IBM Cloud Object Storage System
Version 3.14.1

Manager 2105 Appliance Manual

3401-M00/3403-M00/3409-M00

IBM

> **Note**
>
> Before using this information and the product it supports, read the following information:
>
> - The general information in *Notices*
> - The information in *Safety and environmental notices*
> - The information in the *IBM Environmental Notices and User Guide* (provided on a DVD)

Contents

Figures

Tables

Document information

Intended purpose and audience

This manual contains the instructions for installing and maintaining this appliance. The audience for this guide consists of those individuals responsible for installing IBM Cloud Object Storage System™ appliances.

Note:

- The equipment and device described for installation herein are sophisticated and relatively complex to install. The party or parties installing the equipment must be familiar with installations of computer hardware and disk drives prior to attempting this installation. Only personnel proficient in working with computer hardware and disk drives should attempt to install this appliance.

- After all appliances have been installed in the rack, refer to the *Appliance Configuration Guide* to configure the appliance settings required prior to setting up the system.

- After these appliances are configured, refer to the *System Manager Administration Guide* for information about how to configure, operate, and maintain your system.

- Both the *Appliance Configuration Guide* and the *System Manager Administration Guide* assume that all necessary appliances for the system are installed in the rack.

Safety and environmental notices

Review the safety notices, environmental notices, and electronic emission notices for IBM® Cloud Object Storage System before you install and use the product.

Suitability for telecommunication environment - This product is not intended to connect directly or indirectly by any means whatsoever to interfaces of public telecommunications networks.

Examples of a caution and a danger notice. Numbers in parentheses refer to message numbers in the *IBM Safety Notices* publication G229-9054, which is included with your product.

CAUTION:
A caution notice indicates the presence of a hazard that has the potential of causing moderate or minor personal injury. (C001)

DANGER

> **A danger notice indicates the presence of a hazard that has the potential of causing death or serious personal injury. (D002)**

Safety notices

Safety notices for this product.

Familiarize yourself with the *IBM Safety Notices* publication G229-9054, which is included with your product.

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 a 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.

- 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.

- 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.

- Disconnect the attached power cords, telecommunications systems, networks, and modems before you open the device covers, unless instructed otherwise in the installation and configuration procedures.

- 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. Remove the power cords from the outlets.

  3. Remove the signal cables from the connectors.

  4. 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. Attach the power cords to the outlets.

  5. 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)

DANGER: Heavy equipment — personal injury or equipment damage might result if mishandled. (D006)

DANGER: Professional movers are to be used for all relocation activities. Serious injury or death may occur if systems are handled and moved incorrectly. **(D008)**

DANGER: Serious injury or death can occur if loaded lift tool falls over or if a heavy load falls off the lift tool. Always completely lower the lift tool load plate and properly secure the load on the lift tool before moving or using the lift tool to lift or move an object. **(D010)**

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°C (212°F), repair or disassemble. **(C003)**

Use the following general safety information for all rack mounted devices:

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.

• 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.

• Each rack cabinet might have more than one power cord. Be sure to disconnect all power cords in the rack cabinet 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)

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. 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)
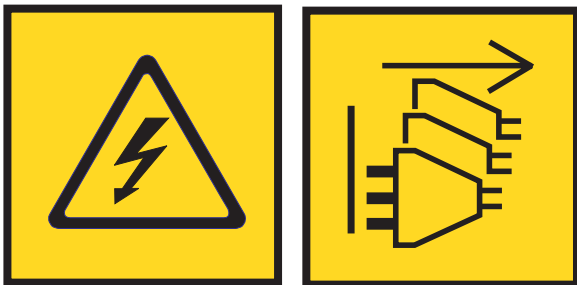
DANGER: Multiple power cords. The product might be equipped with multiple power cords. To remove all hazardous voltages, disconnect all power cords. (L003)
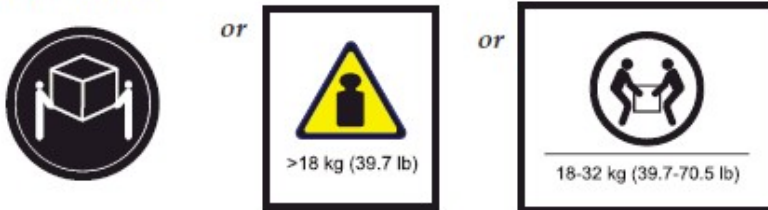
The weight of this part or unit is between 18 and 32 kg (39.7 and 70.5 lb). It takes two persons to safely lift this part or unit. (C009)

Environmental notices

This information contains all of the environmental notices for IBM Systems products in English and other languages.

The IBM Systems Environmental Notices information includes statements on limitations, product information, product recycling and disposal, battery information, flat panel display, refrigeration and water-cooling systems, external power supplies, and safety data sheets.

Declared noise emissions

Declared noise emissions in accordance with ISO 9296[1, 2, 3]

Table 1. Declared noise emissions in accordance with ISO 9296[1,2,3]

Product description	Declared A-Weighted Sound Power Level, L_{WAd} (B)		Declared A-Weighted Sound Pressure Level, L_{pAm} (dB)	
	Operating	Idling	Operating	Idling
Model M00 @ 25-35 deg. C room ambient	7.8[4]	7.8[4]	61	61
Model M00 @ 25-35 deg. C room ambient Acoustical Doors Feature codes FC EC07 = back FC EC08 = front	7.1[4]	7.1[4]	54	54

Notes:

1. Declared level L_{WAd} is the upper-limit A-weighted sound power level; Declared level L_{pAm} is the mean A-weighted sound pressure level measured at the 1-meter bystander positions.

2. All measurements made in conformance with ISO 7779 and declared in conformance with ISO 9296.

3. B, dB, abbreviations for bels and decibels, respectively. 1 B = 10 dB.

4.

   Note: Government regulations (such as those prescribed by OSHA or European Community Directives) may govern noise level exposure in the workplace and may apply to you and your server installation. This IBM system is available with an optional acoustical door feature that can help reduce the noise emitted from this system. The actual sound pressure levels in your installation depend upon a variety of factors, including the number of racks in the installation; the size, materials, and configuration of the room where you designate the racks to be installed; the noise levels from other equipment; the room ambient temperature, and employees' location in relation to the equipment. Further, compliance with such government regulations also depends upon a variety of additional factors, including the duration of employees' exposure and whether employees wear hearing protection. IBM recommends that you consult with qualified experts in this field to determine whether you are in compliance with the applicable regulations.

