BLACK BOX® NETWORK SERVICES

THE SERVSWITCH™ MULTI SYSTEM

ServSwitch Multi
EXP or SB

ServSwitch
Multi MX

ServSwitch
Multi Hub

ServSwitch Multi Base Unit
with rackmount-kit faceplate

Whether you have two servers or hundreds, these multiplatform KVM switches can scale to meet the demands of your business.
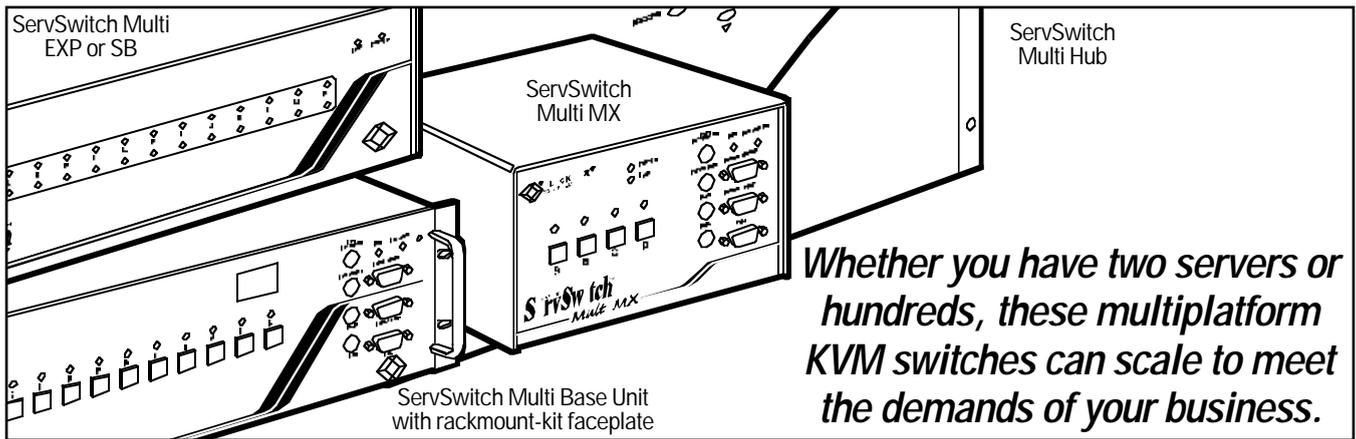
Key Features

▶ *Access up to 3000 CPUs with a single keyboard/ monitor/mouse station.*

▶ *Access from two to several hundred CPUs with multiple stations.*

▶ *Modular—build the switching system you need with cards you can hot-swap.*

▶ *Attach PC, Mac, Sun, RS/6000, and/or SGI equipment.*

▶ *Supports video at up to 1600 x 1200 resolution.*

▶ *All units except Hubs can switch audio and serial I/O when you use audio-style cable.*

▶ *Cards can add powerful menu control and/or serial administration.*

You know how it works with key-board/video/mouse switching: Everybody and his brother makes little boxes that you can plug two (or maybe four) standard IBM® PS/2® compatible PCs into, along with one monitor, one keyboard, and one mouse (two-button mice only, please!). A lot of these "switches" even work. Sort of.

But what if you want to use one KVM-switching system to manage different hardware platforms through a variety of user equipment? Or to control dozens or hundreds of CPUs? What if you want multiple users to do it securely from many widely scattered user stations? What if you want on-screen menus? Or terminal-based serial control for routers and other equipment?

The ServSwitch Multi, our most sophisticated electronic KVM-switching system, is a reliable, flexible solution for anything from a single desktop to virtually your whole enterprise. You can attach as many as 3048 IBM PS/2, PC/AT®, or RS/6000®, Apple®

Macintosh®, Sun Microsystems®, or SGI™ compatible CPUs to a ServSwitch Multi system and use a single monitor, keyboard, and mouse to administer them all. Or hook up a set of ServSwitch Multi Hubs to administer hundreds of CPUs from dozens of stations.

The Multi supports most IBM, Mac®, and Sun® video types at resolutions up to 1280 x 1024 at 90 Hz, or 1600 x 1200 at 60 Hz. You can use IBM PS/2, PC/AT, Mac, or Sun type keyboards and mice at your user stations. If you use its "audio cables," the ServSwitch Multi can also switch access to an RS-232 device such as an external modem or serial printer, as well as audio input (microphone) and output (headphones or speakers).

The key to the ServSwitch Multi's super versatility is its mod-ular chassis design. To add, move, or remove capacity or features, just install, swap, or extract plug-in cards from any chassis—even if the chassis is powered. And when firmware updates are released (available through our Web site,

www.blackbox.co.uk), you can flash-upgrade chassis and cards.

The available models
The ServSwitch Multi Base Unit (KV150A-R2) has an integral "local console" module access-ible through its front panel. You can plug a nearby user station directly into the local-console connectors (although this station won't be secure and won't have an on-screen display). There are also 13 multipurpose card slots on its rear panel, but one of these is an "option slot" that should only hold a non-CPU card. If you like, you can use a Rackmount Kit (RMK19L) to put the Base Unit in 3U of space in a 19" rack.

