

Power Systems

*Installing the 7316-TF4 18.5-Inch and
7316-TF5 17.3-Inch Flat Panel Rack-
Mounted Monitor and Keyboard*



Note

Before using this information and the product it supports, read the information in [“Safety notices” on page v](#), [“Notices” on page 65](#), the *IBM Systems Safety Notices* manual, G229-9054, and the *IBM Environmental Notices and User Guide*, Z125-5823.

This edition applies to IBM® Power Systems servers that contain the POWER9™ processor and to all associated models.

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Safety notices

Safety notices may be printed throughout this guide:

- **DANGER** notices call attention to a situation that is potentially lethal or extremely hazardous to people.
- **CAUTION** notices call attention to a situation that is potentially hazardous to people because of some existing condition.
- **Attention** notices call attention to the possibility of damage to a program, device, system, or data.

World Trade safety information

Several countries require the safety information contained in product publications to be presented in their national languages. If this requirement applies to your country, safety information documentation is included in the publications package (such as in printed documentation, on DVD, or as part of the product) shipped with the product. The documentation contains the safety information in your national language with references to the U.S. English source. Before using a U.S. English publication to install, operate, or service this product, you must first become familiar with the related safety information documentation. You should also refer to the safety information documentation any time you do not clearly understand any safety information in the U.S. English publications.

Replacement or additional copies of safety information documentation can be obtained by calling the IBM Hotline at 1-800-300-8751.

German safety information

Das Produkt ist nicht für den Einsatz an Bildschirmarbeitsplätzen im Sinne § 2 der Bildschirmarbeitsverordnung geeignet.

Laser safety information

IBM servers can use I/O cards or features that are fiber-optic based and that utilize lasers or LEDs.

Laser compliance

IBM servers may be installed inside or outside of an IT equipment rack.



DANGER: When working on or around the system, observe the following precautions:

Electrical voltage and current from power, telephone, and communication cables are hazardous. To avoid a shock hazard:

- If IBM supplied the power cord(s), connect power to this unit only with the IBM provided power cord. Do not use the IBM provided power cord for any other product.
- Do not open or service any power supply assembly.
- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- The product might be equipped with multiple power cords. To remove all hazardous voltages, disconnect all power cords.
 - For AC power, disconnect all power cords from their AC power source.
 - For racks with a DC power distribution panel (PDP), disconnect the customer's DC power source to the PDP.
- When connecting power to the product ensure all power cables are properly connected.
 - For racks with AC power, connect all power cords to a properly wired and grounded electrical outlet. Ensure that the outlet supplies proper voltage and phase rotation according to the system rating plate.

- For racks with a DC power distribution panel (PDP), connect the customer's DC power source to the PDP. Ensure that the proper polarity is used when attaching the DC power and DC power return wiring.
- Connect any equipment that will be attached to this product to properly wired outlets.
- When possible, use one hand only to connect or disconnect signal cables.
- Never turn on any equipment when there is evidence of fire, water, or structural damage.
- Do not attempt to switch on power to the machine until all possible unsafe conditions are corrected.
- Assume that an electrical safety hazard is present. Perform all continuity, grounding, and power checks specified during the subsystem installation procedures to ensure that the machine meets safety requirements.
- Do not continue with the inspection if any unsafe conditions are present.
- Before you open the device covers, unless instructed otherwise in the installation and configuration procedures: Disconnect the attached AC power cords, turn off the applicable circuit breakers located in the rack power distribution panel (PDP), and disconnect any telecommunications systems, networks, and modems.



DANGER:

- Connect and disconnect cables as described in the following procedures when installing, moving, or opening covers on this product or attached devices.

To Disconnect:

1. Turn off everything (unless instructed otherwise).
2. For AC power, remove the power cords from the outlets.
3. For racks with a DC power distribution panel (PDP), turn off the circuit breakers located in the PDP and remove the power from the Customer's DC power source.
4. Remove the signal cables from the connectors.
5. Remove all cables from the devices.

To Connect:

1. Turn off everything (unless instructed otherwise).
2. Attach all cables to the devices.
3. Attach the signal cables to the connectors.
4. For AC power, attach the power cords to the outlets.
5. For racks with a DC power distribution panel (PDP), restore the power from the Customer's DC power source and turn on the circuit breakers located in the PDP.
6. Turn on the devices.

Sharp edges, corners and joints may be present in and around the system. Use care when handling equipment to avoid cuts, scrapes and pinching. (D005)

(R001 part 1 of 2):



DANGER: Observe the following precautions when working on or around your IT rack system:

- Heavy equipment—personal injury or equipment damage might result if mishandled.
- Always lower the leveling pads on the rack cabinet.
- Always install stabilizer brackets on the rack cabinet unless the earthquake option is to be installed.
- To avoid hazardous conditions due to uneven mechanical loading, always install the heaviest devices in the bottom of the rack cabinet. Always install servers and optional devices starting from the bottom of the rack cabinet.

- Rack-mounted devices are not to be used as shelves or work spaces. Do not place objects on top of rack-mounted devices. In addition, do not lean on rack mounted devices and do not use them to stabilize your body position (for example, when working from a ladder).



- Stability hazard:
 - The rack may tip over causing serious personal injury.
 - Before extending the rack to the installation position, read the installation instructions.
 - Do not put any load on the slide-rail mounted equipment mounted in the installation position.
 - Do not leave the slide-rail mounted equipment in the installation position.
- Each rack cabinet might have more than one power cord.
 - For AC powered racks, be sure to disconnect all power cords in the rack cabinet when directed to disconnect power during servicing.
 - For racks with a DC power distribution panel (PDP), turn off the circuit breaker that controls the power to the system unit(s), or disconnect the customer's DC power source, when directed to disconnect power during servicing.
- Connect all devices installed in a rack cabinet to power devices installed in the same rack cabinet. Do not plug a power cord from a device installed in one rack cabinet into a power device installed in a different rack cabinet.
- An electrical outlet that is not correctly wired could place hazardous voltage on the metal parts of the system or the devices that attach to the system. It is the responsibility of the customer to ensure that the outlet is correctly wired and grounded to prevent an electrical shock. (R001 part 1 of 2)

(R001 part 2 of 2):



CAUTION:

- Do not install a unit in a rack where the internal rack ambient temperatures will exceed the manufacturer's recommended ambient temperature for all your rack-mounted devices.
- Do not install a unit in a rack where the air flow is compromised. Ensure that air flow is not blocked or reduced on any side, front, or back of a unit used for air flow through the unit.
- Consideration should be given to the connection of the equipment to the supply circuit so that overloading of the circuits does not compromise the supply wiring or overcurrent protection. To provide the correct power connection to a rack, refer to the rating labels located on the equipment in the rack to determine the total power requirement of the supply circuit.
- *(For sliding drawers.)* Do not pull out or install any drawer or feature if the rack stabilizer brackets are not attached to the rack or if the rack is not bolted to the floor. Do not pull out more than one drawer at a time. The rack might become unstable if you pull out more than one drawer at a time.



- *(For fixed drawers.)* This drawer is a fixed drawer and must not be moved for servicing unless specified by the manufacturer. Attempting to move the drawer partially or completely out of the rack might cause the rack to become unstable or cause the drawer to fall out of the rack. (R001 part 2 of 2)



CAUTION: Removing components from the upper positions in the rack cabinet improves rack stability during relocation. Follow these general guidelines whenever you relocate a populated rack cabinet within a room or building.

- Reduce the weight of the rack cabinet by removing equipment starting at the top of the rack cabinet. When possible, restore the rack cabinet to the configuration of the rack cabinet as you received it. If this configuration is not known, you must observe the following precautions:
 - Remove all devices in the 32U position (compliance ID RACK-001 or 22U (compliance ID RR001) and above.
 - Ensure that the heaviest devices are installed in the bottom of the rack cabinet.
 - Ensure that there are little-to-no empty U-levels between devices installed in the rack cabinet below the 32U (compliance ID RACK-001 or 22U (compliance ID RR001) level, unless the received configuration specifically allowed it.
- If the rack cabinet you are relocating is part of a suite of rack cabinets, detach the rack cabinet from the suite.
- If the rack cabinet you are relocating was supplied with removable outriggers they must be reinstalled before the cabinet is relocated.
- Inspect the route that you plan to take to eliminate potential hazards.
- Verify that the route that you choose can support the weight of the loaded rack cabinet. Refer to the documentation that comes with your rack cabinet for the weight of a loaded rack cabinet.
- Verify that all door openings are at least 760 x 230 mm (30 x 80 in.).
- Ensure that all devices, shelves, drawers, doors, and cables are secure.
- Ensure that the four leveling pads are raised to their highest position.
- Ensure that there is no stabilizer bracket installed on the rack cabinet during movement.
- Do not use a ramp inclined at more than 10 degrees.
- When the rack cabinet is in the new location, complete the following steps:
 - Lower the four leveling pads.
 - Install stabilizer brackets on the rack cabinet or in an earthquake environment bolt the rack to the floor.
 - If you removed any devices from the rack cabinet, repopulate the rack cabinet from the lowest position to the highest position.
- If a long-distance relocation is required, restore the rack cabinet to the configuration of the rack cabinet as you received it. Pack the rack cabinet in the original packaging material, or equivalent. Also lower the leveling pads to raise the casters off of the pallet and bolt the rack cabinet to the pallet.

(R002)

(L001)



DANGER: Hazardous voltage, current, or energy levels are present inside any component that has this label attached. Do not open any cover or barrier that contains this label. (L001)

(L002)

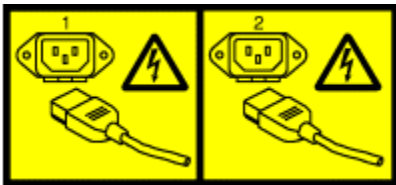


DANGER: Rack-mounted devices are not to be used as shelves or work spaces. Do not place objects on top of rack-mounted devices. In addition, do not lean on rack-mounted devices and do not use them to stabilize your body position (for example, when working from a ladder). Stability hazard:

- The rack may tip over causing serious personal injury.
- Before extending the rack to the installation position, read the installation instructions.
- Do not put any load on the slide-rail mounted equipment mounted in the installation position.
- Do not leave the slide-rail mounted equipment in the installation position.

(L002)

(L003)



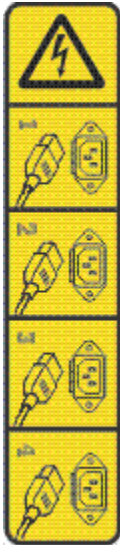
or



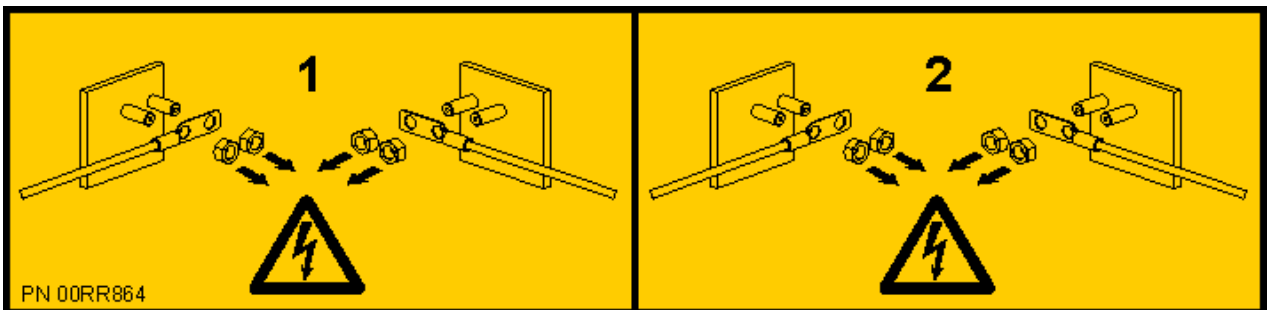
or



or



or



DANGER: Multiple power cords. The product might be equipped with multiple AC power cords or multiple DC power cables. To remove all hazardous voltages, disconnect all power cords and power cables. (L003)

(L007)



CAUTION: A hot surface nearby. (L007)

x Power Systems: Installing the 7316-TF4 18.5-Inch and 7316-TF5 17.3-Inch Flat Panel Rack-Mounted Monitor and Keyboard

(L008)



CAUTION: Hazardous moving parts nearby. (L008)

All lasers are certified in the U.S. to conform to the requirements of DHHS 21 CFR Subchapter J for class 1 laser products. Outside the U.S., they are certified to be in compliance with IEC 60825 as a class 1 laser product. Consult the label on each part for laser certification numbers and approval information.



CAUTION: This product might contain one or more of the following devices: CD-ROM drive, DVD-ROM drive, DVD-RAM drive, or laser module, which are Class 1 laser products. Note the following information:

- Do not remove the covers. Removing the covers of the laser product could result in exposure to hazardous laser radiation. There are no serviceable parts inside the device.
- Use of the controls or adjustments or performance of procedures other than those specified herein might result in hazardous radiation exposure.

(C026)



CAUTION: Data processing environments can contain equipment transmitting on system links with laser modules that operate at greater than Class 1 power levels. For this reason, never look into the end of an optical fiber cable or open receptacle. Although shining light into one end and looking into the other end of a disconnected optical fiber to verify the continuity of optic fibers may not injure the eye, this procedure is potentially dangerous. Therefore, verifying the continuity of optical fibers by shining light into one end and looking at the other end is not recommended. To verify continuity of a fiber optic cable, use an optical light source and power meter. (C027)



CAUTION: This product contains a Class 1M laser. Do not view directly with optical instruments. (C028)



CAUTION: Some laser products contain an embedded Class 3A or Class 3B laser diode. Note the following information:

- Laser radiation when open.
- Do not stare into the beam, do not view directly with optical instruments, and avoid direct exposure to the beam. (C030)

(C030)



CAUTION: The battery contains lithium. To avoid possible explosion, do not burn or charge the battery.

Do Not:

- Throw or immerse into water
- Heat to more than 100 degrees C (212 degrees F)
- Repair or disassemble

Exchange only with the IBM-approved part. Recycle or discard the battery as instructed by local regulations. In the United States, IBM has a process for the collection of this battery. For information, call 1-800-426-4333. Have the IBM part number for the battery unit available when you call. (C003)



CAUTION: Regarding IBM provided VENDOR LIFT TOOL:

- Operation of LIFT TOOL by authorized personnel only.

- LIFT TOOL intended for use to assist, lift, install, remove units (load) up into rack elevations. It is not to be used loaded transporting over major ramps nor as a replacement for such designated tools like pallet jacks, walkies, fork trucks and such related relocation practices. When this is not practicable, specially trained persons or services must be used (for instance, riggers or movers).
- Read and completely understand the contents of LIFT TOOL operator's manual before using. Failure to read, understand, obey safety rules, and follow instructions may result in property damage and/or personal injury. If there are questions, contact the vendor's service and support. Local paper manual must remain with machine in provided storage sleeve area. Latest revision manual available on vendor's web site.
- Test verify stabilizer brake function before each use. Do not over-force moving or rolling the LIFT TOOL with stabilizer brake engaged.
- Do not raise, lower or slide platform load shelf unless stabilizer (brake pedal jack) is fully engaged. Keep stabilizer brake engaged when not in use or motion.
- Do not move LIFT TOOL while platform is raised, except for minor positioning.
- Do not exceed rated load capacity. See LOAD CAPACITY CHART regarding maximum loads at center versus edge of extended platform.
- Only raise load if properly centered on platform. Do not place more than 200 lb (91 kg) on edge of sliding platform shelf also considering the load's center of mass/gravity (CoG).
- Do not corner load the platforms, tilt riser, angled unit install wedge or other such accessory options. Secure such platforms -- riser tilt, wedge, etc options to main lift shelf or forks in all four (4x or all other provisioned mounting) locations with provided hardware only, prior to use. Load objects are designed to slide on/off smooth platforms without appreciable force, so take care not to push or lean. Keep riser tilt [adjustable angling platform] option flat at all times except for final minor angle adjustment when needed.
- Do not stand under overhanging load.
- Do not use on uneven surface, incline or decline (major ramps).
- Do not stack loads.
- Do not operate while under the influence of drugs or alcohol.
- Do not support ladder against LIFT TOOL (unless the specific allowance is provided for one following qualified procedures for working at elevations with this TOOL).
- Tipping hazard. Do not push or lean against load with raised platform.
- Do not use as a personnel lifting platform or step. No riders.
- Do not stand on any part of lift. Not a step.
- Do not climb on mast.
- Do not operate a damaged or malfunctioning LIFT TOOL machine.
- Crush and pinch point hazard below platform. Only lower load in areas clear of personnel and obstructions. Keep hands and feet clear during operation.
- No Forks. Never lift or move bare LIFT TOOL MACHINE with pallet truck, jack or fork lift.
- Mast extends higher than platform. Be aware of ceiling height, cable trays, sprinklers, lights, and other overhead objects.
- Do not leave LIFT TOOL machine unattended with an elevated load.
- Watch and keep hands, fingers, and clothing clear when equipment is in motion.
- Turn Winch with hand power only. If winch handle cannot be cranked easily with one hand, it is probably over-loaded. Do not continue to turn winch past top or bottom of platform travel. Excessive unwinding will detach handle and damage cable. Always hold handle when lowering, unwinding. Always assure self that winch is holding load before releasing winch handle.
- A winch accident could cause serious injury. Not for moving humans. Make certain clicking sound is heard as the equipment is being raised. Be sure winch is locked in position before releasing handle. Read instruction page before operating this winch. Never allow winch to unwind freely.

Freewheeling will cause uneven cable wrapping around winch drum, damage cable, and may cause serious injury.

- This TOOL must be maintained correctly for IBM Service personnel to use it. IBM shall inspect condition and verify maintenance history before operation. Personnel reserve the right not to use TOOL if inadequate. (C048)

Power and cabling information for NEBS (Network Equipment-Building System) GR-1089-CORE

The following comments apply to the IBM servers that have been designated as conforming to NEBS (Network Equipment-Building System) GR-1089-CORE:

The equipment is suitable for installation in the following:

- Network telecommunications facilities
- Locations where the NEC (National Electrical Code) applies

The intrabuilding ports of this equipment are suitable for connection to intrabuilding or unexposed wiring or cabling only. The intrabuilding ports of this equipment *must not* be metalically connected to the interfaces that connect to the OSP (outside plant) or its wiring. These interfaces are designed for use as intrabuilding interfaces only (Type 2 or Type 4 ports as described in GR-1089-CORE) and require isolation from the exposed OSP cabling. The addition of primary protectors is not sufficient protection to connect these interfaces metalically to OSP wiring.

Note: All Ethernet cables must be shielded and grounded at both ends.

The ac-powered system does not require the use of an external surge protection device (SPD).

The dc-powered system employs an isolated DC return (DC-I) design. The DC battery return terminal *shall not* be connected to the chassis or frame ground.

The dc-powered system is intended to be installed in a common bonding network (CBN) as described in GR-1089-CORE.

Installing the 7316-TF4 18.5-Inch Flat Panel Rack-Mounted monitor and keyboard

Learn how to install the 7316-TF4 18.5-Inch Flat Panel Rack-Mounted Monitor and Keyboard.

Overview of the 7316-TF4 18.5-Inch Flat Panel Rack-Mounted Monitor and Keyboard

Learn about the 7316-TF4 18.5-Inch Flat Panel Rack-Mounted Monitor and Keyboard.

The IBM 7316-TF4 18.5-Inch Flat Panel Rack-Mounted Monitor and Keyboard is a flat-panel display and keyboard tray in one unit. The console unit occupies 1U¹ of space in a rack. You can install an optional console switch behind the standard console in the rack to attach more than one server to the flat-panel display and keyboard. If firmware and documentation updates are available, you can download them from the IBM website.

Note: The 1 EIA unit in racks are measured in vertical increments of 1.75 inches each. Each 1.75-inch increment is called an “EIA.” In some countries, the same increment may be referred to as a “U.”

Console features

Learn about the 7316-TF4 and 7316-TF5 18.5-Inch Flat Panel Rack-Mounted Monitor and Keyboard console features.

The standard console has the following features:

- Mounts on slide-rails in the rack to enable easy movement and storage of the monitor
- Toolless rack installation in the 1U space of IBM rack configurations
- 18.5-inch, 16:9 ratio LCD panel with a VGA connection to the server or KVM switch
- Support for widescreen and previous (through scaling) resolutions
- Compatible with worldwide power and regulatory requirements
- Cable-management arm comes preinstalled on the rear of the console
- Can be shipped installed in an IBM rack

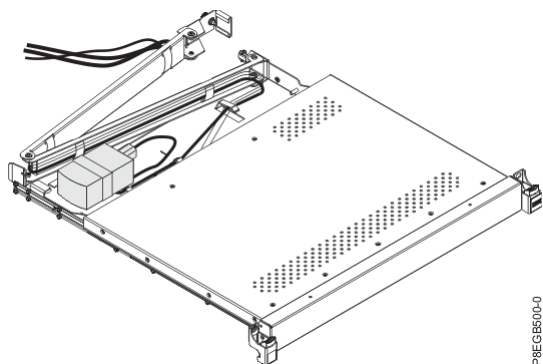
Check Your Inventory

Find information about the parts shipped along with the 7316-TF4 and 7316-TF5 18.5-Inch Flat Panel Rack-Mounted Monitor and Keyboard console.

Note: The illustrations in this topic might differ slightly from your hardware.

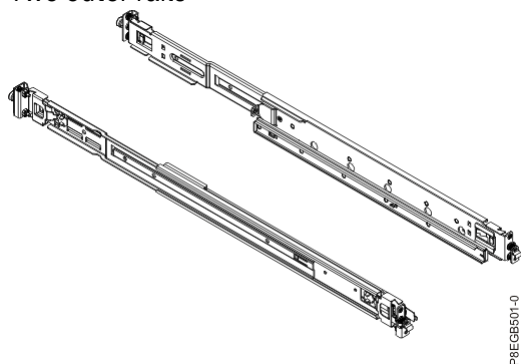
The console kit contains the following items:

- One console unit with built-in flat-panel display and cable-management arm (A 1 m power cord is routed along the cable-management arm and is secured with cable straps.)

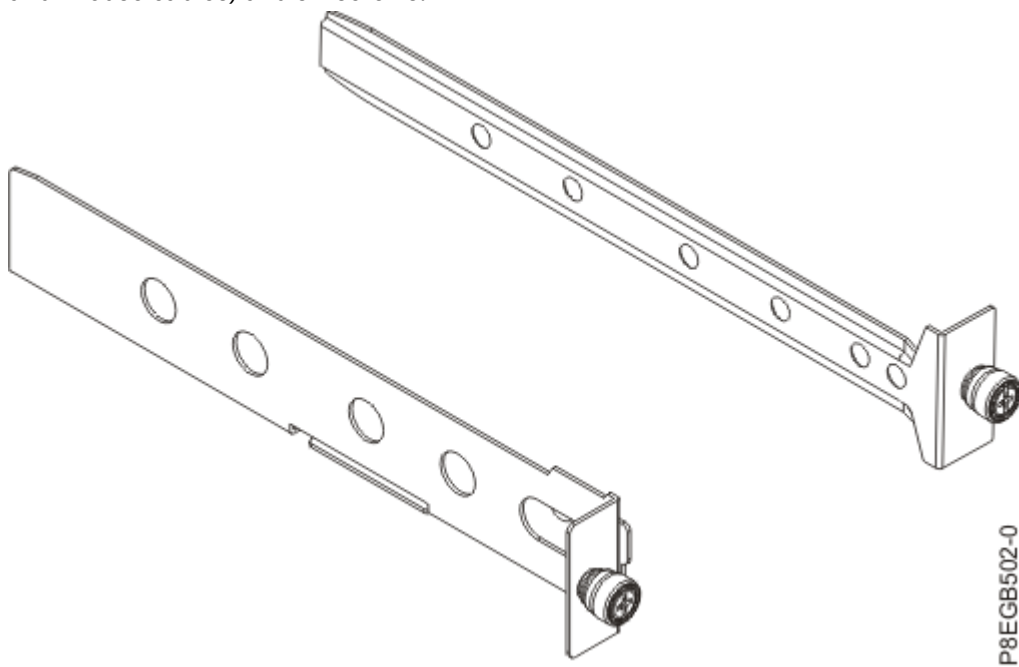


Important: The ac adapter that is connected to the flat-panel display is not intended for use with other products. Do not disassemble the flat-panel display or remove the ac adapter.

- Two outer rails



- Two console-switch mounting brackets, one with a channel (for routing the power, video, and keyboard-and-mouse cables) and six screws.



- One 2.8-m (9-ft) IEC connector power cable



- Bag with M5 clip nuts, M5 stability screws, and M5 shipping screws
- IBM Documentation CD

You need the following tools to replace customer replaceable units (CRU):

- One #1 Phillips screwdriver (to install or remove the inner slide-rails)
- One #2 Phillips screwdriver (to unscrew the shipping screws from the rack if you move the rack to another location; to replace the cable-management arm)

See the documentation that comes with your rack or console switch for more information about those products.

Notices and statements in this document

This topic provides the information on the notices and statements used in this document.

The caution and danger statements in this document are also in the multilingual Safety Information document. Each statement is numbered for reference to the corresponding statement in the Safety Information document.

The following notices and statements are used in this document:

Note: These notices provide important tips, guidance, or advice.

Important: These notices provide information or advice that might help you avoid inconvenient or problem situations.



Attention: These notices indicate potential damage to programs, devices, or data. An attention notice is placed just before the instruction or situation in which damage might occur.



CAUTION: These statements indicate situations that can be potentially hazardous to you. A caution statement is placed just before the description of a potentially hazardous procedure step or situation.



DANGER: These statements indicate situations that can be potentially lethal or extremely hazardous to you. A danger statement is placed just before the description of a potentially lethal or extremely hazardous procedure step or situation.

Console unit specifications

This topic collection provides the information about the specifications of the console unit.

The following sections provide the console unit specifications.

Rail-to-rail depth measurements

This topic provides the information about the rail-to-rail depth measurement to install the 7316-TF4 and 7316-TF5 18.5-Inch Flat Panel Rack-Mounted Monitor and Keyboard.

The console unit fits in a rack with the front to rear rail dimensions as shown in the following table. The console unit dimensions are measured outside-to-outside and are for IBM and non-IBM racks with unthreaded and threaded holes.

Table 1. Console unit rack post distances	
Rack configuration	Rack post distances
No console switch	613 - 909 mm (24.1 - 35.8 in.)
Provision for a console switch	706 - 909 mm (27.9 - 35.8 in.)

Dimensions and weight

This topic provides the information about the dimensions and weight of the console unit.

The following table describes the console unit dimensions and weight.

