IxOS

Release 9.30

KEYSIGHT
TECHNOLOGIES

Getting Started Guide

Notices

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Safety Information

Do not proceed beyond a hazard notice until the indicated conditions are fully understood and met.

A **CAUTION** notice denotes a hazardous situation that, if not avoided, could result in minor or moderate injury.

A **WARNING** notice denotes a hazardous situation that, if not avoided, could result in death or serious injury.

Contacting Us

Keysight headquarters

1400 Fountaingrove Parkway
Santa Rosa, CA 95403-1738
www.ixiacom.com/contact/info

Support

Global Support	+1 818 595 2599	support@ixiacom.com
Regional and local support contacts:		
APAC Support	+91 80 4939 6410	support@ixiacom.com
Australia	+61-742434942	support@ixiacom.com
EMEA Support	+40 21 301 5699	support-emea@ixiacom.com
Greater China Region	+400 898 0598	support-china@ixiacom.com
Hong Kong	+852-30084465	support@ixiacom.com
India Office	+91 80 4939 6410	support-india@ixiacom.com
Japan Head Office	+81 3 5326 1980	support-japan@ixiacom.com
Korea Office	+82 2 3461 0095	support-korea@ixiacom.com
Singapore Office	+65-6215-7700	support@ixiacom.com
Taiwan (local toll-free number)	00801856991	support@ixiacom.com

Documentation conventions

The following documentation conventions are used in this guide:

Describing interactions with the UI

You can interact with products by using different input methods: keyboard, mouse, touch, and more. So in most parts of the user documentation, generic verbs have been used that work with any input method. In cases where input-neutral verbs do not work, mouse-specific verbs are used as the first choice, followed by touch-specific verbs as the second choice.

See the following table for examples on how you can interpret the different input methods.

Input-neutral	Mouse	Touch
Select **Modify**.	Click **Modify**.	Tap **Modify**.
Select **Accounts** > **Other accounts** > **Add an account**.	Click **Accounts** > **Other accounts** > **Add an account**.	Tap **Accounts** > **Other accounts** > **Add an account**.
To open the document in Outline view, select **View** > **Outline**.	To open the document in Outline view, click **View** > **Outline**.	To open the document in Outline view, tap **View** > **Outline**.
Select **Protocols**.	Click the **Protocols** tab.	Tap **Protocols**.
-NA-	Double-click the **Client** wizard.	Double-tap the **Client** wizard.
Open the **Packages** context menu.	Right-click **Packages** to open the shortcut menu.	Long tap **Packages** to open the shortcut menu.

Deprecated words

The following words have been replaced with new words, considering the audience profile, our modern approach to voice and style, and our emphasis to use input-neutral terms that support all input methods.

Old usage...	New usage...
shortcut menu, right-click menu	context menu
click, right-click	select
drag and drop	drag

CONTENTS

CHAPTER 1 Overview of IxOS

This topic provides a basic overview of IxOS.

About the Ixia Product Family

The Ixia system is the most comprehensive tool available for testing multilayer High Speed Ethernet, 10/100 Mbps Ethernet, Ethernet Gigabit, 10/40/100 Gigabit Ethernet, ATM, and Packet over SONET switches, routers, and networks.

The Ixia product family includes chassis, load modules, the Ixia IxExplorer software program, and optional Tcl scripts and related software. A chassis can be configured with any mix of load modules, and multiple chassis can be connected in a daisy chain or star topology and synchronized to support very large and complex test environments. The Ixia IxExplorer software provides complete configuration, control, and monitoring of all Ixia resources in the test network, and the Tcl scripts allow to rapidly conduct the most popular industry benchmark tests.

The XM12 provides high port density and hot swappable capability.

The XM2 is the next generation portable chassis that is a combination of the architecture with the XM form factor. The XM2 provides hot-swappable capability in a more portable format.

The XGS12 Chassis – XGS12-SD and XGS12-HS are the next generation high performance platform capable of supporting XM form factor load modules. XGS12-SD and XGS12-HS are 12-slot chassis with high-speed backplane (160 Gbps between each adjacent two cards) designed for aggregation across load modules. These chassis are capable of testing high density, multi-Terabit bandwidth, Carrier class core edge, metro routers and data center switches. This flexible platform supports layer 2-7 testing on a massive scale and provides the most comprehensive solution for performance, functional, security, and conformance testing of network equipment and network applications.

The 2-slot XGS2 chassis - XGS2-SD and XGS2-HS provide highly flexible and portable chassis that powers load modules and test applications to create an Ixia test system. The XGS2 platform provides the foundation for a complete benchtop or rackmount test environment. The chassis platform supports Ixia applications for performance, functional, conformance, and security testing.

A range of 1 to 48 ports can be packaged depending on network technology. An Ixia card is also referred to as a load module. For most media, any combination of load modules may be included in a single chassis. The highly scalable architecture supports daisy-chaining of up to 256 chassis that may be locally synchronized. Thus, even the most complex systems can be tested thoroughly and cost-effectively.

You can configure and control the unit directly through connections to a keyboard, mouse, monitor, and printer. Also, the unit can be connected to an Ethernet network and an administrator can remotely monitor and control it using the IxExplorer software program. Multiple users can access the unit simultaneously, splitting the ports within a chassis and controlling the activity and configuration of all ports and functions.

Front panel displays give immediate indication of link state, transmission or reception of packets, and error conditions. Ixia's powerful IxExplorer and Microsoft Windows-based software provides easy

configuration, control, and status. The Ixia system offers an optional suite of scripts written in the industry-standard scripting language Tcl, which stands for Tool Command Language (commonly pronounced as *tickle*).

Each Ixia chassis is equipped with one or more Intel processors. The operating system installed on the chassis may be Windows XP Professional or Windows 7 Professional.

> **Note:** Ixia supports upgrades to the Microsoft operating system (OS) on Ixia chassis. Contact Ixia Technical Support for assistance with Microsoft OS upgrade options.

Additional information on the operation of the Ixia chassis and load modules can be found in the other Ixia guides, which include the following:

- *IxExplorer User Guide*: Provides information on the use of the Ixia IxExplorer GUI.
- *Ixia Platform Reference Guide*: Provides information on Ixia chassis and load modules, including specifications.
- *IxAutomate User Guide*: Provides information on the use of the Ixia IxAutomate GUI, for automated testing.
- *Tcl Development Guide*: Provides information on the Ixia Tcl API used in creating customized test scripts.

Comprehensive Help is included in the IxExplorer GUI software.

CHAPTER 2 Installation

This chapter describes the requirements for and provides detailed instructions for installing IxOS. It contains the following topics:

- *Unpacking the Ixia Chassis*
- *Notes, Cautions and Warnings*
- *Installation*
- *Windows 7 Configuration*
- *Windows 10 Configuration*
- Windows disk cleanup
- *File-Sharing*
- *Local/Remote Operation*
- *UNIX Installation Notes*
- *Unix/Linux Operation*
- *Powering Up*
- *Shutting Down*
- *Software Installation for Remote Operation*
- *Server Operation Option*
- *Hardware Manager Options*
- *Installing a Demonstration IxServer*
- *Shell Wrapper Installation*
- *Automatic Update Feature*
- *IxOS Silent Install*
- *Uninstall/Modify a Current Installation*
- *Multi-Version Installation and Management*
- *Repair, Modify, Uninstall using Windows Control Panel*

Unpacking the Ixia Chassis

Each chassis comes packed in its own box. Carefully remove all of the pieces from the box and check that you have all the components as mentioned in the following list:

- IXIA chassis
- Power cord
- Right and left ear brackets and screws, for rack mounting (for XM2)
- Chassis sync cable

- The following documentation items, possibly shipped separately:
  - Windows XP or Windows 7 Professional certificate of authenticity
  - Getting Started Guide

Notes, Cautions and Warnings

Power Cords

Power cords that are included in shipments of Ixia equipment meet the approved/recognized standards of the national safety organization(s) of the destination country.

Use the power cord provided or a power cord approved by the appropriate agency for use in the country where the unit is being used. The power source should be properly grounded.

Battery Replacement

Danger of explosion if battery is incorrectly replaced. You should not attempt to replace the battery.

Return to Ixia Customer Service for replacement with the same or equivalent type of battery. Ixia disposes of used batteries according to the battery manufacturer's instructions.

Ventilation Requirements

The following caution applies to equipment installed into equipment racks:

Reduced Air Flow—Install the equipment in a rack so that the amount of air flow required for safe operation of the equipment is not reduced.
Do not block the back or sides of the chassis, and leave approximately two inches of space around the unit for proper ventilation. Do not block any ventilation apertures on any chassis.Clean ventilation intake grills periodically to permit good airflow intake.

Voltage

Ixia chassis use voltage from 100 VAC to 240 VAC at 50/60 Hz. Current is from 2.25 A to 20 A.

Rack Mounting

Two rack-mount ears and black flat-head screws are provided (for chassis that may be rack-mounted). These are designed to fit a generic 19-inch electronic rack. First, attach the ears to the unit, and then attach the unit by the ears to the rack by a method appropriate for the rack.

Rack Mounting Precautions

If the chassis is installed in a Rack Mount, observe the following precautions:

a. Elevated Operating Ambient Temperature: If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient temperature. Therefore, consider installing the equipment in an environment that is compatible with the maximum allowable ambient temperature specified for the chassis (40° C).

b. Reduced Air Flow: Install the equipment in a rack so that the amount of air flow required for safe operation of the equipment is not reduced.
Do not block the back or sides of the chassis, and leave approximately two inches of space around the unit for proper ventilation.

c. Mechanical Loading: Mount the equipment in the rack so that a hazardous condition is not caused due to uneven mechanical loading.

d. Circuit Overloading: Consider the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on current protection and supply wiring. Pay attention to equipment nameplate ratings when addressing this concern.

e. Reliable Earthing: Maintain reliable earthing (grounding) of rack-mounted equipment. Pay special attention to supply connections other than direct connections to the branch circuit (such as use of power strips).

Use End Caps on Open Ports

The metal edges of the SFP and SFP+ ports are SHARP. To avoid injury, ALWAYS keep unused SFP ports covered with end caps. When installing a load module into a chassis or removing from a chassis, ensure that the end caps are in place on unused ports.

To prevent accidental injury to personnel, do not leave unused SFP (or SFP+) ports uncovered. When transceivers are not installed, end caps must be used.
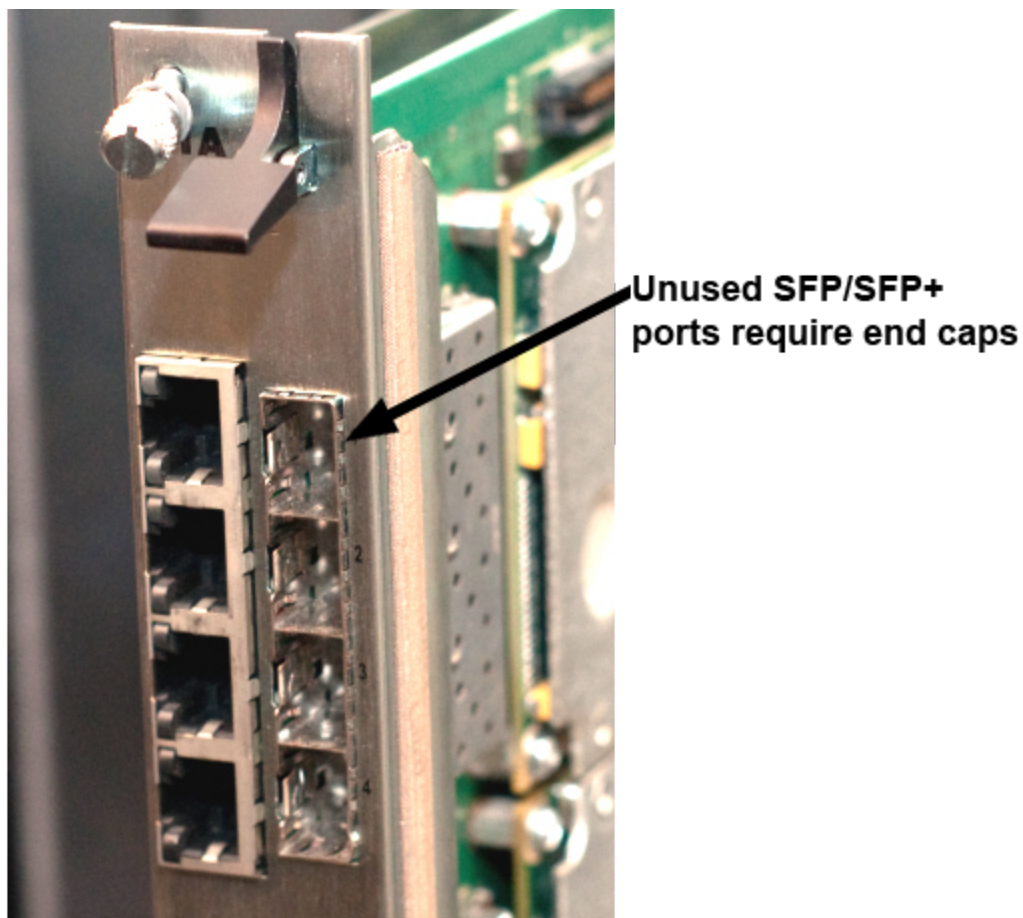
Affected load modules include the following:

- NGY with SFP+ interface, 2/4/8-port, all models

- Dual PHY SFF cards with RJ45 and SFP Gigabit (TXS and STXS)

- ACCELERON-NP and -XP

- LSM1000XMV 4/8/12/16-port, all models

- LSM1000XMS12/12R

- ASM1000XMV12X/12XRTP

Use Ejector Tabs Properly

Ejector tabs on load modules are to be used only to eject a load module from the chassis backplane connector. They are not designed to support the weight of the load module. Ejector tabs can bend if used improperly as handles to push, pull, or carry a load module.

Do not use ejector tabs as handles to support a load module while installing and fitting into the chassis. The ejector tabs are to be used only to eject the module from the chassis backplane connector.

Maintenance Instructions

The only user maintainable feature is changing the fuse, if it blows. Replace the fuse only with one of the same size and rating. The fuse drawer, located near the power cord receptacle, pulls out with a small flat-bladed screwdriver. Note that repeated fuse blowing may likely indicate some internal problem; you should report the problem to Ixia Technical Support.

We recommend cleaning of the ventilation intake grills periodically to permit good airflow intake.

Calibration of the Ixia chassis is not required. There are no adjustable components in any Ixia chassis.

China RoHS Declaration

The China RoHS Declaration can be found in the *Ixia Platform Reference Guide*, in the Chapter titled *About This Guide.*

Cautions

XM12 Caution

The following cautions and warnings apply to the XM12 chassis.

The socket/ outlets used to power the unit must be installed near the equipment and must be easily accessible because the power plug may be used to disconnect the unit from the power source.

Warning Multiple Sources of Supply. Disconnect All Sources before Servicing	**Avertissement** Présence de plusieurs sources d'alimentation électrique. Débrancher toutes les sources d'alimentation avant intervention	**Achtung** Mehrfachstromquellen! Alle Versorgungskabel vor Wartung entfernen.	警告 複数のパワーサプライがありますので、保守する際には必ず全ての電源ケーブルを抜いてください

Warning	Avertissement	Achtung	警告
High Touch Current. Earth Connection Essential Before Connecting Supply	Fort courant de contact Raccordement à la Terre impératif Avant branchement de l'alimentation	Stellen Sie eine sichere Erdverbindung her, bevor Sie die Stromquelle anschließen.	高漏洩電流に気を付け、適切に設置してから電源を接続してください

XM2, XGS2-SD, and XGS2-HS Caution

The following caution applies to XM2, XGS2-SD, and XGS2-HS chassis:

The chassis units can only be operated in the horizontal position.

XGS12-HS, XGS2-SD, XGS2-HS, and XGS12-HS Caution

The following caution applies specifically to XGS12-SD, XGS12-HS, XGS2-SD, and XGS2-HS chassis:

Battery replacement: Danger of explosion if battery is incorrectly replaced. You should not attempt to replace the battery. Return to Ixia Customer Service for replacement with the same or equivalent type of battery. Ixia disposes off used batteries according to the battery manufacturer's instructions.

Installation

The Ixia Chassis comes preloaded with IxServer and IxExplorer software along with Windows 7 Professional. The chassis includes an internal industry standard computer hardware platform. To perform initial configuration, it is necessary to obtain the components mentioned here and to attach them to the appropriate connectors on the back or front of the chassis:

- SVGA monitor
- PS/2-style keyboard
- PS/2-style mouse

Debugability Daemon

When you install IxOS on the chassis, the debugability daemon is also installed along with it. This daemon provides communication and debugability services such as IxLogger and Correlation Engine. It also provides visibility over the ports to the client, so that when the client uses the chassis, the ports are visible directly.

> **Note:** Ixia supports upgrades to the Microsoft operating system (OS) on Ixia chassis. Contact Ixia Technical Support for assistance with Microsoft OS upgrade options.

ℹ **Note:** Any Ixia chassis must be always operated with the chassis cover closed and with all card face plates mounted.
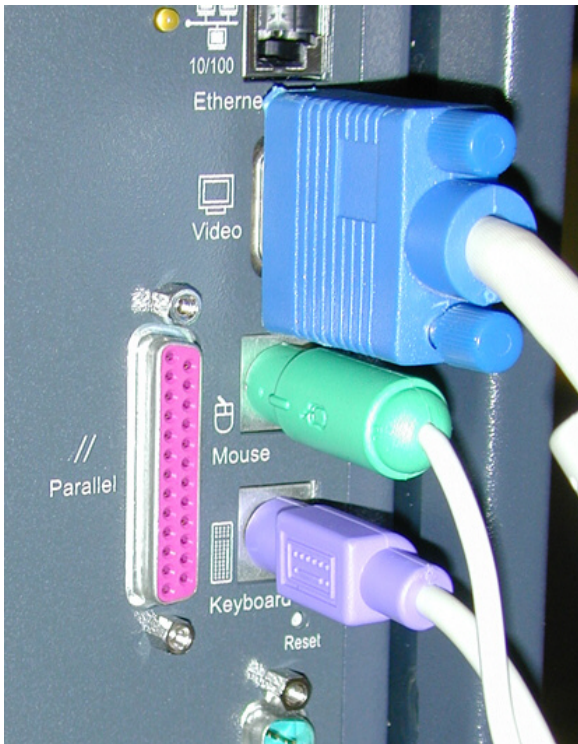
Initial Chassis/Peripheral Connection

To perform initial chassis configuration for Windows, a monitor, keyboard, and mouse must be connected to the chassis.

To configure TCP/IP, do the following:

1. Attach the monitor, keyboard and mouse to the ports on the back of the XGS12-SD chassis, or the front of the XM12 chassis as shown in the following figures.

2. Attach the power cord to the chassis and then to the wall socket. Switch the main power switch to '1' (on).

3. Power on the chassis by pressing the power button in the front of the chassis.

4. Verify that the IxServer window appears as shown in the following figure:

The screenshot shows the IxServer window with a log:

| Date	Time	Card	Port	Result	Event
05-28-1999	09:38:32				MapMemory
05-28-1999	09:38:32				MapMemory
05-28-1999	09:38:32				Download Backplane
05-28-1999	09:38:32				Download C:\PROGRAM FILES\IXIA\Fpga\b0003.
05-28-1999	09:38:36				Boards Present 0x0001
05-28-1999	09:38:36				PowerUp
05-28-1999	09:38:37				Download C:\PROGRAM FILES\IXIA\Fpga\c0020(
05-28-1999	09:38:38				Download C:\PROGRAM FILES\IXIA\Fpga\p0020?
05-28-1999	09:38:42				Initialize Memory
05-28-1999	09:38:46				CentralFpgaVersion 2
05-28-1999	09:38:46	1			FpgaVersion Tx 1.56 Rx 1.56
05-28-1999	09:38:46	1	1		FpgaVersion Tx 1.56 Rx 1.56
05-28-1999	09:38:46	1	2		FpgaVersion Tx 1.56 Rx 1.56
05-28-1999	09:38:46	1	3		FpgaVersion Tx 1.56 Rx 1.56
05-28-1999	09:38:46	1	4		FpgaVersion Tx 1.56 Rx 1.56
05-28-1999	09:38:46				MemoryTest IncAddress
05-28-1999	09:38:46	1			MemoryTest IncAddressTest
05-28-1999	09:38:48				MemoryTest DecAddress
05-28-1999	09:38:48	1			MemoryTest DecAddressTest
05-28-1999	09:38:50				MemoryTest PageTest
05-28-1999	09:38:50	1			MemoryTest PageAddressTest
05-28-1999	09:38:51	1			CentralFpgaVersion 2
05-28-1999	09:38:51	1	1		FpgaVersion Tx 1.56 Rx 1.56
05-28-1999	09:38:51	1	2		FpgaVersion Tx 1.56 Rx 1.56
05-28-1999	09:38:51	1	3		FpgaVersion Tx 1.56 Rx 1.56
05-28-1999	09:38:51	1	4		FpgaVersion Tx 1.56 Rx 1.56
05-28-1999	09:38:51	1	4		WritePort PacketStream StreamCount 1
05-28-1999	09:38:52	1	3		WritePort PacketStream StreamCount 1

1 Connections

Windows 7 and Windows 10 Configuration

The Windows 7 configuration procedure is explained in the following sections.

Windows 7 TCP/IP Configuration

The network address of the chassis must be set, even if the network is not used.

1. To do this, select the following sequence of items: **Start** (in the lower left-hand corner of your computer screen), **Control Panel**, **Network and Internet** and **Network and Sharing Center**. You can view your basic network information and set up connections.
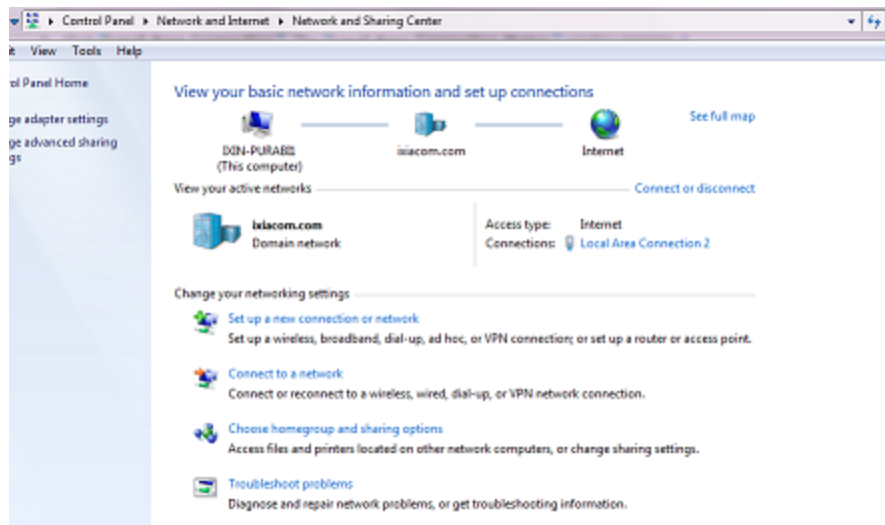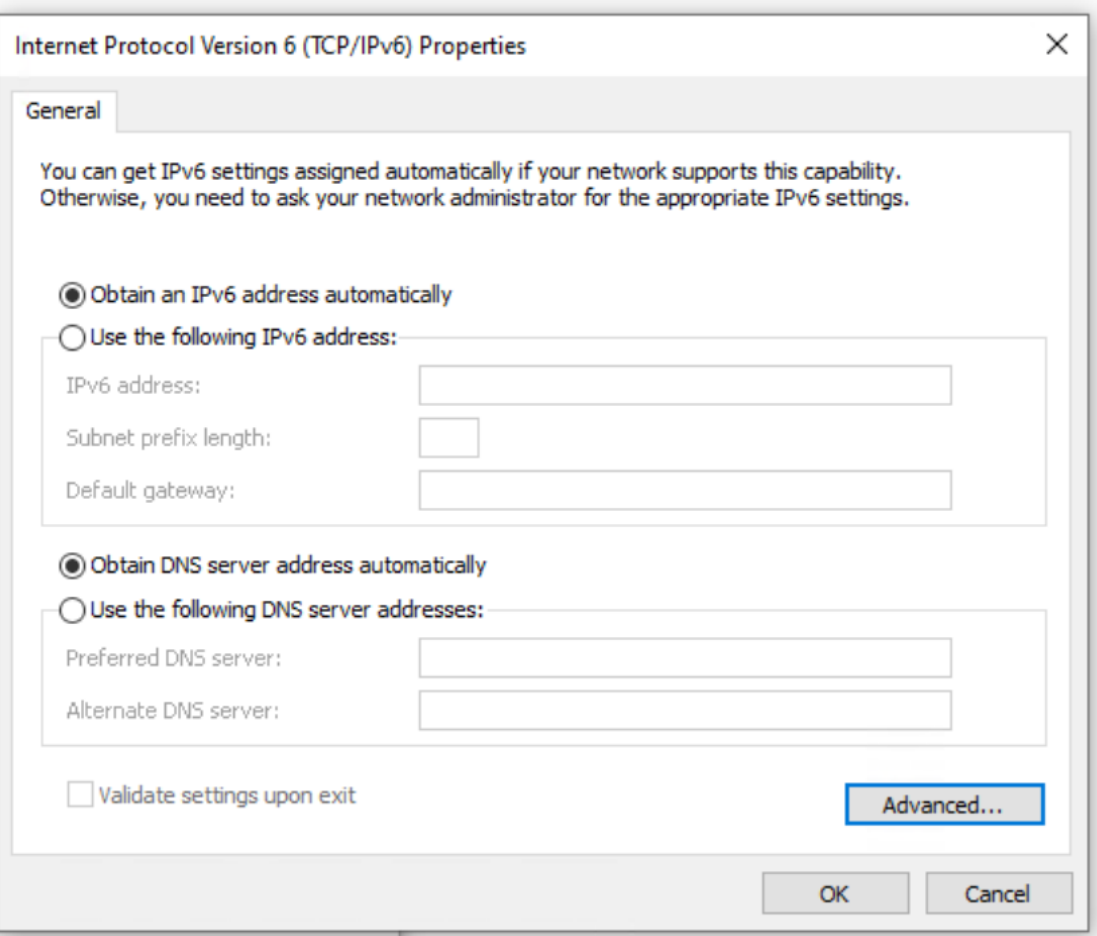
2. Select **Local Area Connection**. The **Local Area Connection Status** window appears.
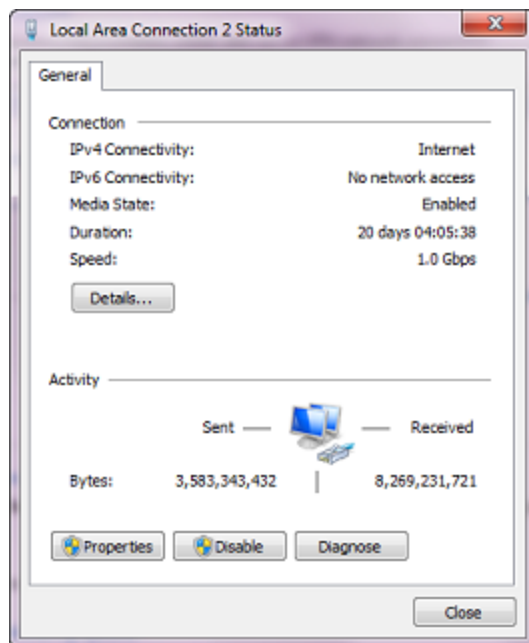
3. Select **Properties**. The **Local Area Connection Properties** window opens, as shown in the following figure:
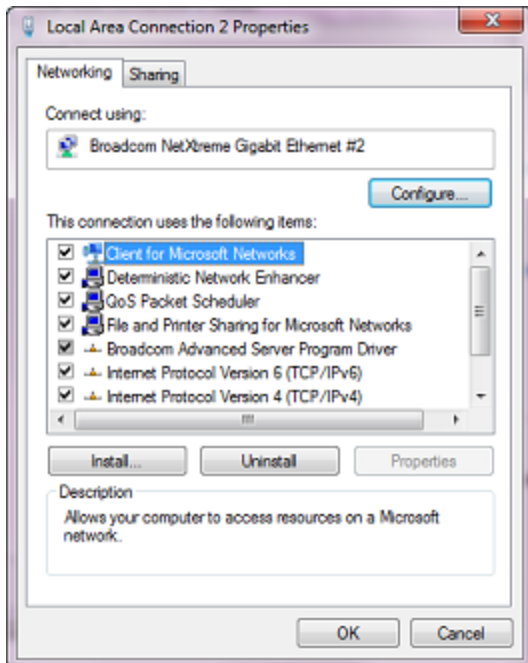
4. Double-click the **Internet Protocol Version 6 (TCP/IPv6)** entry or select **Properties** to open the **Internet Protocol Version 6 (TCP/IPv6) Properties** window as shown in the following figure:

Internet Protocol Version 6 (TCP/IPv6) Properties   ✕

General

You can get IPv6 settings assigned automatically if your network supports this capability.
Otherwise, you need to ask your network administrator for the appropriate IPv6 settings.

