V2101 Series
WinXP Embedded User's Manual

Second Edition, December 2009

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WinXP Embedded User's Manual

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Introduction

Thank you for purchasing the Moxa's V2101 series of x86 ready-to-run embedded computers. This manual introduces the software configuration and management of V2101 computers running the Windows Embedded Standard 2009 operating system. For hardware installation, connector interfaces, setup procedures, and upgrading the BIOS, please refer to the V2101 Series Hardware User's Manual.

Microsoft Windows Embedded Standard 2009 is a specialized operating system consisting of componentized Windows XP Professional features that allows you to build a wide range of innovative, small footprint devices. Windows developers will find Moxa's V2101 computer plus Windows Embedded Standard 2009 operating system to be the right solution for a wide range of applications.

In this chapter, we cover the following topics:

- **Overview**
- **Software Specifications**
  - Application Development Environment
  - Networking and Communication Capabilities
  - Supporting Services and Daemons
- **How to Determine Firmware Build Versions**
- **Inserting a USB Mass Storage Device into the Computer**
- **Inserting an SD Card in the Computer**

Overview

V2101 embedded computers are based on the Intel Atom Menlow XL x86 processor and feature 2 serial ports, dual Gigabit LAN ports, 4 USB 2.0 hosts, and an SD socket. The V2100 Series offers both VGA and LVDS outputs, making it particularly well suited for industrial applications, such as SCADA and factory automation.

The V2101's 2 serial ports makes it ideal for connecting a wide range of serial devices, and the dual 10/100/1000 Mbps Ethernet ports offer a reliable solution for network redundancy, promising continuous operations for data communication and management. As an added convenience, the V2101 computers have three DIs and three DOs for connecting digital input/output devices. In addition, the SD and USB ports provide the V2101 computers with the reliability needed for industrial applications that require data buffering and storage expansion.

Pre-installed with Windows Embedded Standard 2009, the V2101 Series provides programmers with a friendly environment for developing sophisticated, bug-free application software at a lower cost.

All V2101 models support a wide operating temperature range of -40 to 85°C for harsh industrial environments.

Software Specifications

The software features of the V2101-XPE embedded computers are listed below:

Application Development Environment

The V2101-XPE is fully compatible with the XP Professional Development Environment.

The V2101-XPE's use of Windows Embedded Standard 2009 with SP3 provides the following common, popular application development features that make programming convenient and easy.

Every application that runs in Windows XP can be executed in the V2101-XPE, so there is no migration cost.

Windows Embedded Standard 2009 is based on the same binary files as Windows XP Professional; Windows Embedded Standard 2009 enables you to rapidly develop reliable and full-featured connected devices.

- **Microsoft .Net Framework 3.5**—This component includes the common language runtime (CLR) and the .NET Framework class library.
- **Active Directory Service Interface (ADSI) Core**—Provides the basic functionality for ADSI. This component routes any requests to the corresponding provider according to the path it is provided.
- **Active Template Library (ATL)** —Supports ATL applications.
- **ASP.NET 2.0**—A unified Web application platform that provides the services necessary to build and deploy enterprise-class Web applications.
- **Certificate Request Client & Certificate Auto enrollment**—This component includes the common language runtime (CLR) and the .NET Framework class library.
- **COM Base**—Component Object Model (COM) includes a programming model and a set of application programming interfaces (APIs), and does not include a dedicated user interface.
- **Common Control Libraries**—(Side by Side) the component provides common user interface (UI) controls.
- **Common File Dialogs**—Support for common dialog boxes.
- **Direct3D**—The infrastructure for two-dimensional and three-dimensional graphics.

- **DirectPlay**—Provides a networking API that can enable any application to operate over both a peer-to-peer and client/server topology.
- **DirectShow**—Base filter graph and device enumeration support for all DirectShow applications. This component also provides most DirectShow filters.
- **Distributed Transaction Coordinator (MSDTC)** —A distributed transaction facility for Microsoft Windows systems, which uses transaction-processing technology. MSDTC exploits loosely coupled systems to provide scalable performance.
- **Enhanced Write Filter**—An upper filter in the storage device driver stack that redirects disk write operations to volatile (RAM) or non-volatile (disk) storage.
- **Event Log**—A dynamic-link library (DLL) that runs as part of Services.exe. This component stores and retrieves events that can be viewed in the event viewer.
- **Internet Explorer 7**—The Internet Explorer Web browser that allows customers to connect to the Internet or to an intranet (see properties via inetcpl.cpl).
- **Mapi32 Libraries**—The infrastructure for e-mail support.
- **Message Queuing (MSMQ) Core**—Message Queuing is a messaging infrastructure and a development tool for creating distributed messaging applications for Microsoft Windows operating systems; it provides guaranteed message delivery, efficient routing, increased security, support for sending messages within transactions, and priority-based messaging.
- **Microsoft Visual C++ Run Time Libraries**—The Microsoft C++ Runtime Library.
- **NTFS**—The NTFS File System driver (NT File System). Use NTFS instead of FAT for optimum file system security.
- **Power Management**—This component includes a dynamic-link library for power management features in the xpepm.dll file, and a command-line tool for using power management on a run-time image in the xpepm.exe file. **Note:** Instead of using this component, Shutdown.exe is the preferred method to shut down the system.
- **Registry Editor**—The Registry Editor (regedit.exe, regedt32.exe).
- **RPC**—Facilitates local remote procedure calls (RPCs) using the ncalrpc and ncacn_np protocol sequences, and provides support for dynamic endpoint resolution. The RPC name service provides remote procedure call (RPC) named services functionality, such as the RPC Locator. The RPC Named Service component exposes all RpcNs* RPC functions. The RPC server provides a variety of RPC and Component Object Model (COM) services, including RPC Endpoint Mapper, COM Service Control Manager (SCM) and COM Object Resolver.
- **Smart Card Cryptographic Service Providers**—Supports features such as smart card logon and improved e-mail security. Smart cards must be capable of certain RSA public key cryptographic operations. These functions are exposed by using CryptoAPI and, specifically, through a CSP. Typically, each type of smart card requires a CSP, which is provided by the card vendor.
- **USB 2.0**—The core drivers needed to communicate with an Enhanced Host Controller Interface (EHCI) that is compliant with USB .95 or 1.0.
- **Windows API—User**—Provides the user-mode component of the Windows operating system API.
- **Windows Media Player 11**—Playback functionality for digital media that includes videos, CDs, and DVDs for end users and developers.
- **Windows Script Engines**—A complete scripting environment for Windows, including command-line scripting, script languages, and the ability to host script engines within your applications.
- **WMI**—Bundles the features that combine to create the Windows Management Instrumentation (WMI) technologies.

Networking and Communication Capabilities

The V2101-XPE embedded computers provide powerful hardware communication interfaces for network-centric embedded applications, including 2 Ethernet and 2 serial ports, and also support the networking and communications capabilities that are built into Windows Embedded Standard 2009 with SP3 OS. The following features are supported:

- **DHCP Client Service**—Registers and updates Internet Protocol (IP) addresses and Domain Name System (DNS) records for your target system.
- **IP Security Services**—This component provides IP Security (IPsec) services for all IP traffic.
- **Dial-Up Networking**—Provides the infrastructure necessary to implement a Remote Access Service (RAS) client.
- **Microsoft-Windows-HTTP**—Services that implement the functionality of the HTTP protocol on a server.
- **TCP/IP Networking**—Implements the core TCP/IP protocol stack, which includes the IPv4 version for the following protocols: Transmission Control Protocol (TCP), User Datagram Protocol (UDP), raw, Internet Control Message Protocol (ICMP), Internet Group Membership Protocol (IGMP), and Address Resolution Protocol (ARP). The component also includes Wshtcpip.dll, which is the Winsock provider for TCP/IP to enable socket-level communication over TCP/IP.
- **TAPI**—A Telephony API (TAPI) Telephony Service Provider (TSP).
- **Simple Network Management Protocol (SNMP)**—SNMP is an agent service that provides management systems with information about activities that occur at the Internet Protocol (IP) network layer. The SNMP agent monitors network traffic, and retrieves and updates local management information based on the requests from the SNMP manager. The agent also notifies registered managers with traps when significant events occur.
- **Time Service Core**—Synchronizes a workstation's clock with other computers using the Network Time Protocol (NTP) version 3. For increased accuracy, this component also incorporates algorithmic enhancements from NTP 4.
- **Windows Firewall/Internet Connection Sharing (ICS)**—Windows Firewall provides a barrier between your device and network connections to help reduce attacks by hackers, viruses, and worms across networks. Strongly recommended..
- **Wireless Zero Configuration**—Support for the Windows implementation of the IEEE 802.11 standard. This component performs automatic configuration and authentication for IEEE 802.11 wireless network adaptors.
- **Unimodem**—Provides the infrastructure necessary for applications to communicate with a modem.

Supporting Services and Daemons

In addition to development and communication capability, the V2101-XPE embeds the services and daemons shown below. These common and easy-to-use application servers help users migrate industrial communication applications to the V2101-XPE embedded computer very easily and conveniently.

- **COM+ Services**—The next evolution of Microsoft Component Object Model (COM) and Microsoft Transaction Server (MTS).
- **Computer Browser Service**—Computer browsing functionality exposed by Windows through Microsoft Networking. It allows a client machine to browse its network neighborhood for available computers, exposing file and print sharing services.
- **Disk Management Services**—Support for disk and volume management operations. The component implements a Component Object Model (COM) interface that can be used to query and configure disks and volumes (both basic and dynamic). The component also monitors disk arrivals and removals and other changes in the storage subsystem.
- **IIS Web Server**—Allows you to create and manage Web sites.
- **Terminal Server**—Microsoft Terminal Server client application (mstsc.exe).
- **Remote Registry Service**—Enables remote users to modify registry settings on this computer.
- **Telnet Server**—Allows users to connect to Telnet servers from remote computers.

How to Determine Firmware Build Versions

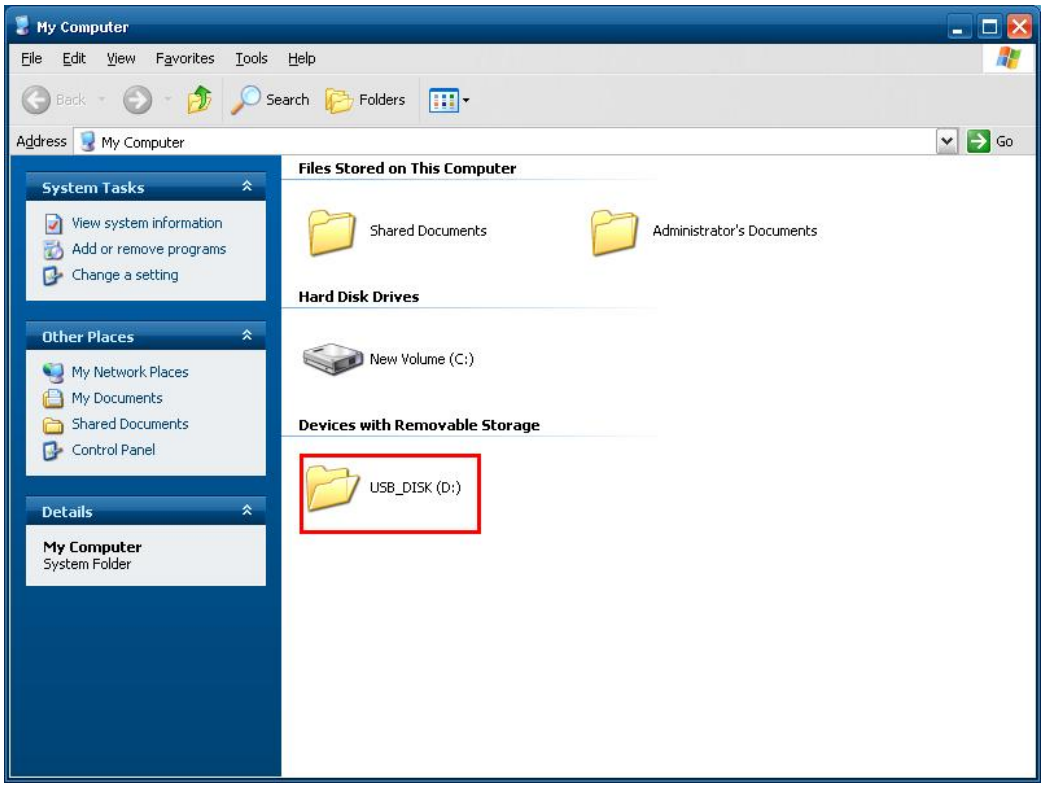
Use the **mxver** command to obtain the firmware version of the V2101-XPE embedded computer. This information is particularly important for identifying which features your embedded computer supports.

- Execute the **mxver.exe** command line utility.

  C:\> mxver
  Model Name: V2100-XPE
  Build Date: 09110915
  Version: V1.0

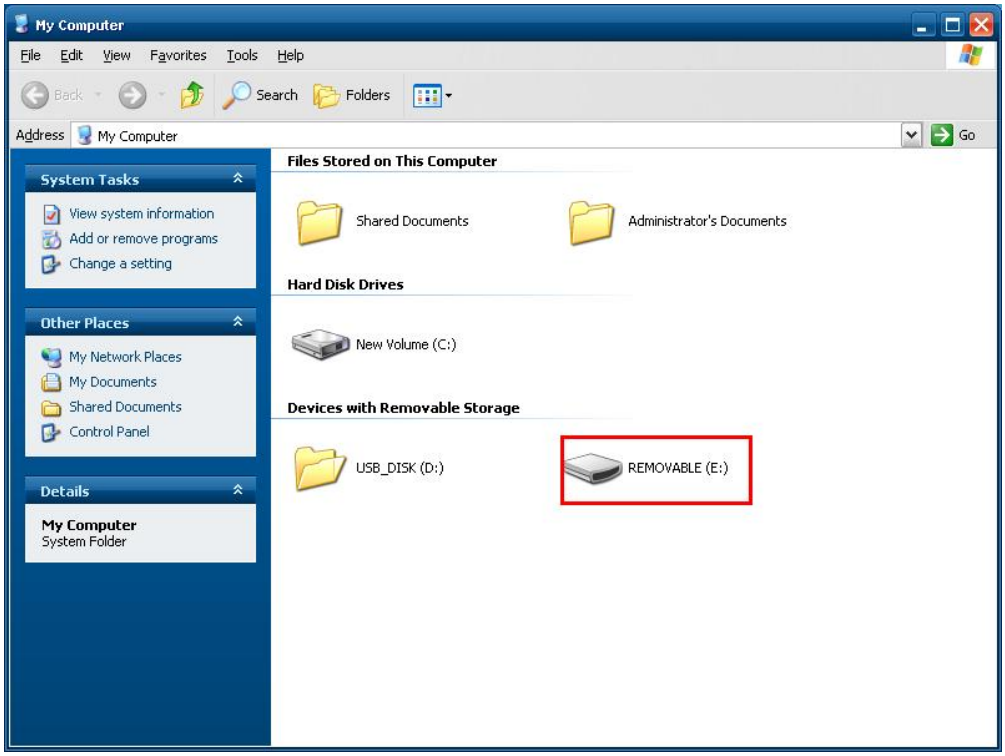
Inserting a USB Mass Storage Device into the Computer

Inserting a USB mass storage device will generate a new drive on the V2101-XPE. The new drive should be visible in the File Explorer.