Support information

For more information on the product or help with troubleshooting, contact IBM Support at IBMCloudStorageSupport@us.ibm.com or visit the Directory of worldwide contacts.

Chapter 1. Appliance safety precautions

Observe physical, electrical, and electronic component safety precautions.
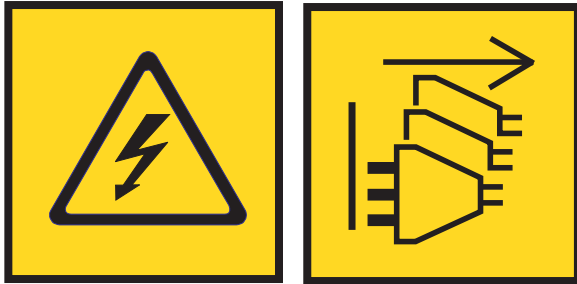
DANGER: An electrical outlet that is not correctly wired could place hazardous voltage on the metal parts of the system or the devices that attach to the system. It is the responsibility of the customer to ensure that the outlet is correctly wired and grounded to prevent an electrical shock. (D004)

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

Physical

Ensure that your equipment rack is placed in a dust-free, well-ventilated area close to an uninterruptible power supply (UPS). Leave enough room behind and around the rack for services and sufficient airflow.

- Keep the area around the appliance clean and free of clutter.
- Place the appliance top cover and any appliance components that were removed away from the appliance or on a table so that they do not accidentally get damaged.
- While you are working on the appliance, do not wear loose clothing such as neckties and unbuttoned shirt sleeves. They can retain a charge even if you are wearing a wrist strap, or could be pulled into a fan.
- After you access the inside of the appliance, close the appliance and secure it to the rack unit with the retention screws after you ensure that all connections are made.
- Close the rack's front door and all panels and components on the appliances when not servicing to maintain proper cooling.

Electrical

Basic electrical safety precautions must be followed to protect yourself and the appliance:

- Do not work alone with high-voltage components.
- Be aware of the locations of the power switch on the appliance and the room's emergency power-off switch, disconnection switch, or electrical outlet. If an electrical accident occurs, quickly remove power from the system.

DANGER

> **A danger of explosion exists if the Onboard battery is installed upside down, which reverses its polarities. This battery must be replaced only with the same or an equivalent type that is recommended by the manufacturer. Dispose of used batteries according to the battery manufacturer's instructions.**

Electronic components

Electrostatic discharge (ESD) is generated by two objects with different electrical charges when they come into contact with each other. An ESD neutralizes this difference, which can damage electronic components and printed circuit boards (PCBs). In general, the following measures are sufficient to neutralize this difference before contact is made to protect equipment from ESD:

- Use a grounded wrist strap that is designed to prevent ESDs.
- Keep all components in their antistatic containers until ready for installation.
- Touch a grounded metal object before you remove any board from its antistatic container.
- Remove any jewelry or metal objects from your body. They are excellent metal conductors that can create short circuits and harm you if they come into contact with printed circuit boards or areas where power is present.

Chapter 2. Specifications and requirements

See the appendix for additional specifications.

Appliance specifications

- All RAM is PC3-12800 DDR3 ECC SDRAM
- All NICs are on board

Table 2. System components in the appliance

CPUs	SDRAM (GB)	OS Drive (TB)	PSUs	NICs (1 Gbps)	NICs (10 Gbps)
Intel Xeon E5-2620	4×8	2×1.0	2	2	0

Requirements

Physical space and power

The appliance uses 100-240 V power.

Table 3. Space and power requirements for the appliance

Model	Rack Units	W (in)	H (in)	D (in)	Weight (lbs)	W (cm)	H (cm)	D (cm)	Weight (kg)	Power (W)
M2105	1	17.2	1.75	25.6	27.5	43.7	4.4	65.0	12.5	165W max

Environmental conditions

Table 4. Operating and non-operating temperatures and humidity for the appliance

Environment	Temperature (°C)	Temperature (°F)	Humidity (non-condensing)
Operating	10–35	50–95	8–90%
Non-operating	-40–70	-40–158	5–95%

Cabling

Table 5. Cabling requirements for the appliance

Cable	Type and Usage
Power Cords	Use only the power cords supplied with the appliance. Do not use another type of cord. Do not use extension cords. If additional power cords are required, contact IBM Support.
1000BASE-T Copper Cables	Use high quality Category 5e or 5 (CAT5e, CAT5) copper cables.

Chapter 3. Installing the appliance into a rack

There are many racks on the market, which means that the assembly procedure might differ slightly. This rail fits a rack between 25.5" and 33.0" deep.

Preparing for installation

Assemble tools

A #2 Phillips screwdriver and a cage nut tool are required to install and secure the rails to the appliance.

Wear a set of leather work gloves when racking the appliance. They help to grip the appliance and to avoid injury from metal edges..

CAUTION:
Do not use of any sort of hammer to secure the rails on the appliance. A hammer could damage the drives within the chassis and possibly void the warranty.

Choose a setup location

Decide on a suitable location for the rack unit that holds your appliance.

Table 6. Appliance location considerations

Factor	Comments
Restricted access location	Install this appliance in a physically secure, limited access location only, such as a service closet or data center.
Clean environment	It should be situated in a clean, well-ventilated, dust-free area.
Ambient operating temperature	If installed in a closed or multi-unit rack assembly, the ambient operating temperature of the rack environment may be greater than the ambient temperature of the room. Install the equipment in an environment compatible with the maximum rated ambient temperature (TMRA) for the appliance.
Sufficient airflow	Equipment should be mounted into a rack so that the amount of airflow required for safe operation is not compromised. Leave enough clearance in front of the rack to open the front door completely (36 inches). Leave about 36 inches of clearance behind the rack for sufficient airflow and ease in servicing.
Mechanical loading	Equipment should be mounted into a rack so that a hazardous condition does not arise due to uneven mechanical loading. Install heavier items into the bottom of the equipment rack to keep the rack stable. Mount equipment in a rack evenly to prevent a later hazard.
Circuit overloading	Consideration should be given to the connection of the equipment to the power supply circuitry and the effect that any possible overloading of circuits might have on overcurrent protection and power supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern. **Note:** The maximum current draw is printed on a label on the appliance power supplies. The system may draw more than 15 Amps at startup (inrush current).
Reliable ground	A reliable ground must be maintained at all times. To ensure grounding, the rack itself should be grounded. Particular attention should be given to power supply connections other than the direct connections to the branch circuit, such as the use of power strips.