◉ Obtain an IPv6 address automatically
○ Use the following IPv6 address:

IPv6 address:

Subnet prefix length:

Default gateway:

◉ Obtain DNS server address automatically
○ Use the following DNS server addresses:

Preferred DNS server:

Alternate DNS server:

☐ Validate settings upon exit   Advanced...

OK   Cancel

5. This setting reflects the default factory setup for your chassis. It is configured to use DHCP to
    discover all network aspects for your chassis. If you have a DHCP server computer on the network
    attached to the chassis, this is the appropriate configuration of your chassis; proceed to step 11. If
    no DHCP server computer is found on the network, Windows 7 automatically assigns a unique IP
    address in the 169.254.0.0–169.254.255.255 range. Again this might be appropriate for your
    network. If you need to assign a particular IP address to your chassis, fill in the fields as explained in
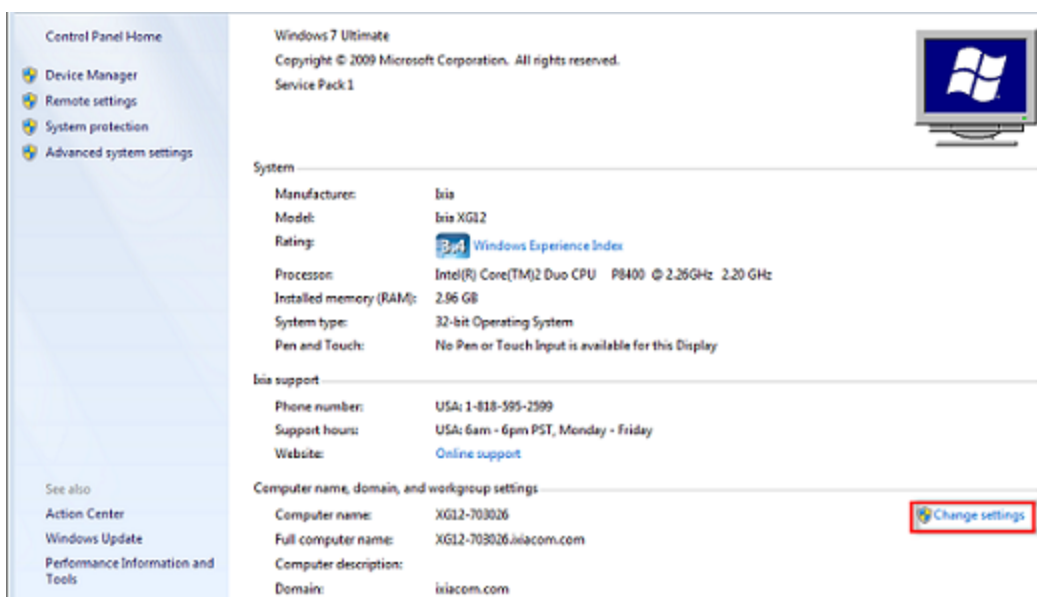   the following table.

	Category	**Parameter**	**Usage**
General	Obtain an IP address automatically		If selected, the fields for IP address are disabled, and the **Obtain DNS server address automatically** option is enabled.
	Use the following IP address:		If selected, the sub-fields under this option are enabled for manual configuration of the IP address information.

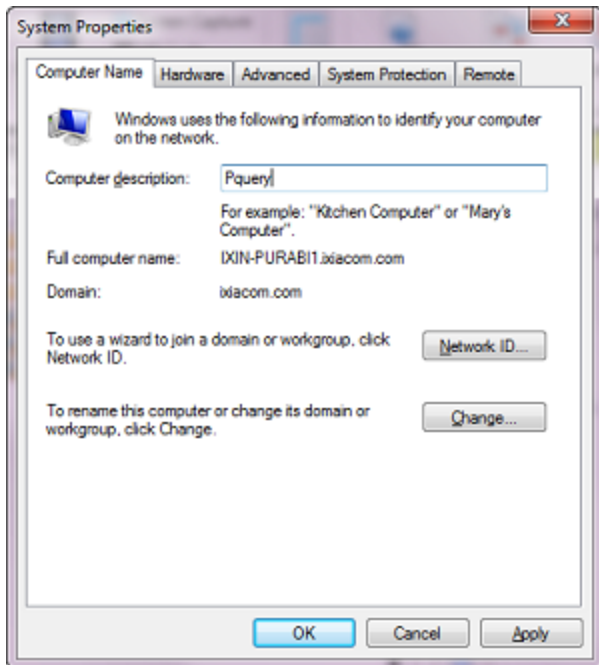|	Category	Parameter	Usage
		IP Address	The single IP address for this chassis.
		Subnet Mask	The IP subnet mask to be used with this IP address.
		Default Gateway	The IP address of the gateway for the network.
	Obtain DNS server address automatically		If selected, the IP address for the server computer providing Domain Name Service (DNS) for name resolution is obtained automatically from the local DHCP server computer.
	Use the following DNS server addresses		If selected, the sub-fields under this option are enabled for manual entry of the IP addresses for the DNS servers.
		Preferred DNS server:	The IP address for the preferred DNS server.
		Alternate DNS server:	The IP address for an alternate DNS server.
	Validate settings upon exit		If selected, the IP address settings are verified when you exit.
	Advanced		If selected, the Advanced TCP/IP Settings dialog box appears.

6. You need to refer to the Host ID at a later time when running IxExplorer. This name must be assigned in the Computer-System Properties window. First, select **Computer** icon on the desktop to open the context menu as shown in the following figure:
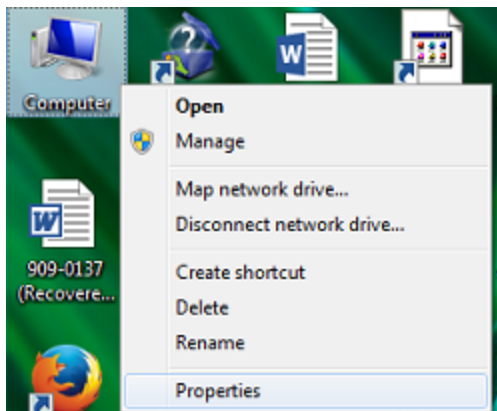
7. Select **Properties** . You can view the basic information about your computer as shown in the following figure:

8. Select **Change settings**. The **System Properties** window appears as shown in the following figure:
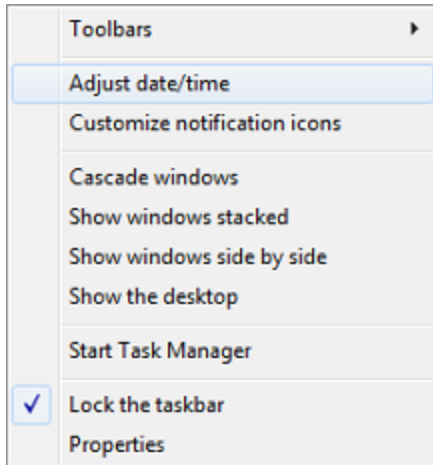
9. The Computer Name shown in the **System Properties** window is an example of the pre-configured name assigned to each chassis. Each chassis' name is of the form <TYPE>-<SERIALNO>. <TYPE> is corresponding to the type of chassis. <SERIALNO> is the chassis serial number and is always six digits long. By default, each chassis is also a member of the *IXIA* workgroup. This may be changed at this time to another workgroup or as a member of a Windows 2000/XP domain. If any change has been made, Windows asks you if you wish to restart. Answer 'YES.'

> **Note:** Changing a chassis name requires updating your license. See Regular License Installation.
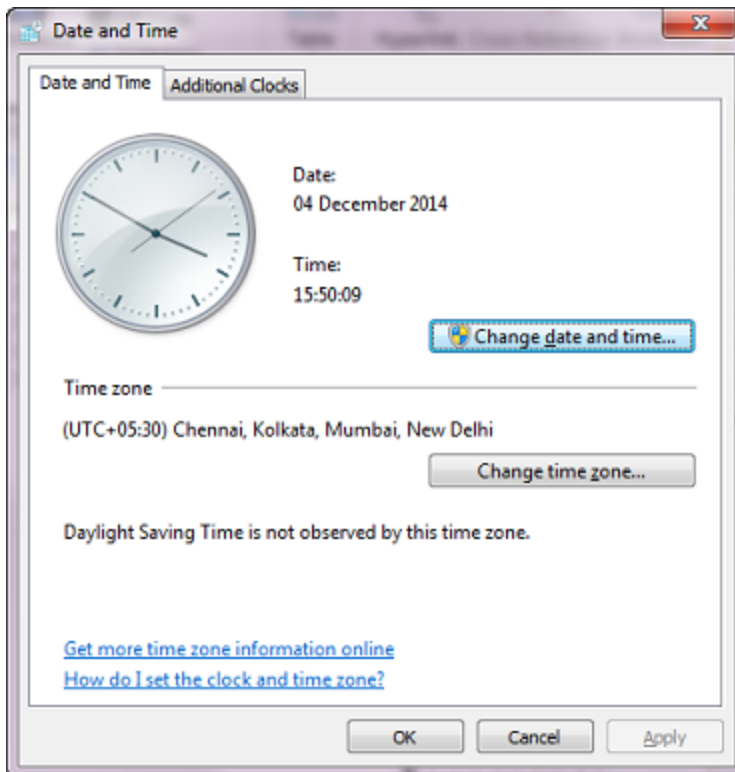
Windows 7 General Configuration

The Windows 7 initial configuration includes some features that make the chassis more robust and easier to use. The features are mentioned in the following list:
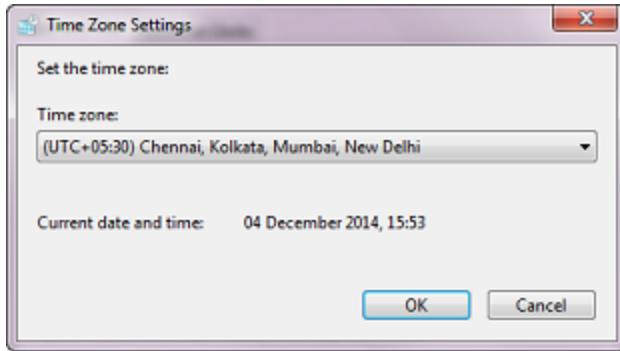
1. The latest Windows 7 Service Pack has been applied. This Microsoft Certified software increases the operating system security.

2. The time zone of the computer has been set to UTC, with Daylight Saving Time disabled. To change this, do the following:

   i. Select the time in the notification area and select **Adjust date/time** from the context menu, as shown in the following figure.

The **Date and Time** window appears.

ii. Select **Change time zone** and adjust the time zone and daylight savings time settings as appropriate, as shown in the following figure. Return to the **Date and Time** tab to set the current time in your time zone.

3. An NTP (Network Time Protocol) service automatically runs. If your chassis is connected to the Internet, it keeps the system clock on your chassis accurate. If your chassis is not connected to the Internet, the NTP service has no adverse effects.

4. An anti-virus scanner is installed, but it does not run a scheduled full system scan.

Windows 7 Security Settings

The user name for the administration level account is *ixia*, with a password consisting of second half of the chassis serial number. For example, if the chassis' serial number is 400-1234567, the account name is *ixia* and the password is *1234567*.

The administrator is responsible for system maintenance and may perform any operation on the system. The *ixia* user is automatically logged on when the chassis is powered on.

Windows 10 TCP/IP Configuration

The network address of the chassis must be set, even if the network is not used.

1. To do this, select the following sequence of items: **Start** (in the lower left-hand corner of your computer screen), **Control Panel**, **Network and Internet** and **Network and Sharing Center**. You can view your basic network information and set up connections.
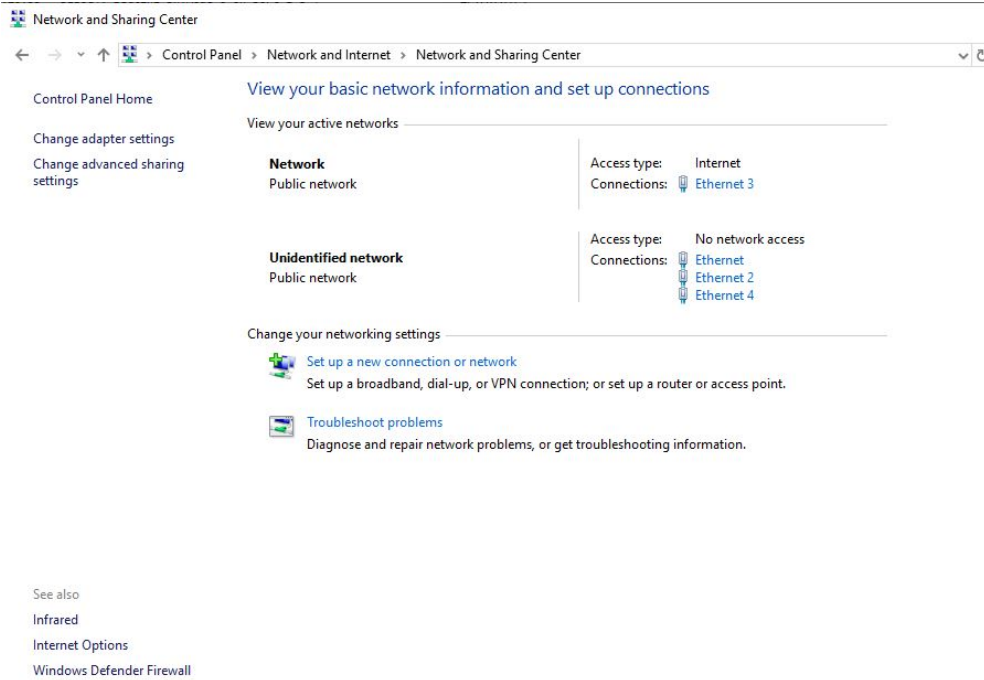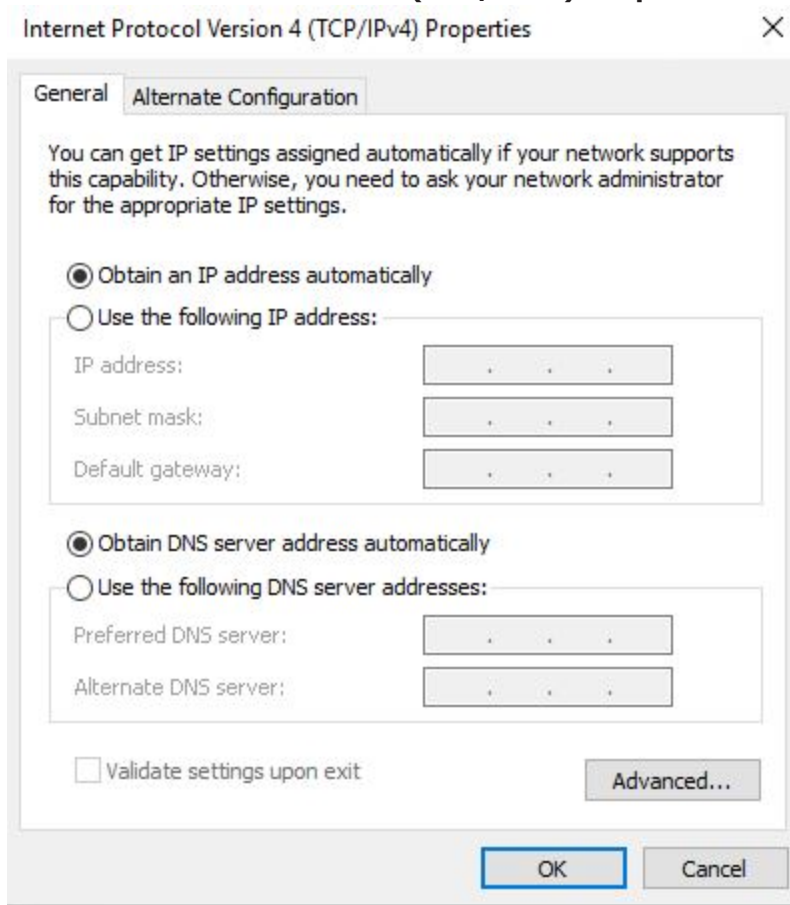
2. Select **Ethernet**. The **Ethernet Status** window appears.
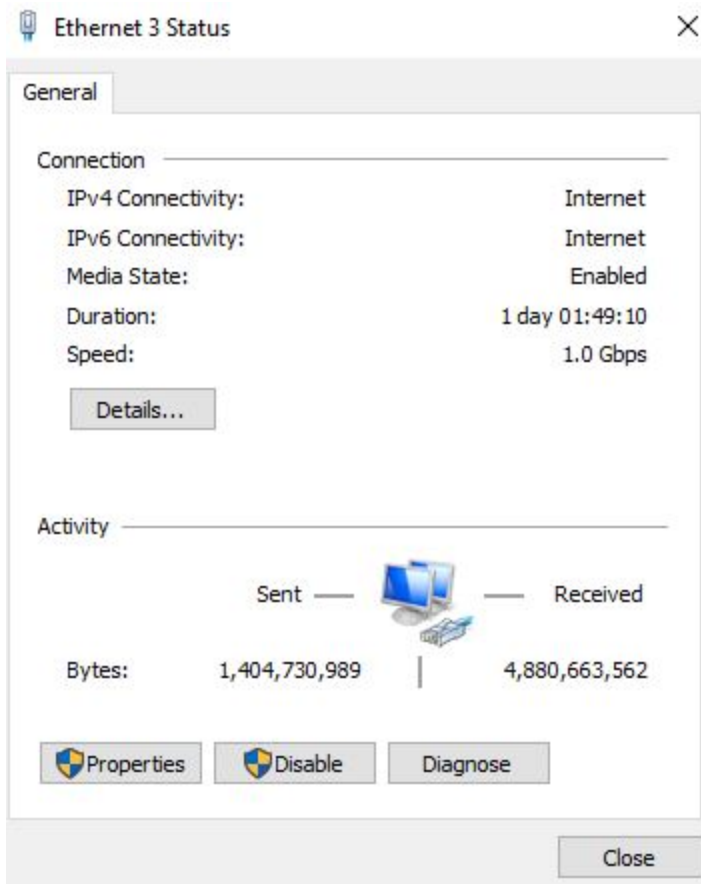
3. Select **Properties**. The **Ethernet Properties** window opens, as shown in the following figure:
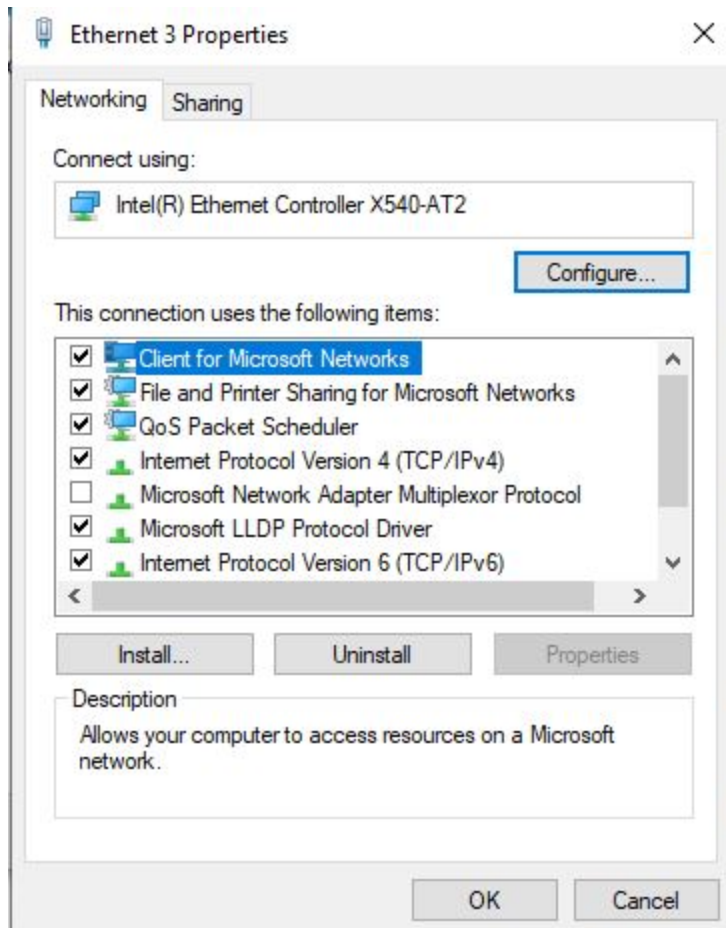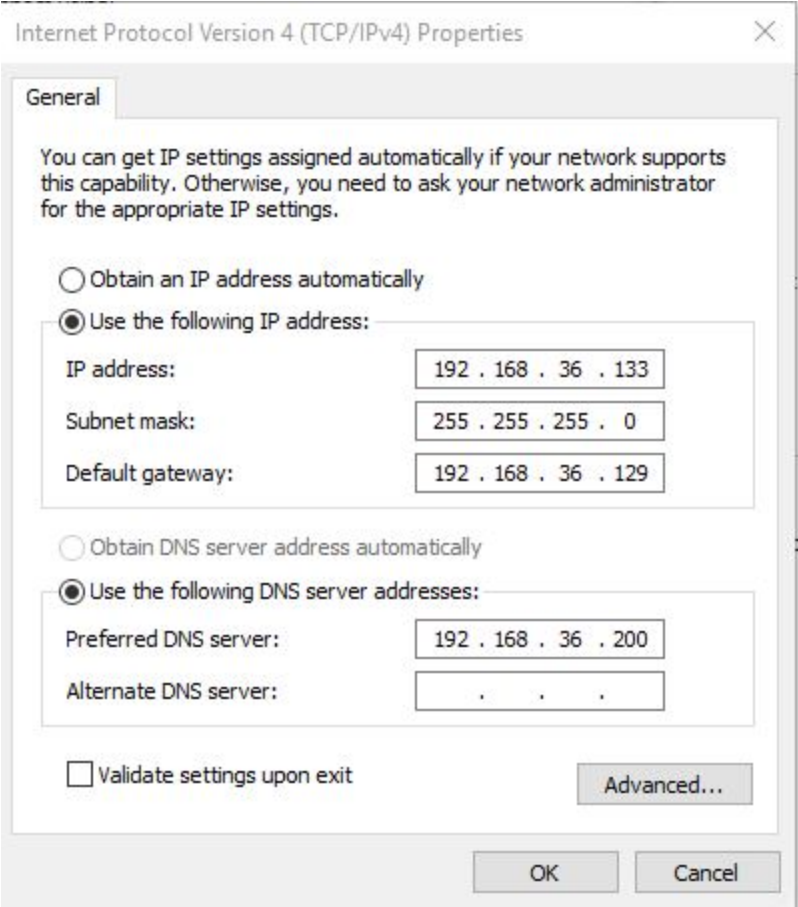
4. Double-click the Internet Protocol Version 6 (TCP/IPv6) entry or select **Properties** to open the **Internet Protocol Version 6 (TCP/IPv6) Properties** window as shown in the following figure:

Internet Protocol Version 4 (TCP/IPv4) Properties ☒

General | Alternate Configuration

You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.

◉ Obtain an IP address automatically
◯ Use the following IP address:

IP address: ___.___.___.___
Subnet mask: ___.___.___.___
Default gateway: ___.___.___.___

◉ Obtain DNS server address automatically
◯ Use the following DNS server addresses:

Preferred DNS server: ___.___.___.___
Alternate DNS server: ___.___.___.___

☐ Validate settings upon exit   [Advanced...]

[OK]   [Cancel]

5. This setting reflects the default factory setup for your chassis. It is configured to use DHCP to discover all network aspects for your chassis. If you have a DHCP server computer on the network attached to the chassis, this is the appropriate configuration of your chassis; proceed to step 11. If no DHCP server computer is found on the network, Windows 10 automatically assigns a unique IP address in the 169.254.0.0–169.254.255.255 range. Again this might be appropriate for your network. If you need to assign a particular IP address to your chassis, fill in the fields as shown in

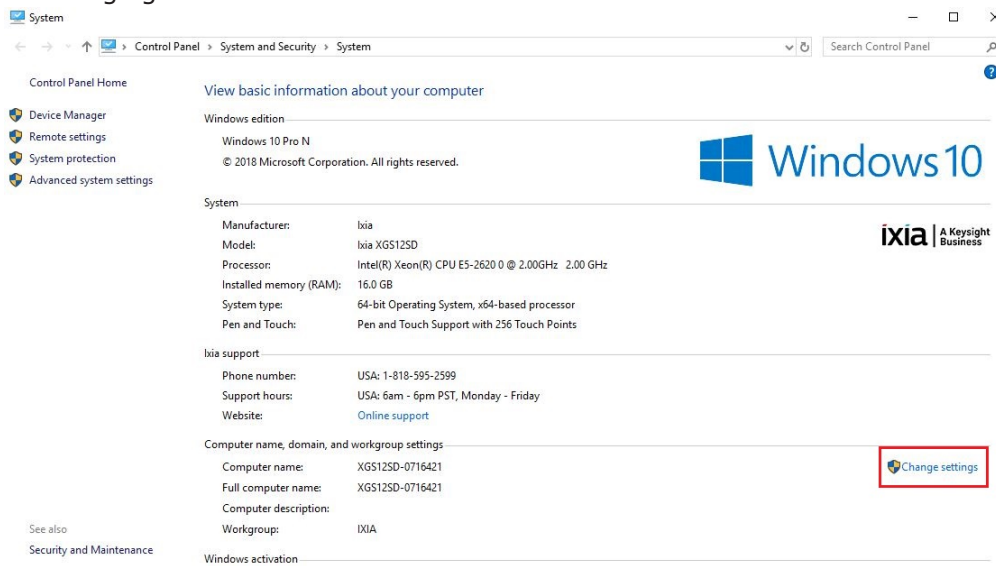the following figure and explained in the table below.

	Category	Parameter	Usage
General	Obtain an IP address automatically		If selected, the fields for IP address are disabled, and the **Obtain DNS server address automatically** option is enabled.
	Use the following IP address:		If selected, the sub-fields under this option are enabled for manual configuration of the IP address information.
		IP Address	The single IP address for this chassis.
		Subnet Mask	The IP subnet mask to be used with this IP address.
		Default Gateway	The IP address of the gateway for the network.

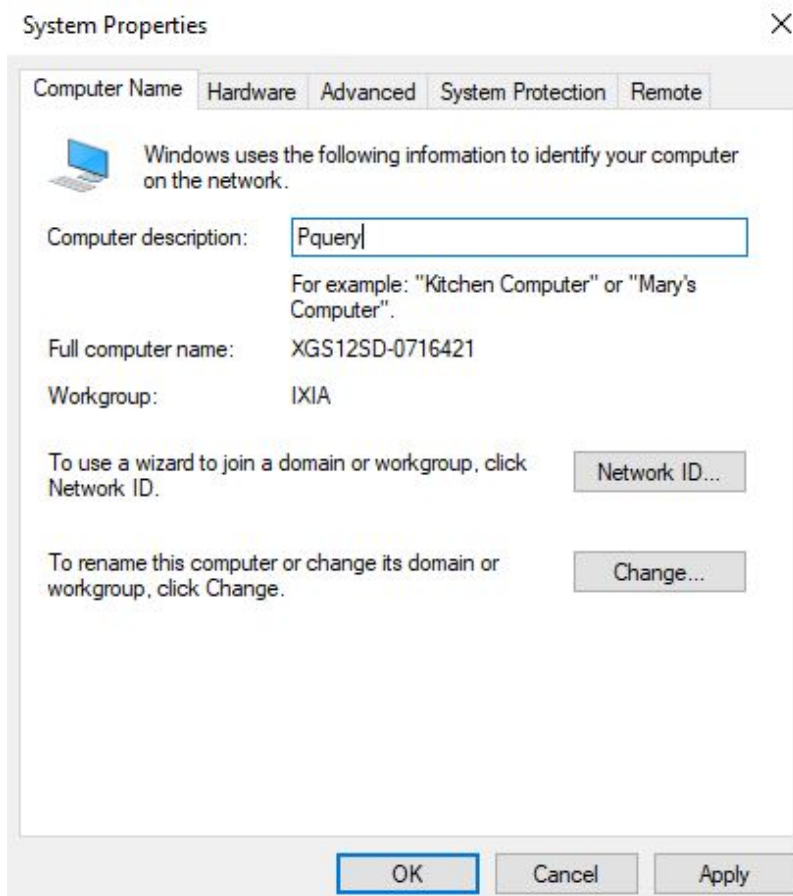|	Category	Parameter	Usage
	Obtain DNS server address automatically		If selected, the IP address for the server computer providing Domain Name Service (DNS) for name resolution is obtained automatically from the local DHCP server computer.
	Use the following DNS server addresses		If selected, the sub-fields under this option are enabled for manual entry of the IP addresses for the DNS servers.
		Preferred DNS server:	The IP address for the preferred DNS server.
		Alternate DNS server:	The IP address for an alternate DNS server.
	Validate settings upon exit		If selected, the IP address settings are verified when you exit.
	Advanced		If selected, the Advanced TCP/IP Settings dialog box appears.

