IBM DataPower XC10 Appliance V2

Introduction to using SNMP with IBM DataPower XC10

What this exercise is about

The objective of this lab is to guide you through enabling, configuring, and accessing the IBM DataPower XC10 SNMP (System Network Management Protocol) agent. The IBM DataPower XC10 SNMP agent provides information used in monitoring the state and status of the IBM DataPower XC10 appliance. This lab will demonstrate how to use the SNMP agent to make SNMP inquiries to the appliance.

Lab requirements

- IBM DataPower XC10 Appliance Version 2
  - Mounted on a rack and initially configured
- Supported web browser
  - Firefox V3.0 or higher (recommended)
  - Internet Explorer V7 or V8
- An installation of NET_SNMP agent
  - See Appendix A for a Microsoft Windows example of a NET-SNMP installation

What you should be able to do

At the end of this lab you should be able to:

- Enable the IBM DataPower XC10 SNMP agent
- Create a new SNMPv2c community
- Access IBM DataPower XC10 system information using the NET-SNMP client

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Introduction

IBM DataPower XC10 Version 2 comes with an SNMP agent already installed. The XC10 appliance allows you to configure several settings from the administrative console, including enabling and disabling the agent, and working with SNMPv2c communities. These settings can be found in the IBM DataPower XC10 administrative console under **Appliance → SNMP Monitoring**. This lab will guide you through the configuration for SNMP Monitoring.

Exercise instructions

Instructions and subsequent documentation use symbolic references to directories, users, ports which are listed as follows:

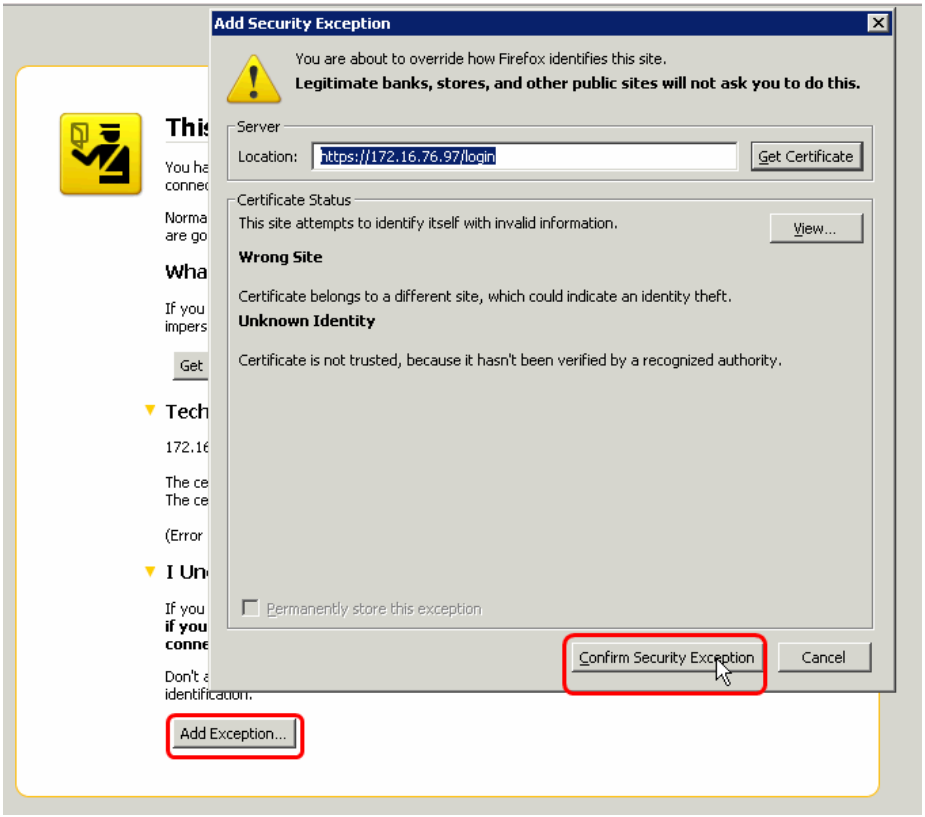
Reference variable	Description	Value
<APPLIANCE_IP>	IP address of your IBM DataPower XC10 appliance	**https://172.16.76.97/login/**
<ADMIN_ID>	Your IBM DataPower XC10 administrator user name	**admin**
<ADMIN_PWD>	Your IBM DataPower XC10 administrator password	**admin123**
<NET-SNMP-INSTALL-DIR>	The NET-SNMP installation directory on your SNMP client computer	**C:\NETSNMP5.5.0**

