MAY 2003

BLACK BOX® ServSwitch™ Octopus

KV1701E
KV1702E
KV1710E

BLACK BOX®
NETWORK SERVICES

Welcome to the ServSwitch™ Family!

Thank you for purchasing a BLACK BOX® Octopus! We appreciate your business, and we think you'll appreciate the many ways that your new Octopus will save you money, time, and effort.

That's because our ServSwitch family is all about breaking away from the traditional, expensive model of computer management. You know, the one-size-fits-all-even-if-it-doesn't model that says, "One computer gets one user station, no more, no less." Why not a single user station (monitor, keyboard, and mouse) for multiple computers—even computers of different platforms? Why not a pair of user stations, each of which can control multiple computers? Why not multiple user stations for the same computer?

With our ServSwitch products, there's no reason why not. We carry a broad line of robust solutions for all these applications. Do you have just two PCs, and need an economical alternative to keeping two monitors, keyboards, and mice on your desk? Or do you need to share dozens of computers, including a mix of IBM® PC, RS/6000®, Apple® Macintosh®, Sun Microsystems®, and SGI™ compatibles among multiple users with different access levels? Does your switch have to sit solidly on a worktable and use regular everyday cables? Or does it have to be mounted in an equipment rack and use convenient many-to-one cables? No matter how large or small your setup is, no matter how simple or how complex, we're confident we have a ServSwitch system that's just right for you.

The ServSwitch™ family from BLACK BOX—the one-stop answer for all your KVM switching needs!

*

This manual will tell you all about your new ServSwitch Octopus, including how to install, operate, and troubleshoot it. For an introduction to the ServSwitch Octopus, see Chapter 2. The ServSwitch Octopus product codes covered in this manual are:

KV1701E KV1702E KV1710E

This manual also includes information about the ServSwitch Octopus software and the Server Access Modules (SAM), which have their own manuals or installation guides:

KV1720A KV1721A KV1722A

FEDERAL COMMUNICATIONS COMMISSION AND INDUSTRY CANADA

RADIO-FREQUENCY INTERFERENCE STATEMENTS

This equipment generates, uses, and can radiate radio-frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio communication. It has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in Subpart B of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This digital apparatus does not exceed the Class A limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of Industry Canada.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique publié par Industrie Canada.

EUROPEAN UNION DECLARATION OF CONFORMITY

This equipment has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in the European standard EN55022. These limits are designed to provide reasonable protection against harmful interference. This equipment generates, uses and can radiate radio-frequency energy, and if not installed and used in accordance with the instructions, might cause harmful interference to radio or television reception.

However, there is no guarantee that harmful interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment on and off, you can correct the interference with one or more of the following measures:

a. Reorient or relocate the receiving antenna.

b. Increase the separation between the equipment and the receiver.

c. Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.

d. Consult the supplier or an experienced radio/TV technician for help.

Shielded cables must be used with this equipment to maintain compliance with radio frequency energy emission regulations and ensure a suitably high level of immunity to electromagnetic disturbances. This equipment has also been found to comply with European standards EN50082 and EN60950.

CE

Japanese Compliance Statement

この装置は、情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に基づくクラスA情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

Other Agency Approvals

USA (UL, FCC)
Canada (cUL, ICES-003)
European Union (CE)

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Normas Oficiales Mexicanas (NOM)

Electrical Safety Statement

INSTRUCCIONES DE SEGURIDAD

1. Todas las instrucciones de seguridad y operación deberán ser leídas antes de que el aparato eléctrico sea operado.
2. Las instrucciones de seguridad y operación deberán ser guardadas para referencia futura.
3. Todas las advertencias en el aparato eléctrico y en sus instrucciones de operación deben ser respetadas.
4. Todas las instrucciones de operación y uso deben ser seguidas.
5. El aparato eléctrico no deberá ser usado cerca del agua—por ejemplo, cerca de la tina de baño, lavabo, sótano mojado o cerca de una alberca, etc.
6. El aparato eléctrico debe ser usado únicamente con carritos o pedestales que sean recomendados por el fabricante.
7. El aparato eléctrico debe ser montado a la pared o al techo sólo como sea recomendado por el fabricante.
8. Servicio—El usuario no debe intentar dar servicio al equipo eléctrico más allá a lo descrito en las instrucciones de operación. Todo otro servicio deberá ser referido a personal de servicio calificado.
9. El aparato eléctrico debe ser situado de tal manera que su posición no interfiera su uso. La colocación del aparato eléctrico sobre una cama, sofá, alfombra o superficie similar puede bloquea la ventilación, no se debe colocar en libreros o gabinetes que impidan el flujo de aire por los orificios de ventilación.
10. El equipo eléctrico deber ser situado fuera del alcance de fuentes de calor como radiadores, registros de calor, estufas u otros aparatos (incluyendo amplificadores) que producen calor.
11. El aparato eléctrico deberá ser connectado a una fuente de poder sólo del tipo descrito en el instructivo de operación, o como se indique en el aparato.
12. Precaución debe ser tomada de tal manera que la tierra fisica y la polarización del equipo no sea eliminada.
13. Los cables de la fuente de poder deben ser guiados de tal manera que no sean pisados ni pellizcados por objetos colocados sobre o contra ellos, poniendo particular atención a los contactos y receptáculos donde salen del aparato.
14. El equipo eléctrico debe ser limpiado únicamente de acuerdo a las recomendaciones del fabricante.
15. En caso de existir, una antena externa deberá ser localizada lejos de las lineas de energia.
16. El cable de corriente deberá ser desconectado del cuando el equipo no sea usado por un largo periodo de tiempo.

17. Cuidado debe ser tomado de tal manera que objectos liquidos no sean derramados sobre la cubierta u orificios de ventilación.
18. Servicio por personal calificado deberá ser provisto cuando:
    - A: El cable de poder o el contacto ha sido dañado; u
    - B: Objectos han caído o líquido ha sido derramado dentro del aparato; o
    - C: El aparato ha sido expuesto a la lluvia; o
    - D: El aparato parece no operar normalmente o muestra un cambio en su desempeño; o
    - E: El aparato ha sido tirado o su cubierta ha sido dañada.

Contents

1. Specifications

During the course of this product's lifetime, modifications might be made to its hardware or firmware that could cause these specifications to change without notice.

