

Application Server

Release 9.20

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.

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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

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About this guide




This section explains the notational and typographical conventions used in this documentation, and provides a list of related documentation.

Section contents:

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Note icons and messages

The following table describes the note icons and messages used in this document.

Name	Icon	Description
Note		Indicates information that emphasizes or supplements important points in the main text.
Important		Indicates information that is essential to the completion of a task.
Tip		Provides supplemental suggestions for applying techniques and procedures to accomplish a task.

Typographical conventions

The following table describes the typographical conventions used in this document.

Convention	Description
bold text	Bold text indicates: <ul style="list-style-type: none">Graphical user interface element names (such as dialog boxes, buttons, menu selections, and so forth).Command line interface commands and options.The name of a field, option, or parameter when used as part of an instruction. For example: "Select the desired Inner Priority value."
<i>Italic text</i>	Italic text indicates: <ul style="list-style-type: none">A text reference to the name of a field, option, or parameter.Document and book titles.The first reference to a new term.Special identification or emphasis in a statement.
monospace text	Text shown in a monospace font is used to indicate: <ul style="list-style-type: none">Text that you input. For example: Enter <code>cd project1</code>Code samples, including keywords and variables within text and as separate paragraphs, and user-defined program elements within text.Text file content or examples, such as lines of text from an .ini file.

Textual conventions

The following table describes the typographical conventions used in this document.

Convention	Description
Boolean text	Words that represent Boolean notation are written in all uppercase text. For example: 192.168.5.5 OR 10.20.30.30.
Keystrokes	Simultaneous keystrokes are shown by joining the key names with a plus sign (+). For example, CTRL+Q.
> (right angle bracket)	Separates levels in a hierarchy of menu selections. For example: "Select Administration > Users ."

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CHAPTER 1 Ixia Application Server Installation

Note Regarding Ixia Applications

The Ixia Application Server does **not** have Ixia applications pre-installed.

In order to support Ixia applications, the client component of Ixia applications used must be installed on the Ixia Application Server. For Ixia application compatibility and support, please visit www.ixiacom.com (under Support, choose Product Compatibility Matrix).

Supported Applications

- **IxAutomate 6.90 GA SP1**, or later version
- **IxLoad 5.10 GA**, or later version
- **IxN2X 6.13 GA**, or later version
- **IxNetwork 5.70 EA Patch 2**, or later version
- **IxOS 5.70 EA SP2 Client**, or later version

A downloadable version of the applications are available at www.ixiacom.com (under **Support, Downloads & Updates**).

Overview and Specifications

The Ixia Application Server is a high-end dual-processor, 1U rack-mount server with state-of-the-art features. It optimizes and enhances Ixia test application performance by running Ixia applications, in a server-based environment. Connection via Microsoft's remote desktop (RDT) facility provides access to the test applications on the server, minimizing client requirements. The Ixia Application Server centralizes application updates and installation, simplifying test-environment management.

Figure: 1U Multi-User Application Server



Specifications are detailed in *Table: Specifications*.

Table: Specifications

	Ixia Application Server
Motherboard	Dual-processor motherboard using Intel C610-series chipset.
Processor	2 x Intel Xeon processor E5-2600 v3 product family.
Memory	64GB RDIMM, 2133 MT/s, Dual Rank.
Drives	One 1TB SATA 6Gbps 3.5 inch hot-plug hard-drive One 480GB Solid State Drive 6Gbps 2.5 inch hot-plug drive
I/O Ports	Rear panel ports: COM port, VGA port, USB and USB 3.0 ports Front panel ports: VGA port, DVD drive
Ethernet Ports	4 x 1 Gigabit Ethernet ports.
System Power	2 x 550W power supply units, 100-240VAC, 50/60Hz, 3.7A-7.4A.
Control Panel	LEDs indicate power on, network activity, hard disk drive activity, overheat warning, and fan failure; control panel also includes a main power button and a reset button.
Cooling System	6x high-efficiency fans.
Physical	Dimensions (WxHxD) 17.2 x 1.7 x 25.4 in. (437 x 43 x 645 mm) Weight: 27 lbs (12.25 kg), Shipping Weight: 47.45 lbs (21.7 kg)
Operating Environment	Up to 35°C (95°F) maximum temperature is reduced by 1°C/300m (1°F/547 ft) above 950m (3,117 ft).
Operating System	Microsoft Windows Server 2012 64-bit Standard Edition with 10 remote desktop user licenses.
Rackmount Kit	Rails for tool-less mounting in 4-post racks with square or unthreaded round holes, or tooled mounting in 4-post threaded hole racks, with support for optional tool-less cable management arm.
Application Support	10 Users on the following applications: IxNetwork IxLoad IxOS

Installation and Setup

Overview

This section provides a quick setup checklist to get your Ixia Application Server up and running. Follow the steps in the order given to get the system operational within a minimum amount of time. This quick setup assumes that your system has come to you with the processors and memory pre-installed. If your system is not already fully integrated with a serverboard, processors, and system memory, turn to the chapter or section noted in each step for details on installing specific components.