If you only need to switch a few CPUs or if you just need a tiny "headquarters unit", a Multi MX (KV155A) is very similar to the Base Unit, but it is much narrow-er, can't be rackmounted, and only has four card slots. (All of these can be used for CPU cards.)

The ServSwitch Multi Expansion Chassis ("EXP" for

short, KV160A-R2), is what we consider the "standard" chassis that's most suitable for the majority of applications. It's the same size as the Base Unit, but it has no local-console module and no option slot. Instead, it has 14 rear-panel card slots, any of which can be used for any type of card. It's rackmountable with the RMK19LE Rackmount Kit.

If you'll have more than four users in your system, consider cascading chassis of the ServSwitch Multi SB (KV162RA). Whereas the other non-Hub Multi models only have enough video paths to handle four independent system users at a time, the SB supports eight independent system users (although no more than four can be attached to any one chassis). The SB physically resembles the EXP and, like the EXP, has 14 rear-panel card slots. However, the SB can be rack-mounted in 3U of space right out of the box; it has "rackmount ears" permanently attached to it, so it doesn't require a separate kit.

The ServSwitch Multi Hub (KV170RA) isn't like the other chassis. It's designed to function as a central concentrator that simplifies cabling in very large cascaded Multi systems, typically those with more than 10 user stations and more than 10 CPUs. Its nine horizontal rear-panel slots can only accept Transmit and Receive Modules; CAT5 cable

runs from these to CAT5 Expansion Receive and Transmit Cards installed in non-Hub Multi chassis. Like the SB, the Hub can be rack-mounted right out of the box; it takes up 7U of space.

The ServSwitch Multi Z8 (KV158A) isn't a card chassis at all. Instead, it's a thin switch like our ServSelect that you can connect to the Multi system with a CAT5 cable and a special included Z8 Card. It lets a group of CPUs be managed by both a local user (who can see only those CPUs) and the central Multi users. It can be mounted in 1U of space with the RMK19K kit. For more about the Z8, including specs and "complete package" info, refer to **FaxBack #24387**.

The cards, modules, and cables

All sorts of cards are available for the ServSwitch Multi system. For example, for each computer CPU you want to attach to the system, install one Autosensing CPU Interface Card ("CPU Card" or "ACIC" for short, KV2000C). It has an HD44 connector that can be connected to a CPU's I/O ports with a convenient one-to-many server cable (KV2020-R2, etc.).

Then there are the "User Cards." They have an HD62 connector that can be attached to keyboards, monitors, mice, and other user-station equipment with a one-to-many user cable (KV2505, etc.). There are two types of these cards:

• For systems in which security isn't a concern and neither is using keyboard commands rather than on-screen menus, install one Universal User Interface Card ("UUIC" for short, KV2500C) for each keyboard/ monitor/mouse/etc. user station.

• If you'd like to be able to use on-screen menus to control the system (even to naming and administering channels and users), or if you'd like to maintain higher levels of security (including password protection and control of access rights), install a User Interface Card with On-Screen Display ("UICD" for short, KV2550C-R3) for each user station.

To link multiple ServSwitch Multi chassis together, install an Expansion Transmit Card in any chassis in order to create two data pathways *out* of the chassis (toward user stations attached to other chassis). Install an Expansion Receive Card in order to bring two data pathways *into* a chassis (from CPUs attached to other chassis). Each data pathway will run from one Transmit Card port to one Receive Card port.

Like the User Cards, there are two varieties of Expansion Cards:

• The older "regular" versions of these cards (KV1601C and KV1602C respectively) have two HD26 connectors and require relatively thick custom cable (KV1600, etc.).

• The newer CAT5 versions of the cards (KV1603C and KV1604C respectively) have six RJ-45 connectors (three for each port) and require CAT5 cable (EYN737MS) instead.

You'll need the CAT5 versions of the Expansion Cards if you're using a ServSwitch Multi Hub in your system. This is because the Hub's Transmit and Receive Modules are specifically designed for communication with the CAT5 cards. Each Module has 16 ports with 2 RJ-45 connectors each. (The Module ports don't support the serial and audio data carried on the Expansion Card ports' third RJ-45.)

There are even cards that let you perform terminal-based serial management of routers and other equipment. Each Serial Control Card (KV1609C) has four RJ-45 connectors that function as serial ports. Run CAT5 cable from these to modular adapters attached to the devices you want to manage. Then install a single Management Card (KV1608C-R3). It has a DB9 connector like the smaller serial ports on current IBM type PCs. Run a null-modem cable to a PC running a terminal emulator— either one of your user station CPUs or a dedicated machine— and you can open sessions with any of the devices attached to any of your Serial Control Cards.

