

# Best Practices for Microsoft Windows Installation

## on Dell PowerEdge Servers with Broadcom NetXtreme Devices

Administrators can choose from a number of methods when installing Broadcom NetXtreme and NetXtreme II device drivers on Dell™ PowerEdge™ servers during Microsoft® Windows® OS installations. This article discusses best practices for carrying out manual and automated installations using the Broadcom installer and utilities like Netset.exe as well as other considerations for Windows installations involving these Broadcom adapters.

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**B**roadcom drivers on Dell PowerEdge servers support both the Broadcom NetXtreme and NetXtreme II series of adapters. The drivers for these two series have very different architectures, but both are supported by common management applications such as the Broadcom Advanced Control Suite (BACS), standards such as the Simple Network Management Protocol (SNMP) and Common Information Model (CIM), and a common intermediate driver that provides teaming (link aggregation) support.

The legacy NetXtreme series uses one driver per device—a simple Network Driver Interface Specification (NDIS) driver—allowing straightforward Microsoft Windows Plug and Play (PnP) installation. The NetXtreme II series introduces technology such as TCP/IP Offload Engine (TOE) that requires two device drivers—the virtual bus driver (VBD) and the NDIS client driver—which can

complicate PnP installation. In addition to these device drivers, the Broadcom adapters include an intermediate driver and applications that provide advanced services and functions.

Because this combination of drivers and applications can be complicated to install, and because of the device architecture and the file-version dependencies for the individual components, Dell and Broadcom provide an InstallShield installer to help simplify installation. This installer handles installation order and can help ensure that component versions have been tested for compatibility with each other and between the two series of adapters. The device drivers are still PnP compliant and can be installed without the assistance of the installer, but Dell encourages using the installer whenever possible to help minimize complications.

Both the NetXtreme and NetXtreme II drivers are included in one installer package, along with the management applications, for convenience and to help ensure version compatibility. The device drivers can be extracted from the installer by running `setup.exe` from the Broadcom driver directory, with the `/a` command-line parameter, and following the on-screen instructions. This article explores guidelines for installing drivers and configuring settings for Broadcom NetXtreme and NetXtreme II network adapters during a Windows OS installation on Dell PowerEdge servers.

### Manual installation of the OS and device drivers

Dell highly recommends using Dell OpenManage™ Server Assistant (DSA) to prepare and install operating systems on PowerEdge servers. DSA contains drivers for supported devices and sets up an unattended installation, helping simplify the process. DSA also provides replication services to deploy an OS across multiple servers. For more information, see the documentation provided with the DSA software.

### Broadcom installer for automated OS deployment

Administrators can use the Broadcom installer, `setup.exe`, to install Broadcom drivers and management applications in conjunction with a Windows unattended installation. They should use this method when the system does not require network access while the installation is running. Administrators can run the installer at the end of the installation phase or following the first login after the full Windows installation has completed.

#### SetupParams section of unattend.txt

Administrators can run the installer from the `SetupParams` section of the `unattend.txt` unattended answer file, which contains one entry for running an additional command after the Windows setup completes but before the final reboot of the installation. The syntax is as follows:

```
[SetupParams]
UserExecute = path and file name
```

For example:

```
[SetupParams]
UserExecute = "C:\Broadcom\w2k3\setup.exe"
```

The following restrictions apply:

- Only one command can be specified. If more than one `UserExecute` line exists, only the first line runs; the rest are ignored.

- The path and file name should be enclosed in quotation marks if the name is long. The path can be omitted only if the application is in the `%SYSTEMROOT%` or `%SYSTEMROOT%\system32` folder or search path.

Running the Broadcom installer in this section installs the drivers for all supported Broadcom network devices in the system, the Broadcom management applications, and the Broadcom intermediate driver. The system then reboots and presents the first login prompt of the newly installed OS. For more information about the Broadcom installer and command-line parameters, see the `silent.txt` file provided with the installer.

Using this method requires that administrators apply any non-default network settings, such as static IP addresses, after the OS is installed. Network settings specified in the unattended answer file are not applied to Broadcom network devices because the drivers for those devices are not installed until the very end of the Windows setup. Administrators can apply network settings manually after the OS installation or in the same way the Broadcom installer is run—for example, by using the Microsoft `Netset.exe`, `Netset03.exe`, or `Wnetset03.exe` utilities from the `SetupParams` section of the answer file (see the “Using the bus, device, and function numbers with NetXtreme II devices” section in this article) or by using `Cmdlines.txt`.<sup>1</sup>

The `SetupParams` section executes only one command, but that command can be a batch file or script that calls more than one command. To use the installer and apply network settings specified in the unattended answer file, the batch file or script could call the installer and then call the `Netset.exe` utility, which applies the network settings specified in the answer file to the newly installed devices. For an example answer file that uses `Netset.exe` in the `SetupParams` section, see the “Example answer file using `Netset.exe` in `SetupParams`” sidebar in this article; for an example answer file that incorporates a Microsoft Visual Basic® script, see the “Example answer file using a Visual Basic script” sidebar in this article.

