



UPDATING FIRMWARE ON SUN FIRE™ V20Z AND SUN FIRE™ V40Z SERVERS USING MICROSOFT WINDOWS 2000, WINDOWS XP, OR WINDOWS SERVER 2003

Pierre Reynes, Network Systems Group

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Updating Firmware on Sun Fire™ V20z and Sun Fire™ V40z Servers Using Microsoft Windows 2000, Windows XP, or Windows Server 2003

In an era of tight IT budgets, many organizations are challenged to optimize existing computing resources. To help this effort, Sun x64 servers give enterprises the freedom to choose from a variety of operating systems, including the Solaris™ Operating System, SuSE Linux, Red Hat Linux and Microsoft Windows. By keeping the BIOS and firmware up-to-date on these systems, organizations are better able to experience increased performance and take advantage of the latest technology.

Sun provides detailed instructions on how to perform BIOS and Service Processor updates on Sun x64 servers running the Solaris OS or Linux environments. This Sun BluePrints article is intended for organizations running Sun Fire V20z or Sun Fire V40z servers and Microsoft Windows 2000, Microsoft Windows Server 2003, or Microsoft Windows XP operating environments. It provides step-by-step instructions for updating the BIOS and Service Processor from a system running any of these Microsoft operating environments. In particular, it describes how to share the NSV files with the appropriate permissions, mount the Server Message Block (SMB) share from the Service Processor (SP) on the Sun Fire V20z or Sun Fire V40z server, and perform the update.

Note – This Sun BluePrints article addresses situations in which the update procedure is performed from a Microsoft Windows-based laptop or workstation, regardless of the operating system running on the Sun Fire V20z or Sun Fire V40z server.

The Update Process

Updating the BIOS and Service Processor on Sun Fire V20z and Sun Fire V40z servers consists of several tasks.

- Checking the system inventory to verify the current version of the BIOS and Service Processor code
- Downloading NSV files
- Sharing NSV files with the appropriate permissions
- Updating the Service Processor (SP) firmware
- Updating the BIOS code
- Rebooting the server
- Loading the BIOS default setup

While this document assumes the use of NSV version 2.2.0.6 or 2.3.0.11, the procedures described herein can be used with other revisions by changing the filenames accordingly. NSV 2.2.0.6 contains the following revisions of firmware:

- BIOS v1.32.7.2 (Sun Fire V20z server)
- BIOS v2.32.8.4 (Sun Fire V40z server)
- SP v2.2.0.18

NSV 2.3.0.11 contains the following revisions of firmware:

- BIOS v1.33.6.2 (Sun Fire V20z server)
- BIOS v2.33.6.2 (Sun Fire V40z server)
- SP v2.3.0.13

Server Preparation

Before performing the update, it is imperative that the following client requirements be met:

- All firewalls and VPN clients must be disabled on the local Microsoft Windows machine. These applications block file sharing and prevent the SP from mounting the share and accessing the NSV files.
- Ensure you have administrator privileges on the local Microsoft Windows machine so that new users can be created and ACLs modified.
- The server must be turned off to update the BIOS code. As a result, the Microsoft operating system used to share the NSV and perform the updates cannot run on the Sun Fire V20z or Sun Fire V40z server. Use a separate system to run Microsoft Windows and perform update tasks. This system referred to as the local Microsoft Windows system in the remainder of this document.
- The Java™ Runtime Environment version 1.5 or higher must be installed on the Microsoft Windows system. The latest version of the Java Runtime Environment is available for download from www.java.com, if necessary.
- A SSH client must be properly installed on the Microsoft Windows system. If a SSH client is not installed, a utility such as PuTTY can be used. (PuTTY can be downloaded from <http://www.chiark.greenend.org.uk/~sgtatham/putty/>, if needed.)

Powering On the Service Processor

The Service Processor (SP) must be running for the update process. However, the platform side of the Sun Fire V20z or Sun Fire V40z server must be powered off.

- Sun Fire V20z server

Plug in the AC power cord on the back of the chassis and turn on the AC power switch on the back panel. The front LCD display must be lit (indicating the SP is on), however the green power LED must be off (indicating the platform is off).

