IBM®

# Global 2x16 Console Manager
# Global 4x16 Console Manager

## Installation and User's Guide

For 1735-2GX and 1735-4GX

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# Installation and User’s Guide

# Safety

Before installing this product, read the Safety Information.

قبل تركيب هذا المنتج، يجب قراءة الملاحظات الأمنية

Antes de instalar este produto, leia as Informações de Segurança.

在安装本产品之前，请仔细阅读 Safety Information
（安全信息）。

安裝本產品之前，請先閱讀「安全資訊」。

Prije instalacije ovog produkta obavezno pročitajte Sigurnosne Upute.

Před instalací tohoto produktu si přečtěte příručku bezpečnostních instrukcí.

Læs sikkerhedsforskrifterne, før du installerer dette produkt.

Lees voordat u dit product installeert eerst de veiligheidsvoorschriften.

Ennen kuin asennat tämän tuotteen, lue turvaohjeet kohdasta Safety Information.

Avant d'installer ce produit, lisez les consignes de sécurité.

Vor der Installation dieses Produkts die Sicherheitshinweise lesen.

Πριν εγκαταστήσετε το προϊόν αυτό, διαβάστε τις πληροφορίες ασφάλειας
(safety information).

לפני שתתקינו מוצר זה, קראו את הוראות הבטיחות.

A termék telepítése előtt olvassa el a Biztonsági előírásokat!

Prima di installare questo prodotto, leggere le Informazioni sulla Sicurezza.

製品の設置の前に、安全情報をお読みください。

본 제품을 설치하기 전에 안전 정보를 읽으십시오.

Пред да се инсталира овој продукт, прочитајте информацијата за безбедност.

Les sikkerhetsinformasjonen (Safety Information) før du installerer dette produktet.

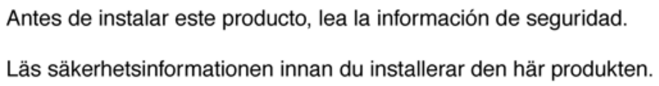
Przed zainstalowaniem tego produktu, należy zapoznać się
z książką "Informacje dotyczące bezpieczeństwa" (Safety Information).

Antes de instalar este produto, leia as Informações sobre Segurança.

Перед установкой продукта прочтите инструкции по
технике безопасности.

Pred inštaláciou tohto zariadenia si pečítaje Bezpečnostné predpisy.

Pred namestitvijo tega proizvoda preberite Varnostne informacije.



Antes de instalar este producto, lea la información de seguridad.

Läs säkerhetsinformationen innan du installerar den här produkten.

## Notices and statements used in this document

- **Note:** These notices provide important tips, guidance, or advice.
- **Important:** These notices provide important information or advice that might help you avoid inconvenient or problem situations.
- **Attention:** These notices indicate possible damage to programs, devices or data. An attention notice is placed just before the instruction or situation in which damage could occur.
- **Caution:** These statements indicate situations that can be potentially hazardous to you. A caution situation 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.

## Important:

All caution and danger statements in this documentation begin with a number. This number is used to cross reference an English caution or danger statement with translated versions of the caution or danger statement in the IBM Safety Information book.

For example, if a caution statement begins with a number 1, translations for that caution statement appear in the IBM Safety Information book under statement 1.

Be sure to read all caution and danger statements in this documentation before performing the instructions. Read any additional safety information that comes with the server or optional device before you install the device.

## Sound Level Measure

The measured sound level of this appliance is 44.7 dB(A).

Die arbeitsplatzbezogene Geräuschemission des Gerätes beträgt 44,7 dB(A).

Statement 1

DANGER

**Electrical current from power, telephone, and communication cables is hazardous.**

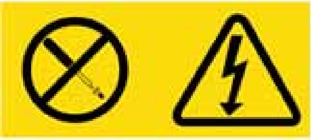
**To avoid a shock hazard:**

- **Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.**
- **Connect all power cords to a properly wired and grounded electrical outlet.**
- **Connect to properly wired outlets any equipment that will be attached to this product.**
- **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.**
- **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 table when installing, moving, or opening covers on this product or attached devices.**

| To Connect: | To Disconnect: |
|---|---|
| 1. Turn everything OFF. | 1. Turn everything OFF. |
| 2. First, attach all cables to devices. | 2. First, remove power cords from outlet. |
| 3. Attach signal cables to connectors. | 3. Remove signal cables from connectors. |
| 4. Attach power cords to outlet. | 4. Remove all cables from devices. |
| 5. Turn device ON. | |

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.**

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CHAPTER 1

# Product overview

The IBM® Global 2x16 Console Manager (GCM2) and the IBM Global 4x16 Console Manager (GCM4) appliances integrate digital and analog KVM switching technology with advanced cable management and provide access for up to three or four simultaneous users. Virtual media support is included. The appliance transmits KVM information between users and target devices attached to the appliance when the users are either remote or locally connected.

Options for remote management and access include an integrated Web interface and VCS client software that can be installed on a remote computer. Options for local management and access include the OSCAR® interface available through a monitor, keyboard, and mouse that can be connected to local user KVM ports on the appliance. Console menu access is also available through a terminal that can be connected to the serial port.

Each appliance has 16 ports for connecting target devices such as servers and routers. Up to 256 target devices can be managed by daisy-chaining target devices. Additional appliances can be tiered for support for up to 2048 target devices.

## Features and benefits

The appliances are rack mountable KVM switches supporting analog (local) and digital (remote) connectivity. Video resolutions are supported up to 1280 x 1024 for remote users.

The GCM2 appliance includes support for KVM-over-IP access for two remote users and virtual media capability for one local user and up to two remote users. The GCM4 appliance includes support for KVM-over-IP access for four remote users, and virtual media capability for one local user and up to four remote users.

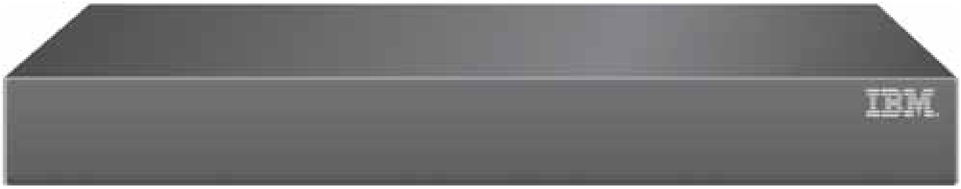


Figure 1.1: GCM2 or GCM4 appliance

Users can access connected target devices remotely through the1000BASE-T Ethernet port and directly through a local user station.

IP access through standard LAN connections supports target device control from anywhere in the world.

Both appliance models have USB and PS/2 ports for one local user station. USB and PS/2 connectors can be mixed; for example, a USB keyboard and a PS/2 mouse can be connected.

A terminal or a computer running a terminal emulation program can be connected to the configuration port for firmware upgrades and other types of configuration.

USB media devices such as CD drives can be connected to any of the four available USB ports for virtual media support.

## Authorization and authentication

Authorization and authentication can be configured to use local databases, or LDAP, or a combination of both methods, as described below:

- Local authentication is always used, whether it is the primary or backup authentication method, and it cannot be disabled.
- Local databases or LDAP can be used for both authentication and authorizations checking.
- LDAP can be used for authentication only while the local databases are used for authorizations checking.

## SNMP

Administrators can configure Simple Network Management Protocol (SNMP) managers to access the appliances and can configure traps to be sent to designated SNMP servers.

### Virtual media

Virtual media support allows USB media devices, such as CD devices, flash storage devices, and disk storage devices, to be shared with the target devices. For virtual media to work, the target device must be directly connected to the appliance with a Virtual Media Conversion Option (VCO) cable. Virtual media is not supported for target devices that are daisy-chained or that are connected to tiered appliances.

The media device being shared can be connected either to one of four USB ports on the appliance or to a USB port on a remote computer. Remotely attached media can be shared with the target devices using either the Web interface or the Virtual Console Software (VCS) client software installed on the remote computer.

Using the virtual media capability, users can perform operations on target devices such as installing or upgrading the operating system; booting from a CD; installing applications; updating the BIOS, or backing up the system.

## Conversion option cables

A Conversion Option (CO) cable is an intelligent interface that is attached to each target device. Firmware on the CO cables can be upgraded using the Web interface, the OSCAR interface, the VCS, or the Console menu.

CO cable models support target devices with either PS/2 and USB ports. You must connect one of the following types of CO cables to each target device:

- **IBM 250 mm KVM Conversion Option (KCO) cable** - PS/2 and VGA connectors
- **IBM 1.5 M KVM Conversion Option (KCO) cable** - PS/2 and VGA connectors
- **IBM Virtual Media Conversion Option (VCO) cable** - USB2 and VGA connectors

**NOTE:** For virtual media support, the target device must be connected to a VCO cable, and the VCO cable must be directly connected to the appliance. Virtual media is not supported for daisy-chained target devices or for target devices connected to tiered appliances.

- **IBM USB Conversion Option (UCO) cable** - USB and VGA connectors

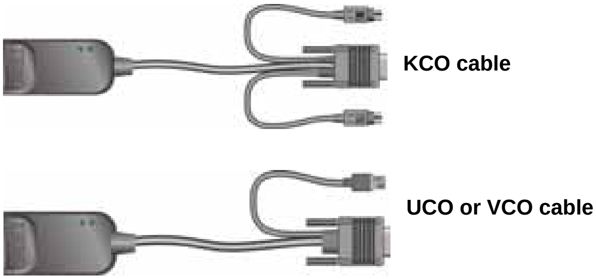


**Figure 1.2: Examples of CO cables**

Using Cat5 cables dramatically reduces cable clutter while providing optimal digital display resolution and video settings. The built-in memory of each CO cable simplifies configuration by storing unique identification codes and optional names that can be configured for each attached target device.

The intelligence integrated into the CO cable enhances security and prevents unauthorized access to a target device through cable manipulation. Each CO cable receives power directly from the target device.

Keep Alive functionality on the CO cables emulates a keyboard to prevent server lock-up even if the appliance is not turned on or if the connection between the CO cable and the switch is interrupted.

Each KCO and UCO cable has two RJ-45 ports for connecting Cat5 cables. Each VCO has one RJ-45 port. The RJ-45 ports are used in the following ways.

- A Cat5 cable must be connected to an RJ-45 port on the CO cable of a target device and to an ARI port on a standalone or tiered appliance.

- When target devices are daisy chained from a single ARI port, a Cat5 cable must be connected to the second RJ-45 port on a KCO or UCO that is connected to a target device. The other end of the Cat5 cable must then be connected to the first RJ-45 port on a KCO or UCO cable that is connected to the next target device in the chain.
- When only one target device is connected to a port with a KCO or UCO cable or when the target device is the last in a daisy chain, a terminator must be connected to the second RJ-45 port on the connected KCO or UCO cable.

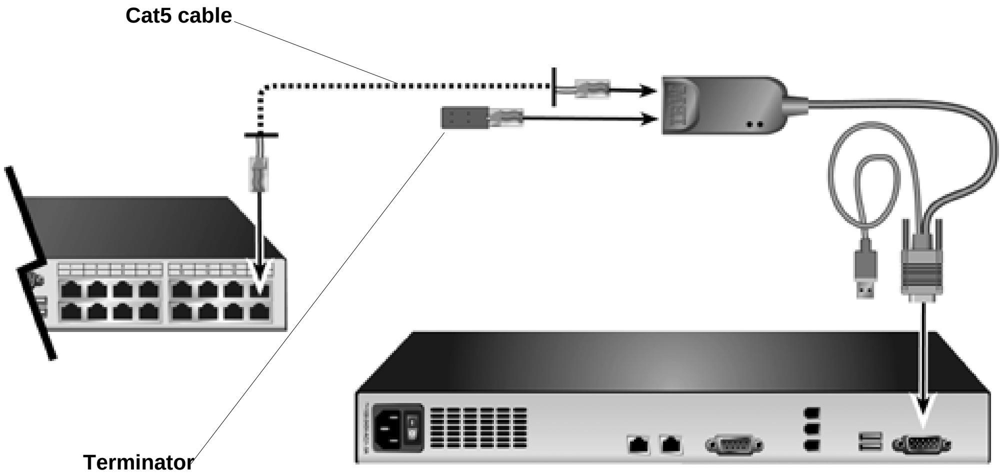


**Figure 1.3: Cat5 cable and a terminator connected to RJ-45 ports on a UCO cable**

## OSCAR graphical user interface

Users at a local user station can use the OSCAR interface, which provides menus to configure the switching system and select target devices. You can list target devices by unique name, eID (electronic ID), or port number. See Chapter 3 for details on how to use the OSCAR interface.

### Security

Administrators can configure the OSCAR interface to restrict access to the switching system by configuring a password and the screen saver. After an administrator-defined period of inactivity, the screen saver engages and access is not allowed until the correct password is entered.

### Operation modes

The OSCAR user interface allows administrators to configure the broadcast, scan, switch, and share operation modes for the target devices.

## Video

The appliance provides optimal resolution for analog VGA, SVGA, and XGA video. Resolutions of up to 1280 x 1024 can be achieved depending upon the length of cable that is separating the appliance and target devices.

## Flash upgradability

The appliance firmware can be upgraded to a more-current version using the Web interface, the OSCAR interface, the VCS, or the Console menu.

See Appendix A for more information about how to upgrade the firmware.

## Accessing the appliance through network connection

The appliance uses TCP/IP for communication over Ethernet. The network port supports up to 1000BASE-T Ethernet. 10BASE-T and switched 100BASE-T Ethernet can be used. The network port gives administrators and users digital access to the switching system.

## Accessing target devices

When a user accesses OSCAR, the Web interface, or the VCS, a list appears with all target devices the user have permission to view and manage. When a target device is selected from the list, a KVM session is created with video of the selected target device displaying in a Video Viewer window.

**NOTE:** The Video Viewer requires JRE 5.0 update 11 to be installed on the computer.

# Example appliance configuration

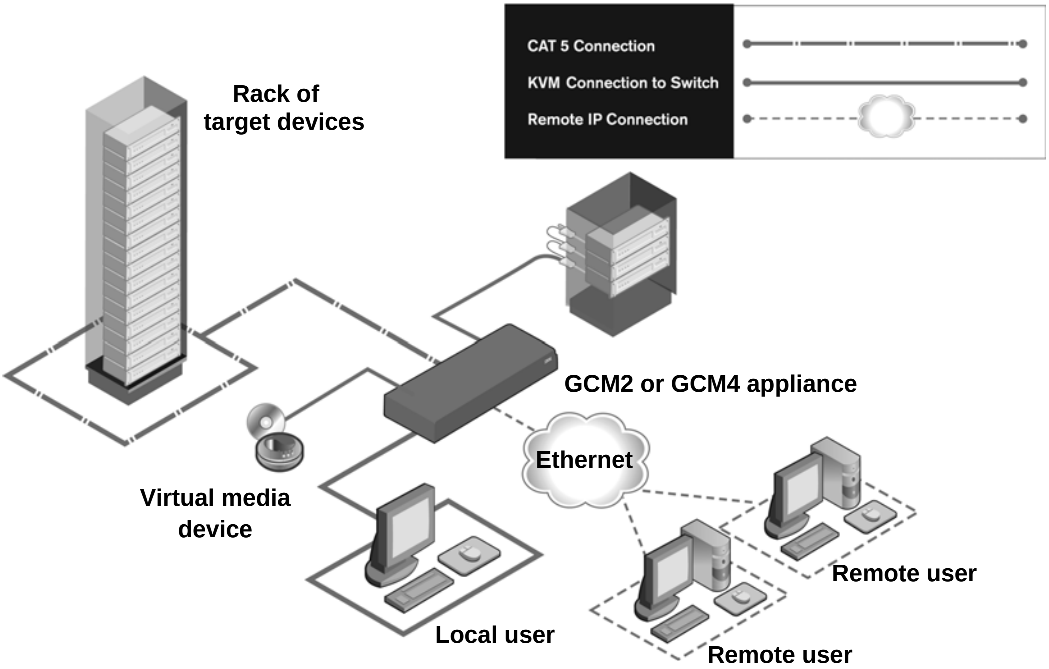


**Figure 1.4: Example appliance configuration**

**Table 1.1: GCM2 and GCM4 appliance model comparison**

| Model | Ports | Remote users | Local users | Local virtual media sessions | Remote virtual media sessions |
|---|---|---|---|---|---|
| GCM2 | 16 | 2 | 1 | 1 | 2 |
| GCM4 | 16 | 4 | 1 | 1 | 4 |

# CHAPTER 2

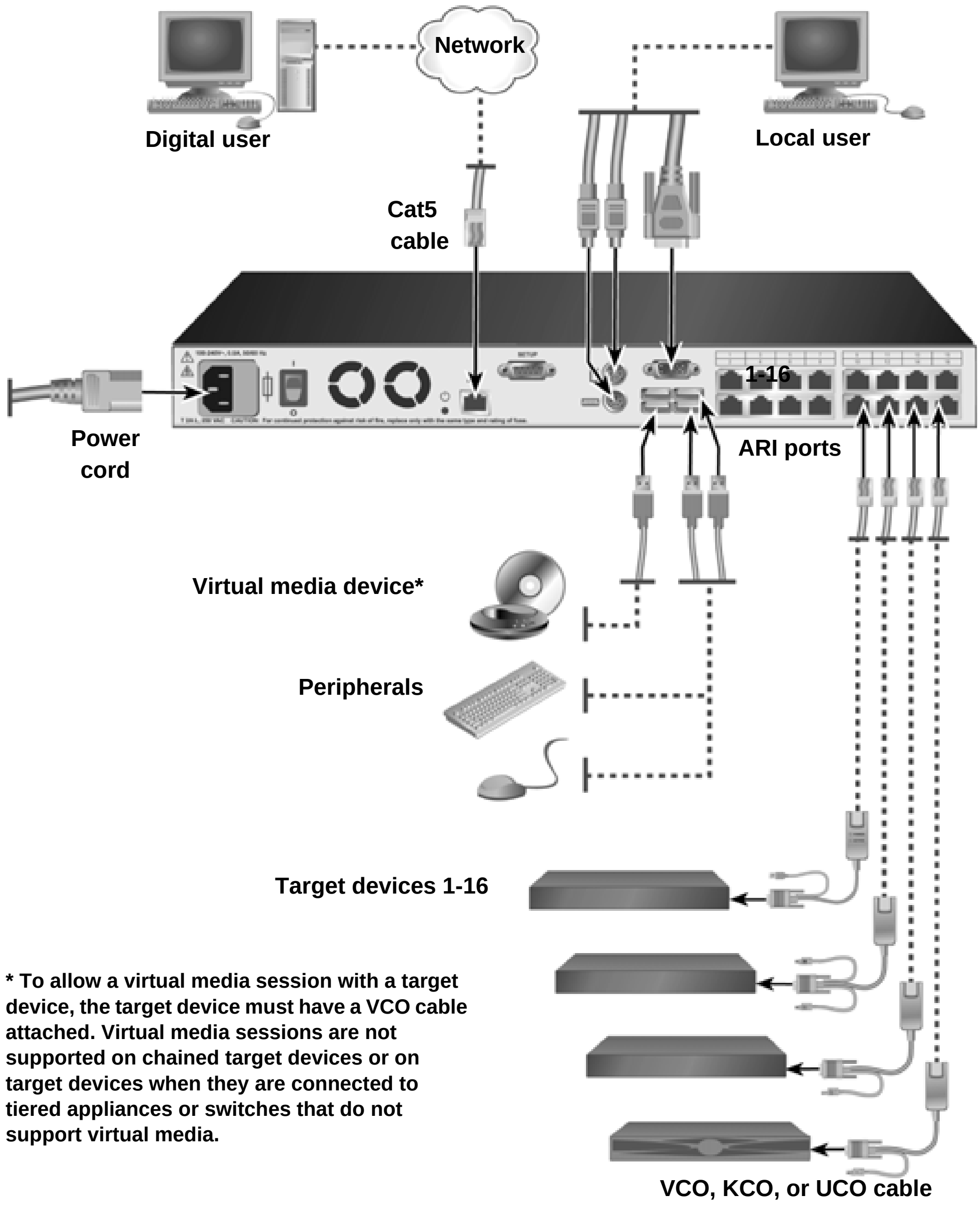
# Installation

The following tasks to set up and configure the appliance are described in this chapter:

1. Unpack the appliance and verify that all components are present and in good condition. See "Required items" on page 9.
2. Make the needed mouse setting adjustments on each target device to be connected. See "Required adjustments to mouse and cursor settings" on page 10.
3. Read and follow the "Safety precautions" on page 10.
4. Rack mount the appliance. See "Rack mounting the appliance" on page 13.
5. Make all hardware connections between the power source, appliance, local user station, target devices, and the Ethernet network. See the following sections:
   - "Connecting hardware to the appliance" on page 16
   - "Daisy chaining" on page 17
   - "Appliance tiering" on page 17

   See also the *Quick Installation Guide*.
6. After turning on the power, verify that all connections are working. See "Verifying Ethernet connections" on page 16.
7. Configure access to the appliance. See "Configuration options and default authentication" on page 21.

The following diagram illustrates one possible configuration for the appliance.



*** To allow a virtual media session with a target device, the target device must have a VCO cable attached. Virtual media sessions are not supported on chained target devices or on target devices when they are connected to tiered appliances or switches that do not support virtual media.**

**Figure 2.1: Basic appliance configuration**

# Required items

Before you install the appliance, make sure that you have all the required items. The following items come with the appliance:

- Power cord
- Rack-mounting brackets
- Documentation CD
- Virtual Console Software Installation CD
- *Quick Installation Guide*
- 1-U filler panel
- 16 terminators

The following additional items are needed:

- A Phillips screwdriver
- For each target device to be connected, one IBM Conversion Option (KCO, UCO, or VCO) and one Cat5 cable
- For each switch to be tiered, one Cat5 cable.
- For each switch to be tiered with a KCO, one IBM KVM Conversion Option (KCO)

# Operating System, Browser, and JRE Requirements

Target devices must be running one of the following operating systems:

- Microsoft® Windows® 2000 Server and Advanced Server
- Microsoft Windows XP Professional and Standard 32-bit
- Microsoft Windows Server 2003 Web, Standard, and Enterprise 32-bit
- Microsoft Windows Server 2003 Enterprise IA64, Standard and Enterprise EM64T
- Microsoft Windows Vista Standard and Enterprise 32-bit
- Microsoft Windows Vista Standard and Enterprise EM64T
- Red Hat® Enterprise Linux® 3.0. 4.0, and 5.0, IA32 and EM64T, WS, ES, and AS

Client computers running the VCS must be running one of the following operating system versions:

- Microsoft Windows 2003 Server with Service Pack 1 Web, Standard, and Enterprise
- Microsoft Windows XP Professional with Service Pack 2
- Microsoft Windows Vista Business
- Microsoft Windows 2000 Professional with Service Pack 4
- Red Hat Enterprise Linux 3.0. 4.0, and 5.0 WS, ES, and AS
- SUSE Linux Enterprise Server 9 and Server 10

Computers used to access the Web interface and client computers running the VCS must have one of the following browsers installed:

- Internet Explorer 7.0 or later
- Netscape 7.0 or later
- Firefox 2.0 or later

Computers used to access the Web interface and client computers running the VCS must have Java Runtime Environment JRE 5.0 update 11 installed. (The Video Viewer does not work without the correct version of the JRE.)

## Required adjustments to mouse and cursor settings

To ensure that the local mouse movement and remote cursor (pointer) display are in sync, the mouse settings must be changed on each remote computer used for accessing the switching system and on each target device.

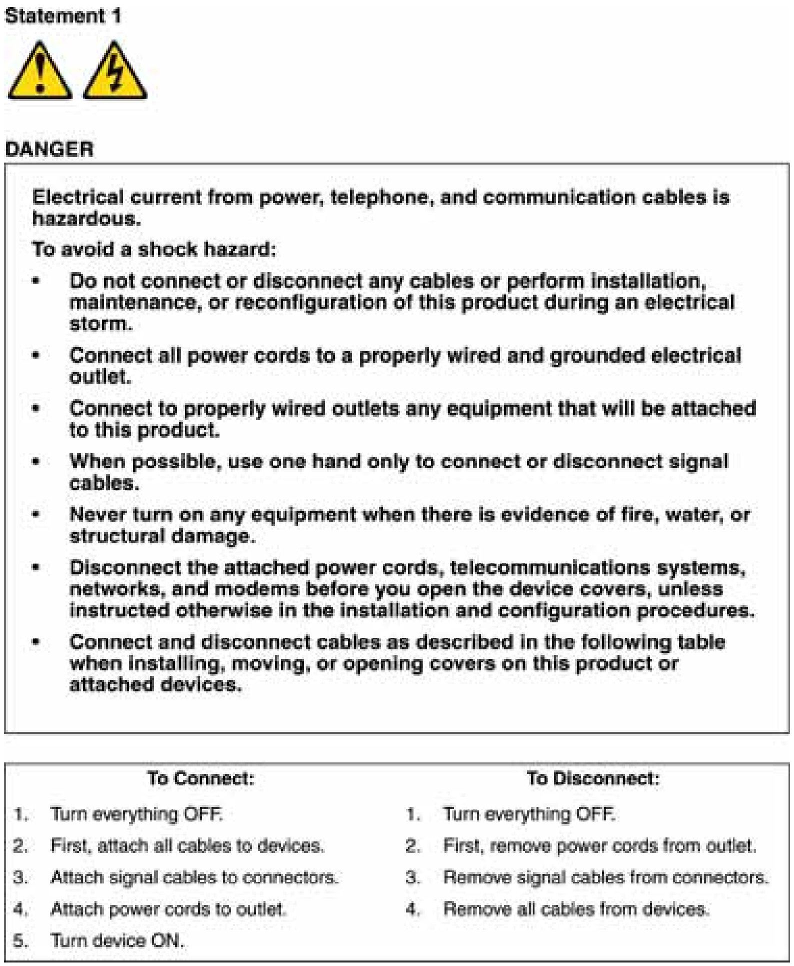
In the mouse properties, ensure that cursor acceleration (sometimes called the pointer speed) is set to Slow or None and that “snap to default” is not enabled.