#### Cmdlines.txt

Using a `Cmdlines.txt` file to run commands at the end of the Windows setup can be a more flexible method than using the `SetupParams` section. Administrators can use any text editor to create a file named `Cmdlines.txt`. In this file, they can add a `Commands` section and enter the commands, one per line, in this section. Commands are executed serially, meaning that a command is not executed until the previous one has completed. This method allows administrators to install the Broadcom drivers and applications and then apply the network settings once that installation command is complete. For example:

<sup>1</sup> For more information about `Netset.exe`, visit [support.microsoft.com/kb/268781](http://support.microsoft.com/kb/268781). For more information about `Netset03.exe` and `Wnetset03.exe`, visit [support.microsoft.com/kb/920293](http://support.microsoft.com/kb/920293).

```
[Commands]
"cmd.exe /c C:\Broadcom\setup.exe /s /v/qn"
"C:\Netset c:\unattend.txt"
```

The preceding commands install the Broadcom drivers and applications silently, and then apply the network settings specified in the unattended answer file to the network devices.

Administrators must place the `Cmdlines.txt` file in the `$OEM$` directory of the distribution share, and the unattended answer file must have the `OemPreinstall = Yes` line in the `Unattended` section. For an example answer file that uses `Netset.exe` in the `Cmdlines.txt` file, see the “Example answer file using `Netset.exe` in `Cmdlines.txt`” sidebar in this article.

Joining a domain can be accomplished in the normal manner (that is, using the answer file) if administrators provide—either in the `SetupParams` section of the unattended answer file or in `Cmdlines.txt`—the commands to install the driver and to set the network parameters using `Netset.exe`. If the system being installed uses the default network settings and Dynamic Host Configuration Protocol (DHCP), administrators only need to include the driver installation command in either of these sections to successfully join a domain as specified in the unattended answer file.

### Automated OS deployment using Plug and Play drivers

Administrators can use several methods to automate Windows OS deployment. Those that use the unattended answer file can also use various methods to identify the network device that should receive specific network settings. The NetXtreme II drivers’ architecture requires some specific steps to successfully complete an installation—especially an automated or unattended installation—that differ from installation steps for previous-generation drivers. For a comparison of automated Microsoft Windows installations with and without NetXtreme II devices, see the “Automated installations with and without Broadcom NetXtreme II devices” sidebar in this article.

### Specifying network settings for adapters

The NetXtreme II device architecture presents some challenges for unattended installation when using the bus, device, and function numbers of the network device to specify which device is assigned which settings. Specifying the NetXtreme II adapter by its bus, device, and function numbers in the `params.adapter` instance section of the unattended answer file does not work because the network device is viewed by the OS as a virtual device on a virtual bus.

The following sections outline methods for identifying network devices as well as an alternative method for applying the network settings using `Netset.exe`, `Netset03.exe`, or `Wnetset03.exe`.<sup>2</sup> The

settings are entered under the `params.adapter` instance section of the unattended answer file. For detailed instructions on the use of answer files and the sections and parameters discussed in this article, see the Microsoft Windows Preinstallation Reference help file (`Ref.chm`) provided with the Windows OS in `\Support\Tools\Deploy.cab`.

**Using the Plug and Play ID.** The `InfID` entry identifies a network adapter with a value that is the same as the adapter’s PnP ID. For example:

```
InfID = *PNP030b
```

For servers with more than one network adapter, administrators must specify each adapter’s PnP ID. For servers with multiple adapters of the same type (that is, adapters with the same PnP ID), they must specify the `NetCardAddress` or PCI location information; otherwise, only the first adapter enumerated or detected that matches the `InfID` entry receives the answer file entries. If administrators specify the `NetCardAddress` or PCI location, the OS installation does not use the `InfID` entry because it is the least specific entry.

**Using the Media Access Control (MAC) address.** The `NetCardAddress` entry specifies the MAC address for the network adapter being configured during unattended setup. For example:

```
NetCardAddress = 0x123456789ABC
```

This entry is required when installing multiple network cards of the same type (with the same PnP ID) on a system and applying non-default entries to the adapters. It is not required for PCI adapters if the PCI location information is specified.

**Using the bus, device, and function numbers.** The `PCIBusNumber`, `PCIDeviceNumber`, and `PCIFunctionNumber` entries indicate the PCI bus on which the network card resides, the device number on that bus, and the function number on that device. Administrators must specify these PCI location entries if the following are true:

- They do not specify the `NetCardAddress` entry.
- They install multiple network cards of the same type (with the same PnP ID) on a system.
- They must apply non-default entries to the adapter.