Unpacking the System

Inspect the box the Ixia Application Server was shipped in and note if it was damaged in any way. If the server itself shows damage you should file a damage claim with the carrier who delivered it. Decide on a suitable location for the rack unit that will hold the Ixia Application Server. It should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise and electromagnetic fields are generated. You will also need it placed near a grounded power outlet. Read the Rack and Server Precautions in the next section.

Preparing for Setup

The shipment box of the Ixia Application Server should include two sets of rail assemblies, two rail mounting brackets, and the mounting screws needed to install the system into the rack. Read this section in its entirety before you begin the installation procedure outlined in the sections that follow.

Choosing a Setup Location

- Leave enough clearance in front of the rack to allow you to open the front door completely (~25 inches) and approximately 30 inches of clearance in the back of the rack to allow for sufficient airflow and ease in servicing. This product is suitable for installation only in a Restricted Access Location (dedicated equipment rooms and service closets).
- This product is not suitable for use with visual display work place devices according to §2 of the German Ordinance for Work with Visual Display Units.

Rack Precautions

- Ensure that the leveling jacks on the bottom of the rack are fully extended to the floor with the full weight of the rack resting on them.
- In single rack installation, stabilizers should be attached to the rack. In multiple rack installations, the racks should be grouped together.
- Always make sure the rack is stable before extending a component from the rack.
- You should extend only one component at a time. Extending two or more components simultaneously may cause the rack to become unstable.

Installer Precautions

- Review the [Safety Precautions](#).
- Determine the placement of each component in the rack before you install the rails.
- Install the heaviest installer components on the bottom of the rack first, and then work upwards.
- Use a regulating uninterruptible power supply (UPS) to protect the installer from power surges, voltage spikes and to keep your system operating in case of a power failure.
- Allow the hot plug SATA drives and power supply modules to cool before touching them.
- To maintain proper cooling, always keep the rack's front door and all panels and components on the installers closed when not servicing.

Rack Mounting Considerations

Ambient Operating Temperature

If installed in a closed or multi-unit rack assembly, the ambient operating temperature of the rack environment may be greater than the ambient temperature of the room. Therefore, consider installing the equipment in an environment compatible with the manufacturer's maximum rated ambient temperature (T_{mra}).

Reduced Airflow

Mount equipment into a rack so that the amount of airflow required for safe operation is not compromised.

Mechanical Loading

Mount equipment into a rack so that a hazardous condition does not arise due to uneven mechanical loading.

Circuit Overloading

Consider the connection of the equipment to the power supply circuitry and the effect that any possible overloading of circuits might have on overcurrent protection and power supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

Reliable Ground

Maintain a reliable ground at all times. To ensure this, the rack itself should be grounded. Pay particular attention to power supply connections other than the direct connections to the branch circuit (that is, the use of power strips).

Installing the System into a Rack

This section provides information on installing the Ixia Application Server into a rack unit with the rack rails provided.

There are a variety of rack units on the market and the assembly procedure may differ slightly. You should also refer to the installation instructions that came with the rack unit you are using.

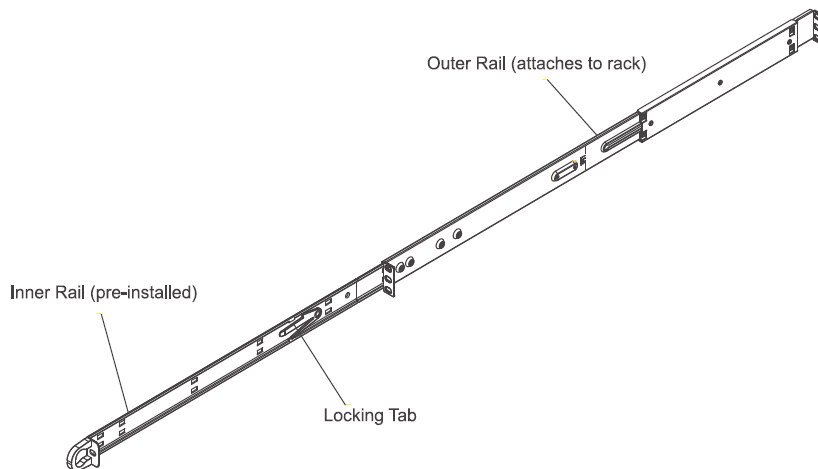
Identifying the Sections of the Rack Rails

There are two rack rail assemblies in the rack mounting kit. Each assembly consists of two sections; an inner fixed chassis rail that secures directly to the server chassis and an outer fixed rack rail that secures directly to the rack itself (see *Figure: Inner and Outer Rails*). Two pairs of short brackets to be used on the front side of the outer rails are also included.

