



AI175R

Intelligent Video Analytics Server User Manual



November 2020

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About This Manual

Conventions

Safety Symbols

Safety Precautions

Regulatory and Integration Information

About This Manual

Conventions

To make sure that you perform certain tasks properly, take note of the following symbols used throughout this manual.



Warning: Provides Information to prevent injury in the process of completing a task.



Caution: Provides Information to prevent damage to the components in the process of completing a task.



Important: Provides Information required for completing a task.



Note: Provides Tips to aid in completing a task.

Safety Symbols

The following symbols are placed on some components of the system to alert the user to potential hazards,



WARNING: Electric Shock Hazard – To reduce risk of injury from electric shock hazards, do not open this component.



WARNING: Contains No User or Field Serviceable Parts – To reduce the risk of injury from electric shock hazards, do not open this component.



WARNING: Hot Surface or Component - To reduce risk of injury from a hot component; allow the surface to cool before touching.



WARNING: Insert Network Interface Only - Any receptacle (e.g. RJ45) marked with this symbol indicates a network interface connection. To reduce the risk of electric shock, fire or damage to equipment, do not plug telephone or telecommunications connectors into this receptacle



WARNING: This symbol, on power supplies or systems, indicates that the equipment is supplied by multiple sources of power. To reduce the risk of injury from electric shock, remove all power cords to completely power down the system.



Weight in kg

Weight in lb

WARNING: This symbol indicates that the component exceeds the recommended weight for one individual to handle safely. To reduce the risk of personal injury or damage to the equipment, observe local occupational health and safety requirements and guidelines for manual material handling.

Safety Precautions



Technician Notes

Only authorized technicians should attempt to repair this equipment.

- Before installing this system, carefully read all the manuals included with the system.

All repair procedures allow only module replacement. Because of the complexity of the individual boards and sub-assemblies, no one should attempt to make repairs at the component level or make modifications to any printed wiring board. Improper repairs can create a safety hazard.

To reduce the risk of personal injury from electric shock and hazardous energy levels, do not exceed the level of repairs specified in these procedures.

The system is designed to be electrically grounded. To ensure proper operation, plug the AC power cord into a properly grounded AC outlet only.



Electrostatic Discharge Precautions

Electrostatic discharge (ESD) can damage static sensitive devices or micro circuitry. Proper packaging and grounding techniques are required to prevent damage.

Keep electrostatic-sensitive parts in their containers until they arrive at a static free work area.

Use a wrist strap connected to the work surface as well as properly grounded tools and equipment

Keep the area free of nonconductive materials such as ordinary plastic tools and foam packing.

Avoid touching pins, leads, or circuitry.

Always place drives with printed circuit board (PCB) assembly-side down.

Grasp cards and boards by the edges. Hold drives by the frame. Avoid touching the solder joints or pins.

If you need to lay the device down while it is out of the antistatic bag, lay it on the antistatic bag. Before picking it up again, touch the antistatic bag and the metal frame of the system unit at the same time.



Rack Warnings

If you plan to rack mount the AI175, please follow the rack manufacturer's safety instructions.

Install the enclosure only in a rack that has been properly secured in an area with suitable environmental conditions.

Have someone assist you during physical installation.

To properly ventilate the system, you must provide at least 7.6 cm of clearance at the front and back of the system.

To reduce the risk of personal injury or damage to equipment, always ensure that the rack is adequately stabilized prior to extending a component outside the rack. A rack may become unstable if more than one component is extended. Extend only one at a time.

Do not stand or step on any components in the rack.

If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (T_{ma}) specified by the manufacturer.

Do not overload the AC power supply branch circuit that provides power to the rack. Observe extension cable and power strip ratings. Ensure that the total ampere rating of all equipment plugged into the extension cable or power strip does not exceed 80 percent of the ampere ratings limit for the extension cable or power strip.



System Warnings

- Avoid dust, humidity, and extreme temperatures; place the system on a stable surface. To reduce the risk of personal injury from hot surfaces, allow the hot-plug disk modules and other system modules to cool before touching them.
To reduce the risk of electric shock or damage to the equipment, do not disable the power cord grounding plug. The grounding plug is an important safety feature.
Ensure the power cord is inserted into a grounded electrical outlet that is easily accessible at all times.
Unplug the power cord from the power supply module to shut off power to the equipment
Protect the storage system from power fluctuations and temporary power interruptions with a regulating uninterruptible power supply (UPS). This device protects the hardware from damage caused by power surges and voltage spikes and keeps the system operational during a power failure.
The storage system must always be operated with all hot plug modules installed or slot covers in place to ensure proper cooling.
Route power cords so that they will not be walked on or pinched by items placed upon or against them. Pay particular attention to the plug, electrical outlet, and the point where the cords exit from the product.

