



Virtual Machine to Physical Machine Migration

This document describes how to migrate an existing virtual machine and migrate its files and configurations into a physical machine. This is also known as virtual to physical migration or V2P migration.

The migration process uses third party tools to:

- Prepare the source virtual machine
- Transfer the prepared source virtual machine to the hard drive of a physical machine

The process for Microsoft guest operating system environments includes the use of Microsoft Sysprep 1.1 and a disk imaging tool such as Symantec Ghost.

The process for other operating systems involves an imaging tool but does not use Sysprep as this only works for Microsoft operating systems. For Linux environments, the Kudzu imaging tool is a reasonable choice. For information on performing a V2P migration of a Linux guest operating system virtual machine, refer to the documentation that accompanies your Linux imaging tool of choice.

The sections in this document are:

- [V2P Migration Requirements](#)
- [Preparing for a V2P Migration](#)
- [Migrating a Virtual Machine to a Physical Machine Overview](#)
- [Additional Resources](#)
- [Examples](#)

V2P Migration Requirements

The following sections list the V2P migration requirements and restrictions:

- [V2P Migration Third Party Tool Requirements](#)
- [V2P Migration Source Machine Requirements](#)
- [V2P Migration Target Machine Requirements](#)
- [V2P Migration Restrictions](#)



V2P Migration Third Party Tool Requirements

To migrate your virtual machine to a physical machine, you need the following third party tools installed in the virtual machine:

- Microsoft Sysprep 1.1 — to prepare the image for transfer. This must be installed on the source virtual machine. This tool allows you to configure changes to hardware devices.
- Symantec Ghost (or any other image transfer software) — to transfer the prepared image. You need a boot floppy for both the virtual machine and the physical machine.
- Drivers for the target physical machine — one for the target disk drive and possibly for other hardware such as ethernet adapters.

V2P Migration Source Machine Requirements

The source virtual machine must have been created by one of the VMware virtualization platforms. In addition, the virtual machine must be running one of the following Microsoft guest operating systems:

- Windows 2000 Professional, Server or Advanced Server
- Windows XP (not tested)
- Windows 2003
- Windows NT 4.0 Workstation or Server (not tested)

V2P Migration Target Machine Requirements

The methods outlined in this technical note are intended to apply to most Windows based physical machines. The V2P migration procedure has been tested with the following target host machines and an `.inf` file for each these systems is provided. Refer to the directory and/or web location where you downloaded this document for copies of these `.inf` files.

- IBM xSeries 345, 330
- Dell PowerEdge 2650, 1650
- Hewlett-Packard ProLiant DL360, DL380
- Fujitsu Siemens Computers PRMERGY RX800, RX600, RX300, RX200, P250

V2P Migration Restrictions

- ACPI and non-ACPI hardware migration:
Virtual machines created with Workstation version 4.0 or greater, GSX Server 3.0 or greater or ESX Server 2.0 or greater emulate ACPI hardware. Due to a Sysprep limitation, virtual machines that emulate ACPI hardware can only be migrated to ACPI physical machines. Virtual machines created with older versions of Workstation, GSX Server, and ESX Server emulate non-ACPI hardware and can only be migrated to non-ACPI physical boxes. Reference [1] provides a compatibility matrix.
- SMP virtual machines must be migrated to SMP compatible physical machines.



Preparing for a V2P Migration

Perform the following prior to migrating a virtual machine to a physical machine:

1. Identify the source virtual machine to migrate.
This can be an original virtual machine or a copy of a virtual machine.
2. Identify the target physical machine to migrate to.
3. List all the hardware components of the target machine.
The following is a sample worksheet you can use to store the physical machine information:

Device	Specifications		
CPU	Type	Speed (MHz/GHz)	Qty
Processor	Bus (MHz)	Cache (KB)	
RAM size (MB/GB)			
SCSI Controller			
Disk type			
Disk size (GB)			
Disk quantity			
NIC 0	Type	Speed	Duplex
NIC 1	Type	Speed	Duplex
NIC 2	Type	Speed	Duplex

4. Identify which drivers you might need.
One method is to view devices in the Registry. These drivers must match the guest operating system on the source machine. Check the Windows machine registry to identify possible drivers.
 - a. Open the Registry Editor, select:
Windows Start > Run > regedit 32
 - b. In the Registry Editor, select:
Local Machine > System > Current Control Settings > Control > Control Device Database
 - c. View the list of hardware and search for the GUID class corresponding to the hardware device.
 - d. Record the name of the hardware device and the device driver identification.
5. Collect all the device drivers required to operate the devices on the target machine. Refer to the:
 - Software disk and documentation provided by the device manufacturer
 - Web site of each device manufacturer



For example, to find an IBM storage device driver from the website:

- a. Go to the IBM website:
[//www.ibm.com/downloads_and_drivers/](http://www.ibm.com/downloads_and_drivers/)
- b. Search for servers > storage type
- c. View the list of drivers in the software device raid server driver matrix.

The following is a sample worksheet you can use to store hardware device drivers reference information.

Device	Driver
Disk Controller	
Disk 1	
Disk 2	
Disk 3	
Ethernet 1	
Ethernet 2	
RAM	
CPU quantity (1 or 2)	
CPU processor type (GHz)	
Graphics	
Miscellaneous devices:	

6. Make a snapshot or backup copy of the virtual machine to be migrated.
 A snapshot feature is provided in your virtualization platform, VMware Workstation, GSX Server, or ESX Server.