Installing the Inner Rails

Both the left and right side inner rails have been pre-attached to the chassis, shown in the following figure.

Figure: Inner and Outer Rails



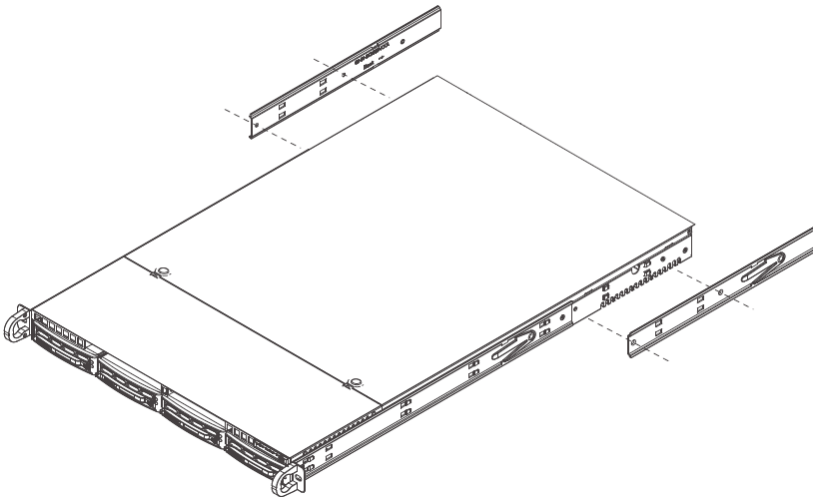
Installing the Outer Rails

To install the outer rails, do the following:

1. Measure the distance from the front rail from the front rail to the rear rail of the rack.
2. Attach a short bracket to the front side of the right outer rail and a long bracket to the rear side of the right outer rail.
3. Adjust both the short and long brackets to the proper distance so that the rail can fit snugly into the rack.
4. Secure the short bracket to the front side of the outer rail with two screws and the long bracket to the rear side of the outer rail with three screws.
5. Repeat these steps for the left outer rail.

Note: Both chassis rails have a locking tab, which serves two functions. The first is to lock the server into place when installed and pushed fully into the rack, which is its normal position. Second is to lock the server in place when fully extended from the rack. This prevents the server from coming completely out of the rack when you pull it out for servicing.

Figure: Installing the Inner and Outer Rails



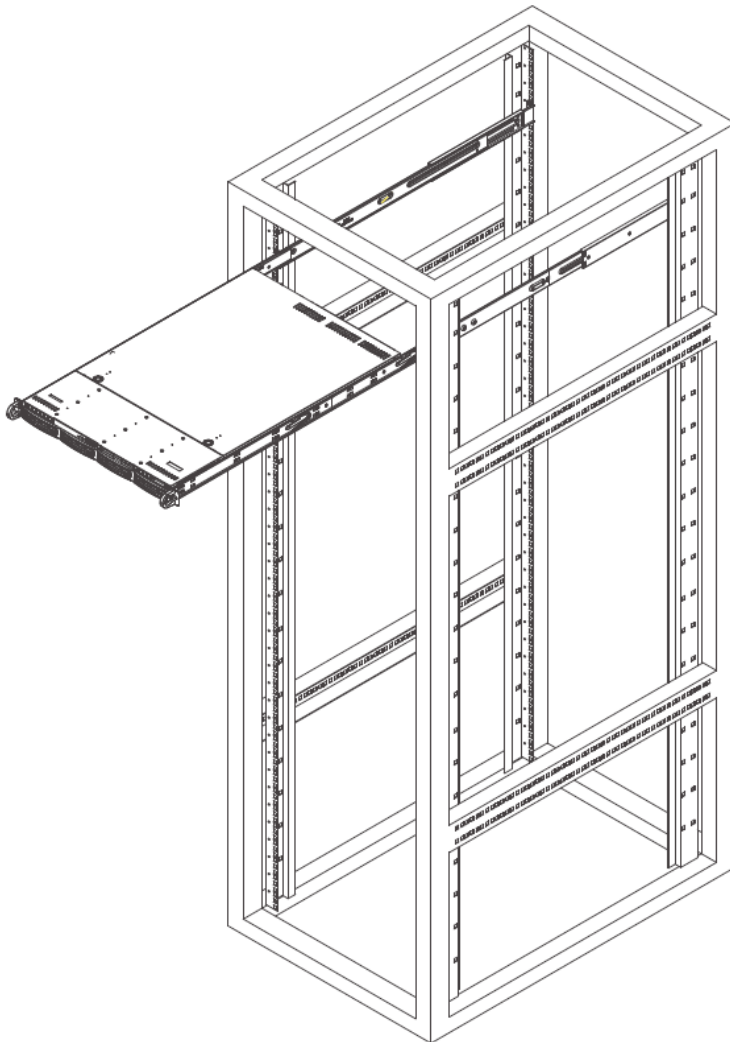
Installing the Server into the Rack

You should now have rails attached to both the chassis and the rack unit. The next step is to install the server into the rack.