Octopus 832 Product Specifications	
Agency Approvals	
	EN55022 Class A, EN55024, EN61000-3-2, EN61000-3-3, EN60950, FCC15 Class A, CSA C22.2 No. 60950, UL60950 third edition, VCCI Class A
Mechanical	
	Height: 1U
	Width: 17" (432 mm)
	Depth: 11" (281 mm)
	Weight: 8 lb (3.7 kg)
Environmental/Power	
	Power consumption: 75 W
	AC input power: max 75 W
	Heat dissipation: 270 Kj
	Humidity: 10-95% non-condensing
	Operating temperature: Ø° C-50° C
	Storage temperature: -20° C-60° C
	Operating voltage: 100-240 Vac
	Power frequency: 50-60 Hz
Ports	
	Network number: 1, RJ45, Ethernet, 10 Base-T, 100 Base-T
	Server ports: 32, RJ45 Octopus interconnect
	User ports: 8, RJ45 Octopus interconnect
	Terminal port: 1, DB9 male, RS232 serial

Octopus 1664 Product Specifications	
Agency Approvals	
	EN55022 Class A, EN55024, EN61000-3-2, EN61000-3-3, EN60950, FCC15 Class A, CSA C22.2 No. 60950, UL60950 third edition, VCCI Class A
Mechanical	
	Height: 2 U
	Width: 17” (432 mm)
	Depth: 11” (281 mm)
	Weight: 16 lb (7.27 kg)
Environmental/Power	
	Power consumption: 150 W
	AC input power: max 150 W
	Heat dissipation: 610 Kj
	Humidity: 10-95% non-condensing
	Operating temperature: Ø° C-50°C
	Storage temperature: -20° C-60° C
	Operating voltage: 100-240 Vac
	Power frequency: 50-60 Hz
Ports	
	Network number: 1, RJ45, ethernet, 10 Base-T, 100 Base-T
	Server ports: 64, RJ45 Octopus interconnect
	User ports: 16, RJ45 Octopus interconnect
	Terminal port: 1, DB9 male, RS232 serial

Octopus 1710 Product Specifications	
Agency Approvals	
	EN55022 Class A, EN55024, EN61000-3-2, EN61000-3-3, EN60950, FCC15 Class A, CSA C22.2 No. 60950, UL60950 third edition, VCCI Class A
Mechanical	
	Height: 1U
	Width: 10.98" (27.9 cm)
	Depth: 11.5" (29.2 cm)
	Weight: 4.41 lb (2 kg)
Environmental/Power	
	Power consumption: 25 W
	AC input power: max 25 W
	Heat dissipation: 90 Kj
	AC input current rating: 1A
	Humidity: 10-95% non-condensing
	Operating temperature: Ø° C-50° C
	Storage temperature: -20° C-60° C
	Operating voltage: 100-240 Vac
	Power frequency: 50-60 Hz
Ports	
	Input Ports: 1, RJ45 Octopus interconnect
	Output ports: 1 6-pin miniDIN, PS/2 keyboard, 1 6-pin miniDIN, PS/2 mouse; 1 8-pin miniDIN, Sun keyboard and mouse, 1 15HDD female, VGA video
Supported Hardware	
	Peripherals: PS/2 keyboard and mouse, Sun keyboard and mouse
	Video resolution: 1024 x 768 with 1,000 feet of UTP from server to user, 1600 x 1200 with 100 feet of UTP from server to user
	Sync types: Separate horizontal and vertical; composite sync on Sun monitors

Octopus SAM (PS/2, USB, Sun HD15, Sun 13WSN) Product Specifications	
Agency Approvals	
	EN55022 Class A, FCC15 Class A
Mechanical	
	Height: .83" (2.11 cm)
	Width: 2.43" (6.17 cm)
	Depth: 4.02" (10.21 cm)
	Weight: .29 lb (.13 kg)
Environmental/Power	
	Power consumption: 130 mA
	Humidity: 10-95% non-condensing
	Operating temperature: 10° C-50° C
	Storage temperature: -20° C-60° C
	Power supply: 5 Vdc
Agency Ports	
	Input ports for SAM-PS/2: 1 6-pin miniDIN, PS/2 keyboard, 1 6-pin miniDIN, PS/2 mouse; 1 15HDD male, VGA Video, 1 RJ45 Octopus interconnect
	Input ports for SAM-VSN: 1 8-pin miniDIN, Sun keyboard and mouse, 1 15HDD male VGA video
	Input ports for SAM-WSN: 1 8-pin miniDIN, Sun keyboard and mouse, 1 13W3 male video
	Input ports for SAM-USB: 1 USB keyboard and mouse (supports Intel, Sun, Macintosh), 1 15HDD male VGA video
	Output ports: 1 RJ45 Octopus interconnect
Server Ports	
	Type: PS/2 keyboard and mouse, VGA video
	Connectors: 2 6-pin miniDIN, 1 15HDD
	Sync types: Separate horizontal and vertical, Sync on Green (as used on SGI and HP9000); composite sync on Sun monitors
	Plug and Play: DDC2B

2. Introduction

2.1 Features and Benefits

The BLACK BOX® ServSwitch™ Octopus Series of products allows multiple users within the switching system to access and operate PC-compatible, USB and Sun servers at the same time. A basic Octopus system consists of users and servers that are all connected to one or more Octopus units. Any user in the system can access any attached server by simply switching to it through an Octopus unit.

Multiplatform

The Octopus Series features multiplatform capabilities, enabling your switching system to simultaneously support any combination of PC, USB or Sun servers. Switch easily across platforms with a PS/2 or Sun keyboard and mouse. Operated through the Octopus system, a PC keyboard and mouse can operate a Sun server as easily as a Sun keyboard and mouse will operate an attached PC.

Multiuser

The Octopus Series allows "matrix switching," enabling multiple users to have simultaneous access to different servers in the system. For example, an Octopus system with four users accessing four different servers is a 4 x 4 matrix. Eight users accessing 10 different servers would be an 8 x 10 system.

Sharing

If two or more users need access to the same server, they can share access through the Octopus Series units. Sharing enables multiple users to switch to the same server at the same time. Everyone can see the server's video, but only one user can enter data at any given moment.

Expansion capability

If your total number of servers is greater than 32 or 64, you can connect multiple Octopus Series units together to give dozens of users control of hundreds of servers from one set of peripherals. For additional flexibility, you can attach other BLACK BOX keyboard, video and mouse (KVM) switches to the Octopus as well.

Octopus OSD

Octopus switches are equipped with the Octopus OSD (On-Screen Display). The Octopus OSD allows you to use your keyboard or mouse to select any attached system computer. The Octopus OSD supports multilevel security with password protection, allowing you to control how much access users have to each server in your data center.

For additional security, Octopus can be configured to log out after a user-defined period of inactivity. When the time-out is reached, the current channel is deselected and the screen goes blank. Users must log in again to access system servers.

The Octoware utility

Octoware is the standalone administration utility supplied with each Octopus that allows you to assign names to attached servers and administer naming and access information for attached users. Octoware can be used to configure Octopus installations remotely, eliminating the need to configure each unit separately. In addition, Octoware supports the ability to monitor and report on all system and switching events and activities.

2.2 Component Overview

A BLACK BOX Octopus system consists of four main components:

- One or more Octopus units
- Octopus user station(s)
- Octopus Server Access Module (SAM)
- UTP cables

NOTE:
Octopus unit and Octopus matrix switch are used interchangeably in this user guide.

The quantity and type of components you receive depend on the specific configuration you order.

The Octopus unit

The Octopus matrix switch (Octopus 832 or Octopus 1664), provides the framework for the Octopus system. The Octopus 832 allows eight users to connect to up to 32 computers and occupies only 1U of rack space. The Octopus 1664 allows 16 users to connect to up to 64 computers and occupies 2U of rack space. Both units can be tiered to connect larger system configurations. The Octopus 832 and the Octopus 1664 store a full database of user rights and computer names and communicate with the Octoware system management utility via an Internet Protocol (IP) port.

The Octopus user station

The Octopus 1710 user station is the interface between the Octopus switch and system users. It provides the Octopus interface for server selection and administration, as well as full compensation for video degradation. The Octopus user station is housed in a desktop mounting unit that may also act as a monitor stand.