Table 6. Appliance location considerations (continued)

Factor	Comments
Power supply	Use a regulating uninterruptible power supply (UPS) to protect the appliance from power surges and voltage spikes, and to keep your system operating in case of a power failure.
Heat, electricity, and EMI	Avoid areas where heat, electrical noise, and electromagnetic fields are generated.

Prepare the rack

1. Ensure that the leveling jacks on the bottom of the rack are fully extended to the floor with the full weight of the rack resting on them.
   - In single rack installations, attach stabilizers to the rack.
   - In multiple rack installations, couple the racks together.
2. Check that the rack is stable before extending an appliance from the rack.
3. Extend only one appliance at a time. Extending two or more simultaneously may destabilize the rack.
4. Determine the placement of each appliance in the rack before you install the rails.
5. Install the heaviest appliances (usually the Slicestor® appliances) on the bottom of the rack first, and then work upward.

Unpack and inspect the shipping box and its contents

1. Inspect outside of box for damage.
2. Note if the box was damaged in any way.
3. Open the top of the box and inspect for damage.
4. Remove all of the components from the packaging and inspect for shipping damage.
5. Arrange for assistance when lifting or installing the appliance in a rack. Use a forklift or lift table to prevent possible injury.
   CAUTION:
   To prevent personal injury and equipment damage, have someone assist you during the equipment installation. If necessary, reduce the weight of the enclosure by removing the hard drives and power supply units during installation.

   When using the lifting straps, keep them even and at the same level at all times. Otherwise, the system can slide to one side, and possibly out of the straps completely. Make sure that the rubberized sides of the lifting straps are against the chassis metal.
6. If the appliance itself shows damage, file a damage claim with the carrier who delivered it.

In addition to the appliance, the box includes the hardware in the following figures:

Figure 1. 4×M4×4 mm flat head screws

Figure 2. 8×M5×12 mm flat head screws

Figure 3. 22×M4×4 mm round head screws

Figure 4. 8×Cone washers for M5

Figure 5. 8×M5 Cage nuts

Figure 6. 2×C13-to-C14 connector, 6ft, 14 AWG power cables

Figure 7. 2×Rack rail extensions

Figure 8. 4×Outer rails

Figure 9. 4×Large brackets

Figure 10. 4×Small brackets

Remove packing materials on and in the appliance

1. Remove the tape warning on the top of the chassis that says: "Remove tape and foam prior to racking system."
2. Loosen the thumbscrews to either side of the faceplate for the appliance.
3. Open the faceplate.
4. Remove the packing foam from the inside of the faceplate.
5. Close the faceplate.
6. Tighten the thumbscrews.

Installing the appliance into the rack

Attention: Allow the enclosure assembly to acclimate to room temperature prior to installation. Disk drives should be stored at room temperature for at least two hours prior to use.

Identify the sections of the rack rails

The appliance includes two rack rail assemblies with three sections, as shown in the following figure:
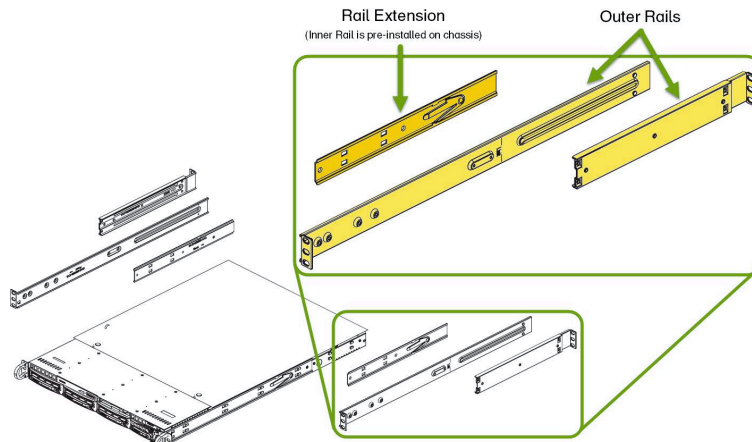
Figure 11. Identifying the sections of the rack rails

- An outer rail forward section that secures to the rack.
- An outer rail rear section that secures to the forward section (to provide variable length) and the rack.
- An inner rail extension that secures directly to the appliance to stabilize the appliance within the rack, if desired.

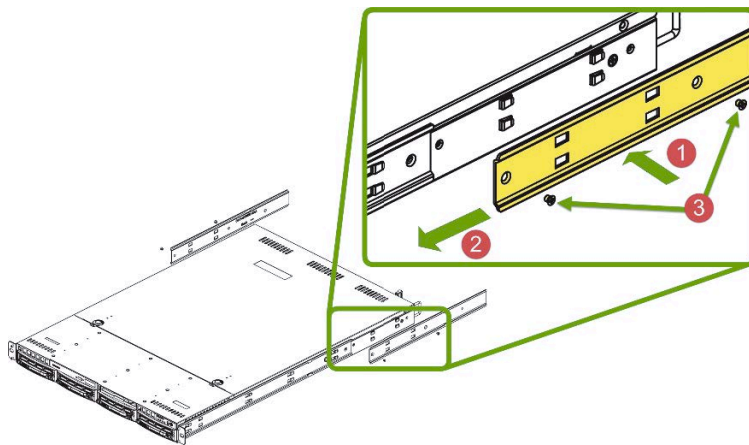## Install the inner rail extension on the appliance

