



Sun Fire™ X4100 and Sun Fire X4200 Servers Release Notes For Software Release 1.1

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Adobe PostScript

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Preface

This document contains procedures and special information for upgrading your Sun Fire X4100 or Sun Fire X4200 server to the Release 1.1 software upgrade bundle.

Related Documentation

For a description of the document set for the Sun Fire X4100 and Sun Fire X4200 servers, see the *Where To Find Documentation* sheet that is packed with your system and also posted at the product's documentation site. See the following URL, then navigate to your product.

<http://www.sun.com/documentation>

Translated versions of some of these documents are available at the web site described above in French, Simplified Chinese, Traditional Chinese, Korean, and Japanese. English documentation is revised more frequently and might be more up-to-date than the translated documentation.

For all Sun hardware documentation, see the following URL:

<http://www.sun.com/documentation>

For Solaris and other software documentation, see the following URL:

<http://docs.sun.com>

Product Updates

For product updates that you can download for the Sun Fire X4100 or Sun Fire X4200 servers, please visit the following Web site:

<http://www.sun.com/servers/entry/x4100/downloads.jsp>

This site contains updates for firmware and drivers, as well as CD-ROM .iso images.

Contacting Sun Technical Support

If you have technical questions about the Sun Fire X4100 or Sun Fire X4200 servers that are not answered in this document, go to:

<http://www.sun.com/service/contacting>

See the Support menu for links to the Knowledgebase.

If you need to contact Sun technical support, please have the following information available so that we can best assist you in resolving problems:

- Description of the problem, including the situation where the problem occurs and its impact on your operation
- Machine type, operating system version, and product version, including any patches and other software that might be affecting the problem
- Detailed steps on the methods you have used to reproduce the problem
- Any error logs or core dumps

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Flash Upgrading Your Server to Release 1.1

Note – It is recommended that you upgrade directly to the latest firmware and BIOS release available. Separate release notes with instructions for returning to earlier releases for troubleshooting or other reasons might also be provided at the document website where this document is published.

This chapter contains procedures and information for upgrading Sun Fire™ X4100 and Sun Fire X4200 servers from the initial Release 1.0 to Release 1.1. See the following sections:

- [“How to Flash Upgrade Your Server to Release 1.1” on page 2](#)
- [“How to Determine The Firmware Version of Your Server” on page 5](#)
- [“Running the Pre-Flash Script” on page 8](#)
- [“Special Considerations Regarding the ILOM Firmware Release 1.0.1 Update” on page 31](#)
- [“Recovering From a Failed Flash Update” on page 33](#)
- [“Upgrading LSI Firmware and BIOS” on page 38](#)
- [“Component Versions By Release” on page 38](#)

How to Flash Upgrade Your Server to Release 1.1

The Integrated Lights Out Manager (ILOM) firmware (FW) and BIOS are tightly coupled and are always updated together. The Release 1.1 Upgrade software bundle contains new ILOM FW and BIOS upgrades, plus a number of optional enhancements to the software that was shipped with earlier releases:

- ILOM FW version 1.0.1, which includes service processor (SP) build 10664 and BIOS 31.
- LSI controller FW 1.08.01 and BIOS 6.04.07.
- Windows drivers for LSI, version 1.20.17.
- New preinstalled Solaris operating system image, which includes Solaris 10 1/06, `raidctl` patch 119851-13, and 100 MB configured free to allow RAID configuration.
- New Sun Fire X4100 and Sun Fire X4200 Diagnostics CD image, which includes SunVTS 6.0 Patch Set 3.
- New Sun Installation Assistant CD image, which adds more support for the following operating systems: Red Hat Enterprise Linux 3 First Customer Ship (FCS) version, Red Hat Enterprise Linux 4 FCS, and SUSE Linux Enterprise Server 9 FCS.

The following section shows a summary of the steps you should perform to update your server from Release 1.0 to Release 1.1.

Summary of ILOM SP/BIOS Flash Upgrade Steps

1. Determine which version of the ILOM firmware that you currently have. See [“How to Determine The Firmware Version of Your Server”](#) on page 5.

Release Version	Firmware version	Firmware Build
Release 1.1	FW 1.0.2	10664
Release 1.0	FW 1.0.0	6464

2. Download and run the `ilom.X4100-preflash_1.2.sh` (or later) pre-flash script file to prepare your server for the flash upgrade.

For detailed instructions, including automated procedures for running the pre-flash script on multiple servers (with a sample automation scripts for copying), see [“Running the Pre-Flash Script”](#) on page 8. Download the file from this URL:

<http://www.sun.com/servers/entry/x4100/downloads.jsp>



Caution – Possible ILOM service processor damage: You must apply the pre-flash script to ILOM SPs that have firmware earlier than `r10664.rom.ima`, to avoid possible corruption of the SP. The flash recovery process from this corruption is complicated, and might not succeed, requiring replacement of the SP hardware (see [“Recovering From a Failed Flash Update”](#) on page 33 for details). The pre-flash script is only required for upgrading from ILOM SP versions earlier than `r10664.rom.ima`.

3. Review the section [“Special Considerations Regarding the ILOM Firmware Release 1.0.1 Update”](#) on page 31 for known issues and considerations regarding the flash upgrade.

4. Download the `r10664.rom.ima` flash image from the URL below:

<http://www.sun.com/servers/entry/x4100/downloads.jsp>

5. Use the ILOM GUI, the ILOM CLI `load` command, or N1 System Manager to perform the flash upgrade.

Because of the increased memory usage during web-based GUI operations, you might need to use N1 System Manager or the ILOM CLI `load` command to upgrade the ILOM firmware. See the N1 System Manager documentation or the *Integrated Lights-Out Manager Administration Guide*, 819-1160 for details of firmware flashing. For example:

From the ILOM CLI, use the following command

```
load -source tftp://<tftpserver>/<firmware.ima>
```

Online documentation for Sun N1 System Manager can be found at:

<http://docs.sun.com/coll/1283.2>



Caution – To ensure a successful flash upgrade, do *not* attempt to modify the ILOM configuration, or use other ILOM GUI, CLI, SNMP, or IPMI interfaces during the flash upgrade process. Wait until after the flash upgrade succeeds to make further ILOM configuration changes. Note that the ILOM upgrade procedure might reset the service processor if it detects recent ILOM configuration changes, or multiple ILOM users or connections.