Once you've planned your ServSwitch Multi system layout, the actual installation is fairly easy. Start at the rear of a chassis (A). Remove one of the blank panels and slide in a card (B). Plug in one or more cables such as the user cable shown here (C), then run them to your devices.
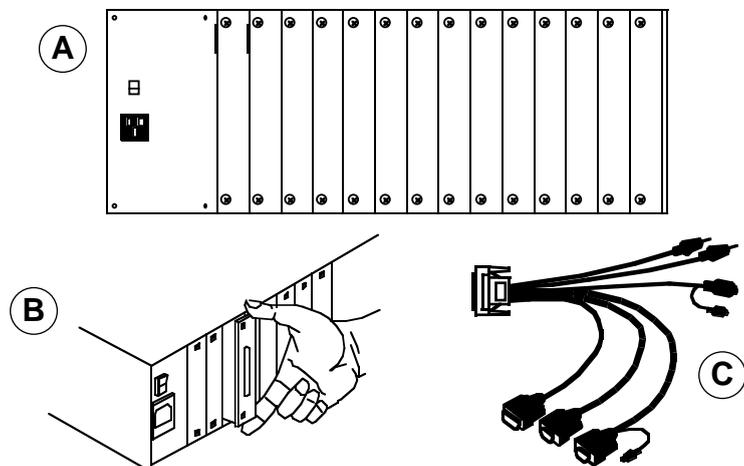
Specifications

*NOTE: For the Z8's specifications, see **FaxBack #24387**.*

Audio Response: Microphone input and stereo output: From 20 Hz to 20 kHz at ±3 dB

Compliance: FCC Part 15 Subpart B Class A, IC Class/classe A

Data Format:
RS-232 connections to CPU and User Cards: Transparent to data format;
RS-232 connections to Serial Control Cards: 7 or 8 data bits; even, odd, or no parity; 1 or 2 stop bits (user-selectable)

Data Rate:
RS-232 connections to CPU and User Cards: Transparent to data rates up to 9600 bps with hardware flow control or up to 115.2 kbps with software flow control;
RS-232 connections to Serial Control Cards: 19.2 kbps; 9600, 4800, 2400, or 1200 bps (user-selectable)

Maximum Distance:
20 ft. (6.1 m) to any attached keyboard, monitor, and mouse;
30 ft. (9.1 m) to any attached CPU;
500 ft. (152.4 m) of total cabling between the highest-level cascaded ServSwitch Multi (the one to which the monitor/keyboard/mouse stations are attached) and the lowest-level ServSwitch Multi (the one to which the CPUs are attached)

Flow Control:
RS-232: Hardware (RTS/CTS), software (X-ON/X-OFF), or none;
Connections to CPU and User Cards: Autosensed;
Connections to Serial Control Cards: User-selectable

Independent Data Pathways:
MX (KV155A): 2;
SB (KV162RA): 8;
Other non-Hub models: 4

Protocol: RS-232: Asynchronous

Maximum Resolution:
90 Hz: 1280 x 1024;
60 Hz: 1600 x 1280;
Maximum video bandwidth is 155 MHz

Standards: VGA, SVGA, XGA, XGA-2, Macintosh, or Sun video; can also carry RS/6000, SGI, or RGsB-on-BNC video with the proper adapters

Thermal Dissipation:
MX (KV155A): 41 BTU per hour (nominal);
Hub (KV170RA): 1020 BTU per hour (nominal);
All other models: 92 BTU per hour (nominal)

User Controls:
For Hub (KV170RA):
(4) front-mounted menu control push buttons;
(2) rear-mounted ON/OFF rocker switches (one for each of the [2] power-supply modules);
On Transmit Modules (KV1701C):
(3) 6-position distance DIP switches;
On Receive Modules (KV1702C):
(3) 2-position distance DIP switches;
For all other models:
Keyboard commands;
(1) rear-mounted ON/OFF rocker switch;
With KV2550C-R3 installed: On-screen menus;
With KV1608C-R3 installed: Serial management menu;
On Base Unit (KV150A-R2): (12) port-selection push buttons, (1) for each port;
On MX (KV155A): (4) port-selection push buttons, (1) for each port;
On CPU interface cards:
(6) jumpers for video type;
(1) 8-position DIP switch for various options

Interfaces:
On front panel of Base Unit (KV150A-R2) and MX (KV155A):
Serial ports: TIA/EIA RS-232 pinned to TIA-574;
VGA port: VGA;
PS/2 ports: IBM PS/2 peripheral input;
Mac port: ADB;
Sun port: Sun peripheral input;
Mic port: Standard mono audio input;
Speaker port: Standard stereo audio output;
Hub's (KV170RA) front-mounted serial port (not currently enabled):
TIA/EIA RS-232 proprietarily pinned on RJ-45;
On CPU Interface, User Interface, and Expansion Cards: Proprietary composites of:
IBM PC/AT, IBM PS/2, ADB, or Sun keyboard;
RS-232, PS/2, ADB, or Sun mouse;
Video (standards listed above);
Mono audio;
Stereo audio

