Dell Optiplex GX280
HW Config and Ghost Install

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1. SCOPE

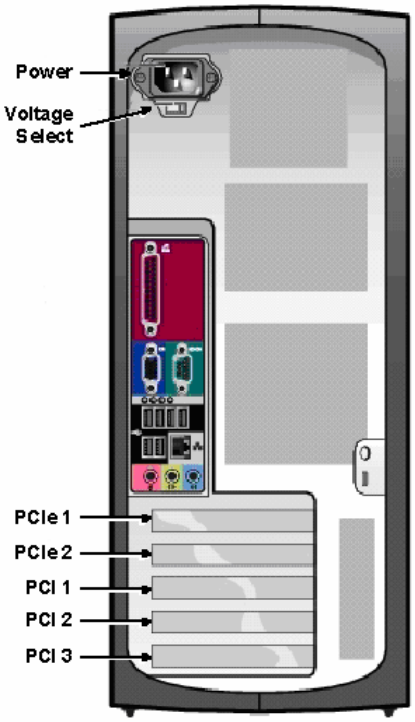
This doc will describe how to setup the Optiplex GX280 and how to install the Baseline Windows 2000 Ghost. This baseline will prepare the Workstation for Print Console to be applied.

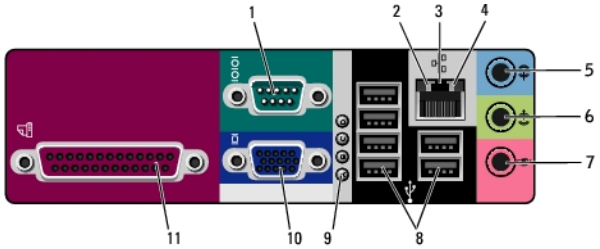
2. HARDWARE CONFIGURATIONS

This section describes current Optiplex Workstation/Windows 2000 Professional hardware platform configurations. It includes peripheral connection diagrams to help installation personnel connect the workstation and peripherals.

2.1 Dell Optiplex GX280 Workstation (Single Hyper-Threaded P4 Processor)

Figure 2-1: Optiplex GX280 Workstation peripheral connection diagram





1. Serial Port (COM1)
2. Link Integrity Light
3. Copper Gigabit NIC
4. Network Activity Light
5. Audio Line-In Connector
6. Audio Line-Out Connector
7. MIC Connector
8. USB2.0 Connectors (8 for GX280 including 2 on front).
   1 for Keyboard
   1 for Mouse)
9. Diagnostic Lights
10. Video Connector
11. Parallel Port (LPT1)

PCIe 1 (PCI Express 16X) – No supported adapters at the time of this writing
PCIe 2 (PCI Express 1X) – No supported adapters at the time of this writing
PCI 1 – Optional Intel Gigabit PCI NIC
PCI 2 or 3 – Adaptec AHA2944UW or AHA29160/39160 SCSI PCI Controller
PCI 4 – Digi Acceleport PCI Card

Table 2-1: Optiplex GX280 Components

Item	Type	Manufacturer	Comments
PC	1 x 3.2 GHz Hyper-threading Pentium IV, FD, CD	DELL	Prescott – 1024KB L2 cache
RAM	1024 MB Non-ECC 533 or 400MHz Dual Channel Shared DDR2 SDRAM	DELL	4 banks total 2x 512MB pre-installed
Hard disk	80 GB SATA1 disk.	DELL/QUANTUM	Optional 1 extra SATA disk.
DVD CD-ROM	Enhance IDE	SAMSUNG	
Video	Intel GMA 900	Intel	
Network	Single Broadcom 10/100/1000 BCM575	Broadcom	
Network	Optional Intel PRO/1000 FC/Copper Gigabit PCI	Intel	Installed in PCI 1