Note – A firmware upgrade causes the server and ILOM to reset. An upgrade takes about 20 minutes to complete. ILOM will enter a special mode to load new firmware. No other tasks can be performed in ILOM until the firmware upgrade is complete and the ILOM is reset.

For full instructions on performing a flash upgrade, see the section, “How to Upgrade the ILOM Firmware” in the *Integrated Lights Out Manager (ILOM) Administration Guide*, 819-1160. You can find the document at this URL:

http://www.sun.com/products-n-solutions/hardware/docs/Servers/x64_servers/x4100/index.html

6. If you have any problems with the flash upgrade, refer to the section “[Recovering From a Failed Flash Update](#)” on page 33.

How to Determine The Firmware Version of Your Server

There are three alternate procedures in this section that you can use:

- [“Determining the Firmware Version Using the CLI Through the Management Ethernet Port”](#) on page 5
- [“Determining the Firmware Version Using the CLI Through the Serial Port”](#) on page 6
- [“Determining the Firmware Version Using the Web GUI”](#) on page 7

Determining the Firmware Version Using the CLI Through the Management Ethernet Port

1. Connect an RJ-45 Ethernet cable to the NET MGT Ethernet port on the back panel.
2. Establish an SSH connection using the following command, then enter the default password (changeme) when you are prompted:

```
# ssh -l root <SP IP address>  
changeme
```

After you have successfully logged in, the SP displays its default command prompt:
->

3. Type the `version` command, which will return output similar to the following:

```
-> version  
SP firmware version: 1.0  
SP firmware build number: 6464  
SP firmware date: Tue Sep 13 12:50:37 PDT 2005  
SP filesystem version: 0.1.13
```

The ILOM firmware build version is the `build number` listed above.

Determining the Firmware Version Using the CLI Through the Serial Port

1. **Configure your terminal device or the terminal emulation software running on a laptop or PC to the following settings:**
 - 8N1: eight data bits, no parity, one stop bit
 - 9600 baud
 - Disable hardware flow control (CTS/RTS)
 - Disable software flow control (XON/XOFF)

2. **Connect a serial cable from the RJ-45 SER MGT port on your server's back panel to your terminal device or PC.**

3. **Press Enter on the terminal device to establish a connection between that terminal device and the server's SP.**

The SP displays a login prompt.

```
SUNSP0003BA84D777 login:
```

In this example login prompt, *0003BA84D777* is the Ethernet MAC address of the SP. This will be different for each server.

4. **Log in to the ILOM SP and type the default user name (**root**) with the default password (**changeme**).**

After you have successfully logged in, the SP displays its default command prompt:

```
->
```

5. **Type the `version` command, which will return output similar to the following:**

```
-> version
```

```
SP firmware version: 1.0
```

```
SP firmware build number: 6464
```

```
SP firmware date: Tue Sep 13 12:50:37 PDT 2005
```

```
SP filesystem version: 0.1.13
```

The ILOM firmware build version is the `build number` listed above.

Determining the Firmware Version Using the Web GUI

1. **Connect to the ILOM Web GUI by typing the IP address of the server's SP into your browser's URL field. For example:**

`https://129.146.53.150`

2. **Log in to the ILOM SP and type the default user name (**root**) with the default password (**changeme**).**

The first web page that is presented is the System Information -> Versions page, which includes the Build Number.

Running the Pre-Flash Script

This section contains a summary of the pre-flash script process, followed by detailed instructions for supported operating system platforms.

- [“Summary Pre-Flash Script Procedure” on page 8](#)
- [“Detailed Pre-Flash Script Procedures” on page 9](#)
- [“Determining Whether the Pre-Flash Script Has Been Applied” on page 29](#)
- [“Locating ILOM Service Processor Addresses” on page 29](#)
- [“How to Reset the SP” on page 30](#)

Summary Pre-Flash Script Procedure

This `ilom.X4100-preflash_1.2.sh` (or later) pre-flash upgrade script prepares Sun Fire X4100 and Sun Fire X4200 ILOM service processors (SPs) for safe upgrade from versions earlier than `r10664.rom.ima` to the latest release. The pre-flash script is only required for upgrading from versions earlier than `r10664.rom.ima`.

To use this script, copy the script to each ILOM SP using the secure copy command `scp(1)`, then execute the script using the secure remote shell command `ssh(1)`. Use the `sunservice` shell account, which has the same password as the `root` account on the ILOM SP.

See the sample commands below:

```
ssh -l sunservice <spip_address> rm -f /coredump/*
scp <pre-flash script name> sunservice@<spip_address>:/coredump
ssh -l sunservice <spip_address> sh /coredump/<pre-flash script name>
```



Caution – The ILOM SP includes the `sunservice` user account, which shares the same password as the `root` account. It is provided solely to allow Sun Services personnel to perform diagnosis and recovery tasks. Customer use of the `sunservice` account might interfere with the correct operation of the ILOM SP and is not supported unless it is used to perform procedures documented by Sun Microsystems.

The script displays one of the following two messages upon completion:

- *** Success ***

If this message is displayed, the ILOM SP can be safely upgraded, using any of the firmware upgrade methods (CLI, GUI, Sun N1 System Manager), with or without configuration preservation. Return to [Step 3](#) of [“Summary of ILOM SP/BIOS Flash Upgrade Steps”](#) on page 3.

- *** Failure ***

If this message is displayed, reset the SP, then apply the pre-flash script again (see [“How to Reset the SP”](#) on page 30).

Detailed Pre-Flash Script Procedures

This section describes options for transferring the pre-flash script to the ILOM SP and running it on different OS platforms.