The Octopus SAM

The Octopus SAM provides the primary interface between an attached device (KVM switch or PS/2, Sun or USB server) and the Octopus system. It provides all Keep Alive, keyboard emulation, DDC (Digital Data Channel) and Octopus support in a server-powered convenient cable format. This eliminates the need for extra rack space, power outlets or additional cables. For ease of installation, each Octopus SAM has a factory-assigned unique number that identifies the attached server within the system. The connection between the Octopus system and the Octopus SAM is via industry standard UTP cabling.

UTP cables

The Octopus system uses video technologies that compensate for the losses that occur in all UTP cables. These technologies make the Octopus compatible with most UTP cable types and support Octopus use in environments where there are combinations of UTP cable types and patch panels. The Octopus will function correctly with any combination of CAT5, CAT5e and CAT6 cables. Throughout this manual, the generic term UTP refers to any CAT cable used by the Octopus system.

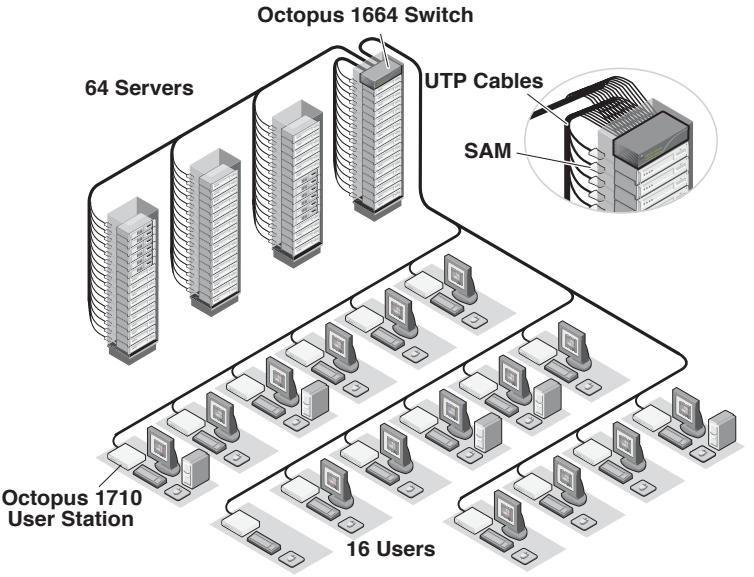

Figure 2-1. Typical Octopus Configuration

2.3 Safety Precautions

To avoid potential video and/or keyboard problems when using these products:

- If the building has 3-phase AC power, ensure that the computer and monitor are on the same phase. For best results, they should be on the same circuit.
- Use only BLACK BOX-recommended cable to connect computers and KVM switches.

To avoid potentially fatal shock hazard and possible damage to equipment, please observe the following precautions:

- Do not use a 2-wire extension cord in any BLACK BOX product configuration.
- Test AC outlets at the computer and monitor for proper polarity and grounding.
- Use only with grounded outlets at both the computer and monitor. When using a backup Uninterruptible Power Supply (UPS), power the computer, the monitor and the appliance off the supply.

NOTE:
The AC inlet is the main disconnect.

Rackmount safety considerations

- Elevated Ambient Temperature: If the equipment is installed in a closed rack assembly, the operation temperature of the rack environment may be greater than room ambient. Use care not to exceed the rated maximum ambient temperature of the equipment.
- Reduced Air Flow: Installation of the equipment in a rack should be such that the amount of airflow required for safe operation of the equipment is not compromised.
- Mechanical Loading: Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.
- Circuit Overloading: Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of circuits might have on overcurrent protection and supply wiring. Consider equipment nameplate ratings for maximum current.
- Reliable Earthing: Reliable earthing of rackmounted equipment should be maintained. Pay particular attention to supply connections other than direct connections to the branch circuit (for example, use of power strips).

3. Installation

The Octopus system uses standard UTP cables to transmit KVM information between users and attached servers.

3.1 Getting Started

Before installing your Octopus system, refer to the following lists to ensure that you have all the items that shipped with the Octopus system as well as other items necessary for proper installation.

Supplied with the Octopus system

- Octopus unit (Octopus 832 or Octopus 1664)
- An EU power cord
- Rackmounting brackets
- A null modem cable
- Octopus Series Installer/User Guide
- Octoware software and user guide on CD
- Octopus Series Quick Install Guide

Supplied with the Octopus user station

- Octopus 1710 user station
- An EU power cord
- Octopus Series Quick Install Guide

Supplied with the Octopus SAM

- Octopus SAM (PS/2, USB, Sun HD15 or Sun 13W3)
- Octopus SAM Quick Install Guide

Needed for installation

- UTP cables for each server and user station you plan to attach to the Octopus system
- One Octopus 1710 user station unit per user station
- One Octopus SAM per server

Optionally you may need:

- Octoware software available on the included CD and through download from Black Box

3.2 Installing the Octopus System

Figure 3-1 illustrates one possible configuration for your Octopus unit. Follow the detailed set of procedures following Figure 3-1 to install the Octopus system.

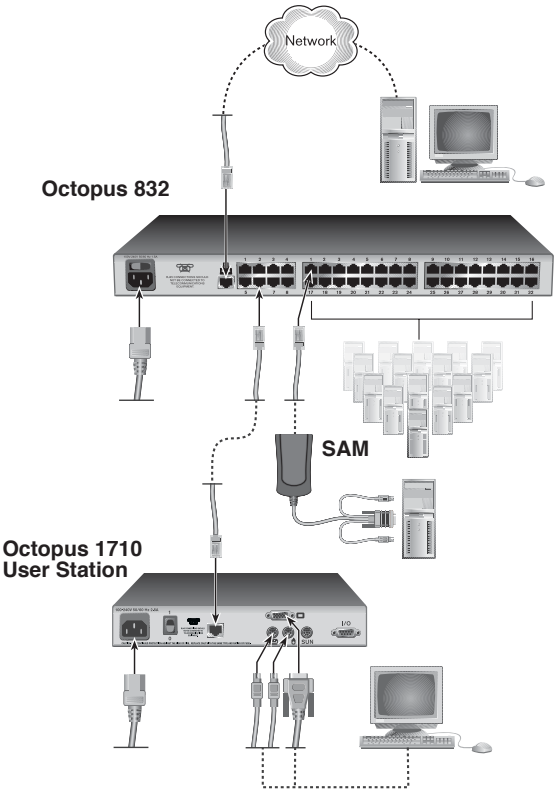

Figure 3-1. Basic ServSwitch Octopus Configuration

CAUTION: Power Considerations

To reduce the risk of electric shock or damage to your equipment-

- Do not disable the power cord grounding plug. The grounding plug is an important safety feature.
- Plug the power cord into a grounded (earthed) outlet that is easily accessible at all times.
- Disconnect the power from the unit by unplugging the power cord from either the electrical outlet or the unit.

Installing the Octopus unit

The Octopus unit is the central hub of your Octopus system. All users and computers are connected through it.

