IBM®

Local 2x8 Console Manager

Installation and User's Guide

For 1735-1GX

Local 2x8 Console Manager 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® Local 2x8 Console Manager (LCM2) appliance integrates analog keyboard, video, and mouse (KVM) switching technology with advanced cable management, access for two simultaneous users, and a user interface. The LCM2 appliance has USB and PS/2® ports on the rear panel that support all major target device platforms.

Glossary

The following words are used throughout this documentation:

- **appliance** - equipment that provides KVM connectivity to attached target devices
- **CO cable** - a Conversion Option cable that, when attached to the appliance and a target device, provides additional functionality such as virtual media sessions
- **switching system** - a set of appliances and attached target devices and CO cables
- **target device** - equipment such as a server or router that is attached to an appliance
- **user** - a KVM connection from an analog port on the appliance
- **virtual media** - a USB media device that can be attached to the appliance and made available to any target device that is connected to the appliance

Features and benefits

On-screen management through the OSCAR® for IBM graphical user interface provides easy system configuration and target device selection.

Figure 1.1: LCM2 appliance

Intelligent cables

You can use the following Conversion Option (CO) cables with the appliance.

- **IBM 250 mm KVM Conversion Option (KCO)** - PS/2 and VGA connectors
- **IBM 1.5 M KVM Conversion Option (KCO)** - PS/2 and VGA connectors
- **IBM Virtual Media Conversion Option (VCO)** - USB2 and VGA connectors, required for virtual media connections
- **IBM USB Conversion Option (UCO)** - USB and VGA connectors

KCO cable   **VCO or UCO cable**
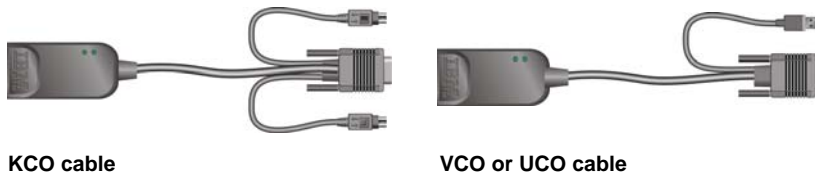
Figure 1.2: Examples of CO cables

These intelligent CO cables with Cat5 design dramatically reduce cable clutter while providing optimal digital display resolution and video settings. The built-in memory of the CO cable simplifies configuration by assigning and retaining unique target device identification codes for each attached target device. This integrated intelligence enhances security and prevents unauthorized access to a target device through cable manipulation. The CO cable is turned on directly from the target device and provides Keep Alive functionality when the appliance is not turned on.

The CO cables enable direct KVM connectivity to target devices that are attached to the appliance. Each LCM2 appliance has eight analog rack interface (ARI) ports for connecting CO cables.

The CO cables that work with the LCM2 appliance support target devices with PS/2 and USB ports. When using the OSCAR interface in conjunction with CO cables, you can easily switch between platforms.

Virtual media

The LCM2 appliance supports virtual media when connected to a VCO cable. You can use virtual media support to connect USB media devices to the appliance and make those devices available to any connected LCM2 appliance. Use virtual media to move data between a target device and a USB media device that are connected to the appliance. You can install, upgrade, or recover the operating system; update the BIOS code; or start the target device from a USB drive through the virtual media capabilities of the LCM2 appliance. To open a virtual media session with a target device, the target device must first be connected to the appliance using a VCO cable.

OSCAR graphical user interface

The LCM2 appliance uses the OSCAR interface, which has menus to configure the switching system and select computers. You can list target devices by unique name, eID (electronic ID), or port number.

Security

Use the OSCAR interface to protect the switching system with a screen saver password. After a user-defined time, the screen saver mode engages and access is prohibited until the correct password is entered to reactivate the switching system.

Operation modes

The OSCAR user interface provides various operation modes for system administration of the LCM2 appliance. Use these modes (Broadcast, Scan, Switch, and Share) to manage the switching activities. See Chapter 3, "Basic operations", beginning on page 19 for more information.

Video

The LCM2 appliance provides optimal resolution for analog VGA, SVGA, and XGA video. You can achieve resolutions of up to 1280 x 1024 depending upon the length of cable that is separating the appliance and target devices.

Flash upgradability

Upgrade the LCM2 appliance at any time through the network port to ensure the appliance is always running the most current available version. See "Appendix A" beginning on page 45 for more information.

Tiering expansion

The LCM2 appliance features an analog console interface (ACI) port that you can use to tier between appliances using only a Cat5 cable. The LCM2 appliance allows for three levels of tiering. You can connect a maximum of 512 target devices with three tiers of LCM2 appliances. See "Tiering LCM2 appliances" on page 12 for more information.
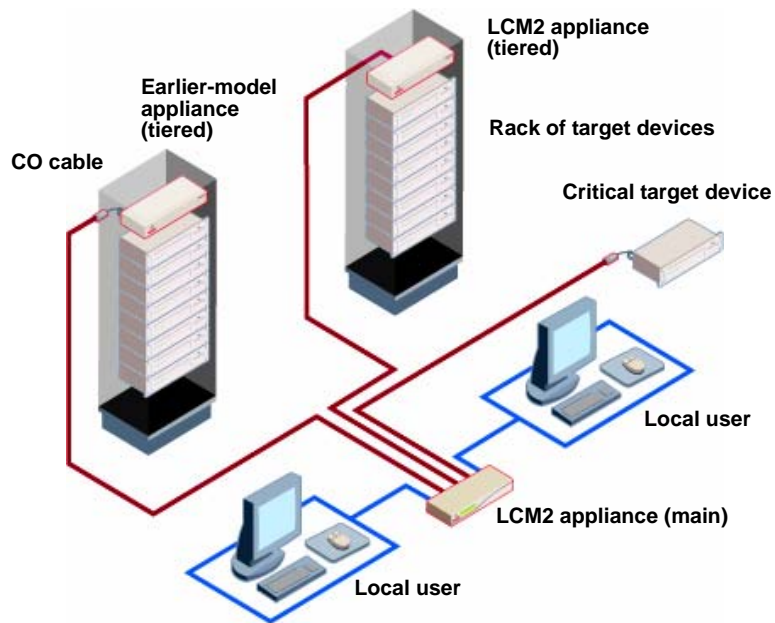
Figure 1.3: Example of an LCM2 appliance configuration

CHAPTER

2

Installation

Required items

Before you install the appliance, make sure that you have all the required items. The following items come with the LCM2 appliance:

- Power cord
- One serial cable
- Rack-mounting brackets
- Documentation CD
- Quick Installation Guide
- 1-U filler panel
- Eight terminators

In addition to the items that come with the appliance, you must provide one CO cable (virtual media, KVM, or USB) and one Cat5 patch cable for each attached target device or appliance. A Phillips screwdriver is also needed for rack-mounting the appliance.