Inserting an SD Card in the Computer

The V2101-XPE computer is equipped with an SD slot for SD card storage expansion support. Please make sure to turn off the computer before inserting the SD card into the SD slot on the front panel. When you insert an SD card, you will see a new disk is detected in **My Computer**.



The V2101-XPE supports SD "Plug and Play" and "Hot Swap", so you may start using this SD card as soon as it is detected. However, if you have inserted a new SD card, we suggest you restart your computer to ensure that the new SD card has been successfully installed. Click **Yes** to do so.

2

Software Configuration

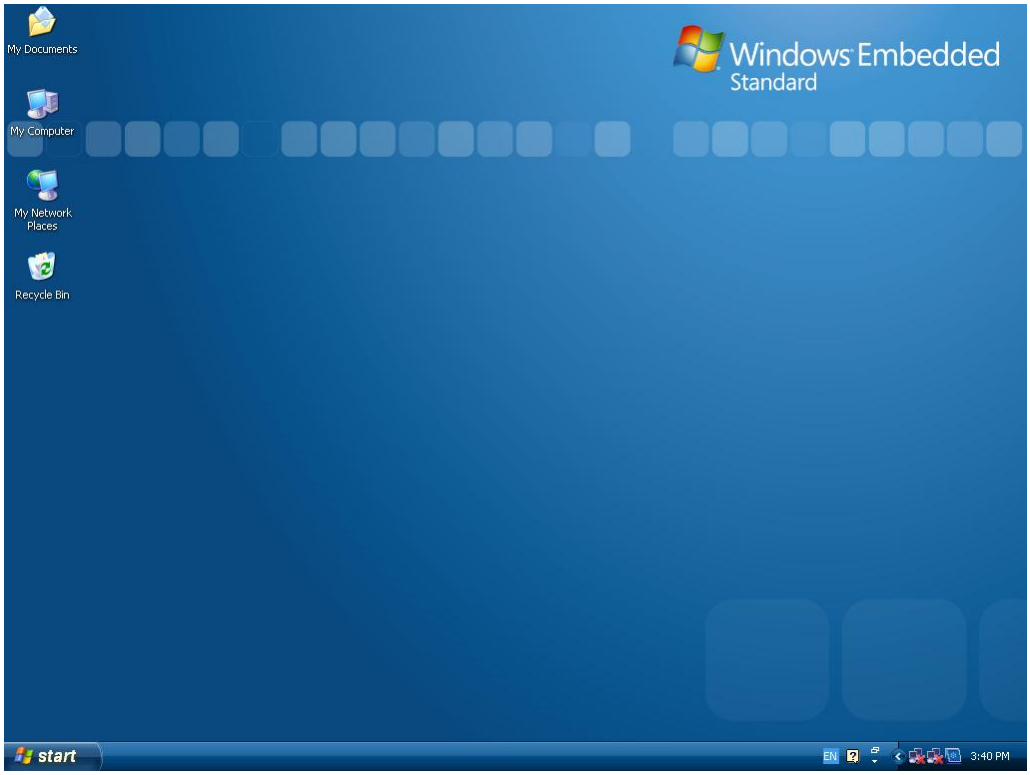
In this chapter, we explain how to operate a V2101-XPE computer directly or from a PC. Instructions are given on how to adjust the system time, troubleshoot network connectivity, and manage other functions. Some of these operations can be done with system commands after gaining access to the computer, and others can be done from the "Control Panel," which is described in a later chapter.

In this chapter, we cover the following topics:

- **Starting Your V2101-XPE Computer**
- **Resetting Your V2101-XPE Computer**
- **Changing the LVDS Settings**
- **Changing the Network Settings**
- **Operating Your V2101-XPE Computer with a Telnet Client**
- **Adjusting the System Time**
- **Starting and Stopping Services**
- **Simple Network Management Protocol (SNMP)**
- **Remote Desktop (RDP)**
- **Serial Ports**
- **Enhanced Write Filter**

Starting Your V2101-XPE Computer

Connect the CRT monitor or LCD monitor to the target computer, and then power it up by connecting it to the power adaptor. It takes about 30 to 40 seconds for the system to boot up. Once the system is ready, the Desktop will appear on your monitor.



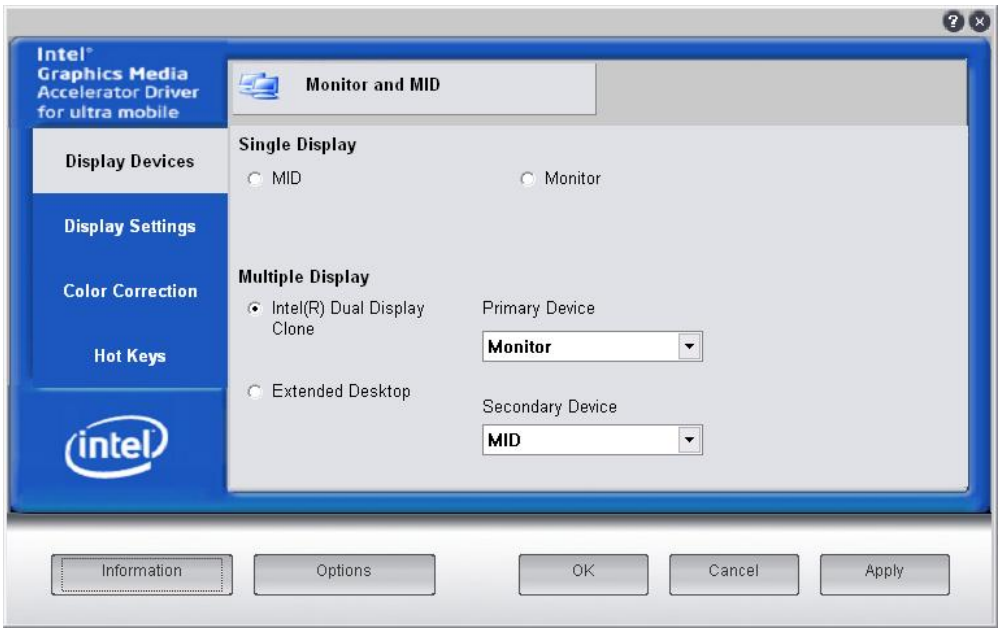
Resetting Your V2101-XPE Computer

- **Reset Button**
  A **Reset** button is located on the front panel of V2101-XPE. Press the reset button to shut down your computer, just as you would do with a standard PC.
- **Software Shutdown / Reboot**
  Click **Start → Turn Off Computer** to reboot or shutdown the V2101-XPE computer.

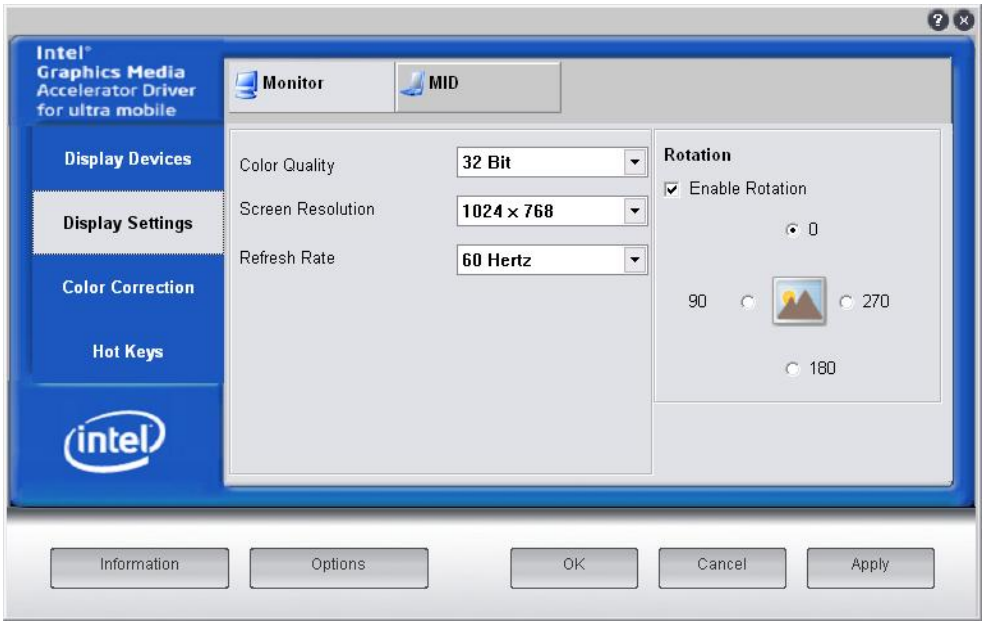
Changing the LVDS Settings

The V2100-XPE computer comes with an LVDS connector, allowing users to connect an LVDS display. Before you connect your LVDS panel to the embedded computer, be sure the display settings match your LVDS panel. Use the following steps to adjust LVDS settings.

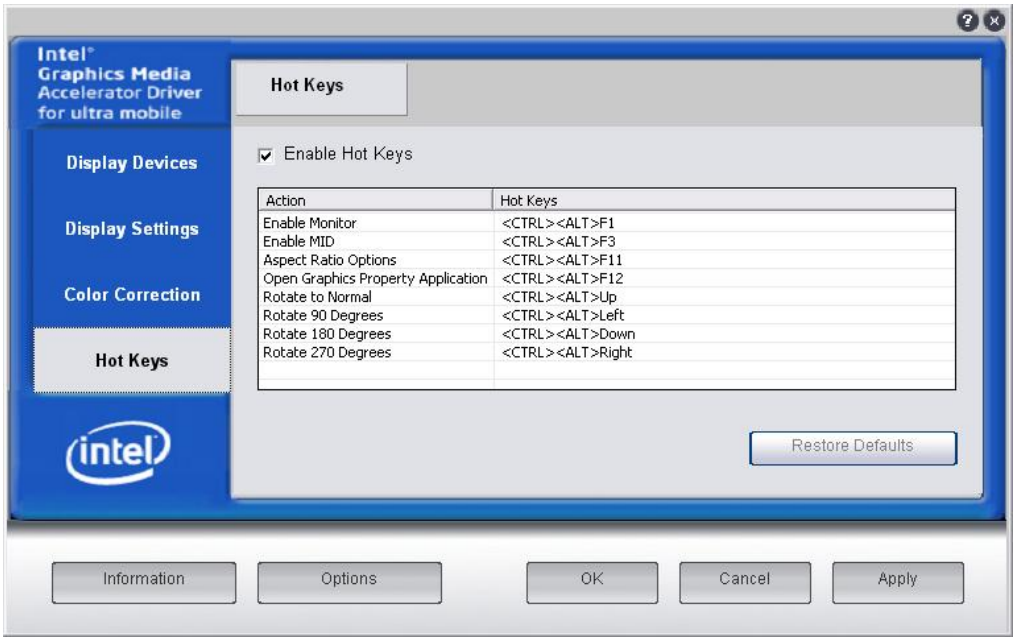
1. Select **[Advanced]** tab in the BIOS Menu.
2. Select **[Advanced Chipset Features]** and then select the **[LCD Panel Type]** and **[Panel Data Format]** compatible with your LVDS panel.
3. Double-click the display icon at the bottom right of the screen
4. Select **Graphics Properties**. (Ex. Intel(R) Dual Display Clone mode for both CRT and LVDS output)



5. Select the **Color Quality** (32 bit or 18 bit), **Screen Resolution**, and **Refresh Rate** compatible with your LVDS display. You may also select the **Enable Rotation** checkbox if you need rotation functions.

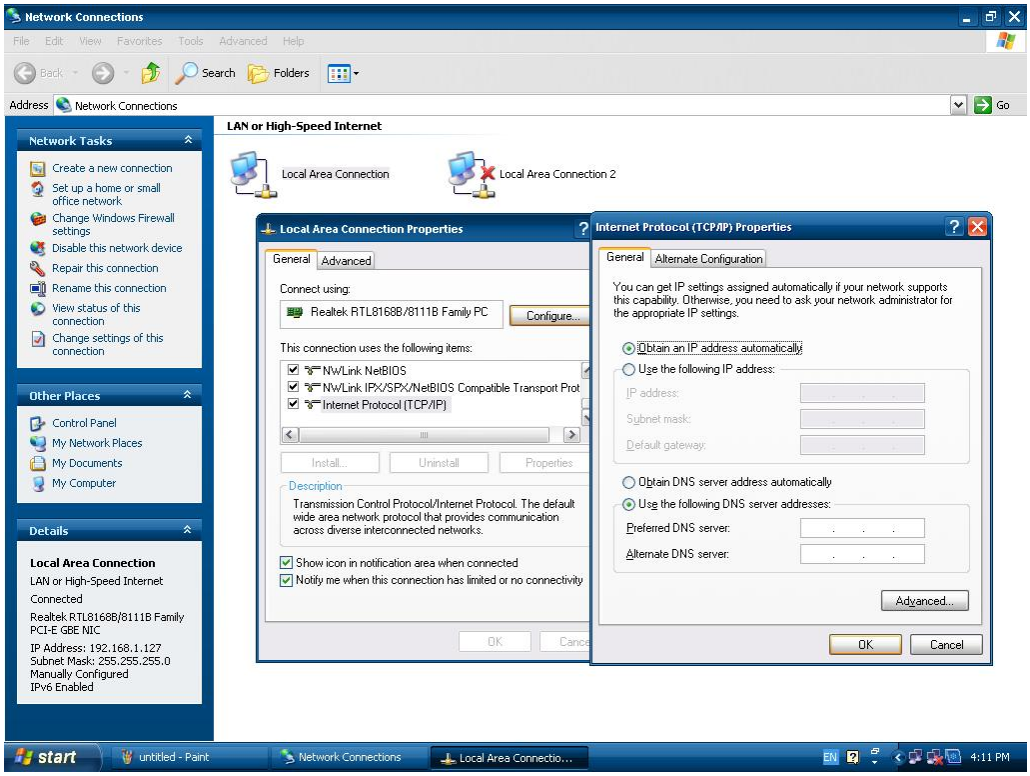


6. You can also use hot keys to change your display settings. When finished, click **Apply** and then **OK**.



Changing the Network Settings

The V2101-XPE computer comes with two network interfaces. Both of the default IP addresses are DHCP. Choose **Start → Control panel → Network Connections** to enter the network settings page. Select the connection and choose **Properties** on the pop-up menu by right-clicking. You can specify the IP address manually or by DHCP. In addition, you can disable or enable either one or both connections with the pop-up menu.