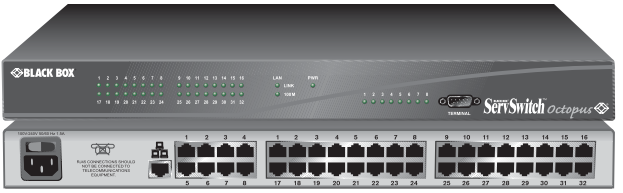

Figure 3-2. Octopus 832 Unit

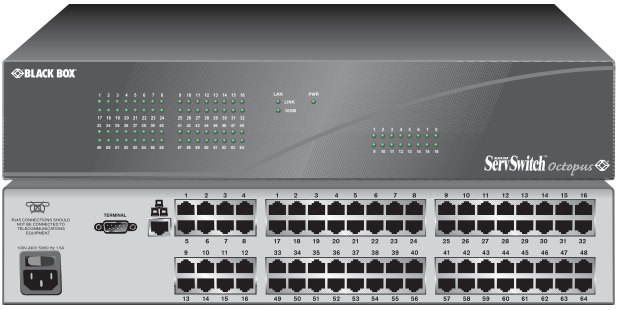

Figure 3-3. Octopus 1664 Unit

Rackmounting your Octopus unit

You can either place your Octopus unit on your rack shelf or rackmount your unit into an EIA standard rack.

A rackmounting kit is supplied with each Octopus. Before installing the switch and other components in the rack, stabilize the rack in a permanent location. Start rack mounting your equipment at the bottom of the rack, then work to the top. Avoid uneven loading or overloading of the rack.

CAUTION: Rack Loading
To reduce the risk of electric shock or damage to your equipment-
- Do not disable the power cord grounding plug. The grounding plug is an important safety feature.
- Plug the power cord into a grounded (earthed) outlet that is easily accessible at all times.
- Disconnect the power from the unit by unplugging the power cord from either the electrical outlet or the unit.

CAUTION: Power Considerations
Connect only to the power source specified on the unit. When multiple electrical components are installed in a rack, ensure that the total component power ratings do not exceed circuit capabilities. Overloaded power sources and extension cords present fire and shock hazards.

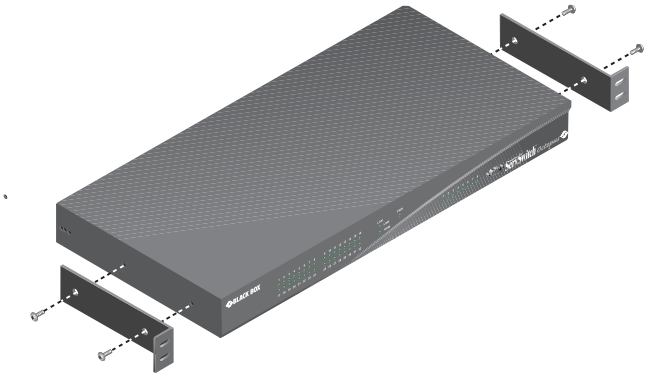

Figure 3-4. Octopus 832 Rackmounting Diagram

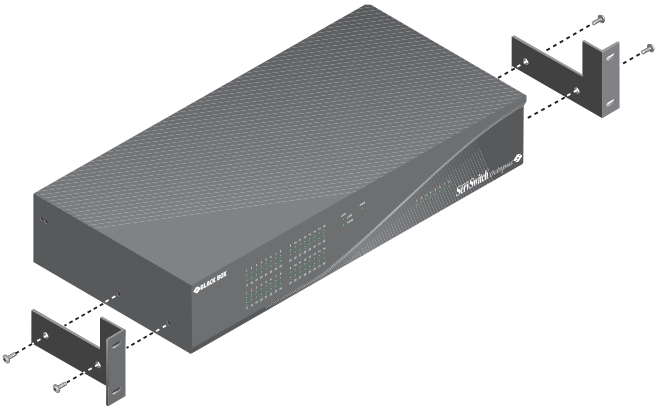

Figure 3-5. Octopus 1664 Rackmounting Diagram

To install the rack mounting bracket:

1. Remove the two side screws closest to the front from each side of your Octopus unit.
2. Line up the holes in the brackets with the holes on the sides of the Octopus unit.
3. Using the screws supplied with the rackmounting bracket, thread one through each of the holes in the sides of the rackmount brackets and into the Octopus unit. Tighten them securely.
4. Install the Octopus unit into your rack using the approved method of your rack manufacturer.

To install a new single Octopus unit:

1. Plug the power cord into the back of the Octopus unit and then into an appropriate power source.
2. Connect a terminal or PC running terminal emulation software (such as HyperTerminal) to the terminal port on the front panel of the Octopus using the supplied null modem cable. The terminal should be set to 9600 baud, 8 bits, 1 stop bit, no parity and no flow control.
3. When the power is switched on, the Power indicator on the front of the unit will remain orange for approximately 30 seconds while performing a self-test, and then change to green. This indicates a healthy condition.
4. Next, follow these instructions to set up the Terminal Applications menu. Refer to Chapter 6 for more details.
    a. You will be prompted to enter a username. The first time you access the switch, enter the username **admin** and press **Enter**. Once you have access to the Octopus Console menu, you can configure a password should you wish to do so.
    b. Once you have logged in to the Octopus, you will see the Octopus Console menu with four options. Select option 1, *Network Configuration*. This will activate the Network Configuration menu.
    c. From the Network Configuration menu, select option 1 to set the IP address.
    d. Select options 2 and 3 to set your netmask and default gateway respectively.
    e. After you have entered these settings, type **Ø** to return to the Octopus Console menu.
    f. If all Octopus units in your installation are part of the same Octopus configuration, you may leave the configuration ID set to **Ø**. If you are running more than one Octopus configuration within your subnet, you will need to designate the group to which this Octopus belongs. To do this, select option 2 to enter the configuration ID for your Octopus unit. A configuration ID designates an Octopus unit as part of a unique installation. When change commands are issued via Octoware, only units with the same configuration ID as the Octoware will be affected. Refer to *System Management* in Chapter 6 for more information on setting configuration IDs.
    g. After entering a configuration ID, enter **Ø** to return to the main menu.
    h. Finally, select option 3 and follow the prompts to password protect your Octopus terminal settings.
    i. Press **Ø** to exit the Octopus Console menu.

To make a LAN connection:

Using a UTP cable, connect the Network port on the back of the Octopus to your LAN.

NOTE:
Both Octoware and Octopus must be on the same subnet in class A, B or C to function properly.

Connecting servers to the Octopus

Once the Octopus unit is installed, you may begin attaching servers and other BLACK BOX KVM switches to it. Both are connected to the Octopus through the use of the SAMs. For information on connecting other BLACK BOX KVM switches to the Octopus, see *Installing a Tiered Octopus System* later in this chapter.

