



Lenovo UpdateXpress System Pack Installer Readme



Version 10.2

(January 2017)

© Copyright Lenovo 2014, 2017.

Portions © Copyright IBM Corporation 2004, 2014

LIMITED AND RESTRICTED RIGHTS NOTICE: If data or software is delivered pursuant to a General Services Administration "GSA" contract, use, reproduction, or disclosure is subject to restrictions set forth in Contract No. GS-35F-05925

Contents

Chapter 1. About UpdateXpress System Pack Installer	1	Chapter 3. Known limitations, problems, and workarounds	5
Chapter 2. Information resources. . .	3	Limitations and problems	5
Documentation	3	Workarounds	15
Web resources	3	Appendix A. Notices.	23

Chapter 1. About UpdateXpress System Pack Installer

Lenovo UpdateXpress System Pack Installer is a software application that applies UpdateXpress System Packs and individual updates to your system.

UpdateXpress System Packs contain Windows and Linux firmware and device driver updates. UpdateXpress System Pack Installer allows you to acquire and deploy these updates, as well as compare updates, and is available with the UpdateXpress System Pack.

Chapter 2. Information resources

You can find additional information about Lenovo UpdateXpress System Pack Installer in the product documentation and on the World Wide Web.

Documentation

The following documentation resource provides additional information about Lenovo UpdateXpress System Pack Installer.

In addition to these release notes, you can find information about how to use UpdateXpress System Pack Installer, v10.2 in the *IBM UpdateXpress System Pack Installer User's Guide*.

This documentation is available in Portable Document Format (PDF). To view a PDF file, you need Adobe Acrobat Reader, which can be downloaded for free from the <http://www.adobe.com/products/acrobat/readstep.html> website at: www.adobe.com/products/acrobat/readstep.html.

Web resources

The following websites provide resources for understanding, using, and troubleshooting BladeCenter®, System x and systems-management tools.

Websites

- Lenovo ToolsCenter website
<https://support.lenovo.com/us/en/documents/LNVO-CENTER>
Use this website to download tools that support System x and BladeCenter products.
- UpdateXpress for Lenovo x86 servers
<http://www-947.ibm.com/support/entry/portal/docdisplay?Indocid=LNVO-XPRESS>
Use this website to download UpdateXpress System Pack Installer and the UpdateXpress System Pack libraries and tools.

These websites provide information about product compatibility and support, warranties and licenses, and various technical resources:

- Lenovo BladeCenter Support products and services
<http://shop.lenovo.com/us/en/systems/servers/blades/bladecenter/>
- ServerProven website
<http://www.lenovo.com/us/en/serverproven/>
- System x Support website
<http://shop.lenovo.com/us/en/systems/server-library/>

Forums

Use these websites to learn about various forums that are available to discuss technology-related and product-related issues pertaining to System x and IBM BladeCenter hardware and software products. These websites include links for obtaining the forums using Rich Site Summary (RSS) feeds.

- System x Forum website
developerWorks Forums

- BladeCenter Forum website

<https://www.ibm.com/developerworks/community/forums/html/forum?id=11111111-0000-0000-0000-000000000819>

Chapter 3. Known limitations, problems, and workarounds

The following limitations, problems, and workarounds are applicable to IBM UpdateXpress System Pack Installer, v10.2.

Limitations and problems

The following limitations are applicable to UpdateXpress System Pack Installer (UXSPI).

UXSPI fails to run with arguments having the character "&"

UXSPI fails to run if there is character "&" in any character of the command line

UXSPI might fail for passwords that include an "&." For example, passwords specified in "--proxy-password," "--mm-password," "--io-password," and "--update-args."

UXSPI fails to detect the IMM PBI driver version for IMM PBI PCI Malbox Interface Device

UXSPI does not support detecting the Intel IMM PBI driver version for IMM PBI PCI Malbox Interface Device

UXSPI does not update the `ibm_fw_sraidmr_5100-tmm*` package if other SRAID firmware packages already exist in the same UXSPI directory

UXSPI will supersede the `ibm_fw_sraidmr_5100-tmm*` package if it already has the same category of SRAID firmware in the same UXSPI directory. You can manually update the `tmm` package with UXSPI tool in a separate update.

UXSPI fails to detect the firmware version for Intel adapters

UXSPI does not support detecting the Intel firmware version.

UXSPI may crash during Gathering Inventory for iSCSI Driver Update on RHEL6.6

The component in UXSPI that collects the iSCSI Driver version sometimes crashes on RHEL6.6

UXSPI fails to detect the installed firmware version of some Qlogic adapters on VMWare ESXi

Legacy Brocade adapters, which have been acquired by Qlogic and have had the firmware and VPD rebranded from Brocade to Qlogic, require that you update to the rebranded firmware first. UXSPI can then detect the installed firmware version.

UXSPI cannot detect the installed firmware version of LSI adapters on Windows 32-bit operating systems

UXSPI fails to update firmware for the LSI SSD Expansion Card on VMWare ESXi

UXSPI fails to detect Brocade firmware version on RHEL 7 and SLES 12

UXSPI fails to detect the installed firmware version of the Brocade options on RHEL 7 and SLES 12.

UXSPI shows only one adapter for multiple Emulex adapters of the same model on a system

If a system has more than one Emulex adapter of the same model, UXSPI only lists one adapter in the comparison result. Although only one adapter is listed, the firmware on all of the matching adapters is appropriately updated.

UXSPI intermittently crashes in GUI while updating xFW on Flex System x240

Should this say the UXSPI GUI intermittently stops while updating xFW on Flex System x240? (crashing implies that you might need to restart)

UXSPI fails to detect the installed firmware version for Intel 800GB SSD

Is there a certain circumstance when this happens or in general, does is this firmware version not detectable?

UXSPI fails to detect and update firmware for a Flex System adapter

UXSPI fails to detect and update firmware for the Flex System FC 5172 2-port 16Gb FC Adapter on VMWare ESXi 5.1U2.

UXSPI fails to update firmware to 3.20.06

UXSPI fails to update firmware to 3.20.06 for the QLogic 16Gb QLE-2662 FC Dual Port HBA on VMWare ESXi 5.1 and 5.5.

UXSPI fails to detect the Broadcom firmware version

UXSPI fails to detect the installed version of the Broadcom NIC on Flex System3100 M5 for Windows and Linux.

UXSPI cannot restore the multi-node interface IP after an update

If you set the static IPs for IMM **usb0/usb1** on a multi-node system, UXSPI might configure these IPs to workable ones, which can connect to IMM. However, after running UXSPI to perform an update, the IPs do not recover to the original IPs. You need to manually restore the IPs.