Migrating a Virtual Machine to a Physical Machine Overview

The following sections describe how to migrate a virtual machine running a Microsoft guest operating system to a physical machine.

- [Preparing Utilities on the Virtual Machine](#)
- [Creating a Directory for Hardware Drivers on the Virtual Machine](#)
- [Creating the sysprep.inf and commandlines.txt Files](#)
- [Creating a Mass Storage Section in the sysprep.inf File](#)
- [Updating the Hal in the sysprep.inf File](#)
- [Running Sysprep](#)
- [Transferring the Virtual Machine Image](#)
- [Booting the Target Physical Machine](#)
- [Installing Additional Drivers](#)
- [Completing the V2P Migration](#)

Preparing Utilities on the Virtual Machine

To setup Microsoft Sysprep and other setup utilities on the virtual machine:

1. Create a Sysprep directory on the virtual machine to be migrated (source system). For example:

```
C:\sysprep
```

2. Download Sysprep 1.1 from the Microsoft Web site.
[//www.microsoft.com/windows2000/downloads/tools/sysprep/default.asp](http://www.microsoft.com/windows2000/downloads/tools/sysprep/default.asp)
3. Copy Sysprep 1.1, into the directory you created in step 1.
4. Copy the following additional setup utilities to the Sysprep directory:

- `setupmgr.exe`
- `setupmgx.dll`

The files are on your Windows 2000 CD, in the `SUPPORT\TOOLS` directory, in the `Deploy.cab` file. You may need to extract the setup files from the `.cab` file. The `setupmgr.exe` utility is used to create the `sysprep.inf` file.

5. Remove older VMware drivers and the VMware Tools from the virtual machine.

You can use the Windows Add/Remove Programs utility found through the Windows menus **Start > Settings > Control Panel > Add/Remove Programs**.

VMware Tools cannot be uninstalled from the physical machine being created in this process.



Creating a Directory for Hardware Drivers on the Virtual Machine

Create a directory for the hardware device drivers on the source virtual machine disk. Then create one subdirectory for each device driver you need installed on the migrated system.

1. Decide if you need the drivers available for plug-and-play detection.

You have the option to store these hardware device drivers in the Sysprep directory. However, the Sysprep directories and their contents are deleted after the Sysprep mini setup completes.

If the hardware device drivers are stored in an alternate directory then the drivers remain on the virtual machine after the Sysprep mini setup is completed and they therefore can also be used for plug-and-play detection.

2. Create a directory for hardware drivers on the source virtual machine. For example:

```
C:\drivers
```

3. Create a sub directory in the drivers directory for each driver you need installed on the migrated system. For example:

```
C:\drivers\network_storage
```

This includes drivers for the SCSI boot drive as well as any other hardware on the target system whose drivers are not distributed on the Windows distribution disk.

Refer to [Preparing for a V2P Migration on page 3](#) for information on identifying and locating all the device drivers needed to complete the V2P migration.

4. Copy the hardware driver into the appropriate subdirectory.

Typically, hardware manufacturers provide this on their installation disk or you can find updated drivers at the hardware manufacturer's web site.

Creating the sysprep.inf and commandlines.txt Files

To create the `sysprep.inf` and `commandlines.txt` files, use the Setup Manager.

1. Run the Setup Manager utility.

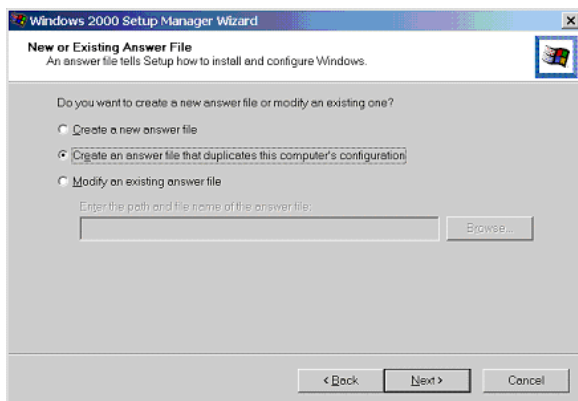
Choose Windows **Start > Run**. Browse to the Sysprep directory. Select `setupmgr.exe`. Click **OK**.



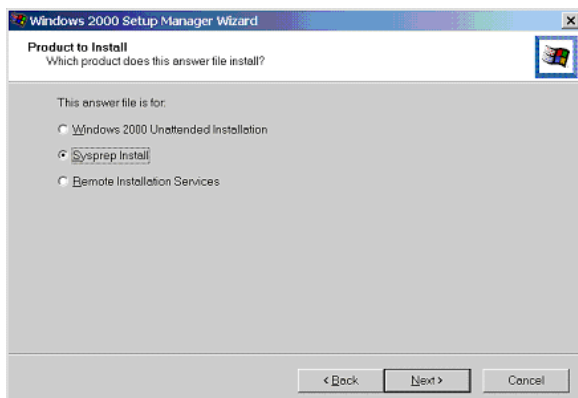
This utility was installed during the preparation phase. Refer to [Preparing Utilities on the Virtual Machine on page 5](#).



2. Continue with the Setup Manager wizard. Click **Next**.
3. Choose **Create an answer file that duplicates this computer's configuration**. Click **Next**.