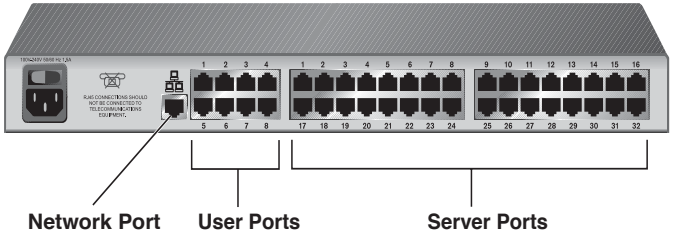

Figure 3-6. Octopus 832 Rear Panel

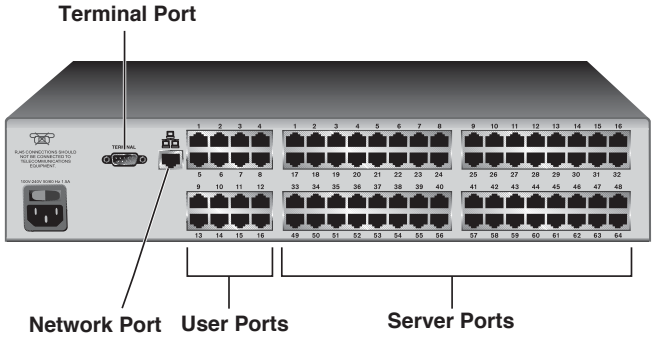

Figure 3-7. Octopus 1664 Rear Panel

To connect servers to the Octopus system:

1. Locate the SAM appropriate to the server you wish to attach.
2. Plug the SAM keyboard, monitor and mouse connectors into the appropriate ports on the back of the selected server.
3. Connect one end of a UTP cable into the RJ45 port on your SAM. Route the cable to your Octopus unit and connect the other end to one of the available RJ45 server ports. Check the unique identifier (UID) on the back of the SAM and log it for future use. When the attached computer is powered and a valid UTP connection is made to an Octopus switch, the green light on the SAM will illuminate.

   Repeat this procedure for every server that will be attached to your Octopus system.

Connecting users to the Octopus

Once all servers are connected, you may begin to connect users. Users are connected to the Octopus system through the Octopus 1710 user station.

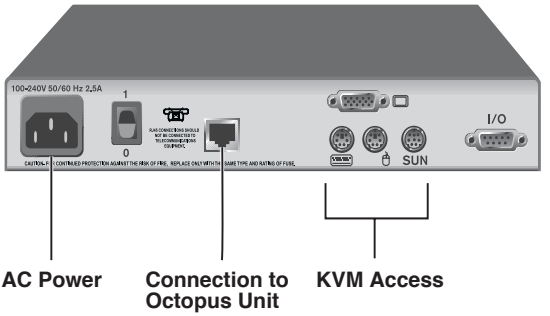

Figure 3-8. Octopus 1710 User Station

To connect users to the Octopus system:

1. Place the Octopus 1710 user station at the desired user station. The Octopus 1710 is designed to bear the weight of a monitor and can be used as a monitor stand.
2. Plug your keyboard, monitor and mouse cables into the appropriate ports on the back of the Octopus 1710 user station.
3. Connect one end of a UTP cable into the RJ45 port on the Octopus 1710 user station. Route the cable to your Octopus unit and connect the other end to one of the available RJ45 user ports.
4. Locate the power cord that shipped with the Octopus 1710 user station. Plug it into the power socket on the rear of the unit. Plug the other end into an appropriate AC wall outlet.

NOTE:
Power down the Octopus unit before servicing. Always disconnect the power cord from the wall outlet.

3.3 Installing a Tiered Octopus System

Multiple KVM switches can be connected to provide access to additional servers. Figure 3-9 illustrates one possible configuration for your Octopus. Follow the detailed set of procedures following Figure 3-9 to successfully install your tiered Octopus system.

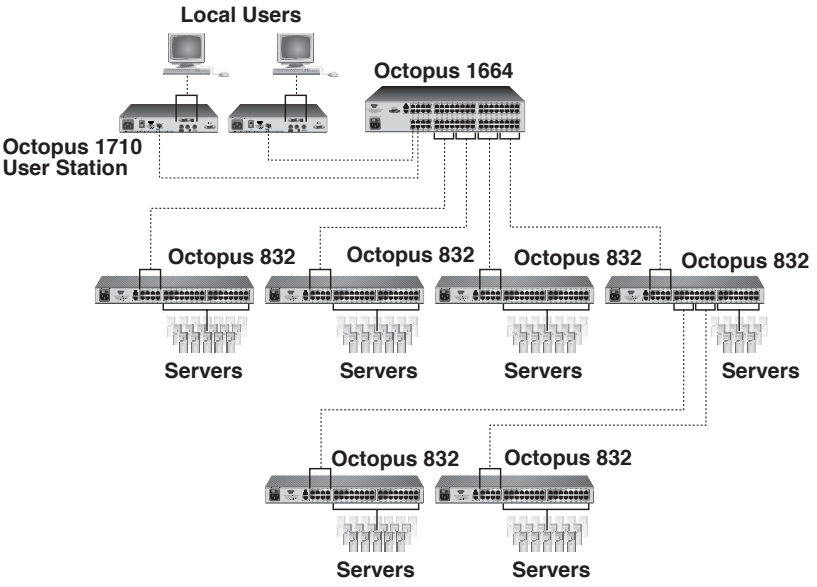

Figure 3-9. Tiered Octopus System

To install a tiered Octopus system:

1. Position the Octopus units that will be connected and select a unit to be the primary hub.
2. Connect one end of a UTP cable into a server port on the primary hub. Route the cable to the tiered Octopus unit and connect it to an available user port. Continue this process until all eight user ports on the tiered Octopus unit have been connected.
3. You may now connect servers to the tiered Octopus units. You may also use these tiered Octopus units to tier another layer of Octopus units. Up to three levels, or tiers, of Octopus units can be connected.

To cascade other BLACK BOX KVM switches from the Octopus unit:

1. Place the switches at the desired location as described above. Make sure that they are turned off and unplugged.
2. Connect the keyboard, video and mouse connectors of the SAM to the corresponding user ports on the tiered switch.
3. Route a UTP cable from the SAM to the primary Octopus unit and connect it to an available server port.

For more information on tiering, see Chapter 4.

NOTE:
When users switch to a port with an attached KVM switch that is not an Octopus unit, they will need to activate the unit's On-Screen Display (OSD) to continue the switch.

3.4 Configuring the Octopus Database

Once all users, servers and switches have been attached, configure the Octopus database of servers and users. For information on configuring your Octopus through the OSD, see Chapter 5. For more information on configuring your Octopus with Octoware, see the Octoware Installer/User Guide.

NOTE:
When users switch to a port with an attached KVM switch that is not an Octopus unit, they will need to activate the unit's OSD to continue the switch

3.5 FLASH Upgrading the Octopus System

FLASH upgrades allow you to update the firmware of your Octopus unit and keep current with the latest Octopus innovations. Please check the BLACK BOX web site for the appropriate FLASH upgrade files. For more information on FLASH upgrading, including how to verify your firmware version, please see your Octoware Installer/User Guide.

NOTE:
The Octoware software is the only way to FLASH upgrade the Octopus.

4. Basic Operations

4.1 Power Up and LEDs

Octopus 832 or Octopus 1664

There are three groups of LEDs on the front panel of your Octopus. Each green LED in the left group corresponds to a server port. Each LED illuminates when the system or cascaded Octopus unit is attached and powered up.

The amber and green LEDs in the center group indicate the status of your LAN connection. When a valid IP connection is made to the network port of the Octopus unit, the green *LINK* LED blinks. The amber *100M* LED indicates the speed of the attached LAN. This LED illuminates when a 100M connection is made or remains unlit when a 10M connection is made.

