

# DA-820 Windows Embedded Standard 7 User's Manual

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[www.moxa.com/product](http://www.moxa.com/product)

**MOXA**®

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# DA-820 Windows Embedded Standard 7 User's Manual

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## Software Components

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Thank you for buying Moxa's DA-820 panel computer. The pre-installed Windows 7 Embedded software platform provides users with a simple and familiar development environment for creating a variety of industrial applications.

See below for the list of Windows Embedded Standard 7 software components pre-installed on the DA-820 computer.

### **Core OS:**

- 64-bit support
- Remote Client
- Remote Procedure Call

### **Applications and Services Development:**

- .Net Framework 3.5
- Remote Desktop Protocol 7.1
- COM OLE Application Support
- COM+ Application Support
- MSMQ

### **Internet Services:**

- Internet Explorer 8.0
- IIS 7.0

### **File Systems and Data Storage:**

- Windows Data Access Components
- Windows Backup and Restore

### **Diagnostics:**

- Common Diagnostic Tools
- Problem Reports and Solutions

**Fonts:** Chinese (Trad. and Simp.), Japanese, Korean, Western, Middle Eastern, South East Asian, and South Asian Fonts

### **Graphics and Multimedia:**

- MPEG DTV-DVD Audio Decoder (MPEG-2, AAC)
- MPEG Layer-3 Audio Codecs(MP3)
- MPEG4 Decoders
- Windows Media Video VC-1 (WMV) Codecs
- DirectX and Windows Device Experience
- Windows Media Player 12
- Create and Play DVDs
- Photo Viewer
- Remote media streaming
- Windows Media Center

### **International:**

- IME Simplified Chinese Support
- IME Traditional Chinese Support
- IME Japanese Support
- IME Korean Support

**Management:**

- Group Policy Management
- Windows Management Instrument (WMI)
- Windows Update

**Networking:**

- Extensible Authentication Protocol (EAP)
- Internet Authentication Service
- Telnet Server
- Bluetooth
- Domain Services
- Network Access Protection
- Network and Sharing Center
- Quality of Service
- Remote Access Service (RAS)
- Telephony API Client
- Windows Firewall
- Wireless Networking

**Security:**

- Credential Roaming Service
- Credentials and Certificate Management
- Windows Authorization Manager (AZMAN)
- Windows Security Center
- Active Directory Rights Management
- Security Base
- Encrypted File System (EFS)
- MS AntiMalware
- Windows Defender
- Bitlocker Secure Startup
- Applocker

**Enterprise Features:**

- Enterprise Search Scopes
- BranchCache
- DirectAccess
- Windows XP Mode

**Embedded Features:**

- Enhanced Write Filter (EWF)
- File-Based Write Filter (FBWF)
- Message Box Default Reply
- Registry Filter
- WSDAPI for .NET

**Embedded Self-Health Diagnostics:** SNMP-based remote scripting layer for monitoring, reporting, and control

## System Initialization

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In this chapter, we describe how to initialize the system settings on the DA-820 computer when you boot up the computer for the first time.

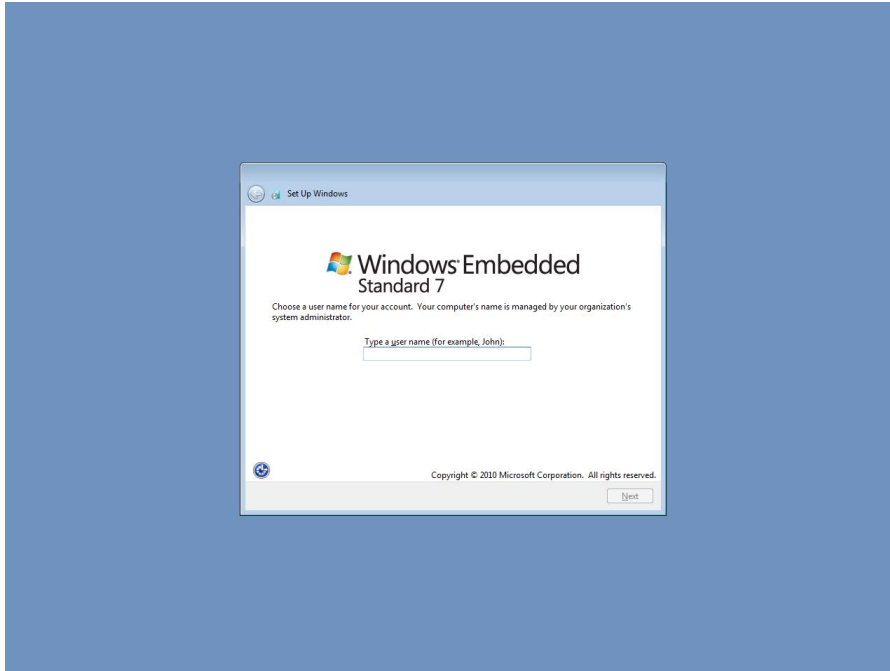
The following topics are covered in this chapter:

- **Initializing User Settings**

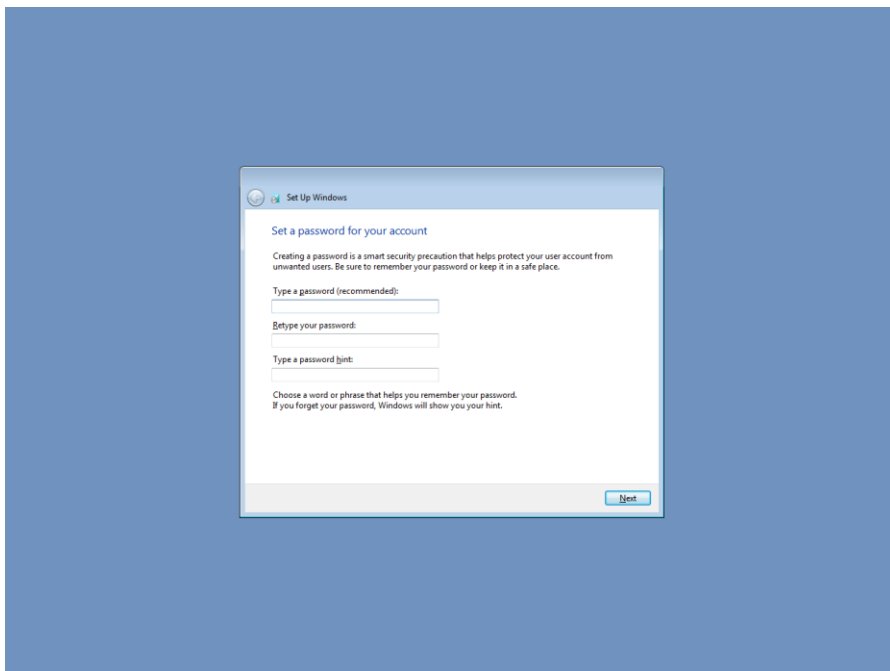
# Initializing User Settings

As with most laptop computers, for the embedded computer to work properly, you first need to create a user account with a unique username. Take the following steps to do this:

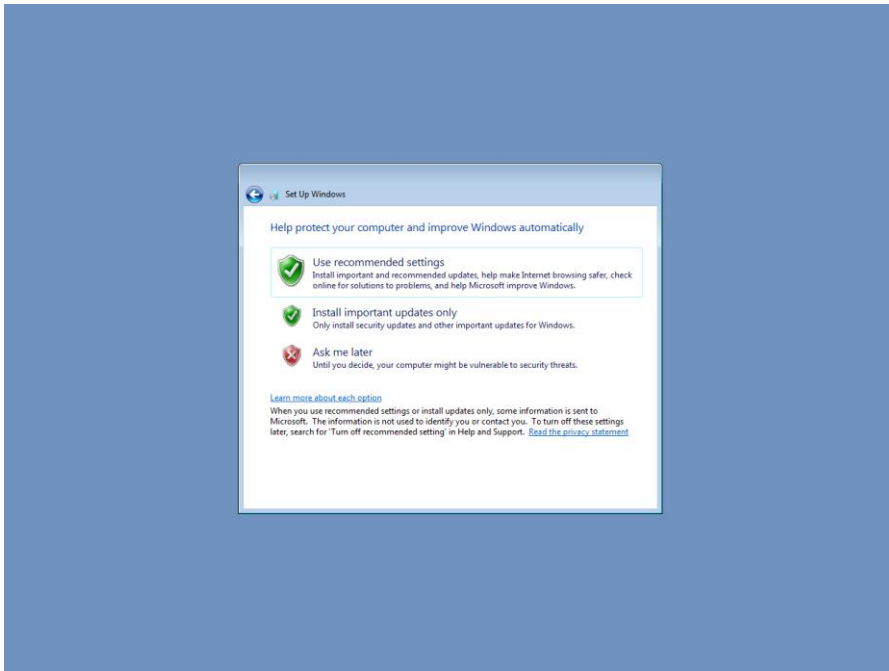
1. When you boot up the embedded computer for the first time, enter the username you will use to log in to this computer.



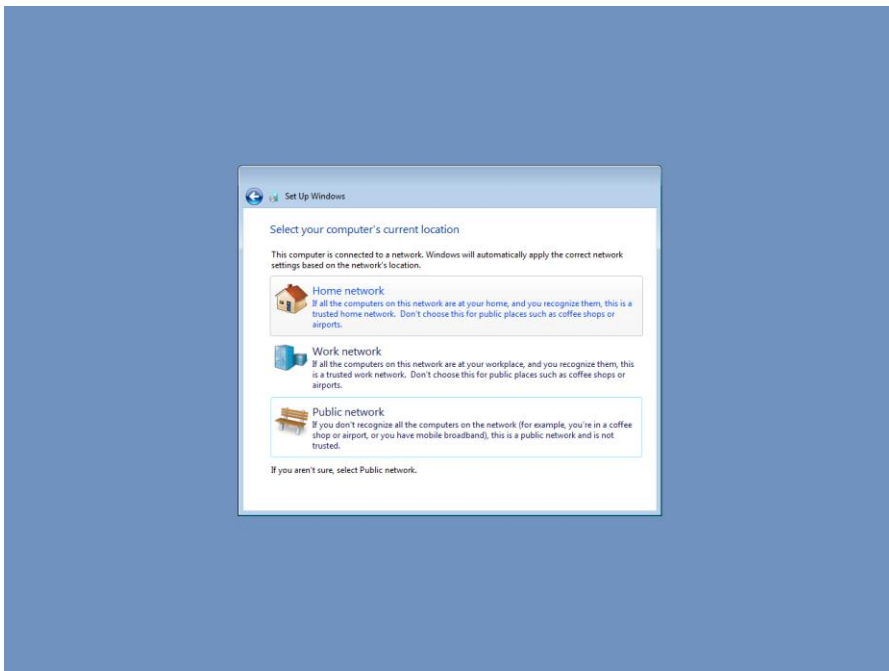
2. If you would like your username to be password protected, type a password, and then retype the password. In addition, you may also type a password hint in case you forget your password. If you do not want to set a password, leave all three input fields blank. Click **Next** to continue.



3. Select a windows update option.

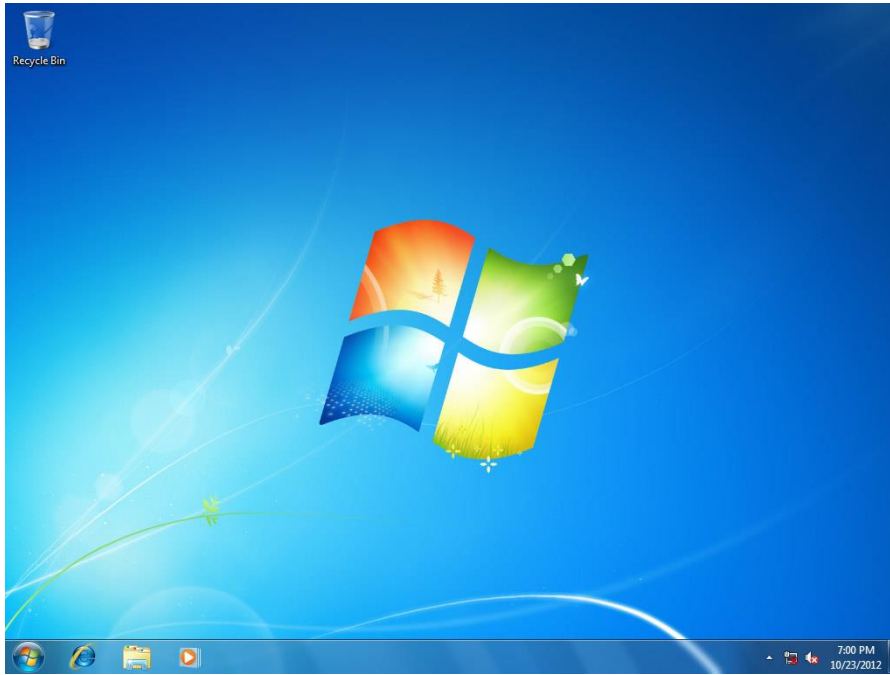


4. Select the computer's current location. Windows will automatically apply the correct network settings based on the location of the network.



5. You can now start using your DA-820 embedded computer.





## Configuring the Serial Interface

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In this chapter, we describe how to configure the DA-820 computer's serial interface.

The following topics are covered in this chapter:

- **Overview**
- **Configuring the Serial Interface Mode**

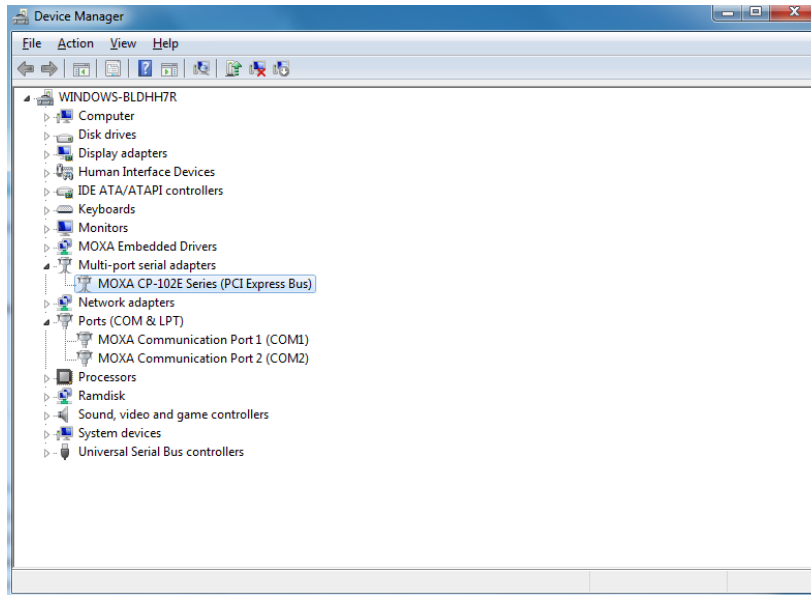
## Overview

The DA-820 has two serial ports, labeled COM1 and COM2. Each serial port can be configured to use any of the following serial interface modes: **RS-232**, **RS-485-2-wire**, or **RS-422/RS-485-4-wire**.

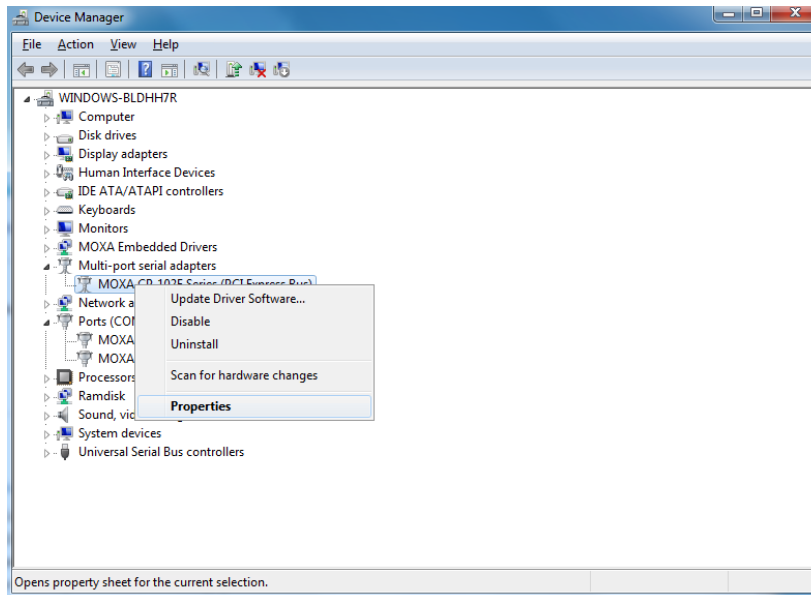
## Configuring the Serial Interface Mode

Take the following steps to configure a port's serial interface mode.

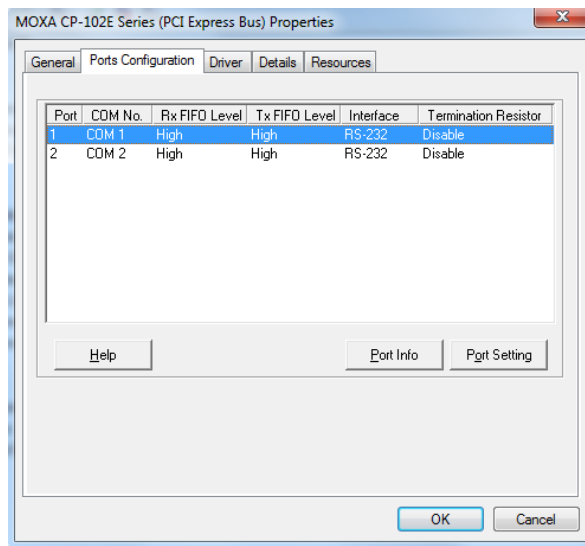
1. Open device manager and right-click **MOXA CP-102E Series (PCI Express Bus)** under **Multi-port serial adapters**.



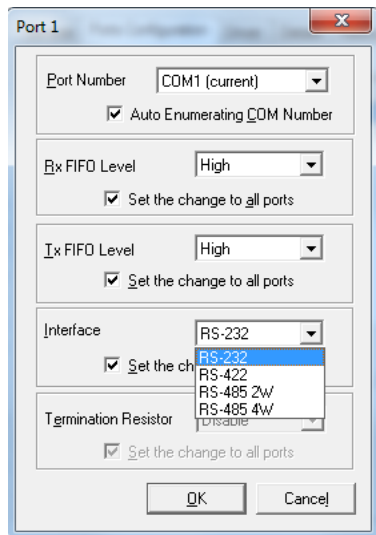
2. Select **Properties**.



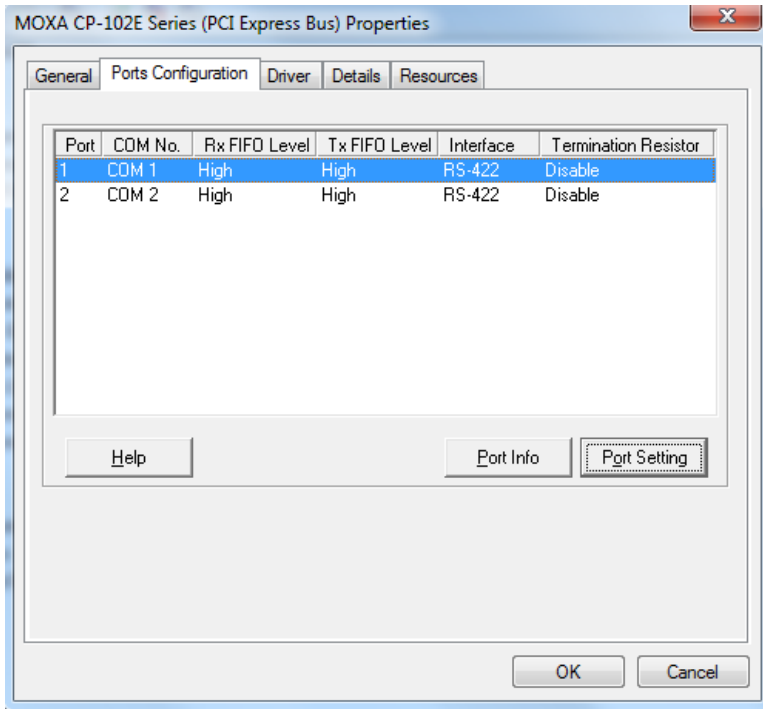
3. Click on the **Ports Configuration** tab, select the COM port whose serial interface you want to configure (e.g., COM1), and then click **Port Setting**.



4. Select the serial interface from the **Interface** drop-down box, and then click **OK**.



5. Check to make sure that the serial interface has been changed.



# Enabling Embedded Filters

---

In this chapter, we describe how to use the Enhanced and File-Based Write Filters.

The following topics are covered in this chapter:

▣ **Enhanced Write Filter**

- Overview
- Enabling Enhanced Write Filter

▣ **File-Based Write Filter**

- Overview
- Configuring File-Based Write Filter

# Enhanced Write Filter

## Overview

Enhanced Write Filter (EWF) provides a means for diverting writes from one disk to another, thereby allowing the operating system (OS) to appear to boot from a write-protected hard disk. All data written to an EWF-protected volume (the hard disk in the following figure) is redirected to an overlay (the EWF volume in the following figure). Because EWF does not write data to the hard disk directly, it can protect the hard disk from sudden power losses. The written data is cached in the overlay and made available (seemingly) as part of the hard disk, giving the appearance that the hard disk is writeable. The overlay is an independent storage location in random access memory (RAM). If desired, data stored in the overlay can be committed to the protected volume at a later time. The following figure gives an overview of the EWF structure.

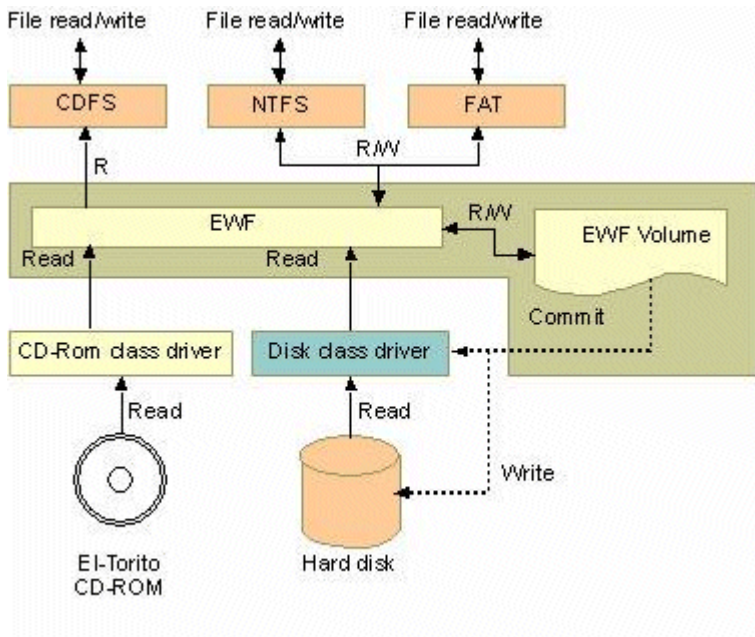


figure too blurry

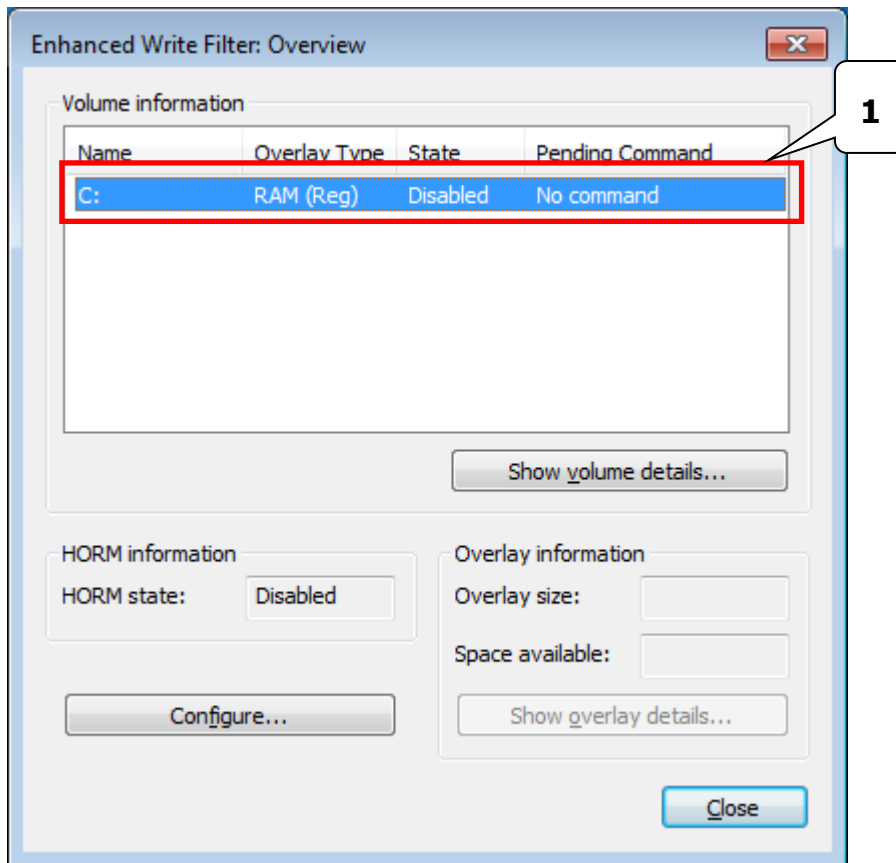
## Enabling Enhanced Write Filter

Take the following steps to enable the Enhanced Write Filter:

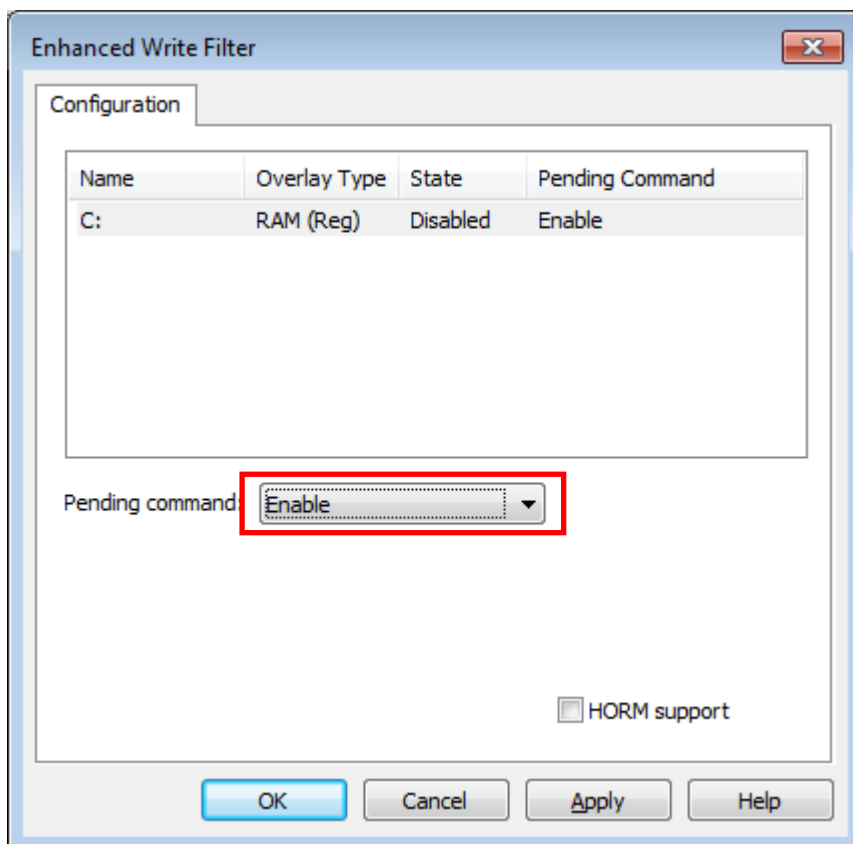
1. Right-click the lock icon on the left side.



2. Select the volume from the Volume Information list and then click **Configure**.



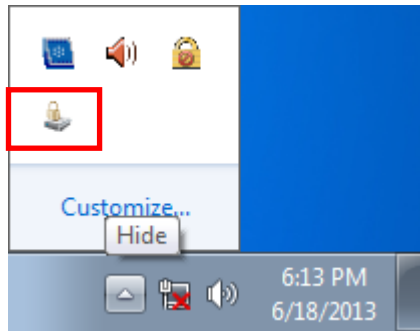
- 3. Select **Enable** from the Pending Command drop-down box.



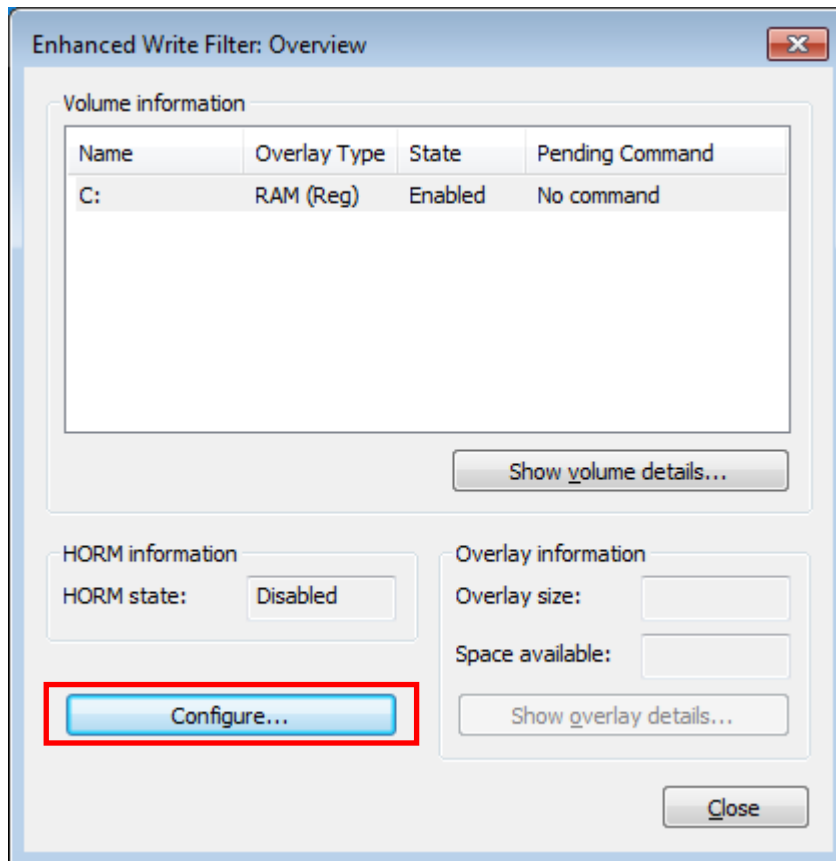
- 4. Reboot the system.