- [“Options For Linux and Solaris Platforms”](#) on page 10
- [“Options For Windows Platforms”](#) on page 20

Options For Linux and Solaris Platforms

- [“Transferring and Running the Script Using SSH and SCP” on page 10](#)
- [“Transferring and Running the Script using TFTP” on page 11](#)
- [“Transferring and Running the Script Using NFS” on page 12](#)
- [“Automated Solaris and Linux Procedure For Running the Script Using Expect and Tcl/Tk Software” on page 13](#)

Transferring and Running the Script Using SSH and SCP

This procedure can be done without logging in to the SP, by using the secure remote shell command `ssh(1)` and the secure copy command `scp(1)`.

Required Tools:

- `ssh`
- `scp`

1. Download the pre-flash script and save it in a known directory.

2. Copy the script to the SP using the following commands:

```
ssh sunservice@<sp ip address> rm -f /coredump/*
```

```
scp <pre-flash script name> sunservice@<sp ip address>:/coredump
```

3. Run the script using the following command:

```
ssh sunservice@<sp ip address> sh /coredump/<pre-flash script name>
```

4. The script displays one of the following two messages upon completion.

- `*** Success ***`

If this message is displayed, the ILOM SP can be safely upgraded, using any of the firmware upgrade methods (CLI, GUI, Sun N1 System Manager), with or without configuration preservation. Return to [Step 3 of “Summary of ILOM SP/BIOS Flash Upgrade Steps” on page 3](#).

- `*** Failure ***`

If this message is displayed, reset the SP, then apply the pre-flash script again (see [“How to Reset the SP” on page 30](#)).

Transferring and Running the Script using TFTP

Required Tools:

- Trivial file transfer protocol (TFTP) server

1. Set up a TFTP server or use an existing one.

Refer to your OS documentation for instructions on setting up a TFTP server.

2. Download and save the pre-flash script to your TFTP root directory.

3. Log in as the sunservice account.

Use sunservice as the user name and the root password for the password.

```
ssh sunservice@<sp ip address> rm -f /coredump/*
```

4. Transfer the pre-flash script to the SP using TFTP and the following commands:

```
cd /coredump
```

```
rm -f /coredump/*
```

```
tftp <tftp server IP address> -c get <pre-flash script name>
```

5. Run the pre-flash script:

```
sh /coredump/<pre-flash script name>
```

6. The script displays one of the following two messages upon completion.

- ***** Success *****

If this message is displayed, the ILOM SP can be safely upgraded, using any of the firmware upgrade methods (CLI, GUI, Sun N1 System Manager), with or without configuration preservation. Return to [Step 3](#) of “[Summary of ILOM SP/BIOS Flash Upgrade Steps](#)” on page 3.

- ***** Failure *****

If this message is displayed, reset the SP, then apply the pre-flash script again (see “[How to Reset the SP](#)” on page 30).

Transferring and Running the Script Using NFS

Required tools:

- A network file system (NFS) directory

1. Export an NFS directory if none is available.

2. Copy the pre-flash script to the exported NFS directory.

3. Log in to the SP as the sunservice account.

Use sunservice as the user name and the root password for the password.

4. Mount the NFS directory.

```
mount <nfs server>:<nfs directory> /mnt
```

5. Remove any current coredump files using the following commands:

```
cd /coredump
```

```
rm -f /coredump/*
```

6. Run the pre-flash script:

```
cd /mnt
```

```
sh <pre-flash script name>
```

7. The script displays one of the following two messages upon completion.

- ***** Success *****

If this message is displayed, the ILOM SP can be safely upgraded, using any of the firmware upgrade methods (CLI, GUI, Sun N1 System Manager), with or without configuration preservation. Return to [Step 3](#) of [“Summary of ILOM SP/BIOS Flash Upgrade Steps”](#) on page 3.

- ***** Failure *****

If this message is displayed, reset the SP, then apply the pre-flash script again (see [“How to Reset the SP”](#) on page 30).

Automated Solaris and Linux Procedure For Running the Script Using Expect and Tcl/Tk Software

Note – This procedure and the sample automated script text are also included in the README file that is included with the pre-flash script.

Required tools:

- Tool Command Language (Tcl) and Tk (toolkit) programming language software
- Expect software application

1. Install Tcl/Tk and Expect software, if not already installed.

You can download Expect from:

<http://expect.nist.gov>

- 2. Download the pre-flash script and save it in the same directory in which you saved the Expect files.**
- 3. Use the Start menu Run dialog and run `cmd.exe` to open a command shell.**
- 4. Change directory to the directory where you saved the Expect files and the pre-flash script.**
- 5. Create a new file named `apply.tcl` in the same directory as the pre-flash and Expect files.**
- 6. Copy and paste the code example from “Automated Solaris and Linux Script For Expect Software” on page 15 into `apply.tcl`.**
- 7. Save your changes to `apply.tcl`.**

8. Run the `apply.tcl` file on the command shell with the following command and options:

```
expect apply.tcl [options]
```

Note – To automate running the script on multiple SPs, put all the SP IP addresses into a file that can be read by the script. List only one SP IP address per line. Then supply the file name to the script below with the `-splist` option. See the table below for all script options.

Script Options	Explanation
<code>-sp <ip address></code> or <code>-splist <file name></code>	The IP address of the server's ILOM SP. The file that lists all the SPs to update, for automated multiple-server upgrades.
<code>-password <password></code>	The root password if the default password is not used.
<code>-scriptname <name></code>	The pre-flash script name, if the default is not used.
<code>-query</code>	Query whether the pre-flash script has already been run.

9. The script displays one of the following two messages upon completion.

■ ***** Success *****

If this message is displayed, the ILOM SP can be safely upgraded, using any of the firmware upgrade methods (CLI, GUI, Sun N1 System Manager), with or without configuration preservation. Return to [Step 3 of “Summary of ILOM SP/BIOS Flash Upgrade Steps” on page 3](#).

■ ***** Failure *****

If this message is displayed, reset the SP, then apply the pre-flash script again (see [“How to Reset the SP” on page 30](#)).