	Ethernet Controller		
SCSI (HVD or LVD) controller	Adaptec AHA2944UWD BIOS Rev. 2.20, PCI, (for connecting to Diff SCSI such as the Trendsetter) or 39160 for MCE Trendsetter	Adaptec/DELL	Installed in PCI 2 or 3
Serial interface	Digi Acceleport PCI + adapter cable	DIGI	Installed in PCI 3
Keyboard	USB	DELL	English
Mouse	USB Ballmouse	DELL	---
External modem	Optional USR56K Ext. PnP	US Robotics	North America, connected to COM1
Monitor	15", Flat LCD monitor	DELL	---
Software + documents	Windows 2000 Professional, **5** client licenses	Microsoft	English, W2K Optiplex Configuration preloaded
Software + documents	GHOST 8	Symantec	English

Table 2-2 Optiplex GX280 BIOS Settings

System	(**highlighted** items are changes from default)
System Info	Show system type, BIOS ver, Dell Tag#
Processor Info	CPU speed, Bus Speed, L2 cache, Hyperthreading status
Memory Info	Shows type of memory installed in each DIMM slot
Date/Time	Set accordingly
Boot Sequence	1. Onboard or USB Floppy Drive 2. Onboard or USB CD-ROM drive 3. Onboard SATA Hard Drive **Onboard IDE Hard Drive (disable this by hitting <space>**)
Drives	
Diskette Drive	Internal
Drive 0: SATA-0	On
Drive 1: SATA-2	**Off (if second SATA drive is not installed)** **On (if second SATA drive is installed)**
Drive 2: PATA-0	On
Drive 3: PATA-1	Off
SATA Operation	Normal
SMART Reporting	Off
Onboard Devices	
Integrated NIC	On (do not select PXE or RPL)
Integrated Audio	**Off**
USB Controller	On
PCI Slots	On
LPT Port Mode	ECP
LPT Port Address	378h
LPT Port DMA	Off
Serial Port #1	Auto
Video	
Primary Video	Auto
Video Memory Size	8MB
Performance	
Hyper-Threading	**On**
HDD Acoustic Mode	**Performance**
Security	
Admin Password	Not Set
System Password	Not Set

Password Changes	Unlocked
Chassis Intrusion	**On**
Intrusion Alert (if active)	**Acknowledge** (will clear the alert)
Power Management	
AC Recovery	Off
Auto Power On	Off
Auto Power Time	12:00am
Low Power Mode	Off
Remote Wake Up	Off
Suspend Mode	S3
Maintenance	
Load Defaults	Cancel (Continue forces defaults of BIOS settings)
Event Log	Lists the current system event log. Allows you to clear events
POST Behavior	
Fast Boot	On
Numlock Key	On
POST Hotkeys	Setup & Boot Menu
Keyboard Errors	Report

2.2 UPS Options

The following shows the recommended optional APC UPS for the Optiplex Workstation:

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 iec 320 c14	100V nema 5-15p	240V 10A iec 320 c14

3. ITEMS REQUIRED

Before loading the Ghost Baseline, check against the software tables and make certain that the hardware is configured as described in *Section 2, Hardware Configurations*.

Table 3-1: Necessary software

Disk	Type	Version	Comments
Dell W2K Resource CD (P/N: 21-0151A)	CD	R	W2K Pro image, utilities for the specific platform
Workstation Image CD's	CD		Server Ghost Image CD's for each GX Workstation
Print Console software	CD	2.x	Print Console software
APC PowerChute Business Edition	CD	6	Software utility for UPS monitoring
Blank floppies	Floppy	N/A	For creating driver disk off W2K Resource CD if needed

4. HARDWARE SETUP

4.1 Add Hardware Components

1) Power the Server down
2) Add the components as listed in *Table 2-1: Optiplex GX280 Components*. Pay attention to slot locations.
3) Connect external Serial connections as follows:

	COM1 (Embedded)	COM3 (Digi P1)	COM4 (Digi P2)	COM5 (Digi P3)	COM6 (Digi P4)
MODEM	X				
Workstation Serial Interface		X			
Recorder Diagnostic			X		
Head Diagnostic				X	
Harmony Densitometer i/f					X

4) Connect the UPS control cable to a USB port.