The green power (*PWR*) LED in the center group illuminates when the Octopus unit is powered and will blink only during a FLASH upgrade.

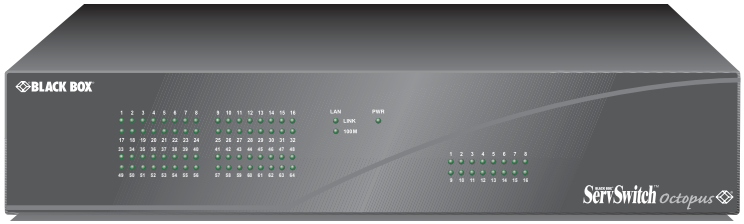

Figure 4-1. Octopus Unit

Additional green LEDs in the right group correspond to each user port and illuminate when the Octopus 1664 or cascaded Octopus unit is attached and powered up. Additional green LEDs in the right group correspond to each user port and illuminate when the Octopus or cascaded Octopus unit is attached and powered up.

Octopus user station

There are two blue LEDs on the Octopus user station. The top LED indicates the power status and the lower LED flashes when the OSD is active.

Octopus SAM

The Octopus SAM features only one green LED. This indicator shows that the attached computer is powered and a valid UTP connection has been made to an Octopus unit. This LED blinks if a fault has been detected.

4.2 User Operations

Controlling your system at the local port

The Octopus user station uses the BLACK BOX OSD, featuring intuitive menus to configure your system and select servers.

When the Octopus user station is powered, users are prompted for their login name and password. Once this is entered, the Octopus OSD is displayed. Users may change their password at any time.

To access the OSD:

Press the hotkey sequence (default is **Ctrl+Ctrl)** to launch the OSD. For alternative hotkey sequences, see the *Console Maintenance* section in Chapter 5. Throughout this manual, **Ctrl+Ctrl** or **Print Screen** is used as the default hotkey sequence.

To change your user password:

1. Press **Ctrl+Ctrl** or **Print Screen** to launch the OSD.
2. When the Octopus OSD dialog box appears, click on the *User* tab.
3. Enter your new password and verify it in the fields provided.

4.3 Octopus OSD Overview

The Octopus OSD consists of five main tabs: Target, User, Console, Admin and ?

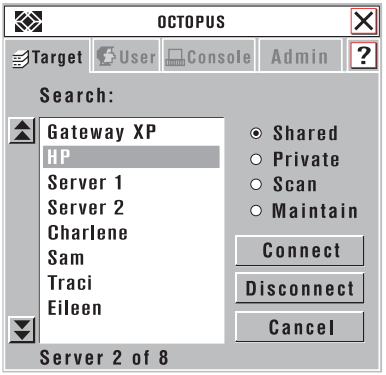

Figure 4-2. OSD Startup Menu

Target

The Target tab lists the servers that may be accessed from your Octopus unit and the available modes for these servers. Servers may be switched in Shared, Private, Scan or Maintain modes.

Shared

If two or more users need to access the same server, they can share access to it through the Octopus Series unit. Sharing means that multiple consoles can view a server channel at the same time, but only one can enter data through the keyboard or mouse at any given moment. When the active console stops all keyboard and mouse activity, another console can take control of the server after a one second delay.

Private

When you select your server after clicking the *Private* radio button, no other user station in the system can switch to your selected server. If another user initiates a channel change to your private channel, access will be denied. You may take your channel out of Private mode by switching to another server or reselecting the same server in shared mode.

Scan

In Scan mode, multiple servers may be monitored in sequence. When keyboard or mouse activity is detected, scanning stops, allowing users to operate an attached device. For more information on scanning, see *Selecting Servers* later in this chapter.

Maintain

Use Maintain mode when you wish to remain connected to a server while rebooting. Once a server is selected in Maintain mode, it will not lose contact with the switch when power is cycled.

NOTE:
Servers in Maintain mode cannot be shared.

User

The User tab provides the current user with options to log out, change scan dwell times or change the password. Passwords must be at least six characters long. For more information on passwords and user options, see *User Maintenance* in Chapter 5.

Console

The Console tab is used to set local settings for the Octopus user station including country specific keyboard layout, command line hotkey sequence, On-Screen Display (OSD) hotkey sequence and logout time.

Entering a logout time will configure your Octopus to automatically log a user out after a specified amount of keyboard and mouse inactivity.

You may choose to select an alternative hotkey sequence by selecting one of the five options listed in the pull-down menu. The available command line hotkey sequences are:

Ctrl+Ctrl
Alt+Alt
Shift+Shift
Print Screen
All

For more information, see *Console Maintenance* in Chapter 5.

Admin

This menu tab is only available to the Admin user.

Users Admin

The Users Admin button allows the Administrator to add, edit and delete users, and assign rights to each server. For more information about user administration, see Chapter 5.

Servers Admin

The Servers Admin button allows the Administrator to edit the server name. Changes to the server name are propagated to the Octopus SAM immediately. For more information on server administration, see Chapter 5.

?

The ? tab provides access to Octopus online help.

4.4 Selecting Servers

Use the Target tab in the Octopus SAM dialog box to connect to servers. When you connect to a server, the Octopus reconfigures the keyboard and mouse to the appropriate settings for the selected server.

To select a server:

1. Press **Ctrl+Ctrl** or **Print Screen** to launch the OSD.
2. Click the *Target* tab and select the appropriate access mode: Shared, Private or Maintain.
3. Click on the server name.
4. Click the *Connect* button.

To disconnect from a selected server, activate the OSD and click the *Disconnect* button or switch to another server.

To scan an Octopus system:

1. Press **Ctrl+Ctrl** or **Print Screen** to launch the OSD.
2. Select the *Target* tab and click the *Scan* radio button.
3. Press and hold the **Ctrl** key while you individually select the servers that you would like to scan. Alternately, if you wish to select a group of servers in sequence, you can click on the first server in the list, press and hold the **Shift** key and select the last server to highlight the list.
4. Click the *Start* button to begin scanning.

Once scanning is initiated, the Octopus will cycle through the selected servers in alphabetical order. If the user has “full” access rights to the current server and the Octopus user station detects keyboard or mouse activity, scanning is suspended. This allows the user to work with the server. When mouse and keyboard activity stops, scanning resumes with the next channel in sequence. If the user has “view only” access rights to the current server, scanning will not be suspended if the user types on

the keyboard or moves the mouse. The length of time each server channel remains on screen, or dwell time, is configurable and can be changed at any time. Default dwell time is three seconds. To halt scanning, press **Ctrl+Ctrl** and click the *Stop* button.

To set the scan dwell time:

1. Press **Ctrl+Ctrl** or **Print Screen** to launch the OSD.
2. Click on the *User* tab.
3. In the box provided, enter the local scan dwell time.
4. Click *Apply*.

4.5 Keyboard Translation

The Octopus user station allows you to use PS/2 or Sun keyboards to operate any type of attached computer. However, when crossing platforms, certain keys will need to be remapped in order to provide all of the functions available on the keyboard native to that platform.