4. Choose **Sysprep Install**. Click **Next**.





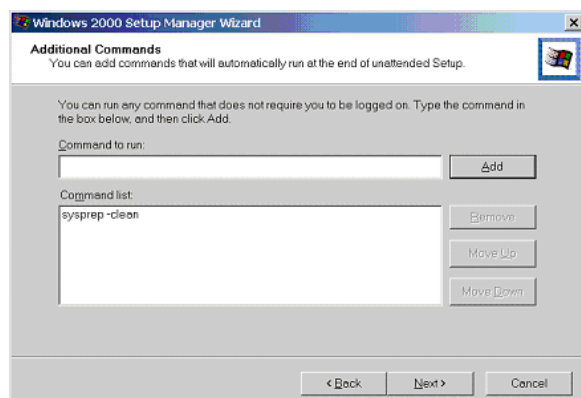
5. Complete the remainder of the screens to specify the configuration you want on the target computer.
6. Setup for running Sysprep.

At the **Additional Commands** screen, add the line:

```
C:\sysprep\sysprep -clean
```

Through the Additional Commands screen the Setup Manager creates a `commandlines.txt` file.

The additional line directs Sysprep to remove any drivers that were pre-installed which do not match the current hardware set.



7. Save both the `commandlines.txt` and `sysprep.inf` in the same directory as `sysprep.exe`.

Configure the OEMPnp Drivers Path

The `DevicePath Value Name`, a `REG_EXPAND_SZ` data type, at `HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion` is truncated when you exceed the 2047 character limit for the `OEMPnpDriversPath` in `Sysprep.inf`. No error is reported.

To workaroud this limit:

1. Remove the `OEMPnpDriversPath` from `Sysprep.inf`.
2. Manually configure the `DevicePath Value Name` by using Regedt32.

Separate each path by a semi-colon (;) and include the `%SystemDrive%` and `%SystemRoot%` reference with absolute paths. This unlike the relative paths that are defaulted in the `Sysprep.inf`.



Creating a Mass Storage Section in the sysprep.inf File

To define the mass storage requirements for the target physical machine, edit the `sysprep.inf` file.

1. Using the text editor of your choice, open the `sysprep.inf` file created in the previous section.
Refer to [Creating the sysprep.inf and commandlines.txt Files on page 6](#) for additional information.
2. Create a Mass Storage Section which contains one line for each mass storage subsystem whose drivers you want to pre-install before transferring the image to the target computer.
3. **For mass storage adapters supported** on the Windows distribution disk:
 - a. Add lines in the mass storage section using the following format:

```
[SysprepMassStorage]
<hardware id> = "<path to device inf>"
```

Where:

`<hardware id>` — the plug-and-play hardware identification number for the mass storage subsystem.

`<path to device inf>` — the path to the `.inf` file for the device in the image you are transferring. This is usually in the `\inf` subdirectory of the Windows system directory.

- b. Specify each storage adapter.

For example, the following entries support the IDE controllers (PCI and Intel) whose drives are included on the Windows 2000 distribution disk. The following example text is from a target physical machine.

```
[SysprepMassStorage]
PCIVEN_8086&DEV_1222 = "%windir%\inf\mshdc.inf"
PCIVEN_8086&DEV_1230 = "%windir%\inf\mshdc.inf"
PCIVEN_8086&DEV_7010 = "%windir%\inf\mshdc.inf"
PCIVEN_8086&DEV_7111 = "%windir%\inf\mshdc.inf"
PCIVEN_8086&DEV_2411 = "%windir%\inf\mshdc.inf"
PCIVEN_8086&DEV_2421 = "%windir%\inf\mshdc.inf"
```

4. **For mass storage adapters not supported** on the Windows distribution disk:
 - a. Add lines in the mass storage section using the following format:

```
[SysprepMassStorage]
<hardware id> = <path to device inf>, <disk directory>, <disk description>, <disk tag>
```

Where:

`<hardware id>` — the plug-and-play hardware identification number for the mass storage subsystem. It can be found in the `textsetup.oem` file for the device from the



driver disk. It is common for one `textsetup.oem` file to cover multiple mass storage devices. If you want to pre-install the driver for all of the devices covered by the file, you must have one line for each `<hardware id>` listed in the file.

Check the `driver.inf` file to be sure it matches the reference here. Use the long number identification, even if a shortened version is listed.

For example the `driver.inf` file may list this with the long name:

```
PCI\VEN_1000&DEV_0030&SUBSYS_01241028
```

The `textsetup.oem` file may list this with a short name:

```
PCI\VEN_1000&DEV_0030
```

`<path to device inf>` the path to the `.inf` file for the device in the image you are transferring.

This defines where you put the drivers. For example:

```
C:\drivers
```

If, when creating the drivers directory, you placed the files from the boot disk for a device, `mydrive` in the subdirectory `mydir`, the path would be

```
C:\drivers\mydir\mydrive.inf.
```

`<disk directory>` — the subdirectory where the driver file can be found. This is relative to the directory specified in `<path to device inf>`. If in the same directory, the value can be backslash (`\`).

`<disk description>` — a description of the hardware supported by the driver being installed.