Regulatory and Integration Information

Regulatory Compliance Identification Numbers

For the purpose of regulatory compliance certifications and identification, this system is assigned a serial number. This system serial number can be found on the product label, along with the required approval markings and information. When requesting certification information for this product, always refer to this serial number. This serial number should not be confused with the marketing name or model number.

Product Safety Compliance

This system complies with the following safety requirements:

Table 1: Safety Compliance

IEC 60950-1:2005 + A1:2009 + A2:2013/	Safety of Information Technology Equipment
EN 60950-1:2006 +A11:2009 +A1:2010 +A12:2011 +A2:2013	Safety of Information Technology Equipment

Worldwide Safety approvals can be supplied upon request. Please contact your sales representative for approvals.

Product EMC Compliance

This product has been tested and verified to comply with the following electromagnetic compatibility (EMC) regulations.

FCC CFR Title 47 Part 15 Subpart B: 2019 Class A

CISPR 22: 2008, ANSI C63.4: 2014

ICES-003 Issue 6: 2016 Class A

Communications Commission Notice

Part 15 of the Federal Communications Commission (FCC) Rules and Regulations has established Radio Frequency (RF) emission limits to provide an interference-free radio frequency spectrum. Many electronic devices, including computers, generate RF energy incidental to their intended function and are, therefore, covered by these rules. These rules place computers and related peripheral devices into two classes, A and B, depending upon their intended installation. Class A devices are those that may reasonably be expected to be installed in a business or commercial environment. Class B devices are those that may reasonably be expected to be installed in a residential

environment (for example, personal computers). The FCC requires devices in both classes to bear a label indicating the interference potential of the device, as well as additional operating instructions for the user.

The rating label on the device shows which class (A or B) the equipment falls into. Class A devices do not have an FCC logo or FCC ID on the label. Class B devices have an FCC logo or FCC ID on the label. Once the class of the device is determined, refer to the following corresponding statement.

Class A Equipment

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at personal expense.

Declaration of Conformity for Products Marked with the FCC Logo—United States Only

This device complies with Part 15 of the FCC Rules Operation and is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

For questions regarding your product, please contact your sales representative.

To identify this product, refer to the Part, Series, or Model number found on the product.

European Union Notice

Products with the CE Marking comply with both the EMC Directive (2014/30/EU) and the Low-Voltage Directive (2014/35/EU) issued by the Commission of the European Community.

Compliance with these directives implies conformity to the following European Norms (items in brackets are the equivalent international standards):

Table 2: European Union Compliance

EN 55032:2015+AC: 2016 Class A	Electromagnetic Interference
EN 55024:2010+A1: 2015	Electromagnetic Immunity
EN 61000-3-2: 2014	Power Line Harmonics
EN 61000-3-3: 2013	Power Line Flicker

Canadian Notice (Avis Canadien)

Class A Equipment

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Power Cords

The power cord set included in the system meets the requirements for use in the country where the system was purchased. If this system is to be used in another country, contact your sales representative to purchase a power cord that is approved for use in that country.

The power cord must be rated for the product and for the voltage and current marked on the product's electrical ratings label. The voltage and current rating of the cord should be greater than the voltage and current rating marked on the product. In addition, the cross-sectional area of the wires must be a minimum of 1.00mm² or 18AWG, and the length of the cords must be between 1.8m (6 feet) and 3.6m (12 feet). If you have questions about the type of power cord to use, contact your sales representative.

The following statement applies only to rack-installed products that are GS-Marked:

This equipment is not intended for use at workplaces with visual display units, in accordance with §2 of the German ordinance for workplaces with visual display units."

Chapter 1

Introduction

Audience Assumptions

About This Guide

Packing Checklist

Specifications

Product Features

System Overview

Introduction

Audience Assumptions

This manual assumes that you are a service technician or network administrator familiar with computer hardware, data storage and network administration terminology and tasks.

About this Guide

This hardware installation guide provides step by step instructions on how to prepare and install the AI175 Storage Server. This manual is generally organized as follows:

Table 3: Introduction of the Manual

Introduction	General introduction to the AI175 and its components.
Hardware Installation	Detailed description of each hardware module and instructions for installation and removal.