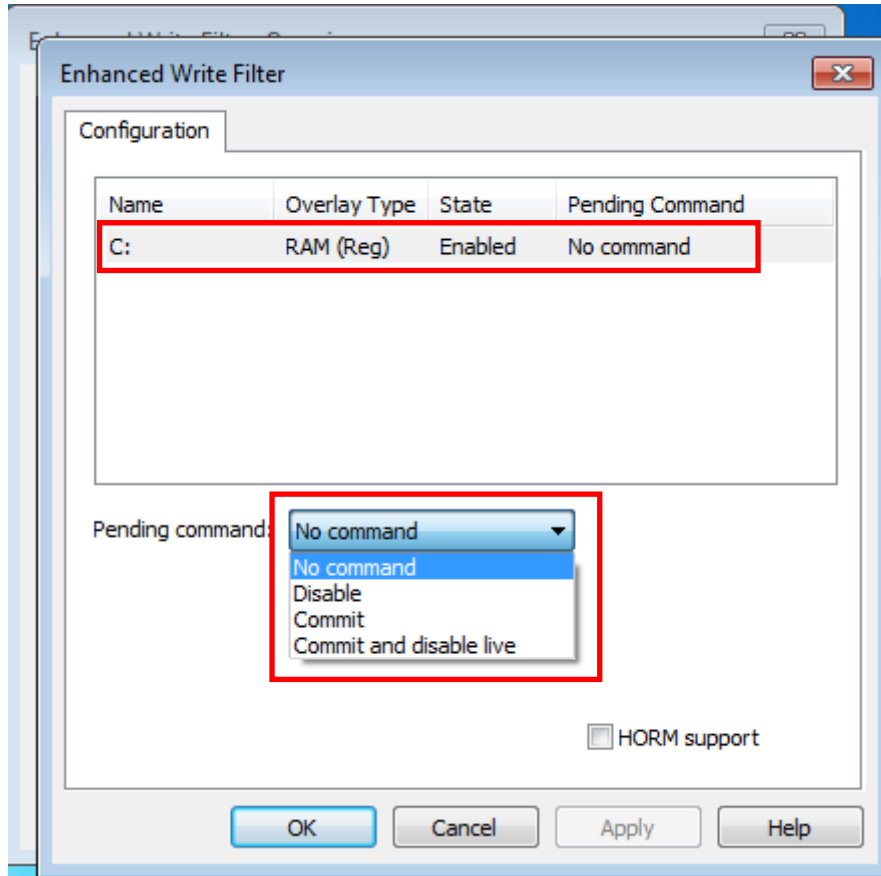
5. Check to see if the lock icon has changed to locked state, as shown below.



6. Click **Configure**. {{where did this screenshot come from; appears automatically after restarting?}}



7. Select the volume, and then select the command you would like to use from the **Pending command** drop-down list.



## File-Based Write Filter

### Overview

According to Microsoft:

*"File-Based Write Filter (FBWF) allows the Windows Embedded platform to maintain the appearance of read and write access on write-sensitive or read-only storage. FBWF makes read and write access transparent to applications.*

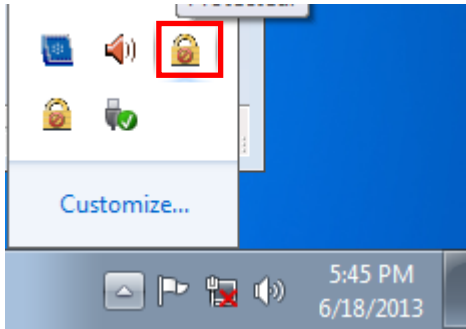
*Writing to storage media may be undesirable or impossible in embedded devices. FBWF redirects all writes targeted for protected volumes to a RAM cache called an overlay. Used in this context, an overlay is similar to a transparency overlay on an overhead projector. Any change made to the overlay affects the picture as seen in the aggregate, but if the overlay is removed, the underlying picture remains unchanged."*

FBWF supports an advanced feature not supported by EWF. That is, it lets the user specify which directory on the disk drive data will be written to. The default setting is c:\temp, which means you can read/write the data into disk without commit action.

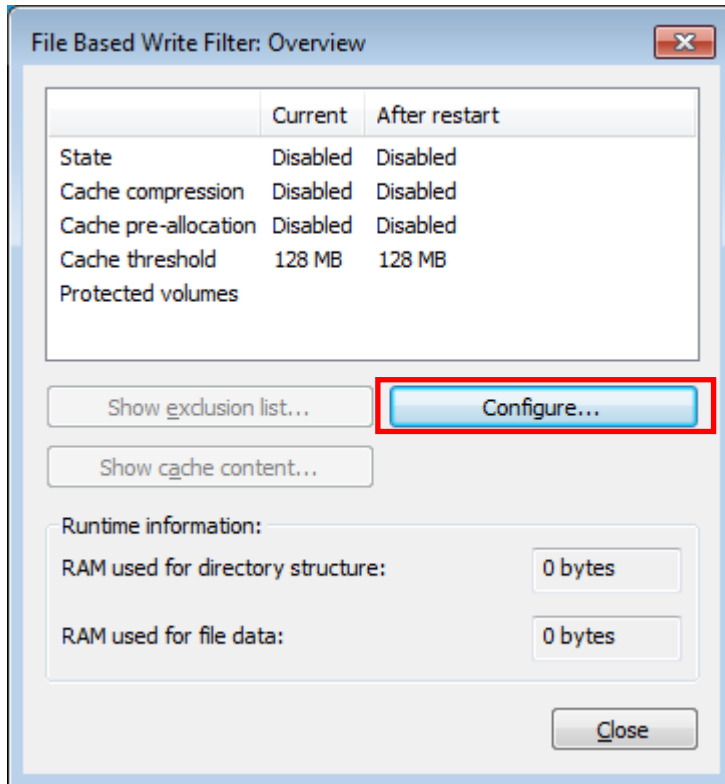
### Configuring File-Based Write Filter

Take the following steps to enable file-based write filtering:

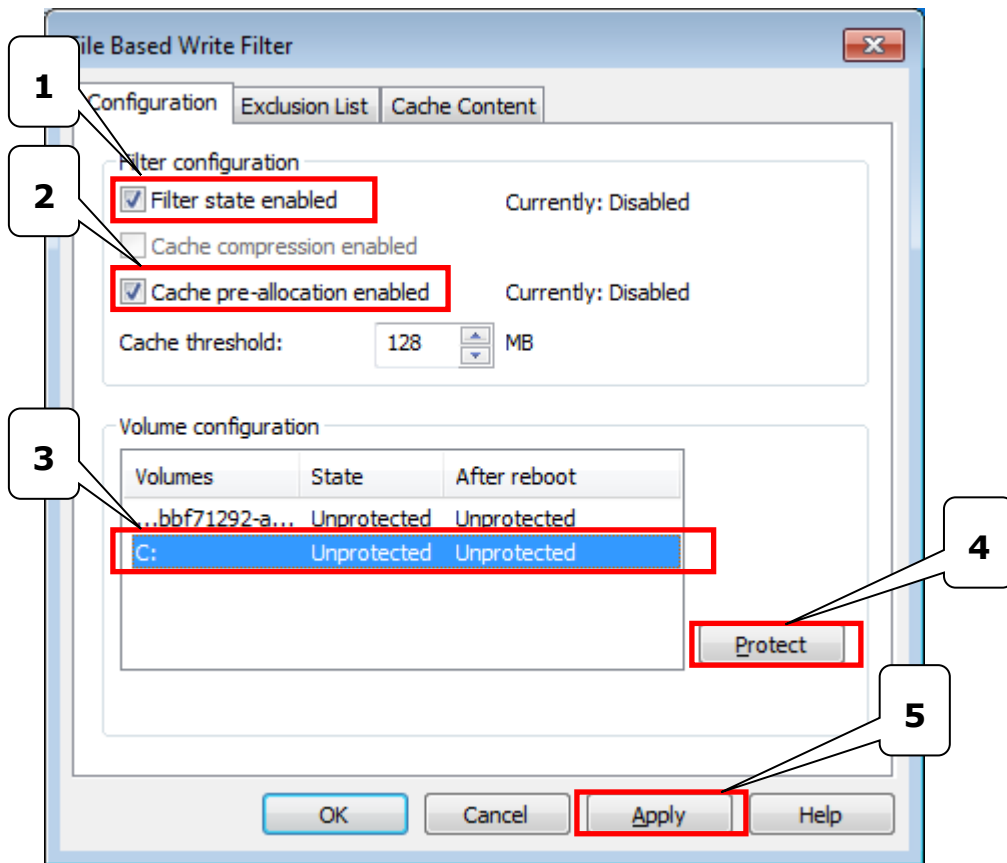
1. Right-click the lock icon on the right side.



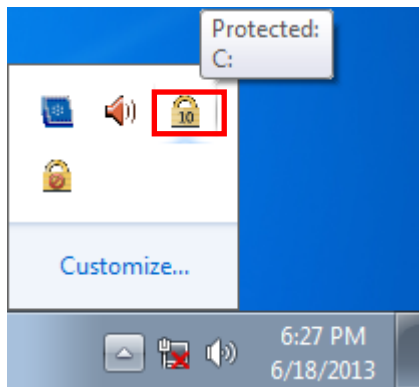
2. Click **Configure**.



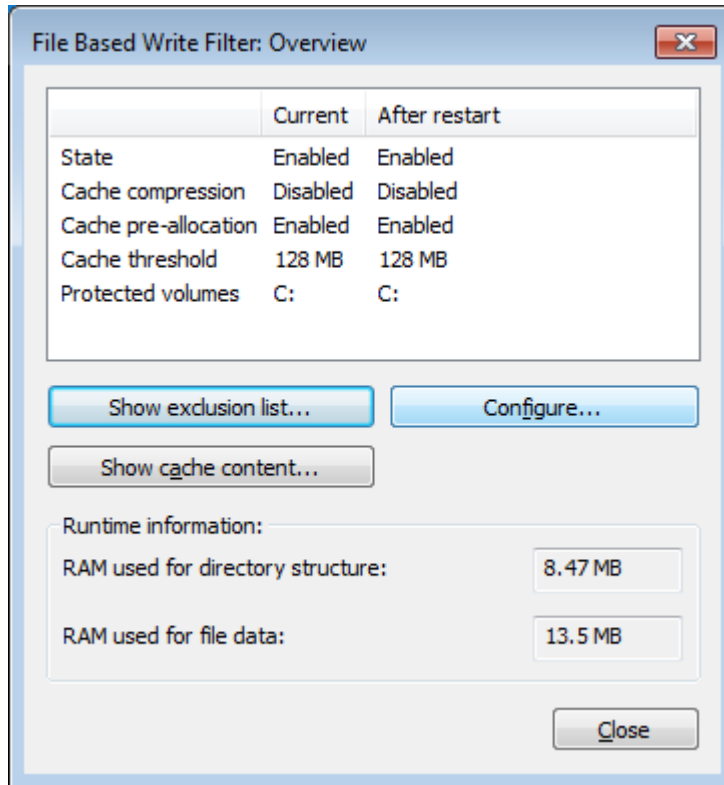
- On the configuration tab, checkmark **Filter state enabled** and **Cache pre-allocation enabled**. Next, select **C:** from the Volume configuration list, and then click **Protect** and **Apply**, in that order.



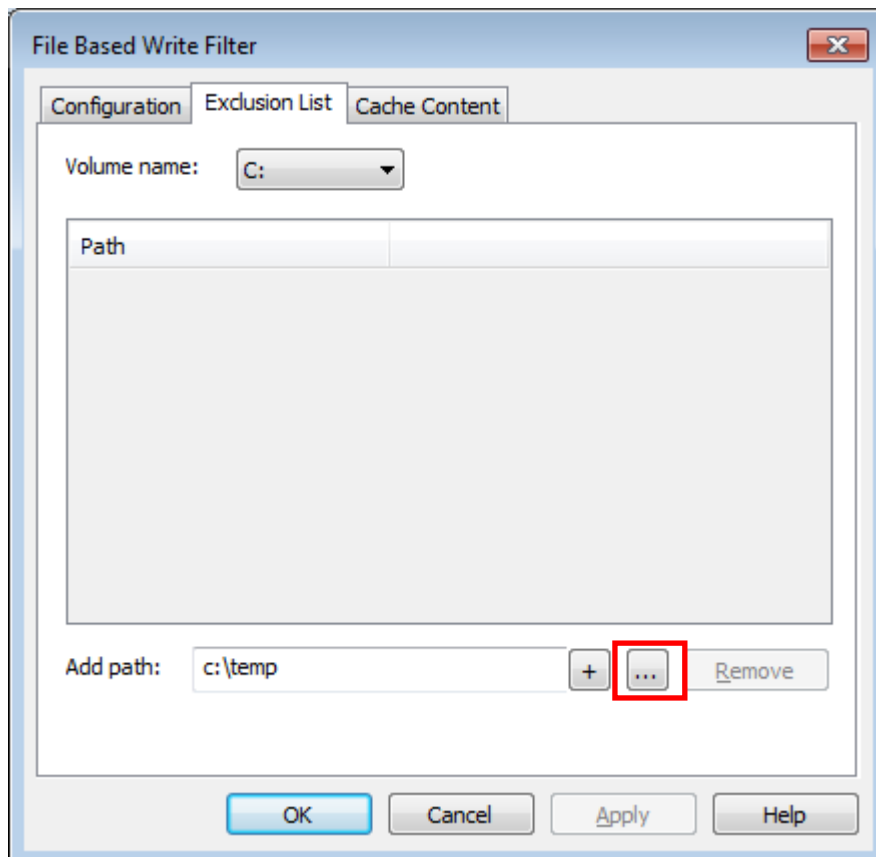
- Reboot the system.
- Right-click the lock icon.



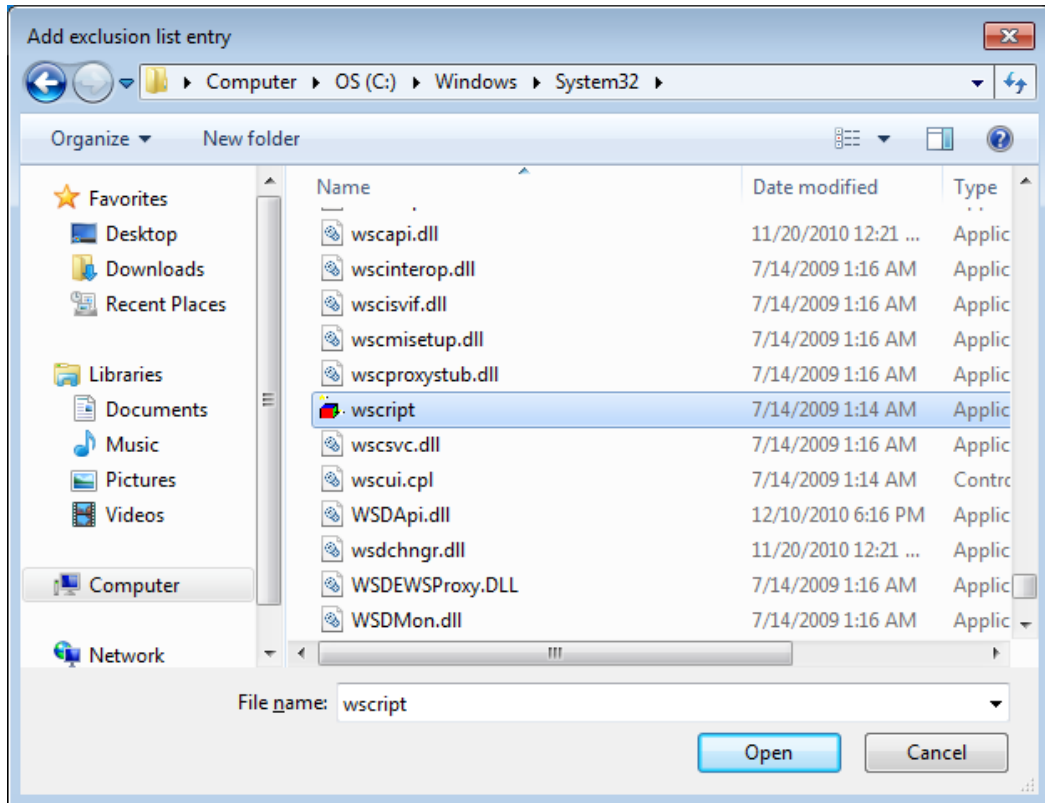
6. Click **Configure**.



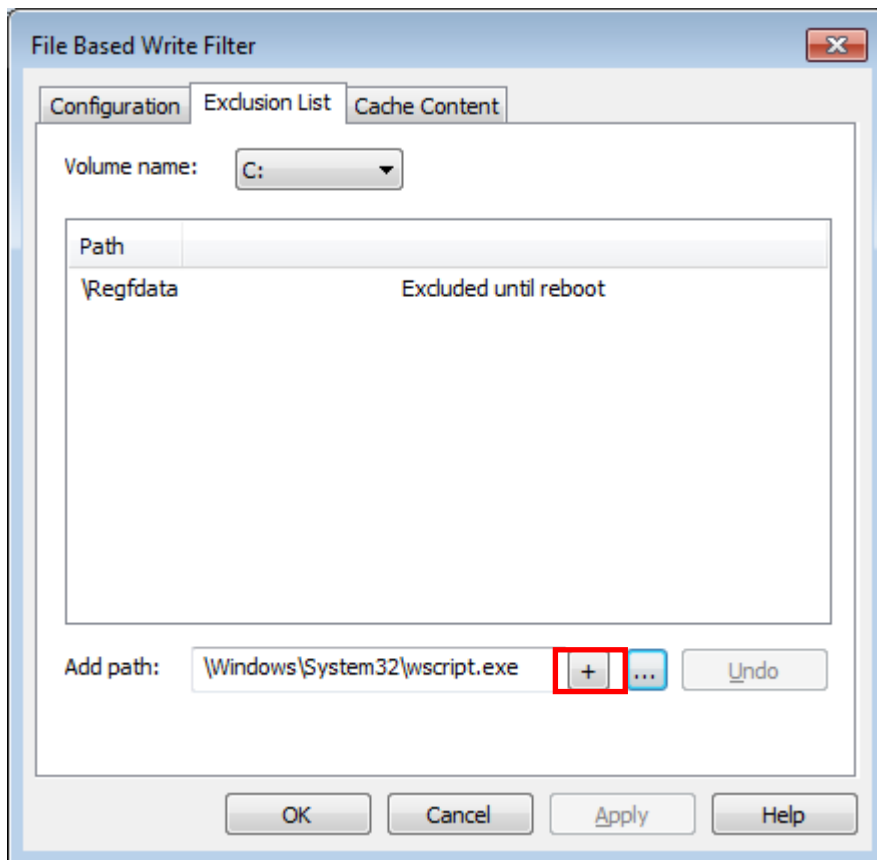
7. Select the **Exclusion List** tab, and then click the browse button.



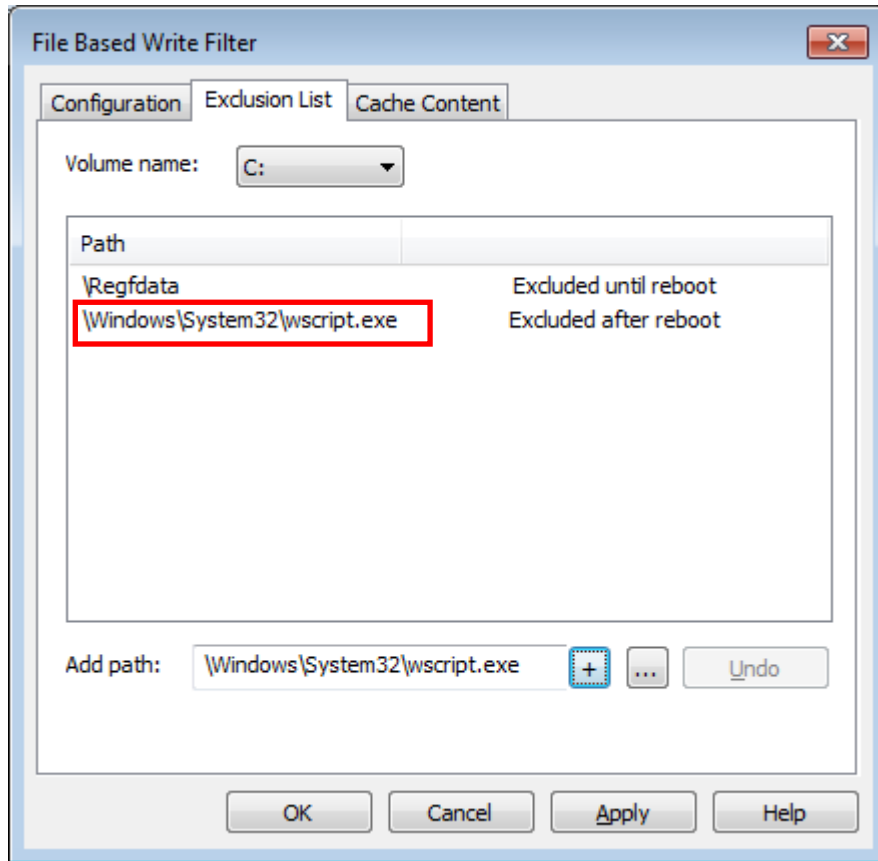
- 8. Select which file you would like to exclude from protection, and then click **Open**.



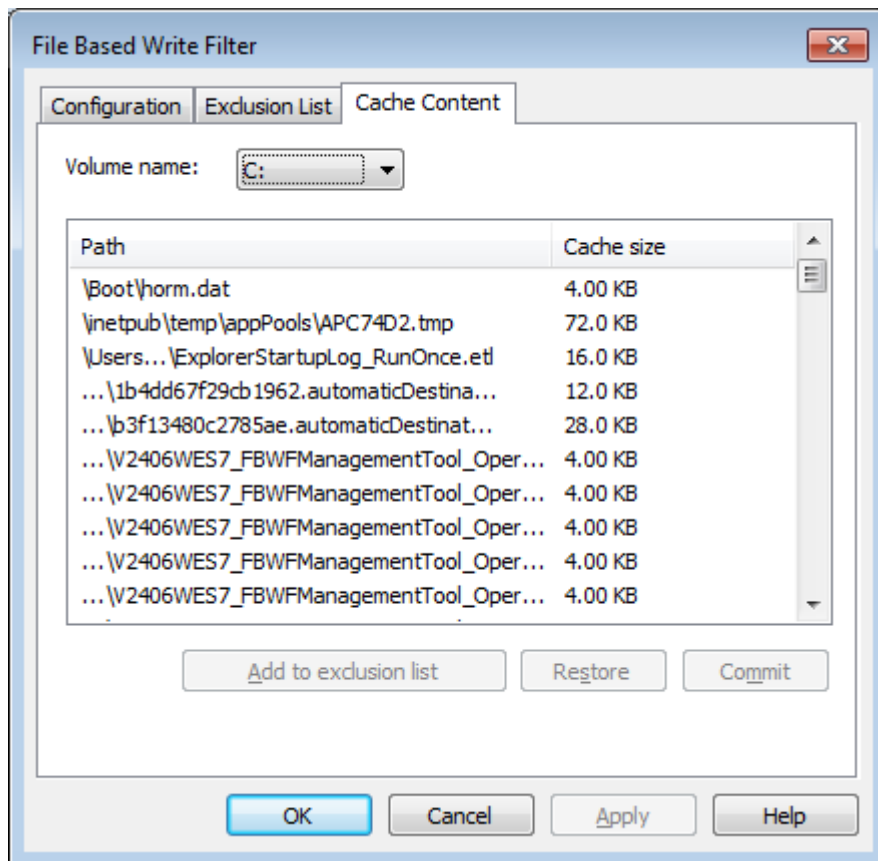
- 9. Click the + button.



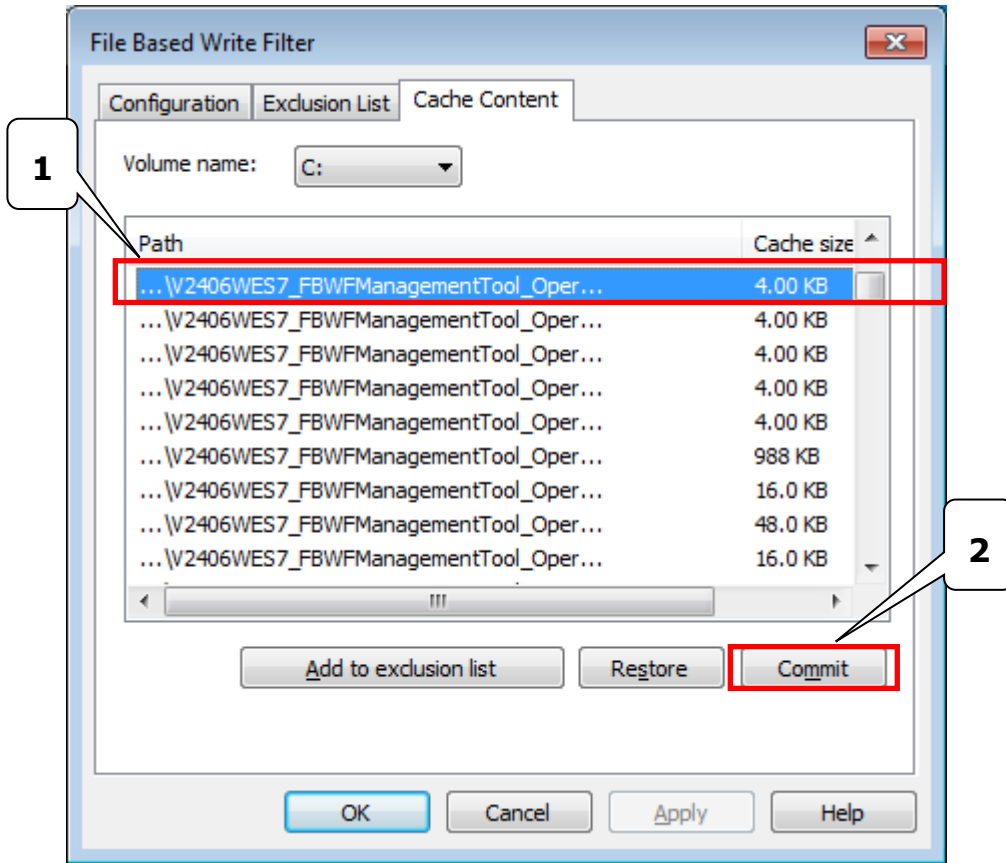
10. Check to make sure that the file path has been added.



11. Select the **Cache Content** tab.



12. Select the file you would like to save to physical disk and then click **Commit**.



13. Reboot the system to activate the changes.



## Moxa SynMap Package

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In this chapter, we describe Moxa SynMap, a software package you can use to easily control and monitor your DA-820 computer.

The following topics are covered in this chapter:

- ❑ **Moxa SynMap Package**
  - Overview
  - Moxa SynMap OIDs List
- ❑ **Installing Windows SNMP Components**
- ❑ **Installing the Moxa SynMap Package**
- ❑ **Installing MXview**
- ❑ **Configuring MxView**
- ❑ **Loading a Moxa SynMap MIB File**
- ❑ **Loading a Host Resource MIB File**
- ❑ **Using Moxa SynMap OIDs**
- ❑ **Using HOST RESOURCE OIDs**

# Moxa SynMap Package

## Overview

SynMap is Moxa's revolutionary software virtualization, an evolutionary advance in network device control that adapts solid, reliable SNMP into a fully portable remote procedure interface. SynMap allows engineers to automate remote processes using SNMP object identifiers (OIDs) rather than device-specific addresses, making a scripted SynMap procedure fully interoperable with any other SynMap device. This means that a script created for one SynMap device can be directly copied to another, immediately conferring the same functionality. By eliminating the need to rewrite and compile code for newly configured devices, you can significantly reduce the amount of time needed for maintenance and deployment.

SNMP is lightweight and easy-to-configure, and has been used by IT professionals for many years. SNMP also enjoys comprehensive native support in high-level languages, including .NET, Java, Python, and Ruby. The SynMap framework has transformed SNMP into a universal configuration and control interface for remote procedures, adapting it not only to monitor and control device internals like temperature, BIOS parameters, and local interfaces, but also to report on and automate tasks at the process layer as well. Easily integrated into any existing Network Management System (NMS), SynMap devices are a flexible and cost-effective upgrade that returns obvious benefits to any IA network.

SynMap currently allows you to use SNMP for remote monitoring and control of a select set of computer processes, but its list of features is rapidly growing. Using SynMap's fully portable scripts, engineers will soon be able to:

- Access, monitor, control, and report on digital I/O at both the process and hardware layers.
- Use OIDs to monitor, configure, and give process control over serial ports and other interfaces.
- Monitor and control system attributes and process events via any NMS.
- Build automated remote procedures using SynMap OIDs called by simple shell scripts, or a preferred high-level language such as Python, Perl, or VBScript—all without any need for low-level C APIs, or platform-specific libraries.
- Significantly simplify and reduce development times for custom utilities and automated executables.
- Gain scripting and automation independence from OS-dependent libraries.

All of this can be achieved using SNMP, the simple, reliable, familiar, and easily accessible standard every IT engineer knows. Discover how Moxa is expanding automation frontiers with Moxa's innovative SynMap.

## Moxa SynMap OIDs List

Check **Appendix A:** Moxa SynMap OID Table to review the complete list of Moxa SynMap OIDs.