Connectors on Cards and Modules:
All Cards and Modules have rear-mounted card-edge connectors;
On CPU Interface Cards (KV2000C): (1) HD44 F;
On User Interface Cards (KV2500C and KV2550C-R3): (1) HD62 F;
On regular Expansion Cards (KV1601C and KV1602C): (2) HD26 (both M on KV1601C, both F on KV1602C);
On CAT5 Expansion Cards (KV1603C and KV1604C): (6) RJ-45;
On Management Cards (KV1608C-R3): (1) DB9 M;
On Serial Control Cards (KV1609C): (4) RJ-45;
On Transmit and Receive Modules for Hub (KV1701C and KV1702C): (32) RJ-45: (16) for video, (16) for keyboard and mouse

Connectors on Chassis:
All models have internal card-edge connectors in each of their Card/Module slots, as well as an IEC 320 M power inlet (KV170RA Hub has [2] of these);
Base Unit (KV150A-R2) and MX (KV155A) also have dedicated front-mounted "local user station" connectors:
(2) DB9 M ([1] for serial mouse, [1] for other serial devices);
(1) HD15 F for video;
(2) 6-pin mini-DIN F ([1] for PS/2 keyboard, [1] for PS/2 mouse);
(1) 4-pin mini-DIN F for ADB keyboard/mouse;
(1) 8-pin mini-DIN F for Sun keyboard/mouse;
(2) RCA F ([1] for microphone, [1] for speakers/headphones);
Hub (KV170RA) also has front-mounted serial port that will be enabled by future versions of firmware

Connectors on User and Server Cables: See the discussion on **page 5**

Indicators: All front-mounted;
On Base Unit (KV150A-R2):
(1) 2-character display panel (5 x 9-pixel area for each character);
(12) selected-port LEDs ([1] for each port);
On MX (KV155A):
(6) LEDs: (1) Power; (1) Fail; (4) Selected port ([1] for each port);
On EXP (KV160A-R2) and SB (KV162RA):
(30) LEDs: (1) Power; (1) Fail; (14) Selected port ([1] for each port); (14) On-line ([1] for each port);
On Hub (KV170RA):
(1) 4 x 20-character LCD panel;
(2) LEDs: Power and Fail

MTBF: 135,000 powered-on-hours (POH)

Temperature Tolerance:
Operating: 41 to 104°F (5 to 40°C);
Storage: -4 to +122°F (-20 to +50°C)

Humidity Tolerance: Up to 90% noncondensing

Maximum Altitude: 12,000 ft. (3657.6 m)

Enclosure: Steel

Power:
Input: 90 to 240 VAC at 47 to 63 Hz from utility-power (mains) outlet, through included detachable power cord and IEC 320 M inlet, to internal transformer:
Hub (KV170RA): Dual redundant input (load is balanced between power supplies);
All other models: Single input;
Consumption (nominal):
MX (KV155A): 12 watts;
Hub (KV170RA): 300 watts;
All other models: 27 watts

Size:
MX (KV155A): 5.5"H x 8.2"W x 13.6"D (14 x 20.8 x 34.5 cm);
Hub (KV170RA): 15.75"H (9U) x 19"W x 13.5"D (40 x 48.3 x 34.3 cm);
All other models: 5.25"H (3U) x 17.1"W x 13.6"D (13.3 x 43.4 x 34.5 cm)

Weight: Otherwise empty enclosures with only power supply/supplies installed:
MX (KV155A): 13.2 lb. (6 kg);
Hub (KV170RA): 55 lb. (24.9 kg);
All other models: 18.5 lb. (8.4 kg);
For all models except the Hub, each extra Interface Card, Management Card, or Serial Control Card adds 0.6 lb. (0.3 kg);
For all models except the Hub, each extra Expansion Card adds 1 lb. (0.5 kg);
For the Hub, each extra Transmit or Receive Module adds 2.5 lb. (1.1 kg)

A single ServSwitch Multi with CPUs and user stations attached. Note that although PS/2 and Mac compatible stations are shown, you should use Sun stations if you'll be attaching any Sun CPUs; that way all Sun CPU functions can be accessed from the stations' mice and keyboards.

Sun CPU

Macintosh CPU

PC/AT Type CPU

PS/2 Type CPU

CPU Cables
(Connectors Not Shown)

Power Outlet

ServSwitch Multi Base Unit with at Least
(4) CPU Cards and (2) User Cards Installed

User Cables
(Connectors Not Shown)

IBM PS/2 Compatible Monitor,
Keyboard, and Mouse, Plus Headphones
and External Modem

Apple Macintosh Compatible Monitor,
Keyboard, and Mouse, Plus Microphone,
Speakers, and Serial Printer

This illustration, which includes the user stations but not the CPUs, shows the advantage of the ServSwitch Multi SB. If these Multi models are SBs, the user on Switch 1 will be able to independently switch to any computer on Switch 2 ("CPU E" through "CPU I"), even though there are already four users on Switch 2. If these models are EXPs or Base Units, the four users on Switch 2 are occupying all four of the system's data pathways, so the user on Switch 1 would have to share access to any of the Switch 2 CPUs. Use ServSwitch Multi SBs if more than four users will need independent access to the CPUs on any chassis in your system.