If they specify the `NetCardAddress` entry, the OS installation does not use the `PCIBusNumber`, `PCIDeviceNumber`, and `PCIFunctionNumber` entries because `NetCardAddress` provides more specific information than the PCI location information.

<sup>2</sup>For more information about these methods, visit [support.microsoft.com/kb/229762](http://support.microsoft.com/kb/229762).

**AUTOMATED INSTALLATIONS WITH AND WITHOUT BROADCOM NETXTREME II DEVICES**

The following table compares Microsoft Windows automated installation with and without Broadcom NetXtreme II devices. These differences apply only when network settings other than the default settings are applied.

Steps for performing automated Microsoft Windows installation	Required for installations without Broadcom NetXtreme II devices	Required for installations with Broadcom NetXtreme II devices
Administrator creates answer file manually or with Microsoft tools	✓	✓
Administrator adds SetupParams section or Cmdlines.txt with Netset.exe, pointing to the answer file, or uses the MAC addresses of the NetXtreme II devices		✓
Administrator provides the answer file on a floppy, USB, or CD drive, or any other media that the Windows installer can read	✓	✓
Administrator includes Netset.exe on the same media as the answer file		✓
Administrator starts Windows installation using winnt.exe with command-line options pointing at the answer file and installation directory	✓	✓
Windows installer begins copying all installation files to two temp directories on the destination hard drive (copy process is the same whether over the network or on a CD); network driver is typically NDIS2 at this point, but it could be ODI16	✓	✓
Copy completes and Windows begins text-mode installation; there is no network driver or activity	✓	✓
Text-mode installation completes, and Windows starts the Windows graphical user interface (GUI); there is no network driver or activity	✓	✓
If NT file system (NTFS) is selected, conversion from file allocation table (FAT) is performed, followed by a reboot	✓	✓
Windows begins GUI-mode installation: hardware detection, system files installation, registry hive creation, and selected Windows components installation	✓	✓
Network components are installed and network settings are applied as specified in the answer file (application of network settings for NetXtreme II devices would fail during this step if specified by bus, device, and function designation)	✓	✓
Cmdlines.txt or SetupParams instructions are executed	✓	✓
Netset.exe applies network settings; the bus, device, and function designation is successful for NetXtreme II devices		✓
System is joined to the domain if specified in the answer file	✓	✓
System reboots and runs Windows in the normal mode (user is prompted with the sign-in dialog)	✓	✓

**Using the bus, device, and function numbers with NetXtreme II devices.** Specifying the NetXtreme II adapter by its bus, device, and function numbers in the `params.adapter` instance section does not apply the network settings because the network device is viewed by the OS as a virtual device on a virtual bus.<sup>3</sup>

Administrators can apply the network settings from the `SetupParams` section of the unattended answer file by using `Netset.exe`, `Netset03.exe`, or `Wnetset03.exe`. For example:

```
[SetupParams]
UserExecute ="C:\Netset c:\unattend.txt"
```

Administrators can also use the `Cmdlines.txt` method to run `Netset.exe`, `Netset03.exe`, or `Wnetset03.exe` to apply the network settings. For example:

```
[Commands]
"C:\Netset c:\unattend.txt"
```

Joining a domain can be accomplished using `Netset.exe`, `Netset03.exe`, or `Wnetset03.exe` with either method by specifying the domain to join in the normal manner (using the answer file). For example:

```
[Identification]
JoinDomain = MyDomain
```

Administrators can use a Microsoft Visual Basic script to determine whether NetXtreme II adapters are present before running the `Netset.exe` utility if they run the utility from within a script either in the `SetupParams` section of the unattended answer file or in `Cmdlines.txt`, thus allowing one answer file template for systems both with and without NetXtreme II adapters. For an example Visual Basic script to detect NetXtreme II adapters, see the “Example Visual Basic script to detect Broadcom NetXtreme II adapters before running `Netset.exe`” sidebar in this article.

## NetXtreme II devices and the Windows Preinstallation Environment

Because the NetXtreme II driver architecture and technology differ from those of previous-generation Broadcom adapters, using NetXtreme II devices and drivers in conjunction with the Windows Preinstallation Environment (WinPE) requires certain processes and considerations. When building a WinPE image, administrators should consider the following:

- The `/PnP` switch must be specified for the NetXtreme II driver to load.

- The `drvinst.exe` utility must be used to inject the NetXtreme II drivers into the WinPE build. Copying the files to the various directories does not work.
- Only the `-winpe` switch for `Factory.exe` works with the normal NetXtreme II drivers (the VBD and the NDIS client driver). A simple NDIS driver for Microsoft Remote Installation Services (RIS) usage that works with the `-minint` switch is available on the Dell support Web site. For more information about the RIS-specific driver, see the “Remote Installation Services” section in this article.