Table 2. Console unit dimensions and weight	
Height	44 mm (1.75 in.) (display in stored position)

Table 2. Console unit dimensions and weight (continued)	
Width	434 mm (17 in.) (main chassis only, slide-rails not included, faceplate not included)
Depth	434 mm (17 in.) (chassis behind EIA mounting flange, bezel in front of EIA flange not included, cable-management arm not included)
Bezel depth	35 mm (1.4 in.) (including latches and IBM Logo)
Bezel width	482 mm (19 in.) (includes latches)
Maximum forward extension	650 mm (25.6 in.)
Weight	10.4 kg (23 lb)

Installing the 7316-TF4 18.5-Inch Flat Panel Rack-Mounted Monitor and Keyboard

This topic collection provides the information to install the 7316-TF4 18.5-Inch Flat Panel Rack-Mounted Monitor and Keyboard console.

The console unit occupies 1U of mounting space in a rack. To install the console unit in the rack, complete the steps in the following sections. Removing the rack doors and side panels, and removing the rack devices that are above and below where you want to install the console unit, might make installation easier.

See the documentation that comes with your rack for additional information.

Guidelines for rack mounting the console unit:

- **Elevated operating ambient** - If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment might 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.
- **Reduced air flow** - Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.
- **Mechanical loading** - Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.
- **Circuit overloading** - Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.
- **Reliable earthing** - Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (for example, use of power strips).



CAUTION: This product is equipped with a 3-wire (two conductors and ground) power cable and plug. Use this power cable with a properly grounded electrical outlet to avoid electrical shock.
C018

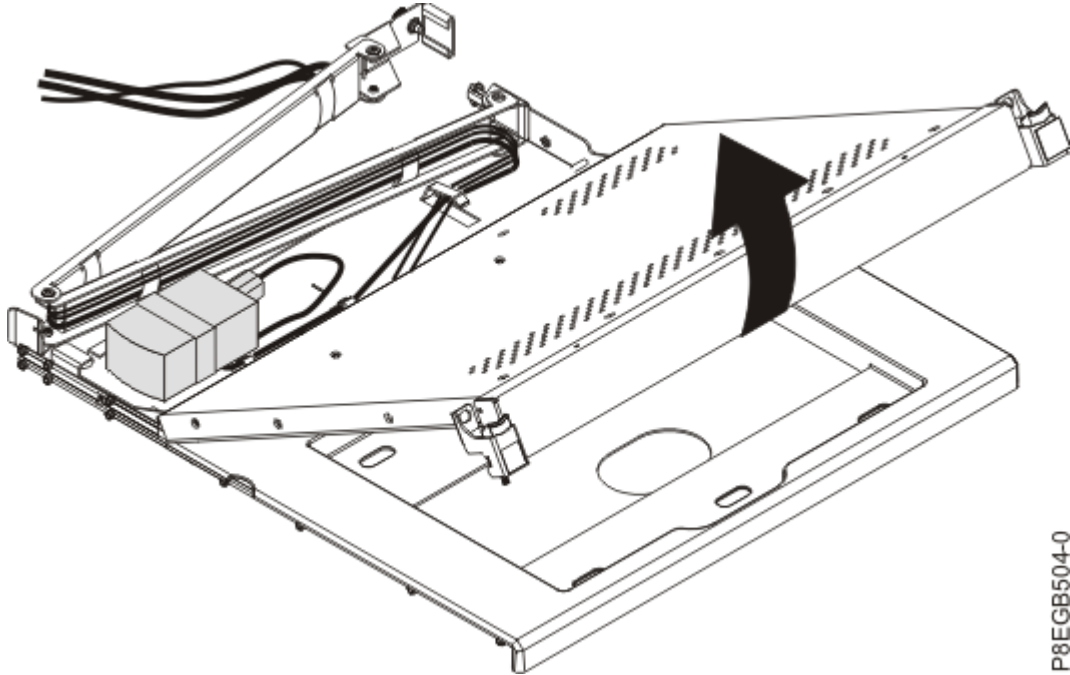
Installing the keyboard in the console unit

Learn how to install the keyboard in the console unit.

To install the keyboard in the console unit, complete the following steps:

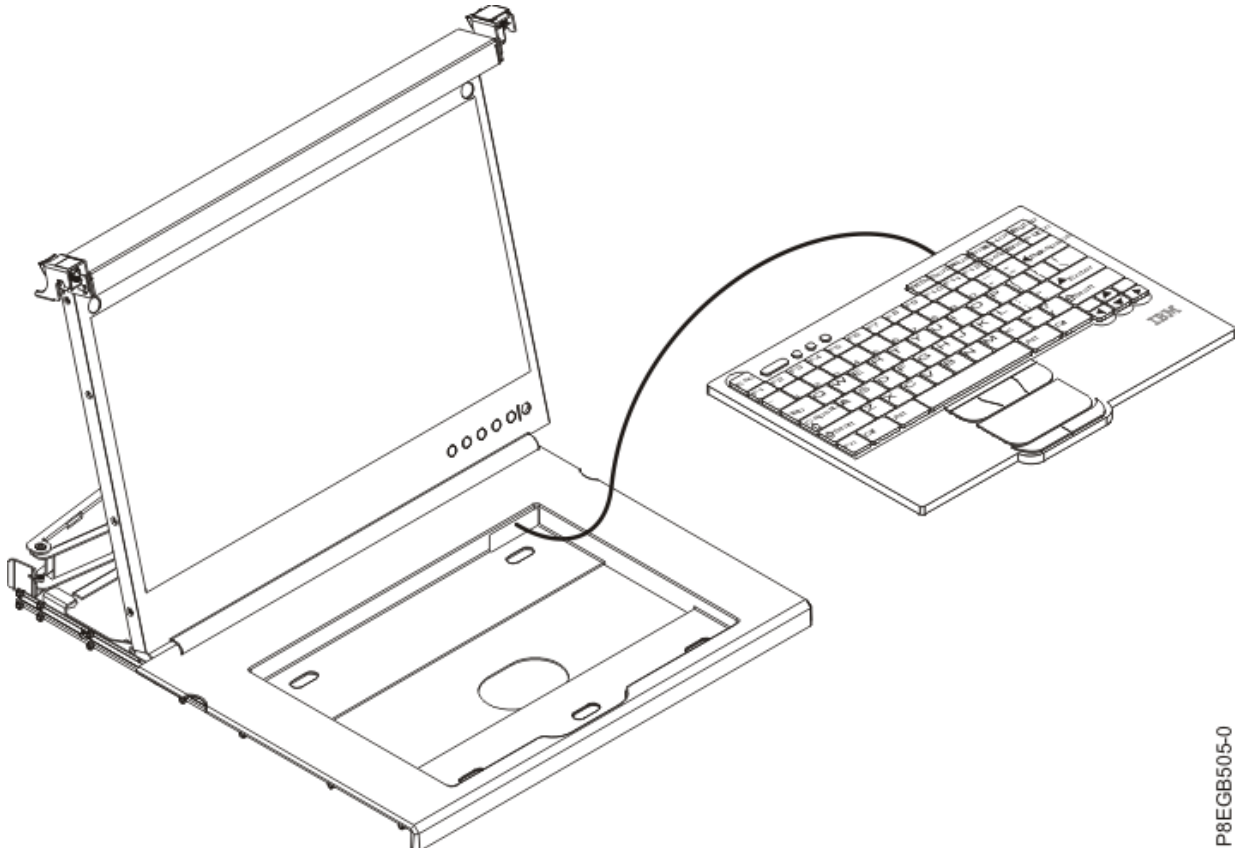
1. Place the console unit on a table or other flat surface and make sure that the right side of the unit extends approximately 76 mm (3 in.) over the edge of the surface. This will help you route the keyboard-and-mouse cable more easily later in the procedure.

2. Carefully lift the front of the flat-panel display to the full upright position.



Attention: Do not extend the keyboard feet. The flat-panel display screen might be damaged if the feet are extended when the display is closed.

3. Hold the keyboard near the keyboard tray and carefully route the keyboard-and-mouse cable down through the keyboard tray cutout and up through the cutout that is behind the flat-panel display. (See the illustration.) Carefully pull the cable through the cutouts.



4. Peel the backing of the double-sided foam tape that is preinstalled on the front of the console tray.

5. Place the keyboard in the tray and exert a small amount of pressure on the keyboard to secure it to the double-sided tape.
6. Close the flat-panel display.



Attention:

- When you route the keyboard-and-mouse cable, make sure that the cable does not hang below the underside of the keyboard where it might be damaged if it interferes with the devices in the rack space below the console unit.
 - Make sure that you route all cables through the cable-routing features on the console frame behind the display and along the cable-management arm.
7. Route the cable along the cable-management arm, securing the cables with the hook-and-loop fastener strips.

Installing the console unit in the rack

Learn how to install the console unit in the rack.

Review the documentation that comes with your rack for safety and cabling information. When you install your system in a rack, observe the following guidelines:

- Make sure that the room air temperature is below 35°C (95°F).
- Do not block any air vents; usually 15 cm (6 in.) of air space provides proper airflow.
- Plan the device installation starting from the bottom of the rack.
- Install the heaviest device in the bottom of the rack.
- Do not extend more than one device out of the rack at the same time.
- Connect all power cords to properly wired and grounded electrical outlets.
- Do not overload the power outlet when you install multiple devices in the rack.
- You can install the outer slide-rails in a square-hole rack, round-hole rack, or threaded-hole rack and no tools are required.

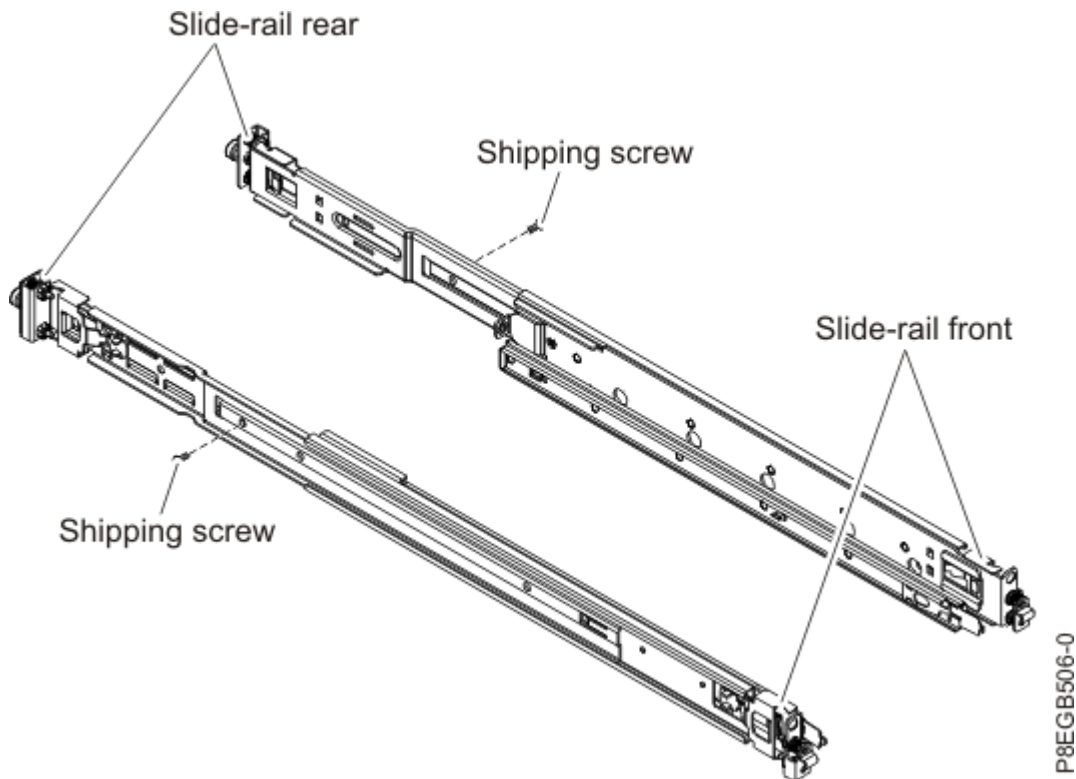
To install the console unit in the rack, complete the following steps:

1. Place the console unit on a stable, flat surface.

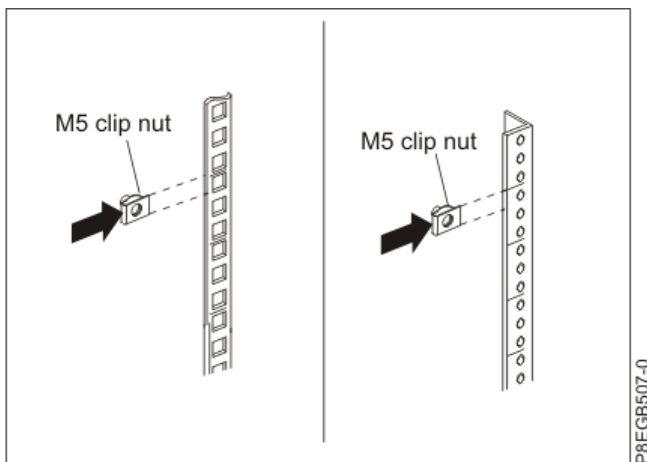


Attention: The video cable is connected to the flat-panel display. As you install the console unit in the rack, be careful that you do not pinch or cut the video cable.

2. Select a 1U location in the rack for the console unit.
3. Remove the shipping screw from each outer slide-rail.



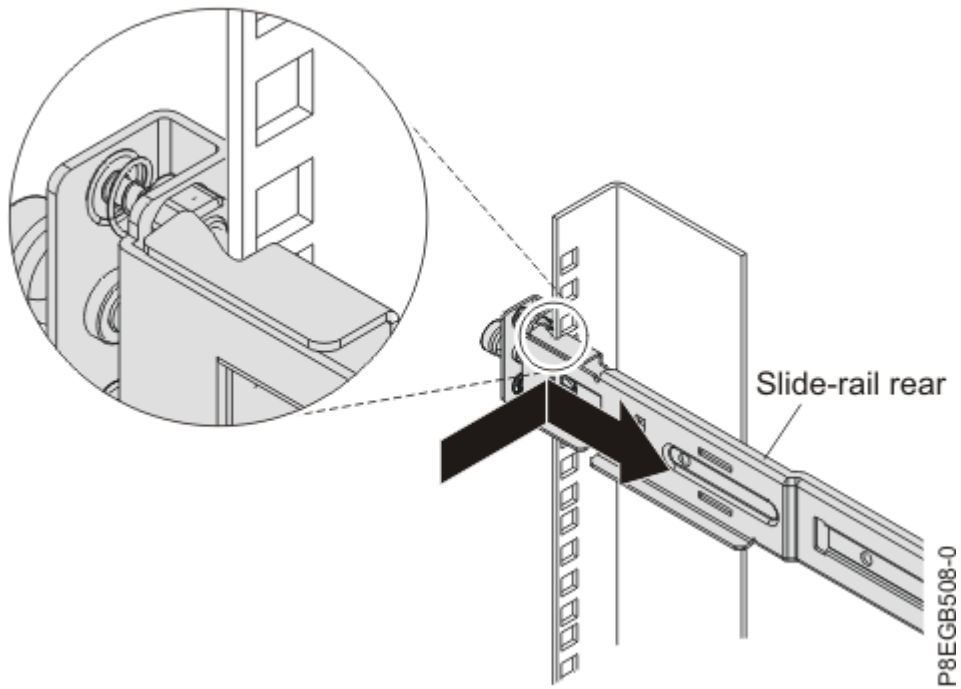
4. **(For non-threaded hole racks)** Install an M5 clip nut in the front of the rack in the top hole of the 1 U-space position that you select. The clip nuts are in the bag of screws that come with the console unit.



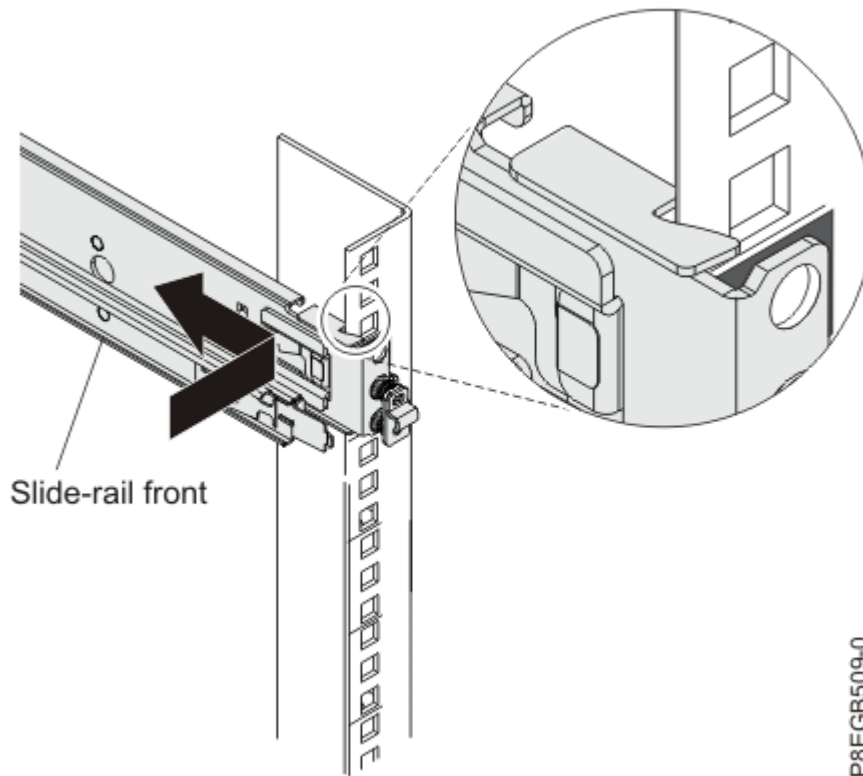
5. To attach the outer slide-rail to the rack, complete the following steps.

Note: Install the rear slide-rail bracket on the rear of the rack first; then, install the front slide-rail bracket on the front of the rack.

- Holding the slide-rail horizontally, align the rear slide-rail bracket so that the bracket is on the outside of the rack mounting flanges.
- Press the rear slide-rail bracket towards the rack flange and then pull it towards the front of the rack until the locking bracket clicks into place behind the rack flange.

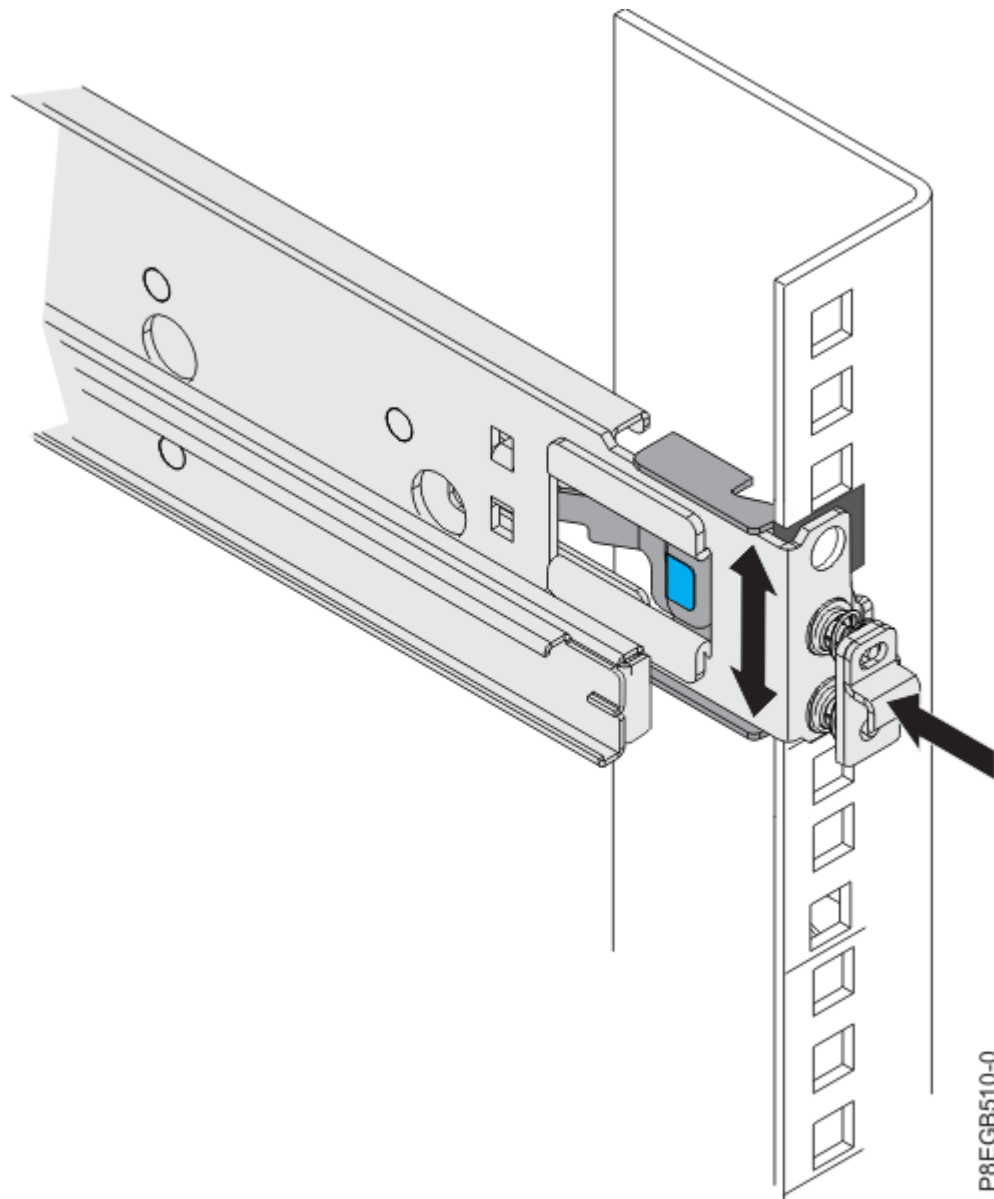


- c. Extend the slide-rail and press the front slide-rail bracket towards the rack flange and then push it towards the rear of the rack until the locking bracket clicks into place behind the rack flange.

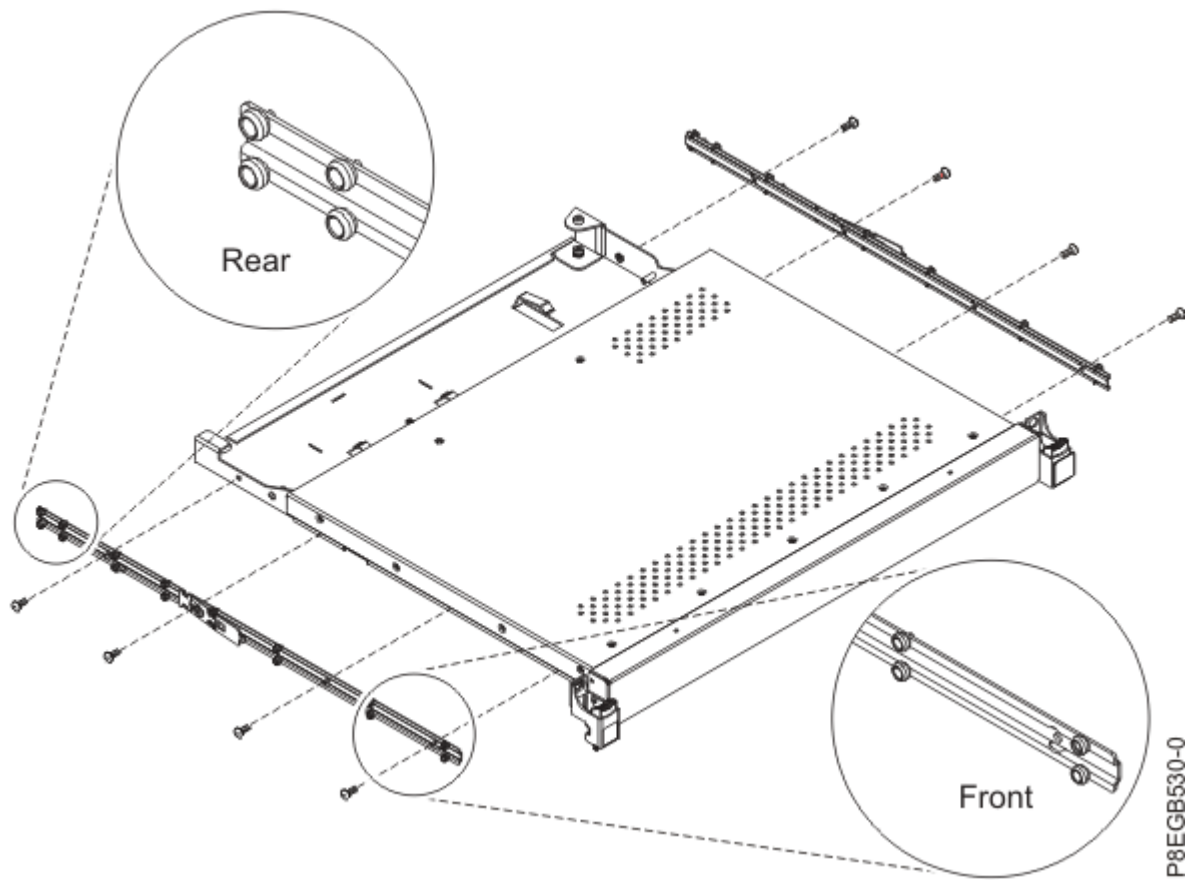


- d. Repeat steps “5.a” on page 7 to “5.c” on page 8 to attach the other outer slide-rail.