Figure 12. Combining the sections of the rack inner rails

1. Place the inner rail extensions, facing "outward" like the inner rail, on the side of the appliance aligning the hooks of the appliance with the inner rail extension holes, as shown in the preceding figure.
2. Slide the extension toward the front of the appliance.
3. Secure the appliance with two screws.
4. Repeat these steps for the opposite inner rail extension.
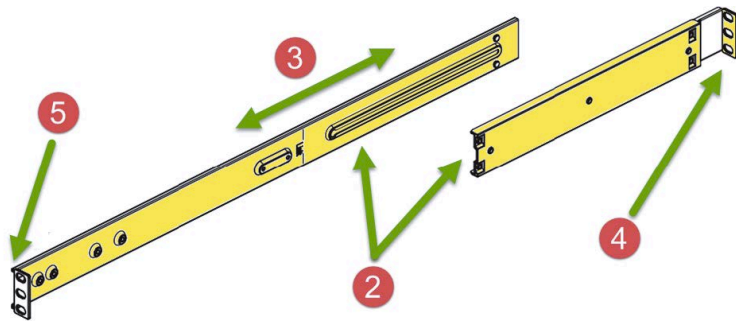
Install the outer rails

Figure 13. Assembling the outer rails

1. Measure the distance from the front rail to the rear rail of the rack.
2. Combine the short bracket to the long bracket by putting the T-bolt on the short bracket through the large hole in the slide in the long bracket to keep them together, as shown in the preceding figure.
3. Adjust both the short and long brackets to the proper distance so that the rail can fit snugly into the rack.
4. Secure the short bracket to the rear side of the right outer rail with three screws.
5. Secure the long bracket to the front side of the right outer rail with two screws.
6. Repeat these steps for the left outer rail.

Lock the rail tabs

Both chassis rails have a locking tab, which locks the appliance in place when:
- Installed and pushed fully into the rack.
- Extended fully from the rack so it does not come completely out of the rack when pulled out for service.
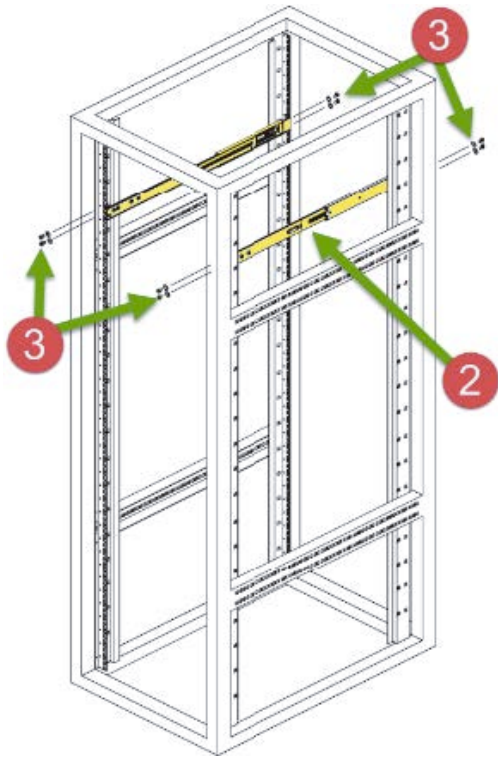
Install the outer rails to the rack

Figure 14. Installing the outer rails to the appliance rack

1. Attach the longer section of the outer rail to the outside of the shorter section of the outer rail.
   - Align the pins with the slides.
   - Make both ends of the outer rail face the same direction to be secured to the rack.
2. Adjust both sections of the outer rail to the proper length so that the rail fits snugly within the rack, as shown in the preceding figure.
3. Secure the longer section of the outer rail to the rack with two M5 screws and the shorter section to the rear side of the rack with two M5 screws.
4. Repeat these steps for the opposite outer rail.

Install the appliance into a rack

1. Line up the rear of the chassis rails with the front of the rack rails.
2. Confirm that the appliance includes the inner rails (A) and rail extensions (B).
3. Confirm that the outer rails (C) are installed on the rack.
4. Line appliance rails (A and B) with the front of the rack rails (C).
5. Slide the appliance rails into the rack rails, keeping the pressure even on both sides, as shown in the following figure. You might have to depress the locking tabs when inserting.
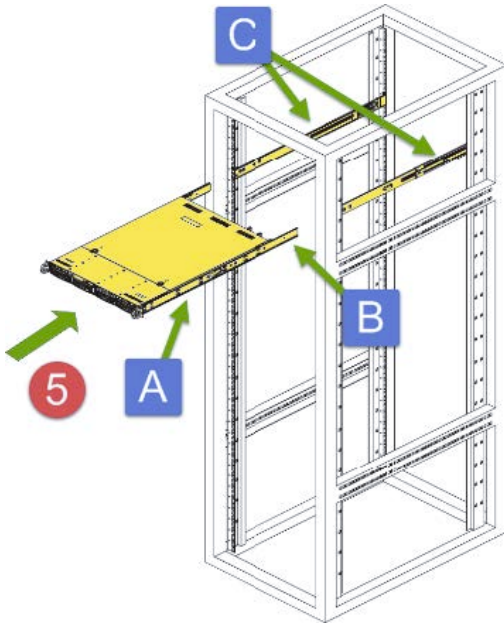
Figure 15. Lining up the appliance with the rack rails

When the appliance has been pushed completely into the rack, you should hear the locking tabs click into the locked position.

6. Insert and tighten the thumbscrews that hold the front of the appliance to the rack.

Cable the appliance

1. On the rear panel, connect the C13 end of the power cables to the C14 inlets in the PSU, as shown in the following figure.

Figure 16. Rear of appliance

2. The Ethernet connections are located just to the left of the center of the appliance and are next to each other. Connect a standard Ethernet cable from the left Ethernet port.
3. Press the power button located on the top far right corner of the appliance front panel when the bezel is unscrewed and flipped down.
4. To ensure the power is on, verify the power and network link lights are lit and listen for running fans, as shown in the following figure.

Figure 17. Front of appliance

Chapter 4. Appliance physical interface

The physical interface for the appliance consists of buttons and LEDs on the front panel and ports and LEDs on the back panel.

Front control panel

The power status and the hard drive and network activity of the appliance can be read from its front control panel, as shown in the following figure.

Figure 18. Front panel buttons and LEDs for the appliance

Physical buttons

The appliance includes two push-buttons on the right of the front panel:

Reset   Reboots the system.

Power   Applies or removes power from the power supply to the appliance. Powering down the appliance removes the main power, but supplies stand-by power. The appliance must be unplugged before servicing.

LEDs

The control panel has five LEDs to provide critical information for different components:

i   Fan failure, power failure, overheating or unit identification within a large rack installation. The following states are possible:

    Fast blinking red (1 Hz)
        Fan failure

    Slow blinking red (0.25 Hz)
        Power failure

    Solid red
        CPU overheated

    Solid blue
        Local unit identification (UID) button depressed

    Blinking blue
        UID

    Network activity on LAN1 when flashing.