Packing Checklist

Make sure you have all the components shipped with your system. If any item is damaged or missing, please contact your sales representative for replacement. The AI175 is shipped with the following:

Table 4: Package Contents

Chassis	1U rack-mounted chassis
Power Supplies	Two (redundant) power supplies.
Rail Kit	Rail Kit for rack installation.
Disk Drives	Up to four hot plug 3.5" Hard Drives or SSDs depending on the configuration.
Power Cords	Two power cords

Specifications

The table below is the technical specification for the AI175.

Table 5: Specifications

CPU	2x Intel Xeon Scalable
GPU	Nvidia Tesla T4 (Not available with RAID)
Memory	Up to 768GB DDR4 2400 ECC RDIMM
Expansion Slot	1x PCIe Gen3 x16 (system can only be fitted with 1 GPU or RAID adapter at a time)
Storage	2x 240/480/960 GB SSD for OS
	4x 3.5" HDD (not available w/ GPU)
	6, 8, 10, 12, 14 and 16TB SATA III Video Class
Networking	4x GbE, 1x Management
Display Output	1x VGA, if GPU is installed 1x mDP + 2x HDMI
Input/Output	4x USB 3.0 (2x front + 2x rear)
Dimensions (WxHxD)	17.5" x 1.7" x 24.3" / 444 x 44 x 616 mm
Weight	Max 42 lbs/19 kg
Power	2x 100/220V AC
Watts	770
Operating Temperature	10°C - 35°C

Product Features

This chapter describes the features of this AI175. It covers each module and the module's features and specifications.

The AI175R is optimized for Analytic/Machine Learning Video Surveillance applications. The AI175R comes fully integrated and tested with industry leading video analytic software, offering a turnkey platform for Artificial Intelligence, Machine learning and Heuristic Analytic applications.

System Overview

The Graphic Processing Unit (GPU) is optimized for the video analytics market. It delivers the performance required for the most demanding megapixel installations.

Multiple CPU configurations available to create the most efficient and cost-effective analytics solutions.

Powerful server and storage system, built around dual high-performance Intel® Xeon® Scalable processors.

Purpose-built open platform to integrate Video Management Software, and Video Analytic Software Providers. All major supported Video Analytic Software providers are prequalified.

More are continually added to ensure the widest possible certification coverage.

Effortless installation, management and administration along with advance RAID

Front View

The front of the AI175 allows easy access to the 4 hot plug drive canisters. Each drive canister has a status LED located to the right of the release handle. The power and reset buttons, LED indicators, slim type optical drive, and two USB ports are located on the front panel.

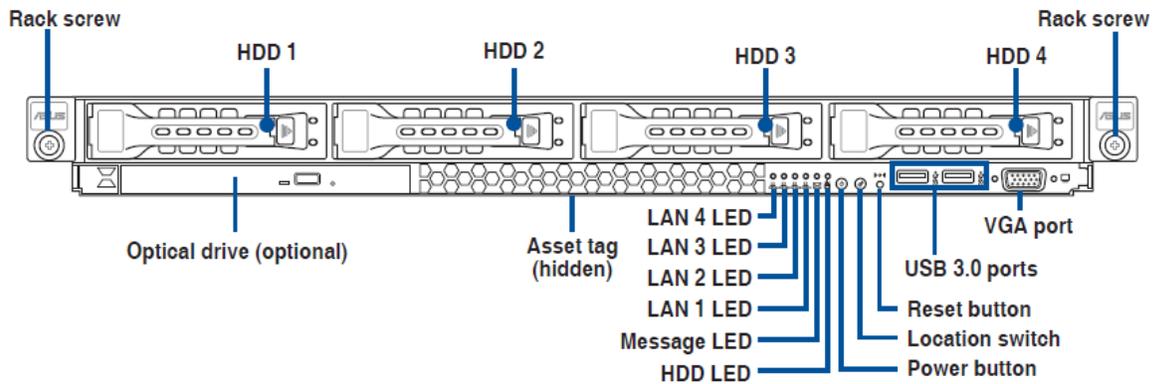


Figure 1: AI175 Front Panel

Back View

The back of the AI175 rear panel includes the expansion slots, system power socket, and rear fans. The middle part includes the I/O shield with openings for the rear panel connectors on the motherboard.