UXSPI cannot detect the installed Brocade firmware version with firmware older than version 2.4.1b

UXSPI cannot detect the installed firmware version of a Broadcom option with firmware that is older than version 2.4.1b on VMWare vSphere 5.0/5.1/5.5 with Patch 9, vSphere 5.1 U2, and vSphere 5.5 U1.

UXSPI fails to test the proxy connection with CCproxy

UXSPI fails to test the proxy connection in the GUI when the proxy is set by **CCproxy**. You can ignore the testing proxy connection and continue acquiring packages.

UXSPI is unable to detect the firmware version of CN4054 on vSphere5.1 U2

UXSPI is unable to detect the installed firmware version on VMWare vSphere 5.1 U2 for the Emulex Virtual Fabric Adapter CN4054.

UXSPI fails to stop at a prompt to update VMware EXSi

When you use putty to log into Linux OS and then run a UXSPI command line on a remote Linux OS to update firmware on VMware ESXi in Attended Mode, the screen of putty keeps flashing after UXSPI does a comparison. You cannot continue and cannot stop it with Ctrl+C.

UXSPI shows the wrong device name for the Broadcom NetXtreme I Quad Port GbE Adapter

UXSPI shows the installed firmware version of the Broadcom NetXtreme I Quad Port GbE Adapter with the wrong device name.

Host must be discovered by MegaRAID Storage Manager before UXSPI can upgrade MegaRAID Storage Manager to a newer version

For MegaRAID Storage Manager (MSM) to work correctly, the supported SAS/SATA controller must be plugged into the machine, and the driver and firmware must be flashed for the controller. With the MegaRAID Storage Manager installed on a system, before you can upgrade it to a newer version using UXSPI, the following prerequisite must be met: Launch the prior version of MSM and discover the host successfully, otherwise the upgrade task using UXSPI might fail.

AMD Driver Pack current version is always undetectable

UXSPI does not detect the current version of the AMD Driver Pack. As a result, the AMD Driver Pack update package is recommended for deployment on every execution of UXSPI, regardless of the current version.

Intel Driver Pack current version is always undetectable

UXSPI does not detect the current version of the Intel Driver Pack. As a result, the Intel Driver Pack update package is recommended for deployment on every execution of UXSPI, regardless of the current version.

UXSPI always installs the LSI driver

If the hardware for a driver component is not present in the system or it is disabled, the installer will not install the driver. The one exception is the Windows LSI driver. This driver is always installed. You cannot physically remove the LSI chip because it is a standard component on the system planar. However, you can disable it. Even in instances when it is disabled, UXSPI installs the LSI driver.

Broadcom NetXtreme firmware update requires version 3.58b or later for the tg3 driver

The Broadcom NetXtreme firmware update requires version 3.58b or later for the tg3 driver to support the firmware update process. Version 3.58b or later of the driver must be loaded and currently running before the firmware update can be successfully applied.

Linux device driver updates require specific packages

The Linux device driver update packs require the following packages to be installed:

- Red Hat Enterprise Linux: rpm-build, perl, and bash
- SuSE Enterprise Linux: perl and bash

ServeRAID 8i, 8k/8k-l, 8s, 8e and 7t firmware is only detected on Windows when the filter driver is active

Detection of ServeRAID 8i, 8k/8k-l, 8s, 8e and 7t firmware versions requires a filter driver. This filter driver is installed as part of the ServeRAID Manager. It is also installed whenever the ServeRAID firmware update packages from UpdateXpress System Packs that are installed. The ServeRAID firmware update packages return an error code when executed without the filter driver being installed. The Windows system requires a reboot before this driver becomes active. You can rerun the ServeRAID firmware update to complete the update.

7e SATA/SCSI HostRAID and 8e SAS/SATA HostRAID controllers are not supported on Windows 2008

7e SATA/SCSI and 8e SAS/SATA HostRAID controllers are not supported on Windows Server 2008 (32-bit and 64-bit operating systems). If you are running UXSPI compare or update functions on Windows Server 2008 R2, a dialog box opens stating: Integrated RAID On Chip (IROC) Library has stopped working. To have UXSPI continue, double click **Close the Program**.

Firmware ibm_fw_hdd_sas-1.10.01_linux_32-64 displays different versions

The SAS/SATA Hard Disk Drive (HDD) Update Program incorrectly reports different versions of both the installed version and the update version of the firmware. The following results are displayed for the comparison:

- Update: SG9XCS2D200GEIBM (/dev/sg1)
- New Version: SA03SE6A
- Installed Version : SE6C

Baseboard Management Controller (BMC) and CPLD firmware updates require IPMI drivers

BMC and CPLD firmware updates require that IPMI drivers are installed and running. If the IPMI drivers are not running, the BMC and CPLD firmware version cannot be detected and the online updates will not install.

Detection of Integrated Management Module (IMM) firmware version requires IPMI drivers

IPMI drivers are required to detect the installed version of the IMM firmware. If the IPMI drivers are not running, the IMM firmware version cannot be detected. Installation of the IMM firmware update, however, is not dependent on the IPMI driver.

Gathering inventory might take 15 to 20 minutes when Linux Remote Supervisor Adapter II (RSA II) daemon is installed without the Linux RSA II card being installed

On Linux systems, the gathering inventory phase of the install can take as long as 18-20 minutes when the system has the RSA II daemon installed without having the RSA II card installed. The updates you select are still applied after the delay in the gathering inventory phase.

On Windows, only loaded and active drivers associated with a device are detected

For Windows systems, UXSPI only detects the presence and version information for drivers that are loaded and active. Although a driver for a device might have been installed, it will not be detected until the operating system associates the driver with its matching device. Drivers are not detected if they are not associated with a matching device.

Different New Version is displayed before and after an update

The New Version displayed before and after an update might differ if the update is undetectable before updating. If the update is currently uninstalled or undetected, this field shows the version of the overall update package. If the update is detected, this field shows the individual update contained within the update package. The version of the overall update package might be different than the version of the individual update file.

Offline updates are not deployed

Offline updates are not compared or deployed by UXSPI. The offline updates are legacy firmware updates that cannot be directly applied from the OS.

x460/MXE-460/x3950 is only supported in single node

Multi-node support is not available for x460/MXE-460/x3950. If you want to update a x460/MXE-460/x3950 multi-node, you must break apart the nodes and update as single nodes.

Only BIOS versions of QLogic FC firmware are detected

The update for QLogic Fibre Channel (FC) firmware, updates both QLogic FC BIOS and firmware. However, the QLogic FC firmware update versions are not reported. Only the BIOS versions of the QLogic FC firmware are detected. Comparing the update BIOS version to the installed BIOS version is sufficient to determine whether the QLogic firmware is a previous version.

Only Firmware versions of LSI 1064, 1068 and 1078 firmware updates are detected

The update for LSI 1064, 1068, and 1078 firmware updates both the LSI BIOS and the firmware. However, the BIOS versions of LSI firmware updates are not reported, and only the LSI firmware versions are detected.