Special cursors should not be used. Also make sure that cursor visibility options, such as pointer trails, **Ctrl** key cursor location animations, cursor shadowing and cursor hiding are turned off.

**NOTE:** To work around cursor synchronization problems, you can use the *Tools - Single Cursor Mode* command available in the Viewer window to manually toggle control between the cursor on the target device being viewed and the cursor on the computer from which you are accessing the switching system. The Viewer is described in the *VCS Installation and User’s Guide.*

## Safety precautions

Observe the following guidelines to safely operate the equipment.



**Statement 1**

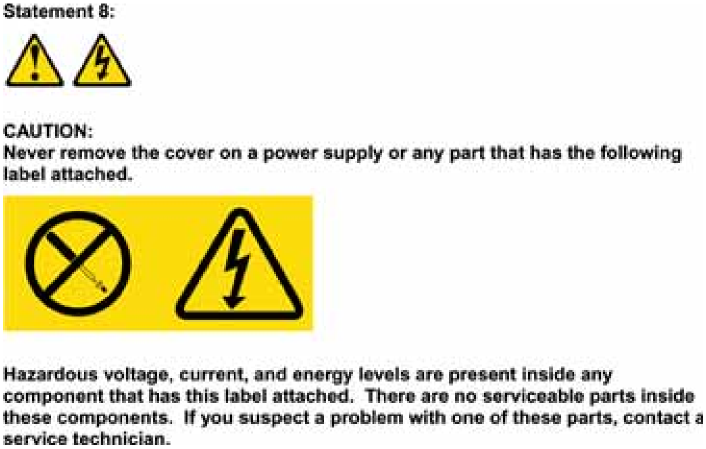
**DANGER**

**Electrical current from power, telephone, and communication cables is hazardous.**

**To avoid a shock hazard:**

- **Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.**
- **Connect all power cords to a properly wired and grounded electrical outlet.**
- **Connect to properly wired outlets any equipment that will be attached to this product.**
- **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.**
- **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 table when installing, moving, or opening covers on this product or attached devices.**

| To Connect: | To Disconnect: |
|---|---|
| 1. Turn everything OFF. | 1. Turn everything OFF. |
| 2. First, attach all cables to devices. | 2. First, remove power cords from outlet. |
| 3. Attach signal cables to connectors. | 3. Remove signal cables from connectors. |
| 4. Attach power cords to outlet. | 4. Remove all cables from devices. |
| 5. Turn device ON. | |



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.

## General

- Observe and follow service markings.
- Do not service any appliance except as explained in the appliance documentation.
- Opening or removing covers that are marked with the triangular symbol with a lightning bolt might expose you to electrical shock. Components inside these compartments must be only serviced by a trained service technician.
- The appliance contains no serviceable components. Do not attempt to open the appliance.
- If any of the following conditions occur, disconnect the appliance from the electrical outlet and replace the part or contact the trained service provider:
  - The power cable, extension cable, or connector is damaged.
  - An object has fallen into the product.
  - The appliance has been exposed to water.
  - The appliance has been dropped or damaged.
  - The appliance does not operate properly when you follow the operating instructions.

- Keep the appliance away from radiators and heat sources. Also, do not block cooling vents.
- Do not spill food or liquids on the appliance components, and never operate the appliance in a wet environment. If the appliance gets wet, see the applicable section in the troubleshooting guide or contact the trained service provider.
- Use the appliance only with approved equipment.
- Allow the appliance to cool before removing covers or touching internal components.
- Operate the appliance only from the type of external power source that is indicated on the electrical ratings label. If you are not sure of the type of power source that is required, consult the service provider or local power company.
- Be sure that the monitor and attached devices are electrically rated to operate with the power that is available in the current location.
- Use only power cables that are provided with the appliance.
- To help prevent electric shock, connect the appliance and peripheral power cables into properly grounded electrical outlets. These cables are equipped with three-prong connectors to help ensure proper grounding. Do not use adapter connectors or remove the grounding prong from a cable.
- Observe extension cable and power strip ratings. Make sure that the total ampere rating of all products that are connected to the power strip does not exceed 80 percent of the ampere ratings limit for the power strip.
- To help protect the appliance from sudden, transient increases and decreases in electrical power, use a surge suppressor, line conditioner, or uninterruptible power supply.
- Carefully position appliance cables and power cables. Route cables so that they cannot be stepped on or tripped over. Be sure that nothing rests on any cables.
- Do not modify power cables or connectors. Consult a licensed electrician or the power company for site modifications. Always follow the local and national wiring rules.

## Rack mounting the appliance

Before installing the appliance and other components in the rack (if not already installed), stabilize the rack in a permanent location. Install the equipment starting at the bottom of the rack, and then work to the top. Avoid uneven loading or overloading of racks.

## General guidelines

- Refer to the rack installation documentation that accompanied the rack for specific caution statements and procedures.
- Elevated ambient temperature: In a closed rack assembly, the operation temperature of the rack environment can be greater than room ambient. Use care not to exceed the rated maximum ambient temperature of the unit.
- Reduced air flow: Carefully install the equipment in a rack so that an adequate amount of airflow is maintained for safe operation of the equipment.
- Mechanical loading: Avoid a potentially hazardous condition caused by uneven mechanical loading by carefully mounting the equipment in the rack.
- Circuit overloading: Consider the connection of the equipment to the supply circuit and the effect that overloading of circuits might have on overcurrent protection and supply wiring. Observe equipment nameplate ratings for maximum current.
- Reliable earthing: Maintain reliable earthing of rack-mounted equipment. Pay particular attention to supply connections other than direct connections to the branch circuit (for example, use of power strips).

## Installing the appliance vertically in the side of a rack

**To install the appliance vertically, complete the following steps:**

1. Remove the screws that are on each side of the appliance.
2. Line up the small holes of the L-shaped brackets with the screw holes in the appliance.
3. With a Phillips screwdriver, fasten the mounting brackets to the appliance using two 8/32-inch x 1/2-inch pan-head screws on each side.
4. Mount the appliance assembly to the rack by matching the long slots on each bracket to a set of holes on the rack. Next, insert a combination hex-head screw through the slots in the bracket and the holes in the rack. Cap the screw with a hex serrated flange nut and tighten.

   The mounting holes on the upper and lower side braces in a rack side compartment must be between 50.8-cm (20.0-in.) and 57.3-cm (22.6-in.) apart. If the rack has movable side braces, refer to the rack documentation for information about relocating side braces if they are not already spaced for this installation.

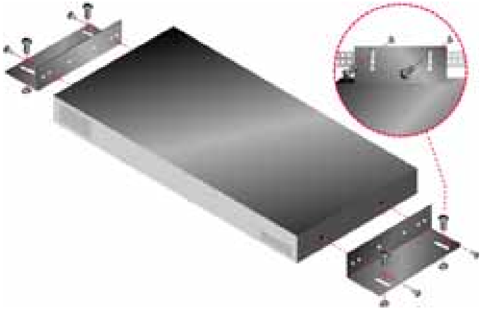


Figure 2.2: Appliance vertical installation

## Installing the appliance horizontally in the 1-U rack mounting space

**NOTE:** The filler panel must be placed in front of the rack when the appliance is mounted in the horizontal 1-U orientation.

**To install the appliance horizontally, complete the following steps:**

1. Remove the screws on each side of the appliance.
2. Line up the holes in the long side of each mounting bracket.
3. With a Phillips screwdriver, fasten the mounting brackets to the appliance using two 8/32-inch x 1/2-inch pan-head screws on each side.
4. Attach four cage nuts or clip nuts to the rack mounting flange of the rack so that the nut is positioned on the inside of the rack.
5. Mount the appliance assembly to the rack by matching the holes in the short side of each mounting bracket to a set of matching holes on the rack. Insert the combination hex-head screws through the slots in the mounting bracket and the holes in the mounting rail, then into the cage nuts or clip nuts.

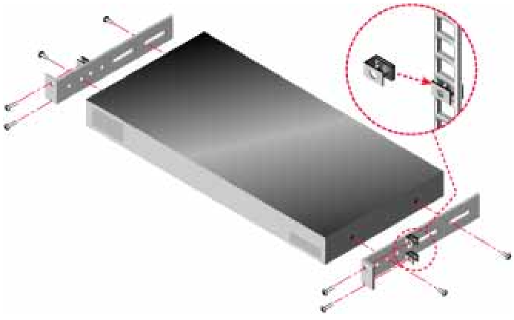


Figure 2.3: Appliance horizontal installation

## Connecting hardware to the appliance

**To connect and turn on the appliance, complete the following steps:**

1. Turn off the target devices that are part of the switching system. Connect one end of the supplied power cord to the back of the appliance and connect the other end of the cord to an ac power source.
2. Connect a VGA monitor and keyboard and mouse cables into the labeled ports.

   PS/2 or USB keyboard and mouse connectors can be mixed. You must install both a keyboard and a mouse or the keyboard does not initialize correctly. Do not connect a DVI or EGA monitor. Label the cables for easy identification.
3. Connect target devices.
   a. Locate the appropriate model of CO (KCO, UCO, or VCO) cable for the target device.
   b. Connect the CO cable to the target device.
   c. Connect one end of a Cat5 patch cable (4-pair, up to 10 meters) into an RJ-45 port on the CO cable.
   d. Connect the other end of the Cat5 cable from the CO into an ARI port on the back of the target device. Repeat steps a through d for all target devices to be directly connected.
   e. Connect a terminator to the second RJ-45 port on each KCO or UCO, unless you are daisy-chaining another target device to the same port. If you are chaining multiple target devices, follow the procedure under “Daisy chaining” on page 17.
4. Connect a Cat5 patch cable from the Ethernet network into the LAN port on the back of the appliance.
5. If you plan to use the Console menu interface for configuration or firmware upgrades, connect a terminal or a computer running terminal emulation software to the configuration port on the back panel of the appliance using a straight through serial cable. Ensure terminal settings are 9600 bits per second (bps), 8 bits, 1 stop bit, no parity, and no flow control.
6. To enable local virtual media, connect a USB media device to a USB port on the appliance.
7. Turn on each target device and then turn on the appliance.
8. After approximately one minute, the appliance completes initialization and opens the OSCAR graphical user interface **Free** tag on the monitor of the local user station.
9. Configure access to the appliance. See “Configuration options and default authentication” on page 21.

## Verifying Ethernet connections

Check the LEDs next to the Ethernet port after the system is turned on. The green LED on the right is the Link indicator. It lights when a valid connection to the network is established, and it flashes when there is activity on the port. The amber/green LED on the left indicates that the speed of the Ethernet connection is either 100 Mbps (amber) or 1000 Mbps (green).

# Daisy chaining

You can daisy chain up to 16 target devices from each ARI port allowing up to 256 target devices to be managed by a single GCM2 or GCM4 appliance.

**To daisy chain target devices, complete the following steps:**

1. Connect one end of a Cat5 cable to the second RJ-45 port on a KCO or UCO cable that is connected to a target device.
2. Connect the other end of this cable to the first RJ-45 port of the KCO or UCO cable for a target device being chained.
3. Repeat steps 1 and 2 for all target devices being chained together.
4. When you reach the end of the chain, attach a terminator to the second RJ-45 port on the last KCO or UCO cable in the chain.

# Appliance tiering

GCM2 and GCM4 appliances can be tiered to integrate up to 256 target devices as part of the same switching system. Compatible earlier-model KVM switches can be tiered to enable management of up to 2048 target devices from a single GCM2 or GCM4 appliance.

The GCM2 or GCM4 appliance automatically discovers cascade devices (either tiered appliances or tiered legacy switches), but an administrator must specify the number of ports on the cascade device using either the Web interface, the VCS, or the OSCAR interface.

See “Configuration options and default authentication” on page 21 for more information about these configuration options. See “To configure a cascade device name and the number of channels, complete the following steps:” on page 48 for how to specify the number of ports using the Web interface.

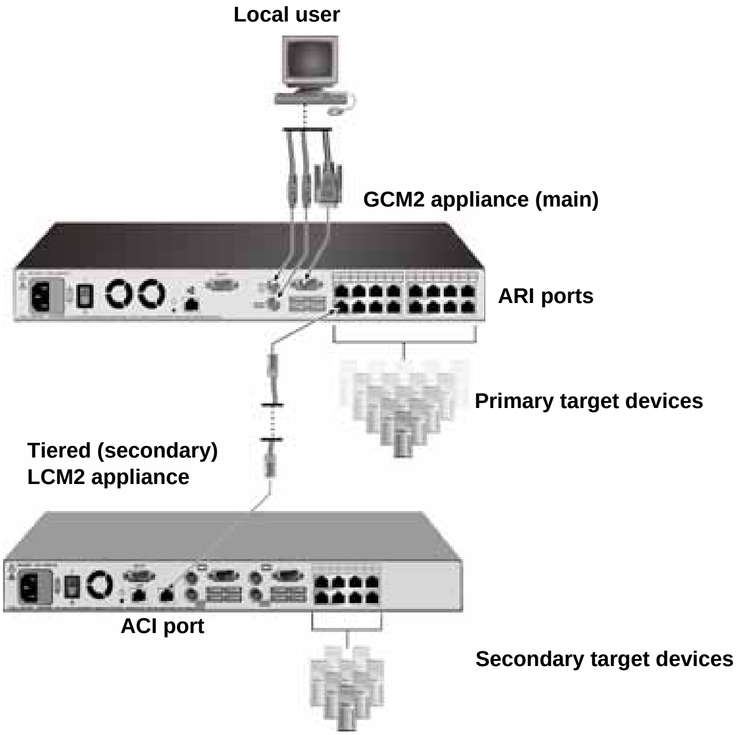


**Figure 2.4: Appliance configuration with a single tiered appliance**

Each ARI port on the main GCM2 or GCM4 appliance can be connected with a Cat5 cable to another compatible switch in either of the two following ways:

- By connecting to the ACI port of another GCM2 or GCM4 appliance or an earlier-model switch
- By connecting to a KCO that is connected to the local user ports on an earlier-model switch

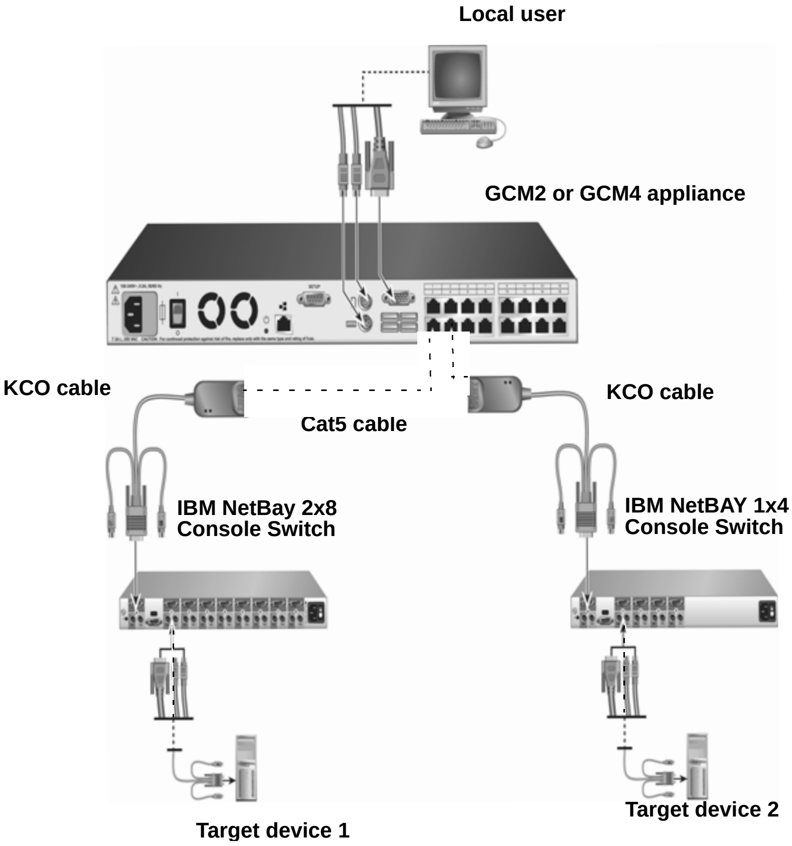


**Figure 2.5: Tiering an earlier-model appliance**

All target devices that are connected to tiered appliances are listed in the main appliance target device list.

The following earlier-model switches are compatible with the GCM2 and GCM4 appliances:

- IBM NetBAY™ 1x4 Console Switch
- IBM NetBAY 2x8 Console Switch
- IBM NetBAY ACT Remote Console Manager
- IBM NetBAY ACT Local Console Manager
- IBM 1x8 Console Switch
- IBM 2x16 Console Switch

When tiering earlier-model switches, make sure a GCM2 or GCM4 appliance is the primary (or main) appliance at the top level of the tier. Up to two levels of tiering are supported with the listed earlier-model appliances.

**To tier multiple GCM2 or GCM4 appliances, complete the following steps:**

1. Mount the secondary GCM2 or GCM4 appliance in the same rack with the main GCM2 or GCM4 appliance.
2. Connect all target devices.
3. Attach one end of a Cat5 cable to the ACI port on the tiered appliance.
4. Attach the other end of the Cat5 cable to one of the ARI ports on the primary appliance.
5. Specify the number of ports on the tiered appliance using the Web interface, the VCS, or the OSCAR interface.

**To tier earlier-model appliances to a GCM2 or GCM4 appliance, complete the following steps:**

1. Mount the earlier-model appliances in the same rack with the main GCM2 or GCM4 appliance according to the instructions that are included with the appliances.
2. If using a CO cable to connect a tiered appliance, complete the following steps:
   a. Attach the keyboard, monitor, and mouse connectors of a CO cable to the local user ports on the tiered appliance.
   b. Attach one end of a Cat5 cable to the end of the CO cable.
   c. If using a CO cable to connect a tiered appliance, attach a terminator to the second RJ-45 port on the CO cable that is connected to the last appliance in the tier.
3. If using a Cat 5 cable to connect the tiered appliance, complete the following steps:
   a. Connect a Cat5 cable directly to the RJ-45 connector (ACI port) on the tiered appliance.
   b. Connect the other end of the Cat5 cable to an ARI port on the back of the appliance.
4. Turn off and turn on the target devices that are connected to the tiered appliance according to the instructions that are included with that device.
5. If using a CO cable, turn off and turn on the tiered appliance to enable its local port to recognize the CO cable.

6. Specify the number of ports on the tiered appliance using the Web interface, the VCS, or the OSCAR interface.
7. Repeat steps 2 to 6 for all appliances.

## Configuring tiering for the maximum number of target devices

Tiering the maximum number of 2048 target devices requires you to connect 16 IBM Local 2x8 Console Manager (LCM2) appliances to the ARI ports of one GCM2 or GCM4 appliance.

From the eight ARI ports on the LCM2 secondary appliances, you can either tier eight IBM 2x16 Console Switch appliances or you can daisy-chain 16 target devices.

**Table 2.1: Earlier model switches configuration for the (2048(maximum number of target devices**

| Primary | Secondary | Tertiary |
|---|---|---|
| GCM2 or GCM4 | Up to 16 LCM2 2x8 appliances | Eight 2x16 console switch appliances (each with 16 target devices connected)<br>-or-<br>16 target devices daisy-chained from each of the ARI ports |

**To configure the maximum number of 2048 target devices, complete the following steps:**

1. Use a Cat5 cable to connect each of the 16 ARI ports on a single GCM2 or GCM4 appliance to the ACI port on each of the 16 LCM2 appliances.
2. Tier additional appliances or chain additional target devices to the ARI ports on each of the LCM2 appliance.
   - To tier another level of appliances: Use a Cat5 cable to connect each of the eight ARI ports on each tiered LCM2 appliance to the ACI port on each of the eight 2x16 Console Switch appliances
   - To daisy-chain target devices from the secondary tier: Connect a chain of 16 target devices to each of the eight ARI ports on each tiered LCM2 appliance.

## Configuration options and default authentication

This section compares the local and remote configuration options and the default authentication needed for accessing each option. The appliance has a default user account configured with username Admin and no password.

**NOTE:** For security, assign a password to the Admin account immediately the first time you access any of the configuration options.

Configure user access to the target devices in the switching system by using one or a combination of the local and remote options.

## Local configuration options

By default, the OSCAR interface and the Console menu are available to any user who is able to access the local user station or a terminal connected to the serial configuration port.

**Table 2.2: Local configuration options**

| Option | How accessed | Default authentication | How authentication is configured. |
|---|---|---|---|
| OSCAR interface<br>See Chapter 4. | Keyboard, monitor, mouse connected to appliance | None. Press Print Screen to access. | Configure screen saver, assign a password to Admin, create other accounts and passwords. |
| Console menu<br>See Chapter 5. | Terminal or computer with terminal emulation program that is connected to the configuration port on the appliance | None. Connect the terminal. Press Enter until Console Main Menu appears. | Set a console password. |

## Remote configuration options

Remote configuration options are available on a computer that has network access to the appliance by using either the VCS client software or the integrated Web interface.

**Table 2.3: Remote configuration options**

| Option | How accessed | Default authentication | How authentication is configured. |
|---|---|---|---|
| Web interface<br>See Chapter 3. | After appliance IP address is configured, enter IP address in a supported browser on a computer with network access to the appliance. | Access to the Web interface requires login with a user name and password. Default User name: Admin; Password: <none>.<br>Access to target devices requires login also. | Assign a password to Admin, create other accounts and assign them passwords. |
| VCS<br>See the *VCS Installation and User’s Guide* | Install and start the VCS client on a supported computer. | The VCS Explorer does not require a login. Access to target devices requires login with a user name and password. | Use the VCS to first discover and then configure the appliance. Create users and specify their passwords and target device access. |

## Configuring the appliance IP address

Users enter the IP address for the appliance in a browser to access the Web interface. Administrators can initially configure the IP address using either the Console menu, the OSCAR interface or the VCS. Both DHCP and static IP addressing are supported. The use of a static IP address is recommended.

**To configure the IP address, restrict access, and assign target device names using the OSCAR interface, complete the following steps:**

1. From the keyboard of the local user station, press **Print Screen**. The OSCAR interface window displays the Main window with a list of the connected target devices by port number.
2. Click **Setup** > **Names**. The Names window appears.
3. Enter a name for each target device.
4. Click **OK** to return to the Main window.
5. Click **Setup** > **Security**.
6. Double-click the **New** field and type a password for the Admin.
7. Select the **Enable Screen Saver** checkbox.
8. In the **Inactivity Time** field, type a number of seconds.
9. Click **OK** to return to the Main window.
10. Click **Setup** > **Network**.
11. Configure the network speed, transmission mode, and the IP address.
12. Click **OK** to save.
13. Press **Esc** to return to the Main window.
14. Press **Esc** to exit the OSCAR interface.

# Configuring users accounts and user device access using the Web interface

**To configure user accounts and specify target device access using the Web interface, complete the following steps:**

1. Enter the appliance IP address in a browser.
2. Log into the Web interface.
3. Click the **Configure** tab.
4. From the left menu, click **Users**.
5. Click the **Add User** button.
6. Specify the username and password.
7. Click **Set User Access Rights**.
8. Select the checkbox next to one or more device names.

9. Click **Save** to enable the user’s access to devices.
10. Repeat steps 5 to 9 until all users are configured.
11. Click **Logout** to exit from the Web interface.

# CHAPTER 3 Using the Web Interface

The integrated Web interface is accessed from a computer that has network access to the appliance. The user enters the IP address configured for the appliance in a supported browser and logs into the Web interface when prompted.

Administrators can use the Web interface for viewing all system status and for system configuration. Users can use the Web interface to launch the Video Viewer and establish KVM and virtual media sessions with target devices, and they can view certain system configuration information.