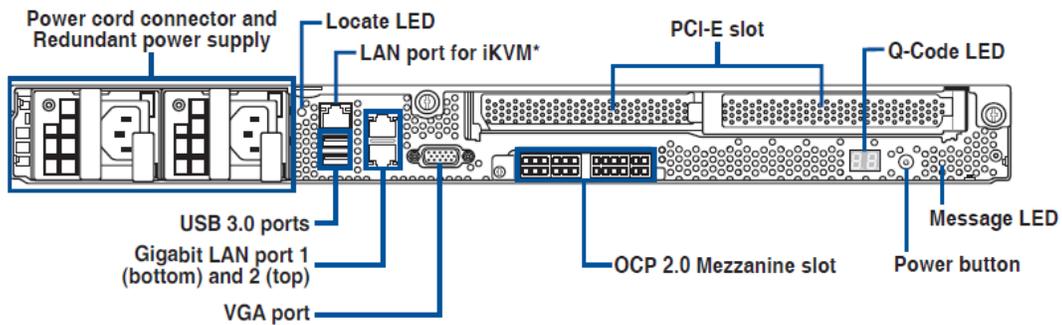
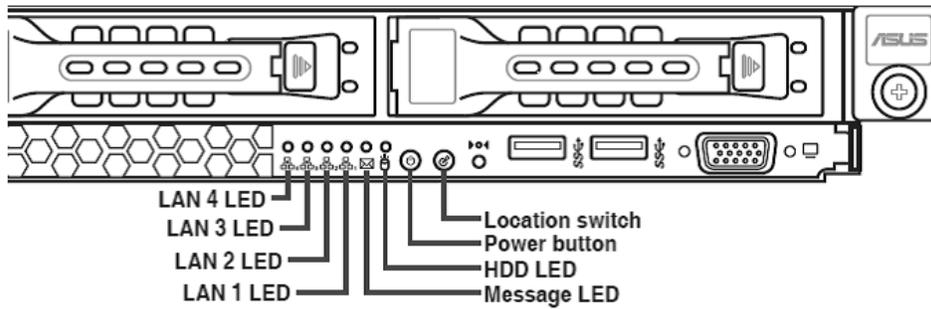


Figure 2: AI175 Rear View and Panel

System LED Information

This system is equipped with LED indicators for all major components of the system. These LEDs provide visual cues to the status of each of these components.

Front panel LEDs

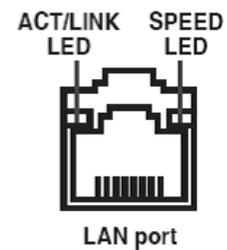


LED	Icon	Display status	Description
Power LED		ON	System power ON
HDD Access LED		OFF Blinking	No activity Read/write data into the HDD
Message LED		OFF ON	System is normal; no incoming event A hardware monitor event is indicated
Location LED		OFF ON	Normal status Location switch is pressed (Press the location switch again to turn off)
LAN LEDs		OFF Blinking ON	No LAN connection LAN is transmitting or receiving data LAN connection is present

Figure 3:Front Panel LEDs

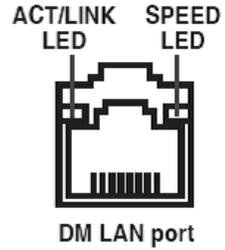
LAN Port (RJ-45) LEDs

Activity/Link LED		Speed LED	
Status	Description	Status	Description
OFF	No link	GREEN	1 Gbps connection
GREEN	Linked		
BLINKING	Data activity		

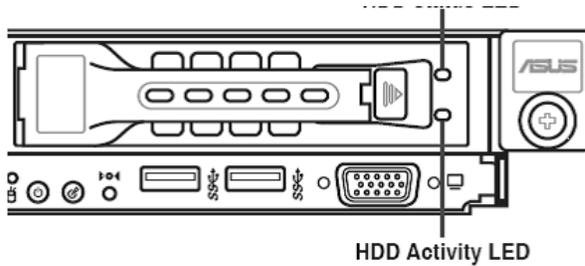


Dedicated Management LAN port (DM_LAN1) LED indications

Activity/Link LED		Speed LED	
Status	Description	Status	Description
OFF	No link	OFF	10 Mbps connection
YELLOW	Linked	ORANGE	100 Mbps connection
BLINKING	Data activity	GREEN	1 Gbps connection



HDD status LED



SATA/SAS HDD LED Description			
HDD Status LED	GREEN	ON	SATA/SAS HDD power ON
	RED	ON	HDD has failed and should be swapped immediately
	GREEN/RED	Blinking	RAID rebuilding
	GREEN/RED	OFF	HDD not found
HDD Activity LED	GREEN	Blinking	Read/write data from/into the SATA/SAS HDD

Figure 4: HDD Status LEDs

Chapter 2

Hardware Installation

Hard Disk Drives

Mounting the System onto a Rack

Hardware Installation

Hard Disk Drives

The system supports four hot-swap SATA/SAS hard disk drives. The hard disk drive installed on the drive tray connects to the motherboard SATA/SAS ports via the SATA/SAS backplane.