6. You need to refer to the Host ID at a later time when running IxExplorer. This name must be assigned in the **Computer-System Properties** window.
   First, select the the Computer icon on the desktop to open the context menu as shown in the following figure:
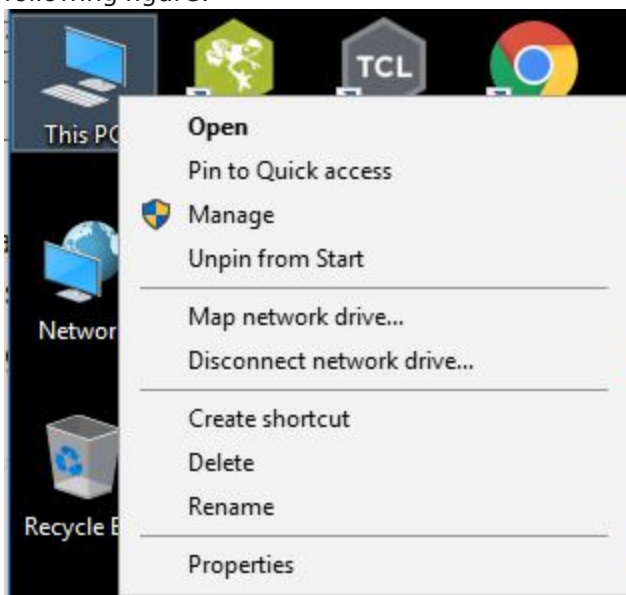
7. Select **Properties**. You can view the basic information about your computer as shown in the following figure:

8. Select **Change settings**. The **System Properties** window appears as shown in the following figure:

9. The Computer Name shown in the **System Properties** window is an example of the pre-configured name assigned to each chassis. Each chassis' name is of the form <TYPE>-<SERIALNO>. <TYPE> is corresponding to the type of chassis. <SERIALNO> is the chassis serial number and is always six digits long.
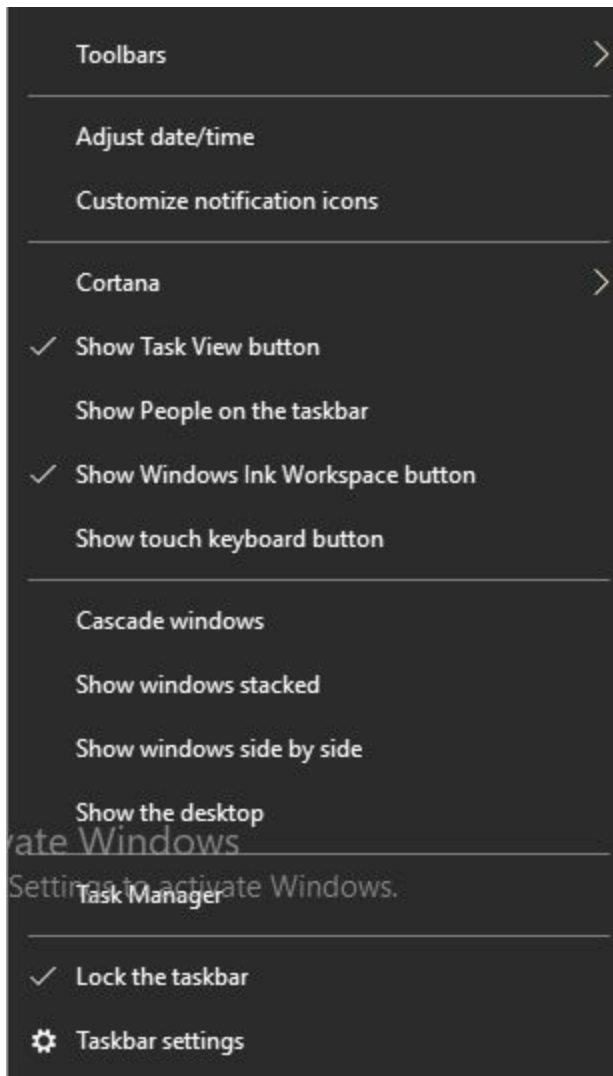   By default, each chassis is also a member of the *IXIA* workgroup. This may be changed at this time to another workgroup or as a member of a Windows 2000/XP/7/10 domain.
   If any change has been made, Windows asks you if you wish to restart. Answer 'YES.'
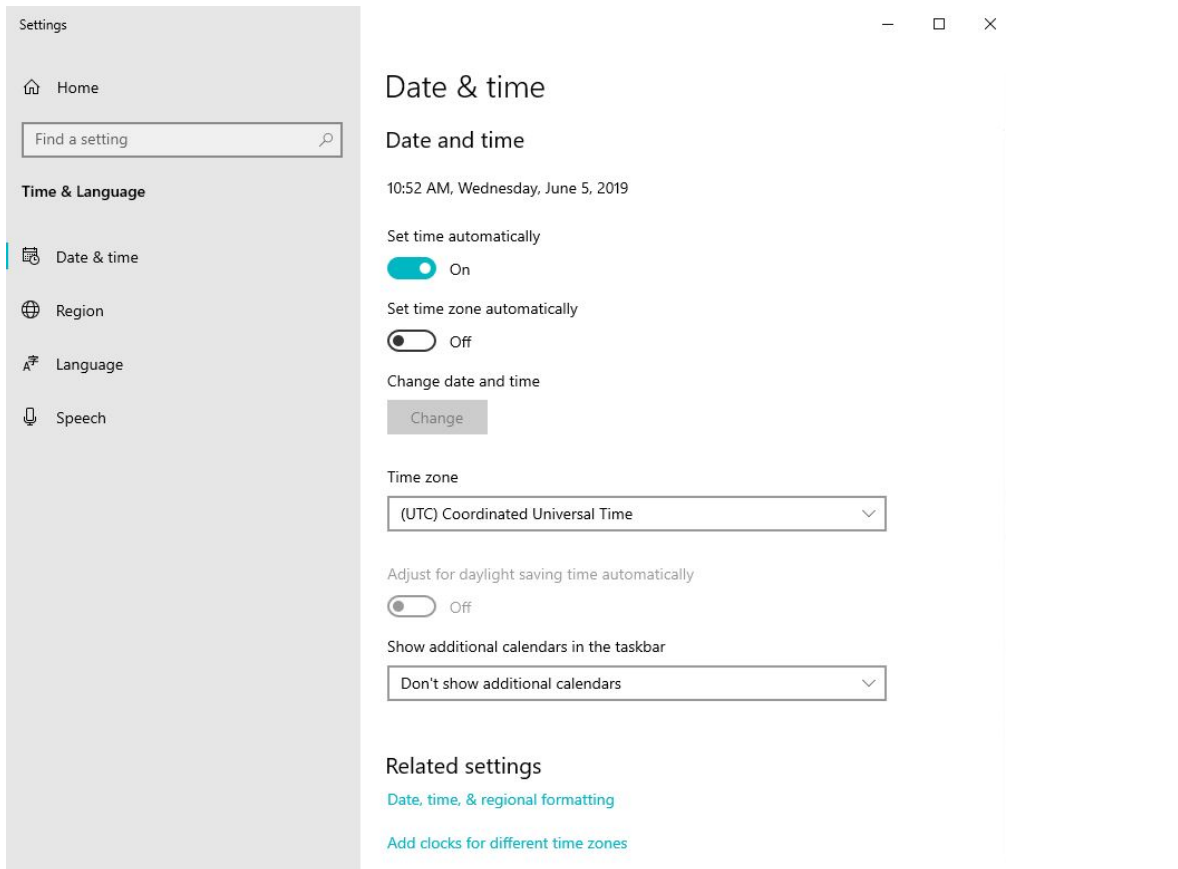
Windows 10 General Configuration

The Windows 10 initial configuration includes some features that make the chassis more robust and easier to use. The features are mentioned in the following list:
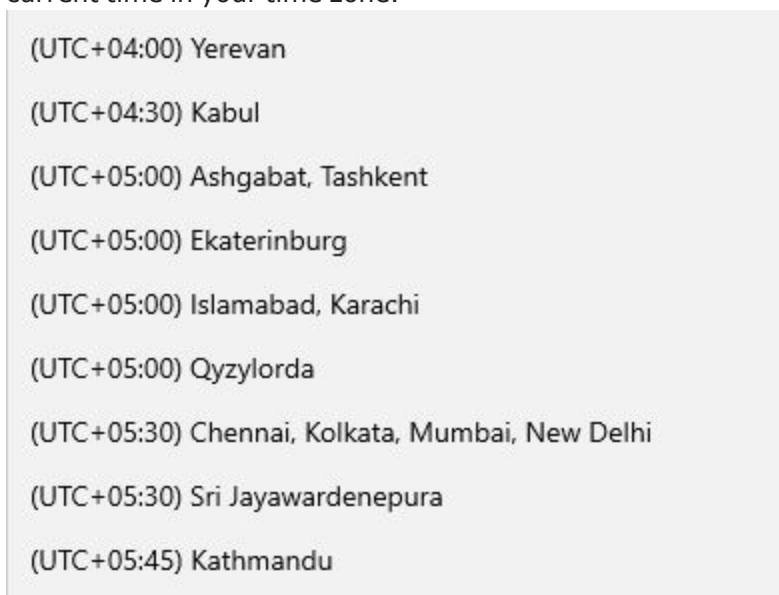
1. Unlike Windows 7 which only received one major **Service Pack** update, Microsoft frequently works on big updates to Windows 10.
   New features are introduced on a regular basis in the Windows 10 operating system.

2. The time zone of the computer is set to UTC, Coordinated Universal Time. To change this, do the following:

   i. Select the time in the notification area and select **Adjust date/time** from the context menu, as shown in the following figure.

The **Date and Time** window appears.

ii. Select **Change time zone** and adjust the time zone and daylight savings time settings as appropriate, as shown in the following figure. Return to the **Date and Time** tab to set the current time in your time zone.

3. An NTP (Network Time Protocol) service automatically runs. If your chassis is connected to the Internet, it keeps the system clock on your chassis accurate. If your chassis is not connected to the Internet, the NTP service has no adverse effects.

4. An anti-virus scanner is installed, but it does not run a scheduled full system scan.

Windows 10 Security Settings

The user name for the administration level account is *ixia*, with a password consisting of second half of the chassis serial number. For example, if the chassis' serial number is 400-1234567, the account name is *ixia* and the password is *1234567*.

The administrator is responsible for system maintenance and may perform any operation on the system. The *ixia* user is automatically logged on when the chassis is powered on.

Windows Disk Cleanup

Windows Disk Cleanup automatically cleans up dump, PerfMon, and trace files after a preset number of days.

To invoke only the IxOS-specific Disk Cleanup type the following command in the command prompt.

```
cleanmgr /sagerun:4011
```

In a complex environment with many Windows machines, it is desirable to use a Group Policy to set up Disk Cleanup consistently across the board. See Automatic Disk Cleanup with Group Policy and SCCM for more information.

File-Sharing

To protect Ixia chassis from virus attacks, Ixia has secured the chassis from unsafe remote access. This was started with chassis shipped or repaired on and later than August 1, 2004. By default, Microsoft NetBIOS file sharing mechanisms are **disabled** on Ixia chassis. The chassis is not able to browse through the network, join a domain, or have open file shares. To allow a means of file transfer to and from a chassis, an FTP server computer has been included and enabled on the chassis.

A remote user, logged into another computer, may look at or deposit files on a chassis by using FTP. When accessing a chassis' FTP server computer, the *C:* drive is set to *read-only* and the *D:* drive is set to *read/write*. The intent is that software updates be deposited on the *D:* drive, and then locally installed from the chassis' console. To view the contents of the chassis *C:* drive, type *ftp://TTT-nnnnnn/* into your browser, as shown in the following image.

To access a chassis' *D:* drive, just append a *d:* to the URL.

Software may be copied to the folder shown on the browser's screen by drag-and-drop operations.
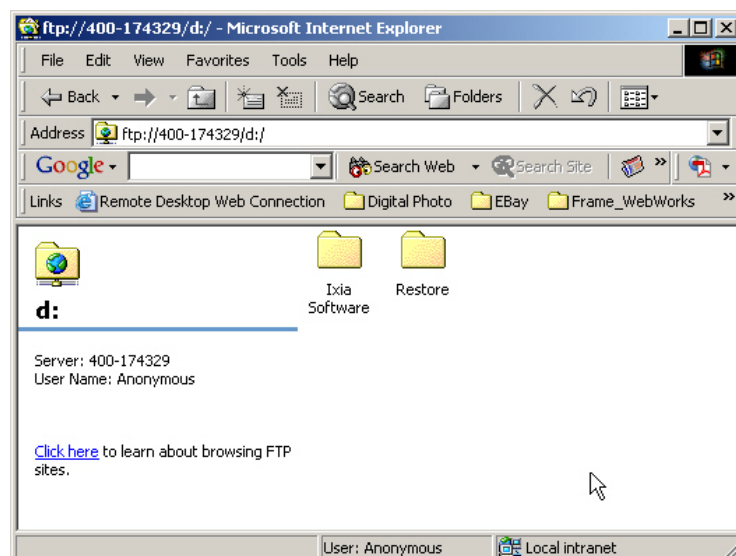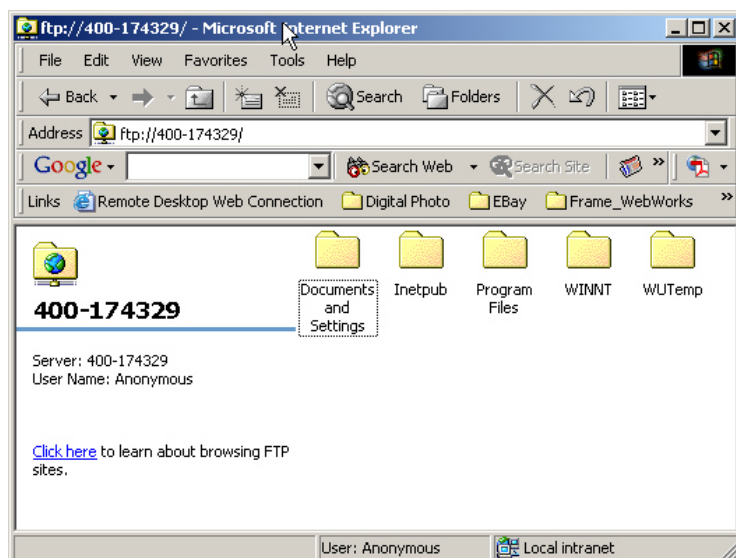
Local/Remote Operation

The IxExplorer software is the primary tool for navigation, configuration, and control of the Ixia hardware. You may use IxExplorer either from the monitor attached directly to the chassis or from a system connected to the network attached to the chassis. After initial configuration, the monitor, keyboard, and mouse need not remain attached to the chassis. If the IxExplorer software is to be used from a remote system, the software must be installed there.

UNIX Installation Notes

To run the GUI installer, your client computer must be configured with an operational X-windows server computer.

Be sure to set your DISPLAY environment variable to the host name or IP address of the client computer on which you want the installer GUI to display. The following examples explain the setting of the DISPLAY environment variable using various shells. If you need environment configuration assistance beyond this, consult your System Administrator.

```
// enable connections to X Server
xhost + or xhost [remote hostname]

// set DISPLAY environment variable
// determine shell
echo $SHELL

// depending on what shell you use - Bourne shell (bsh or sh),
// Bash (bash- Bourne shell again), C shell (csh) or Korn shell (ksh);
// set DISPLAY environment variable:

// bash:
export DISPLAY=hostname:0

// bsh or ksh:
DISPLAY=hostname:0
export DISPLAY

// csh:
setenv DISPLAY hostname:0
```

If you are updating an existing installation, be sure to run the installer as the same user who initially installed the software.

Always run the uninstaller before removing any files manually.

If you are installing as the root user using an install location in a network-mounted file system, ensure that you have write permission to the file system.

To install the Tcl Client on Linux computer, perform the following steps: (note that the binary file name 'IxOS<version>Linux.bin' is used in the following example. In most cases, the file name is different)

1. Download either the ZIP, BIN or TAR file from the Ixia Web site.
2. Extract and copy all folders and files from the ZIP, BIN or TAR file into the lib folder of the IxOS client installation.
3. Copy the IxOS<version>Linux.bin file to the Linux system.
4. Change the file's attribute to make it executable. Example: chmod +x IxOS<version>Linux.bin

5. Execute the IxOS installer file (use the −i gui option if your Linux version supports a graphical user interface). Example: ./IxOS<version>Linux.bin

6. When the installer prompts you, select Tcl version 8.5 (required).

7. Follow the rest of the instructions to complete the installation.

8. Follow the installation prompts to complete the installation.

9. After installation, set the following variables

> **Note:** The following examples match the sample installation, you must alter these paramets to match your installation.

```
export IXIA_HOME=/opt/ixia/tcl/8.5.17.0 IXIA_VERSION=9.10.XXX.XXX
export TCLLIBPATH=$IXIA_HOME/lib 10.
```

10. Alternatively, specify the following environment variable to specify the location ,the log, sample, and results files for IxOS:

```
IXIA_LOGS_DIR=/tmp/Ixia/Logs
IXIA_RESULTS_DIR=/tmp/Ixia/Results
IXIA_SAMPLES=/tmp/Ixia//samples IXIA_TCL_DIR=$IxiaLibPath
```

1. If the Tcl option was installed with an IxOS installation, add Ixia's bin and lib folder to the PATH and LD_LIBRARY_PATH variable to use it.

```
For example: IxiaLibPath=$IXIA_HOME/lib
IxiaBinPath=$IXIA_HOME/bin
PATH=$IxiaBinPath:.:$TCLBinPath:$PATH
LD_LIBRARY_PATH=$IxiaLibPath:$LD_LIBRARY_PATH
```

If the installation fails, check that there is enough disk space on the system by using the *df -ak* command.

There must be enough space in the /tmp folder to extract the files, and also in the target folder where the files are to be installed. If the /tmp directory does not have enough space, specify the directory. You can do this by setting IATEMPDIR environment with path to the folder where you have enough free space. The following example shows the use of the options:

```
export IATEMPDIR=<tempdir>
```

```
./IxOS8.00.XXX.XXXLinux.bin
```

> **Note:** For 64-bit Linux systems, you should use the ixosX.XX.XXX.XXXLinux64.bin. The installation is the same as described in the previous procedure.

Unix/Linux Operation

Though IxExplorer is a Windows-only application, you can access the IxOS hardware and software from a UNIX or Linux environment by installing a Tcl client on the UNIX/Linux computer. The client computer connects to IxTclServer on the chassis.

For specific information on how to use IxTclServer and the Tcl client, see the *IxOS Tcl Development Guide*.

There is also support for 64-bit Linux and the installer is ixos8.00.XXX.XXXLinux64.bin.

Powering Up

To power the chassis, press the power button in the front of the chassis. If a monitor is connected to the chassis, the initial window appears.

The IxServer software is the agent that interfaces directly to the hardware of the chassis. It is started automatically at power-up and the software's viewable output is primarily intended as a diagnostic tool for the Ixia hardware. IxExplorer can now be started locally by double-clicking the IxExplorer icon on the Windows desktop, as shown in the following figure:

Shutting Down

To shut down the chassis, if you are using the monitor attached to the chassis itself, you can use any of the three following techniques:

- From IxExplorer, select the chassis in the tree view, select **Tools** and choose **Shutdown**.
- Close IxExplorer, and shut down Windows by using the **Shutdown** option from the **Start** menu.
- Press the power button in front of the chassis.

If you are using IxExplorer remotely, you can shut down the chassis by:

- From IxExplorer, select the chassis in the tree view, select **Tools** and select **Shutdown**.

If no monitor attached directly to the chassis, you can also:

- Press the power button in front of the chassis.

All of these options invoke shutdown of Windows, and turn off the power supply in the chassis. When the chassis is powered off but still getting AC power, the yellow 'Standby' LED on the front of the chassis is lit. Try to avoid powering down the unit by removing AC power or turning off the power switch at the AC power input module on the rear of the chassis, as this may cause file system problems.

Installing and Removing Load Modules

Installing Load Modules

To install a load module, do the following:

1. Support the bottom of the load module with one hand, while gripping the front of the load module with the other hand.

   > ⓘ **Note:** Ensure that end caps are in place on unused ports. See topic Use End Caps on Open Ports

2. Align bottom of load module onto the guide rail in the chassis slot.

3. Gently slide the load module into the slot by pushing on the front of the load module.

   Do not use ejector tabs as handles to support the load module while installing and seating into the chassis. The ejector tabs are to be used only when ejecting.

4. Push the load module firmly into the backplane connector. The load module must be firmly seated into the connector.

Removing a Load Module from the Chassis

To remove a load module from the chassis, do the following:

1. Press the ejectors at top and bottom of load module front, to release the load module from the backplane connector.

2. Gently grip the ejectors and pull the load module a short way—about 1 inch (3 cm)—out of the chassis.

    Do not use ejectors to support the weight of the load module. They are not intended to support the weight.

3. Grip the front of the load module and pull it out of the chassis. When the load module is partially out, support the bottom of the load module.

4. Place the load module into an ESD bag or container, to prevent damage while handling or transporting it.

Software Installation for Remote Operation

For remote operation on chassis, you need to use a client component called IxExplorer. IxExplorer is included as part of IxOS installation on chassis and can be accessed via monitor attached to chassis itself. For client computers, standalone IxExplorer installer should be used. Both IxExplorer and IxOS can be downloaded from Ixia website.

After downloading the installer (.exe file) on your computer, select on the file and select **Run as administrator** from the context menu to start installation. The installation presents a standard set of dialog boxes allowing users to include/exclude certain components. Please make sure **Client** component is included.

The following client operating systems are certified for use with the indicated Ixia IxOS software.

- Windows 2008 Server 64-bit
- Windows 7 Enterprise 32-bit (Build 7601)

- Windows 7 Professional 32-bit (Build 7601)
- Windows 7 Professional 64-bit (Build 7601)
- Windows 7 Ultimate 32-bit (Build 7601)
- Windows 2012 Server Standard R2 64-bit
- Windows 8.1 Enterprise 32-bit and 64-bit (Build 9600)
- Windows 10 Pro (Build 1803)

The following versions of Windows operating systems are no longer supported on the client:

- Windows Vista Enterprise SP2 32-bit and 64-bit
- Windows XP Professional 32-bit SP3

> **Note:**
> - Before proceeding with IxOS or IxExplorer installation, Ixia recommends you to update Microsoft Windows Operating System version on Ixia Chassis or Client computers to corresponding supported build version. Contact Ixia Technical Support for assistance with Microsoft Windows Operating System update options on Ixia Chassis.
> - If the target drive has insufficient storage, you may encounter 2755 error message during installation. This is indicative of insufficient space on the system drive or target drive. IxOS installation requires ~13 GB of space on chassis and ~5.5 GB of space on client. IxExplorer installation requires ~2.5 GB of space on client.

Software Installation Procedure

You require admin privileges to install the software. Complete the following steps to install the software.

1. Download a copy of IxExplorer or IxOS installer (.exe file) from Ixia website. Since you need administrative privileges to proceed with installation, select the file and select **Run as administrator** from the context menu to start installation.

