

Prinergy 2.x

EMC/DG Server Hardware Setup

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Revision History

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00	May 15, 2001	Keith Chan	First draft
A	June 7, 2001	Keith Chan	First Release
B	January 31, 2001	Michelle Baudais / Richard Simms	Updates to several procedures. Applied Creo template, and rebranded to Creo.

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1. SCOPE

This document outlines both basic and optional components used in the EMC/DG Aviion Server based legacy hardware configurations for Prinergy 2.x systems. It includes procedures for setting up hardware to be Prinergy 2.x/ Windows 2000 ready.

EMC/DG Aviion 2300 and 3700 servers are the current supported legacy platforms. Aviion 2700 and 2200 are under conditional supported model.

2. HARDWARE CONFIGURATIONS

This section describes Prinergy 2.0/Windows 2000 supported legacy hardware platform configurations. It includes peripheral connections diagrams to help installation personnel connect the servers and peripherals. Basic and optional components are outlined in Tables 2-1 to 2-3.

The two standard platforms supported by Prinergy 2.0/ Windows 2000 are:

- EMC/DG Aviion 3700 primary or secondary server
- EMC/DG Aviion 2300 secondary server or RenderStation

The two platforms conditionally supported by Prinergy 2.0/ Windows 2000 are:

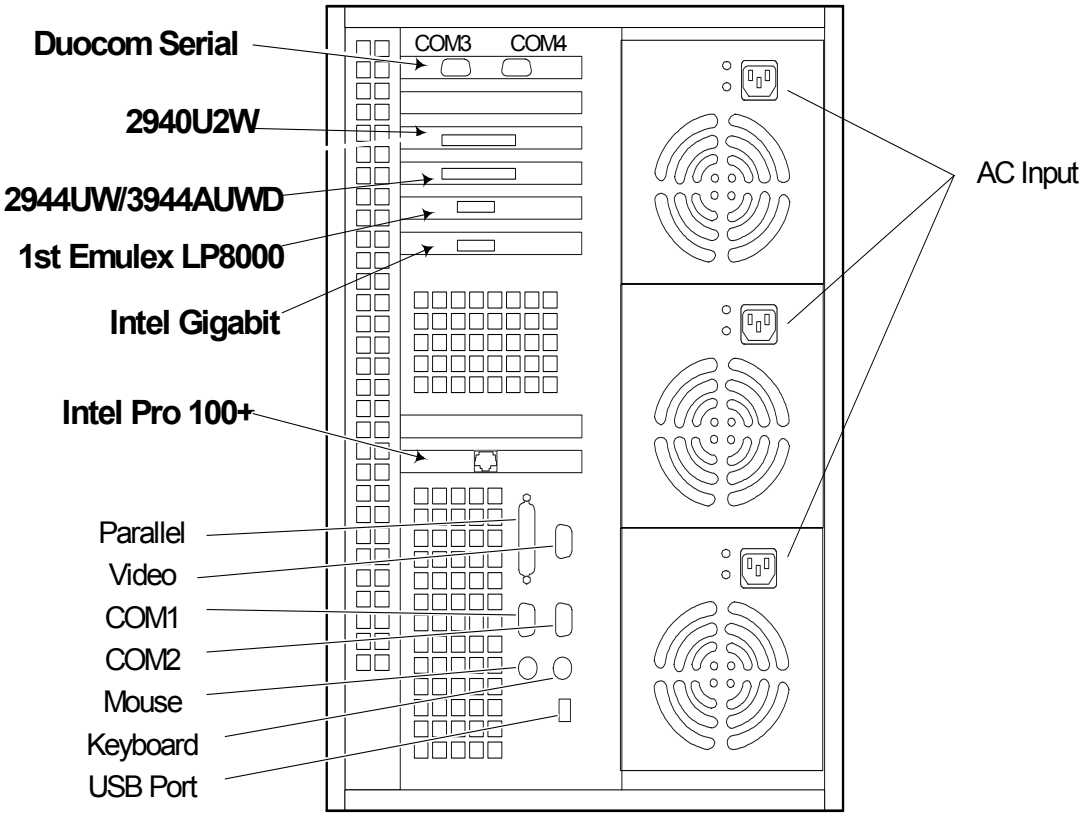
- EMC/DG Aviion 2700 secondary server or RenderStation
- EMC/DG Aviion 2200 secondary server or RenderStation

For System Installation and Configuration procedure/information of the current offering hardware platforms such as Dell PowerEdge servers, please see Document Number 72-3572A.

2.1 EMC/DG Aviion 3700 (Quad Pentium III Xeon Server)

This section outlines hardware configurations of the EMC/DG Aviion AV3700 Server configured as the Prinergy Primary/Secondary Server 3700 with processor speed of 450/500/550Mhz.

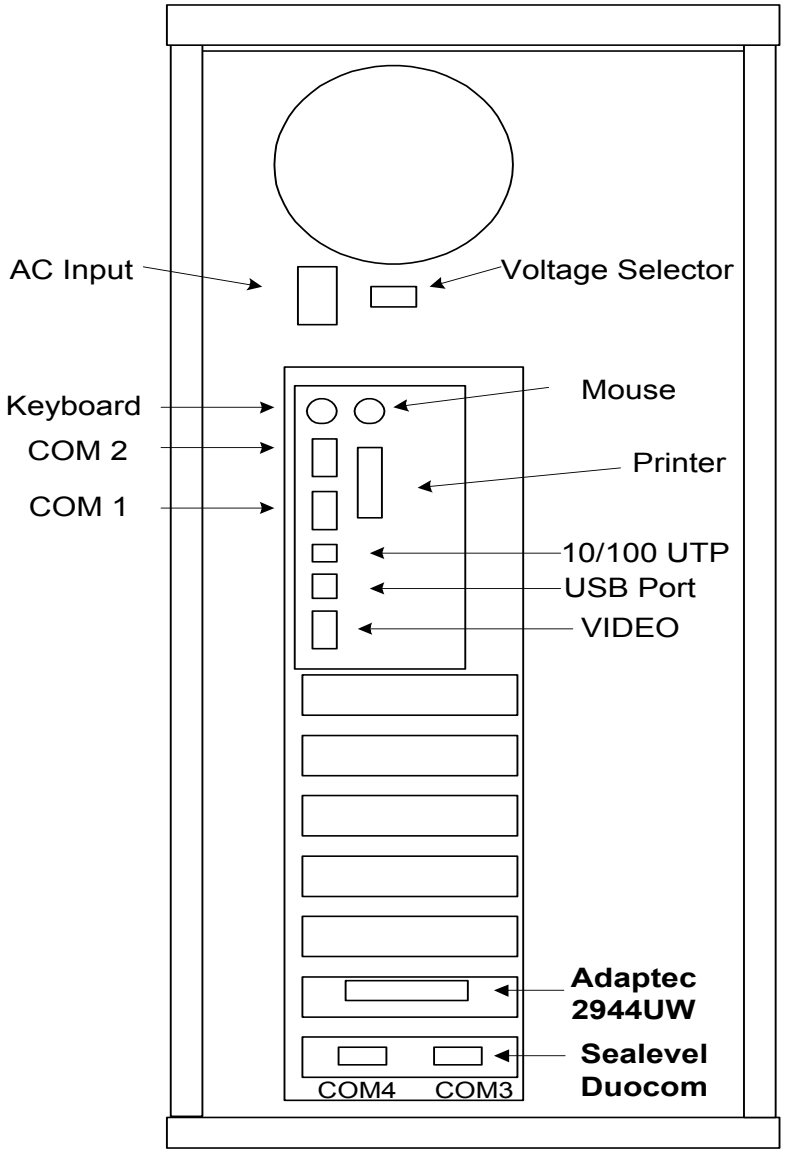
Figure 2-1 shows the rear view of the Prinergy Server 3700:



2.2 EMC/DG Aviion 2300 (Dual Pentium III Server)

This section outlines hardware configurations of the EMC/DG Aviion 2300 Server configured as the Prinergy secondary server or RenderStation with processor speed of 500/600/700Mhz

Figure 2-2 shows the rear view of the Prinergy Server 2300:



2.3 Peripheral Storage Device Kits (RAID)

Table 2-1: EMC CLARiiON CL 5700/5300, fiber channel RAID

Item	Type	Manufacturer (Distributor)	Model	Comments
Cabinet	CLARiiON CL 5200/5300 DPE, HA Desk side NT	EMC/DG		Base 10 bay FC cabinet
Cabinet	Option of CLARiiON 5000 10 Bay DAE, HA, DS	EMC/DG	79511D	Add-on 10 bay expansion cabinet
Memory	128 MB DPE cache memory, FC5200/5300	EMC/DG		Each SP = 128 MB cache memory
BBU	Battery backup unit	EMC/DG		
FC host adapter	1 x Emulex LP8000 FC adapter	Emulex (EMC/DG)	(7499)	2 adapters for each cabinet
FC disks	Option of 5 x 17.2 GB / 10K rpm	Seagate (EMC/DG)	(79020-HFL)	Set of 9 drives for optimal performance setup
FC disks	Option of 5 x 35.2 GB / 7200 rpm	Seagate (EMC/DG)		Set of 9 drives for optimal performance setup
FC cable	FC on copper cable 5m/16ft, DB9-DB9			
Terminal cable	Terminal cable	-	-	Comes with NT kit
Software	AviiON NT&NW attach kit for FC CLARiiON	EMC/DG	7945	

2.4 Output Device Connection Kits

Table 2-2: Creo Platesetter/ Trendsetter, TS Spectrum, PS/ TS VLF

Item	Type	Manufacturer (Distributor)	Model	Comments
SCSI diff controller	Adaptec AHA2944, PCI	Adaptec	-	
Multi port serial card	Digi ClassicBoard 4 PCI + adapter cable	Digi	-	Expand to 6 serial ports
Serial cable	1-1, 9 pin D-Sub male/female, length 10m	Creo	16-3460	
Serial cable	1-1, 9 pin D-Sub male/female, length 10m	Creo	16-3460	
SCSI cable	68pin HD male, 2-56 screws to 68pin HD male, 2-56 screws, length 7,5m	Creo	16-3503	
Software + documents	Platesetter Control S/W V1.7 or Print Console for Prinergy	Creo	-	