Safety precautions

Observe the following guidelines to safely operate the equipment.

Statement 1

DANGER

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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, then work to the top. Avoid uneven loading or overloading of racks.

General guidelines

- Refer to the rack installation documentation the 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 in. x 1/2 in. 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.
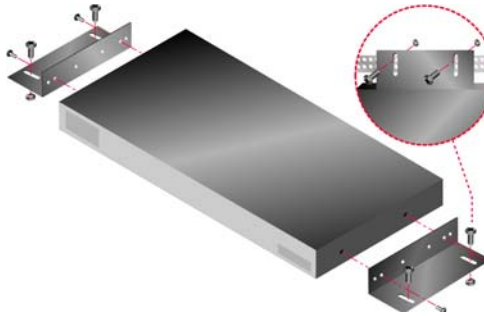
Figure 2.1: Appliance vertical installation

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

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 in. x 1/2 in. 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.
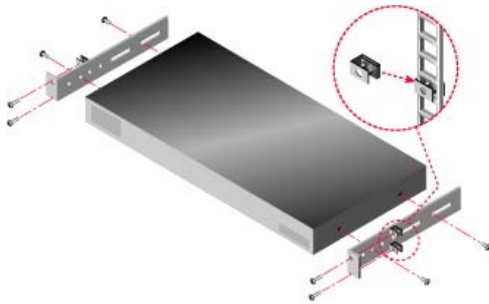
Figure 2.2: Appliance horizontal installation

Installing the LCM2 appliance

Connect the supplied power cord into the rear of the appliance and then into a power source. Figure 2.3 on page 11 illustrates one possible configuration for the LCM2 appliance. See the following detailed set of procedures to install the appliance.
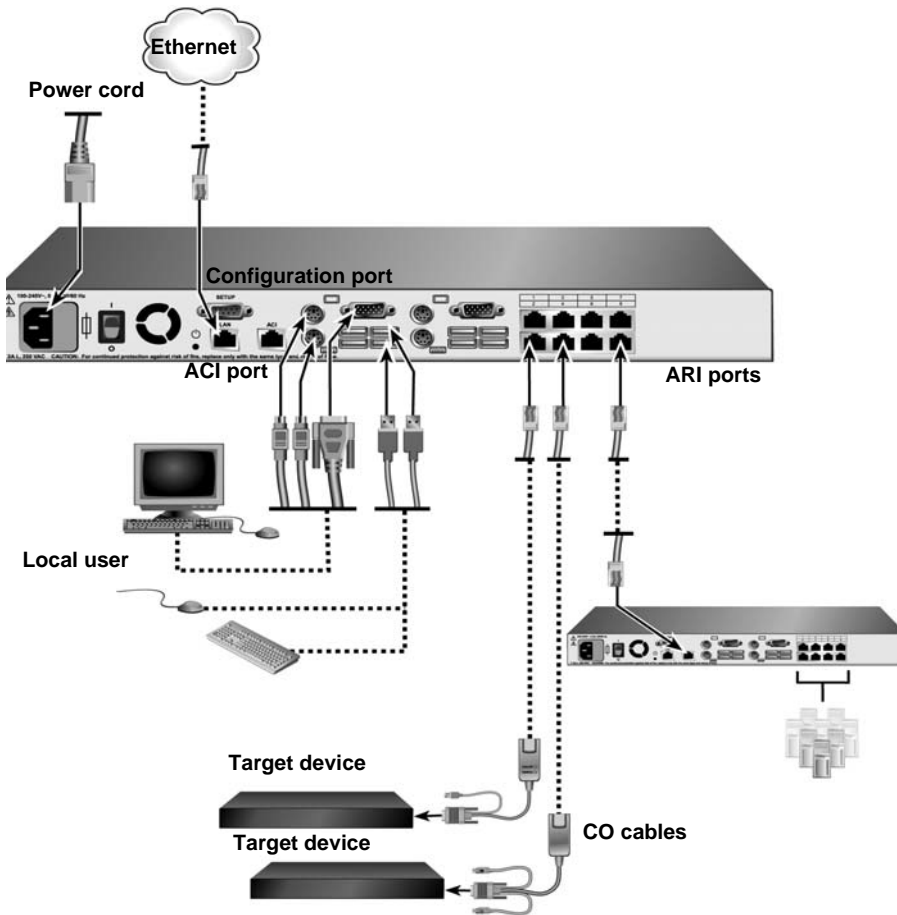
Figure 2.3: Basic LCM2 appliance configuration

Connecting a CO cable to each target device

To connect a CO cable to a target device, complete the following steps:

1. Attach the color-coded connectors of the CO cable to the keyboard, monitor, and mouse ports on the first target device that you connect to the appliance.

2. Attach one end of the Cat5 cable to the RJ-45 connector on the CO cable.

3. If the cable is a KCO or UCO, attach a terminator to the other RJ-45 connector on the CO cable.

4. Connect the other end of the Cat5 cable to an ARI port on the rear of the LCM2 appliance.

5. Repeat steps 1 to 4 for all target devices that you are attaching.

If you are chaining multiple CO cables or target devices, see "Chaining target devices with CO cables" on page 16 for more information.

Connecting local peripheral devices

The LCM2 appliance provides two sets of ports for local users. To connect local peripheral devices to these ports, complete the following steps:

1. Connect a keyboard, monitor, and mouse to the first set of color-coded ports on the rear of the appliance.
2. Connect a keyboard, monitor, and mouse to the second set of color-coded ports on the rear of the appliance.
3. Bundle and label the cables for easy identification.