## Automated Deployment Services and Remote Installation Services

Using Microsoft Automated Deployment Services (ADS) and RIS presents several issues for driver installation that administrators should consider.

### Automated Deployment Services

Administrators must use a simple NDIS driver for initial network connectivity during the copy phase of the installation. This driver resides in the RIS directory in the standard NetXtreme II driver package. Administrators should add this driver to the Presystem directory as they would any other driver. This driver is not sufficient, nor will it install, in a fully installed OS. It is only for use during OS deployment and installation; the normal drivers (the VBD and the NDIS client driver) must be used at all other times.

Administrators should set static network settings according to the method described in the “Image deployment and IP address configuration” section of the *ADS Administrator's Guide*. This method uses the `SetStaticIP` Visual Basic script in conjunction with the `set-static-ip.xml` sequence file.

If the ADS deployment incorporates custom variables in the `Sysprep.inf` file for the network settings using `PCIBusNumber`, `PCIDeviceNumber`, and `PCIFunctionNumber` as adapter identifiers, administrators must use the methods described in the “Specifying network settings for adapters” section in this article.

### Remote Installation Services

As with ADS, administrators must use the simple NDIS driver in the NetXtreme II driver package's RIS directory for initial network connectivity during the copy phase of the installation. Administrators should add this driver to the `i386` directory in the particular image requiring NetXtreme II 5708 network interface card (NIC) support. For example, for a Microsoft Windows Server® 2003 OS image, the files for the image may reside in the `\RemoteInstall\Setup\English\Images\win2003` directory, and administrators should place the drivers in the `i386` subdirectory. The normal combination drivers—the VBD and the NDIS client

<sup>3</sup>For more information, visit [support.microsoft.com/kb/920293](http://support.microsoft.com/kb/920293).

driver—should be added to the \$OEM\$ directory structure as specified at [support.microsoft.com/kb/246184](http://support.microsoft.com/kb/246184).

### WinPE load from Remote Installation Services server

If administrators are using an RIS server to boot a WinPE image through the Preboot Execution Environment (PXE), they must inject the simple NDIS RIS driver into the WinPE image instead of the normal VBD driver set. They must also place the RIS driver in the i386 directory that the WinPE image resides in. If they use the VBD driver set, the RIS load will result in the error message “File b06nd50x.sys caused an unexpected error (21) at line 4211 in d:\srvrtm\base\boot\setup\setup.c.”

### Other installation considerations for Broadcom NetXtreme devices

Some Windows OS installations involving Broadcom NetXtreme devices require additional considerations. This section examines guidelines for installations involving Altiris® image capturing and deployment and the Microsoft Scalable Network Pack (SNP).

#### Altiris image capturing and deployment

When performing Altiris image capturing and deployment, administrators should not use the Universal Network Driver Interface (UNDI) method of capturing the image, which could result in an OS halt. Instead of using the UNDI method, administrators should use the Altiris-defined method of specifying and using an NDIS 2 driver. The NDIS 2 driver for NetXtreme II is available in the DOS utilities package of the NetXtreme II driver, from the Dell support Web site, or on the Service Mode CD of the Dell OpenManage suite CD set.


#### TCP/IP setting changes with the Microsoft Scalable Networking Pack

Administrators may opt to install the Microsoft SNP during an OS installation. Changing network settings, such as gateway addresses, for Broadcom NetXtreme adapters could cause an OS halt when SNP package version 9 is installed. Changing the gateway settings while TOE is active using the SNP may cause this problem. The recommended work-around is to disable TOE offloading, change the IP settings on the system, and then re-enable TOE offloading. To do so, administrators can use the following commands:

```
netsh int ip set chimney disabled (to disable TOE offloading)
netsh int ip set chimney enable (to re-enable TOE offloading)
```

Administrators can also disable and re-enable the TOE offloading NIC from the Network Connections window (accessible from the Start menu under Settings > Network Connections) by right-clicking on the TOE-enabled network interface and selecting “Disable,” making the desired changes to the IP settings, and then right-clicking on the disabled interface and selecting “Enable.”

### Best practices for Windows installations involving Broadcom NetXtreme devices

Installing Broadcom NetXtreme and NetXtreme II devices during installation of a Microsoft Windows OS can present several challenges. Using the methods outlined in this article can help administrators simplify the installation process and help provide consistent deployments across Dell PowerEdge servers. 