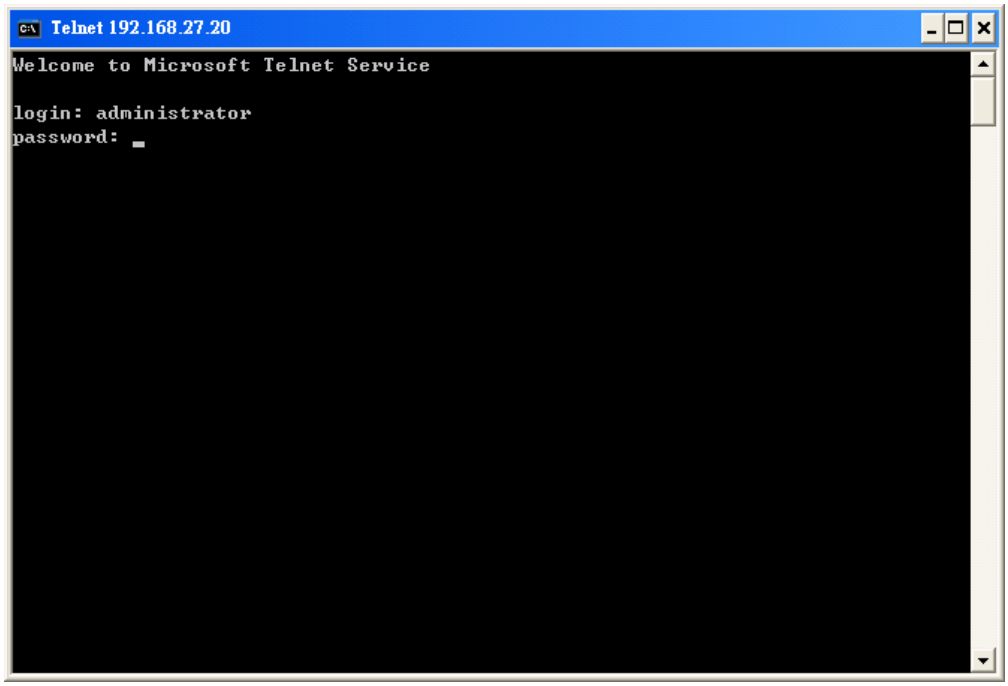
Operating Your V2101-XPE Computer with a Telnet Client

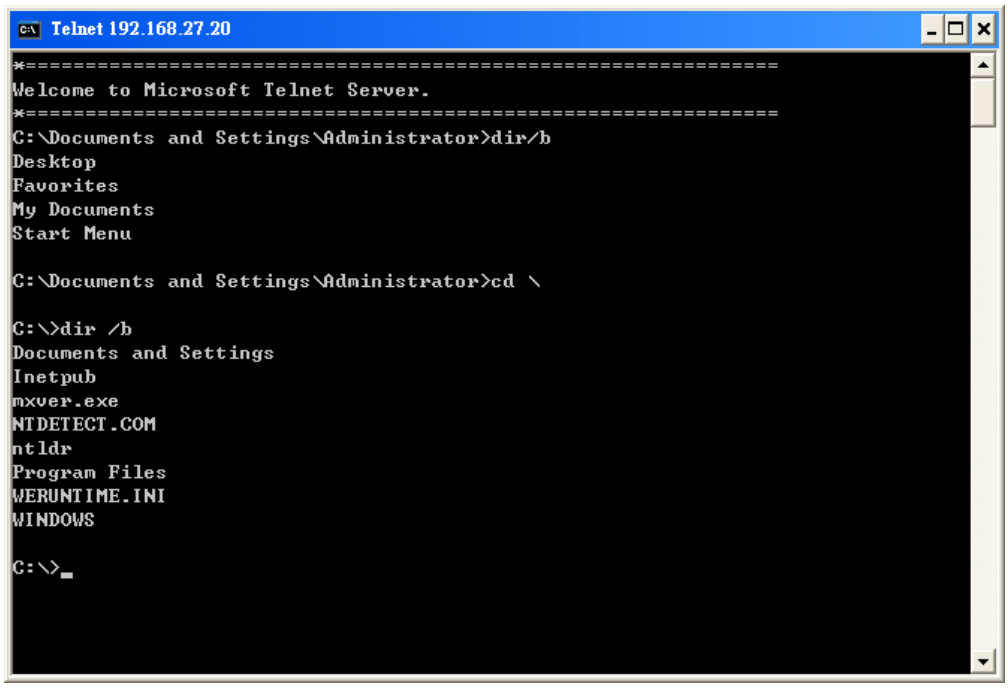
Use a crossover Ethernet cable to connect your development workstation directly to the target computer, or use a straight-through Ethernet cable to connect the computer to a LAN hub or switch. Next, use a telnet client on your development workstation to connect to the Telnet console utility of the target computer. After a connection has been established, type the login name and password as requested to log on to the computer.

After logging in through the Telnet client, a list of commands will be available for operating the computer. Use ***HELP*** to display all of the commands, or type ***HELP [command name]*** to display extended help for the selected command. Some of these commands, such as ***DATE*** and ***TIME***, are very useful for managing the computer's system time. Other commands, such as ***DIR*** and ***MKDIR***, are good utilities for file management. For example, to inspect the file structure of the root directory, type ***DIR.***

NOTE: The default user id is "administrator" and the default password is not set; you need to create a new password for this account to use this telnet client.

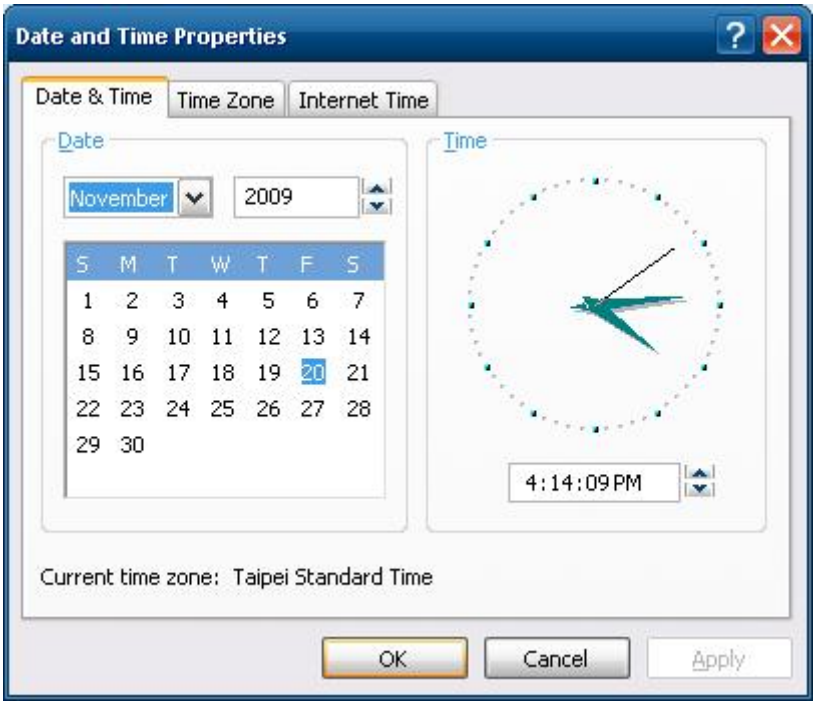
NOTE: There is a connection limitation on using Telnet clients. You are only allowed to create connections with two Telnet clients at the same time.


Telnet 192.168.27.20
Welcome to Microsoft Telnet Service
login: administrator
password:

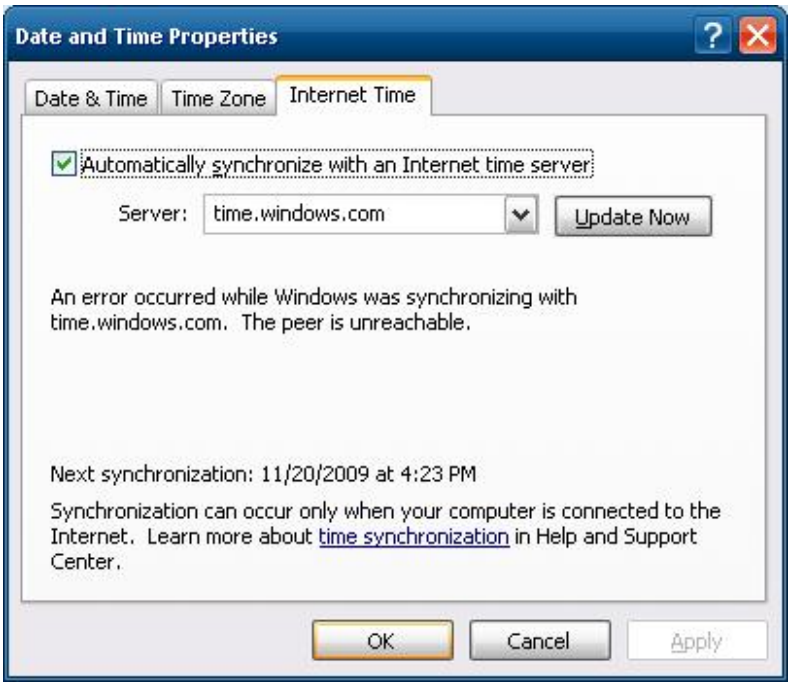

Telnet 192.168.27.20
*===
Welcome to Microsoft Telnet Server.
*===
C:\Documents and Settings\Administrator>dir/b
Desktop
Favorites
My Documents
Start Menu
C:\Documents and Settings\Administrator>cd \
C:\>dir /b
Documents and Settings
Inetpub
mxver.exe
NTDETECT.COM
ntldr
Program Files
WERUNTIME.INI
WINDOWS
C:\>

Adjusting the System Time

- **Setting the System Time Manually:** Use the **date/time** command line utility to query the current system date/time or set a new system date/time.
- **Date/Time Control panel:** Go to the **Control Panel** and double click the **Date and Time** icon.

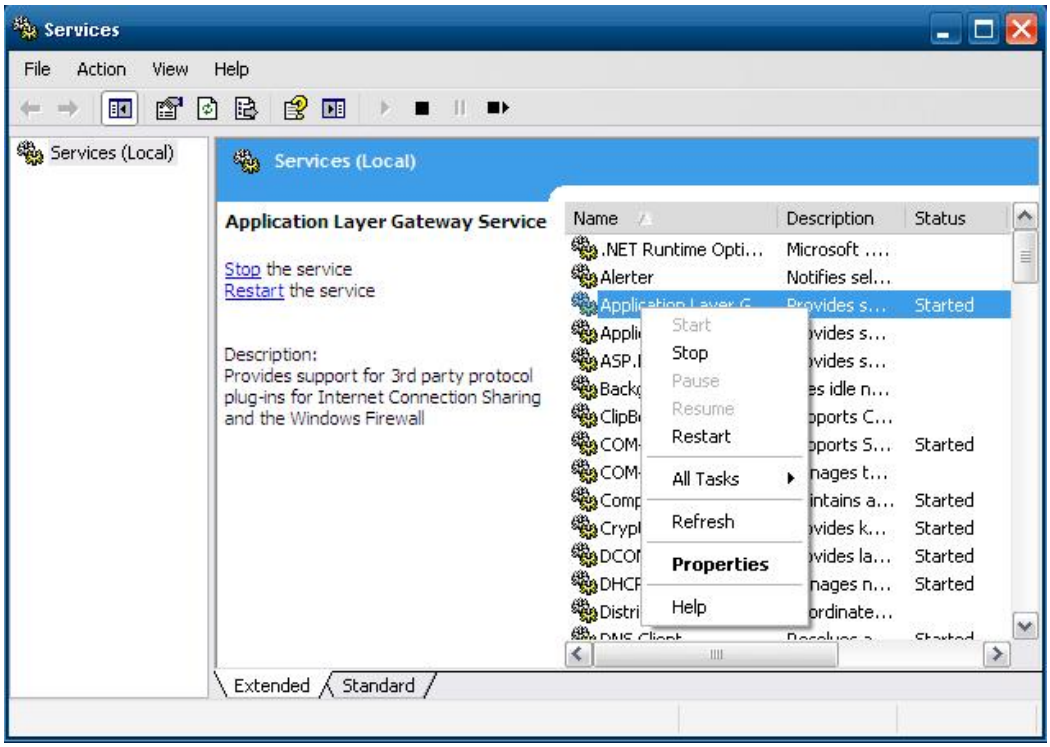


- **SNTP:** In the Date and Time Properties window, you can see the NTP server setting.



Starting and Stopping Services

Select **Start → Control Panel → Administrative Tools** and double click **Services**. Select and right-click on the service name, and then choose to stop or start.



Simple Network Management Protocol (SNMP)

To check SNMP agent capabilities on a target V2101-XPE (e.g., suppose the network IP is 192.168.3.127) computer, log on to the workstation computer on which the SNMP manager resides and then type:

\> snmpwalk -v 2c -c public 192.168.3.127 system

You will see a series of messages from the SNMP agent on the V2101-XPE computer that allow you to monitor and manage the computer.

Remote Desktop (RDP)

You can connect to the target V2100-XPE computer remotely by using **Remote Desktop**. Right-click **My Computer** on your desktop, and select **Properties**. Click the **Remote** tab for further configuration.

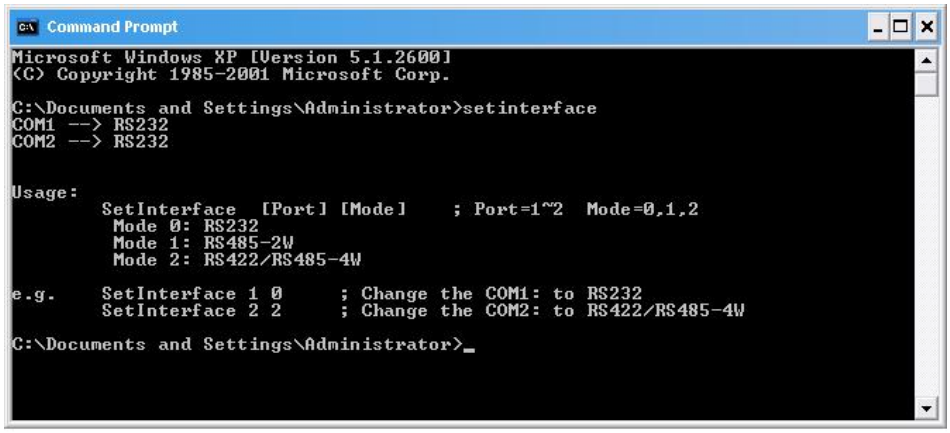
Make sure that the **Allow users to connect remotely to this computer** checkbox is selected. Next, click **Select Remote Users**, and add the users allowed to connect to your desktop. When finished, click **OK**.

Serial Ports

V2101-XPE embedded computers have 2 serial ports on the back panel. These ports are designed to provide reliable, high-speed, 3-in-1 (RS-232, RS-422, and RS-485) operation. Each of the ports supports baudrates up to 115,200 bps.

Ports 1 and 2 are the embedded serial ports of the CPU chipset. They are standard 16550 UART ports, and support a baudrate maximum Baudrate of 115,200 bps. Note that these two ports do not support **Hardware Flow Control**.

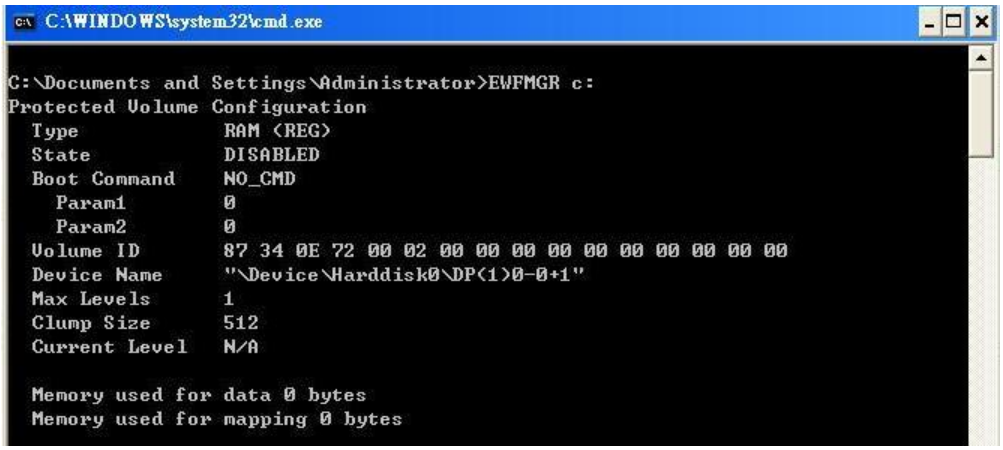
The command line utility "SetInterface.exe" is for users to view and set the current operation mode.