For example, instead of displaying:

```
Update      : SAS1064 Firmware
New Version  : 1.23.81.00
Installed Version : 1.23.81.00
```

```
Update      : SAS1064 Bios
New Version  : 6.18.01.00
Installed Version : 6.18.01.00
```

Only the firmware version is displayed:

```
Update      : SAS1064 Firmware
New Version  : 1.23.81.00
Installed Version : 1.23.81.00
```

UXSPI does not support an AMM firmware update in some cases

UXSPI does not support the update of Advanced Management Module (AMM) firmware if the AMM firmware package build id is later than BPET54V and the installed AMM firmware build id is earlier than BPET62G.

Unable to read the inserted CD-ROM while updates are being applied on Windows

When applying updates on a Windows system using UXSPI, a CD-ROM that is inserted into the CD-ROM drive cannot be read until all of the updates have completed. An existing CD-ROM that is in the drive can be read provided it is inserted before the updates start.

On LS21/LS41, the onboard LSI 1064 cannot be distinguished from the expansion card

On the LS21/LS41, the onboard LSI 1064 cannot be distinguished from the LSI 1064 expansion adapter. This means that when running in the compare or update mode, each installed LSI 1064 adapter is displayed under each LSI 1064 update that is present. The version comparison is performed and depending on the versioning, the update might be incorrectly determined to be backlevel and can be selected. The updates themselves can distinguish between the adapters and will flash the correct firmware on each adapter.

Acquisition of Windows updates does not distinguish between the different versions of Windows

Windows 2000, Windows 2003, and Windows 2008 updates are organized in a single WindowsUXSP. Similarly the tool acquires all Windows updates (either UXSP or the latest individual update) for a given system is done by selecting the the Windows operating system. This means that although Windows updates for a given system can be acquired, there might not be updates for the Windows version of interest.

For example, the acquired UXSP supports Windows 2000 and Windows 2003, but not support Windows 2008. You can use this UXSP to update on Windows 2008. In that case you will get an error code of 33, stating: Cannot find UpdateXpress System Pack XML file for this Machine Type and Operating System.

There is no built-in timeout for completion of updates

UXSPI does not require that updates complete within a certain time period. If an update does not end UXSPI will run indefinitely.

The LSI HBA expansion card is undetectable on HS20 (8843) and LS20 blade servers

The LSI HBA expansion card (LSI 1064) is undetectable on HS20 (8843) and LS20 blade servers. However, the LSI HBA expansion card update can still be applied even if the installed version is not detected.

The version number is not reported for the RSA 2 firmware

Only the build ID of RSA 2 firmware is reported. The version number is not reported. For example:

```
[ ] IBM System x3350 Remote Supervisor Adapter II Update
Severity      : Initial Release
Reboot       : Reboot Required to take effect
Update ID    : ibm_fw_rsa2_k3ep05a_linux_i386
New Version  : 1.00 (K3EP05A)
Installed Version : (K3EP05A)
```

The version number is not always reported for Diagnostics

The build number of the Diagnostics is always reported; the version number is not always reported.

The build number of the BMC and IMM are not always reported

The version number of the Baseboard Management Controller (BMC) or Integrated Management Module (IMM) is always reported; the build number is not always reported.

8e SATA Controller will not be detected in the Windows 2008 environment

Do not attempt to run an update for this adapter because it will fail. This is a limitation with the Adaptec HRCCONF tool.

Second OS image is not always updated when using an ICPM card

If the TFTP server is set up on the AMM that the ICPM card is plugged into, UXSPI updates the boot image and only one OS image. The following error is displayed when the product tries to update the second OS image: Could not find update file. The AMM version must be at least BPET42D or later to properly configure the ICPM card.

UXSPI only supports updating two files for legacy Management Modules

UXSPI only supports the updating of two files for legacy Management Modules.

Cobia card on Windows 64-bit OS requires a 64-bit native build Broadcom CIM provider

The Cobia card on the Windows 64-bit OS requires a 64-bit native build Broadcom CIM provider.

Device driver update returns code 1603

Code 1603 indicates a general device driver update problem, such as the current device driver is a higher level than the one available in the update, or the hardware is not present. No further action is required.

Firmware update from bootable media is not supported for IBM System x3450

For IBM System x3450, firmware must be updated from within an installed operating system.

Additional considerations when using VMWare ESX remote functions

To use the remote functions of VMWare ESX, you must make the following changes:

Enable SSH access for the root user

By default, SSH access is blocked for the root user. To enable it, edit the `/etc/ssh/sshd_config` file to change the value of `PermitRootLogin` to **Yes**.

Open firewall ports on the ESX host to allow access for a service or management agent

By default, the ESX host blocks firewall ports used by the service and management agents. You must open these ports to provide access to the server by the agent. Complete the following steps to provide access.

1. Log into the VI client and select the server from the inventory panel.
2. Click the **Configuration** tab and select **Security Profile**.
3. Select the **SSH Client** and **SSH Server** and click **OK**.

Libusb_support must be enabled to allow an update of the RSA2 driver on VMWare 4.0

You must enable **Libusb_support** support manually prior to running the update. To enable support, run the command `esxcfg-module -s libusb_support t=1 usb.o` and then restart the machine for the change to take effect.

Configure the firewall to allow uEFI/DSA/IMM updates on uEFI/IMM systems

To perform these updates, you must configure the firewall to ensure that the flash utilities can connect to the IMM. Complete the configuration steps for one of the applicable VMware systems.

On VMware 3.5 systems:

1. `esxcfg-firewall -allowIncoming`
2. `esxcfg-firewall -allowOutgoing`
3. `ifconfig cdceth0 169.254.x.x`
4. `route del -net 169.254.0.0 netmask 255.255.0.0 lo`
5. Ping 169.254.95.118 to ensure that you can connect to the IMM using the Ethernet over USB interface.

For VMware 4.0 systems:

1. `esxcfg-firewall -allowIncoming`
2. `esxcfg-firewall -allowOutgoing`
3. `esxcfg-vswitch -l`
4. `esxcfg-vswitch -L vusb0 vSwitch0`
5. `ifconfig vswif0 169.254.xxx.xxx netmask 255.255.0.0`
6. Ping 169.254.95.118 to ensure that you can connect to the IMM using the Ethernet over USB interface.

LSI BUS messages appear during inventory gathering

The LSI provider used by UpdateXpress System Pack Installer to gather the LSI adapter data during inventory collection displays many lines of LSI BUS messages on the screen. These messages can be ignored.