4.2 Configure BIOS Adapters

4.2.1 Configuring the BIOS Settings

1) Boot the Workstation and hit **<F2>** to Enter Setup.
2) Compare the settings as listed in *Table 2-2 Optiplex GX280 BIOS Settings* and adjust as necessary.

4.2.2 Configuring the PCI Adaptec 39u160

1) Ensure the 39u160 BIOS is at a rev listed in Tech Planet / Server / Downloads page. At the time of this writing v3.10 is the current supported rev. Download the update from Tech Planet if requiring an update.

2) Press **CTRL +A** (if appears) during the Adaptec 39160 SCSI BIOS boot up prompt to run the Adaptec SCSI Select Utility.

3) For **both** 39160 ports found do the following.

   a) From the Main Menu screen, select **Configure/View Host Adapter Settings**.

   b) Select **<F6> / Yes** to Reset options to default.

   c) Select **Advanced Configuration**.

Domain Validation	Disabled
BIOS support for bootable CD	Disabled

      i) All other items left at default.

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

   d) Press **ESC** to the controller A/B select and repeat for controller B.

4) Press **ESC** and select **Yes** to exit the utility.

4.2.3 Configuring the Differential Adaptec 2944UW

WARNING: This controller is running 5V supply, so it's not compatible with the 3.3V based PCI-64 and PCI-X buses.

1) Ensure the 2944UW BIOS is at a rev listed Tech Planet / Server / Downloads page. At the time of this writing v2.20 is the current supported rev. Download the update from Tech Planet if requiring an update.

2) Press **CTRL +A** (if appears) during the Adaptec 2944 SCSI BIOS boot up prompt to run the Adaptec SCSI Select Utility.

3) From the Main Menu screen, select **Configure/View Host Adapter Settings**.

4) Select **<F6> / Yes** to Reset options to default.

5) Select **Advanced Configuration**.

Host Adapter BIOS	Disabled: Scan Bus
BIOS support for bootable CD	Disabled

   a) All other items left at default.

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

6) Press **ESC** to the controller A/B select and repeat for controller B.

7) Press **ESC** and select **Yes** to exit the utility.

5. APPLYING WINDOWS 2000 GHOST

This section will lay down the Windows 2000 Workstation OS from a Ghost image. After you complete the procedures in this section, your system will be ready for Print Console software installation.

5.1 Apply the Ghost

1) Insert the bootable Server Image CD into the drive and boot the system off this DVD. The DVD will boot you directly into Ghost.
2) Press the TAB key to move the cursor to a desired image file and press **ENTER**.
3) Highlight the first hard disk from the drive list and press **ENTER**. Verify/change the partition sizes to the following according to desired platform:
   - 1st Partition = 17200MB (NTFS), 2nd Partition = LeftoverSpace (NTFS)
4) Press the TAB key to move the cursor to the **OK** button, and press **ENTER**.
5) Press the TAB key to move the cursor to the **Yes** button and press **ENTER** to proceed with loading the disk image (takes approximately 5 minutes).
6) Remove the CD from the drive and press **ENTER** to accept the Reset Computer prompt after the download is completed. The system will boot into a baseline W2K Professional operating system.

5.2 System Preparation Mini-Setup

1) Power up the system. A Windows 2000 mini-setup screen will appear. Select **Next**.

2) Select I Accept this Agreement and then select **Next**.

3) Select **Next** in the Regional Settings window.

4) In the **Name** field, type PrintConsole Workstation. In the **Organization** field, type the customer name. Select **Next**.

5) Enter the following license key and select **Next**.

M8G6J – FFVB4 – CKYY8 – 7JYYF – THQD8

6) Type in the appropriate computer name and enter the password, then select **Next**.

7) Type in the "Modem Dialing Information" area code select **Next**.

8) Set the correct date/time and select **Next**.

9) Select "Typical Settings" in the Network Settings window and select **Next**.

Note: At this point, the system will pop up a "**Setup Cancelled**" error message; click <**OK**> to continue (It's safe to ignore the harmless message).