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#### FOR MORE INFORMATION

**Broadcom NetXtreme user guides:**

[support.dell.com/support/edocs/network/broadcom](http://support.dell.com/support/edocs/network/broadcom)

## EXAMPLE ANSWER FILE USING NETSET.EXE IN SETUPPARAMS

```

[UserData]
FullName="DellServer"
OrgName="Dell"
ComputerName="PEServer"
ProductID="Product ID"
Keyboard="en"

[Unattended]
DriverSigningPolicy=Ignore
NtUpgrade=no
OverwriteOemFilesOnUpgrade=no
FileSystem=ConvertNTFS
OemPreinstall=yes
ConfirmHardware=yes
;ComputerType="Dell PowerEdge Server","OEM"
ExtendOemPartition=8195
OemFilesPath="C:\dell\%oem$"
OemPnPDriversPath="\drivers;\drivers\r117179;\
drivers\r117547;\drivers\r120343;\drivers\r120343\
ris_inf;\drivers\r120960;\drivers\r122597;\
drivers\r122665;\drivers\r122758;\drivers\r122758\
b_29093;\drivers\r122802;\drivers\r122802\sp;\
drivers\r97922;\drivers\r99849;\drivers\r99970"
TargetPath=\winnt
OemSkipEula=yes
WaitForReboot=no

[GUIUnattended]
OemSkipWelcome=1
OemSkipRegional=1
AdminPassword=*
EMSBBlankPassword = Yes
TimeZone=020

[LicenseFilePrintData]
AutoUsers=500
AutoMode=PERSERVER

[SetupParams]
;The line below will cause netset to execute using
the answer file saved in the root of the C
drive.
UserExecute="C:\netset.exe c:\winnt.sif"

[Display]
BitsPerPixel=16
XResolution=800
YResolution=600
VRefresh=60

[Identification]
DomainAdmin="Administrator"
DomainAdminPassword=""
JoinDomain=snacpxe ;Indicates that the server
should attempt to join this domain once OS
installation is complete
JoinWorkgroup=

[Networking]
InstallDefaultComponents=Yes

[NetProtocols]
MS_TCPIP=TcpipParams

[NetClients]
MS_MSClnt = params.MS_MSClnt

[NetServices]
MS_Server = params.MS_Server

[NetOptionalComponents]
SNMP=1
DNS=0
DHCPserver=0
WINS=0

[Components]
iis_common=Off
iis_dbg=Off
iis_doc=Off
iis_ftp=Off
iis_htmla=Off
iis_inetmgr=Off
iis_nntp=Off
iis_nntp_docs=Off
iis_smtp=Off
iis_smtp_docs=Off
iis_www=Off
iis_www_docs=Off
indexsrv_system=Off
TSEnable=Off
cluster=Off
snmp_srv=0

[InternetServer]
PathFTPRoot="%systemdrive%\inetpub\ftproot"
PathWWWRoot="%systemdrive%\inetpub\wwwroot"

[TerminalServices]
ApplicationServer=0

```

```

[SNMP]
Community_Name=""
Limit_Host=localhost
Service=Applications,Internet,End-to-End
Send_Authentication=No
Any_Host=No
Location=""
Accept_CommunityName=public:Read_Only
Traps=
Contact_Name=""

[data]
MsDosInitiated="1"
floppyless="1"
AutoPartition="0"
InstallDir="\WINNT"
winntupgrade="no"
win9xupgrade="no"

[NetAdapters]
Adapter0=Params.Adapter0
Adapter1=Params.Adapter1
Adapter2=Params.Adapter2
Adapter3=Params.Adapter3

[TcpipParams]
AdapterSections=TcpipParams.Adapter0,TcpipParams.
    Adapter1,TcpipParams.Adapter2,TcpipParams.Adapter3
[params.Adapter0]
PciBusNumber=5
PciDeviceNumber=0
PciFunctionNumber=0

[params.Adapter1]
PciBusNumber=9
PciDeviceNumber=0
PciFunctionNumber=0

[params.Adapter2]
PciBusNumber=13
PciDeviceNumber=0
PciFunctionNumber=0

[params.Adapter3]
PciBusNumber=15
PciDeviceNumber=0
PciFunctionNumber=0

[TcpipParams.Adapter0]
SubnetMask=255.255.255.0
DHCP=no
DefaultGateway=192.168.2.132
WINS=yes
winsServerList=192.168.2.2
DNSServerSearchOrder=192.168.2.120

[TcpipParams.Adapter1]
SpecificTo=Adapter1
IPAddress=192.168.10.125
SubnetMask=255.255.255.0
DHCP=no
DefaultGateway=192.168.2.132
WINS=yes
winsServerList=192.168.2.2
DNSServerSearchOrder=192.168.2.120

[TcpipParams.Adapter2]
SpecificTo=Adapter2
IPAddress=192.168.2.125
SubnetMask=255.255.255.0
DHCP=no
DefaultGateway=192.168.2.132
WINS=yes
winsServerList=192.168.2.2
DNSServerSearchOrder=192.168.2.120

[TcpipParams.Adapter3]
SpecificTo=Adapter3
IPAddress=192.168.3.125
SubnetMask=255.255.255.0
DHCP=no
DefaultGateway=192.168.2.132
WINS=yes
winsServerList=192.168.2.2
DNSServerSearchOrder=192.168.2.120

[MassStorageDrivers]
"DELL PERC5 RAID Controller Driver (Server 2003
    32-bit)"=OEM
    
```