Automated Solaris and Linux Script For Expect Software

----- Solaris and Linux Script Begin -----

```
# Setting some default option
sp      ""
    user      "sunservice"
    passwd    "changeme"
    scriptname "ilom.X4100-preflash_1.2.sh"
    splist    ""
    query     ""
}

proc parse_arg {argc argv} {
    global OPT
    set i 0
    while { $i < $argc } {
        set arg [ lindex $argv $i ]
        incr i
        switch -exact -- $arg {
            "-sp"          { set OPT(sp) [lindex $argv $i]; incr i }
            "-user"        { set OPT(user) [lindex $argv $i]; incr i }
            "-passwd"      { set OPT(passwd) [lindex $argv $i]; incr i }
            "-scriptname"  { set OPT(scriptname) [lindex $argv $i]; incr i }
            "-splist"      { set OPT(splist) [lindex $argv $i]; incr i }
            "-query"       { set OPT(query) "true" }
            default        { puts "Unknown option: $arg"; exit 1 }
        }
    }
}

proc copy_script {} {
    global OPT

    puts "Clear space in $OPT(user)@$OPT(sp):/coredump\n"
    spawn ssh -oUserKnownHostsFile=/dev/null $OPT(user)@$OPT(sp) "rm -f /coredump/core.*"
    expect {
        "(y/n)?" {
            exp_send "n"
        }
    }; exp_continue
} " (yes/no)?" {
```

```

                exp_send "yes
"; exp_continue
    } "password:" {
        exp_send "$OPT(passwd)
"; exp_continue
    } timeout {
        puts "\n$OPT(scriptname) FAIL: timeout"; return 1
    }
}
puts "Copy $OPT(scriptname) to $OPT(user)@$OPT(sp):/coredump\n"
spawn scp -oUserKnownHostsFile=/dev/null $OPT(scriptname) $OPT(user)@$OPT(sp):/coredump
expect {
    "(y/n)?" {
        exp_send "n
"; exp_continue
    } "(yes/no)?" {
        exp_send "yes
"; exp_continue
    } "password:" {
        exp_send "$OPT(passwd)
"; exp_continue
    } "100%" {
        puts "\nStill copying $OPT(scriptname) to $OPT(sp)"
                                                sleep 15
        puts "\ncopy $OPT(scriptname) to $OPT(sp) done\n"
    } timeout {
        puts "\nUnable to copy $OPT(scriptname) to $OPT(sp)"; return 1    } eof {
        puts "\nUnable to copy $OPT(scriptname) to $OPT(sp)"; return 1
    }
}
return 0
}

proc exec_script {} {
    global OPT

    puts "Executing $OPT(user)@$OPT(sp):/coredump/$OPT(scriptname)"
    spawn ssh -oUserKnownHostsFile=/dev/null $OPT(user)@$OPT(sp) sh
/coredump/$OPT(scriptname)
    expect {
        "(y/n)?" {
            exp_send "n

```

```

"; exp_continue
    } "(yes/no)?" {
        exp_send "yes
"; exp_continue
    } "password:" {
        exp_send "$OPT(passwd)
"; exp_continue
    } "Success" {
        puts "\n$OPT(scriptname) SUCCEED"
    } "Failure" {
        puts "\n$OPT(scriptname) FAIL"; return 1
    } timeout {
        puts "\n$OPT(scriptname) FAIL: timeout"; return 1
    } eof {
        puts "\n$OPT(scriptname) FAIL"; return 1
    }
}
return 0
}

proc query_script {} {
    global OPT

    puts "Querying $OPT(user)@$OPT(sp)"
    spawn ssh -oUserKnownHostsFile=/dev/null $OPT(user)@$OPT(sp) ls -ltd /var/patchit
    expect {
        "(y/n)?" {
            exp_send "n
"; exp_continue
        } "(yes/no)?" {
            exp_send "yes
"; exp_continue
        } "password:" {
            exp_send "$OPT(passwd)
"; exp_continue
        } "Success" {
            puts "\n$OPT(scriptname) SUCCEED"
        } "drwx" {
            puts "\n$OPT(scriptname) already run on $OPT(sp)"; return 1
        } "No such file" {
            puts "\n$OPT(scriptname) not yet run on $OPT(sp)"; return 1

```

```

    } timeout {
        puts "\n$OPT(scriptname) FAIL: timeout"; return 1
    } eof {
        puts "\n$OPT(scriptname) FAIL"; return 1
    }
}
return 0
}

parse_arg $argc $argv

if { [file exist $OPT(scriptname)] == 0 } {
    puts "$OPT(scriptname) does not exist or inaccessible\n"
    exit 255
}

if {$OPT(sp) != ""} {
    if {$OPT(query) != ""} {
        query_script
    } elseif { [copy_script] == 0 } {
        exec_script
    }
} elseif { $OPT(splist) != "" } {
    if { [file exist $OPT(splist)] == 1 } {
        set splistfile [open $OPT(splist) r]
        while { [gets $splistfile ipaddr] >= 0 } {
            set OPT(sp) $ipaddr
            if {$OPT(query) != ""} {
                query_script
            } elseif { [copy_script] == 0 } {
                exec_script
            }
        }
    }
} else {
    puts "SP list file $OPT(splist) does not exist\n"
}

} else {
    puts "\nUsage:          $argv0 -sp <sp ipaddress> "
    puts "                    (or)"
    puts "                    $argv0 -splist <filename that lists all SP ipaddress to"
    puts "                    update> "
    puts "\nOther options:"
    puts "                    -passwd <password> : root password if not default"
}

```

```
    puts "                -scriptname <name> : preflash scriptname if not default"
    puts "                -query           : query if preflash script has already
been run"
    puts "\n"
    exit 1
}
```

----- **Solaris and Linux Script End** -----

Options For Windows Platforms

- “Transferring and Running the Script Using PuTTY” on page 20
- “Transferring and Running the Script using TFTP” on page 21
- “Automated Windows Procedure For Running the Script Using Expect and PuTTY Software” on page 22

Transferring and Running the Script Using PuTTY

Required Tools:

- PuTTY software, including `plink.exe` (command line) and `pscp.exe`.