2.5 DLT Tape Drive Kits

Table 2-3: Single DLT 8000 Drive

Item	Type	Manufacturer (Distributor)	Model	Comments
DLT8000 drive	External DLT 8000	ADIC	15-xxxx	
SCSI SE terminator	68 pin HD	-	-	Comes with the DLT drive
SCSI SE controller	Adaptec 2940U2W Ultra 2 SCSI	Adaptec	94-3156	
SCSI cable	68pin HD male, 2-56 screws to 68 pin HD male, length 3ft	ADIC	-	Comes with the DLT drive

Table 2-4: DLT 8000 Tape Library

Item	Type	Manufacturer (Distributor)	Model	Comments
ADIC FastStor tape library	External FastStor 7 or 22	ADIC	15-xxxx	
SCSI diff terminator	68 pin HD	-	-	Comes with the DLT tape library
SCSI diff controller	Adaptec 2944UW Ultra Wide SCSI	Adaptec	94-3155	
SCSI cable	68pin HD male, 2-56 screws to 68 pin HD male, length 3ft	ADIC	-	Comes with the DLT tape library

2.6 UPS Requirements

Each server type is configured with a different rating of UPS unit. Ensure that the site has the proper outlet for handling the UPS.

The following table lists the different APC UPS plug types:

Table 2-5: APC UPS plug types

UPS Type			Plug Type			
Vendor	**Model**	**Power Type**	**North American**	**Europe**	**Asia**	**Australia**
APC	SmartUPS 1000/ 1400 Desk Side	1K VA / 1.4 KVA 100V – (Japan) SmartUPS xx00J	125V 15A nema 5-15	230V 10A iec320 c14	100V nema 5-15p	240V 10A iec320 c14
APC	SmartUPS 2200 Desk Side	2.2 KVA 110V – (N.A.) SmartUPS xx00	125V 20A nema 5-20	230V 16A iec320 c20	100V 20A nema 5-20p	240V 10A iec320 c20
APC	SmartUPS 3000 Desk Side	3.0 KVA 220V – (Europe) SmartUPS xx00I	125V 30A nema 5-30	230V 16A iec320 c30	100V nema 5-30p	240V 10A iec320 c30

2.7 Drive Designations

All platforms have a common disk drive configuration. This ensures a common base for all systems and makes software components platform-independent.

Table 2-6: Server's drive letter designation

Drive	Type	Information
C:	NTFS	W2K NT Loader, boot files
D:	NTFS	W2K paging, operating system, Prinergy executables, third-party executables
H:	N/A	CD-ROM
E:	NTFS	Prinergy DataLog
No drive	FAT	GHOST + W2K OS images
J:	NTFS	Databases and ITP data files (Not required by Renderstation)
F – Z	NTFS	Databases and jobs (Not required by Renderstation)

3. HARDWARE CONNECTIONS

To set up a Prinergy system efficiently, check against the software tables, and check that the hardware is configured as described in Section 2, Hardware Configurations.

Some of the information in this document is platform-dependent. If you see a section heading referring to a specific model, for example, (*For 4400 Server*), skip that section if you are not dealing with that specific model.

3.1 Connecting Server Hardware Components

Complete the following steps before installing Windows 2000:

1. Connect any external hardware (see Section 2, Hardware Configurations).
2. Install additional network cards if requested by the customer (**Note:** Prinergy does not support multiple NICs in the server).
3. Add additional memory DIMMs as requested by the customer.
4. Connect the Diamond SupraExpress 56EPKI Pro modem (if applicable) to COM1.

   Note: It is strongly recommended that at least one modem be connected to a Prinergy system.
5. Connect the Prinergy software dongle on the primary server's Printer (LPT1) port.

3.2 Connecting UPS

This applies to all systems.

The following should be connected to the UPS:

- Server(s)
- Monitor
- Modem
- External FC Raid (if one is being used and that the UPS has the correct VA rating)
- Tape library or Single DLT tape drive (if one is installed)

Use the appropriate power cord to meet the specific country requirements at the customer site (see Table 2-5: APC UPS plug types).

4. SETUP

4.1 3700 Hardware Setup

This section describes how to set up a 3700 Server that has not been pre-configured for Prinergy. It'll show the user how to perform the following:

- Hardware configuration
- BIOS settings configuration

4.1.1 Option Card Locations

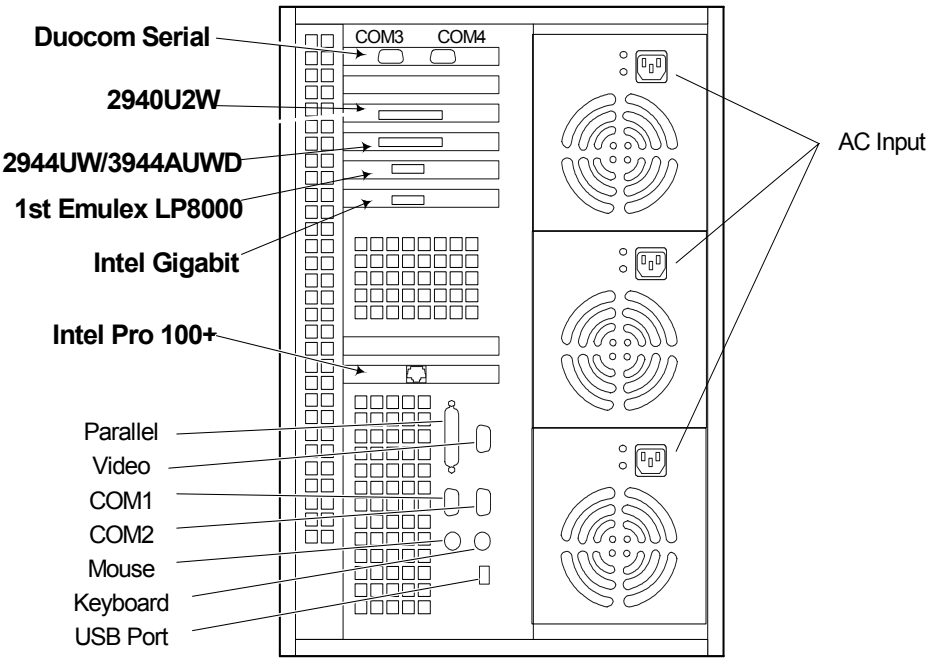


Figure 4-1: 3700 PCI Slot layout

4.1.2 Hard Disk Drive Configurations

The Aviion 3700 Server features hot-swap drive bays configured from the factory with a minimum of three to a maximum of six disk drives. SCSI IDs for drives are set from 0-5.

The basic internal disk top down layout is shown in figure below:

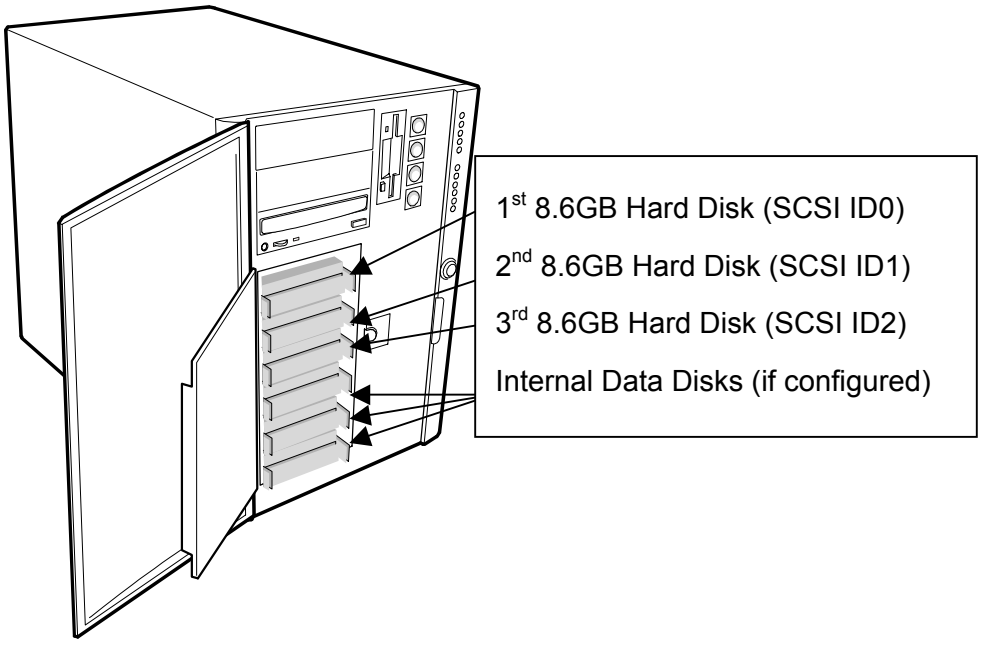


Figure 4-2: 3700 front view

All Prinergy (2.x) 3700 Server must be configured with minimum 3 x 8.6GB UltraSCSI hard disks to attain the most optimum performance of Prinergy. The system can either be configured with a maximum of three internal data disk (8.6 or 17.2GB) or an external FC RAID options. System Disks are partitioned as below:

Disk0:

- 1st partition "C" = FAT = 2047MB, W2K loader and boot files (C: drive)
- 3rd Partition "D" = NTFS = 6xxxMB, operating system and Prinergy software (D: drive)

Disk1: Mirror of Disk0

Disk2:

- 1st partition = FAT = 2047MB, Prinergy baseline W2K ghost images (no drive letter)
- 2nd partition "E" = NTFS = 6629MB, Prinergy log files (E: drive)

For Prinergy Server 3700, up to three additional 8.6GB or 17.2GB UltraSCSI hard disks can be added for internal data storage. You can either configure the disk(s) as a NTFS volume (J: drive) or, if more than one disk (of the same size) are added, we recommend that you configure them as a W2K striped set to create a larger volume and improve system performance.