    Network activity on LAN2 when flashing.

    Solid-state drive activity.

Power supplied to PSUs; lit when the appliance is operating.

Rear panel

The rear panel contains I/O ports.

I/O ports

The I/O ports are color coded per the PC 99 specification. The locations of the various I/O ports are shown in the following figure.
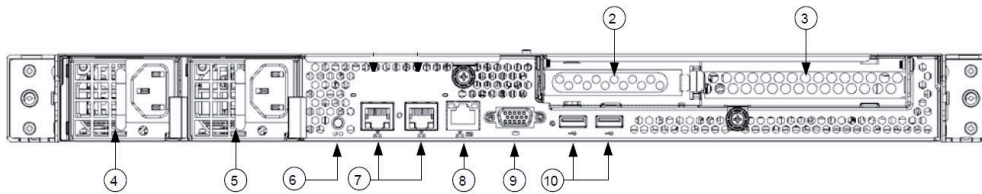

Figure 19. Rear panel I/O ports for the appliance

Table 7. Legend for rear panel I/O Ports for the appliance

Number	Description
1	Unused
2	PCIe card slot (on riser card)
3	10 GbE NIC card
4	Power supply 1
5	Power supply 2
6	UID button/LED
7	1 GbE RJ45 ports (2)
8	10/100 Mbit/s management port
9	DB-15 video connector
10	USB 2.0 ports (2)

Network interface ports

1 Gbps LAN LEDs

The LAN ports have two LEDs. One LED indicates activity when blinking. The other LED can be green, amber or off to indicate the speed of the connection, as shown in the following figure. See the following table for the functions associated with the connection speed LED.

Figure 20. LAN LED connection speed indicator

Table 8. LAN LED connection speed colors

Color	Speed
Off	No connection or 10 Mbps
Green	100 Mbps
Amber	1 Gbps

Intelligent Platform Management Interface (IPMI)

This network port allows remote administration of hardware. For a detailed description of IPMI, refer to the following Intel documentation:

https://www.intel.com/content/www/us/en/servers/ipmi/ipmi-home.html

Power supplies

Each power supply includes one LED with three states in the rear.

Table 9. Power supply LED states

LED state	Description
Solid green	System on
Solid amber	System plugged in and turned off or the appliance is off but in an abnormal state
Blinking Amber	Internal temperature reached 63°C. The appliance automatically powers down when PSU temperature reaches 70°C and restarts when the PSU temperature drops below 60°C.

Hard drive carrier

Each drive carrier has one LED with two states.

Table 10. Conditions indicated by drive carrier LEDs

Condition	LED color
Drive activity	Green
Drive failure	Red

Chapter 5. Field replaceable units

A number of components can be replaced in the field.

Replacement parts

Contact IBM Support for replacement parts for the appliance.

The following customer serviceable replacement parts are available:
- 4×8 GB Memory Modules
- Power Supply Module
- Operating System Drive

The following customer serviceable upgrades are available:
- SFP+/QSFP optical modules

See the *Field Replaceable Units Reference Guide* for a complete list of available parts and drives.

Replacing internal components

Replace the memory modules

CAUTION:
1. **In the absence of diagnostic tools to identify the failed memory module, best practice is to remove and replace all installed memory modules when a memory failure has been identified.**
2. **Make certain that all memory modules are of the same type (DDR3) and speed (DDR3- 1333 or DDR3-1600). The slowest speed of one memory module sets the memory speed for the entire device.**
3. **Disconnect power from the appliance when replacing memory modules and fans. To disconnect power, first power down the system with the operating system and then unplug the power cords from all the power supply modules.**
4. **Handle memory modules by their edges only. Do not touch the chips, components or contacts.**

Four memory modules are used in this appliance model, in a configuration similar to that shown in the following figure. Repeat the following steps for each memory module.
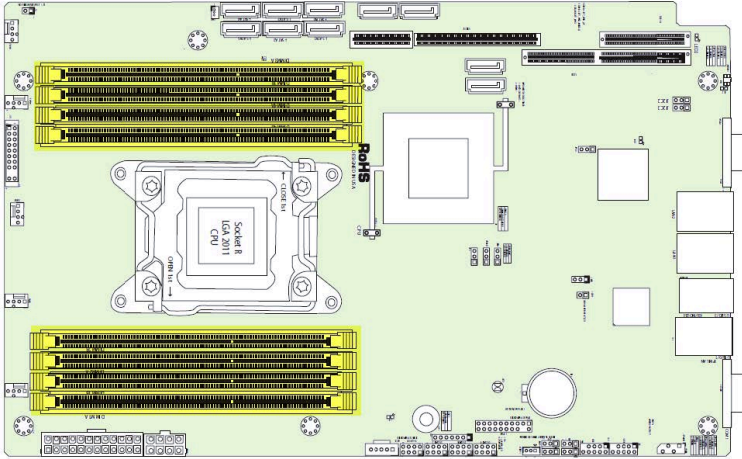
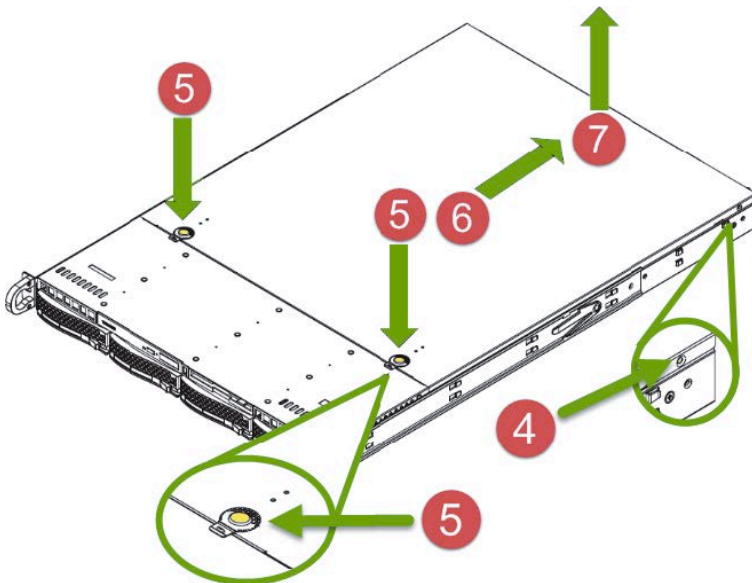*Figure 21. Location of the replaceable memory modules*

Figure 22. Removing the chassis cover

1. Log in to the device as localadmin.
2. At the command prompt, type poweroff.

   Note: After you power off the appliance, remove the power cord and network cables from the back of the chassis.