This can be found in the `[Disks]` section of the `textsetup.oem` file for the driver. There should be a line for each disk of the format:

```
d1= Hardware Description, disk.tag, \
```

This field supports any text you need to create a clear description.

`<disks tag>` — the name of the tag file for the driver disk. It can be found in the same line of the `textsetup.oem` file for the driver.

b. Specify each storage adapter.

For example:

```
[SysprepMassStorage]
```

```
PCI\VEN_1000&DEV_0621 = C:\drivers\perc 4\symmpi.inf, \, Dell  
PERC 4/im | LSI Logic 1020/1030 Driver, symmpi.tag
```



Updating the Hal in the sysprep.inf File

If the target system requires a different HAL (hardware abstraction layer) than the source system, a line can be included in the [Unattended] section of the `sysprep.inf` file. That is if the virtual machine is a multi-processor and the target machine is a single processor, and this information is required to align the number of processors.

To change from a uni-processor source virtual machine to a multi-processor target system, add the line:

```
[Unattended]
UpdateHAL = ACPIAPIC_MP,%windir%\inf\hal.inf
```

To change from a multi-processor source virtual machine to a uni-processor target system:

1. Add the line:

```
[Unattended]
UpdateHAL =
ACPIAPIC_UP,%SystemDrive%\Sysprep\i386\Uniproc\Mp2up.inf
```

2. Copy the uni-processor files from the Windows 2000 product CD to the Sysprep distribution folder.

For example, copy from the directory:

```
\$OEM$\$1\Sysprep\i386\Uniproc.
```

The files to copy are as follows:

```
Mp2up.inf
Mp2up.cat
Kernel32.dl_
Ntdll.dll
Win32k.sy_
Winsrv.dl_
```

You do not need to expand the unexpanded files. The detection does this automatically when needed.

3. If a service pack updates these files, the updated files need to be copied into the folder.

Running Sysprep

Run Sysprep from the directory in which it was copied. This prepares the image for booting on the target system and shuts down the source virtual machine.

1. From the powered on source virtual machine, run Sysprep.

Select Windows **Start** > **Run**. Browse to the path for the `sysprep.exe` file. Click **OK**.

Alternatively, at the command prompt, type:

```
c:\sysprep\sysprep -pnp -forcshutdown
```

This command adds the PNP drivers path during the Mini-Setup and consequently you are not prompted for the path to the PNP drivers at login.

2. Shutdown the source virtual machine.



When the Sysprep process is complete, if it does not automatically do so, shutdown the source virtual machine.

Transferring the Virtual Machine Image

Use any disk imaging product, for example Ghost to transfer the image to the target system.

Transfer the virtual machine image using your preferred imaging tool. For example Ghost.

To clone the image using your preferred imaging tool.

1. Create boot floppy or FLP image for virtual machine.
2. Create boot floppy for physical machine.
3. Clone the image to the physical machine disk.

Refer to your imaging product documentation for a complete description of the imaging process.

Booting the Target Physical Machine

Boot the target physical machine from the imaging tool boot floppy.

If everything for the new boot device is configured correctly, Windows starts and runs a mini-setup.

This is not a full install of the Windows operating system. It is a wizard like sequence to define and identify the new physical machine on the network.

If the drivers were not configured correctly, a blue screen appears with the error "Inaccessible Boot Device" during the boot process. Check the configuration in the `sysprep.inf` file to verify the drivers are correct for the target physical machine. Refer to [Creating the sysprep.inf and commandlines.txt Files on page 6](#) for information on how the file should be set up.

Installing Additional Drivers

After mini setup completes you are prompted to install drivers for new hardware found on the target system. This includes networking drivers for the hardware card in the target physical machines.

To locate drivers:

- Check the target physical machine's local system. Some drivers are installed through the image tool.
- Check the manufacturer provided hardware device disks or the manufacturer web site. Refer to [Creating a Directory for Hardware Drivers on the Virtual Machine on page 6](#) for additional information.

Completing the V2P Migration

Perform the clean up steps as follows.

1. Remove residual VMware drivers.
2. Scan through the event logs for the physical machine for problems with drivers or services and correct them.



3. Clear the event logs, reboot and repeat the steps in section [Bootting the Target Physical Machine on page 12](#) and [Installing Additional Drivers on page 12](#) until the event logs are clear of critical issues.
4. Perform your validation tests for the migrated system.
5. Validate that the `boot.ini` file is correctly configured on the new physical system.
Use a text editor of choice and review the file.
6. Ensure that, at a minimum, the following drivers are installed in the physical machine.
 - Network driver(s)
 - Disk controller driver(s)
 - Graphics driver
 - Keyboard and mouse drivers
 - Additional device driversSearch through your appropriate program directory.
7. Ensure that the disk on the physical machine has a signature written to it and that the disk is enabled as active.

A signature is a unique identifier that Windows assigns to a disk typically through the disk manager when you first mount the disk on a computer.

You can also use an imaging products such as Ghost to assign the signature to any raw target that has not been formatted for Windows.
8. Set up network configuration for the physical machine. Ensure it is on the same network as the virtual machine.
9. Verify SID (security identification) information, as necessary.

If you plan to have the source virtual machine run on the same network as the new physical machine, you need to give the machine different SIDs.

The mini-setup might have set this up. During the Setup Manager wizard you have the option to configure the SID for the target physical machine. Decide whether to keep the old SID or assign a new one.
10. Verify the HAL of the target physical machine corresponds with the HAL of the source virtual machine.