> **ⓘ Note:**
> - Use IxExplorer if you only need client components and do not need server components like Demo Server, TCL Server, and Hardware Manager. IxExplorer can only be installed on Client computers. For all other scenarios, use IxOS installer, which also installs IxExplorer.
>
> - If you do not have administration privileges, the **User Account Control** dialog box will appear, as shown in the figure below.
>
>
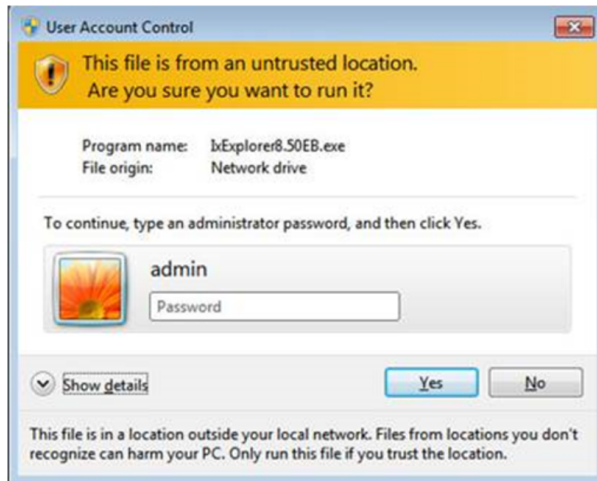
2. A dialogue box appears providing option for changing Installer Cache path where installer and helper files are stored. It should only be changed to a location which does not require administrative privileges. Select **Next** to proceed.
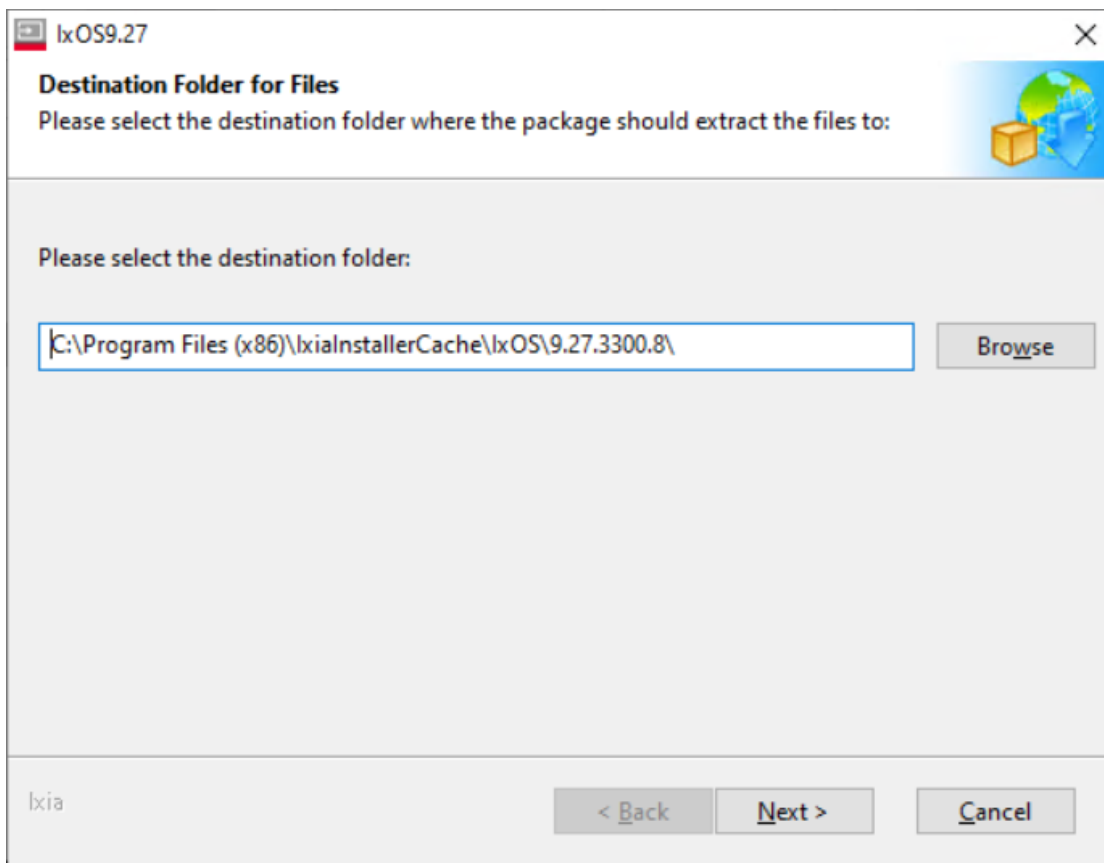
3. Installer starts unpacking files after which, setup progress window appears and package integrity check is performed. Wait for the check to complete.
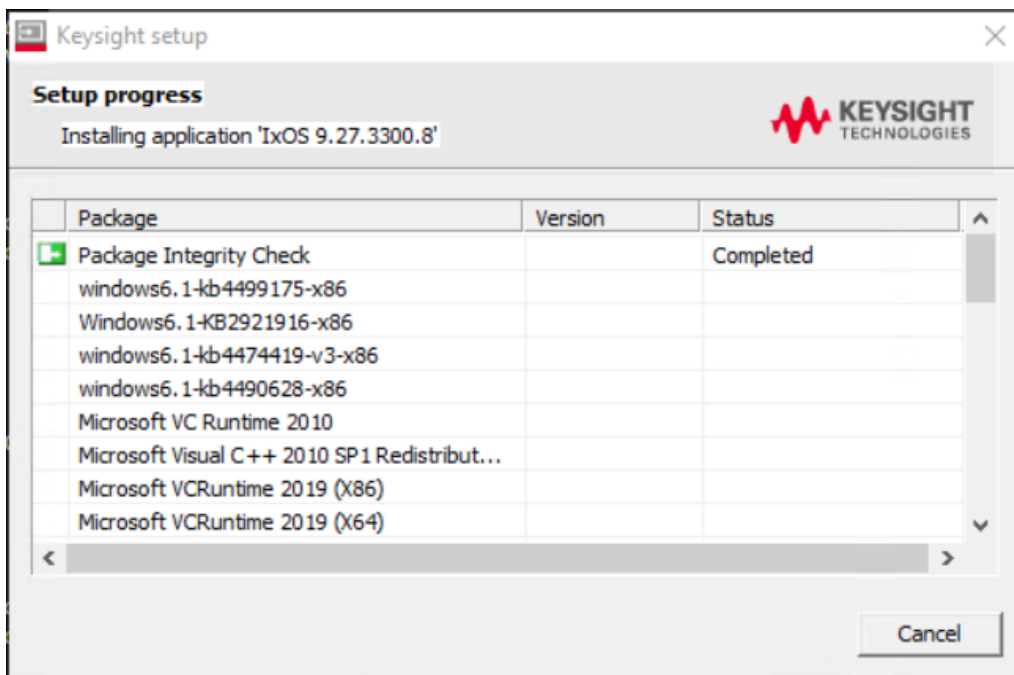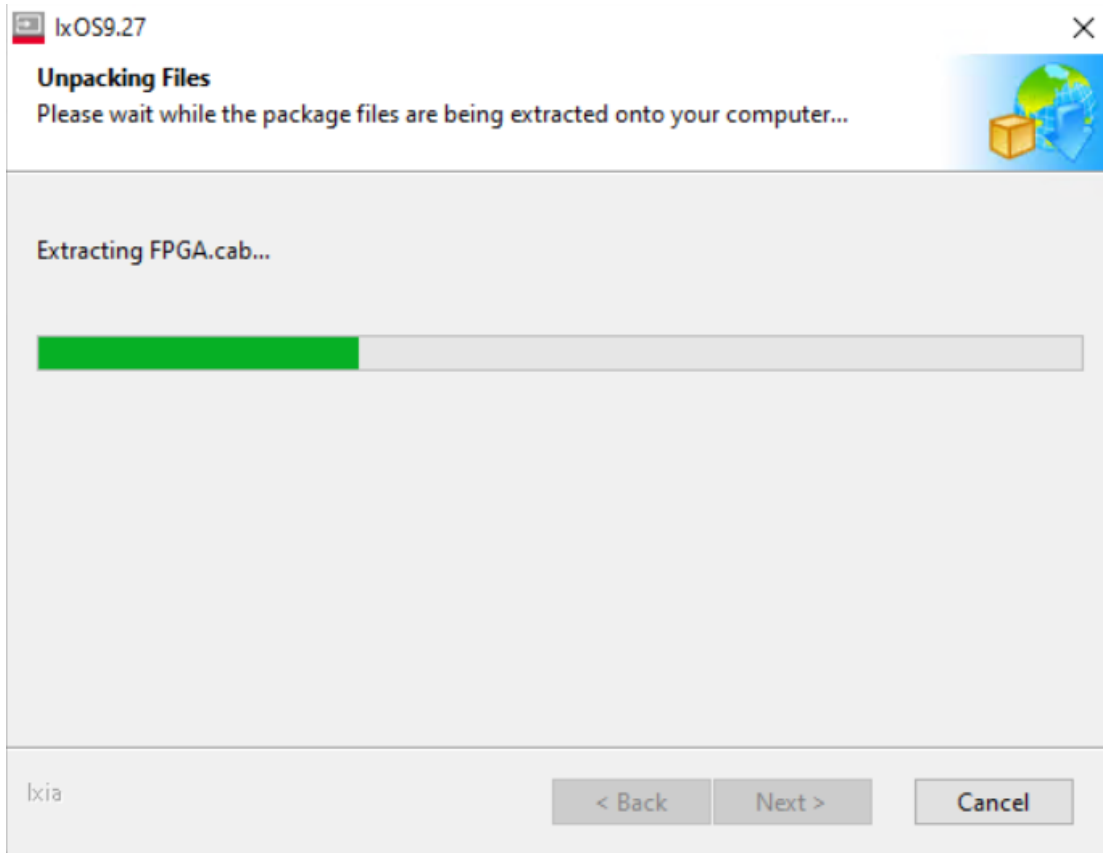
4. After package integrity check passes, a separate welcome dialog box appears indicating that setup is ready to begin. Select **Next**.
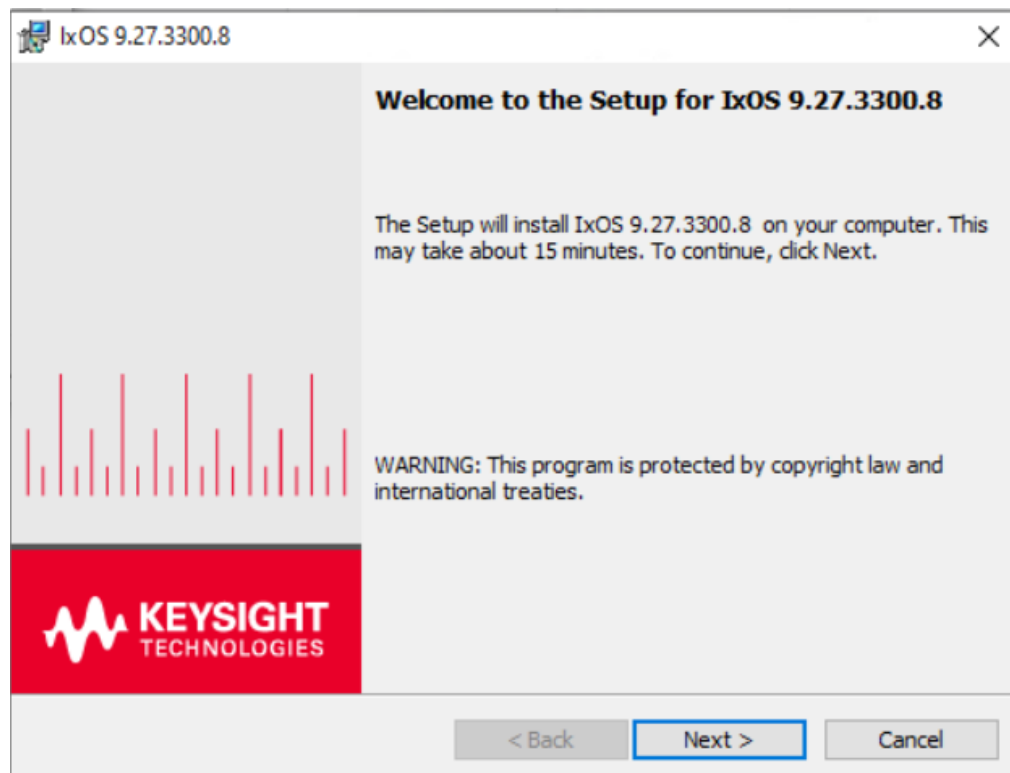

If IxOS or IxExplorer is already installed on the computer, following dialog box will appear indicating multiple installation of same application. Select **Continue** to proceed.
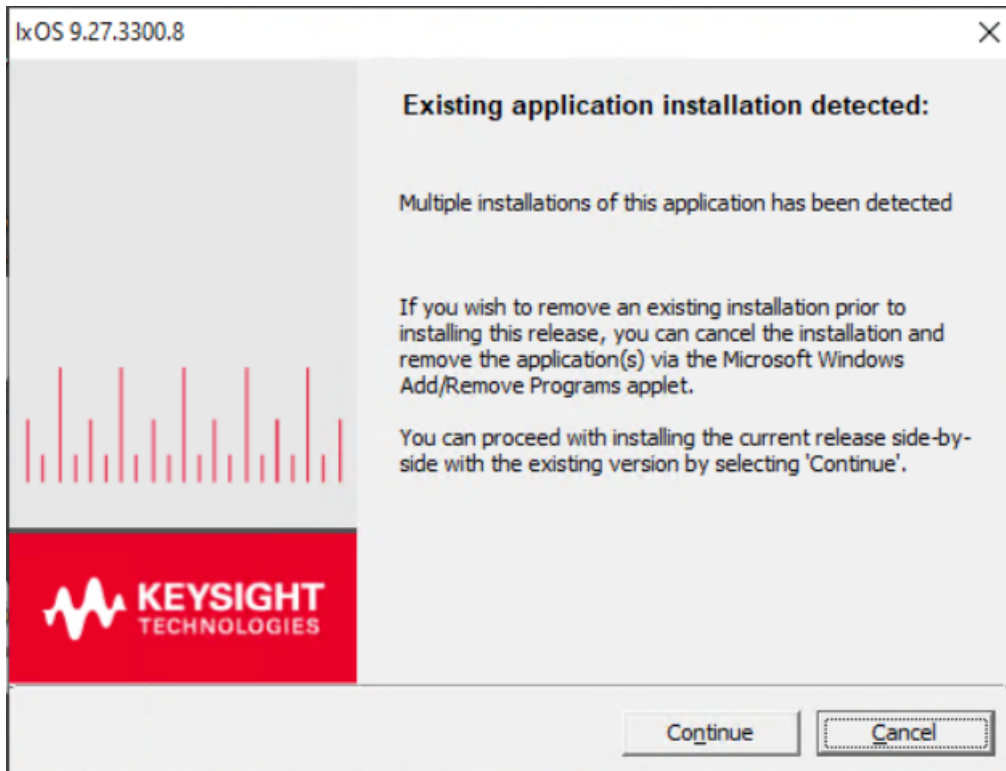
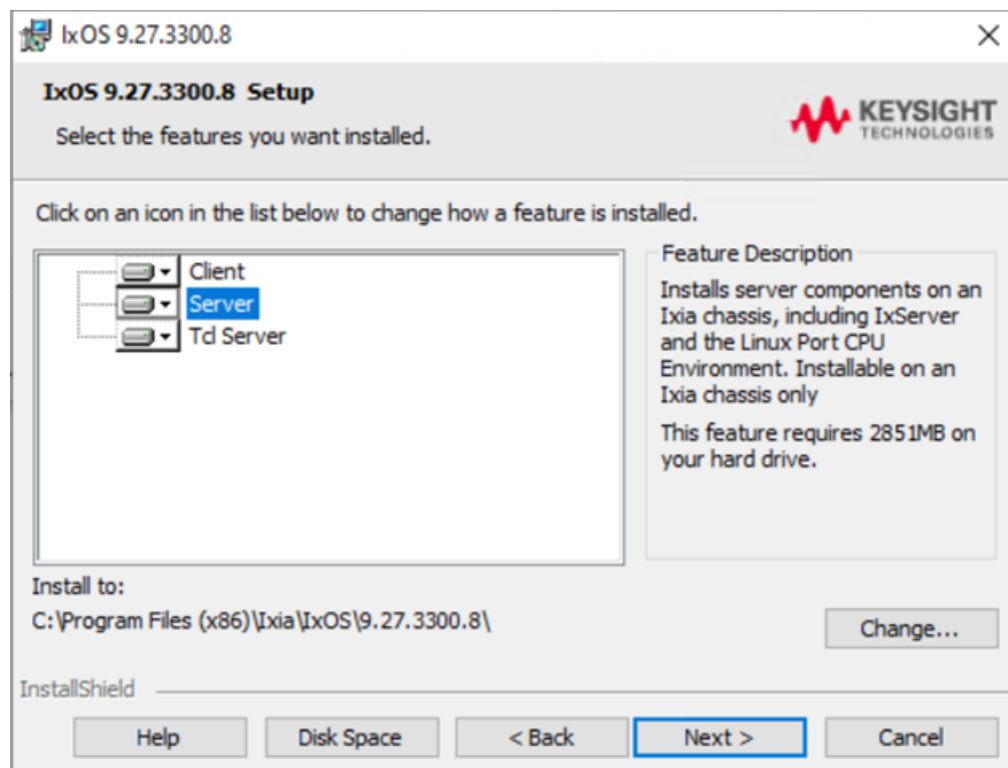ℹ️ **Note:** IxServer should not be up and running during installation. If it is, you will be prompted to retry installation after closing IxServer.

---

5. Software License Agreement window appears. You must accept the terms, to continue the installation. You need to license the product if it is not already licensed. See Chapter 4, License Management. Select **Next** to proceed.
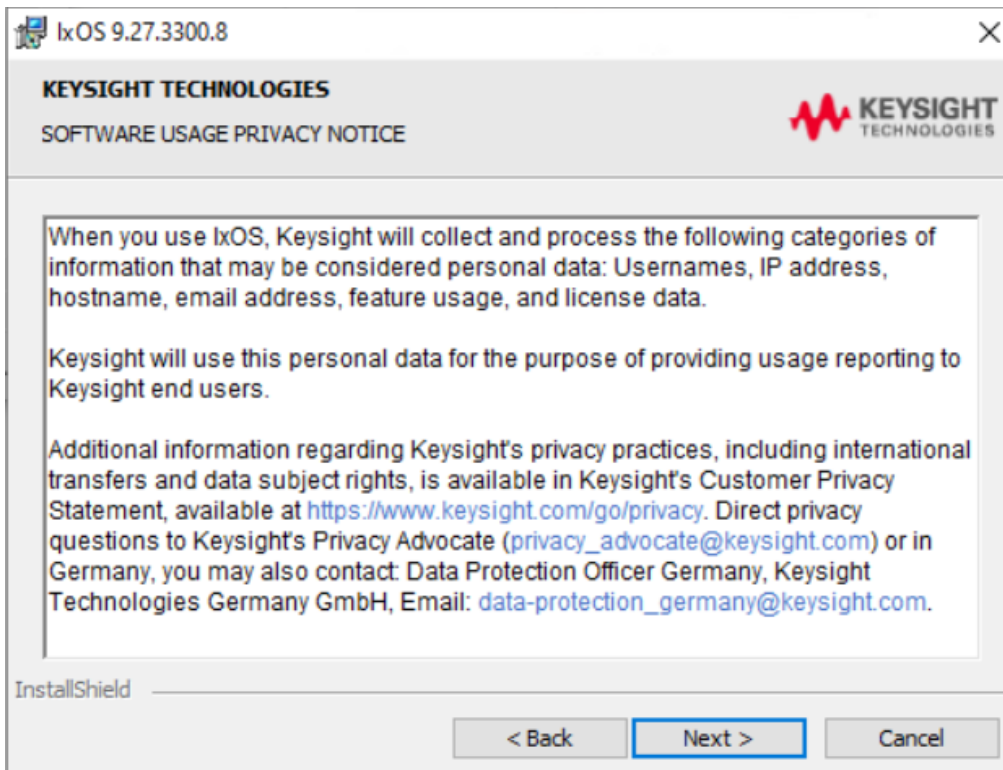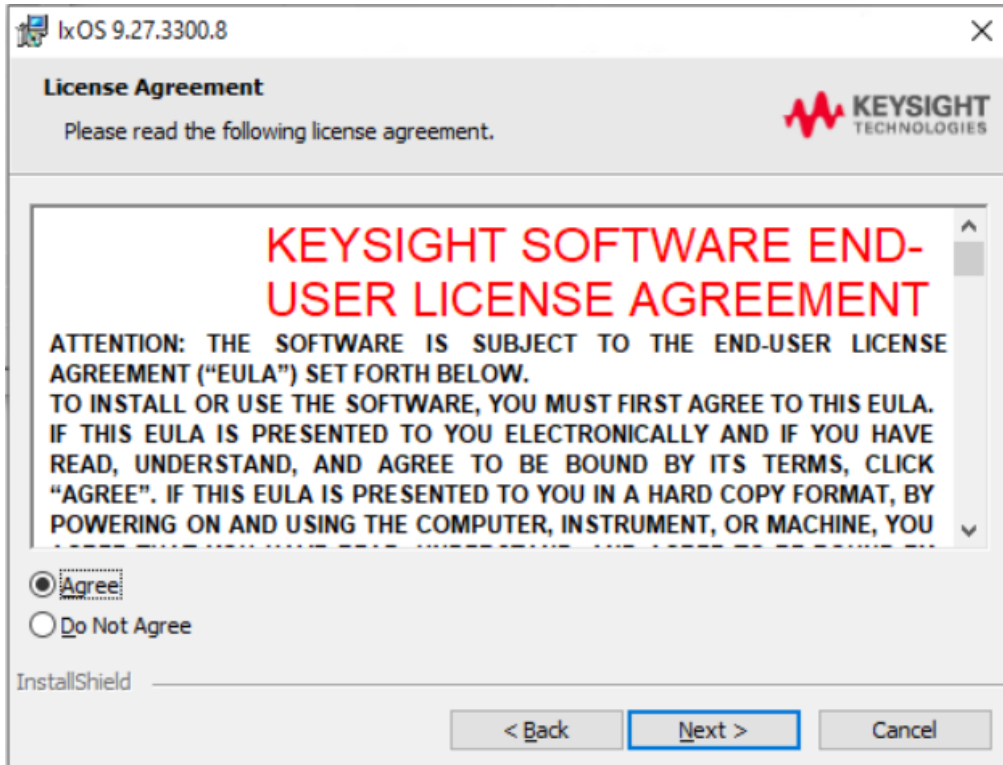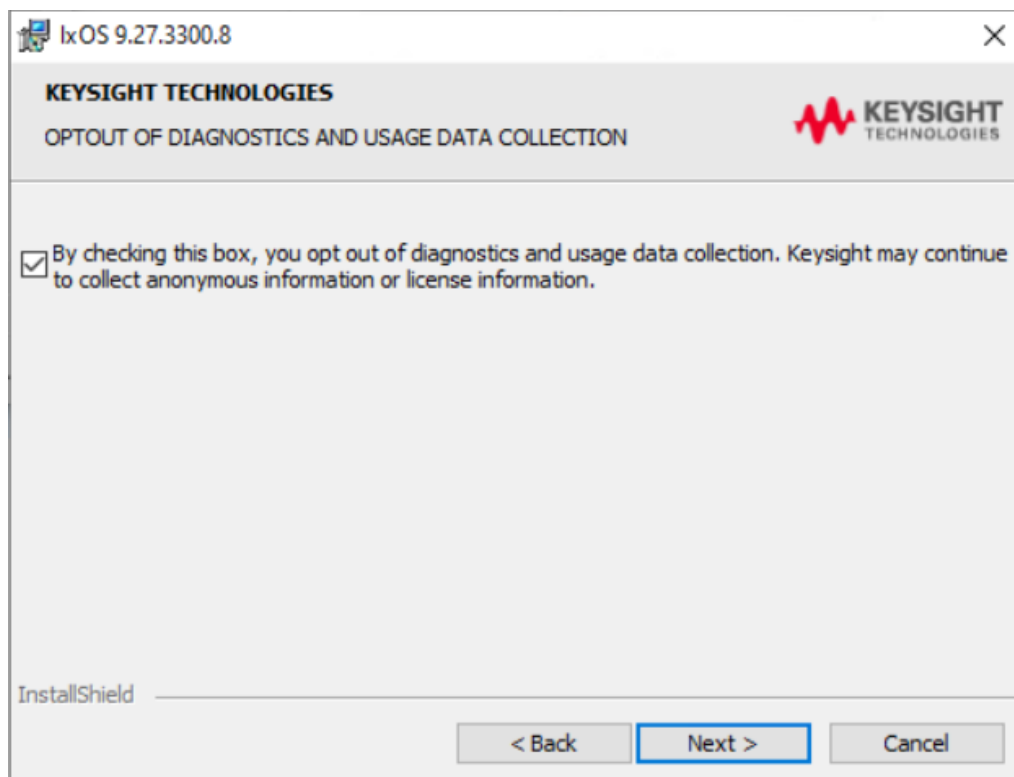
6. **Installation Option** window appears. Following options are listed depending on whether installer is IxOS or IxExplorer and whether target is a chassis or client.

IxExplorer 9.27.3300.8

IxExplorer 9.27.3300.8 Setup

Select the features you want installed.

KEYSIGHT
TECHNOLOGIES

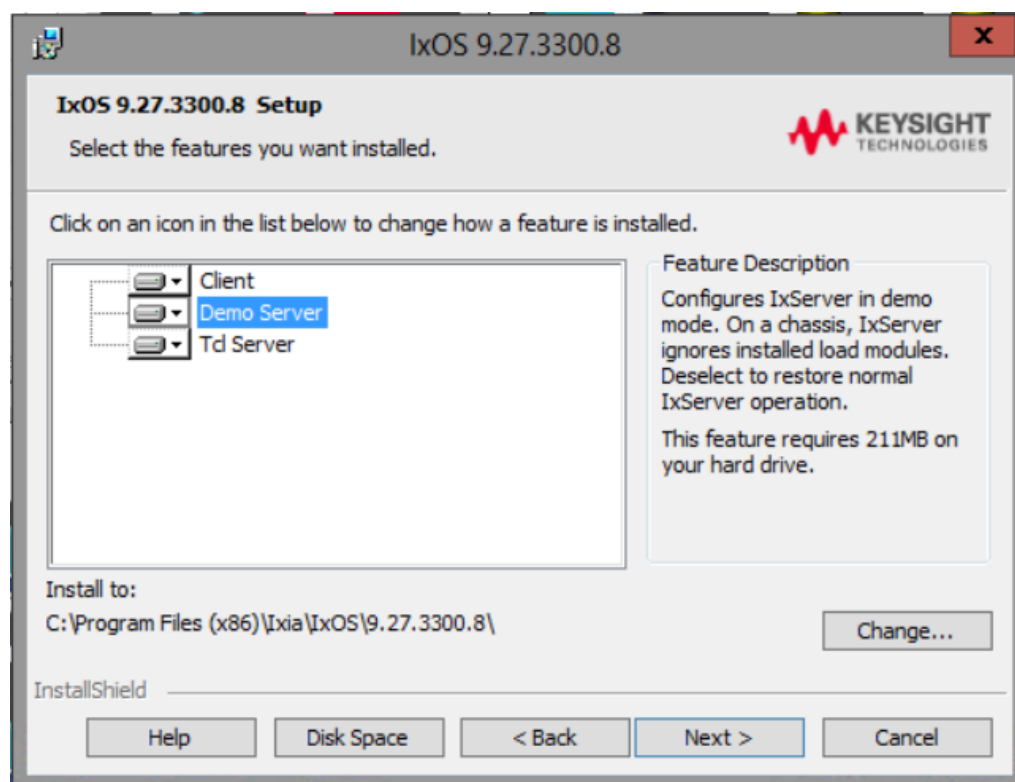Click on an icon in the list below to change how a feature is installed.

Client

Feature Description

Installs client for controlling an Ixia chassis, including IxExplorer, Tcl Client, and ScriptGen. Install on a remote client workstation or Ixia chassis.

This feature requires 305MB on your hard drive.

Install to:

C:\Program Files (x86)\Ixia\IxOS\9.27.3300.8\

Change...

InstallShield

| Help | Disk Space | < Back | Next > | Cancel |

IxOS 9.27.3300.8

IxOS 9.27.3300.8 Setup

Select the features you want installed.

KEYSIGHT
TECHNOLOGIES

Click on an icon in the list below to change how a feature is installed.

Client
Server
Tcl Server

Feature Description

Installs server components on an Ixia chassis, including IxServer and the Linux Port CPU Environment. Installable on an Ixia chassis only

This feature requires 2851MB on your hard drive.

Install to:

C:\Program Files (x86)\Ixia\IxOS\9.27.3300.8\

Change...

InstallShield

| Help | Disk Space | < Back | Next > | Cancel |

- Select the components that should be installed. Options include the following:
  - **Client**: Installs IxExplorer and TCL consoles used to manage and configure the Ixia chassis, load modules, and ports. Available on both IxExplorer and IxOS installation.
  - **Server**: Installs IxServer which only boots up in Ixia Chassis, accepts connections from client apps like IxExplorer or TCL console and communicates with or manages chassis hardware. Available only when IxOS is installed on chassis.
  - **Demo Server**: A pseudo-IxServer that imitates several configurable load modules. No real traffic can be sent using the demonstration server computer. Available only when IxOS is installed on client. Refer to Installing a Demonstration IxServer for more information.
  - **Tcl Server**: Installs software module which implements an intermediate process needed to support nonWindows (Unix) IxAutomate (formerly IxScriptMate), Tcl, and other client computers. Available only when IxOS is installed. See the IxOS Tcl Development Guide for more information on IxTclServer.

Any option selected for installation will not have a red 'X' in its icon. Select **Next** to proceed.
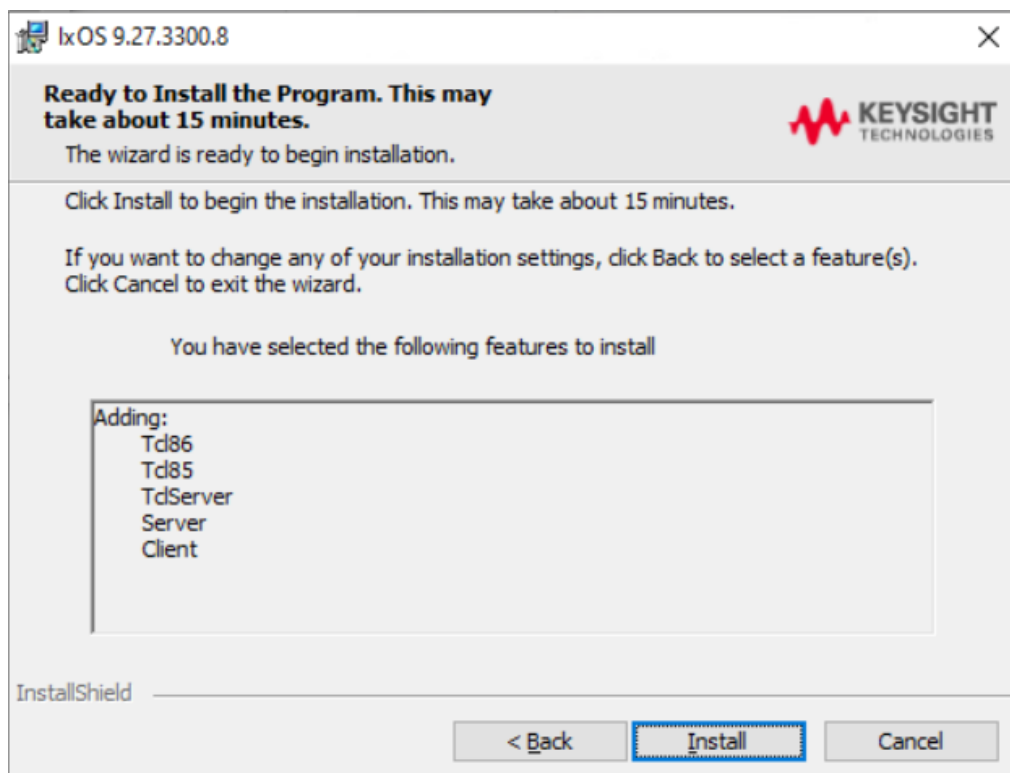
> **ⓘ Note:**
> - If IxServer or IxTclServer are selected, another dialog box appears that requests to define how the server should be run. See Server Operation Option below for more information. This however does not affect Demo Server.
> - If none of IxServer, IxTclServer and Demo Server is selected, another dialog box appears asking whether you want to install off-chassis hardware manager. See Hardware Manager Options for more details.