10) Specify the domain name if the local network has one. If not, leave it at the default setting (i.e. WORKGROUP) and select **Next**.

Select **Next**, then **Finish** to reboot the system.

5.3 After Mini Setup

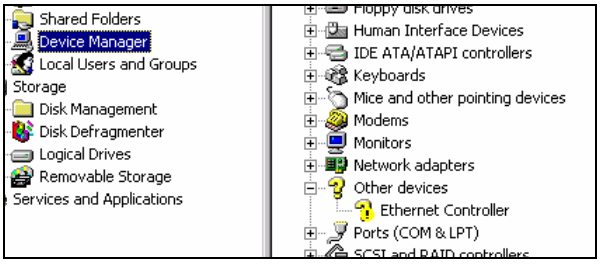
5.3.1 Detecting New Hardware

All hardware should have their drivers already preloaded. Only optionally added adapters, of drivers not already loaded (ie. additional Intel Pro1000 NIC) will be detected. The source for these drivers will reside in one or more of the following locations:

- **%SystemDrive%\Drivers** on your Workstation
- ResourceCD 21-0151AR (minimum)
- Tech Planet

1) Hit **Cancel** to the Found New Hardware wizard prompt.

2) Right click My Computer and select **Manage > Device Manager**.You should see the following:



3) You'll notice new devices without their proper drives showing up under **Other Devices > DeviceName** and will have the icon beside it.

4) If the updated driver does not appear in your \Drivers folder copy the driver from the ResourceCD or TechPlanet into your **Drivers** folder.

5) Right click each of the new devices and select **Properties > Driver > Update Driver > Next**.

6) Select **Search for a suitable** and select **Next**.

7) Select **Specify a location** and browse to the applicable **.inf** driver in your \Drivers folder.

8) At the "Wizard has found a driver that is a closer match..." prompt select **Install one of the other drivers** and hit **Next**.

9) Select the driver from the \Drivers directory you had originally pointed to and hit **Next**. The driver "may" now show the updated driver version. If it doesn't it will require a reboot which can be done later. Close the driver upgrade windows.

5.3.2 Setting Virtual Memory

1) Right-click **My Computer** and select **Properties**.

2) Select the **Advanced** tab, and then select **Performance Options…**

3) Set **Application Responses** to **Optimize Performance for Background Services**.

4) Set **Virtual Memory.**

   a) Select **Change…**, then selecting you OS drive and setting **Initial Size = Maximum Size** (= 1.5 x of physical RAM installed. For example, if the system has 1GB RAM installed, then enter 1536). Click **OK**, **OK**.

   b) If a second physical disk is used, create **an additional** paging file on this drive where Maximum Size = Initial Size = 1.5x Physical RAM.

5) Select Environment Variables…

   a) Set **User Variables** for Administrator to **TEMP = TMP = E:\Temp.** Repeat the same for System Variables, and then click **OK**.

6) Select Startup and Recovery…

   a) Set Display list of Operating Systems to **5** seconds. Uncheck Automatically Reboot, and then click OK, OK to confirm.

7) Click **No** to the restart the computer prompt.

5.3.3 Verifying NIC Driver Settings

Next, make sure that the Network Interface Card has the correct driver settings.

1) From the desktop, right-click **My Network Places**. Select **Properties.**

2) A window will open. Right-click **Local Area Connection** icon and select **Properties**. The **Local Area Connection Properties** dialog box will open.

3) Enable the Show icon in taskbar when connected check box.

4) Click **Configure**, and then select the **Advanced** tab.

5) Set the **Adaptive Technology** (Not applicable for Gigabit NIC) setting to **Off**.

6) Set **Speed** & **Duplex** to **AUTO DETECT**.

   You may also choose to match the settings to the local network switch connection type. This will allow you to achieve maximum network throughput. Click **OK** and wait for the Adapter properties to complete making changes.

7) Select (highlight) the Internet Protocol (TCP/IP) option and select Properties > Advanced > WINS. Uncheck Enable LMHOSTS lookup. Select Enbale NetBIOS over TCP/IP and click OK, OK.

