Technical Note



Upgrade to Windows XP Embedded

### Introduction

It is advisable to upgrade the FR0040-00 NV9000 frame (running Windows XP) to an FR0040-02 or FR0040-10 (running Windows XP Embedded).

This process installing a new SSD in a working FR0040-00 controller using an upgrade kit which has all the necessary parts and software installed.

The system being upgraded has been licensed to run Windows XP Professional, so you should see an embedded license sticker in the SSD drive tray next to the drive which permits the system to run Windows XP embedded.

## Procedure

Follow these steps to perform this upgrade of the client's controller:

- 1 Save the client's NV9000 configuration from the controller to a USB flash drive. Record any unique settings of the client's controller. Also make sure that you have the proper kit for the controller at hand: a stand-alone controller kit, primary controller kit, or secondary controller kit.
- 2 Shut down, power down, and unplug the controller. Wait 30 seconds.
- 3 Move the two Ethernet NICs to the bottom 2 slots. If there is a serial NIC, place it in the top NIC slot. Refer to Miranda document RF0189-10-A0 for details. Refer also to Technical Note *TN0019-xx Moxa Card Installation*.
- 4 Remove both drive trays (HDD and SSD) from the controller. Insert the HDD drive tray (the HDD is larger and this tray was in the top bay) in the bottom bay.

To open the drive bay

- 1 Slide the latch at the right to the right. The lever pops out.
- 2 Pull the lever until the tray is all the way out.
- 5 Insert the SSD drive tray *from the upgrade kit* in the top bay. (It should have a license sticker.) To reinsert a drive tray
  - 1 Push the tray all the way in.
  - 2 The lever should snap closed. Push on the lever to ensure that it closes completely.
- 6 Plug in the power cords and turn on the controller.
- 7 Ensure that the controller has the boot priority order set to start with the SSD. This should be automatic because the SSD is currently in drive bay 0 (the top bay).

If you are not sure, press and hold the 'Del' key during the initial bootup. The "CMOS Setup" page appears after a few seconds. This is an alphanumeric screen having a blue background and several command options to which you can navigate using arrow keys.

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sc : Quit 10 : Save and Exit Setup	$\uparrow \downarrow \rightarrow \leftarrow$ : Select Item
PC Health Status	Exit without Saving
PnP/PCI Configurations	Save and Exit Setup
Power Management Setup	Set User Password
Integrated Peripherals	Set Supervisor Password
Advanced Chipset Features	Load Optimized Defaults
Advanced BIOS Features	Load Fail-Safe Defaults
Standard CMOS Features	Frequency/Voltage Control

This is the CMOS Setup page:

Follow these steps:

1 Using the arrow keys, choose "Advanced BIOS Features"



2 Choose 'Hard Disk Boot Priority' and press the 'Enter' key. The priority list appears:

1. Ch2 M. Sandisk SSD SATA 500	Item Help
3. Bootable Add-in Cards	Menu Level ►►
	Use <1> or <1> to select a device , then press <+> to move it up or <-> to move it down the list. Press <esc> to exit this men</esc>

- 3 Follow the directions on the screen to place the SSD first.
- 8 Now restart Windows (using the embedded OS on the SSD).
- 9 Clear event logs after you verify that there were no major errors.
  - On the desktop, you will find a 'compmgmt' tool. It is a copy of this file:

C:\Windows\system32\compmgmt.msc

Launch the tool and choose "Event Viewer' in the navigation tree:

srie Accon view window P						
Computer Management (Local)	Туре	Date	Time	Source	Category	Event
System Tools Function Security System Security System Source Logs and Alerts Storage Removable Storage	<ul> <li>Information</li> <li>Information</li> <li>Information</li> <li>Information</li> <li>Error</li> <li>Error</li> <li>Information</li> <li>Information</li> <li>Marning</li> <li>Information</li> <li>Warning</li> <li>Information</li> <li>Marning</li> <li>Information</li> <li>Marning</li> <li>Information</li> <li>Marning</li> <li>Information</li> <li>Serror</li> <li>Error</li> <li>Error</li> <li>Error</li> <li>Error</li> </ul>	1/7/2009 1/7/2009 1/7/2009 1/7/2009 1/7/2009 1/7/2009 1/7/2009 1/7/2009 1/7/2009 1/7/2009 1/6/2009 1/6/2009 1/6/2009 1/6/2009 1/6/2009	2:08:20 PM 2:08:20 PM 2:08:20 PM 2:08:20 PM 2:08:20 PM 2:08:04 PM 2:08:04 PM 2:08:23 PM 2:08:23 PM 10:35:18 2:01:38 PM 1:26:59 PM 1:26:59 PM 1:26:43 PM 1:26:43 PM	Tcpip Tcpip Tcpip NetBT Serial Rocket SNMP SNMP SNMP SNMP SNMP SNMP Tcpip Tcpip Tcpip NetBT Serial Posket	None None None None None None None None	4202 4202 4202 4307 18 18 1001 1101 1001 1101 1001 1101 4202 4202

To clear all events, right-clock the sub-entry (such as System) and choose 'Clear All Events' from the context menu:

Open Log File	
Save Log File As	
New Log View	
Clear all Events	
View	۲
New Window from Here	
Rename	
Refresh	
Export List	
Properties	
Help	

- 10 Restart Windows. Again verify that there are no errors in the event logs.
- 11 Install the client configurations that you saved in step 1. Make changes to the controller to reflect the unique settings that you recorded in step 1. Then restart Windows and verify correct operation.
- 12 Insert a formatted USB drive into the running controller. The USB drive must have the HDD setup files on it.

You can obtain the relevant files from Miranda's FTP site. The name of the folder is **TBD**. See the listing at the end of this note for details. The files total about 400 MB in size. You should place these files in a folder called Drive\_D\_hdd\_setup\_thumb\_drive on the USB drive.



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Change the drive letter to 'X'.

- ▲ The USB drive does not have to be bootable, but the SSD must be bootable into Windows XP embedded.
- 13 When everything is working, run HDD\_image.bat, in the USB drive, to refresh the HDD.

Doing so will clean, re-partition, and format the created partitions on the HDD. It will also create folders and copy files to the E: drive.