Part 1: Configuring the IBM DataPower XC10 SNMP Agent

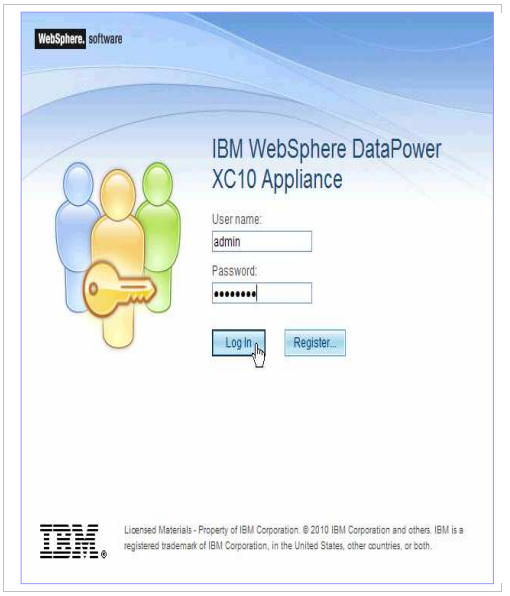
The IBM DataPower XC10 SNMP agent can be configured in the web administrative console. There is a link to the monitoring settings page in the Appliance tab of the administrative console. That page has the configuration settings for SNMP. This part of the lab will guide you through the settings available on that page.

____ 1. Open a Mozilla Firefox or other supported web browser and browse to your DataPower XC10 appliance.

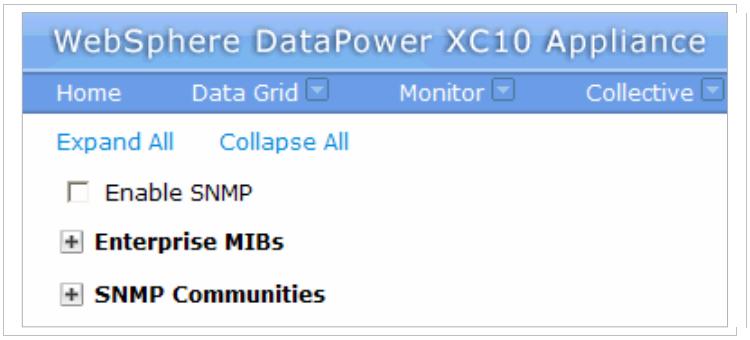
____ 2. If you receive a Security Exception, accept the Security exception by clicking the **Add Exception** button, and then clicking the **Confirm Security Exception** button.



____ 3. Log using your assigned **<ADMIN_ID>** and **<ADMIN_PWD>.** For your own appliance, you could use any valid user name as long as the user ID has appliance administrative and appliance monitoring authority.

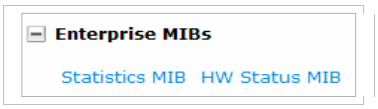


____ 4. Click **Appliance → SNMP Settings** from the top menu



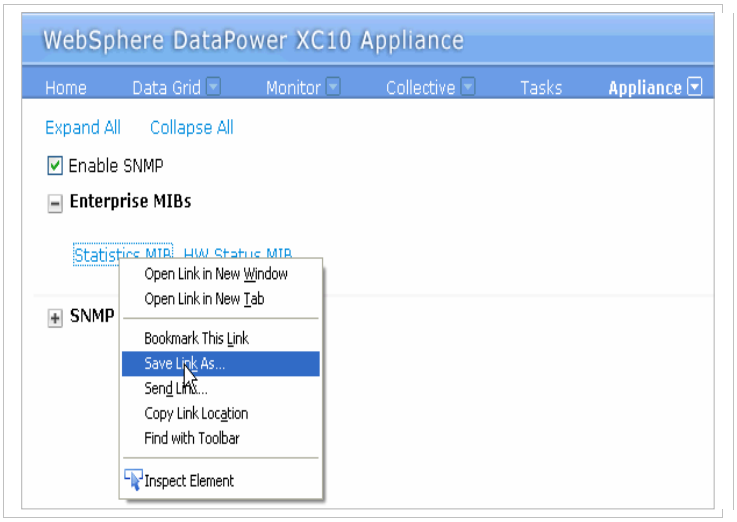
____ 5. If the **Enable SNMP** check box is check, uncheck it.

____ 6. Expand **Enterprise MIBs.** The MIB (Management Information Base) defines what calls can be made to the appliance, and what data should be gathered. When probing for information from the appliance, specific data is requested by passing in the particular MIB data you want to see returned. Notice there are two MIB file links available.