## EXAMPLE ANSWER FILE USING A VISUAL BASIC SCRIPT

The following example answer file incorporates a Microsoft Visual Basic script in the SetupParams section to install Broadcom drivers with the installer, install the Microsoft Scalable Network Pack, and use Netset.exe to apply network settings:

```
[UserData]
FullName="DellServer"
OrgName="Dell"
ComputerName="PEServer"
ProductID="Product ID"
Keyboard="en"

[Unattended]
DriverSigningPolicy=Ignore
NtUpgrade=no
OverwriteOemFilesOnUpgrade=no
FileSystem=ConvertNTFS
OemPreinstall=yes
ConfirmHardware=yes
;ComputerType="Dell PowerEdge Server","OEM"
ExtendOemPartition=8195
OemFilesPath="C:\dell\%oem$"
OemPnPDriversPath="\drivers;\drivers\r117179;\
drivers\r117547;\drivers\r120343;\drivers\r120343\
ris_inf;\drivers\r120960;\drivers\r122665;\
drivers\r122758;\drivers\r122758\b_29093;\
drivers\r122802;\drivers\r122802\sp;\drivers\
r97922;\drivers\r99849;\drivers\r99970"
TargetPath=\winnt
OemSkipEula=yes
WaitForReboot=no

[GUIUnattended]
OemSkipWelcome=1
OemSkipRegional=1
AdminPassword=*
EMSBlankPassword = Yes
TimeZone=020

[LicenseFilePrintData]
AutoUsers=500
AutoMode=PERSERVER

[Display]
BitsPerPel=16
XResolution=800
YResolution=600
VRefresh=60

[Identification]
DomainAdmin=""
DomainAdminPassword=""
JoinDomain=
JoinWorkgroup=WorkGroup

[SetupParams]
; The line below will execute the script "Installit.vbs"
using cscript as the scripting engine
UserExecute = "cmd /c cscript c:\installit.vbs"

[Networking]
InstallDefaultComponents=Yes

[NetProtocols]
MS_TCPIP=TcpipParams

[NetClients]
MS_MSClient = params.MS_MSClient

[NetServices]
MS_Server = params.MS_Server

[NetOptionalComponents]
SNMP=1
DNS=0
DHCPserver=0
WINS=0

[Components]
iis_common=Off
iisdbg=Off
iis_doc=Off
iis_ftp=Off
iis_htmla=Off
iis_inetmgr=Off
iis_nntp=Off
iis_nntp_docs=Off
iis_sntp=Off
iis_sntp_docs=Off
iis_www=Off
iis_www_docs=Off
indexsrv_system=Off
TSEnable=Off
cluster=Off
snmp_srv=0

[InternetServer]
PathFTPRoot="%systemdrive%\inetpub\ftproot"
PathWWWRoot="%systemdrive%\inetpub\wwwroot"
```

```

[TerminalServices]
ApplicationServer=0
PciDeviceNumber=0
PciFunctionNumber=0

[SNMP]
Community_Name=""
Limit_Host=localhost
Service=Applications,Internet,End-to-End
Send_Authentication=No
Any_Host=No
Location=""
Accept_CommunityName=public:Read_Only
Traps=
Contact_Name=""

[data]
MsDosInitiated="1"
floppyless="1"
AutoPartition="0"
InstallDir="\WINNT"
winntupgrade="no"
win9xupgrade="no"

[NetAdapters]
Adapter0=Params.Adapter0
Adapter1=Params.Adapter1
Adapter2=Params.Adapter2
Adapter3=Params.Adapter3
Adapter4=Params.Adapter4
Adapter5=Params.Adapter5

[TcpipParams]
AdapterSections=TcpipParams.Adapter0,TcpipParams.
Adapter1,TcpipParams.Adapter2,TcpipParams.
Adapter3,TcpipParams.Adapter4,TcpipParams.Adapter5

[params.Adapter0]
PciBusNumber=5
PciDeviceNumber=0
PciFunctionNumber=0

[params.Adapter1]
PciBusNumber=9
PciDeviceNumber=0
PciFunctionNumber=0

[params.Adapter2]
PciBusNumber=13
PciDeviceNumber=0
PciFunctionNumber=0

[params.Adapter3]
PciBusNumber=11
PciDeviceNumber=0
PciFunctionNumber=0

[params.Adapter4]
PciBusNumber=15
PciDeviceNumber=0
PciFunctionNumber=0

[params.Adapter5]
PciBusNumber=17
PciDeviceNumber=0
PciFunctionNumber=0

[TcpipParams.Adapter0]
SpecificTo=Adapter0
IPAddress=192.168.0.254
SubnetMask=255.255.255.0
DHCP=no
DefaultGateway=
WINS=no
winsServerList=
DNSServerSearchOrder=192.168.0.128

[TcpipParams.Adapter1]
SpecificTo=Adapter1
IPAddress=192.168.1.254
SubnetMask=255.255.255.0
DHCP=no
DefaultGateway=
WINS=no
winsServerList=
DNSServerSearchOrder=192.168.1.128

[TcpipParams.Adapter2]
SpecificTo=Adapter2
IPAddress=192.168.2.254
SubnetMask=255.255.255.0
DHCP=no
DefaultGateway=
WINS=no
winsServerList=
DNSServerSearchOrder=192.168.2.128

[TcpipParams.Adapter3]
SpecificTo=Adapter3
IPAddress=192.168.3.254
SubnetMask=255.255.255.0
DHCP=no
DefaultGateway=
WINS=no
winsServerList=