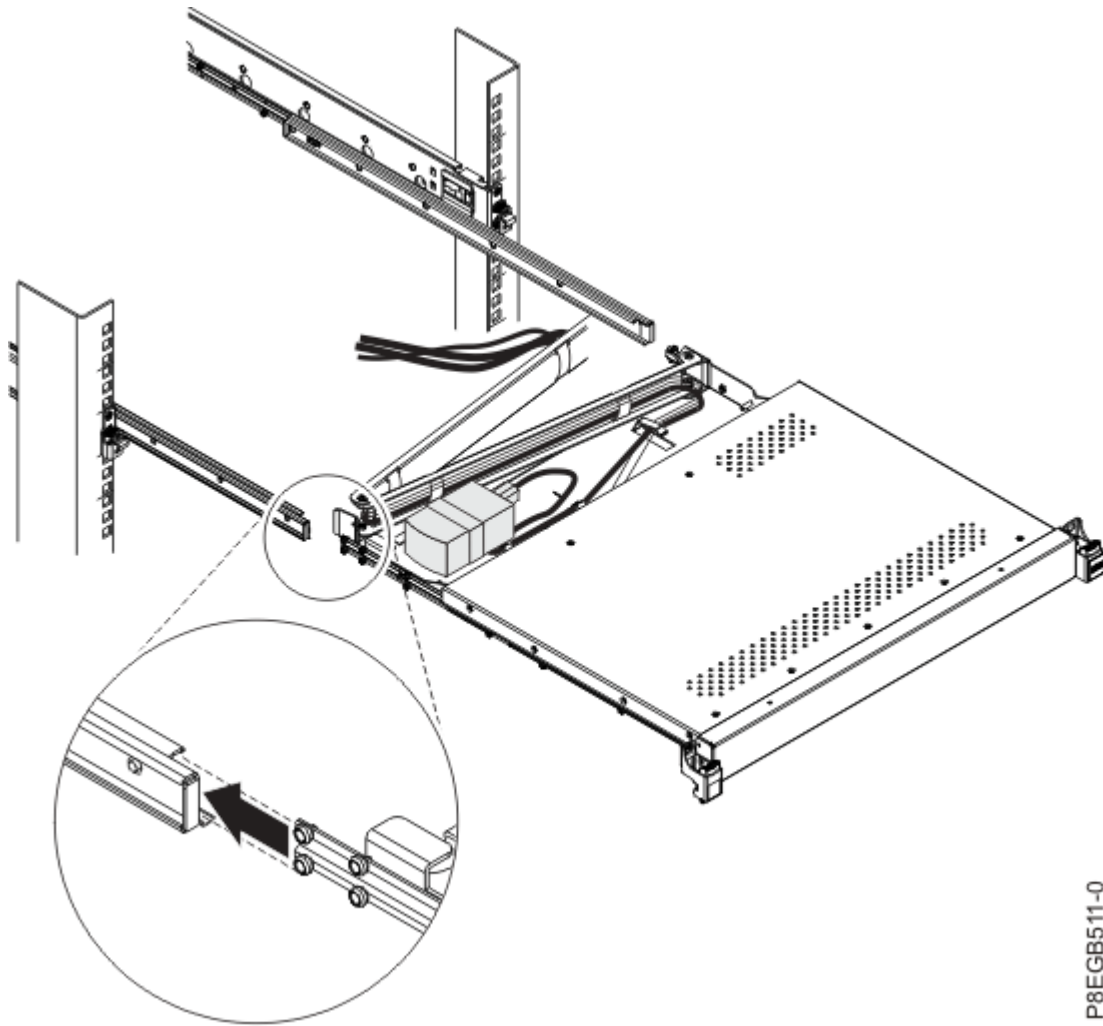
Note: Make sure that the two pins in the slide-rail brackets are pressed completely into the rack holes and that the bracket is flush with the rack flange. You might have to move the slide-rail up and down several times, and press on the end of the bracket to release the pins so that they are correctly in the holes in the rack flange.



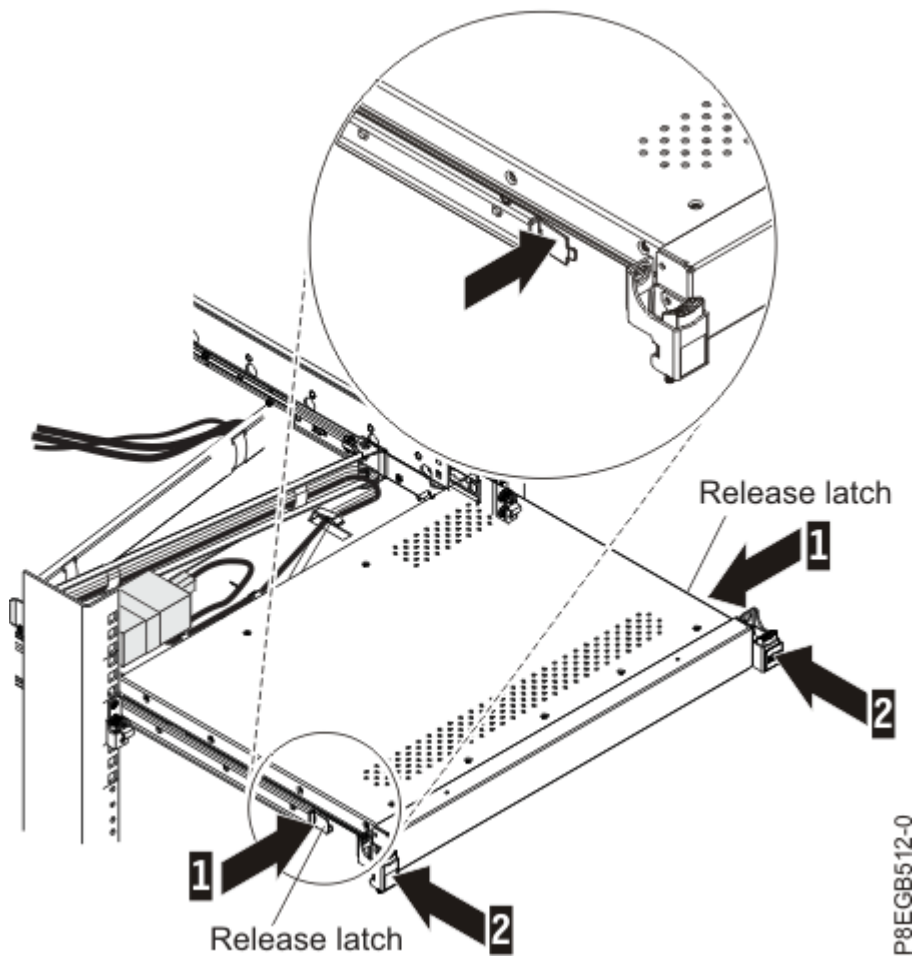
6. Remove the rollers from the rail and fasten them to the display using three screws on each rail.



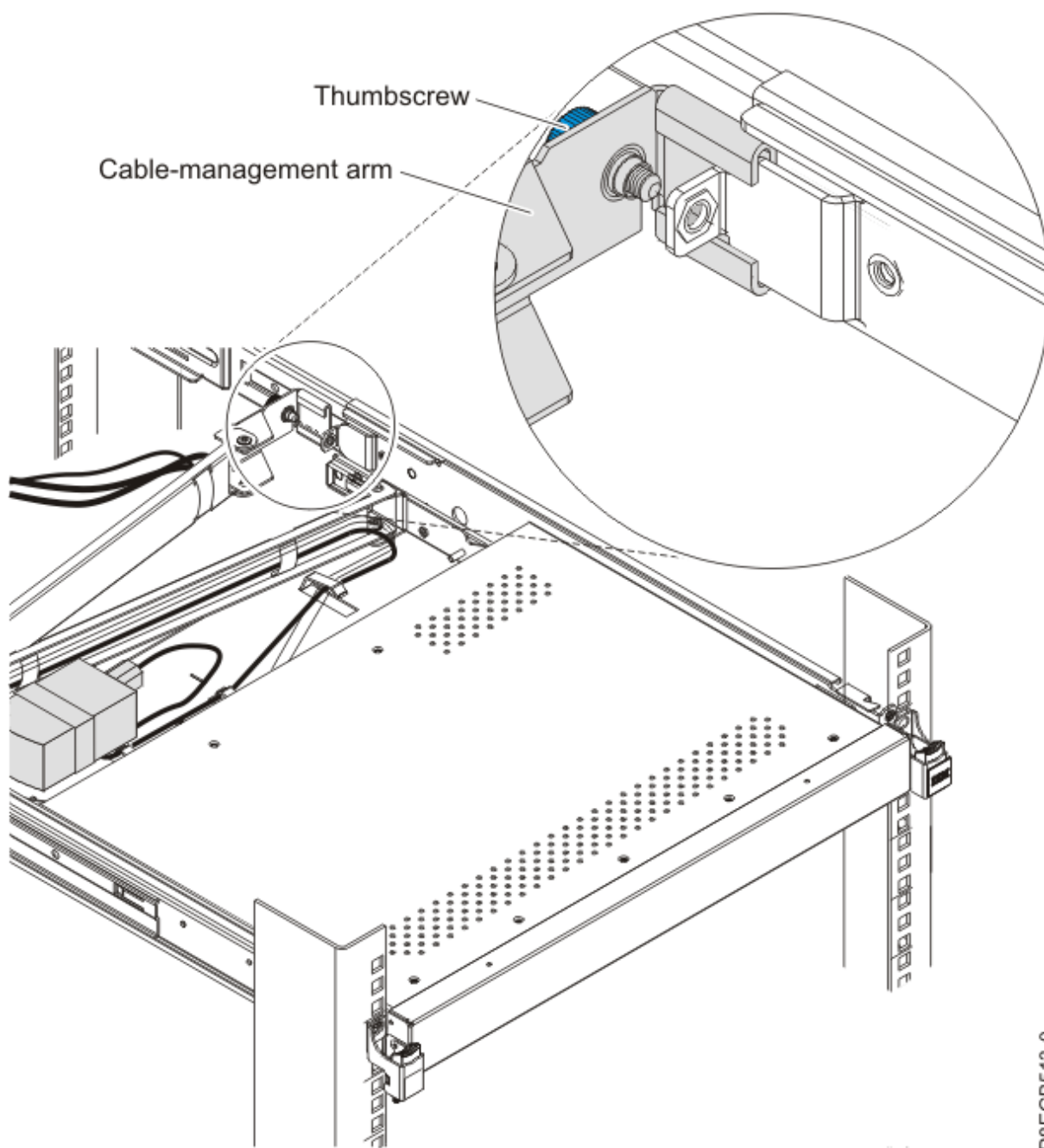
Carefully slide the console unit into the ball-bearing assemblies in the rails. Carefully slide the rollers on the console unit into the notch in the slide-rails as shown in the illustration.



7. Press in both release latches 1; then, grasp both sides of the console unit and push it completely into the rack 2. There will be resistance initially as the inner and outer rails are aligned. Pull the console unit out halfway, and then push it back in to seat the console unit in the rails. Do this a few times until the console unit moves smoothly in the rails.



8. On the right rail, align the C-channel on the end of the cable-management arm with the bracket on the console unit. Slide the C-channel onto the bracket until the cable-management arm thumbscrew aligns with the hole in the bracket. Tighten the thumbscrew.



P8EGB513-0

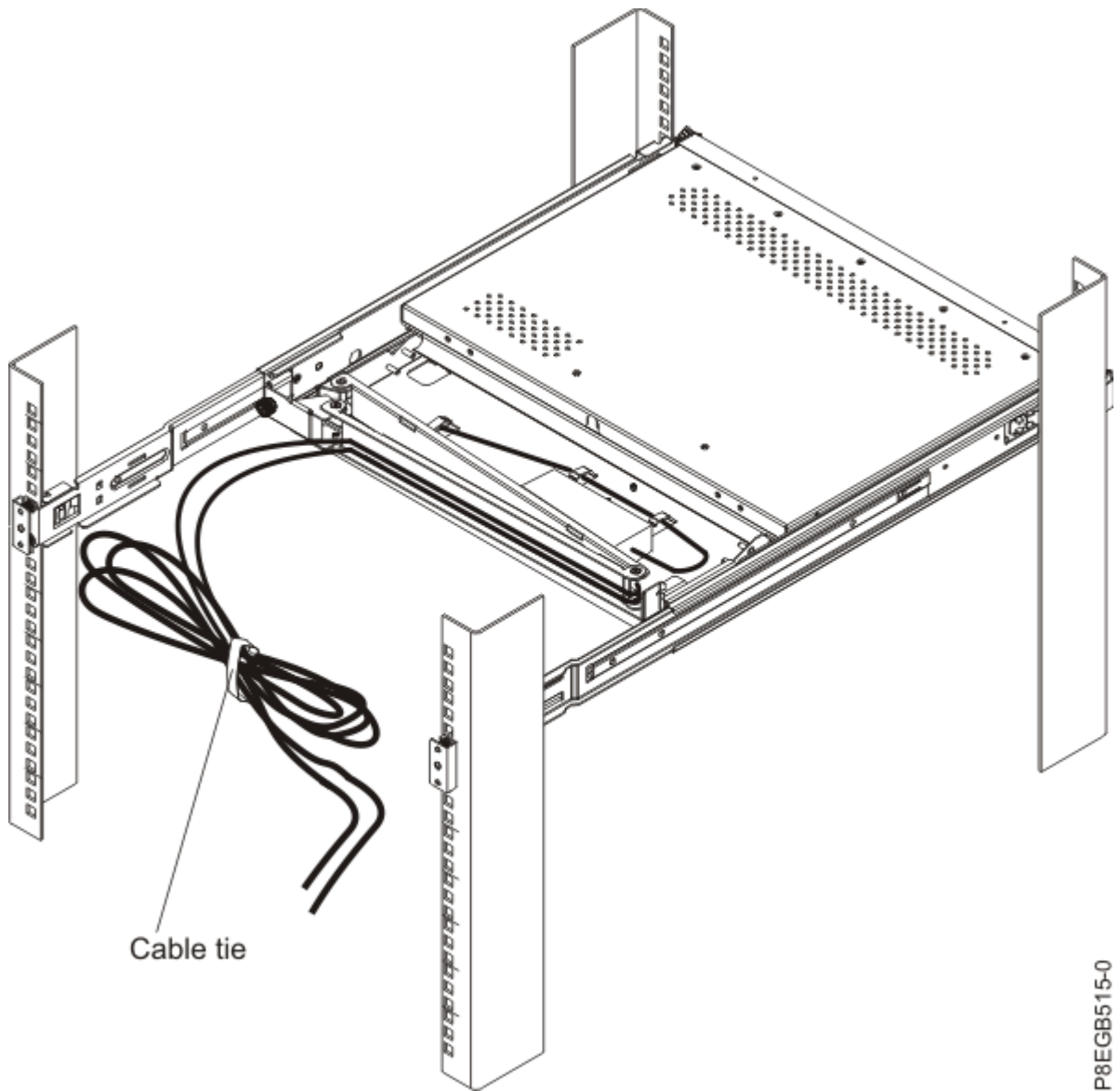
9. Connect all cables to either a server or a console switch in the rack. Connect the power cord to the short jumper cord on the cable-management arm, and then connect the power cord to a properly grounded electrical outlet or power distribution unit (PDU). For information about installing a console switch behind the console unit in the rack, see [Installing the Optional Console Switch](#).
10. Fully extend the console unit from the front of the rack, and then neatly route the cables within the rack and secure them with cable straps along the way.

Important: If you have excess video cable, do not coil it as shown in the following illustration.



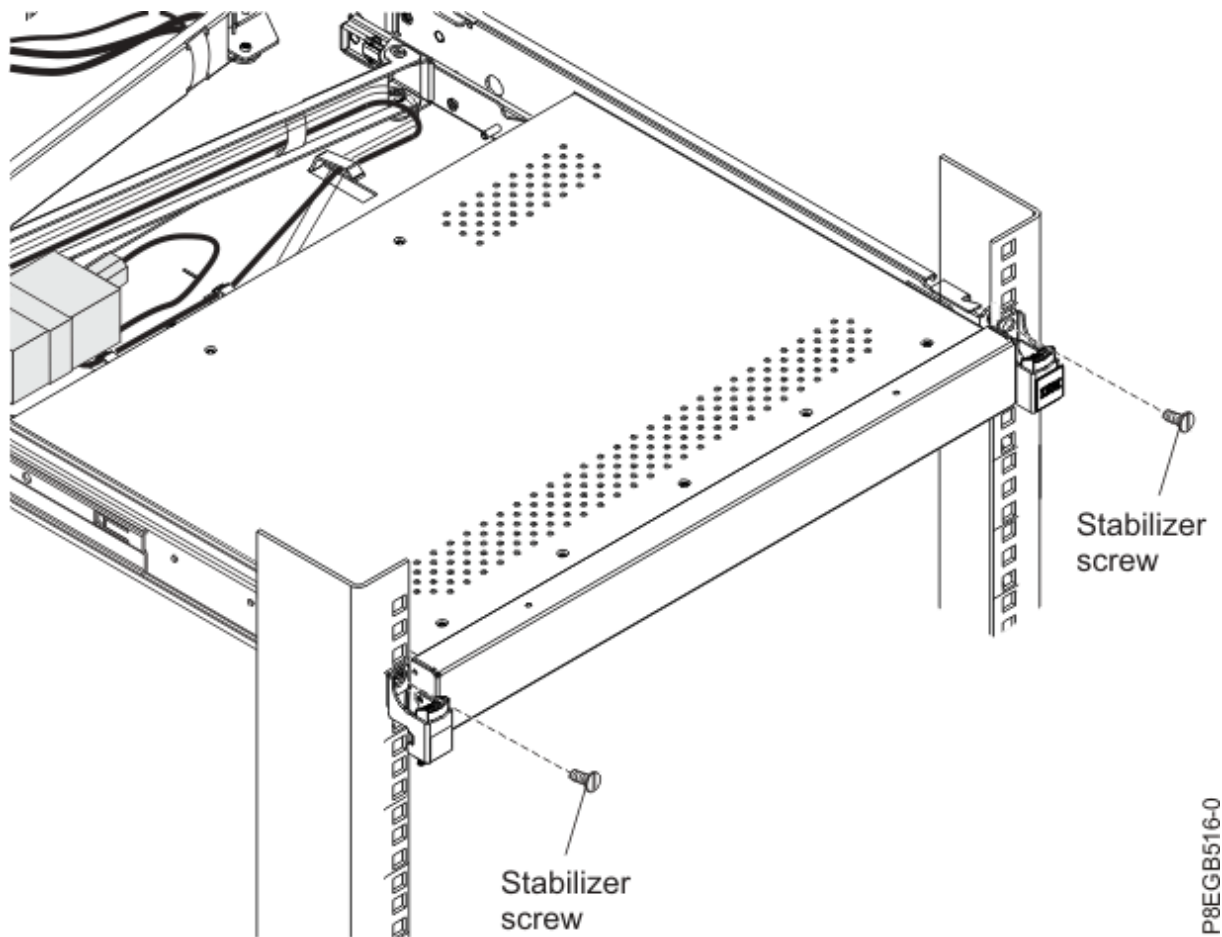
P8EGB514-0

To minimize the electrical interference if you have excess video cable, arrange the cable in figure-eight loops, as shown in the following illustration. Secure the cable in the middle with a cable tie or strap.



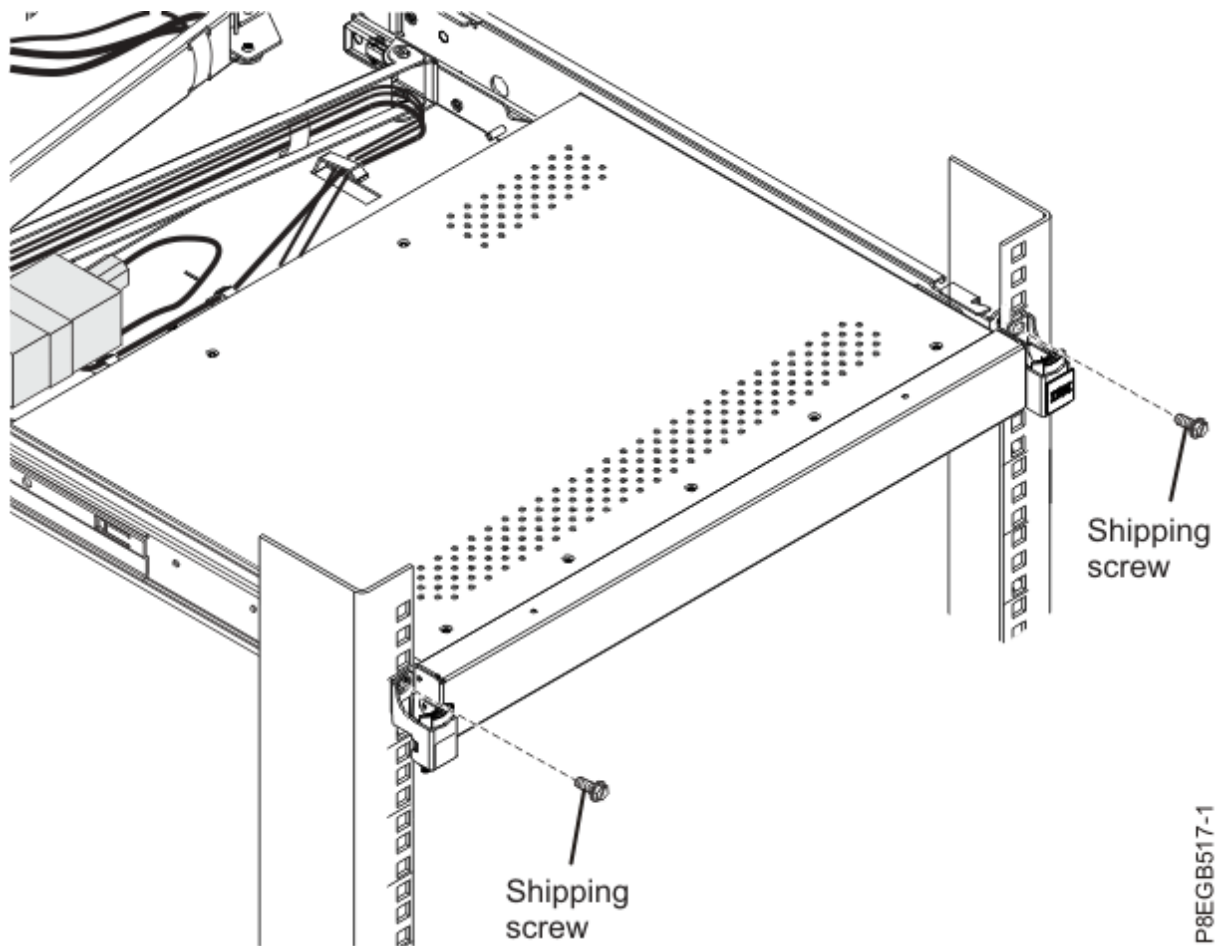
P8EGB515-0

(Optional for all racks) To secure the slide-rails to the rack after installation, install an M5 flat-head stabilizer screw in the top hole on the front of each slide-rail.



Before you move a rack with a console unit to another location, secure the front of the console unit to the rack with two M5 shipping screws that come in the bag of screws (see the illustration).

P8EGB516-0



11. See [Using the TFT-LCD display](#) for information about operating the display. See the keyboard documentation for information about operating the keyboard.

Installing the optional console switch

Learn how to install the optional console switch.

You can use a console switch to attach more than one server to a single display and keyboard. The optional console switch is available separately.

Depending on the depth of the console switch and the depth of the rack, you might be able to mount a console switch behind the console unit in the same 1U space. To mount the console switch behind the console unit, use the custom mounting brackets that come with the console unit.

Important: The console switch extends beyond the rear rack-cabinet mounting flanges when you install the switch behind the console unit.

Note:

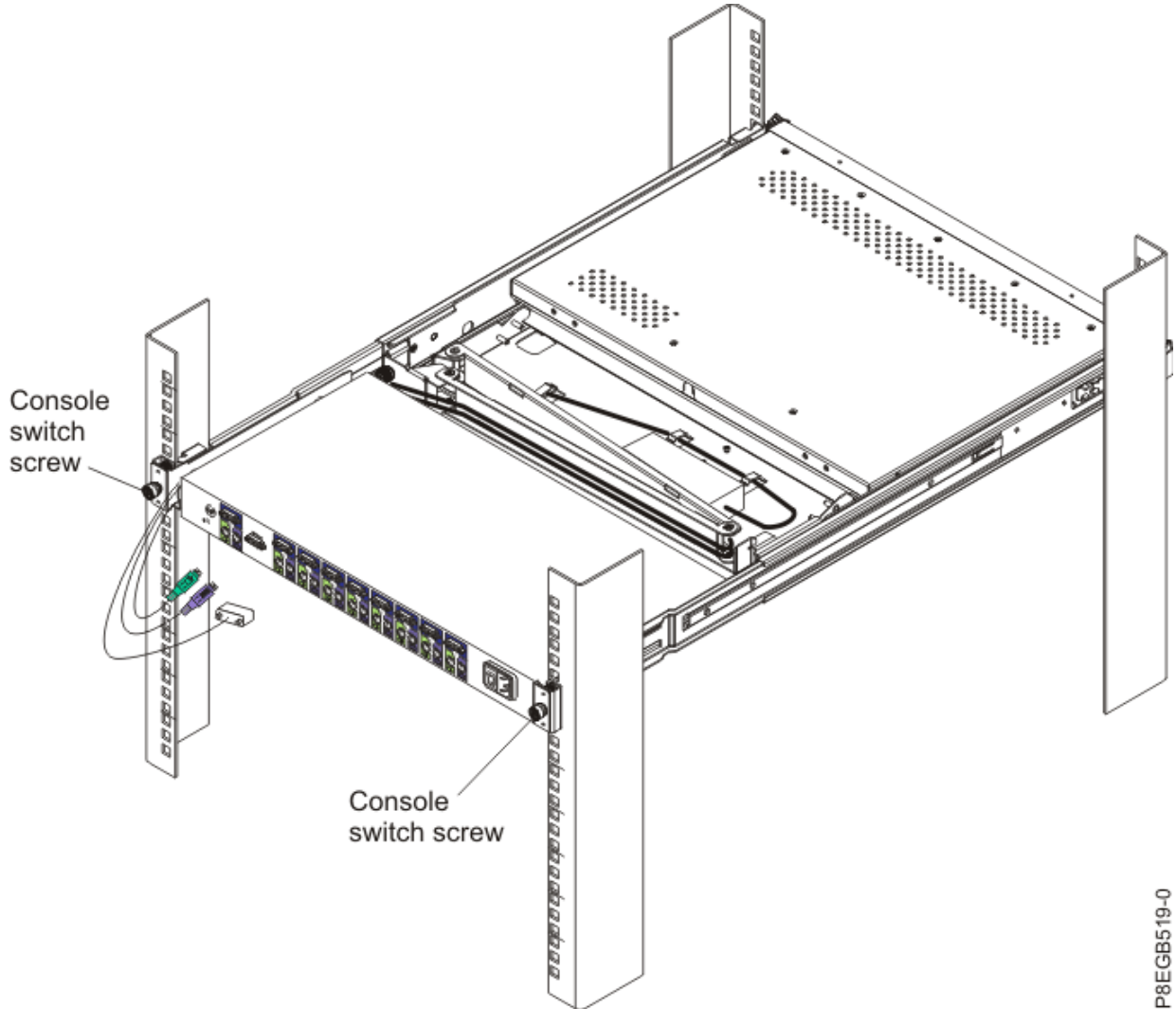
- In this procedure, left and right refer to orientations as you are facing the rear of the rack.
- The console switch mounting brackets are supplied in the miscellaneous hardware kit.
- The mounting brackets have several pre-drilled holes and can support most console switch designs.

To install a console switch behind the tray, complete the following steps:

1. Attach the left-side bracket to the left side of the console switch using two 8-32 screws. Then, attach the right-side bracket to the right side of the console switch.