The Intel-based Gigabit Ethernet Drivers for Windows v14.0 does not support Windows Server 2008 R2

The Intel-based Gigabit Ethernet Drivers for Windows (`intc_dd_nic_14.0_windows_32-64.exe`) does not support Windows Server 2008 R2. If you attempt to run this driver, you get an error stating that the install did not succeed. This occurs because the driver updates that are in v14.0 are already bundled with Windows Server 2008 R2, and it is not necessary to run this update.

Attempting to backlevel Broadcom from 2.1.1a shows undetected

Broadcom packages 2.1.0c and earlier cannot determine the version data if 2.1.1a has already been applied. However, the 2.1.0c packages can still be applied and the version detection is corrected.

UXSPI Acquisition function requires access through firewall

To acquire support files from the IBM website, UXSPI requires access through the local firewall. You must open HTTP port 80 and HTTPS port 443 in order to use the acquisition function.

ServeRAID B5015 controller is not detected on IBM System x3850 X5 with SLES 11 SP1

UXSPI cannot detect the ServeRAID B5015 controller on IBM System x3850 X5 servers running SLES 11 Service Pack 1.

ServeRAID B5015 firmware version not detected on RHEL 5 U5 and RHEL 6

UXSPI cannot detect the firmware version of the ServeRAID B5015 when running on RHEL 5 U5 or RHEL 6.

Broadcom adapters are not supported by VMware ESX 4.0 and 4.1

UXSPI cannot detect the firmware of Broadcom adapters in VMware ESX 4.0 or 4.1 environments.

Mounted directory will be rejected when running UXSPI on SLES10

The specified mount directory will be unmounted when running UXSPI on SLES10. Keep the current working directory at the mount point, such as `/mnt` to prevent an unmount of the related network when running UXSPI.

Brocade firmware version cannot be detected on RHEL 5.8, RHEL 6.2, RHEL 6.3, SLES 10.4, SLES 11.2, and ESX 4.1

The Brocade firmware version displays as undetectable from UXSPI in RHEL 5.8, RHEL 6.2, RHEL 6.3, SLES 10.4, SLES 11.2, and ESX 4.1. This is a limitation of the Brocade CIM provider version 3.0.1.0. There is no known workaround.

UXSPI requires up to 2 GB of free memory to guarantee a firmware update

If the operating system is booted from USB or CD/DVD, UXSPI requires up to 2 GB of free memory to guarantee an update of the firmware. The operating system itself uses memory space, requiring that the memory size should be 4 GB or more.

USB key can be lost during update of IMM firmware via USB key

When updating the Integrated Management Module (IMM) firmware using a USB key, updating the firmware causes the IMM to unmount the USB key, making it unavailable for any remaining updates. To avoid this problem when updating IMM firmware from a USB key, perform the firmware update as a separate update, or perform any other updates prior to updating the IMM firmware.

UXSPI hangs when attempting to perform updates on IBM System x3950 X5 type 7146

The IBM System x3950 X5 could hang after selecting **Updates** from the TUI or GUI menus, and return an unrecognizable error. This can be caused by a failure of one or more of the solid-state drives installed in the device.

If you encounter this error, perform diagnostics on the solid-state drives and replace any failed ones.

libstdc++.so.6 is required for UXSPI updates

The `libstdc++.so.6` module is installed by default by VMware 3.5 and other operating systems. It is required by UXSPI. If this module was not installed when the operating system was installed, or was subsequently uninstalled, updates will fail and the following error message is displayed: Error while loading shared libraries: libstdc++.so.6: cannot open shared object file: No such file or directory.

If you encounter this error, ensure that the `libstdc++.so.6` module is installed on the target system and try running updates again.

Some systems do not recognize some USB keys

Some IBM systems do not recognize the SanDisk SDCZ36 4 and 8 GB USB keys.

If you experience difficulty using one of these keys, try a different type of USB key or create your bootable media using a CD or DVD.

Firefox displays warning for unresponsive script when performing remote updates

When using remote access through the AMM to perform updates remotely using the UXSPI GUI, Firefox displays a warning message for a busy or unresponsive script and provides the option to stop the script or continue. This behavior is caused by network latency through the AMM.

Select **Continue** and allow the script to continue running. The update will complete normally.

Updates fail to complete when "New Hardware Found" pop-up windows are displayed

Before deploying updates, close any pop-up windows opened by the operating system. In particular, you must close any "New Hardware Found" pop-up windows displayed by Windows. Until these are closed, Windows does not allow the new hardware to be updated, causing UXSPI to stop responding.

Brocade 10Gb dual port combined network adapter driver mismatch

When using UXSPI to update systems that have the Brocade 10Gb dual port combined network adapter installed, you might receive a message warning that the BCU and driver versions do not match. UXSPI cannot detect the Brocade firmware version if the Brocade driver version is not equal to the provider version used by UXSPI. This is a known issue and can be safely ignored.

If you are using UXSPI 4.40, install Brocade driver 2.3.0.0. If you are using UXSPI 5.00, install Brocade driver 3.0.0.0.

64-bit Linux requires compat-libstdc++

To run 32-bit binaries and utilities including UXSPI, 64-bit Linux operating systems require the compatibility library: **compat-libstdc++**. You can use the following command to determine whether this library is installed: **rpm -qa | grep compat-libstdc++-296** .

Updating Mellanox could require that you manually uninstall rpm

If a Mellanox update fails, manually remove the rpm files from the Mellanox update log. The mellanox log path and file name can be found in the UXSPI log.

Log files cannot be saved to a USB key on a remote console

When performing updates to a target system from a remote console, UXSPI is unable to save the resulting log files to a USB key connected to the remote console.

MPT2SAS firmware update causes UXSPI to exit on Linux

When using the UXSPI CLI to update the IBM HBA/LSI onboard 6Gb firmware on Linux operating systems, UXSPI exits without an Installation Successful message after performing this update. The SAS firmware is installed correctly but the updates (firmware and drivers for other devices in the system) are not executed. This issue does not affect the UXSPI GUI or an individual update for the IBM HBA/LSI onboard 6Gb adapter.

UXSPI cannot inventory the backup firmware versions for IMM and uEFI

UXSPI is unable to detect the firmware versions in the backup banks for IMM and uEFI. UXSPI always reports the firmware version for the primary banks of these devices.

UXSPI cannot determine the machine type when multiple Samba shares are mounted on SLES 11.1 x86

When a system running SLES 11.1 x86 has multiple Samba shares mounted, UXSPI is unable to determine the machine type of the system.

RSA II version is not detected when running UXSPI from bootable media

When running UXSPI from bootable media created by the Bootable Media Creator, UXSPI is unable to detect the RSA II version on the target system.

Brocade driver 3.0 or higher is required to detect the Brocade firmware version

Upgrade the Brocade driver to 3.0 or higher to detect the firmware version of the installed Brocade cards.