To install a 3.5" hot-swap SATA/SAS HDD:

Push the spring lock to the right (A) then pull the tray lever outward (B) to release the drive tray. The drive tray ejects slightly after you pull out the lever.

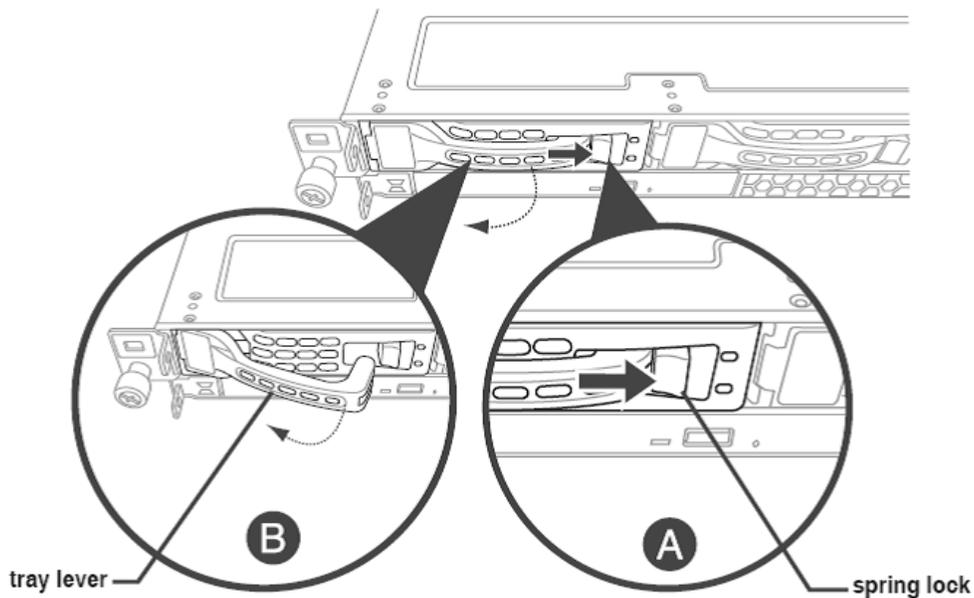
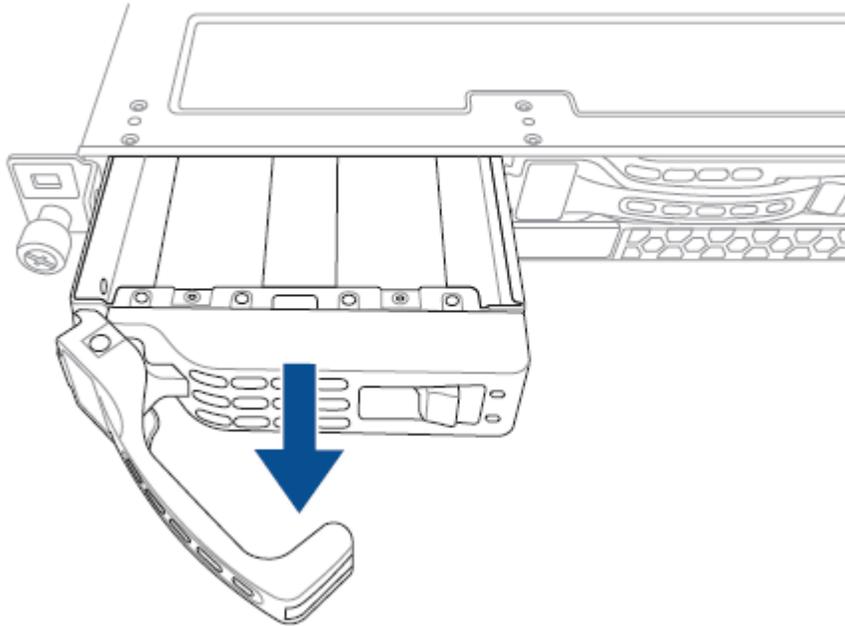


Figure 5: HDD Installation

To remove a 3.5" hot-swap SATA/SAS HDD:
Firmly hold the tray lever and pull the drive tray out of the bay.