Enhanced Write Filter

The "Enhanced Write Filter" protects the contents of a volume on the target media volume by redirecting all writes to another storage location called on overlay. Use the following steps to enable the Enhanced Write Filter.

1. Type **EWFMGR C:** to check if the state of the Enhanced Write Filter is **Disabled**.
2. To enable the filter, type **EWFMGR C: -enable**.
3. Reboot the system to activate the change.
4. Delete a file on your protected volume and reboot the system; the file you just deleted will appear.



3

Management Tools

The V2101-XPE ready-to-run embedded computers are shipped with the Windows Embedded Standard 2009 operating system already installed. This network-centric platform is designed to serve as a front-end for data acquisition and industrial control applications. A set of Windows XP management tools are installed on the V2101-XPE computer to resolve management issues.

In this chapter, we cover the following topics:

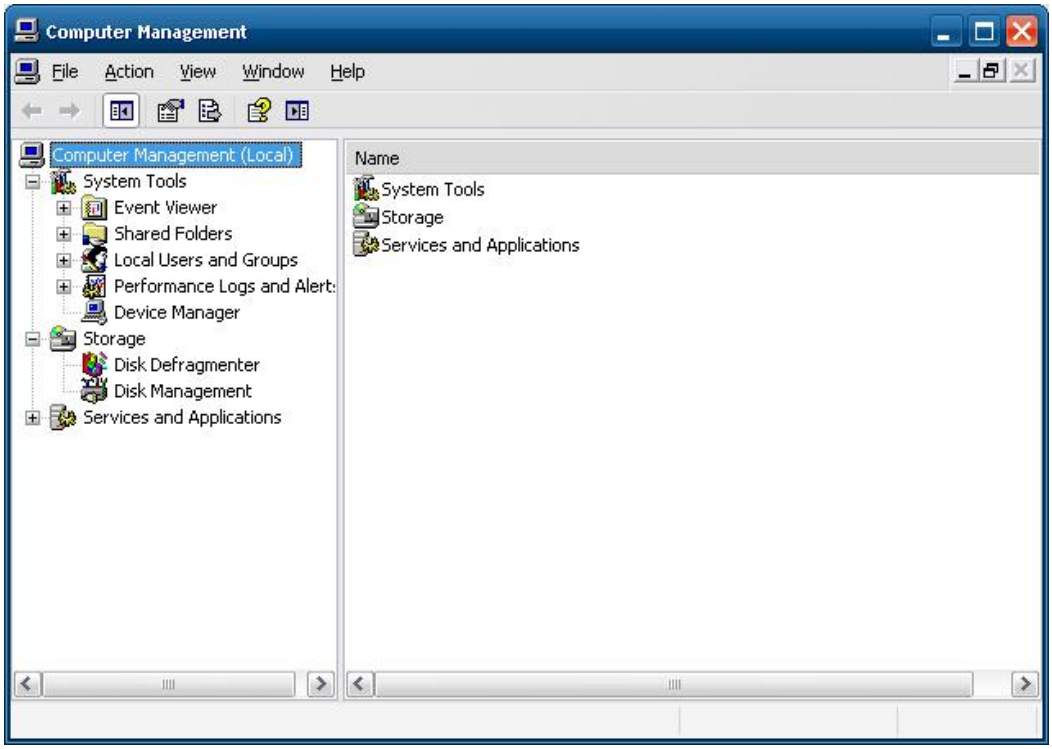
- **Computer Management**
- **Component Services**
- **Event Viewer**
- **Internet Information Services (Web/FTP)**
- **ODBC Data Source Administrator**
- **Performance Monitor**
- **Services**

Computer Management

[Control Panel] → [Administrative Tools] → Computer Management.

You can use the tools for a variety of tasks, such as disk partition, disk mount/dismount, and create/remove users.

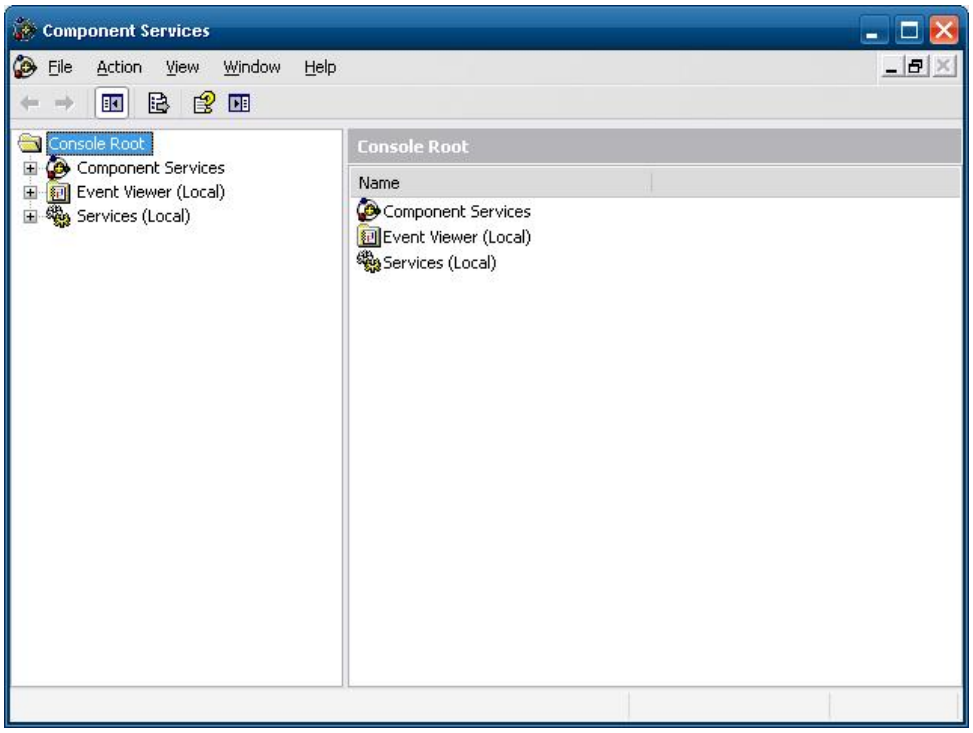
You can also check services in the Computer Management window.



Component Services

[Control Panel] → [Administrative Tools] → Component Services.

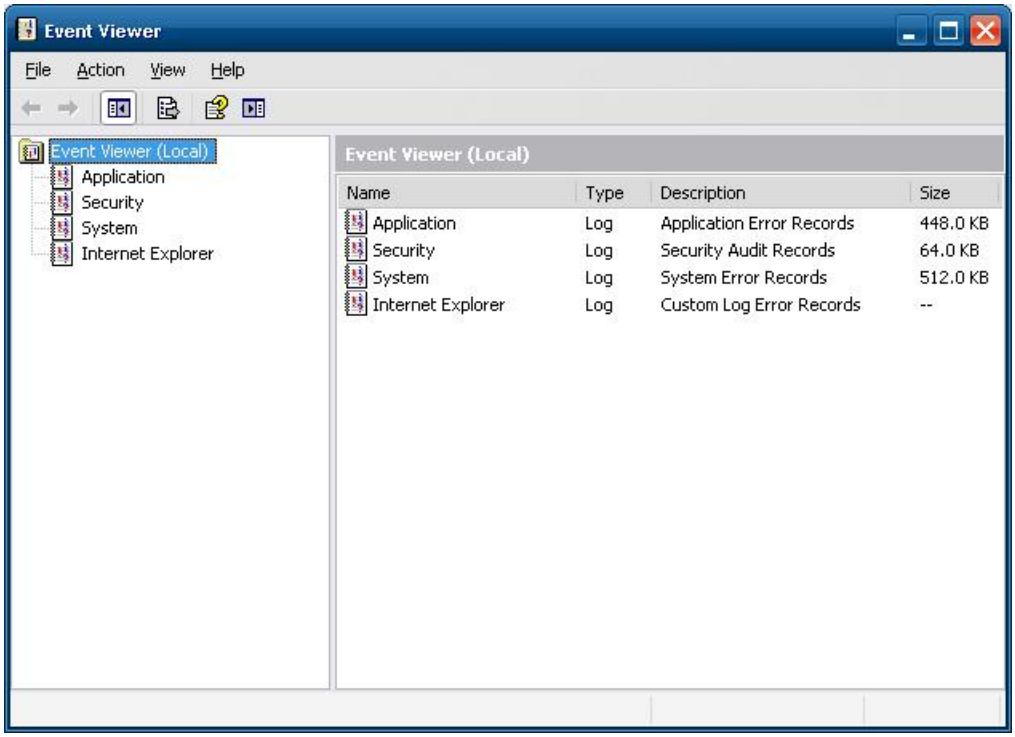
You can install/view/remove COM components with this tool.



Event Viewer

[Control Panel] → [Administrative Tools] → Event Viewer.

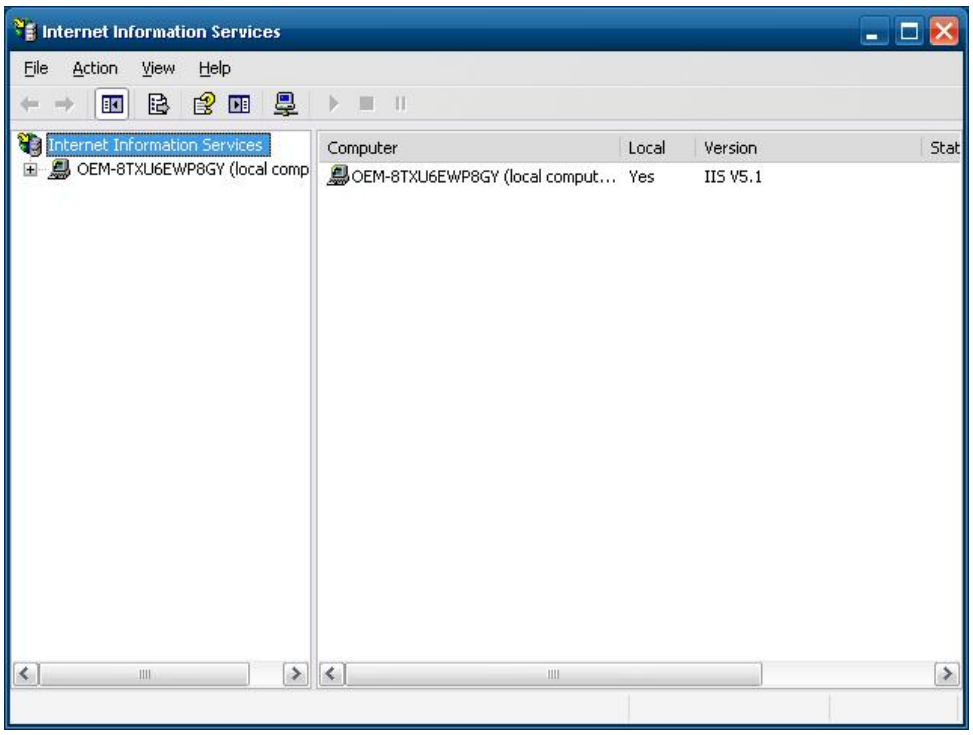
Every V2101-XPE event, including system, applications, and security events are logged in this event database.



Internet Information Services (Web/FTP)

[Control Panel] → [Administrative Tools] → Internet Information Services.

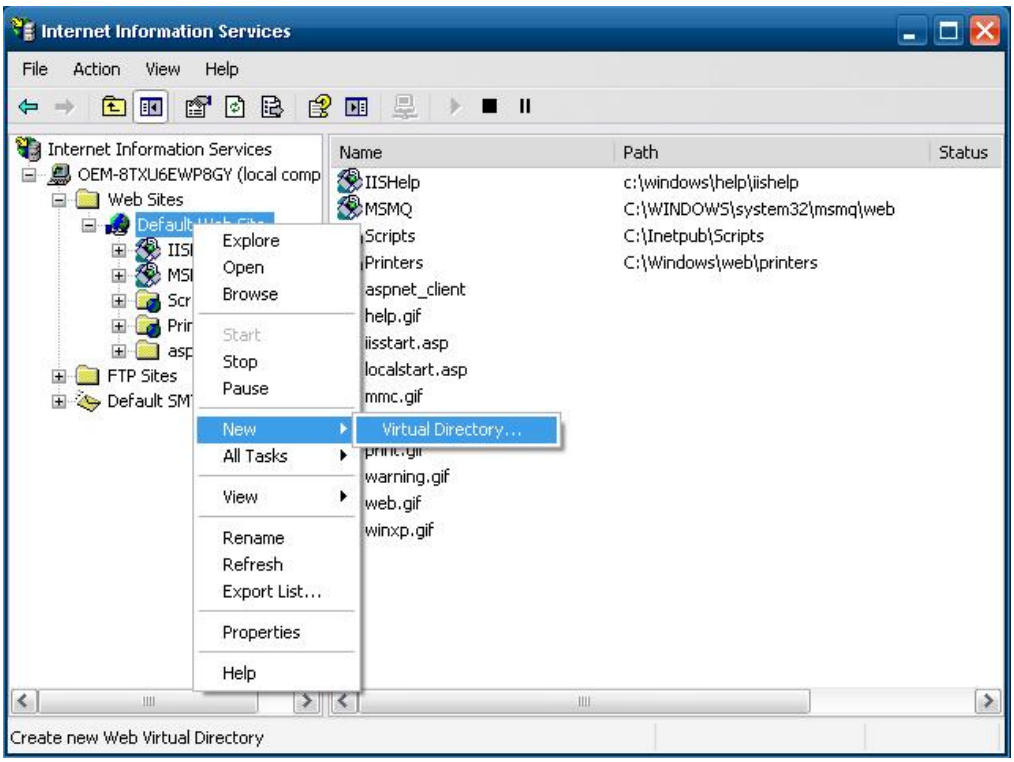
If you need to set up Web or FTP, you must use this tool for configuration purposes, and you can also start/stop HTTP/FTP services.



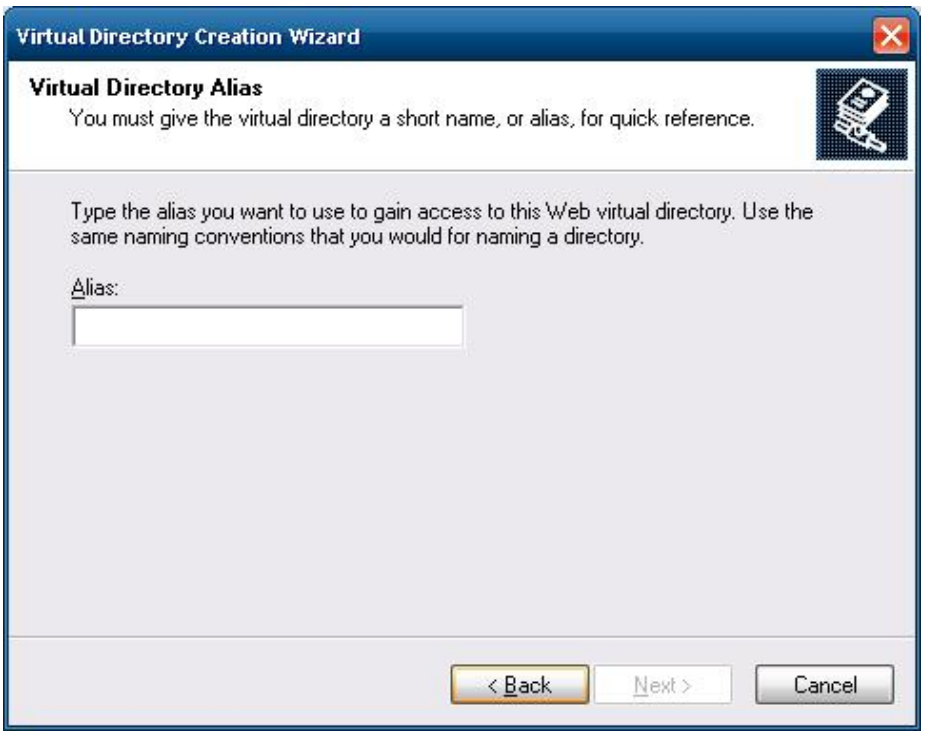
A default web page is located in the directory **c:\Inetpub**. Use this default page to test your web server.