- Sun Fire V40z server

Plug in the AC power cords to the power supplies on the back of the chassis. The front LCD display must be lit (indicating the SP is on), however the green power LED must be off (indicating the platform is off).

Configuring Service Processor Network Settings

As the Service Processor boots and comes up, its network settings must be configured.

- If a DHCP server is available on the network to which the Service Processor is connected, simply press the `select` (center) button on the LCD panel to confirm the use of DHCP. The Service Processor then requests an IP address from the DHCP server. Approximately five to ten seconds later, the IP address appears on the front LCD display.
- If a DHCP service is not available on the network, use the arrow buttons to manually enter the following network information settings: IP Address, netmask and default gateway or router. More information can be found in the *Sun Fire V20z and Sun Fire V40z Servers — Installation Guide, part number 817-5246*.

Resetting the Service Processor

If the Service Processor is configured with a login and password, and that information is not available to you, the Service Processor must be reset.

1. Power on the Service Processor. Turn on the system and wait until the Service Processor completes the boot process.
2. Reset the Service Processor. Press any of the three operator panel buttons next to the front panel LCD screen. The LCD displays the option `Server Menu`.
3. Press the `Forward` operator panel button until the `SP` option menu is displayed.
4. Press the `select` (center) button to confirm.
5. Press the `Forward` button until the `Use Defaults` option is displayed.
6. Press the `select` button twice to confirm. The Service Processor resets to the default settings and reboots.
7. If a DHCP server is available on the network to which the Service Processor is connected, press the `select` (center) button on the LCD panel to confirm the use of DHCP. If a DHCP service is not available, use the arrow buttons to manually enter the following network information settings: IP Address, netmask and default gateway or router. More information can be found in the *Sun Fire V20z and Sun Fire V40z Servers — Installation Guide, part number 817-5246*.

Connecting the Microsoft Windows System

The local Microsoft Windows system that will be used to perform the update must be connected to the *management network* — the same local area network (LAN) as one of the Service Processor 10/100 Mbps Ethernet management ports. If uncertain, try to ping the Service Processor IP address from the local client. If the command is successful, the local client is on the same LAN as the Service Processor port.

Note – Updating a server over a wide area network (WAN) is not recommended.

Setting the Service Processor Manager User and Password

The following instructions set the Manager User on the Service Processor. These steps should only be performed if the Service Processor has never been setup, or if it was just reset the using the procedure above.

1. Connect to the Service Processor with the SSH client using the IP address displayed on the server LCD display.

2. Login using the username `setup` without a password.
3. When prompted, create the first manager-level user. This example uses the username `sun` and password `sun`. The SSH session will disconnect as the Service Processor automatically reboots.

The Service Processor is now setup and ready to be used to perform the server update.

Verifying BIOS and Firmware Revisions

Before proceeding with the server update, verify the BIOS and firmware revisions on the system and take note of the current Service Processor settings and firmware revisions.

Checking Code Revisions on the Sun Fire V20z Server

Verify the version of the BIOS and firmware currently installed on the Sun Fire V20z server.

1. Connect to the Service Processor through SSH. Launch the SSH client and connect to the Service Processor IP address displayed on the Sun Fire V20z front panel LCD. Login using your Service Processor username and password.

Note – If you have not yet set up an account on the Service Processor, or have forgotten your login information, refer to the *Server Preparation* section at the beginning of this document.

2. Use the `inventory get software` Service Processor command to determine the BIOS and firmware revisions currently installed on the system. The system must be upgraded if the SP Base and BIOS Revision are not the latest available.

<code>inventory get software</code>			
Name	Revision	Install Date	Description
Platform BIOS	V01.32.7.2	Mon Apr 18 19:17:42 2005	Platform BIOS for V20z servers - ID: 239
Operator Panel	X1.0.1.2	Mon Apr 18 19:17:42 2005	Operator Panel Firmware
SP Base	V2.2.0.18	Mon Apr 18 19:17:42 2005	SP Base Software

Check Code Revisions on the Sun Fire V40z Server

Verify the version of the BIOS and firmware currently installed on the Sun Fire V40z server.