4.1.3 SCSI Controller BIOS Settings

Integrated SymBIOS 53C896 and 53C810 SCSI Controller settings

1. Press CTRL+C during the SymBIOS SCSI BIOS boot up prompt to perform the SCSI Utility. From the **Main Menu** screen, select **Adapter Boot Order,** Verify/Make changes to match the following boot order sequence:

Boot Order		Bus	Dev/ Funct	Boot Order		Bus	Dev/ Funct
0	SYM53C801	00	40	1	SYM53C896	01	18
2	SYM53C896	01	19				

2. Return to the Main Menu <ESC>, Select **Quit** to exit the BIOS setup and re-boot

Differential Adaptec 2944UW SCSI Controller Settings (if installed)

1. Press CTRL+A during the Adaptec 2944UW BIOS boot up prompt to run SCSI Select (if Adaptec 2944UW controller is installed).
2. Select **Configure** and then select **View Host Adapter Settings**.
3. Select **Advanced Configuration Options**.
4. Set **Host Adapter BIOS** to **Disabled**.
5. Press, ESC and select **Yes** to save the changes (if changes has been made).
6. Press ESC and select **Yes** to exit the utility.
7. Press ENTER to reboot.

4.1.4 System CMOS Setup Settings

The minimum known W2K-compatible revision of EMC/DG BIOS is PhoenixBIOS 4.0 Release 6.0 S450NX BIOS Release 13.0 Build 80 (for the 500 MHz CPU).

If the system is running an older revision of BIOS (such as BIOS 11 build 67), after W2K is installed, the system may not see the Clariion SCSI Raid cabinet attached to the Adapter AHA2944UW SCSI PCI controller.

Verify that the server has the latest revision of the BIOS installed. Follow the procedure outlined in section below to perform a server BIOS flash.

Flashing AV3700 Server BIOS

- Insert the W2K Resources CD for AV3700 (Creo P/N: 21-0050x) into drive; perform one of the two procedures below to create the desire bootable BIOS floppy disk.

Creating The Bootable Floppy Using DiskDupe Floppy Image

1. Under NT4, look for a DiskDupe image file "**AV37R13.IMG**" in the **H:\BIOS_FW\B13\ FLOPPY** folder (if it does not exist, then proceed to procedure number 2 below to create the floppy using the original BIOS file supplied by EMC/DG).

2. Using the image file provided, create the bootable BIOS floppy by starting the DISKDUPE utility included on the Resources CD.

3. A Windows 98 bootable system floppy disk will be created using the provided DiskDupe image.

Creating The Bootable Floppy Using BIOS Files From EMC/DG

1. Under NT4, look for the BIOS file, **AV37B13.EXE,** in the **H:\BIOS_FW\B13** folder, double-click on this file and a dialogue box will pop up asking for an UNZIP destination folder

2. Insert a blank floppy into drive; type in "**A:**\" <CR> and extracted BIOS files will be unzipped onto the blank floppy, wait for file copy to be completed.

3. Take the not yet bootable floppy to a Windows 9x system, with the floppy insert into drive, open a DOS window, type in "**A:\WIN95BT**" <CR> and the system will start copying HIMEM.SYS and RAMDRIVE.SYS files to the floppy and transferring system to the floppy, making it into a bootable floppy disk.

4. If there're no Windows 9x system onsite, then boot the target system into DOS off the system C: (DOS 6.22) drive, then insert the not yet bootable BIOS floppy into drive.

5. Copy **C:\DOS\HIMEM.SYS** and **C:\DOS\RAMDRIVE.SYS** files to the floppy, then type in "SYS A:" <CR> to transfer DOS system to the BIOS floppy, making it a bootable floppy disk.

Running BIOS Flash Utility

5. With the newly created bootable BIOS floppy inserted in the drive, reboot the target server and the BIOS flash Utility will be initiated automatically. Follow the instructions on the screen to carry thru the BIOS flash process until a successful update message prompt appears.

   a) Enter Server Type (3700)

   b) DOS server number N + Q Power 4 (????? Can't read handwritten notes)

   c) Enter Serial Number.

2. Power down the server, wait 30 seconds, then power up the server, press <F2> key during the system POST sequence to enter the BIOS SETUP utility. (Note that the server will continue with all SCSI controller boot up sequence before entering SETUP screen).

3. From the "**PhoenixBIOS Setup Utility**" Main menu screen, select "**Processor Settings**" option and press <CR> (**Ignore the following steps if the settings do not appear**).
   a) Set "Processor Speed Setting = [550Mhz] (or the current installed processor speed)
   b) Set "Processor POST Speed Setting = [550Mhz] (or the current installed processor speed)
   c) Set Processor Retest = [No] (Set to <YES> if ONLY one CPU is detected on boot up)
   d) Set Processor Serial Number = [Disabled]
   e) Set Memory Cache = [Enabled] and press <ESC> and leave all other default settings unchanged

4. At the "**Main**" option screen, set the correct local time and date.

5. Select "**Advanced**" option, then set:
   1. Plug & Play O/S = [No]

2. Reset Configuration Data = [Yes] (to request the BIOS to load the system default BIOS parameters)

6. Press <F10> to save configuration changes, and <CR> to exit Setup and the system will reboot (Ignore any Warning/Error messages during boot up sequence).

7. Press <F2> to re-enter the Setup Utility again. (Need to follow up on this)

8. Select "**Server**" and set **Processor Retest** = [No] (If in the future, one or more CPU did not pass the boot up self test, then set this setting to [Yes] is the first step to attempt to reset the suspected CPU(s)).

9. Select "**Boot**" and set **Boot-time Diagnostic Screen** = [Enabled]
   a) Extended RAM Step = 1MB
   b) Then select "**Boot Device Priority**", then set the settings to:
      i) [Removable Devices]
      ii) [ATAPI CD-ROM Drive]
      iii) [Hard Drive]
   c) Press [ESC] to exit the sub-menu

10. Select "**Advanced**", then "**I/O Device Configuration**" option and verify the following:
    a) Serial Port A: Enabled, Base I/O address = 3F8, Interrupt = IRQ 4
    b) Serial Port B: Enabled, Base I/O address = 2F8, Interrupt = IRQ 3
    c) Parallel Port: Enabled, Mode = ECP, Base I/O address = 378, Interrupt = IRQ 7, DMA channel = DMA 1
    d) Press <ESC> and leave all other default settings unchanged

11. Press <F10> to Save Configuration Changes and <CR> to exit and reboot the server.

4.1.5 System Setup Utility (SSU) Settings

It is strongly recommended that you perform the procedure in the section to allocate system resources such as IRQ, etc. appropriately:

1. Boot system using the SSU diskettes. Change diskettes as prompted.

2. Select Option 2: **Boot from ROM_DOS**.

3. From the main menu screen, double click **Resources**

4. Click **No**, do not restore configuration from a backup file

5. Double click **Baseboard: System Board** (from the Resource Configuration Add-in screen)

6. Click **Resource Use** button, Verify that IRQ 3 is used for Serial Port 2 and IRQ 4 is for Serial Port 1

7. If not, double click the controller using the interrupt, Double click the **IRQ** number, Select an alternate IRQ number, using IRQ 10 or 11, and click **OK**

8. Click **OK**, then **Yes** to commit changes.

9. Double click **Baseboard: System Board,** Double click **On-Board Communication Devices Group**

10. Set Serial Port 1 to 3F8 - IRQ 4 and Serial Port 2 to 2F8 - IRQ 3 and click **OK,** Click **OK** and **Yes** to commit changes

11. Double click **Baseboard: System Board,** Click **Resource Use** button

12. If there are controllers using IRQ 5 and 15, then re-configure the controllers to use an alternate IRQ, using IRQ 10 or 11

13. Once IRQ 5 and 15 are available, go to the Resource configuration Add-in screen. Click **Add ISA Card.**

14. Insert the Duocomm Configuration Diskette, and select the **A:** drive, Select the **!DUOC860.CFG** file, and click **OK**. A message should be returned that the board was successfully added.

15. Double click **Baseboard: System Board,** Click **Resource Use**

16. Verify the IRQ settings are similar to the following. Note that add-in cards in **bold** will be different than listed depending on the configuration.

    0 Baseboard: System Board / Timer
    1 Baseboard: System Board / Chipset
    3 Baseboard: System Board / Serial Port 2 Configuration
    4 Baseboard: System Board / Serial Port 1 Configuration
    5 ISA Card: DuoCom 3088 Dual Port Serial Controller / DuoCom COM 3
    6 Baseboard: System Board / On-Board Floppy Controller
    7 Baseboard: System Board / Parallel Port Configuration
    8 Baseboard: System Board / RTC
    9 Baseboard: System Board / ACPI SCI Interrupt
    10 PCI Card: Bus nn Dev nn – SCSI Controller / SCSI Controller
    10 PCI – Multifunction Controller / USB Controller
    10 PCI – Ethernet Controller / Ethernet Controller
    11 PCI -- Multifunction Controller / SCSI Controller
    11 PCI – Multifunction Controller / SCSI Controller
    12 Baseboard: System Board / Mouse Interrupt
    13 Baseboard: System Board / Math Co-processor
    14 Baseboard: System Board / On-Board IDE Controller
    15 ISA Card: DuoCom 3088 Dual Port Serial Controller / DuoCom COM 4

17. Close windows back to the System Setup Utility main window. Select **File – Exit** to exit the utility

18. Click **Yes** to save the changes made, Click **No**, do not make a backup copy of the configuration.

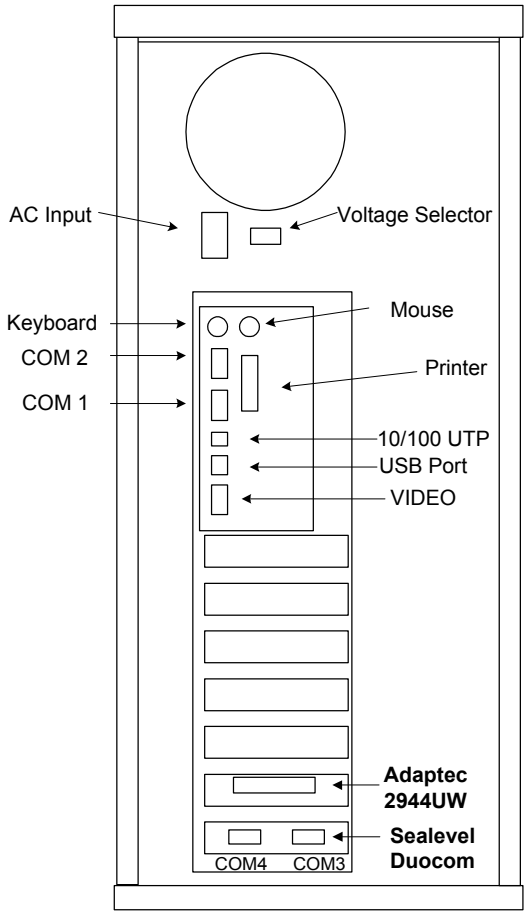
19. Proceed to Section 5.5 Verifying COM3/4 Availability in W2K to verify COM3 and COM4 existence.