Follow the steps shown below to create the virtual directory.

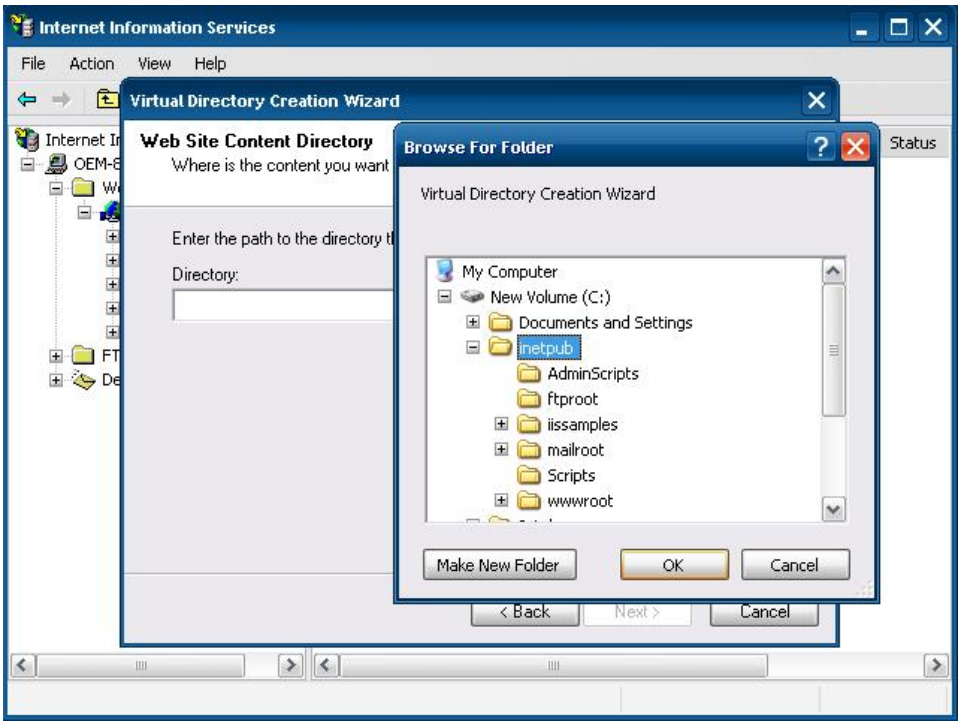
1. Create a virtual directory by selecting **Default Web Site → New → Virtual Directory.**

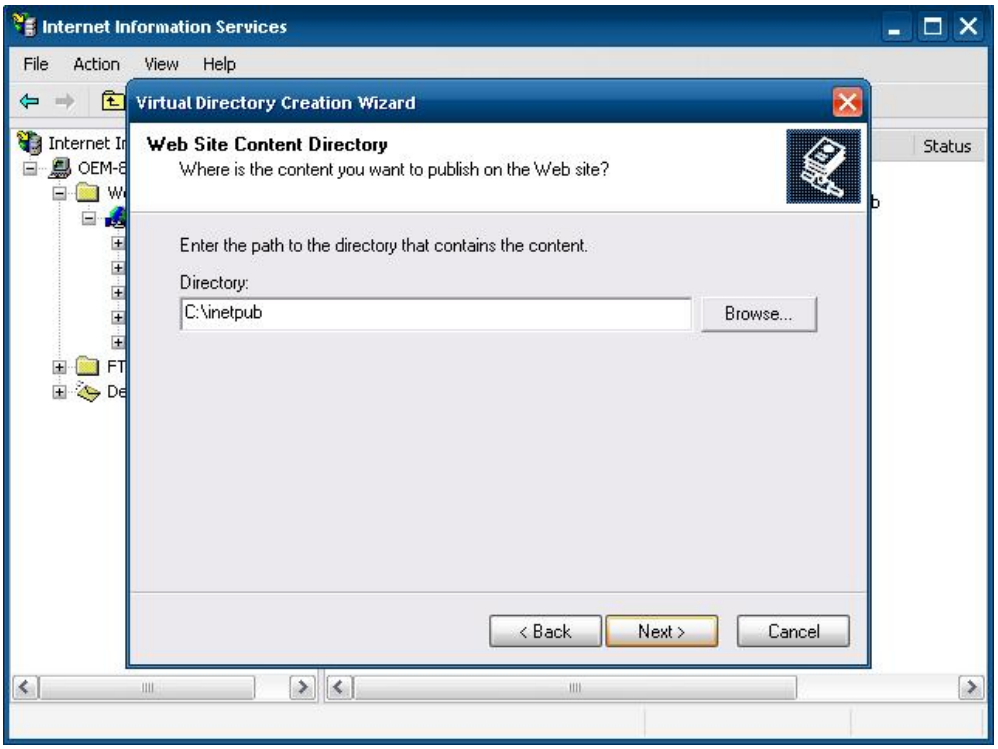


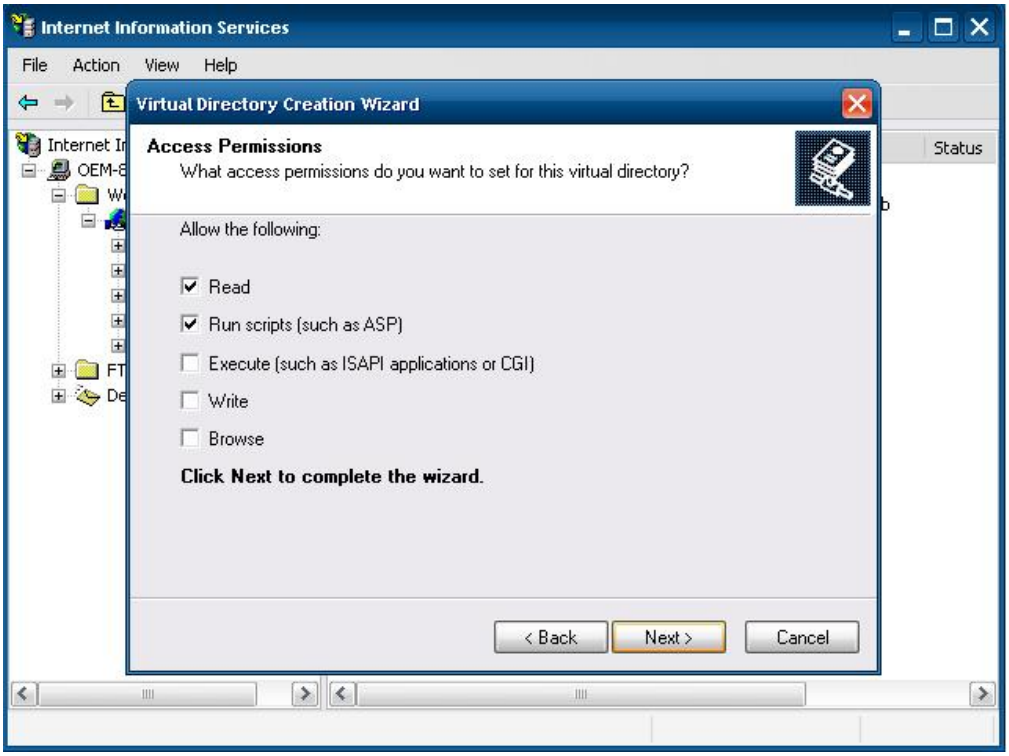
2. Follow the virtual directory creation wizard and complete the steps to create the virtual directory **c:\Inetpub**.



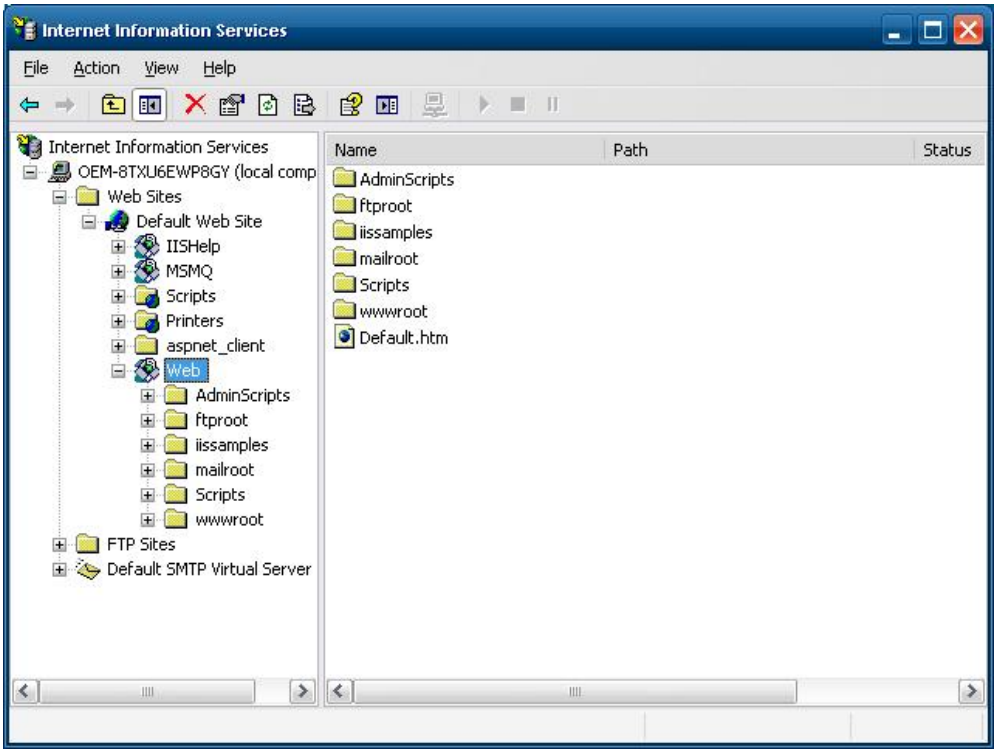
Type the alias into the text box. Click **Next** to continue.


Internet Information Services
File Action View Help
Virtual Directory Creation Wizard
Web Site Content Directory
Where is the content you want
Enter the path to the directory t
Directory:
Browse For Folder
Virtual Directory Creation Wizard
My Computer
New Volume (C:)
Documents and Settings
inetpub
AdminScripts
ftproot
iissamples
mailroot
Scripts
wwwroot
Make New Folder
OK
Cancel
< Back
Next >
Cancel
Status


Internet Information Services
File Action View Help
Virtual Directory Creation Wizard
Web Site Content Directory
Where is the content you want to publish on the Web site?
Enter the path to the directory that contains the content.
Directory:
C:\inetpub
Browse...
< Back
Next >
Cancel
Status


Internet Information Services
File Action View Help
Virtual Directory Creation Wizard
Access Permissions
What access permissions do you want to set for this virtual directory?
Allow the following:
Read
Run scripts (such as ASP)
Execute (such as ISAPI applications or CGI)
Write
Browse
Click Next to complete the wizard.
< Back
Next >
Cancel
Status

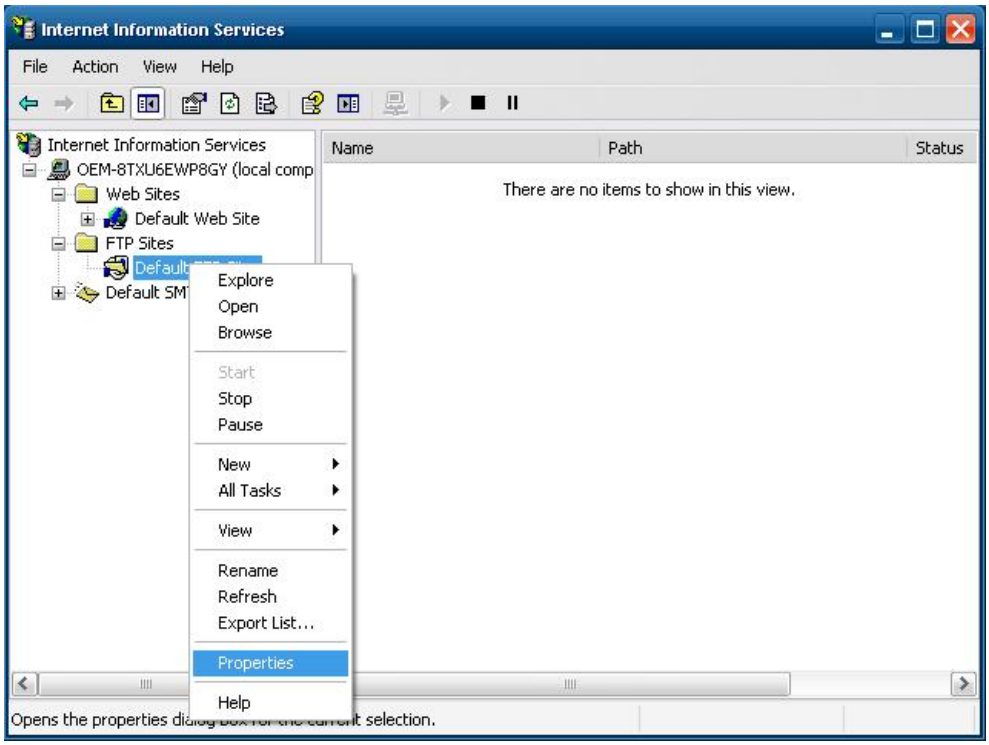

Virtual Directory Creation Wizard
You have successfully completed the Virtual Directory Creation Wizard.
Click Finish to continue.
< Back
Finish
Cancel

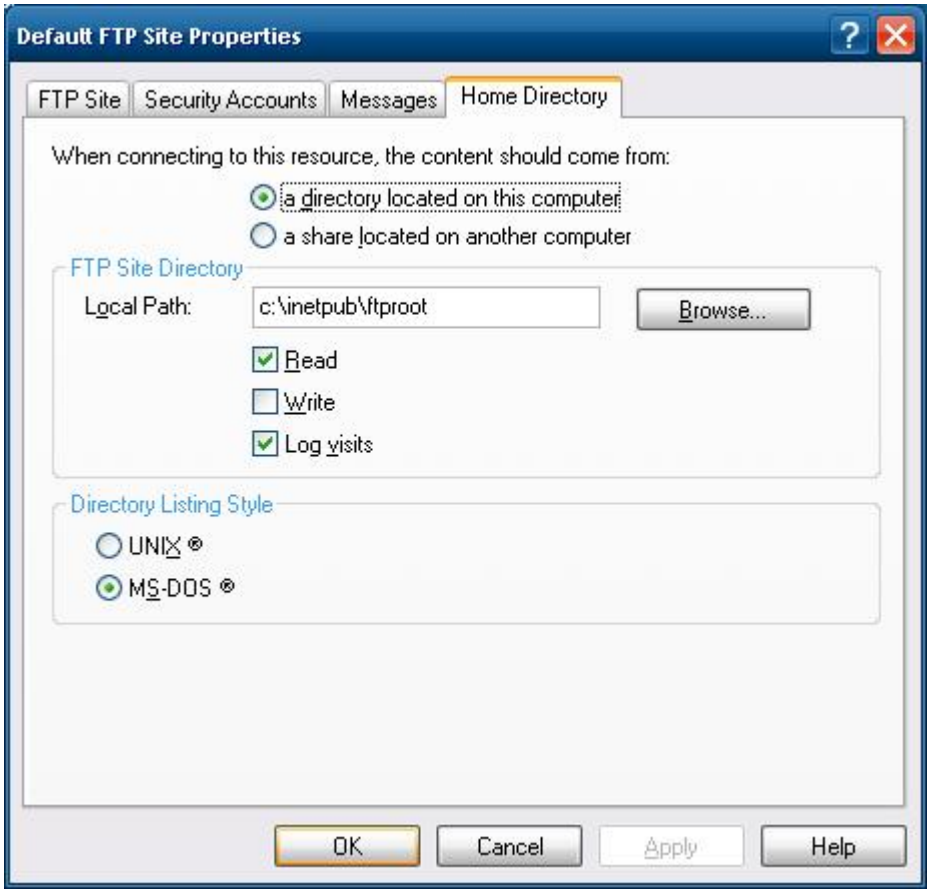


3. When you complete the steps, the virtual directory **WEB** will appear under **Default WEB Site**.

4. On your desktop, type **[IP Address]/WEB/Default.htm** (e.g., 192.168.1.127/WEB/Default.htm). The following message will appear. The steps are indicated in the following sequence of diagrams.