8) Select **Maximize data throughput for network applications** option, and then click **OK**, **OK** to complete the NIC settings.

9) Close the Network and Dial-up Connections window.

5.3.4 Setting up Disk Configuration

Optiplex Workstation has a consistent drive lettering as outlined below:

Disk0:

- 1st Partition = C:, File System = NTFS: Boot drive, NT loader and boot files, System drive, W2K + Print Console applications.
- 2nd Partition = D:, File System = NTFS: Data

Disk1: (If Exist)

- 1st Partition = E:, File System = NTFS: More for Data storage

1) Right-click on **My Computer** and select **Manage** to open the Computer Management Console. Under **Computer Management (Local)**, expand the **Storage** component and select **Disk Management**.
2) If the Write Signature and Upgrade Disk Wizard dialog box appears, select **Cancel**

WARNING: If you accept this prompt by selecting Next, W2K will convert all un-partitioned disk(s) to the new Dynamic disk type. It is not recommended since DOS will NOT recognize the Dynamic disk type.

3) Right-click on the CD drive by pointing the cursor at the CD icon and then select **Change drive letter and path**. Select **Edit** and change the CD drive letter to H: and select **OK**, then **Yes** to confirm the change.
4) Right-click the partition of Disk1 and select **Create Partition**. The Create Partition Wizard window appears. Select **Next**. To create **E:** partition with **File System** = **NTFS**, **Label** = **Data1, Perform a quick format.**

5.3.5 Windows Explorer Property Settings

1) Start Windows Explorer by selecting **Start > Accessories > Explorer**.
2) Select **View** > **Details**.
3) Select **Tools** > **Folder Options** > **View tab**.

Display compressed files and folders alternate color	Enabled
Display full path in address bar	Enabled
Display full path in title bar	Enabled
Show hidden files and folders	Enabled
Hide file extensions for known file types	Disabled

4) Select **Apply,** then click the **Like current folder** button, **Yes** to confirm.
5) Click **OK** to exit.

5.3.6 Customizing Command Prompt Window Properties

Change the DOS command prompt properties according to the following:

1) **Options** tab: Windows default settings (no changes)
2) **Font** tab: **Font size** = **7 x12** (no other changes)
3) Layout tab > Screen Buffer size: Width = 200, Height = 1000, uncheck Let System Position Window

5.3.7 Installing UPS Software (Optional APC Uninterrupted Power Supply)

1) Edit the **Boot.ini** file for UPS use:
   a) Start Explorer by selecting **Start** and then **Run**. Enter `Explorer`.

b) Right-click **C:\Boot.ini** and select **Properties**.

c) Uncheck **Read Only** and click **OK**.

d) Double-click on **Boot.ini** to open the file in Notepad.

e) Edit the following two lines to add the text shown in **bold** below:

multi(0)disk(0)rdisk(0)partition(X)\WINNT="Creo Windows 2000 Server " **/NoSerialMice:COM2**
multi(0)disk(0)rdisk(0)partition(X)\WINNT="Creo Recovery Console"

f) Where (X) could be 1, 2, or 3, depending of the position of the SCSI controller.

g) Save and Close the file.

h) Right-click the **C:\Boot.ini** file and select **Properties**.

i) Select **Read Only,** and then click **OK**.

2) Install Powerchute

a) Insert the Prinergy W2K Resources CD, and double-click **H:\W2K_Util\APCBE622\pcbesetup.exe** to start the PowerChute Business Edition setup program.

b) Click Setup / Install Product.

c) From the Product Installation window, click **Install** for the Agent, and then click **Next**.

d) Accept the license agreement.

e) Choose **%SystemDrive%\PWRCHUTE** as the destination location for the PowerChute Agent files, and then click **Next**.

f) Click **No** when asked, "Would you like to automatically search all communications ports for an APC UPS". A dialog box will now appear which will prompt you to select the UPS type and Communication Port that the PowerChute Agent's host uses.

g) Select the following:

UPS Type:	Smart UPS
Communications Port	COM2 or USB

h) Click **Next**.