Power Supply Modules

The AI175 contains one or two 770 watt power supply modules to provide redundant power for the entire enclosure. One power supply provides enough power to boot up and run a fully loaded system. The second power supply serves as a backup in the event of a system failure.

The location of the power supply modules on the AI175 is shown below. To remove a power supply, follow the figure below. To insert the power supply reverse the steps.



Figure 6: AI175 Power Supply Insert / removal

Reminder

Before you remove or install the power supply module from the AI175, disconnect the power supply cord(s).

Mounting the System onto a Rack

Rail kit installation

The tool less design of the rail kit allows you to easily install the rack rails into the server rack without the need for additional tools. The kit also comes with a metal stopping bracket that can be installed to provide additional support and stability to the server.

The tool-less rail kit package includes:

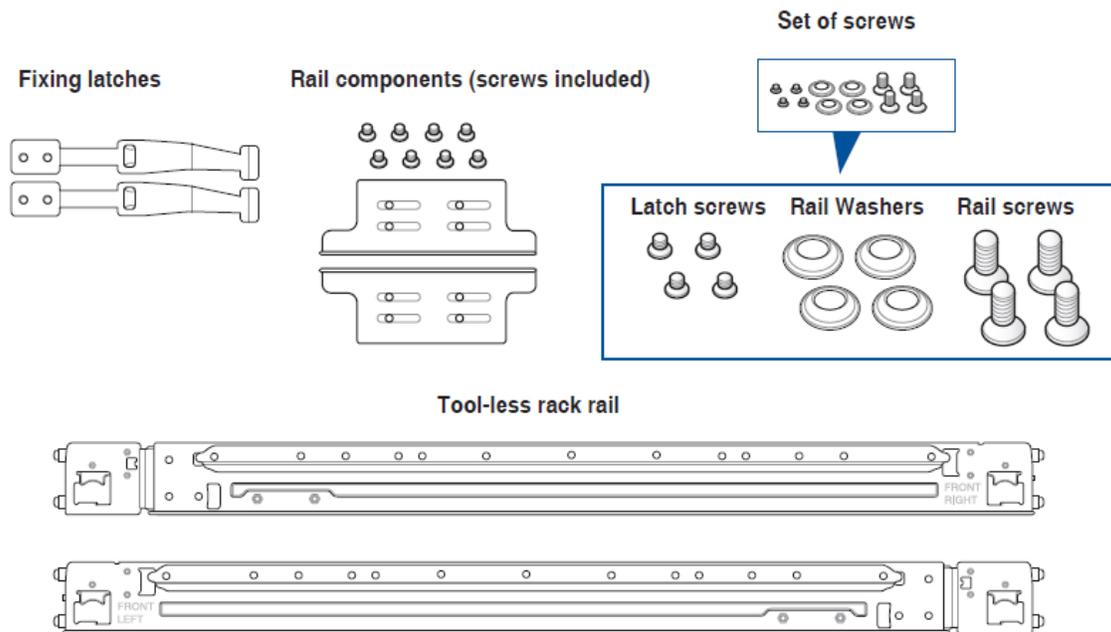
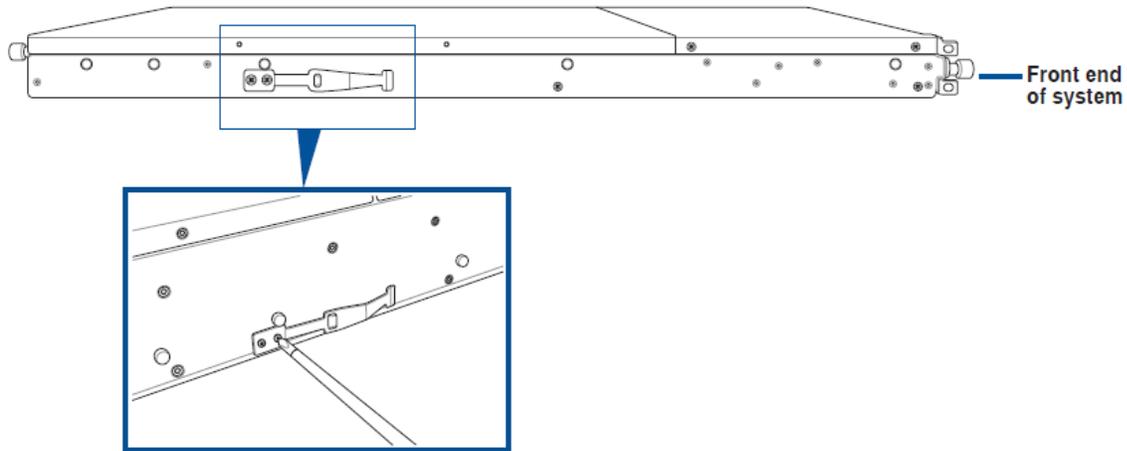