Note: The left-side bracket has a channel for you to route the power, video, and keyboard-and-mouse cables. Make sure that you attach the brackets to the console switch so that the channel on the left-side bracket faces upward.

2. Install the console switch behind the flat-panel monitor and keyboard tray using four (two on each side) of the Phillips screws supplied in your miscellaneous hardware kit.



P8EGB519-0

3. Route the power, video, and keyboard-and-mouse cables through the channel in the left-side bracket on the console switch. Then, connect the video, keyboard, and mouse connectors to the console switch.
4. For information about connecting the flat-panel monitor, thin keyboard, and servers to the console switch, see the documentation provided with the console switch.

Using the TFT-LCD display

This topic collection provides the information about using the TFT-LCD display.

This chapter contains information about using the TFT-LCD display. For most applications, the factory default settings on the display do not require adjustment.

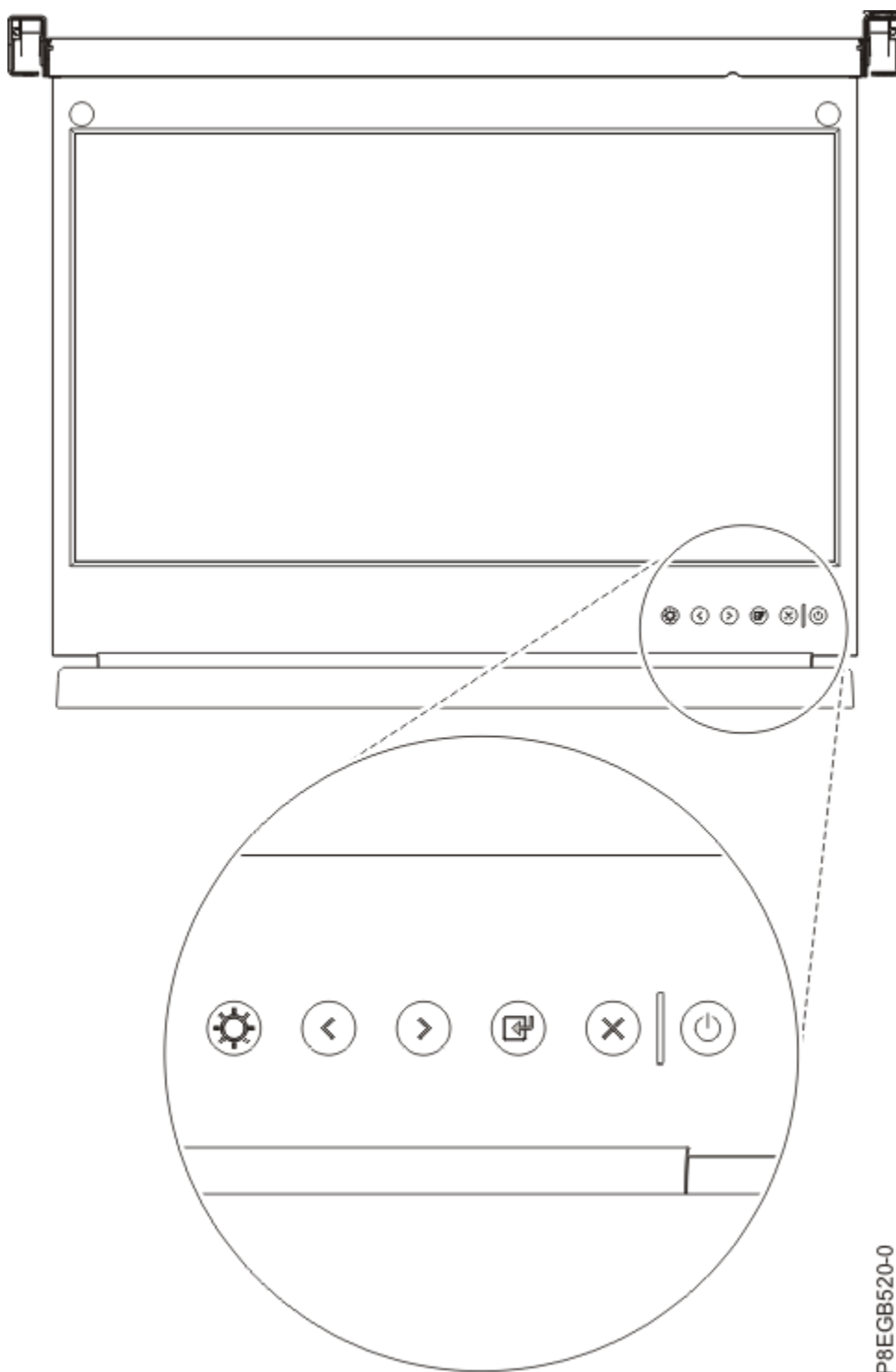
Using the on-screen display (OSD) menu

Learn how to use the OSD menu to adjust the characteristics of the image that is being displayed.

Using the control buttons

Learn how to use the control buttons on the TFT - LCD display.

The control buttons on the lower right of the LCD display are shown in the following illustration.



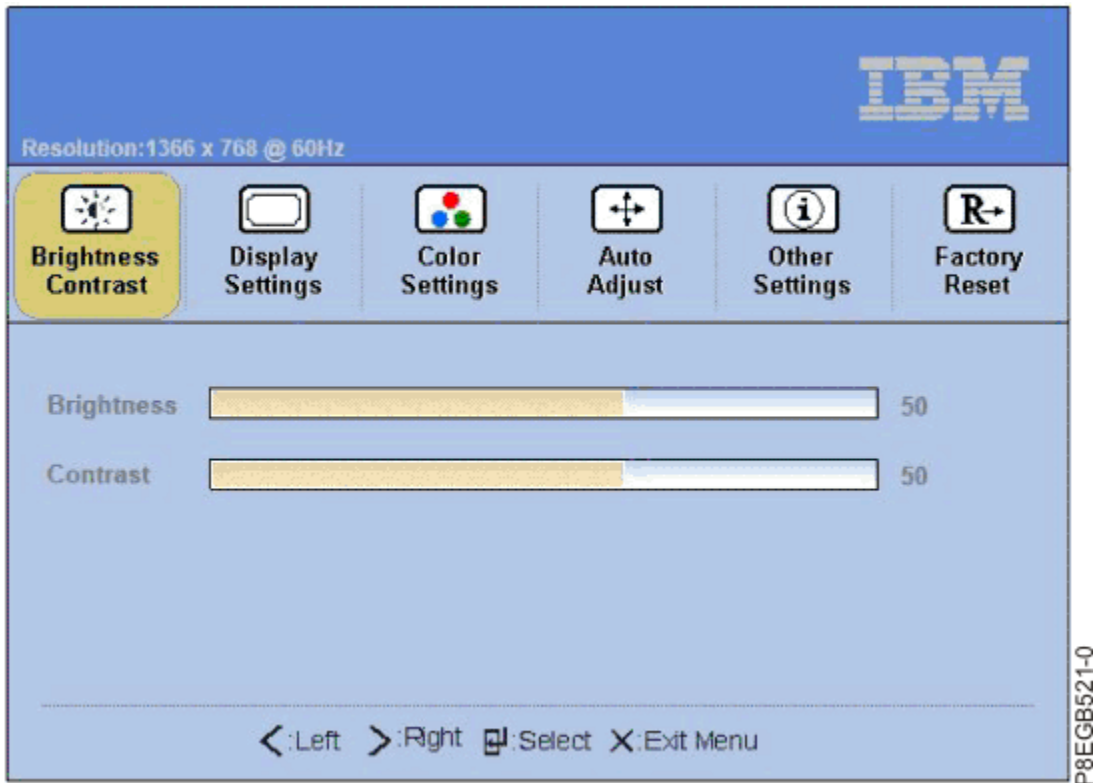
- **Brightness/Contrast:** Press this button to access the controls.
- **Left arrow and right arrow buttons:**
 - Press the right arrow button to select the function that is to be adjusted.
 - Press the left arrow or right arrow button to decrease or increase the value of the selected adjustment or to select the correct setting.
- **Exit button:** Press this button to exit the menu or return 1 level in the menu.
- **Select/Menu button:** Press this button to access, select, or confirm a menu option.

- **Power button:** Press this button to turn on and turn off the display power. This indicator shows the status of the display operation:
 - Green: Normal operation
 - Flashing green: Standby power
 - Black: Power is off

Using the display menu

Learn how to use the display menu on the TFT - LCD display.

To activate the display menu, press the Select/Menu button. The Main menu is displayed.



The menu choices are described in the following list:

- **Brightness/Contrast**
 - **Brightness** - Brightness Slider Default 50, incremental adjustment by 0 from 1 - 100
 - **Contrast** - Contrast Slider Default 50, incremental adjustment by 0 from 1 - 100
- **Display Settings**
 - **Wide Mode**
 - 1:1 - Uses exact pixel count from video controller
 - Aspect - Uses pixel ratio but scales to largest available picture
 - Fill - Default. Scales incoming image to utilize full screen
 - **Horizontal Position** - Screen picture adjustment - Default at 50 Center of the Screen, incremental adjustment by 1 pixel from 0 - 100
 - **Vertical Position** - Screen picture adjustment - Default at 50 Center of the Screen, incremental adjustment by 1 pixel from 0 - 100
 - **Sharpness** - Visual reference to light and dark - Default 50, incremental adjustment by 10 from 0 - 100
 - **Pixel Clock** - Analog input control - Default Panel Dependent

- **Phase** - Analog input control - Default Panel Dependent
- **Display Info** - Display Resolution and Refresh Rate
- **Reset Display settings** - Reset Display Settings to Factory Default - confirmation required
- **Color Settings**
 - **Standard**
 - **Warm**
 - **Cool**
 - **Custom Color** - If selected, the following RGB default values are displayed:
 - **Red** - Default 50, incremental adjustment by 1, from 0 - 100
 - **Blue** - Default 50, incremental adjustment by 1, from 0 - 100
 - **Green** - Default 50, incremental adjustment by 1, from 0 - 100
 - **Reset Color Settings** - Resets color to factory default - confirmation required
- **Auto Adjust** - Auto adjustment - confirmation required
- **Other Settings**
 - **Language**
 - **English** - Converts OSD UI into local language chosen by user (default language)
 - **Spanish** - Converts OSD UI into local language chosen by user
 - **French** - Converts OSD UI into local language chosen by user
 - **German** - Converts OSD UI into local language chosen by user
 - **Japanese** - Converts OSD UI into local language chosen by user
 - **Korean** - Converts OSD UI into local language chosen by user
 - **Simple Chinese** - Converts OSD UI into local language chosen by user
 - **Menu Timer** Sliding scale by 5 second increments, from 5 to 100 - default is 20
 - **DDC/CI** On/Off - default is On
 - **LCD Conditioning** On/Off - default is Off
 - **Reset** Reset Other settings to Factory Default - confirmation required
- **Factory Reset** - Reset all settings to default

Maintaining the TFT-LCD display

Learn how to maintain the TFT-LCD display.

Statement 8:



CAUTION: Never remove the cover on a power supply or any part that has the following label attached.



Hazardous voltage, current, and energy levels are present inside any component that has this label attached. There are no serviceable parts inside these components. If you suspect a problem with one of these parts, contact a service technician.

Before you perform any maintenance on the display, turn off the power. Observe the following guidelines when you clean the display:

- Gently wipe the device covers and the screen with a soft cloth.
- Remove finger marks and grease with a damp cloth and mild detergent; do not use solvents or abrasives.
- Never use flammable cleaning material to clean an IBM display or any other electronic device.

Technical specifications

This topic provides the detailed technical specifications of the TFT-LCD display unit.

The technical specifications for the console unit are described in the following list.

Size	18.5-inch diagonal
Display area (horizontal x vertical)	376.32 x 301.056 mm
Type	TFT active matrix
Pixel pitch (horizontal x vertical)	0.294 x 0.294 mm
Brightness	250 cd /m2 (Typ.)
Contrast ratio	1000:1 (Typ.)
Display color	16.7 M colors
Viewing Angle	Horizontal - 170° Vertical - 160°
Aspect Ratio	16:9 (Native)
Scaling	1:1, Aspect and Fill
Optimum mode	1280 x 1024 at 60 Hz
Maximum mode	1280 x 1024 at 70 Hz
Connector	VGA
	ac 100 - 240 V, 60 - 50 Hz dc 12 V/ 5.0 A
Standard usage	17 watts
Maximum	22 watts
Power supply maximum	40 Watts
Power Saving	Less than 1 Watts
Operating temperature	0°C to 50°C
Operating humidity	10% to 80%

Operating altitude maximum	3000 meters
Storage temperature	-20°C to +60°C
Storage humidity	5% to 95%
Storage altitude maximum	3000 meters

Supported resolution timing charts

This topic provides the detailed supported resolution timing charts for the TFT-LCD display unit.

The following tables are the supported resolution timing charts. Although additional resolutions might work, these are the supported signals.

Table 3. 640 x 480 timing chart				
Type	Standard			
Timing name	640 x 480 @ 60 Hz		640 x 480 @ 75 Hz	
Horizontal frequency and polarity	31.469 kHz	Negative	37.5 kHz	Negative
Vertical frequency and polarity	59.94 Hz	Negative	75 Hz	Negative
Pixel clock	25.175 MHz		31.5 MHz	
Scan type	Noninterlaced		Noninterlaced	
Horizontal				
Period	31.778 μs	800 pixels	26.667 μs	840 pixels
Display	25.422 μs	640 pixels	20.317 μs	640 pixels
Blanking	6.356 μs	160 pixels	6.349 μs	200 pixels
Sync	3.813 μs	96 pixels	2.032 μs	64 pixels
Back porch	1.907 μs	48 pixels	3.810 μs	120 pixels
Front porch	0.636 μs	16 pixels	0.508 μs	16 pixels
Vertical				
Total	16.683 ms	525 lines	13.333 ms	500 lines
Display	15.253 ms	480 lines	12.800 ms	480 lines
Blanking	1.430 ms	45 lines	0.533 ms	20 lines
Sync	0.064 ms	2 lines	0.080 ms	3 lines
Back porch	1.049 ms	33 lines	0.427 ms	16 lines
Front porch	0.318 ms	10 lines	0.027 ms	1 line

<i>Table 4. 800 x 600 timing chart</i>		
Type	Standard	
Timing name	800 x 600 @ 60 Hz	800 x 600 @ 75 Hz

Table 4. 800 x 600 timing chart (continued)				
Type	Standard			
Horizontal frequency and polarity	37.879 kHz	Positive	46.875 kHz	Positive
Vertical frequency and polarity	60.317 Hz	Positive	75 Hz	Positive
Pixel clock	40 MHz		49.5 MHz	
Scan type	Noninterlaced		Noninterlaced	
Horizontal				
Period	26.400 μs	1056 pixels	21.333 μs	1056 pixels
Display	20.000 μs	800 pixels	16.162 μs	800 pixels
Blanking	6.400 μs	256 pixels	5.172 μs	256 pixels
Sync	3.200 μs	128 pixels	1.616 μs	80 pixels
Back porch	2.200 μs	88 pixels	3.232 μs	160 pixels
Front porch	1.000 μs	40 pixels	0.323 μs	16 pixels
Vertical				
Total	16.579 ms	628 lines	13.333 ms	625 lines
Display	15.840 ms	600 lines	12.800 ms	600 lines
Blanking	0.739 ms	28 lines	0.533 ms	25 lines
Sync	0.106 ms	4 lines	0.064 ms	3 lines
Back porch	0.607 ms	23 lines	0.448 ms	21 lines
Front porch	0.026 ms	1 line	0.021 ms	1 line

Table 5. 1024 x 768 timing chart				
Type	Standard			
Timing name	800 x 600 @ 60 Hz		800 x 600 @ 75 Hz	
Horizontal frequency and polarity	48.363 kHz	Negative	60.023 kHz	Negative
Vertical frequency and polarity	60.004 Hz	Negative	75.029 Hz	Negative
Pixel clock	65 MHz		78.75 MHz	
Scan type	Noninterlaced		Noninterlaced	
Horizontal				
Period	20.677 μs	1344 pixels	16.660 μs	1312 pixels
Display	15.754 μs	1024 pixels	13.003 μs	1024 pixels
Blanking	4.923 μs	320 pixels	3.657 μs	288 pixels
Sync	2.092 μs	136 pixels	1.219 μs	96 pixels

Table 5. 1024 x 768 timing chart (continued)

Type	Standard			
Back porch	2.462 μ s	160 pixels	2.235 μ s	176 pixels
Front porch	0.369 μ s	24 pixels	0.203 μ s	16 pixels
Vertical				
Total	16.666 ms	806 lines	13.328 ms	800 lines
Display	15.880 ms	768 lines	12.795 ms	768 lines
Blanking	0.786 ms	38 lines	0.533 ms	32 lines
Sync	0.124 ms	6 lines	0.050 ms	3 lines
Back porch	0.600 ms	29 lines	0.466 ms	28 lines
Front porch	0.062 ms	3 lines	0.017 ms	1 line

Table 6. 1152 x 864 timing chart

Type	Standard			
Timing name	1152 x 864 @ 60 Hz		1152 x 864 @ 75 Hz	
Horizontal frequency and polarity	54.348 kHz	Positive	67.5 kHz	Positive
Vertical frequency and polarity	60.053 Hz	Positive	75 Hz	Positive
Pixel clock	80 MHz		108 MHz	
Scan type	Noninterlaced		Noninterlaced	
Horizontal				
Period	18.400 μs	1472 pixels	14.815 μs	1600 pixels
Display	14.400 μs	1152 pixels	10.667 μs	1152 pixels
Blanking	4.000 μs	320 pixels	4.148 μs	448 pixels
Sync	1.200 μs	96 pixels	1.185 μs	128 pixels
Back porch	2.400 μs	192 pixels	2.370 μs	256 pixels
Front porch	0.400 μs	32 pixels	0.593 μs	64 pixels
Vertical				
Total	16.652 ms	905 lines	13.333 ms	900 lines
Display	15.898 ms	864 lines	12.800 ms	864 lines
Blanking	0.754 ms	41 lines	0.533 ms	36 lines
Sync	0.055 ms	3 lines	0.044 ms	3 lines
Back porch	0.681 ms	37 lines	0.474 ms	32 lines
Front porch	0.018 ms	1 line	0.015 ms	1 line

Table 7. 1366 x 768 timing chart				
Type	Standard			
Timing name	1366 x 768 @ 60 Hz		1366 x 768 @ 75 Hz	
Horizontal frequency and polarity	47.712 kHz	Positive	60.15 kHz	Positive
Vertical frequency and polarity	60.053 Hz	Positive	75 Hz	Positive
Pixel clock	85.5 MHz		110.195 MHz	
Scan type	Noninterlaced		Noninterlaced	
Horizontal				
Period	20.959 μs	1792 pixels	16.625 μs	1832 pixels
Display	15.976 μs	1366 pixels	12.396 μs	1366 pixels
Blanking	4.983 μs	426 pixels	4.231 μs	466 pixels
Sync	1.310 μs	112 pixels	1.307 μs	144 pixels
Back porch	2.929 μs	250 pixels	2.120 μs	234 pixels
Front porch	0.749 μs	64 pixels	0.799 μs	88 pixels
Vertical				
Total	16.662 ms	795 lines	13.333 ms	802 lines
Display	16.097 ms	768 lines	12.768 ms	768 lines
Blanking	0.566 ms	27 lines	0.565 ms	34 lines
Sync	0.126 ms	6 lines	0.049 ms	3 lines
Back porch	0.377 ms	18 lines	0.498 ms	30 lines
Front porch	0.063 ms	3 lines	0.015 ms	1 line

Table 8. 1280 x 800 timing chart				
Type	Standard			
Timing name	1280 x 800 @ 60 Hz		1280 x 800 @ 75 Hz	
Horizontal frequency and polarity	49.702 kHz	Negative	62.795 kHz	Negative
Vertical frequency and polarity	59.81 Hz	Positive	74.934 Hz	Positive
Pixel clock	83.5 MHz		106.5 MHz	
Scan type	Noninterlaced		Noninterlaced	
Horizontal				
Period	20.120 μs	1680 pixels	15.925 μs	1696 pixels
Display	15.329 μs	1280 pixels	12.019 μs	1280 pixels
Blanking	4.790 μs	400 pixels	3.906 μs	416 pixels

Table 8. 1280 x 800 timing chart (continued)				
Type	Standard			
Sync	1.533 μ s	128 pixels	1.202 μ s	128 pixels
Back porch	2.395 μ s	200 pixels	1.935 μ s	206 pixels
Front porch	0.862 μ s	72 pixels	0.751 μ s	80 pixels
Vertical				
Total	16.720 ms	831 lines	13.345 ms	838 lines
Display	16.096 ms	800 lines	12.740 ms	800 lines
Blanking	0.624 ms	31 lines	0.605 ms	38 lines
Sync	0.121 ms	6 lines	0.096 ms	6 lines
Back porch	0.443 ms	22 lines	0.462 ms	29 lines
Front porch	0.060 ms	3 lines	0.048 ms	3 lines

Table 9. 1280 x 1024 timing chart				
Type	Standard			
Timing name	1280 x 1024 @ 60 Hz		1280 x 1024 @ 75 Hz	
Horizontal frequency and polarity	63.981 kHz	Positive	79.976 kHz	Positive
Vertical frequency and polarity	60.02 Hz	Positive	75.025 Hz	Positive
Pixel clock	108 MHz		135 MHz	
Scan type	Noninterlaced		Noninterlaced	
Horizontal				
Period	15.630 μs	1688 pixels	12.504 μs	1688 pixels
Display	11.852 μs	1280 pixels	9.481 μs	1280 pixels
Blanking	3.778 μs	408 pixels	3.022 μs	408 pixels
Sync	1.037 μs	112 pixels	1.067 μs	144 pixels
Back porch	2.296 μs	248 pixels	1.837 μs	248 pixels
Front porch	0.444 μs	48 pixels	0.119 μs	16 pixels
Vertical				
Total	16.661 ms	1066 lines	13.329 ms	1066 lines
Display	16.005 ms	1024 lines	12.804 ms	1024 lines
Blanking	0.656 ms	42 lines	0.525 ms	42 lines
Sync	0.047 ms	3 lines	0.038 ms	3 lines
Back porch	0.594 ms	38 lines	0.475 ms	38 lines
Front porch	0.016 ms	1 line	0.013 ms	1 line

Table 10. 1440 x 900 timing chart				
Type	Standard			
Timing name	1440 x 900 @ 60 Hz		1440 x 900 @ 75 Hz	
Horizontal frequency and polarity	55.935 kHz	Negative	70.635 kHz	Negative
Vertical frequency and polarity	59.887 Hz	Positive	74.984 Hz	Positive
Pixel clock	106.5 MHz		136.75 MHz	
Scan type	Noninterlaced		Noninterlaced	
Horizontal				
Period	17.878 μs	1904 pixels	14.157 μs	1936 pixels
Display	13.521 μs	1440 pixels	10.530 μs	1440 pixels
Blanking	4.357 μs	464 pixels	3.627 μs	496 pixels
Sync	1.427 μs	152 pixels	1.112 μs	152 pixels
Back porch	2.178 μs	232 pixels	1.814 μs	248 pixels
Front porch	0.751 μs	80 pixels	0.702 μs	96 pixels
Vertical				
Total	16.698 ms	934 lines	13.336 ms	942 lines
Display	16.090 ms	900 lines	12.741 ms	900 lines
Blanking	0.608 ms	34 lines	0.595 ms	42 lines
Sync	0.107 ms	6 lines	0.085 ms	6 lines
Back porch	0.447 ms	25 lines	0.467 ms	33 lines
Front porch	0.054 ms	3 lines	0.042 ms	3 lines

Table 11. 1600 x 1200 timing chart				
Type	Standard			
Timing name	1600 x 1200 @ 60 Hz		1600 x 1200 @ 75 Hz	
Horizontal frequency and polarity	75 kHz	Positive	65.29 kHz	Negative
Vertical frequency and polarity	60 Hz	Positive	59.954 Hz	Positive
Pixel clock	162 MHz		146.25 MHz	
Scan type	Noninterlaced		Noninterlaced	
Horizontal				
Period	13.333 μs	2160 pixels	15.316 μs	2240 pixels
Display	9.877 μs	1600 pixels	11.487 μs	1680 pixels
Blanking	3.457 μs	560 pixels	3.829 μs	560 pixels

Table 11. 1600 x 1200 timing chart (continued)

Type	Standard			
Sync	1.185 μ s	192 pixels	1.203 μ s	176 pixels
Back porch	1.877 μ s	304 pixels	1.915 μ s	280 pixels
Front porch	0.395 μ s	64 pixels	0.711 μ s	104 pixels
Vertical				
Total	16.667 ms	1250 lines	16.679 ms	1084 lines
Display	16.000 ms	1200 lines	16.082 ms	1050 lines
Blanking	0.667 ms	50 lines	0.597 ms	39 lines
Sync	0.040 ms	3 lines	0.092 ms	6 lines
Back porch	0.613 ms	46 lines	0.459 ms	30 lines
Front porch	0.013 ms	1 line	0.046 ms	3 lines

Hardware maintenance information

This topic collection provides the information about the IBM Customer-replaceable units (CRUs) for the console unit and instructions for the replacement parts.

Replaceable components

This topic provides the information about the replaceable components of the 7316-TF4 and 7316-TF5 18.5-Inch Flat Panel Rack-Mounted Monitor and Keyboard console.

Field replaceable units (FRUs) must be replaced only by a trained service technician, unless they are classified as customer replaceable units (CRUs).

Tier 1 CRU: Replacement of Tier 1 CRUs is your responsibility. If IBM installs a Tier 1 CRU at your request without a service contract, you will be charged for the installation.

Tier 2 CRU: You may install a Tier 2 CRU yourself or request IBM to install it, at no additional charge, under the type of warranty service that is designated for your product.

For more information about the terms of the warranty and getting service and assistance, see the *Warranty Information* document that comes with the optional device.

IBM CRU part numbers are subject to change without notice. This section contains a listing of the CRU part numbers that are available as of the date of this document was written.