UXSPI continues to run remotely when interrupted locally

When UXSPI runs on a remote system, it is launched in a separate process from UXSPI on the local machine. When **CTRL+C** is used to interrupt the local process, the remote process continues to run. This can result in incomplete updates and instability on the remote system.

To interrupt the local process, log on to the remote system and manually stop the UXSPI process.

Power saving function is not supported for ESXi updates

The Power Saving function is not supported for any VMware ESXi updates.

UXSPI runs slowly on Windows multi-node systems

When initially running UXSPI on a multi-node system that is running Windows 2011, it can take up to 15 minutes for UXSPI to start. This does not impact the update function.

Broadcom 10GBase-T dual port NIC is not supported with RHEL 5

The Broadcom 10GBase-T dual port NIC is not supported when using UXSPI with RHEL 5.

Abnormal GUI when saving logs in a bootable environment

When saving log files in a bootable environment, the layout of the buttons in the GUI might not be consistent. The layout of buttons can change from instance to instance, even when using the same environment.

Format mismatch for some LSI and ServeRAID adapters

When comparing the installed version of firmware for some LSI and ServeRAID adapters that are using UXSPI, the installed version of firmware might be displayed in a different format than the version displayed by the System Update Package XML file. For example, the installed version might be displayed as:

```
07.19.00.00_07.18.01.05
```

while the version in the System Update Package is displayed as:

```
07.19.00.00
```

This is only a difference in the how the version is displayed and does not affect the compare function.

Duplicate IP addresses when updating IMM, uEFI, and DSA

When using UXSPI to update IMM, uEFI, and DSA, you might encounter IP address duplication. This is because some NICs use IP addresses 169.254.95.118 or 169.254.95.120. These IP addresses are reserved for IMM LAN-over-USB.

Broadcom firmware update on ESXi is only supported on vSphere 5.0 u1 and vSphere 5.1 with the customized patch

UXSPI does not support Broadcom firmware updates on vSphere 5.0 u1 and vSphere 5.1. Broadcom firmware updates are supported when the customized patch is installed.

Some parameters for updating the IO module have restrictions

The values of the following UXSPI parameters are URL format strings: **-io-uploadpath**, **--mm-file**, **--mm-file2**, **--io-file**, and **--io-file2**.

The username, password, and file path of the URL can not contain a blank character and special characters, such as “:” and “@”.

UXSPI requires rebooting VMWare ESXi after each loop of the ESW firmware update

When using UXSPI to flash IMM, uEFI, or DSA on VMWare ESXi in loops, you must reboot VMWare ESXi each time a loop is completed.

Make sure switch telnet access is enabled before updating it

Telnet access for some switches is disabled by default.

You should manually enable the switch.

A mounted directory is rejected when running UXSPI on SLES10

The specified mount directory will be unmounted when running UXSPI on SLES10.

When running UXSPI, keep the current working directory as the mount point. Use **/mnt** to prevent unmounting on the related network.

Ensure the Telnet connection is enabled and the password has not been changed for Cisco switches

Click **Reset the switch to factory defaults** on the management page for the Cisco Switch to ensure the Telnet connection is enabled and the password has not been changed.

Brocade device driver does not support SLES 11.3

The inbox driver and the latest Brocade device driver package do not work on SLES 11.3.

Firmware update for a switch might fail when the IP address of the switch is allocated by DHCP

UXSPI requires that the IP address of a switch is stable during the firmware update process. If the IP address is changed after reboot, UXSPI fails to reconnect to the switch and return an error.

Flex System requirement for updating x-FW in out-of-band mode

If you want to update x-FW in out-of-band mode on a Flex System, you need to create an IPMI account via the IMM web page and ensure that the account is the same as the CMM login account.

Detection of the Mellanox firmware version on Windows requires Mellanox Firmware Tools

Mellanox Firmware Tools (MFT) is required for detecting the installed version of the Mellanox firmware on Windows. If the MFT is not installed, the Mellanox firmware version cannot be detected. The installation of a Mellanox firmware update, however, is not dependent on the MFT.

OpenSSL on ESXi4.1, ESXi5.0, and ESXi5.1 can only support TLS level 1.0

OpenSSL on ESXi4.1, ESXi5.0, and ESXi5.1 can only support TLS level 1.0. If you set the IMM TLS min level to 1.1 or 1.2, TC fails to get and set the IMM configuration through the ESXi system.

UXSPI v9.50 and subsequent releases do not support Windows 2003

UXSPI v9.50 and subsequent releases do not support Windows 2003. You can use UXSPI 9.41 on Windows 2003 systems. The file is available for download from the IBM Support Fix Central web page.

There is no QLogic adapter support for the Lenovo customized VMWare ESXi 4.1 image

There are no QLogic drivers and no provider for these adapters:

- QLogic 10Gb Virtual Fabric Adapter for IBM BladeCenter
- Qlogic QLE8262 Dual Port 10GbE SFP+ Adapter
- Qlogic MEZZ 16Gb 2p FC Adapter

There is currently no support for them on the Lenovo customized VMWare ESXi 4.1 image. In addition, even if you manually install the Qlogic driver and provider, there is still no support.

Detection of Emulex firmware version requires the installation of Emulex OneCommand Manager

Emulex OneCommand Manager (core version) is required for detecting the installed version of Emulex firmware. If it is not installed, the Emulex firmware can not be detected. The installation of Emulex firmware, however, is not dependent on Emulex OneCommand Manager.

RETAIN tips

The following tips in the IBM Remote Technical Assistance Information Network (RETAIN), apply to this release of UXSPI. Please visit the IBM support pages to view these tips:

- H202233: mpt2sas FW update causes UXSPI exit on Linux operating systems - IBM System x
- H202234: 7164: UpdateXpress System Pack Installer (UXSPI) list multiple Unified Extensible Firmware Interface (UEFI) updates - IBM System x3755 M3
- H202235: UpdateXpress System Pack Installer (UXSPI) does not support Broadcom, LSI, or Emulex update in VMware ESXi 4.1 - IBM BladeCenter and IBM System x
- H202237: ServeRAID B5015 SSD Controller Firmware Version Detection Limitation - IBM System x
- H202238: No ESW update support for x3755 M3 on VMware ESXi 4.1 U1 - IBM System x3755 M3 (7164)
- H202239: Brocade device driver update fails every other time - Brocade 4 Gigabit FC HBA, Brocade 8 Gigabit FC HBA, Brocade 10 Gigabit CNA
- H202240: Multiple concurrent instances of VMWare ESXi update will fail - IBM System x
- H202241: IMM update option missed when install UXSP - IBM System x
- H202242: UXSPI unable to detect two ServeRAID BR10i controllers - IBM System x3400 M3 (7378), x3500 M3 (7380)
- H202243: GUI DOESN'T MATCH WITH CLI
- H203984: UXSPI unable to detect hard drive firmware version on Microsoft Windows 2008, 2008 R2 - IBM System x3250 M4 (2583)
- H204993: Python script will hang when calling UXSPI to update UEFI to 173v if the UEFI is already 173v - IBM System x3690 X5, x3850 X5
- H205607: UXLite update program cannot detect Brocade firmware and BIOS version - IBM BladeCenter HS23E (8038, 8039), IBM System x3530 M4 (7160), IBM System x3630 M4 (7158)
- H207166: UXSPI needs requisite XML file to know if the REQ was met - IBM BladeCenter and System x

Workarounds

The following known problems and workarounds are applicable to UpdateXpress System Pack Installer, v10.2.