1. Connect to the Service Processor through SSH. Launch the SSH client and connect to the Service Processor IP address displayed on the Sun Fire V40z front panel LCD. Login using your Service Processor username and password.

Note – If you have not yet set up an account on the Service Processor, or have forgotten your login information, refer to the *Server Preparation* section at the beginning of this document.

2. Use the `inventory get software Service Processor` command to determine the BIOS and firmware revisions currently installed on the system. The system must be upgraded if the SP Base and BIOS Revisions are not the latest available.

```

inventory get software
Name                Revision      Install Date      Description
Platform BIOS      V02.32.8.2   Mon Apr 18 19:17:42 2005 Platform BIOS for V40z servers
Operator Panel     X1.0.1.2     Mon Apr 18 19:17:42 2005 Operator Panel Firmware
SP Base            V2.2.0.18   Mon Apr 18 19:17:42 2005 SP Base Software

```

Updating the System

The process of updating the system includes several steps:

- Downloading and sharing NSV files
- Mounting the NSV share on the Service Processor
- Performing the Service Processor update
- Updating the BIOS
- Taking care of housecleaning

Downloading and Sharing NSV Files

The following steps describe how to download and share the NSV files.

1. Open a Command Prompt window on the Microsoft Windows system using the *Start/Run* command.

```
cmd
```

2. Create the NSV directory. The NSV directory is the central repository from which the Sun Fire V20z and Sun Fire V40z servers download new firmware during the update process. From the Command Prompt window on the Microsoft Windows system, create one of the following directories, depending on the type of server to be updated.

For a Sun Fire V20z server:

```

c:
md \nsv
cd \nsv
md v20z
cd v20z

```

For a Sun Fire V40z server:

```

c:
md \nsv
cd \nsv
md v40z
cd v40z

```


3. Download the NSV files to the directory just created. The files can be found at <http://www.sun.com/servers/entry/v20z/downloads.html> on the Sun website. Click on *Current Release* under *Firmware and Utilities (NSV)*. Download the NSV files identified below. Note that the following examples use a revision number of x_x_x_x. Be sure to replace x_x_x_x with the latest revision available.
 If updating a Sun Fire V20z server, download the following files to the `c:\nsv\v20z` directory on the local Microsoft Windows system.
 - `nsv_Vx_x_x_x.zip`
 - `nsv-v20z-bios-fw_Vx_x_x_x.zip`
 If updating a Sun Fire V40z server, download the following files to the `c:\nsv\v40z` directory on the local Microsoft Windows system:
 - `nsv_Vx_x_x_x.zip`
 - `nsv-v40z-bios-fw_Vx_x_x_x.zip`
4. Unzip the NSV package files. Unzip the downloaded NSV release package files into the directory created on the local Microsoft Windows system. If the unzipping process creates new zip archive files, unzip these files as well.

Note – You must be logged onto the local Microsoft Windows system with administrator privileges to perform some of the steps below.

5. Create a local user. For example, from the Command Prompt window, create a local Microsoft Windows user named `nsvupdate` with the password `nsvupdate`.

```
NET USER nsvupdate nsvupdate /add
```

6. Modify the Access Control List (ACL). From the Command Prompt window, use `CACLS` to modify the NSV directory access control list and give read and execute permissions to the local `nsvupdate` user.
 For a Sun Fire V20z server:

```
CACLS c:\nsv\v20z /E /G nsvupdate:r
```

For a Sun Fire V40z server:

```
CACLS c:\nsv\v40z /E /G nsvupdate:r
```

7. If the local client from which the update is being performed will remain at the current network location and act as a permanent NSV server for event logging and diagnostic functions, give additional write permissions to the local user.

For a Sun Fire V20z server:

```
CACLS c:\nsv\v20z /E /G nsvupdate:w
```

For a Sun Fire V40z server:

```
CACLS c:\nsv\v40z /E /G nsvupdate:w
```

8. Share the NSV directory on the local Microsoft Windows system.

For a Sun Fire V20z server:

```
NET SHARE nsv-v20z=c:\nsv\v20z /REMARK:"Sun Fire V20z NSV update files" /CACHE:No
```

For a Sun Fire V40z server:

```
NET SHARE nsv-v40z=c:\nsv\v40z /REMARK:"Sun Fire V40z NSV update files" /CACHE:No
```

Mounting the NSV Share on the Service Processor

Mounting the NSV Share is needed to give the Service Processor access to the files in the shared NSV directory.