1. Download PuTTY `plink.exe` and `pscp.exe` files and save them in a directory.

You can download these files from:

<http://www.chiark.greenend.org.uk/~sgtatham/putty/>

2. Download the pre-flash script and save it in the same directory in which you saved the PuTTY files.

3. Use the Start menu Run dialog and run `cmd.exe` to open a command shell.

4. Go to the directory where you saved the PuTTY files and the pre-flash script.

5. Copy the pre-flash script to the SP with the following PuTTY commands:

```
plink sunservice@<sp ip address> "rm -f /coredump/*"
```

```
pscp <pre-flash script name> sunservice@<sp ip address>:/coredump
```

6. Run the pre-flash script on the SP with the following PuTTY command:

```
plink sunservice@<sp ip address> "sh /coredump/<pre-flash script name>"
```

7. The script displays one of the following two messages upon completion.

- ***** Success *****

If this message is displayed, the ILOM SP can be safely upgraded, using any of the firmware upgrade methods (CLI, GUI, Sun N1 System Manager), with or without configuration preservation. Return to [Step 3](#) of “[Summary of ILOM SP/BIOS Flash Upgrade Steps](#)” on page 3.

- ***** Failure *****

If this message is displayed, reset the SP, then apply the pre-flash script again (see “[How to Reset the SP](#)” on page 30).

Transferring and Running the Script using TFTP

Required Tools:

- TFTP server software: `tftpd32.exe`

Optional Tools:

- PuTTY software, including `plink.exe` (command line)

1. Download the `tftpd32.exe` file and save it in a directory.

You can download this file from:

<http://tftpd32.jounin.net>

Note – This TFTP server does not require installation. The `tftpd32` software will make all the files in the directory it is launched from available for TFTP. It can be started and stopped as desired.

2. Download and save the pre-flash script into the same directory in which you saved `tftpd32.exe`.

3. Start `tftpd32.exe` by running it from a command shell, or use File Browser to start it.

4. Make note of the IP address of the TFTP server that `tftpd32` reports.

5. Log in to the SP as the `sunservice` account.

Use `sunservice` as the user name and the root password for the password.

6. Transfer and run the pre-flash script on the SP with following commands:

```
plink sunservice@<sp ip address> "rm -f /coredump/*"  
cd /coredump  
tftp <tftp server IP address> -c get <pre-flash script name>  
sh <pre-flash script name>
```

7. The script displays one of the following two messages upon completion.

- `*** Success ***`

If this message is displayed, the ILOM SP can be safely upgraded, using any of the firmware upgrade methods (CLI, GUI, Sun N1 System Manager), with or without configuration preservation. Return to [Step 3 of “Summary of ILOM SP/BIOS Flash Upgrade Steps” on page 3](#).

- `*** Failure ***.`

If this message is displayed, reset the SP, then apply the pre-flash script again (see [“How to Reset the SP” on page 30](#)).

Automated Windows Procedure For Running the Script Using Expect and PuTTY Software

Note – This procedure and the sample automated script text are also included in the README file that is included with the pre-flash script.

Required tools:

- Tool Command Language (Tcl) and Tk (toolkit) programming language software
- Expect software application

1. Install Tcl/Tk and Expect software, if not already installed.

You can download Expect from:

<http://expect.nist.gov>

- 2. Download the pre-flash script and save it in the same directory in which you saved the Expect files.**
- 3. Use the Start menu Run dialog and run `cmd.exe` to open a command shell.**
- 4. Change directory to the directory where you saved the Expect files and the pre-flash script.**
- 5. Create a new file named `apply.tcl` in the same directory as the pre-flash and Expect files.**
- 6. Copy and paste the code example from “Automated Windows Script For Expect Software” on page 24 into `apply.tcl`.**
- 7. Save your changes to `apply.tcl`.**

8. Run the `apply.tcl` file on the command shell with the following command and options:

```
expect apply.tcl [options]
```

Note – To automate running the script on multiple SPs, put all the SP IP addresses into a file that can be read by the script. List only one SP IP address per line. Then supply the file name to the script below with the `-splist` option. See the table below for all script options.

Script Options	Explanation
<code>-sp <ip address></code>	The IP address of the server's ILOM SP.
or	
<code>-splist <file name></code>	The file that lists all the SPs to update, for automated multiple-server upgrades.
<code>-password <password></code>	The root password if the default password is not used.
<code>-scriptname <name></code>	The pre-flash scriptname, if the default is not used.
<code>-query</code>	Query whether the pre-flash script has already been run.

9. The script displays one of the following two messages upon completion.

■ ***** Success *****

If this message is displayed, the ILOM SP can be safely upgraded, using any of the firmware upgrade methods (CLI, GUI, Sun N1 System Manager), with or without configuration preservation. Return to [Step 3 of “Summary of ILOM SP/BIOS Flash Upgrade Steps” on page 3](#).

■ ***** Failure *****

If this message is displayed, reset the SP, then apply the pre-flash script again (see [“How to Reset the SP” on page 30](#)).