4.2 2300 Hardware Setup

This section describes how to set up a new Aviion 2300-based server that has not been pre-configured for Prinergy. It'll show the user how to perform the following:

- Hardware configuration
- BIOS Settings

4.2.1 Option Card Locations



Card Position when installed:

Sealevel Duocom 3088	**ISA Slot 1**
Adaptec 2944UW (7462)	**PCI-1 Slot 1**

Figure 4-3: Rear view of the 2300 Server

4.2.2 Hard Disk Drive Configurations

The Aviion 2300 Server features hot-swap drive bays configured from the factory with a minimum of three to a maximum of five disk drives. SCSI IDs for drives are set from 0-4 starting from the bottom up of the drive cage as illustrated in picture below.

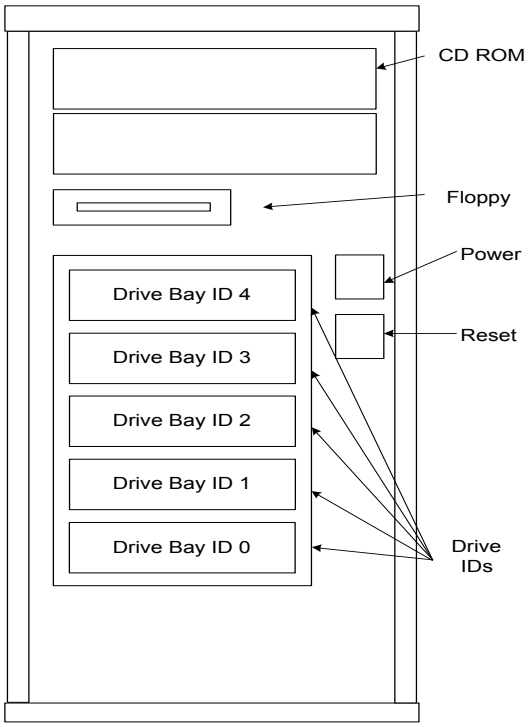


Figure 4-4: Front view of the 2300 Server

The standard 2300 system without internal data disks is configured with 3 x 8.6GB UltraSCSI hard disks and are partitioned as below:

Disk0:

- 1st partition "C" = FAT = 2047MB, W2K loader and boot files (C: drive)
- 2nd partition "D" = NTFS = 6xxxMB, operating system and Prinergy software (D: drive)

Disk1: Mirror of Disk0

Disk2:

- 1st partition = FAT = 2047MB, Prinergy baseline W2K ghost images (no drive letter)
- 2nd partition "E" = NTFS = 6629MB, Prinergy log files (E: drive)

For Prinergy Server/RenderStation 2300, up to two additional 8.6GB UltraSCSI hard disks can be added for internal data storage. You can either configure the disk(s) as a NTFS volume (J: drive) or, if more than one disk (of the same size) are added, we recommend that you configure them as a W2K striped set to create a larger volume and improve system performance.

4.2.3 SCSI Controller BIOS Settings

Integrated Adaptec AIC-7896 SCSI Controller Settings

1. Press CTRL +A during the Adaptec AIC-7896 SCSI BIOS boot up prompt to run the Adaptec SCSI Select Utility. From the **Main Menu** screen:

2. Select **Configure** and then select **View Host Adapter Settings**.

3. Select **Advanced Configuration Options**.
4. Set Host Adapter BIOS to **Enabled**.
5. Set BIOS Support for Bootable CD-ROM to **Enabled**.
6. Press ESC, ESC and then select **Yes** to save the changes (if changes has been made).
7. Press ESC and select **Yes** to exit the utility.
8. Press ENTER to reboot.

Differential Adaptec 2944UW SCSI Controller Settings (if installed)

1. Press CTRL+A during the Adaptec 2944UW BIOS boot up prompt to run SCSI Select (if the Adaptec 2944UW controller is installed).
2. Select **Configure** and then **View Host Adapter Settings**.
3. Select **Advanced Configuration Options**.
4. Set Host Adapter BIOS to **Disabled**.
5. Press ESC, ESC and select **Yes** to save the changes (if changes has been made).
6. Press ESC and select **Yes** to exit the utility.
7. Press ENTER to reboot.

Disk Write Cache Setup For 2300

1. Press CTRL+A during the Adaptec AIC-7896 SCSI BIOS boot up prompt to run the Adaptec SCSI Select Utility. From the **Main Menu** screen:
2. Select **Configure** and then **View Host Adapter Settings**.
3. Select **Advanced Configuration Options**.
4. Set Host Adapter BIOS to **Enabled**.
5. Set BIOS Support for Bootable CD-ROM to **Enabled**.
6. Pres ESC to exit this menu, then select **SCSI Device Configuration** and press ENTER.
7. Set **Drive Write Cache** to **Yes** (by moving the cursor to device ID #0 and pressing ENTER, then selecting **Yes**.)

   WARNING: By enabling the disk's write cache, it'll enhance the disk write access performance but it'll also post a potential data loss/corruption if the system experience a sudden power loss. It's strongly recommended that an UPS is used for system with this performance enhancement feature enabled!

8. Repeat for device ID #1, and if more disks are installed, set devices 2, 3, 4 and 5 accordingly.

9. Press ESC, and select **Yes** to save changes. Press ESC again, then select **Yes** to exit the SCSI Utility.

10. Press ESC, ESC and then select **Yes** to save the changes (if changes has been made).

11. Select **SCSI Disk Utilities**.

12. Select all disks shown (by highlighting one at a time), then select **Format Disk** to perform low-level formatting of all unknown sources of disks.

    Note: This step is necessary to eliminate the potential problem of having different disks' boot sector geometries among different SCSI controllers used in different systems.

13. Press ESC, ESC and select **Yes** to save the changes (if changes has been made).

14. Press ESC and select **Yes** to exit the utility.

15. Press ENTER to reboot.

4.2.4 System CMOS Setup Settings

The minimum known W2K-compatible revision of EMC/DG BIOS is PhoenixBIOS 4.0 Release 6.0 (L440GX+ BIOS Production Release 11.1 Build 102).

However, there's been an incident discovered during an upgrade at a customer site in which after the server is upgraded to Windows 2000. The server started to experience keyboard/mouse cursor locked up (frozen) after a couple of hours (of sometimes a few hours) of system idling (no user activity).

The system was finally diagnosed with a marginal faulty processor (600Mhz) since the system would be running fine under NT 4.0 but experience locked up under W2K.

Verify that the server has the latest revision of the BIOS installed. Follow the procedure outlined in section below to perform a server CMOS BIOS flash.

Flashing AV2300 Server BIOS

- Insert the W2K Resources CD for AV2300 (Creo P/N: 21-0051x) into drive; perform one of the two procedures below to create the desire bootable BIOS floppy disk.

Creating The Bootable Floppy Using DiskDupe Floppy Image

1. Under NT4, look for a DiskDupe image "**AV23B111.IMG**" in the **H:\BIOS_FW\B11\ FLOPPY** folder (if it does not exist, then proceed to procedure number 2 below to create the floppy using the original BIOS file supplied by EMC/DG).

2. Using the image file provided, create the bootable BIOS floppy by starting the DISKDUPE utility included on the Resources CD.

3. A Windows 98 bootable system floppy disk will be created using the provided DiskDupe image.

Creating The Bootable Floppy Using BIOS Files From EMC/DG

1. Under NT4, look for the BIOS file "in "**AV23B11.EXE**" in the **H:\BIOS_FW\B11** folder, double-click on this file and a dialogue box will pop up asking for an UNZIP destination folder
2. Insert a blank floppy into drive; type in "**A:**\" <CR> and extracted BIOS files will be unzipped onto the blank floppy, wait for file copy to be completed.
3. Take the not yet bootable floppy to a Windows 9x system, with the floppy insert into drive, open a DOS window, type in "**A:\WIN95BT**" <CR> and the system will start copying HIMEM.SYS and RAMDRIVE.SYS files to the floppy and transferring system to the floppy, making it into a bootable floppy disk.
4. If there're no Windows 9x system onsite, then boot the target system into DOS off the system C: (DOS 6.22) drive, then insert the not yet bootable BIOS floppy into drive.
5. Copy **C:\DOS\HIMEM.SYS** and **C:\DOS\RAMDRIVE.SYS** files to the floppy, then type in "SYS A:" <CR> to transfer DOS system to the BIOS floppy, making it a bootable floppy disk.