3. Remove the screws at the rear sides of the chassis, if present.
4. Push in the release tabs on the top of the chassis cover to the rear of the seam to unlock the cover, as shown in Figure 22.
5. Once unlocked, slide the chassis cover toward the rear of the chassis, and lift up and away from the chassis to remove.
6. Pull each module lock tab away from the notches on each side of the memory module, as shown in the following figure.

Figure 23. Releasing a memory module from its slot

7. Lift the memory module out of the module slot.
8. Line up the new memory module to be inserted so that the notch at the bottom aligns with the gap in the module slot, as shown in the following figure.
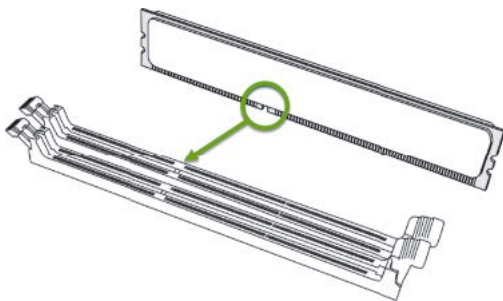

Figure 24. Location of the memory module notch and corresponding gap in the module slot

9. Insert the new memory module into the module slot on the motherboard, pushing it down firmly, as shown in the following figure.
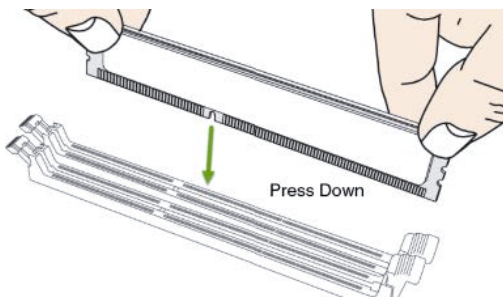

Figure 25. Inserting a new memory module

10. Lift and push the module lock tabs into the memory module, as shown in the following figure.

Figure 26. Locking a new memory module into its slot

11. Place the chassis cover on top of the chassis.

12. Slide the chassis cover toward the front of the chassis until the tabs click under slots in the top front.

13. Replace the screws at the rear sides of the chassis cover.

14. Plug in the power cable and network cables.

15. Power on the appliance.

Replace fans

After determining which fan has failed, follow these steps:

1. Log in to the device as `localadmin`.

2. At the command prompt, type `poweroff`. After the appliance has powered off, you can remove the power cord and network cables from the back of the chassis.

3. Remove the screws at the rear sides of the chassis cover, if present.

4. Push in the release tabs on the top of the chassis cover to the rear of the seam to unlock the cover.

5. Once unlocked, slide the chassis cover toward the back.

6. Lift the chassis cover up and away from the chassis.

7. Unplug the fan cable from the motherboard.

8. Remove the failed blower fan from the chassis.

9. Replace the failed fan with an identical 4 cm, 12 Volt fan. Push it into the vacant space in the housing while making sure the arrows on the top of the fan (indicating air direction) point in the same direction as the arrows on the other fans, as shown in the following figure.
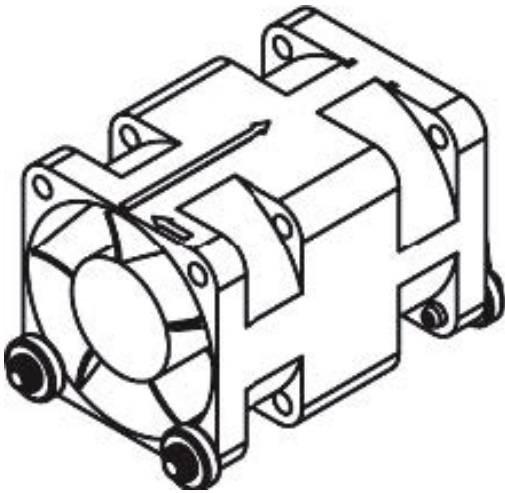

Figure 27. 4 cm case fan

10. Reposition the fan housing over the two mounting posts in the chassis. Reconnect the fan wires to the same chassis fan headers you removed them from, as shown in the following figure.
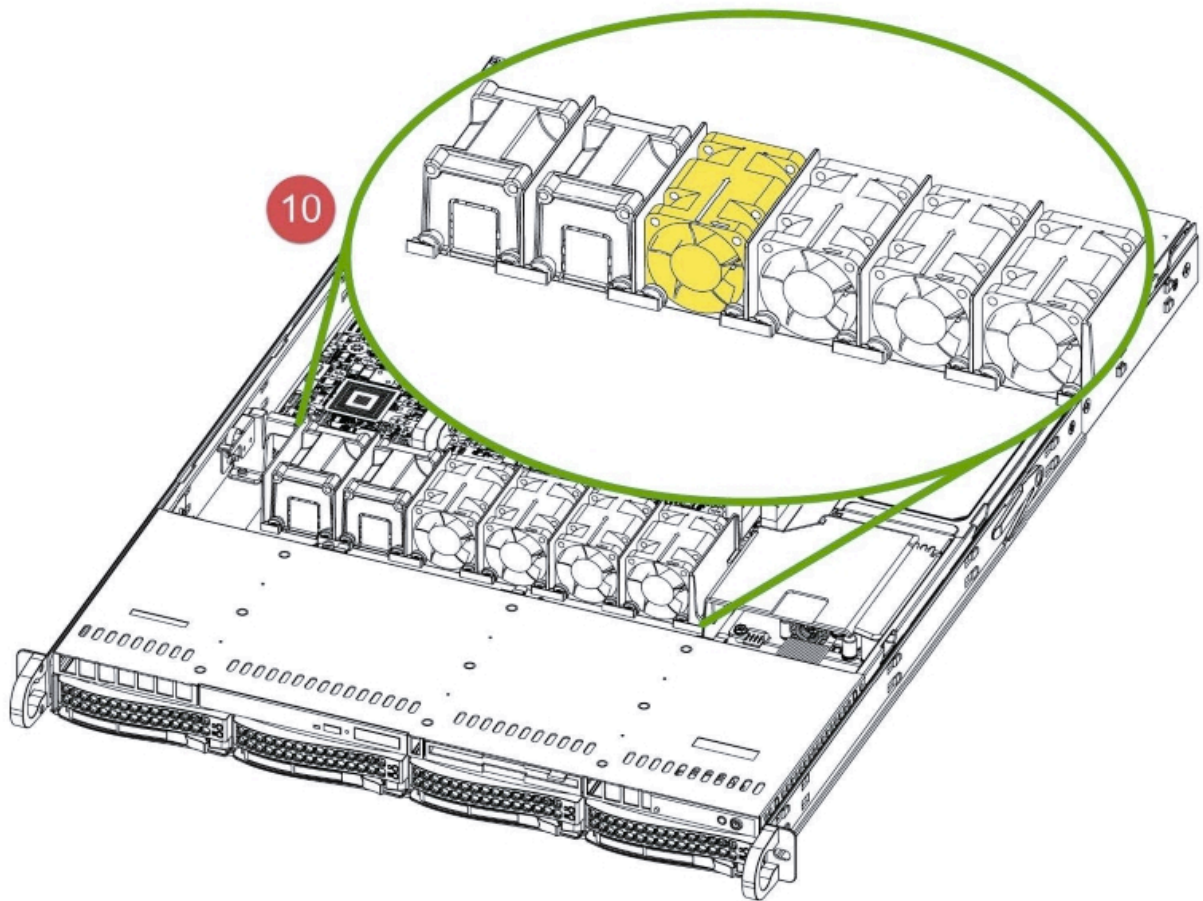
Figure 28. Location of the fans in the appliance