```

```

DNSServerSearchOrder=192.168.3.128
[TcpipParams.Adapter4]
SpecificTo=Adapter4
IPAddress=192.168.4.254
SubnetMask=255.255.255.0
DHCP=no
DefaultGateway=
WINS=no
winsServerList=
DNSServerSearchOrder=192.168.4.128

[TcpipParams.Adapter5]
SpecificTo=Adapter5
IPAddress=192.168.5.254
SubnetMask=255.255.255.0
DHCP=no
DefaultGateway=
WINS=no
winsServerList=
DNSServerSearchOrder=192.168.5.128

[MassStorageDrivers]
"DELL PERC5 RAID Controller Driver (Server 2003
32-bit)"=OEM

```

### Example Visual Basic script for installing Broadcom drivers and the Microsoft Scalable Network Pack and applying network settings to network devices

To use the Microsoft Visual Basic script below, administrators must copy the script, Netset.exe, and the Microsoft Scalable Network Pack executable to the root of the installation drive. The Broadcom installer must be copied to a "broadcom" subdirectory of the root installation drive. The paths and script may be adjusted as necessary.

```

'VBScript Example
'Create the scripting object
Set WshShell = WScript.CreateObject("WScript.Shell")

'Run the Broadcom driver installer in the silent mode, with all the defaults, in a normal window and wait
for it to complete before executing the next command
ReturnCode = WshShell.Run("c:\broadcom\setup.exe /s /v/qn", 1, True)
'Run the MS SNP pack executable in the silent mode, in a normal window and wait for it to complete before
executing the next command
ReturnCode = WshShell.Run("c:\ WindowsServer2003-KB912222-v9-x86-ENU.exe /passive /norestart", 1, True)
'Run netset.exe, using the answer file saved to the root of the drive, in a normal window, and wait for it
to complete before running the next command
ReturnCode = WshShell.Run("c:\netset c:\winnt.sif", 1, True)

```

## EXAMPLE ANSWER FILE USING NETSET.EXE IN CMDLINES.TXT

```

[UserData]
FullName="DellServer"
OrgName="Dell"
ComputerName="PEServer"
ProductID="Product ID"
Keyboard="en"

[Unattended]
DriverSigningPolicy=Ignore
NtUpgrade=no
OverwriteOemFilesOnUpgrade=no
FileSystem=ConvertNTFS
OemPreinstall=yes ;Required for the automated
install to run the Cmdlines.txt file
ConfirmHardware=yes
;ComputerType="Dell PowerEdge Server","OEM"
ExtendOemPartition=8195
OemFilesPath="C:\dell\%oem$"
OemPnPDriversPath="\drivers;\drivers\r117179;\
drivers\r117547;\drivers\r120343;\drivers\r120343\
ris_inf;\drivers\r120960;\drivers\r122597;\
drivers\r122665;\drivers\r122758;\drivers\r122758\
b_29093;\drivers\r122802;\drivers\r122802\sp;\
drivers\r97922;\drivers\r99849;\drivers\r99970"
TargetPath=\winnt
OemSkipEula=yes
WaitForReboot=no

[GUIUnattended]
OemSkipWelcome=1
OemSkipRegional=1
AdminPassword=*
EMSBlankPassword = Yes
TimeZone=020

[LicenseFilePrintData]
AutoUsers=500
AutoMode=PERSERVER

[Display]
BitsPerPixel=16
XResolution=800
YResolution=600
VRefresh=60

[Identification]
DomainAdmin="Administrator"
DomainAdminPassword=""
JoinDomain=snacpxe ;Indicates that the server
should attempt to join this domain once OS

installation is complete
JoinWorkgroup=

[Networking]
InstallDefaultComponents=Yes

[NetProtocols]
MS_TCPIP=TcpipParams

[NetClients]
MS_MSClient = params.MS_MSClient

[NetServices]
MS_Server = params.MS_Server

[NetOptionalComponents]
SNMP=1
DNS=0
DHCPserver=0
WINS=0

[Components]
iis_common=Off
iisdbg=Off
iis_doc=Off
iis_ftp=Off
iis_htmla=Off
iis_inetmgr=Off
iis_nntp=Off
iis_nntp_docs=Off
iis_smtp=Off
iis_smtp_docs=Off
iis_www=Off
iis_www_docs=Off
indexsrv_system=Off
TSEnable=Off
cluster=Off
snmp_srv=0

[InternetServer]
PathFTPRoot="%systemdrive%\inetpub\ftproot"
PathWWWRoot="%systemdrive%\inetpub\wwwroot"

[TerminalServices]
ApplicationServer=0

[SNMP]
Community_Name=""
Limit_Host=localhost
Service=Applications,Internet,End-to-End