## Supported browsers

The following browsers are supported for accessing the Web interface:

- Microsoft Internet Explorer version 6.0 or later
- Firefox version 2.0 or later
- Netscape version 7.0 or later

## Upgrading GCM2 and GCM4 appliances to use the Web interface

You need to use the latest version of the VCS to upgrade GCM2 and GCM4 appliances to the firmware version that supports the Web interface. Perform the following tasks, which are described in this section:

- Download and install the latest version of the VCS software on a computer.
- Download the appliance firmware either onto a TFTP server or onto the VCS client computer.
- Upgrade the firmware on each GCM2 and GCM4 appliance to a version that supports the Web interface, using the firmware upgrade tool in the VCS Appliance Management Panel (AMP).
- Use the VCS Migration Wizard and the Resync Wizard to migrate and resync upgraded appliances.

**NOTE:** After a GCM2 or GCM4 appliance is upgraded and migrated, the appliance and its target devices can be managed using either the Web interface or the VCS. For more details about using the VCS, see the *VCS Installation and User's Guide*.

**To start the VCS and access the AMP for an appliance, complete the following steps:**

1. Download and install the latest version of the VCS on a client computer.
2. Start the VCS. (The examples assume the software is installed in the default locations.)
   - In Microsoft Windows operating systems, select **Start** > **Programs** > **IBM Virtual Console Software**.
   - In the Linux operating system, go to **/usr/lib/IBM_Virtual_Console_Software/** and enter: `./IBM_Virtual_Console_Software`.
3. In the VCS Explorer window, click **Appliances**.
4. Select the appliance to upgrade from the list. The appliance login window appears if you are not currently logged in.
5. Log in if needed. The AMP opens.

**To upgrade appliance firmware, complete the following steps:**

1. Download a version of the firmware that includes support for the Web interface from: http://www.ibm.com/support/ either onto the computer that is running the VCS or onto a TFTP server.
2. In the VCS Appliances window, select the appliance, and click the **Tools** tab.
3. Save the appliance configuration and appliance user database files. "Managing appliance configuration files" on page 54 and "Managing user databases" on page 56.
4. Upgrade the appliance firmware. See "To upgrade appliance firmware, complete the following steps:" on page 26.

**NOTE:** Do not exit the AMP until the upgrade and reboot are complete to allow the migration flag for the appliance to be set in the database.

5. Perform the steps in the upgrade procedure until all appliances are upgraded.
6. Click **OK** to exit the AMP.
7. Migrate and resync the upgraded appliance(s).

**To migrate upgraded appliances, complete the following steps.**

1. In the VCS Explorer, click **Tools** > **Migrate**. The Migration Wizard appears.
2. Click **Next**. Upgraded appliances appear in the Available Appliances list.
3. If upgraded appliances do not appear in the list, complete the following steps:
   a. Click **Cancel** to exit the Migration Wizard.
   b. Click **Cancel** to exit the Tools tab and exit the AMP.
   c. Select the appliance and bring up the AMP again so it can detect the upgraded appliance(s).
   d. Click **Tools** > **Migrate**.
   e. Click **Next**.

4. Select each appliance to be migrated and click **>** to move the appliance from the **Available Appliances** list to the **Appliances to migrate** list.
5. To use the local database appliance information, select the **Use Local Database Information** check box.
6. Click **Next**. The Completing the Migration Wizard window appears.
7. Click **Finish** to exit the Wizard.

**To resync migrated appliances, complete the following steps:**

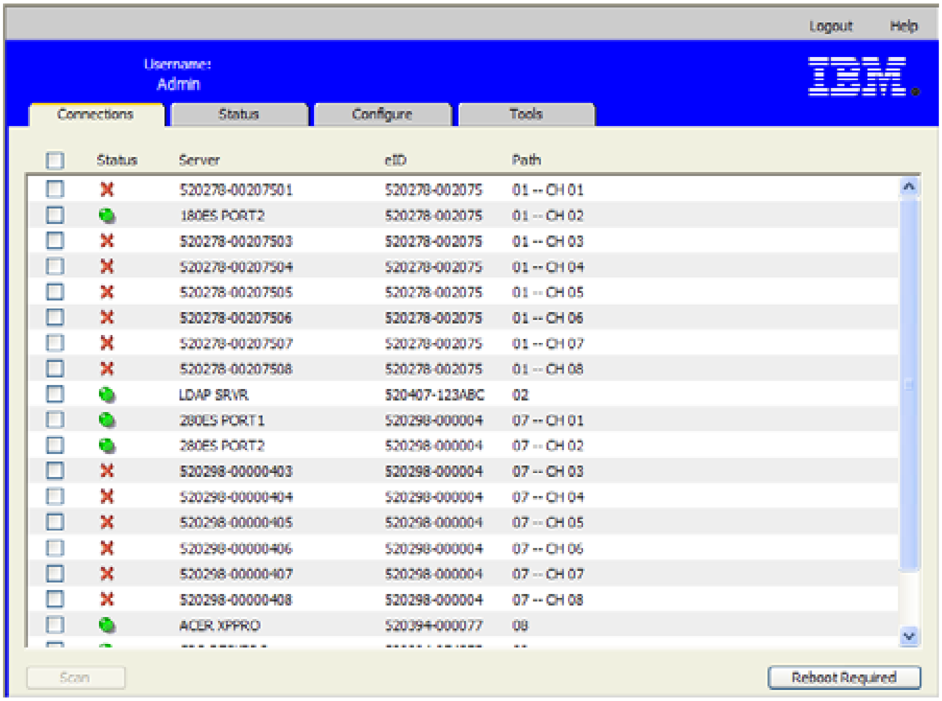
1. In the VCS Explorer, right click the name of the appliance. The Resync button appears.
2. Click the **Resync** button. The Resync Appliance Wizard appears.
3. Click **Next**. A page with a warning and two check box options appears.
4. Read the warning, select the check box options as desired, and click **Next**. The Completing the Resync Appliance Wizard appears.
5. Click **Finish** to exit.

**To remove support for the Web interface on an appliance, remove the following steps:**

1. In the Web interface, select the appliance.
2. Use the **Firmware upgrade** feature of the Web interface to install an earlier version of the firmware that does not support the Web interface. See "Viewing software and firmware versions for the appliance" on page 48.
3. In the VCS Explorer window, click **Units**, right click the name of the appliance, click **Delete** in the pop-up menu, and click **Yes** to confirm.
4. In the VCS Explorer window, select **Units** > **New Appliance**. Follow the steps in the New Appliance Wizard to add the appliance back again.

## Web interface window

This section gives an overview of the tabs, defines the Path numbering conventions, and the Reboot Required button.



Username:
Admin

| □ | Status | Server | eID | Path |
|---|---|---|---|---|
| □ | ✗ | 520278-00207501 | 520278-002075 | 01 -- CH 01 |
| □ | ● | 180ES PORT2 | 520278-002075 | 01 -- CH 02 |
| □ | ✗ | 520278-00207503 | 520278-002075 | 01 -- CH 03 |
| □ | ✗ | 520278-00207504 | 520278-002075 | 01 -- CH 04 |
| □ | ✗ | 520278-00207505 | 520278-002075 | 01 -- CH 05 |
| □ | ✗ | 520278-00207506 | 520278-002075 | 01 -- CH 06 |
| □ | ✗ | 520278-00207507 | 520278-002075 | 01 -- CH 07 |
| □ | ✗ | 520278-00207508 | 520278-002075 | 01 -- CH 08 |
| □ | ● | LDAP SRVR | 520407-123ABC | 02 |
| □ | ● | 280ES PORT1 | 520298-000004 | 07 -- CH 01 |
| □ | ● | 280ES PORT2 | 520298-000004 | 07 -- CH 02 |
| □ | ✗ | 520298-00000403 | 520298-000004 | 07 -- CH 03 |
| □ | ✗ | 520298-00000404 | 520298-000004 | 07 -- CH 04 |
| □ | ✗ | 520298-00000405 | 520298-000004 | 07 -- CH 05 |
| □ | ✗ | 520298-00000406 | 520298-000004 | 07 -- CH 06 |
| □ | ✗ | 520298-00000407 | 520298-000004 | 07 -- CH 07 |
| □ | ✗ | 520298-00000408 | 520298-000004 | 07 -- CH 08 |
| □ | ● | ACER XPPRO | 520394-000077 | 08 |

**Figure 3.1: Web interface window with Connections tab selected and Reboot Required button**

The Web interface has four tabs: Connections, Configure, Status, and Tools.

- Connections - Connect to target devices. See "Connecting to target devices" on page 31.
- Status - View session status and disconnect sessions. See "Viewing and disconnecting session status" on page 32.
- Configure - Configure the appliance network parameters, KVM session parameters (timeouts, encryption, sharing options), user accounts and user target device access, SNMP, servers, and CO cables. See "Overview of viewing and configuring appliance parameters" on page 33.
- Tools - Reboot the appliance, upgrade firmware on the appliance and CO cables, save and restore appliance configuration files, save and restore appliance and user databases. See "Using the Tools" on page 51.

### Port numbers in Path columns

When a target device is connected directly to the main appliance, the port number on the appliance is shown in the Path column. For example, in Figure 3.1 the Path column for the server named ACER XPPRO shows the server is connected to port 08.

A GCM2 or GCM4 appliance or a legacy switch that is tiered from the main appliance is referred to as a cascade device. When a target device is connected to a cascade device, the port number on the main appliance is shown on the left followed a dash, which is followed by CH and then followed by the port (channel) number on the cascade device where the target device is connected.

As shown in Figure 3.1, 01- CH 02 displays in the Port column for a server named 180ES PORT2, which is connected to port 02 of a cascade device that is connected to port 01 of the primary appliance.

### Reboot Required button

When an administrator makes any changes that require a reboot, the Reboot Required button displays at the lower right of the window as shown in Figure 3.1. At any time or after completing all configuration changes, an administrator can reboot the system by clicking the Reboot Required button. Changes do not go into effect until a reboot is performed. See also "Rebooting the appliance using the Tools" on page 51 for how an administrator can reboot using the Tools.

## Video Viewer

When a user selects a target device from the list on the Connections tab, the Video Viewer window appears. A logged-in user has access to the target device desktop.

The Java Runtime Environment (JRE 1.5.0_11) must be installed on the remote computer for the Video Viewer to work.

To ensure that the local mouse movement and remote cursor (pointer) display are in sync, the mouse settings must be changed on each remote computer used for accessing the switching system and on each target device. See "Required adjustments to mouse and cursor settings" on page 10.

**NOTE:** To work around cursor synchronization problems, you can use the *Tools - Single Cursor Mode* command available in the Viewer window to manually toggle control between the cursor on the target device being viewed and the cursor on the computer from which you are accessing the switching system. The Viewer is described in the *VCS Installation and User’s Guide.*

## User access rights

Three access rights are defined: User, User Administrator, and Appliance Administrator. The access rights (or levels) assigned to a user account affect which target devices the user can access, and whether the user can preempt existing KVM sessions or view existing KVM sessions in stealth mode. The access rights also affect what types of configuration a user can perform on the appliance.

**Table 3.1: User access rights**

| Allowed Actions | User | User Administrator | Appliance Administrator |
|---|---|---|---|
| If Preempt mode is enabled, preempt other user sessions. If Stealth mode is enabled, view primary user sessions in stealth mode.<br>**Note:** Preemptions only apply to remote users. | No | Equal and lesser | All |
| Configure network and global parameters (security mode, timeouts, SNMP). | No | No | Yes |
| Reboot and upgrade firmware. | No | No | Yes |
| Configure user accounts. | No | Yes | Yes |
| Monitor target device status. | No | Yes | Yes |
| Access target devices. | Assigned by Admin | Yes | Yes |

**To access the Web interface, complete the following steps:**

1. Enter the appliance IP address in a browser. The login window appears.
2. Type the username and password and click **OK**. The Web interface window appears with the Connections tab selected.

**To exit the Web interface, perform the following step:**

**NOTE:** If an administrator has specified an Inactivity Timeout, a user with any type of access is logged out automatically if the specified number of minutes elapses without activity

To log out manually, click **Logout** in the upper right of Web interface.

## Connecting to target devices

When the **Connections** tab is clicked, the window displays a list of target devices that are directly connected and daisy chained to the GCM2 or GCM4 appliance and that are connected or daisy chained to any cascade device. A user creates a KVM session by clicking on the name of a target device.

## Session sharing options

Session sharing can be configured by Admin and other users with Appliance Administrator or User Administrator rights. The first user with a KVM session with a target device is called the primary user. If another (secondary) user attempts to start a KVM session the same target device, options for the secondary user depend on the following two conditions:

- The access rights of the users
- Whether an administrator has configured global connection sharing

  Automatic Sharing, Exclusive Connections, and Stealth Connections all are configurable options that require Sharing to be enabled.

**Table 3.2: Session sharing definitions**

| Term | Definition |
|---|---|
| Automatic Sharing | Secondary users can share a KVM session without first requesting permission from primary users. |
| Exclusive Connections | Primary users can designate a KVM session as an exclusive connection that cannot be shared. |
| Stealth Connections | Stealth connections allow undetected viewing of KVM sessions. Secondary users with Appliance Administrator rights can create stealth connections to any KVM session. Secondary users with User Administrator rights can create stealth connections when their access rights are the same as or higher than the rights of the primary user. Stealth permissions follow preemption permissions. |
| Preempt mode | Secondary users with Appliance Administrator rights can preempt sessions. Secondary users with User Administrator rights can preempt sessions only when their access rights are the same as or higher than the rights of the primary user. |

For more information about access rights and session types, see "Configuring users and user access rights" on page 39.

**To connect to target devices using the Web interface, complete the following steps:**

1. Log into the Web interface as any user configured for access to one or more target devices. The Web interface appears with the **Connections** tab active.
2. Click the name of a target device. A Video Session Viewer information dialog briefly appears followed by a status dialog.

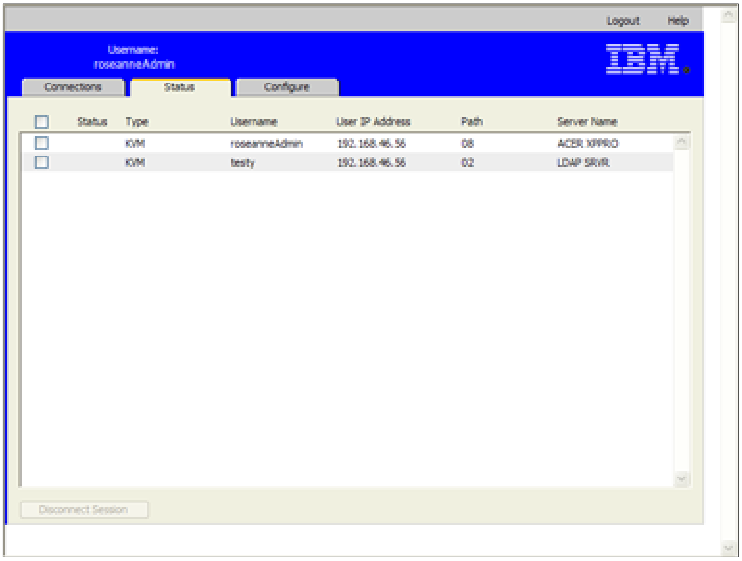
3. If another user does not have an active KVM session with the target device, the Video Viewer window appears.
   - If another user has an active KVM session with the target device, and sharing is not enabled, or if the number of port sessions has been exceeded, a message window displays and you are denied access to the target device.
   - If sharing is enabled, you can have several options depending on your access rights and on whether session sharing, session preemption, or stealth connections are enabled.
   - If you have Appliance Administrator rights, you can share any session, preempt the session, or observe the session in stealth mode.
     - If you have User Administrator rights, you can share the session, preempt the session, or observe the session in stealth mode only if your rights are the same as or higher than the primary user.
     - If an administrator has enabled exclusive connections, and a primary user has set Exclusive Mode for the session, you cannot share the session unless you have Appliance Administrator rights.
4. If an administrator has enabled exclusive sessions, you can click the Exclusive Mode option in the Video toolbar Tools menu. The Exclusive Mode status symbol appears in the toolbar.
5. To start a Virtual Media session with a device, click **Tools > Virtual Media** on the Video Viewer tool bar. The Virtual Media Session window appears showing the physical drives on the computer that can be mapped as virtual media.
6. Select the **Mapped** check box next to the drive(s) to be mapped. For details, see the Video Viewer chapter of the *VCS Installation and User’s Guide*. For constraints and restrictions, see also *"Virtual media*" on page 91.
7. To end a KVM session, click File > Exit from the toolbar.

## Viewing and disconnecting session status

When the **Status** tab is available and selected, Admin and other users with Appliance Administrator or User Administrator rights can view the status of each active KVM session: the session type, the username, the user IP address, the type of CO cable and the name of the target device to which it is connected. Administrators can also disconnect user sessions.

**To view session status and disconnect sessions, complete the following steps:**

1. Log into the Web interface as a user with Appliance Administrator or User Administrator rights.
2. Click the **Status** tab. The **Status** window appears. A list of users and their connection information appears.



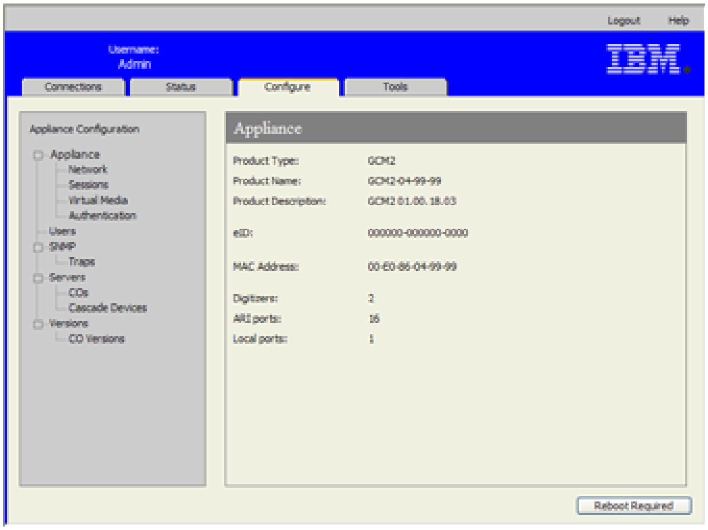
| □ | Status | Type | Username | User IP Address | Path | Server Name |
|---|---|---|---|---|---|---|
| □ |  | KVM | roseanneAdmin | 192.168.46.56 | 08 | ACER XPPRO |
| □ |  | KVM | testy | 192.168.46.56 | 02 | LDAP SRVR |

**Figure 3.2: Status window**

3. To disconnect user session(s), complete the following steps.
   a. Select the check box for one or more sessions.
   b. Click the **Disconnect Session** button. A confirmation window appears.
   c. Click **OK**. The Tools window appears.

# Overview of viewing and configuring appliance parameters

When the **Configure** tab is selected, Admin and other users with Appliance Administrator and User Administrator rights can view appliance information. Users with Appliance Administrator rights can also configure the appliance. The configuration information is specified in windows that appear when options are selected from the left menu.



Product Type: GCM2
Product Name: GCM2-04-99-99
Product Description: GCM2 01.00. 18.03
eID: 000000-000000-0000
MAC Address: 00-E0-86-04-99-99
Digitizers: 2
ARI ports: 16
Local ports: 1

Figure 3.3: Configure tab with left menu options and Appliance window

**To view appliance information, complete the following steps:**

1. Log into the Web interface as a user with Appliance Administrator or User Administrator rights.
2. Click **Configure** > **Appliance** to view the product type, name, description, eID, MAC address, digitizers (number of digital users supported), number of ARI ports and of local user ports.

## Configuring network parameters, KVM sessions, virtual media, and authentication

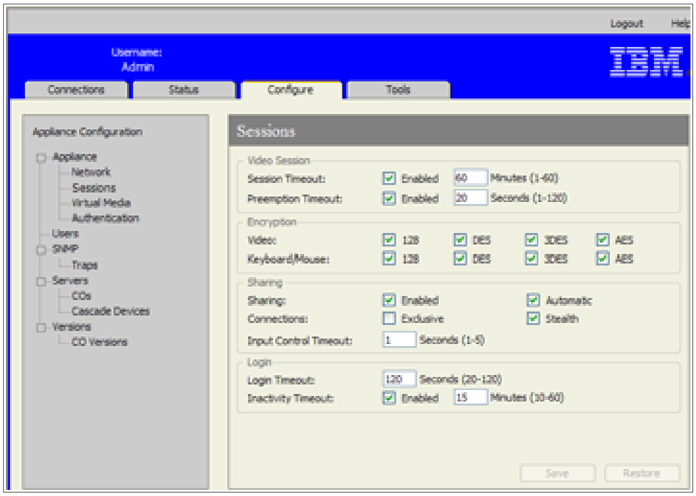
When the **Configure** tab is selected, Admin and other users with Appliance Administrator rights can also configure the appliance: network parameters, KVM sessions, virtual media sessions, users and authentication.

**To configure network parameters, complete the following steps:**

1. Log into the Web interface as a user with Appliance Administrator rights.
2. Click **Configure** > **Appliance** > **Network** to view the MAC address, set the LAN speed, and enable or disable DHCP.
3. If you disable DHCP, configure a static IP address, subnet mask, gateway IP address, and optionally specify the IP addresses for up to three DNS servers.
4. Click **Save**.

**To configure sessions, complete the following steps:**

1. Log into the Web interface as a user with Appliance Administrator rights.
2. Click **Configure** > **Appliance** > **Sessions.**



Sessions

Video Session

Session Timeout: ☑ Enabled 60 Minutes (1-60)

Preemption Timeout: ☑ Enabled 20 Seconds (1-120)

Encryption

Video: ☑ 128 ☑ DES ☑ 3DES ☑ AES

Keyboard/Mouse: ☑ 128 ☑ DES ☑ 3DES ☑ AES

Sharing

Sharing: ☑ Enabled ☑ Automatic

Connections: □ Exclusive ☑ Stealth

Input Control Timeout: 1 Seconds (1-5)

Login

Login Timeout: 120 Seconds (20-120)

Inactivity Timeout: ☑ Enabled 15 Minutes (10-60)

Figure 3.4: Appliance Sessions window

3. Configure Video Session parameters by performing the following steps.
   a. Select the **Session Timeout** check box and enter a number of minutes to elapse before inactive video sessions are closed.
   b. Select the **Video session preemption timeout** check box and type a number of seconds between 5 and 120. This sets a delay between when a preemption warning message is sent and when the video session is preempted. If the preemption timeout option is not enabled, preemption occurs without warning.

**NOTE:** Changes made to video session parameters affect only future sessions.

4. Configure encryption (128, DES, 3DES, AES) by performing the following steps in the Encryption area of the window. Video encryption is optional but at least one Keyboard/Mouse encryption level must be set.
   a. Select none, one, or more Video encryption check boxes.
   b. Select one or more Keyboard/Mouse encryption check boxes.
5. To configure KVM session sharing, select the **Enable Share mode** check box and complete the following steps.
   a. To enable secondary users to share KVM sessions without requesting permission from primary users, select the **Automatic** check box.
   b. To enable primary users to prevent sharing of sessions, select the **Exclusive** check box.

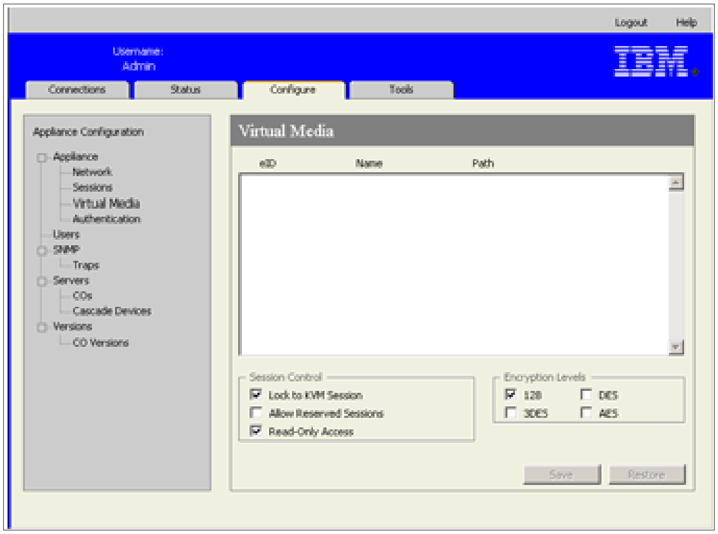
c. To enable administrators to monitor sessions secretly, select the **Stealth** check box.

d. To specify a time period to elapse before the appliance transfers keyboard and mouse control from a primary user to a secondary user, enter 1 to 5 seconds in the **Input Control Timeout** field.

6. To configure a Login Timeout, enter a time between 20 and 120 seconds. The login timeout specifies the time allowed for an LDAP server to respond to a login request. The default time is 30 seconds, but some WANs can require a longer time period.
7. To configure an Inactivity Timeout for the Web interface, enter a time between 10 and 60 minutes. If the specified time elapses without the user navigating within the interface or making changes, the user is logged out of the Web interface.
8. Click **Save**.

**To configure virtual media, complete the following steps:**

1. Log into the Web interface as a user with Appliance Administrator rights.
2. Click **Configure** > **Appliance** > **Virtual Media**. The Virtual Media window lists the target devices that are directly connected to the appliance or that are connected to tiered appliances that support virtual media using VCO cables.