UXSPI uses IMM Lan-over-USB with "169.254. .xx" network, which may conflict with another application

If you are running an application, such as Oracle RAC, that also uses the "169.254.95.xx" network, running UXSPI changes the network route table which might cause the other application to behave unexpectedly.

Workaround

1. Change the network setting of the other application to prevent conflict.
2. Terminate the other application when you update the UXSPI firmware, if possible.
3. Update the firmware using the IMM web page or run the binary file directly for the option firmware.

Sometimes the X window on SLES12 stops working when running UXSPI to update

Sometimes the X window on SLES12 stops working when running UXSPI to update, and at the same time the update finally succeeds. The screen does not show a response from the keyboard and the mouse, however it still works via SSH, which indicates the OS is still running.

Workaround

1. You can use SSH to run UXSPI in CLI mode to update.
2. If this happens, you can connect to the OS via SSH and run these commands to restart:
 - init 3
 - init 5

UXSPI does not support collecting FFDC on SLES12

After failing to update xFW, UXSPI does not collect the First Failure Data Capture (FFDC) on SLES12.

Workaround

Collect the FFDC from the IMM web page.

UpdateXpress System Pack Installer fails to update firmware for the Flex System FC5052 and FC5054 adapters

When using UpdateXpress System Pack Installer (UXSPI) to update firmware for the Flex System FC5052 2-port 16Gb FC Adapter and the Flex System FC5054 4-port 16Gb FC Adapter on a VMware system, the updates might fail because the system is out of memory.

Workaround

Manually disable the HHRC Wrapper on the VMware system.

UXSPI fails to update xFW for one node of the IBM System x3950 X6

Sometimes, UXSPI succeeds in updating xFW for node0 of IBM System x3950 X6, but fails to update xFW for node1.

Workaround

In this case, you can follow these steps to recover the system.

1. DC off the box.

2. Remove the alternating current power source from both the top and bottom nodes. Wait for all of the LEDs to turn off.
3. Unplug all of the Compute books except slot 1.
4. Connect the alternating current power source to only the bottom node.
5. Connect IMM enet to the bottom node.
6. Log on to IMM web on the bottom node.
7. Flash the IMM and uEFI code.
8. DC on the box and let it get to uefi f1/setup screen.
9. DC off the box.
10. Unplug the bottom alternating current power source. Wait for all of the LEDs to turn off.
11. Unplug compute book in slot 1.
12. Install compute book in slot 5.
13. Connect the alternating current power source to the top node only.
14. Install IMM enet to the top node.
15. Log into IMM web on the top node.
16. Load IMM and uEFI code.
17. Connect the video to the top node.
18. DC on the box.
19. Boot to the uEFI setup screen.
20. DC off the box.
21. Remove the alternating current power source. Wait for all of the LEDs to turn off.
22. Install all of the compute books.
23. Connect all of the alternating current power sources.
24. Verify through the IMM, that the box has been setup as a two-node, 8-way box.
25. DC on the box.
26. Ensure that the box boots.
27. Ensure that all of the code is up-to-date through the IMM web interface on both nodes, or through uEFI setup.

The error message: Exiting from the current instance **is displayed when only one instance of UXSPI is running.**

UXSPI uses semaphores to prevent UXSPI from running multiple instances at the same time. When UXSPI exits ungracefully, the semaphore might not get released, preventing another instance of UXSPI from starting.

Workaround

Run UXSPI from the command line using the `-semdestroy` option. Then, run UXSPI as usual.

UXSPI does not support running multiple copies of itself

Because only one UXSPI tool should apply updates to a system at a time, UXSPI does not support running multiple UXSPI tools on a local system at the same time. You can, however, run the tools against multiple remote systems by using the **remote** argument.

Workaround

To use the **remote** argument, you must set the environment variable `UXSPI_MULTIPLE_INSTANCE` to 1 on the system running the tool. The following example demonstrates this argument for Windows and simultaneously running remote updates on servers 10.6.9.58 and 10.0 8.137:

```
SET UXSPI_MULTIPLE_INSTANCE=1
start cmd.exe /K uxspi500.exe up -remote=10.6.9.58
-remote-user=administrator -remote-password=passw0rd
start cmd.exe /K uxspi500.exe up -remote=10.0 8.137
-remote-user=administrator -remote-password=passw0rd
```

The following example demonstrates this argument for Linux for simultaneously running remote updates on servers 10.6.9.58 and 10.0 8.137:

```
export UXSPI_MULTIPLE_INSTANCE=1
uxspi500.rhel5 up -remote=10.6.9.58 -remote-user=root
-remote-password=passw0rd > log1.txt 2>err1.txt &
uxspi500.rhel5 up -remote=10.0 8.137 -remote-user=root
-remote-password=passw0rd > log2.txt 2>err2.txt &
```

Cancelling a remote UXSPI instance might cancel other instances of UXSPI

If you use a remote UXSPI that is started by using the `--remote` option or from a third party connection package such as Windows Remote Desktop Connection, it cannot detect another UXSPI instance running on the same remote system. Running multiple instances on the same system is supported; however, clicking **Cancel** from the GUI terminates all instances of UXSPI running on the remote system.

Workaround

It is preferred that you not run multiple instances of UXSPI on the same remote system. If you do run multiple instances, manually check to see whether any other administrators are running UXSPI before clicking **Cancel**.

Acquisition of the latest updates for a new machine type does not update the UXSPI supported machine types list

The list of supported machine types in the UXSPI GUI includes all machine types supported at the time UXSPI was released. New machine types are added to the list when an UpdateXpress System Pack is released for the new machine type, or when the installer is updated. Acquiring updates for a new machine type does not update the supported machine types list in the GUI.

Workaround

Acquire the UpdateXpress System Pack for the new machine type, restart the GUI to update the supported machine types list, and then acquire the latest updates for the new machine type.

Unable to execute UXSPI from a USB key

Some Linux operating systems (for example, SLES 10) automatically mount USB devices with the **noexec** parameter. This parameter disallows any user from running a program directory from the mounted device.