Figure 7: Rail Kit Package

Installing the tool-less rack rail

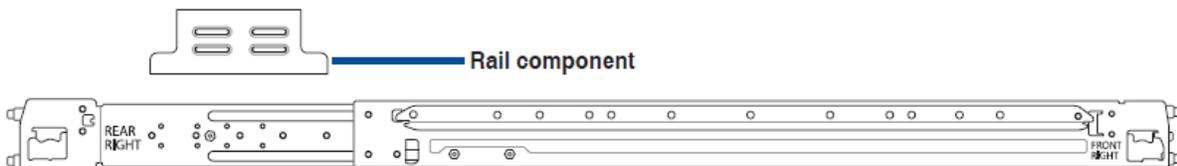
To install the tool-less rack rails into the rack:

1. Secure the two fixing latches to the two sides of the server using the set of latch screws.

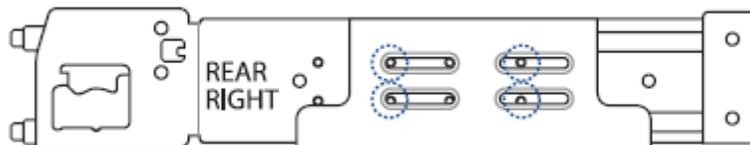


Follow steps 2 to 4 if the depth of your server rack exceeds 850mm, if the depth of your server rack is less than 850mm, please skip steps 2 to 4 and proceed with step 5.

2. Slightly slide out and extend the right rack rail, then prepare one of the bundled rail components.



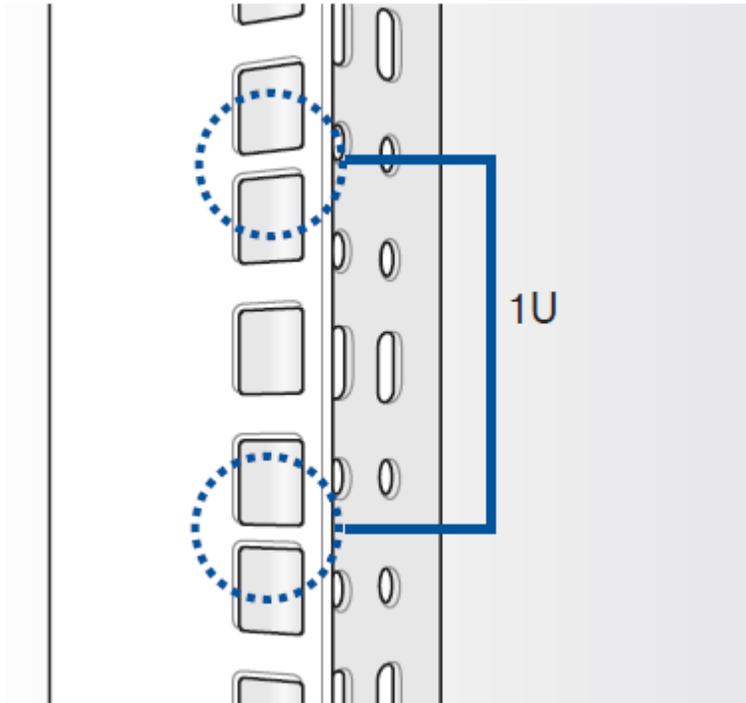
3. Align the rail component with the right rack rail and secure it using four (4) bundled screws.