To install the server into the rack, do the following:

1. Line up the rear of the chassis rails with the front of the rack rails.
2. Slide the chassis rails into the rack rails, keeping the pressure even on both sides (you may have to release the pressure on the locking tabs when inserting).

Figure: Installing the Server into a Rack

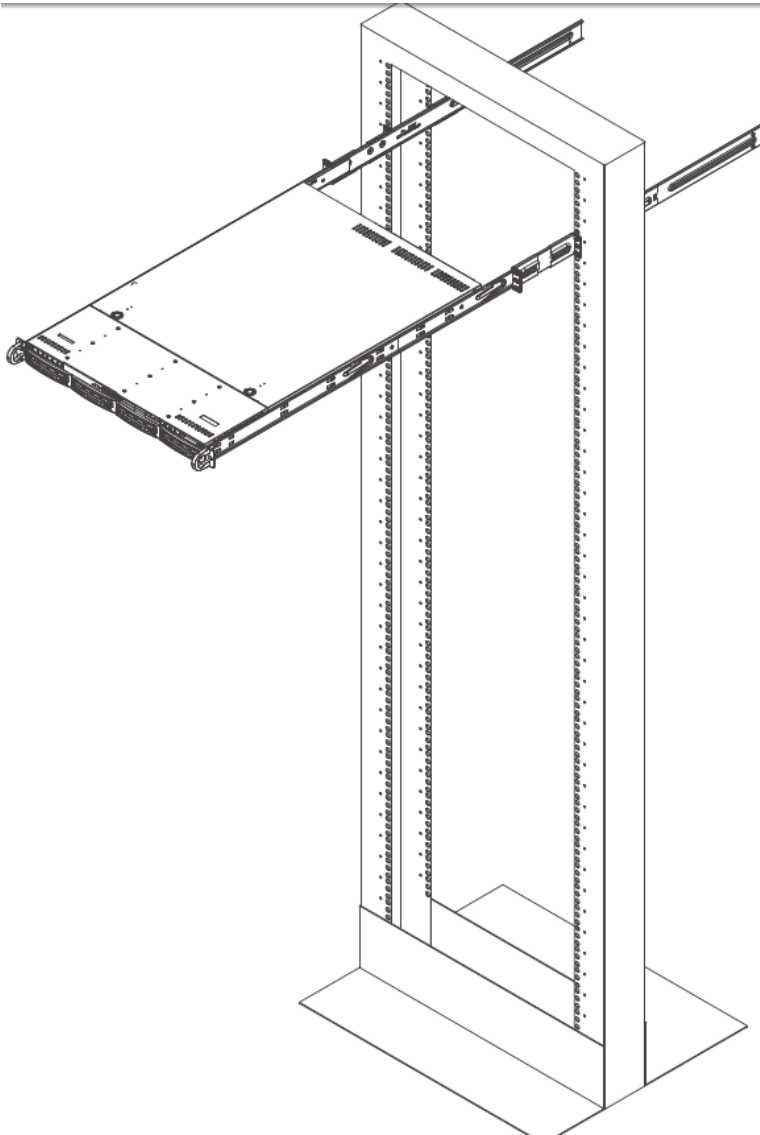


Installing a Server into a Telco Rack

To install the Ixia Application Server into a Telco type rack, do the following:

1. Use two L-shaped brackets on either side of the chassis.
2. Determine how far the server will extend out the front of the rack. Larger chassis should be positioned to balance the weight between front and back. If a bezel is included on your server, remove it.
3. Attach the two front brackets to each side of the chassis, then the two rear brackets positioned with just enough space to accommodate the width of the telco rack.
4. Finish by sliding the chassis into the rack and tightening the brackets to the rack.

Figure: Installing the Server into a Telco Rack



Providing Power

The final step is to provide input power to the system. Plug the power cord from the power supply unit into a high-quality power strip that offers protection from electrical noise and power surges.

 **Note:** It is recommended that you use an uninterruptible power supply (UPS).

System Interface

Figure: Front Panel, Application Server






Overview





There are several LEDs on the control panel to keep you constantly informed of the overall status of the system as well as the activity and health of specific components. There are also two buttons on the chassis control panel.