If you need to use the FTP server, you must create the default password for your account and turn on the write permission on your home directory located in **c:\intepub\ftproot**. Select **FTP Sites → Default FTP Site → Properties → Home Directory**, and checkmark the **Write** checkbox. You should now be able to transmit files through the ftp server.

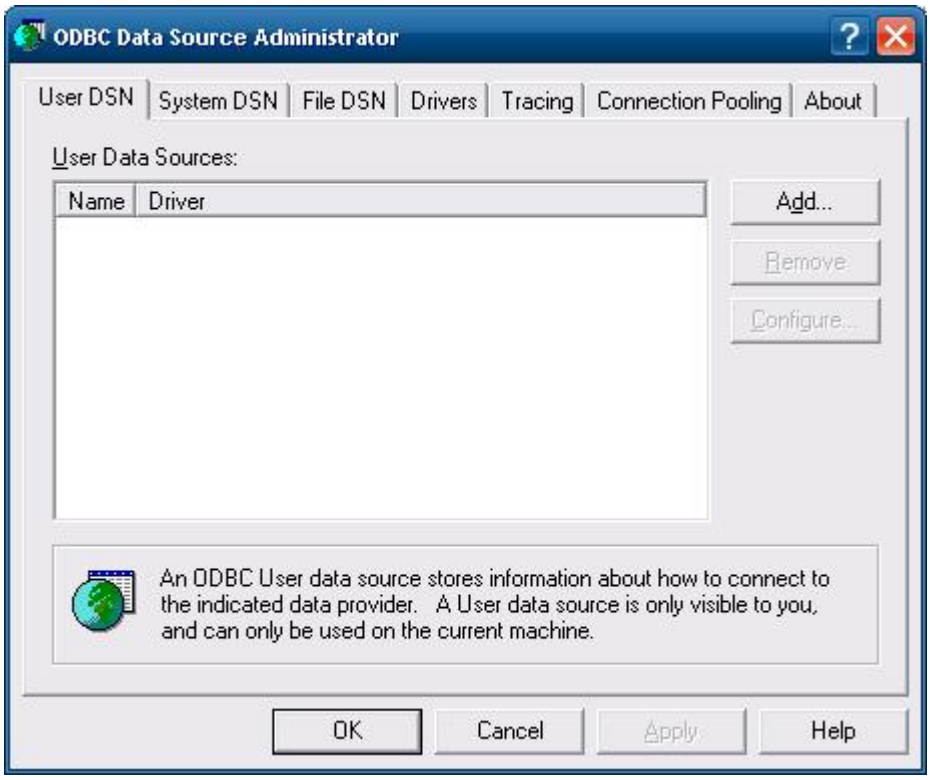



Default FTP Site Properties
FTP Site
Security Accounts
Messages
Home Directory
When connecting to this resource, the content should come from:
a directory located on this computer
a share located on another computer
FTP Site Directory
Local Path:
c:\inetpub\ftproot
Browse...
Read
Write
Log visits
Directory Listing Style
UNIX ®
MS-DOS ®
OK
Cancel
Apply
Help

ODBC Data Source Administrator

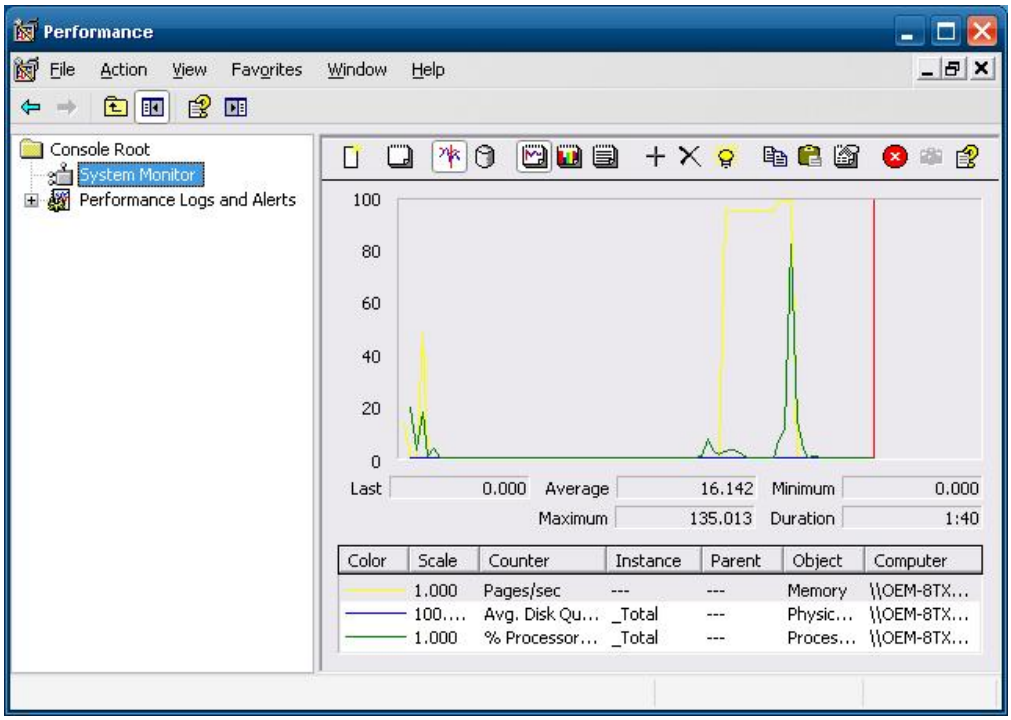
[Control Panel] → [Administrative Tools] → Data Sources (ODBC)

This database source configuration tool is for users to add, delete, or set up the data source, and then display information about the installed ODBS drivers. You can create a new data source or trace the calls to ODBC functions.



Performance Monitor

[Control Panel] → [Administrative Tools] → Performance. You can use this tool to monitor system and network resources.

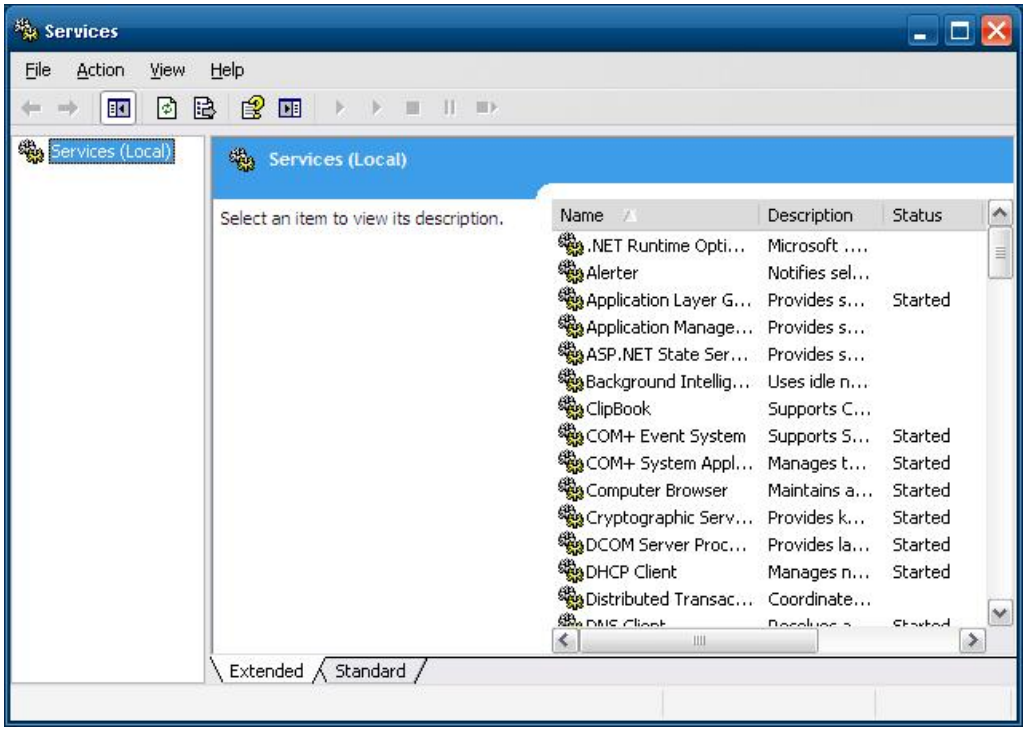


Services

[Control Panel] → [Administrative Tools] → Services

You can use this utility to start/stop/restart services.

(e.g. If you do not need telnet service you can stop it and set the "startup option" to "manual".)



4

System Recovery

The V2101-XPE ready-to-run embedded computers are a Windows Embedded Standard 2009 platform. This chapter describes the recovery process in the event of system instability.

The following topics are covered in this chapter:

- **Recovery Environment**
- **Recovery Procedure**

Recovery Environment

The environment includes a V2101-XPE embedded computer and a bootable USB disk with the recovery programs and system image file.

Hardware

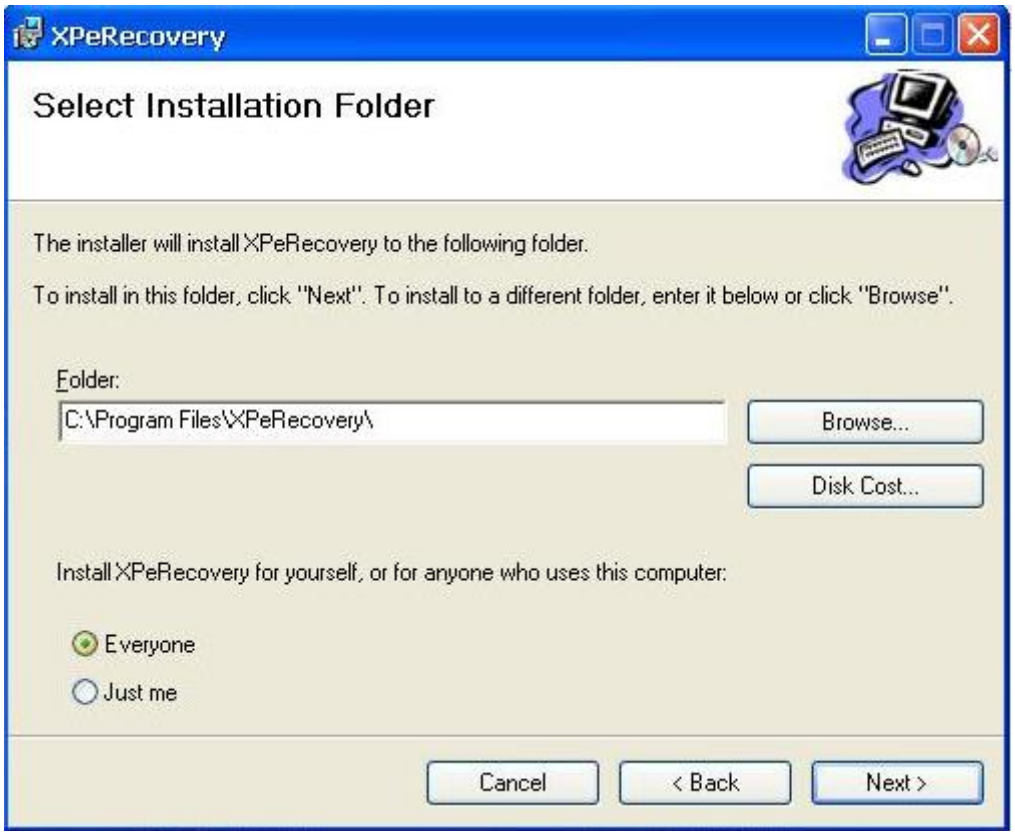
The hardware used includes a PC, a V2101-XPE computer and a USB disk with the recovery programs. **(Note: The USB disk should be at least 2GB.).**

Recovery Procedure

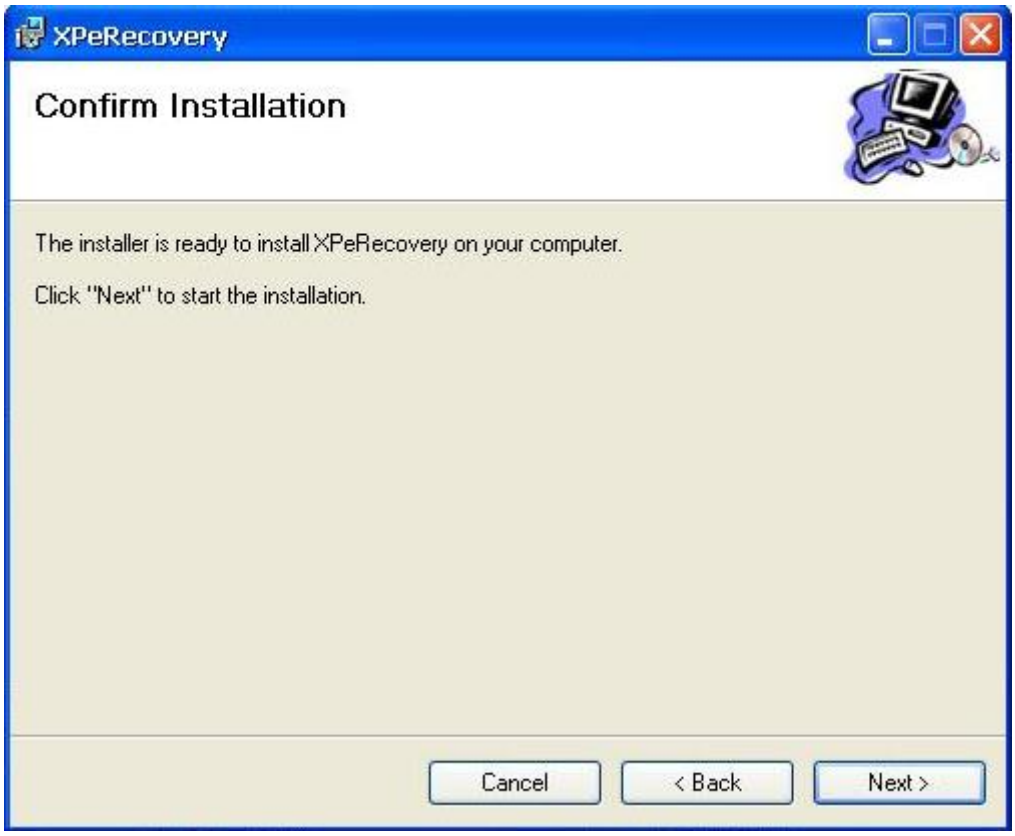
Step 1: Install XPE Disk Recovery

Insert the software CD (in your package) into your computer and find **XPeRecovery.msi** in the **recovery** folder. Double-click **XPeRecovery.msi** to start the setup process and click **Next**.