```

```

Send_Authentication=No
Any_Host=No
Location=""
Accept_CommunityName=public:Read_Only
Traps=
Contact_Name=""

[data]
MsDosInitiated="1"
floppyless="1"
AutoPartition="0"
InstallDir="\WINNT"
winnupgrade="no"
win9xupgrade="no"

[NetAdapters]
Adapter0=Params.Adapter0
Adapter1=Params.Adapter1
Adapter2=Params.Adapter2
Adapter3=Params.Adapter3

[TcpipParams]
AdapterSections=TcpipParams.Adapter0,TcpipParams.
    Adapter1,TcpipParams.Adapter2,TcpipParams.Adapter3

[params.Adapter0]
PciBusNumber=5
PciDeviceNumber=0
PciFunctionNumber=0

[params.Adapter1]
PciBusNumber=9
PciDeviceNumber=0
PciFunctionNumber=0

[params.Adapter2]
PciBusNumber=13
PciDeviceNumber=0
PciFunctionNumber=0

[params.Adapter3]
PciBusNumber=15
PciDeviceNumber=0
PciFunctionNumber=0

[TcpipParams.Adapter0]
SpecificTo=Adapter0
IPAddress=192.168.0.125
SubnetMask=255.255.255.0
DHCP=no
DefaultGateway=192.168.2.132
WINS=yes
winsServerList=192.168.2.2
DNSServerSearchOrder=192.168.2.120

[TcpipParams.Adapter1]
SpecificTo=Adapter1
IPAddress=192.168.10.125
SubnetMask=255.255.255.0
DHCP=no
DefaultGateway=192.168.2.132
WINS=yes
winsServerList=192.168.2.2
DNSServerSearchOrder=192.168.2.120

[TcpipParams.Adapter2]
SpecificTo=Adapter2
IPAddress=192.168.2.125
SubnetMask=255.255.255.0
DHCP=no
DefaultGateway=192.168.2.132
WINS=yes
winsServerList=192.168.2.2
DNSServerSearchOrder=192.168.2.120

[TcpipParams.Adapter3]
SpecificTo=Adapter3
IPAddress=192.168.3.125
SubnetMask=255.255.255.0
DHCP=no
DefaultGateway=192.168.2.132
WINS=yes
winsServerList=192.168.2.2
DNSServerSearchOrder=192.168.2.120

[MassStorageDrivers]
"DELL PERC5 RAID Controller Driver (Server 2003
    32-bit)"=OEM

```

## EXAMPLE VISUAL BASIC SCRIPT TO DETECT BROADCOM NETXTREME II ADAPTERS BEFORE RUNNING NETSET.EXE

The following Microsoft Visual Basic script snippet can be incorporated as a function or in the main part of a script to detect whether Broadcom NetXtreme II devices are installed. Netset.exe, Netset03.exe, or Wnetset03.exe can run only if the NetXtreme II devices are detected. The drivers must be installed using PnP or the Broadcom installer prior to this portion of the script running. Administrators can then use the NX2Test variable to determine whether Netset.exe should be run.

```
On Error Resume Next
RegKey = 0
RegKey = ws.RegRead("HKLM\SYSTEM\CurrentControlSet\Control\Network\{4D36E972-E325-11CE-BFC1-08002BE10313}\
  Descriptions\Broadcom NetXtreme II GigE (NDIS VBD Client)")
if RegKey <> 1 then

  NX2Test = "Not Present"
else
  NX2Test = "Present"
end if
```