14 Now run Dixmlcom.exe from the Dixml folder (on the USB drive). Choose 'Restore' on the left:



Restore	Disks and pa	artitions:		
Write a previously created	Drive #partition	Logical drive	Туре	Capacity
mage (XML) back to a drive.	DISK0#1	C: ()	NTFS (7)	3.64 GB
Note that you must put the	DISK0#FREE	n/a	Free (0)	38.9 MB
mage into an existing partition.	DISK1#1	D: ()	NTFS (7)	10.0 GB
f necessary create a new	DISKI#2	E:U	NIFS(/)	40.0 GB
partition with Windows Disk	DISK2#1	ηγα F: Δ	FAT16-Huge (6)	980 MB
reduniore	Partition de	tails:		
<u>rieuu (11976</u>	Partition de	tails: artition:	Associated logica	l drive:
	Partition de Pa Drive:	tails: artition: DISK1	Associated logica Logical drive: D:	l drive:
	Partition de Partition de Drive: Size of drive: Name:	tails: artition: DISK1 233 GB ST3250820NS	Associated logica Logical drive: D: Label: Serial no: 8C5C5F6	l drive: D
Dix Welcome	Partition de Partition de Drive: Size of drive: Name: Partition#:	tails: artition: DISK1 233 GB ST3250820NS 1	Associated logica Logical drive: D: Label: Serial no: 8C5C5F6 File system: NTFS	I drive: D
Dix Welcome	Partition de Partition de Drive: Size of drive: Name: Partition#: Partition#: Partition type:	tails: artition: DISK1 233 GB ST3250820NS 1 NTFS (7)	Associated logica Logical drive: D: Label: Serial no: 8C5C5F6 File system: NTFS Total sectors: 20,980,82 Handi C 120	I drive: D
Dix Welcome	Partition de Pr Drive: Size of drive: Name: Partition#: Partition type: Size of partition: Stat sector	tails: artition: DISK1 233 GB ST3250820NS 1 NTFS (7) 10.0 GB 63	Associated logica Logical drive: D: Label: Serial no: 8C5C5F6 File system: NTFS Total sectors: 20,980,82 Used: 752,132,0 Free: 9,990,049	I drive: D 96 (717 MB) 792 (9 GB)
Dix Welcome	Partition de Prive: Size of drive: Name: Partition#: Partition#: Size of partition: Start sector: Total sectors:	tails: artition: DISK1 233 GB ST3250820NS 1 NTFS (7) 10.0 GB 63 20.980,827	Associated logica Logical drive: D: Label: Serial no: 85C55F6 File system: NTFS Total sectors: 20,980,82 Used: 752,132,0 Free: 9,990,04 Total: 10,742,18	I drive: D 14 196 (717 MB) 1,782 (9 GB) 1,888 (10 GB)
Dix Welcome Backup Restore	Partition de Partition de Drive: Size of drive: Name: Partition#: Partition#: Partition type: Size of partition: Start sector: Total sectors:	tails: artition: DISK1 233 GB ST3250820NS 1 NTFS (7) 10.0 GB 63 20,980,827	Associated logica Logical drive: D: Label: 8C5C5F6 File system: NTFS Total sectors: 20,980,82 Used: 752,132,0 Free: 9,990,049 Total: 10,742,18	I drive: D 14 196 (717 MB) 1,792 (9 GB) 11,888 (10 GB)

In the window that appears, select the D: partition, on the right:

Click 'Next'. The "restore wizard" appears:

🔤 Restore		- 🗆 🗙
	Welcome to the drive restore wizard! This wizard will assist you with restoring your drives:	
	Select the drive image XML file you want to restore: F:\HDD IMAGE\Drive_D_hdd_boot_drive xml	<u> </u>
	<u>N</u> ext>	Cancel

Click the "browse" icon. In the resulting 'Save' dialog, select Drive\_D\_hdd\_boot\_drive.xml in the HDD IMAGE folder (on the USB drive). Click 'Next' to proceed to restore the D: drive.

15 Restart the controller, holding the 'Del' key down to access the CMOS Setup page. Change the boot priority (as described in step 7) so that the HDD is first in the priority list. The controller will now boot from the HDD.

When Windows' startup completes, login. You will see the DriveImager icon on the desktop.

16 Backup the client's system SSD to the E: drive using *DriveImager*.

Follow these steps:

1 Double-click DriveImager.exe to launch it:



' Tools 👩 Log 😏 Help		
vailable Drives		
Display Removable Drives Only		
≓- Physical Drive 0 (3.679 GiB) (SanDisk SSD SATA 5000 2.5)	Format FAT16 Bootable	Write Image to Drive
	😒 Extract Zip	Create Drive Image File
- C\ - 10.004 GiB - Fixed - NTFS -	A Run Bootoreo	Write XP MBR
E:\ — 40.003 GiB — Fixed — NTFS —	Check Files Integrity	
Physical Drive 2 (0.357 GiB) (Flash Drive SK_OSB20 OSB Device) F\( - 0.957 GiB - Fixed - FAT	CHECK HIGSHREIghty	
	Format to NTFS	l.
58 PM: (Imaging Drive) (Physical Drive 0 (3.679 GiB) (SanDisk SSD SATA 5000 2.5)) 51 PM: (Imaging Drive) (Physical Drive 0 (3.679 GiB) (SanDisk SSD SATA 5000 2.5)) )ackup\Production-B-Day-StandAlone-12-19-2008.nvbin" 07 AM: (Finished writing image to drive, please unplug card) (Physical Drive 0 (3.679)	Finished Creating drive image Started writing image to file: "E.\S GiB) (SanDisk SSD SATA 5000 2.5) 00 2.5)) Started writing image from	ystem ) Writing Image to Drive

2 Click 'Create Drive Image File'. A 'Save' dialog appears in which you may name the backup image file. The directory is E:\System Backup. You should not select a different directory.