To connect local virtual media, complete the following step:

Connect the virtual media to any one of the USB ports on the appliance. For all virtual media sessions, you must use a VCO.

Tiering LCM2 appliances

You can tier multiple LCM2 appliances to enable one or two users to connect to up to 512 target devices. You can reach a maximum number of 2048 target devices if you tier a digital 16 port appliance on the main level, an LCM2 appliance on the second level, and an analog 16 port appliance on the third level. In a tiered switching system, each ARI port on the main LCM2 appliance can connect to the ACI port on each tiered appliance. Each tiered appliance can then be connected to a target device with a CO cable. The example in Figure 2.4 on page 14 shows two LCM2 appliances that are tiered under the main appliance, enabling the connection of up to seven primary target devices, seven secondary target devices, and eight tertiary target devices. Using this configuration, you can tier eight appliances under the main appliance and eight appliances under each secondary appliance, enabling the connection of up to 512 target devices. The third level of tiering can be either earlier-model appliances or another LCM2 appliance. In this configuration, the local port OSCAR interface is disabled when the secondary LCM2 appliance is connected through the ACI port below another appliance.

To tier multiple LCM2 appliances, complete the following steps:

1. Connect the tiered LCM2 appliance to each target device as described in "Installing the LCM2 appliance" on page 10.
2. Connect one or two users to the main appliance as described in "Connecting local peripheral devices" on page 12.
3. Attach one end of the Cat5 cable to the ACI port on the tiered LCM2 appliance.
4. Attach the other end of the Cat5 cable to one of the ARI ports on the rear of the main LCM2 appliance.
   The switching system will automatically merge the two appliances. All target devices that are connected to the tiered LCM2 appliance are included in the main LCM2 appliance target

device list in the OSCAR interface. However, if you are tiering an earlier-model appliance, the list of appliances in the OSCAR interface will display both the primary appliance port number and the secondary or tertiary appliance port number. See "Adding earlier-model appliances" on page 15 for more information.

5. Repeat steps 3 and 4 for all additional tiered LCM2 appliances you want to attach.
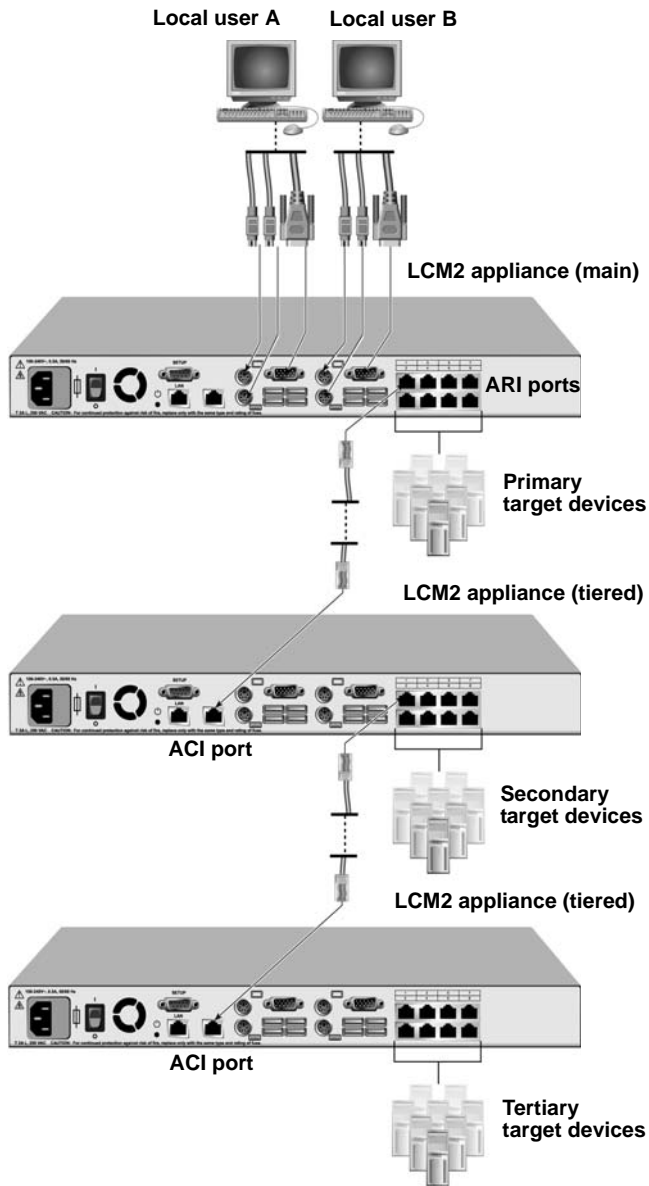
Figure 2.4: LCM2 appliance configuration with tiered appliances

Adding earlier-model appliances

You can add earlier-model appliances for integration into the existing configuration. In a tiered switching system, each ARI port will accommodate up to 16 target devices. When earlier-model appliances are tiered under the LCM2 appliance, the LCM2 appliance must be at the top level of the tier. See the following list for earlier-model appliances that are compatible with the appliance configuration.

Earlier-model appliances include:

- 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

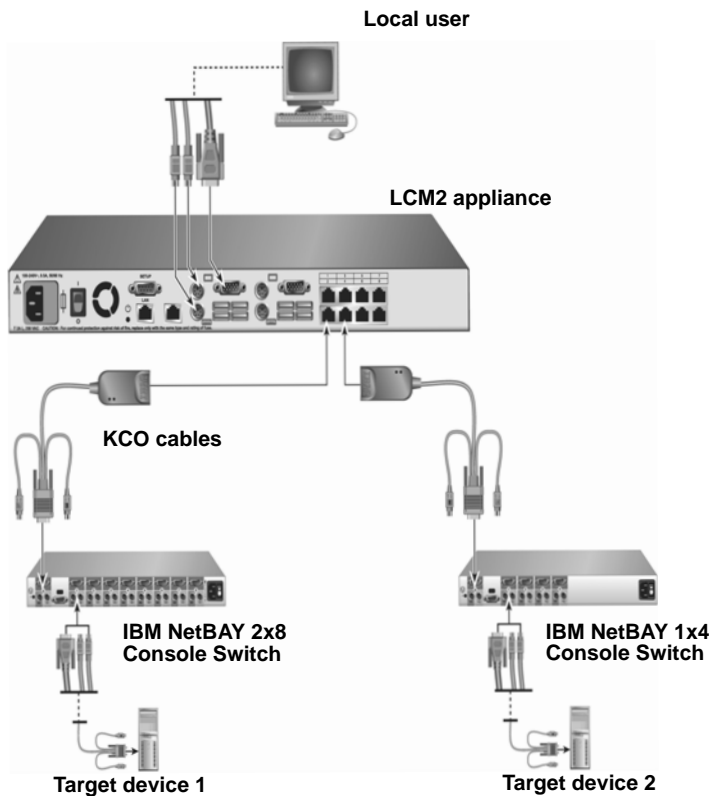**Figure 2.5: Appliance configuration with an earlier-model appliance**