Running BIOS Flash Utility

1. With the newly created bootable BIOS floppy inserted in the drive, reboot the target server and the BIOS flash Utility will be initiated automatically. Follow the instructions on the screen to carry thru the BIOS flash process until a successful update message prompt appears.
2. Power down the server, wait 30 seconds, then power up the server, press <F2> key during the system POST sequence to enter the BIOS SETUP utility. (Note that the server will continue with all SCSI controller boot up sequence before entering SETUP screen).
3. From the "**PhoenixBIOS Setup Utility**" Main menu screen, select "**Processor Settings**" option and press <CR> (**Ignore the following steps if the settings do not appear**).
   a) Set "Processor Speed Setting = [700Mhz] (or the current installed processor speed)
   b) Set "Processor POST Speed Setting = [700Mhz] (or the current installed processor speed)
   c) Set Processor Retest = [No] (Set to <YES> if ONLY one CPU is detected on boot up)
   d) Set Processor Serial Number = [Disabled]
   e) Set Memory Cache = [Enabled] and press <ESC> and leave all other default settings unchanged
4. At the "**Main**" option screen, set the correct local time and date.
5. Select "**Advanced**" option, then set:
   a) Installed O/S = [Other]
   b) Reset Configuration Data = [Yes] (to request the BIOS to load the system default BIOS parameters)
6. Press <F10> to save configuration changes, and <CR> to exit Setup and the system will reboot (Ignore any Warning/Error messages during boot up sequence)
7. Press <F2> to re-enter the Setup Utility again. (Need to follow up on this)

8. Select "**Server**" and set **Processor Retest** = [No] (If in the future, one or more CPU did not pass the boot up self test, then set this setting to [Yes] is the first step to attempt to reset the suspected CPU(s)).

9. Select "**Boot**" and set **Boot-time Diagnostic Screen** = [Enabled]
   a) Extended RAM Step = 1MB
   b) Then select "**Boot Device Priority**", then set the settings to:
      i) [Removable Devices]
      ii) [ATAPI CD-ROM Drive]
      iii) [Diskette Drive]
      iv) [Hard Drive]
   c) Press [ESC] to exit the sub-menu

10. From the **Advanced** menu, select "**Integrated Peripheral Configuration**" option and verify the following:
    a) COM 1: Enabled, Base I/O address = 3F8, Interrupt = IRQ 4
    b) COM 2: Enabled, Base I/O address = 2F8, Interrupt = IRQ 3
    c) Parallel Port: Enabled, Mode = ECP, Base I/O address = 378, Interrupt = IRQ 7, DMA channel = DMA 3
    d) Press <ESC> and leave all other default settings unchanged

11. Press <F10> to Save Configuration Changes and <CR> to exit and reboot the server

4.2.5 System Setup Utility (SSU) Settings

1. It is strongly recommended that you perform the procedure in the section to allocate system resources such as IRQ, etc. appropriately:

2. The following procedure contains steps that configure a Duocom serial adapter. Even though some systems will not have one of these cards installed, the procedure should be performed regardless, as the card may be added at the customer site. The !DUOC860.CFG file for the Duocom card will be required on a diskette for this procedure.

3. Insert the L440GX+ Server Board Resource CD-ROM into drive, power up the Server, wait for the L440GX+ System Board CD-ROM menu to be displayed.

4. Select **Utilities,** Select **Run System Setup Utility,** Double click **Resources**

5. Click **No**, do not restore configuration from a backup file

6. If listed, select **ISA Card, Modem, DGC 118025414**, and press <Delete> to remove the modem configuration.

7. Double click **Baseboard: System Board** (from the Resource Configuration Add-in screen)

8. Double click **On-Board Disk Controllers** Group, Select **On-Board IDE Controller**

9. In the **Choice** drop down menu, select **Disable Primary and Secondary Channels,** Click **OK** and **Yes** to commit changes

10. Double click **Baseboard: System Board** (from the Resource Configuration Add-in screen), Click **Resource Use** button

11. Verify that IRQ 3 is used for Serial Port 2 and IRQ 4 is for Serial Port 1

12. If not, double click the controller using the interrupt

13. In the **Choice** drop down menu, select **Free Resources – Re-assign at Next Boot,** Click **OK**, then **Yes** to commit changes

14. Double click **Baseboard: System Board,** Double click **On-Board Communication Devices Group**

15. Set the Serial Port 1 to **3F8 - IRQ 4** and Serial Port 2 to **2F8 - IRQ 3** and click **OK,** Click **OK** and **Yes** to commit changes

16. Double click **Baseboard: System Board,** Click **Resource Use** button

17. If there are controllers using IRQ 5 and 15, then re-configure the controllers setting them to **Free Resources – Re-assign at Next Boot**. Use the same procedures as previous steps.

18. Once IRQ 5 and 15 are available, go to the Resource configuration Add-in screen. Click **Add ISA Card,** Insert the Duocom Configuration Diskette, and select the **A:** drive

19. Select the **!DUOC860.CFG** file, and click **OK**. A message should be returned that the board was successfully added.

20. Double click **Baseboard: System Board,** Click **Resource Use**

21. Verify the IRQ settings are similar to the following. Note that add-in cards in **bold** will be different than listed depending on the configuration. This is acceptable.

    0 Baseboard: System Board / Timer
    1 Baseboard: System Board / Chipset
    3 Baseboard: System Board / Serial Port 2 Configuration
    4 Baseboard: System Board / Serial Port 1 Configuration
    5 ISA Card: DuoCom 3088 Dual Port Serial Controller / DuoCom COM 3
    6 Baseboard: System Board / On-Board Floppy Controller
    7 Baseboard: System Board / Parallel Port Configuration
    8 Baseboard: System Board / RTC
    8 Baseboard: System Board / ACPI SCI Interrupt
    10 PCI –Ethernet Controller/ Ethernet Controller
    9 PCI – Multifunction Controller / USB Controller
    10 PCI Card: Bus nn Dev nn – SCSI Controller / SCSI Controller
    11 PCI -- Multifunction Controller / SCSI Controller
    11 PCI – Multifunction Controller / SCSI Controller
    12 Baseboard: System Board / Mouse Interrupt
    13 Baseboard: System Board / Math Co-processor
    15 ISA Card: DuoCom 3088 Dual Port Serial Controller / DuoCom COM 4

22. Close windows back to the System Setup Utility main window. Select **File – Exit** to exit the utility, Click **Yes** to save the changes made

23. Click **No**, do not make a backup copy of the configuration, Select **Quit Now;** Reboot the system.

24. Proceed to Section 5.5 Verifying COM3/4 Availability in W2K to verify COM3 and COM4 existence.

4.3 2700 Hardware Setup

This section describes how to set up a new Aviion 2300-based server that has not been pre-configured for Prinergy. It'll show the user how to perform the following:

- Hardware configuration
- BIOS Settings

4.3.1 Option Card Locations

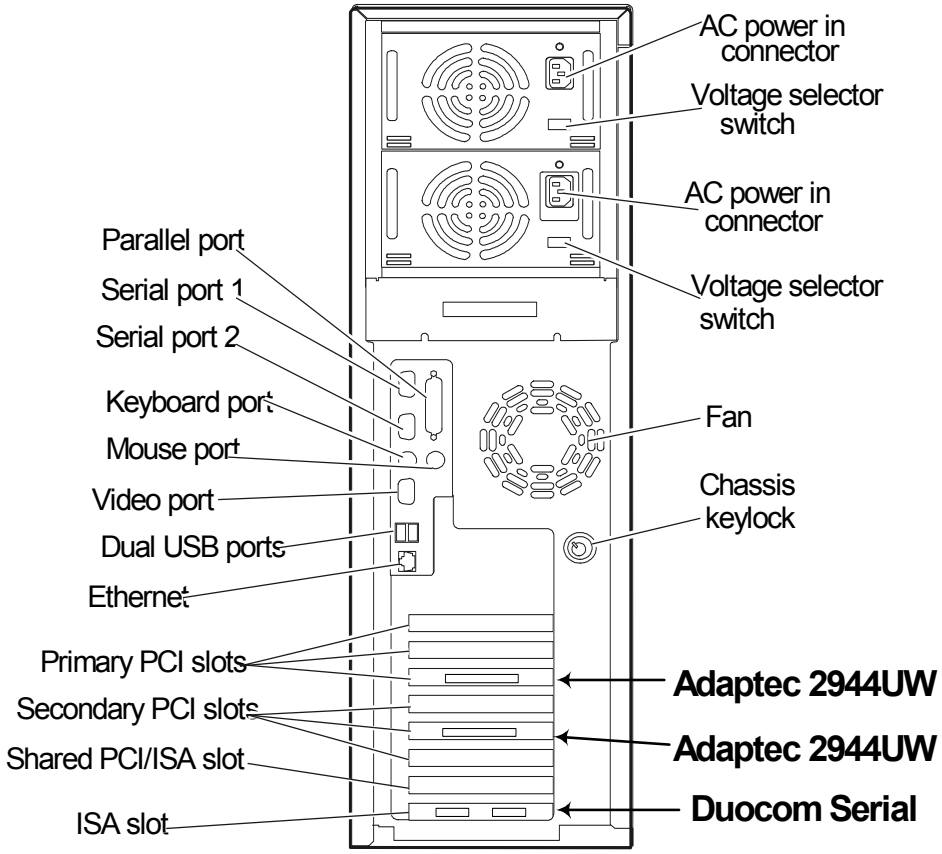


Figure 4-5: Rear view of the 2700 Server

4.3.2 Hard Disk Drive Configurations

The Aviion 2700 Server features hot-swap drive bays configured from the factory with a minimum of three to a maximum of six disk drives. SCSI IDs for drives are set from 0-5 starting from the bottom up of the drive cage as illustrated in picture below.