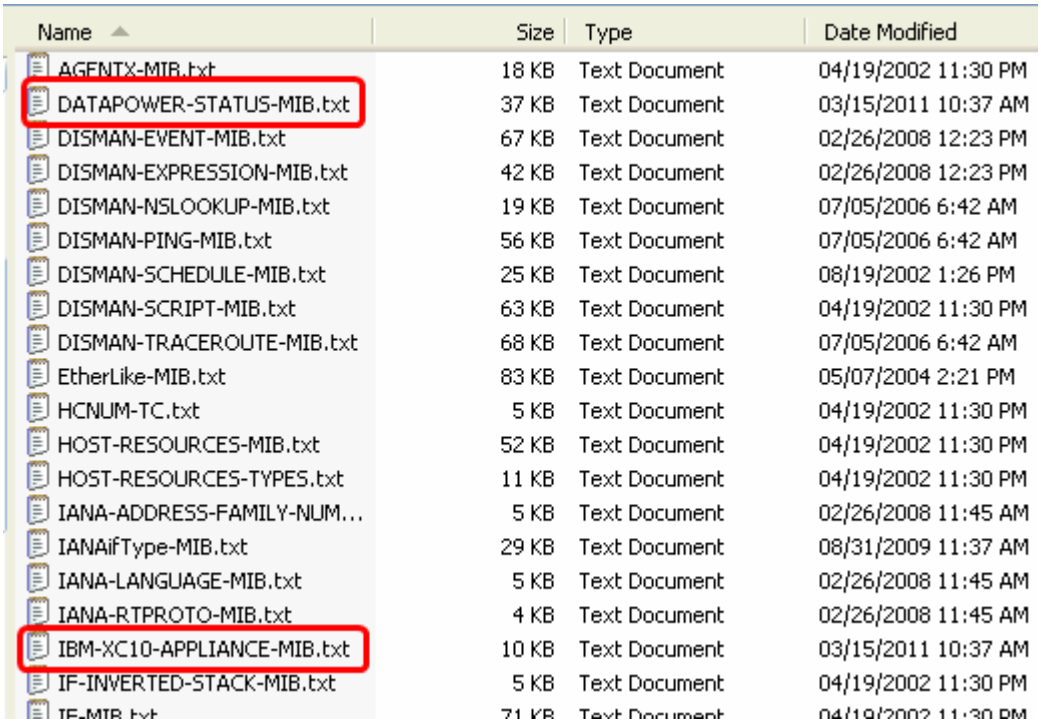


The **Statistics MIB** file allows you to direct the SNMP client to gather map, grid, and JVM statistics from the IBM DataPower XC10 appliance. The **HW Status MIB** allows you to direct the SNMP client to gather hardware status information from the IBM DataPower XC10 appliance.

____ 7. Right click each of the MIB file links and save the MIB txt files to the NET-SNMP MIBs directory on the NET-SNMP client machine. The target directory should be: **<NET-SNMP-INSTALL-DIR>/share/snmp/mibs.** Do this for both MIB files.



Target library: **<NET-SNMP-INSTALL-DIR>/share/snmp/mibs**

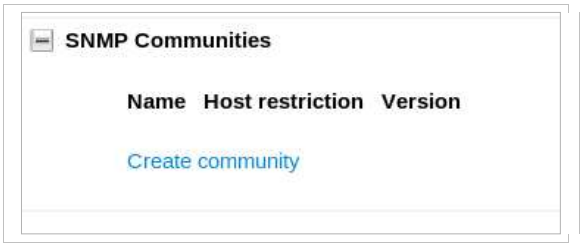


Name	Size	Type	Date Modified
AGENTX-MIB.txt	18 KB	Text Document	04/19/2002 11:30 PM
DATAPOWER-STATUS-MIB.txt	37 KB	Text Document	03/15/2011 10:37 AM
DISMAN-EVENT-MIB.txt	67 KB	Text Document	02/26/2008 12:23 PM
DISMAN-EXPRESSION-MIB.txt	42 KB	Text Document	02/26/2008 12:23 PM
DISMAN-NSLOOKUP-MIB.txt	19 KB	Text Document	07/05/2006 6:42 AM
DISMAN-PING-MIB.txt	56 KB	Text Document	07/05/2006 6:42 AM
DISMAN-SCHEDULE-MIB.txt	25 KB	Text Document	08/19/2002 1:26 PM
DISMAN-SCRIPT-MIB.txt	63 KB	Text Document	04/19/2002 11:30 PM
DISMAN-TRACEROUTE-MIB.txt	68 KB	Text Document	07/05/2006 6:42 AM
EtherLike-MIB.txt	83 KB	Text Document	05/07/2004 2:21 PM
HCNUM-TC.txt	5 KB	Text Document	04/19/2002 11:30 PM
HOST-RESOURCES-MIB.txt	52 KB	Text Document	04/19/2002 11:30 PM
HOST-RESOURCES-TYPES.txt	11 KB	Text Document	04/19/2002 11:30 PM
IANA-ADDRESS-FAMILY-NUM...	5 KB	Text Document	02/26/2008 11:45 AM
IANAifType-MIB.txt	29 KB	Text Document	08/31/2009 11:37 AM
IANA-LANGUAGE-MIB.txt	5 KB	Text Document	02/26/2008 11:45 AM
IANA-RTPROTO-MIB.txt	4 KB	Text Document	02/26/2008 11:45 AM
IBM-XC10-APPLIANCE-MIB.txt	10 KB	Text Document	03/15/2011 10:37 AM
IF-INVERTED-STACK-MIB.txt	5 KB	Text Document	04/19/2002 11:30 PM
IF-MIB.txt	71 KB	Text Document	04/19/2002 11:30 PM