To attach an earlier-model appliance to the LCM2 appliance, complete the following steps:

1. Mount the earlier-model appliance into the rack according to the instructions that are included with that device.
2. Either attach the keyboard, monitor, and mouse connectors of the CO cable to the local port on the tiered appliance and attach one end of a Cat5 cable to the end of the CO cable, or attach one end of a Cat5 cable directly to the ACI port of the tiered appliance.
3. Connect the other end of the Cat5 cable to one of the ARI ports on the rear of the appliance.
4. Turn off and turn on the target devices to the tiered appliance according to the instructions that are included with that device.
5. Turn off and turn on the tiered appliance to enable its local port to recognize the CO cable.
6. Repeat steps 1 to 5 for all tiered appliances that you want to attach to the switching system.The switching system will automatically merge the two appliances. All target devices that are connected to the tiered appliance are included in the main appliance target device list in the OSCAR interface. However, when an earlier-model appliance is connected to a KCO cable, the list of appliances in the OSCAR interface will display both the primary appliance port number, followed by a dash, and the secondary appliance port number. For example, the Port column for a secondary earlier-model appliance might dispaly 01-02, where 01 is the primary port and 02 is the secondary port.

Chaining target devices with CO cables

To chain together target devices using KCO cables, complete the following steps:

1. Attach one end of the Cat5 cable to the RJ-45 connector on the KCO cable.
2. Connect the other end of the Cat5 cable to an ARI port on the rear of the appliance.
3. Attach the color-coded cable ends to the keyboard, monitor, and mouse ports on the first target device that you are connecting to this appliance.
4. Attach one end of the Cat5 cable to the second RJ-45 connector on the KCO cable for the first target device.
5. Attach the other end of this cable to the first RJ-45 connector of the KCO cable for the second target device.
6. Repeat steps 3 through 5 for all target devices that you chain together.
7. When you reach the end of the chain, attach a terminator to the second RJ-45 connector on the last KCO cable in the chain.

To chain together target devices using UCO cables, complete the following steps:

1. Attach one end of the Cat5 cable to the RJ-45 connector on the UCO cable.
2. Connect the other end of the Cat5 cable to an ARI port on the rear of the appliance.
3. Attach the cable ends to the monitor and USB ports on the first target device that you are connecting to this appliance.

4. Attach one end of the Cat5 cable to the second RJ-45 connector on the UCO cable for the first target device.

5. Attach the other end of this cable to the first RJ-45 connector of the UCO cable for the second target device.

6. Repeat steps 3 through 5 for all target devices that you chain together.

7. When you reach the end of the chain, attach a terminator to the second RJ-45 connector on the last UCO cable in the chain.

Setting up the LCM2 appliance

With the LCM2 appliance, you can auto detect and configure each port on the appliance. Chapter 3 provides detailed instructions on naming customization and OSCAR interface setup and configuration.

3 *Basic operations*

Controlling the switching system from the analog user ports

The LCM2 appliance has USB keyboard and mouse ports on the rear panel that you can use to connect a USB or PS/2 keyboard and mouse for direct analog access. The appliance uses the OSCAR interface, which has menus to configure the switching system and select target devices.

Starting the OSCAR interface

You can view, configure, and control target devices in the switching system from the OSCAR interface from a KVM connection to either analog user port.

To start the OSCAR interface, press Print Screen. Alternatively, you can press the Control, Alt, or Shift key twice within 1 second to start the OSCAR interface. You can use any of these key sequences instead of pressing Print Screen in any procedure in this document. To specify which key sequences can be used to start the OSCAR interface, click **Setup > Menu**.

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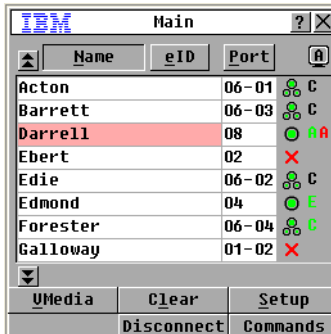

Figure 3.1: Example of a Main window

The Main window lists the target devices in 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 is connected to an LCM2 appliance, the ARI port number is shown first, followed by the number of the appliance port to which the target device is connected. For example, in Figure 3.1, the target device named Acton is connected to ARI port 06 and appliance port 01.

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 3.1: 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.
⧖	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 could 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).

You can set a screen delay to specify 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. Press Print Screen to start the OSCAR interface.
2. In the Main window, click **Setup > Menu**.
3. In the **Screen Delay Time** field, type the number of seconds that you want to elapse between when Print Screen is pressed and when the OSCAR interface starts.

Connecting a user 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, press Print Screen to start the OSCAR interface, and then use one of the following procedures:

- In the Main window, double-click the target device name, eID number, or port number.
- Type the port number, and press Enter.
- Type the first few characters of the target device name or eID number, and press Enter.

You can toggle between two selected target devices. To select the previously selected target device, press Print Screen and press Backspace.

To disconnect the user from a target device, 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.

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 3.2: 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. 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. In all other windows: Close the current window, without saving changes, and return to the previous window. 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.

Table 3.2: OSCAR interface navigation basics (Continued)

Key, key combination, or mouse action	Result
Enter	Completes a switch in the Main window and exits the OSCAR interface. 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.
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. 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 35.