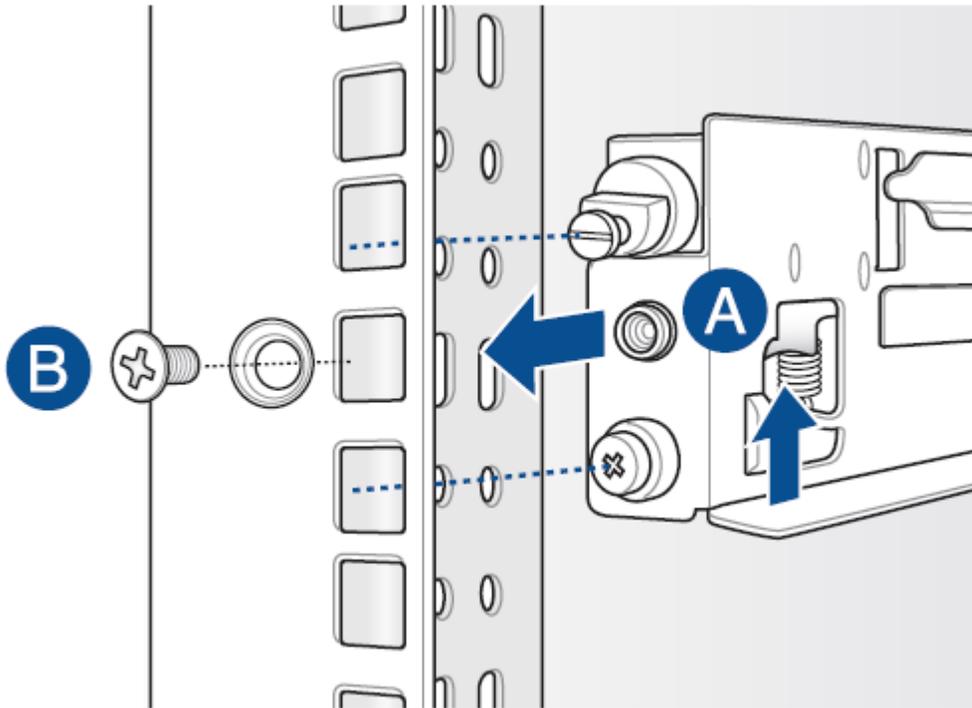
4. Follow steps 2 and 3 to secure the rail component to the left rail rack.

5. Select a desired space and place the appropriate rack rail (left and right) on opposite positions on the rack.

A 1U space consists of three square mounting holes with two thin lips on the top and the bottom.



6. Secure the rail components to the rail using the bundled screws.
 7. Press the spring lock (**A**) then insert the studs into the selected square mounting holes on the rack post.
 8. Press the spring lock on the other end of rail then insert the stud into the mounting hole on the rack post. Extend the rack rail, if necessary.
 9. (Optional) Use the rail screw and rail washer (**B**) that comes with the kit to secure the rack rail to the rack post.
 10. Perform steps 3 to 5 for the other rack rail.
- Ensure that the installed rack rails (left and right) are aligned, secured, and stable in place.



11. Lift the server chassis and insert into the rack rail.
 Ensure that the rack rail cabinet and the rack posts are stable and standing firmly on a level surface.

Rail kit dimensions

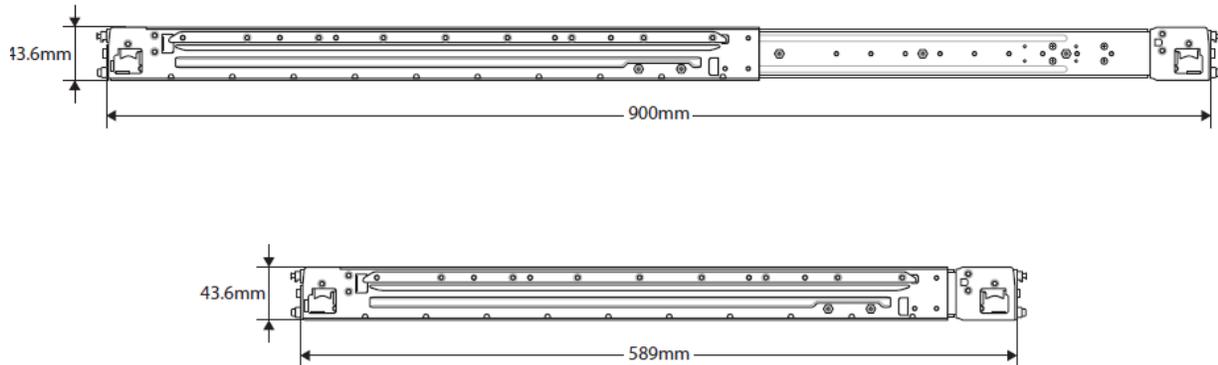


Figure 8: Rail Kit dimensions