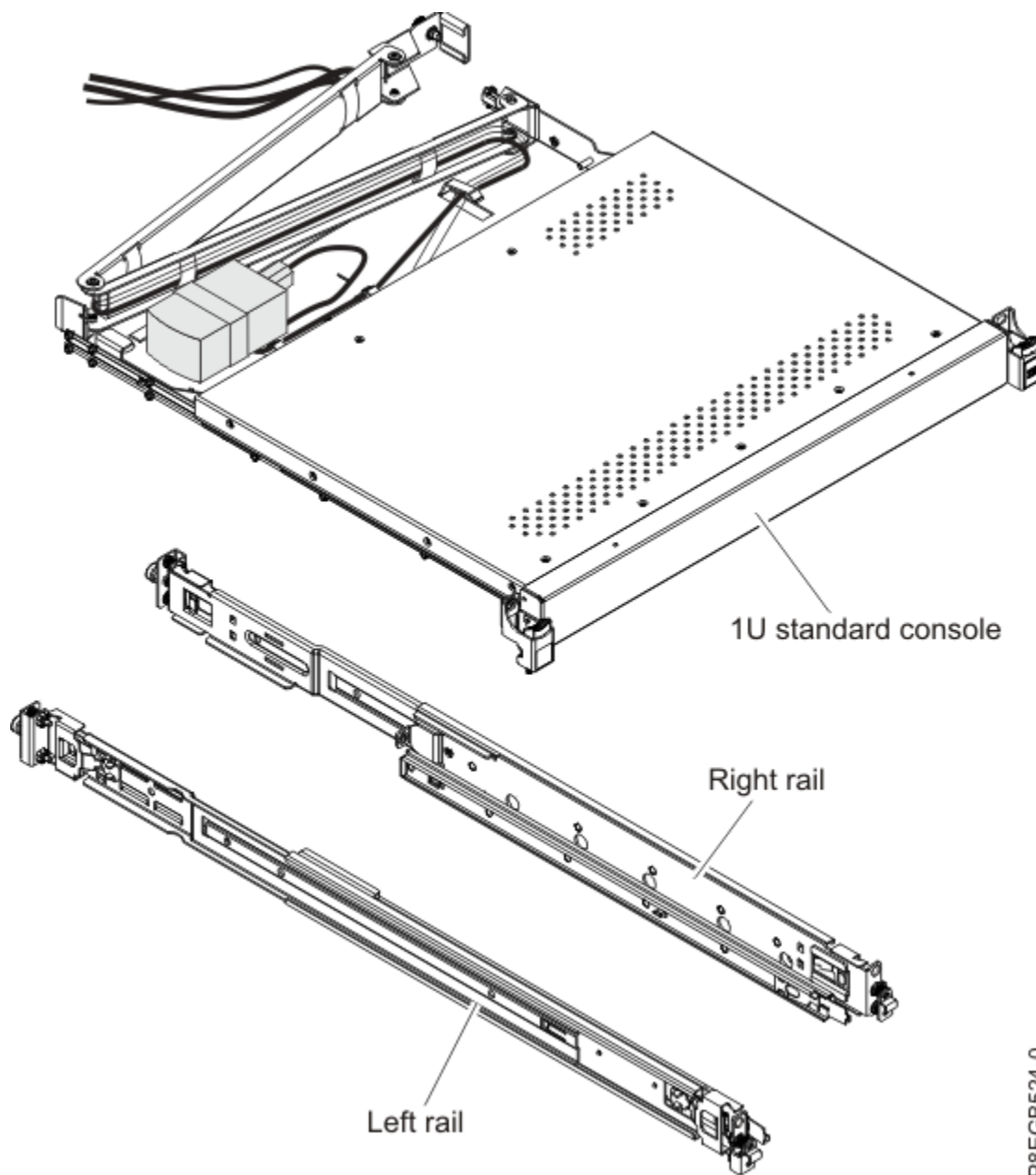


Table 12. Field replaceable units for the IBM 1U 18.5-inch Standard Console

Description	CRU part number (Tier 1)
IBM 1U 18.5-inch Standard Console, without keyboard	47C2521
Standard slide-rail kit (inner and outer rails)	44X3116
Cable-management arm	44X3114
Miscellaneous parts kit (includes shipping screws, console switch mounting brackets and mounting screws)	44X3120
Power cord that connects the power supply to a power distribution unit (PDU)	39M5377

You need the following tools to replace customer replaceable units:

- One #1 Phillips screwdriver (to install or remove the inner slide-rails)
- One #2 Phillips screwdriver (to replace the cable-management arm)

Power cords

This topic provides the information about the power cords and the part number of the power cords for different countries across the world.

For your safety, IBM provides a power cord with a grounded attachment plug to use with this IBM product. To avoid electrical shock, always use the power cord and plug with a properly grounded outlet.

IBM power cords used in the United States and Canada are listed by Underwriter's Laboratories (UL) and certified by the Canadian Standards Association (CSA).

For units intended to be operated at 115 volts: Use a UL-listed and CSA-certified cord set consisting of a minimum 18 AWG, Type SVT or SJT, three-conductor cord, a maximum of 15 feet in length and a parallel blade, grounding-type attachment plug rated 15 amperes, 125 volts.

For units intended to be operated at 230 volts (U.S. use): Use a UL-listed and CSA-certified cord set consisting of a minimum 18 AWG, Type SVT or SJT, three-conductor cord, a maximum of 15 feet in length and a tandem blade, grounding-type attachment plug rated 15 amperes, 250 volts.

For units intended to be operated at 230 volts (outside the U.S.): Use a cord set with a grounding-type attachment plug. The cord set should have the appropriate safety approvals for the country in which the equipment will be installed.

IBM power cords for a specific country or region are usually available only in that country or region.

<i>Table 13. Power cord part numbers and associated regions</i>	
IBM power cord part number	Used in these countries and regions
39M5206	China
39M5102	Australia, Fiji, Kiribati, Nauru, New Zealand, Papua New Guinea

Table 13. Power cord part numbers and associated regions (continued)

IBM power cord part number	Used in these countries and regions
39M5123	Afghanistan, Albania, Algeria, Andorra, Angola, Armenia, Austria, Azerbaijan, Belarus, Belgium, Benin, Bosnia and Herzegovina, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Congo (Democratic Republic of), Congo (Republic of), Cote D'Ivoire (Ivory Coast), Croatia (Republic of), Czech Republic, Dahomey, Djibouti, Egypt, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Finland, France, French Guyana, French Polynesia, Germany, Greece, Guadeloupe, Guinea, Guinea Bissau, Hungary, Iceland, Indonesia, Iran, Kazakhstan, Kyrgyzstan, Laos (People's Democratic Republic of), Latvia, Lebanon, Lithuania, Luxembourg, Macedonia (former Yugoslav Republic of), Madagascar, Mali, Martinique, Mauritania, Mauritius, Mayotte, Moldova (Republic of), Monaco, Mongolia, Morocco, Mozambique, Netherlands, New Caledonia, Niger, Norway, Poland, Portugal, Reunion, Romania, Russian Federation, Rwanda, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, Slovakia, Slovenia (Republic of), Somalia, Spain, Suriname, Sweden, Syrian Arab Republic, Tajikistan, Tahiti, Togo, Tunisia, Turkey, Turkmenistan, Ukraine, Upper Volta, Uzbekistan, Vanuatu, Vietnam, Wallis and Futuna, Yugoslavia (Federal Republic of), Zaire
39M5130	Denmark
39M5144	Bangladesh, Lesotho, Macao, Maldives, Namibia, Nepal, Pakistan, Samoa, South Africa, Sri Lanka, Swaziland, Uganda
39M5151	Abu Dhabi, Bahrain, Botswana, Brunei Darussalam, Channel Islands, China (Hong Kong S.A.R.), Cyprus, Dominica, Gambia, Ghana, Grenada, Iraq, Ireland, Jordan, Kenya, Kuwait, Liberia, Malawi, Malaysia, Malta, Myanmar (Burma), Nigeria, Oman, Polynesia, Qatar, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Seychelles, Sierra Leone, Singapore, Sudan, Tanzania (United Republic of), Trinidad and Tobago, United Arab Emirates (Dubai), United Kingdom, Yemen, Zambia, Zimbabwe
39M5158	Liechtenstein, Switzerland
39M5165	Chile, Italy, Libyan Arab Jamahiriya
39M5172	Israel

Table 13. Power cord part numbers and associated regions (continued)

IBM power cord part number	Used in these countries and regions
39M5095	220 - 240 V Antigua and Barbuda, Aruba, Bahamas, Barbados, Belize, Bermuda, Bolivia, Brazil, Caicos Islands, Canada, Cayman Islands, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guam, Guatemala, Haiti, Honduras, Jamaica, Japan, Mexico, Micronesia (Federal States of), Netherlands Antilles, Nicaragua, Panama, Peru, Philippines, Taiwan, United States of America, Venezuela
39M5081	110 - 120 V Antigua and Barbuda, Aruba, Bahamas, Barbados, Belize, Bermuda, Bolivia, Caicos Islands, Canada, Cayman Islands, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guam, Guatemala, Haiti, Honduras, Jamaica, Mexico, Micronesia (Federal States of), Netherlands Antilles, Nicaragua, Panama, Peru, Philippines, Saudi Arabia, Thailand, Taiwan, United States of America, Venezuela
39M5219	Korea (Democratic People's Republic of), Korea (Republic of)
39M5199	Japan
39M5068	Argentina, Paraguay, Uruguay
39M5226	India
39M5233	Brazil

Replacing the keyboard

Learn how to replace the keyboard from the console unit.

Before you replace the keyboard, remove any devices that are directly above the console unit so that you have access to disconnect the cables. See the documentation that comes with the device for removal instructions.

You can also remove the console unit from the rack for easier cable access. See the instructions in [Removing the console unit from the rack](#); then, return to step 5 in this procedure.

To replace a keyboard in the console unit, complete the following steps:

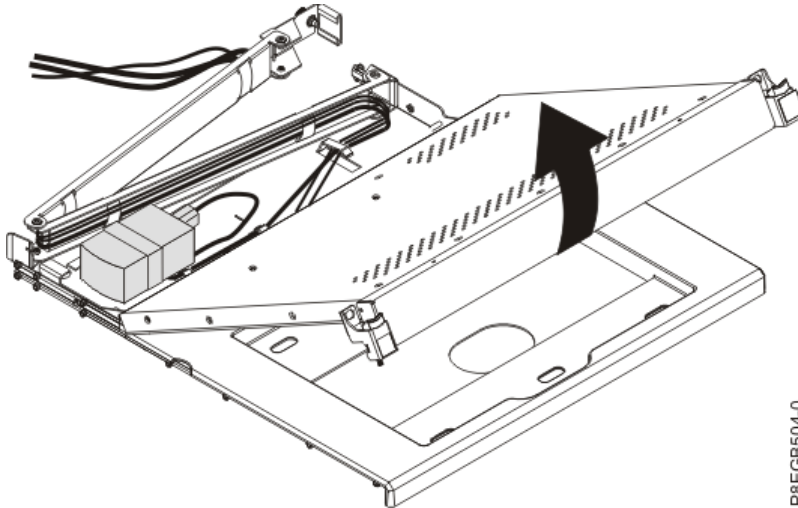
1. Close the flat-panel display.
2. Disconnect the keyboard-and-mouse cable from the server or console switch.
3. Carefully unfasten the hook-and-loop fastener strips from the cable-management arm and remove the keyboard-and-mouse cable.

L012



CAUTION: Pinch hazard. (L012)

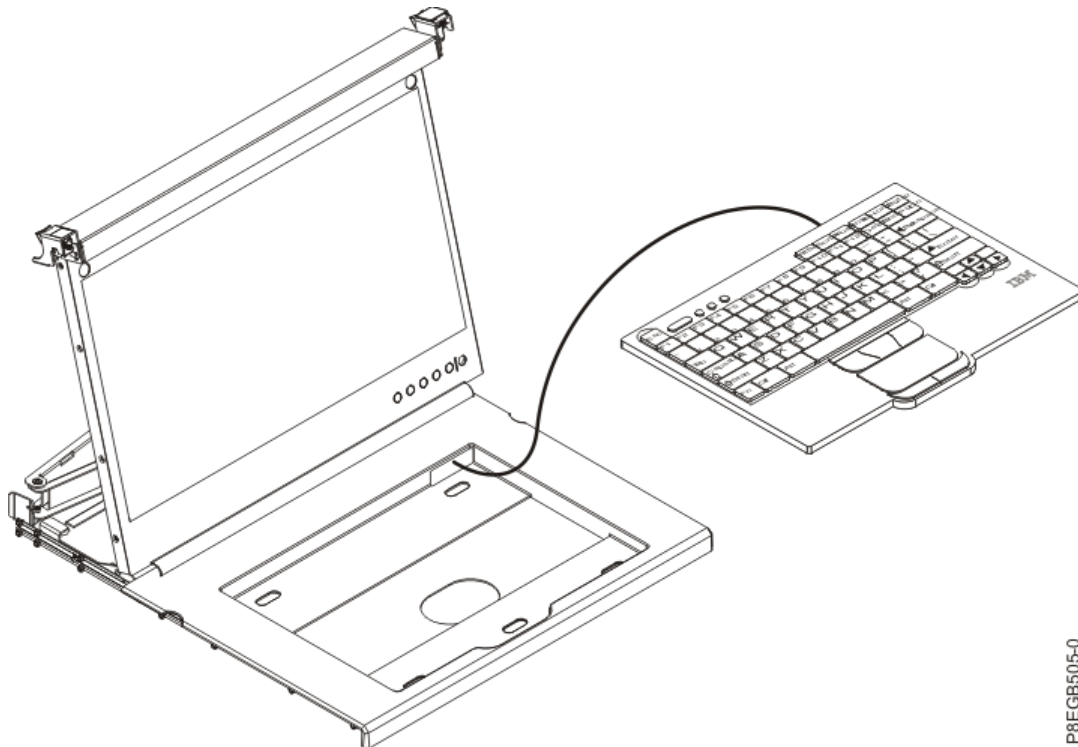
4. Fully extend the console unit out of the rack.
5. Lift the front of the flat-panel display and raise the display to the full upright position.



6. Remove the old keyboard from the console unit.
7. Unpack the replacement keyboard.

Note: Do not extend the keyboard feet. The flat-panel display screen might be damaged if the feet is extended when the display is closed.

8. Hold the new keyboard near the keyboard tray and carefully route the keyboard-and-mouse cable down through the keyboard tray cutout and up through the cutout that is behind the flat-panel display. (See the illustration.) Carefully pull the cable through the cutouts.



9. Place the keyboard in the tray and exert a small amount of pressure on the keyboard to secure it to the double-sided tape on the front of the console tray.
 10. Close the flat-panel display.
 11. If you removed the console unit from the rack, go to [“Installing the console unit in the rack”](#) to complete the procedure.
- Note:** When you route the keyboard-and-mouse cable, make sure that the cable does not hang below the underside of the keyboard where it might be damaged if it interferes with the devices in the rack space below the console unit.
12. Route the keyboard-and-mouse cable along the cable-management arm, securing the cable with the hook-and-loop fastener strips.
 13. Reconnect the keyboard-and-mouse cable.

Replacing the cable-management arm

Learn how to replace the cable-management arm from the console unit.

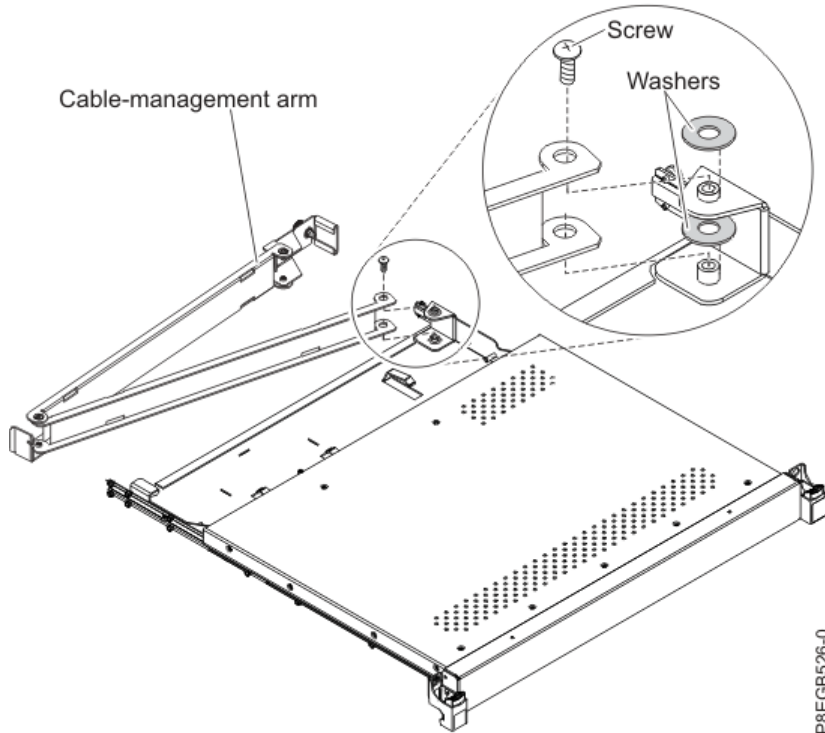
Before you replace the cable-management arm, remove any devices that are directly above and below the console unit so that you can disconnect the cables and detach the cable-management arm. See the documentation that comes with the device for removal instructions.

You can also remove the console unit from the rack for easier access. See the instructions in [Removing the console unit from the rack](#); then, return to step 5 in this procedure.

To replace the cable-management arm, complete the following steps:

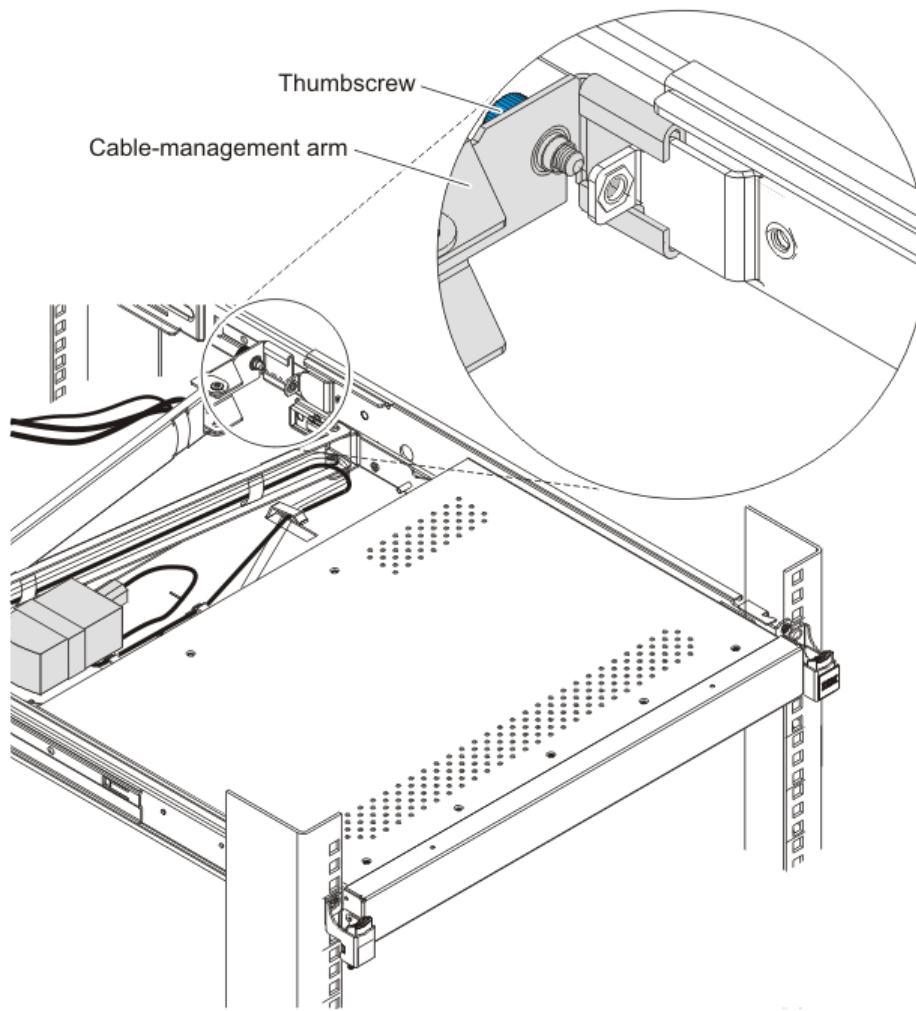
1. If a console switch is installed behind the console unit, remove the console switch from the rack.
2. Turn off the display and disconnect the power cord from the short jumper cord on the cable-management arm from the electrical outlet or power distribution unit (PDU). Disconnect from the server or console switch any cables that are connected to the console unit (keyboard-and-mouse, video, and power cables).
3. Close the flat-panel display.
4. Temporarily remove all cables from the cable-management arm.

5. Remove the screw that attaches the front cable-management arm bracket to the console unit and then, remove the cable-management arm.



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6. Unpack the replacement cable-management arm.
7. Remove the two washers on the cable-management arm bracket and replace them with the new washers that come with the replacement cable-management arm.
8. Align the screw holes in the new cable-management arm with the bracket and secure it with the screw that you removed in step 5.
9. If you removed the console unit from the rack, go to [Installing the console unit in the rack](#) to complete the procedure.
10. Route the cables that you removed in step 2 along the new cable-management arm and secure them along the way with the hook-and-loop fastener strips.
11. Align the C-channel on the end of the cable-management arm with the bracket on the console unit. Slide the C-channel onto the bracket until the cable-management arm thumbscrew aligns with the hole in the bracket. Tighten the thumbscrew.



12. If you removed a console switch from behind the console unit, reinstall it now.
13. Reconnect to the server or console switch all cables that you removed in step 2.
14. Connect power to the display.

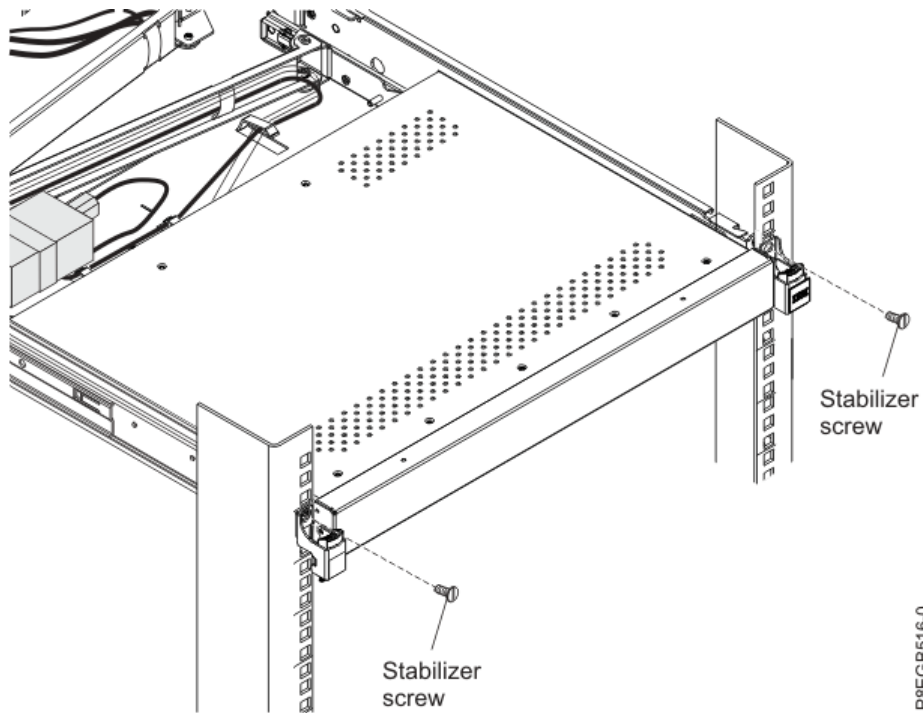
Replacing the slide-rail assemblies

Learn how to replace the slide-rail assemblies.

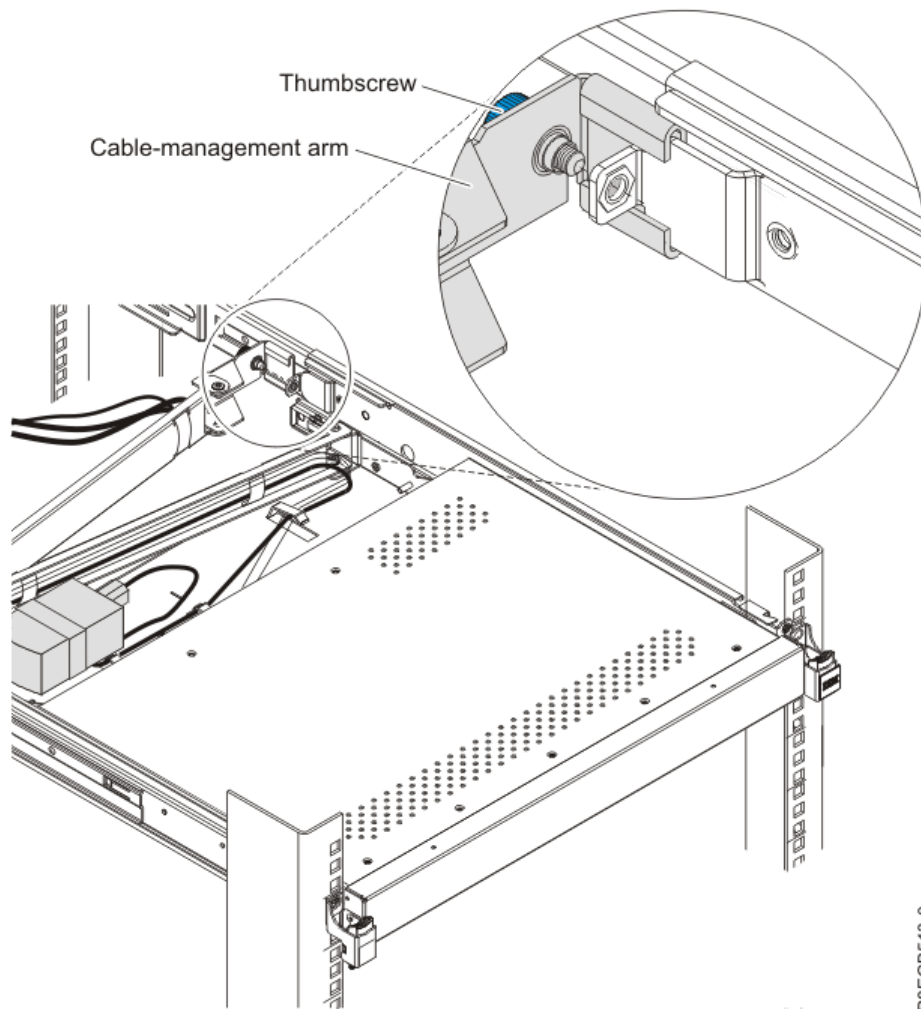
Note: To make sure that the slide-rail assemblies fit correctly, replace both the outer and inner slide-rails at the same time.

To replace the outer and inner slide-rails for the console unit, complete the following steps:

1. If a console switch is installed behind the console unit, remove the console switch from the rack.
2. Turn off the display and disconnect the power cord from the short jumper cord on the cable-management arm from the electrical outlet or power distribution unit (PDU). Disconnect from the server or console switch any cables that are connected to the console unit (keyboard-and-mouse, video, and power cables).
3. Close the flat-panel display.
4. If you installed the optional flat-head stabilizer screws in the top hole on the front of each slide-rail, remove them and set them aside.