Additional Resources

Additional resources are described in the following sections:

- [Sysprep References](#)
- [VMware Documentation](#)
- [Related Websites](#)
- [VMware Professional Services](#)



Sysprep References

The follow two documents are included in the Sysprep package downloaded from Microsoft:

- *Microsoft Windows 2000 Guide to Unattended Setup* (unattend.doc) — Starting on Page 135 is a write up on updating the HAL for switching between uniprocessor and multiprocessor systems.
- *Microsoft Windows 2000 Sysprep Update* (newsysprep.doc) — This is a write up on updating the mass storage drivers when migrating between systems.

VMware Documentation

The following VMware documentation is available on the product CD-ROM and/or on the VMware Website:

- VMware ESX Server
[//www.vmware.com/support/esx](http://www.vmware.com/support/esx)
 - *VMware ESX Server User's Manual*
 - *ESX Server Release Notes*
- VMware P2V Assistant
[//www.vmware.com/support/p2v](http://www.vmware.com/support/p2v)
 - *VMware P2V Assistant User's Manual*
 - *P2V Assistant Release Notes*

Related Websites

The following are Websites that can provide additional information.

- [//www.vmware.com](http://www.vmware.com)
- [//www.sysprep.com](http://www.sysprep.com)
- [//www.veritas.com](http://www.veritas.com)
- [//www.powerquest.com](http://www.powerquest.com)
- [//www.ghost.com](http://www.ghost.com)

VMware Professional Services

VMware Profession Services contact points are listed in the table below:

Service	Contact Points	Content
Education Services	education@vmware.com	Open Enrollment and Customer-Site Classes
Technical Support	www.vmware.com/support/	Documentation (all product lines)
		Troubleshooting
		Hardware Compatibility for ESX Server
		Knowledge Base
		Perl API Documentation



Service	Contact Points	Content
Consulting Services	consulting@vmware.com	ESX Server Jumpstart Package
		P2V Migration Package
		DRB (Disaster Recovery and Backup) Package
		V2P Migration Package
		Server Consolidation
		Custom Consulting

Examples

The following sections provide samples of files and driver locations for reference purposes. The sample txtsetup.oem and smmpi.inif file are used as resource for building the sample sysprep.inif file. Use the source files that correspond to your target hardware, to build similar files.

- [Sample txtsetup.oem File](#)
- [Sample smmpi.inif File](#)
- [Sample sysprep.inif File](#)



Sample txtsetup.oem File

```

# txtsetup.oem-version 2K.3 for SYMMPI Windows drivers (Windows 2000)
#
# *****
#
# Copyright 2001 LSI Logic, Corp. All rights reserved.          *
#                                                                 *
# This file is property of LSI Logic, Corp. and is licensed for *
# use as is. The receipt of or possession of this file does not *
# convey any rights to modify its contents, in whole, or in part, *
# without the specific written consent of LSI Logic, Corp.      *
#                                                                 *
# *****
#
# format for txtsetup.oem.
#
# General format:
#
# [section]
# key = value1,value2,...
#
#
# The hash ('#') introduces a comment.
# Strings with embedded spaces, commas, or hashes should be double-quoted
#

[Disks]

# This section lists all disks in the disk set.
#
# <description> is a descriptive name for a disk, used when
#   prompting for the disk
# <tagfile> is a file whose presence allows setup to recognize
#   that the disk is inserted.
# <directory> is where the files are located on the disk.
#

dl = "Dell PERC 4/im | LSI Logic 1020/1030 Driver", \sympmi.tag, \

[Defaults]

# This section lists the default selection for each 'required'
# hardware component. If a line is not present for a component,
# the default defaults to the first item in the [<component_name>]
# section (see below).
#
# <component_name> is one of computer, display, keyboard, mouse, scsi
# <id> is a unique <within the component> string to be associated
#   with an option.

scsi = SYMMPI_2K

[scsi]

```




```

# This section lists the options available for a particular component.
#
# <id> is the unique string for the option
# <description> is a text string, presented to the user in a menu
# <key_name> gives the name of the key to be created for the component in
#   HKEY_LOCAL_MACHINE\ControlSet001\Services

SYMMPI_2K = "Dell PERC 4/im | LSI Logic 1020/1030 Driver (Windows 2000)",symmpi

[HardwareIds.scsi.SYMMPI_2K]

id = "PCI\VEN_1000&DEV_0621", "symmpi"
id = "PCI\VEN_1000&DEV_0622", "symmpi"
id = "PCI\VEN_1000&DEV_0624", "symmpi"
id = "PCI\VEN_1000&DEV_0030", "symmpi"

# This section lists the files that should be copied if the user
# selects a particular component option.
#
# <file_type> is one of driver, port, class, dll, hal, inf, or detect.
#   See below.
# <source_disk> identifies where the file is to be copied from, and must
#   match an entry in the [Disks] section.
# <filename> is the name of the file. This will be appended to the
#   directory specified for the disk in the [Disks] section to form the
#   full path of the file on the disk.

[Files.scsi.SYMMPI_2K]
driver = dl,symmpi.sys,SYMMPI
inf     = dl,symmpi.inf
catalog = dl,symmipi2k.cat

[Config.SYMMPI]

# This section specifies values to be set in the registry for
# particular component options. Required values in the services\xxx
# key are created automatically -- use this section to specify additional
# keys to be created in services\xxx and values in services\xxx and
# services\xxx\yyy.
#
# <key_name> is relative to the services node for this device.
#   If it is empty, then it refers to the services node.
#   If specified, the key is created first.
# <value_name> specifies the value to be set within the key
# <value_type> is a string like REG_DWORD. See below.
# <value> specifies the actual value; its format depends on <value_type>
value = Parameters\PnpInterface,5,REG_DWORD,1