____ 8. Expand the **SNMP Communities** section

SNMP communities define rights to access data and manipulate the configuration of the appliance being monitored. The community name is passed to the appliance using the SNMP client, and the SNMP agent will grant access based on the settings for the community. Communities can also be used to restrict access to specific client IP addresses.

You might see communities like these, already defined on your appliance:



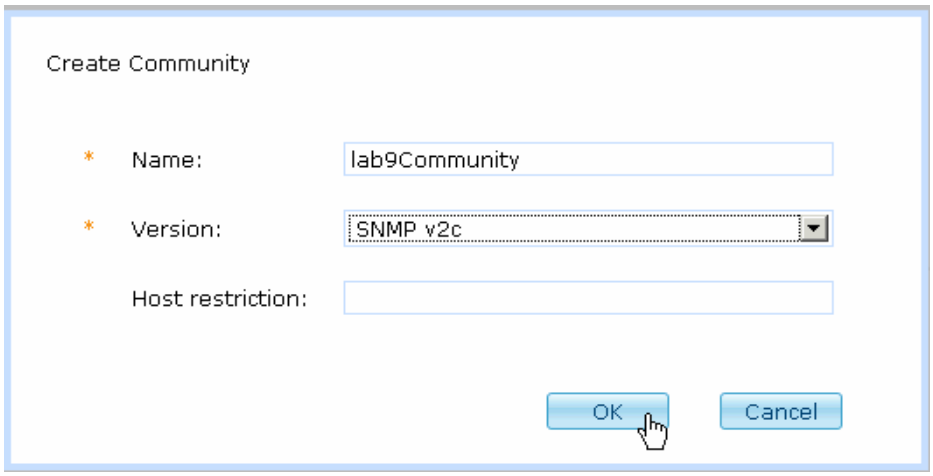
____ 9. Click **Create community**.

____ 10. Provide a unique community name. For example **lab-NN-Community**.

____ 11. Select **SNMP v2c** as the version.

____ 12. The **Host restriction** field is optional. A blank setting allows any host to access this SNMPv2c community using an SNMP client.

____ **13.** Click **OK.**



____ 14. Check the **Enable SNMP** check box. You might briefly see the message **Started** at the right.

Note: This message sometimes is not visible when running a browser window inside a Remote Desktop Connection.

The host community is added to a list of available configured communities. Your SNMP agent is now ready for connection on port 161 with an SNMP client.

Part 2: Gathering system information using the NET-SNMP client

____ 15. Using the NET-SNMP client, you can gather appliance status information from the IBM DataPower XC10 appliance using calls with the simple network management protocol.

__ a. **Open a command line window** and browse to the **<NET-SNMP-INSTALL-DIR>/bin** directory

__ b. Type this command (on one line)in the command window:

snmpwalk -Os -c lab-NN-Community -v 2c <XC10_Appliance_IP>:161 DATAPOWER-STATUS-MIB::dpStatus

Note: the **–Os** is letter - capital “O” - and lower-case “s”. Replace **<lab-NN-Community>** with the name of the lab community you previously created.

__ c. The IBM DataPower XC10 SNMP agent should return almost 200 lines of information. This information is displayed similar to this:

```
dpStatusDateTimeStatustime.0 = Timeticks: (1300217957) 150 days, 11:42:59.57
dpStatusDateTimeStatusuptime.0 = INTEGER: 0
dpStatusDateTimeStatustimezone.0 = STRING: posix/CST6CDT
dpStatusDateTimeStatustzspec.0 = STRING: unknown
dpStatusDateTimeStatusbootuptime.0 = INTEGER: 0
dpStatusMemoryStatusUsage.0 = Gauge32: 18
dpStatusMemoryStatusTotalMemory.0 = Gauge32: 33019660
dpStatusMemoryStatusUsedMemory.0 = Gauge32: 6026916
dpStatusMemoryStatusFreeMemory.0 = Gauge32: 26992744
. . . (remaining lines deleted for brevity)
```

You passed in a MIB value: DATAPOWER-STATUS-MIB::dpStatus. This argument has told the NET-SNMP client to examine the status MIB file for the dpStatus information. This information includes data about the appliance’s uptime, the memory usage including total memory, used memory, and free memory, environmental information, firmware level and disk status information.