User Cables

CPU = CPU Card
USR = User Card
XMT = Expansion Transmit Card
RCV = Expansion Receive Card

Switch 2

Switch 3

Expansion Cables
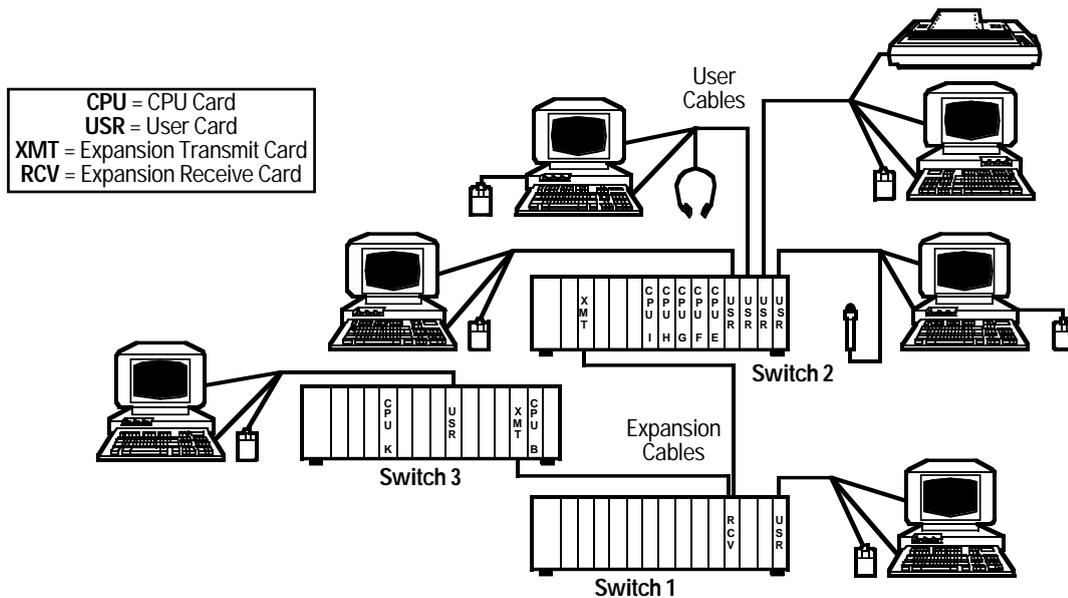
Switch 1

Connectors on User and Server Cables

User Cables run from User Cards installed in the ServSwitch Multi to your user stations. Server Cables run from CPU Cards installed in the ServSwitch Multi to your CPUs. All of these cables have a single high-density connector on the switch end (HD62 for User Cables, HD44 for Server Cables) and multiple connectors at the other end.

All standard User Cables have an HD15 female for a multisync monitor to plug into and a DB9 male for a serial mouse or trackball. All audio cables add to these another DB9 male for a non-mouse serial device, a mono RCA jack for a microphone, and a stereo RCA jack for speakers or headphones. Where the User Cables differ is in their main keyboard and mouse connectors. The PC type cables have three of these: a 5-pin DIN female for an older PC/AT keyboard plus a pair of 6-pin mini-DIN females for a PS/2 mouse and keyboard respectively. The Mac type cables have a single 4-pin mini-DIN female for an ADB (Apple) keyboard and mouse. The Sun type cables have a single 8-pin mini-DIN female for a Sun keyboard and mouse.

IBM type Server Cables have an HD15 male to attach to the CPU's video port, a 5-pin DIN male for a PC/AT keyboard port, two 6-pin mini-DIN males for PS/2 keyboard and mouse ports respectively, and a DB9 female for a serial mouse port. The IBM type audio cable adds a second DB9 female for another serial port, plus a mono RCA plug for the CPU's audio in port and a stereo RCA plug for the CPU's audio out port.

Mac and Sun type Server Cables each come in two different versions. One version has the traditional video connector (DB15 male for Mac, 13W3 male for Sun) to plug into the video port of an older CPU. The other version has an HD15 male to plug into the VGA video port of a newer CPU. These Server Cables have the standard connector (4-pin mini-DIN male for Mac, 8-pin mini-DIN male for Sun) to attach to the CPU's keyboard/mouse port. The Mac and Sun audio cables add a mono RCA plug for the CPU's audio-in port and a stereo RCA plug for the CPU's audio-out port.

Technically Speaking

- ServSwitch Multis support many video standards; set DIP switches on the CPU Interface Cards for your desired video type, as well as for shared-use timeout (discussed later in this section) and keyboard translation. (Using non-multisync monitors with some platforms will require special video adapters.)

- The units also support many types of keyboards and mice, as long as each station's keyboard and mouse are the same type (unless you're using a PC serial mouse, which is supported by all platforms' cabling). See the **Specifications page**.