Username:
Admin

Virtual Media

| eID | Name | Path |
|---|---|---|

Session Control

☑ Lock to KVM Session
☐ Allow Reserved Sessions
☑ Read-Only Access

Encryption Levels

☑ 128 ☐ DES
☐ 3DES ☐ AES

**Figure 3.5: Appliance > Authentication window**

3. Under Session Control, complete the following steps.

a. To enable virtual media sessions to continue even after their associated KVM sessions are closed, clear the **Lock to KVM Session** check box. This option might be needed, for example, if operating system upgrades launched during virtual media sessions are expected to take longer than the KVM session inactivity timeout.

b. To lock virtual media sessions to KVM sessions, select the **Lock to KVM Session** check box.

c. To allow primary users to have exclusive virtual media sessions, select the **Allow Reserved Sessions** check box. Reserved sessions remain active when the associated KVM session is closed.

d. To allow shared virtual media sessions, clear the **Allow Reserved Sessions** check box.

e. To enable or disable read-only access to virtual media, select or clear the Read-Only Access check box.

4. Under Encryption Levels, select none, one, or more of the check boxes for 128, DES, 3DES, and AES.

5. Click **Save**.

---

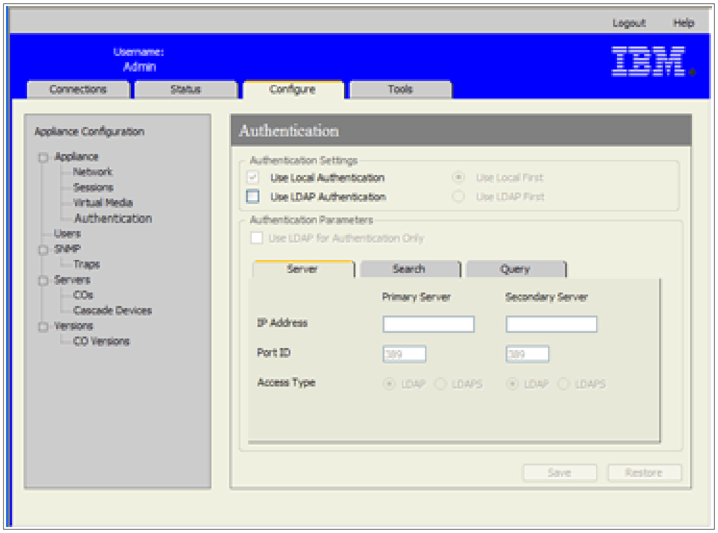
**NOTE:** For more information about constraints on virtual media usage, see "Virtual media" on page 91.

---

**To configure authentication, complete the following steps:**

1. Log into the Web interface as a user with Appliance Administrator rights.

2. Click **Configure** > **Appliance** > **Authentication**.



Username:
Admin

Authentication

Authentication Settings

☑ Use Local Authentication ● Use Local First

□ Use LDAP Authentication ○ Use LDAP First

Authentication Parameters

□ Use LDAP for Authentication Only

| | Primary Server | Secondary Server |
|---|---|---|
| IP Address | | |
| Port ID | 389 | 389 |
| Access Type | ● LDAP ○ LDAPS | ● LDAP ○ LDAPS |

Figure 3.6: Appliance > Authentication window

3. To configure authentication using local databases, select the checkbox for **Use Local Authentication** and click **Save**.

4. To configure authentication using LDAP, select the checkbox for **Use LDAP Authentication**. Radio buttons become active to allow you to specify the order in which local and LDAP

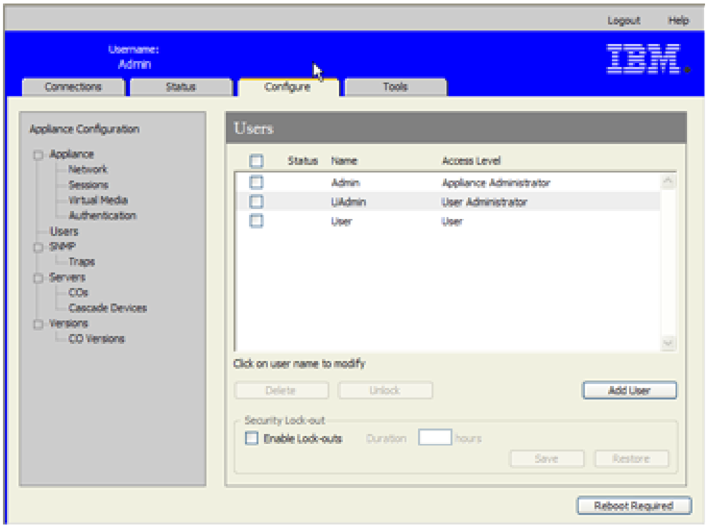
databases are checked. The Authentication Parameters area on the window also becomes active.

**NOTE:** Local authentication is always used, whether it is the primary or backup authentication method, and it cannot be disabled.

5. Select either the **Use Local First** or **Use LDAP First** radio button.
6. To specify LDAP to be used for authentication only and the local databases to be used for authorizations checking, select the **Use LDAP for Authentication Only** check box.
7. Click the **Server** tab and configure one or two LDAP enabled directory servers in the Primary Server and optional Secondary Server areas:
   a. Type an address in the **IP address** field.
   b. (Optional) Change the UDP port number in the **Port ID** field.
   c. Configure the access type.
   d. Select the **LDAP** radio button to send queries to the LDAP server in clear text (non-secure LDAP).
   e. Select the **LDAPS** radio button to send queries using SSH (secureLDAP).
8. To configure the parameters used when searching the LDAP directory service for users, click the **Search** tab and complete the following steps.
9. Define a distinguished name (an administrator-level user that the appliance uses to log into the directory service) in the Search DN field. This is a required field unless the directory service has been configured to enable anonymous search.
   a. Type a password for the user in the Search Password field.
   b. Type the starting point for LDAP searches in the Search Base field.
   c. Type a mask in the UID Mask field. The default value is correct for use with Active Directory. This field is required for LDAP searches.
10. To configure the parameters used when searching the LDAP directory service for users, click the **Search** tab and complete the following steps.
    a. Type a distinguished name for the administrator, which the appliance uses to log into the directory service, in the Search DN field. This is a required field unless the directory service has been configured to enable anonymous search.
    b. Type a password for the administrator in the **Search Password** field.
11. Click the **Query** and configure the modes.
    - Appliance query mode is used to authenticate administrators attempting to access the appliance itself.
    - Device query mode is used to authenticate users that are attempting to access attached target devices.
12. Click **Save**.

# Configuring users and user access rights

When the **Configure** tab is selected, the Admin and other users with Appliance Administrator and User Administrator rights can click on the **Users** option in the left menu to configure user accounts.



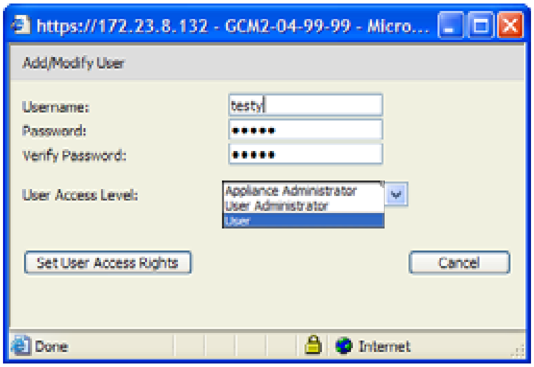
| Status | Name | Access Level |
|---|---|---|
| □ | Admin | Appliance Administrator |
| □ | UAdmin | User Administrator |
| □ | User | User |

Click on user name to modify

Figure 3.7: Users window

**To configure users and user access rights, complete the following steps:**

1. Log into the Web interface as a user with Appliance Administrator or User Administrator rights.
2. Click the **Configure** tab.
3. In the left menu, click **Users**.
4. Click the **Add User** button. The **Add/Modify User** window appears.
5. Type the username and password to assign to the user and then verify the password by typing it in the **Verify Password** field. The password must be between 5 and 16 characters and must contain upper and lowercase alphabetical characters and at least one number.



https://172.23.8.132 - GCM2-04-99-99 - Micro...

Add/Modify User

Username: testy

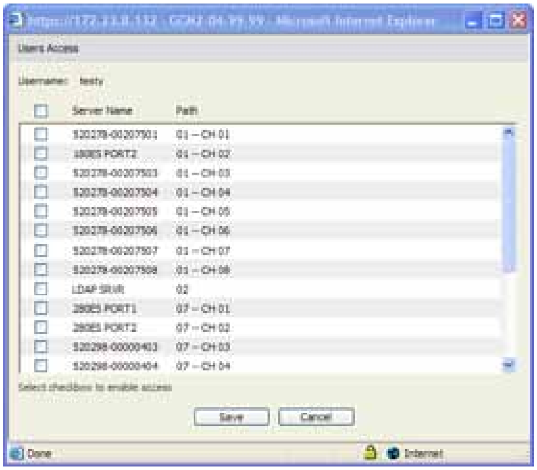
Password: •••••

Verify Password: •••••

User Access Level: Appliance Administrator / User Administrator / User

Figure 3.8: Add/Modify User window

6. Click **Appliance Administrator**, **User Administrator**, or **User** from the pull-down User Access Level menu. If **User** is selected, the Set User Access Rights button becomes active.
   a. Click the **Set User Access Rights** button to select individual target devices for that user.The User Access window appears.



https://172.23.8.132 - GCM2-04-99-99 - Microsoft Internet Explorer

Users Access

Username: testy

| □ | Server Name | Path |
|---|---|---|
| □ | 520278-00207501 | 01 – CH 01 |
| □ | 180ES PORT2 | 01 – CH 02 |
| □ | 520278-00207503 | 01 – CH 03 |
| □ | 520278-00207504 | 01 – CH 04 |
| □ | 520278-00207505 | 01 – CH 05 |
| □ | 520278-00207506 | 01 – CH 06 |
| □ | 520278-00207507 | 01 – CH 07 |
| □ | 520278-00207508 | 01 – CH 08 |
| □ | LDAP SRVR | 02 |
| □ | 280ES PORT1 | 07 – CH 01 |
| □ | 280ES PORT2 | 07 – CH 02 |
| □ | 520298-00000403 | 07 – CH 03 |
| □ | 520298-00000404 | 07 – CH 04 |

Select checkbox to enable access

Figure 3.9: Users Access window

   b. To allow the user access to a target device, select the check box for the device. Select the first check box to enable access to all target devices.
   c. To prevent the user from accessing a target device, clear the check box next to the device name.
   d. Click **Save**.

**To change a password, complete the following steps:**

1. Log into the Web interface as a user with Appliance Administrator or User Administrator rights.
2. Click the **Configure** tab.
3. In the left menu, click **Users**.
4. Click a user name in the **Users** column to modify an existing user. The Add/Modify User window appears.
5. In the **Add/Modify User** window, type the new password in the **Password** box and then repeat the password in the **Verify Password** box. The password must be between 5 and 16 characters and must contain upper and lowercase alphabetical characters and at least one number.
6. Click **Save**.

**To delete a user, complete the following steps:**

1. Log into the Web interface as a user with Appliance Administrator or User Administrator rights.
2. Click the **Configure** tab.
3. In the left menu, click **Users**.
4. Select the check box next to the user name.
5. Click the **Delete** button on the left side of the window. A confirmation window appears.
6. Click **Yes**.

## Enabling Security Lock-out and unlocking user accounts

When the **Configure** tab is selected, the Admin and other users with Appliance Administrator rights can click the **Users** option in the left menu to configure the Security Lock-Out feature. Security lock-out disables a user account if the user enters an invalid password five consecutive times. The account remains locked until either an administrator-specified number of hours elapses, the appliances is power-cycled, or an administrator unlocks the account. A User Administrator can unlock only user accounts; an Appliance Administrator can unlock any type of account.

**NOTE:** All accounts (User, User Administrator, and Appliance Administrator) are subject to the lock-out policy.

**To enable lock-outs, complete the following steps:**

1. Log into the Web interface as a user with Appliance Administrator or User Administrator rights.
2. Click the **Configure** tab and then click **Users** in the left menu.
3. Select the **Enable Lock-outs** check box.
4. Type a number of hours (1 to 99) in the **Duration** field.

**To unlock an account, complete the following steps:**

1. Log into the Web interface as a user with Appliance Administrator or User Administrator rights.
2. Click the **Configure** tab and then click **Users** in the left menu.
3. Select the check box next to the user name.
4. Click the **Unlock** button. The lock icon next to the username disappears.

**To disable the security lockout, complete the following steps:**

1. Log into the Web interface as a user with Appliance Administrator rights.
2. Click the **Configure** tab and then click **Users** in the left menu.
3. Clear the **Enable Lock-outs** check box. The **Duration** field is disabled.

**NOTE:** Disabling Security Lock-Out does not affect users that are already locked out.

## Configuring SNMP

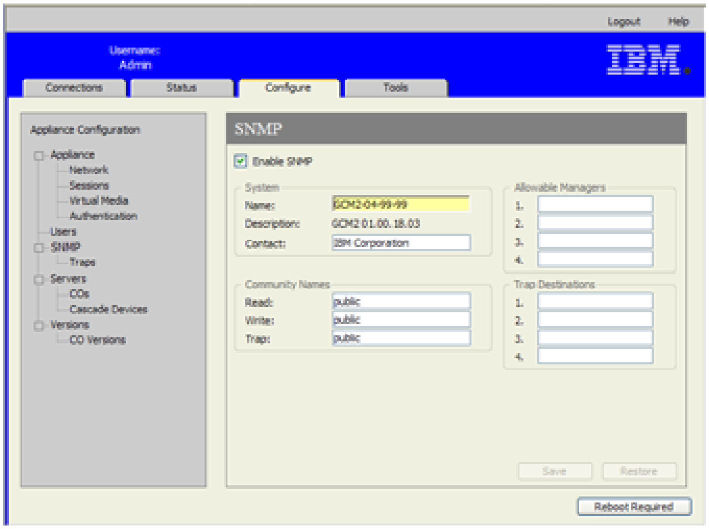
When the **Configure** tab is selected, the Admin and other users with Appliance Administrator rights can click the **SNMP** option in the left menu to configure SNMP. SNMP managers, such as Tivoli and HP OpenView, can communicate with the appliance by accessing MIB-II and the public portion of the enterprise MIB.

The administrator can do the following SNMP configuration:

- Enable or disable SNMP.
- Enter appliance information and community strings.
- Restrict which SNMP servers can manage the appliance by identifying a set of allowable SNMP managers. If no allowable SNMP servers are specified, any SNMP manager can monitor the appliance from any IP address.
- Specify SNMP servers as destinations for SNMP traps from the appliance. If no destinations are specified, no traps are sent.

The Web interface retrieves the SNMP parameters from the appliance. If Enable SNMP is selected, the unit responds to SNMP requests over UDP port 161. For third-party SNMP management software to monitor the appliance, UPD port 161 must be exposed on the firewall.

Under **Configure** > **SNMP**, appliance administrators can enter system information and community strings and can specify SNMP servers to manage the appliance and specify other SNMP servers to receive SNMP traps from the appliance. For more information on traps, see "Configuring SNMP traps" on page 43.



SNMP

☑ Enable SNMP

System

Name: GCM2-04-99-99

Description: GCM2 01.00. 18.03

Contact: IBM Corporation

Allowable Managers

1.
2.
3.
4.

Community Names

Read: public

Write: public

Trap: public

Trap Destinations

1.
2.
3.
4.

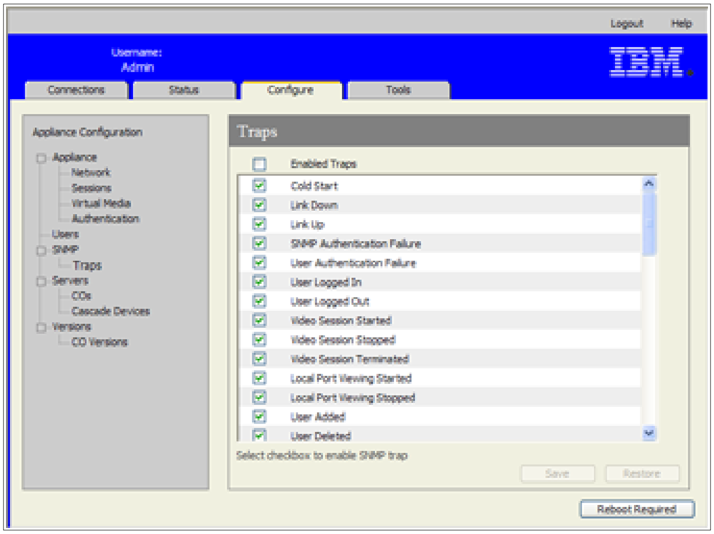
Figure 3.10: SNMP Configuration window

**To configure general SNMP settings, complete the following steps:**

1. Log into the Web interface as a user with Appliance Administrator rights.
2. Click the **Configure** tab, and then click **SNMP** in the left menu.
3. Select or clear the **Enable SNMP** check box to enable or disable SNMP.
4. If SNMP is enabled, complete the following steps:
   a. Type the fully qualified domain name for the system in the **Name** field and the name of a contact person in the **System** section. Both fields have a limit of 255 characters.
   b. Type **Read**, **Write**, and **Trap** community names. These specify the community strings that must be used in SNMP actions. The **Read** and **Write** strings only apply to SNMP over UDP port 161 and act as passwords that protect access to the appliance. The values can be up to 64 characters in length. These fields can not be left blank.
   c. Type the IP address of up to four management servers in the **Allowable Managers** fields, or leave the fields blank to allow any SNMP management server to manage the appliance.
   d. Type the IP address of up to four management servers to which this appliance will send traps in the **Trap Destination** fields. If no IP addresses are specified, no traps are sent.
5. Click **Save**.

## Configuring SNMP traps

When the **Configure** tab is selected, the Admin and other users with Appliance Administrator rights can click the **SNMP** > **Traps** option in the left menu to configure which traps are enabled and disabled. OpenManage™ IT Assistant software is the event manager.



□ Enabled Traps

☑ Cold Start
☑ Link Down
☑ Link Up
☑ SNMP Authentication Failure
☑ User Authentication Failure
☑ User Logged In
☑ User Logged Out
☑ Video Session Started
☑ Video Session Stopped
☑ Video Session Terminated
☑ Local Port Viewing Started
☑ Local Port Viewing Stopped
☑ User Added
☑ User Deleted

Select checkbox to enable SNMP trap

**Figure 3.11: SNMP Traps Window**

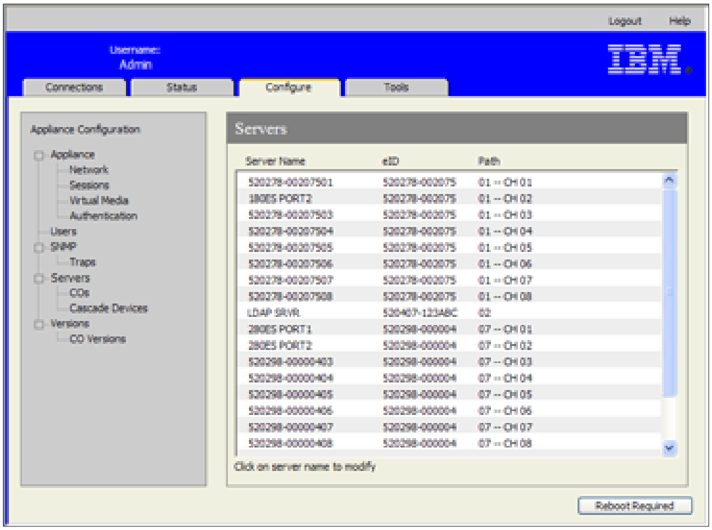
**To configure SNMP traps, complete the following steps:**

1. Log into the Web interface as a user with Appliance Administrator rights.
2. Click the **Configure** tab and then click **SNMP > Traps** in the left menu.
3. Select or clear the **Enabled Traps** check box to enable or disable traps.
4. If SNMP traps are enabled, select the check box to enable each SNMP trap.
5. Click **Save**.

# Viewing target device information and naming target devices

When the **Configure** tab is selected, the Admin and other users with Appliance Administrator and User Administration rights can click the **Servers** option in the left menu to view information about target devices. Users with Appliance Administrator rights can configure names for target devices.

- The Server Name column lists the connected target devices whether they are connected to an ARI port on the appliance or to a port on a tiered appliance or switch (cascade device).
- The **eID** column displays the eID stored on the CO cable.
- The number in the **Path** column indicates the number of the port where the target device is connected whether the device is connected to a port on the main appliance or to a port on a tiered appliance or switch.

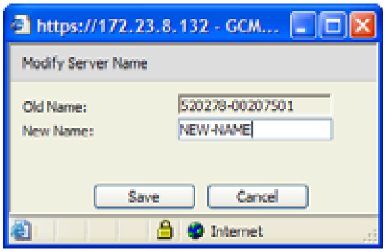


| Server Name | eID | Path |
|---|---|---|
| 520278-00207501 | 520278-002075 | 01 -- CH 01 |
| 180ES PORT2 | 520278-002075 | 01 -- CH 02 |
| 520278-00207503 | 520278-002075 | 01 -- CH 03 |
| 520278-00207504 | 520278-002075 | 01 -- CH 04 |
| 520278-00207505 | 520278-002075 | 01 -- CH 05 |
| 520278-00207506 | 520278-002075 | 01 -- CH 06 |
| 520278-00207507 | 520278-002075 | 01 -- CH 07 |
| 520278-00207508 | 520278-002075 | 01 -- CH 08 |
| LDAP SRVR | 520407-123ABC | 02 |
| 280ES PORT1 | 520298-000004 | 07 -- CH 01 |
| 280ES PORT2 | 520298-000004 | 07 -- CH 02 |
| 520298-00000403 | 520298-000004 | 07 -- CH 03 |
| 520298-00000404 | 520298-000004 | 07 -- CH 04 |
| 520298-00000405 | 520298-000004 | 07 -- CH 05 |
| 520298-00000406 | 520298-000004 | 07 -- CH 06 |
| 520298-00000407 | 520298-000004 | 07 -- CH 07 |
| 520298-00000408 | 520298-000004 | 07 -- CH 08 |

Click on server name to modify

**Figure 3.12: Servers window**

Clicking on a Server Name displays a Modify Server Name window.



Old Name: 520278-00207501
New Name: NEW-NAME

**Figure 3.13: Modify Server Name window**

**To modify the name of a target device, complete the following steps:**

1. Log into the Web interface as a user with Appliance Administrator rights.
2. Click the **Configure** tab and then click **Servers** in the left menu.
3. Click the name of the server. The **Modify Server Name** window appears.
4. Type the name for the server. Names must have between 1 and 15 characters, can include alphabetical and numeric characters, and can not include spaces or special characters with the exception of hyphens.
5. Click **Save**.

## Viewing CO cable information and setting a CO language

When the **Configure** tab is selected, the Admin and other users with Appliance Administrator or User Administration rights can click the **Servers** > **COs** option in the left menu to view information about each CO cable in the system, its Electronic ID number (EID), its Path (port), its CO cable type and the type of target device to which it is connected.

Users with Appliance Administrator rights can also clear offline COs from the list and set the language that is recorded in USB CO cables and on the target device to match the language of the local keyboard.

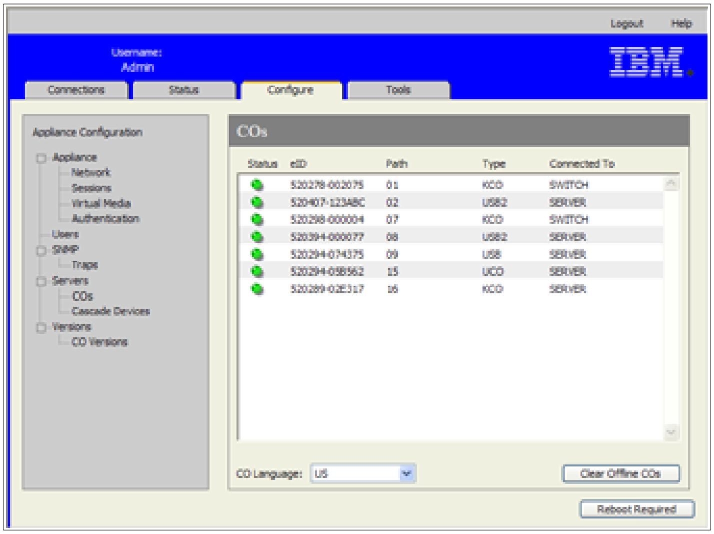
**NOTE:** It is not possible to clear offline COs that are connected to a tiered analog appliance.

**NOTE:** All offline COs connected to GCM2 and GCM4 appliances are cleared, including those associated with any powered down Servers.