7. This is an optional step which you will only see if you're using IxOS installer, which might install two versions of TCL as shown in figure below. Selecting any one of the TCL version will only change the version of default TCL interpreter spawned by TCL server when it receives a connection from TCL client. This can be changed after installation as well, using **TCL Server Launcher** -> **Tools** -> **Options**. Select **Next** to proceed.
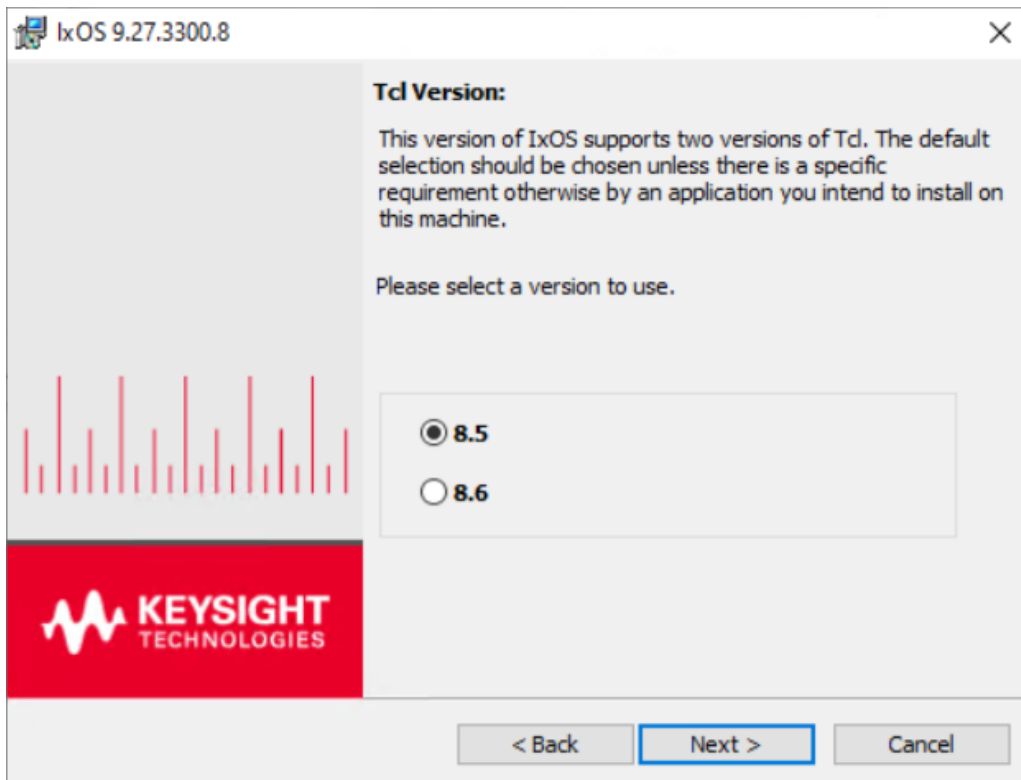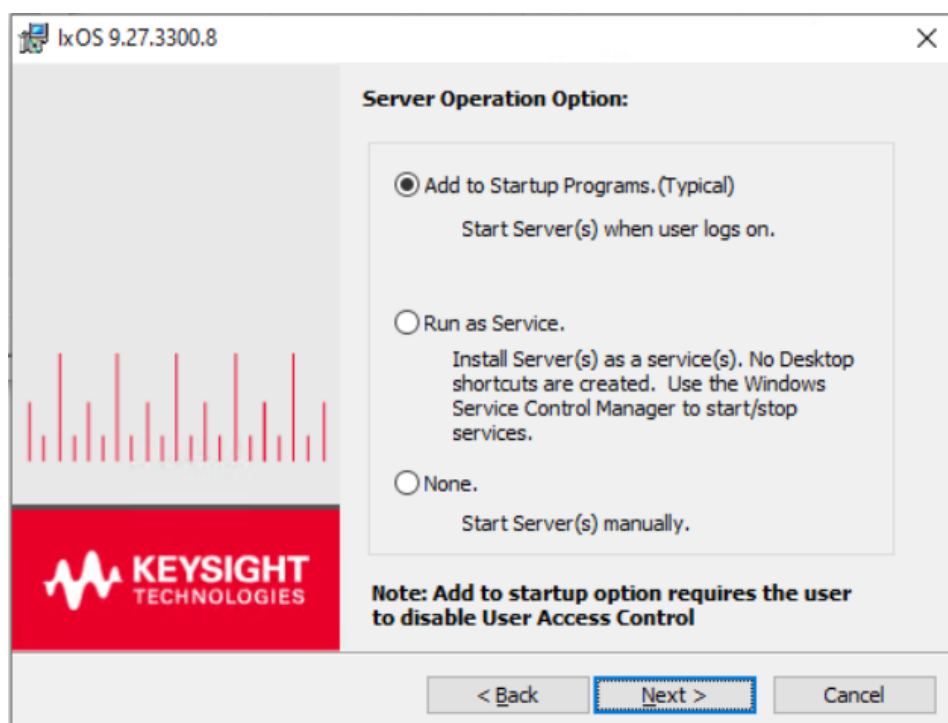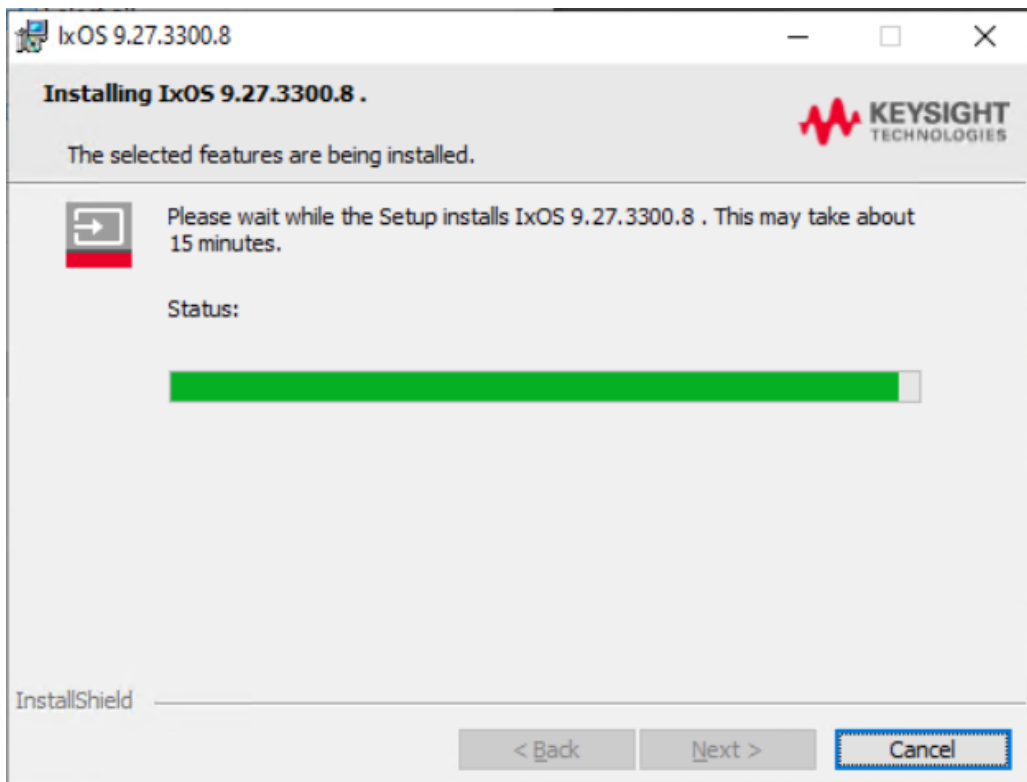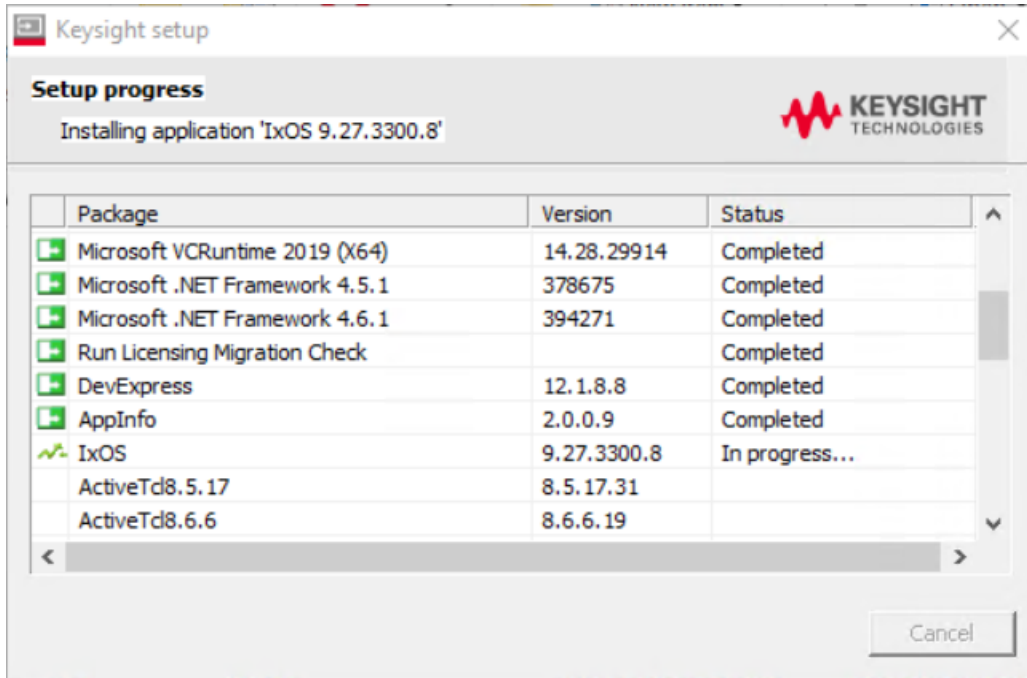
8. After you have selected the components as per your requirement, the dialog box shows the selected components that are ready to install, as shown in the following figure. Select **Install** to proceed.
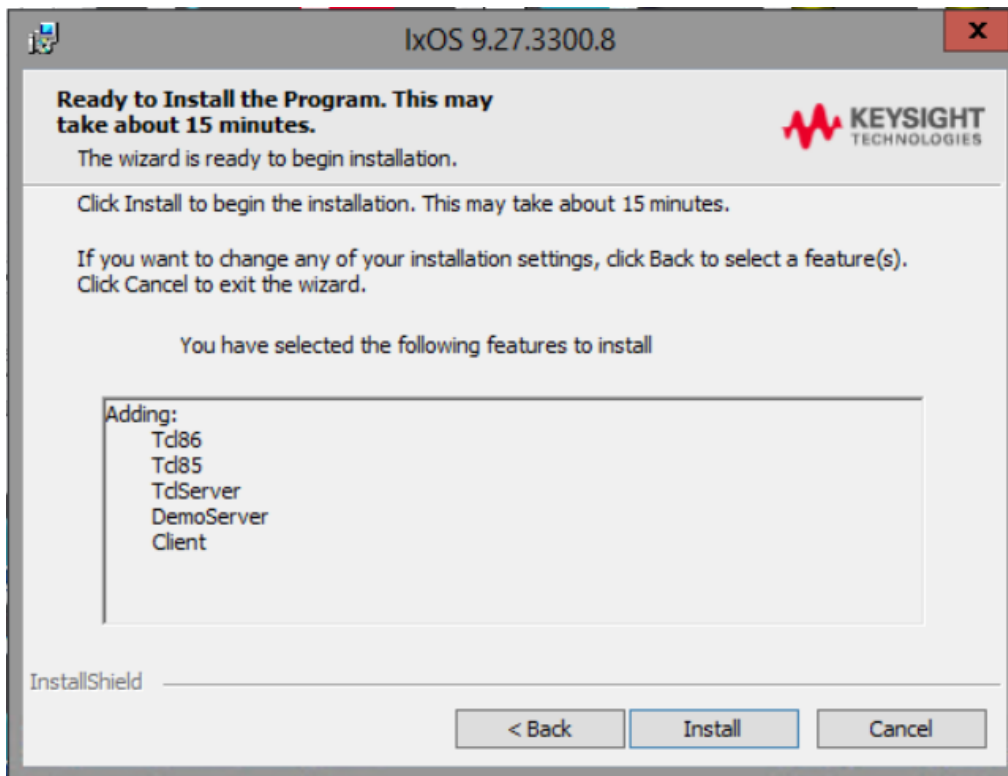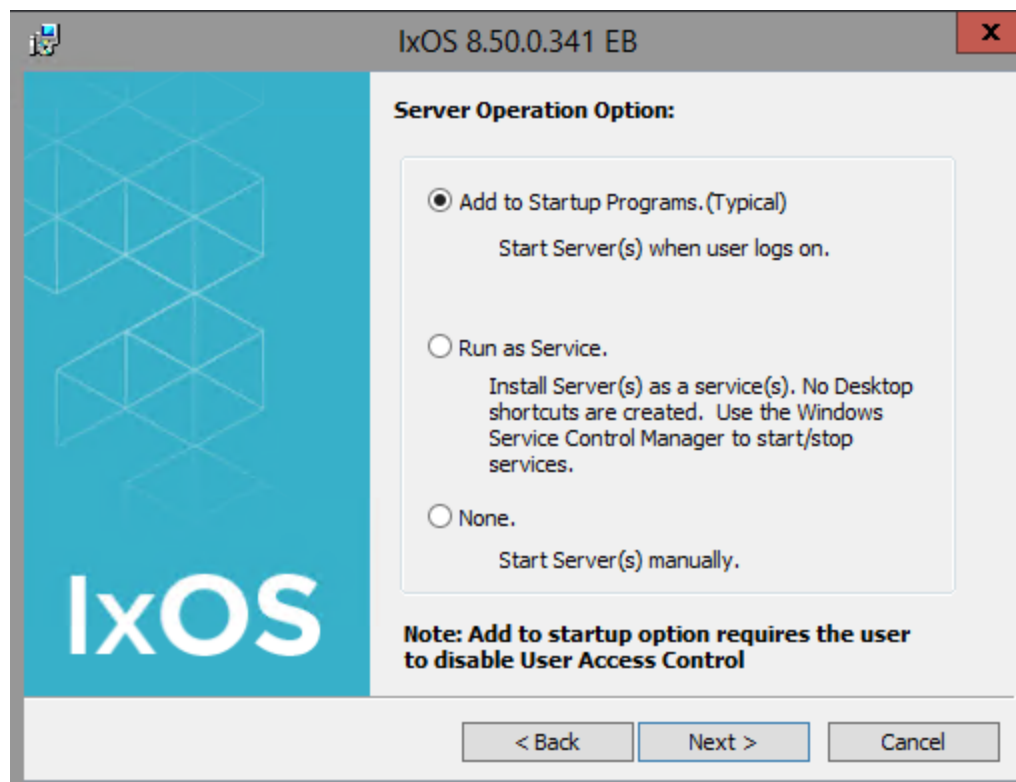
9. After several installation progress windows (such as one shown below), a dialog box will finally appear indicating installation completion. You can view Release Notes if you select **Show the Release Notes** check box. Select **Finish** to exit.

Keysight setup   ✕

Setup progress

Installing application 'IxOS 9.27.3300.8'

KEYSIGHT
TECHNOLOGIES

Package	Version	Status	^
Microsoft VCRuntime 2019 (X64)	14.28.29914	Completed	
Microsoft .NET Framework 4.5.1	378675	Completed	
Microsoft .NET Framework 4.6.1	394271	Completed	
Run Licensing Migration Check		Completed	
DevExpress	12.1.8.8	Completed	
AppInfo	2.0.0.9	Completed	
IxOS	9.27.3300.8	In progress…	
ActiveTcl8.5.17	8.5.17.31		
ActiveTcl8.6.6	8.6.6.19		⌄

Cancel

IxOS 9.27.3300.8   — ☐ ✕

Installing IxOS 9.27.3300.8 .

KEYSIGHT
TECHNOLOGIES

The selected features are being installed.

Please wait while the Setup installs IxOS 9.27.3300.8 . This may take about 15 minutes.

Status:

InstallShield

< Back   Next >   Cancel

Server Operation Option

IxServer and Tcl Server start up has three control options, as shown the following figure.

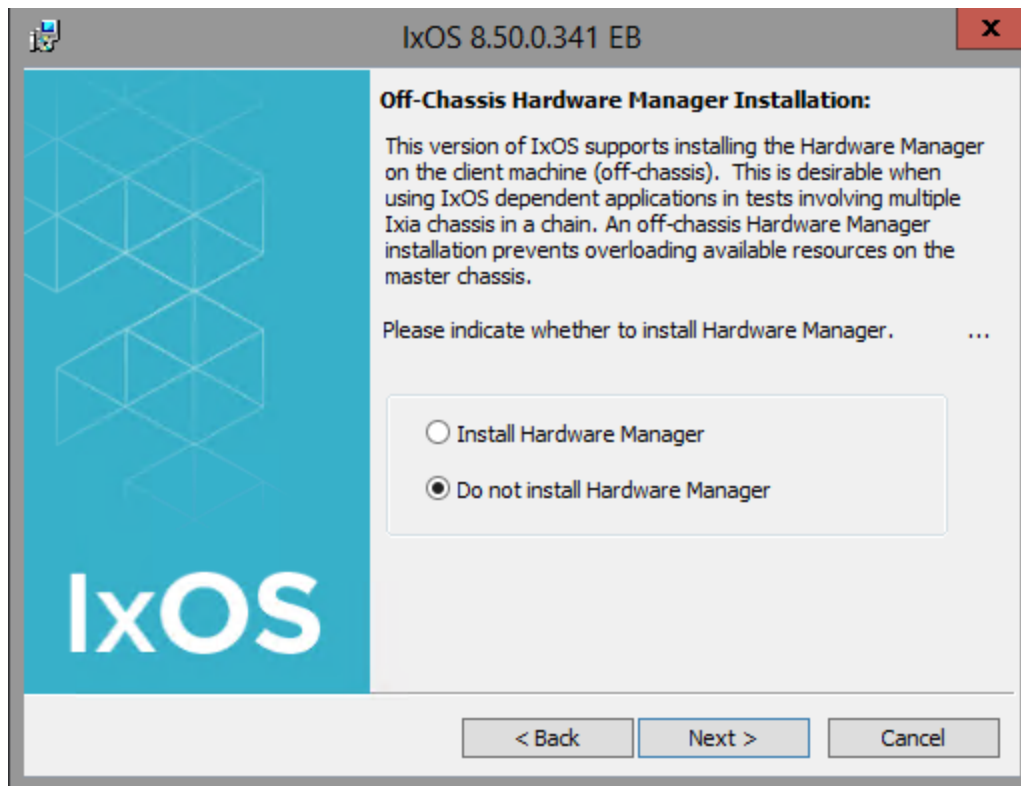The options in this dialog box are described in the following table:

Option	Function
Add to Startup Programs (Typical)	If this option is selected, the server computers are part of the Windows Startup Programs and run automatically on Windows start up. The normal User Interface (UI) is provided, with the appropriate desktop icons.
Run as Service	If this option is selected, the server computers run as a Windows service. There are no desktop icons, and no UI. The server computers starts automatically with Windows.
	To stop a server computer, use the **Windows Service Control Manager** (select the **My Computer** icon, select **Manage**, and then **Services** from the context menu). From there, you can disable or enable the server (IxServerService.)
	For IxServer configuration, the service must be stopped and the UI opened through the Ixia folder in the Start Menu. The server computer cannot be configured while running as a service.
	IxServer can be monitored using it's log file, which is located at *C:\Program Files\Ixia*.
None	If this option is selected, the server computers are not automatically started with Windows, and must be manually started by using the appropriate icon.

Hardware Manager Options

If install options for both Tcl Server and IxServer/Demo Server are not selected, you will have an option for installing off-chassis hardware manager, as shown in the following figure.

> **Note:** Hardware Manager is an IxOS component that manages the resources on an Ixia chassis. Applications such as IxNetwork communicate with a chassis through Hardware Manager. For further information, refer to the *Aptixia IxNetwork User Guide*, page 2-60, topic *Off-Chassis Hardware Manager.*

As described in the dialog box, it is advisable to install the Hardware Manager off-chassis for applications that run tests over chassis chains.

Use the option to select whether or not to install the Hardware Manager off-chassis.
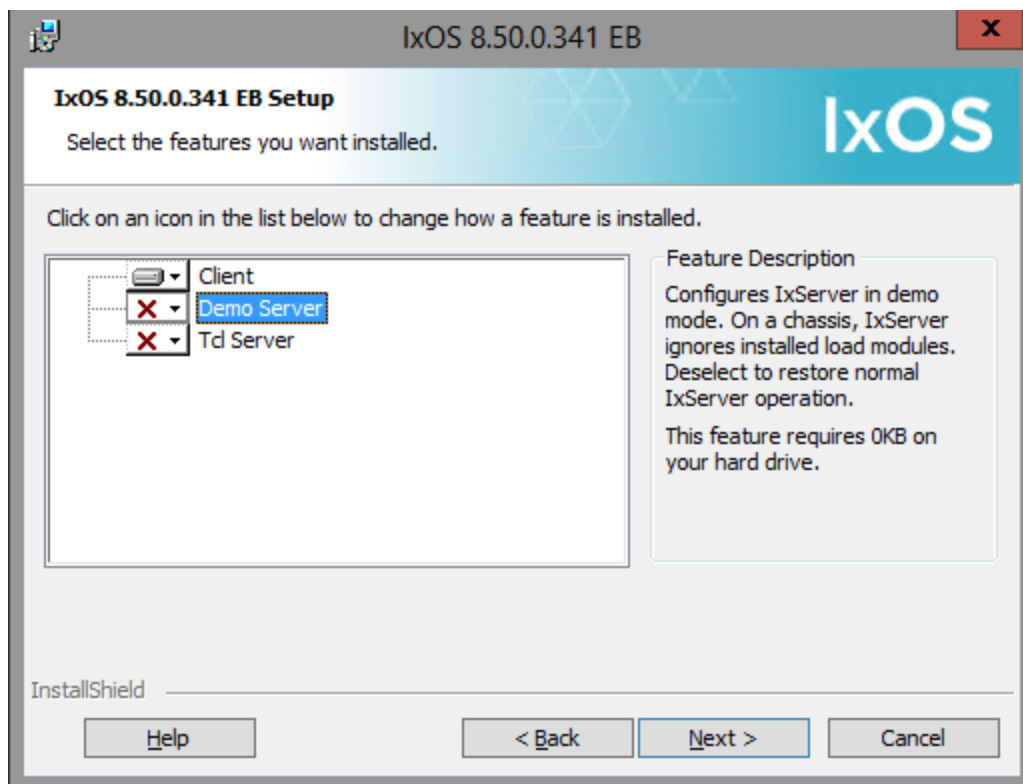
Installing a Demonstration IxServer

A demonstration IxServer can be installed along with the IxExplorer. This is an optional choice. Once installed, you can connect to the server computer using the locally installed IxExplorer client computer. The demonstration version of IxServer only allows you to examine the components (that is, a wide variety

of chassis, load modules, and ports) of an artificially generated chassis chain. No real testing can be performed.

Avoid installing both a demo mode and a real version of IxOS onto the same system.

- If a demo mode version of IxOS is installed onto a chassis, and a real version of IxOS is installed onto the same chassis, and then the real version is uninstalled, the Ixia drivers is not removed (because of the presence of another version of IxOS on the system) in this case. When starting the demo version of IxOS on that chassis, the demo mode tries to start the services, but fails because demo mode would not have installed any services.

- Similarly, when both a demo mode and a real version of IxOS are installed on a computer, and then the real version gets uninstalled, the drivers are still present. The demo mode running on the computer tries to read/write inaccessible data. In addition, the demo mode has the same issues with services as described above with regard to the chassis.

- In both the cases, to correct this problem, it is necessary to uninstall both servers from the system, and then install the Demo Server onto the remote client computer workstation, and install the real IxServer onto the chassis.

After obtaining the IxExplorer software, follow the IxExplorer installation instructions provided in Software Installation Procedure During the installation process, the following dialog box appears.

For the demonstration server, select the option **Demo Server**. A menu appears, as shown below.
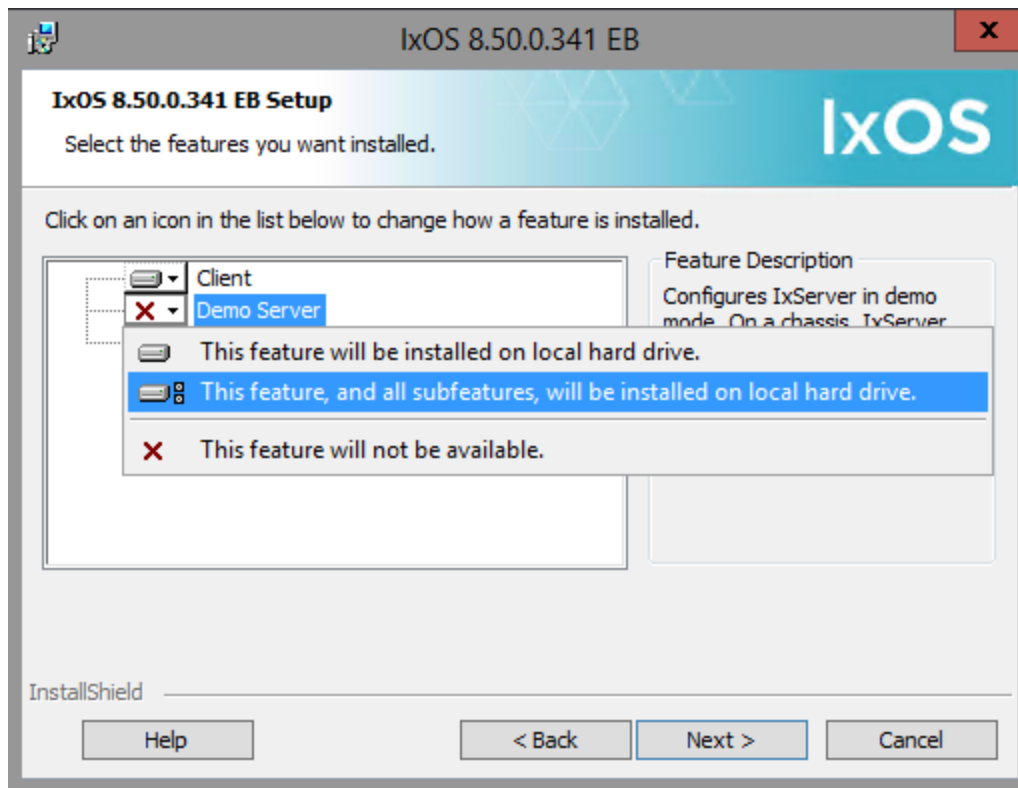
Select either the first or second option. The demonstration version of IxServer is installed on the local computer (typically a workstation).

Shell Wrapper Installation

You must install the shell wrappers in /opt/ixia/ixos-api/<version>/bin folder to execute the ixTcl and ixwish tests.

- ixnettcl : Sets TCLLIBPATH and calls the ixiatcl8.5.17 link in /usr/bin. To execute Tcl script, execute `ixnettcl <lowLevelScriptName>`

- ixnetperl : Sets PERL5LIB and calls the ixiaperl5.18 link in /usr/bin. To execute Perl script, execute `ixnetperl < lowLevelScriptName >`

- ixnetpython : Sets PYTHONPATH and calls the ixiapython2.7.6 link in /usr/bin. To execute Python script, execute `ixnetpython < lowLevelScriptName >`

- ixnetwish : Sets TCLLIBPATH and calls the ixiawish8.5.17 link in /usr/bin. To execute Wish script, execute `ixnetwish < lowLevelScriptName >`

> ⓘ **Note:** For more information on the Tcl, Perl, and Python settings scripts, see the *IxOS Tcl Development Guide*.

Unix/Linux Operation

IxExplorer is a Windows-only application. You can access the IxOS Tcl APIs from a Unix or Linux environment using IxTclServer and a Tcl client computer. For specific information on how to use IxTclServer and the Tcl client computer, see the *IxOS Tcl Development Guide*.

> **Note:**
> PIT Notes:
>
> The Platform Independent tgz packages do not contain Perl, Python or TCL interpreters. The Ixia dependencies (mpexpr and snit) are also not included. Download the all-in-one language packages and dependencies installer for Linux x86 and x64 to use with any app Platform Independent TCL installer from the Ixia website.

Automatic Update Feature

Preparing to Install

Follow the steps to prepare to use the Automatic Update functionality:

1. Locate the install package named *Ixos<version.version>.exe* (for example, IxOS5.10SP1exe). Extract this to the network location. This install package can be downloaded from the Ixia Website and it is included on the product CD.
2. Extract the installer files from the install package by using the following command:
   Ixos<version.version>.exe -s -e -f <extraction path>
3. Install the chassis from the same network path. Use the setup.exe in the same folder to install the chassis.

Using Automatic Update

The versions of IxExplorer client computer and IxServer must be synchronized, otherwise they cannot operate together. It is possible to automatically update the version of the client computer to the server computer using the **Automatic Update** feature.