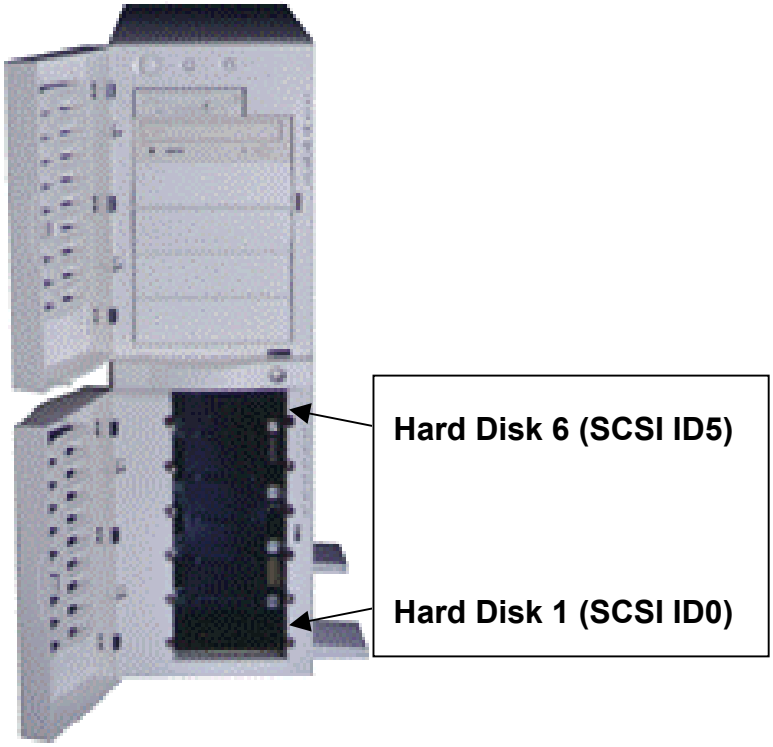


Figure 4-6: Front view of the 2700 Server

The ideal 2700 system without internal data disks is configured with 3 x 8.6GB UltraSCSI hard disks and are partitioned as below:

Disk0:

- 1st partition "C" = FAT = 2047MB or 32MB (if 4GB Disk is used), W2K loader and boot files (C: drive)
- 2nd partition "D" = NTFS = 6xxxMB or 4xxxMB (if 4GB Disk is used), operating system and Prinergy software (D: drive)

Disk1: Mirror of Disk0

Disk2:

- 1st partition = FAT = 2047MB, Prinergy baseline W2K ghost images (no drive letter)
- 2nd partition "E" = NTFS = 6629MB, Prinergy log files (E: drive)

For Prinergy Server/RenderStation 2700, up to three additional 8.6GB UltraSCSI hard disks can be added for internal data storage. You can either configure the disk(s) as a NTFS volume (J: drive) or, if more than one disk (of the same size) are added, we recommend that you configure them as a W2K striped set to create a larger volume and improve system performance.

4.3.3 SCSI Controller BIOS Settings

Integrated Adaptec AIC-7890 SCSI Controller Settings

1. Press CTRL +A during the Adaptec AIC-7890 SCSI BIOS boot up prompt to run the Adaptec SCSI Select Utility. From the **Main Menu** screen:
2. Select **Configure** and then select **View Host Adapter Settings**.
3. Select **Advanced Configuration Options**.
4. Set Host Adapter BIOS to **Enabled**.
5. Set BIOS Support for Bootable CD-ROM to **Enabled**.
6. Press ESC, ESC and then select **Yes** to save the changes (if changes has been made).
7. Press ESC and select **Yes** to exit the utility.
8. Press ENTER to reboot.

Differential Adaptec 2944UW SCSI Controller Settings (if installed)

1. Press CTRL+A during the Adaptec 2944UW BIOS boot up prompt to run SCSI Select (if the Adaptec 2944UW controller is installed).
2. Select **Configure** and then **View Host Adapter Settings**.
3. Select **Advanced Configuration Options**.
4. Set Host Adapter BIOS to **Disabled**.
5. Press ESC, ESC and select **Yes** to save the changes (if changes has been made).
6. Press ESC and select **Yes** to exit the utility.
7. Press ENTER to reboot.

Disk Write Cache Setup For 2700

1. Press CTRL+A during the Adaptec AIC-7890 SCSI BIOS boot up prompt to run the Adaptec SCSI Select Utility. From the **Main Menu** screen:
2. Select **Configure** and then **View Host Adapter Settings**.
3. Select **Advanced Configuration Options**.
4. Set Host Adapter BIOS to **Enabled**.
5. Set BIOS Support for Bootable CD-ROM to **Enabled**.
6. Pres ESC to exit this menu, then select **SCSI Device Configuration** and press ENTER.
7. Set **Drive Write Cache** to **Yes** (by moving the cursor to device ID #0 and pressing ENTER, then selecting **Yes**.)

WARNING: By enabling the disk's write cache, it'll enhance the disk write access performance but it'll also post a potential data loss/corruption if the system experience a sudden power loss. It's strongly recommended that an UPS is used for system with this performance enhancement feature enabled!

8. Repeat for device ID #1, and if more disks are installed, set devices 2, 3, 4 and 5 accordingly.
9. Press ESC, and select **Yes** to save changes. Press ESC again, then select **Yes** to exit the SCSI Utility.
10. Press ESC, ESC and then select **Yes** to save the changes (if changes has been made).
11. Select **SCSI Disk Utilities**.
12. Select all disks shown (by highlighting one at a time), then select **Format Disk** to perform low-level formatting of all unknown sources of disks.

    Note: This step is necessary to eliminate the potential problem of having different disks' boot sector geometries among different SCSI controllers used in different systems.

13. Press ESC, ESC and select **Yes** to save the changes (if changes has been made).
14. Press ESC and select **Yes** to exit the utility.
15. Press ENTER to reboot.

4.3.4 Flashing the Gateway BIOS

4. Insert the W2K Resources CD for the AV2700 (Creo P/N: 21-0052x) into the drive. Copy all files (including the sub-directory) in the H:\BIOS_FW\ ALRBIO613\ FLPDISK folder to a blank floppy.
5. Create a DOS bootable floppy off the H:\BOOTDISK\DOSMLTSC folder using the DISKDUPE utility included on the Resources CD.
6. Change the startup files of AUTOEXEC.BAT and CONFIG.SYS (off the newly created bootable floppy disk) extension to AUTOEXEC.KC and CONFIG.KC, then restart the server with this bootable DOS floppy inserted in the drive.
7. Press ENTER twice at the Enter Time and Date prompts, then insert the BIOS floppy into the drive.
8. Enter `PROGBIOS` at the DOS prompt and the PROGBIOS program heading appears along the top of the screen. (If the Flash Programming driver exits with an "Unable to open file '10565-09.bin' for input" error message, simply rename the '10565-13.bin' to '10565-09.bin' and run the PROGBIOS utility again.)
9. Press Y at the "Do you want to flash BIOS? [Y/N]" prompt and the BIOS flashing is started. DO NOT disrupt the flash in progress until it prompts you to power down and reboot the server.
10. Power down the server, wait 30 seconds, then power up the server, pressing the F2 key during the POST memory test sequence to enter the BIOS SETUP utility. (Note that the

server will continue with all SCSI controller boot up sequences before entering the Setup screen.)

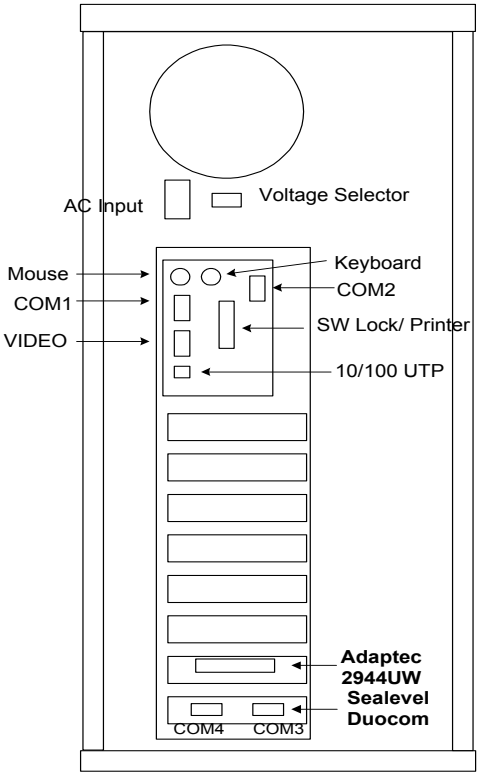
11. From the PhoenixBIOS Setup Utility Main Menu screen, select **Advanced → Reset Configuration Data** (by moving the cursor down to highlight the option) and press ENTER.
12. Select **Yes** and press ENTER to request the BIOS to load the system default BIOS parameters.
13. Press F10 to save the configuration changes and press ENTER to exit Setup and the system will reboot.
14. Press F2 to re-enter the Setup Utility.
15. Select **Advanced → Local Bus IDE Adapter** and set it to **Disabled**.
16. Select **Resource Configuration → IRQ Reservation**, then set **IRQ 5** and **15** to **Reserved**. (These two IRQs are used by the DUOCOM ISA card serial COM3 and 4 ports. Ensure that the card HW IRQs are set to **5** and **15**.)
17. Press ESC, ESC to exit out to the Advanced menu.
18. Select **Peripheral Configuration** and verify the following port settings:
    a) Serial Port A: **Enabled**, **Base I/O address** = **3F8**, **Interrupt** = **IRQ4**
    b) Serial Port B: **Enabled**, **Base I/O address** = **2F8**, **Interrupt** = **IRQ3**
    c) Parallel Port : **Enabled**, **Mode** = **ECP**, **Base I/O address** = **378**, **Interrupt** = **IRQ7, DMA channel** = **DMA1**
    d) Press ESC to exit.
19. Select **Embedded Device Control** and verify (making changes if necessary) the following:
    a) **Embedded PCI SCSI Channel A**: **Enabled**
    b) **Embedded PCI SCSI Channel B**: **Enabled**
    c) **Embedded PCI NIC**: **Enabled** (if used) or **Disabled** (if an add-on PCI Gigabit NIC is installed)
    d) **SHM Address** = **1**
    e) **PNP MultiBoot** = **Enabled**
20. Press F10 to save the configuration changes and press ENTER to exit Setup.
21. If subsequent reboots reported a couple of errors (right after the SCSI devices are initialized): "**ERROR: Update table not found for CPU # 2, Stepping 651**", and "**ERROR: Update table not found for CPU # 2, Stepping 651"** which require pressing <F1> key to get the system to fully boot up. Then boot into DOS using the floppy created in this procedure and execute the "**MULOADER.EXE**" which is located on the same BIOS floppy.
22. Boot the server into Windows 2000 and start verifying COM3 and COM4 availability by performing the steps described in Section 5.5 Verifying COM3/4 Availability in W2K below.