If you read through the DataPower-Status-MIB.txt file you downloaded earlier in the lab, you can experiment with other calls you can make to retrieve different data. Reading and parsing an SNMP MIB file is an advanced administrative task. To begin, you can search the file for “dpStatus”. From there you can experiment with SNMP data you can retrieve by substituting the DATAPOWER-STATUS-MIB::dpStatus argument in your NET-SNMP call with another object identifier from the MIB file.

__ d. An example of a useful argument substitution would be DATAPOWER-STATUS-MIB::dpStatusFirmwareVersion. Type this command into the command window:

snmpwalk -Os -c lab-NN-Community -v 2c <XC10_Appliance_IP>:161 DATAPOWER-STATUS-MIB::dpStatusFirmwareVersion

__ e. This call will return data for the firmware similar to this:

```
dpStatusFirmwareVersionVersion.0 = STRING: 2.9.0

dpStatusFirmwareVersionBuild.0 = STRING: 20110503-0833
```

____ 16. Using the IBM-XC10-APPLIANCE-MIB.txt file, invoke the NET-SNMP client to gather information about the grid, maps, and the JVMs running on the appliance.

__ a. Type this command in the command window:

```
snmpwalk -Os -c lab-NN-Community -v 2c <XC10_Appliance_IP>:161
IBM-XC10-APPLIANCE-MIB::gridStats
```

__ b. If any grids are defined on the appliance, you should see information about the grids, which looks similar to this:

```
gridName.1 = STRING: "987_employee"
gridName.2 = STRING: "987_WASCreated_Test"
gridAvgTranTime.1 = Counter64: 0
gridAvgTranTime.2 = Counter64: 0
gridAvgThruPut.1 = Counter64: 0
gridAvgThruPut.2 = Counter64: 0
gridTransactionCount.1 = Counter64: 184663
gridTransactionCount.2 = Counter64: 66
gridMaxTranTime.1 = Counter64: 400
gridMaxTranTime.2 = Counter64: 360
gridMinTranTime.1 = Counter64: 0
gridMinTranTime.2 = Counter64: 0
gridTotalTranTime.1 = Counter64: 133670
gridTotalTranTime.2 = Counter64: 945
```

__ c. Other requests you can make for this MIB are **::mapStats** and **::jvmStats.** In addition you can make more refined requests if you know the iteration number for the object of interest, such as:

```
::jvmHostName.1
::mapName.3
::gridName.2
```

What you did in this exercise

During this lab you were introduced to the SNMP agent of the IBM DataPower XC10 Appliance. You created a new SNMP v2c community, downloaded the SNMP MIB files provided with the appliance, and enabled the SNMP agent. You retrieved information from the IBM DataPower XC10 SNMP agent using two MIB files by calling the snmpwalk function of NET-SNMP 5.5 client.

Appendix A: Installing the NET-SNMP client

Many SNMP clients are available to use to monitor an SNMP managed device. You can use any SNMP client you want to connect to the IBM DataPower XC10 appliance. NET-SNMP is a simple yet powerful command line tool that is a free open source product.

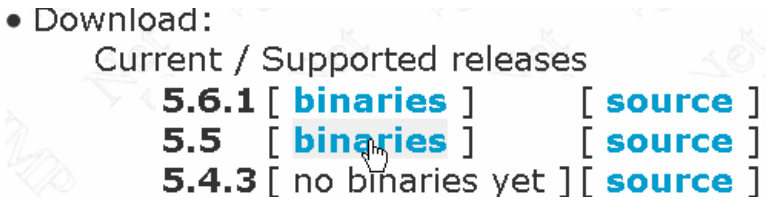
Here is an example of downloading and installing the NET-SNMP open source SNMP client.

____ 1. Download and install the NET-SNMP client.

__ **a.** Open a web browser and navigate to **www.net-snmp.com.**

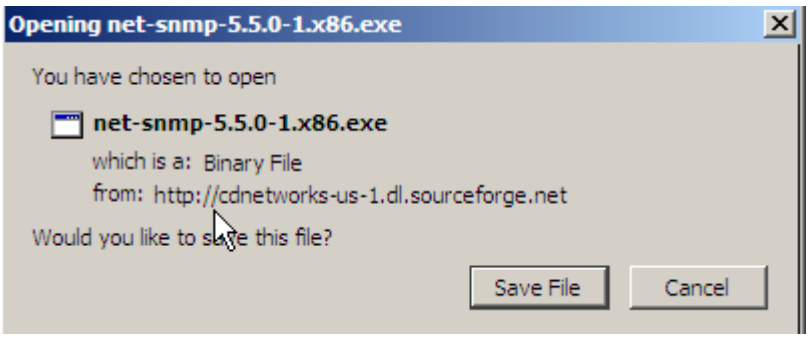
__ b. Click the **Download** link in the left navigation section of the page.