Connecting local virtual media

You can connect virtual media directly to the appliance using the USB port on the appliance. Note that all USB ports are assigned to a single virtual media session and cannot be independently mapped.

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

1. Press Print Screen to start the OSCAR interface. The Main window opens.
2. Connect the user to the target device with which you want to establish a virtual media session. Use the arrow keys to highlight the target device name, and then press Enter.
3. Press Print Screen to start the OSCAR interface again.
4. The Virtual Media window opens.
5. Select one or more of the following check boxes:
   - **Locked** - Select this check box to specify that when the user is disconnected from a target device, the virtual media is also disconnected.

- • **Reserve** - Select this check box to specify that the virtual media connection can be accessed only by your user name and that no other user can connect to that target device. If both **Locked** and **Reserved** are selected, the session will be reserved.
- • **CD ROM** - Select this check box to establish a virtual media CD connection to a target device. Clear this check box to end the connection.
- • **Mass Storage** - Select this check box to establish a virtual media mass-storage connection to a target device. Clear this check box to end the connection.
- • **Write Access** - Select this check box to enable the connected target device to write data to the virtual media during a virtual media session. Read access is always enabled during virtual media sessions.

6.   Click **OK**.

Configuring the appliance and the OSCAR interface

To configure the appliance and the OSCAR interface, start the OSCAR interface and click **Setup**. The following illustration shows the Setup window.

Figure 3.2: Setup window

The following table describes the options in the Setup window.

Table 3.3: 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	Set passwords to restrict access to the target devices. Enable the screen saver.
Flag	Change the display properties including timing, color, and location of the status flag.
Language	Specify the language that the interface is displayed in.

Table 3.3: Setup features to manage routine tasks for the target devices (Continued)

Option	Purpose
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.
Switch	Specify the appliance mode.
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 will not be able to modify the name of the applicable CO cable.

To access the Names window, complete the following steps:

1. Press Print Screen to start the OSCAR interface. The Main window opens.
2. Click **Setup > Names**. The Names window opens.

If the target device list changes, the mouse cursor will turn into an hourglass as the list is automatically updated. No mouse or keyboard input is 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 name or port number and click **Modify**. The Name Modify window opens.
2. Type a name in the **New Name** field. Names of target devices 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** to transfer the new name to the Names window. 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.

Assigning device types

The LCM2 appliance automatically discovers tiered appliances, but you must specify the number of ports on the tiered appliance through the Devices window. IBM Console Switches and other earlier-model appliances are listed in the Type category for the tiered appliance. When you select a configurable appliance from the list, the **Modify** button becomes available, so you can assign it the correct number of ports.

To access the Devices window, complete the following steps:

1. Press Print Screen to start the OSCAR interface. The Main window opens.

2. Click **Setup > Devices**. The Devices window opens.
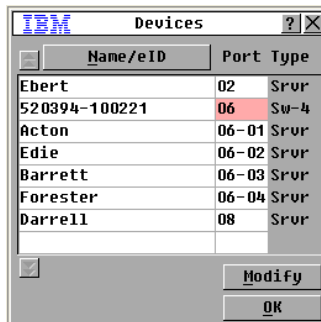
Figure 3.3: Devices window

When the LCM2 appliance discovers a tiered appliance, the port numbering changes to accommodate each target device under that appliance. For example, if the appliance is connected to ARI port 6, the appliance port is listed as 06, and the target devices that are under it are numbered sequentially as 06-01, 06-02, and so on.

To assign a device type, complete the following steps:

1. In the Devices window, select the port number.

2. Click **Modify**. The Device Modify window opens.
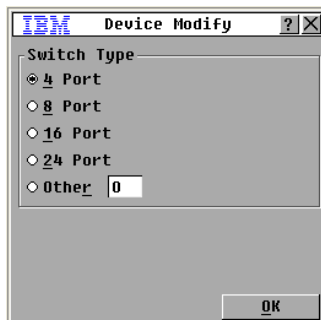
Figure 3.4: Device Modify window

3.   Select or type the number of ports that are supported by the tiered appliance and click **OK**.

4.   Repeat steps 1 to 3 for each port for which you want to assign a device type.

5.   Click **OK** in the Devices window to save settings.

Changing the display behavior

Use the Menu window to change the order of 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.   Press Print Screen to start the OSCAR interface. The Main window opens.

2.   Click **Setup** > **Menu**. The Menu window opens.
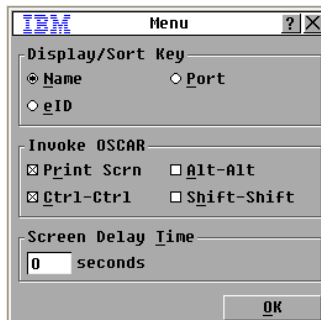
Figure 3.5: Menu window

To select the order of the target devices, complete the following steps:

1.   Click one of the following buttons:

   •   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 select a key combination to start the OSCAR interface, complete the following steps:

1. In the **Invoke OSCAR** section, select which key combinations you want to use to start the OSCAR interface, then press your selected combination.

2. Click **OK**.

You can set a screen delay so that you can select a target device 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. Type the number of seconds (0 through 9) to specify the length of time that elapses between when Print Screen is pressed and when the OSCAR interface starts. If you specify 0, there is no delay.

2. Click **OK**.

Selecting display language

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

Figure 3.6: Language window

To select a language for the OSCAR interface:

1. Press Print Screen to start the OSCAR interface. The Main window opens.

2. Click **Setup > Language**. The Language window opens.

3. In the Language window, select the language and click **OK**.

Controlling the status flag

The status flag is displayed on the desktop 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 3.4: OSCAR interface status flags

Flag	Description
Darrell	Flag type by name.
Free	Flag indicating that the user has been disconnected from all systems.
520255-73F344	Flag type by eID number.
Darrell ·》	Flag indicating that Broadcast mode is enabled.

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

1. Press Print Screen. The Main window opens.

2. Click **Setup > Flag**.

3. Set one or more of the following settings:

- 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 the flag color.
- Select **Opaque** to make the flag solid, or select **Transparent** to make the desktop visible through the flag.
- To specify the position of the flag, complete the following steps:
  - a. Click Set Position.
  - 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.