> **Note:** The chassis Icon in IxExplorer is a purple color when its IxServer is using a different version of the software than the IxExplorer client computer.
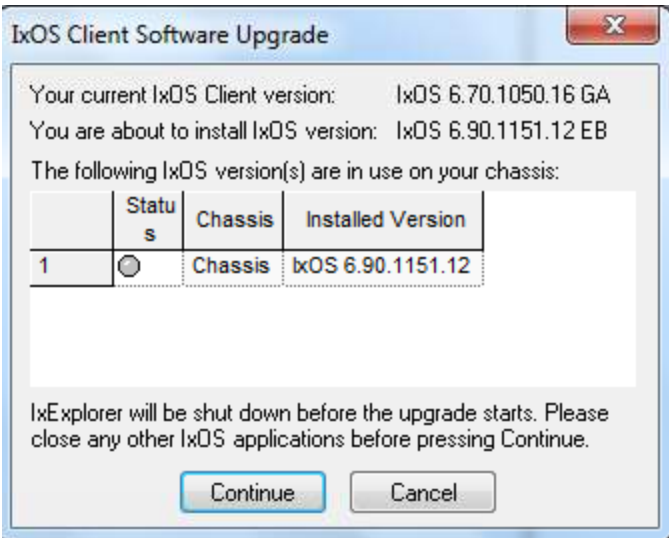
When trying to connect to a server computer with a different version than IxExplorer, a warning message appears.
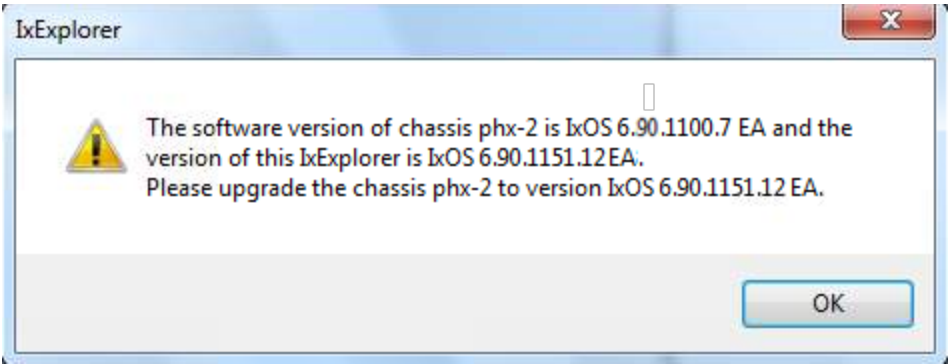
Select **OK** (the warning message closes). From the **Tools** menu, select the IxOS Upgrade option, as shown in the following figure.
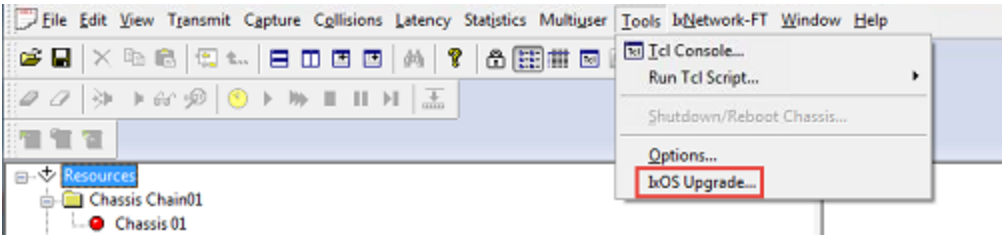
The dialog box that appears is shown in the following figure.

The **IxOS Client Software Upgrade** dialog box displays the current version of the client computer software and the server computer software. Select **Continue** to begin upgrading the client computer software.

> **ℹ Note:** This feature works only if the following criteria are observed:
>
> - The initial installation of the server software must be done from a network folder using the *setup.exe* (provided with Ixia installer package).
>   The network folder cannot be a mapped drive; it must be a UNC path.
>
> - The *IxOSUpdateTemplate.bat* file must also be in the network folder.
>
> - The server installation folder must be accessible to both the workstation that the IxExplorer client computer is installed on, and the chassis that IxServer is installed on.
>
> - The path to the network folder must be the same folder path for both computers.
>
> - In some instances, the anti-virus software prevents proper updating of the IxOS software. Disable anti-virus software before using the Auto-Update feature.

IxOS Silent Install

IxOS Silent Install is a feature which enables you to install IxOS software unattended. A silent installation of IxOS is ideal for test scenarios or as part of a large-scale enterprise deployment.

You may use the IxAdmin package to perform remote silent installations on multiple computers at the same time.

If you want to use Silent Installation to install IxOS software on an Ixia chassis, you must change the policy that controls Silent Installation. See *Preparing an Ixia Chassis for Silent Installation*.

IxOS product silent install setup is discussed in*IxOS Silent Install by .exe Package*.

IxOS silent install setup for LINUX is discussed in *IxOS Silent Install on LINUX*.

Preparing an Ixia Chassis for Silent Installation

If you try to run a Silent Install on an Ixia Chassis with Windows installed, Windows displays the following warning message for the Ixia kernel driver:

```
Signature Not Found
```

To prevent this warning, you must change the Windows policy that governs the installation of unsigned drivers. Follow the steps below. You only need to use this procedure once.

1. On the Ixia chassis, select **Start**, select **Run**, and then type **MMC**, and select **OK**.
2. Select **Add/Remove Snap-in**, on the **Console** menu.
3. Select **Add** and select **Group Policy** and select **Add**.
4. Select **Finish/Close/OK**.
5. Navigate down the following tree:

   ```
   Console Root

      Local Computer Policy
   ```

```
Computer Configuration

  Windows Settings

    Security Settings

      Local Policies

        Security Options
```

6. Select **unsigned driver installation behavior** and select **Security** from the context menu.

7. Change the **Local policy setting** to **Silently succeed**.

8. Select **OK**.

ⓘ   **Note:** It is necessary to restart the chassis after this operation.

IxOS Silent Install by .exe Package

Setting up the silent install for IxOS for a chassis involves activating specific features included in the product package, and specifying the server operation mode through a command prompt.

The available features and properties (operation modes) are delivered as part of the installer.

To run the IxOS installer silently, use the IxOS<version>.X.X.exe package, where <version> is the version of the software, and X.X is the build number for the particular package. The command line to extract the setup is like "IxOS_X.XX_EA.exe /s /extract-only". It caches to location \Program Files\IxiaInstallerCache\IxOS\X.X.X.X where X.X.X.X is the build number. The setup.exe file is located in this folder.

The following steps demonstrate how to set up silent installation through the .exe package.

1. Open a command prompt.

2. Enter the following command argument, in one line:

```
setup.exe [-s|-q] [-n] [i|x|r] [F.Feature1=Yes|No [F.Feature2=Yes|No]] [P.Prop1=Val1
[P.Prop2=Val2]]
```

See *IxOS setup.exe Package Example* below for examples of using the command prompt to set up silent installation.

Switch	Definition
-s	silent (progress bar only)
-q	quiet (no GUI at all)
-n	external controlled (by IxAdmin)
no switch	GUI installation

Switch	Definition
(default)	

Switch	Definition
i	install
x	uninstall
r	repair
no action (default)	install

Features

F.Feature1=Yes—install the named feature.

These features represent installer components and are detailed in config.xml file, in the ConfigOptions/CannedConfig section. If no features are provided, a default configuration is used.

Features represent the installer components that can be selected from the GUI in standalone mode. The command prompt allows the combinations of these features.

Feature	Definition
F.Client	install Client
F.Server	install Server
F.TclServer	install Tcl Server
F.DemoServer	install Demo Server
F.HWManager	install Hardware Manager

Properties

P.Prop1 =Val1—pass to the installer a certain property.

If no properties provided, default properties is used.

Properties correspond with settings from the installation GUI, but do not represent the standard features from the feature selection dialog box. Rather the options are presented as option buttons, check boxes, or edit fields (like the choice of TCL version in IxOS). A special property is InstallDir which (if accepted by the application installer) sets the installation folder.

Property	Definition
P.RUNMODE = 1	Server is running like Service
P.RUNMODE = 2	Server is running like Add to Startup
P.RUNMODE = 3	None - manual mode
P.TCLVERSION=8.5	to install TCL 8.5
P.InstallDir	sets the installation folder

IxOS setup.exe Package Examples

The following examples demonstrate various options when setting up silent installation using the setup.exe package:

- Silent Install, IxOS Server::

    ```
    Setup.exe –s F.Server=Yes
    ```
- Quiet Install, IxOS Server:

    ```
    Setup.exe –q F.Server=Yes
    ```
- Quiet Install, IxOS Client with Tcl 8.5

    ```
    Setup.exe –q i F.Client=Yes P.TCLVERSION=8.5
    ```
- Silent Uninstall (any config)

```
Setup.exe –s x
```

The table below represents the detailed list of the configuration and corresponding commands for IxOS.

IxOS configuration to install	Command line
Client with TclServer (add to startup)	Silent : setup.exe –s F.Client=Yes P.TCLVERSION="8.5" F.TclServer=Yes P.RUNMODE=2
	Quiet : setup.exe –q F.Client=Yes P.TCLVERSION="8.5" F.TclServer=Yes P.RUNMODE=2
	Controlled by IxAdmin: setup.exe –s –n F.Client=Yes P.TCLVERSION="8.5" F.TclServer=Yes P.RUNMODE=2

IxOS configuration to install	Command line
Client	setup.exe –s F.Client=Yes P.TCLVERSION="8.5"
Client with HWManager	setup.exe –s F.Client=Yes F.HWManager=Yes P.TCLVERSION="8.5"
TclServer (add to startup)	setup.exe –s F.TclServer=Yes P.TCLVERSION="8.5" P.RUNMODE=2
Server (add to startup)	setup.exe –s F.Server=Yes P.RUNMODE="2"
Server (run as service)	setup.exe –s F.Server=Yes P.TCLVERSION="8.5" P.RUNMODE="1"
Server (start manually)	setup.exe –s F.Server=Yes P.TCLVERSION="8.5" P.RUNMODE="3"
Client, TclServer and Server (add all to startup)	setup.exe –s F.Client=Yes F.Server=Yes F.TclServer=Yes P.TCLVERSION="8.5" P.RUNMODE="2"
Client, TclServer and Server (start all manually)	setup.exe –s F.Client=Yes F.Server=Yes F.TclServer=Yes P.TCLVERSION="8.5" P.RUNMODE="3"
Client, TclServer and Server (start all as services)	setup.exe –s F.Client=Yes F.Server=Yes F.TclServer=Yes P.TCLVERSION="8.5" P.RUNMODE="1"
TclServer with Server (add both to startup)	setup.exe –s F.Server=Yes F.TclServer=Yes P.TCLVERSION="8.5" P.RUNMODE="2"
TclServer with Server (start both as services)	setup.exe –s F.Server=Yes F.TclServer=Yes P.TCLVERSION="8.5" P.RUNMODE="1"
TclServer with Server (start both manually)	setup.exe –s F.Server=Yes F.TclServer=Yes P.TCLVERSION="8.5" P.RUNMODE="3"
Demo Server and TclServer (add both to startup)	setup.exe –s F.DemoServer=Yes F.TclServer=Yes P.TCLVERSION="8.5" P.RUNMODE="2"

IxOS Silent Install on LINUX

To install IxOS on Linux in silent mode, do the following:

1. Create a response file using <installer> -r <path to silent response file> command line. The response file will record the user inputs provided during console installation.
   Example: `ixosX.X.X.XLinux.bin –f /home/ixsdk/user/response1.txt`
2. Install IxOS using the response file.

Example: `ixosX.X.X.XLinux.bin –f /home/ixsdk/user/response1.txt –i silent`

Uninstall/Modify a Current Installation

To remove silently the current version of IxOS, uninstall it entering the following argument at the command prompt:

```
Setup.exe –s x
```

To modify an existing installation, first uninstall it, and then reinstall it with the desired features.

Silent Repair/Modify

Silent repair is the same as running silent install on a current installation. Enter the following at the command prompt:

```
setup.exe -s r
```

Multi Version Installation and Management

Beginning with IxOS 5.10 SP2, multi-version support is present in the Ixia operating system. Multiple versions of IxOS can be present on the client computer, as well as multiple versions of applications such as IxLoad or IxNetwork. You can select from the different versions of IxOS to maintain compatibility with the application that you are running.

Benefits

The benefits of multi-version installation are as follows:

- You can incorporate multiple versions of IxOS on a testbed.
- If you need to downgrade, you no longer have to uninstall/reinstall; you can simply start the other version of IxOS.
- The Licensing model still remains the same.
- This new model also extends into applications. So multiple application versions can co-exist in the future.

Caveats

- Only a single version of IxServer can be running at any one time.
- IxOS 8.00 does not co-exist with older versions of IxOS. The older versions need to be uninstalled before upgrading.

- Client computer/chassis version matching does not change. So a Client computer with IxOS 5.10 SP3 still abides by the same restrictions if attempting to connect to a chassis running IxOS 5.10 SP2.

- There are changes made to the installer. When installing this new version of IxOS, you may choose to first uninstall the existing version of IxOS. Alternatively, if the current version of IxOS supports multi-versions, a co-exist option is present. See *Installation Changes*.

- Each version of IxOS installs into its own folder on *C:\Program Files\Ixia\IxOS\version xx*. The folder *C:\Program Files\Ixia* contains other Ixia-dependent applications; so any uninstalling and deleting of application files must be limited to the specific version folder.

After uninstalling version X of an application, you may alternatively use Windows Explorer to delete files from the version X folder only. Be careful not to delete any files outside the version X folder because those files are accessed by other versions and other applications.

- Demo server also supports multi-version intallation. However, see note under *Installing a Demonstration IxServer* for a caution regarding installing demo server computer and IxServer onto same workstation.

- .ixs files are not migrated by the installer. So if a new IxOS version is being installed to co-exist with a current version, it does not migrate the existing .ixs. It installs a new .ixs in its own folder.

- Both ActiveState Tcl 8.5 and 8.6 are now installed with IxOS. See *ActiveState Tcl 8.5* for details.

ActiveState Tcl 8.5 and 8.6

Both ActiveState Tcl 8.5 and 8.6 are installed with IxOS, beginning with IxOS version 8.50 EA. Existing scripts written with Ixia's version of Tcl 8.4 and Tcl 8.5 is compatible with Activestate Tcl 8.5 and 8.6. Shipping with ActiveState Tcl allows Ixia to standardize the version of Tcl across all Ixia apps. ActiveState Tcl is the predominant software that Ixia customers use when they have their own Tcl.

Support for ActiveState Tcl

Commercial support for ActiveState Tcl is available through ActiveState at: http://www.ActiveState.com/enterprise-edition. For peer support resources for ActiveState Tcl issues refer: http://www.ActiveState.com/Support/.

IxOS and ActiveState

ActiveState Tcl 8.6 is the up-to-date, quality-assured binary distribution from ActiveState. Current releases, and other professional tools for open source language developers are available at http://www.ActiveState.com.

Version Management Tools

Two new tools, AppInfo and Application Selector, are both installed automatically during IxOS installation. Application Selector can be started by selecting the icon on the desktop.

AppInfo

The AppInfo tool is for managing multi-version installations. AppInfo makes automated choices, matching a version of an application with the appropriate version of IxOS. The AppInfo tool automatically selects the highest compatible version of IxOS unless you override the choice.

Application Selector

The Application Selector tool is used to override the automatic selections made by AppInfo during installation. You can choose a specific version of IxOS to run with a selected application. The Application Selector shows only applications that are currently loaded onto the client computer. When a new application (or new version) is loaded, it shows up in the Application Selector next time the Selector is opened.

Installation Changes

The folder structure of the Ixia group has been modified. Applications are no longer loaded to the Ixia folder, but into specific folders for each application and each version. The applications can be accessed through icons on the desktop, or during installation you can choose not to install the icons.

When installing multi-version IxOS, one of following three scenarios may occur:

a. Installation of a multi-version IxOS when there is an existing non-multiversion instance.
b. Installation of a multi-version IxOS when there is a pre-existing multi-version instance.
c. Installation of a multi-version IxOS when there are multiple pre-existing multi-version IxOS instances.
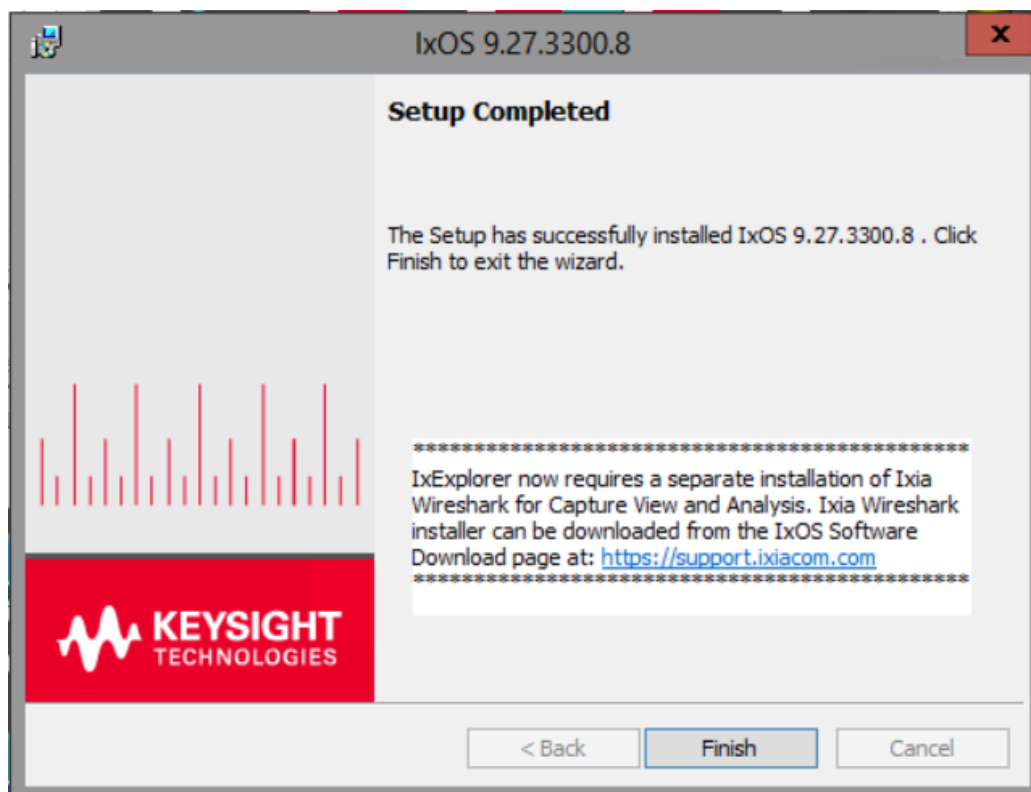
When scenario b (above) is true, a dialog box similar to the following appears.
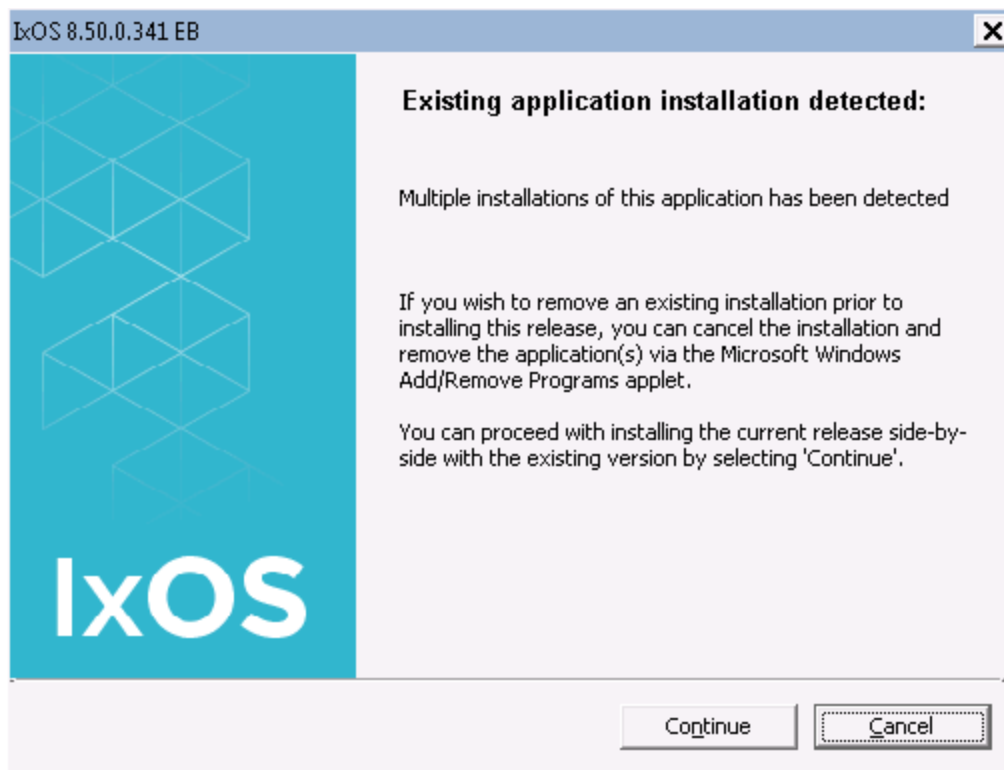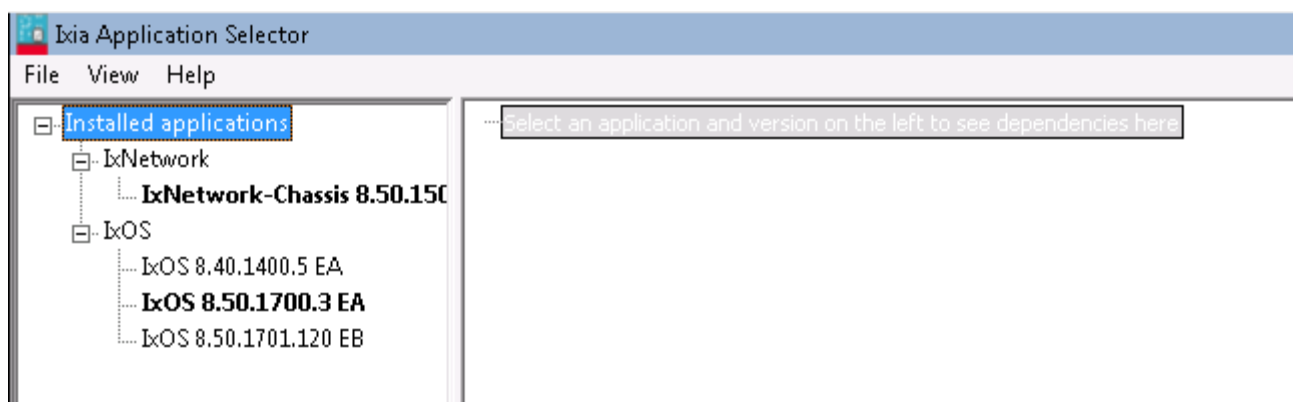
During the IxOS installation process, the following new dialog box appears as AppInfo is configured.
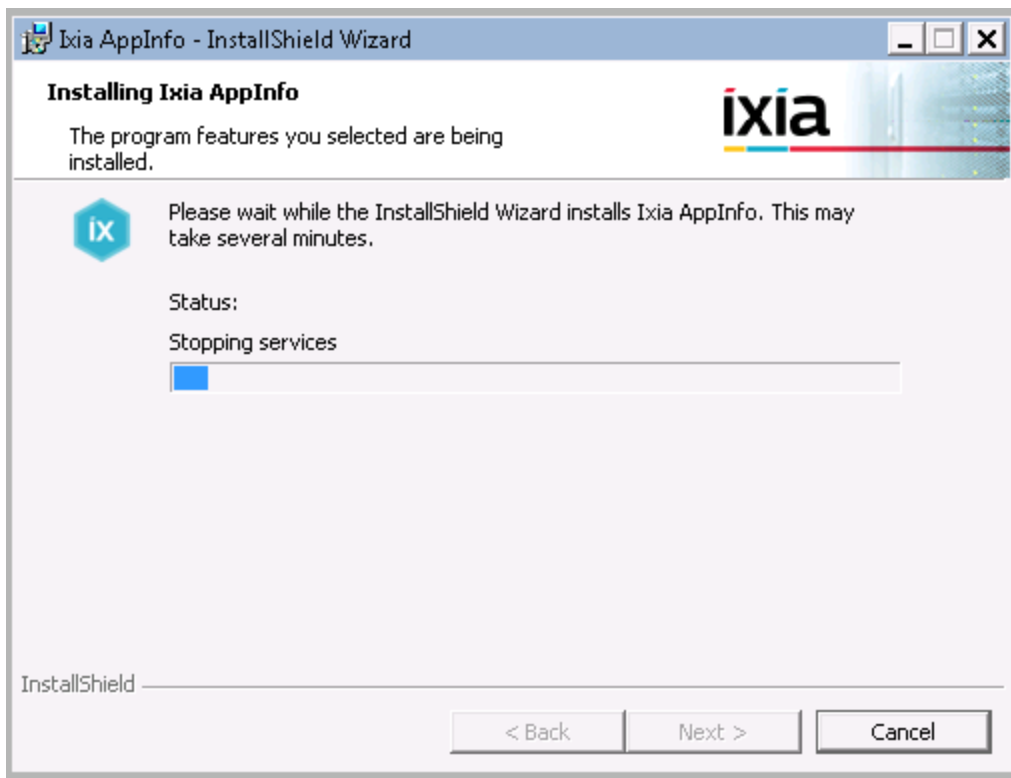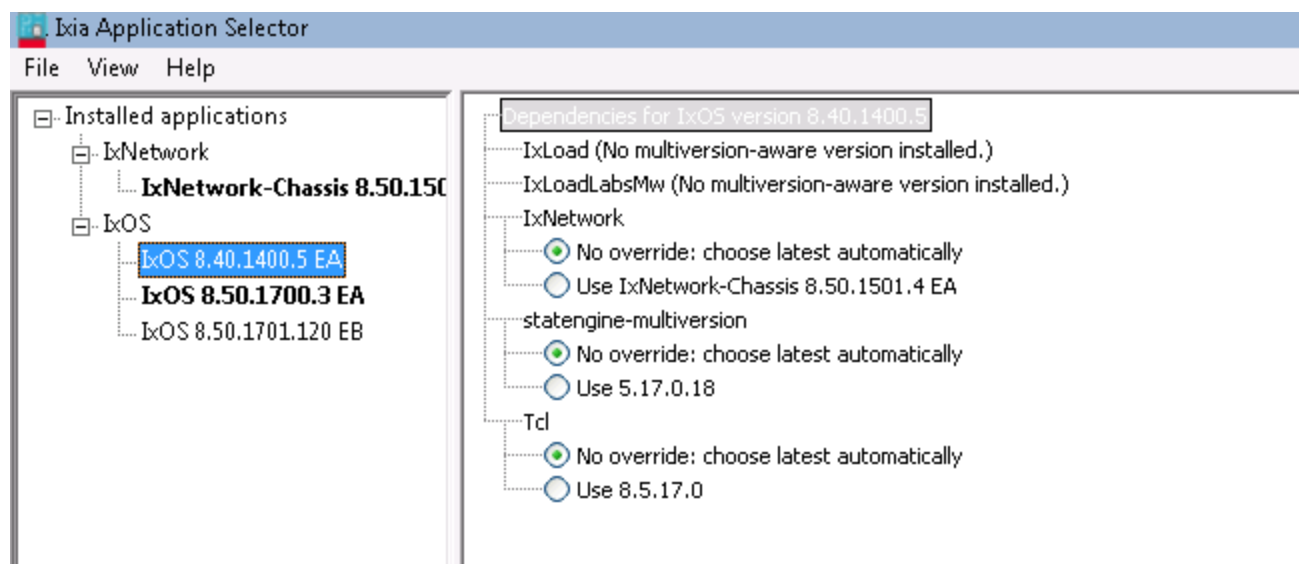
After the installation completes, following installation screen appears. You must install Wireshark separately for Capture View and Analysis.

When **Application Selector** is opened, the window similar to the following figure is displayed.


Select an application version in the left pane, to view the dependencies in the right pane, as shown in the following figure.

For example, Application Selector indicates that, for IxOS version 8.40.1400.5, the compatible version IxNetwork 8.50.1501.4, is installed. It also indicates the default No override selection for the Tcl version.