1. Obtain the IP address of the local Microsoft Windows system using the ipconfig command.

```
C:\nsv> ipconfig

Windows 2000 IP Configuration

Ethernet adapter Local Area Connection:

    Connection-specific DNS Suffix  . : Sun.COM
    IP Address. . . . . : 10.6.164.2
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 10.6.164.254
```

Temporarily disable any firewalls or VPN clients running on the local Microsoft Windows system. These applications block file sharing and will prevent the Service Processor from mounting and accessing the NSV files. Use the Service Manager to stop the VPN service if it is running. Enter the following command at the command prompt, and look for services with names containing the word *Firewall* or *VPN*, such as *Internet Connection Firewall*, *Symantec Firewall*, or *Cisco Systems VPN Service*. Stop these services for the duration of the upgrade procedure.

```
services.msc /s
```

Note – If the Microsoft Windows system is used as a permanent NSV server, configure the firewall to permanently allow file sharing access from the IP address used by the Service Processors, rather than disabling it.

2. Mount the share from the Service Processor.

For a Sun Fire V20z server, use the `SP ADD MOUNT` command at the SSH prompt to mount the `nsv-v20z` share, then verify the share is mounted using the `SP GET MOUNTS` command.

```
sp add mount -r //local-windows-ip-address/nsv-v20z -l /mnt -u nsvupdate -p nsvupdate
For example:
sp add mount -r //10.6.164.2/nsv-v20z -l /mnt -u nsvupdate -p nsvupdate
sp get mounts
Local Remote Windows account name
/mnt          //10.6.164.2/nsv-v20z nsvupdate
```

For a Sun Fire V40z server, use the `SP ADD MOUNT` command at the SSH prompt to mount the `nsv-v40z` share, then verify the share is mounted using the `SP GET MOUNTS` command.

```
sp add mount -r //local-windows-ip-address/nsv-v40z -l /mnt -u nsvupdate -p nsvupdate
For example:
sp add mount -r //10.6.164.2/nsv-v40z -l mnt -u nsvupdate -p nsvupdate
sp get mounts
Local Remote Windows account name
/mnt          //10.6.164.2/nsv-v40z nsvupdate
```

Once the NSV share is mounted on the Service Processor, enter the following command to verify the mount is working properly.

```
cd /mnt
ls
```

After entering the `ls` command from the Service Processor, the content of the folder shared on the Microsoft Windows machine should be displayed. If not, verify that sharing is active and that no firewall or VPN service is running on the Microsoft Windows system.

Performing the Service Processor Update

Once the NSV files are downloaded and shared, the Service Processor update can be performed using the following steps.

1. Determine if the platform side of the server is off using the `platform` command at the SSH prompt.

```
platform get power state
```

2. If the platform side of the server is on, turn it off. .

```
platform set power state off -f -w
```

- From the Command Prompt window on the local Microsoft Windows system, verify the version of the Java Runtime Environment installed on the system. Version 1.5 or later is required.

```
c:\nsv> java -version
java version "1.5.0_02"
Java(TM) 2 Runtime Environment, Standard Edition (build 1.5.0_02-b09)
Java HotSpot(TM) Client VM (build 1.5.0_02-b09, mixed mode)
```

- Launch the Java Service Processor Update utility on the local Microsoft Windows system.

For a Sun Fire V20z server:

```
java -jar C:\nsv\v20z\update_server\Vx_x_x_x\updateServer.jar -f
C:\nsv\v20z\sw_images\sp\spbase\Vx_x_x_x\install.image -p 50000
```

For a Sun Fire V40z server:

```
java -jar C:\nsv\v40z\update_server\Vx_x_x_x\updateServer.jar -f
C:\nsv\v40z\sw_images\sp\spbase\Vx_x_x_x\install.image -p 50000
```

Note – These commands must be entered on the same line. It is split into two lines here for readability.