- When multiple stations are attached to the ServSwitch Multi, user access to CPUs can either be shared or independent. Stations with shared access can all see and hear the output of a given CPU, but only one of them can input commands and data at any given time. When there is no keyboard or mouse input from the active station for a user-selectable timeout period, another station may become active. Stations with independent access, on the other hand, can input commands and data independently of each other. If each one has access to all CPUs, there can only be two (MX), four (Base Unit or EXP), or eight (SB) independent stations in the system at the same time on a full-size Switch (only two on an MX).

- ServSwitch Multis can be interconnected, but are not designed to be cascaded with any other Serv type switch except the ServSelect and the Z8.

The complete package

NOTE: *For the Z8's information, see **FaxBack #24387**.*

- ServSwitch Multi Base Units, MXs, EXPs, and SBs ship from the factory with a power cord and a manual.

- ServSwitch Multi Hubs ship from the factory with two power supplies and two fan assemblies. (To comply with electrical safety regulations and prevent shipping damage, the power supplies and fans are shipped uninstalled.) You'll also receive two power cords and a manual.

Other things you will need

- CPU Interface Cards for each CPU you want to connect to the ServSwitch Multi.

- User Interface Cards for each user station you want to connect to the ServSwitch Multi.

- A keyboard and mouse. We recommend that these be Sun type if you'll be managing any Sun CPUs, or IBM type otherwise. (Do *not* use an Apple keyboard and mouse if you're mixing platforms; the one-button Apple mouse is not able to trigger Sun and IBM functions controlled by the right and center mouse buttons.)

- A monitor. If you're mixing platforms, we recommend a true multiscan, multisync monitor, capable of synching to each CPU's video-output frequencies and compatible with all of the CPUs' video cards. Also, if one of the multiple platforms is IBM, the monitor must be able to accept both separate horizontal/vertical sync and composite sync. Such monitors are widely available.

We recommend that the monitor be able to display a maximum resolution of not less than 1280 x 1024 at a maximum refresh rate of not less than 75 Hz.

Other things you might need

- Video adapters (see **page 8**).

- Headphones, speakers, or microphones for audio I/O.

- Serial cable to connect a shared serial device.

- Expansion Cables and Transmit and Receive Cards/Modules for applications that exceed the capacity of a single chassis.

- User Interface Cards with On-Screen Display for display-menu convenience.

- A Management Card, one or more Serial Control Cards, and the associated cables for terminal-based device control.

Before the ServSwitch Multi Hub...

Using only ServSwitch Multi EXP chassis (because too many Expansion Cards are required for any chassis to host more than 4 users or CPUs), connecting 16 users to 16 computers so that all of the users have independent access to all of the computers requires 8 EXP chassis, 32 CAT5 Transmit Cards, 32 CAT5 Receive Cards, and 128 CAT5 expansion cables.

Each Line between
Two Chassis
Represents Eight
Expansion Cables
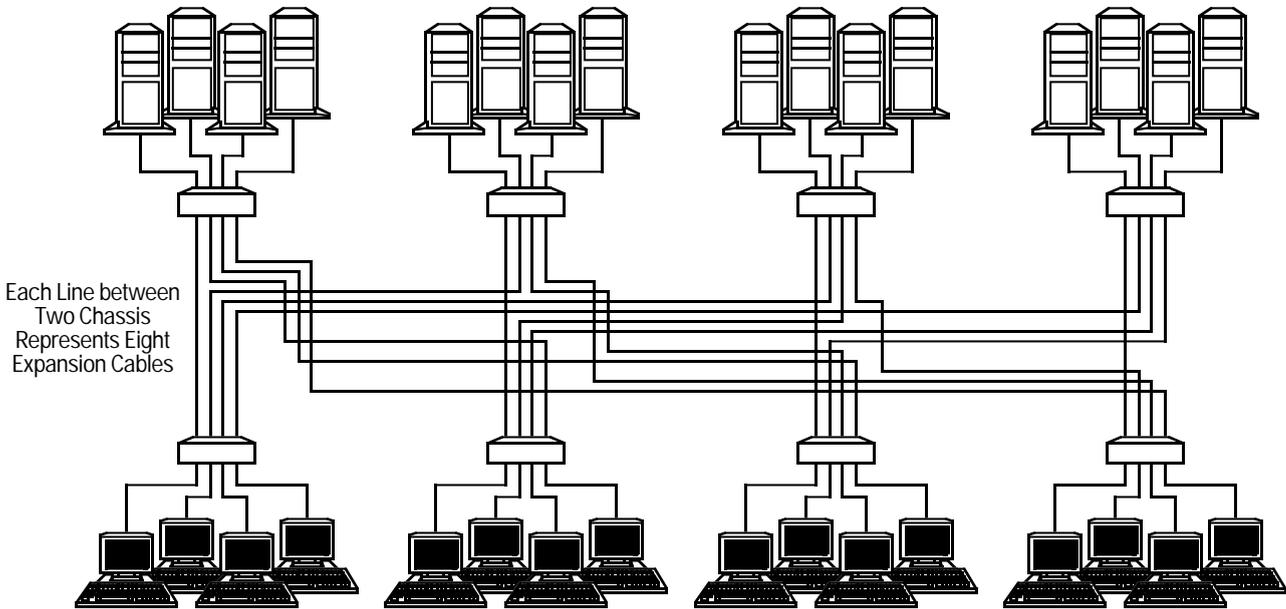
...and after.