5. Remove the console unit from the rack:
 - a. Remove the thumbscrew that attaches the cable-management arm to the outer slide-rail bracket. Slide the C-channel on the cable-management arm completely away from the bracket on the console unit.

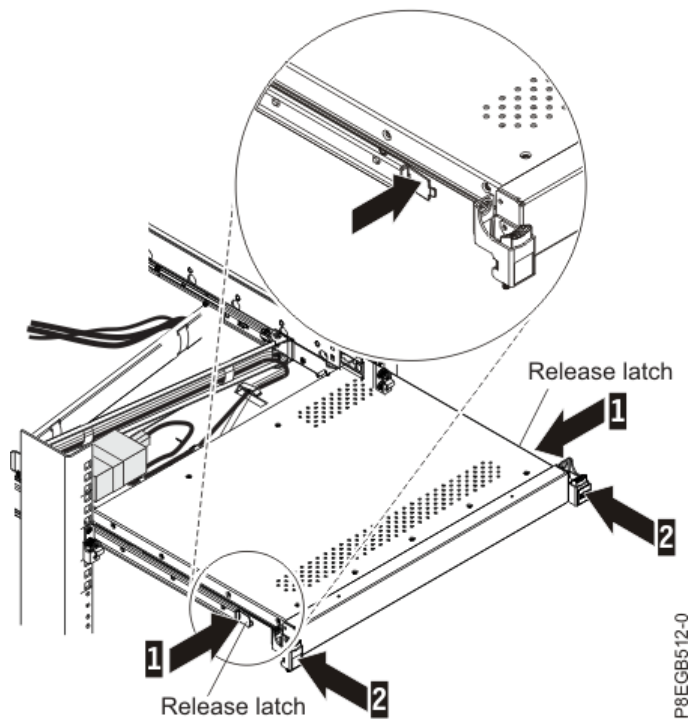


L012

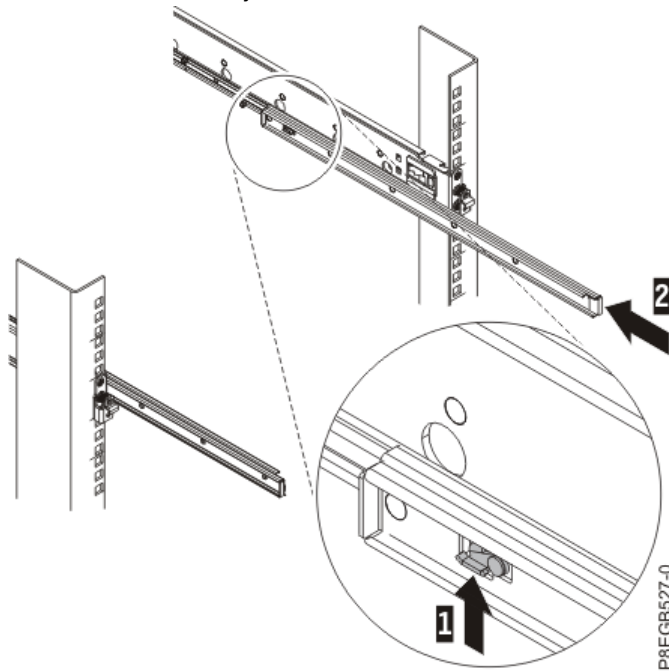


CAUTION: Pinch hazard. (L012)

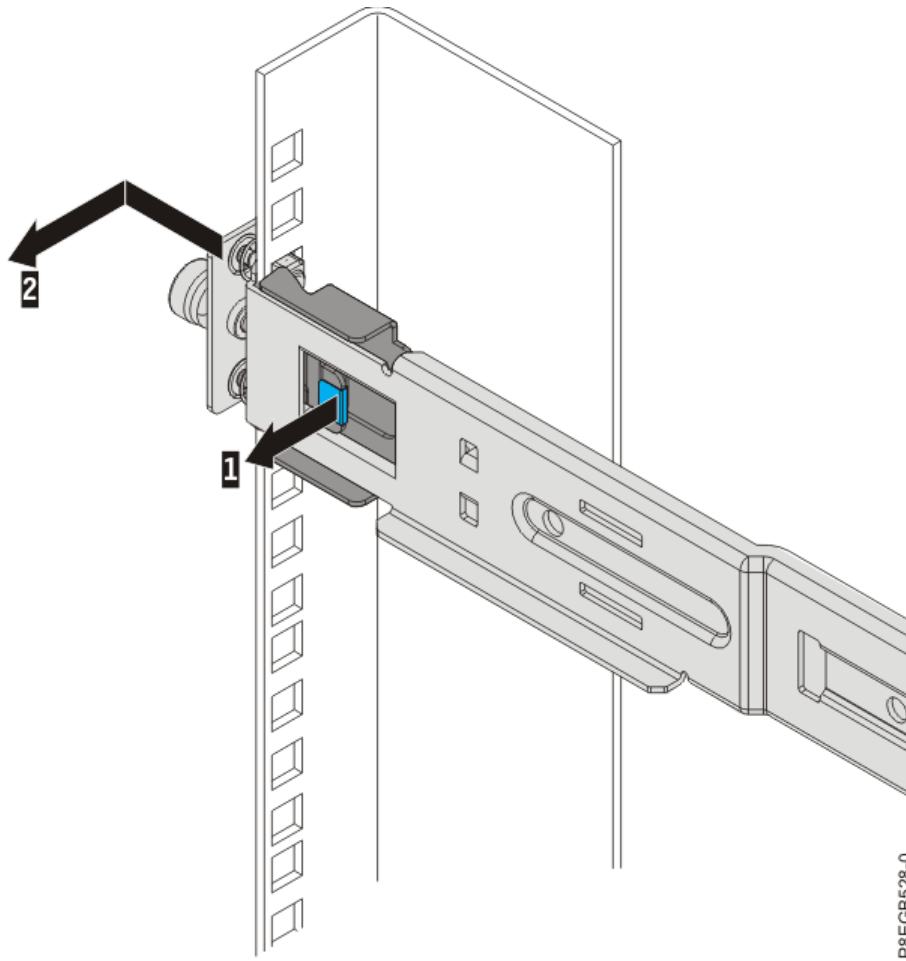
- b. Fully extend the console unit out of the rack.
- c. Press in both release latches 1.



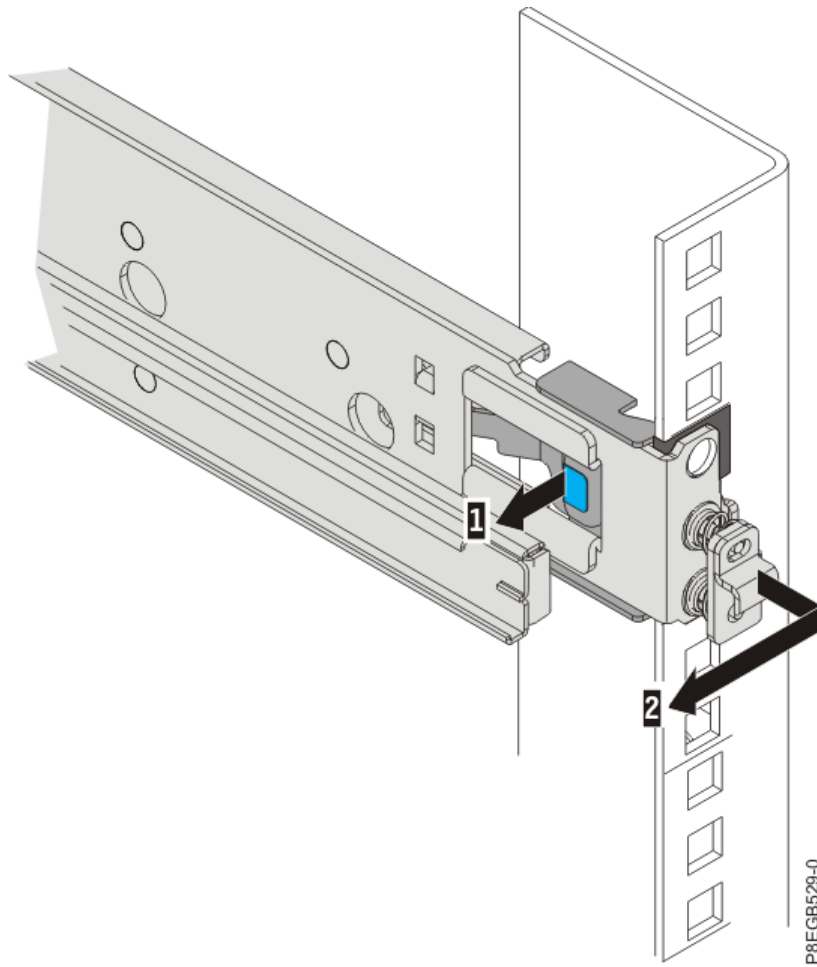
- d. Grasp both sides of the console unit and pull it completely out of the rack 2.
- e. Place the console unit on a table or other flat surface.
6. To close the extended rails, press up on the release latch 1 and push the extended rail towards the rack so that it is fully closed 2.



7. Remove the rear bracket of the outer slide-rail from the rack by pulling the blue tab out 1 while you move the end of the slide-rail away from the rack flange and toward the center of the rack 2.

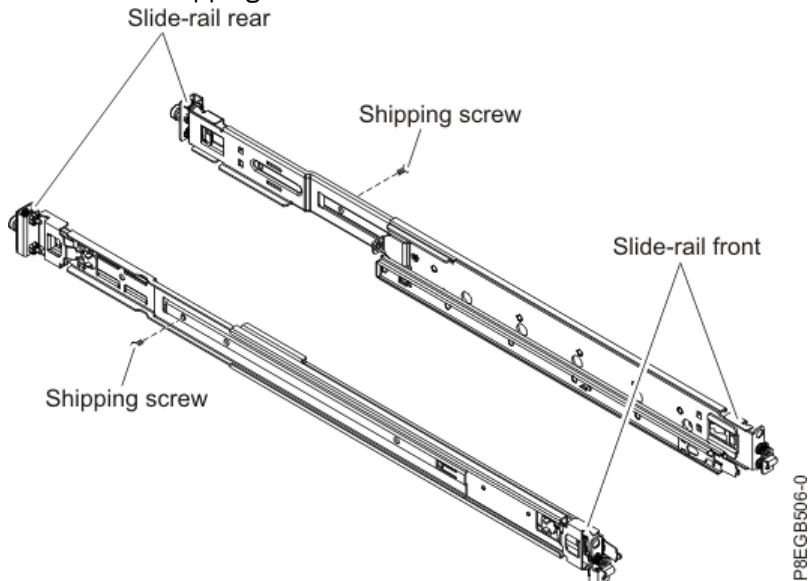


8. Remove the front bracket of the outer slide-rail from the rack by pulling the blue tab out 1 while you pull the end of the slide-rail away from the rack flange and toward the center of the rack 2.



Repeat step “7” on page 40 and step “8” on page 41 for the other outer slide-rail.

9. Remove the shipping screw from each new outer slide-rail.

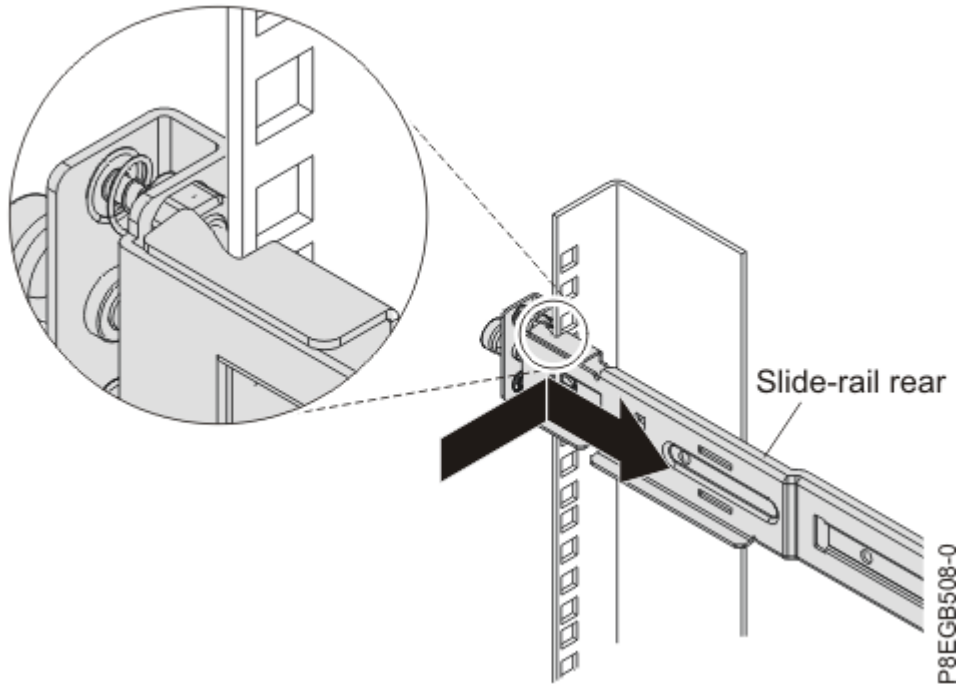


10. To attach the outer slide-rail to the rack, complete the following steps.

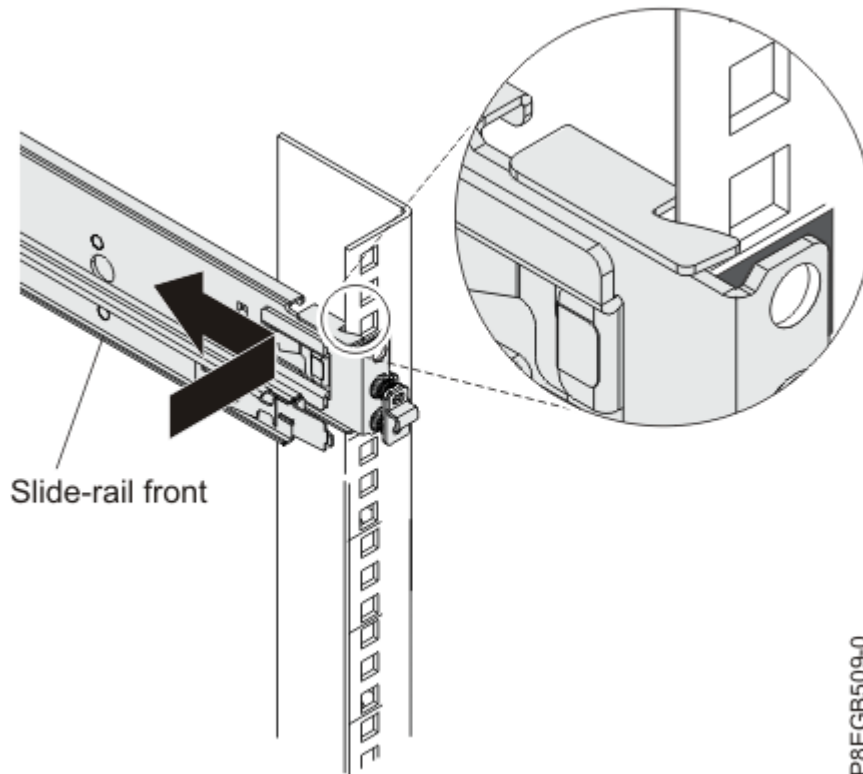
Note: Install the rear slide-rail bracket to the rear of the rack first; then, install the front slide-rail bracket to the front of the rack.

- a. Holding the slide-rail horizontally, align the rear slide-rail bracket so that the bracket is on the outside of the rack mounting flanges.

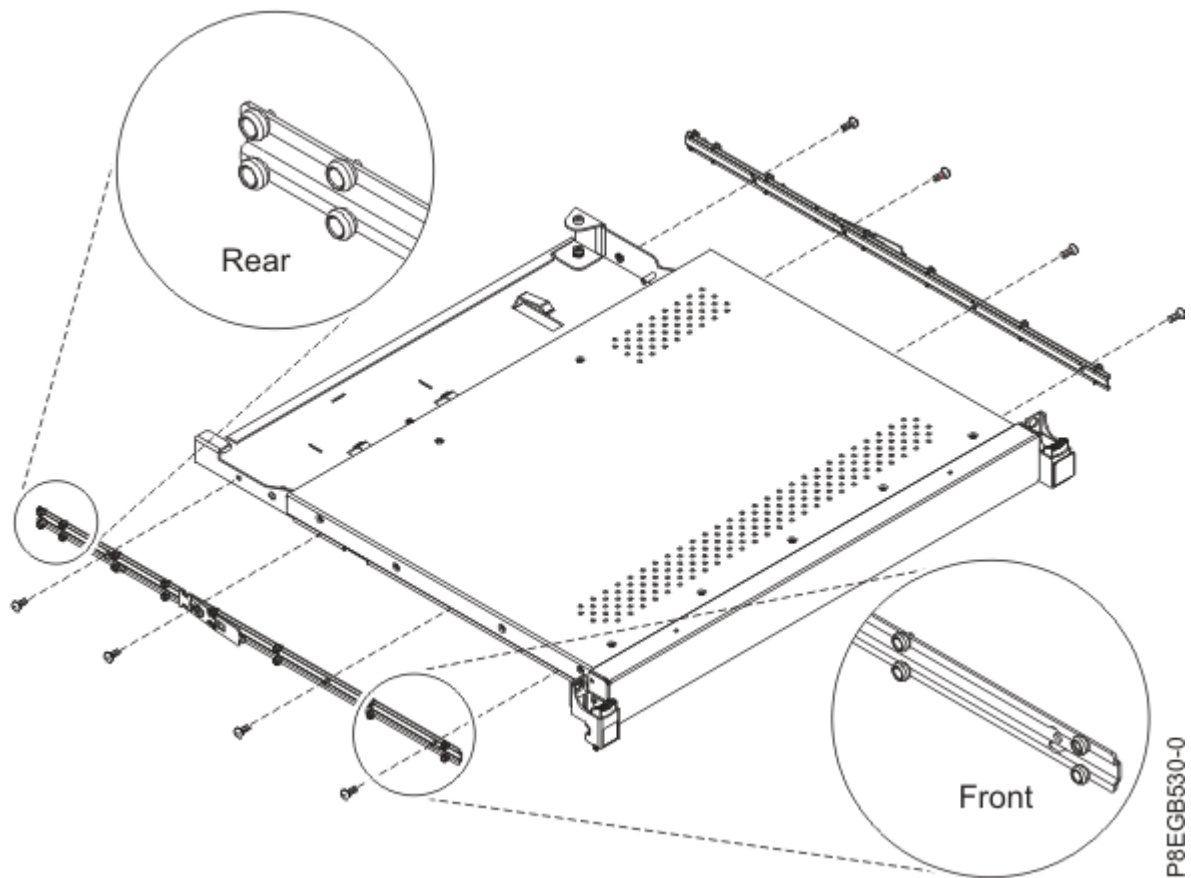
- b. Press the rear slide-rail bracket toward the rack flange and then pull it towards the front of the rack until the locking bracket clicks into place behind the rack flange.



- c. Extend the slide-rail and press the front slide-rail bracket toward the rack flange and then push it towards the rear of the rack until the locking bracket clicks into place behind the rack flange.



- d. Repeat steps “10.a” on page 42 to “10.c” on page 43 to attach the other outer slide-rail.
11. Use a #1 Phillips screwdriver to remove the four screws that attach each inner slide-rail to the console unit. Then, attach the corresponding new inner slide-rails to the unit, using the same hardware. Make sure that you orient the inner slide rails correctly (see the illustration).



12. Go to [Installing the console unit in the rack](#) for instructions for reinstalling the console unit in the rack, and then install any other devices that you removed from the rack.

Replacing the console unit

This topic collection provides the information on how to replace the console unit.

The procedures that are provided in this section to replace the console unit in the rack consist of the following tasks:

1. Removing the existing console unit from the rack
2. Moving the keyboard from the existing console unit to the replacement console unit
3. Removing and replacing the outer slide-rails

Note: The replacement console unit comes with inner slide-rails attached. To make sure that the slide-rail assemblies fit correctly, replace the existing outer slide-rails with the new rails that come with the replacement console unit.

4. Installing the replacement console unit in the rack.

Removing the rack doors and side panels might make removal of the existing console unit and installation of the replacement easier. See the documentation that comes with the rack for additional information.

Removing the console unit from the rack

Learn how to remove the console unit from the rack.

To remove the console unit from the rack, complete the following steps:

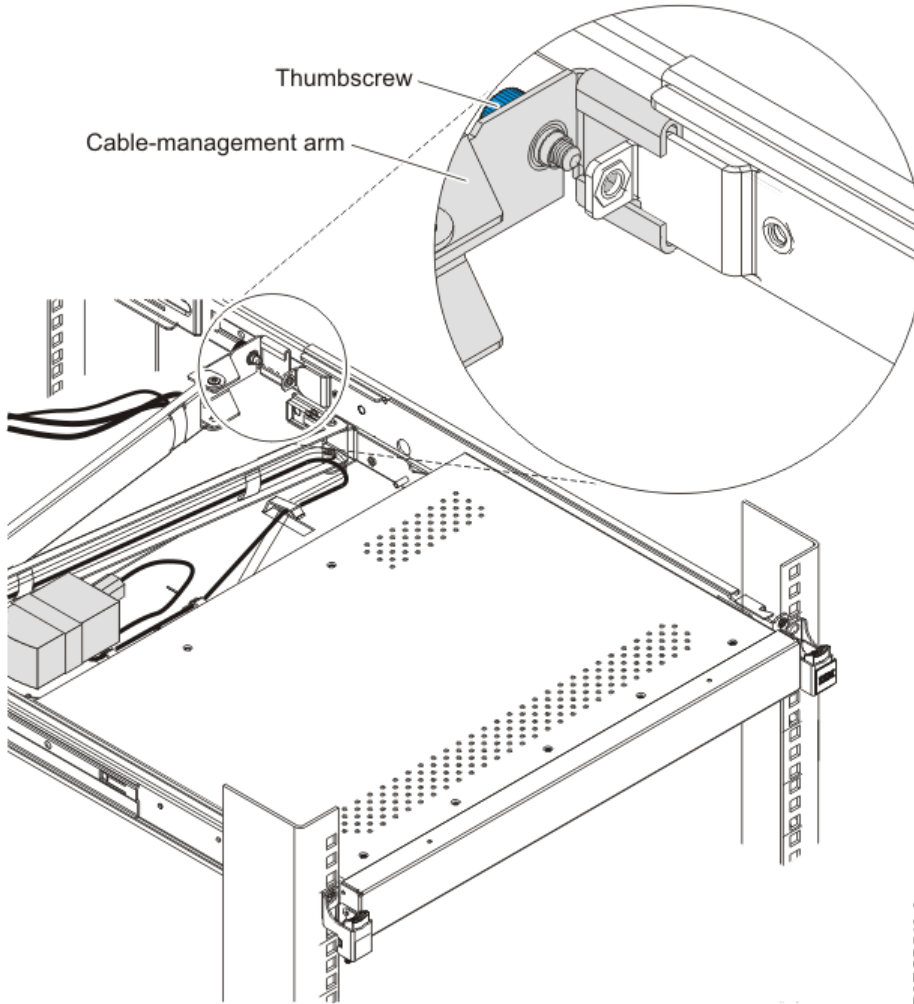
1. If a console switch is installed behind the console unit, remove the console switch from the rack.
2. Turn off the display and disconnect the power cord from the short jumper cord on the cable-management arm from the electrical outlet or power distribution unit (PDU). Disconnect from the

server or console switch any cables that are connected to the console unit (keyboard-and-mouse, video, and power cables).

3. Close the flat-panel display.

4. Remove the console unit from the rack:

- a. Remove the thumbscrew that attaches the cable-management arm to the outer slide-rail bracket. Slide the C-channel on the cable-management arm completely away from the bracket on the console unit.



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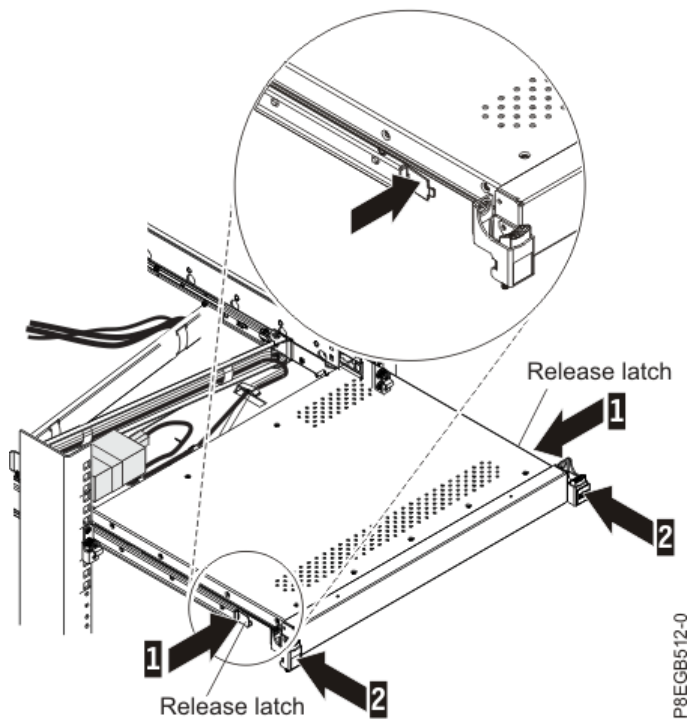
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CAUTION: Pinch hazard. (L012)

b. Fully extend the console unit out of the rack.

c. Press in both release latches 1.



