR: Module megaraid_sas is in use
PSoC3 device not found. Update is not applicable.

PSoC firmware update return code is 171

sh-3.2# ./ibm_fw_psoc3_m5110e-36_linux_32-64.bin -s
The update may take up to 15 minutes.
ERROR: Module megaraid_sas is in use
PSoC found and firmware updated.

PSoC firmware update return code is 0

sh-3.2#
```

12 Troubleshooting similar issues

It may be that after applying the PSoC code update the issue either still persists or a different issue may occur.

12.1 Issue persists after updating the PSoC code

The ServeRAID M5110 and M5110e HBA can either utilise "Standard" Cache Memory or Flash Cache Memory. Standard Cache Memory uses a battery to protect data stored in the Cache Memory in the event of a power failure. Flash Cache Memory is backed up with a capacitor which is either referred to as SuperCAP, supercapacitor, or CVPM, Cache Vault Power Module.

The M5110e disappearing issue will "persist" if Flash Cache Memory is in use as the charge of the super capacitor (CVPM) will hold the Programmable System-on-Chip (PSOC) in its current state until the supercapacitor is completely discharged, at which point the hang condition will clear and the system can be restarted. See also Retain tip [H213425](#) per support bulletin [MIGR-5096525](#) for further details.

In this case follow the instructions from Retain tip [H213255](#) per support bulletin [MIGR-5096194](#):

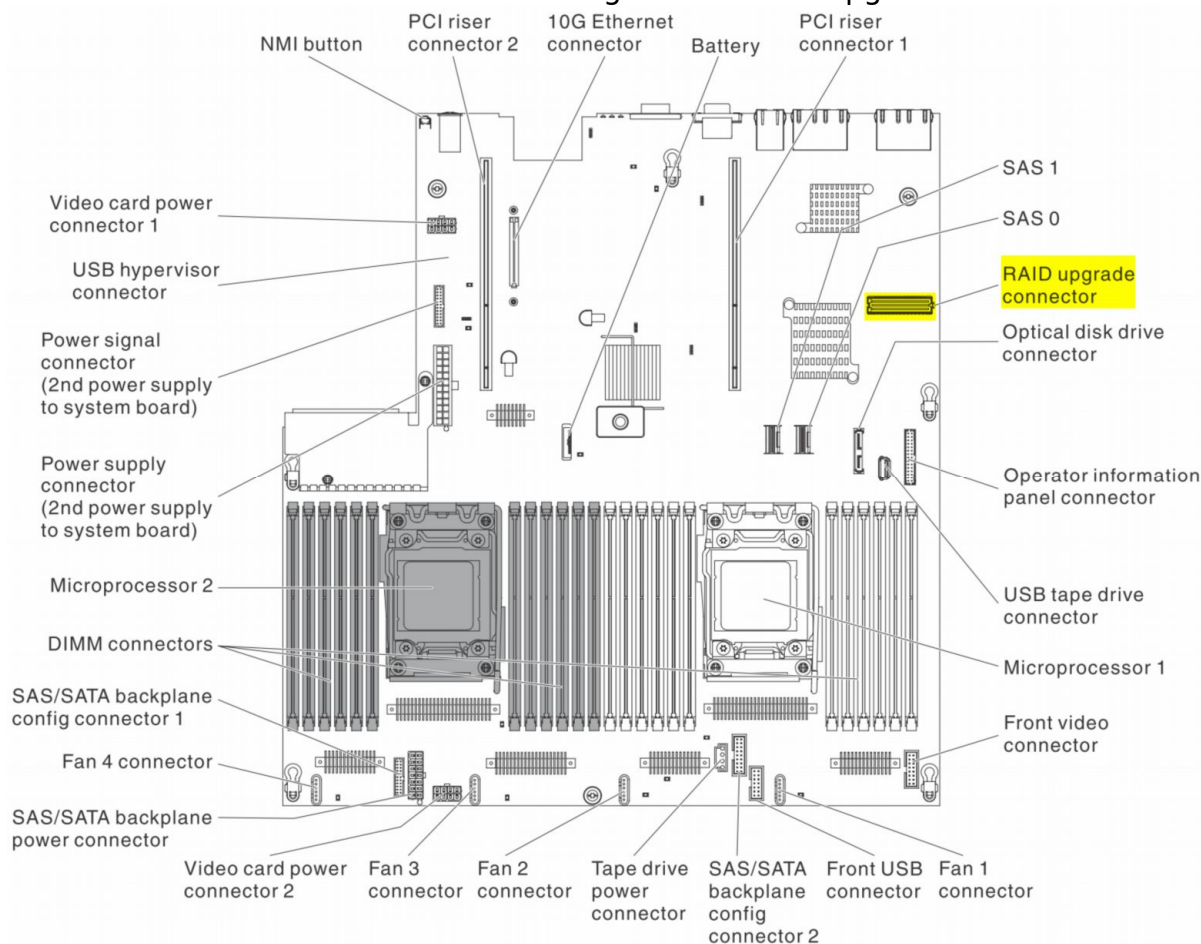
- Shutdown and power off the x3650 M4 host server
- Remove the AC power from the x3650 M4 host server for at least 10 minutes
- Check the LED on the Flash Cache Memory that it is off (not illuminated). This verifies that the Cache Vault Power Module is fully discharged. For further information see Chapter "[12.1.1 Locating the RAID Flash Cache Memory](#)" below
- Reconnect the AC power to the x3650 M4 host server
- Power up the x3650 M4 server

12.1.1 Locating the RAID Flash Cache Memory

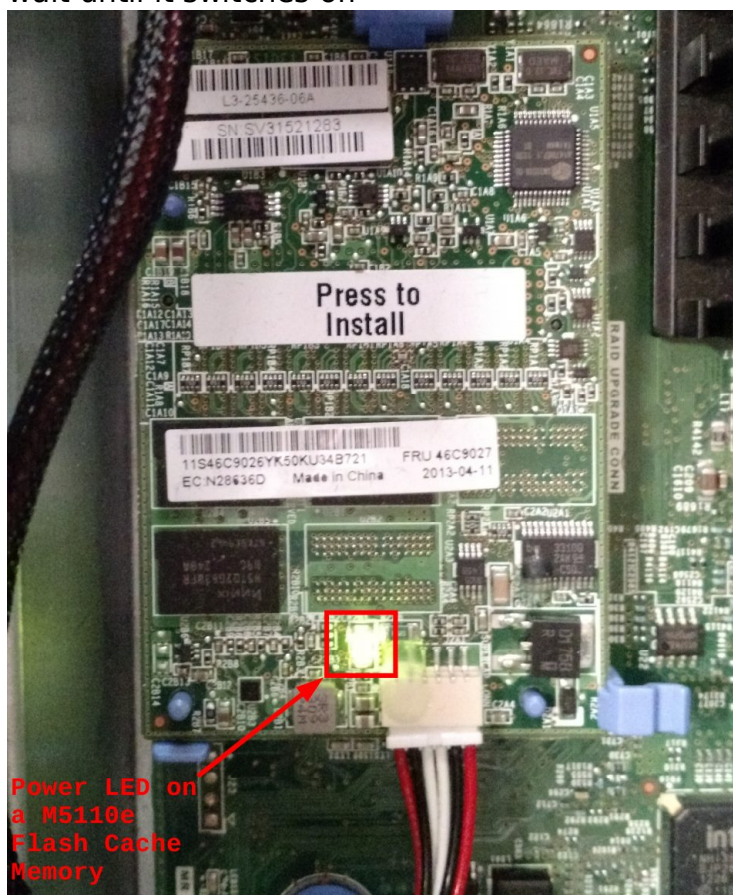
The ServeRAID M5110e RAID Cache Memory – both the standard and Flash Cache Memory – is attached to the system board. There can only be one RAID Cache Module attached to the system board at any time.

Perform these steps:

1. Open the System x3650 M4 top cover
2. Check the below system board connector diagram. The connector into which the RAID Cache is indicated in the below diagram as "RAID upgrade connector"