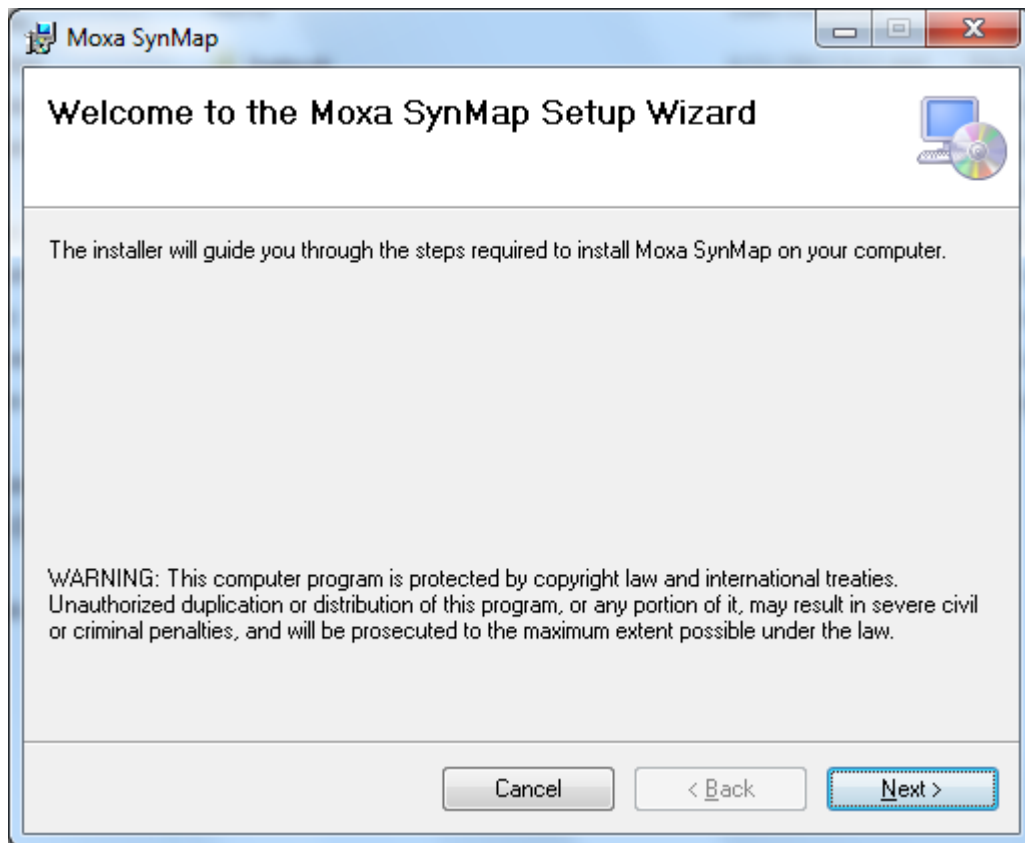
## Installing Windows SNMP Components

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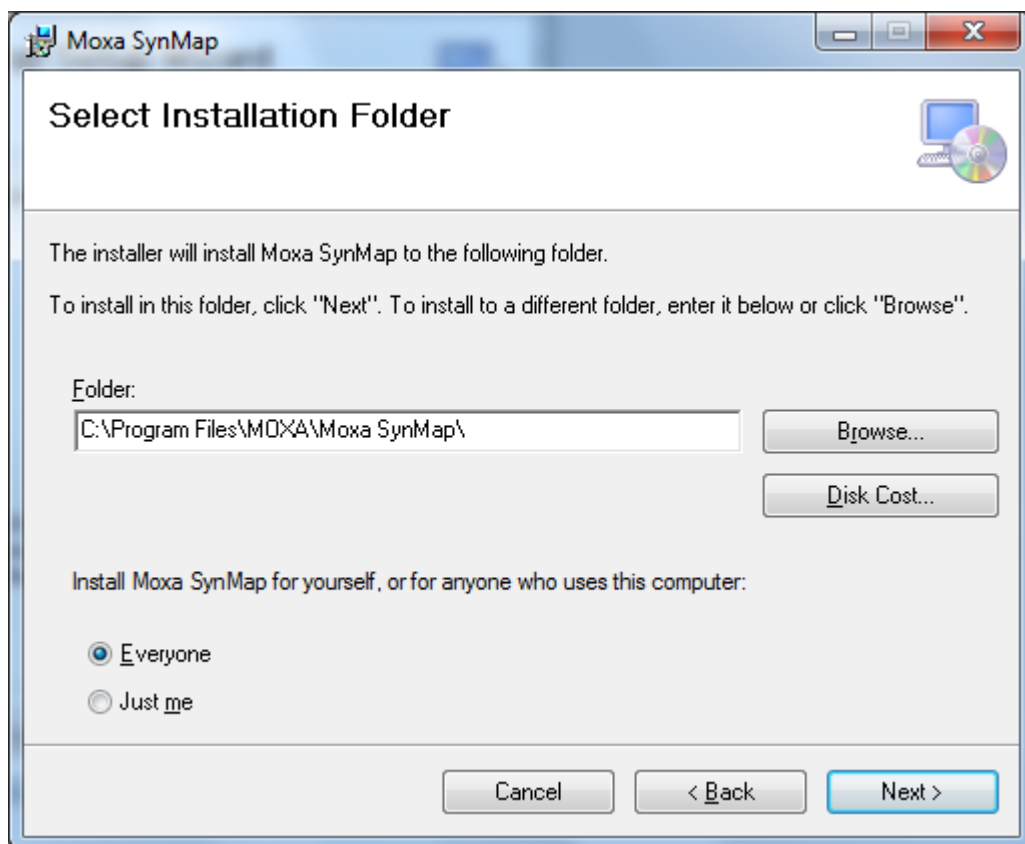
## Installing the Moxa SynMap Package

To use Moxa SynMap on the DA-820 computer, you will first need to install the SynMap package. Take the following steps to install the Moxa SynMap package:

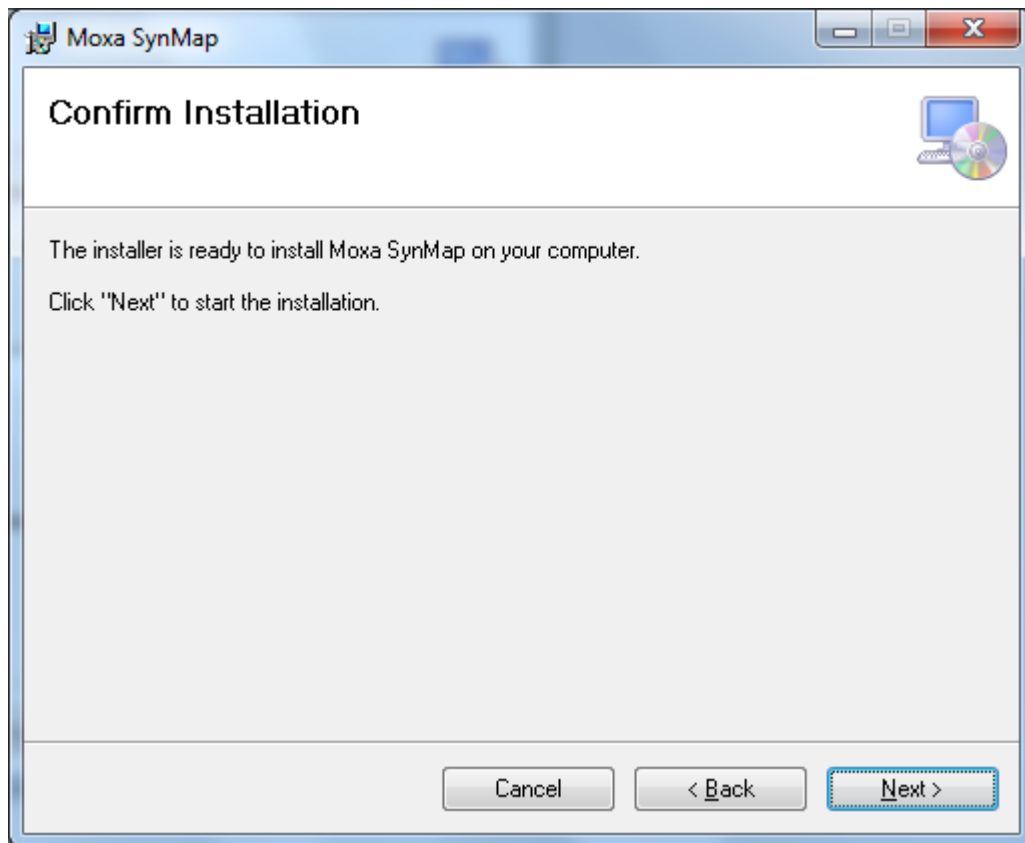
1. Double click **mxSynMap\_setup.msi**, which is located in the following folder:  
<software DVD>\utility\1.mxSynMap\
2. Click **Next** to continue.



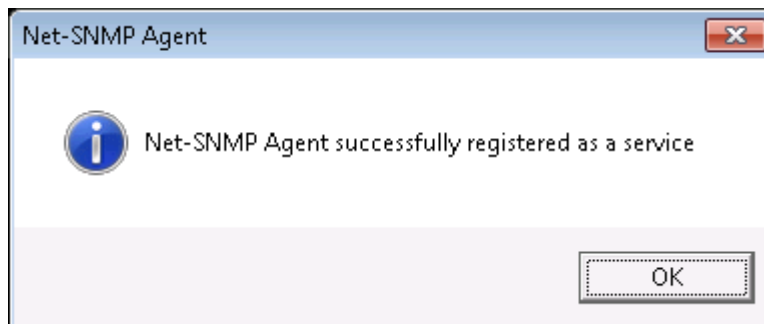
- 3. Select the folder in which you would like to install the package, or simply click **Next** to continue if you want to use the default folder.



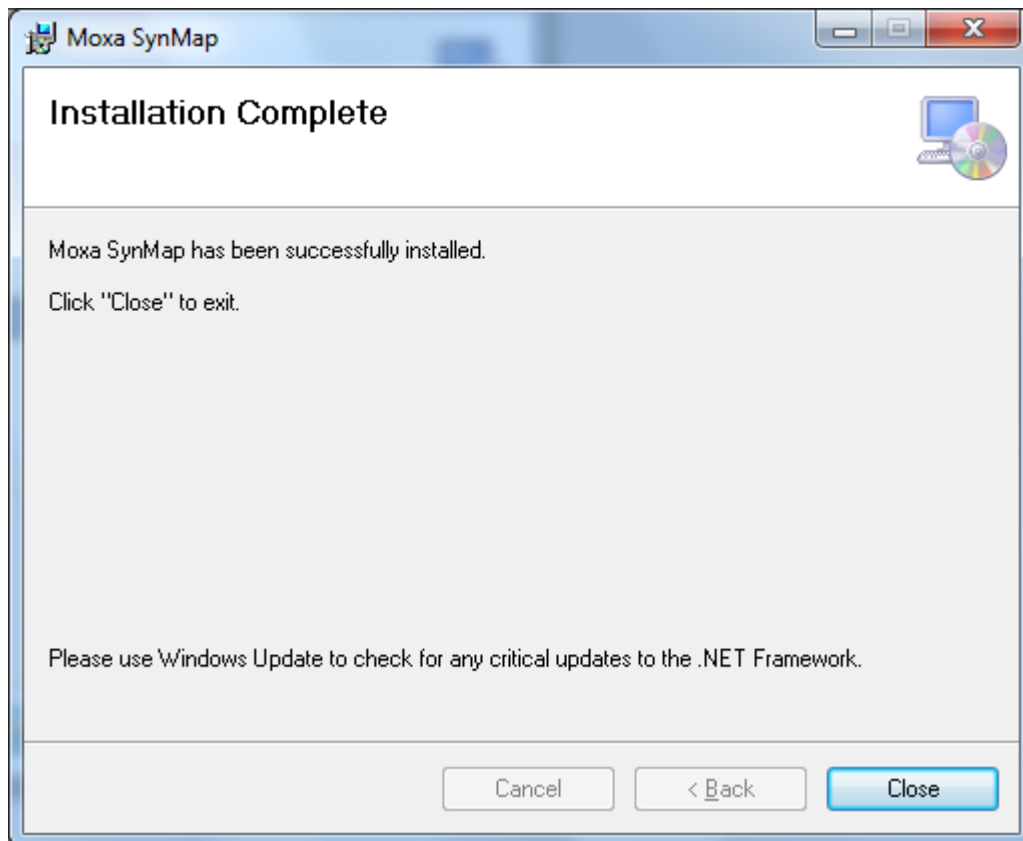
- 4. Click **Next** to continue.



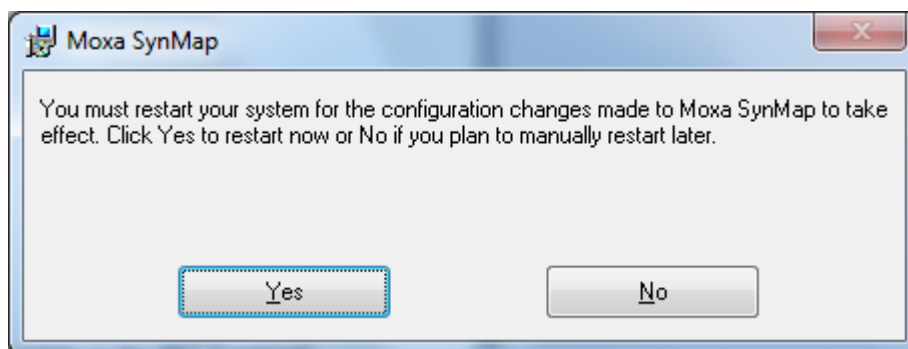
- 5. Click **OK** to continue.



- 6. When finished, click **Close** to complete the installation.



7. You will need to restart the computer to start using SNMP on your DA-820 computer. Click **Yes** to reboot the system.

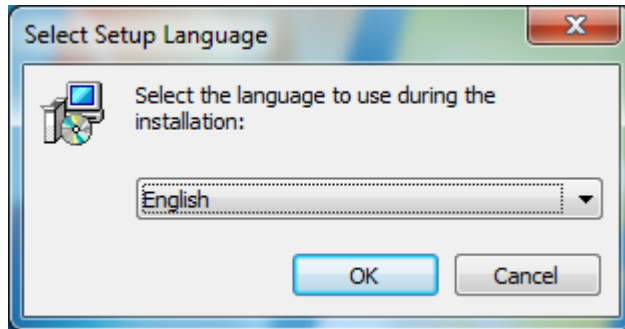


## Installing MXview

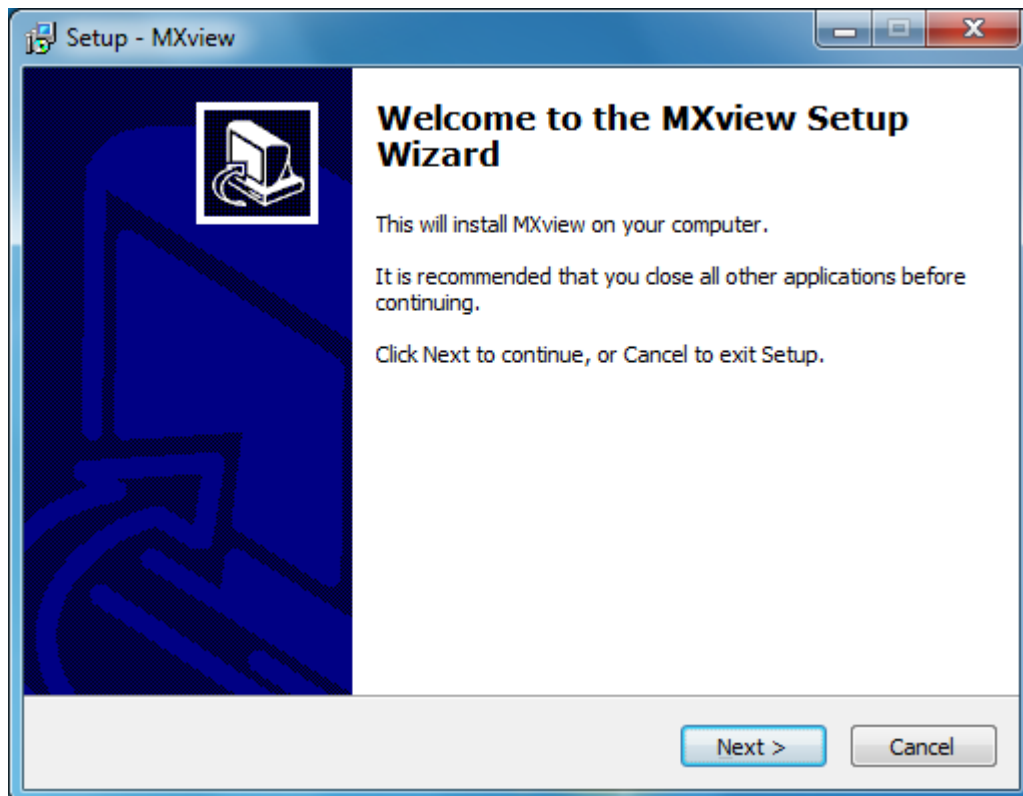
In this section, we demonstrate how to use the MIB browser mxView to monitor and control Moxa SynMap OIDs. If you have already installed your own MIB browser, you can skip this section.

Take the following steps to install the MxView package:

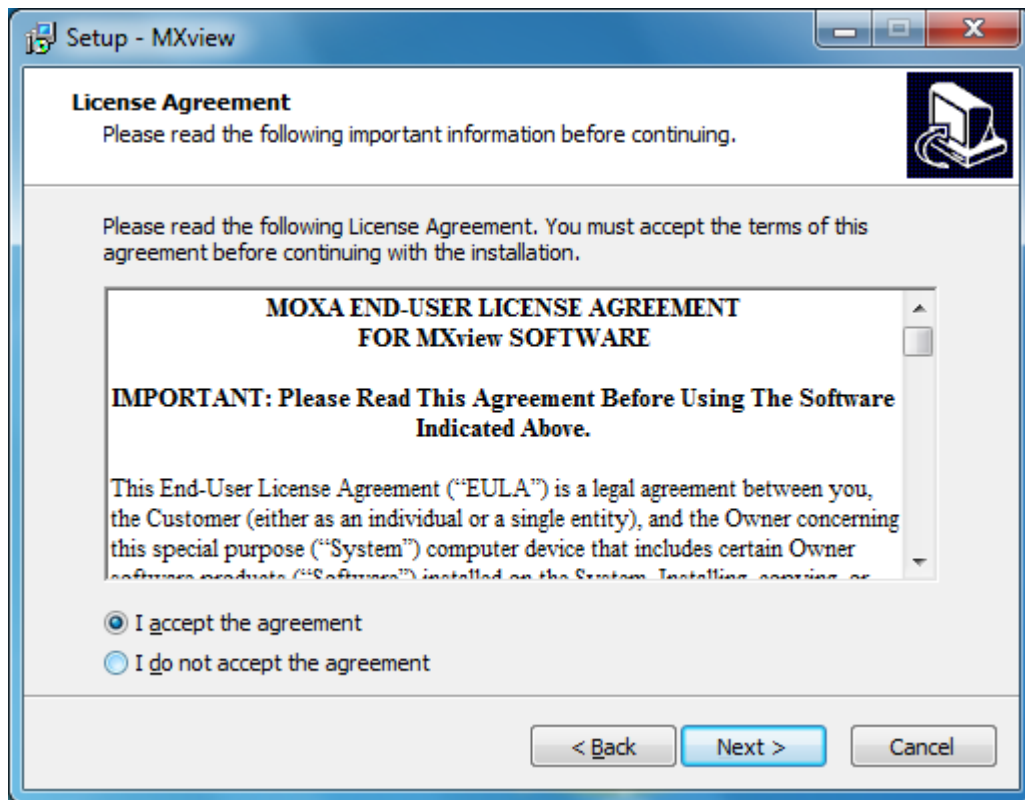
1. Double click **MXView\_Trial\_V2.3.exe**, located in the following folder:  
<software DVD>\utility\4.mxViewTrial
2. Click **OK** to continue.



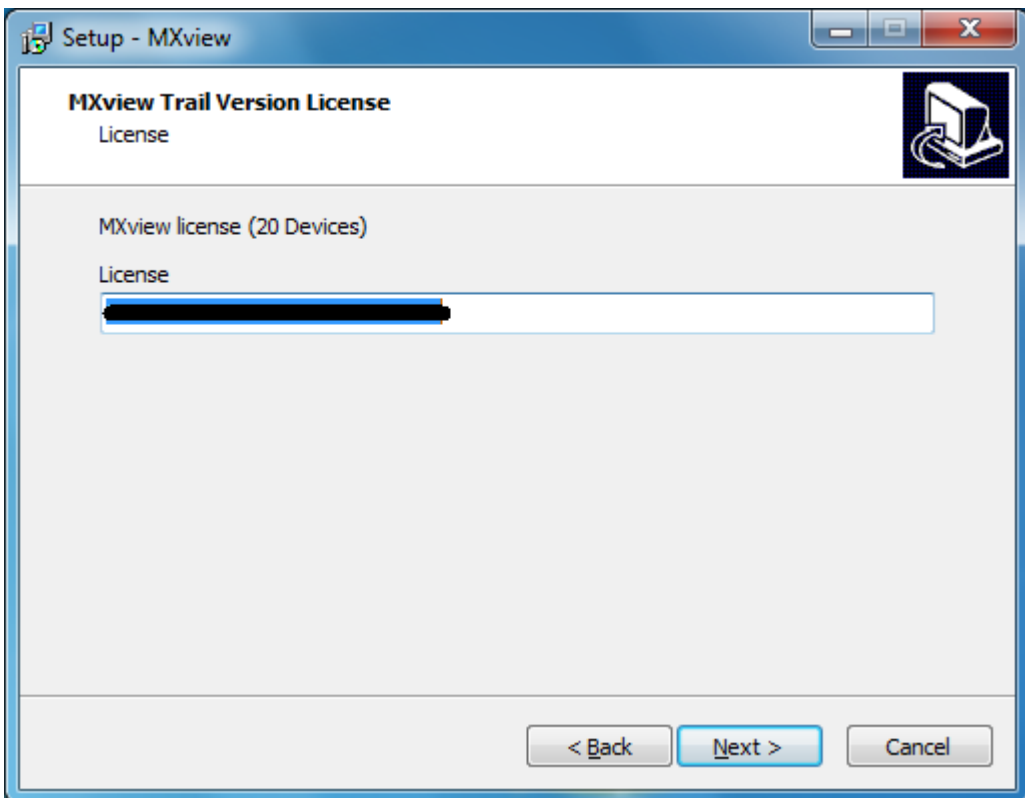
3. Click **Next** to continue.



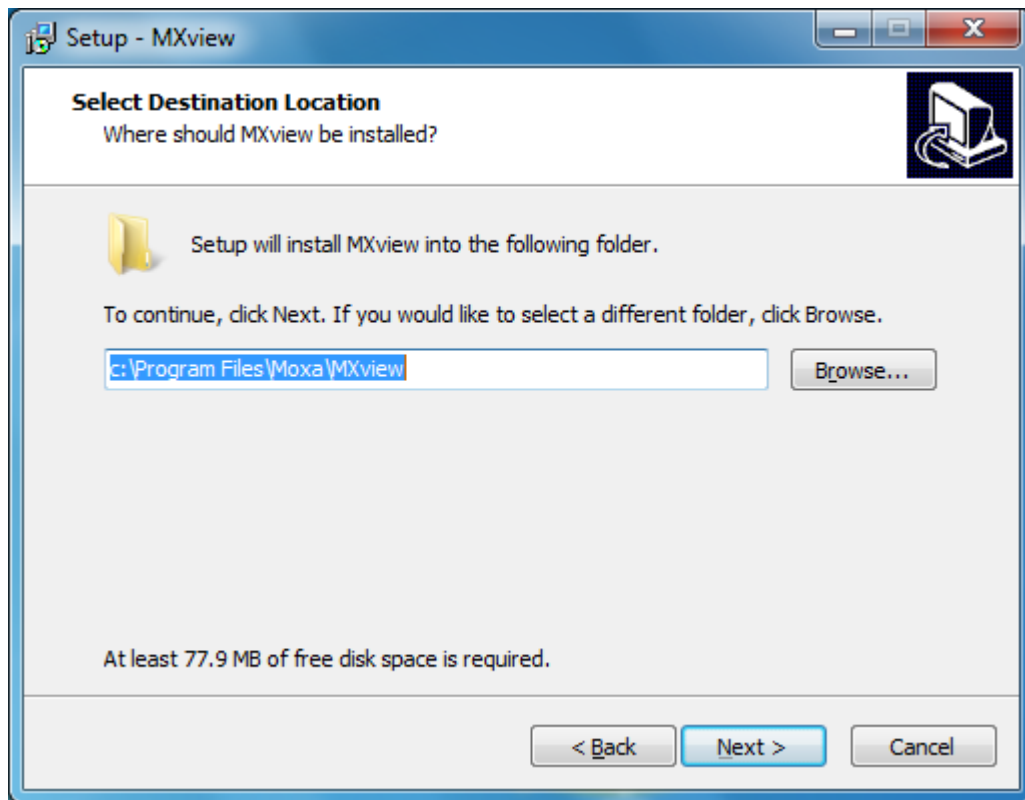
4. Select "I accept the agreement" and then click **Next**.



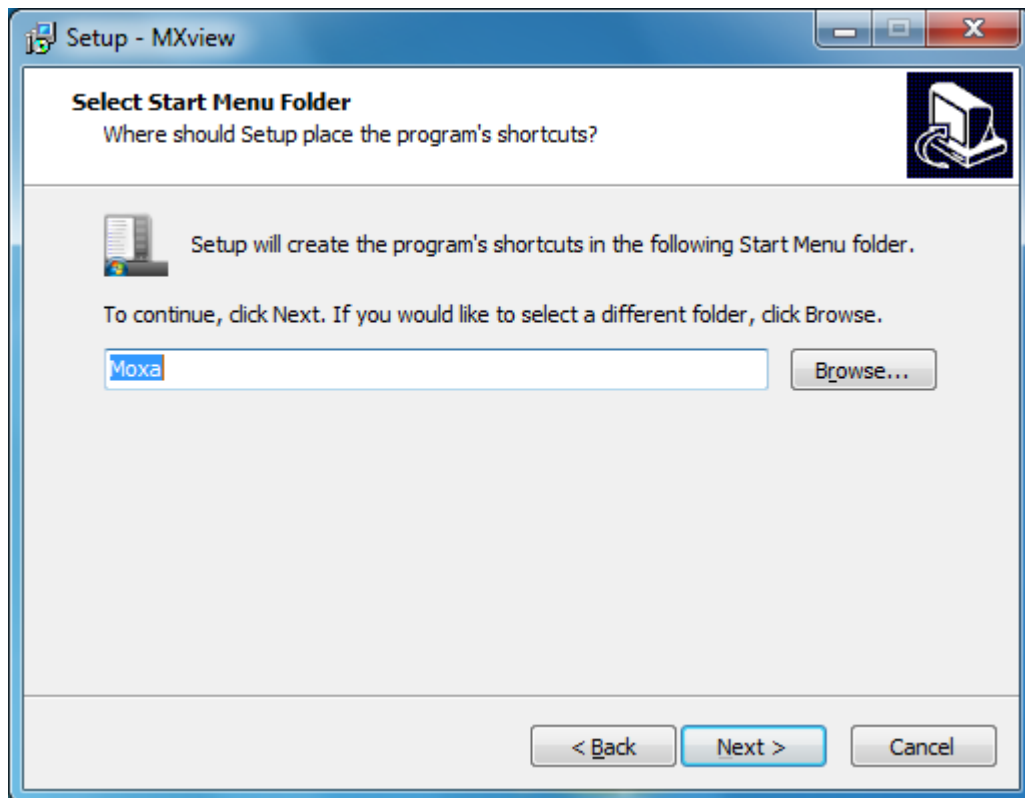
- 5. Click **Next** to continue



- 6. Click **Next** to continue.

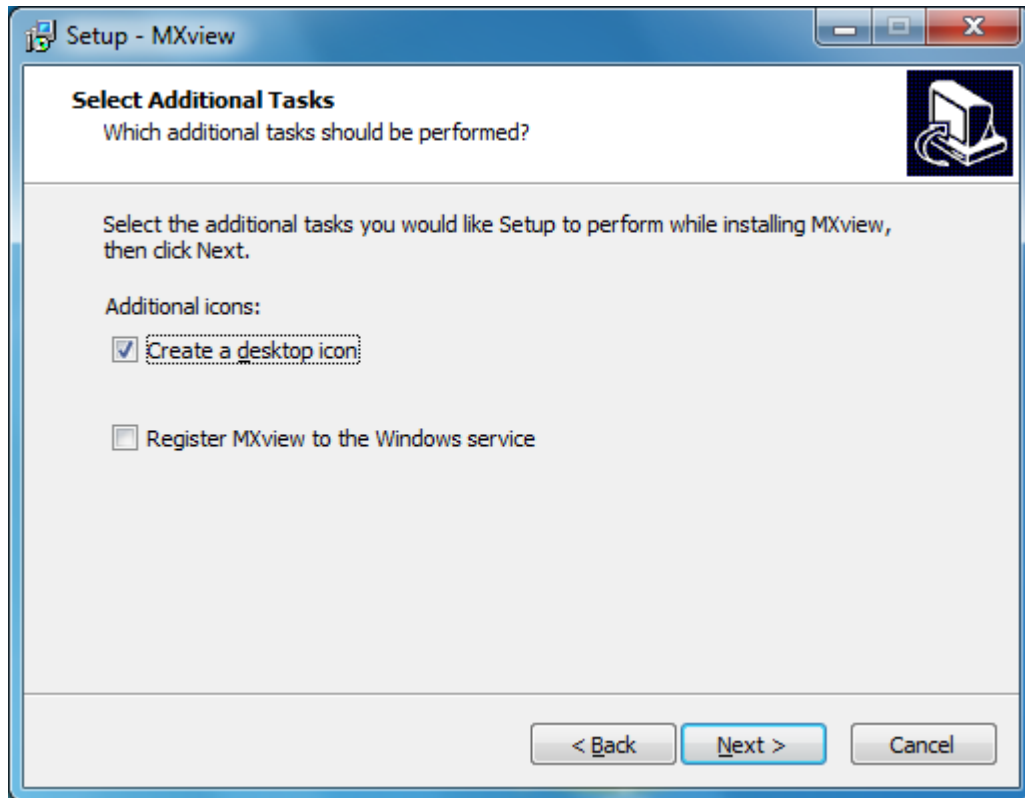


- 7. Click **Next** to continue.