Control Panel Buttons

There are two push-button buttons located on the front of the chassis. These are (in order from left to right) a reset button and a power on and power off button. The front panel controls and indicators are described in *Table: Front Panel Controls & Indicators*.

Table: Front Panel Controls & Indicators

Control / Indicator	Description
Reset RESET 	Reboots the system.
Power 	Main power switch, which is used to apply or turn off the main system power. Turning off system power with this button removes the main power but keeps standby power supplied to the system.
Overheat/ Fan Fail 	When this LED flashes it indicates a fan failure. When on continuously, it indicates an overheat condition, which may be caused by cables obstructing the airflow in the system or the ambient room temperature being too warm. Check the routing of the cables and make sure all fans are present and operating normally. Also check that the chassis covers are installed. This LED will remain flashing or on as long as the overheat condition exists.
LAN1	When flashing, indicates network activity on LAN1.

Control / Indicator	Description
	
LAN2 	When flashing, indicates network activity on LAN2.
HDD 	Channel activity for all hard disks. When flashing, this light indicates DVD-ROM or IDE drive activity.
Power (LED) 	Indicates power is being supplied to the system's power supply units. This LED should normally be illuminated when the system is operating.

Safety Precautions

Electrical

Basic electrical safety precautions should be followed to protect yourself from harm and the Ixia Application Server from damage.

- Be aware of the locations of the power on/off switch on the chassis as well as the room's emergency power-off switch, disconnection switch or electrical outlet. If an electrical accident occurs, you can then quickly remove power from the system.
- Do not work alone when working with high voltage components.
- Power should always be disconnected from the system when removing or installing main system components, such as the serverboard, memory modules and floppy drive. When disconnecting power, you should first power down the system using the operating system and then unplug the power cords of all the power supply units in the system.
- When working around exposed electrical circuits, another person who is familiar with the power-off controls should be nearby to switch off the power if necessary.
- Use only one hand when working with powered-on electrical equipment. This is to avoid making a complete circuit, which will cause electrical shock. Use extreme caution when using metal tools, which can easily damage any electrical components or circuit boards they come into contact with.
- Do not use mats designed to decrease static electrical discharge as protection from electrical shock. Instead, use rubber mats that have been specifically designed as electrical insulators.

- The power supply power cords must include a grounding plug and must be plugged into grounded electrical outlets.
- DVD-ROM Laser — **CAUTION** - this server may have come equipped with a DVD-ROM drive. To prevent direct exposure to the laser beam and hazardous radiation exposure, do not open the enclosure or use the unit in any unconventional way.

General Safety Precautions

To ensure general safety, do the following:

- Keep the area around the Ixia Application Server clean and free of clutter.
- The Ixia Application Server weighs approximately 23 lbs to 27 lbs (10.4 kg to 12.2 kg) when fully loaded. When lifting the system, always keep your back straight and lift with your legs.
- Place the chassis top cover and any system components that have been removed away from the system or on a table so that they won't accidentally be stepped on.
- While working on the system, do not wear loose clothing such as neckties and unbuttoned shirt sleeves, which can come into contact with electrical circuits or be pulled into a cooling fan.
- Remove any jewelry or metal objects from your body, which are excellent metal conductors that can create short circuits and harm you if they come into contact with printed circuit boards or areas where power is present.
- After accessing the inside of the chassis, close it up and secure it to the rack after ensuring that all connections have been made.

ESD Precautions

Electrostatic discharge (ESD) can damage electronic components and printed circuit boards. The following measures are generally sufficient to protect your equipment from ESD.

- Use a grounded wrist strap designed to prevent static discharge.
- Do not let components or PCBs come into contact with your clothing, which may retain a charge even if you are wearing a wrist strap.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or contacts.
- When handling chips or modules, avoid touching their pins.

Operating Precautions

Make sure that the chassis cover is in place when the Ixia Application Server is operating, to ensure proper cooling.

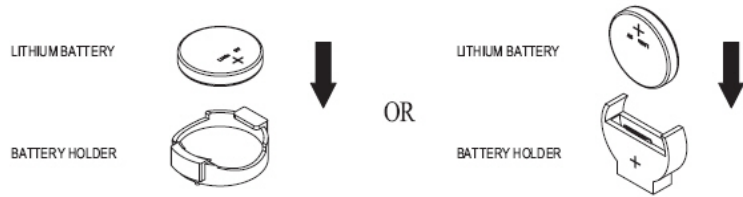
Onboard Battery Replacement

This battery must be replaced only with the same or an equivalent type recommended by the manufacturer. Dispose of used batteries according to local environmental regulations.

Figure: Onboard Battery Replacement shows the proper orientation of the onboard lithium battery.

There is a danger of explosion if the onboard battery is installed upside down, which will reverse its polarity.