If you use a Hub with 1 Transmit Module and 1 Receive Module installed, you can use 2 SB chassis to host CPUs instead of 4 EXP chassis, plus you'll only need 8 CAT5 Transmit Cards, 8 CAT5 Receive Cards, and 64 expansion cables—a significant savings that only gets bigger as you add more users and CPUs. (SBs should be used to concentrate CPUs, as shown here, rather than users. User Cards need more power and create more heat than CPU Cards, and the SB isn't always able to handle more than four of them.)

Each Line between
a Chassis and the
Hub Represents
Eight Expansion
Cables
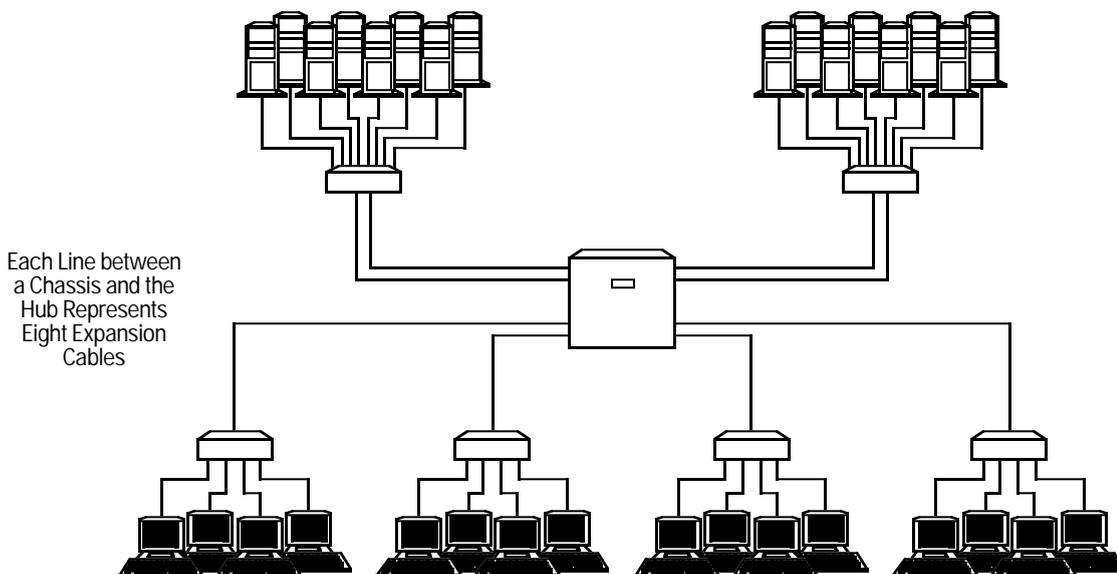
Ordering Information

ITEM	CODE
ServSwitch Multi Chassis	
ServSwitch Multi Base Unit	KV150A-R2
ServSwitch Multi MX	KV155A
ServSwitch Multi Z8	KV158A
ServSwitch Multi Expansion Chassis (ServSwitch Multi EXP)	KV160A-R2
ServSwitch Multi SB	KV162RA
ServSwitch Multi Hub	KV170RA
Plug-In Cards and Modules	
Universal User Interface Cards (UUICs)	KV2500C
User Interface Cards with On-Screen Display (UICDs)	KV2550C-R3
Autosensing CPU Interface Cards (ACICs)	KV2000C
Expansion Transmit Cards	KV1601C
Expansion Receive Cards	KV1602C
CAT5 Expansion Transmit Cards	KV1603C
CAT5 Expansion Receive Cards	KV1604C
Management Cards	KV1608C-R3
Serial Control Cards	KV1609C
Transmit Module for Hub	KV1701C
Receive Module for Hub	KV1702C
User (User Interface) Cables	
For IBM PS/2 or PC/AT User Station	
1-ft. (0.3-m) Standard	KV2505
1-ft. (0.3-m) with Audio	KV2515
10-ft. (3-m) with Audio	KV2545
20-ft. (6.1-m) with Audio	KV2585
For Mac User Station	
1-ft. (0.3-m) Standard	KV2700
1-ft. (0.3-m) with Audio	KV2710
For Sun User Station	
1-ft. (0.3-m) Standard	KV2800
1-ft. (0.3-m) with Audio	KV2810
10-ft. (3-m) with Audio	KV2840
Server (CPU Interface) Cables	
For IBM PS/2 or PC/AT CPU	
8-ft. (2.4-m) Standard	KV2020-R2
20-ft. (6.1-m) Standard	KV2025
30-ft. (9.1-m) Standard	KV2030
8-ft. (2.4-m) with Audio	KV2040-R2
20-ft. (6.1-m) with Audio	KV2060-R2
30-ft. (9.1-m) with Audio	KV2080-R2

Ordering Information (continued)