**NOTE:** User device access rights are changed to remove target devices associated with cleared offline COs.

**Table 3.3: CO cable status symbols**

| Symbol | Description |
|---|---|
| 🟢 | The CO cable is online (green circle). |
| ✖ | The CO cable is offline or is not operating correctly. |
| 🟡 | The CO cable is being upgraded (yellow circle). |



Username:
Admin

| Status | eID | Path | Type | Connected To |
|---|---|---|---|---|
| ● | 520278-002075 | 01 | KCO | SWITCH |
| ● | 520407-123ABC | 02 | USB2 | SERVER |
| ● | 520298-000004 | 07 | KCO | SWITCH |
| ● | 520394-000077 | 08 | USB2 | SERVER |
| ● | 520294-074375 | 09 | USB | SERVER |
| ● | 520294-058562 | 15 | UCO | SERVER |
| ● | 520289-02E317 | 16 | KCO | SERVER |

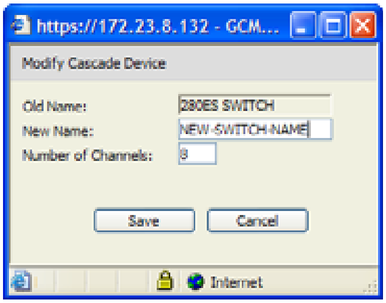
CO Language: US

Figure 3.14: Servers - COs window

# Viewing and configuring cascade devices

When the **Configure** tab is selected, the Admin and other users with Appliance Administrator or User Administration rights can click the **Servers** > **Cascade Devices** option in the left menu to view information about each cascade device (either a GCM2 or GCM4 appliance or legacy switches tiered from the appliance): its Electronic ID number (EID), its Path (port), and the number of channels on the cascade device.

Users with Appliance Administrator rights can click a cascade device name to bring up the **Modify Cascade Device** window for changing the device name or number of channels.



Old Name: 280ES SWITCH
New Name: NEW-SWITCH-NAME
Number of Channels: 8

Figure 3.15: Modify Cascade Device window

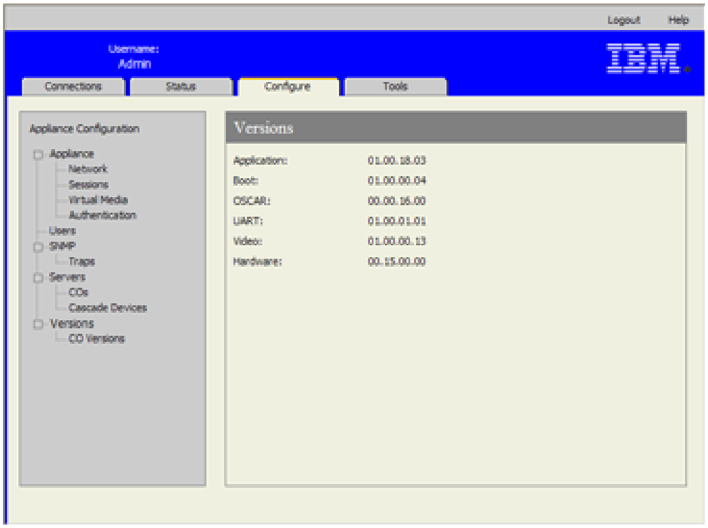
**NOTE:** Then channels on cascade devices are not automatically detected. Appliance administrators must use this window to manually specify the number of channels (ports) on each cascade device.

**To configure a cascade device name and the number of channels, complete the following steps:**

1. Log into the Web interface as a user with Appliance Administrator rights.
2. Click the **Configure** tab, and then click **Cascade Devices** in the left menu.
3. Click the name of the cascade device. The **Modify Cascade Device** window opens.
4. Type the new name for the device.
5. Type the number of channels, between 4 and 24, for the device.
6. Click **Save**.

## Viewing software and firmware versions for the appliance

When the **Configure** tab is selected, any user can click the **Versions** option in the left menu to view version information about software and firmware on the appliance.



Username:
Admin

Versions

| | |
|---|---|
| Application: | 01.00.18.03 |
| Boot: | 01.00.00.04 |
| OSCAR: | 00.00.16.00 |
| UART: | 01.00.01.01 |
| Video: | 01.00.00.13 |
| Hardware: | 00.15.00.00 |

Figure 3.16: Versions window

## Viewing CO cable version information and administering firmware

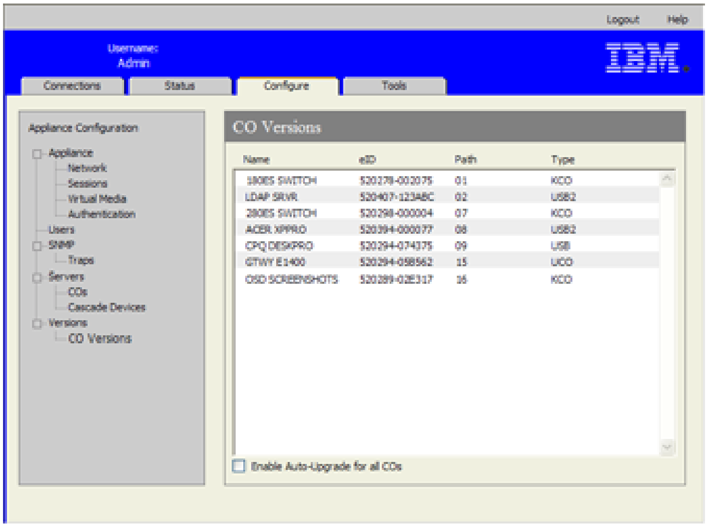
When the **Configure** tab is selected, any user can click **Versions** > **CO** in the left menu to view information about each CO cable: its Name, eID, Path, and Type. Any user can also click on an eID for a CO cable to view Application, Boot, and Hardware version information and whether updated firmware is available for the selected CO cable.

Admin and other users with Appliance Administrator rights can configure firmware upgrades for individual CO cables and enable automatic firmware upgrades for CO cables.

Appliance Administrators can upgrade all CO cables of the same type at once in the Tools tab. See "Using the Tools" on page 51.

Selecting the **Enable Auto-Upgrade for all COs** check box causes automatic upgrades of all subsequently connected CO cables to the firmware level available on the appliance. This guarantees that CO cable firmware is compatible with the appliance firmware.

Admin and other users with Appliance Administrator rights can use this window to reset a KCO cable if it is connected to a tiered switch, which can be necessary if the appliance stops recognizing the tiered switch.



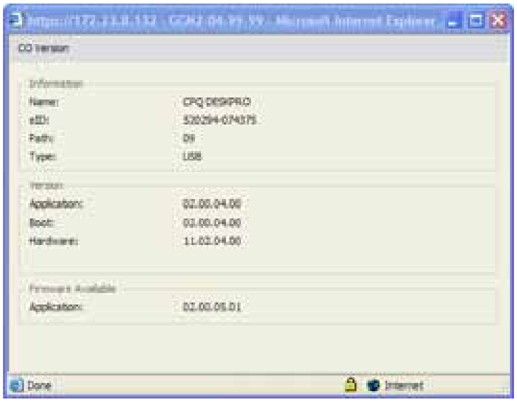
| Name | eID | Path | Type |
|---|---|---|---|
| 180ES SWITCH | 520278-002075 | 01 | KCO |
| LDAP SRVR | 520407-123ABC | 02 | USB2 |
| 280ES SWITCH | 520298-000004 | 07 | KCO |
| ACER XPPRO | 520394-000077 | 08 | USB2 |
| CPQ DESKPRO | 520294-074375 | 09 | USB |
| GTWY E1400 | 520294-058562 | 15 | UCO |
| OSD SCREENSHOTS | 520289-02E317 | 16 | KCO |

☐ Enable Auto-Upgrade for all COs

Figure 3.17: COs Firmware Version Window

**To view version information for a CO cable, complete the following steps:**

1. Log into the Web interface as any user.
2. Click the **Configure** tab, and then click **Versions** > **CO Versions** in the left menu.
3. Click the eID of the CO cable. A window displays the CO version information.



https://172.23.0.132 - GCM2-04-99-99 - Microsoft Internet Explorer

CO Version

Information

Name: CPQ DESKPRO

eID: 520294-074375

Path: 09

Type: USB

Version

Application: 02.00.04.00

Boot: 02.00.04.00

Hardware: 11.02.04.00

Firmware Available

Application: 02.00.05.01

**Figure 3.18: CO Version window**

4. Click the X in the upper right of the window to return to the CO Versions window.

**To configure automatic or individual CO cable firmware upgrades, complete the following steps:**

1. Log into the Web interface as a user with Appliance Administrator rights.
2. Click the **Configure** tab, and then click **Versions** > **CO** in the left menu.
3. To enable automatic upgrades of subsequently connected CO cables, complete the following steps.
   a. Click the **Enable Auto-Upgrade for all COs** button. A confirmation window appears.
   b. Click **OK** to continue.
4. To load and upgrade CO cable firmware, complete the following steps:
   a. Click the eID of the CO cable. The CO Version window opens.
   b. Compare the Application version to the Firmware Available Application version show. (You can load firmware even if the current and available versions are the same. In some cases, you can downgrade the CO cable to an older, compatible version.)
   c. Click the **Load Firmware** button. The firmware upgrade begins. During the upgrade, a progress message is displayed below the **Firmware Available** box and the **Load Firmware** button dims. When the upgrade is finished, a message appears indicating that the upgrade was successful.
   d. Click the **X** in the upper right of the CO Version window to return to the CO Versions window.
   e. Repeat steps a-d for each individual CO cable to upgrade.

**To reset a CO cable, complete the following steps:**

1. Log into the Web interface as a user with Appliance Administrator rights.
2. Click the **Configure** tab, and then click **Versions** > **CO** in the left menu.
3. Click the eID of the KCO cable you want to reset. The CO Version window opens.
4. Click the **Reset CO button**. A confirmation window appears.
5. Click **OK** to continue.
6. When the reset completes, click the **X** in the upper right of the CO Version window to return to the CO Versions window.

## Using the Tools

When the Tools tab is selected, Admin and other users with Appliance Administrator rights can click any of the buttons on the Tools window to do the specified tasks.

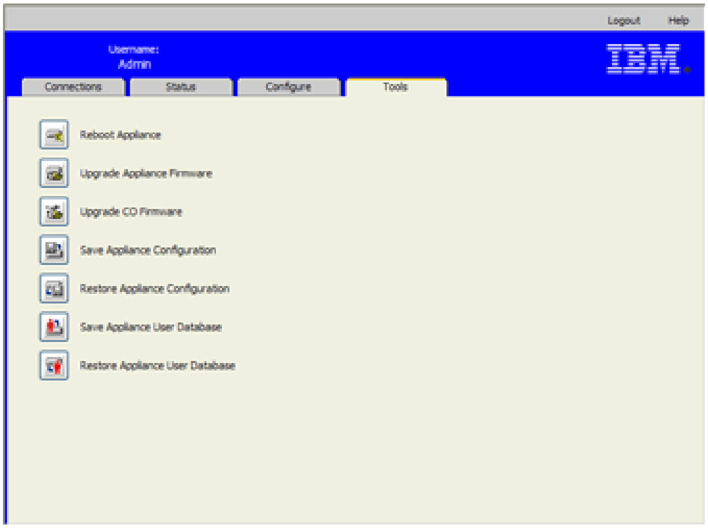

Logout
Help
Username:
Admin
IBM.
Connections
Status
Configure
Tools
Reboot Appliance
Upgrade Appliance Firmware
Upgrade CO Firmware
Save Appliance Configuration
Restore Appliance Configuration
Save Appliance User Database
Restore Appliance User Database

**Figure 3.19: Tools tab**

## Rebooting the appliance using the Tools

When the **Tools** tab is selected, Admin and other users with Appliance Administrator rights can reboot the appliance by clicking the Reboot Appliance button in the **Tools** tab. Appliance Administrators can also reboot the appliance by clicking the Reboot Required button whenever it appears after a configuration change. When **Reboot Appliances** is clicked, a disconnect message is broadcast to any active users, the current user is logged out and the appliance is immediately rebooted.

**To reboot the appliance using the Tools, complete the following steps:**

1. Log into the Web interface as a user with Appliance Administrator rights.
2. Click the **Tools** tab. The **Tools** window appears.
3. Click the **Reboot Appliance** button. A confirmation window appears.
4. Click **OK**. The appliance reboot takes about one minute.

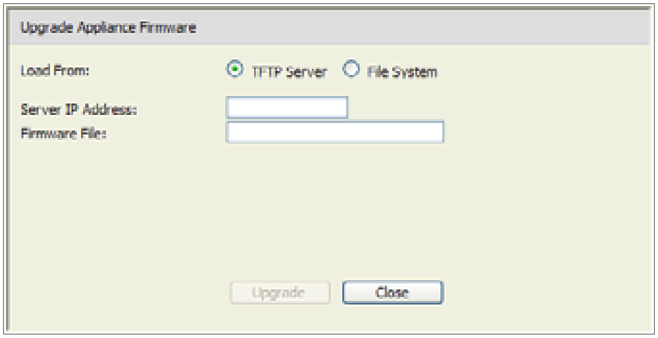
## Upgrading the appliance firmware using the Tools

When the **Tools** tab is selected, Admin and other users with Appliance Administrator rights can click the **Upgrade Appliance Firmware** button to upgrade appliance firmware that has been downloaded either into the file system of the computer that is running the Web interface or onto a TFTP server. When an upgrade is initiated, a progress bar appears. As long as an upgrade is in progress, you cannot start another.

**NOTE:** If you are updating an appliance to a firmware version that provides support for the Web interface, you need to use the VCS as described in "Upgrading GCM2 and GCM4 appliances to use the Web interface" on page 25 to upgrade the firmware, migrate and resync the appliance after the upgrade.

**To upgrade appliance firmware, complete the following steps:**

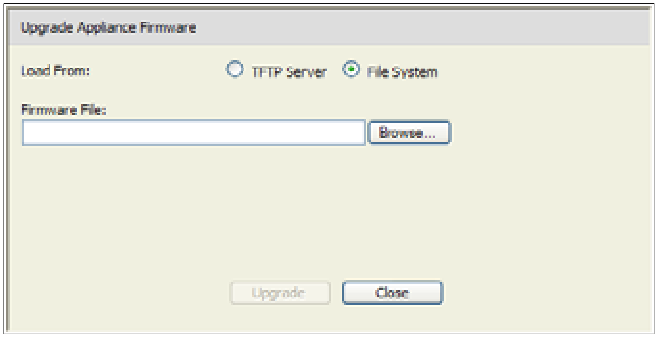
1. Download the appliance firmware from http://www.ibm.com/support/ either to a TFTP server or to the current computer.
2. Log into the Web interface as a user with Appliance Administrator rights.
3. Click the **Tools** tab. The **Tools** window appears.
4. Click the **Upgrade Appliance Firmware** button. The **Upgrade Appliance Firmware** window appears.
5. To upgrade firmware from a TFTP server, select the **TFTP Server** radio button, type the IP address in the S**erver IP Address** field, and type the pathname in the Firmware File field.


Upgrade Appliance Firmware

Load From: ● TFTP Server ○ File System

**Figure 3.20: Upgrade Appliance Firmware window- TFTP server**

6. To upgrade firmware from the current computer, select the **File System** radio button and browse to the location on your file system where the firmware file is located. Click **Open**.



Upgrade Appliance Firmware

Load From: ○ TFTP Server ● File System

Firmware File:

**Figure 3.21: Upgrade Appliance Firmware window - file system**

7. Click the **Upgrade** button. The **Upgrade** button dims and a progress message and progress bar appears.
8. When the upgrade is complete, the Reboot Appliance window appears.
9. Click **Yes** to reboot the appliance.
10. When the notice “Firmware Upgrade has completed. The Appliance is ready” appears, click **Close** to exit the Upgrade Appliance Firmware window.
11. Perform the steps in this procedure until all appliances are upgraded.
12. Click **OK**.

**NOTE:** Do not turn appliance power off while the appliance firmware is being upgraded.

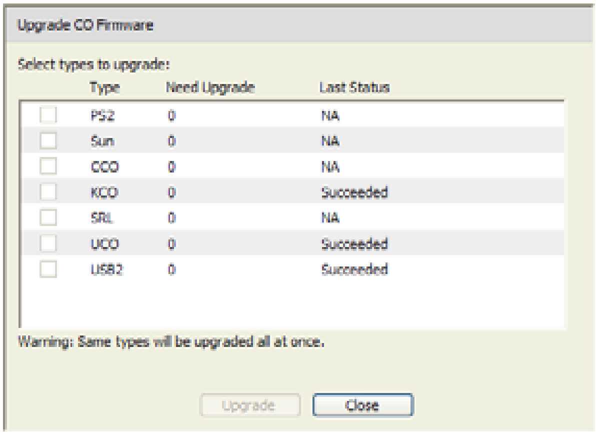
## Upgrading firmware on multiple CO cables using the Tools

When the **Tools** tab is selected, Admin and other users with Appliance Administrator rights can click the **Upgrade CO Firmware** button to upgrade firmware for multiple CO cables.

**To upgrade firmware on multiple CO cables, complete the following steps:**

1. Log into the Web interface as a user with Appliance Administrator rights.
2. Click the **Tools** tab. The **Tools** window appears.
3. Click the **Upgrade CO Firmware** button. The **Upgrade CO Firmware window** appears.
4. Select the check box in front of each CO cable type (**PS2**,**USB**,**USB2**,**SRL**,**Sun**) to upgrade.

**NOTE:** A disabled check box indicates that all CO cables of that type are running the current firmware, or that no CO cable of that type exists in the system.



Upgrade CO Firmware

Select types to upgrade:

| | Type | Need Upgrade | Last Status |
|---|---|---|---|
| □ | PS2 | 0 | NA |
| □ | Sun | 0 | NA |
| □ | CCO | 0 | NA |
| □ | KCO | 0 | Succeeded |
| □ | SRL | 0 | NA |
| □ | UCO | 0 | Succeeded |
| □ | USB2 | 0 | Succeeded |

Warning: Same types will be upgraded all at once.

**Figure 3.22: Upgrade CO Firmware window**

5. Click **Upgrade**. The **Upgrade** button dims. The **Last Status** column displays either In Progress or Succeeded, depending on the status of each CO cable upgrade. **A firmware upgrade currently in progress message** displays until all of the selected CO cable types are upgraded. A confirmation window appears.
6. Click **OK**. The **Upgrade Firmware** window appears with the **Upgrade** button is enabled.
7. Click **Close** to exit the **Upgrade Firmware** window and return to the Tools window.

# Managing appliance configuration files

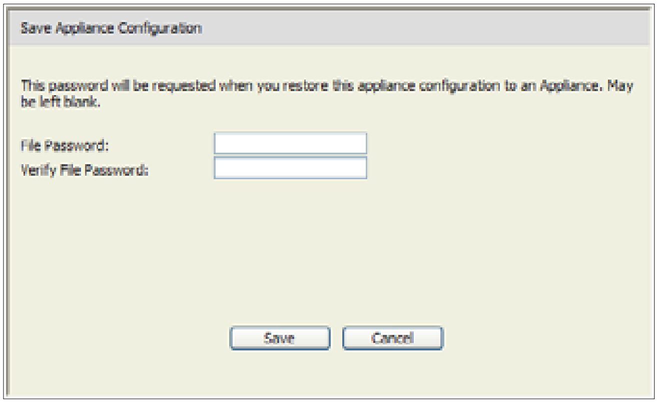
When the **Tools** tab is selected, Admin and other users with Appliance Administrator rights can click the **Save Appliances Configuration** button to save appliance configuration into a file and click the **Restore Appliance Configuration** button to restore the file.

An Appliance configuration file stores all appliance settings, including SNMP settings, LDAP settings, and NTP settings. The file can be stored anyplace in the file system of the current computer. A saved appliance configuration file can be restored to a new or upgraded appliance to avoid manual configuration or reconfiguration.

**NOTE:** User account information is stored in the user configuration file. See "Managing user databases" on page 56.

**To save appliance configuration, complete the following steps:**

1. Log into the Web interface as a user with Appliance Administrator rights.
2. Click the **Tools** tab. The **Tools** window appears.
3. Click the **Save Appliances Configuration** button. The **Save Appliance Configuration** window appears.



Save Appliance Configuration

This password will be requested when you restore this appliance configuration to an Appliance. May be left blank.

File Password:

Verify File Password:

Figure 3.23: Save Appliance Configuration window

4. (Optional) Enter a password in the **File Password** field, then repeat the password in the **Verify File Password** field. If a file password is configured, the administrator must supply this password when attempting to restore the appliance configuration.
5. Click **Save**. A confirmation window appears.
6. Click **Save**. A Save As window appears
7. Navigate to the file system location where you want to store the file. Enter a File Name.
8. Click **Save**. The configuration file is saved to the desired location. A progress window displays.
9. When the Download Complete message appears, click **Close** to close the progress window.
10. Click the X in the upper right of the Save Appliance Configuration window to return to the Tools window.

**To restore a saved appliance configuration, complete the following steps:**

1. Log into the Web interface as a user with Appliance Administrator rights.
2. Click the **Tools** tab. The **Tools** window appears.
3. Click the **Restore Appliances Configuration** button. The **Restore Appliance Configuration** window appears.

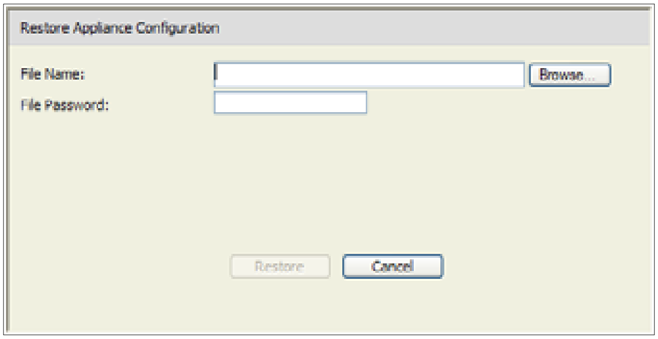


**Figure 3.24: Restore Appliance Configuration window**

4. Click **Browse** and navigate to the location where the saved configuration file is stored. The file name and location appear in the **File name** field.
5. If a file password was created, enter it in the File Password field.
6. Click **Restore**. When the restoration is complete, a confirmation window appears.
7. Click **OK** to return to the Tools window.

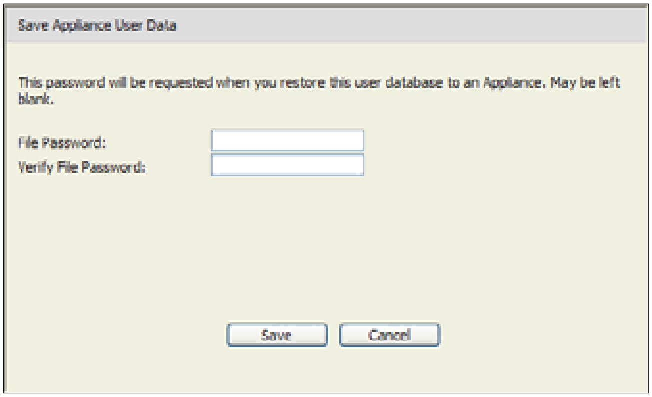
## Managing user databases

When the **Tools** tab is selected, Admin and other users with Appliance Administrator rights can click the **Save Appliance User Database** button to save appliance configuration into a file and click the **Restore Appliance User Database** button to restore the file.

The user database file stores the configuration for all user accounts on the appliance. A saved user database file can be restored to a new or upgraded appliance to avoid manual configuration or reconfiguration of users.

**To save the appliance user database, complete the following steps:**

1. Log into the Web interface as a user with Appliance Administrator rights.
2. Click the **Tools** tab. The **Tools** window appears.
3. Click the **Save Appliance User Database** button. The **Save Appliance User Data** window appears.



Save Appliance User Data

This password will be requested when you restore this user database to an Appliance. May be left blank.

File Password:

Verify File Password:

**Figure 3.25: Save Appliance User Data window**

4. (Optional) Enter a password in the **File Password** field, then repeat the password in the **Verify File Password** field. If a file password is configured here, the administrator must supply this password to restore the appliance configuration.
5. Click **Save**. A confirmation window appears.
6. Click **Save**. A File Download - Security Warning window appears.
7. Navigate to the file system location for storing the file. Enter a name for the user data file in the **File Name** field.
8. Click **Save**. The data file is saved to the specified location. A progress window displays.
9. When the Download Complete message appears, click **Close** to close the progress window.
10. Click the X in the upper right of the Save Appliance User Data window to return to the Tools window.
11. A confirmation window appears.
12. Click **OK**.

**To restore the appliance user database, complete the following steps:**

1. Log into the Web interface as a user with Appliance Administrator rights.
2. Click the **Tools** tab. The **Tools** window appears.
3. Click the **Restore Appliance User Database** button. The **Restore Appliance User Data** window appears.

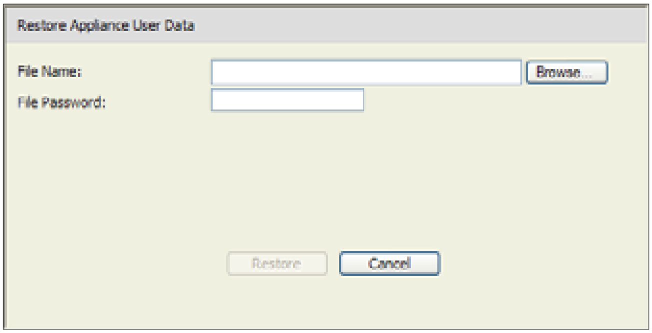


Figure 3.26: Restore Appliance User Data window

4. Click **Browse** and navigate to the location where the saved user data file is stored.
5. Select the file. The file name and location appear in the **File name** field.
6. If a file password was created, enter it in the **File Password** field.
7. Click **Restore**. When the restoration is complete, a confirmation window appears.
8. Click **OK** to return to the Tools window.