4. 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.

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.

Figure 3.7: Keyboard window

To change the keyboard country code, complete the following steps:
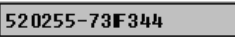
1. Press Print Screen to start the OSCAR interface. The Main window opens.

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

You can enable a screen saver to start if the user remains unused for a specified length of time. When the screen saver starts, the user is disconnected from any target device to which it was connected. The screen saver stops when you press any key or move the mouse.

To immediately start the screen saver, press Print Screen and press Pause.

If you set a password, the keyboard and mouse are locked when the screen saver starts. When you press a key or move the mouse while the screen saver is running, a Password window opens, and you must type the password and click **OK** to unlock the keyboard and mouse.

Important: If you forget the password, you must call technical support. See "Appendix C" for contact information.

To enable the screen saver, complete the following steps:

1. Press Print Screen. The Main window opens.

2. Click **Setup > Security**. If a password is set, the Password window opens. Type the password and click **OK**.

3. Select the **Enable Screen Saver** check box.

4. In the **Inactivity Time** field, type the number of seconds (1 through 99) that must elapse before the screen saver starts.

5. If the monitor is Energy Star compliant, select **Energy**; otherwise, select **Screen**.

6. (Optional) To run the screen-saver test, click **Test**. The screen-saver test runs for 10 seconds.

7. Click **OK**.

To disable the screen saver, complete the following steps:

1. Press Print Screen. The Main window opens.

2. Click **Setup > Security**. If a password is set, the Password window opens. Type the password and click **OK**.

3. Clear the **Enable Screen Saver** check box.

4. Click OK.

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.

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

1. Press Print Screen. The Main window opens.

2. Click **Setup > Security**. If a password is already set, the Password window opens. Type the password and click **OK**.

3. Double-click the **New** field.

4. In the **New** field, type the new password.

5. In the **Repeat** field, type the password again.

6. Click **OK**.

To disable password protection, complete the following steps:

1. Press Print Screen. The Main window opens.

2. Click **Setup > Security**. In the Password window, type the password and click **OK**.

3. Double-click the **New** field. Leave the field blank, and press Enter.

4. Double-click the **Repeat** field. Leave the field blank, and press Enter.

5. Click **OK**.

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 3.5: 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.

To access the Commands window, complete the following steps:

1. Press Print Screen. The Main window opens.
2. Click **Commands**. The Commands window opens.
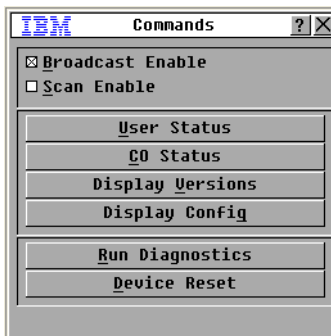
Figure 3.8: Commands window

Displaying version information

You can use the OSCAR interface to view the versions of the LCM2 appliance and the CO cable firmware. For more information, see "Appendix A" beginning on page 45.

To view version information, complete the following steps:

1. Press Print Screen. The Main window opens.
2. Click **Commands** > **Display Versions**. The Version window opens. The top pane of the window lists the subsystem versions in the appliance.


```
IBM          Version        ? X
RCM 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

   Upgrade            CO

©2005 Avocent   en-us
```
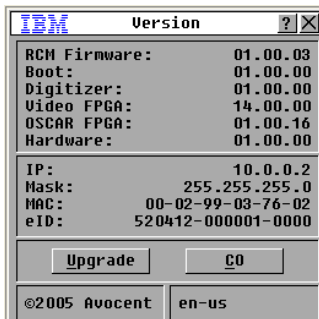
Figure 3.9: Version window

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. For more information about loading firmware, see "Appendix A" beginning on page 45.
5. Click **X** to close the CO Version window.

Upgrading the firmware

You can also use the OSCAR interface to upgrade the firmware available for the LCM2 appliance. For optimum performance, keep the firmware current.

Figure 3.10: Upgrade window

To upgrade firmware, complete the following steps:

1. Press Print Screen. The Main window opens.

2. Click **Commands > Display Versions > Upgrade.** The Upgrade window opens.

3. 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 display configuration

Use the Display Configuration window to view the current configuration of the LCM2 switching system.

To view the current configuration, 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 no user is currently connected, both the **User** and **Server Name** fields are blank.

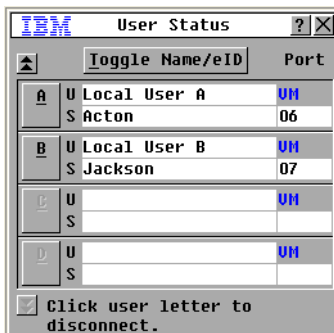**Figure 3.11: User Status window**

To view current user connections, click **Commands > User Status**. The User Status window opens.

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.

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

Resetting the keyboard and mouse

You can reset the keyboard and mouse by clicking **Commands > Device Reset**. If the keyboard or mouse is still 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. Press Print Screen. The Main window opens.

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.   Click **Setup > Scan**. The Scan window opens
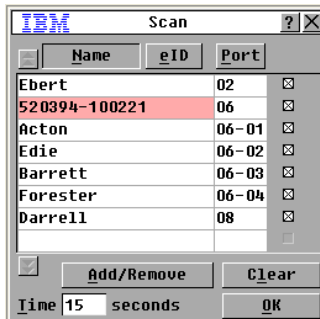
Figure 3.12: Scan window

2.   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.

3.   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.

4.   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. Click **Commands**. The Commands window opens.
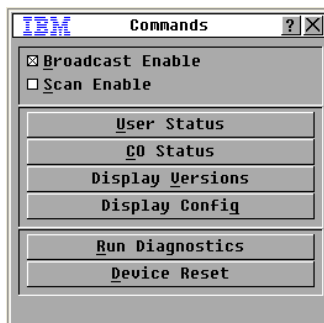
Figure 3.13: Commands window

2. Select **Scan Enable** in the Commands window. Scanning will be begin immediately.

3. 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, you will receive a warning that 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.