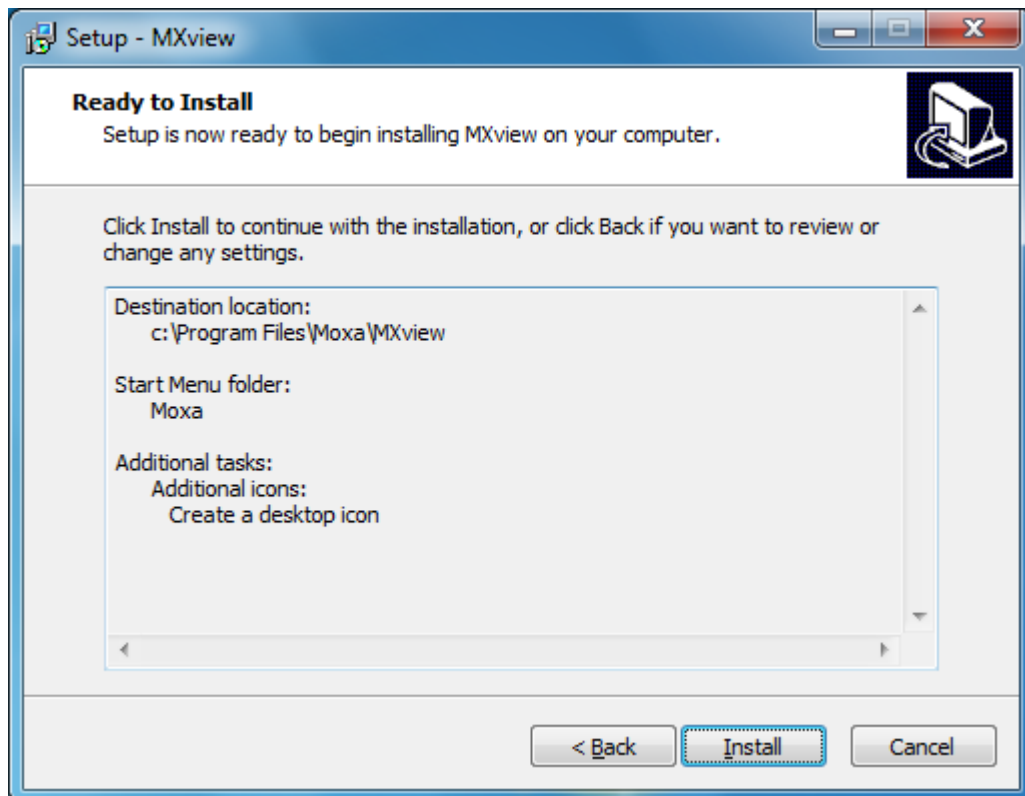


- 8. Click **Next** to continue.

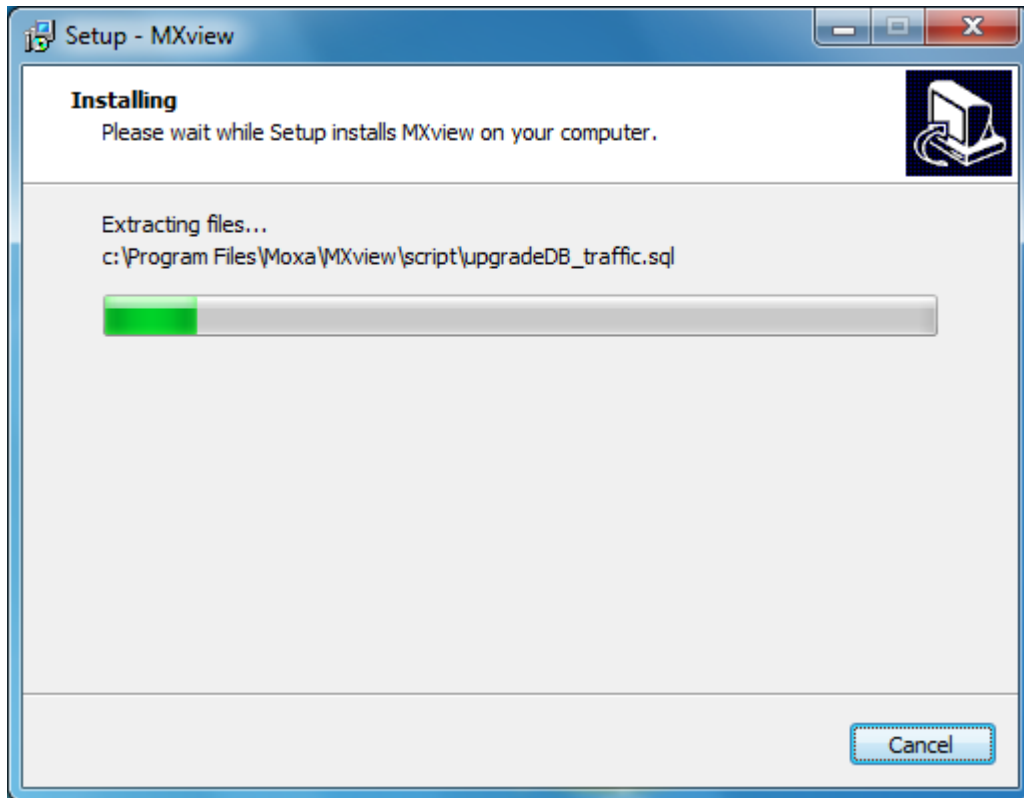




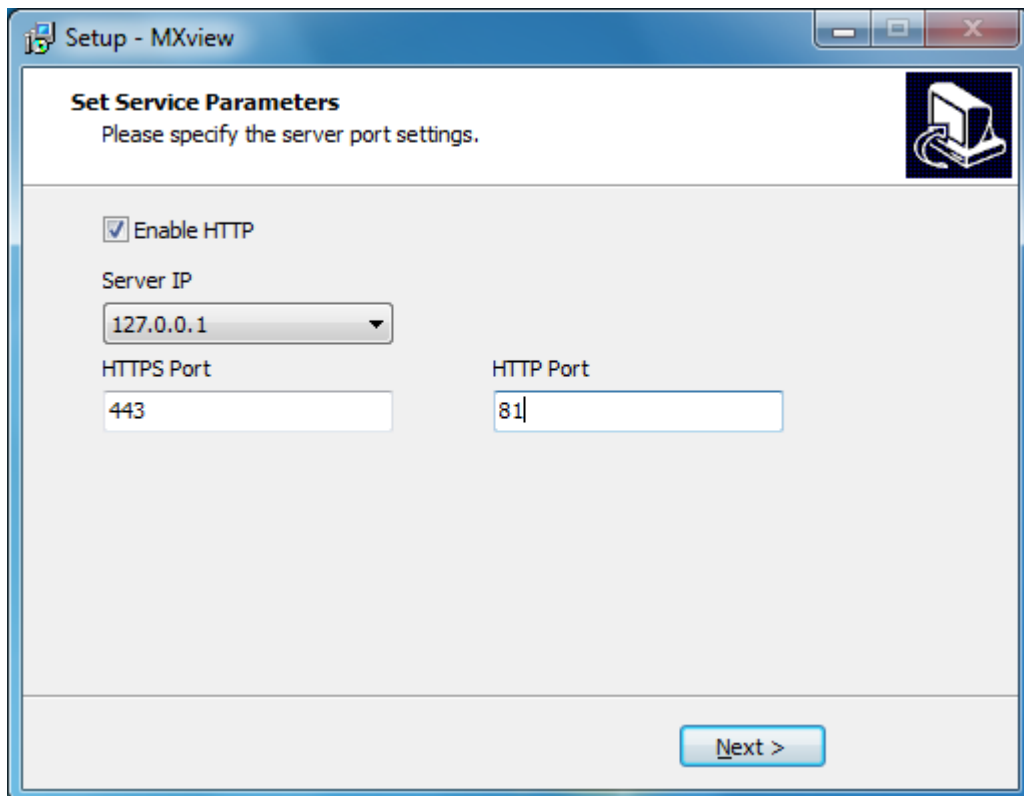
- 9. Click **Install** to continue.



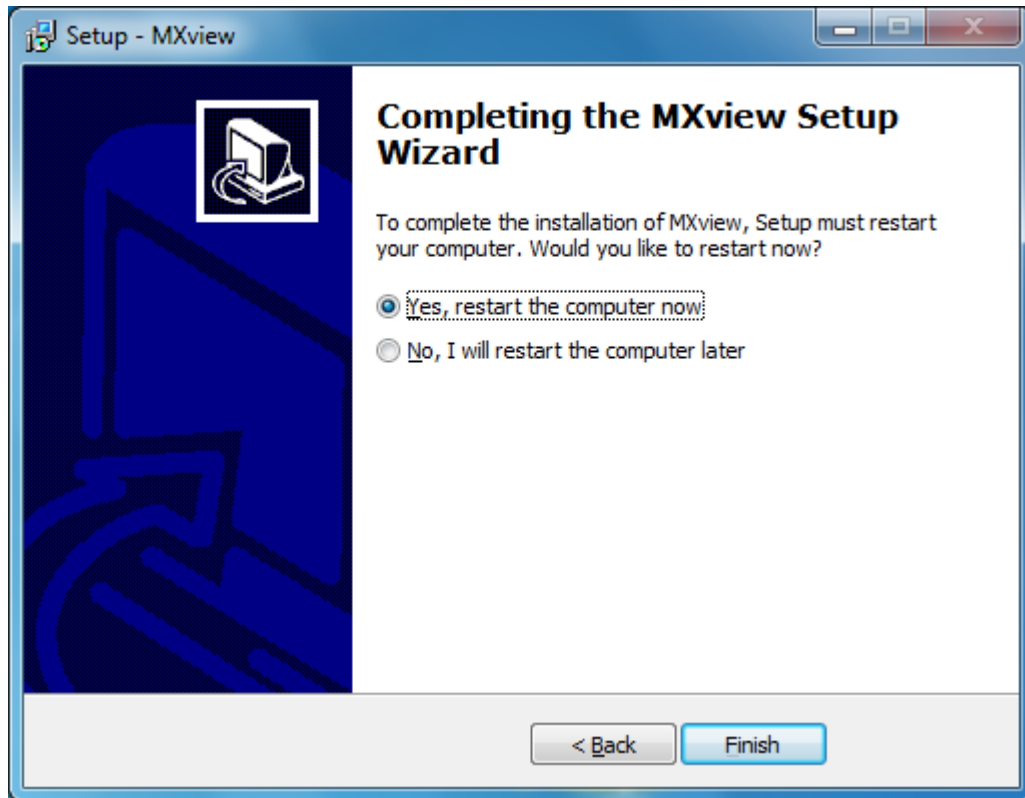
- 10. Wait while the program is being installed.



11. Change the HTTP port to the appropriate number for your setup (e.g., 81), and then click **Next** to continue.



12. Select "Yes, restart the computer now" and then click **Finish** to reboot the system.



13. After rebooting, the MXview shortcut will appear on your desktop.



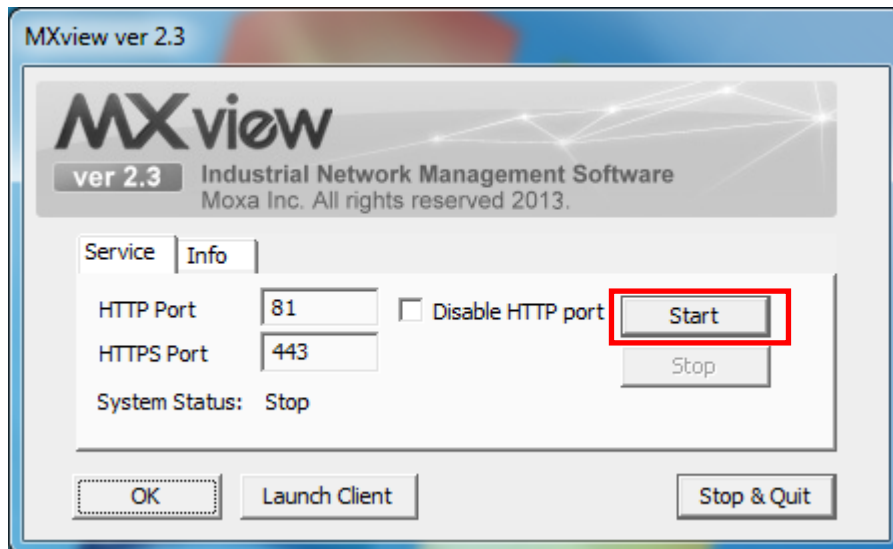
## Configuring MxView

Take the following steps to configure MXview:

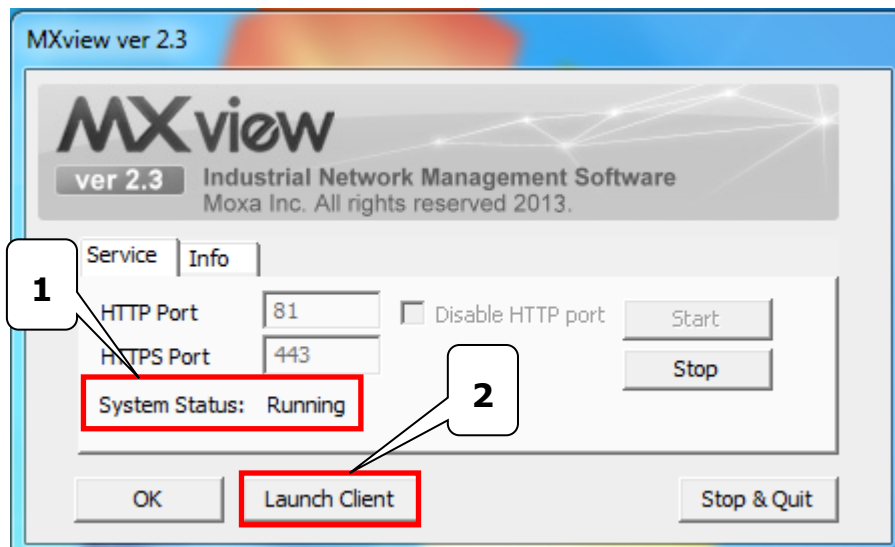
1. Double click the **MXview Service** shortcut on the desktop.



2. Click **Start** to continue.



3. Wait for **System Status** to be running, and then click **Launch Client**.



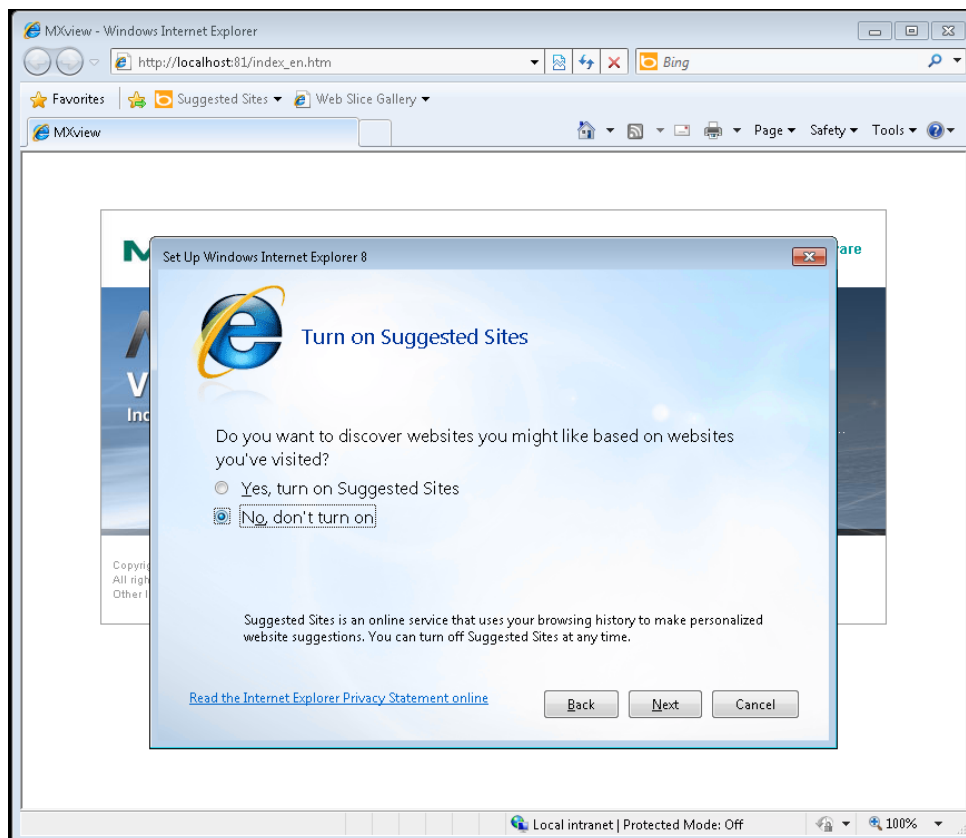
4. MXview will invoke Internet Explorer.

**NOTE** You will need to configure Internet Explorer the first time you launch MXview. Continue with Step 5 below to complete the configuration.

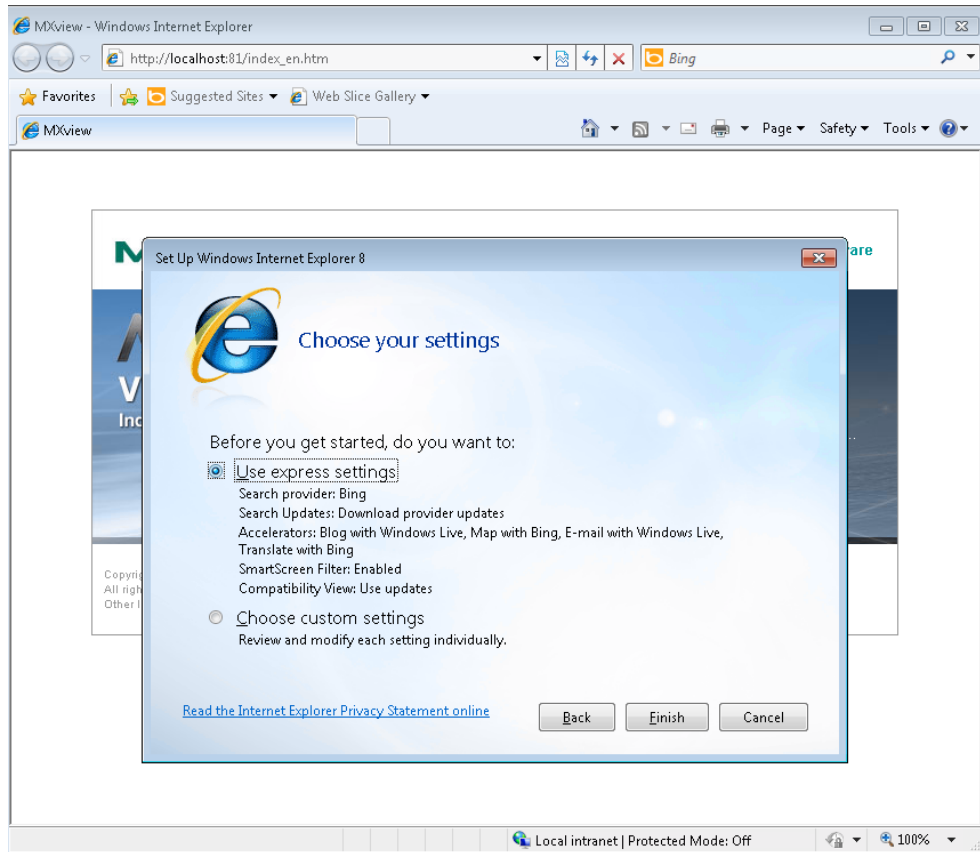
5. Click **Next** to continue.



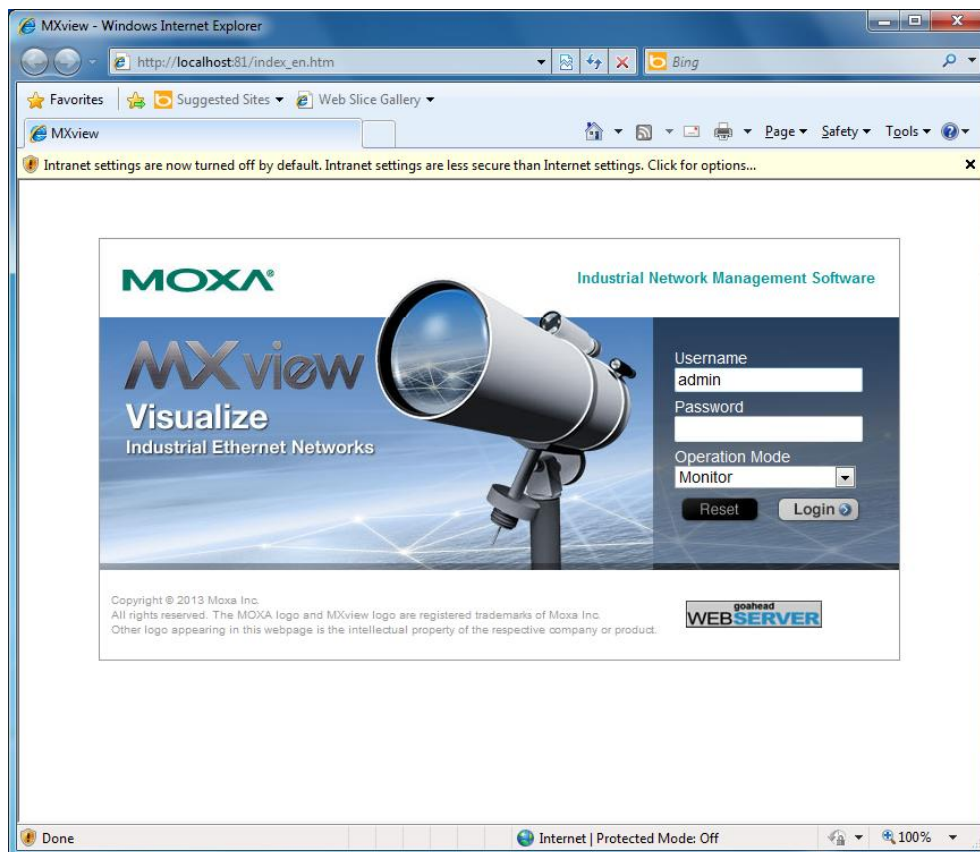
6. Select the "No, don't turn on" option, and then click **Next** to continue.



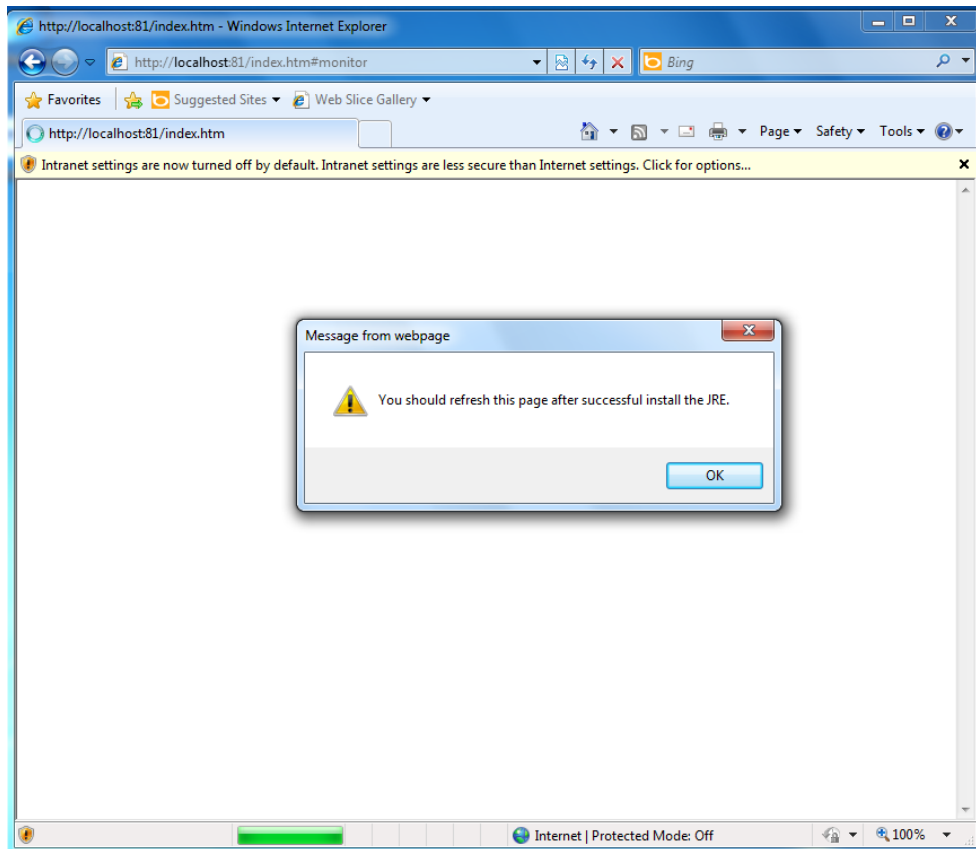
7. Select the "Use express settings" option, and then click **Finish** to complete the configuration.



8. To log in, type the default username (**admin**) in the Username field, and leave the password field blank. Click **Login** to continue

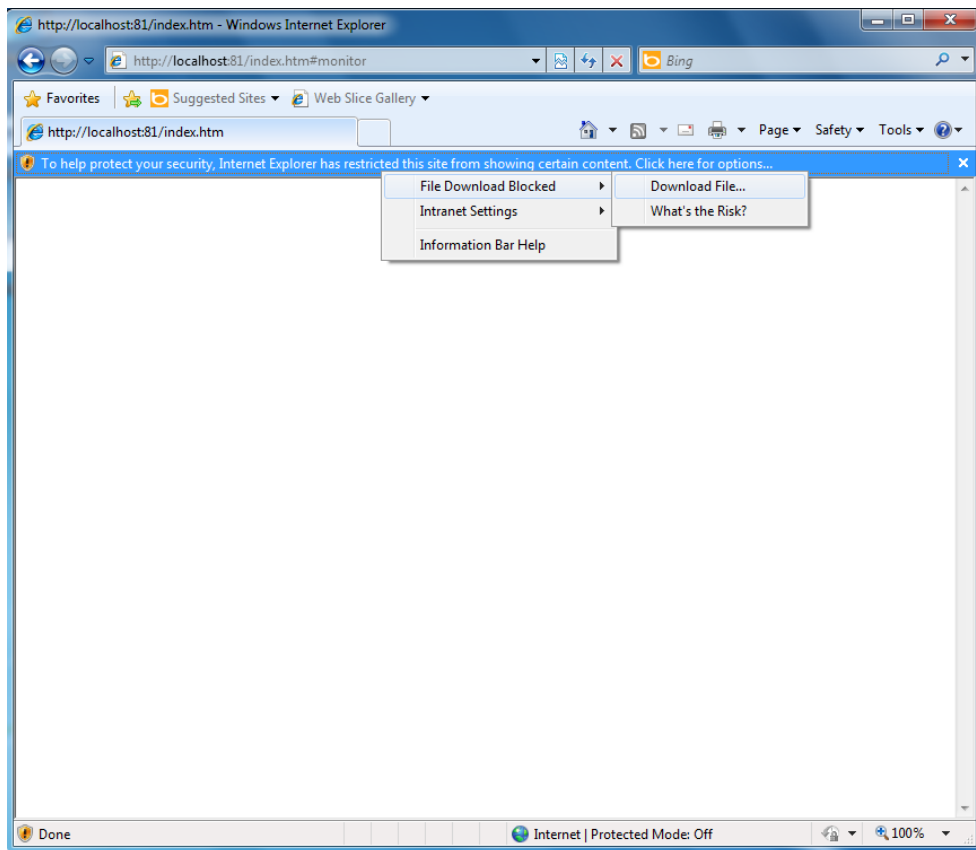


9. If you see the popup message "You should refresh this page after successful install the JRE." you will need to install the java runtime environment. Click **OK** to continue.