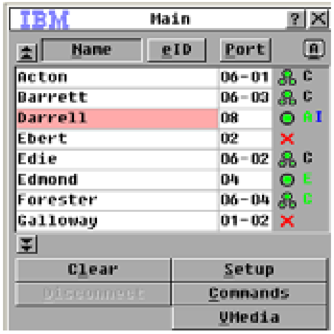
CHAPTER 4

# Using the OSCAR interface

You can connect a keyboard, monitor, and mouse to local ports on the back of the appliance to act as a local user station for direct analog access. A local user can then use the OSCAR interface to configure the switching system and access target devices.

## OSCAR interface Main window

The following illustration is an example of the Main window of the OSCAR interface.



| | | | |
|---|---|---|---|
| Acton | 06-01 | ⁂ | C |
| Barrett | 06-03 | ⁂ | C |
| Darrell | 08 | ● | AI |
| Ebert | 02 | ✗ | |
| Edie | 06-02 | ⁂ | C |
| Edmond | 04 | ● | E |
| Forester | 06-04 | ⁂ | C |
| Galloway | 01-02 | ✗ | |

**Figure 4.1: Example of a Main window**

The Main window lists the target devices connected to the switching system. You can order the list by target device names, eID numbers, or port numbers by clicking the **Name**, **eID**, or **Port** button.

The Port column indicates the ARI port to which each target device is connected. If an earlier-model appliance or switch (called a cascade device) is connected to a GCM2 or GCM4 appliance, the ARI port number on the main appliance where the cascade device is connected is shown first, followed by the number of the port on the cascade device to which the target device is connected. For example, in Figure 4.1, the target device named Acton is connected to a cascade device that is connected to ARI port 06; the target device is connected to port 01 on the cascade device.

The status of each target device in the switching system is indicated by one or more status symbols in the right column. The following table describes the status symbols.

**Table 4.1: OSCAR interface status symbols**

| Symbol | Description |
|---|---|
| 🟢 | The CO cable is online (green circle). |
| ✗ | The CO cable is offline or is not operating correctly. |
| ⛬ | The target device is tiered through another appliance. The target device and the appliance are online and have power. |
| ✗<br>○○ | The target device is tiered through another appliance. The appliance is offline or does not have power. |
| 🟡 | The CO cable is being upgraded (yellow circle). When this symbol is visible, do not turn off and turn on the appliance or connected target devices and do not disconnect the CO cable. Doing so might damage the CO cable permanently. |
| A | The CO cable is being accessed by the indicated user channel (green channel letter). |
| A | The CO cable is blocked by the indicated user channel (black channel letter). For instance, in Figure 3.1, user C is viewing Forester, but is blocking access to Acton, Barrett, and Edie which are connected to the same CO cable. |
| I | A remote virtual media connection is established to the target device connected to the indicated user channel (blue letter). |

**To start the OSCAR interface, complete the following steps:**

1. Turn on the monitor connected to the local user ports.
2. Start the OSCAR interface by performing one of the following steps.
   - Press **Print Screen**.
   - Press the **Ctrl**, **Alt**, or **Shift** key twice within 1 second to start the OSCAR interface.

**NOTE:** You can use any of these key sequences instead of pressing Print Screen in any procedure in this chapter.

3. If a password is set, the Password window opens. Type the password and click **OK**.

**To set an OSCAR interface startup delay, complete the following steps:**

1. Start the OSCAR interface.
2. In the Main window, click **Setup** > **Menu**.
3. In the **Screen Delay Time** field, type a number of seconds.

# Using the OSCAR interface

This table describes the keys, key combinations, and mouse actions that you can use in the OSCAR interface. Two or more key names or mouse actions that are separated by commas indicate a sequence of actions. Two or more key names or mouse actions that are separated by a plus sign (+) indicate a combination of actions; that is, they are performed simultaneously.

You can use the main keyboard or the numeric keypad to type numerals, except when you use the Alt+0 key combination; you must use the 0 key on the main keyboard when you use Alt+0.

**Table 4.2: OSCAR interface navigation basics**

| Key, key combination, or mouse action | Result |
|---|---|
| Print Screen; Ctrl, Ctrl; Shift, Shift; or Alt, Alt | Start the OSCAR interface. To specify which key sequences can be used to start the OSCAR interface, click **Setup > Menu**. |
| Print Screen, Print Screen | Send the Print Screen keystroke to the currently selected target device. In other words, a screen capture will be performed for the target device.<br>If Print Screen is not selected as startup key sequence in **Setup > Menu**, you only need to press Print Screen once to take a screen capture of the target device. |
| F1 | Display help for the current window. |
| Escape | In the OSCAR main window: Close the OSCAR interface and return to the status flag on the desktop.<br>In all other windows: Close the current window, without saving changes, and return to the previous window.<br>In pop-up windows: Close the pop-up window and return to the current window. |
| Alt+X | Close the current window, without saving changes, and return to the previous window. |
| Alt+O | Click **OK** and return to the previous window. |
| Alt+*port number* | Select a target device to be scanned; *port number* is the port number of the target device. |
| Enter | Completes a switch in the Main window and exits the OSCAR interface.<br>Click on an editable field to select the text for editing and enable the Left and Right arrow keys to move the cursor. Press Enter to quit the edit mode. |
| Print Screen, Backspace | Return to the previously selected target device. |
| Print Screen, Alt+0 | Disconnect the user from the selected target device. Note that the zero must be typed on the main keyboard, not the numeric keypad. |

Table 4.2: OSCAR interface navigation basics (Continued)

| Key, key combination, or mouse action | Result |
|---|---|
| Print Screen, Pause | Start the screen saver immediately and lock the user, if it is password-protected. |
| Up Arrow or Down Arrow | Move the cursor from line to line in a list. |
| Right Arrow or Left Arrow | When editing text in a field: Move within the text in the field.<br>All other conditions: Move the cursor from column to column in a list. |
| Page Up or Page Down | Page through a list or help window. |
| Home or End | Move the cursor to the top or bottom of a list. |
| Delete | Delete the selected characters in a field or the selected item in the scan list. For more information about scan lists see "Scanning the switching system" on page 78. |

## Connecting to a target device

Use the Main window of the OSCAR interface to select a target device to which you want to connect. When you select a target device, the keyboard and mouse are automatically reconfigured to the correct settings for that target device.

**To select a target device, complete the following steps:**

1. Start the OSCAR interface.
2. Use one of the following options in the Main window to select the device:
   - Double-click the target device name, eID number, or port number.
   - Type the port number, and press **Enter**.
   - Type the first few unique characters of the target device name or eID number, and press **Enter**.
3. You can toggle between two selected target devices. To select the previously selected target device, press **Print Screen** and press **Backspace**.

**To disconnect from a target device, perform the following step:**

Press **Print Screen** and press **Alt**+**0**. A Free status flag in the OSCAR interface indicates that the user is not connected to a target device.

## Configuring and starting local virtual media sessions

You can start a virtual media session with a target device through the OSCAR interface only when a USB media device is connected directly to the appliance using a USB port on the appliance.

Virtual media sessions created in any manner require that the target device is connected using a VCO cable.

**NOTE:** All USB ports are assigned to a single virtual media session and cannot be independently mapped.

**To configure virtual media sessions, complete the following steps:**

1. Start the OSCAR interface.
2. Select the target device.
3. Click the **VMedia** button. The Virtual Media window opens.
4. To specify that ending a KVM session also ends a virtual media session, select the **Locked** check box.
5. To specify that a user can reserve a virtual media session so that no other user can connect, select the **Reserve** check box.
6. To enable the target device to write data to the virtual media during a virtual media sessions, select the **Write Access** check box. Read access is always enabled during virtual media sessions.
7. Click **OK**.

**To start a local virtual media session, complete the following steps:**

1. Start the OSCAR interface.
2. Select the target device.
3. Click the **VMedia** button. The Virtual Media window opens.
4. To map a CD ROM device connected to the appliance so that its icon appears on the desktop of the target device, select the **CD ROM** check box. Clear this check box to end the mapping.
5. To map a USB storage device (diskette or hard drive) that is connected to the appliance so that its icon appears on the desktop of the target device, select the **Mass Storage** check box. Clear this check box to end the mapping.
6. Click **OK**.

# Configuring the appliance and the OSCAR interface

You can use the OSCAR interface **Setup** window to configure the appliance and the OSCAR interface.

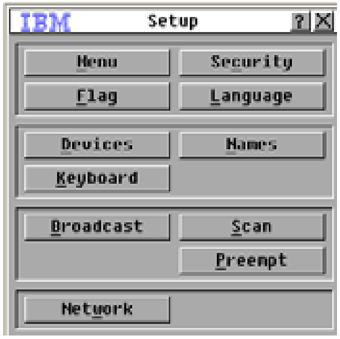


**Figure 4.2: Setup window**

The following table describes the options in the Setup window.

**Table 4.3: Setup features to manage routine tasks for the target devices**

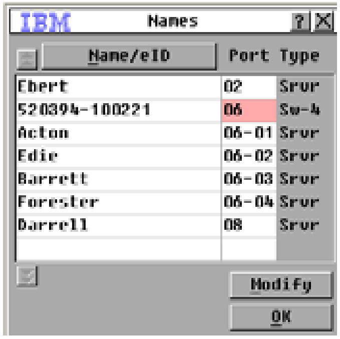
| Option | Purpose |
|---|---|
| **Menu** | Order the list of target devices by target device name, eID number, or port number. Set a screen delay to specify the length of time that elapses between when Print Screen is pressed and when the OSCAR interface starts. |
| **Security** | Enable the screen saver. Set a password to restrict access to the target devices. |
| **Flag** | Change the display properties including timing, color, and location of the status flag. |
| **Language** | Specify the language that the interface is displayed in. |
| **Devices** | Specify the number of ports that are on the attached tiered appliance. |
| **Names** | Assign a unique name to each target device. |
| **Keyboard** | Specify the keyboard country code. |
| **Broadcast** | Simultaneously control multiple target devices through keyboard and mouse actions. |
| **Scan** | Set up a custom scan pattern for up to 16 target devices. |
| **Preempt** | Specify preemption settings. |
| **Network** | Specify the network speed and configuration, IP address, netmask, and gateway for the switching system. |

## Assigning target device names

Use the Names window to identify individual target devices by name rather than by port number. The Names list is always sorted by port order. Names are stored in the CO cable, so even if you move the cable or target device to another ARI port, the name and configuration are recognized by the appliance. If a target device is turned off, you cannot modify the name of the CO cable.

**To access the Names window, complete the following steps:**

1. Start the OSCAR interface.
2. Click **Setup > Names**. The Names window opens.



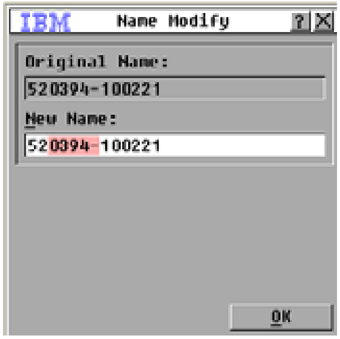
| Name/eID | Port | Type |
|---|---|---|
| Ebert | 02 | Srvr |
| 520394-100221 | 06 | Sw-4 |
| Acton | 06-01 | Srvr |
| Edie | 06-02 | Srvr |
| Barrett | 06-03 | Srvr |
| Forester | 06-04 | Srvr |
| Darrell | 08 | Srvr |

Figure 4.3: Names window

If new CO cables are discovered by the appliance, the on-screen list will be automatically updated. The mouse cursor will change into an hourglass during the update. No mouse or keyboard input will be accepted until the list update is complete.

**To assign names to target devices, complete the following steps:**

1. In the Names window, select a target device and click **Modify**. The Name Modify window opens.



Original Name:
520394-100221

New Name:
520394-100221

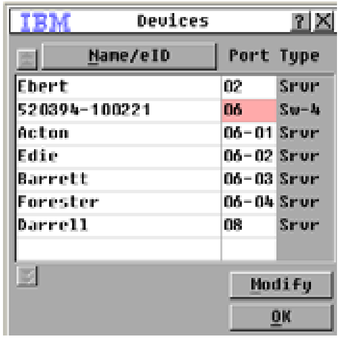
Figure 4.4: Name Modify window

2. Type a name in the **New Name** field. Names can be up to 15 characters long. Valid characters are A through Z, a through z, 0 through 9, space, and hyphen.
3. Click **OK**. The selection is not saved until you click **OK** in the Names window.
4. Repeat steps 1 to 3 for each target device in the switching system.
5. Click **OK** in the Names window to save the changes, or click **X** or press Escape to exit without saving changes.

If a CO cable has not been assigned a name, its eID is used as the default name. To list target devices alphabetically by name, press Alt+N or click **Name** in the Main window.

## Configuring ports on cascade devices

The GCM2 or GCM4 appliance automatically discovers attached tiered appliances and switches (cascade devices), but you must specify the number of ports on each cascade device through the Devices window. IBM Console Switches and other earlier-model appliances are listed in the Type category for the tiered appliance.



| Name/eID | Port | Type |
|---|---|---|
| Ebert | 02 | Srvr |
| 520394-100221 | 06 | Sw-4 |
| Acton | 06-01 | Srvr |
| Edie | 06-02 | Srvr |
| Barrett | 06-03 | Srvr |
| Forester | 06-04 | Srvr |
| Darrell | 08 | Srvr |

Figure 4.5: Devices window

When the appliance discovers a tiered appliance or switch, the port numbering changes to identify each connected target device.

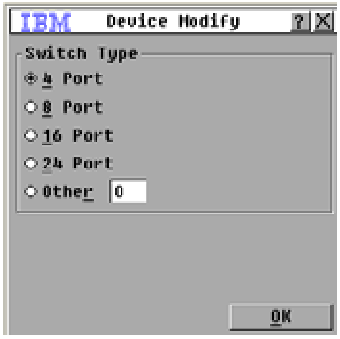
When you select a configurable target device from the list, the **Modify** button becomes available, so you can configure the correct number of ports.

**To access the Devices window, complete the following steps:**

1. Start the OSCAR interface.
2. Click **Setup** > **Devices**. The Devices window opens.

**To assign a device type, complete the following steps:**

1. In the Devices window, select the port number of the cascade device.
2. Click **Modify**. The Device Modify window opens.



Switch Type

● 4 Port

○ 8 Port

○ 16 Port

○ 24 Port

○ Other 0

Figure 4.6: Device Modify window

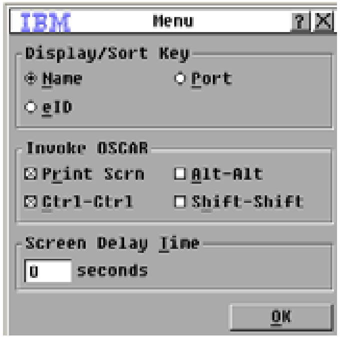
3. Select a radio button or type the number of ports on the cascade device and click **OK**.
4. Repeat steps 1 to 3 for each cascade appliance.
5. Click **OK** in the Devices window to save settings.

## Changing the display behavior

Use the Menu window to change the order of the target devices and set a screen delay for the OSCAR interface. The display order setting affects the order in which target devices are listed in several windows, including the Main, Devices, and Broadcast windows.

**To access the Menu window, complete the following steps:**

1. Start the OSCAR interface.
2. Click **Setup > Menu**. The Menu window opens.



Display/Sort Key

● Name ○ Port

○ eID

Invoke OSCAR

☒ Print Scrn ☐ Alt-Alt

☒ Ctrl-Ctrl ☐ Shift-Shift

Screen Delay Time

0 seconds

Figure 4.7: Menu window

**To specify the order of target devices, complete the following steps:**

1. In the Menu window, select one of the following check boxes:
   - Select **Name** to list the target devices alphabetically by target device name.
   - Select **eID** to list the target devices numerically by eID number.
   - Select **Port** to list the target devices numerically by port number.
2. Click **OK**.

**To specify a key combination to start the OSCAR interface, complete the following steps:**

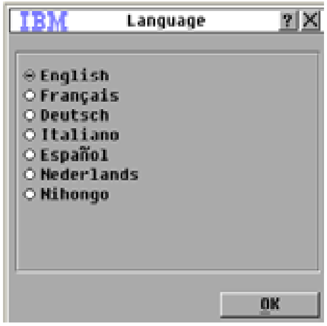
1. In the Menu window, in the **Invoke OSCAR** section, press one of the following keys or combinations of keys to specify which key starts the OSCAR interface:
   - **Print Scrn**
   - **Ctrl-Ctrl**
   - **Alt-Alt**
   - **Shift-Shift**
2. Click **OK**.

You can set a screen delay so that a target device can be selected using the keyboard without starting the OSCAR interface. A screen delay specifies the length of time that elapses between when Print Screen is pressed and when the OSCAR interface starts. To set a screen delay, complete the following steps:

1. In the Menu window, in the **Screen Delay Time** section, type the number of seconds (0 through 9) to specify the length of delay. If you specify 0, there is no delay.
2. Click **OK**.

## Selecting the display language

Use the Language window to change the display language for the OSCAR interface.



● English
○ Français
○ Deutsch
○ Italiano
○ Español
○ Nederlands
○ Nihongo

**Figure 4.8: Language window**

**To select a language for the OSCAR interface, complete the following steps:**

1. Start the OSCAR interface.
2. Click **Setup** > **Language**. The Language window opens.
3. In the Language window, select the language and click **OK**.

## Configuring the status flag

The status flag is displayed on the desktop of the target device in the Video Viewer and indicates the name or eID number of the selected target device or the status of the selected port. You can specify the information that is displayed in the flag, the flag color, whether the desktop is visible through the flag, whether the flag is displayed all the time, and where the flag is displayed on the desktop. The following table shows examples of status flags.

**Table 4.4: OSCAR interface status flags**

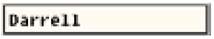
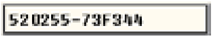
| Flag | Description |
|---|---|
|  Darrell | Flag type by name. |
|  520255-73F344 | Flag type by eID number. |

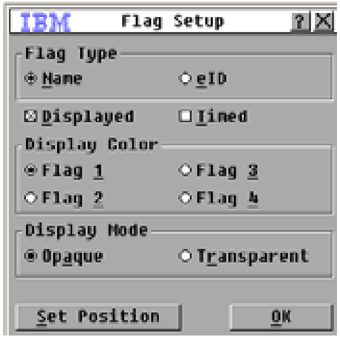
**Table 4.4: OSCAR interface status flags (Continued)**

| Flag | Description |
|---|---|
| Free | Flag indicating that the user has been disconnected from all systems. |
| Darrell | Flag indicating that Broadcast mode is enabled. |

**To specify the status-flag settings, complete the following steps:**

1. Start the OSCAR interface.

2. Select **Setup** > **Flag.**



IBM Flag Setup

Flag Type
● Name ○ eID

☒ Displayed □ Timed

Display Color
● Flag 1 ○ Flag 3
○ Flag 2 ○ Flag 4

Display Mode
● Opaque ○ Transparent

**Figure 4.9: Flag Setup window**

3. Click or more of the following check boxes:

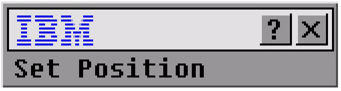
- Select **Name** or **eID** to specify the information that is displayed in the flag.
- Select **Displayed** to display the flag all the time, or select **Timed** to display the flag for only 5 seconds after you select a target device.
- In the **Display Color** section, select a flag.
- Select **Opaque** to make the flag solid, or select **Transparent** to make the desktop visible through the flag.

4. To specify the position of the flag, complete the following steps:

   a. Click the **Set Position** button.

   b. Hold down the left mouse button on the title bar of the Set Position window, and drag the window to the new location.

   c. Press the right mouse button to close the Set Position window.



Set Position

Figure 4.10: Set Position window

5. Click **OK** to save the changes, or click X or press **Escape** to exit without saving the changes.

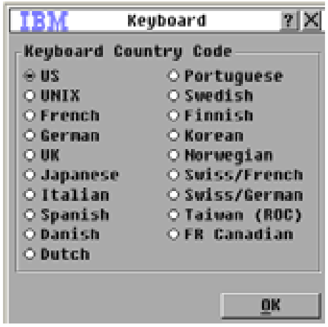
## Setting the keyboard country code

By default, the appliance sends the US keyboard country code to USB cables attached to target devices, and the code is applied to the target devices when they are turned on or rebooted. Codes are then stored in the CO cable. Using a keyboard code that supports a language different from that of the appliance firmware will cause incorrect keyboard mapping.

If multiple keyboards are connected to the local port, they must be of the same type (PC or Mac) and of the same language. Only local users can view or change keyboard country code settings.

Issues might arise when you use the US keyboard country code with a keyboard of another country. For example, the Z key on a US keyboard is in the same location as the Y key on a German keyboard.

You can use the Keyboard window to send a different keyboard country code than the default US setting.



Keyboard Country Code

● US
○ UNIX
○ French
○ German
○ UK
○ Japanese
○ Italian
○ Spanish
○ Danish
○ Dutch
○ Portuguese
○ Swedish
○ Finnish
○ Korean
○ Norwegian
○ Swiss/French
○ Swiss/German
○ Taiwan (ROC)
○ FR Canadian

Figure 4.11: Keyboard window

**To change the keyboard country code, complete the following steps:**

1. Start the OSCAR interface.
2. Click **Setup** > **Keyboard**. The Keyboard window opens.
3. Select the country code for the keyboard, and click **OK**. Confirm the change in the Keyboard Warning window.
4. Click **OK** to save the change, or click **X** or press Escape to exit without saving the change.

## Setting appliance security

When a password is not set, anyone with access to the local user station can access the OSCAR interface. For security, enable the screen saver and set an OSCAR interface password.

You can specify an inactivity timeout for the screen saver. When the screen saver starts, any target device connections are ended. The screen saver stops when you press any key or move the mouse.

When a password is set, you must type the password and click **OK** to turn off the screen saver. A password must contain both alphabetic and numeric characters and can be up to 12 characters long. Passwords are case-sensitive. Valid characters are A through Z, a through z, 0 through 9, space, and hyphen.

**Important:** If you forget the password, you must call technical support. See “Appendix E” beginning on page 97 for contact information.

**To immediately start the screen saver, perform the following step:**

Press **Print Screen** and press **Pause**.

**To access the Security window, complete the following steps:**

1. Start the OSCAR interface.
2. Click **Setup** > **Security**. The Security window opens.

**To enable the screen saver, complete the following steps:**

1. In the Security window, select the **Enable Screen Saver** check box.
2. In the **Inactivity Time** field, type the number of seconds (1 through 99) of inactivity before the screen saver starts.
3. If the monitor is Energy Star compliant, select **Energy**; otherwise, select **Screen**.
4. (Optional) To run the screen-saver test, click **Test**. The screen-saver test runs for 10 seconds.
5. Click **OK**.

**To disable the screen saver, complete the following steps:**

1. In the Security window, clear the **Enable Screen Saver** check box.
2. Click **OK**.

**To set or change a password, complete the following steps:**

1. In the Security window, double-click the **New** field.
2. In the **New** field, type the new password.
3. In the **Repeat** field, type the password again.
4. Click **OK**.

**To disable password protection, complete the following steps:**

1. In the Security window, double-click the **New** field. Leave the field blank, and press Enter.
2. Double-click the **Repeat** field. Leave the field blank, and press Enter.
3. Click **OK**.

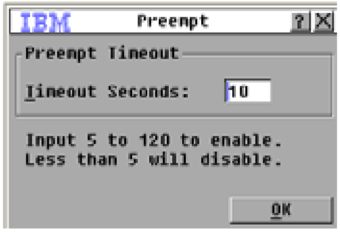
## Setting the preemption warning

Administrators and users with certain access rights can preempt (disconnect) KVM sessions and take control of the target device. You can choose whether or not to warn the primary user before preempting a KVM and specify how long the appliance waits for the primary user to respond to the warning.

For more information about preempting sessions and preemption settings, see the *VCS Installation and User's Guide*.

**To view or change the preemption warning settings, complete the following steps:**

1. Start the OSCAR interface.
2. Click **Setup > Preempt**.
3. Enter a number of seconds in the **Timeout Seconds** field.
   - If you enter a value of 0 to 4 seconds, the first user will not be warned before the session is preempted.
   - If you enter a value of 5 to 120 seconds, the first user will be warned and will be allowed to continue using the target device for up to the amount of time in the **Timeout Seconds** field. The session will be preempted when the user clicks **OK**, or when the specified time elapses.
4. Click **OK** to save the settings.



Timeout Seconds: 10

Input 5 to 120 to enable.
Less than 5 will disable.