Select the Tcl version, and the dependencies are displayed as shown in the following figure.
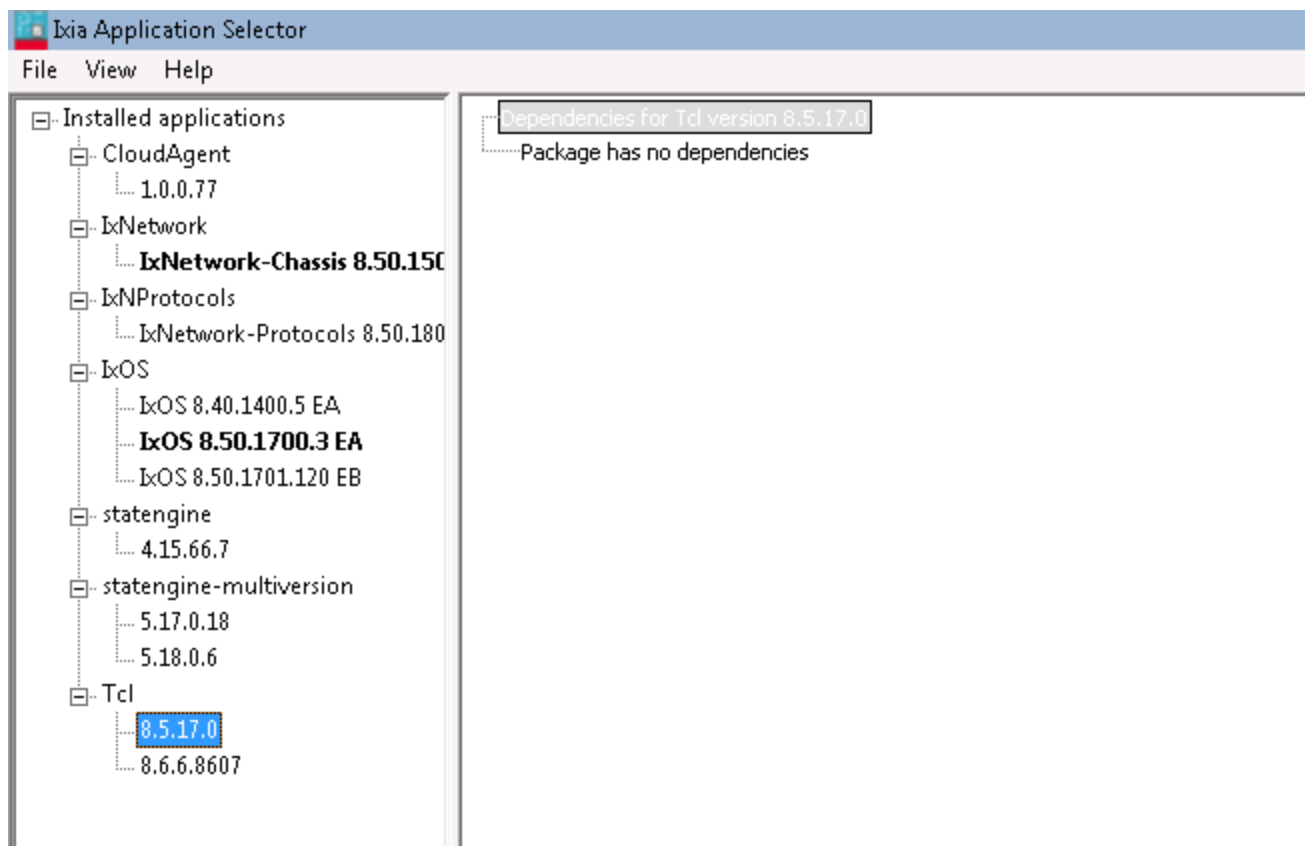
Application Selector indicates that Tcl version 8.5.17.0 has no dependencies.

# Repair, Modify, Uninstall using Windows Control Panel

In addition to the *Silent Repair/Modify* procedure, you can use the Windows Control Panel to uninstall, modify, or repair the IxOS software. The following circumstances may indicate using this approach:

a. Uninstall the IxOS software: Use the **Remove** dialog box.

b. Modify: This allows to add or remove specific components involved in the IxOS installation. For example, if only the Tcl client was installed, and the Tcl Server was not installed, you can use the **Modify** dialog box to install the Tcl Server. Or, if you have installed the Demo Server and want to remove it, you can use this dialog box.

c. Repair: If you notice some missing files in the installation that may have been deleted or modified, you can use the **Repair** dialog box.

To uninstall the IxOS software, do the following:

1. From the Windows **Start** menu, select **Settings**->**Control Panel**.

2. From the **Control Panel**, double-click the **Add or Remove Programs** option.

3. Highlight **IxOS**. Select **Change**.

   When you select **Change**, the **Program Maintenance** dialog box appears. The dialog box is shown in the following figure.
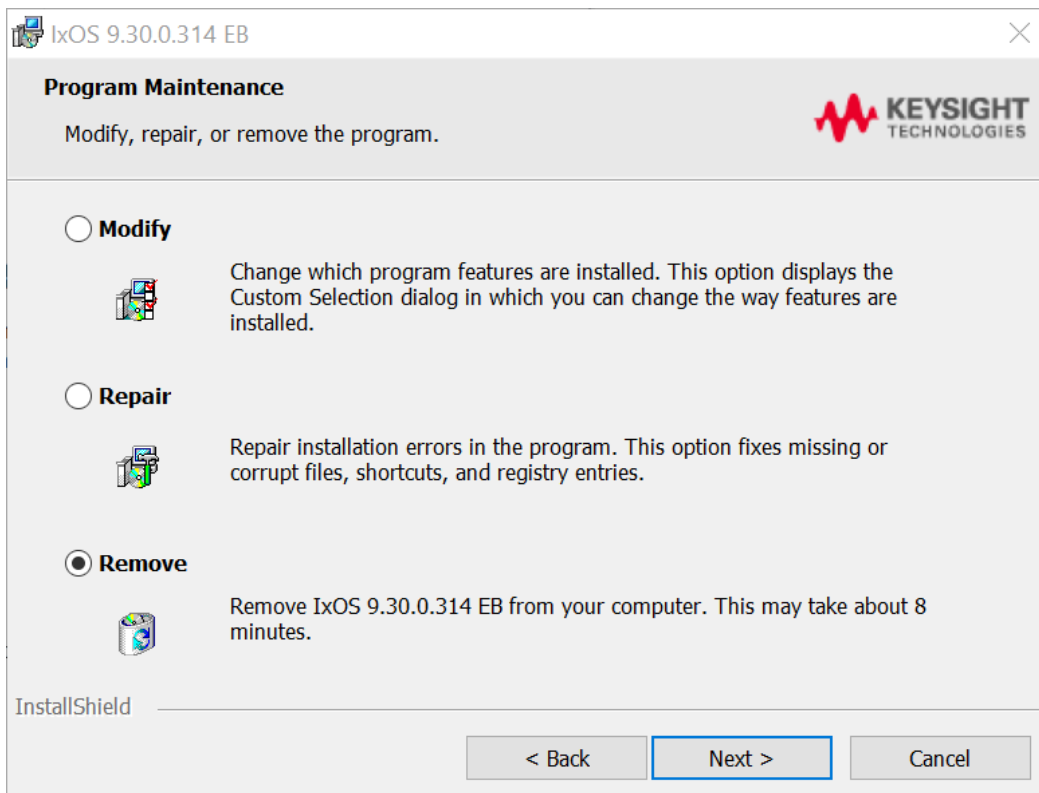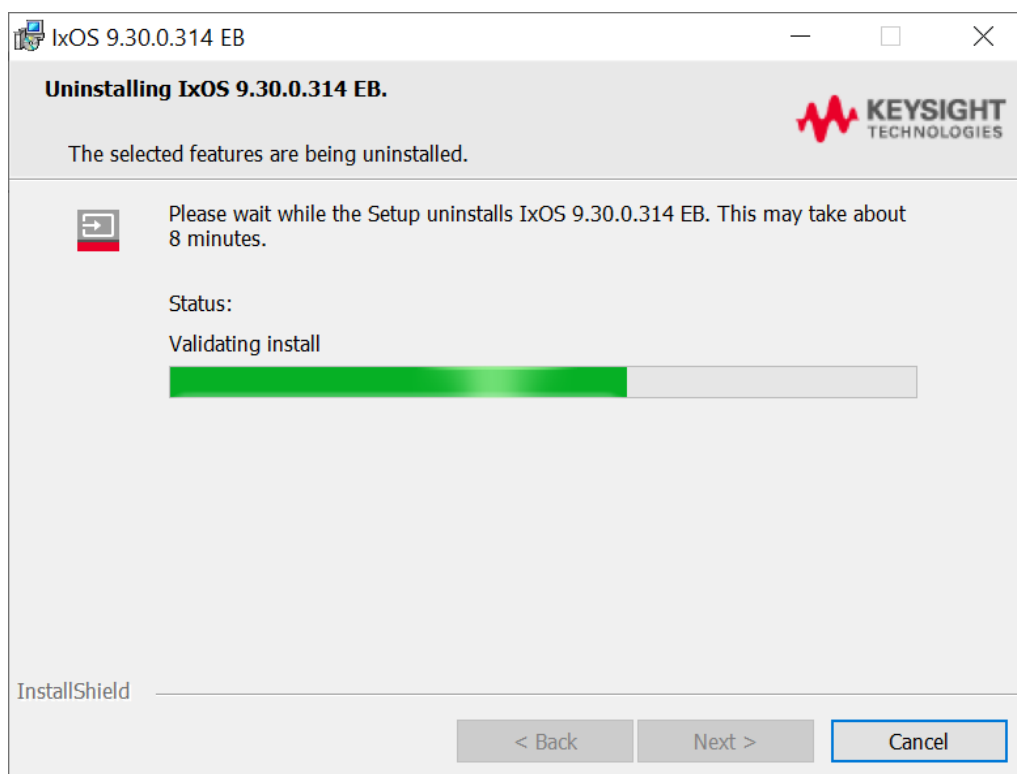
4. Select **Remove**, and then select **Next**.

Windows Installer opens the **Remove the Program** dialog box. The dialog box is shown in the following figure.
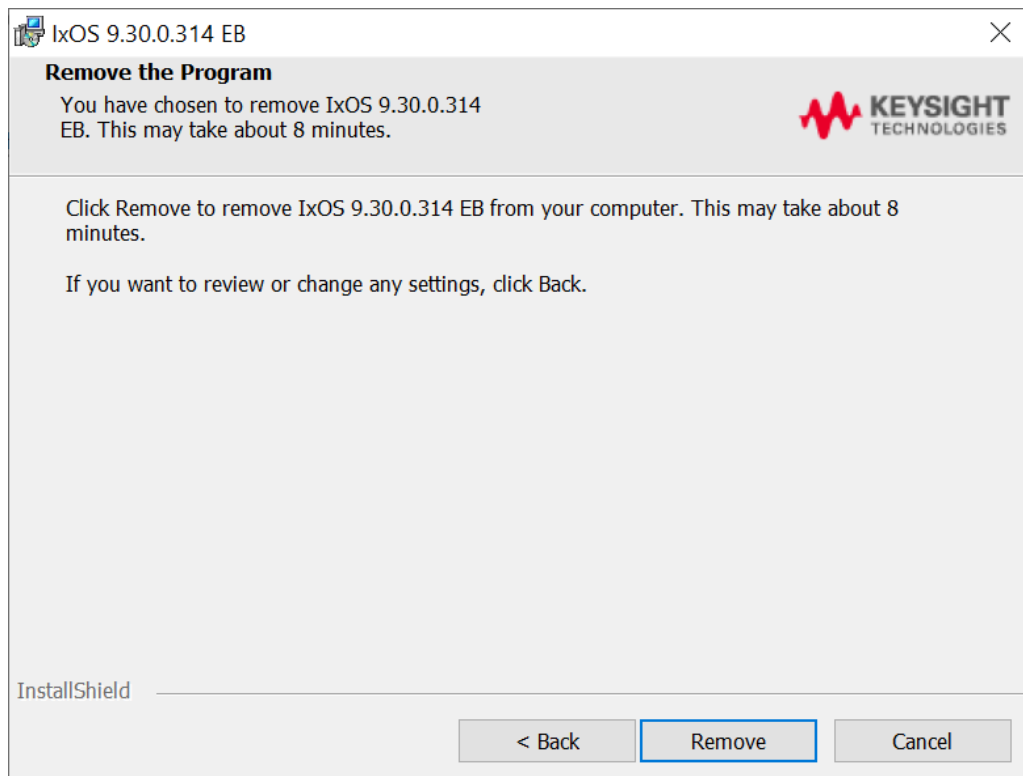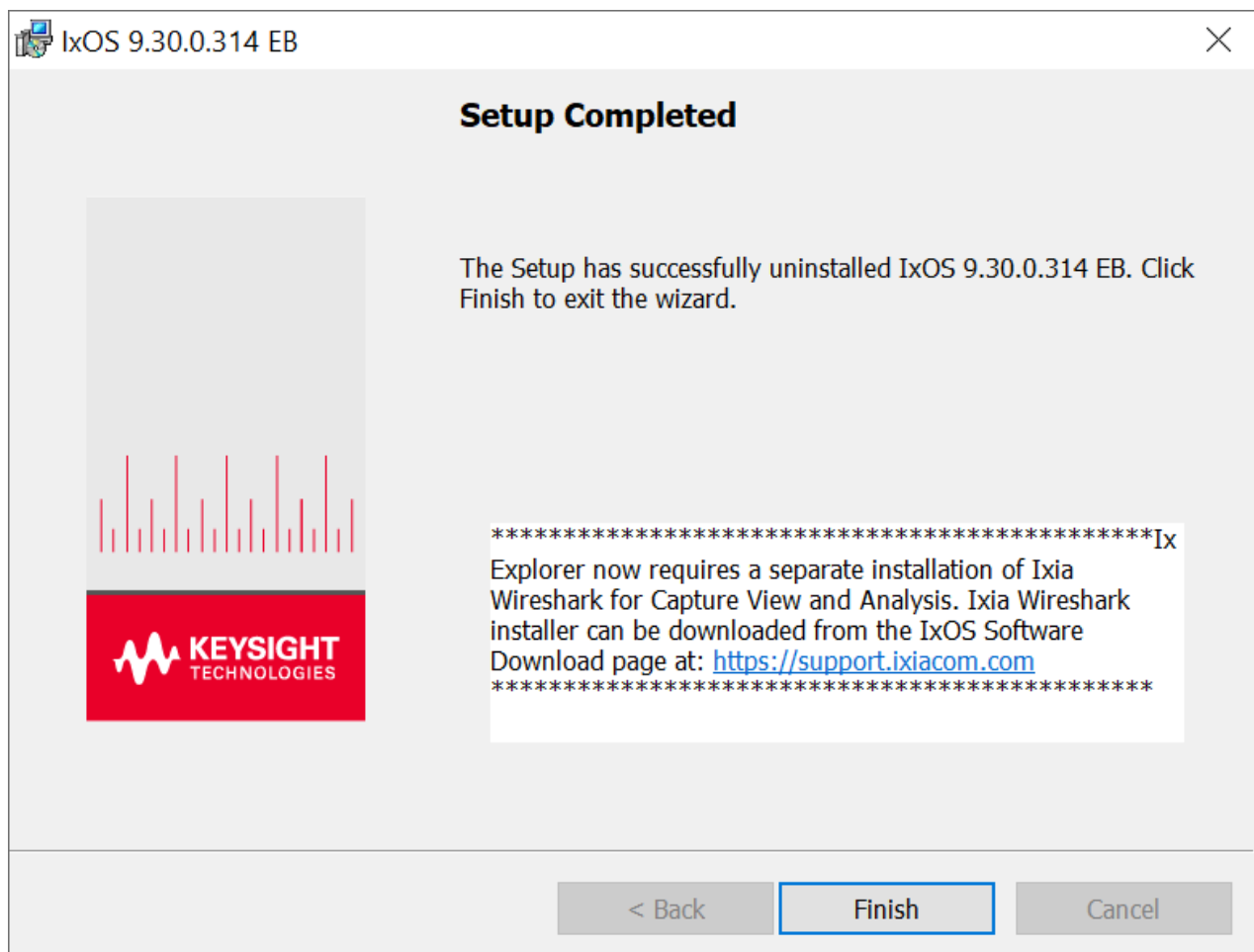
5. Select **Remove**.

   Windows Installer displays a dialog box as it removes IxOS from your computer. The dialog box is shown in the following figure.

After the uninstall operation is complete, Windows Installer displays the **Setup Complete** dialog box as shown in the following figure.

6. Select **Finish**.
7. Close the **Add or Remove Programs** window.

CHAPTER 3 Using IxExplorer

This chapter describes the requirements for and provides detailed instructions for using IxExplorer, the IxOS graphical use interface (GUI). It contains the following topics:

- *Introducing IxExplorer*
- *Packet Streams (Transmit Generation)* describes the process of defining and configuring data flows to be transmitted from a port.
- *Using Capture on page 84* describes how data is captured on a port and then displayed in useful ways.
- *Tutorial # 1: Transmitting Your First Data*
- *Tutorial # 2: Capturing Your First Transmitted Data*
- *Filters and Triggers* describes comprehensive filters and triggers that enable you to capture and count received packets based on configurable matching conditions.
- *Statistics* describes how to view all or a subset of the statistics available for chassis ports.
- *Multiple Statistics View*
- *Port Properties*
- Using IxExplorer with Wine
- *Useful Tricks*

Introducing IxExplorer

The IxExplorer software provided with this product follows the Microsoft Windows Explorer paradigm for a standard, easy-to-use interface. It is assumed that the person using this product is familiar with the Windows user interface and terminology such as 'double mouse click' or selecting from context menu to either invoke an action or provide more information.

The IxExplorer software provides complete configuration, control, and monitoring of Ixia resources in the test network.

To establish communication between IxExplorer and each chassis, the Host ID or IP address of each chassis must be known. If you did not collect the Host ID during initial configuration (steps 12-14 in the Initial Configuration section) or the actual IP address assigned to the chassis (step 10 in the Initial Configuration section), the chassis ID information for the chassis can be accessed by selecting the **Network Neighborhood** icon on the Windows desktop, and selecting **Properties** from the context menu. In the **Network** dialog box, select the **Identification** tab. The chassis ID is located in the **Computer Name** box.

Once this ID is known, go to the **IxExplorer** pane in **Explore Network Resources** window,selct the chassis option in the pane, and select **Properties** from the context menu. The Host ID or IP address can be entered in the **IP Address** box. The chassis ID should be set to a unique number with respect to other chassis that you might connect together at your facility.

Once the contact between IxExplorer and the chassis is established, the indicator next to the chassis in the pane goes from red to yellow to green. IxExplorer uses the Microsoft Windows Explorer paradigm for a

standard, easy-to-use interface. Users who are familiar with Windows are likely to be able to configure and run a basic transmit-and-capture Ethernet packet stream test within two or three minutes of first power up. IxExplorer configures and controls traffic generation, monitors statistics, views, and decodes captured packets. The scalable interface can be used across multiple chassis concurrently for seamless operation of large configurations.
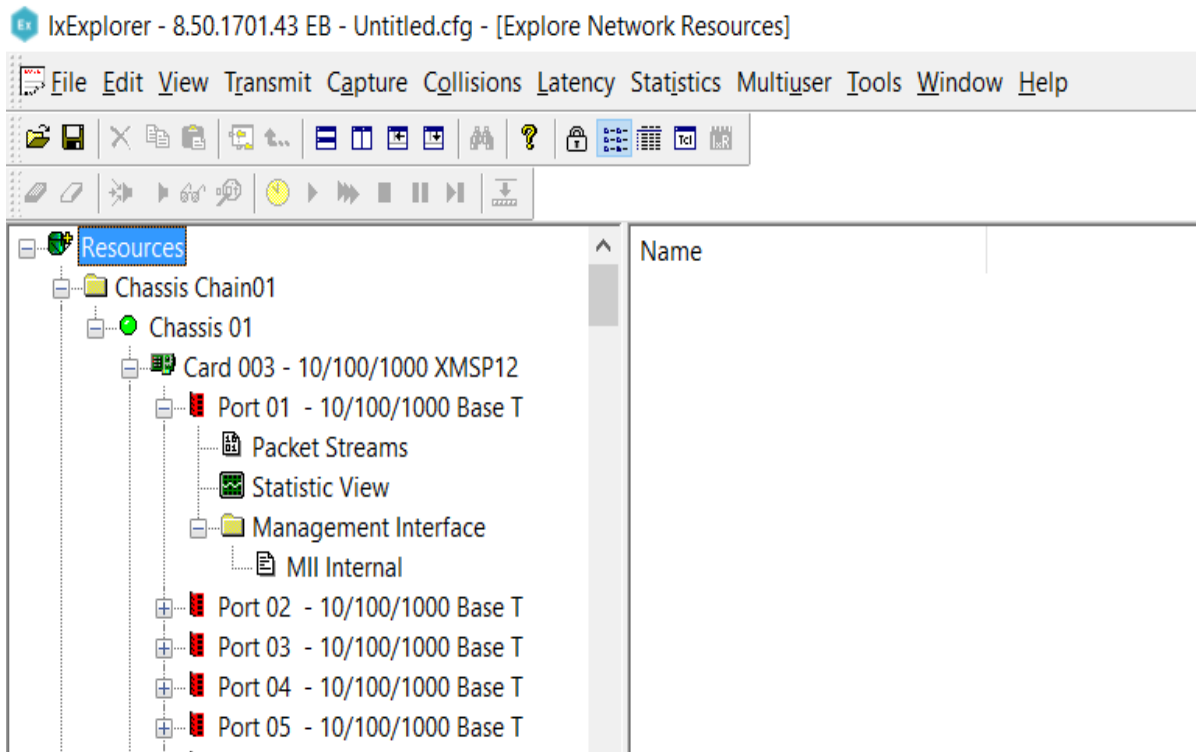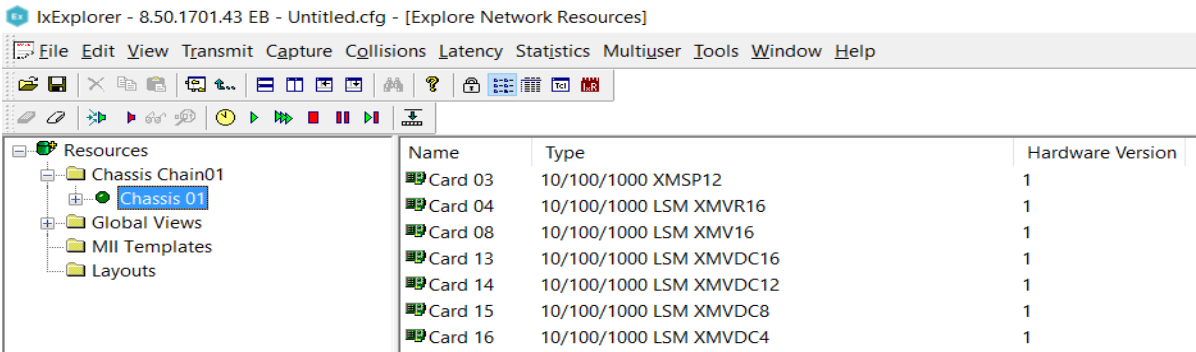
Packet Streams (Transmit Generation)

Packet Streams are user-defined configurations that allow to define and configure data flows to be transmitted from a port. A Packet Stream configuration contains parameters that control the format of generated frames, such as preamble size, destination and source addresses, packet type identifiers, data payload, packet size, inter-frame gap, forced errors, CRC values, and other frame contents. Stream Control parameters allow to define the relationship of streams to other streams, whether continuous, sequential, interrupt, or end stream, with looping to the beginning of a list of streams. In this way, you can create complex and continuous data flows.

The first time a chassis is powered up after shipment from the factory, each port has default settings for Packet Streams and Capture Filters. The Packet Stream default configuration is to send a continuous stream of valid 64-byte packets with minimum interframe gap, with all zeroes in the destination and source addresses, plus incrementing bytes in the data field. The Capture Filter default configuration allows all packets to be captured. The following tutorials assume that you are using the default configurations. After they are changed, the changes are retained so the tutorials may no longer run as specified.

Tutorial # 1: Transmitting Your First Data

In this example, we transmit a continuous 64-byte packet stream, with a destination address of 00 00 00 00 00 00, a source address of 00 00 00 00 00 00, incrementing data bytes, and good CRC values.

The **Resources** pane appears on the left side of the **IxExplorer** window. Under **Resources** on the pane, there is **Chassis Chain01**, and under this there is **Chassis 1**. The round indicator on the left side of **Chassis 1** should be green, indicating that the IxExplorer software has established communications with the server agent running on the chassis.

To transmit data, do the following:

1. Double-click **Chassis 1**, and you see all Cards that are installed in the chassis, labeled by the number of the slot that they occupy.

2. Select one of the cards to send and receive the packet stream.

3. Install a jumper cable from port 1 of that card to port 2 of that card. If the card is a 10/100 Mbps Load Module, use an Ethernet crossover jumper cable. If the card is a Gigabit Load Module, use a duplex fiber jumper cable.

4. Double-click the card in the IxExplorer pane to display the ports for that card.

5. Select port 1, and select **Start Transmit** from the context menu.

6. You are now transmitting your first packet stream from port 1 on the card to port 2 on the card. The indicators on the front of the card reflects this, with the **Tx/Coll LED** on port 1 lit, and the **Rx/Err LED** on port 2 lit. Both LEDs should be green, indicating good data. You can stop the packet stream by selecting the card, and selecting **Stop Transmit** from the context menu.

To look at the packet stream configuration for the stream of packets that you just sent, you can select **Packet Streams** under the port in the pane, and then double-click packet stream 1 that appears in the window to the right of the pane. This corresponds to the first of the streams of data to be transmitted.

When you double-click, a tabbed dialog box opens, which contains all of the user-definable parameters for Packet Streams configuration.

Parameters	Usage
Preamble Size	Variable from 2-255 bytes
Data Pattern	Wide range of user-definable patterns
Frame Size	Variable from 12-65535 bytes
DA/SA	Definable, with many increment and decrement options
Protocol	802.3 or Ethernet V.2 formats, IP type (more types in the future)
UDF 1, 2, 3, 4	User-defined fields with many pattern and size options
Insert Time Stamp and Port ID	For packet tracking purposes and other data analysis
Force Errors	Bad CRC, no CRC, alignment (10/100 only), dribble (10/100 only)

Parameter	Usage
Enabled Features	Continuous packet, continuous burst, stop after this stream, advance to next stream, go to any stream with or without a count
Inter-Packet Gap	From below minimum to many seconds
Inter-Burst Gap	From below minimum to many seconds
Inter-Stream Gap	From below minimum to many seconds

It is very informative for a new user to experiment with these packet stream parameters and view the capture view results.

Stream Properties for Galaxy:01.01 ID 1

Frame Data | Stream Control | Packet View | Warnings

Preamble Size
8
(Bytes 2-255)

Data Pattern - (Starting at offset 34)
Type: Inc Byte
Data: 00 01 02 03
New
Edit

Frame Size (Includes CRC)
○ Fixed   Size 64
○ Random   Min 64
○ Increment
○ Auto   Max 1518

DA / SA | Protocols | UDF1 | UDF2 | UDF3 | UDF4

Data Link Layer
☐ Cisco ISL   Edit ISL
☐ VLAN   Edit VLAN
☐ MPLS   Edit MPLS
○ None   Type
◉ Ethernet II 0800
○ Ethernet Snap
○ 802.3 Raw
○ 802.2 (IPX)

Protocols
○ None   ○ IPX   Edit
◉ IPv4   ○ ARP
○ IPv6   ○ Pause Control

◉ None   ○ UDP / IP
○ TCP / IP   ○ RIP / UDP / IP
○ ICMP / IP ○ DHCP / UDP / IP
○ IGMP / IP
○ OSPF / IP

Insert
☐ Time Stamp
☐ Packet Group Signature
☐ Sequence Signature
Edit

Force Errors
◉ No Error
○ Alignment
○ Dribble Bit
○ Bad CRC
○ No CRC

Prev | Next | Port Properties | OK | Cancel | Help

Stream Properties for Galaxy:01.01 ID 1

Frame Data | Stream Control | Packet View | Warnings

☑ Enabled

Name: Initializeilt

○ Continuous Packet
○ Continuous Burst
○ Stop after this Stream
◉ Advance to Next Stream
○ Return to ID
○ Return to ID for Count

Return To ID: 1
Loop Count: 1
Packets Per Burst: 100
Bursts Per Stream: 1

Inter-Packet Gap

Units	Time	Packets/Sec	% Max Rate
Nanoseconds Value	960	148809.52	100

◉ Fixed   Min Gap 960   148809.52   100
○ Random   Max Gap 1280   142045.45   95.45

Inter-Burst Gap ☑
Units: Nanoseconds   Value: 960

Inter-Stream Gap ☑
Units: Nanoseconds   Value: 960

Update Gaps

Prev | Next | Port Properties | OK | Cancel | Help

Using Capture

The Capture View shows the data captured on a port. The settings of the capture filter for that port determine which packets are shown in the capture view (more on this later). The capture view window is split into three panes, top downwards. The top pane is a list that contains columns for a frame index number, a time stamp, the destination address, the source address, the packet data, the frame length, and the error status of the frame. The middle pane contains a text decode of the contents of the packet selected in the top window. The bottom pane contains the hexadecimal byte display of the contents of the selected packet.
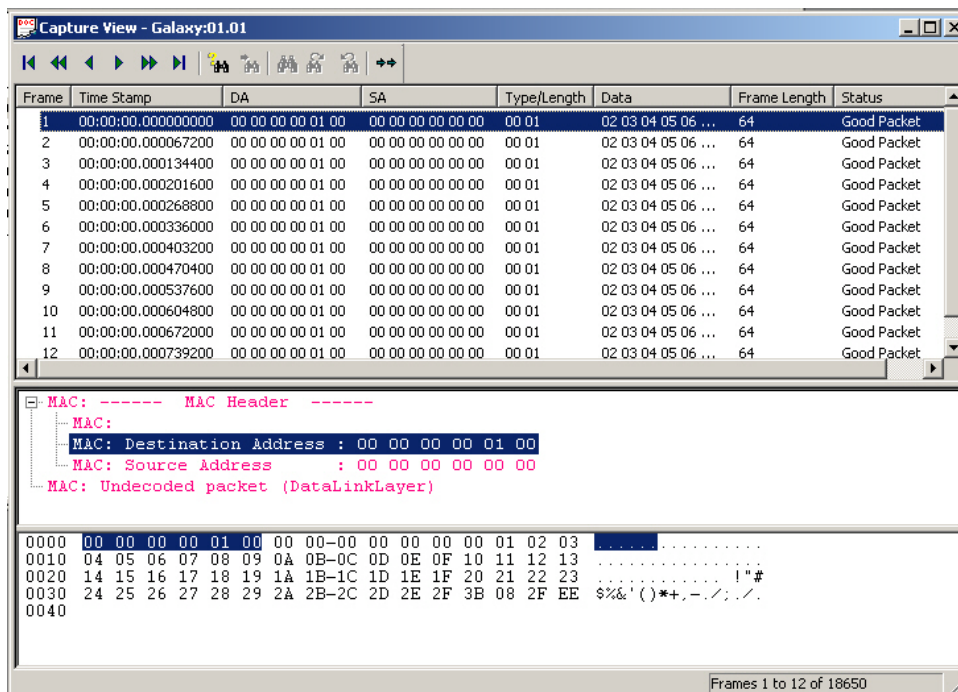

Tutorial # 2: Capturing Your First Transmitted Data

In this example, we take a look at the actual packets that are transmitted when we run the packet stream in tutorial #1. We will be referring to the same card and ports as used in that tutorial.