Automated Windows Script For Expect Software

-----**Windows Script Start** -----

```
#!/bin/sh
#
# Copyright 2006 Sun Microsystems, Inc. All rights reserved.
# Use is subject to license terms.
#
# \
exec tclsh "$0" ${1+"$@"}
package require Expect

# Setting some default option
array set OPT {
    sp      ""
    user    "sunservice"
    passwd  "changeme"
    scriptname "ilom.X4100-preflash_1.2.sh"
    splist  ""
    query   ""
}

proc parse_arg {argc argv} {
    global OPT
    set i 0
    while { $i < $argc } {
        set arg [ lindex $argv $i ]
        incr i
        switch -exact -- $arg {
            "-sp"          { set OPT(sp) [lindex $argv $i]; incr i }
            "-user"        { set OPT(user) [lindex $argv $i]; incr i }
            "-passwd"      { set OPT(passwd) [lindex $argv $i]; incr i }
            "-scriptname"  { set OPT(scriptname) [lindex $argv $i]; incr i }
            "-splist"      { set OPT(splist) [lindex $argv $i]; incr i }
            "-query"       { set OPT(query) "true" }
            default        { puts "Unknown option: $arg"; exit 1 }
        }
    }
}

proc copy_script {} {
```

```

global OPT

puts "Clear space in $OPT(user)@$OPT(sp):/coredump\n"
spawn plink -ssh $OPT(user)@$OPT(sp) "rm -f /coredump/core.*"
expect {
    "(y/n)?" {
        exp_send "n"
}; exp_continue
    "(yes/no)?" {
        exp_send "yes"
}; exp_continue
    "password:" {
        exp_send "$OPT(passwd)
}; exp_continue
    } timeout {
        puts "\n$OPT(scriptname) FAIL: timeout"; return 1
    }
}
puts "Copy $OPT(scriptname) to $OPT(user)@$OPT(sp):/coredump\n"
spawn pscp $OPT(scriptname) $OPT(user)@$OPT(sp):/coredump
expect {
    "(y/n)?" {
        exp_send "n"
}; exp_continue
    "(yes/no)?" {
        exp_send "yes"
}; exp_continue
    "password:" {
        exp_send "$OPT(passwd)
}; exp_continue
    } "100%" {
        puts "\nStill copying $OPT(scriptname) to $OPT(sp)"
                                                sleep 15
        puts "\ncopy $OPT(scriptname) to $OPT(sp) done\n"
    } timeout {
        puts "\nUnable to copy $OPT(scriptname) to $OPT(sp)"; return 1    } eof {
        puts "\nUnable to copy $OPT(scriptname) to $OPT(sp)"; return 1
    }
}
return 0
}

```

```

proc exec_script {} {
    global OPT

    puts "Executing $OPT(user)@$OPT(sp):/coredump/$OPT(scriptname)"
    spawn plink -ssh $OPT(user)@$OPT(sp) sh /coredump/$OPT(scriptname)
    expect {
        "(y/n)?" {
            exp_send "n"
        }; exp_continue
        "(yes/no)?" {
            exp_send "yes"
        }; exp_continue
        "password:" {
            exp_send "$OPT(passwd)"
        }; exp_continue
        "Success" {
            puts "\n$OPT(scriptname) SUCCEED"
        }
        "Failure" {
            puts "\n$OPT(scriptname) FAIL"; return 1
        }
        timeout {
            puts "\n$OPT(scriptname) FAIL: timeout"; return 1
        }
        eof {
            puts "\n$OPT(scriptname) FAIL"; return 1
        }
    }
    return 0
}

```

```

proc query_script {} {
    global OPT

    puts "Querying $OPT(user)@$OPT(sp)"
    spawn plink -ssh $OPT(user)@$OPT(sp) ls -ltd /var/patchit
    expect {
        "(y/n)?" {
            exp_send "n"
        }; exp_continue
        "(yes/no)?" {
            exp_send "yes"
        }; exp_continue
    }
}

```

```

        } "password:" {
            exp_send "$OPT(passwd)
"; exp_continue
        } "Success" {
            puts "\n$OPT(scriptname) SUCCEEDED"
        } "drwx" {
            puts "\n$OPT(scriptname) already run on $OPT(sp)"; return 1
        } "No such file" {
            puts "\n$OPT(scriptname) not yet run on $OPT(sp)"; return 1
        } timeout {
            puts "\n$OPT(scriptname) FAIL: timeout"; return 1
        } eof {
            puts "\n$OPT(scriptname) FAIL"; return 1
        }
    }
    return 0
}

```

```

parse_arg $argc $argv

```

```

if { [file exist $OPT(scriptname)] == 0 } {
    puts "$OPT(scriptname) does not exist or inaccessible\n"
    exit 255
}

```

```

if {$OPT(sp) != ""} {
    if {$OPT(query) != ""} {
        query_script
    } elseif { [copy_script] == 0 } {
        exec_script
    }
} elseif { $OPT(splist) != "" } {
    if { [file exist $OPT(splist)] == 1 } {
        set splistfile [open $OPT(splist) r]
        while { [gets $splistfile ipaddr] >= 0 } {
            set OPT(sp) $ipaddr
            if {$OPT(query) != ""} {
                query_script
            } elseif { [copy_script] == 0 } {
                exec_script
            }
        }
    }
}

```

```

    }
} else {
    puts "SP list file $OPT(splist) does not exist\n"
}
} else {
    puts "\nUsage:          $argv0 -sp <sp ipaddress> "
    puts "                    (or)"
    puts "                    $argv0 -splist <filename that lists all SP ipaddress to
update> "
    puts "\nOther options:"
    puts "                    -passwd <password> : root password if not default"
    puts "                    -scriptname <name> : preflash scriptname if not default"
    puts "                    -query           : query if preflash script has already
been run"
    puts "\n"
    exit 1
}
-----Windows Script End -----

```

Determining Whether the Pre-Flash Script Has Been Applied

There are several methods you can use to determine whether the pre-flash script has been applied.

- The pre-flash script prints the following messages at the conclusion of a successful pre-flash process:

```
*** Patch installed ***  
  
You may now upgrade your firmware  
  
Please ensure you upgrade to the latest version available.  
  
*** Success ***
```

- You can also use the following command to verify that the pre-flash script has been successfully applied.

```
ssh sunservice@<sp ip address> ls /var/patchit
```

If the text returned does *not* contain the following message, then the patch is applied and running.

```
No such file or directory
```

- The automated methods for applying the pre-flash script provide a `-query` option that you can use to determine whether the pre-flash script was applied. See [“Automated Solaris and Linux Procedure For Running the Script Using Expect and Tcl/Tk Software”](#) on page 13 and [“Automated Windows Procedure For Running the Script Using Expect and PuTTY Software”](#) on page 22.

Locating ILOM Service Processor Addresses

There are several methods you can use to locate ILOM SPs and their IP addresses.

- Sun N1 System Manager. Sun N1 System Manager provides the capability to display the ILOM SP addresses of managed systems with the `n1sh` command.

