COMPAQ
White Paper

Contents

Compaq Guide to PC Deployment

Network Installation of Microsoft Windows on Compaq Armada Series of Personal Computers Using the Multi-NIC Boot Utility

Abstract: *The Multi-NIC Boot Utility (MNBU) contains software to boot the Compaq Armada 1500, 17xx, 3500, 7xxx Series of Personal Computers to MS-DOS, load the correct NDIS network controller driver, and begin installation of Microsoft Windows NT, Windows 95, or Windows 98.*

*This paper and other relevant documents may be located at
http://www.compaq.com/solutions/pcsolutions/deployment/wp.html.*

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Obtaining the Multi-NIC Boot Utility

The Multi-NIC Boot Utility (MNBU) is packaged in a Compaq SoftPAQ, located under Corporate Deployment on the Compaq Web site at http://www.compaq.com/im/change.

Multi-NIC Boot Utility Operation

The MNBU automatically performs the following steps:

1. Boots MS-DOS.

2. Detects one of the supported network controllers.

3. Constructs Microsoft Client configuration files PROTOCOL.INI and SYSTEM.INI to match the detected network controller.

4. Generates a random network name for the computer.

5. Starts Microsoft Client using the detected network controller's DOS NDIS driver.

6. Processes whatever enterprise-specific steps you require.

Supported Network Controllers

Expansion Bases supported by the MNBU include:

- **Convenience Base II** - Ethernet support for the Armada 1500, 17xx, and 3500 series of Personal Computers.

- **Armada Station, Armada Station II, Armada MiniStation E** - Ethernet support for the Armada 7xxx series of Personal Computers.

Note: At this time PCMCIA Network Cards are not supported. Only PCI devices are supported with this utility.

Adding Microsoft Client

To use the MNBU, you must add some files from the Windows NT 4.0 Server CD. Copy the following files from the "\Clients\Msclient\Netsetup\" folder on the Windows NT 4.0 Server CD into the MNBU "\NET" directory:

emsbfr.exe
hosts
ifshlp.sys
lmhosts
nemm.dos
net.exe
net.msg
neth.msg
networks
nmtsr.exe
protman.dos
protman.exe

```
services
tcpdrv.dos
tcptsr.exe
tcputils.ini
tinyrfc.exe
umb.com
```

Modifying SYSTEM.INI and PROTOCOL.INI

SYSTEM.INI and PROTOCOL.INI are built dynamically during MNBU boot in order to automatically load the detected NIC's driver. Further modifications to these files may be accomplished by editing SYSINI.TMP and PROTINI.TMP for your specific needs. These two files contain the boilerplate text for the INI files.

Note: The requirement that files are built dynamically requires that the MNBU diskette not be write protected. This requirement is also necessary due to Microsoft Client's creation of password list (.PWL) files.

Using a Specific Computer Name

If you wish to use a specific computer name instead of a randomly generated name, remove the line in AUTOEXEC.BAT that begins with "unique."

```
REM **BEGIN RANDOM COMPUTER NAME GENERATOR**

REMOVE ->            unique /f:name.txt /s:ComputerName=Boot$
                     type name.txt>>\net\system.ini

REM **END COMPUTER NAME GENERATOR*
```

And edit NAME.TXT:
```
;UNIQUE Generated name
ComputerName=<YourName>
```

Performing Enterprise-Specific Functions

Place any enterprise-specific functionality at the end of AUTOEXEC.BAT after the statement:

```
REM **BEGIN ENTERPRISE SPECIFIC FUNCTIONALITY**
```

Typically, this will include commands such as NET USE to map a network drive containing an operating system installation image, WINNT.EXE /B to launch Windows NT Setup, or SETUP.EXE to launch Windows 9x Setup.

For more information on using WINNT.EXE and the NET command (Windows NT Workstation 4.0) or SETUP.EXE (Windows 95 or Windows 98), refer to the appropriate Microsoft operating system documentation.

Systems With Multiple Network Controllers

DETECT.BAT uses a program called SYSINV.EXE to find the first NIC in the system (defined by PCI order). This NIC is referred to as NET0. The /eNET0 command line parameter can be found on the SYSINV.EXE line in DETECT.BAT.

If you wish to identify another network controller instead of the default, change /eNET0 to /eNET1. The third controller is NET2 and so on.

To find out which NETx identifier corresponds to the NIC you wish to use, run SYSINV.EXE at the command line. This lists devices next to the NETx identifier.

Adding and Deleting Network Controller Drivers

Drivers may be added or deleted from the MNBU diskette. Currently, there is very little free space on the diskette, so adding a new driver may require that you remove another.

Removing a driver from the MNBU diskette requires only that you delete the driver (<drivername>.DOS) from the \NET directory.

Adding a driver requires the following steps:

1. Copy the new driver into the \NET directory.

2. Run SYSINV.EXE /S on a PC equipped with the new network card. SYSINV will display a line similar to this:

    NET0: (21120E11) Unknown type - update INI file

The eight characters in parentheses constitute the PCI ID of the new network card.

3. Edit SYSINV.INI by adding the PCI ID of the new card to the bottom of the file along with a NIC code and a description. For example:

    21120E11=6=My New Favorite Network Controller from Compaq

The choice of NIC code is arbitrary, but due to the rules of MS-DOS batch script, it is recommended that the new value be one less than the lowest existing code.

4. Run SYSINV.EXE /S again and verify that the new network card is shown as:

    NET0: (21120E11) My New Favorite Network Controller from Compaq

5. Edit DETECT.BAT and add a section to handle the new NIC code. Immediately after the line

    "REM TODO - Add additional errorlevel checks for other NICs here."

    add the following line:

    if errorlevel==6 goto NewNet

6. Add the MS-DOS batch script to handle NewNet after the line

    "REM TODO - add new NIC sections here."

    ```
    :NewNet
    echo Detected My New Favorite Network Controller from Compaq
    set netcard=<drivername>
    set drivername=<drivername>$
    set ndis2=<drivername>.dos
    cd\net
    autoinf us < protoini.tmp > protocol.ini
    autoinf us < sysini.tmp > system.ini
    ```

```
goto end
```

The choice of "NewNet" is arbitrary.