11. Plug in the power cable and network cables.
12. Power on the appliance.
13. Check that the fan is working properly and that the LED on the control panel has turned off.
14. Place the chassis cover on top of the chassis.
15. Slide the chassis cover toward the front of the chassis until the tabs click under slots in the top front.
16. Replace the screws at the rear sides of the chassis cover.

Replace external front components

Check the status of the operating system/database drives

The operating system and database for the appliance are stored on a RAID-1 disk set. When one drive in this set is replaced, it rebuilds automatically. Check on the status of the RAID rebuild by using the Manager Web Interface:

1. Check the Device Health of the Manager from the **Monitor** page.
2. Click **Devices** from the list on the left side of the page.
3. Click **Manager**.
4. Click a specific Manager device.
5. Check the list of drives under **Summary of device health**.

- If the drive was inserted correctly, the following message is displayed:

  All drives are online.

6. Check the Event Console for the status of the RAID repair.
   - If the drive in the RAID array is in repairing itself, the following message is displayed:

     The local drive in bay *bay_id* **is repairing.**

   - If the drive in the RAID array is successfully repaired, the following message is displayed:

     The local drive in bay *bay_id* **is repaired.**

   - If the drive in the RAID array is running correctly, this event shows:

     Local drive array has been repaired.

Replace the operating system/database drives

1. Press the release button on the drive carrier. This action extends the carrier handle, as shown in the following figure.
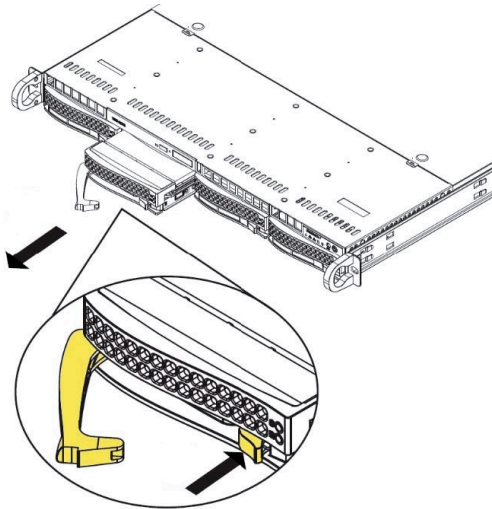

Figure 29. Removing a drive from the chassis

> **Note:** The operating system drives are the two at the left. The preceding figure makes the extraction of the drive easier to see and is only for illustration purposes.

2. Pull the drive carrier out of the chassis by using the handle.
3. Insert the new OS drive into the open slot in the front of the appliance.
4. Contact IBM Support to issue OS drive recovery.

Replace external rear components

Replace a power supply unit

If either of the two power supply units (PSU) fails, the other unit takes the full load and the system can continue operation without interruption. The Universal Information LED on the control panel flashes slowly until the failed unit is replaced.

The PSUs can be replaced without powering down the appliance. The redundant feature keeps the appliance active while the failed PSU is replaced.

1. Push the release tab on the rear of the PSU, as shown in the following figure.
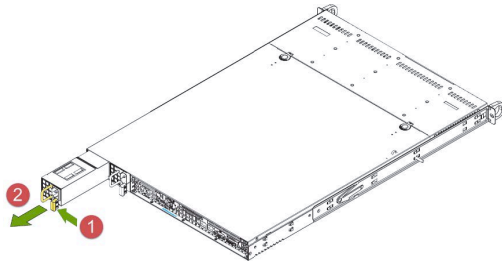
Figure 30. Removing a PSU from the chassis

2. Pull the PSU out using the provided handle. (The PSU wiring is designed to detach automatically when the PSU is pulled from the chassis).

3. Replace the failed PSU with another PSU.

4. Push the new PSU into the power bay until you hear a click.

Install an SFP+ / QSFP optical module

1. Log in to the device as `localadmin`.

2. At the command prompt, type `poweroff`.

3. Remove the SFP+ / QSFP module from the packaging.

4. Remove the black plastic protective cap from the optical side of the module.

5. Insert the module into the network card until it clicks into place.

6. Insert the fiber optic cable into the SFP+ / QSFP module.

7. Restart system and configure the network interface. For more information, see the *Appliance Configuration Guide*.

Battery removal and installation

Battery removal

To remove the Onboard battery, follow these steps:

1. Power off your system and unplug your power cable.

2. Locate the Onboard battery, as shown in the figure below.

3. Using a tool such as a pen or a small screwdriver, push the battery lock outwards to unlock it. When unlocked, the battery pops out from the holder.