For example, if you access a Sun workstation with a PS/2 keyboard, you will notice that the PS/2 keyboard does not have the **Stop** and **Again** keys that are on a true Sun keyboard. But, by turning **Scroll Lock** on, the **F1** and **F2** keys on the PS/2 keyboard function as the Sun **Stop** and **Again** keys. With **Scroll Lock** off, **F1** and **F2** function normally.

The following table shows the translations for a PS/2 keyboard to a Sun computer. All mapped functions will only be valid when the **Scroll Lock** is on.

PS/2 Keyboard to Sun Computer

Key	Sun	Key	Sun
F1	Stop	F9	Find
F2	Again	F10	Cut
F3	Props	F11	Power
F4	Undo	F12	Command
F5	Front	keypad *	Compose
F6	Copy	NUMLOCK	Help
F7	Open	keyboard /	Mute
F8	Paste	keyboard -	Vol -
		keyboard +	Vol +

Sun keyboards have a **Power** key used to power the workstation. PS/2 keyboards may have a **Sleep** key to place the computer in a stand-by or power saving mode.

Power/Sleep for USB Computers

Keyboard	Peripheral Key	Scroll Lock	Computer
PS/2	Shift - F11	On	Win 98/2000
	F11	On	Win 98/Mac
	Sleep	On	Win 98/Mac
Sun	Power	On	Win 98/2000
	Power	Off	Win 98/Mac

To issue the Power/Sleep command:

Press **Scroll Lock** - **F11** (or **Sleep** key) on a PS/2 keyboard.

-or-

For a Sun computer, press the **Power** key.

5. Advanced Operations

5.1 User Maintenance

The Octopus system can be configured to support up to 128 users. Each user is identified by a unique name and password and can be assigned full, view only or no rights to servers attached to the Octopus. These actions, as well as deleting and editing users once they are configured, are performed through the Admin menu and require that the user be logged in under the Admin user.

To add a user:

1. Press **Ctrl+Ctrl** or **Print Screen** to launch the OSD.
2. Click the *Admin* tab.
3. Click the *Users Admin* button.
4. Click the *Add User* button.

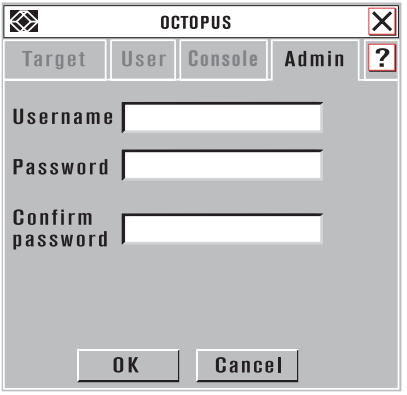

Figure 5-1. Adding a User

5. Enter the name of the user in the Username field.
6. Enter the user's password and confirm it in the provided fields.
7. Click *OK*.

To edit a user:

1. Press **Ctrl+Ctrl** or **Print Screen** to launch the OSD.
2. Click on the *Admin* tab.

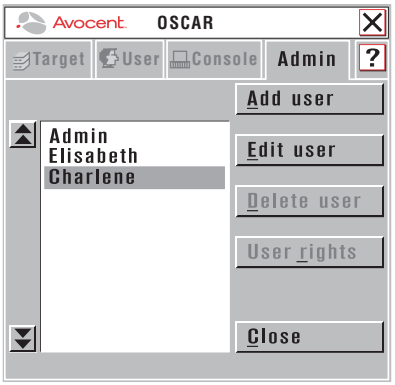

Figure 5-2. Editing a User

3. Click on the *Users Admin* button.
4. Click on the username that you wish to edit, then click the *Edit User* button. Change the user's name or password as needed.
5. When all changes are complete, click *OK*.

To delete a user:

1. Press **Ctrl+Ctrl** or **Print Screen** to launch the Octopus OSD.
2. Click on the *Admin* tab.
3. Click on the *Users Admin* button.
4. Click the user you wish to delete, then click the *Delete User* button.
5. You will be prompted to complete the deletion. Click *Yes* or *No* to complete.

To set user access rights:

1. Press **Ctrl+Ctrl** or **Print Screen** to launch the Octopus OSD.
2. Click on the *Admin* tab.
3. Click on the *Users Admin* button.
4. Click on the user that you wish to assign rights for and then click the *User Rights* button.
5. To change a user's access rights to a single server, click on the target from the list of available servers. Select the appropriate access level: *none*, *view* or *full*.
   -or-
   To change a user's access rights to multiple servers, press the **Ctrl** key and select the targets from the list of available servers. Select the appropriate access level: *none*, *view* or *full*.

NOTE:
The default setting for a user's access rights is *none*.

6. After configuring all servers, click the *OK* button.

To enforce user login:

As a security measure, the Octopus can be configured to automatically force users to log in.

1. Select the *Admin* tab and click the *Users Admin* button.
2. Select the *Edit User* button and enter your password. Click the *Force User Login* box and click *OK*.

5.2 Server Maintenance

Through the use of SAM, the Octopus system automatically recognizes attached servers by their unique ID numbers. With SAM, you can assign a name to each server for more convenient identification.

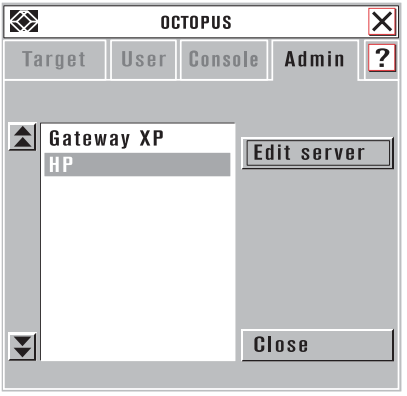

Figure 5-3. Naming a Server

To name a server:

1. Press **Ctrl+Ctrl** or **Print Screen** to launch the OSD.
2. Click on the *Admin* tab.
3. Click on the *Servers Admin* button.
4. A list of available servers will appear. Select the server UID or name that you wish to alter and click *Edit Server*.

NOTE:
It is only possible to edit servers that are attached to the Octopus system and powered.

5. Enter the new name for the server.
6. If the selected SAM is attached to a Sun keyboard, select the appropriate keyboard layout. This keyboard layout is stored in the SAM and will be reported to the attached Sun server each time the server reboots.
7. Click the *Apply* button.

Available Sun Keyboard Layouts on the Octopus User Station

Sun Keyboard Layouts	
US English	Italy
Canada (French)	Spain
UK	Portugal
France	Greece
Germany	Japan
Netherlands	Korea
Belgium	Switzerland (German)
Denmark	Switzerland (French)
Norway	Russia
Sweden	Taiwan
Finland	

5.3 Console Maintenance

The Octopus has default settings for keyboard, logout time, hotkey and command line hotkey sequences. These settings ensure that all keys pressed on the attached keyboard display the correct character in the OSD. The Octopus can support keyboard types from multiple countries and regions. In most cases, these will not need to be changed.

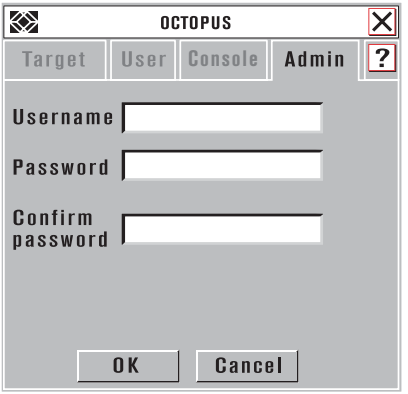

Figure 5-4. The Console Tab

To adjust keyboard layout:

1. Press **Ctrl+Ctrl** or **Print Screen** to launch the OSD.
2. Click on the *Console* tab.
3. The current keyboard layout will be displayed. Click on the double arrow to the right of the keyboard layout to scroll through available options.
4. Select your new layout and click *Apply*.