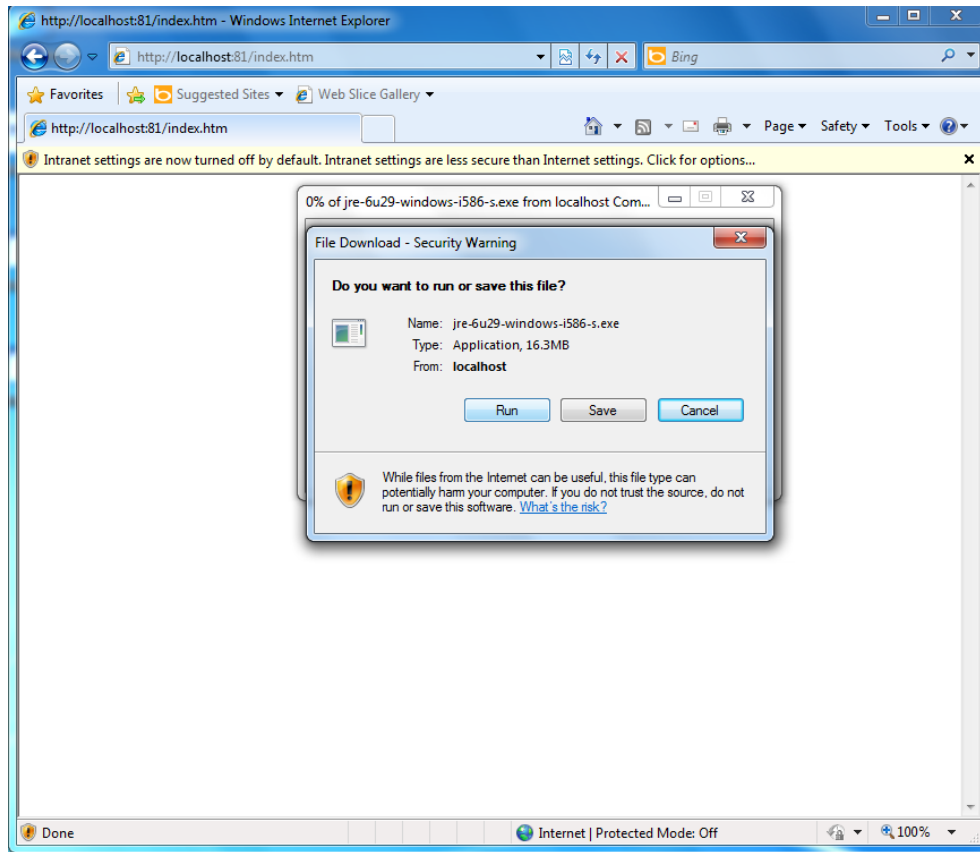


content error

10. Click the "Click here for options..." bar and select **File Download Blocked → Download File** to continue.

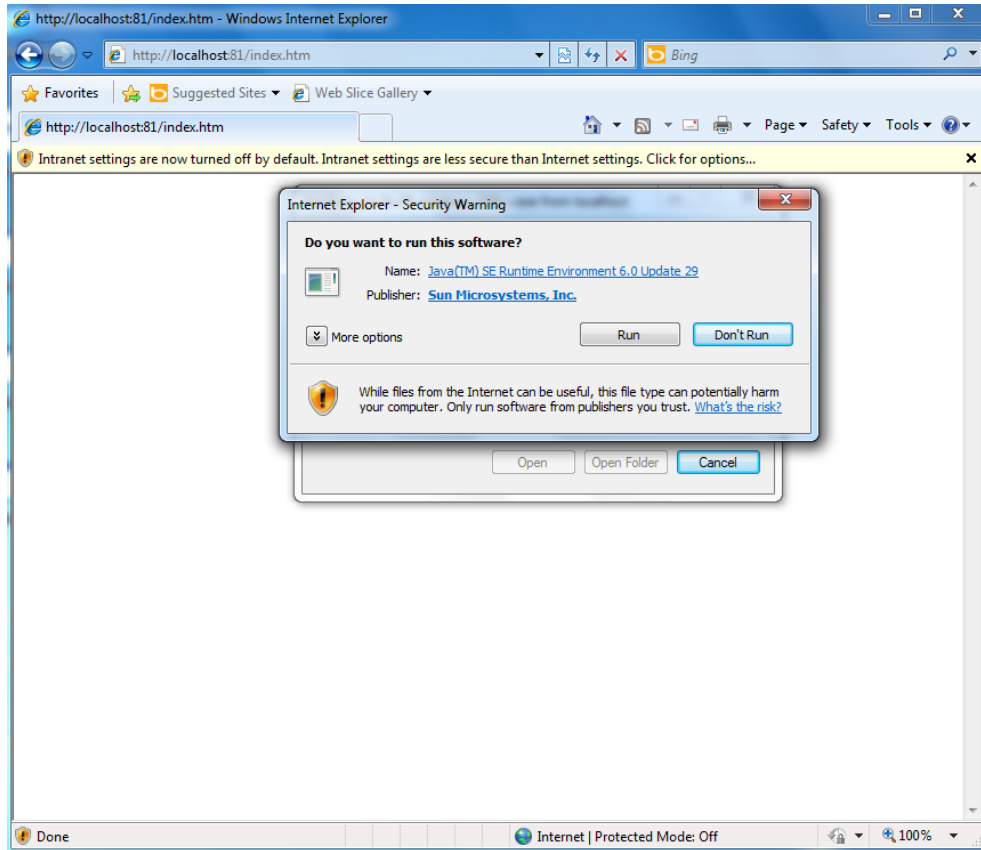


11. Click **Run** to download and install the Java Runtime Environment.

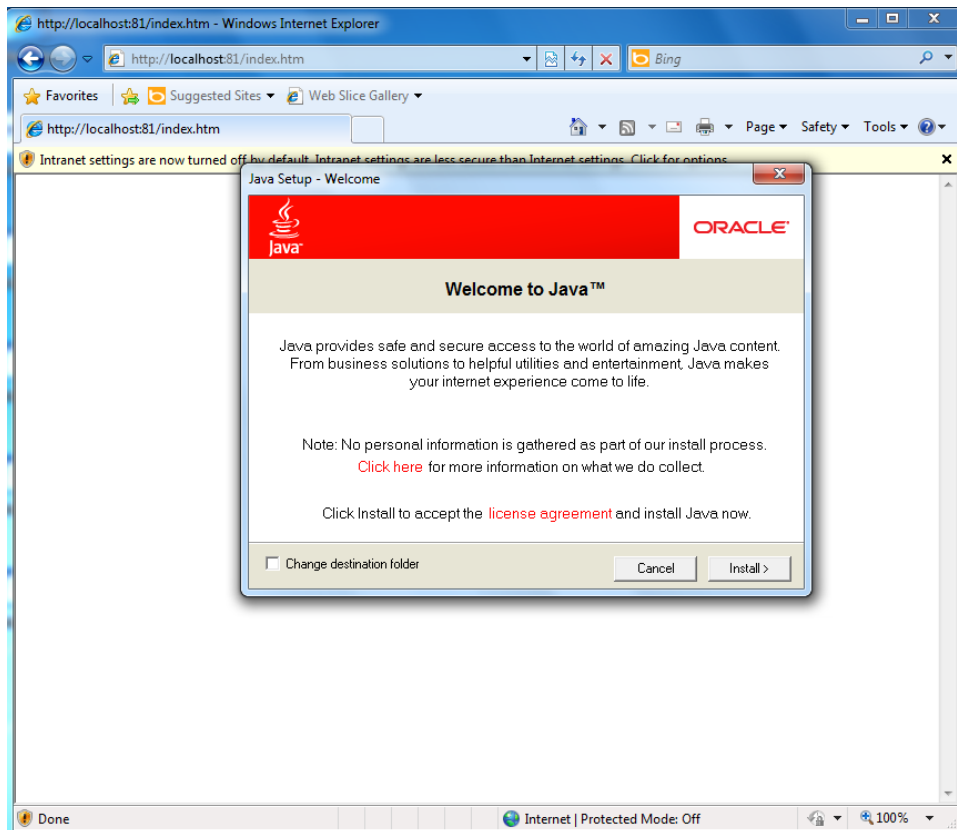




12. Click **Run** to continue.



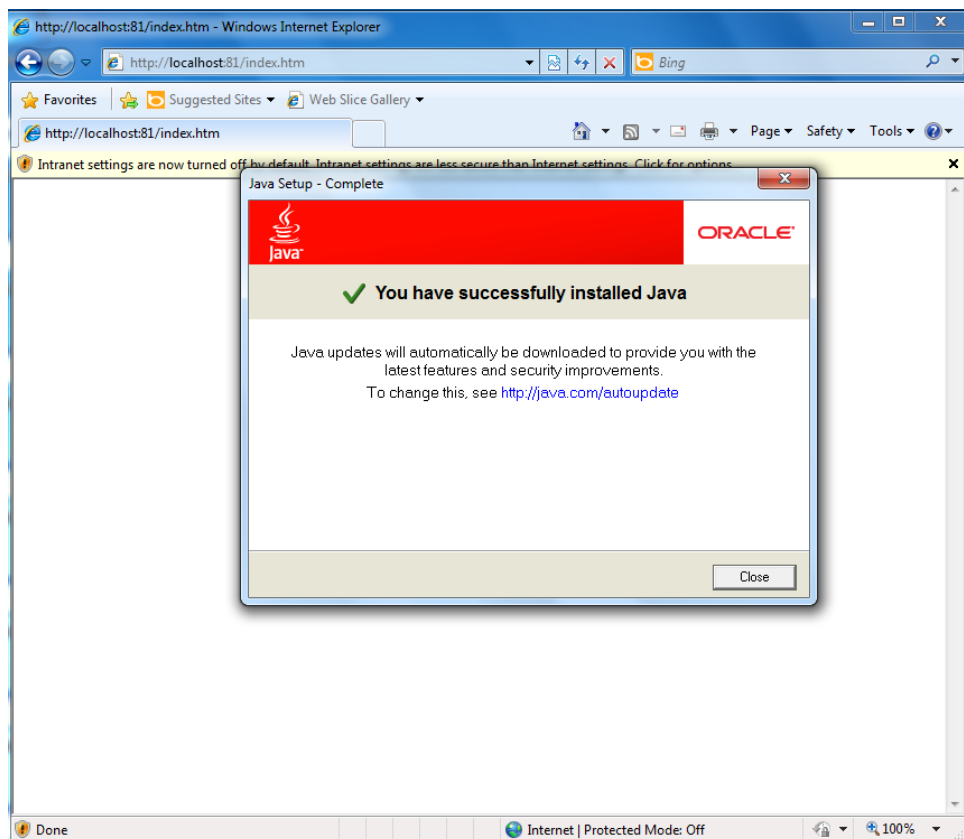
13. Click **Install** to continue.



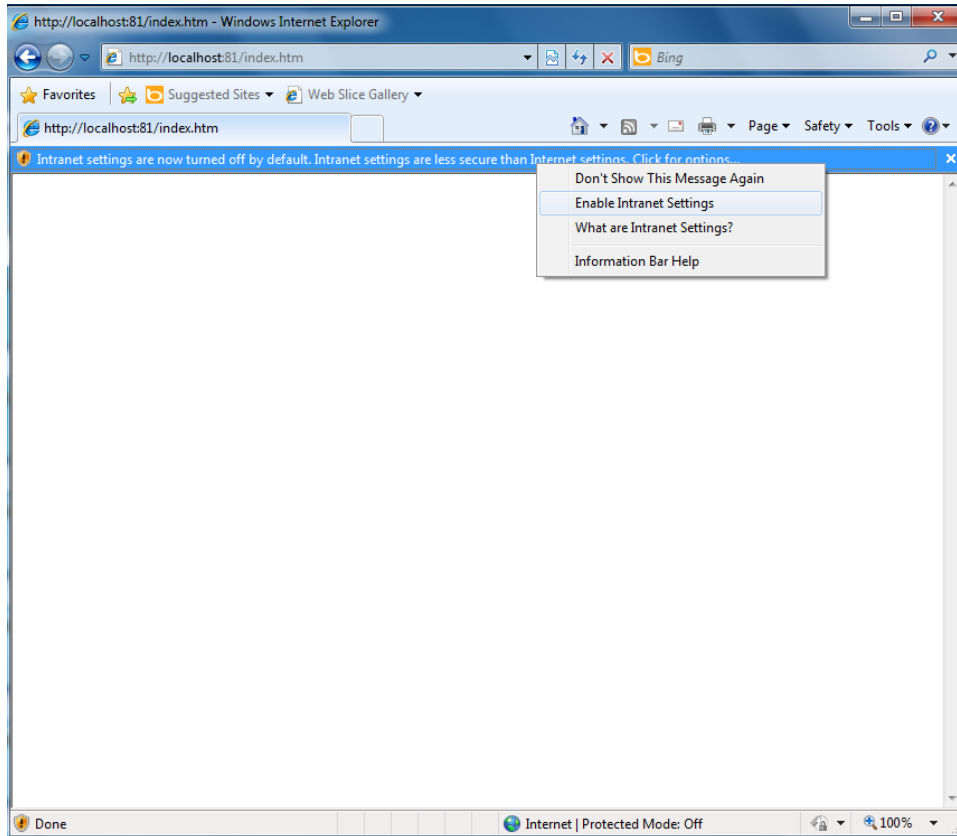
14. Wait while Java is installed.



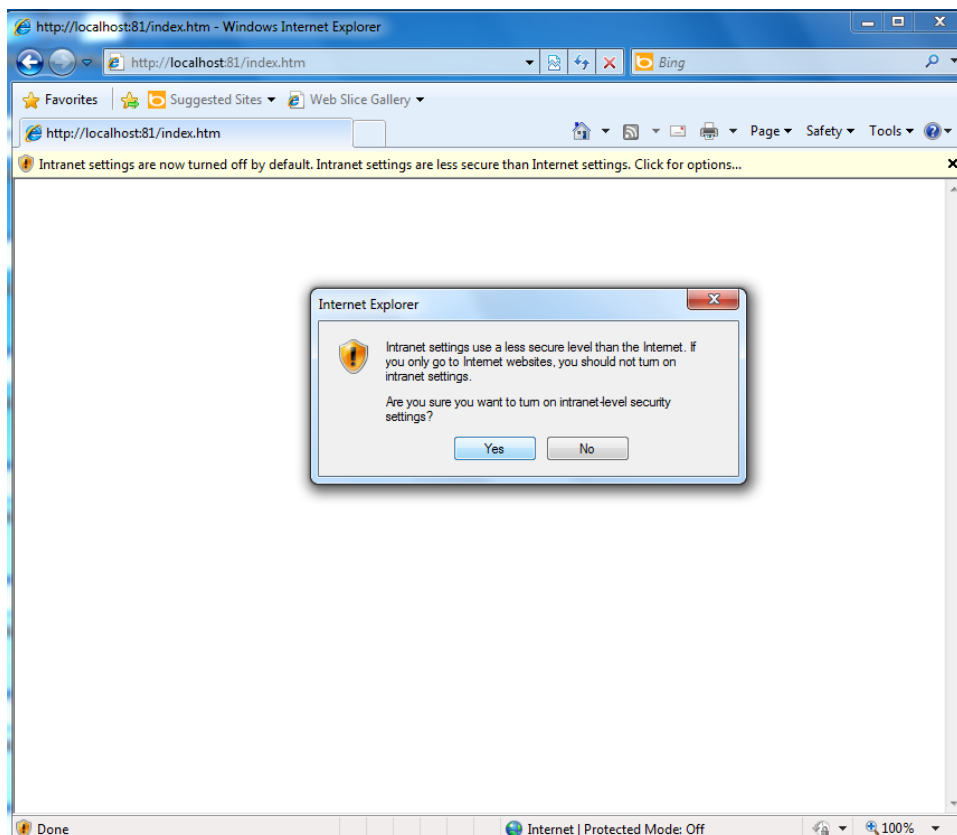
15. Click **Close** to complete the installation process.



- Click the "Click here for options..." button and then select **Enable Intranet Settings**.



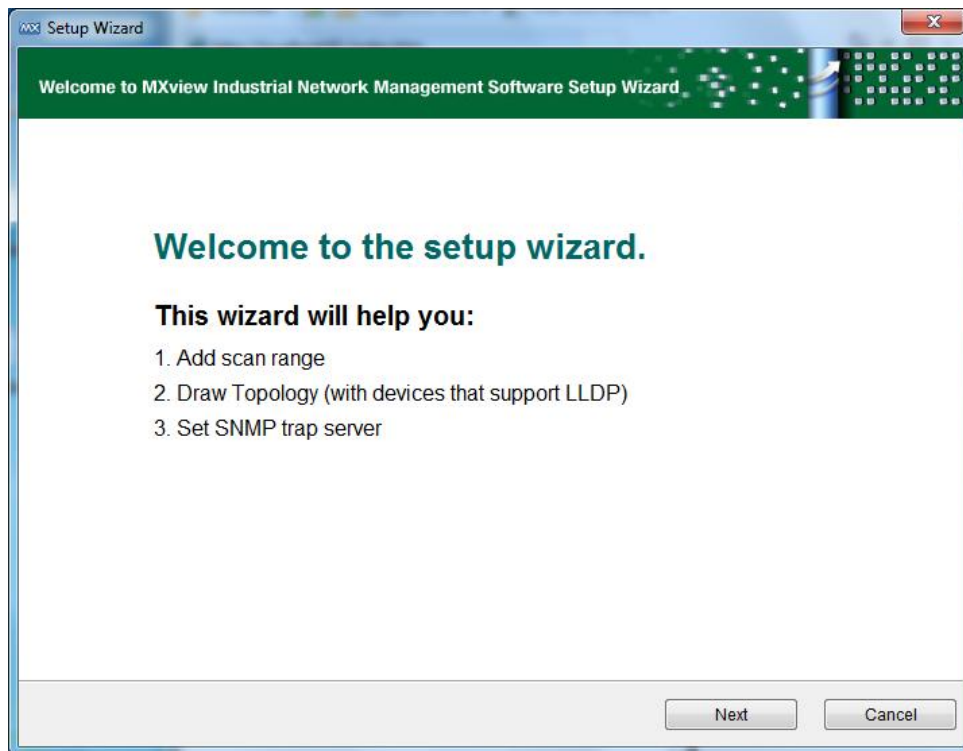
- Click **Yes** to continue.



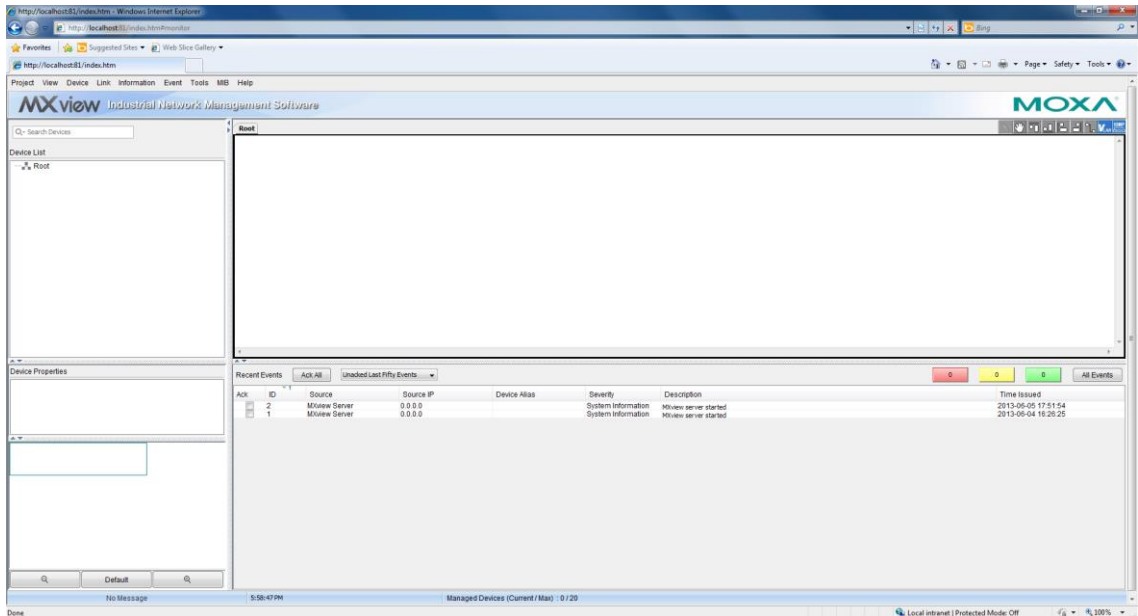
18. Click **Run** to continue.



19. Click **Next** to use the Setup Wizard to configure some basic settings, or click **Cancel** to immediately launch MXview first, and then configure the settings without using the Setup Wizard.



20. When MXview is launched, it should appear similar to what's shown in the following screenshot.



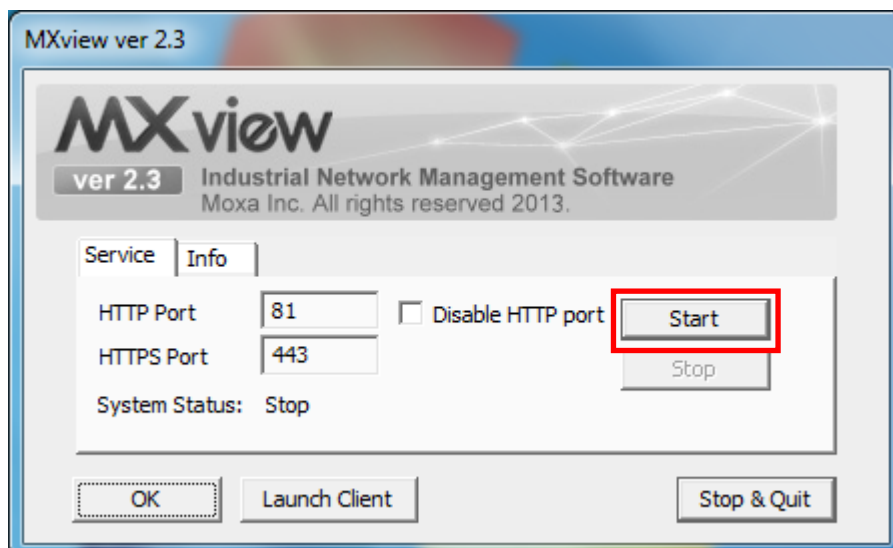
## Loading a Moxa SynMap MIB File

Take the following steps to load a Moxa SynMap MIB file:

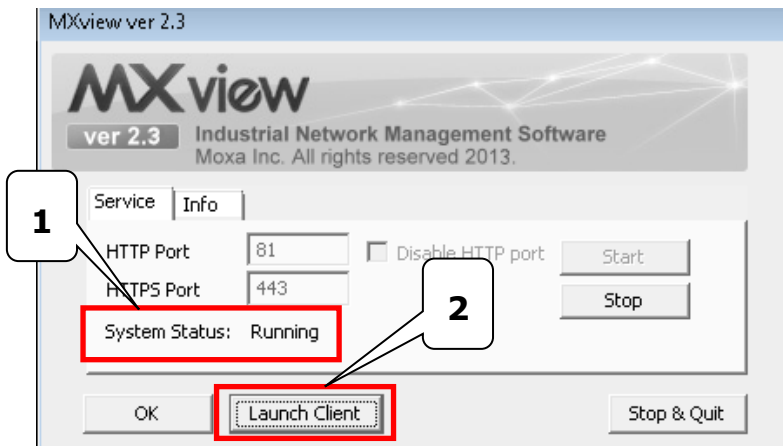
1. Click the **MxView Service** shortcut on the desktop.



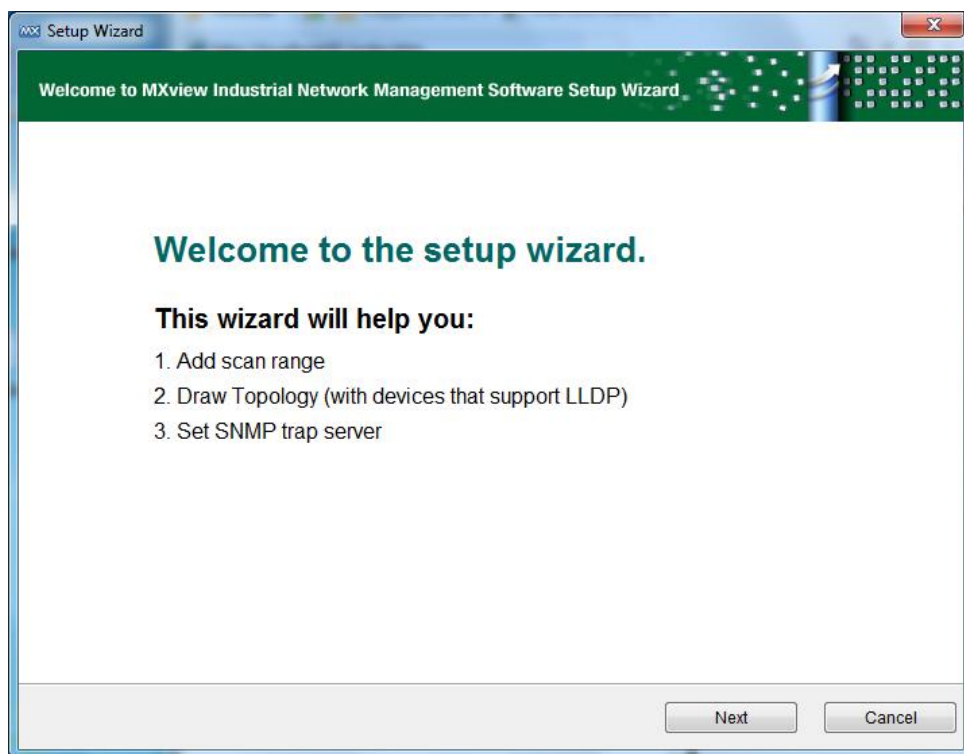
2. Click **Start**.



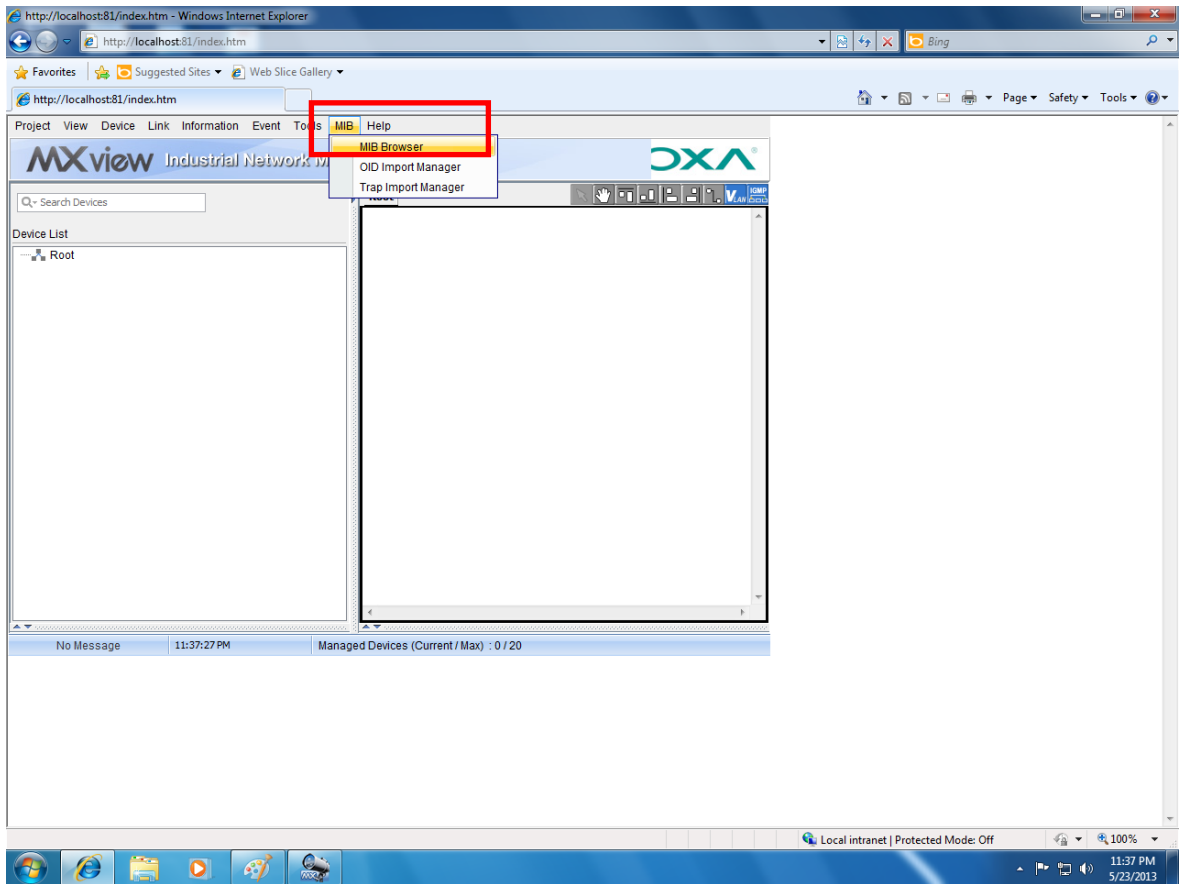
3. Wait for **System Status** to be running, and then select **Launch Client** to continue.



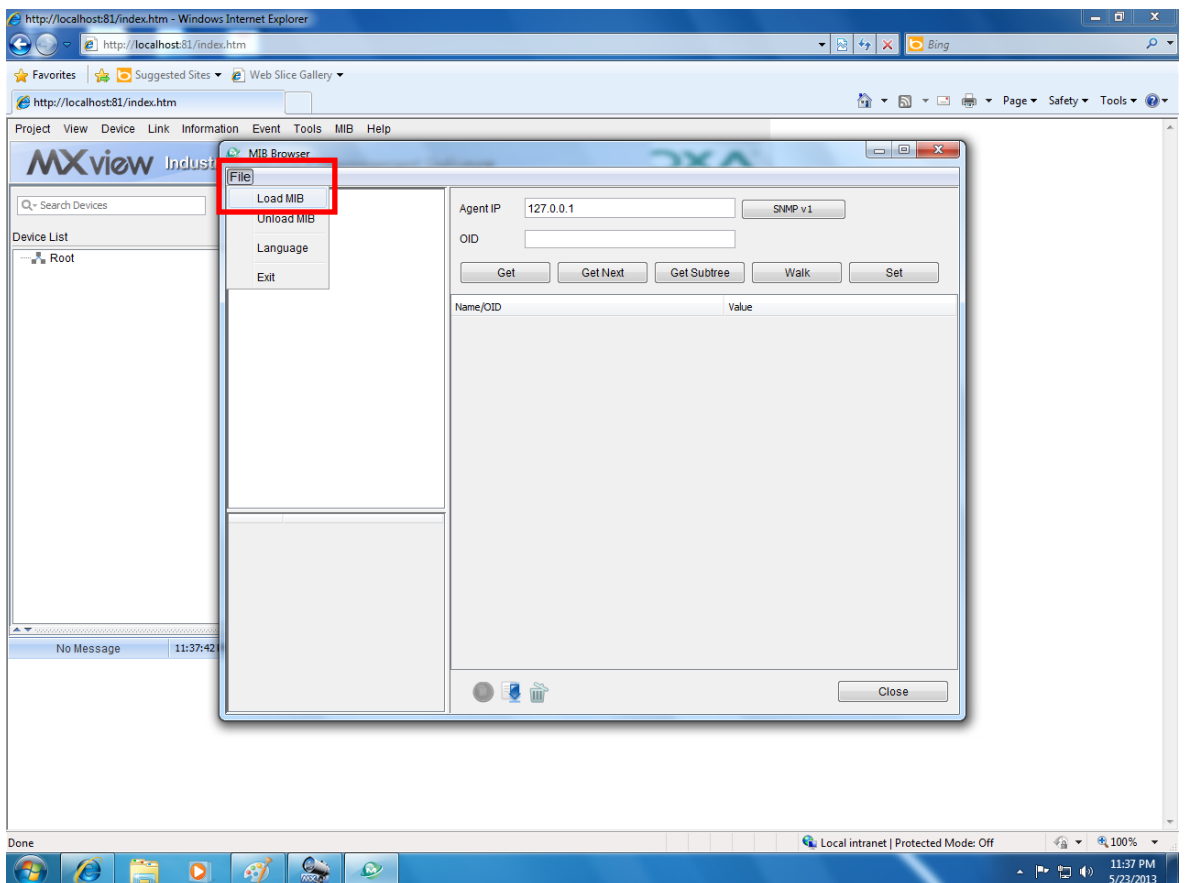
4. Click **Cancel**.