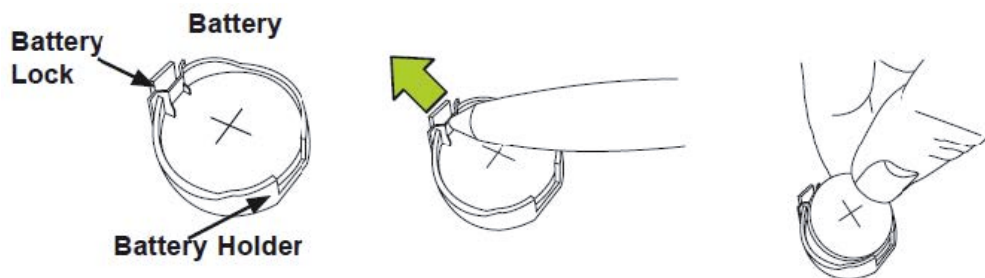4. Remove the battery, as shown in the following figure.

Figure 31. Remove the battery

CAUTION:
Handle used batteries carefully. Do not damage the battery in any way; a damaged battery can release hazardous materials into the environment. Do not discard a used battery in the garbage or a public landfill. Refer to the IBM Systems Environmental Notices for battery disposal guidelines.

Battery installation

To install an Onboard battery, follow these steps:

1. Identify the battery's polarity. The positive (+) side must be facing up.
2. Insert the battery into the battery holder. Push it down until you hear a click to ensure that the battery is securely locked, as shown in the following figure.

Figure 32. Install the battery

CAUTION:
Be sure to replace the battery with the same type only.

Notices

This information was developed for products and services offered in the US. This material might be available from IBM in other languages. However, you may be required to own a copy of the product or product version in that language in order to access it.

IBM may not offer the products, services, or features discussed in this document in other countries. Consult your local IBM representative for information on the products and services currently available in your area. Any reference to an IBM product, program, or service is not intended to state or imply that only that IBM product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any IBM intellectual property right may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any non-IBM product, program, or service.

IBM may have patents or pending patent applications covering subject matter described in this document. The furnishing of this document does not grant you any license to these patents. You can send license inquiries, in writing, to:

IBM Director of Licensing
IBM Corporation
North Castle Drive
Armonk, NY 10504-1785
U.S.A.

For license inquiries regarding double-byte character set (DBCS) information, contact the IBM Intellectual Property Department in your country or send inquiries, in writing, to:

Intellectual Property Licensing
Legal and Intellectual Property Law
IBM Japan, Ltd.
19-21, Nihonbashi-Hakozakicho, Chuo-ku
Tokyo 103-8510, Japan

INTERNATIONAL BUSINESS MACHINES CORPORATION PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some jurisdictions do not allow disclaimer of express or implied warranties in certain transactions, therefore, this statement may not apply to you.

This information could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. IBM may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time without notice.

Any references in this information to non-IBM websites are provided for convenience only and do not in any manner serve as an endorsement of those websites. The materials at those websites are not part of the materials for this IBM product and use of those websites is at your own risk.

IBM may use or distribute any of the information you provide in any way it believes appropriate without incurring any obligation to you.

Licensees of this program who wish to have information about it for the purpose of enabling: (i) the exchange of information between independently created programs and other programs (including this one) and (ii) the mutual use of the information which has been exchanged, should contact:

IBM Director of Licensing
IBM Corporation
North Castle Drive, MD-NC119
Armonk, NY 10504-1785
US

Such information may be available, subject to appropriate terms and conditions, including in some cases, payment of a fee.

The licensed program described in this document and all licensed material available for it are provided by IBM under terms of the IBM Customer Agreement, IBM International Program License Agreement or any equivalent agreement between us.

The performance data discussed herein is presented as derived under specific operating conditions. Actual results may vary.

Information concerning non-IBM products was obtained from the suppliers of those products, their published announcements or other publicly available sources. IBM has not tested those products and cannot confirm the accuracy of performance, compatibility or any other claims related to non-IBM products. Questions on the capabilities of non-IBM products should be addressed to the suppliers of those products.

Statements regarding IBM's future direction or intent are subject to change or withdrawal without notice, and represent goals and objectives only.

All IBM prices shown are IBM's suggested retail prices, are current and are subject to change without notice. Dealer prices may vary.

This information is for planning purposes only. The information herein is subject to change before the products described become available.

This information contains examples of data and reports used in daily business operations. To illustrate them as completely as possible, the examples include the names of individuals, companies, brands, and products. All of these names are fictitious and any similarity to the names and addresses used by an actual business enterprise is entirely coincidental.

COPYRIGHT LICENSE:

This information contains sample application programs in source language, which illustrate programming techniques on various operating platforms. You may copy, modify, and distribute these sample programs in any form without payment to IBM, for the purposes of developing, using, marketing or distributing application programs conforming to the application programming interface for the operating platform for which the sample programs are written. These examples have not been thoroughly tested under all conditions. IBM, therefore, cannot guarantee or imply reliability, serviceability, or function of these programs. The sample programs are provided "AS IS", without warranty of any kind. IBM shall not be liable for any damages arising out of your use of the sample programs.

If you are viewing this information softcopy, the photographs and color illustrations may not appear.

Trademarks

IBM, the IBM logo, and ibm.com® are trademarks or registered trademarks of International Business Machines Corp., registered in many jurisdictions worldwide. Other product and service names might be trademarks of IBM or other companies. A current list of IBM trademarks is available on the web at Copyright and trademark information at www.ibm.com/legal/copytrade.shtml.

Accesser®, Cleversafe®, ClevOS™, Dispersed Storage®, dsNet®, IBM Cloud Object Storage Accesser®, IBM Cloud Object Storage Dedicated™, IBM Cloud Object Storage Insight™, IBM Cloud Object Storage Manager™, IBM Cloud Object Storage Slicestor®, IBM Cloud Object Storage Standard™, IBM Cloud Object Storage System™, IBM Cloud Object Storage Vault™, SecureSlice™, and Slicestor® are trademarks or registered trademarks of Cleversafe, an IBM Company and/or International Business Machines Corp.

Other product and service names might be trademarks of IBM or other companies.

Homologation statement

This product may not be certified in your country for connection by any means whatsoever to interfaces of public telecommunications networks. Further certification may be required by law prior to making any such connection. Contact an IBM representative or reseller for any questions.

IBM ®

Printed in USA