4.4 2200 Hardware Setup

This section describes how to set up a new Aviion 2200-based server that has not been pre-configured for Prinergy. It'll show the user how to perform the following:

- Hardware configuration
- BIOS Settings

4.4.1 Option Card Locations



Card Position when installed:

Sealevel Duocom 3088	**ISA Slot 1**
Adaptec 2944UW (7462)	**PCI-1 Slot 1**

Figure 4-7: Rear view of the 2200 Server

4.4.2 Hard Disk Drive Configurations

The Aviion 2200 Server features non hot-swap drive bays configured from the factory with a minimum of three to a maximum of six disk drives. SCSI IDs for drives are set from 0-5 starting from the bottom up of the drive cage. Figure below shows location of the internally mounted disk cage.

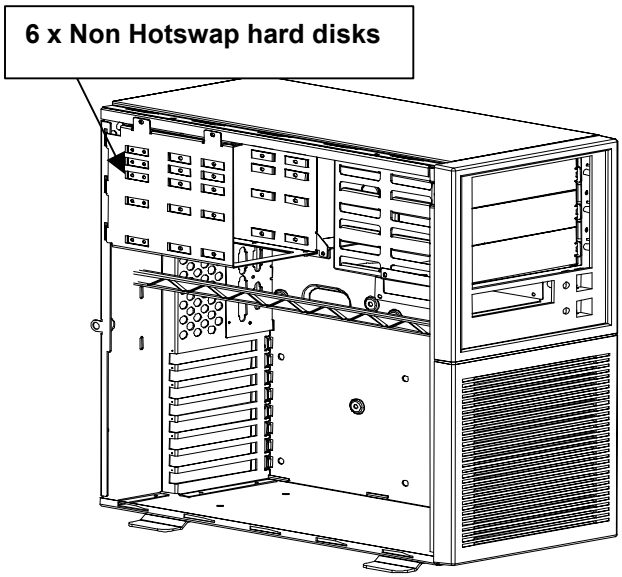


Figure 4-8: Front view of the 2200 Server

The standard 2200 system without internal data disks is configured with 3 x 8.6GB UltraSCSI hard disks.

Disk0:

- 1st partition "C" = FAT = 2047MB or 32MB (if 4GB Disk is used), W2K loader and boot files (C: drive)
- 2nd partition "D" = NTFS = 6xxxMB or 4xxxMB (if 4GB Disk is used), operating system and Prinergy software (D: drive)

Disk1: Mirror of Disk0

Disk2:

- 1st partition = FAT = 2047MB, Prinergy baseline W2K ghost images (no drive letter)
- 2nd partition "E" = NTFS = 6629MB, Prinergy log files (E: drive)

4.4.3 SCSI Controller BIOS Settings

Integrated SymBIOS PCI SCSI Controller BIOS Settings

1. Press <CTRL> <C> during **Symbios PCI SCSI BIOS** boot up prompt to run Symbios Configuration Utility.
2. Select the first channel (bus:device) and press <CR>
3. Select **Configure/View Host Adapter Settings**
4. Select **Advanced Configuration Options**
5. Set **Host Adapter BIOS Enabled**

6. Set **Extended BIOS Translation for DOS Drives >1GB Enabled**
7. Set **BIOS Support for Bootable CD-ROM Enabled**
8. Press <ESC>, <ESC> and select "Yes" to save changes
9. Press <ESC> to return to the channel selection window, If two channels are enabled, repeat settings for the second channel.
10. Press <ESC> and select Yes to exit utility, and Press <CR> to reboot

Differential Adaptec 2944UW SCSI Controller Settings (if installed)

1. Press CTRL+A during the Adaptec 2944UW BIOS boot up prompt to run SCSI Select (if the Adaptec 2944UW controller is installed).
2. Select **Configure** and then **View Host Adapter Settings**.
3. Select **Advanced Configuration Options**.
4. Set Host Adapter BIOS to **Disabled**.
5. Press ESC, ESC and select **Yes** to save the changes (if changes has been made).
6. Press ESC and select **Yes** to exit the utility.
7. Press ENTER to reboot.

4.4.4 Flashing AV2200 Server BIOS

1. Insert the W2K Resources CD for the AV2200 (Creo P/N: 21-0053x) into the drive. Extract (by double-clicking on it) the H:\BIOS_FW\ AV22B10.EXE file to a temporary folder, then run the command `RAWRITE AV22B10` (and press ENTER). Insert a blank floppy disk into the drive, then enter `A:` when it prompts for a floppy drive letter.
2. Leave the newly created bootable floppy in the drive. Restart the system and wait for the DOS prompt to appear.
3. Enter `1` at the DOS prompt and the BIOS Update Utility will begin programming the new BIOS. Do not disrupt the programming in progress until it prompts the user to do so.
4. Power down the server, wait 30 seconds, then power up the server. Press the F2 key during the system POST sequence to enter the BIOS SETUP utility. (Note that the server will continue with all SCSI controller boot up sequences before entering the Setup screen.)
5. From the PhoenixBIOS Setup Utility Main Menu screen, select **Processor Settings**.
   a) Set **CPU Speed Setting** = **400Mhz** (or the current installed processor speed)
   b) Set **Processor Retest** = **No** (Set to **Yes** if ONLY one CPU is detected on boot up)
   c) Set **Memory Cache** = **Enabled** and press ESC
6. Select **Advanced** and then set:
   - **Installed O/S** = **Other**

- **Reset Configuration Data** = **Yes** (to request the BIOS to load the system default BIOS parameters)

7. Press F10 to save the configuration changes, and press ENTER to exit Setup. The system will reboot. (Ignore any warning/error messages during the boot-up sequence.)
8. Press F2 to re-enter the Setup Utility.
9. Select **Integrated Peripheral Configuration** and verify the following:
   - COM 1: **Enabled**, **Base I/O address** = **3F8**, **Interrupt** = **IRQ 4**
   - COM 2: **Enabled**, **Base I/O address** = **2F8**, **Interrupt** = **IRQ 3**
   - Parallel Port: **Enabled**, **Mode** = **ECP**, **Base I/O address** = **378**, **Interrupt** = **IRQ 7**, **DMA channel** = **DMA 3**
   - Press ESC to leave all other default settings unchanged.
10. Press F10 to save the configuration changes and press ENTER to exit and reboot the server.
11. Upon the very first W2K boot up, the system might boot into Standard VGA graphic mode and a sequence of New Hardware Found messages might appear. Wait for a complete boot up, then reboot W2K even if it does not prompt to do so. Everything should be fine after that.

5. WINDOWS 2000 CONFIGURATIONS SPECIFIC TO EMC/DG SERVERS

Refer to Document Number 72-3476B-A, Windows 2000 Installation for Prinergy 2.x, to proceed with the installation of Server Operating System. This section will cover Windows 2000 installation and configuration information, compatibility/workaround issues specifically applied to the EMC/DG Aviion Server ONLY.

For Dell Server specific Windows 2000 installation and configuration information, please refer to Document Number 72-3572A-A for details.

5.1 W2K and AV3700 Server

There are currently no known issues for this server running W2K. The minimum known W2K-compatible revision of EMC/DG BIOS is PhoenixBIOS 4.0 Release 6.0 (BIOS Production Release 13 Build xxx).

If the system is running an older revision of BIOS, after W2K is installed, the system may not see the Clariion SCSI Raid cabinet attached to the Adapter AHA2944UW SCSI PCI controller.

Verify that the server has the latest revision of the BIOS installed. Follow the procedure outlined in section above to perform a server BIOS flash.

5.2 W2K and AV2300 Server

There are currently no windows 2000 compatibility issues with this server running W2K. The minimum known W2K-compatible revision of EMC/DG BIOS is PhoenixBIOS 4.0 Release 6.0 (L440GX+ BIOS Production Release 11.1 Build 102).

However, there's been an incident discovered during an upgrade at a customer site in which after the server is upgraded to Windows 2000. The server started to experience keyboard/mouse cursor locked up (frozen) after a couple of hours (of sometimes a few hours) of system idling (no user activity).

The system was finally diagnosed with a marginal faulty processor (600Mhz) since the system would be running fine under NT 4.0 but experience locked up under W2K.

Verify that the server has the latest revision of the BIOS installed. Follow the procedure outlined in section above to perform a server BIOS flash

5.3 W2K and AV2700 Server

The AV2700 Server is officially NOT being supported by EMC/DG on the Windows 2000 OS. The latest EMC/DG Server BIOS revision for this platform is version 6.00.33. Through tests in the lab and at beta sites, it was discovered that Windows 2000 running with this BIOS would perform poorly; especially during the plate-making process; both interpretation and rendering stages are affected greatly.

However, a resolution has been put in place that has proved to be working in the lab (on two machines) and one other machine working at one other beta site (Lake County Press).

A new version 6.00.13 of the server BIOS of the equivalent ALR 8200 Server from Gateway is included on the W2K Resources CD for this platform. This BIOS must be flashed to resolve W2K performance issues related to plate-making time. There are a couple of issues concerning the fact that we have to load a Gateway BIOS in an EMC/DG Server:

1. Service and support: We are currently working with EMC to obtain an agreement on servicing the server hardware with a Gateway BIOS, and we have Gateway's permission to use their version of the BIOS on other vendors' server platforms.
2. W2K OS related issues would be supported by Creo ONLY.