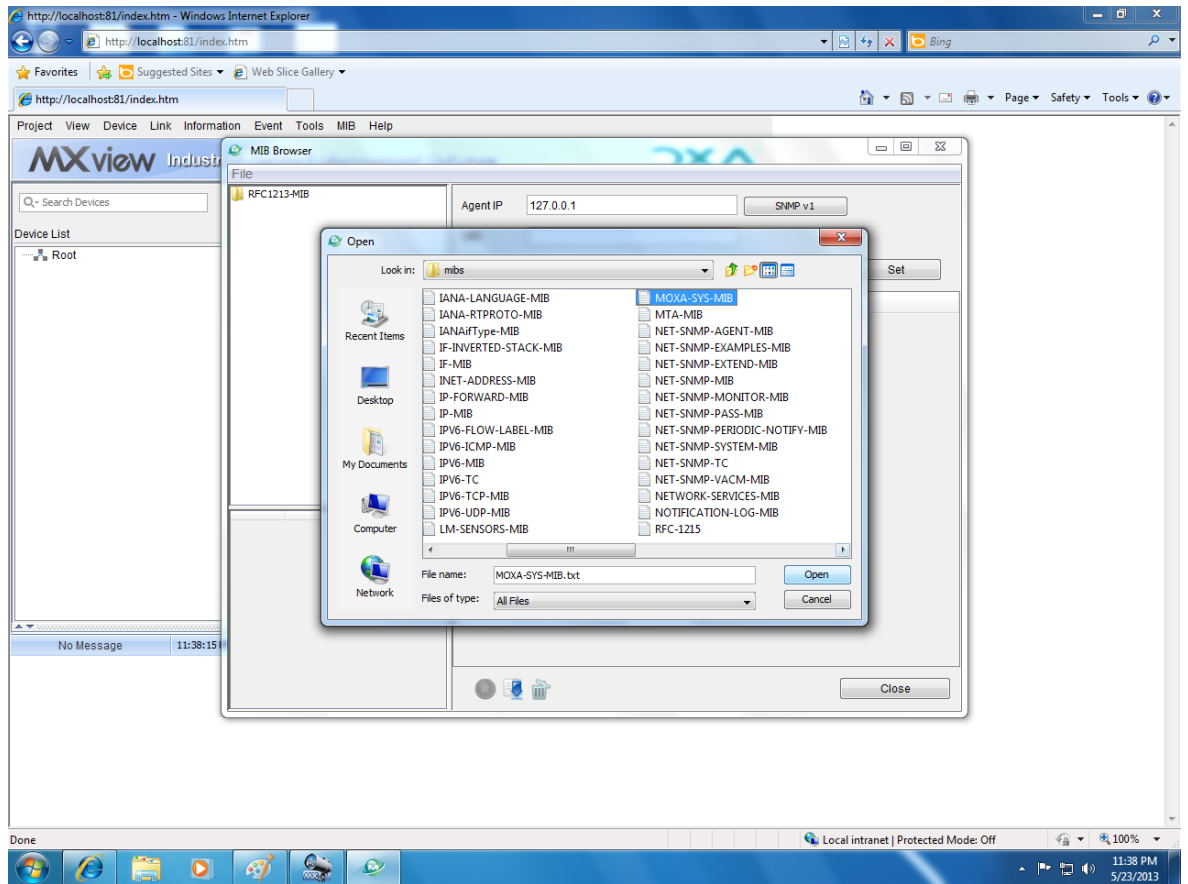
- 5. On the toolbar, click **MIB** → **MIB Browser**.



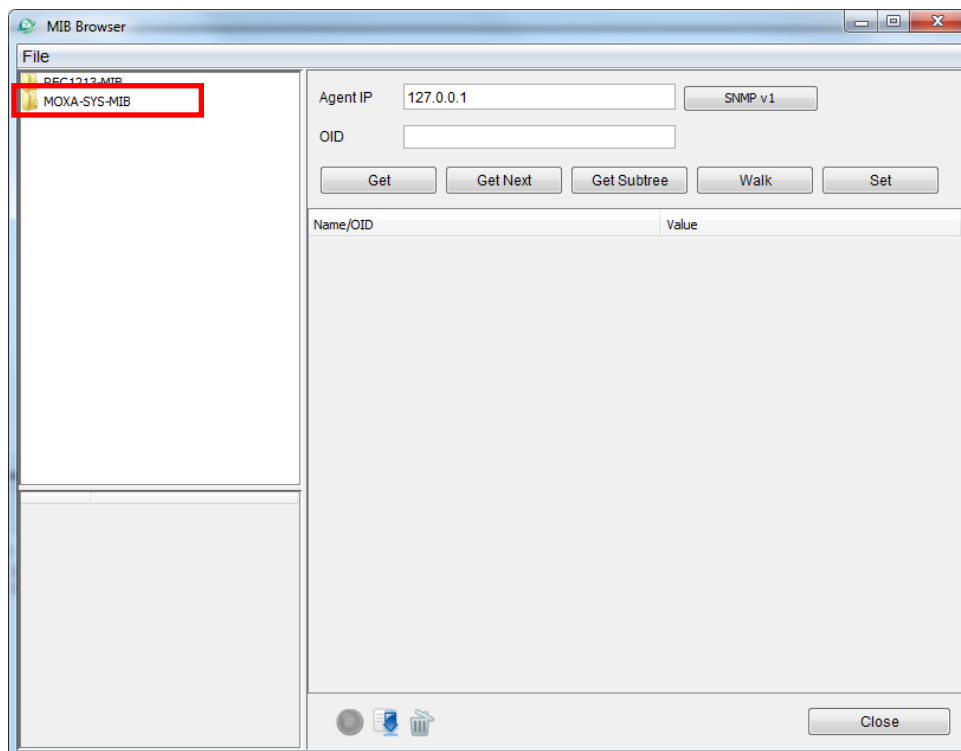
- 6. In the MIB Browser popup window, click **File** → **Load MIB**.



7. Navigate to **c:\usr\share\snmp\mibs\MOXA-SYS-MIB.txt**.



8. Check if Moxa SynMap MIB appears in MIB Browser.





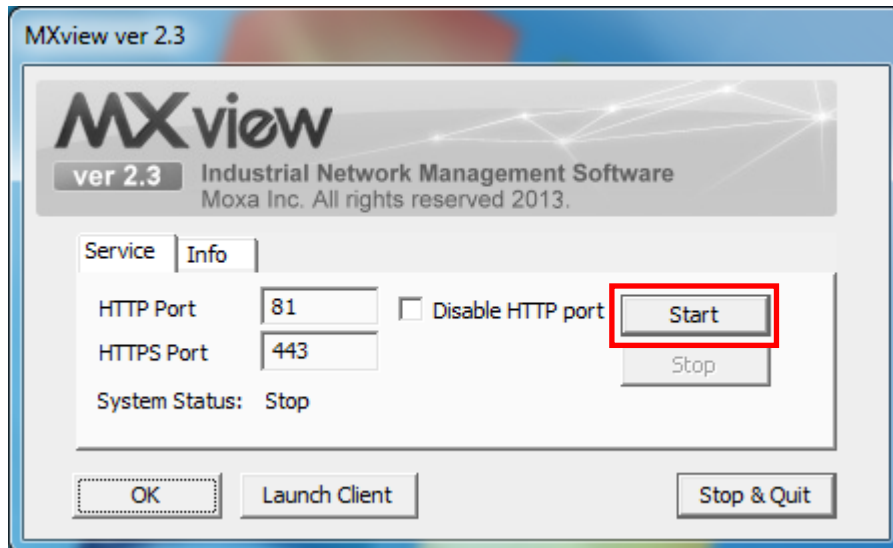
## Loading a Host Resource MIB File

Take the following steps to load a Moxa SynMap MIB file:

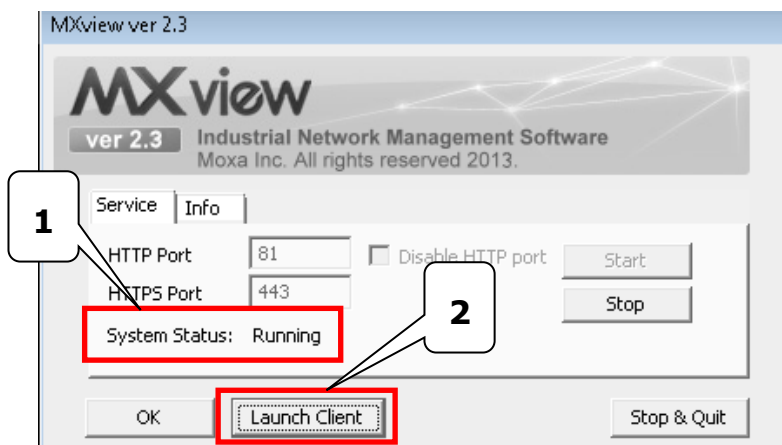
1. Click the **MxView Service** shortcut on the desktop.



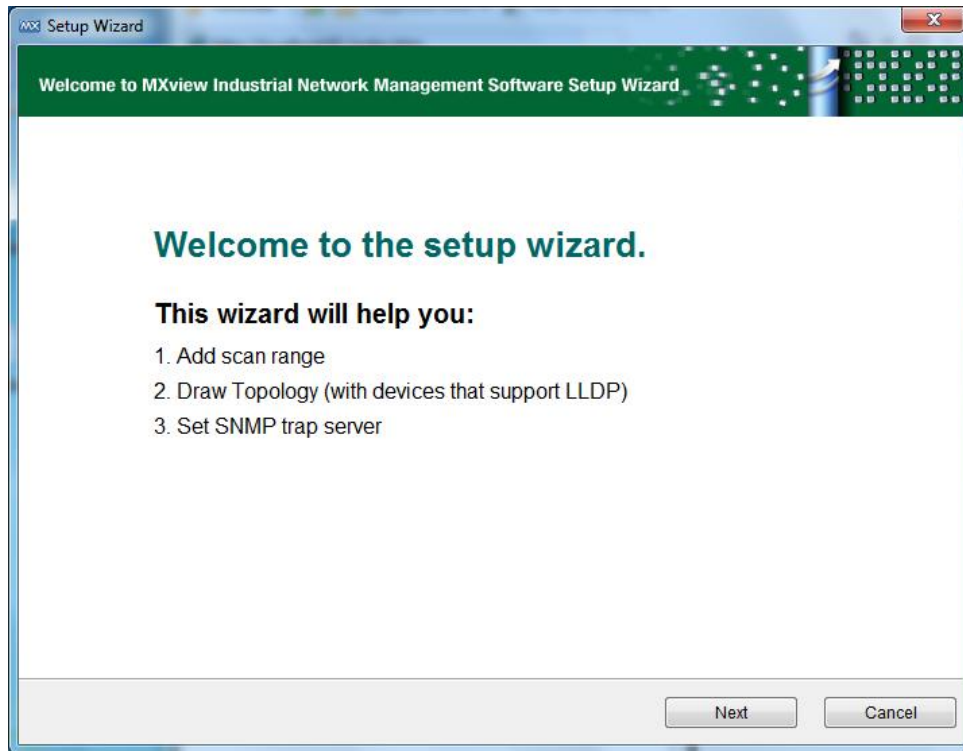
2. Click **Start**.



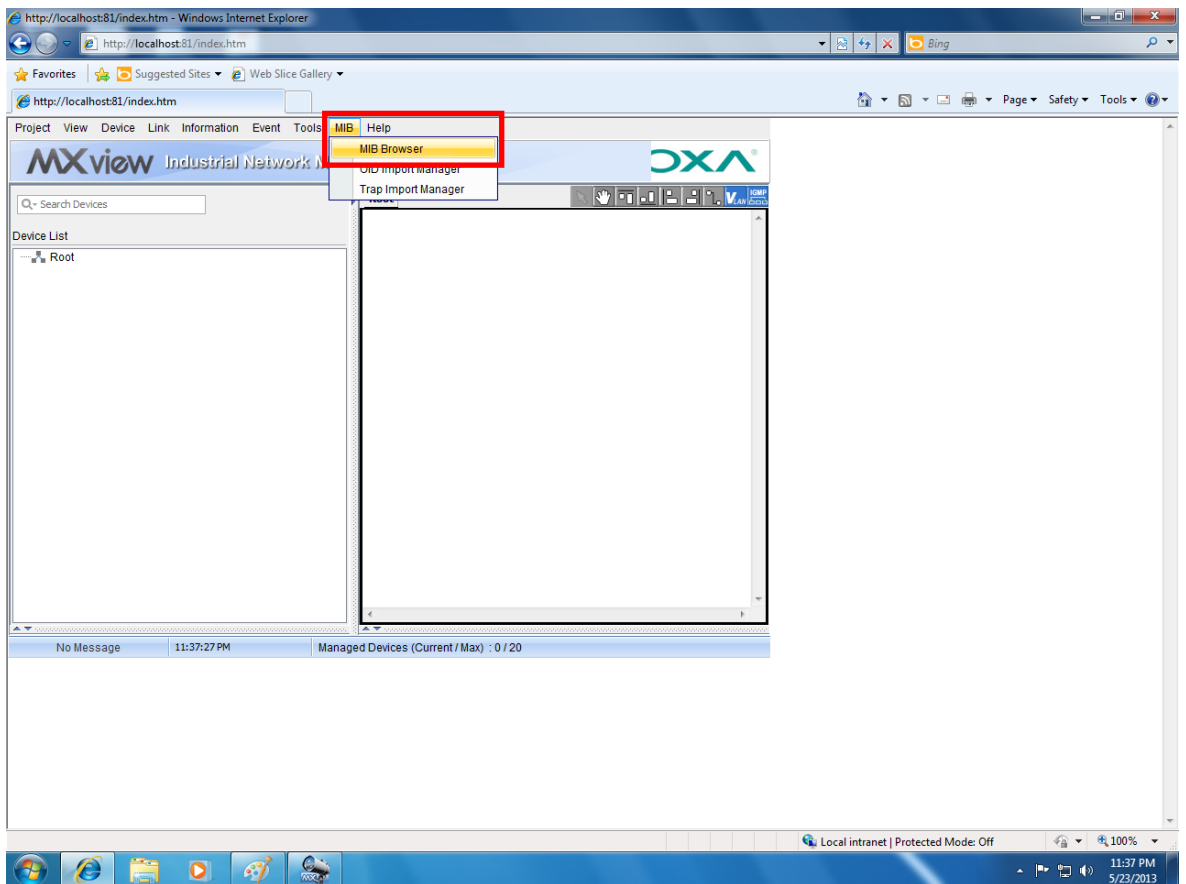
3. Wait for **System Status** to be running, and then select **Launch Client** to continue.



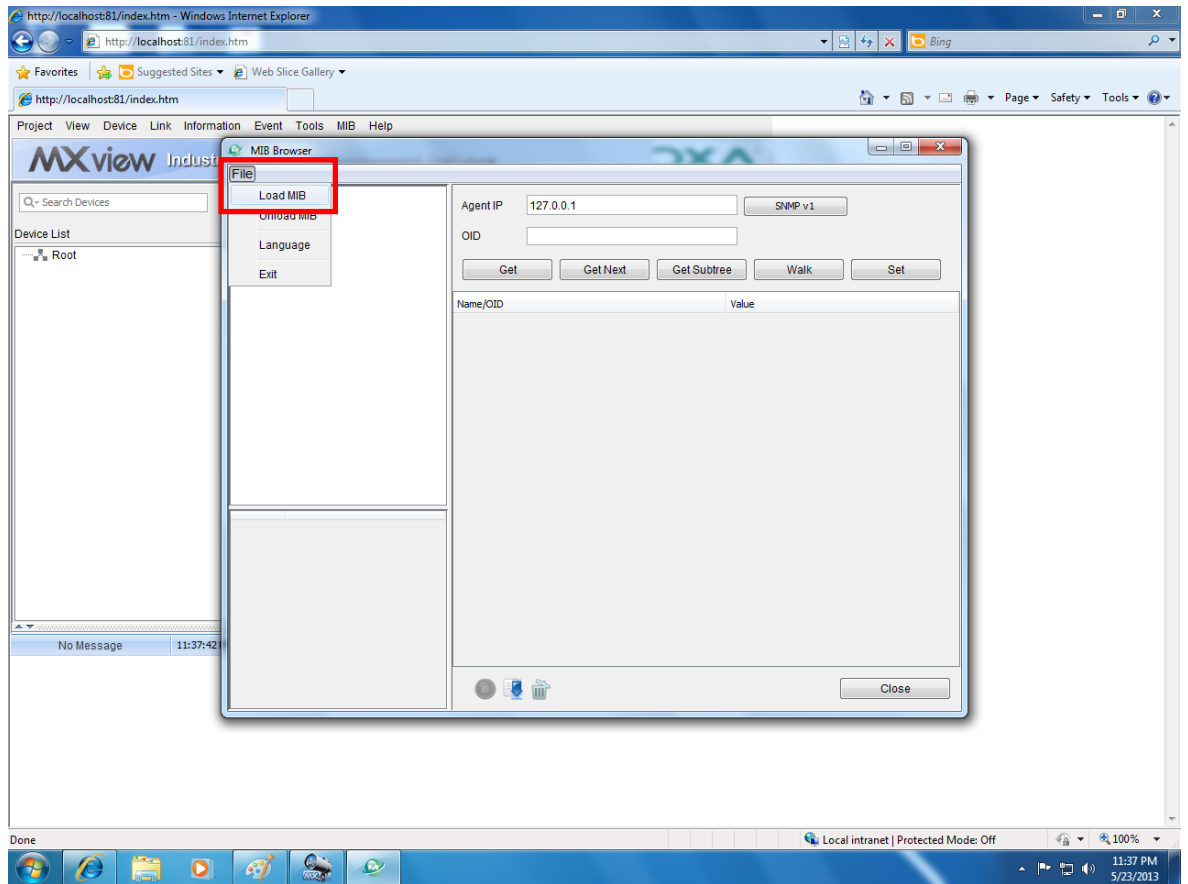
- 4. Click **Cancel**.



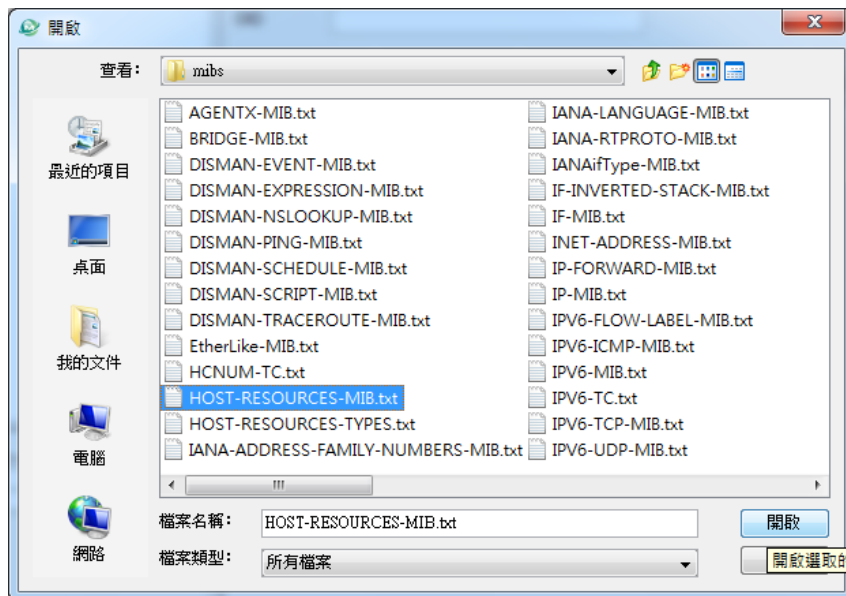
- 5. On the toolbar, click **MIB → MIB Browser**.



- In the MIB Browser popup window, click **File** → **Load MIB**.

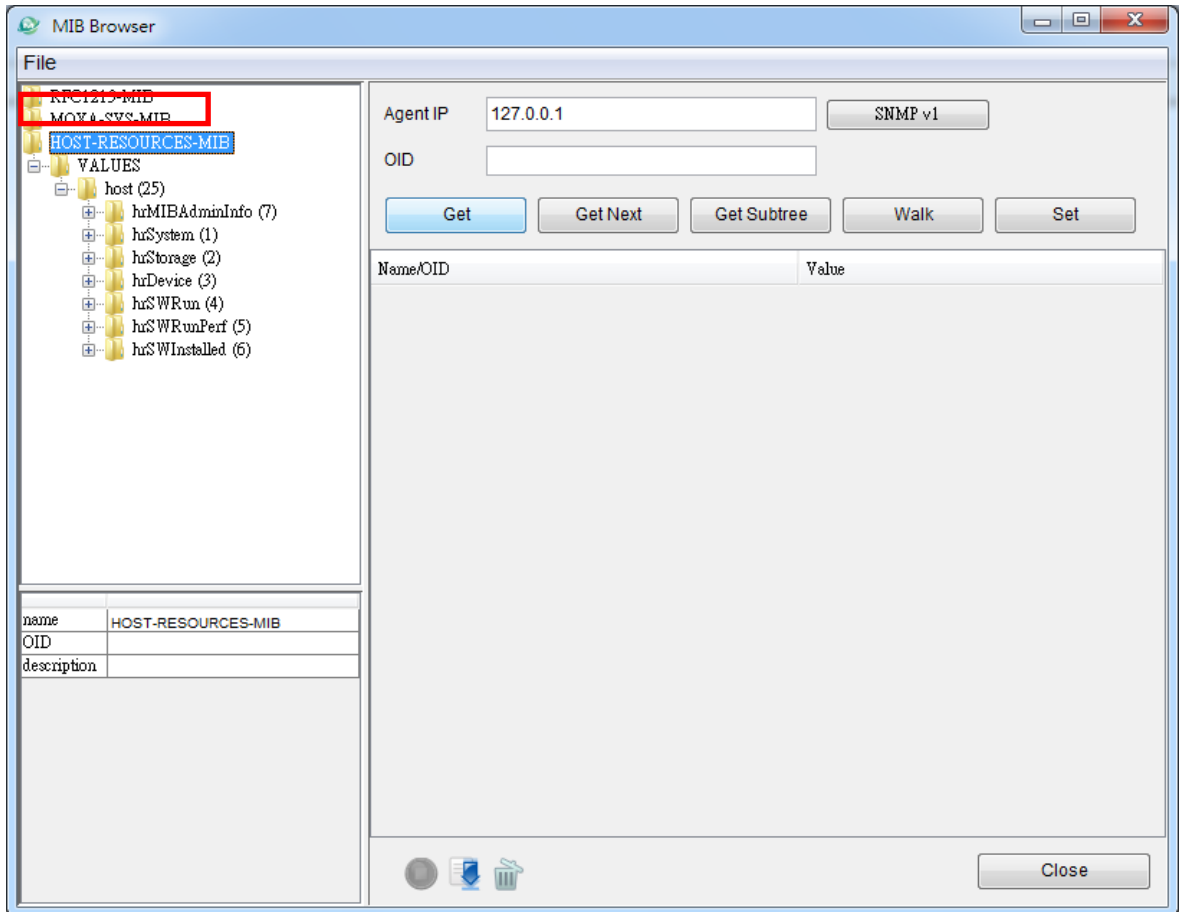


- Navigate to **c:\usr\share\snmp\mibs\HOST-RESOURCES-MIB.txt**.



has Chinese text

8. Check if HOST-RESOURCES MIB appears in MIB Browser.



## Using Moxa SynMap OIDs

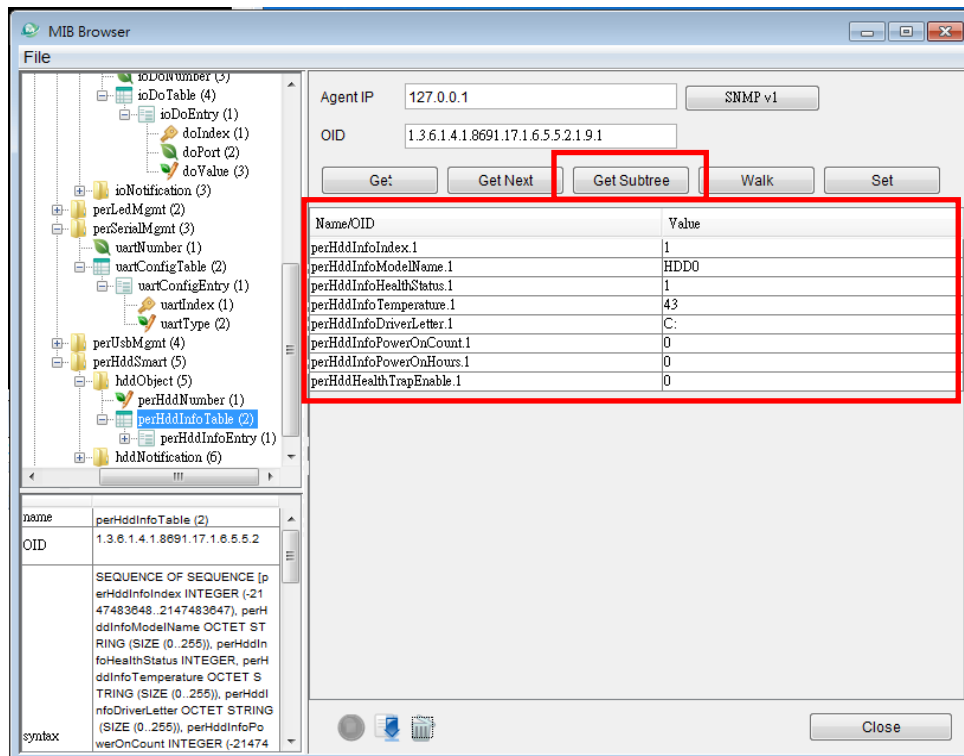
Take the following steps to use Moxa SynMap OIDs.

1. Try to get the disk status:

Double-click

**MOXA-SYS-MIB\VALUES\moxa\embeddedComputer\moxaSystem\peripheralMgmt\perHdds  
mart.**

2. Click **GetSubTree** to display the information. If you can get the information, your MxView settings are correct.



## Using HOST RESOURCE OIDs

Take the following these steps to use **HOST RESOURCE OIDs**.

1. Try to get the disk usage:  
 Double-click **HOST-RESOURCES-MIB\VALUES\host\hrStorage\hrStorageTable\hrStorageEntry**.

2. Select **GetSubTree** to display the information. If you can get the information, your MxView settings are correct.

The screenshot shows the MIB Browser application window. The left pane displays a tree view of MIB objects, with **hrStorageEntry (1)** selected. The right pane shows the configuration for the selected object, including Agent IP (192.168.30.139), OID (1.3.6.1.2.1.25.2.3.1.7.3), and buttons for Get, Get Next, Get Subtree, Walk, and Set. Below the configuration is a table of Name/OID and Value pairs.