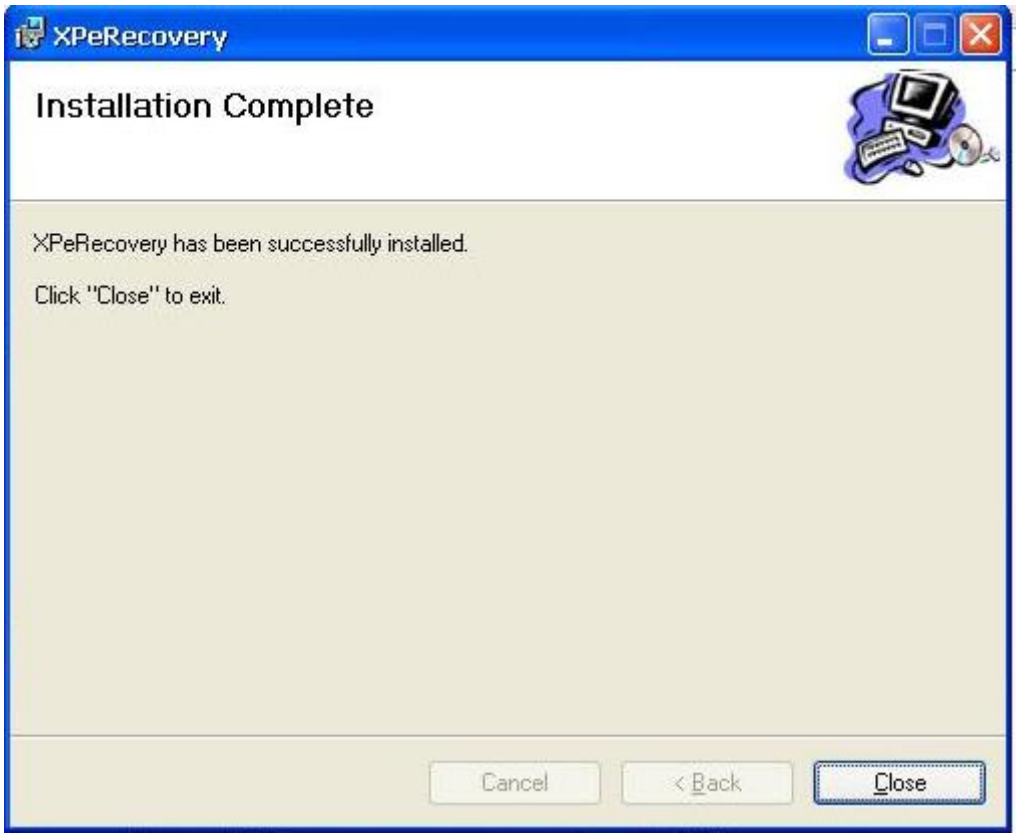
Click **Browse** and select the folder you wish to install to and then click **Next**.



Click **Next** to start the installation.

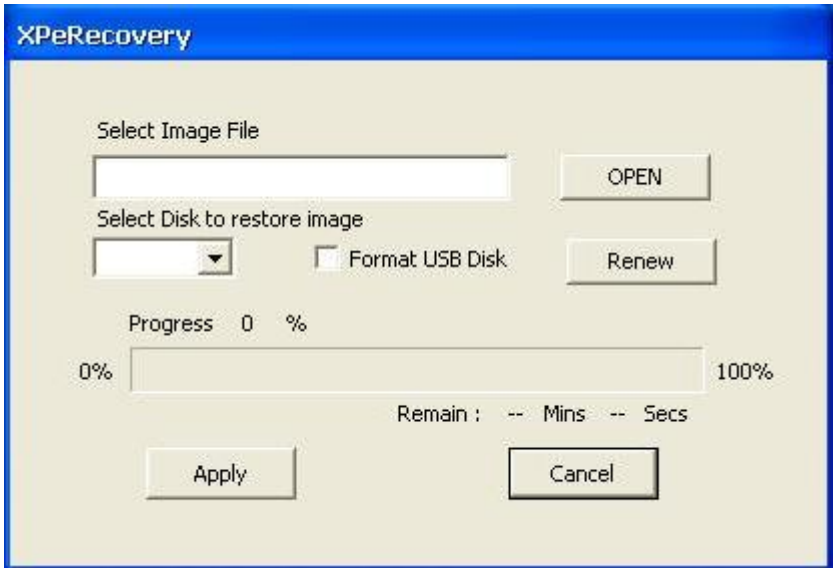


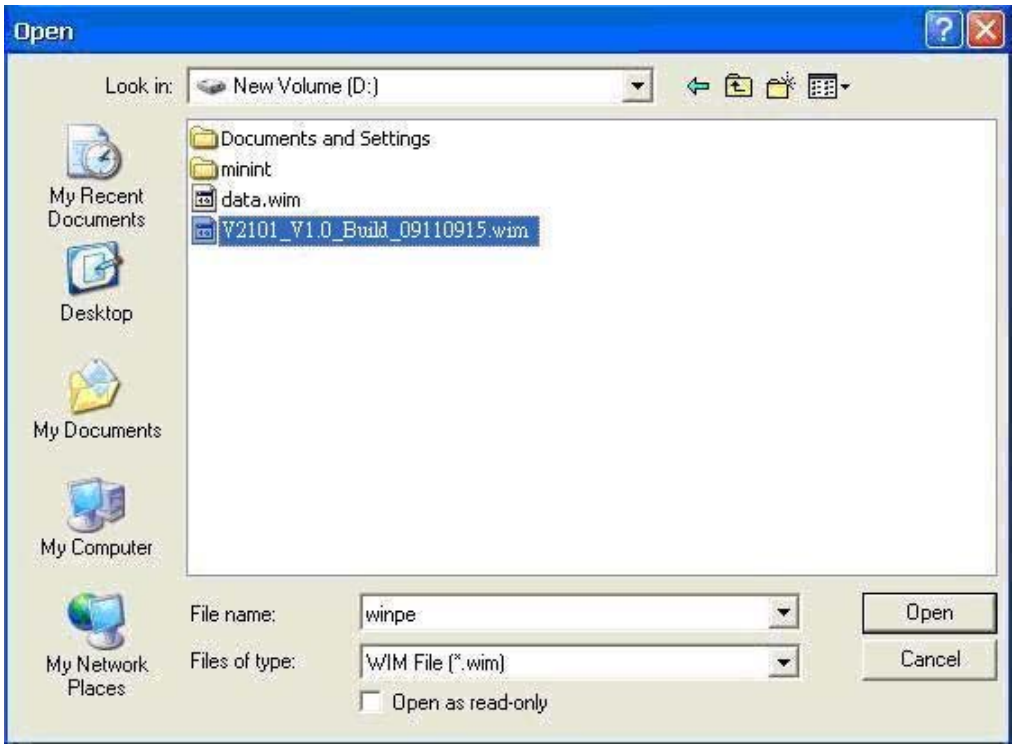
Click **Close** to finish.



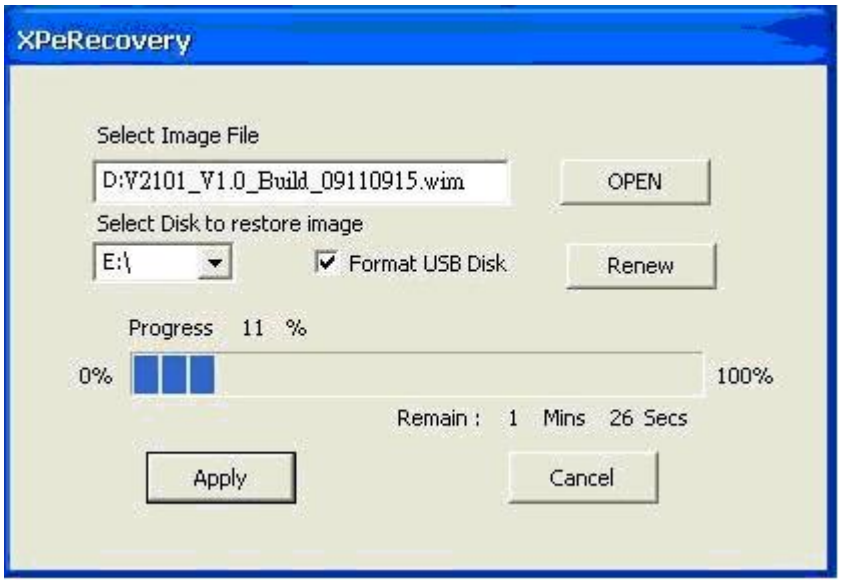
Step 2: Extract Recovery Image from PC to USB disk

After the installation is complete, you will see the **XPeRecovery** shortcut on your desktop. You can start the USB disk recovery utility by opening this shortcut. Double-click the shortcut then click **OPEN** to select the image file. This file is located on the software CD in the **recovery** folder, and the filename is **V2101_V1.0_Build_09110915.wim**. You may also copy this file to your PC. In the following example, we have already copied the image file to the D drive of the PC.

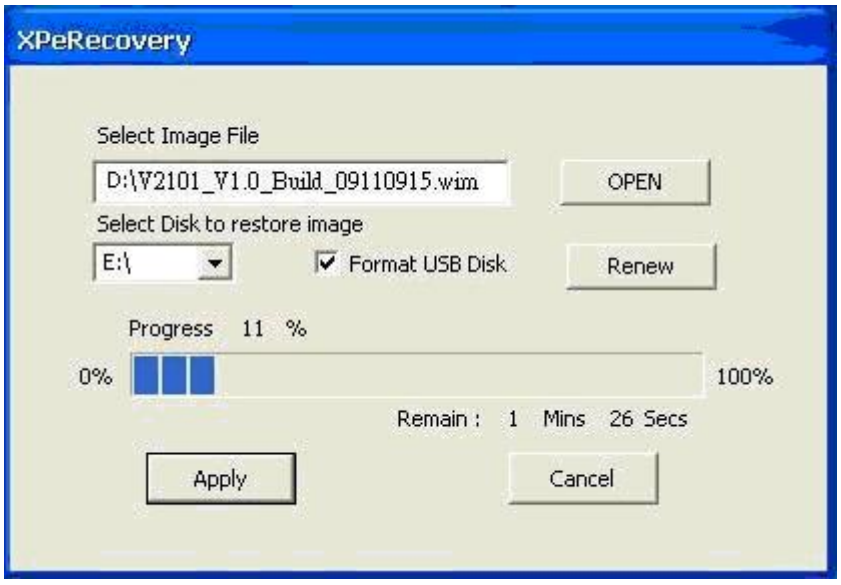




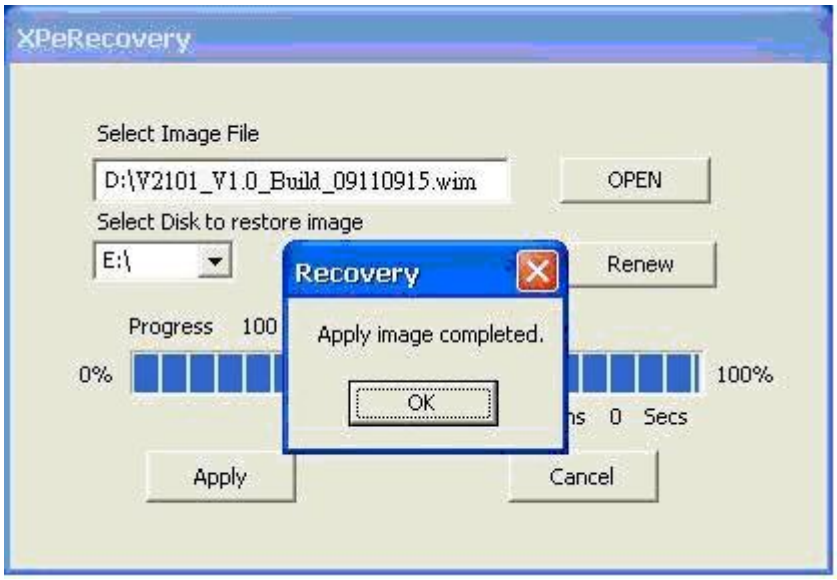
Click the drop-down list and select your USB disk drive letter (in this example, it is the E drive), and check **Format USB Disk**.



Click **Apply** to start the process; the utility will display the progress and time remaining

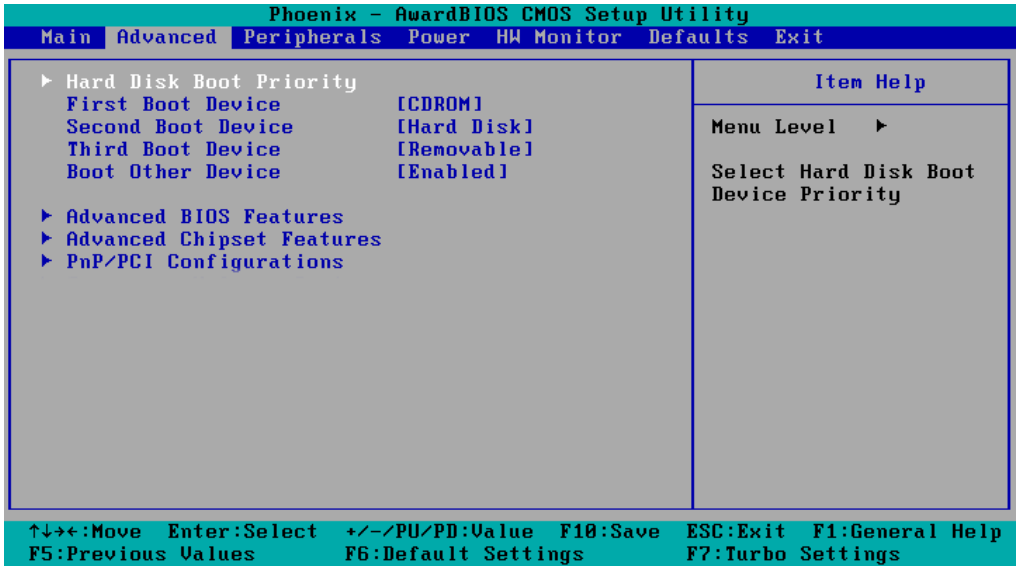


This message will appear when the process is complete. Click **OK**.