```



Sample smmpi.inf File

```

;
; SYMMPI.INF - version 2K.5 (Windows 2000)
;
; This is the INF file for Windows 2000 for the SYMMPI based PCI MPI
; environment
;
; *****
;
; Copyright 2001 LSI Logic, Inc. All rights reserved.
;
; This file is property of LSI Logic, Inc. and is licensed for
; use as is. The receipt of or possession of this file does not
; convey any rights to modify its contents, in whole, or in part,
; without the specific written consent of LSI Logic, Inc.
;
; *****

[version]
signature="$Windows NT$"
Class=SCSIAdapter
ClassGUID={4D36E97B-E325-11CE-BFC1-08002BE10318}
Provider=%LSI%
DriverVer=07/17/2002,1.08.06
CatalogFile.ntx86=symmpi2k.cat

[DestinationDirs]
DefaultDestDir = 12 ; DIRID_DRIVERS

[SourceDisksFiles.x86]
symmpi.sys = 1

[SourceDisksNames]
1 = %DiskDesc%,,

[Manufacturer]
%LSI%=LSI
%DELL%=DELL

[LSI]
%DevDesc1% = SYMMPI_Inst, PCI\VEN_1000&DEV_0621
%DevDesc2% = SYMMPI_Inst, PCI\VEN_1000&DEV_0622
%DevDesc3% = SYMMPI_Inst, PCI\VEN_1000&DEV_0624
%DevDesc4% = SYMMPI_Inst, PCI\VEN_1000&DEV_0030

[DELL]
%DevDescD1% = SYMMPI_Inst, PCI\VEN_1000&DEV_0030&SUBSYS_01351028
%DevDescD1% = SYMMPI_Inst, PCI\VEN_1000&DEV_0030&SUBSYS_011A1028
%DevDescD1% = SYMMPI_Inst, PCI\VEN_1000&DEV_0030&SUBSYS_01241028

[ControlFlags]
ExcludeFromSelect = PCI\VEN_1000&DEV_0621
ExcludeFromSelect = PCI\VEN_1000&DEV_0622

```

```
ExcludeFromSelect = PCI\VEN_1000&DEV_0624
ExcludeFromSelect = PCI\VEN_1000&DEV_0030
ExcludeFromSelect = PCI\VEN_1000&DEV_0030&SUBSYS_01351028
ExcludeFromSelect = PCI\VEN_1000&DEV_0030&SUBSYS_011A1028
ExcludeFromSelect = PCI\VEN_1000&DEV_0030&SUBSYS_01241028

[SYMMPI_Inst]
CopyFiles = SYMMPI_CopyFiles
AddReg = SYMMPI_AddReg

[SYMMPI_Inst.HW]
DelReg = LegacyScsiportValues

[SYMMPI_Inst.Services]
AddService = SYMMPI, %SPSVCINST_ASSOCSERVICE%, SYMMPI_Service_Inst,
Miniport_EventLog_Inst

[SYMMPI_Service_Inst]
ServiceType = %SERVICE_KERNEL_DRIVER%
StartType = %SERVICE_BOOT_START%
ErrorControl = %SERVICE_ERROR_NORMAL%
ServiceBinary = %12%\symmpi.sys
LoadOrderGroup = SCSI Miniport
AddReg = pnpsafe_pci_addreg

[SYMMPI_CopyFiles]
symmpi.sys,,1

[SYMMPI_AddReg]
HKLM,SYSTEM\CurrentControlSet\Services\Symmapi\Parameters\Device,DriverParameter,, "P1
aceHolder=0;"
HKLM,SYSTEM\CurrentControlSet\Services\Symmapi\Parameters\Device,MaximumSGList,0x0001
0001,0x41
HKLM,SYSTEM\CurrentControlSet\Services\Symmapi\Parameters\Device,NumberOfRequests,0x0
0010001,0x80

[LegacyScsiportValues]
HKR,Scsiport,BusNumber
HKR,Scsiport,LegacyInterfaceType
HKR,Scsiport,SlotNumber

[pnpsafe_pci_addreg]
HKR, "Parameters\PnpInterface", "5", 0x00010001, 0x00000001

[Miniport_EventLog_Inst]
AddReg = Miniport_EventLog_AddReg

[Miniport_EventLog_AddReg]
HKR, ,EventMessageFile,%REG_EXPAND_SZ%, "%SystemRoot%\System32\IoLogMsg.dll"
HKR, ,TypesSupported,%REG_DWORD%, 7

[Strings]
LSI = "LSI Logic"
DELL = "Dell"
DiskDesc = "LSI Logic PCI SCSI/FC MPT Driver Install Disk"
```



```

DevDesc1 = "LSI Logic FC909 Fibre Channel Adapter"
DevDesc2 = "LSI Logic FC929 Fibre Channel Adapter"
DevDesc3 = "LSI Logic FC919 Fibre Channel Adapter"
DevDesc4 = "LSI Logic 1020/1030 Ultra320 SCSI Adapter"
DevDescD1 = "Dell PERC 4/im RAID Controller"