Name/OID	Value
hrStorageIndex.1	1
hrStorageIndex.2	2
hrStorageIndex.3	3
hrStorageType.1	1.3.6.1.2.1.25.2.1.4
hrStorageType.2	1.3.6.1.2.1.25.2.1.3
hrStorageType.3	1.3.6.1.2.1.25.2.1.2
hrStorageDescr.1	C:\Label: Serial Number 3620e9a1
hrStorageDescr.2	Virtual Memory
hrStorageDescr.3	Physical Memory
hrStorageAllocationUnits.1	4096
hrStorageAllocationUnits.2	65536
hrStorageAllocationUnits.3	65536
hrStorageSize.1	14384127
hrStorageSize.2	87279
hrStorageSize.3	43653
hrStorageUsed.1	3325567
hrStorageUsed.2	12750
hrStorageUsed.3	13139
hrStorageAllocationFailures.1	0
hrStorageAllocationFailures.2	0
hrStorageAllocationFailures.3	0

Below the table, the object's details are shown:

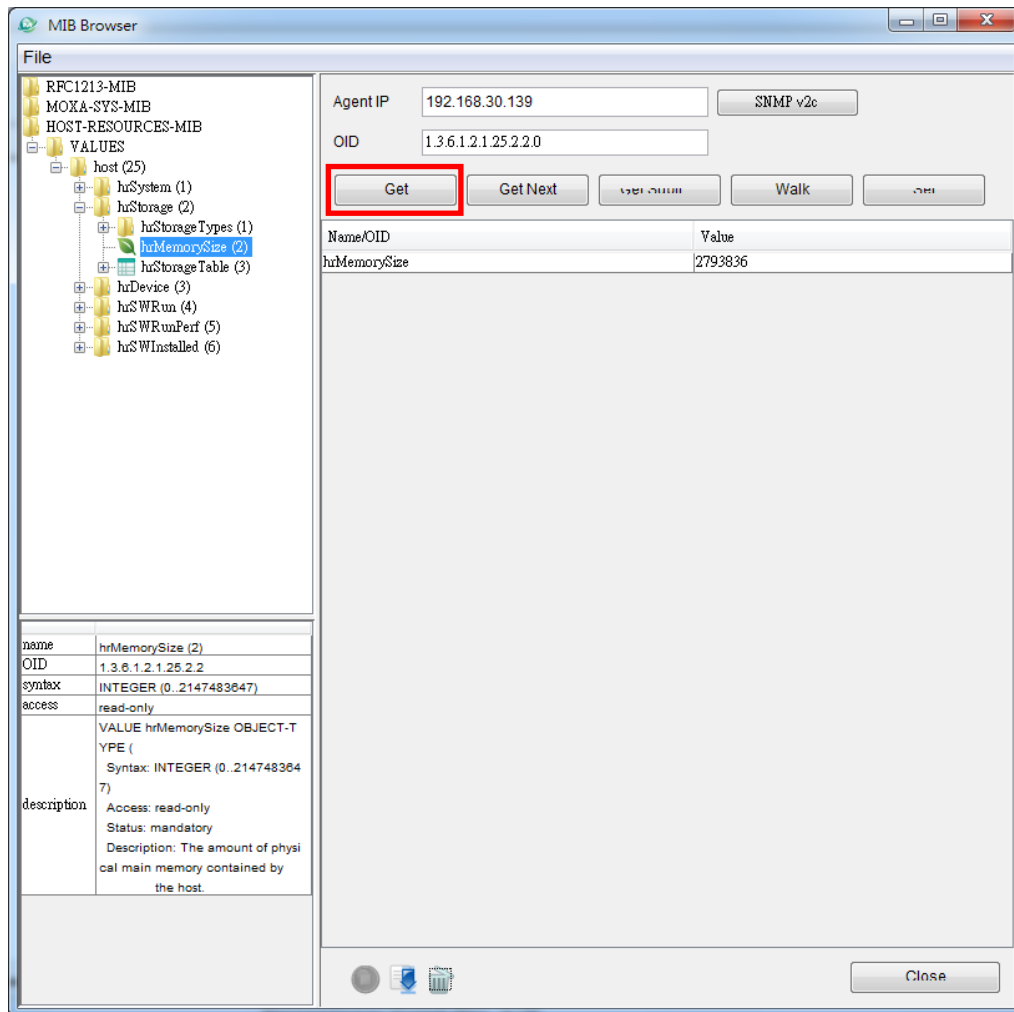
```

name      hrStorageEntry (1)
OID       1.3.6.1.2.1.25.2.3.1
syntax    SEQUENCE [hrStorageIndex INTEGER, hrStorageType OBJECT IDENTIFIER, hrStorageDescr OCTET STRING, hrStorageAllocationUnits INTEGER, hrStorageSize INTEGER, hrStorageUsed INTEGER, hrStorageAllocationFailures INTEGER (0..4294967295)]
access    not-accessible
VALUE     hrStorageEntry OBJECT-TYPE (
  Syntax: SEQUENCE [hrStorageIndex INTEGER, hrStorageType OBJECT IDENTIFIER, hrStorageDescr OCTET STRING, hrStorageAllocationUnits INTEGER, hrStorageSize INTEGER, hrStorageUsed INTEGER, hrStorageAllocationFailures INTEGER (0..4294967295)]

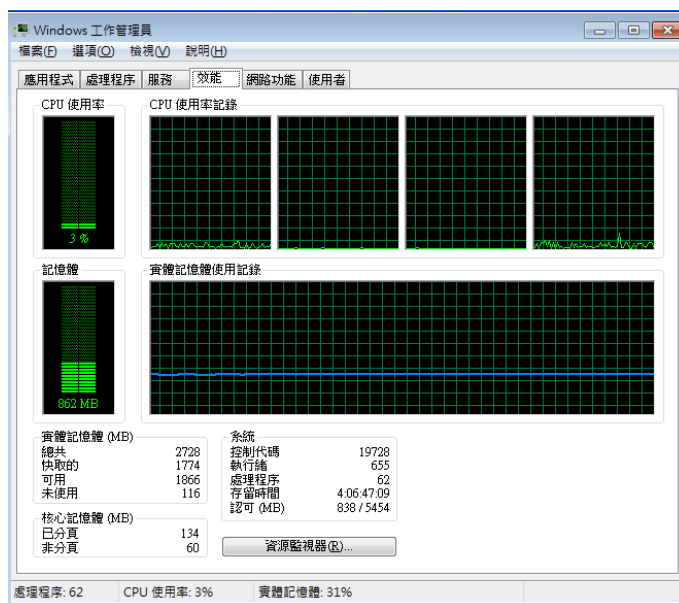
```

3. Get the **hrStorageAllocationUnits.1** value (4096 in the example shown above).
4. Get the **hrStorageSize.1** value (14384127 in the example shown above).
5. Multiply the above two values together to obtain the total disk size:  
total disk size = hrStorageAllocationUnits x hrStorageSize = 4096 x 14384127 = 58917384192 = 60 GB  
<Johnny: How did you get 60 GB? I calculated **54.87 GB**>
6. Try to get the disk usage:  
Double-click **HOST-RESOURCES-MIB\VALUES\host\hrStorage\hrStorageSize**

7. Click **Get**.



8. Check the physical memory size when the Device Manager window opens.

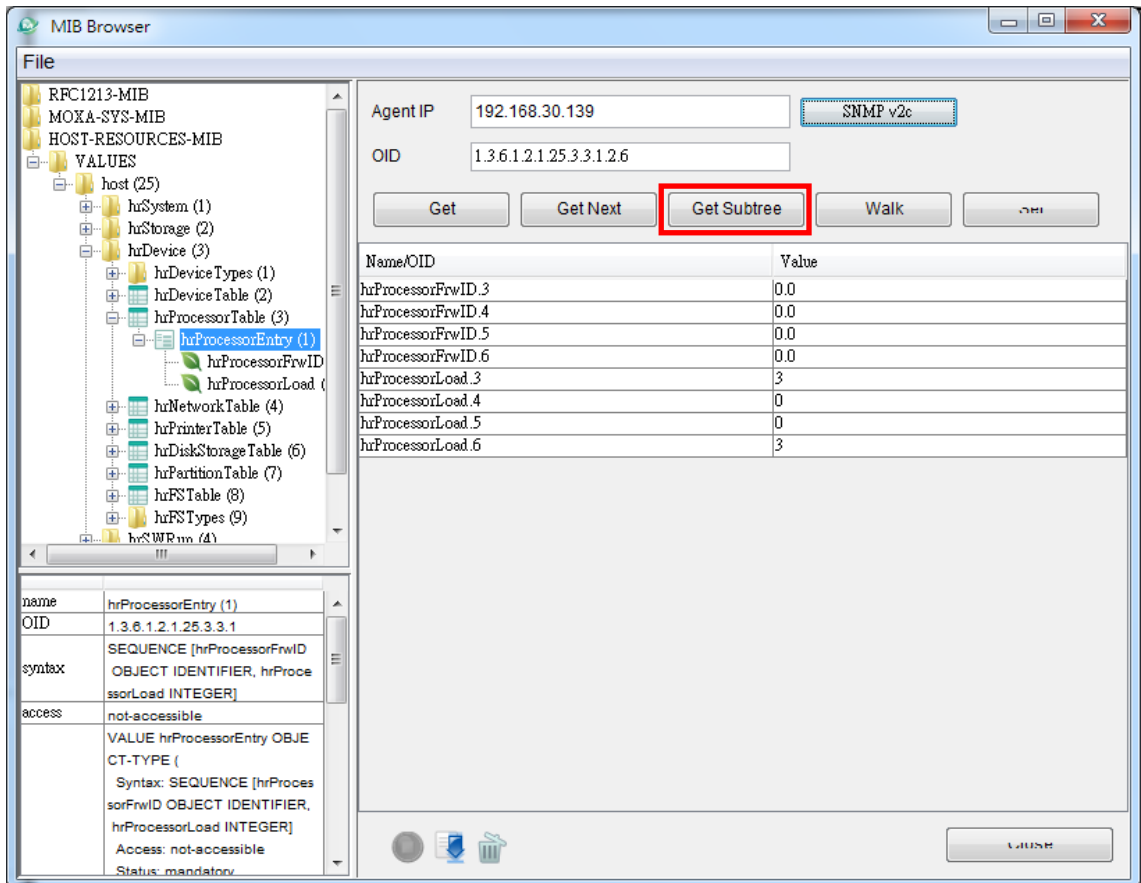


has Chinese characters

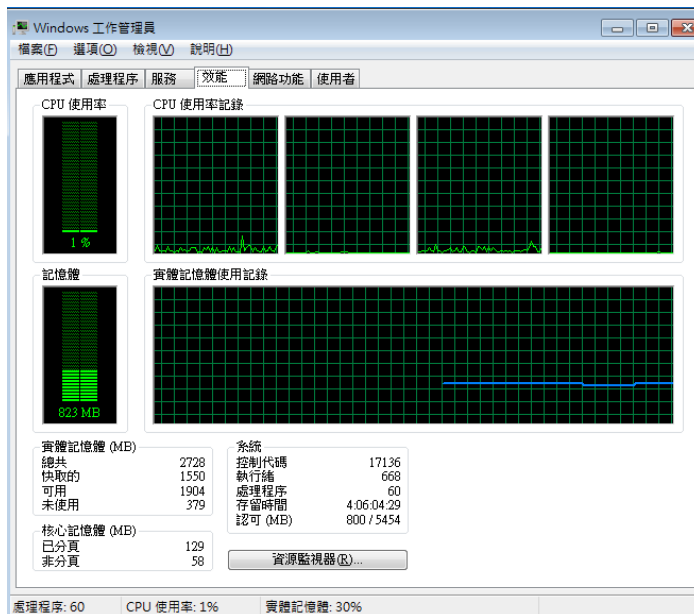
9. Try to get the disk usage:

Double-click **HOST-RESOURCES-MIB\VALUES\host\hrProcessorTable\hrProcessorEntry**

10. Click **Get SubTree**.



11. Check the CPU loading corresponding to each CPU core when Device Manager opens.



has Chinese characters



# 6

## Examples

---

In this chapter, we give examples of using some of the DA-820 computer's various functions.

The following topics are covered in this chapter:

- ❑ **Watchdog**

- Enabling the Watchdog Function

- ❑ **LED Test Program**

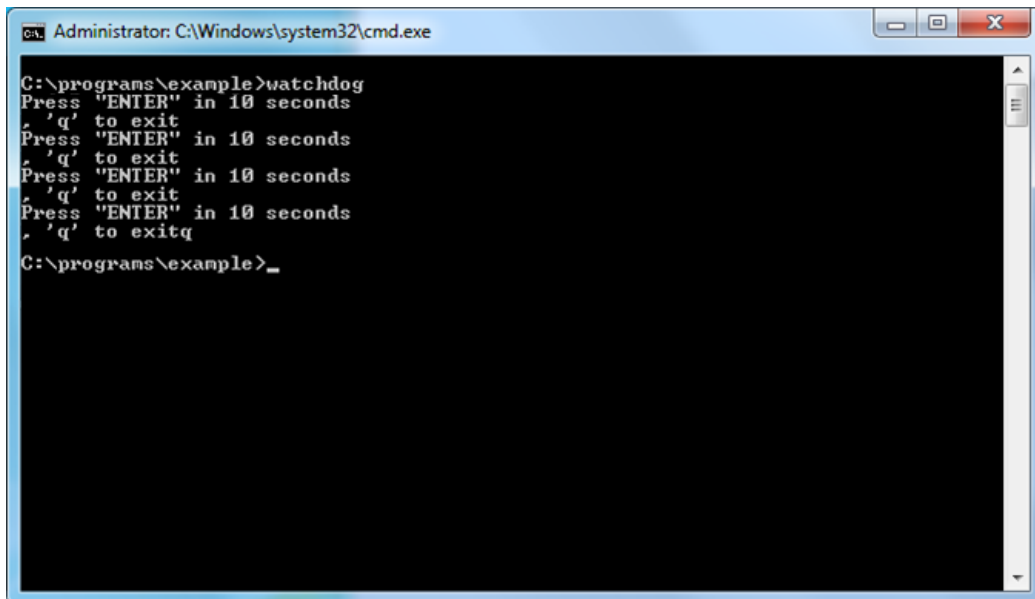
## Watchdog

The DA-820 computers provide example for users to enable the watchdog function. The Watchdog example is under <Software DVD>\examples\Projects\WatchDog and the executable file **Watchdog.exe** is under <Software DVD>\examples\Release. {{are there 2 files or only 1?}}

You can follow the steps below to test the watchdog function with executable file.

### Enabling the Watchdog Function

1. Create c:\programs\example folder and copy the **Watchdog.exe** into the folder.
2. Execute **Watchdog.exe**.
3. You need to press **Enter** in every 10 seconds or the system will reboot.
4. To stop the watchdog function, press **q** to exit the program.



```
Administrator: C:\Windows\system32\cmd.exe
C:\programs\example>watchdog
Press "ENTER" in 10 seconds
'q' to exit
Press "ENTER" in 10 seconds
'q' to exit
Press "ENTER" in 10 seconds
'q' to exit
Press "ENTER" in 10 seconds
'q' to exitq
C:\programs\example>_
```

## LED Test Program

The DA-820 software DVD includes two dll files and one exe file that can be used to test the functionality of the DA-820's LEDs. To do this, take the following steps:

1. Copy the following files from the product software DVD. {{copy from where to where??}}  
**mxgpio.dll:** \DVDDA820-W7E V1.0\examples\lib\mxgpio\  
**mxGeneralIo.dll:** \DVDDA820-W7E V1.0\examples\lib\MxGeneralIo\  
**LED.exe:** \DVDDA820-W7E V1.0\examples\Release\
2. Type **led** and then enter to execute LED.exe. {{how do you set the value of the current LED??}}

```

Administrator: Command Prompt - led
C:\Sample>led
LED Test Program
  <0> Exit Program
  <1> Display LED
  <2> Set LED value
-

```

3. Type **1** and then enter to get the current LED value. In the example shown here, LED 0 is the current LED.

```

Administrator: Command Prompt - led
C:\Sample>led
LED Test Program
  <0> Exit Program
  <1> Display LED
  <2> Set LED value
1
LED[0] = 0
-

```

4. To set the LED value (or state) of the current LED, type **2** and then enter, and then type 0 to disable {{does this mean turn **off** the LED light??}} or 1 to enable {{does this mean turn **on** the LED light??}} the LED and the value.

```

Administrator: Command Prompt - led
C:\Sample>led
LED Test Program
  <0> Exit Program
  <1> Display LED
  <2> Set LED value
2
Input the value <0:disable 1:enable> = 1
Set led signal success!
-

```

{{NOTE: The text in these windows is a bit strange. Can we it bel updated??}}

# System Recovery

---

The DA-820 ready-to-run embedded computers are a Windows Embedded Standard 7 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**

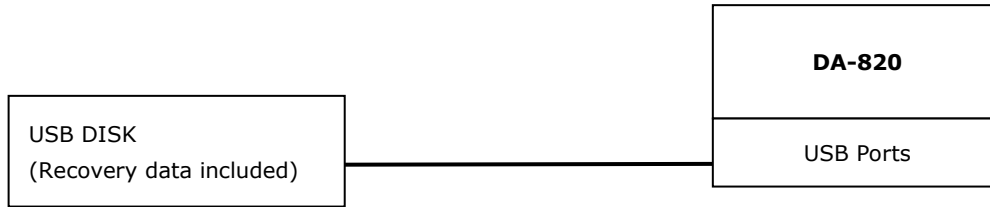
- Step 1: Prepare your USB drive
- Step 2: Change the BIOS Settings
- Step 3: Restore the system from USB drive
- Step 4: Change BIOS Settings to Boot from the Original Disk
- Step 5: Reboot the Computer

□ **Saving the System to a USB Drive**

# Recovery Environment

The recovery environment includes the DA-820 panel computer and a bootable USB disk that has the recovery programs and system image file in on it.

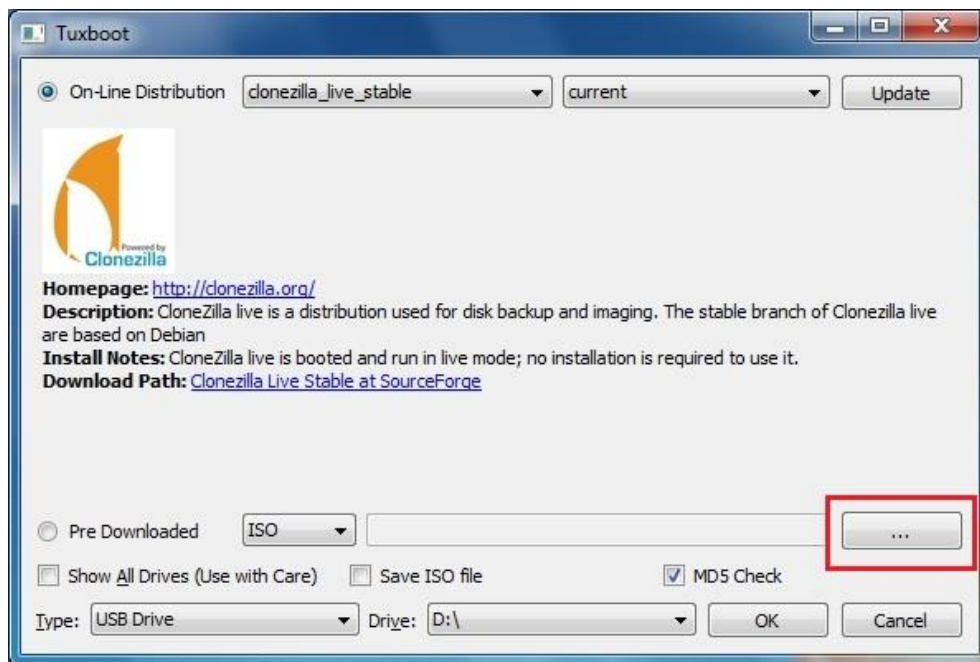
The hardware used includes a PC, a DA-820 computer and a USB disk with the recovery programs. **(Note: The USB disk should be at least 2GB.)**



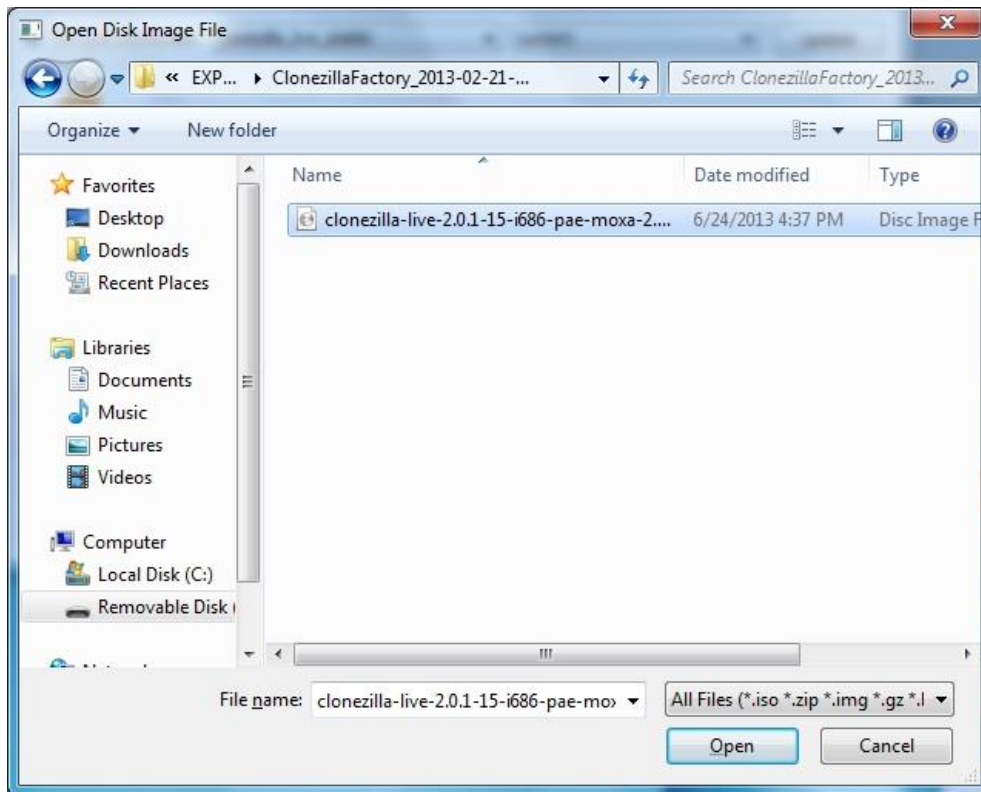
# Recovery Procedure

## Step 1: Prepare your USB drive

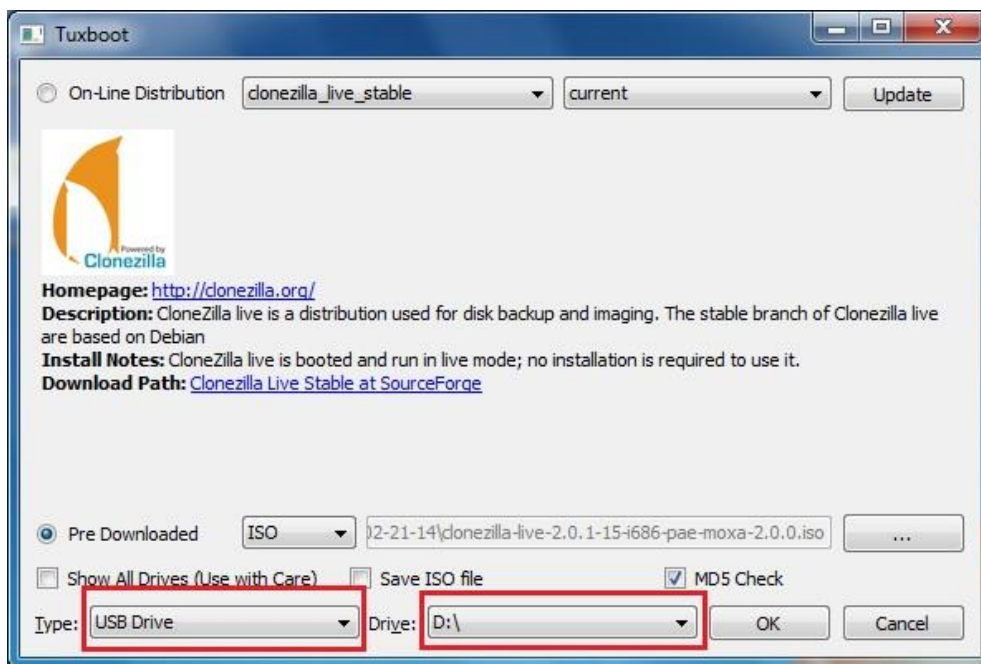
1. Execute **tuxboot-windows-23.exe** from the <Software DVD>\recovery\DA-820-W7E, then select **Pre Download**, and then click "...".



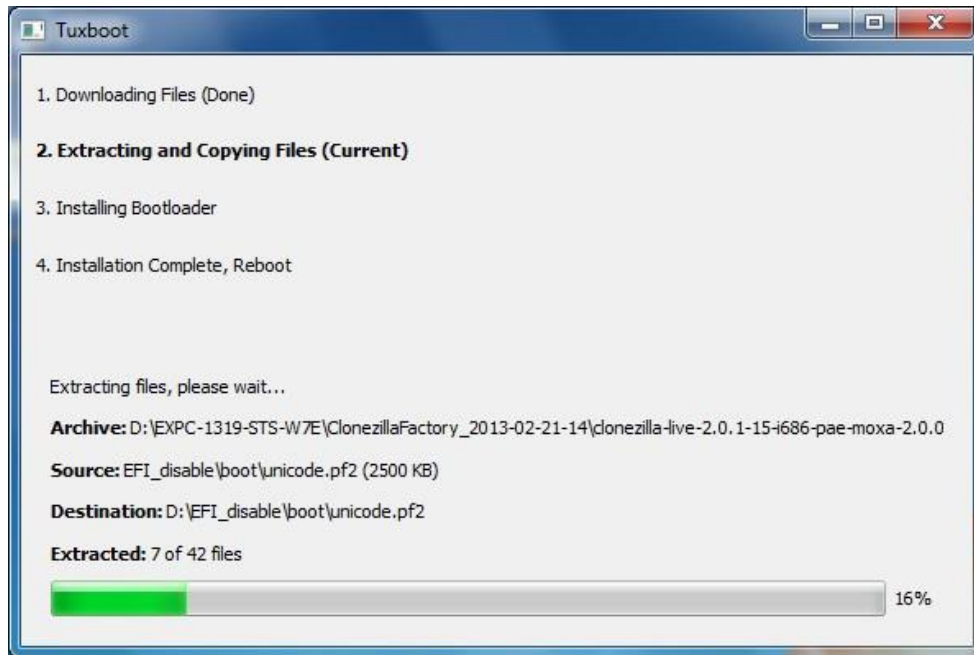
2. Select the ISO file from <Software DVD> \recovery\ DA-820-W7E \ClonezillaFactory\_2013-02-21-14\.



3. Select **USB Drive** type, select a **Drive**, and then click **OK** to continue.



- The boot files will be copied to your USB drive.



- When finished, click **Exit** to stop the program.

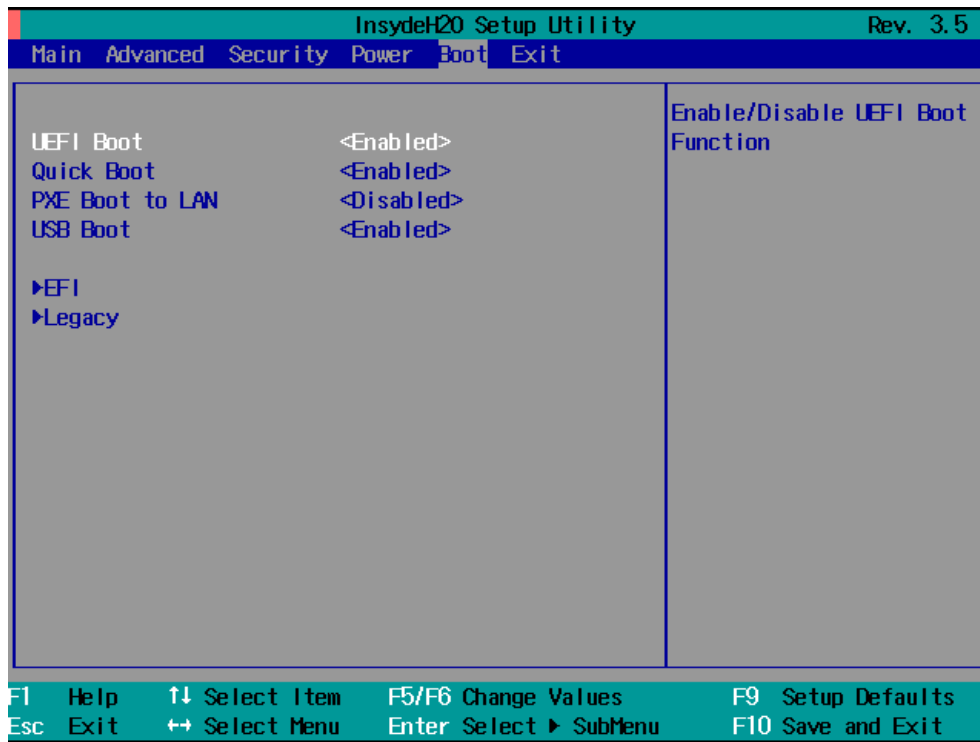


- Manually copy the **os\_image** directory from the <Software DVD>\ **DA-820-W7E** \recovery folder to \home\partimag\ on the USB drive.

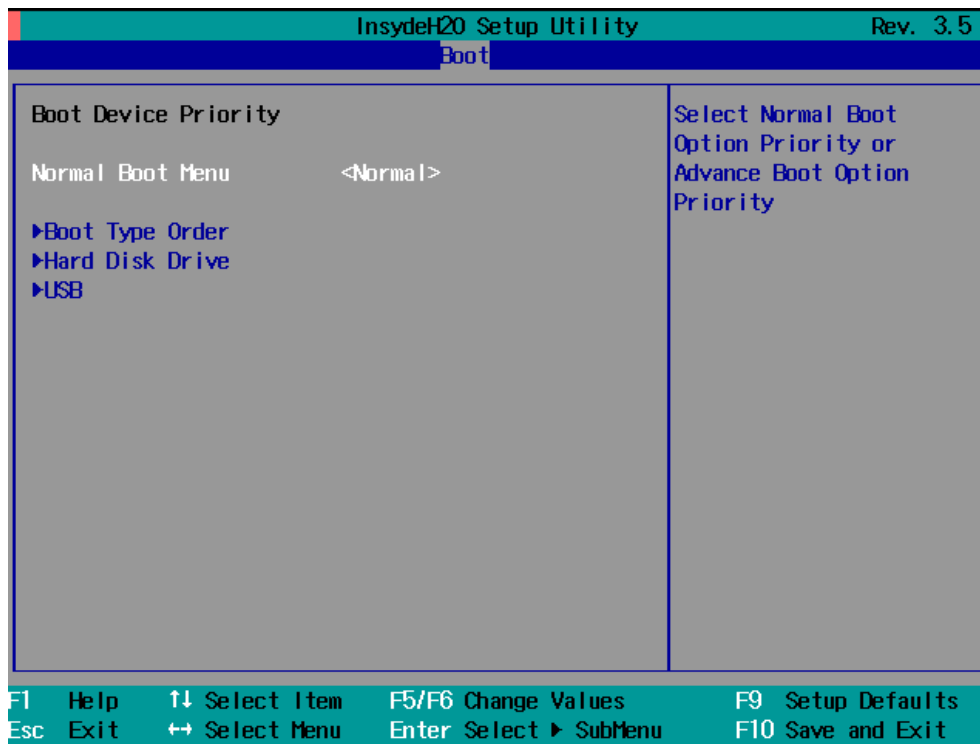
## Step 2: Change the BIOS Settings

You will need to change the BIOS settings to boot from the USB disk.

- Turn on the computer and press **F2** when you hear the beep sound to enter the BIOS setup menu. Select **Boot** and then select **Legacy**. Press **Enter** to continue.