Available Keyboard Layouts on the Octopus User Station

Keyboard Layouts	
US English	Finland
Canada (French)	Italy
UK	Spain
France	Portugal
Germany	Greece
Netherlands	Japan
Belgium	Korea
Denmark	Switzerland (French)
Norway	Switzerland (German)
Sweden	

To change the OSD hotkey sequence:

1. Press **Ctrl+Ctrl** or **Print Screen** to launch the OSD.
2. Click on the *Console* tab.
3. The current OSD hotkey sequence will be displayed. Click on the double arrow to the right of the OSD hotkey sequence to scroll through available options.
4. Select your new sequence and click *Apply*.

To change the command line hotkey sequence:

1. Press **Ctrl+Ctrl** or **Print Screen** to launch the OSD.
2. Click on the *Console* tab.
3. The current command line hotkey sequence will be displayed. Click on the double arrow to the right of the command line hotkey sequence to scroll through available options.
4. Select your new sequence and click *Apply*.

To change the logout time:

1. Press **Ctrl+Ctrl** or **Print Screen** to launch the OSD.
2. Click on the *Console* tab. The current logout time will be displayed.
3. Enter your new logout time and click *Apply*.

6. Terminal Operations

6.1 Accessing the Terminal Menu

Each Octopus 832 or Octopus 1664 can be configured at the unit level through the configuration port on the front of the unit. All Terminal commands are accessed through a terminal or PC running terminal emulation software.

To access the Terminal Applications menu:

1. Connect a terminal or PC running terminal emulation software (such as HyperTerminal) to the configuration port on the front panel of the Octopus 832 or Octopus 1664 using the supplied null modem cable. The terminal should be set to 9600 baud, 8 bits, 1 stop bit, no parity and no flow control. The terminal may be connected at any time, even when the unit is powered.
2. The first time you access the switch, you are prompted to enter a username. Enter the username **admin** and press **Enter**. Once you have access to the Octopus Console menu, you can configure a password should you wish to do so.

Terminal Applications menu commands

The Terminal Applications menu of the Octopus features four selections: Network Configuration, System Management, Set/Change Password and Exit. Each is discussed below.

Network Configuration

The Octopus is configured for network access through this option. When it is selected, you will have access to the addressing that allows the Octopus to be positioned in your network.

NOTE:
Both Octoware and Octopus must be on the same subnet in Class A, B or C to function properly.

System Management

The Octopus uses IP to communicate with the Octoware software and synchronize all Octopus databases. You must provide a unique ID for each configuration so that multiple Octopus configurations can be connected to the same subnet and administered from multiple Octoware installations on the same subnet.

NOTE:
All Octopus units that are part of the same Octopus configuration MUST have the same configuration ID.

Set the configuration IDs of all Octopus configurations that will be connected to the same subnet as shown in the following table. Continue this numbering system for all other Octopus configurations connected to the same subnet.

Octopus Configuration ID

System	Configuration ID
system 1	000001
system 2	000002
system 3	000003

Set/Change Password

You can set the Octopus to a secure mode so that the Terminal Operations menu cannot be accessed without first entering a password.

To activate security:

1. Select the *Set/Change Password* menu option. You will be prompted to decide if you wish to continue. Enter a **Y**.
2. Type a password for this Octopus unit and press **Enter**. This password may be up to 14 characters long.
3. You will be prompted to re-type the password. Once you complete this step, security will be active and you will not be able to access Octopus Terminal Operations without the password.

To change the password:

1. Select the *Set/Change Password* menu option.
2. You will be prompted to type the old password and a new one.
3. Re-enter the new password to verify.

CAUTION:
This password places your Octopus terminal in a secure mode. This password should be guarded like any network password and care should be taken to avoid forgetting or misplacing it. There are no means for recovering a lost password.

Exit

This menu selection will return you to the ready prompt.

7. TROUBLESHOOTING

7.1 Calling Black Box

If you determine that your ServSwitch Octopus is malfunctioning, do not attempt to alter or repair the unit. It contains no user-serviceable parts. Refer to the table on the following page for Black Box Technical Support information.

Before contacting Black Box Technical Support, make a record of the history of the problem. We will be able to provide more efficient and accurate assistance if you have a complete description, including:

- the nature and duration of the problem;
- when the problem occurs;
- the components involved in the problem;
- any particular application that, when used, appears to create the problem or make it worse; and
- the results of any testing you've already done.

7.2 Shipping and Packaging

If you need to transport or ship your ServSwitch Octopus:

- Package it carefully. We recommend that you use the original container.
- If you are shipping the ServSwitch Octopus for repair, make sure you include its power cord and the cables you're using with it. If you are returning the ServSwitch Octopus, make sure you include everything you received with it. Before you ship, contact Black Box to get a Return Authorization (RA) number.

Black Box Technical Support

Country	Web Site/E-Mail	Phone	Fax
Austria	www.black-box.at support@black-box.at	+43 1 256 98 56	+43 1 256 98 56
Belgium	www.blackbox.be support.nederlands@blackbox.be support.french@blackbox.be support.english@blackbox.be	+32 2 725 85 50	+32 2 725 92 12
Denmark	www.blackbox.dk blackbox@blackbox.dk	+32 2 725 85 50	+32 2 725 92 12
Finland	www.blackbox.fi tuki@blackbox.fi	+35 201 888 800	+35 201 888 808
France	www.blackbox.fr tech@blackbox.fr	+33 1 45 606 717	+33 1 45 606 747
Germany	www.blackbox.de techsupport@black-box.de	+49 811 5541 110	+49 811 5541 499
Italy	www.blackbox.it supporto.tecnico@blackbox.it	+39 02 27 404 700	+39 02 27 400 219
Netherlands	www.blackbox.nl techsupport@blackbox.nl	+31 30 241 7799	+31 30 241 4746
Norway	www.blackboxnorge.no support@blackboxnorge.no	+47 55 300 710	+47 55 300 701
Spain	www.blackbox.es tecnico@blackbox.es	+34 9162590732	+34 916239784
Sweden	www.blackboxab.se support@blackboxab.se	+46 8 44 55 890	+46 08 38 04 30
Switzerland	www.black-box.ch support@black-box.ch	+41 55 451 70 71	+41 55 451 70 75
UK	www.blackbox.co.uk techhelp@blackbox.co.uk	+44 118 965 6000	+44 118 965 6001
Ireland	www.blackbox.co.uk techhelp@blackbox.co.uk	+353 1 662 2466	+353 1 662 2477

Doc. No. 590-342-001A

Customer Support Information:

For free technical support, please contact your local Black Box office.

Mailing address: **Black Box Ltd.**, 464 Basingstoke Road, Reading, Berkshire RG2 0BG

World-Wide Web: **www.blackbox.co.uk/global** • E-mail: **octopus@servswitch.de**