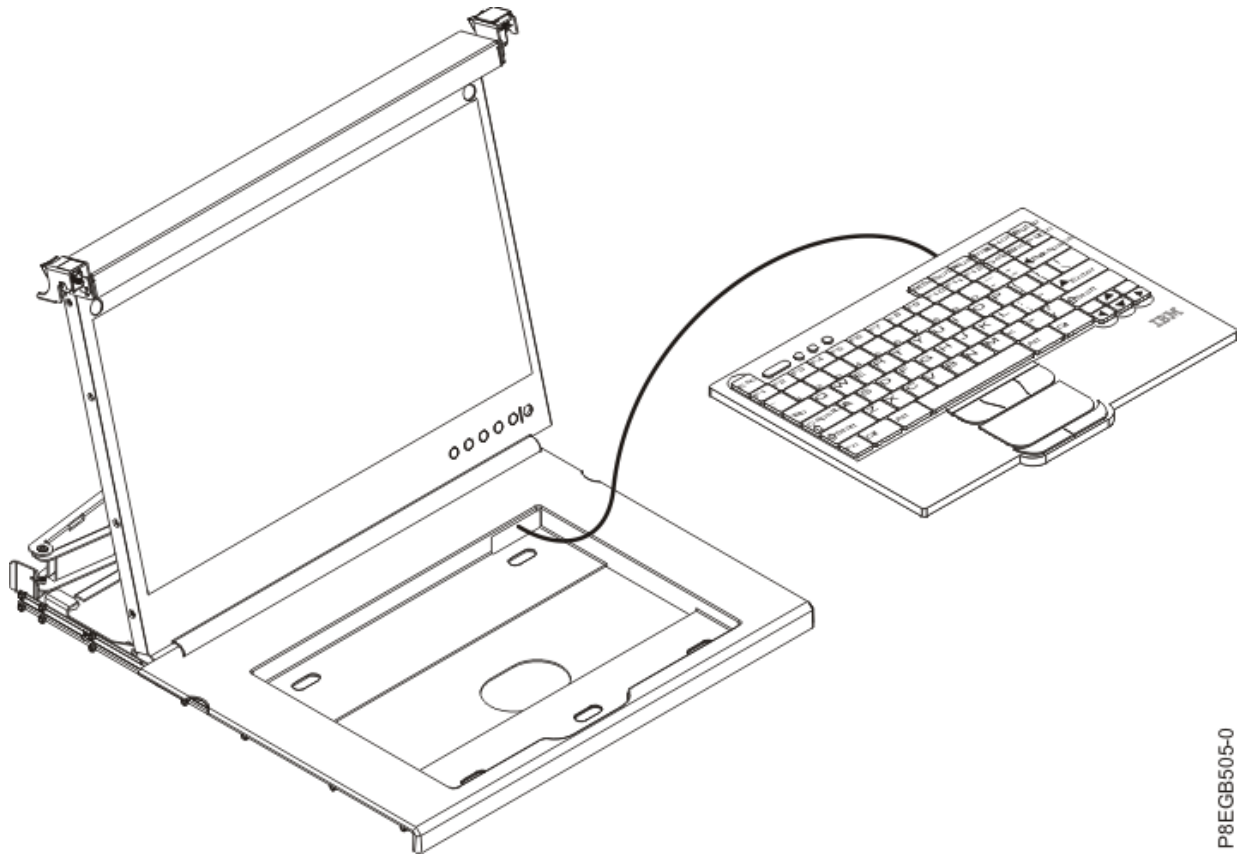
- d. Grasp both sides of the console unit and pull it completely out of the rack 2.
- e. Place the console unit on a table or other flat surface.

Moving the keyboard

Learn how to move the keyboard from the console unit.

To move the keyboard from the existing console unit to the replacement console unit, complete the following steps:

1. Carefully lift the flat-panel display to the full upright position.
2. Remove the keyboard-and-mouse cable from the keyboard tray, and then remove the keyboard from the console unit and set it aside.
3. Place the replacement console unit on a table or other flat surface and make sure that the right side of the unit extends approximately 76 mm (3 in.) over the edge of the surface. This will help you route the keyboard-and-mouse cable more easily.
4. Hold the keyboard near the keyboard tray and carefully route the keyboard-and-mouse cable down through the keyboard tray cutout and up through the cutout that is behind the flat-panel display. (See the illustration.) Carefully pull the cable through the cutouts.



5. Place the keyboard in the tray and exert a small amount of pressure on the keyboard to secure it to the double-sided tape on the front of the console tray.
6. Close the flat-panel display.



Attention:

- When you route the keyboard-and-mouse cable, make sure that the cable does not hang below the underside of the keyboard where it might be damaged if it interferes with the devices in the rack space below the console unit.
- Make sure that you route all cables through the cable-routing features on the console frame behind the display and along the cable-management arm.

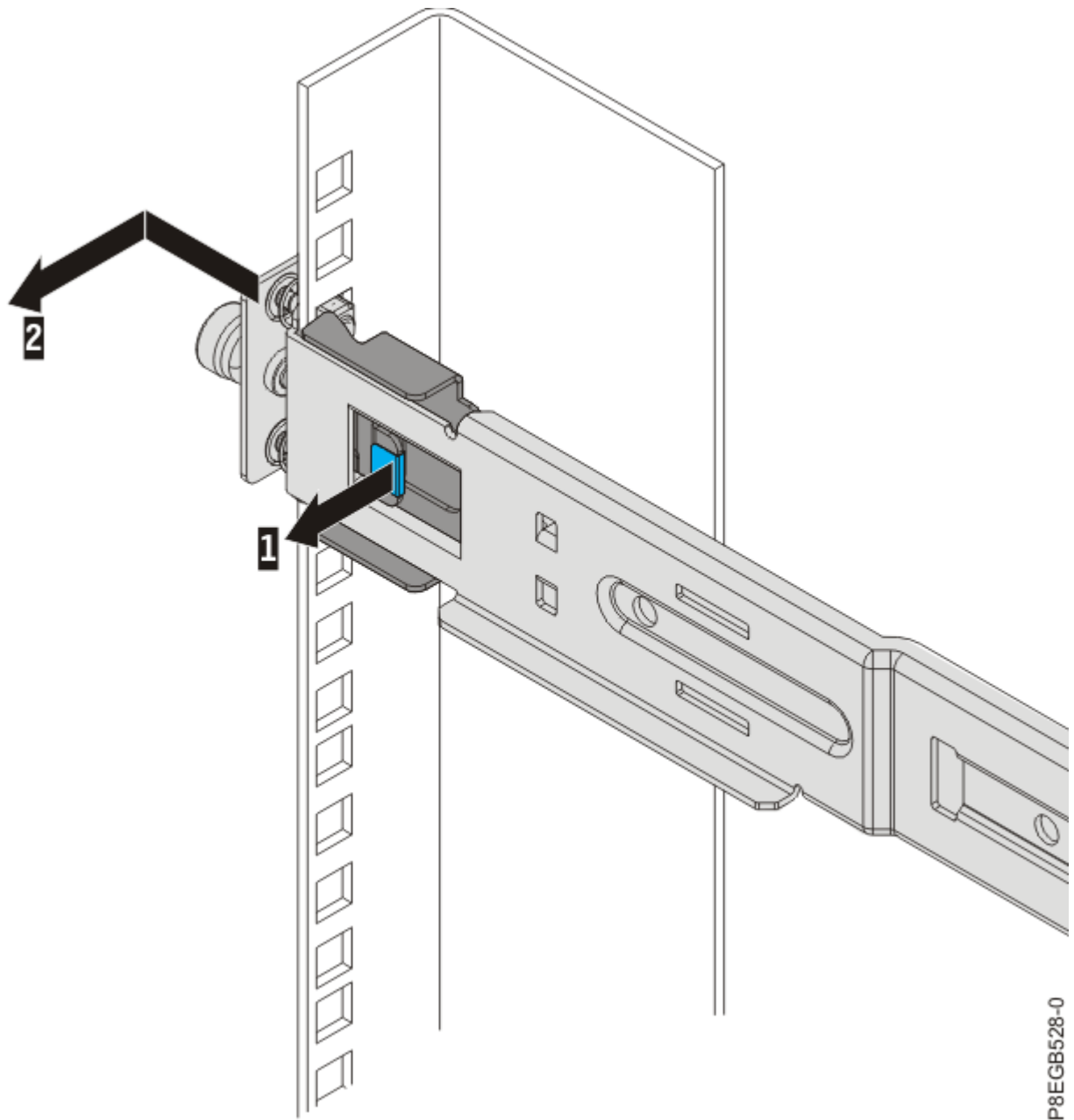
7. Close the flat-panel display.

Removing and replacing the outer slide-rails

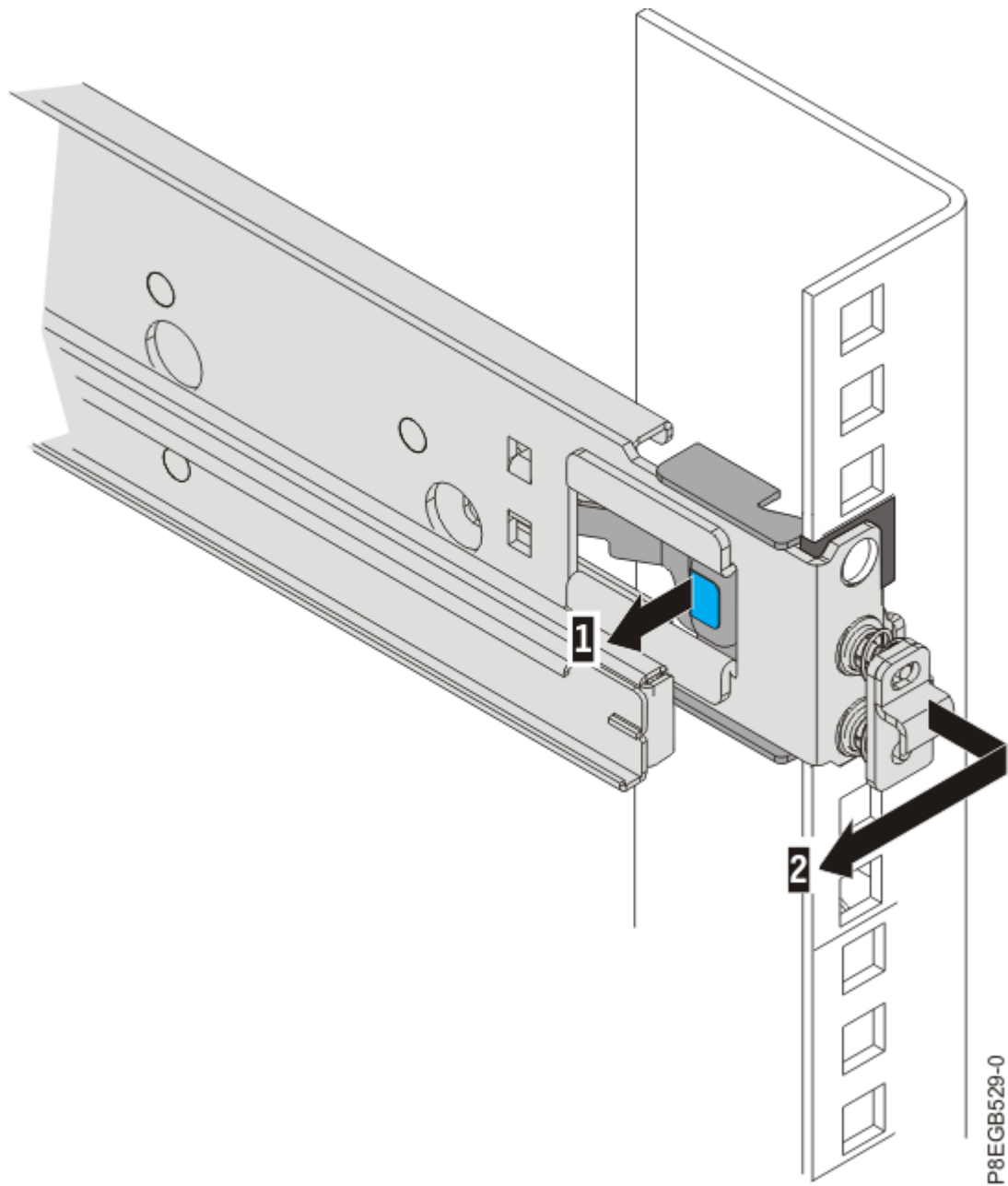
Learn how to remove and replace the outer slide-rails.

To remove and replace the outer slide-rails, complete the following steps:

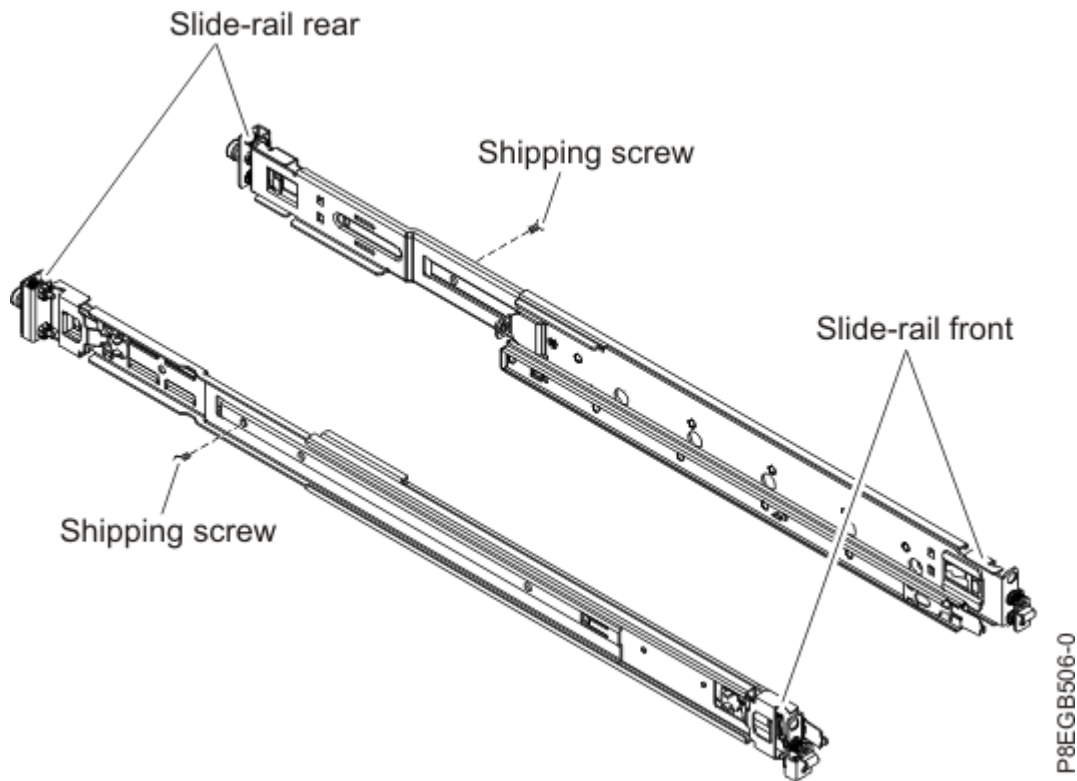
1. Remove the rear bracket of the outer slide-rail from the rack by pulling the blue tab out **1** while you move the end of the slide-rail away from the rack flange and toward the center of the rack **2**.



2. Remove the front bracket of the outer slide-rail from the rack by pulling the blue tab out **1** while you pull the end of the slide-rail away from the rack flange and toward the center of the rack **2**. Repeat step [“1”](#) on page 47 and [“2”](#) on page 48 for the other outer slide-rail.



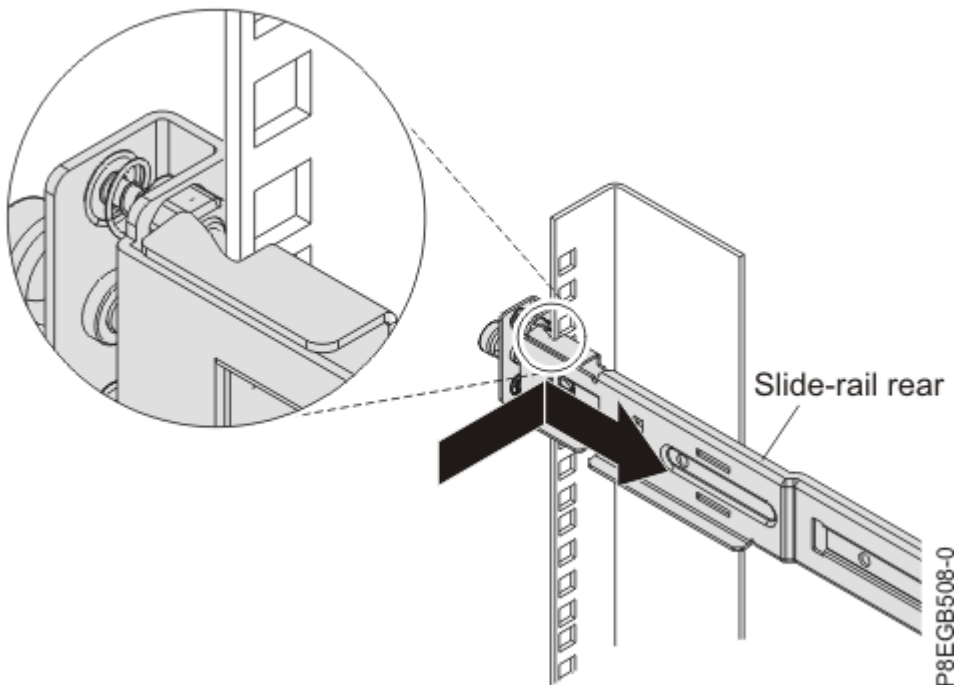
3. Remove the shipping screw from each new outer slide-rail.



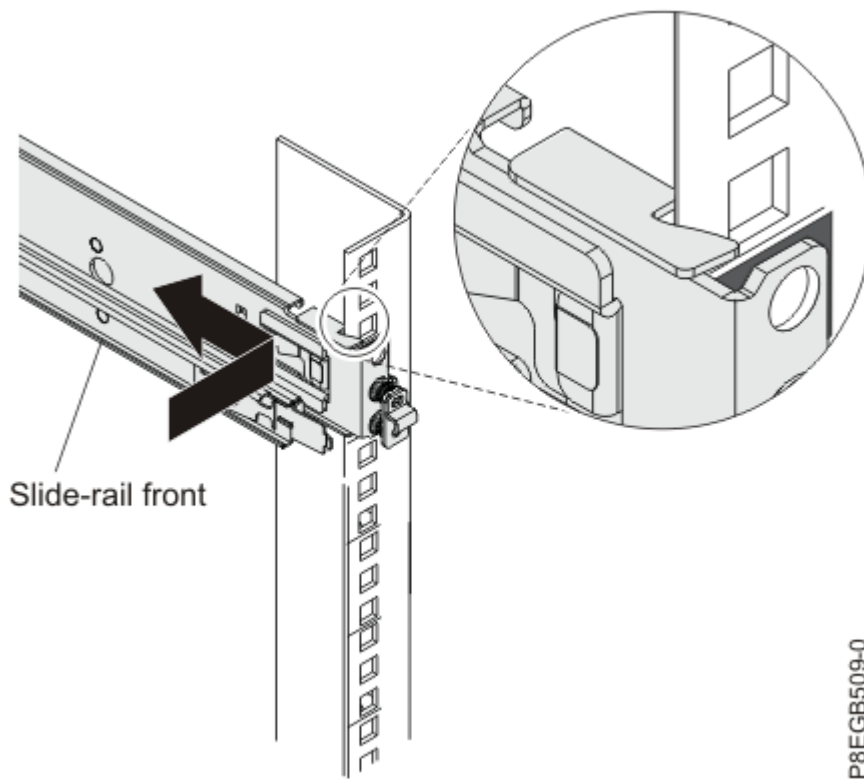
4. To attach the outer slide-rail to the rack, complete the following steps.

Note: Install the rear slide-rail bracket to the rear of the rack first; then, install the front slide-rail bracket to the front of the rack.

- Holding the slide-rail horizontally, align the rear slide-rail bracket so that the bracket is on the outside of the rack mounting flanges.
- Press the rear slide-rail bracket towards the rack flange and then pull it towards the front of the rack until the locking bracket clicks into place behind the rack flange.



- Extend the slide-rail and press the front slide-rail bracket towards the rack flange and then push it towards the rear of the rack until the locking bracket clicks into place behind the rack flange.



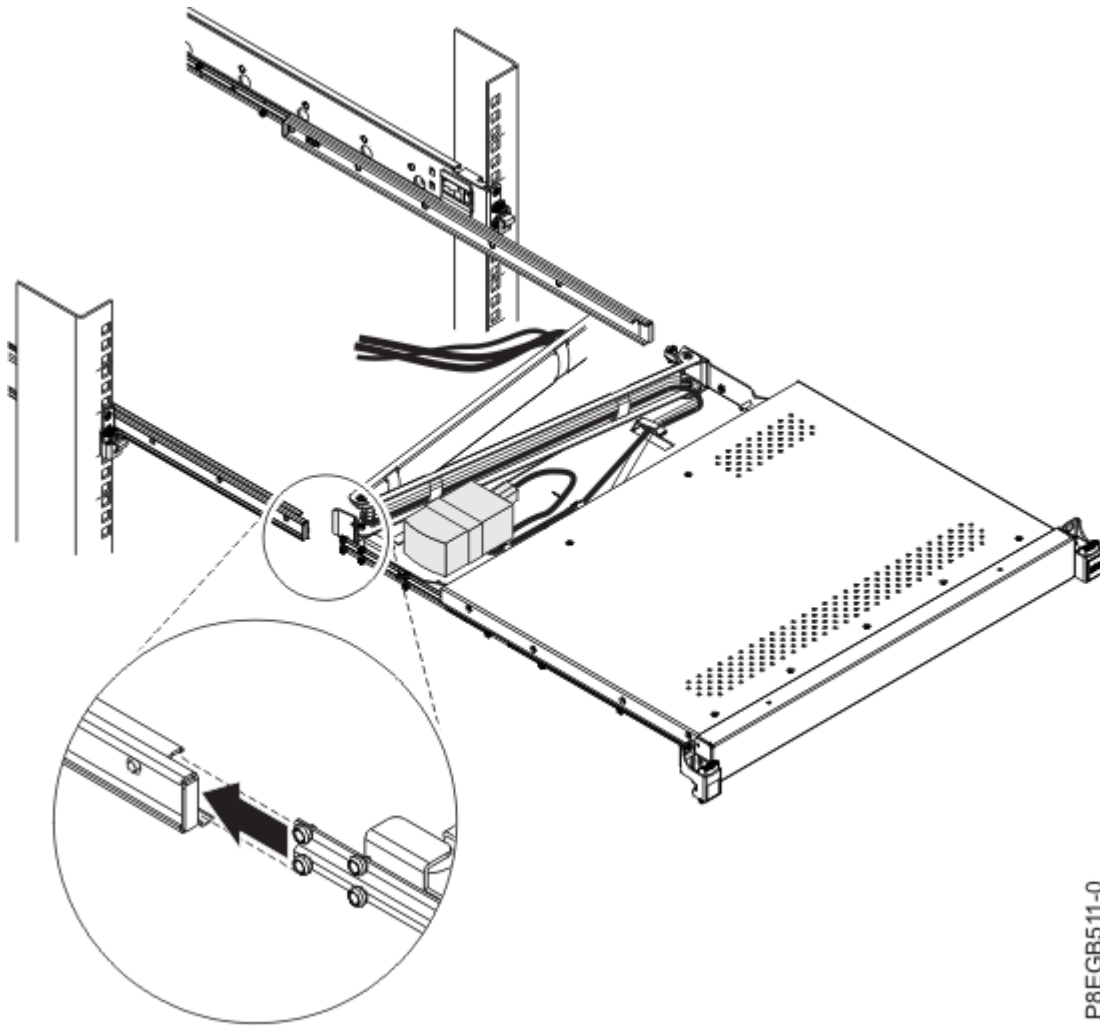
d. Repeat steps [“4.a” on page 50](#) to [“4.c” on page 50](#) to attach the other outer slide-rail.

Installing the console unit in the rack

Learn how to install the console unit in the rack.

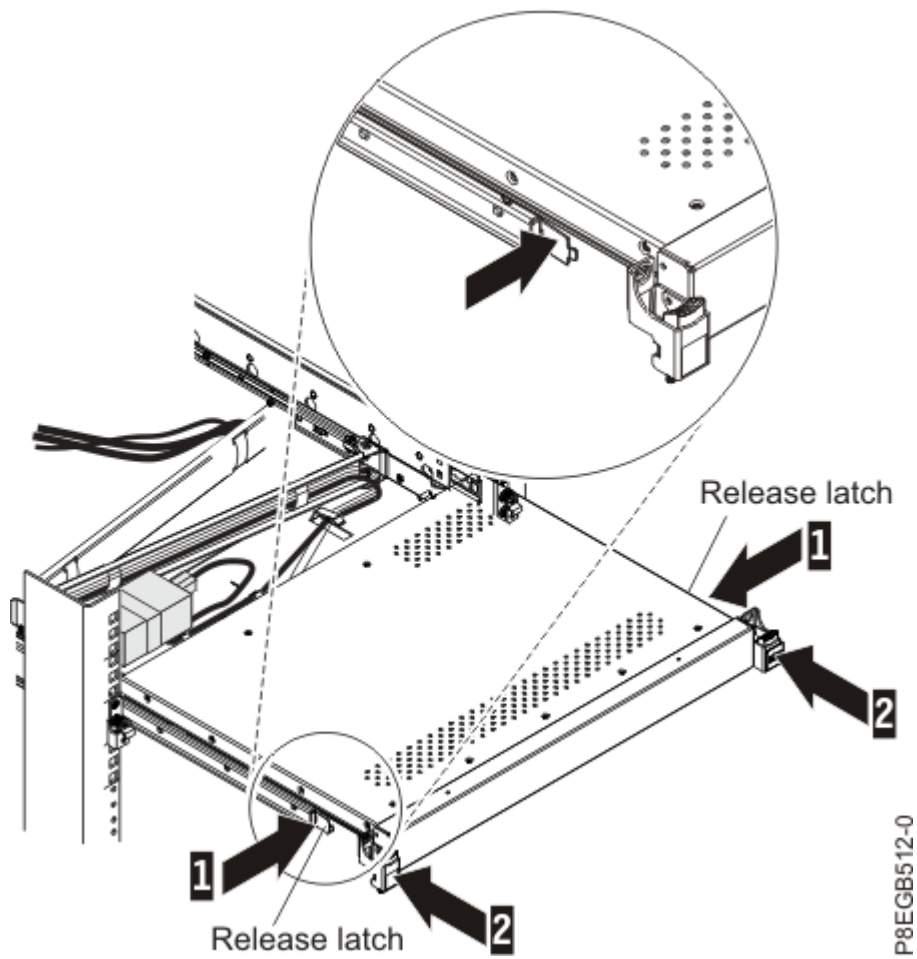
To install the console unit in the rack, complete the following steps:

1. Extend the inner part of the outer slide-rails and slide them forward to the front of the outer rails. Carefully slide the rollers on the console unit into the notch in the slide-rails as shown in the illustration.