Figure: Onboard Battery Replacement



CHAPTER 2 Ixia Application Server Settings

Remote Desktop Usage

The Ixia Application Server is designed to be remotely administered via Remote Desktop.

Each remote user is allowed one Remote Desktop session on the Application Server. If a second user tries to connect to the server with an account that is already logged-in, the original user will be disconnected. This feature allows a session to be continued at another location if a user forgets to disconnect.

If a remote user wishes to share his connection with another, use the *Assist* mode.

In order to leave the session running, but disconnect, use the *Disconnect* option, but do not log off. Logging off will kill any running applications for that user. The next connection for the same user name will continue with the ongoing session.

Logging In to the Ixia Application Server

To log in to the Ixia Application Server via remote desktop, use the two Remote Desktop license cards pre-installed with the application server.

To install additional RD CALs (Client Access Licenses):

1. Launch the RDS license manager, and select **Tools > Terminal Services > Remote Desktop Licensing Manager** in Windows Server 2012.
2. Select the server name and select **Install Licences** from the context menu.
3. Select the applicable license program and select **Next**.
4. Enter the licensing information and select **Next**.
5. Enter the product version, license type, quantity and select **Next**.
6. Select **Finish** if the status indicates success.

 **Note:** Ixia will not be responsible for any system failure during installation of additional RD CALs.

User Account Settings

The following are the default user accounts installed on the Application Server along with their corresponding passwords. You can access the Application Server using these accounts over Remote Desktop sessions. These Remote Desktop sessions can be used to install, or uninstall, or modify, and run applications. It is advised that you change the Admin account names for security reasons. The default password for the Administrator account should be left unchanged to provide access to the server for debug purposes.

The *Administrator* and *Ixia* accounts are intended to be used for local console access only. Remote Access should be done using the *Admin* and *User* accounts.

User Account passwords are based on the Chassis Serial Number. For example, if the Serial Number is 1UAC-123456, then the password is based on 123456.

Table: Single User

Account Name	Password
Administrator	123456
Ixia	123456
Admin01	123456-01
User01	123456-01

Table: Multi User

Account Name	Password
Administrator	123456
Ixia	123456
Admin01	123456-01
Admin02	123456-02
Admin03	123456-03
Admin04	123456-04
Admin05	123456-05
Admin06	123456-06
Admin07	123456-07
Admin08	123456-08
Admin09	123456-09
Admin10	123456-10
User01	123456-01
User02	123456-02
User03	123456-03

Account Name	Password
User04	123456-04
User05	123456-05
User06	123456-06
User07	123456-07
User08	123456-08
User09	123456-09
User10	123456-10

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CHAPTER 3 Running Ixia Applications

Ixia test applications are designed to provide a wide range of innovative test features and sophisticated testing capabilities. To successfully take advantage of Ixia test applications, use the Ixia Application Server, which will provide great flexibility in executing test sessions, especially in circumstances where you need to temporarily disconnect from the test session in progress, and then reconnect at a later time. Additionally, Ixia applications such as IxNetwork and IxLoad can be remotely executed on the Ixia Application Server through Microsoft's remote desktop client.

A properly configured Ixia Application Server running Microsoft Terminal Controller can provide the following specific benefits:

- Supports multiple users simultaneously
- Requires only a single Ixia test application installation on the application server instead of installing on all end-user computers
- Frees up the end-user's computer
- Supports disconnect/reconnect from the test session in progress