__ c. Select the appropriate [binaries] link. In this example, V5.5 contains the required binaries for Microsoft Windows.



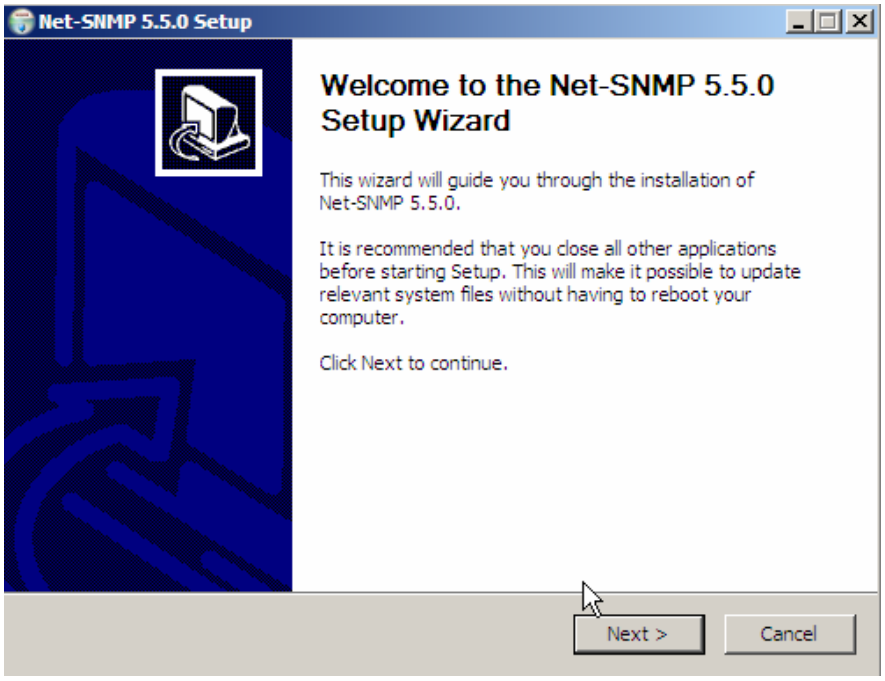
__ d. In this example, the download for the x86 version of NET-SNMP is selected.

__ e. Wait for the download dialog box to open and select **Save file**. Save the file.

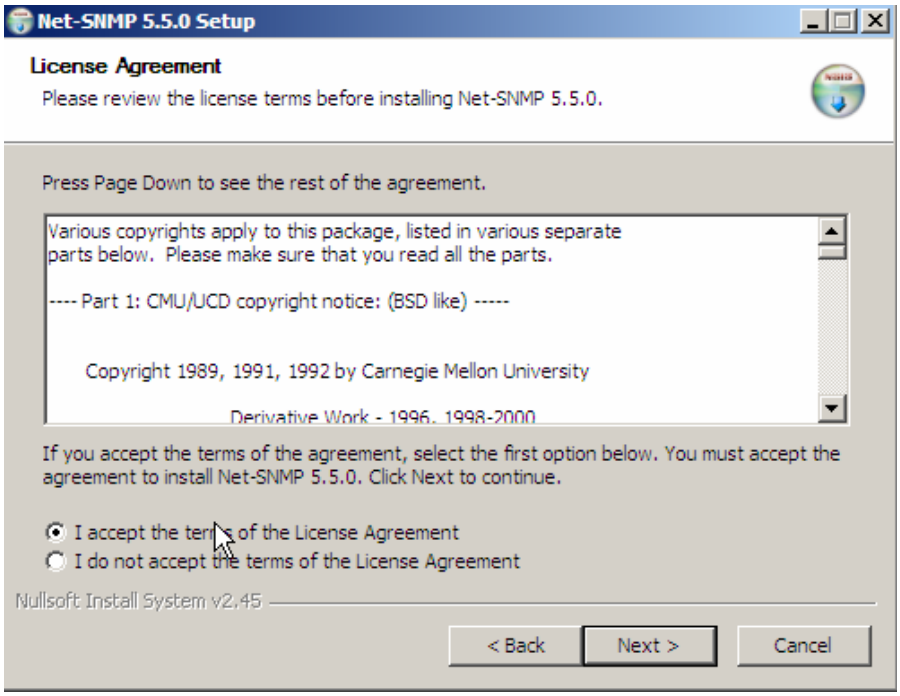


__ f. In this example, the installer browses to the downloaded file and double-clicks the downloaded file to invoke the installer. Take the appropriate actions for your operating system to install the product.