- Start the update process from the Service Processor. Return to the window with the SSH connection to the Service Processor and start the update process using the `sp update` command.

```
sp update flash all -i local-windows-ip-address -p 50000
```

- The Service Processor executes the command and reboots, and the SSH session automatically terminates. The Command Prompt window running the Java SP Update utility displays the following messages as the Service Processor reboots and updates. If no additional servers need updating, the Java Service Processor Update utility can be closed with a `ctrl-c` key sequence once the *Update complete* message appears.

```
C:\nsv> java -jar C:\nsv\v40z\update_server\V2.2.0.6\updateServer.jar -f
C:\nsv\v40z\sw_images\sp\spbase\V2.3.0.5\install.image -p 50000
[Wed May 11 11:48:18 PDT 2005] Update server is ready; port 50000
[Wed May 11 11:48:47 PDT 2005] [/10.6.164.40] [SP_BASE LATEST] Update started
[Wed May 11 11:52:58 PDT 2005] [/10.6.164.40] [SP_BASE LATEST] Update complete
C:\nsv\v40z\sw_images\sp\spbase\V2.3.0.5\install.image
```

Updating the BIOS

Updating the BIOS requires the following steps.

- Determine if the platform side of the server is off using the `platform` command at the SSH prompt.

```
platform get power state
```

2. If the platform side of the server is on, turn it off.

```
platform set power state off -f -W
```

3. Update the BIOS. The update process may run for several minutes before displaying any output. Once the BIOS update is complete, the server automatically shuts down.

To update the BIOS on a Sun Fire V20z server:

```
platform set os state update-bios /mnt/sw_images/platform/firmware/bios/Vx_x_x_x/bios.sp
For example:
platform set os state update-bios /mnt/sw_images/platform/firmware/bios/V1.33.6.2/bios.sp
This command may take several minutes. Please be patient.
Bios started
Bios Flash Transmit Started
Bios Flash Transmit Complete
Bios Flash update Progress: 7
Bios Flash update Progress: 6
Bios Flash update Progress: 5
Bios Flash update Progress: 4
Bios Flash update Progress: 3
Bios Flash update Progress: 2
Bios Flash update Progress: 1
Bios Flash update complete
```

To update the BIOS on a Sun Fire V40z server:

```
platform set os state update-bios /mnt/sw_images/platform/firmware/bios/Vx_x_x_x/bios.sp
For example:
platform set os state update-bios /mnt/sw_images/platform/firmware/bios/V2.33.6.2/bios.sp
This command may take several minutes. Please be patient.
Bios started
Bios Flash Transmit Started
Bios Flash Transmit Complete
Bios Flash update Progress: 7
Bios Flash update Progress: 6
Bios Flash update Progress: 5
Bios Flash update Progress: 4
Bios Flash update Progress: 3
Bios Flash update Progress: 2
Bios Flash update Progress: 1
Bios Flash update complete
```

Taking Care of Housecleaning

If the Microsoft Windows system is needed as a permanent NSV server on the management network, leave the directory mounted and shared. However, if the Microsoft Windows system is located on this network temporarily (for example, if it is a mobile laptop), it is recommended that the directory be unmounted and unshared using the following procedure.

1. Unmount the NSV directory. Connect to the Service Processor through SSH and delete the mount.

```
sp delete mount
```

2. Verify the directory is unmounted. The directory corresponding to the system (*nsv-v20z* or *nsv-v40z*) should not be displayed.

```
sp get mounts
```

3. Unshare the NSV directory from a new Command Prompt windows on the local Microsoft Windows system.

For a Sun Fire V20z server:

```
NET SHARE nsv-v20z /DELETE
```

For a Sun Fire V40z server:

```
NET SHARE nsv-v40z /DELETE
```

The update procedure is now complete. Before using the newly updated server:

- Turn the Platform on
- Make sure the new BIOS version is displayed on the first screen
- Press the F2 key to enter the BIOS setup utility
- Press the F9 key to load the default BIOS configuration
- Press the F10 key to save and quit the setup utility

Scripting Considerations

The steps and commands presented in this Sun BluePrints article utilize the command line rather than the Microsoft Windows graphical environment to facilitate the use of batch programming or scripting to automate the update of multiple systems.