3. Check the status of the LED on the RAID Flash Cache Memory. If it is illuminated wait until it switches off



12.2 RAID Configuration lost with more than 8 HDDs

When more than 8 hard disk drives are installed in a x3650 M4 server then an additional hard disk drive backplane with attached SAS Expander card is used. If the SAS Expander firmware - also referred to backplane firmware - is v61A6 then the previous RAID Configuration may be gone after a system restart. However all disk drives are discovered by the server.

In this case the SAS Expander (backplane) firmware must be updated to at least v61B6 by using one of these methods:

- Bootable Media Creator tool and performing full server update, see also Chapter ["9 Update the System x3650 M4 server"](#)
- Using package [ibm_fw_exp_6gb-sas-61b6_linux_32-64](#)
- Using package [ibm_fw_exp_6gb-sas-61b6_windows_32-64](#)

For further details refer to Retain tip [H213861](#) per support bulletin [MIGR-5097170](#).

12.3 RAID Configuration is lost, disk drives are discovered

As a minimum a second hard disk drive backplane with attached SAS Expander needs to be installed in the server.

Check the following code levels:

- ServeRAID M5110e
- SAS Expander Firmware

If the SAS Expander firmware is v61A6, update it to v61B6 and update the firmware of the ServeRAID M5110e to the latest available code level.

12.4 Hard disk drives are not detected by host server

Prerequisites:

- A second hard disk drive backplane with attached SAS Expander card must be installed in the host server
- The PSoC code update does not cure the issue
- The instructions of Chapter "[12.1 Issue persists after updating the PSoC code](#)" have been followed without success
- After removing the second hard disk backplane with the attached SAS Expander the disk drives in slots 0 to 7 are recognised

If the SAS Expander firmware is v61A6 update it to v61B6 and update the firmware of the ServeRAID M5110e to the latest available code level.

12.5 If a similar issue still persists

If a similar issue still persists after updating the PSoC and following all other steps in Chapter "[12 Troubleshooting similar issues](#)" then contact the IBM / Lenovo support centre for further assistance.

13 IBM System x SSR

IBM System x System Service Representatives can perform the PSoC update with the BoMCsft2 tool. This requires that the USB memory key is updated to the latest level.

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