Figure 3.14: Diagnostics window

Next to each item that will be tested, you will see a pass (green circle) or fail (red x) symbol to the left of each item as that test finishes. The following table details each of the tests.

Table 3.6: Diagnostic test details

Test	Description
Firmware CRCs	Reports on the condition of the main board RAM.
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.
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. Click **Commands > Run Diagnostics**. A warning message indicates that all users will be disconnected.

2. Click **OK** to begin diagnostics.

3. All users are disconnected and the Diagnostics window opens.

4. 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 eight target devices at a time, one target device per ARI port.

To access the Broadcast window, complete the following steps:

1. Press Print Screen. The Main window opens.
2. Click **Setup** > **Broadcast**. The Broadcast window opens.

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, from the Commands window, clear the **Broadcast Enable** check box.

Setting the connection mode

Connections between the user and target devices can be preemptive or cooperative with the other user.

A preemptive connection between the user and a target device is disconnected, without warning, if the other user selects the same target device.

A cooperative connection enables the user to maintain the connection to a target device if another user selects the same target device. In this mode, two users can be simultaneously connected to the target device if **Share Enable** is selected. When the second user connects to the target device, the first user still has keyboard and mouse control over the target device. When the first user ceases providing keyboard and mouse input to the target device, the appliance will wait the number of seconds specified in the **Timeout Seconds** field before transferring keyboard and mouse control to the second user.

To select the connection mode, complete the following steps:

1. Press Print Screen. The Main window opens.

2. Click **Setup > Switch**.

3. Select **Preemptive** or **Cooperative**. If you selected **Cooperative**, you can select **Share Enable** to enable both users to control the same target device. In the **Timeout Seconds** field, type the number of seconds that the appliance will wait for input from the first connected user before allowing input from the second user.

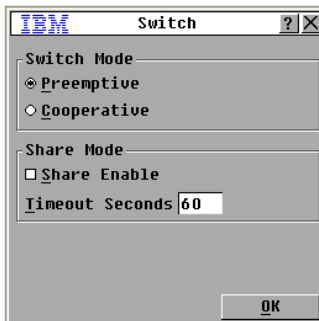4. Click **OK** to save the settings.

Figure 3.15: Switch window

Computer terminal operations

The Console menu

Each appliance can be configured at the appliance level through the Console menu interface accessed through the configuration port on the rear of the appliance. All terminal commands are accessed through a terminal or computer running terminal emulation software.

Network configuration

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

1. When you turn on the appliance, the appliance initializes for approximately one minute. After it completes initialization, press any key on the terminal or on the computer running the terminal emulation software to access the Console menu interface. The terminal can be connected at any time, even when the appliance is already turned on.

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

```
+--------------------------------------------------+
|                  IBM LCM2 Console                |
|   Copyright (c) 2000-2005, All Rights Reserved   |
+--------------------------------------------------+
|                     Main Menu                    |
+--------------------------------------------------+

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

  Enter selection ->
```
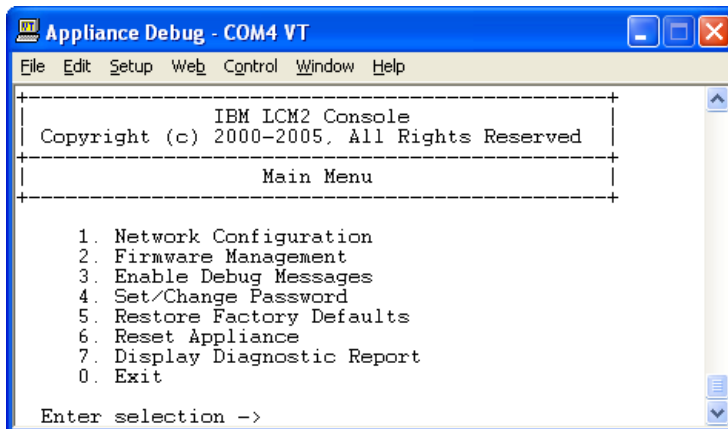
Figure 4.1: Network configuration menu

3. Type 1 and press Enter to set the network speed. You should set the connection manually without relying on the auto negotiate feature. After pressing Enter, you are returned to the Network Configuration menu.

4. Type 2 and press Enter to specify whether you are using a static or Dynamic Host Configuration Protocol (DHCP) address. A static IP address can be used to provide a user-defined IP address, netmask, and default gateway for the appliance. Use a static IP address for ease of configuration. DHCP is a protocol that automates the configuration of TCP/IP-enabled computers. When DHCP is selected, the IP Address, Netmask, and Default Gateway settings are automatically assigned to the appliance and cannot be modified by a user. If you are using the DHCP option, configure the DHCP target device to provide an IP address to the appliance and then skip step 5.

5. Select the remaining options from the Network Configuration menu to finish the configuration of the appliance with an IP address, netmask, default gateway, and ping response.

6. Type 0 (zero) and press Enter to return to the Console Main menu. The appliance will then reboot.

Other Console Main menu options

Besides the Network Configuration option, the Console Main menu of the appliance has the following menu items: Security Configuration, Firmware Management, Enable Debug Messages, Restore Factory Defaults, Reset Appliance, and Exit. Each is discussed in the following section.

Security Configuration

Console Password: Enable or disable the console password using security for the console (access requires an Admin account).

In the event that you forgot the password, type Help. You will be given a one time use key to supply to technical support, who will then supply you with a one time use password that you can use to access the Serial Port.

Firmware Management

This menu contains the FLASH Download selection. For more information, see "Appendix A" beginning on page 45.

Enable Debug Messages

This menu option turns on console status messages. Because this can significantly reduce performance, you should only enable debug messages when instructed to do so by technical support. When you are finished viewing the messages, press any key to exit this mode.

Restore Factory Defaults

This menu option will restore all appliance options to the default settings.

Reset Appliance

You can use this menu option to initiate a soft reset of the appliance.

Exit

This menu selection will return you to the ready prompt.

Appendix A: Flash upgrades

Upgrading the LCM2 appliance

Use the LCM2 appliance flash upgrade feature to update the appliance with the latest available firmware.