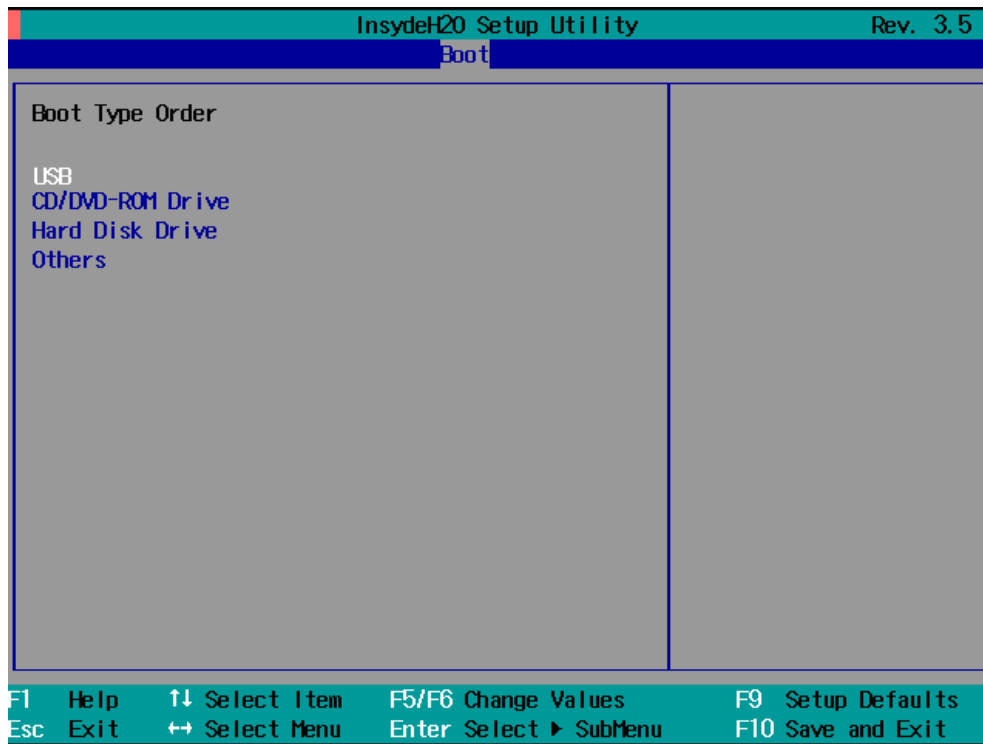
2. Select **Boot Type Order**.





3. Select USB disk and then press "+" to move it to the first boot device position.

**Warning: An incorrect boot priority will lead to recovery failure.**

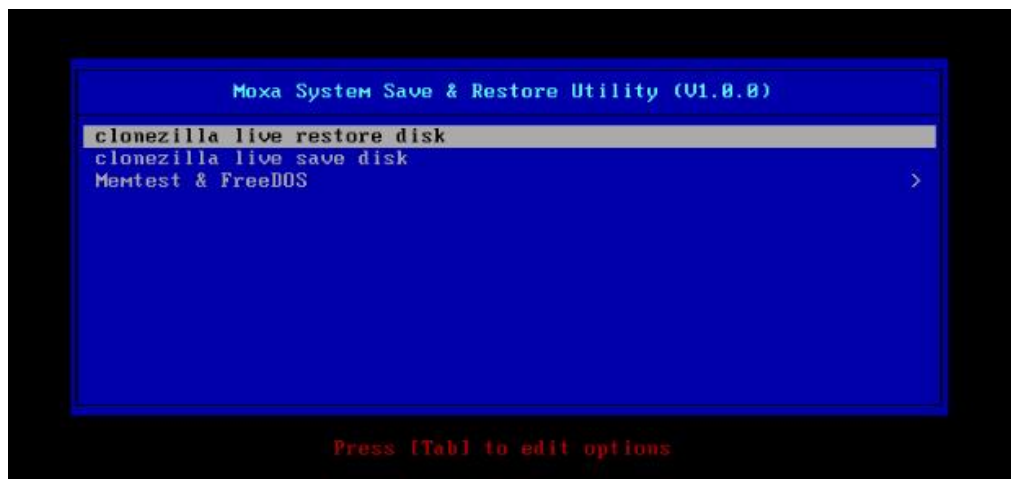


4. Press **F10** and then press **Enter** to save and exit BIOS setup.

### Step 3: Restore the system from USB drive

Connect the USB disk to any of the DA-820's USB ports and then reboot the computer. The system will boot from the USB disk and the Pre-installation Environment and the recovery utility will appear.

1. Select **clonezilla live restore disk**.



2. Wait for the USB drive boot process to finish.

```
[ 5.153522] sd 0:0:0:0: [sdal] Attached SCSI disk
[ 5.163726] sd 0:0:1:0: [sdbl] Attached SCSI disk
[ 5.287941] sd 0:0:0:0: Attached scsi generic sg0 type 0
[ 5.310750] sd 0:0:1:0: Attached scsi generic sg1 type 0
[ 5.334915] sr 1:0:0:0: Attached scsi generic sg2 type 5
Begin: Loading essential drivers ... [ 5.690577] Atheros(R) L2 Ethernet Driver - version 2.2.3
[ 5.692430] Copyright (c) 2007 Atheros Corporation.
[ 5.776770] Broadcom NetXtreme II 5771x 10Gigabit Ethernet Driver bnx2x 1.62.00-6 (2011/01/30)
[ 5.914014] Btrfs loaded
[ 5.955475] device-mapper: uevent: version 1.0.3
[ 5.961407] device-mapper: ioctl: 4.19.1-ioctl (2011-01-07) initialised: dm-devel@redhat.com
done.
Begin: Running /scripts/init-premount ... done.
Begin: Mounting root file system ... [ 6.178946] Uniform Multi-Platform E-IDE driver
[ 6.186189] ide_generic: please use "probe_mask=0x3f" module parameter for probing all legacy ISA
IDE ports
[ 6.913744] FAT: utf8 is not a recommended IO charset for FAT filesystems, filesystem will be cas
e sensitive!
[ 7.047997] aufs: module is from the staging directory, the quality is unknown, you have been war
ned.
[ 7.072516] aufs 2.1-standalone.tree-38-rcN-20110228
Begin: Running /scripts/live-premount ... done.
[ 7.213433] loop: module loaded
[ 7.509770] squashfs: version 4.0 (2009/01/31) Phillip Lougher
Begin: Running /scripts/live-realpremount ... done.
Begin: Mounting "/live/image/live/filesystem.squashfs" on "//filesystem.squashfs" via "/dev/loop0" .
.. done.
done.
Begin: Running /scripts/live-bottom
... Begin: Configuring fstab ... done.
Begin: Preconfiguring networking ... done.
Begin: Loading preseed file ... done.
Begin: Running /scripts/init-bottom ... done.
INIT: version 2.88 booting
Using makefile-style concurrent boot in runlevel S.
live-config: hostname user-setup sudo locales tzdata keyboard-configuration sysvinit sysv-rc initram
fs-tools util-linux login openssh-server_
```

3. Enter **y** to continue the restore process.

```
The jobs in /etc/ocs/ocs-live.d/ are finished. Start "ocs-live-restore" now.
Setting the TERM as linux
*****
Clonezilla image dir: /home/partimag
*****
Shutting down the Logical Volume Manager
  No volume groups found
  No volume groups found
Finished Shutting down the Logical Volume Manager
*****
Activating the partition info in /proc... done!
*****
The following step is to restore an image to the hard disk/partition(s) on this machine: "/home/part
imag/xpe_savedisk" -> "sda sda1"
WARNING!!! WARNING!!! WARNING!!!
WARNING! THE EXISTING DATA IN THIS HARDDISK/PARTITION(S) WILL BE OVERWRITTEN! ALL EXISTING DATA WILL
BE LOST:
*****
Machine: EXPC-1319
sda (2.1GB_VBOX_HARDDISK__ata-VBOX_HARDDISK_VB1c64a0a3-c9f7523d)
*****
Are you sure you want to continue? ?
[y/n] y
```

4. Enter **y** to confirm again.

```
The jobs in /etc/ocs/ocs-live.d/ are finished. Start "ocs-live-restore" now.
Setting the TERM as linux
*****
Clonezilla image dir: /home/partimag
*****
Shutting down the Logical Volume Manager
  No volume groups found
  No volume groups found
Finished Shutting down the Logical Volume Manager
*****
Activating the partition info in /proc... done!
*****
The following step is to restore an image to the hard disk/partition(s) on this machine: "/home/part
imag/xpe_savedisk" -> "sda sda1"
WARNING!!! WARNING!!! WARNING!!!
WARNING! THE EXISTING DATA IN THIS HARDDISK/PARTITION(S) WILL BE OVERWRITTEN! ALL EXISTING DATA WILL
BE LOST:
*****
Machine: VirtualBox
sda (2.1GB_VBOX_HARDDISK__ata-VBOX_HARDDISK_VB1c64a0a3-c9f7523d)
*****
Are you sure you want to continue? ?
[y/n] y
OK, let's do it!!
This program is not started by clonezilla server.
The following step is to restore an image to the hard disk/partition(s) on this machine: "/home/part
imag/xpe_savedisk" -> "sda (sda1)"
WARNING!!! WARNING!!! WARNING!!!
WARNING! THE EXISTING DATA IN THIS HARDDISK/PARTITION(S) WILL BE OVERWRITTEN! ALL EXISTING DATA WILL
BE LOST:
*****
Machine: EXPC-1319
sda (2.1GB_VBOX_HARDDISK__ata-VBOX_HARDDISK_VB1c64a0a3-c9f7523d)
*****
Let me ask you again, Are you sure you want to continue? ?
[y/n] _
```

5. Wait for the process to finish.



6. Select **(0) Poweroff** to power off the computer.

```
Restoring the first 446 bytes of MBR data, i.e. executable code area, for sda... done!
*****
Now resize the partition for sda1
ntfsresize -f /dev/sda1
ntfsresize v2.0.0 (libntfs 10:0:0)
Device name      : /dev/sda1
NTFS volume version: 3.1
Cluster size     : 2048 bytes
Current volume size: 2064511488 bytes (2065 MB)
Current device size: 2064513024 bytes (2065 MB)
New volume size  : 2064511488 bytes (2065 MB)
Nothing to do: NTFS volume size is already OK.
*****
The grub directory is NOT found. Maybe it does not exist (so other boot manager exists) or the file
system is not supported in the kernel. Skip running grub-install.
*****
Found NTFS boot partition among the restored partition(s): /dev/sda1
Head and sector no. of /dev/sda from EDD: 64, 63.
The start sector of NTFS partition /dev/sda1: 63
Adjust filesystem geometry for the NTFS partition: /dev/sda1
Running: partclone.ntfsfixboot -w -h 64 -t 63 -s 63 /dev/sda1
ntfsfixboot version 0.9
done!
*****
*****
This program is not started by Clonezilla server, so skip notifying it the job is done.
Finished!
Now syncing - flush filesystem buffers...

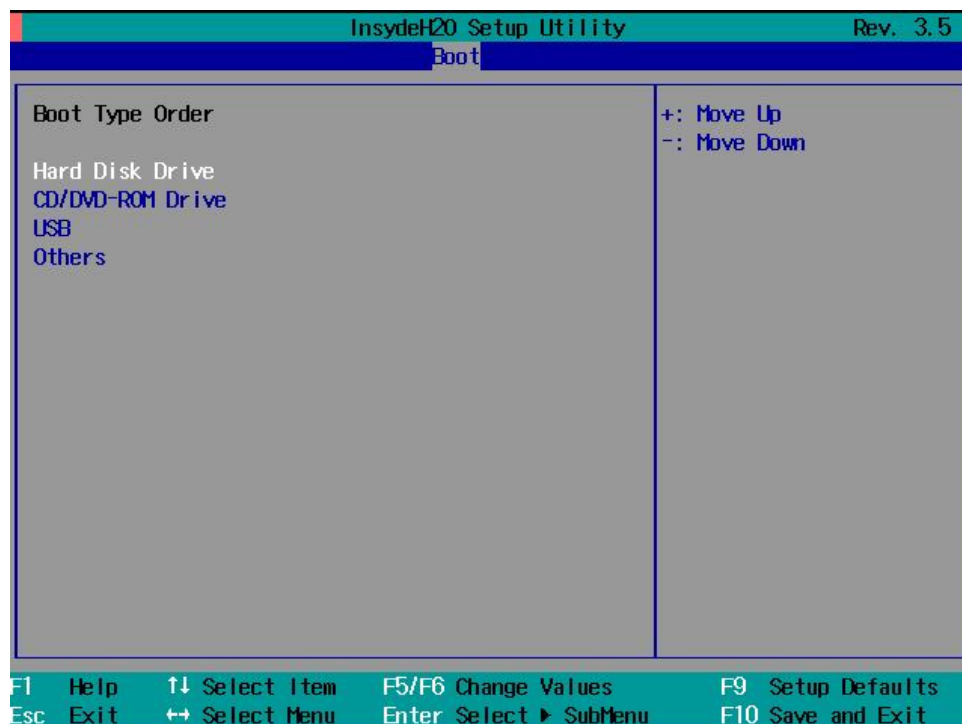
"ocs-live-restore" is finished.
Now you can choose to:
(0) Poweroff
(1) Reboot
(2) Enter command line prompt
(3) Start over
[2]
```

7. Remove the USB drive after the computer has been powered off.

## Step 4: Change BIOS Settings to Boot from the Original Disk

Now you will need to change the boot priority so that it can boot from the original disk. As the system reboots, press **F2** to enter the BIOS setup menu.

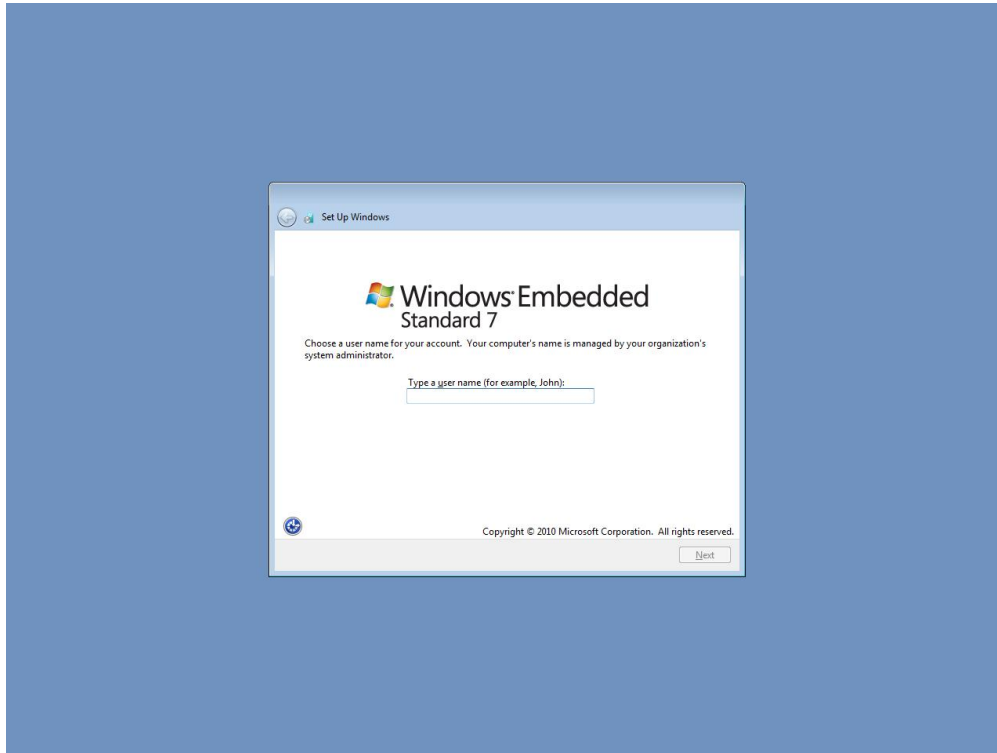
1. Select **Hard Disk Boot Priority** and then press **+** to move to the first boot device position, and then press **Enter**. Make sure the hard disk has first boot priority.



2. Press **F10** and then press **Enter** to save and exit BIOS settings.

## Step 5: Reboot the Computer

You need to wait about 10 to 15 minutes for the system to restart two times automatically, since the system configuration files will be initiated while booting up for the first time. **Do not turn off the computer or shut down the computer** while the system is restarting; otherwise, the IIS service will be terminated. When the operating system has successfully launched, you will need to restart your computer so that the new settings can be activated.

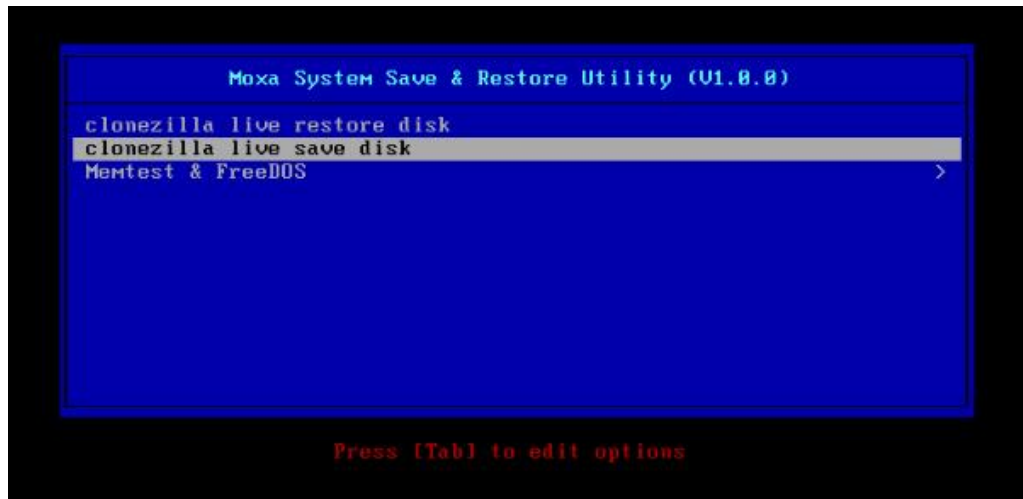


## Saving the System to a USB Drive

You may also save the current system to the USB drive for system recovery in case the system crashes. Before saving the system to the USB drive, we suggest you remove all files under `\home\partimag\` on the USB drive. In addition, change the BIOS settings to make the USB drive the first boot priority.

When the system has been launched, take the following steps.

1. Select **clonezilla live save disk**.



2. Wait for the USB drive boot process to finish.

```

[ 5.141941] sd 0:0:1:0: [sdb] Attached SCSI disk
[ 5.257277] sd 0:0:0:0: Attached scsi generic sg0 type 0
[ 5.269691] sd 0:0:1:0: Attached scsi generic sg1 type 0
[ 5.280668] sr 1:0:0:0: Attached scsi generic sg2 type 5
Begin: Loading essential drivers ... [ 5.772551] Atheros(R) L2 Ethernet Driver - version 2.2.3
[ 5.774561] Copyright (c) 2007 Atheros Corporation.
[ 5.863196] Broadcom NetXtreme II 5771x 10Gigabit Ethernet Driver bnx2x 1.62.00-6 (2011/01/30)
[ 6.005932] Btrfs loaded
[ 6.054095] device-mapper: uevent: version 1.0.3
[ 6.059737] device-mapper: ioctl: 4.19.1-ioctl (2011-01-07) initialised: dm-devel@redhat.com
done.
Begin: Running /scripts/init-premount ... done.
Begin: Mounting root file system ... [ 6.289382] Uniform Multi-Platform E-IDE driver
[ 6.301889] ide_generic: please use "probe_mask=0x3f" module parameter for probing all legacy ISA
IDE ports
[ 6.801141] NTFS driver 2.1.30 [Flags: R/W MODULE].
[ 6.914295] NTFS volume version 3.1.
Begin: Running /scripts/live-premount ... done.
[ 7.331989] FAT: utf8 is not a recommended IO charset for FAT filesystems, filesystem will be cas
e sensitive!
[ 7.453369] aufs: module is from the staging directory, the quality is unknown, you have been war
ned.
[ 7.479098] aufs 2.1-standalone.tree-38-rcN-20110228
[ 7.610228] loop: module loaded
[ 7.905144] squashfs: version 4.0 (2009/01/31) Phillip Lougher
Begin: Running /scripts/live-realpremount ... done.
Begin: Mounting "/live/image/live/filesystem.squashfs" on "//filesystem.squashfs" via "/dev/loop0" .
.. done.
done.
Begin: Running /scripts/live-bottom
... Begin: Configuring fstab ... done.
Begin: Preconfiguring networking ... done.
Begin: Loading preseed file ... done.
Begin: Running /scripts/init-bottom ... done.
INIT: version 2.88 booting
Using makefile-style concurrent boot in runlevel S.
  
```

3. Enter **y** to continue.

```

Setting the TERM as linux
*****
Clonezilla image dir: /home/partimag
*****
Shutting down the Logical Volume Manager
  No volume groups found
  No volume groups found
Finished Shutting down the Logical Volume Manager
Selected device [sda] found!
The selected devices: sda
*****
Activating the partition info in /proc... done!
Selected device [sda] found!
The selected devices: sda
Searching for data partition(s)...
Excluding busy partition or disk...
Unmounted partitions (including extended or swap): sda1
Collecting info.. done!
Searching for swap partition(s)...
Excluding busy partition or disk...
Unmounted partitions (including extended or swap): sda1
Collecting info.. done!
The data partition to be saved:  sda1
The swap partition to be saved:
Activating the partition info in /proc... done!
Selected device [sda1] found!
The selected devices: sda1
Getting /dev/sda1 info...
*****
The following step is to save the hard disk/partition(s) on this machine as an image:
*****
Machine: VirtualBox
sda (2103MB_VBOX_HARDDISK_ata-VBOX_HARDDISK_VB1c64a0a3-c9f7523d)
sda1 (2065MB_ntfs(In_VBOX_HARDDISK_)_ata-VBOX_HARDDISK_VB1c64a0a3-c9f7523d)
*****
-> "/home/partimag/xpe_savedisk".
Are you sure you want to continue? ? (y/n) y

```

4. Wait for the process to finish.

```

/dev/sdb1: read failed after 0 of 2048 at 0: Input/output error
  No volume groups found
  No volume groups found
Finished Shutting down the Logical Volume Manager
Checking the integrity of partition table in the disk /dev/sda...
Reading the partition table for /dev/sda...RETV=0
*****
done!
Saving the MBR data for sda...
1+0 records in
1+0 records out
512 bytes (512 B) copied, 0.00347646 s, 147 KB/s
*****
Starting saving /dev/sda1 as /home/partimag/xpe_savedisk/sda1.XXX...
/dev/sda1 filesystem: ntfs.
*****
Checking NTFS integrity in /dev/sda1... done!
Checking the disk space...
Use ntfsclone with gzip to save the image.
Image file will be split with size limit 1000000 MB.
*****
If this action fails or hangs, check:
* Is the disk full ?
*****
ntfsclone v2.0.0 (libntfs 10:0:0)
NTFS volume version: 3.1
Cluster size      : 2048 bytes
Current volume size: 2064510976 bytes (2065 MB)
Current device size: 2064513024 bytes (2065 MB)
Scanning volume ...
100.00 percent completed
Accounting clusters ...
Space in use      : 1770 MB (85.7%)
Saving NTFS to image ...
  0.64 percent completed

```

5. Select **(0) Poweroff** so that the computer will power off when the process is finished.

```
Restoring the first 446 bytes of MBR data, i.e. executable code area, for sda... done!
*****
Now resize the partition for sda1
ntfsresize -f /dev/sda1
ntfsresize v2.0.0 (libntfs 10:0:0)
Device name      : /dev/sda1
NTFS volume version: 3.1
Cluster size     : 2048 bytes
Current volume size: 2064511488 bytes (2065 MB)
Current device size: 2064513024 bytes (2065 MB)
New volume size   : 2064511488 bytes (2065 MB)
Nothing to do: NTFS volume size is already OK.
*****
The grub directory is NOT found. Maybe it does not exist (so other boot manager exists) or the file
system is not supported in the kernel. Skip running grub-install.
*****
Found NTFS boot partition among the restored partition(s): /dev/sda1
Head and sector no. of /dev/sda from EDD: 64, 63.
The start sector of NTFS partition /dev/sda1: 63
Adjust filesystem geometry for the NTFS partition: /dev/sda1
Running: partclone.ntfsfixboot -w -h 64 -t 63 -s 63 /dev/sda1
ntfsfixboot version 0.9
done!
*****
*****
*****
This program is not started by Clonezilla server, so skip notifying it the job is done.
Finished!
Now syncing - flush filesystem buffers...

"ocs-live-restore" is finished.
Now you can choose to:
(0) Poweroff
(1) Reboot
(2) Enter command line prompt
(3) Start over
[2]
```



# A

## Moxa SynMap OID Table

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In this appendix, we describe the Moxa SynMap OID Table.

The following topics are covered in this appendix:

- ❑ **Moxa SynMap OID Table**
- ❑ **HOST RESOURCE OID Table**

# Moxa SynMap OID Table

The following table shows the full list of the Moxa SynMap OID.

Item Name	OID	MAX-Access	Description	Supported
productName	1.3.6.1.4.1.8691.17.1.1.1	read-only	product name	✓
productDesc	1.3.6.1.4.1.8691.17.1.1.2	read-only	short product description	✓
productVersion	1.3.6.1.4.1.8691.17.1.1.3	read-only	product version	✓
productBuildDate	1.3.6.1.4.1.8691.17.1.1.4	read-only	product's last build date (YYMMDDHH)	✓
biosVersion	1.3.6.1.4.1.8691.17.1.4.1	read-only	BIOS version	
biosSaveSetting	1.3.6.1.4.1.8691.17.1.4.2	read-write	Write 1 to save the bios setting; if you read 0, the "save bios" request has been applied.	
biosSettingStatus	1.3.6.1.4.1.8691.17.1.4.3	read-only	Shows a comparison of the bios CMOS setting and bios new setting.	
bootDeviceStatus	1.3.6.1.4.1.8691.17.1.4.4.1	read-only	current support boot device	
firstBootDevice	1.3.6.1.4.1.8691.17.1.4.4.2	read-write	read show current first boot device, write set boot device.	
pwrOnAfterPwrFail	1.3.6.1.4.1.8691.17.1.4.8.1	read-write	Select "power on" after power fails.	
pwrLanWakeUp	1.3.6.1.4.1.8691.17.1.4.8.3	read-write	Enable/Disable wake on LAN functionality.	
tempSensorsIndex	1.3.6.1.4.1.8691.17.1.5.1.1	read-only	Reference index for each observed device.	✓
tempSensorsDevice	1.3.6.1.4.1.8691.17.1.5.1.1	read-only	Name of the temperature sensor being read.	✓
tempSensorsValue	1.3.6.1.4.1.8691.17.1.5.1.1	read-only	Temperature of this sensor, in mC.	✓
voltSensorsIndex	1.3.6.1.4.1.8691.17.1.5.1.2	read-only	Reference index for each observed device.	✓
voltSensorsDevice	1.3.6.1.4.1.8691.17.1.5.1.2	read-only	Name of the device being read.	✓
voltSensorsValue	1.3.6.1.4.1.8691.17.1.5.1.2	read-only	Voltage in mV.	✓
ioDiNumber	1.3.6.1.4.1.8691.17.1.6.1.1	read-only	Number of digital input pins in the current system.	
diIndex	1.3.6.1.4.1.8691.17.1.6.1.1	read-only	Reference index for each digital input pin.	
diPort	1.3.6.1.4.1.8691.17.1.6.1.1	read-only	The port number of a digital input pin.	
diValue	1.3.6.1.4.1.8691.17.1.6.1.1	read-only	The digital input status (0 is low, 1 is high).	
diTrapEnable	1.3.6.1.4.1.8691.17.1.6.1.1	read-write	When this object is enabled, agent will send trap message when digital input pin status is changed.	
ioDoNumber	1.3.6.1.4.1.8691.17.1.6.1.1	read-only	Number of digital output	

	.3		pins in the current system.	
doIndex	1.3.6.1.4.1.8691.17.1.6.1.1.4.1.1	read-only	Reference index for each digital output pin.	
doPort	1.3.6.1.4.1.8691.17.1.6.1.1.4.1.2	read-only	Port number of a digital output pin.	
doValue	1.3.6.1.4.1.8691.17.1.6.1.1.4.1.3	read-write	Digital output status (0 is low, 1 is high).	
uartNumber	1.3.6.1.4.1.8691.17.1.6.3.1	read-only	Number of internal UARTs in the current system.	✓
uartIndex	1.3.6.1.4.1.8691.17.1.6.3.2.1.1	read-only	Reference index for each UART port.	✓
uartType	1.3.6.1.4.1.8691.17.1.6.3.2.1.2	read-write	UART mode (0 is RS232, 1 is RS485 2 wires, 2 is RS422, 3 is RS485 4 wires)	✓
usbNumber	1.3.6.1.4.1.8691.17.1.6.4.1.1	read-only	Number of ports, regardless of their current state in the usb general port table.	
usbDeviceIndex	1.3.6.1.4.1.8691.17.1.6.4.1.3.1.1	read-only	This index is identical to usbPortIndex for the corresponding USB port.	
usbDeviceVendorID	1.3.6.1.4.1.8691.17.1.6.4.1.3.1.2	read-only	USB device port vendor, HEX-formatted string, as provided to the USB host by the USB device.	
usbDeviceProductID	1.3.6.1.4.1.8691.17.1.6.4.1.3.1.3	read-only	Product ID, HEX-formatted string, as provided to the USB host by the USB device.	
usbDeviceActiveClass	1.3.6.1.4.1.8691.17.1.6.4.1.3.1.4	read-only	This object returns the USB Device Class type of the active configuration.	
usbPlugTrapEnable	1.3.6.1.4.1.8691.17.1.6.4.1.4	read-write	When this object is enabled, agent will send trap message when a USB device is inserted.	
moxaSystemTrapIP	1.3.6.1.4.1.8691.17.1.9.1	read-write	Set Trap IP address.	✓
moxaSystemTrapCommunity	1.3.6.1.4.1.8691.17.1.9.2	read-write	Trap community.	✓

## HOST RESOURCE OID Table

The following table shows the Host Resource OID.

Item Name	OID	MAX-Access	Description	Supported
hrProcessorTable	1.3.6.1.2.1.25.3.3	read-only	CPU usage	✓
hrStorageTable	1.3.6.1.2.1.25.2.3	read-only	Disk and memory usage	✓