For example, the following command can be used to create a list of Sun Fire X4100 and Sun Fire X4200 servers:

```
n1sh show server | grep 'X4[12]00'
```

- DHCP server. See “ILOM Initial Setup” in the Integrated Lights Out Manager Administration Guide (819-1160) for instructions on how to determine the IP address of a single server.
- Linux and Solaris open-source `nmap` command. The open-source `nmap` command provides a `-p` port option to scan for port 623, which can be used to quickly detect IPMI-enabled devices on a network. For example:

```
nmap -p 623 10.6.154.1/24
```

How to Reset the SP

To reset the ILOM SP, there are several methods you can use (for complete details, see the *Integrated Lights-Out Manager Administration Guide*, 819-1160):

- From the ILOM SP graphical web interface, navigate to the Maintenance tab, then use the Reset SP action.
- From the ILOM CLI, use the following command:
reset /SP
- Using IPMItool, use the following command:
ipmitool -U root -P <password> -H <sp_ipaddress> bmc reset cold
- You can also reset the ILOM SP by shutting down the host, then removing and restoring AC power cords to the system.

Special Considerations Regarding the ILOM Firmware Release 1.0.1 Update

This section describes considerations that might affect the firmware upgrade.

Flash Upgrades From SP Build 6464 to Build 10644 Fail With Bad /conf Partition (6415975)

These servers provide a combined ILOM service processor and BIOS firmware upgrade option. Flaws have been discovered in the ILOM upgrade feature, which may result in corruption of the ILOM service processor firmware and the motherboard SUN FRU ID record.

Workaround

Run the supplied preflash script on the service processor before upgrading the ILOM firmware. For detailed instructions, see [“Running the Pre-Flash Script” on page 8](#).

FRU Information Appears Empty After Updating the ILOM Firmware and the BIOS (6406138)

The host CPU and DIMM FRU information shown by the service processor is provided to the service processor during each BIOS power-on-self-test (POST). Therefore, after a BIOS/ILOM upgrade, this FRU information is empty until the first host BIOS POST.

Workaround

This is expected behavior. Reset the server and allow it to complete POST during bootup to repopulate the FRU lists.

Considerations When Starting the Update On Systems With ILOM Versions Earlier than 6464

If you were a Beta or Early Access customer, you might have a system with an ILOM version earlier than 6464.

Note – To determine the release of your server, see the procedures in [“How to Determine The Firmware Version of Your Server” on page 5](#).

- If the release is earlier than 6169, you must return the Graphics Redirect and Service Processor (GRASP) board to the factory for reprogramming. See “BIOS Upgrades Fail When Upgrading SP Firmware Older Than Version 6169 (6324746)” in the *Sun Fire X4100 and Sun Fire X4200 Servers Product Notes*, 819-1162.
- If the release is 6169, then upgrade your ILOM to the current version 10644 by doing the following steps:
 1. Upgrade to ILOM version 6464, the initial general release. See “Upgrading the ILOM SP Firmware From Version 6169 to 6464 Causes SP Configuration To Be Lost” in the *Sun Fire X4100 and Sun Fire X4200 Servers Product Notes*, 819-1162.
 2. Power cycle the server. (Unplug, then reconnect its AC power cords.)
 3. Upgrade to ILOM version 6464 again.
 4. Upgrade to ILOM version 10664. See [“How to Flash Upgrade Your Server to Release 1.1” on page 2](#) for additional considerations.

Recovering From a Failed Flash Update

This section contains instructions for recovering from a failed Sun Fire X4100 or Sun Fire X4200 ILOM firmware upgrade. Several issues have been identified with the firmware upgrade, which could result in a failed or incomplete firmware upgrade.

Use the following procedure to recover from a failed firmware upgrade. Note that in a small percentage of cases (such as when no output is displayed on the SP serial port), the Graphics Redirect and Service Processor (GRASP) board must be replaced.

Prerequisites:

- A trivial file-transfer protocol (TFTP) server is required to reload the ILOM firmware.
- The host system must also remain powered off for the duration of the recovery process.

Note – Numbers printed below are in hexadecimal unless otherwise noted.

Recovery Steps:

- 1. Determine if the ILOM SP first-level booter (referred to in this procedure as U-Boot) is intact. Follow documented procedures to connect to the SP serial port, apply power to the system, and observe the initial ILOM boot messages.**

See the *Sun Fire X4100 and Sun Fire X4200 Servers Installation Guide*, 819-1155 for details.

- If no screen output is displayed, stop here. The GRASP board must be replaced. Refer to the *Sun Fire X4100 and Sun Fire X4200 Servers Service Manual*, 819-1157 for instructions.
- If screen output is displayed, continue to the next step.

- 2. Enter the ILOM SP U-Boot command interpreter with `xyzzy`.**

When the message, `Booting linux in 2 seconds...` is displayed, during ILOM initial boot, type `xyzzy` to enter the U-Boot command interpreter.

Note – The characters typed will not echo. Cutting and pasting the characters improves the chance of success. You might need to try the process of applying power to the system and entering `xyzzy` several times.

3. Disable automatic reboot.

Set the U-Boot environment variable, `bootretry`, to `-1` to temporarily disable automatic reboot:

```
set bootretry -1
```

4. Configure the network for TFTP access.

a. Copy the ILOM SP firmware image to a TFTP server that is accessible on the same IP subnet as the ILOM SP network port.

b. Set the IP address for the ILOM SP and the TFTP server IP address by setting the `ethaddr` and `serverip` U-Boot variables.

```
set ipaddr n.n.n.n
set serverip n.n.n.n
```

5. Use the U-Boot `tftp` command to download the `r10644.rom.ima` ILOM firmware image.

```
tftp 100000 r10644.rom.ima
```

Note – If the TFTP server or filename is incorrect, you might need to enter `^C` to halt the `tftp` command, then repeat this recovery procedure.