Name the backup you create

Upgrade\_B-DAY-*mm-dd-yyyy* 

where *mm*, *dd*, and *yyyy* are the month, day, and year of the backup. After a few minutes, the backup completes and you will see a completion message:

Display Removable Drives Only		
Physical Drive 0 (3.679 GiB) (SanDisk SSD SATA 5000 2.5)     □ □ \_ 3.641 GiB — Fixed — NTFS —     Physical Drive 1 (232.886 GiB) (ST3250820NS)     □ □ ( 10.004 GiB — Fixed — NTFS —     □ □ ( 10.003 GiB — Fixed — NTFS —     □ Physical Drive 2 (0.957 GiB) (Flash Drive SK_USB20 USB Device)     □ F( 0.957 GiB — Fixed — FAT —	Format FAT16 Bootable Extract Zip Run Bootprep Check Files Integrity Format to NTFS	Vrite Image to Drive
<ul> <li>56 AM: (Imaging Drive) (Physical Drive 0 (3.679 GiB) (SanDisk SSD SATA 5000 2.5)</li> <li>49 AM: (Imaging Drive) (Physical Drive 0 (3.679 GiB) (SanDisk SSD SATA 5000 2.5)</li> <li>3ackup\Production-B-Day-StandAlone-01-09-2009.nvbin"</li> <li>58 PM: (Imaging Drive) (Physical Drive 0 (3.679 GiB) (SanDisk SSD SATA 5000 2.5)</li> <li>51 PM: (Imaging Drive) (Physical Drive 0 (3.679 GiB) (SanDisk SSD SATA 5000 2.5)</li> </ul>	)) Finished Creating drive image )) Started writing image to file: "E\\$ )) Finished Creating drive image )) Started writing image to file: "E\\$ 79 GiB) (SanDisk SSD SATA 5000 2.5	System System )) Writing Image to Driv

- 17 When the backup in step 16 is complete, restart the controller, holding the 'Del' key to access CMOS Setup. Set the boot priority (as in step 7) so that the SSD is first in the list. The controller will thereafter boot from the SSD.
- 18 At this point, the upgrade is complete, and you may shut down the controller.

## Kits

This is the list of FRUs (field replaceable units) for which we intend to create BOMs in regard to the NV9000 system controller.

• SSD FRU

SSD (solid state drive) Drive tray Required screws XP embedded image loaded

• HDD FRU

HDD (hard disk drive) Drive tray Required screws Bootable partition with recovery image

# Files for the USB Drive

This is the suggested directory structure for the USB drive used in step 12.

🛅 Dixml
🛅 diskmagn.msc
😭 dixml.chm
📖 dixmlcom.exe
🙋 dixmlcom.htm
🌁 dixmlcom.inf
🛒 dixmlcom_nu2menu.xml
🔊 vssserv.dll
💁 vssvista.dll
👏 vssxp.dll
C HDD IMAGE
🖬 Drive_D_hdd_boot_drive.dat
🔮 Drive_D_hdd_boot_drive.xml
C SE-Utilities-468
🚈 SEUtilitiesV4.6.8_Installer.exe
C 5P0040-10
NvAgent.exe
NvCPServer.exe
NvDistributorCO.exe
NvRtrServerCO.exe
NvSMS7000MCPU.exe
🔂 SV0288-04.msi
🔤 cmd.exe
🛅 diskpart.exe
HDD_image.bat
MbrFix.exe
🕖 MbrFix.htm
NV9000HDD.txt
T7 : 1

Version numbers can vary.