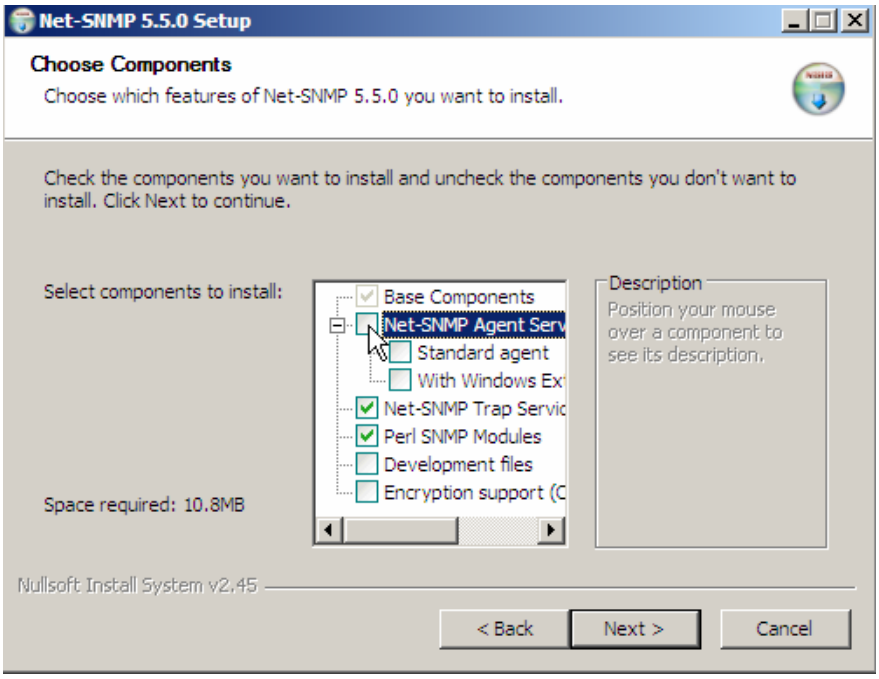
__ g. Select Next in the NET-SNMP install dialog to kick off the installation wizard.



__ h. Accept the license terms and select Next.

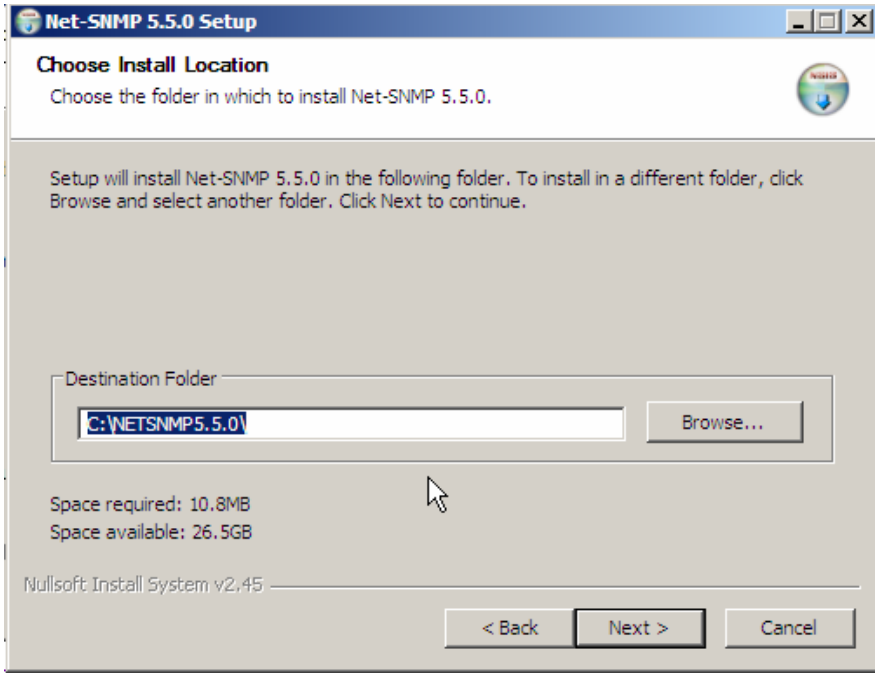


__ **i.** Un-check the option to install the SNMP agent service. You do not need to install any agents for this lab exercise. Click **Next.**