**Figure 4.12: Preempt window**

# Managing target device tasks using the OSCAR interface

From the Commands window, you can manage the switching system and user connections, enable the Scan and Broadcast modes, and update the firmware.

Table 4.5: Commands to manage routine tasks for the target device

| Feature | Purpose |
|---|---|
| **CO Status** | View the version and upgrade status of the CO cable. |
| **Display Config** | View current display settings. |
| **Run Diagnostics** | Configure and begin diagnostics on target devices. |
| **Broadcast Enable** | Begin broadcasting to the target devices. Configure a target device list for broadcasting under the Setup window. |
| **Scan Enable** | Begin scanning the target devices. Set up a target device list for scanning in the Setup window. |
| **User Status** | View and disconnect users. |
| **Display Versions** | View version information for the appliance as well as view and upgrade firmware for individual CO cables. |
| **Device Reset** | Re-establish operation of the keyboard and mouse. |

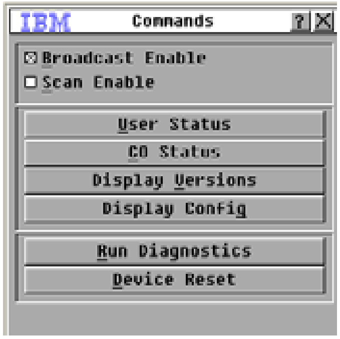


Figure 4.13: Commands window

**To access the Commands window, complete the following steps:**

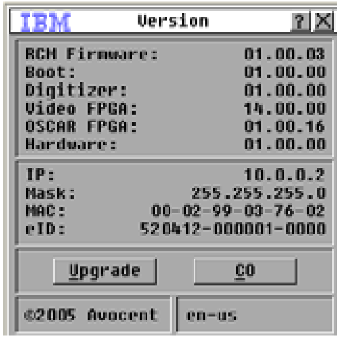
1. Start the OSCAR interface.
2. Click **Commands**. The Commands window opens.

## Displaying version information

You can use the OSCAR interface to view the versions of the appliance and the CO cable firmware. For more information, see "Appendix A" beginning on page 89.

**To view version information, complete the following steps:**

1. Start the OSCAR interface.
2. Click **Commands** > **Display Versions**. The Version window opens. The top pane of the window lists the subsystem versions in the appliance.



RCH Firmware: 01.00.03
Boot: 01.00.00
Digitizer: 01.00.00
Video FPGA: 14.00.00
OSCAR FPGA: 01.00.16
Hardware: 01.00.00

IP: 10.0.0.2
Mask: 255.255.255.0
MAC: 00-02-99-03-76-02
eID: 520412-000001-0000

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en-us

Figure 4.14: Version window

3. Click the **CO** button to view individual CO cable version information. The CO Select window opens.
4. Select a CO cable to view and click the **Version** button. The CO Version window opens.
5. Click **X** to close the CO Version window.

## Upgrading the CO cable firmware

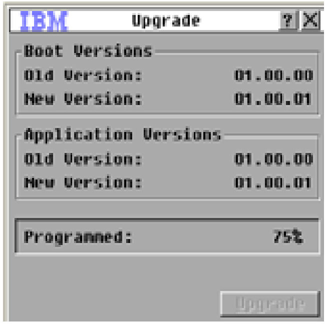
You can use the OSCAR interface to upgrade the firmware for CO cables.

**To upgrade CO cable firmware, complete the following steps:**

1. Download the latest version of the CO cable firmware from http://www.ibm.com/support/ onto a TFTP server.
2. Start the OSCAR interface.
3. Click **Commands > CO Status**. The CO Status window opens.
4. Select the check box next to the name of the CO cable.
5. To enable automatic upgrades, select the **Enable CO Autoupdate** check box.
6. Click the **Upgrade** button. The Download window opens.
7. Type the IP address of the TFTP server in the TFTP IP field.
8. Type the pathname to the file in the **Filename** field.
9. Click the **Download** button.
10. Click **Upgrade**. A Warning window opens. Clicking **OK** opens the Upgrade Process window. The progress of the upgrade is indicated in the **Programmed** field.

## Upgrading the appliance firmware

You can use the OSCAR interface to upgrade the firmware available for the appliance. For optimum performance, keep the firmware current.



Boot Versions

Old Version: 01.00.00

New Version: 01.00.01

Application Versions

Old Version: 01.00.00

New Version: 01.00.01

Programmed: 75%

Figure 4.15: Upgrade window

**To upgrade appliance firmware, complete the following steps:**

1. Download the latest version of the firmware from http://www.ibm.com/support/ onto a TFTP server.
2. Start the OSCAR interface.
3. Click **Commands > Display Versions > Upgrade.** The Download window opens.
4. Type the IP address of the TFTP server in the **TFTP IP** field.
5. Type the pathname to the file in the **Filename** field.
6. Click the **Download** button.
7. Click **Upgrade**. A Warning window opens. Clicking **OK** opens the Upgrade Process window. The progress of the upgrade is indicated in the **Programmed** field.

## Viewing the switching system configuration

Use the Display Configuration window to view the configuration of the switching system.

**To view the current configuration, complete the following steps:**

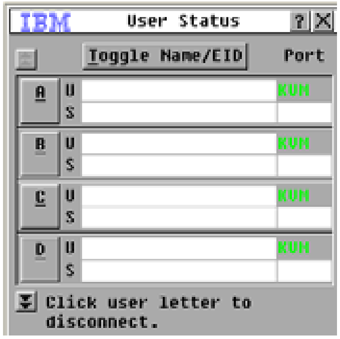
Click **Commands > Display Config**. The Display Configuration window opens and lists the current system configuration values.

## Viewing and disconnecting user connections

You can view and disconnect users from target devices through the User Status window. The user (U) is always visible; however, you can display either the target device name or eID number to which a user is connected. If there is no user currently connected to a channel, the **User** and **Server Name** fields are blank.

**To view current user connections, complete the following steps:**

1. Start the OSCAR interface.
2. Click **Commands** > **User Status**. The User Status window opens.



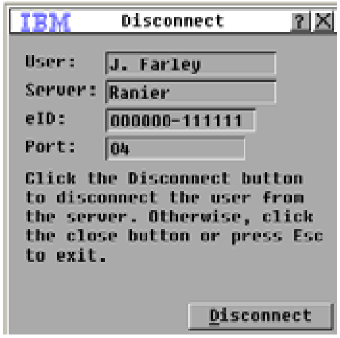
Click user letter to disconnect.

**Figure 4.16: User Status window**

**To disconnect a user, complete the following steps:**

1. From the User Status window, click the letter that corresponds to the user to disconnect. The Disconnect window opens.
2. Complete one of the following steps:
   - Click **OK** to disconnect the user and return to the User Status window.
   - Click **X** or press **Escape** to exit the window without disconnecting a user.

**NOTE:** If the User Status list has changed since it was last visible, the mouse cursor turns into an hourglass as the list is automatically updated. No mouse or keyboard input is accepted until the list update is complete.



User: J. Farley

Server: Ranier

eID: 000000-111111

Port: 04

Click the Disconnect button to disconnect the user from the server. Otherwise, click the close button or press Esc to exit.

**Figure 4.17: Disconnect window**

## Resetting the keyboard and mouse

If the keyboard or mouse is not responding, you might be able to re-establish operation of these peripheral devices by issuing a Reset command for the mouse and keyboard settings on the target device. The Reset command sends a hot-plug sequence to the target device, which causes the mouse and keyboard settings to be sent to the appliance. With communication re-established between the target device and the appliance, functionality is restored to the user. This function is for Microsoft Windows-based computers only. Resetting the keyboard and mouse on a target device running any other operating system might require that you reboot that target device.

**To reset the mouse and keyboard values, complete the following steps:**

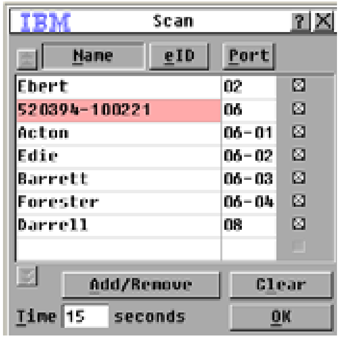
1. Start the OSCAR interface.
2. Click **Commands** > **Display Versions > CO**. Select the CO cable connected to the mouse and keyboard that need to be reset from the list.
3. Click **Version** > **Reset**.
4. A message is displayed stating that the mouse and keyboard are reset.
5. Complete one of the following steps:
   - Click **OK** to close the message field.
   - Click **X** or press **Escape** to exit without sending a Reset command to the mouse and keyboard.

# Scanning the switching system

In scan mode, the appliance automatically scans from port to port (target device to target device). Use scan mode to monitor the activity of up to 16 target devices, and to specify which target devices to scan and the number of seconds that each target device will be visible. The scanning order is determined by placement of the target device in the list, which is always shown in scanning order. You can choose to list the target devices by name, eID number, or port number by clicking the corresponding button.

**To add target devices to the scan list, complete the following steps:**

1. Start the OSCAR interface.
2. Click **Setup > Scan**. The Scan window opens.



| Name | eID | Port | |
|---|---|---|---|
| Ebert | | 02 | ☒ |
| 520394-100221 | | 06 | ☒ |
| Acton | | 06-01 | ☒ |
| Edie | | 06-02 | ☒ |
| Barrett | | 06-03 | ☒ |
| Forester | | 06-04 | ☒ |
| Darrell | | 08 | ☒ |
| | | | □ |

Time 15 seconds

Figure 4.18: Scan window

3. The window contains a listing of all target devices that are attached to the appliance. To select target devices to be scanned, complete one of the following steps:
   - Select the check box next to the target devices that you want to scan.
   - Double-click on a target device name or port.
   - Press **Alt** and the eID number of the target device that you want to scan. You can select up to 16 target devices from the list.
4. In the **Time** field, type the number of seconds (from 3 to 255) of time before the scan moves to the next target device in the sequence.
5. Click **OK**.

**To remove a target device from the scan list, complete the following steps:**

1. To select a target device to be removed from the scan list, complete one of the following steps:
   - In the Scan window, clear the check box next to the target device to be removed.
   - Double-click on the target device name or port.
   - Press **Shift** + **Delete** to remove the selected target device and all entries below it.
   - Click the **Clear** button to remove all target devices from the scan list.
2. Click **OK**.

**To start the Scan mode, complete the following steps:**

1. Start the OSCAR interface.
2. Click **Commands**. The Commands window opens.
3. Select **Scan Enable** in the Commands window. Scanning will begin immediately.
4. Click **X** to close the Commands window.

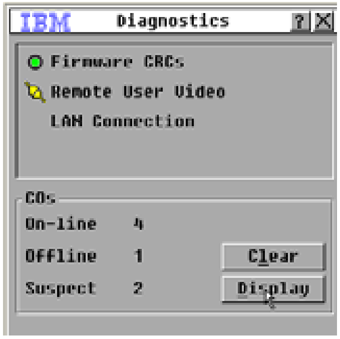
**To cancel scan mode, complete one of the following steps:**

- If the OSCAR interface is open, select a target device.
- If the OSCAR interface is not open, move the mouse or press any key on the keyboard to stop scanning at the currently selected target device.

## Running switching system diagnostics

You can validate the integrity of the switching system through the Run Diagnostics command. This command checks the main board functional sub-systems (memory, communications, appliance control, and the video channels) for each system controller. When you select the **Run Diagnostics** button, a warning indicates that all users (remote and local) will be disconnected. Click **OK** to confirm and begin the test.

The Diagnostics window opens. The top section of the window opens the hardware tests. The bottom portion divides the tested CO cables into three categories: On-line, Offline or Suspect. CO cables might be listed as offline while being upgraded.



● Firmware CRCs

Remote User Video

LAN Connection

COs

| | |
|---|---|
| On-line | 4 |
| Offline | 1 |
| Suspect | 2 |

Figure 4.19: Diagnostics window

When the test is finished for an item, a pass (green circle) or fail (red x) symbol will be visible to the left of the item. The following table details each of the tests.

**Table 4.6: Diagnostic test details**

| Test | Description |
|---|---|
| Firmware CRCs | Reports on the condition of the main board RAM. |
| Remote User Video | Reports on the condition of the remote user video. |
| LAN Connection | Reports on the condition of the LAN connection. |
| On-line CO cables | Indicates the total number of currently connected and turned on CO cables. |

Table 4.6: Diagnostic test details

| | |
|---|---|
| Offline CO cables | Indicates the number of CO cables that have been connected successfully in the past and are turned off. |
| Suspect CO cables | Indicates the number of CO cables that have been detected, but are either unavailable for connection or have dropped packets during the ping tests. |

**To run diagnostic tests, complete the following steps:**

1. Start the OSCAR interface.
2. Click **Commands > Run Diagnostics**. A warning message indicates that all users will be disconnected.
3. Click **OK** to begin diagnostics.
4. All users are disconnected, and the Diagnostics window opens.
5. As each test is finished, a pass (green circle) or fail (red x) symbol is visible. The test is complete when the last test symbol is visible.

## Broadcasting to target devices

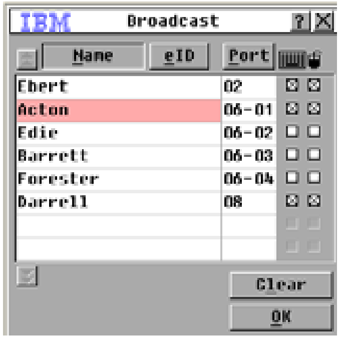
The analog user can simultaneously control more than one target device in a switching system to ensure that all selected target devices receive identical input. You can choose to independently broadcast keystrokes or mouse movements.

- **Broadcasting keystrokes** - The keyboard state must be identical for all target devices that are receiving a broadcast to identically interpret keystrokes. Specifically, the Caps Lock and Num Lock modes must be the same on all keyboards. While the appliance attempts to send keystrokes to the selected target devices simultaneously, some target devices might inhibit and thereby delay the transmission.
- **Broadcasting mouse movements -** For the mouse to work accurately, all systems must have identical mouse drivers, desktops (such as identically placed icons), and video resolutions. In addition, the mouse must be in exactly the same place on all screens. Because these conditions are extremely difficult to achieve, broadcasting mouse movements to multiple systems might have unpredictable results.

You can broadcast to up to 16 target devices at a time, one target device per ARI port.

**To access the Broadcast window, complete the following steps:**

1. Start the OSCAR interface.
2. Click **Setup > Broadcast**. The Broadcast window opens.



| Name | eID | Port | ⌨ | 🖱 |
|---|---|---|---|---|
| Ebert | | 02 | ☒ | ☒ |
| Acton | | 06-01 | ☒ | ☒ |
| Edie | | 06-02 | □ | □ |
| Barrett | | 06-03 | □ | □ |
| Forester | | 06-04 | □ | □ |
| Darrell | | 08 | ☒ | ☒ |

Figure 4.20: Broadcast window

**To broadcast to selected target devices, complete the following steps:**

1. Complete one of the following steps:
   - From the Broadcast window, select the **Mouse** or **Keyboard** check boxes for the target devices that are to receive the broadcast commands.
   - Press the Up or Down Arrow keys to move the cursor to the target device. Then press Alt+K to select the **Keyboard** check box or Alt+M to select the **Mouse** check box. Repeat for additional target devices.
2. Click **OK** to save the settings and return to the Setup window. Click **X** or press Escape to return to the Main window.
3. Click **Commands**. The Commands window opens.
4. Select the **Broadcast Enable** check box to activate broadcasting. The Broadcast Enable Confirm/Deny window opens.
5. Click **OK** to enable the broadcast. Click **X** or press Escape to cancel and return to the Commands window.
6. If broadcasting is enabled, type the information or perform the mouse movements that you want to broadcast from the user station. Only target devices in the list are accessible. The other user is disabled when broadcast mode is enabled.

**To turn broadcasting off, perform the following step:**

From the OSCAR interface Commands window, clear the **Broadcast Enable** check box.

CHAPTER 5

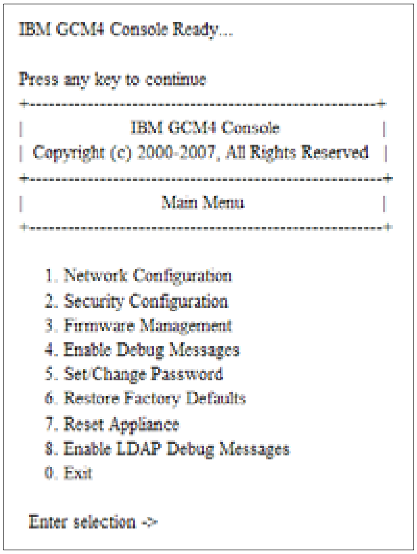
# Using the Console Menu

The Console Menu can be used for certain types of appliance configuration and for upgrading firmware. A terminal or a computer running terminal emulation software must be connected to the serial configuration port on the appliance to access the Console Menu.

**NOTE:** The Web interface and the VCS are recommended for configuration because they can be used from any computer with network access to the appliance. The Web interface cannot be accessed until an IP address has been configured; IP address configuration can be done through the Console Menu. The VCS can discover the appliance with or without an IP address assigned.

## Console Main Menu

By default, anyone with physical access to the connected terminal or computer with terminal emulation software can use the Console Menu.



```
IBM GCM4 Console Ready...

Press any key to continue
+------------------------------------------------------+
|                  IBM GCM4 Console                    |
|  Copyright (c) 2000-2007, All Rights Reserved        |
+-------------------------------------------------------+
|                     Main Menu                         |
+-------------------------------------------------------+

    1. Network Configuration
    2. Security Configuration
    3. Firmware Management
    4. Enable Debug Messages
    5. Set/Change Password
    6. Restore Factory Defaults
    7. Reset Appliance
    8. Enable LDAP Debug Messages
    0. Exit

  Enter selection ->
```

**Figure 5.1: Console Menu**

**NOTE:** For security, enable password protection for the Console Menu, as described in “Set/Change Password option” on page 86.

**To access the Console Menu and select an option, complete the following steps:**

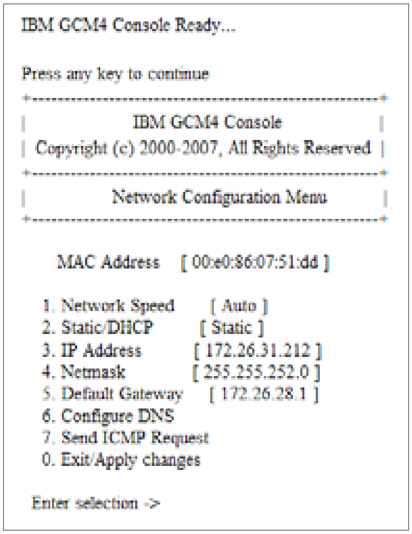
1. Turn on the appliance. The appliance initializes for approximately one minute.
2. After initialization completes, press any key on the keyboard of the terminal or the computer running the terminal emulation software. The Console Main menu opens.

**NOTE:** The terminal can be connected at any time, even after the appliance is turned on.

3. Type the number of an option and press **Enter**.

## Network Configuration Menu

The  Network Configuration Menu is for configuring static or DHCP addressing. If static IP addressing is enabled, then other options can be selected to configure the static IP address, netmask, default gateway, and DNS servers. You can use option 7 to send a ping to a specific IP address.



```
IBM GCM4 Console Ready...

Press any key to continue
+---------------------------------------------------+
|                 IBM GCM4 Console                  |
| Copyright (c) 2000-2007, All Rights Reserved      |
+---------------------------------------------------+
|            Network Configuration Menu             |
+---------------------------------------------------+

     MAC Address    [ 00:e0:86:07:51:dd ]

   1. Network Speed       [ Auto ]
   2. Static/DHCP        [ Static ]
   3. IP Address         [ 172.26.31.212 ]
   4. Netmask            [ 255.255.252.0 ]
   5. Default Gateway     [ 172.26.28.1 ]
   6. Configure DNS
   7. Send ICMP Request
   0. Exit/Apply changes

  Enter selection ->
```

Figure 5.2: Network Configuration Menu

**To configure network settings using the Console Menu, complete the following steps:**

1. Access the Console Main menu.
2. Type `1` and press **Enter** for the Network Configuration option. The Network Configuration menu opens.

3. To enter the network speed, complete the following steps:
   a. Type 1 and press **Enter**.
   b. At the **Enter selection** prompt, enter the number of the speed setting and press **Enter**. Do not select Auto-Negotiate. The Network Configuration menu appears.
4. To select either Static or DHCP IP addressing, complete the following steps:
   a. Type 2 and press **Enter** to toggle between Static and DHCP addressing for the appliance.
      - Select static for ease of configuration.
      - If you choose DHCP, configure the DHCP target device to provide an IP address to the appliance and then skip to step 7.
5. To configure a static IP address complete the following steps:
   b. Type 3 and press **Enter**.
   c. Type an IP address at the **Enter IP address** prompt, and press Enter to return to the Network Configuration Menu.
6. (Optional) To configure a netmask, complete the following steps:
   a. Type 4 and press **Enter**.
   b. Type a netmask at the **Enter subnet mask** prompt, and press **Enter** to return to the Network Configuration Menu.
7. (Optional) To configure a default gateway, complete the following steps:
   c. Type 5 and press **Enter**.
   d. Type an IP address for the gateway at the **Enter default gateway IP address** prompt, and press **Enter** to return to the Network Configuration Menu.
8. (Optional) To send a ping (ICMP request), type 7, enter the IP address of the host to ping, and press **Enter**. When the reply is received, press any key to continue.
9. Type 0 (zero) and press **Enter** to apply changes and return to the Console Main menu.
10. Type 7 and press **Enter** to reboot the appliance and put the changes into effect.
11. When prompted, press any key to continue.

## Security Configuration option

Selecting the Security Configuration option allows you to unbind the appliance from a DSView 3 software server. If authentication servers are configured, up to four authentication servers can be listed along with their IP addresses. The menu also indicates whether the appliance is being managed by a DSView 3 software server.

**To configure security using the Console Menu, complete the following steps:**

1. Access the Console Main menu.
2. Type 2 and press **Enter** for the Security Configuration option. The Security Configuration menu opens.

3. If the appliance is being managed by a DSView 3 software, select **Unbind from DSView 3 Server** to unbind the appliance from the server.

# Firmware Management option

Selecting the Firmware Management option allows you to upgrade the appliance firmware from a TFTP server. For more information on how to download the latest firmware onto a TFTP server and upgrade the appliance firmware, see “Flash upgrades” on page 89.

**To upgrade appliance firmware using the Console Menu, complete the following steps:**

1. Access the Console Main menu.
2. Type `3` and press **Enter** for the Firmware Management option. The current version of the firmware displays on the Firmware Management menu.
3. Type `1` and press **Enter** to select Flash Download.
4. Type the IP address of the TFTP server and press **Enter**.
5. Type the path name of the firmware file and press **Enter**.
6. Type `yes` and press **Enter** to confirm the TFTP download. The appliance verifies that the file you downloaded is valid. You are then prompted to confirm the upgrade.
7. Type `yes` and press **Enter** to confirm. The appliance begins the flash upgrade process. On-screen indicators show the upgrade progress. After the upload is complete, the appliance resets and upgrades the internal subsystems. After the upgrade is complete, a verification message is displayed.

## Enable Debug Messages option

Selecting the Enable Debug Messages option turns on the display of console status messages. Because this can significantly reduce performance, you should only enable debug messages when instructed to do so by you technical-support representative.

**To enable debug messages using the Console Menu, complete the following steps:**

1. Access the Console Main menu.
2. Type `4` and press **Enter**. Console status messages appear.
3. When you are finished viewing the messages, press any key to stop the display and return to the Console Main Menu.

## Set/Change Password option

Selecting the Set/Change Password option lets you set a password for accessing the Console Menu. If the password is blank, Console Menu access is allowed without authentication.

**To configure a password for accessing the Console Menu, complete the following steps:**

1. Access the Console Main menu.
2. Type `5` and press **Enter**. The Set/Change Password Menu appears.

3. Enter `yes` at the prompt. A password configuration window appears.
4. Enter the password as prompted.

## Restore Factory Defaults option

Selecting the Restore Factory Defaults option allows you to restore all appliance default settings.

**To restore factory default configuration using the Console Menu, complete the following steps:**

1. Bring up the Console Main menu.
2. Type `6` and press **Enter**.
3. Enter `yes` at the prompt. The default appliance configuration settings are restored.

## Reset Appliance option

Selecting the Reset Appliance option allows you to initiate a soft reset of the appliance.

**To reset the appliance using the Console Menu, complete the following steps:**

1. Bring up the Console Main menu.
2. Type `7` and press **Enter**.
3. Enter `yes` at the prompt. The appliance is reset.

## Enable LDAP Debug Messages option

Selecting the Enable LDAP Debug Messages option turns on the display of LDAP debug messages.

**To display LDAP debug messages using the Console Menu, complete the following steps:**

1. Bring up the Console Main menu.
2. Type `8` and press **Enter**.
3. When you are finished viewing the messages, press any key to exit this mode.

## Exit option

Selecting the Exit menu option returns you to the ready prompt.