Items needed for the upgrade
- Target device that is running a terminal program
- Available serial port (COM port) on the target device
- Serial cable that connects the appliance and the target device
- Firmware update

To upload a new flash file, complete the following steps:

1. Go to http://www.ibm.com/support/ and download the latest flash firmware. Save the flash upgrade file to the correct directory on the TFTP target device.
2. Connect a computer running terminal emulation software to the configuration port on the rear panel of the appliance using the supplied straight serial cable.The terminal should be set to 9600 bps, 8 bits, 1 stop bit, no parity, and no flow control.
3. If the appliance is not on, turn it on now. After approximately one minute, press any key to access the Console Main menu.
4. The Console Main menu opens. Select the Firmware Management option. The current version of the firmware is opened on the Firmware Management menu.
5. Type 1 and press Enter to select FLASH Download.
6. Type the IP address of the TFTP target device and press Enter.
7. Type the name of the flash file and press Enter.
8. Confirm the TFTP download by typing a y or yes and pressing Enter.
9. The appliance will verify that the file you downloaded is valid. Next, you are prompted to confirm the upgrade. Type a y or yes and press Enter to confirm.
10. 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.
11. After the upgrade is complete, a verification message is displayed.

Upgrading the CO cable firmware

The CO cables can be upgraded individually or simultaneously.

To simultaneously upgrade multiple CO cables, complete the following steps:

1. Press Print Screen**.** The Main window opens.
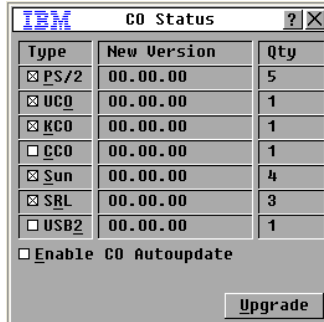2. Click **Commands > CO Status.** The CO Status window opens.

Figure A.1: CO Status window

3. Click one or more types of modules to upgrade. Click **Upgrade**.
4. The CO Upgrade window opens. Click **OK** to initiate the upgrade and return to the CO Status window.

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

1. Press Print Screen**.** The Main window opens.
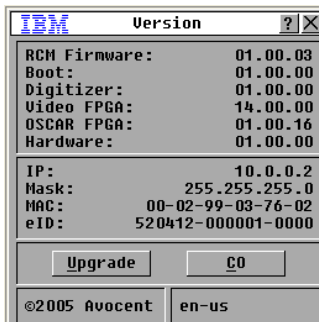2. Click **Commands** > **Display Versions**. The Version window opens.

Figure A.2: Version window

3. Click **CO** to view individual CO cable version information. The CO Select window opens.
4. Select a CO cable to upgrade and click the **Version** button. The CO Version window opens.
5. Click the **Load Firmware** button. The CO Load window opens.
6. Click **OK** to initiate the upgrade and return to the Status window.

NOTE: During an upgrade, the CO cable status indicator in the Main window is yellow. The CO cable is unavailable while an upgrade is in progress. When an upgrade is initiated, any current connection to the target device through the CO cable is terminated.

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 1Hz, 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 the TFTP target device (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 successfully 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 feature of LCM2 appliances enables you to connect to the USB port of an attached computer. With this feature, a user located at the appliance or using the remote software can access a local USB storage device, such as a USB CD drive, diskette drive, or flash drive, from an attached computer.

The Virtual Media Conversion Option (VCO) cable 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 LCM2 appliance.

Booting from a virtual USB device is dependant 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 LCM2 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 a 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: Product specifications

LCM2 appliance product specifications	
Target device ports	
Number	8
Cable types	VCO, KCO, and UCO
Connectors	RJ-45
Sync types	Separate horizontal and vertical
Plug and Play	DDC2B
Video resolution	Local Port Maximum 1280 x 1024 @ 75 Hz
Serial port	
Number	1
Type	Serial RS-232
Connector	DB9 female
Analog port sets	
Number	2
Type	PS/2, USB, VGA, and ACI
Connectors	PS/2 miniDIN, 15 pin D, RJ-45
Dimensions	
Dimensions (H x W x D)	4.37 cm x 43.18 cm x 20.32 cm; 1-U form factor (1.72 in. x 17.00 in. x 8.00 in.)
Weight	2.6 kg (5.75 lb) without cables
Power supply	
Heat dissipation	92 BTU/Hr
Airflow	8 CFM
Power consumption	12.5 Watts
AC-input power	40 Watt maximum
AC-input voltage rating	100 to 240 V ac Autosensing

Table D.1: Product specifications (Continued)

LCM2 appliance product specifications	
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 or region dependent connector on the power resource end
AC-frequency	50 to 60 HZ
Ambient atmospheric condition ratings	
Temperature	0° to 50° Celsius (32° to 122° Farenheit) operating -20° to 60° Celsius (-4° to 140° Farenheit) nonoperating
Humidity	20 to 80% noncondensing operating 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 eServer™ or IntelliStation® system or optional device, 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 Hardware Maintenance Manual and Troubleshooting Guide or Problem Determination and Service Guide on the IBM Documentation CD that comes with your system.

NOTE: For some IntelliStation models, the Hardware Maintenance Manual and Troubleshooting Guide is available only from the IBM support Web site.

- Go to the IBM support Web site at http://www.ibm.com/pc/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 eServer and IntelliStation systems also describes the diagnostic tests that you can perform. Most eServer and IntelliStation 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 eServer or IntelliStation 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/pc/support/ and follow the instructions. Also, some documents are available through the IBM Publications Ordering System at http://www.elink.ibmlink.ibm.com/public/applications/publications/ cgibin/pbi.cgi.

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 eServer and IntelliStation systems, optional devices, services, and support. The address for IBM xSeries and BladeCenter information is http://www.ibm.com/eserver/xseries/. The address for IBM IntelliStation information is http://www.ibm.com/pc/us/intellistation/.

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

Software service and support

Through IBM Support Line, you can get telephone assistance, for a fee, with usage, configuration, and software problems with 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.

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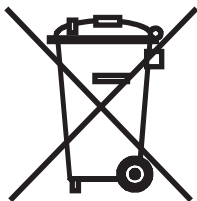
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Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment 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 89/336/EEC 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.

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