The following procedures are to be performed on a targeted AV2700 Server to prepare the unit to be running W2K at optimum levels.

5.4 W2K and AV2200 Server

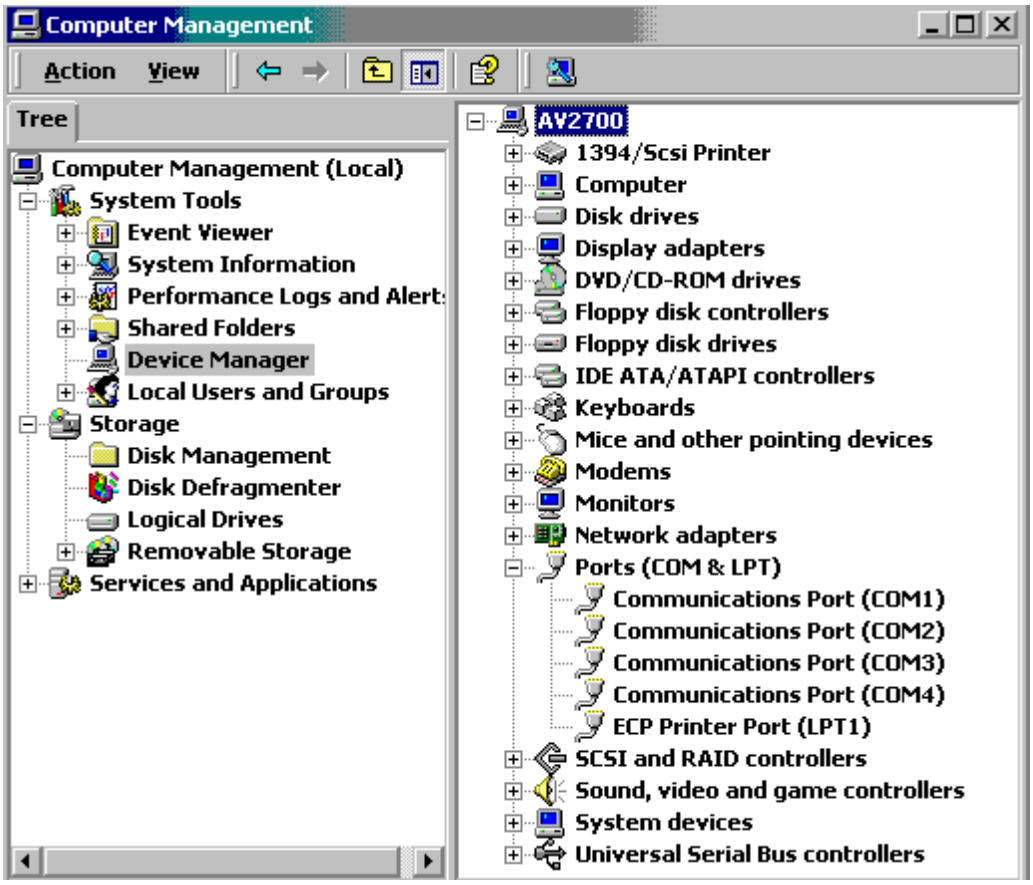
There are currently no known issues with this server running W2K. The minimum W2K-compatible version of EMC/DG BIOS is PhoenixBIOS 4.0 Release 6.0 (N440BX BIOS Production Release 10.0 Build 71). (This version has been tested and qualified by Creo.)

Verify that the server has the latest revision of the BIOS installed. Follow the procedure outlined in section above to perform a server BIOS flash.

5.5 Verifying COM3/4 Availability in W2K

1. Right-click **My Computer** and select **Manage**. The Computer Management MMC console appears.

2. Select **Device Manager** on the left pane window, then select and expand the **Ports (COM& LPT)** field. Verify that COM3 and COM4 appear as shown in the figure below:



3. Right-click on COM3 or 4 and select **Properties**. The Properties window appears.

4. Select the **Resources** tab, and verify that:

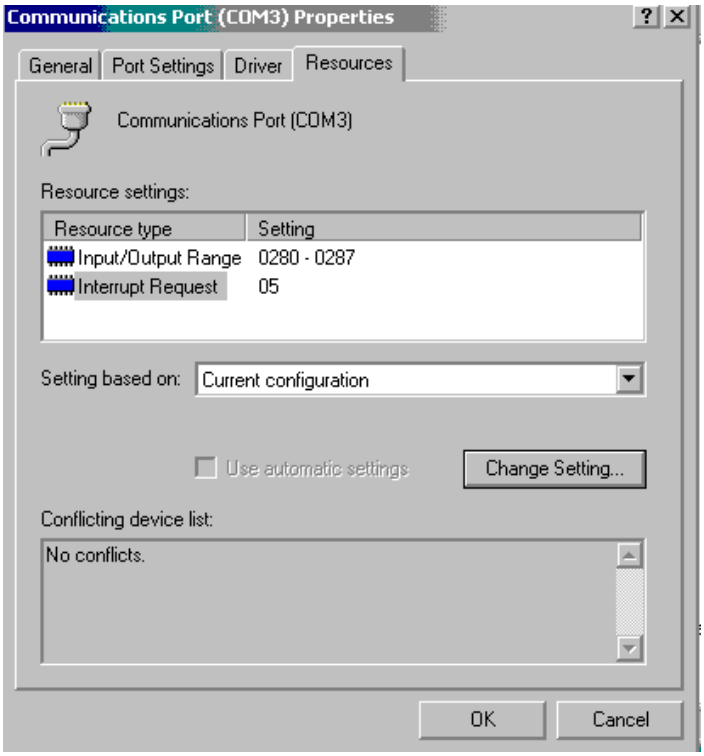
   - COM3: **Input/Output Range** = **0280 – 0287**

     Interrupt Request (IRQ) = **05**

   - COM4: **Input/Output Range** = **0288 – 028F**

     Interrupt Request (IRQ) = **15**

   - **Conflicting device list** = **No Conflicts** as shown in figure below:



5. If no errors/warnings appear, the system is ready for normal operation.

5.6 W2K DUOCOM Setup

All EMC/DG servers were configured with a SeaLevel Duocom ISA card to provide two additional serial ports (COM3 and COM4) for servers connecting to Creo output devices. This ISA card requires exclusive use of IRQ resources (IRQ 5 and 15). The IRQs must therefore be reserved from the system so that other PCI devices will not attempt to allocate the above two IRQs.

IRQ 5 and 15 are restricted from running the BIOS Setup Utility on the AV2700 and from performing a SSU or SCU (System Setup Utility or System Configuration Utility) on the AV3700, 2300 and 2200 server platforms.

5.6.1 Reserving IRQs for the Duocom Card

If a new BIOS flash has been performed on the EMC/DG Server, you MUST proceed to configure the Duocom resources according to the particular platform's requirement (i.e. running the SSU/SCU or BIOS Setup). Then go on to add COM3 and COM4 (if they do not exist in the W2K Device Manager field under the Computer Management MMC Console) in W2K according to the procedure outlined below.

5.6.2 Configuring COM3 and COM4 in W2K

1. Start **Control Panel** and select **Add/Remove Hardware**.
2. Select **Next** at the Add/Remove Hardware Wizard.
3. Select **Add/Troubleshoot Device** and then select **Next**. Wait until the search ends (about 15-30 seconds).

4. Select **Add New Device** and then select **Next**.
5. Select **No I want to Select Hardware from a List** and then select **Next**.
6. Select **Ports (COM and LPT)** and then select **Next**.
7. Under **Manufacturers** select **Standard Port Types**. Under **Models** select **Communications Port** and then select **Next**.
8. Select **OK** to ignore the Windows could not detect the settings of the devices message prompt.
9. In **Setting based on** select **Basic Configuration 8**.
10. Select **Input/Out Range** and then select **Change Settings**.
11. Enter `0280 - 0287`. You should see `0280-0287` appear in the setting window.
12. Select **Input/Output Range** and then **Change Settings**. Under **Conflict Information** there should be a No Devices Are Conflicting message. Select **OK**.
13. Select **Interrupt Request** and select **Change Settings**.
14. Press the up-arrow to select **05**. Note that under **Conflict Information** there should be a No Devices are Conflicting message. Select **OK** if there are no conflicts.
15. Select **OK** at the Add New Hardware Wizard Properties window.
16. Select **Next** at the Windows will use default settings window.
17. Select **Finish**, then select **Yes** at Restart the computer now? prompt.
18. Repeat the steps above for COM4, which has the following settings:

- **Input/Out Range** = **0288 – 028F**
- **Interrupt Request** = **15**

5.7 Windows 2000 Fault-Tolerant Volumes

5.7.1 Overview

Windows 2000 fault-tolerant volumes are those disk sets created by W2K software feature to protect system from disk(s) failure and to allow user to recover failed disk(s) without lengthy system down time.

The types of fault-tolerant volumes are those created as Mirrored set (Raid 1, data are duplicated on the 2nd disk of a 2-disk set), and Raid-5 set (Data and parity striped intermittently across three or more physical disks).

Note: There're also other types of disk sets but considered to be non fault-tolerant. They are Volume set (data being written across multiple physical disks one after another is full), and Striped set (Raid 0, data written on this volume are spanned across multiple disks at the same time). Although to create these two non fault-tolerant disk sets, the disks must be converted to Dynamic disk type as well.

The EMC/DG AV3700 servers were usually configured with an extra disk to allow setting up a System mirrored disk set utilizing Windows 2000's Dynamic disk feature. The problem with converting the disk(s) into Dynamic disk type is that you MUST be using version 7.0 or higher of the Ghost utility to create multiple-partition based System OS images of the system disk where the user can use to restore the system when a disaster occurs.

Step by step procedure on how to create and recover fault-tolerant disk sets and Striped set (Raid 0) are provided in section 5 of the *Windows 2000 Installation For Prinergy 2.x* (Document Number 72-3476B-A).