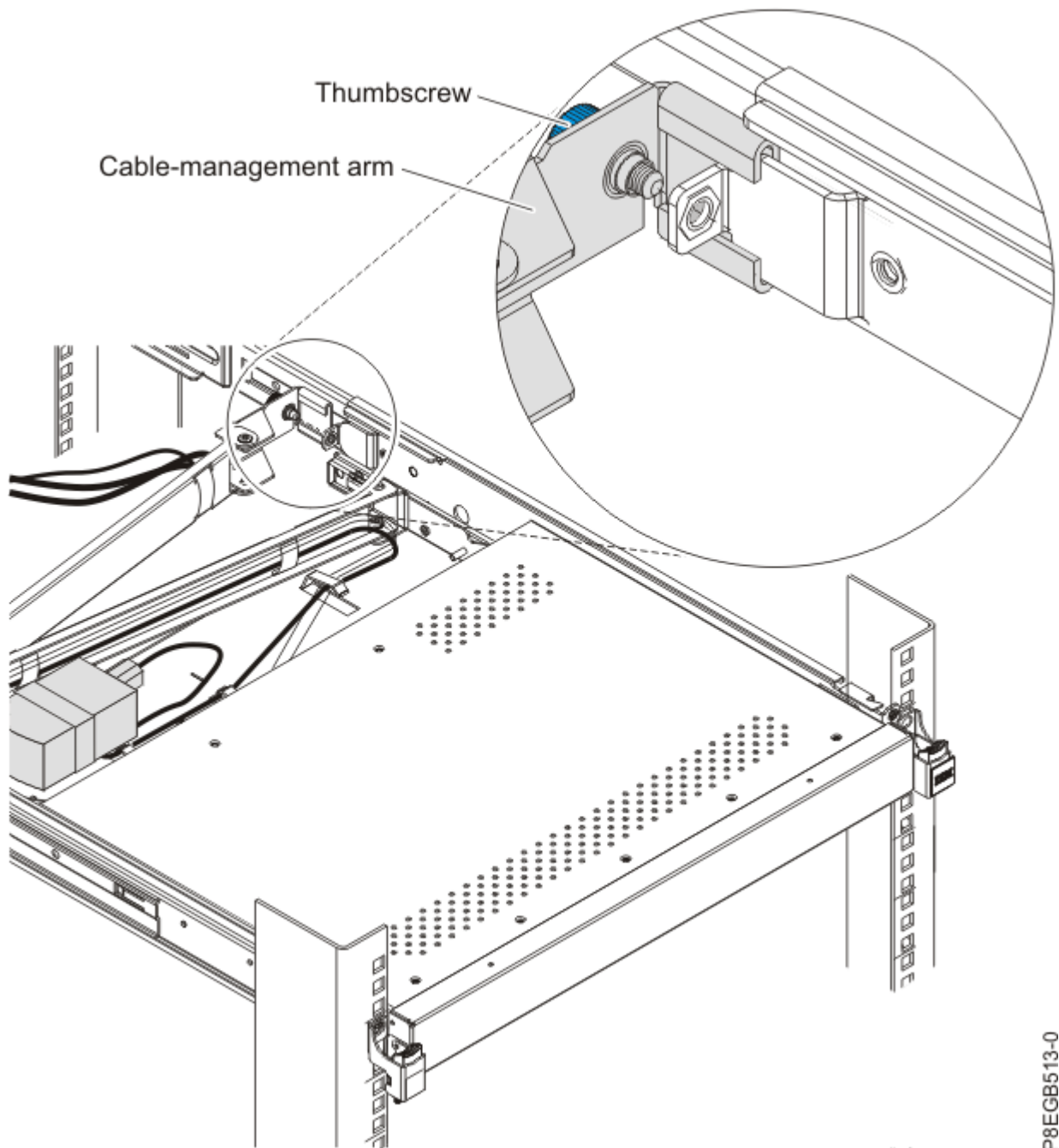


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2. Press in both release latches **1**; then, grasp both sides of the console unit and push it completely into the rack **2**. There will be resistance initially as the inner and outer rails are aligned. Pull the console unit out halfway, and then push it back in to seat the console unit in the rails. Do this a few times until the console unit moves smoothly in the rails.

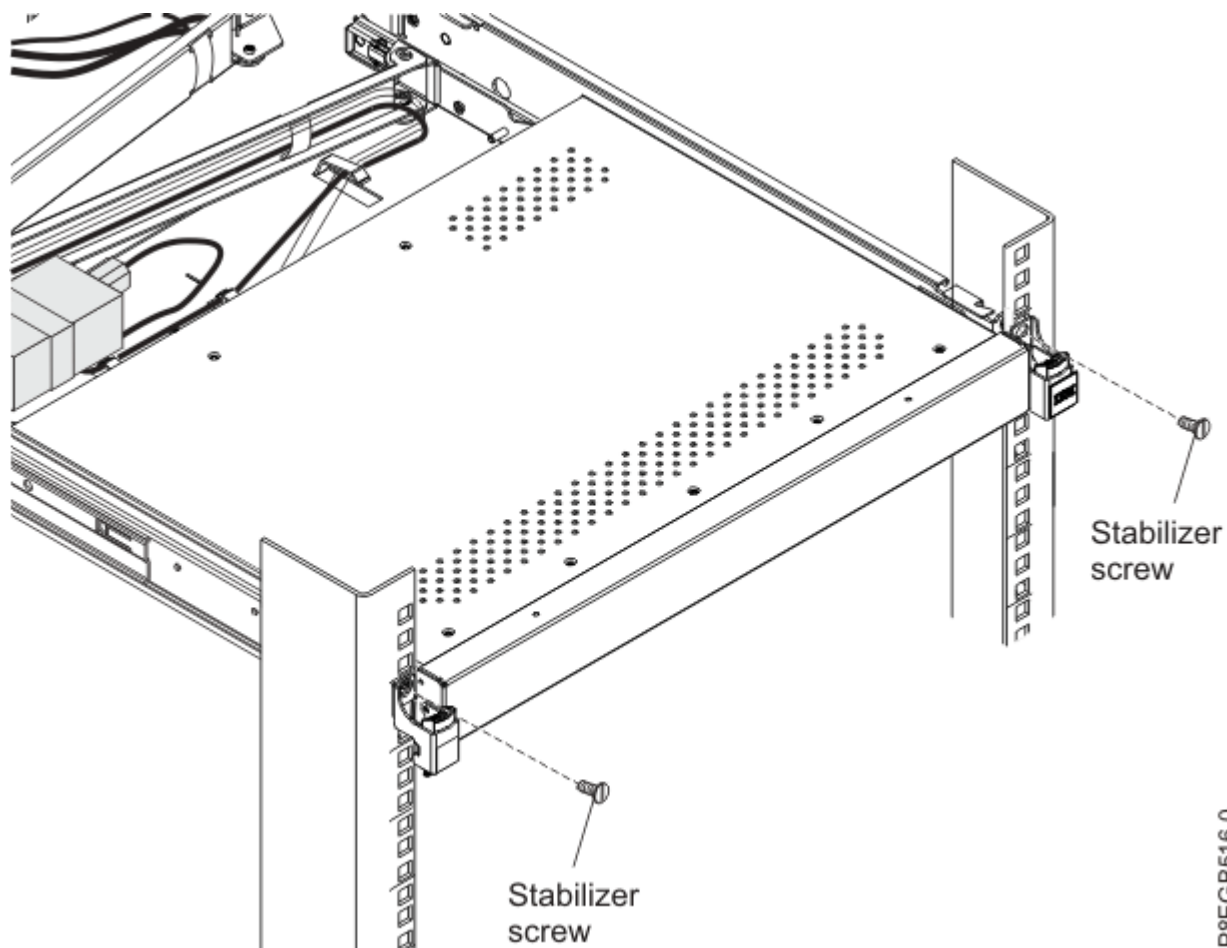


3. Align the C-channel on the end of the cable-management arm with the bracket on the console unit. Slide the C-channel onto the bracket until the cable-management arm thumbscrew aligns with the hole in the bracket. Tighten the thumbscrew.



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4. Reinstall the stabilizer screws if you have removed them.



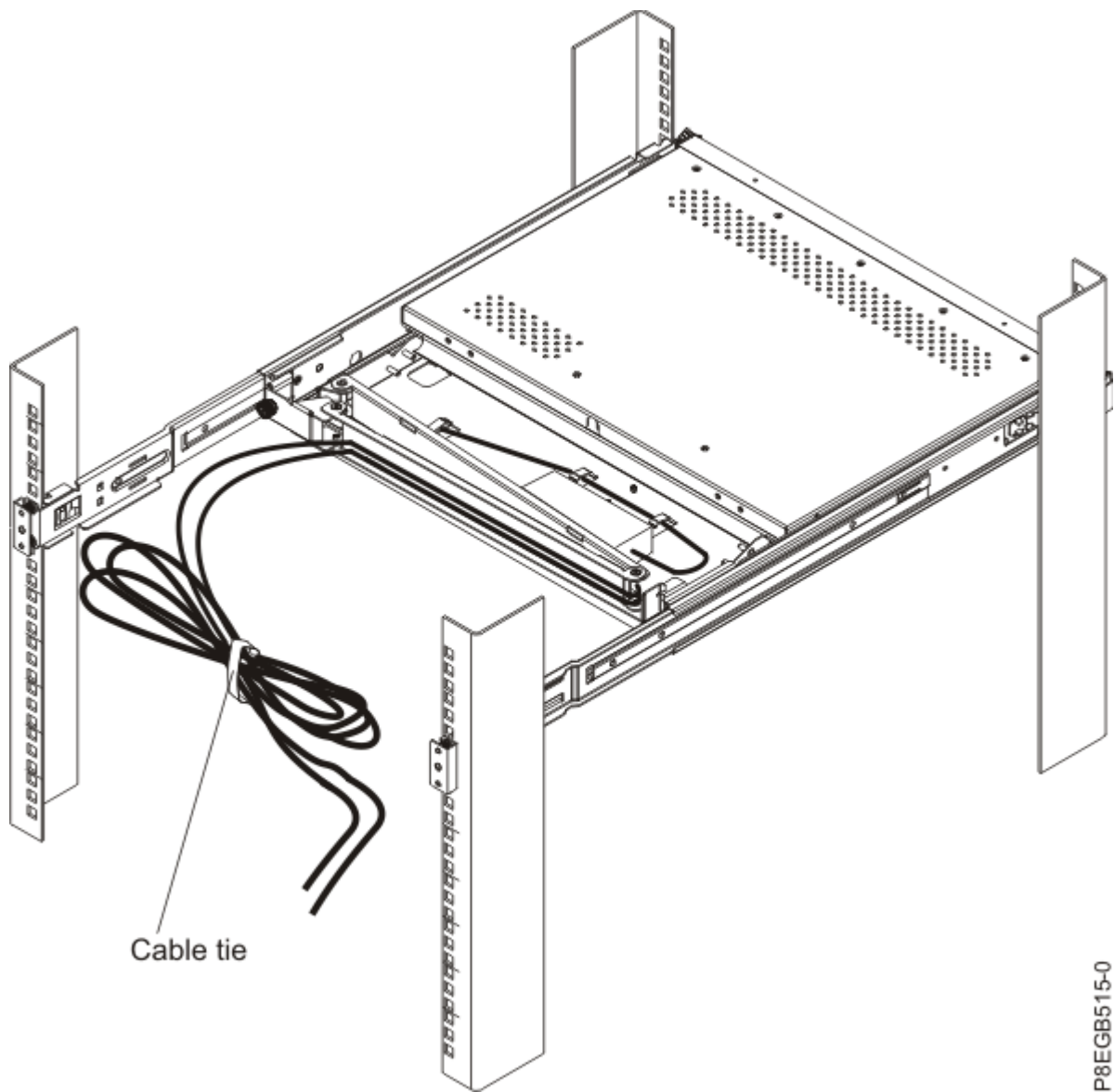
5. If you removed a console switch from behind the console unit, reinstall it now.
6. Reconnect to the server or console switch all cables that you removed.
7. Connect power to the display.
8. Fully extend the console unit from the front of the rack, and then neatly route the cables within the rack and secure them with cable straps along the way.

Important: If you have excess video cable, do not coil it as shown in the following illustration.



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To minimize the electrical interference if you have excess video cable, arrange the cable in figure-eight loops, as shown in the following illustration. Secure the cable in the middle with a cable tie or strap.



Installing the 7316-TF5 17.3-Inch flat panel rack-mounted monitor and keyboard

Learn how to install the 7316-TF5 17.3-Inch flat panel rack-mounted monitor and keyboard.

The IBM 7316-TF5 17.3-Inch flat panel rack-mounted monitor and keyboard is a flat-panel display and keyboard tray in one unit. The console unit occupies 1U of space in a rack. You can install an optional console switch behind the standard console in the rack to attach more than one server to the flat-panel display and keyboard. The display supports video resolutions from 640 x 480 through 1920 x 1080 at 60 and 75 Hz refresh rates.

Note: The 1 EIA unit in racks are measured in vertical increments of 1.75 inches each. Each 1.75-inch increment is called an “EIA.” In some countries, the same increment may be referred to as a “U.”

Note: Before you begin installing the IBM 7316-TF5 17.3-Inch flat panel rack-mounted monitor and keyboard, ensure that you have at least 1 EIA unit of free space above the location where you are installing the console unit.

Prerequisites

Ensure that you have the following items before you start your installation:

- Flat-head screwdriver
- Rack with at least two units of space

Note: If you do not have a rack that is installed, install the rack. For instructions, see [Racks and rack features](http://www.ibm.com/support/knowledgecenter/POWER9/p9hbf/p9hbf_9xx_kickoff.htm) (http://www.ibm.com/support/knowledgecenter/POWER9/p9hbf/p9hbf_9xx_kickoff.htm).

7316-TF5 17.3-Inch flat panel rack-mounted monitor and keyboard specifications

The technical specifications for the console unit are described in the following list.

Physical Dimensions	
H x W x D	1.66x17.17x17.05 inches 4.23x43.61x43.3cm
Weight	11.43 lbs (5.2Kg)
Shipping Dimensions	
Package (L x W x D)	22.9 x 7.9 x 24.5 inches 58.1 x 20 x 61.3 cm
Weight	25.3 lbs (11.45 kg)
LCD Panel	
Size	17.3-inch diagonal
Type	TFT
Characteristics	
Brightness	300 cd /m2 (Typ.)

Contrast ratio	700:1 (Typ.)
Viewing Angle	Horizontal - 178° Vertical - 178°
Display resolution	
Optimum mode	640 x 480 at 60 Hz
Maximum mode	1920 x 1080 at 75 Hz
Connectors	2 USB 3.0 pass-through, VGA, DisplayPort and RS232
Power Supply	90 to 264 VAC 47 to 63Hz 36W
Power Consumption	
Maximum	11 watts
Environmental conditions	
Operating temperature	0°C to 50°C
Operating humidity	20% to 90%
Operating altitude maximum	5000 meters max
Storage temperature	-20°C to +60°C
Storage humidity	10% to 90%
Storage altitude maximum	5000 meters max

Replaceable components

Learn about the replaceable components of the 7316-TF5 console.

Description	Replaceable part number
Display with Keyboard, TAA	02JD551
Display with Keyboard, US	02JD549
Display with Keyboard, International	02JD553
Display with Keyboard, UK	02JD500
Display with Keyboard, France	02JD501
Display with Keyboard, Italy	02JD502
Display with Keyboard, Spain	02JD503
Display with Keyboard, Denmark	02JD504
Display with Keyboard, Norway	02JD505
Display with Keyboard, Sweden / Fin	02JD506
Display with Keyboard, Switzerland	02JD507
Display with Keyboard, Portugal	02JD508
Display with Keyboard, Belgium	02JD509
Display with Keyboard, Japan	02JD510

Description	Replaceable part number
Display with Keyboard, Russia	02JD511
Display with Keyboard, Netherlands	02JD512
Display with Keyboard, Latin America/Spanish	02JD513
Display with Keyboard, Canada	02JD514
Display with Keyboard, Germany	02JD515
Display with Keyboard, Korea	02JD550
Display with Keyboard, Chinese	02JD552
Rack-mount rails, cable-management arm	02RA002
AC Adapter	02JD576
VGA cable 9 feet	02JD580
USB cable 9 feet	02JD581

Installing the inner rails to the monitor and keyboard assembly

To install the 7316-TF5 into a rack, you may need to attach the inner slide rails to the TF5 console.

Attach the electrostatic discharge (ESD) wrist strap. The ESD wrist strap must be connected to an unpainted metal surface until the service procedure is completed, and if applicable, until the service access cover is replaced.



Attention:

- Attach an electrostatic discharge (ESD) wrist strap to the front ESD jack, to the rear ESD jack, or to an unpainted metal surface of your hardware to prevent the electrostatic discharge from damaging your hardware.
- When you use an ESD wrist strap, follow all electrical safety procedures. An ESD wrist strap is used for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.
- If you do not have an ESD wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted metal surface of the system for a minimum of 5 seconds. If at any point in this service process you move away from the system, it is important to again discharge yourself by touching an unpainted metal surface for at least 5 seconds before you continue with the service process.

To attach the inner slide rails to the console, do the following:

1. Open the packaging. Remove a rail and slide assembly from the foam cushions.
2. Place the rail assembly on a flat surface, and fully extend the inner slide rail.
3. **(L012)**



CAUTION: Pinch hazard. (L012)

Using your fingernail or a flat-head screwdriver, press the white plastic release latch that is on the slide assembly while at the same time pulling the inner slide rail. Remove the inner slide rail.

4. Remove the monitor and keyboard assembly from the packaging and lay it on a flat surface.
5. Align the holes on the inner slide rail (stamped **A**) with the notches on the plastic of the monitor and keyboard assembly.
6. Install a screw in each of the holes to attach the inner slide rail to the monitor and keyboard assembly.
7. Repeat these steps to attach the other inner slide rail to the console.

Installing the 7316-TF5 17.3-Inch flat panel rack-mounted monitor and keyboard into a rack

Install the 7316-TF5 17.3-Inch flat panel rack-mounted monitor and keyboard into a rack.

To install the 7316-TF5 17.3-Inch flat panel rack-mounted monitor and keyboard into a rack, do the following:

Attach the electrostatic discharge (ESD) wrist strap. The ESD wrist strap must be connected to an unpainted metal surface until the service procedure is completed, and if applicable, until the service access cover is replaced.



Attention:

- Attach an electrostatic discharge (ESD) wrist strap to the front ESD jack, to the rear ESD jack, or to an unpainted metal surface of your hardware to prevent the electrostatic discharge from damaging your hardware.
 - When you use an ESD wrist strap, follow all electrical safety procedures. An ESD wrist strap is used for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.
 - If you do not have an ESD wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted metal surface of the system for a minimum of 5 seconds. If at any point in this service process you move away from the system, it is important to again discharge yourself by touching an unpainted metal surface for at least 5 seconds before you continue with the service process.
1. Move to the front of the rack.
 2. Holding one slide-rail horizontally, align the rear slide-rail bracket with the holes on the rear of the rack.
 3. Press the rear slide-rail bracket toward the rack flange until it clicks into place.
 4. Pull the slide rail toward the front of the rack until the front bracket clicks into place behind the rack flange.

5. Extend the inner slide rail until it is fully extended and clicks into place.
6. Repeat these steps for the other rail.
7. Align the unit with the extended inner slide rails and then press the unit into the rack.

Installing the cable-management arm

Install the cable-management arm.

Attach the electrostatic discharge (ESD) wrist strap. The ESD wrist strap must be connected to an unpainted metal surface until the service procedure is completed, and if applicable, until the service access cover is replaced.



Attention:

- Attach an electrostatic discharge (ESD) wrist strap to the front ESD jack, to the rear ESD jack, or to an unpainted metal surface of your hardware to prevent the electrostatic discharge from damaging your hardware.
- When you use an ESD wrist strap, follow all electrical safety procedures. An ESD wrist strap is used for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.
- If you do not have an ESD wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted metal surface of the system for a minimum of 5 seconds. If at any point in this service process you move away from the system, it is important to again discharge yourself by touching an unpainted metal surface for at least 5 seconds before you continue with the service process.

(L012)



CAUTION: Pinch hazard. (L012)

To install the cable management arm, do the following:

1. Move to the rear of the rack. From the rear of the rack, slide the cable-management arm between the rails.
2. Align the two screw holes on the cable management arm with the two screw holes on the rails. Install a screw through each hole.
3. Remove the two 6-32 screws from the rear of the monitor and keyboard assembly. Set the two screws aside.
4. Attach the cable management arm to the rear of the unit with the two 6-32 screws that removed in the previous step.
5. Connect the cables and route them through the cable management arm and unit opening.

Replacing the TF5 console

You might need to replace the TF5 console.

To replace the TF5 console, remove the console from the rails and then remove the rails from the rack. Repeat the steps outlined in this article to install the new console into the rack, install the cable-management arm, and route and connect cables.

Note: A RID (Replacement Identification) tag is included with the replacement console. You must write the serial number of the console that you are removing on the RID Tag and secure a that tag to the replacement console. Your IBM warranty is linked to this serial number. The new RID tag maintains the original serial number record of the machine and allows IBM to entitle the machine for future maintenance or warranty service.

- Verify that the machine serial number on the failing console matches the serial number reported to IBM technical support.
- Transcribe the machine type, model, and serial number of the failing unit onto the Replacement ID tag.

Use a ballpoint pen to complete the RID tag. Felt-tip pens or pencils can damage the tag.

Stick the Replacement Identifier tag on the rear of the TF5 console.

Supporting information

- For more information about the 7316-TF5 17.3u-Inch Flat Panel Rack-Mounted Keyboard specifications, see [Quick Specs](https://www.uptyma.com/wp-content/uploads/2019/06/QuickSpec-UPTyma-17-3.pdf) (https://www.uptyma.com/wp-content/uploads/2019/06/QuickSpec-UPTyma-17-3.pdf).
- For more information about how to attach the inner rails to the TF5 console, see the [Read Me First Card](https://www.uptyma.com/wp-content/uploads/2019/06/UPtyma-173RM17A-Inner-Rail-Installation.pdf) (https://www.uptyma.com/wp-content/uploads/2019/06/UPtyma-173RM17A-Inner-Rail-Installation.pdf).
- For flat-panel and keyboard installation, use, and maintenance information, choose the User's Guide for your language:
 - [English User's Guide](https://www.uptyma.com/wp-content/uploads/2019/06/UPG173RM17A1URackmountEnglish.pdf) (https://www.uptyma.com/wp-content/uploads/2019/06/UPG173RM17A1URackmountEnglish.pdf).
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The following Class A statements apply to the IBM servers that contain the POWER9 processor and its features unless designated as electromagnetic compatibility (EMC) Class B in the feature information.

66 Power Systems: Installing the 7316-TF4 18.5-Inch and 7316-TF5 17.3-Inch Flat Panel Rack-Mounted Monitor and Keyboard

When attaching a monitor to the equipment, you must use the designated monitor cable and any interference suppression devices supplied with the monitor.

Canada Notice

CAN ICES-3 (A)/NMB-3(A)

European Community and Morocco Notice

This product is in conformity with the protection requirements of Directive 2014/30/EU of the European Parliament and of the Council on the harmonization of the laws of the Member States relating to electromagnetic compatibility. IBM cannot accept responsibility for any failure to satisfy the protection requirements resulting from a non-recommended modification of the product, including the fitting of non-IBM option cards.

This product may cause interference if used in residential areas. Such use must be avoided unless the user takes special measures to reduce electromagnetic emissions to prevent interference to the reception of radio and television broadcasts.

Warning: This equipment is compliant with Class A of CISPR 32. In a residential environment this equipment may cause radio interference.

Germany Notice

Deutschsprachiger EU Hinweis: Hinweis für Geräte der Klasse A EU-Richtlinie zur Elektromagnetischen Verträglichkeit

Dieses Produkt entspricht den Schutzanforderungen der EU-Richtlinie 2014/30/EU zur Angleichung der Rechtsvorschriften über die elektromagnetische Verträglichkeit in den EU-Mitgliedsstaaten und hält die Grenzwerte der EN 55022 / EN 55032 Klasse A ein.

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Dieses Produkt entspricht dem "Gesetz über die elektromagnetische Verträglichkeit von Geräten (EMVG)". Dies ist die Umsetzung der EU-Richtlinie 2014/30/EU in der Bundesrepublik Deutschland.

Zulassungsbescheinigung laut dem Deutschen Gesetz über die elektromagnetische Verträglichkeit von Geräten (EMVG) (bzw. der EMC Richtlinie 2014/30/EU) für Geräte der Klasse A

Dieses Gerät ist berechtigt, in Übereinstimmung mit dem Deutschen EMVG das EG-Konformitätszeichen - CE - zu führen.

Verantwortlich für die Einhaltung der EMV Vorschriften ist der Hersteller:
International Business Machines Corp.
New Orchard Road
Armonk, New York 10504
Tel: 914-499-1900

Der verantwortliche Ansprechpartner des Herstellers in der EU ist:
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Technical Relations Europe, Abteilung M456
IBM-Allee 1, 71139 Ehningen, Germany

Tel: +49 (0) 800 225 5426
email: HalloIBM@de.ibm.com

Generelle Informationen:

Das Gerät erfüllt die Schutzanforderungen nach EN 55024 und EN 55022 / EN 55032 Klasse A.

Japan Electronics and Information Technology Industries Association (JEITA) Notice

(一社) 電子情報技術産業協会 高調波電流抑制対策実施
要領に基づく定格入力電力値: Knowledge Centerの各製品の
仕様ページ参照

This statement applies to products less than or equal to 20 A per phase.

高調波電流規格 JIS C 61000-3-2 適合品

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- 換算係数 : 0

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台北市松仁路7號3樓
電話：0800-016-888

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Responsible Party:
International Business Machines Corporation
New Orchard Road
Armonk, NY 10504
Contact for FCC compliance information only: fccinfo@us.ibm.com

Class B Notices

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CAN ICES-3 (B)/NMB-3(B)

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Verantwortlich für die Einhaltung der EMV Vorschriften ist der Hersteller:
International Business Machines Corp.
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Der verantwortliche Ansprechpartner des Herstellers in der EU ist:
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IBM-Allee 1, 71139 Ehningen, Germany

Tel: +49 (0) 800 225 5426
email: HalloIBM@de.ibm.com

Generelle Informationen:

Das Gerät erfüllt die Schutzanforderungen nach EN 55024 und EN 55032 Klasse B

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This statement applies to products less than or equal to 20 A per phase.

高調波電流規格 JIS C 61000-3-2 適合品

This statement applies to products greater than 20 A, single phase.

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- 回路分類 : 6 (単相、P F C回路付)
- 換算係数 : 0

This statement applies to products greater than 20 A per phase, three-phase.

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電話：0800-016-888

United States Federal Communications Commission (FCC) Notice

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. 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. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult an IBM-authorized dealer or service representative for help.

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. Proper cables and connectors are available from IBM-authorized dealers. IBM is not responsible for any radio or television interference caused by using other than recommended cables and connectors or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC rules. Operation 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.

Responsible Party:

International Business Machines Corporation
New Orchard Road
Armonk, New York 10504
Contact for FCC compliance information only: fccinfo@us.ibm.com

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