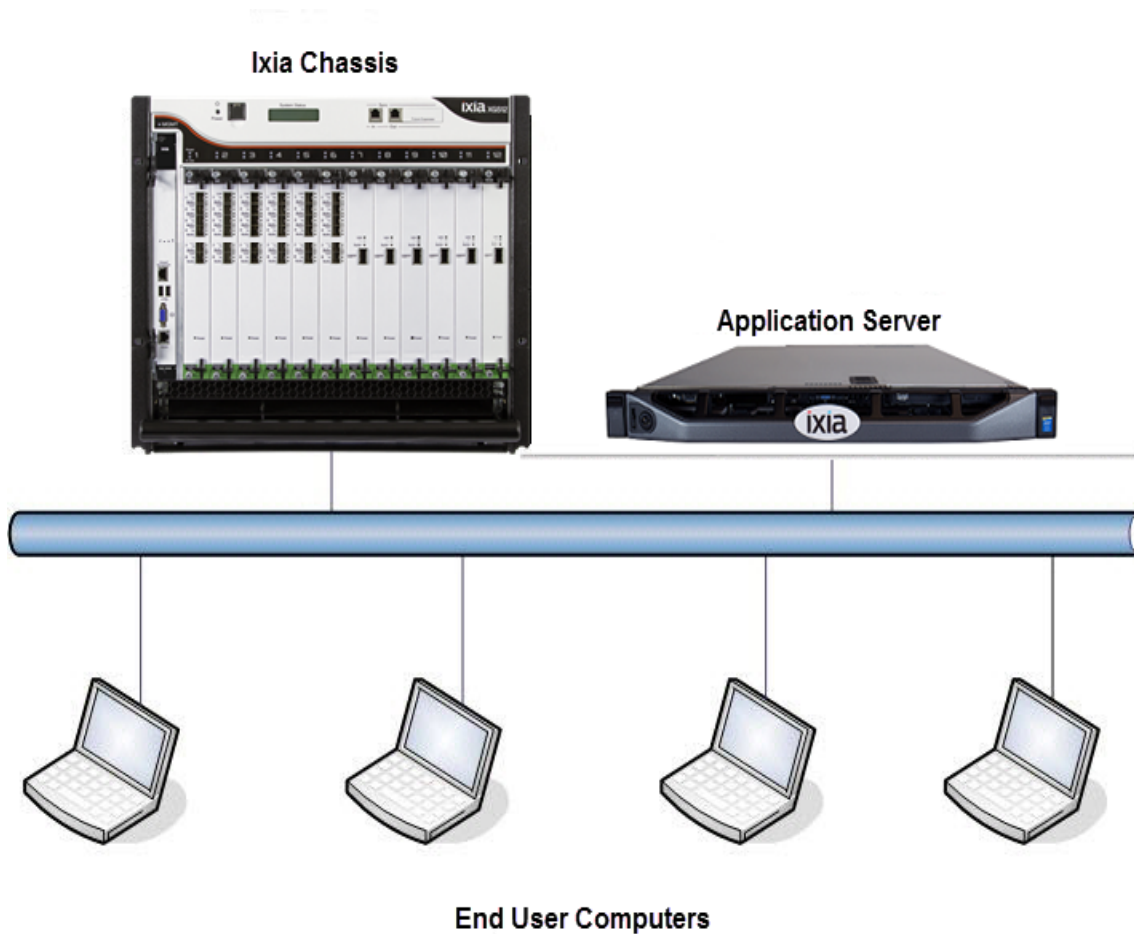
Configuration

The Ixia chassis, the Ixia Application Server, and the end-users' computers are all connected via a corporate intranet or internet. Ixia test applications will be installed only on the Ixia Application Server. No installation is required for the individual end-user's laptop or PC. The end-user's computer is used to run the Microsoft Remote Desktop client.

The standard Ixia Application Server can support a single remote user, while the High-Performance Ixia Application Server can support up to ten simultaneous remote users.

The Ixia Application Server operating system is Microsoft Windows Server 2012 64-bit Standard Edition with 10 Remote Desktop user licenses.

Figure: Typical Multi-User Configuration



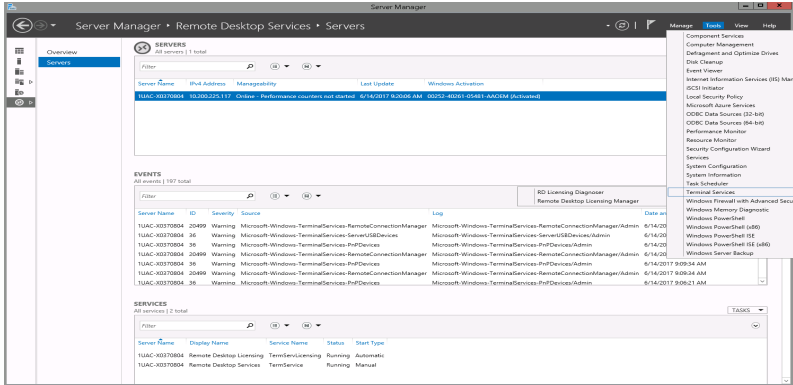
Multi-User Support

The configuration below supports multiple users running the Ixia application from the High-Performance Ixia Application Server:

- Each login user needs to have "Administrator" and "Remote Desktop Users" privilege to run the Ixia application.
- Set the server to restrict each user to single session.
- Only one copy of the Ixia application needs to be installed by a user with an Administrator privilege. Installation should be done via VNC, not Remote Desktop.
- Each user will be able to execute an Ixia application by running a remote desktop session on the Ixia Application Server.
- Each user will be able to control and configure his/her own instance of the Ixia application they are using. Each instance can be modified only by the logged-in user.