1. Select port 2, and select **Start Capture** from the context menu.

2. Select port 1, and select **Start Transmit** from the context menu.

3. Select port 1 again, and select **Stop Transmit** from the context menu.

4. Select port 2, to highlight it.

5. To the right of the pane, you see four items: Capture view, Filters, Packet Streams, and Statistics. Double-click **Capture View**.

6. A window opens that displays the packets captured on port 2 when port 1 transmitted its packet stream. You have just captured your first packet stream.
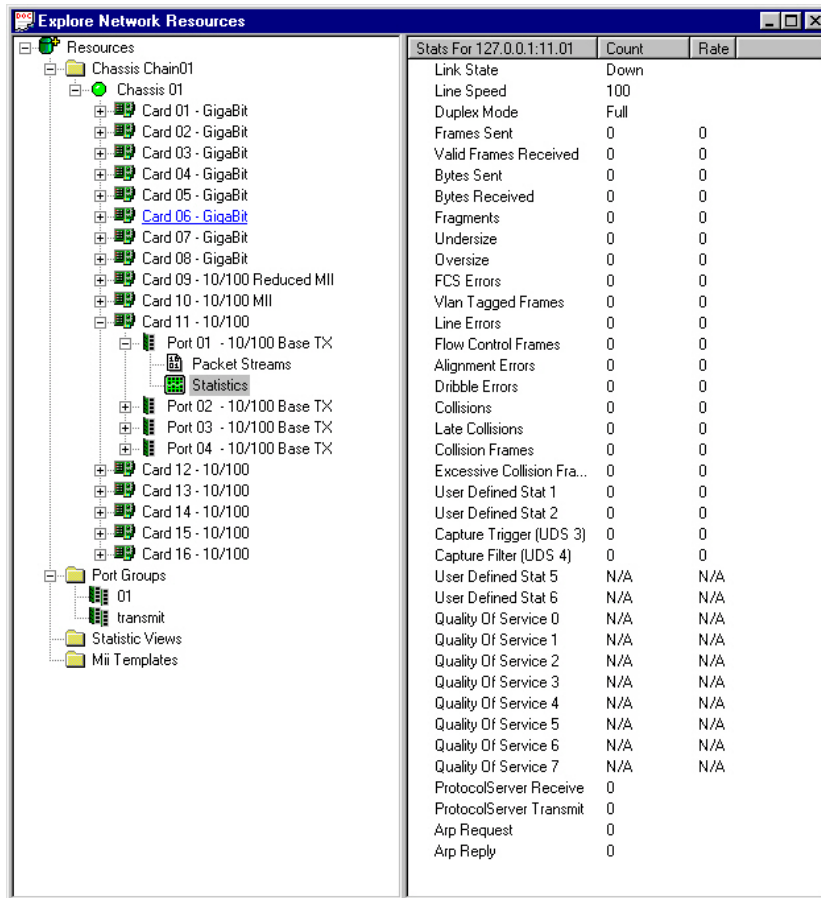
Filters and Triggers

Comprehensive filters and triggers allow to capture and count received packets based on configurable matching conditions such as destination address, source address, data payload pattern matches, and packet error types. There is a trigger to start capture, and filter to define what is allowed into the capture buffer once the trigger occurs. There are also four user-definable statistics counters that may be configured using the same matching conditions as the trigger and filter definitions. Double-click the **Filter, Statistics, Receive Mode** option in the right pane. The dialog box as shown in the following figure appears.
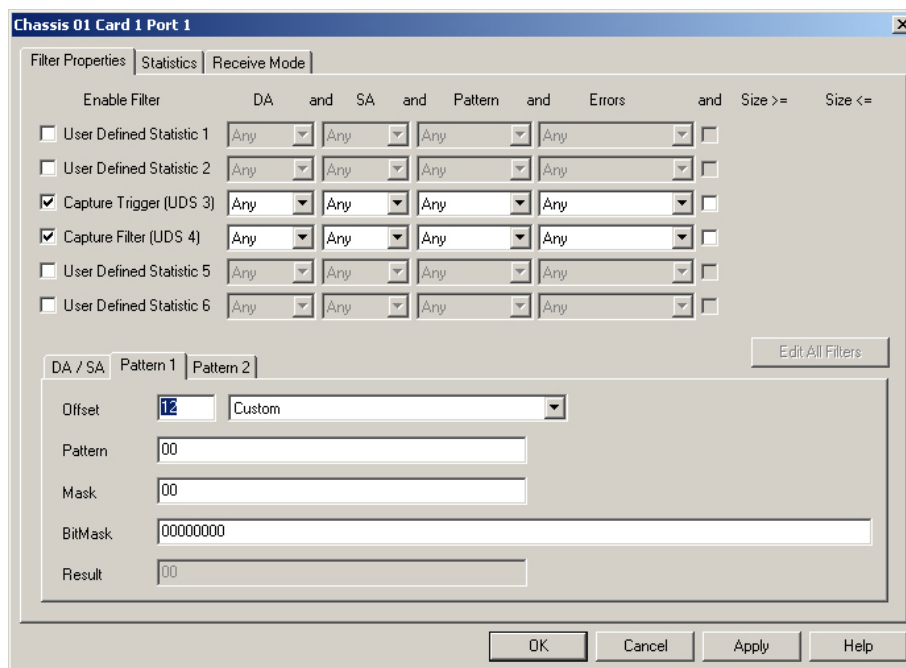
Statistics

The Statistics feature of IxExplorer allows to view all or a subset of the statistics available for chassis ports. Statistics for multiple ports can be displayed side-by-side for greater insight into overall traffic patterns. To view the statistics for a single port, double-click **Statistics** under the port on the pane as shown in the following figure.

Statistics Counters

The counters that appear in the statistics windows for each type of Load Module are the ones that are applicable to the Load Module type. For example, there are collision counters for 10/100 Load Modules, but not for Gigabit Load Modules, since there is no such thing as a collision on Gigabit Ethernet. All counters are 64-bit values. The **Rate** column shows the count rate values for each counter in increments per second.

A complete listing of all items displayed in the statistics windows for different modes of operation can be found in the *Ixia Platform Reference Guide*.

Multiple Statistics View

To display multiple ports statistics side-by-side, select **Statistic Views** in the pane and select **New** from the context menu. This opens a window where you can select the ports to view statistics for in a side-by-side display. On the left side of the window, highlight the desired ports using either the shift-select or

control-select methods, and then select **Add** to place them in a list on the right side of the window. Select **OK**. The statistics window appears.

The default counters in this view are only the counters that are common to both 10/100 and Gigabit Load Modules. If you want to include counters that do not appear in this view by default (for example, Collisions), you can add them to the view. From a statistics window that does contain the desired counter, you can drag-and-drop the counter into the multiple ports statistics view window. Also, the rate counters do not appear by default, and they can be added in the same way. If you want to re-order the list of counters in the window, you can re-arrange them as desired using the same drag-and-drop method.

Port Properties

To change or view the configuration of a port, select the port on the pane and select **Properties** from the context menu. This allows to view and configure parameters such as loopback, port speed, duplex mode, MII register settings, and other port-specific operating characteristics.

Using IxExplorer with Wine

You can run IxExplorer on Linux chassis. To install IxOS on a Linux chassis and run IxExplorer on it, do the following:

1. Log into chassis by using SSH and admin credentials.
2. Open the IxOS CLI, and install an active IxOS build.

```
[tantines@C02F64ZDMD6R ~ % ssh admin@baloo.buh.is.keysight.com
[admin@baloo.buh.is.keysight.com's password:

Welcome to Ixia CLI Launcher!
Last login: Wed May 11 00:15:23 +0800 2022 from 10.22.220.75


------------------------------------------------
| Management IP        : 10.38.179.71   |
| Management IPv6      : not configured |
| Web Platform Version : 9.20.2.11      |
------------------------------------------------


Access application CLIs with these commands:
        enter bps
        enter chassis

You may also use ssh -t admin@<this-host> <app-name> [<command> [<args>]] for direct access
You may also access the chassis using the web interface: https://10.38.179.71:443

Use ? or help for more information.

[# enter chassis
Welcome to Ixia chassis.
----------------------------------------------------------
| Management IP               : 10.38.179.71         |
| Management IPv6             : not configured       |
| Active IxOS Version         : 9.20.2701.142 EB     |
| IxNetwork Protocols Version : 9.20.2199.9          |
| LicenseServerPlus Version   : 5.40.0.26            |
| Chassis status              : READY                |
----------------------------------------------------------


Welcome! You are now in IxOS CLI. Type help or ? for more commands.

@..    - navigate to parent scope
@menu  - navigates to a specific submenu

New IxOS versions available, use "show ixos available-updates" to list them.
# install ixos 9.20.2701.142
```

3. Install IxOS client, that is, IxExplorer of the installed active IxOS buid.

```
Welcome! You are now in IxOS CLI. Type help or ? for more commands.

@..    - navigate to parent scope
@menu  - navigates to a specific submenu

New IxOS versions available, use "show ixos available-updates" to list them.
# install ixos-client
```

4. Connect by using a VNC Viewer to the chassis IP or hostname on port 5901, such as baloo.buh.is.keysight.com:5901. Use admin/admin as credential for connection.

> **Note:** You can change this password by using the **Change VNC password** utility in the viewer.

5. Launch IxExplorer from desktop icon .

6. Use SFTP to connect to the chassis by using the admin credentials and transfer files in and out of the IxExplorer container. Use /ixia/ixexplorer/<IxOS build> folder for file transfer.

> **Note:**
> - In the VNC Viewer, you can find the file_transfers folder on desktop.
> - To uninstall IxExplorer from the container, use the `uninstall ixos-client [<version>]` command in the IxOS CLI.

Useful Tricks

To copy a port's properties from one port to another, select a port and drag it on top of another port on the tree.

To start packet streams on all of the ports on one card, select the card in the pane and select **Start Transmit** from the context menu. Similarly, you can stop packet streams, and start and stop capture for all ports on a card.

To start packet streams on all ports on all cards in a chassis, select the chassis in the pane and select **Start Transmit** from the context. Similarly, you can stop packet streams, and start and stop capture for all ports on all cards in a chassis.

To rearrange the statistics counters in a statistics view, select and drag the counters to the desired location. In this way you can arrange the statistics counters into any order desired.

CHAPTER 4 License Management

This chapter describes Ixia software license management. It contains the following topics:

Introduction

Ixia's license management system. **Ixia Licensing Utility (ILU)** and **License Server Plus (LS+)** replace **Ixia Registration Utility (IRU)** and **License Server (LS)**. ILU enables you to do the following:

- Centralize and monitor your software usage.
- Maintain an accurate license inventory.
- Smoothly transfer licenses across different hosts and teams.

Offline activation and deactivation of licenses are also available now.

The **Activation Code** for the purchased Ixia product(s) is sent in an e-mail message, when you purchase an Ixia software. Enter this **Activation Code** in ILU to generate a license. For the licensed software to work properly, licenses must be activated on-site. License activation for an Ixia product can be done after the software installation but must be done before the software usage.

The licensing operation is done with a simple wizard and can be run in the following ways:

- The same computer on which the software was installed
- Some other Windows-based computer with the following minimum system requirements:
    - Microsoft® Windows® XP, Microsoft® Windows® 7 and later
    - 1 Ghz or higher processor
    - 512 MB of RAM
    - 950 MB of free hard drive space (x86)
    - 2.1 GB of free hard drive space (x64)

The computer used to perform the licensing process must be connected to the Ixia chassis and to workstations in the lab environment. If at all possible, it should also be connected to the Internet. If simultaneous connections to the lab network and Internet are not feasible, it is still possible to complete

all licensing operations. The offline activation and deactivation processes are covered in *Overview of Offline Activation/Deactivation* section of the *Ixia Licensing Management User Guide*.

During the IxOS installation process, a dialog box appears that shows several options for licensing information. The following figure shows the dialog box as it appears.
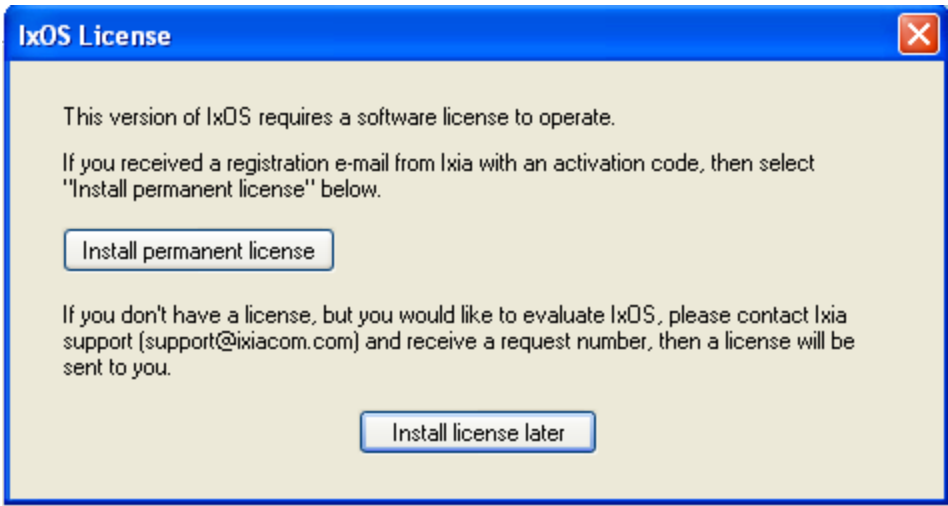
The following table explains the options in the licensing prompt.

Options	Description
Install permanent license	Runs the registration process. You must have purchased a license and received a licensing e-mail with a registration number and password. Selecting this option starts the license installation process.
Install license later	Skips the licensing process and continues with the installation. IxOS does not run without a valid, registered license. If you select this option, at some point it is necessary to run the Ixia Licensing Utility (ILU), and register the software.

For IxOS, only IxServer is licensed. The IxExplorer client can be installed anywhere, as many times as needed, without a license. A license is also required when using the Windows Control Panel to modify or repair the IxOS software. In any instance where a license is not available, a temporary license is offered. For example:

- If the IxOS installer is started and the SERVER option is selected, the Ixia Licensing installer is installed and the dialog box to acquire a temporary license appears.

- If MODIFY is selected in the **Add/Remove programs** dialog box, Licensing is not installed if IxServer is already installed. Select **Repair** to acquire a temporary license in this case.

- If the IxOS installer is started and only the CLIENT option is selected, Licensing is not installed and no licensing dialog box appears.

- If MODIFY is selected in the **Add/Remove programs** dialog box, and the SERVER feature is selected for installation (where previously only the client feature was installed), licensing is installed and the dialog box to acquire temporary licenses appears.

Types of Licenses

Ixia provides the following types of licenses for its products:

- Node-Locked Licenses
- Floating Licenses
- Evaluation Licenses

Node-Locked Licenses

Node-locked licenses are locked to a particular chassis or workstation and allow only certain product functions to run on that chassis or workstation.

Floating Licenses

Floating licenses are stored on a license server and allow a set number of chassis or workstations to use product software features. All chassis or workstations that use this type of license must be connected to the license server and the server must be up and running. Once the set number of users is reached for that particular feature, additional users for the product features are denied.

> **Note:** You can mix both node-locked and floating licenses to get the best solution according to your testing environment.

Evaluation Licenses

Evaluation licenses evaluate Ixia products. Except for a time limit, they act in all respects as a regular license (must be activated using ILU).

Licensing Models

Ixia provides the following licensing models for its products:

- [Subscription Licenses](#)
- [Perpetual Licenses](#)

Subscription Licenses

Subscription licenses are floating and limited licenses, stored on a license server. They are checked out from the defined license servers and allow only a limited number of licenses to be used concurrently.

> **Note:** For specific details on subscription licenses, please refer to the documentation of your product of interest.

Perpetual Licenses

Perpetual licenses are node-locked licenses, stored on a chassis. They are checked out from the individual chassis and cannot be installed on a different license server.

> **Note:** For specific details on perpetual licenses, please refer to the documentation of your product of interest.

Prerequisites

Before activating a license, you must have the following:

The e-mail message from Ixia with the activation code. The key contents of this e-mail message are as follows:

- Entitlement Code: If you provide the entitlement code, ILU loads all the available activation codes associated with that entitlement code.
- Product: The product name for which the license is being activated.
- Quantity: The number of licenses.
- Activation Code: A unique number for the license.
- Start Date: The date from which the license can be activated.
- End Date: The date on which the license will expire.

Tcl Notes for use with Licensing

Although the GUI offers the ability to designate an independent license server as a menu option, no such option is available to a Tcl program. Instead an environment variable named IXN_LICENSE_SERVER must be set.

If you are running your Tcl program on a Unix client computer, the environment variable must be set on the host running the TclServer. If you are running your Tcl program on a Windows client computer, it

must be set on that client computer. Environment variables are set on a Unix host through the user's shell initialization script.

To set the environment variables on a Windows host, do the following:

1. Select **My Computer** on the desktop and then select **Properties** from the context menu.

2. Select **Advanced** tab from the **System Properties** dialog box.

3. Select **Environment Variables** at the bottom of the page.

4. In either **User variables for <user>** or **System variables** list, if IXN_LICENSE_SERVER does not exist in the list, select **New**, or else **Edit**.

5. The name of the variable should be IXN_LICENSE_SERVER and the value should be the name or IP address of the license server computer.

Installation Scenarios

These installation scenarios are described in the following sections:

- *Licensing to a Chassis or Workstation via the Internet*
- *Licensing to a License Server via the Internet*
- *Licensing to a Chassis or Workstation without the Internet*
- *Licensing to a License Server without the Internet*

The *Installation Host* is the computer that is used to perform the licensing installation. This can be the same computer on which the Ixia software was installed, an Ixia chassis, a License Server, or a separate workstation.
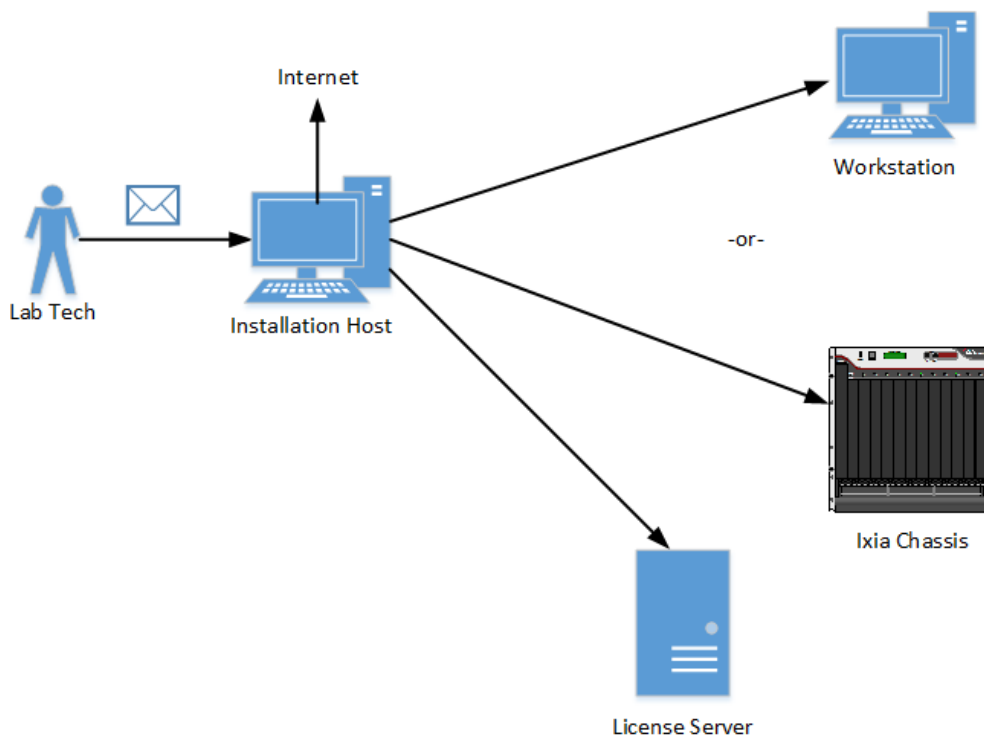
Licensing to a Chassis or Workstation via the Internet

In this case, the Installation Host is connected to the Internet and licenses are installed to the workstation or Ixia chassis to which the license pertains (the workstation and the Installation Host can be the same computer). The Installation Host must also be connected to the workstation/chassis (if they are not the same computer) as shown in the following figure.
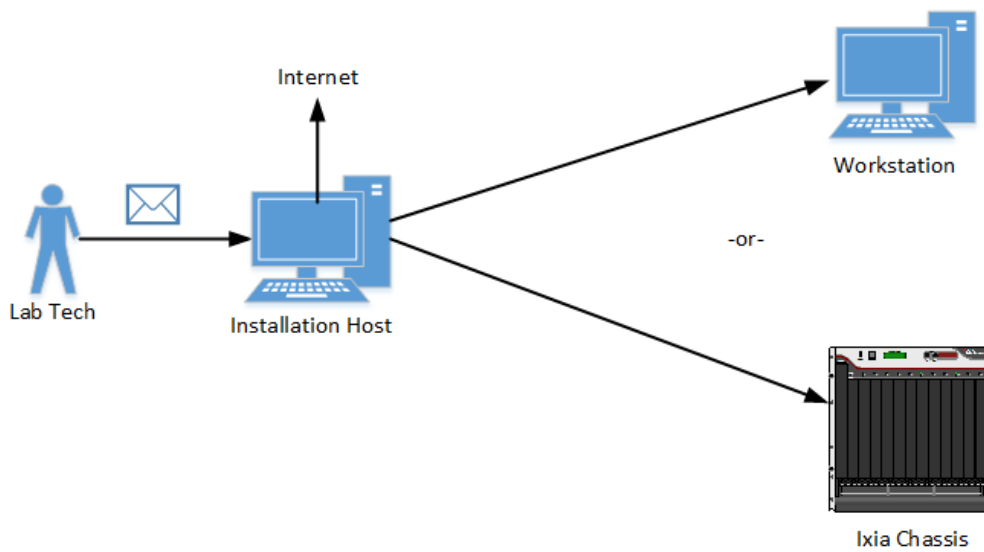
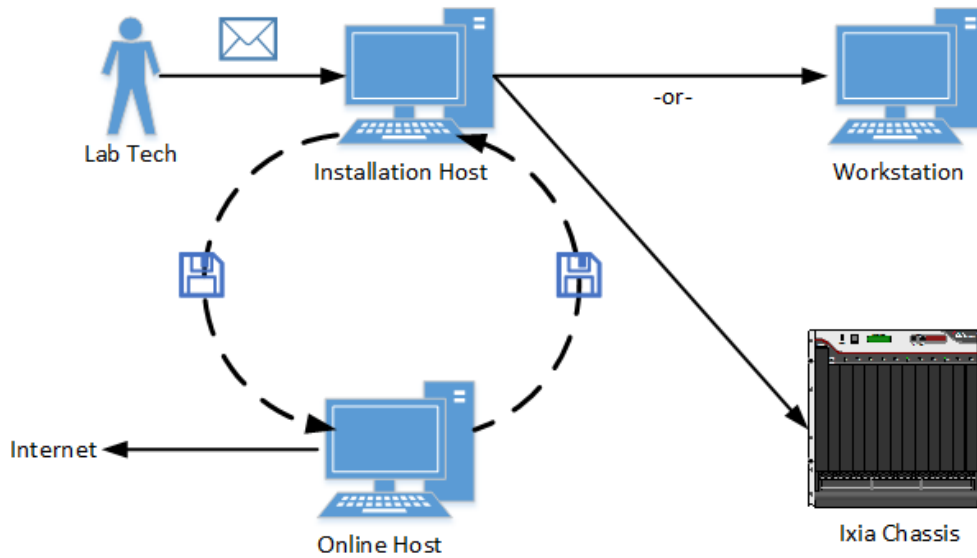## Licensing to a License Server via the Internet

In this case, the installation host is connected to the Internet and licenses are installed on a central license server (the license server and the installation host can be the same machine). The installation host must also be connected to the license server and the workstation/chassis (if the license server and the installation host are not the same machine).

Licensing to a Chassis or Workstation without the Internet

In this case, the Installation Host is not connected to the Internet and the licenses are installed to the workstation or Ixia chassis to which the license pertains (the workstation and the Installation Host can be the same computer). The Installation Host must also be connected to the workstation/chassis (if they are not the same computer).

To complete the installation process, an additional computer is necessary—an *Online Host*, as shown in the following figure. This computer must be connected to the Internet. It is necessary to transfer small amounts of information from the Online Host to the Installation Host to complete the process. E-mail or a portable USB drive may be appropriate.

Licensing to a License Server without the Internet

In this case, the installation host is not connected to the Internet and licenses are installed on a license server (the license server and the installation host can be the same machine). The installation host must also be connected to the license server and the workstation/chassis (if the license server and the installation host are not the same machine).

In order to complete the installation process, an additional computer is necessary – an online host – shown in the figure below. This machine must be connected to the Internet. It is necessary to transfer small amounts of information between the online host and the installation host to complete the process. E-mail or a portable USB drive may be appropriate.
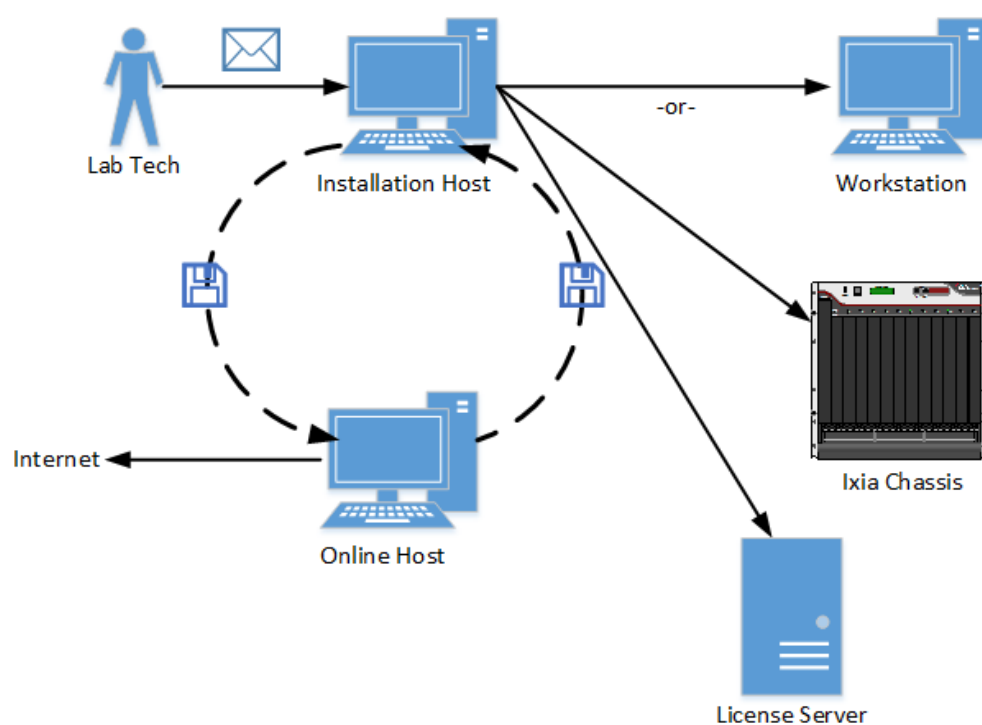
Installing Ixia Licensing Utility

For details on installing Ixia Licensing Utility, refer to the *Ixia Licensing Management User Guide*.

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