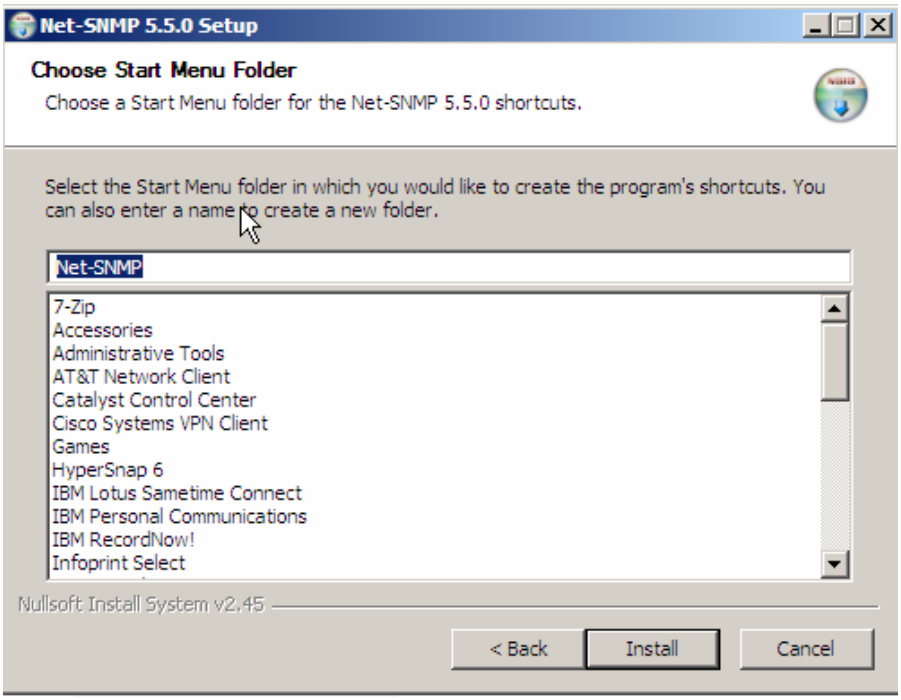


**NOTE: If you cannot un-check the “Net SNMP Agent Service” box, you will need to uncheck the inner “Standard agent” box then the “Net SNMP Agent Service” outer box will uncheck itself.

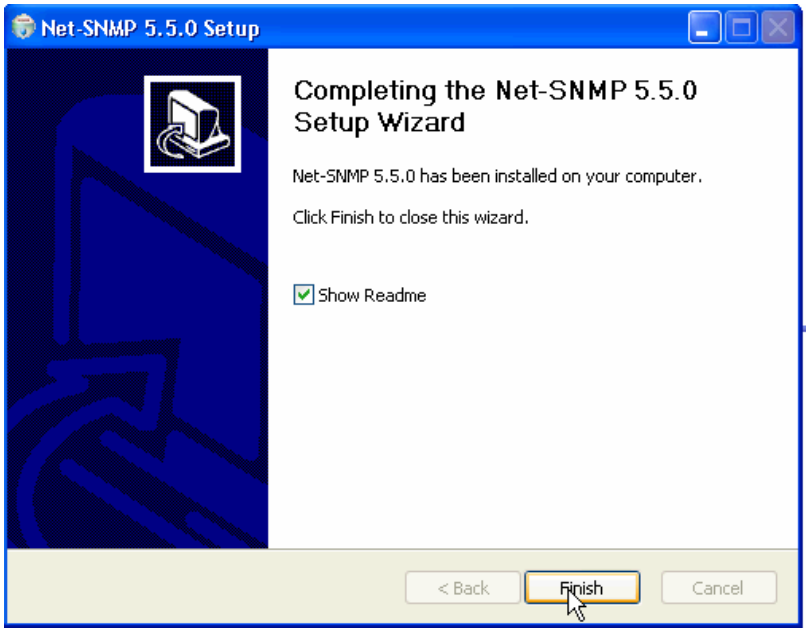
__ j. Select the location you want to install Net-SNMP and click next. This lab will assume the default install location. These instructions refer to the installation location as <NET-SNMP-INSTALL-DIR>; in this case that directory is C:/NETSNMP5.5.0.



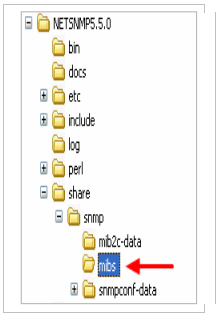
__ k. Select Install. Wait for the installation to complete.



__ **l.** Uncheck **Show Readme,** unless you want to review the readme file for the product. Then click **Finish.**



__ **m.** In this lab exercise, you will copy the MIB files from the IBM DataPower XC10 appliance to the NET-SNMP MIB directory. This is located at **<NET-SNMP-INSTALL-DIR>/share/snmp/mibs.**



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