Scripting Using Batch Files

The Microsoft Windows environment supports scripting through the use of batch files (*.bat* or *.cmd* files) that contain sequential commands in a simple text format. The commands presented in this document can be used in a batch file in conjunction with more advanced commands, such as *if*, *for* or *goto*, to automate the update process. More information on batch programming in Microsoft Windows environments can be found at <http://www.microsoft.com/resources/documentation/windows/xp/all/proddocs/en-us/batch.msp> on the Web.

PuTTY Link

PuTTY Link (Plink) is a free, command line connection tool. Similar to a UNIX-based SSH, Plink can be used to send commands over SSH using a simple syntax, such as:

```
plink -ssh admin@1.2.3.4 "command"
```

Plink is available for download at <http://www.chiark.greenend.org.uk/~sgtatham/putty/download.html>, while the Plink documentation can be found at <http://the.earth.li/~sgtatham/putty/latest/html/doc/>

Scripting Under Microsoft Windows Services for UNIX 3.5

Microsoft Windows Services for Unix (SFU) 3.5 enables UNIX tools, such as OpenSSH, to run on a Microsoft Windows system. It also provides a familiar scripting environment to UNIX system administrators, including KornShell and C Shell environments, and Perl. SFU and related documentation can be found at <http://www.microsoft.com/windowsserver/system/sfu/default.aspx>

The Sun BluePrints article document "Automating Initial Setup and Management of Sun Fire V20z and V40z Servers" describes methods for automating firmware updates on multiple Sun Fire V20z or V40z servers simultaneously using `expect` scripts. It details the steps for creating scripts to automate these tasks and run them in parallel, and includes examples of several of the more common tasks.

Bessoudo, Jacques. "Automating Initial Setup and Management of Sun Fire V20z and V40z Servers," *Sun BluePrints OnLine*, June 2005. To access this article online, go to <http://www.sun.com/blueprints/0605/81902798.html>

OpenSSH for SFU 3.5

Under SFU, OpenSSH can be run to send commands over SSH from a Perl script (for example). To download OpenSSH for SFU 3.5, visit <http://www.interix.com/tools/warehouse.htm>

Summary

As organizations update the BIOS and firmware of Sun x64 servers, they are better able to take advantage of new technologies and reap performance benefits. With the information contained in this Sun BluePrints article, organizations can update the BIOS and firmware of Sun Fire V20z and Sun Fire V40z servers from Microsoft Windows 2000, Microsoft Windows Server 2003 or Microsoft Windows XP systems by:

- Downloading NSV files
- Sharing NSV files with the appropriate permissions
- Updating the Service Processor (SP) firmware
- Updating the firmware for the operator panel (located on the front of the server)
- Updating the BIOS

About the Author

Pierre Reynes is currently working in Technology Marketing focusing on x64-based servers, and networking and security solutions. Before joining Sun in 1999, he worked as a Technical Director at DNS Telecom in Paris, France, and was in charge of secured network offerings and distribution of Cobalt Internet appliances. Prior to that he co-founded a multimedia design and hosting company in France. Throughout his career, he has helped define, document and market x86-64 platforms, networking infrastructure components and software, firewalls, and data communication systems.

References

Sun Fire V20z/V40z Server Downloads:

<http://www.sun.com/servers/entry/v20z/downloads.html>

Microsoft Windows Services for UNIX:

<http://www.microsoft.com/windowsserversystem/sfu/default.aspx>

Microsoft Windows XP Professional Product Documentation — Using Batch Files:

<http://www.microsoft.com/resources/documentation/windows/xp/all/proddocs/en-us/batch.aspx>

Interop Systems Inc.:

<http://www.interix.com/tools/warehouse.htm>

PuTTY: A Free Telnet/SSH Client home page:

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

PuTTY Download Page:

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

PuTTY User Manual:

<http://the.earth.li/~sgtatham/putty/latest/html/doc/>

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