Workaround

To run a file from a USB device in this configuration, either copy the entire UXSP to your hard disk drive and execute from that location, or remount the USB device with the **exec** parameter. You can accomplish the second option by first unmounting the USB device by issuing: **umount /mnt/usbkey** as root (assuming **/mnt/usbkey** is the mount point of the USB device). You can then remount the device by specifying the **mount** command with the **exec** parameter. For example: `mount /dev/sdb1 /mnt/usbkey -o exec`.

Linux drivers are not active immediately

The Linux device drivers require activation. UXSPI loads the new driver into the file system, but the operating system does not use the new driver until it is loaded.

Workaround

To modify this behavior, remove the existing driver with the **rmmod** command and load the new driver with the **modprobe** command. Alternatively, after rebooting the system the new driver is active.

Linux LSI Logic SCSI 1020/1030/1064/1068 Controllers are not detected after install

The Linux device drivers require activation. UXSPI loads the new driver into the file system, but the operating system does not use the new driver until it is loaded.

Workaround

The mptctl driver must be loaded. Run the **lsmod** command to verify that mptctl is loaded. If it is not loaded, run the following command to load the driver: **modprobe mptctl**.

Linux version of UXSPI requires compatibility libraries

The 64-bit UXSPI requires the compatibility libraries. However, the compatibility libraries are not installed by default in RHEL4. Therefore, when you execute the installer, it returns an error stating the library file is missing.

Workaround

Ensure that you install the legacy software development packages.

The path passed to the local path argument (-l or --local) must not exceed 234 characters

The local path argument cannot exceed 234 characters

Workaround

Copy UpdateXpress System Pack to a directory that is less than 234 characters.

Firmware updates for the Broadcom network card for Linux on CD/DVD and USB-Key bootable-media are not applied when the network card is not up and active

On Linux, a Broadcom network interface controller must be up and active for firmware updates to be applied. Also, on Linux and when updating from the bootable-media, each network port must be connected to a switch or router.

Workaround

Ensure the network interface controller that you are updating is up and active for each port and connected to a switch or a router.

UXSPI does not always start on Linux systems

In rare cases UXSPI might fail to successfully start on Linux. In this case, the following error message is sent to stderr:

```
-----  
WARNING! This package doesn't appear to match your system.  
It is likely that it will not properly execute.  
The following information was determined for your system:
```

```
distribution = Red Hat  
release = 4  
processor architecture = Intel 64-bit"  
-----
```

Distribution, release, and processor architecture can vary and match the Linux system. The installer will return an error code of 1.

Workaround

Restart UXSPI. It will succeed the next time.

USB key fails on RHEL5

When a USB key is inserted on RHEL5, by default it is mounted as **noexec**. **noexec** means no application can run, including UXSPI.

Workaround

Override the default **noexec** mount option. For example, mount a USB key device of /dev/sdc1 as /media/disk. To do so, perform the following steps:

```
umount /dev/sdc1
mkdir /media/disk
mount -o exec /dev/sdc1 /media/disk
```

User Account Control (UAC) on Windows Vista and Windows Server 2008 prevents the installer from running without popup windows

UAC is a security control that normally prompts you before running the application at a privileged level on Windows Vista and Windows Server 2008.

Workaround

To disable this feature for UXSPI, launch **Invgy_util_uxspi_10.2_winsrvr_32-64.exe** at the command prompt with elevated privileges by completing the following steps.

1. Right-click **Invgy_util_uxspi_10.2_winsrvr_32-64.exe** and select **Run as Administrator**.
2. At the UAC prompt command window, click **Yes**.

UXSPI is launched with a full administrator security token.

Broadcom firmware is not detected or updated from CD or DVD bootable-media on a IBM System x3550 system

On an IBM System x3550 system, bootable-media on a CD or DVD might not detect the Broadcom firmware version or successfully apply the firmware update.

Workaround

Use a USB key instead of CD and DVD bootable-media, or ensure the Baseboard Management Controller (BMC) is updated to version 1.27 build level GFBT43A or later and then reboot the system.

Unable to boot from USB Key bootable media on systems with onboard SATA drives

Systems that only support onboard SATA drives, such as IBM System x336 and IBM System x306m, fail to boot from the USB Key bootable media. However, systems using ServeRAID adapters, or with LSI onboard 1064 or higher, do not experience this problem.

Workaround

Create a CD bootable media and apply the firmware updates from CD instead from the USB key.

Booting from USB Key bootable media on a IBM System x3755 might display video error messages

When booting from USB Key bootable media on a IBM System x3755, you might see video error messages about the video resolution. The error is displayed for 30 seconds unless you press the **Enter** key.

Workaround

Ignore these error messages.

Bootable media might not display all updates in the list view

The Bootable media Text User Interface (TUI) might not display all the updates in the list view when the total number of updates in the list view exceeds the size of the display screen. This is particularly true for the IBM System x3755, which displays a small screen size in the Bootable media TUI mode.

Workaround

Toggle to see the full update detail list using the **Full View** selection.

Additional requirements for Windows 2003 remote server updates in IPv6 networks

To perform remote server updates for a Windows 2003 server in an IPv6 network, you must perform the following steps:

1. Set up the IPv6 network on the target server. Refer to Step-by-Step Guide for Setting Up IPv6 in a Test Lab at: “11edd39551d7&displaylang=en” on page
2. Enable file sharing connections over the IPv6 on the target server. To do this, add a key named DisableStrictNameChecking to the registry:
HKEY_LOCAL_MACHINE\System\CurrentControlSet\Services\LanmanServer\Parameters,
with type **REG_DWORD** with a value=1.

DSA (diags) firmware is not always installed if the IMM is a previous version

Because the DSA firmware update is run before the IMM firmware update, if the IMM firmware is an older previous version, the DSA firmware update fails.

Workaround

Run the update twice. The first update will bring the IMM firmware to the current level, which allows the second update to update the DSA firmware. A reboot is not required between the updates.

Update of IBM HBA/LSI onboard 6Gb firmware exits CLI

When using the UXSPI CLI to update the IBM HBA/LSI onboard 6Gb firmware in Linux distributions (RHEL4 and RHEL5), UXSPI exits without an Installation Successful message after performing this update. The SAS firmware is installed correctly, but the updates which follow (firmware and drivers for other devices in the system), are not executed.

This issue does not affect the UXSPI GUI or the individual update for the IBM HBA/LSI onboard 6Gb adapter.

Full corequisite checking is not performed when using the CLI

When specifying update packages from the command line, UXSPI does not perform full checking of corequisite packages. Specifically, while both prerequisites and corequisites are checked for a current package, if a package that is a prerequisite of the current package also has a corequisite, the corequisite is not checked. In rare instances, this can cause the update to fail. This issue does not affect the UXSPI GUI.