Username	administrator
Password	creo

i) Click **Finish**.

3) Install the Server:

a) From the Product Installation window, click Install for the Server, and then click **Next**.

b) Accept the license agreement.

c) Enter **`administrator`** for the username and **`creo`** for the password. The username and password must be the same as the Agent.

d) Clear the Automatically check for product updates check box, and then click Next.

e) Create your configuration profile (These are the global settings for all of your PowerChute Agents):

i) Click **Next** to the Create Configuration Profile window.

ii) Select **Broadcast Messages** check box, and then click **Next**.

iii) Select the **Entire Domain** check box, and then click **Next**.

iv) From the Power-Protection Strategy window, select the **Maximize Safety** check box, and then click **Next**.

v) Click **Next** to the prompts and **Finish** to the Changes Complete window.

f) From the Device List Configuration window, select the Agent (Should be the Server Name) under **Discovered Devices:** and click **Add**, and then click **Apply**. Click **Close**.

g) Click Register Later.

4) Install the Console:

a) From the Product Installation window, click **Install** for the Console, and then click **Next**.

b) Accept the license agreement.

c) Select Launch PowerChute Business Edition, and then click Finish.

d) Click **No** to the Most Used Features feedback window.

e) Enter the following at the Login window:

User Name	administrator
Password	creo
Server	127.0.0.1 (this is the local server in the routing table)

5) Reboot the Server.

5.3.8 Clearing Out Computer Eventlogs

1) Right-click **My Computer** and select **Manage** to bring up the Computer Management Console.

2) Select and expand the **Eventview** option, then select and clear the contents of the **System** and **Application** logs to clear out all references of the old computer name in these logs.

5.3.9 Creating GHOST Baseline W2K OS Images

1) Boot the system off the DOS floppy.

2) Once the system is booted into the DOS prompt A:\>, enter `C:` to log onto C: drive.

3) Enter `GHOST6` to start up GHOST V6.5. From the main menu, **select Local > Disk > To Image** and press ENTER twice.

4) Highlight the first hard disk (with two partitions) from the list in the Select local source drive by clicking on the drive number window, and press ENTER.

5) Press TAB to move the cursor to the destination drive field and press the down arrow to scroll through the available drives. Select the drive from which GHOST was executed.

6) Press TAB to move the cursor down to the **File Name** field and type in a file name (such as blw2kop) and press ENTER.

7) Press TAB to move the cursor to **High** on the Compress Image prompt and press ENTER.

8) Press TAB to move the cursor to **Yes** on the Question prompt and press ENTER to start writing the disk image to a mapped network drive.

9) Press ENTER at the Dump Complete prompt.

10) From the **Main Menu**, select **Quit** and press ENTER to exit GHOST.

6. SETUP FOR DISASTER RECOVERY

This section outlines steps to prepare the system to be protected by a backup strategy.

Boot the system into DOS off the Dell W2K Resource CD or Dell Server Image CD with the appropriate DOS IDE driver, and then create the System fully configured (site specific) W2K OS image using GHOST utility.

7. SYSTEM DISASTER RECOVERY

We recommend that every Optiplex workstation be configured with the optional 2nd disk drive for setting up a RECOVERY partition for storing ghost images of a fully configured (site-specific configurations) system disk. The system can then implement a simple system disaster recovery strategy, by using GHOST (General Hardware Operation System Transfer) as the workstation baseline W2K Professional Operating System recovery tool. This utility allows users to recover the entire system (to the last known good system settings) within 30 minutes in case of a system disaster crash.

The simple backup strategy includes a two-step process taken when a disaster occurs:

1) The system is first booted off a Server Image CD with the appropriate DOS IDE controller driver.

2) Invoke the GHOST utility included on the CD (or the 2GB FAT or 4GB FAT32 RECOVERY partition) to download the appropriate fully configured W2K OS image (i.e. backup) to the first drive in the system. Reboot and the system should be ready for normal operation.