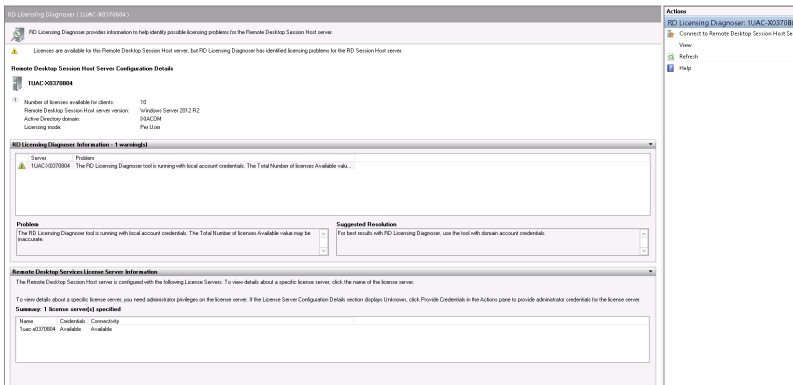
- Each instance of the Ixia application and remote desktop session can be viewed and controlled by other users if permission is granted by the login user. The following quick steps show how to do this:
1. On the Server (to which you have connected using Remote Desktop Connection), select **Tools > Terminal Services > RD Licensing Diagnoser** in Windows Server 2012. to open the Terminal Services Manager (*Figure: Terminal Services Manager*)

Figure: Terminal Services Manager



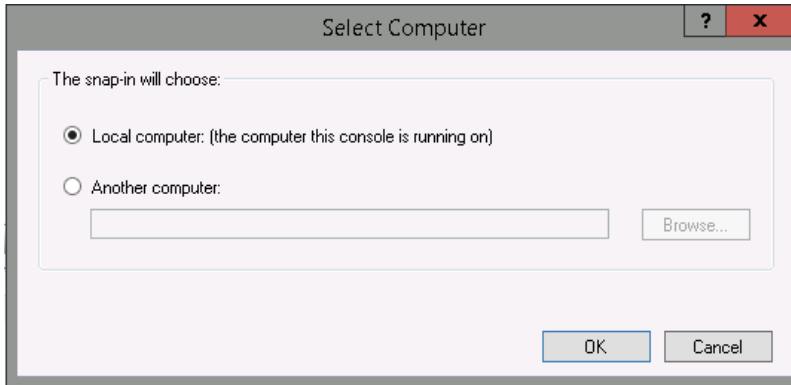
2. Select **RD Licensing Diagnoser**. The RD Licensing Diagnoser window appears (*Figure: RD Licensing Diagnoser*). Select **Connect to Remote Desktop Session Host Server** to establish the remote desktop session.

Figure: RD Licensing Diagnoser



3. After you select **Connect to Remote Desktop Session Host Server**, the **Select Computer** dialog box appears. (*Figure: Select Computer*) . Select the computer on which you want the remote desktop session to run and select **OK**.

Figure: Select Computer



Now the system is ready to run the Ixia application.

Known Limitations

Installation

- When installing an Ixia application on the Ixia Application Server, only **console mode** is allowed. Remote Desktop Session is not able to install all required components (and no error message will be given). Ixia recommends VNC service to be used for remote installation.
- All Ixia applications need to be terminated before uninstalling/installing any Ixia application. Failure to do so will cause MSSQL installation error. Ixia recommends to terminate all Remote Desktop sessions prior to installation.

 **Note:** Any application installed through Remote Desktop will be available to all users on the server

IxNetwork

IxNetwork is designed to support the Multi-User function of the Microsoft Terminal Services. The only limitations are the number of users and chassis supported by a single Application Server. The Multi-User Support configuration listed above ([Multi-User Support](#)) is based on the following requirements:

- There are only 10 simultaneous users
- Each user has 9 to 10 ports on average
- Limit load over routes to 2 instances.
- Each user measures up to 64K traffic flows

The number of measured flows will impact the performance of each user on application server. For example, when the number of tracked traffic flows for one user reaches 256K, the number of recommended users on the application will drop to less than six. Ixia recommends to leave 20 -25% of installed memory available to handle peak demands.

The number of chassis used in the test configuration does not impact the performance of the Ixia Application Server. However, the number of users, ports, and traffic streams allocated per port will

directly affect the server's performance. Fewer users on the Ixia Application Server results in larger configurations available for a single user.

The default configuration file name is chosen based on user's login name. For example, the user *Admin01* will use C:\Program Files\Ixia\IxNetwork\data\default_Admin01.ixncfg. The log files are also stored in a directory based on user's login name. For example, user *Admin01* log files will be stored in C:\Program Files\Ixia\IxNetwork\admin01\data\logs\.

Default names and locations for trace logs are the same for all users, so it is recommended to change the names when enabling.

IxAutomate

The saved configuration for IxAutomate, along with its log files and result files, is saved in the same directory on the Ixia Application Server. The config files for each user will be applied to each instance of IxAutomate on the application server. Each user must carefully name the config files based on the user's login name. For example, the configuration file for user *Admin01* could be named RFC2544-admin01.

The recommended limitation on the number of users, ports, and streams per port is the same as for IxNetwork.

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