```

```

;*****
;Handy macro substitutions (non-localizable)
SPSVCINST_ASSOCSERVICE = 0x00000002
SERVICE_KERNEL_DRIVER = 1
SERVICE_BOOT_START = 0
SERVICE_ERROR_NORMAL = 1
REG_EXPAND_SZ = 0x00020000
REG_DWORD = 0x00010001

```

Sample sysprep.inf File

```

;SetupMgrTag
[Unattended]
    UpdateHAL = "ACPIAPIC_MP,%windir%\inf\hal.inf"
    OemSkipEula=Yes
    OemPnPDriversPath=C:\drivers
    InstallFilesPath=C:\sysprep\i386
    TargetPath=\WINNT

[GuiUnattended]
    AdminPassword=passw0rd
    OEMSkipRegional=1
    TimeZone=4
    OemSkipWelcome=1

[UserData]
    FullName=v2p
    ComputerName=DELL-V2P

[Display]
    BitsPerPel=32
    Xresolution=1024
    YResolution=768
    Vrefresh=85

[LicenseFilePrintData]
    AutoMode=PerServer
    AutoUsers=5

[RegionalSettings]
    LanguageGroup=1

[SetupMgr]
    DistFolder=C:\sysprep\i386
    DistShare=win2000dist

[Identification]
    JoinWorkgroup=V2P-VMS