Workaround

To avoid this issue, manually select any corequisite packages required by packages that are prerequisites of the one you are installing. Alternately, you can use the GUI.

RHEL 6 requires installation of SOAPpy

To function properly on RHEL 6, UXSPI requires that the full-featured SOAP library for Python (SOAPpy) be installed manually after operating system installation. To install this library and all prerequisites manually, complete the following steps.

1. Insert the RHEL 6 installation CD.
2. On the target system, select **Add/Remove Software**.
3. In the search box, enter lib and click **Search** to display a list of available libraries.

4. Select the **Full-Featured SOAP Library for Python** (SOAPPy-0.11.6-11.el6) and accept all of the prerequisites.
5. Click **Apply** to install the files.

Running UXSPI remotely from a USB key using AMM can take an extremely long time to boot

When running UXSPI from a USB key using an AMM, boot times can be as long as 20-30 minutes. This is a limitation of this scenario.

Workaround

To avoid this problem, create a CD or DVD image of the boot media for use in remote scenarios requiring the AMM.

Undetected failure when two clients update the same VMware ESXi target

When separate UXSPI clients attempt to remotely update the same VMware ESXi target system, both updates fail, but no error is reported.

Workaround

Allow only one UXSPI client to perform a remote update to a VMware ESXi system at a time.

UXSPI fails to update the DSA package

UXSPI fails to update the DSA package when the **Diagnostics** option is set from the Boot Options menu in uEFI.

Workaround

Remove **Diagnostics** from the Boot Options menu and AC-Cycle the system before flashing DSA with UXSPI. You can also restart the system and verify that **Diagnostics** is not in Boot Options before flashing DSA.

UXSPI does not support uploading a directory to the TFTP server

Due to the limitation of the TFTP server, UXSPI does not support uploading a directory to the TFTP server. Therefore, if the payload of the IO module firmware is a directory, UXSPI does not support updating it automatically using TFTP server.

Workaround

Upload the directory to the TFTP server manually and then use the --io-file option to update the firmware. Alternatively, use the FTP or SFTP server.

UXSPI fails to update the device driver for the Flex System FC5022 2-port 16Gb FC Adapter in CLI mode

UXSPI fails to update the device driver for the Flex System FC5022 2-port 16Gb FC Adapter in CLI mode on Windows.

Workaround

Update the device driver with UXSPI in GUI mode.

UXSPI sometimes fails to update IMM on vSphere 5.0, 5.0 U1, and 5.1

UXSPI sometimes fails to update IMM on vSphere 5.0, 5.0 U1, and 5.1 due to the operation system IPMI deadlock issue on vSphere 5.0, 5.0 U1, and 5.1. vSphere 5.1 U1 and 5.0 U2 are preferred.

Appendix A. Notices

Use this information to understand the legal notices for this documentation.

This information was developed for products and services offered in the U.S.A.

Lenovo may not offer the products, services, or features discussed in this document in other countries. Consult your local Lenovo representative for information on the products and services currently available in your area. Any reference to a Lenovo product, program, or service is not intended to state or imply that only that Lenovo product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any Lenovo intellectual property right may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any non-Lenovo product, program, or service.

Lenovo may have patents or pending patent applications covering subject matter described in this document. The furnishing of this document does not grant you any license to these patents. You can send license inquiries, in writing, to:

Lenovo Director of Licensing
Lenovo Corporation
North Castle Drive
Armonk, NY 10504-1785
U.S.A.

For license inquiries regarding double-byte (DBCS) information, contact the Lenovo Intellectual Property Department in your country or send inquiries, in writing, to:

Lenovo World Trade Asia Corporation
Licensing 2-31 Roppongi 3-chome, Minato-ku
Tokyo 106-0032, Japan

The following paragraph does not apply to the United Kingdom or any other country where such provisions are inconsistent with local law: LENOVO CORPORATION PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some states do not allow disclaimer of express or implied warranties in certain transactions, therefore, this statement may not apply to you.

This information could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. Lenovo may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time without notice.

Any references in this information to non-Lenovo Web sites are provided for convenience only and do not in any manner serve as an endorsement of those Web sites. The materials at those Web sites are not part of the materials for this Lenovo product and use of those Web sites is at your own risk.

Lenovo may use or distribute any of the information you supply in any way it believes appropriate without incurring any obligation to you.

Licensees of this program who wish to have information about it for the purpose of enabling: (i) the exchange of information between independently created programs and other programs (including this one) and (ii) the mutual use of the information which has been exchanged, should contact:

Lenovo Corporation
MW9A/050
5600 Cottle Road

San Jose, CA 95193
U.S.A.

Such information may be available, subject to appropriate terms and conditions, including in some cases, payment of a fee.

The licensed program described in this information and all licensed material available for it are provided by Lenovo under terms of the Lenovo Customer Agreement, Lenovo International Program License Agreement, or any equivalent agreement between us.

Any performance data contained herein was determined in a controlled environment. Therefore, the results obtained in other operating environments may vary significantly. Some measurements may have been made on development-level systems and there is no guarantee that these measurements will be the same on generally available systems. Furthermore, some measurements may have been estimated through extrapolation. Actual results may vary. Users of this document should verify the applicable data for their specific environment.

Information concerning non-Lenovo products was obtained from the suppliers of those products, their published announcements or other publicly available sources. Lenovo has not tested those products and cannot confirm the accuracy of performance, compatibility or any other claims related to non-Lenovo products. Questions on the capabilities of non-Lenovo products should be addressed to the suppliers of those products.

All statements regarding Lenovo's future direction or intent are subject to change or withdrawal without notice, and represent goals and objectives only.

This information contains examples of data and reports used in daily business operations. To illustrate them as completely as possible, the examples include the names of individuals, companies, brands, and products. All of these names are fictitious and any similarity to the names and addresses used by an actual business enterprise is entirely coincidental.

If you are viewing this information softcopy, the photographs and color illustrations may not appear.

Trademarks

Lenovo, the Lenovo logo, and ibm.com are trademarks or registered trademarks of International Business Machines Corp., registered in many jurisdictions worldwide. Other product and service names might be trademarks of Lenovo or other companies. A current list of Lenovo trademarks is available on the web at Lenovo Copyright and Trademark Information at <http://www.lenovo.com/legal/copytrade.html>.

Adobe and the Adobe logo are either registered trademarks or trademarks of Adobe Systems Incorporated in the United States, and/or other countries.

Intel is a trademark or registered trademark of Intel Corporation or its subsidiaries in the United States and other countries.

Linux is a registered trademark of Linus Torvalds in the United States, other countries, or both.

Microsoft and Windows are trademarks of Microsoft Corporation in the United States, other countries, or both.

Other company, product, or service names may be trademarks or service marks of others.

Lenovo[™]