Be sure that the complete flash image is actually downloaded successfully before proceeding. You should see a message similar to:

```
=> tftp 100000 r10644.rom.ima
Using FCC1 ETHERNET device
TFTP from server 10.6.154.8; our IP address is 10.6.154.99
Filename 'r10644.rom.ima'.
Load address: 0x100000

Loading:
#####
#####
#####
#####
#####
#####
done
Bytes transferred = 13107200 (c80000 hex)
```

6. Confirm that the download succeeded:

a. Confirm that the `tftp` command output ends with

Bytes transferred = *ByteCount*

b. Use the `md` command and confirm that its output displays strings from the beginning of the firmware image file. For example:

```
=> md 100000
00100000: 244d4f44 554c4524 01004000 00000200    $MODULE$.@.....
00100010: 00000000 000000f2 67726173 70000000    .....grasp...
00100020: 01000200 40000000 61000000 0000ffff    ....@...a.....
00100030: ffff0000 00000100 00000000 0000aa55    .....U
00100040: 46575f56 45525349 4f4e3d31 2e302e31    FW_VERSION=1.0.1
00100050: 0a46575f 44415445 3d4d6172 20203320    .FW_DATE=Mar  3
00100060: 32303036 0a46575f 4255494c 4454494d    2006.FW_BUILDTIM
00100070: 453d3130 3a35363a 30370a46 575f4445    E=10:56:07.FW_DE
00100080: 53433d57 41524e49 4e47203a 20554e4f    SC=WARNING : UNO
00100090: 46464943 49414c20 4255494c 44212120    FFICIAL BUILD!!
001000a0: 0affffff ffffffff ffffffff ffffffff    .....
```

7. Erase the existing ILOM flash image:



Caution – Interrupting the flash recovery process from this point onwards, or entering an incorrect U-Boot command, might result in a disabled service processor, which will require replacement. DO NOT stop or remove power from the system from this point onward.

a. Erase the exiting flash image with the `erase ff380000 ffffffff` command.

A series of dots will be displayed indicating the progress of the erase. For example:

```
=> erase ff380000 ffffffff
.....
.....Erased 200/200 sectors
```

b. If a failure occurs, retry the `erase` command repeatedly until it succeeds.

Note – If a persistent failure occurs, the service processor is not flash-upgradable, and must be replaced. Refer to the *Sun Fire X4100 and Sun Fire X4200 Servers Service Manual*, 819-1157, for details on replacing the GRASP board.

8. Program the new ILOM firmware image:

- a. Use the U-Boot `cp.b` command to copy the new ILOM firmware image from the download location at 100000 to ff380000, until end address ffffffff.**

For example:

```
=> cp.b 100000 ff380000 ffffffff
```

Copy to Flash

```
.....  
.....  
.....done
```

- b. Use the `fmh` command to verify the new ILOM firmware image.**

Before resetting, make sure the copy succeeded, using the `fmh` command, which should display firmware sections. For example:

```
=> fmh
```

Listing FMH Modules

Flash Size : 32768 KB

Erase Size : 64 KB

Sector Count : 512

FMH Located at 0xff380000 of Size 0x00020000

Name : grasp

Ver : 1.0

Type : 0x0002

Flags : 0x0000

Size : 0x00000061

Location: 0xff380040

LoadAddr: 0xffffffff

Checksum: Not Computed

FMH Located at 0xff3a0000 of Size 0x00120000

Name : sysbios

Ver : 1.31

Type : 0x0000

Flags : 0x0100

Size : 0x00100000

Location: 0xff3c0000

```
LoadAddr: 0xffffffff
Checksum: Valid
```

```
FMH Located at 0xff4c0000 of Size 0x000c0000
```

```
Name      : osimage
Ver       : 1.0
Type      : 0x0006
Flags     : 0x0119
Size      : 0x000ac9c8
Location: 0xff4c0040
LoadAddr: 0x00c00000
Checksum: Valid
...

```

Note – If the command output does not show anything, you may have entered an incorrect memory address. Repeat the `tftp`, `erase` and `cp.b` commands until the image is properly copied. Note that you must erase the existing firmware image before attempting to copy a new image.

9. Reset the ILOM service processor.

Once you are certain that the service processor firmware image has been recovered, you can restart the service processor with the `reset` command.

```
=> reset
```

10. Recover the system BIOS:

Note – This manual ILOM SP recovery process does *not* reflash the system BIOS. Repeat the firmware upgrade process, using the ILOM GUI or CLI procedures as described in [“How to Flash Upgrade Your Server to Release 1.1” on page 2](#) and the *Integrated Lights-Out Manager Administration Guide*, 819-1160.

Be sure to reset your service processor and BIOS configuration settings as needed, because they might be lost during this recovery.

Upgrading LSI Firmware and BIOS

The Release 1.1 software bundle includes LSI controller FW 1.08.01 and BIOS 6.04.07.

For instructions on upgrading LSI FW and BIOS, see the documentation that accompanies the LSI download.

Component Versions By Release

The service processor (SP) and BIOS software and the LSI firmware versions might be updated in each new release.

[TABLE 1](#) lists the component versions for Release 1.1 of the Sun Fire X4100 and Sun Fire X4200 servers.

TABLE 1 Server Release 1.1 Component Versions

Component Name	Sun Fire X4100 Server Version	Sun Fire X4200 Server Version
ILOM FW 1.0.1	SP build 10644	SP build 10644
BIOS	0ABGA031	0ABGA031
LSI Firmware	fw1.08.01-bios6.04.0A	fw1.08.01-bios6.04.0A
Motherboard	501-7261	501-6974

[TABLE 2](#) lists the component versions for the initial release (Release 1.0) of the Sun Fire X4100 and Sun Fire X4200 servers.

TABLE 2 Server Release 1.0 Component Versions

Component Name	Sun Fire X4100 Server Version	Sun Fire X4200 Server Version
ILOM FW 1.0	SP build 6464	SP build 6464
BIOS	0ABGA022	0ABGA022
LSI Firmware	fw1.04.00-bios6.02.0A	fw1.04.00-bios6.02.0A
Motherboard	501-7261	501-6974

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