**To exit the Console Menu, perform the following step:**

Type `0` (zero) and press **Enter**.

# Appendix A: Flash upgrades

You can use the appliance flash upgrade feature to upgrade the appliance with the latest firmware available. The appliance firmware upgrade can be performed remotely using the Web interface or the VCS or locally using the Console Menu or OSCAR interface.

The Console Menu and the OSCAR interface both require a TFTP server. The Web interface and the VCS can upgrade firmware from the file system or a TFTP server.

- The preferred method for upgrading the firmware is to use the Web interface as described in “Upgrading the appliance firmware using the Tools” on page 52.
- Before the appliance has an IP address, the preferred method is to use the VCS as described in “Upgrading GCM2 and GCM4 appliances to use the Web interface” on page 25. For more about using the VCS for firmware upgrades, see the *VCS Installation and User’s Guide*.

After the flash memory is reprogrammed with the upgrade, the appliance performs a soft reset, which terminates all CO cable sessions. During an upgrade, the CO cable status indicator in the OSCAR interface Main window is yellow.

To download the firmware, complete the following steps:

1. Log into a computer that will be used to upgrade the firmware using the Web interface or the VCS or log into a TFTP server.
2. Go to http://www.ibm.com/support/, locate an updated version of the GCM2 appliance or GCM4 appliance firmware, and download it.

**To upgrade the appliance firmware using the Console Menu, complete the following steps:**

1. Connect a terminal or a computer running terminal emulation software to the configuration port on the back panel of the appliance using a straight serial cable. The terminal should be set to 9600 bps, 8 bits, 1 stop bit, no parity, and no flow control.
2. If the appliance is not on, turn it on. After approximately one minute, press any key to access the Console Main menu.
3. The Console Main menu opens. Select the Firmware Management option. The current version of the firmware displays on the Firmware Management menu.
4. Type `1` and press **Enter** to select Flash Download.
5. Type the IP address of the TFTP server and press **Enter**.
6. Type the path name of the firmware file and press **Enter**.
7. Type `yes` and press **Enter** to confirm the TFTP download.
8. The appliance verifies that the file you downloaded is valid. Next, you are prompted to confirm the upgrade.

9. Type `yes` and press **Enter** to confirm. The appliance begins the flash upgrade process. On-screen indicators show the upgrade progress. After the upload is complete, the appliance resets and upgrades the internal subsystems. After the upgrade is complete, a verification message is displayed.

## Repairing damaged firmware

In the rare case that the firmware is damaged after a firmware upgrade (which might happen if the appliance is turned off and turned on during the upgrade process), the appliance will remain in boot mode. In this mode, the Power LED at the rear panel flashes at about 1 Hz, and the appliance attempts to restore the firmware over TFTP using the following default configuration:

- TFTP client IP address 10.0.0.2
- TFTP target device IP address 10.0.0.3
- Upgrade file name equal to CMN-XXXX.fl, where XXXX is the 4-digit Compliance Model Number (CMN) that is printed on the agency label of the appliance

**To repair damaged firmware, complete the following steps:**

1. Connect the appliance to a TFTP server (using a cross-over cable or hub), which is set up with the default IP address (10.0.0.3).
2. Rename the upgrade file to the default file name (CMN-XXXX.fl).

The Power LED will flash at about 2 Hz when the appliance is downloading the upgrade file, and it will flash at about 4 Hz when it is programming the downloaded file to flash. After it has restored the firmware, the appliance reboots automatically and the Power LED is lit.

# Appendix B: Virtual media

## Virtual media and USB 2.0 constraints

The Virtual Media Conversion Option (VCO) is a composite device that addresses four functions: keyboard, mouse, CD drive, and mass storage device. The CD drive and mass storage device will be present on the target device whether or not a virtual media session is mapped. If a media device is not mapped, it is shown without media present. When a virtual media device is mapped to the target device, the target device will be notified that media has been inserted. When the media device is unmapped, the target device will be notified that the media was removed. Therefore, the USB virtual device is not disconnected from the target device.

The VCO cable presents the keyboard and mouse as a composite USB 2.0 device. Therefore the BIOS must support composite USB 2.0 human interface device (HID). If the BIOS of the connected computer does not support this type of device, the keyboard and mouse might not work until the operating system loads USB 2.0 device drivers. If this occurs, there might be a BIOS update provided by the computer manufacturer that will provide BIOS support for a USB 2.0 connected keyboard and mouse.

## Booting a computer using virtual memory

In many cases the virtual media feature can boot an attached computer from a device attached to the USB port on the appliance. Most computers with a USB port can use virtual media; however, limitations in some USB media devices and the BIOS of some computers might prevent the computer from booting from a USB device attached to the GCM2 or GCM4 appliance.

Booting from a virtual USB device is dependent on the target device supporting booting from an external composite USB device. It also requires a CD of the operating system that supports external USB 2.0 booting. The following is a partial list of operating systems that support booting from an external USB 2.0 device:

- Windows Server 2003
- Windows XP
- Windows 2000 Server with Service Pack 4 (SP4) or later

**To determine if your computer can be booted from virtual media, complete the following steps:**

1. Connect a USB CD drive to the GCM2 or GCM4 appliance with an operating system installation CD that is bootable and map it to the target device. Reboot the target device to determine if it will boot from this attached CD drive. The BIOS might need to be set to boot from an external USB device.
2. If the target device will not boot, connect the USB CD drive to a USB port on the target device and reboot the target device. If the target device successfully boots from the CD drive, the BIOS is not supporting booting from a composite USB 2.0 device. Check the support Web site from the target device manufacturer to determine if a later BIOS is available that might support booting from a composite USB 2.0 device. If so, update the BIOS and retry.

3. If the target device is not capable of booting from an external USB 2.0 device, try the following methods to remotely boot this target device:
    - Some BIOS versions provide an option to limit USB speeds. If this option is available to you, change the USB port setting to “USB 1.1” or “Full Speed” mode and try booting again.
    - Insert a USB 1.1 card and try booting again.
    - Insert a USB 1.1 Hub between the VCO cable and the target device and try booting again.
    - Contact the manufacturer of the target device for information on availability or plans of a BIOS revision that will support booting from a composite USB 2.0 device.

## Virtual media restrictions

The following list specifies restrictions for using virtual media:

- The GCM2 and GCM4 virtual media appliances only support connection of USB 2.0 diskette drives, flash drives, and CD drives.
- The VCS only supports mapping of USB 2.0 and USB 1.1 diskette drives and flash drives connected to the client computer.

# Appendix C: UTP cabling

The following information is intended to brief you on various aspects of connection media. The performance of an switching system depends on high quality connections. Poor quality or poorly installed or maintained cabling can diminish system performance.This appendix is for information purposes only. Consult with the local code officials or cabling consultants prior to any installation.

## UTP copper cabling

Switching systems utilize unshielded twisted pair (UTP) cabling.The following are basic definitions for the three types of UTP cabling that the appliance supports:

- Cat5 UTP (4-pair) high performance cable consists of twisted pair conductors, used primarily for data transmission. The twisting of the pairs gives this cable some immunity from the infiltration of unwanted interference. Cat5 cable is generally used for networks running at 100 or 1000 Mbps.
- Cat5E (enhanced) cable has the same characteristics as Cat5, but is manufactured to somewhat more stringent standards.
- Cat6 cable is manufactured to tighter requirements than Cat5E cable. Cat6 has higher measured frequency ranges and significantly better performance requirements than Cat5E cable at the same frequencies.

## Wiring standards

There are two supported wiring standards for 8-conductor (4-pair) RJ-45 terminated UTP cable: EIA/TIA 568A and B. These standards apply to installations utilizing Cat5, 5E, and 6 cable specifications. The switching system supports either of these wiring standards. Refer to the following table for details.

**Table C.1: UTP wiring standards**

| Pin | EIA/TIA 568A | EIA/TIA 568B |
|---|---|---|
| 1 | white/green | white/orange |
| 2 | green | orange |
| 3 | white/orange | white/green |
| 4 | blue | blue |
| 5 | white/blue | white/blue |
| 6 | orange | green |
| 7 | white/brown | white/brown |
| 8 | brown | brown |

## Cabling installation, maintenance, and safety tips

The following is a list of important safety considerations that should be reviewed prior to installing or maintaining the cables:

- Keep all Cat5 runs to a maximum of 10 meters each.
- Maintain the twists of the pairs all the way to the point of termination, or no more that one-half inch untwisted. Do not skin off more than one inch of jacket while terminating.
- If bending the cable is necessary, make it gradual with no bend sharper than a one inch radius. Sharply bending or kinking the cable can permanently damage the interior of the cable.
- Arrange the cables neatly with cable ties, using low to moderate pressure. Do not over tighten ties.
- Cross-connect cables where necessary, using rated punch blocks, patch panels, and components. Do not splice or bridge cables at any point.
- Keep the Cat5 cable as far away as possible from potential sources of EMI, such as electrical cables, transformers, and light fixtures. Do not tie cables to electrical conduits or lay cables on electrical fixtures.
- Always test every installed segment with a cable tester. Toning alone is not an acceptable test.
- Always install jacks to prevent dust and other contaminants from settling on the contacts. The contacts of the jack should face up on the flush mounted plates, or left, right, or down on surface mount boxes.
- Always leave extra slack in the cables, neatly coiled in the ceiling or nearest concealed location. Leave at least five feet at the work outlet side and 10 feet at the patch panel side.
- Choose either 568A or 568B wiring standard before beginning. Wire all jacks and patch panels for the same wiring scheme. Don’t mix 568A and 568B wiring in the same installation.
- Always follow all local and national fire and building codes. Be sure to firestop all cables that penetrate a firewall. Use plenum rated cable where it is required.

# Appendix D: Technical specifications

**Table D.1: GCM2 and GCM4 appliance product specifications**

| | |
|---|---|
| **Target device Ports** | |
| Number | 16 |
| Types | VCO, KCO, and UCO |
| Connectors | RJ-45 |
| Sync Types | Separate horizontal and vertical |
| Plug and Play | DDC2B |
| Video Resolution | 640 x 480 @ 60 Hz (Local Port and Remote Port Minimum)<br>800 x 600 @ 75 Hz<br>960 x 700 @ 75 Hz<br>1024 x 768 @ 75 Hz<br>1280 x 1024 @ 75 Hz (Remote Port Maximum using a VCO) |
| Supported Cabling | 4-pair UTP Cat5 or Cat6, 10 meters maximum length |
| **Serial Port** | |
| Number | 1 |
| Cable type | Serial RS-232 |
| Connector | DB9 female |
| **Network Connection** | |
| Number | 1 |
| Type | Ethernet: IEEE 802.3 2002 Edition - 10BASE-T, 100BASE-T, 1000BASE-T |
| Connector | RJ-45 |
| **Local Port** | |
| Number | 1 |
| Type | USB, PS/2, and VGA |
| Connectors | PS/2 miniDIN, 15 pin D, RJ-45 |
| **USB Device Port** | |
| Number | 4 |
| Type | USB 2.0 |

**Table D.1: GCM2 and GCM4 appliance product specifications (Continued)**

| | |
|---|---|
| **Dimensions** | |
| Height x Width x Depth | 1.72 in. x 17.00 in.x 10.98 in.; 1-U form factor<br>(4.37 cm x 43.18 cm x 27.98 cm) |
| Weight | 7.3 lbs (3.31 kg) without cables |
| **Power Supply** | |
| Heat dissipation | 92 BTU/Hr |
| Airflow | 8 CFM |
| Power consumption | 12.5 Watts |
| AC-input power | 40 Watts maximum |
| AC-input voltage rate | 100 to 240 V ac Autosensing |
| AC-input current rating | 0.5 A |
| AC-input cable | 18 AWG three-wire cable, with a three-lead IEC-320 receptacle on the power supply end and a country-dependent connector on the power resource end |
| AC frequency | 50 to 60 Hz autosensing |
| **Ambient atmospheric condition ratings** | |
| Temperature | 0$^{o}$ to 50$^{o}$ Celsius (32$^{o}$ to 122$^{o}$ Farenheit) operating<br>-20$^{o}$ to 60$^{o}$ Celsius (-4$^{o}$ to 140$^{o}$ Farenheit) nonoperating |
| Humidity | 20 to 80% noncondensing operating<br>5 to 95% noncondensing nonoperating |
| **Safety and EMC approvals and markings** | |
| | UL, FCC, cUL, ICES, CE, N, GS, IRAM, GOST, VCCI, MIC, C-Tick |

# Appendix E: Getting help and technical assistance

If you need help, service, or technical assistance or just want more information about IBM® products, you will find a wide variety of sources available from IBM to assist you. This appendix contains information about where to go for additional information about IBM and IBM products, what to do if you experience a problem with your system, and whom to call for service, if it is necessary.

## Before you call

Before you call, make sure that you have taken these steps to try to solve the problem yourself:

- Check all cables to make sure that they are connected.
- Check the power switches to make sure that the system and any optional devices are turned on.
- Use the troubleshooting information in your system documentation, and use the diagnostic tools that come with your system. Information about diagnostic tools is in the *Problem Determination and Service Guide* on the IBM *Documentation* CD that comes with your system.
- Go to the IBM support Web site at http://www.ibm.com/systems/support/ to check for technical information, hints, tips, and new device drivers or to submit a request for information.

You can solve many problems without outside assistance by following the troubleshooting procedures that IBM provides in the online help or in the documentation that is provided with your IBM product. The documentation that comes with IBM systems also describes the diagnostic tests that you can perform. Most systems, operating systems, and programs come with documentation that contains troubleshooting procedures and explanations of error messages and error codes. If you suspect a software problem, see the documentation for the operating system or program.

## Using the documentation

Information about your IBM system and preinstalled software, if any, or optional device is available in the documentation that comes with the product. That documentation can include printed documents, online documents, readme files, and help files. See the troubleshooting information in your system documentation for instructions for using the diagnostic programs. The troubleshooting information or the diagnostic programs might tell you that you need additional or updated device drivers or other software. IBM maintains pages on the World Wide Web where you can get the latest technical information and download device drivers and updates. To access these pages, go to http://www.ibm.com/systems/support/ and follow the instructions. Also, some documents are available through the IBM Publications Center at http://www.ibm.com/shop/publications/order/.

## Getting help and information from the World Wide Web

On the World Wide Web, the IBM Web site has up-to-date information about IBM systems, optional devices, services, and support. The address for IBM System x™ and xSeries® information is http://www.ibm.com/systems/x/. The address for IBM BladeCenter information is http://www.ibm.com/systems/bladecenter/. The address for IBM IntelliStation® information is http://www.ibm.com/intellistation/.

You can find service information for IBM systems and optional devices at http://www.ibm.com/systems/support/.

## Software service and support

Through IBM Support Line, you can get telephone assistance, for a fee, with usage, configuration, and software problems with System x and xSeries servers, BladeCenter products, IntelliStation workstations, and appliances. For information about which products are supported by Support Line in your country or region, see http://www.ibm.com/services/sl/products/.

For more information about Support Line and other IBM services, see http://www.ibm.com/services/, or see http://www.ibm.com/planetwide/ for support telephone numbers. In the U.S. and Canada, call 1-800-IBM-SERV (1-800-426-7378).

## Hardware service and support

You can receive hardware service through IBM Services or through your IBM reseller, if your reseller is authorized by IBM to provide warranty service. See http://www.ibm.com/planetwide/ for support telephone numbers, or in the U.S. and Canada, call 1-800-IBM-SERV (1-800-426-7378).

In the U.S. and Canada, hardware service and support is available 24 hours a day, 7 days a week. In the U.K., these services are available Monday through Friday, from 9 a.m. to 6 p.m.

## IBM Taiwan product service

台灣 IBM 產品服務聯絡方式：
台灣國際商業機器股份有限公司
台北市松仁路7號3樓
電話：0800-016-888

IBM Taiwan product service contact information:

IBM Taiwan Corporation
3F, No 7, Song Ren Rd.
Taipei, Taiwan
Telephone: 0800-016-888

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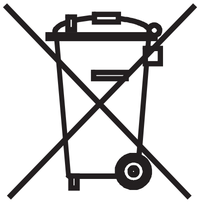
## Product recycling and disposal

This unit must be recycled or discarded according to applicable local and national regulations. IBM encourages owners of information technology (IT) equipment to responsibly recycle their equipment when it is no longer needed. IBM offers a variety of product return programs and services in several countries to assist equipment owners in recycling their IT products. Information on IBM product recycling offerings can be found on IBM's Internet site at http://www.ibm.com/ibm/environment/products/prp.shtml.

Esta unidad debe reciclarse o desecharse de acuerdo con lo establecido en la normativa nacional o local aplicable. IBM recomienda a los propietarios de equipos de tecnología de la información (TI) que reciclen responsablemente sus equipos cuando éstos ya no les sean útiles. IBM dispone de una serie de programas y servicios de devolución de productos en varios países, a fin de ayudar a los propietarios de equipos a reciclar sus productos de TI. Se puede encontrar información sobre las ofertas de reciclado de productos de IBM en el sitio web de IBM http://www.ibm.com/ibm/environment/products/prp.shtml.



**Notice:** This mark applies only to countries within the European Union (EU) and Norway.

This appliance is labeled in accordance with European Directive 2002/96/EC concerning waste electrical and electronic equipment (WEEE). The Directive determines the framework for the return and recycling of used appliances as applicable throughout the European Union. This label is applied to various products to indicate that the product is not to be thrown away, but rather reclaimed upon end of life per this Directive.

注意: このマークは EU 諸国およびノルウェーにおいてのみ適用されます。

この機器には、EU 諸国に対する廃電気電子機器指令 2002/96/EC(WEEE) のラベルが貼られています。この指令は、EU 諸国に適用する使用済み機器の回収とリサイクルの骨子を定めています。このラベルは、使用済みになった時に指令に従って適正な処理をする必要があることを知らせるために種々の製品に貼られています。

**Remarque :** Cette marque s’applique uniquement aux pays de l’Union Européenne et à la Norvège.

L’etiquette du système respecte la Directive européenne 2002/96/EC en matière de Déchets des Equipements Electriques et Electroniques (DEEE), qui détermine les dispositions de retour et de recyclage applicables aux systèmes utilisés à travers l’Union européenne. Conformément à la directive, ladite étiquette précise que le produit sur lequel elle est apposée ne doit pas être jeté mais être récupéré en fin de vie.

In accordance with the European WEEE Directive, electrical and electronic equipment (EEE) is to be collected separately and to be reused, recycled, or recovered at end of life. Users of EEE with the WEEE marking per Annex IV of the WEEE Directive, as shown above, must not dispose of end of life EEE as unsorted municipal waste, but use the collection framework available to customers for the return, recycling, and recovery of WEEE. Customer participation is important to minimize any potential effects of EEE on the environment and human health due to the potential presence of hazardous substances in EEE. For proper collection and treatment, contact your local IBM representative.

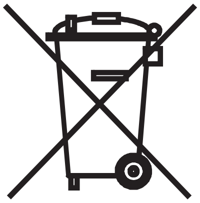
## Battery return program

This product may contain a sealed lead acid, nickel cadmium, nickel metal hydride, lithium, or lithium ion battery. Consult your user manual or service manual for specific battery information. The battery must be recycled or disposed of properly. Recycling facilities may not be available in your area. For information on disposal of batteries outside the United States, go to http://www.ibm.com/ibm/environment/products/batteryrecycle.shtml or contact your local waste disposal facility.

In the United States, IBM has established a return process for reuse, recycling, or proper disposal of used IBM sealed lead acid, nickel cadmium, nickel metal hydride, and battery packs from IBM equipment. For information on proper disposal of these batteries, contact IBM at 1-800-426-4333. Have the IBM part number listed on the battery available prior to your call.

**For Taiwan:** Please recycle batteries.

**For the European Union**:



**Notice:** This mark applies only to countries within the European Union (EU).

Batteries or packaging for batteries are labeled in accordance with European Directive 2006/66/EC concerning batteries and accumulators and waste batteries and accumulators. The Directive determines the framework for the return and recycling of used batteries and accumulators as applicable throughout the European Union. This label is applied to various batteries to indicate that the battery is not to be thrown away, but rather reclaimed upon end of life per this Directive.

Les batteries ou emballages pour batteries sont étiquetés conformément aux directives européennes 2006/66/EC, norme relative aux batteries et accumulateurs en usage et aux batteries et accumulateurs usés. Les directives déterminent la marche à suivre en vigueur dans l'Union Européenne pour le retour et le recyclage des batteries et accumulateurs usés. Cette étiquette est appliquée sur diverses batteries pour indiquer que la batterie ne doit pas être mise au rebut mais plutôt récupérée en fin de cycle de vie selon cette norme.

バッテリーあるいはバッテリー用のパッケージには、EU 諸国に対する廃電気電子機器指令 2006/66/EC のラベルが貼られています。この指令は、バッテリーと蓄電池、および廃棄バッテリーと蓄電池に関するものです。この指令は、使用済みバッテリーと蓄電池の回収とリサイクルの骨子を定めているもので、EU 諸国にわたって適用されます。このラベルは、使用済みになったときに指令に従って適正な処理をする必要があることを知らせるために種々のバッテリーに貼られています。

In accordance with the European Directive 2006/66/EC, batteries and accumulators are labeled to indicate that they are to be collected separately and recycled at end of life. The label on the battery may also include a chemical symbol for the metal concerned in the battery (Pb for lead, Hg for mercury, and Cd for cadmium). Users of batteries and accumulators must not dispose of batteries and accumulators as unsorted municipal waste, but use the collection framework available to customers for the return, recycling, and treatment of batteries and accumulators. Customer participation is important to minimize any potential effects of batteries and accumulators on the environment and human health due to the potential presence of hazardous substances. For proper collection and treatment, contact your local IBM representative.

**For California:**

Perchlorate material – special handling may apply. See http://www.dtsc.ca.gov/hazardouswaste/perchlorate/.

The foregoing notice is provided in accordance with California Code of Regulations Title 22, Division 4.5 Chapter 33. Best Management Practices for Perchlorate Materials. This product/part may include a lithium manganese dioxide battery which contains a perchlorate substance.

# Electronic emission notices

## Federal Communications Commission (FCC) statement

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

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. 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.

## Industry Canada Class A emission compliance statement

This Class A digital apparatus complies with Canadian ICES-003.

## Avis de conformité à la réglementation d'Industrie Canada

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

## Australia and New Zealand Class A statement

**Attention:** This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

## United Kingdom telecommunications safety requirement

**Notice to Customers**

This apparatus is approved under approval number NS/G/1234/J/100003 for indirect connection to public telecommunication systems in the United Kingdom.

## European Union EMC Directive conformance statement

This product is in conformity with the protection requirements of EU Council Directive 2004/108/EC on the approximation 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 nonrecommended modification of the product, including the fitting of non-IBM option cards.

This product has been tested and found to comply with the limits for Class A Information Technology Equipment according to CISPR 22/European Standard EN 55022. The limits for Class A equipment were derived for commercial and industrial environments to provide reasonable protection against interference with licensed communication equipment.

**Attention:** This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

European Community contact:

IBM Technical Regulations

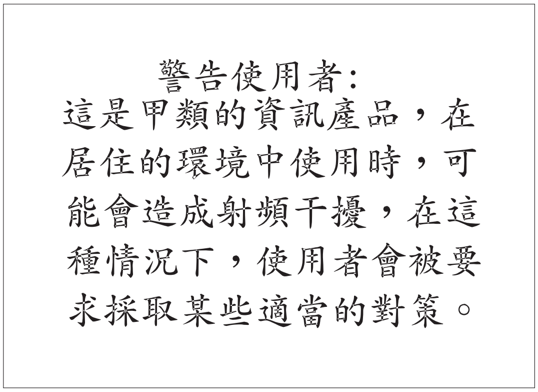
Pascalstr. 100, Stuttgart, Germany 70569

Telephone: 0049 (0)711 785 1176

Fax: 0049 (0)711 785 1283

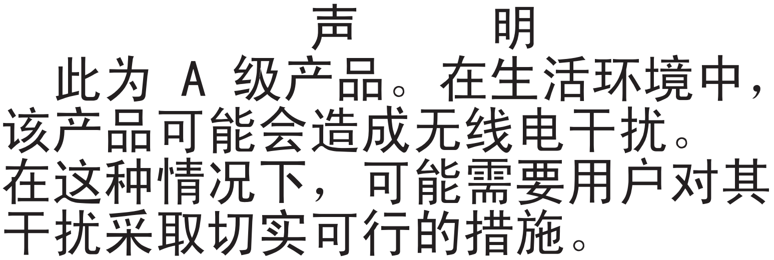
E-mail: tjahn@de.ibm.com

## Taiwanese Class A warning statement



警告使用者:
這是甲類的資訊產品，在
居住的環境中使用時，可
能會造成射頻干擾，在這
種情況下，使用者會被要
求採取某些適當的對策。

## Chinese Class A warning statement



声　明
此为 A 级产品。在生活环境中，
该产品可能会造成无线电干扰。
在这种情况下，可能需要用户对其
干扰采取切实可行的措施。

## Japanese Voluntary Control Council for Interference (VCCI) statement

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