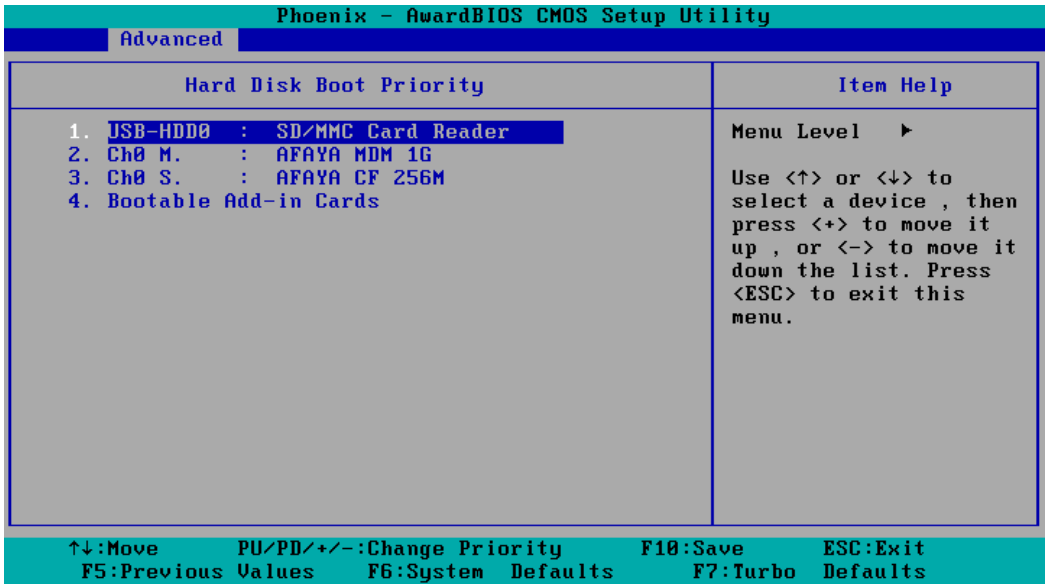


Step 3: Change the BIOS Settings

On the V2101-XPE computer, you need to change the BIOS settings to boot from USB disk. Turn on the computer and press **DEL** to enter the BIOS setup menu. Select **Hard Disk Boot Priority** and press **Enter**.



Select USB disk and then press "+" to make it the first boot device. **Warning: Incorrect boot disk priority will lead to recovery failure**.

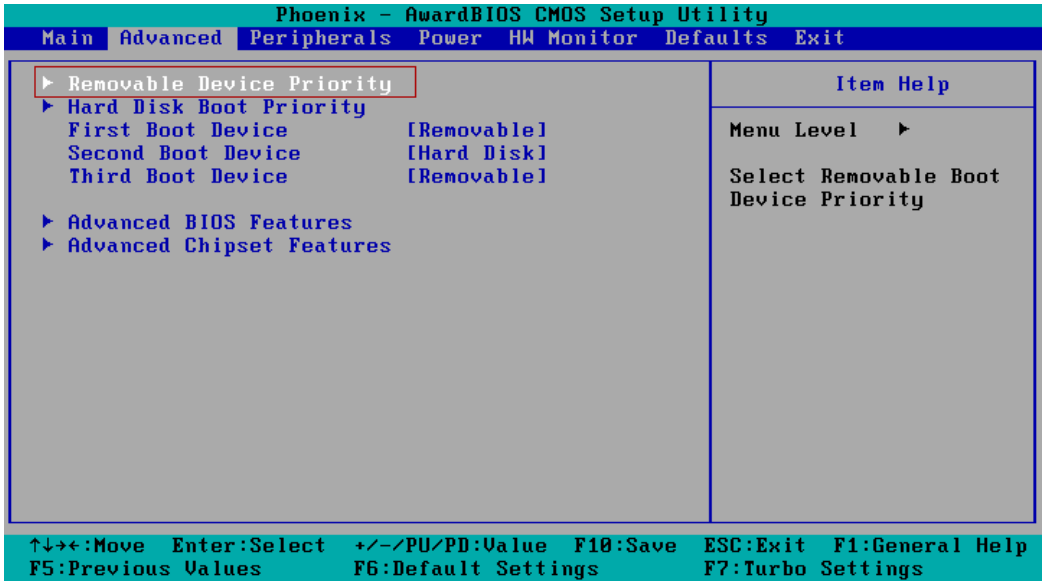


Press **F10** and then press **Enter** to save and leave the BIOS setup.

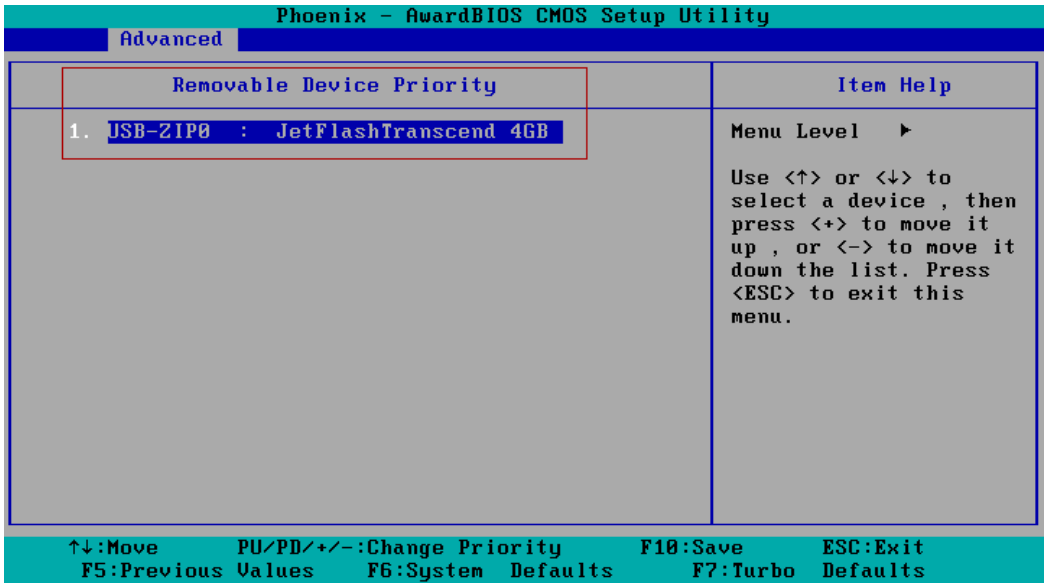
ATTENTION

Please note that some USB disks will be regarded as the **Removable Device**. If it happens, see the following steps.

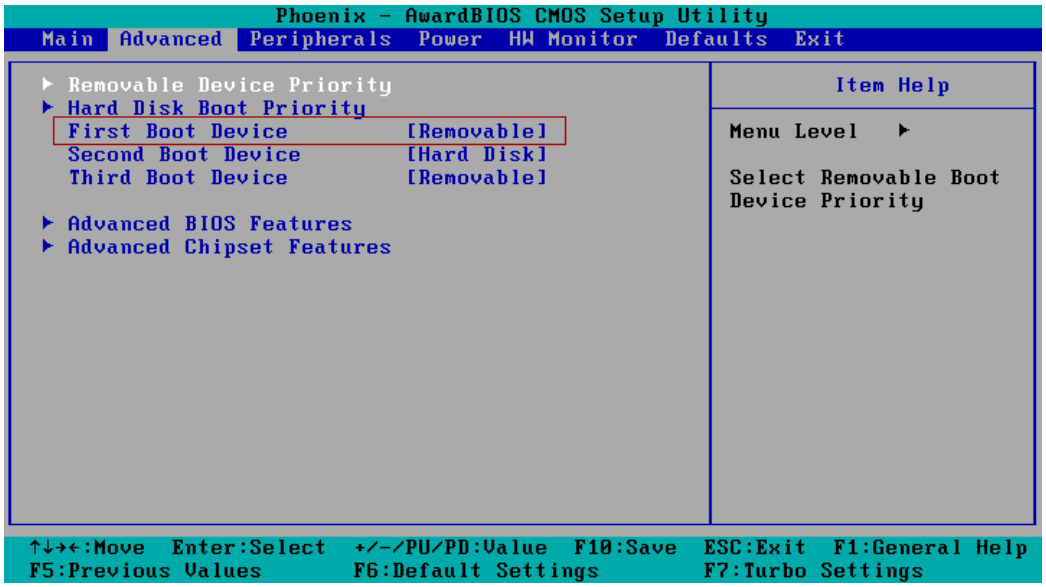
a. Select **Removable Device Priority**.



b. Make sure that the USB disk has been detected. Press **Esc** to exit.



c. Make sure that the **First Boot Device is Removable**. If not, select **First Boot Device**, press **Enter** and select it from the list.

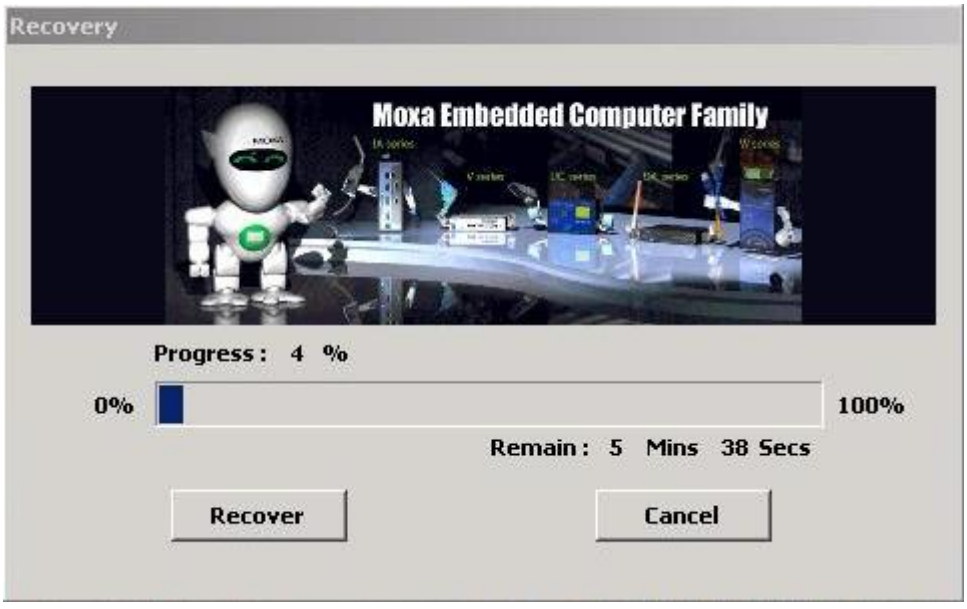


d. Select **Exit → Save & Exit Setup** and then press **Enter**.

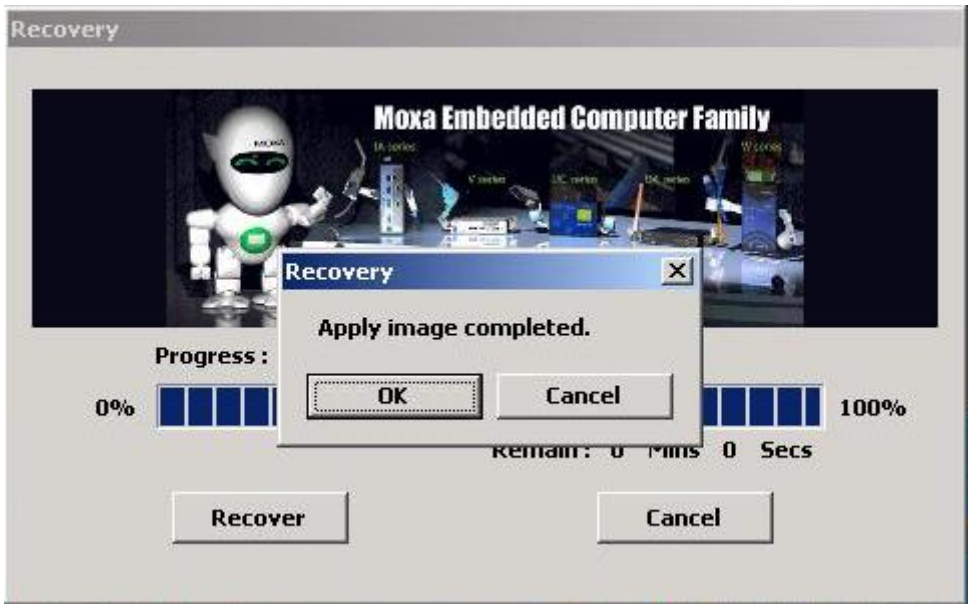
e. Choose **Y** to save to the CMOS and then exit.

Step 4: Reboot the Computer and Start Recovery

Insert the USB disk on any USB port of the V2101-XPE, and then reboot the computer. The system will boot from the USB disk and the Windows Pre-installation Environment and the recovery utility will appear. Click **Recover** to start system recovery.

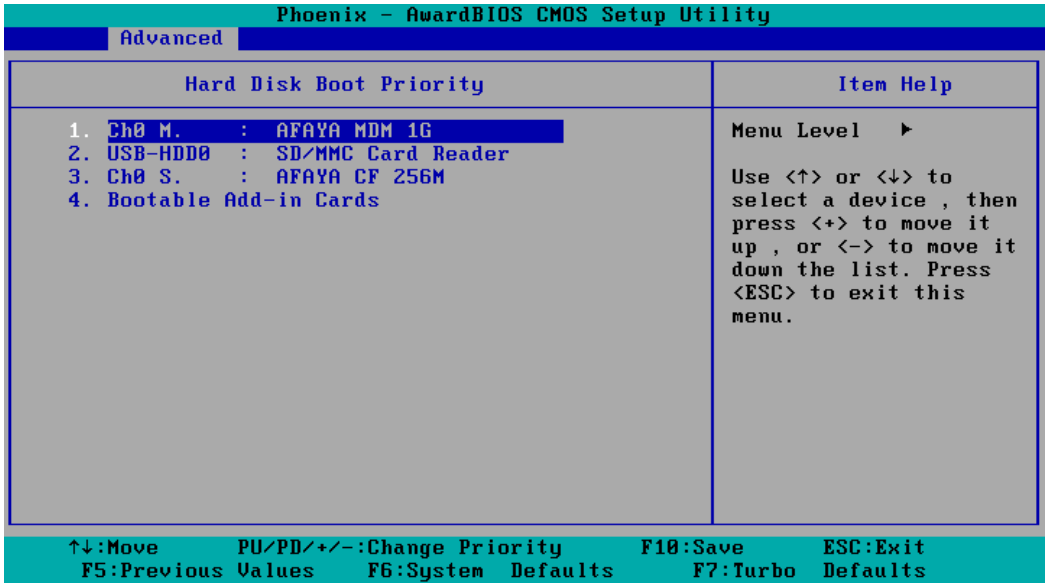


Click **OK** when the recovery process is complete and system will reboot.



Step 5: Change the BIOS Setting to Boot from Original Disk.

Now, you need to change the boot priority so that it can boot from the original disk. As the system reboots, press **DEL** to enter BIOS setup menu. Select **Hard Disk Boot Priority** and press **Enter**. Make sure that the hard disk has first boot priority.



Press **F10** and then press **Enter** to save and leave the BIOS settings.

Step 6: Reboot the Computer.

Remove the USB disk from the USB port before restarting and rebooting the V2101-XPE. You need to wait for about ten to fifteen minutes while the system recovers. **DO NOT power off or shut down the computer** during this time or the IIS service will be terminated. When the operating system has successfully launched, you need to restart your computer so that the new settings can be activated.