```



```
[Networking]
    InstallDefaultComponents=No

[NetClients]
    MS_MSClient=params.MS_MSClient

[SysprepMassStorage]

PCI\VEN_1000&DEV_0621 = "C:\drivers\symmpi\symmpi.inf", "\", "Dell PERC 4/im | LSI
Logic 1020/1030 Driver", "symmpi.tag"
PCI\VEN_1000&DEV_0622 = "C:\drivers\symmpi\symmpi.inf", "\", "Dell PERC 4/im | LSI
Logic 1020/1030 Driver", "symmpi.tag"
PCI\VEN_1000&DEV_0624 = "C:\drivers\symmpi\symmpi.inf", "\", "Dell PERC 4/im | LSI
Logic 1020/1030 Driver", "symmpi.tag"
PCI\VEN_1000&DEV_0630 = "C:\drivers\symmpi\symmpi.inf", "\", "Dell PERC 4/im | LSI
Logic 1020/1030 Driver", "symmpi.tag"
PCI\VEN_1000&DEV_0030&SUBSYS_01351028 = "C:\drivers\symmpi\symmpi.inf", "\", "Dell
PERC 4/im | LSI Logic 1020/1030 Driver", "symmpi.tag"
PCI\VEN_1000&DEV_0030&SUBSYS_011A1028 = "C:\drivers\symmpi\symmpi.inf", "\", "Dell
PERC 4/im | LSI Logic 1020/1030 Driver", "symmpi.tag"
PCI\VEN_1000&DEV_0030&SUBSYS_01241028 = "C:\drivers\symmpi\symmpi.inf", "\", "Dell
PERC 4/im | LSI Logic 1020/1030 Driver", "symmpi.tag"

PCI\VEN_9005&DEV_00C0 = "C:\drivers\adp160m\ADPU160M.INF", "\", "Adaptec Ultra160
Windows2000 FMS4.0 SP5", "ul60dsk1"
PCI\VEN_9005&DEV_00C0&SUBSYS_F6209005 =
"C:\drivers\adp160m\ADPU160M.INF", "\", "Adaptec Ultra160 Windows2000 FMS4.0 SP5",
"ul60dsk1"
PCI\VEN_9005&DEV_00C0&SUBSYS_F6200E11 =
"C:\drivers\adp160m\ADPU160M.INF", "\", "Adaptec Ultra160 Windows2000 FMS4.0 SP5",
"ul60dsk1"
PCI\VEN_9005&DEV_0080 = "C:\drivers\adp160m\ADPU160M.INF", "\", "Adaptec Ultra160
Windows2000 FMS4.0 SP5", "ul60dsk1"
PCI\VEN_9005&DEV_0080&SUBSYS_E2A09005 =
"C:\drivers\adp160m\ADPU160M.INF", "\", "Adaptec Ultra160 Windows2000 FMS4.0 SP5",
"ul60dsk1"
PCI\VEN_9005&DEV_0080&SUBSYS_E2A00E11 =
"C:\drivers\adp160m\ADPU160M.INF", "\", "Adaptec Ultra160 Windows2000 FMS4.0 SP5",
"ul60dsk1"
PCI\VEN_9005&DEV_0080&SUBSYS_62A09005 =
"C:\drivers\adp160m\ADPU160M.INF", "\", "Adaptec Ultra160 Windows2000 FMS4.0 SP5",
"ul60dsk1"
PCI\VEN_9005&DEV_0080&SUBSYS_E2209005 =
"C:\drivers\adp160m\ADPU160M.INF", "\", "Adaptec Ultra160 Windows2000 FMS4.0 SP5",
"ul60dsk1"
PCI\VEN_9005&DEV_00CF = "C:\drivers\adp160m\ADPU160M.INF", "\", "Adaptec Ultra160
Windows2000 FMS4.0 SP5", "ul60dsk1"
PCI\VEN_9005&DEV_008F = "C:\drivers\adp160m\ADPU160M.INF", "\", "Adaptec Ultra160
Windows2000 FMS4.0 SP5", "ul60dsk1"

PCI\VEN_1028&DEV_000E&SUBSYS_01231028 = "C:\drivers\mraid2k\Oemsetup.inf", "\", "DELL
PERC 3/4 RAID Driver for Windows 2000", "mraid2k.sys"
PCI\VEN_1028&DEV_000F&SUBSYS_013B1028 = "C:\drivers\mraid2k\Oemsetup.inf", "\", "DELL
PERC 3/4 RAID Driver for Windows 2000", "mraid2k.sys"
PCI\VEN_1028&DEV_000F&SUBSYS_014A1028 = "C:\drivers\mraid2k\Oemsetup.inf", "\", "DELL
PERC 3/4 RAID Driver for Windows 2000", "mraid2k.sys"
PCI\VEN_1028&DEV_000F&SUBSYS_014C1028 = "C:\drivers\mraid2k\Oemsetup.inf", "\", "DELL
PERC 3/4 RAID Driver for Windows 2000", "mraid2k.sys"
PCI\VEN_1028&DEV_000F&SUBSYS_014D1028 = "C:\drivers\mraid2k\Oemsetup.inf", "\", "DELL
PERC 3/4 RAID Driver for Windows 2000", "mraid2k.sys"
PCI\VEN_101E&DEV_1960&SUBSYS_05111028 = "C:\drivers\mraid2k\Oemsetup.inf", "\", "DELL
PERC 3/4 RAID Driver for Windows 2000", "mraid2k.sys"
PCI\VEN_1000&DEV_1960&SUBSYS_05181028 = "C:\drivers\mraid2k\Oemsetup.inf", "\", "DELL
PERC 3/4 RAID Driver for Windows 2000", "mraid2k.sys"
```



```
PCI\VEN_1000&DEV_1960&SUBSYS_05201028 = "C:\drivers\mraid2k\Oemsetup.inf", "\", "DELL PERC 3/4 RAID Driver for Windows 2000", "mraid2k.sys"

PCI\VEN_1011&DEV_0046&SUBSYS_13649005 = "C:\drivers\perc2\perc2.inf", "\", "Dell PERC 2, 2/Si, 3/Si, 3/Di Windows 2000 Device Drivers", "raidisk1"
PCI\VEN_1011&DEV_0046&SUBSYS_13659005 = "C:\drivers\perc2\perc2.inf", "\", "Dell PERC 2, 2/Si, 3/Si, 3/Di Windows 2000 Device Drivers", "raidisk1"
PCI\VEN_1028&DEV_0001&SUBSYS_00011028 = "C:\drivers\perc2\perc2.inf", "\", "Dell PERC 2, 2/Si, 3/Si, 3/Di Windows 2000 Device Drivers", "raidisk1"
PCI\VEN_1028&DEV_0002&SUBSYS_00021028 = "C:\drivers\perc2\perc2.inf", "\", "Dell PERC 2, 2/Si, 3/Si, 3/Di Windows 2000 Device Drivers", "raidisk1"
PCI\VEN_1028&DEV_0003&SUBSYS_00031028 = "C:\drivers\perc2\perc2.inf", "\", "Dell PERC 2, 2/Si, 3/Si, 3/Di Windows 2000 Device Drivers", "raidisk1"
PCI\VEN_1028&DEV_0002&SUBSYS_00D11028 = "C:\drivers\perc2\perc2.inf", "\", "Dell PERC 2, 2/Si, 3/Si, 3/Di Windows 2000 Device Drivers", "raidisk1"
PCI\VEN_1028&DEV_0002&SUBSYS_00D91028 = "C:\drivers\perc2\perc2.inf", "\", "Dell PERC 2, 2/Si, 3/Si, 3/Di Windows 2000 Device Drivers", "raidisk1"
PCI\VEN_1028&DEV_000A&SUBSYS_01061028 = "C:\drivers\perc2\perc2.inf", "\", "Dell PERC 2, 2/Si, 3/Si, 3/Di Windows 2000 Device Drivers", "raidisk1"
PCI\VEN_1028&DEV_000A&SUBSYS_011B1028 = "C:\drivers\perc2\perc2.inf", "\", "Dell PERC 2, 2/Si, 3/Si, 3/Di Windows 2000 Device Drivers", "raidisk1"
PCI\VEN_1028&DEV_000A&SUBSYS_01211028 = "C:\drivers\perc2\perc2.inf", "\", "Dell PERC 2, 2/Si, 3/Si, 3/Di Windows 2000 Device Drivers", "raidisk1"
PCI\VEN_9006&DEV_2140&SUBSYS_21409006 = "C:\drivers\perc2\perc2.inf", "\", "Dell PERC 2, 2/Si, 3/Si, 3/Di Windows 2000 Device Drivers", "raidisk1"
PCI\VEN_9005&DEV_00C5&SUBSYS_00C51028 = "C:\drivers\perc2\perc2.inf", "\", "Dell PERC 2, 2/Si, 3/Si, 3/Di Windows 2000 Device Drivers", "raidisk1"
```