ITEM   CODE

Server (CPU Interface) Cables (continued)
  For Mac CPU with Apple Video
    8-ft. (2.4-m) Standard KV2220
    20-ft. (6.1-m) Standard KV2225
    30-ft. (9.1-m) Standard KV2230
    8-ft. (2.4-m) with Audio KV2240
    20-ft. (6.1-m) with Audio KV2260
    30-ft. (9.1-m) with Audio KV2280
  For Mac CPU with VGA Video
    8-ft. (2.4-m) Standard KV2920
    20-ft. (6.1-m) Standard KV2925
    30-ft. (9.1-m) Standard KV2930
    8-ft. (2.4-m) with Audio KV2940
    20-ft. (6.1-m) with Audio KV2960
  For Sun CPU with Sun Video
    8-ft. (2.4-m) Standard KV2320
    20-ft. (6.1-m) Standard KV2325
    30-ft. (9.1-m) Standard KV2330
    8-ft. (2.4-m) with Audio KV2340
    20-ft. (6.1-m) with Audio KV2360
    30-ft. (9.1-m) with Audio KV2380
  For Sun CPU with VGA Video
    8-ft. (2.4-m) Standard KV2420
    20-ft. (6.1-m) Standard KV2425
    30-ft. (9.1-m) Standard KV2430
    8-ft. (2.4-m) with Audio KV2440
    20-ft. (6.1-m) with Audio KV2460
    30-ft. (9.1-m) with Audio KV2480

You may also need...
  Console (User Interface) Adapters for Non-Multisync Monitors
    For Mac Monitors (HD15 male to DB15 female; use with Mac User Cable KV27xx) KV16MAC
    For Sun Monitors (HD15 male to 13W3 female; use with Sun User Cable KV28xx) KV16SUN
    For RS/6000 Monitors
      13W3 (HD15 male to 13W3 female; use with PS/2 User Cable KV25xx) KV16RS6-1
      3C3 (HD15 male to 3C3 female; use with PS/2 User Cable KV25xx) KV163C3-1
    For SGI Monitors (HD15 male to 13W3 female; use with PS/2 User Cable KV25xx) KV16SGI-1
    For RGB Monitors (HD15 male to triple BNC female; use with PS/2 User Cable KV25xx)................................KV16BNC

  CPU (CPU Interface) Video Adapters
    For RS/6000 CPUs
      13W3 (13W3 male to HD15 female; use with IBM Server Cable KV20x0-R2 or KV20x5)............................KV16RS6-2
      3C3 (3C3 male to HD15 female; use with IBM Server Cable KV20x0-R2)...KV163C3-2
    For SGI CPUs (13W3 male to HD15 female; use with IBM Server Cable KV20x0-R2) KV16SGI-2

  Loopback Mouse Adapter (DB9 female; attach this to the serial mouse strand of a server cable if you are having
    trouble switching to a particular PS/2 computer)...KV16LOOP

Ordering Information (continued)

ITEM	CODE

Expansion Cables
   Regular Expansion Cables
      10-ft. (3-m)..KV1600
      25-ft. (7.6-m) KV160025
      50-ft. (15.2-m) KV160050
      100-ft. (30.4-m) KV160100
   CAT5 Solid-Conductor Cables (also used to connect Z8s to Multi system)
      Available in a variety of *xxx*-ft. stock lengths from 2 ft. (0.6 m) to 250 ft. (76.2 m)..............................EYN737MS-0*xxx*
      Or in custom lengths EYN737MS
      Also available in plenum-rated versions and bulk versions in various lengths and colors.

Management Cables and Adapters
   AT Null Modem (Management Card) Cable
      Available in a variety of *xx*-ft. stock lengths from 6 ft. (1.8 m) to 50 ft. (15.2 m) EYN257H-00*xx*-FF
      Or in custom lengths EYN257H
   Modular Adapters (attach to the serial devices you'll be managing)
      DB9 Female DCE (plugs into DB9 male DTE ports) FA062F-DCE
      DB9 Female DTE (plugs into DB9 male DCE ports) FA062F-DTE
      DB9 Male DCE (plugs into DB9 female DTE ports) FA062M-DCE
      DB9 Male DTE (plugs into DB9 female DCE ports)..FA062M-DTE
      DB25 Female DCE (plugs into DB25 male DTE ports)..FA085F-DCE
      DB25 Female DTE (plugs into DB25 male DCE ports)..FA085F-DTE
      DB25 Male DCE (plugs into DB25 female DTE ports) FA085M-DCE
      DB25 Male DTE (plugs into DB25 female DCE ports)..FA085M-DTE

CPU Cables for ServSwitch Multi Z8 (DB25 male to HD15 male and dual 6-pin mini-DIN male)............................EHN056

Rackmount Kits
   For Base Units RMK19L
   For EXPs RMK19LE
   For Z8s RMK19K
(The SB and Hub models can be rackmounted right out of the box, without requiring a kit.
The MX model is designed as a desktop unit only and cannot be rackmounted.)

Data Line Surge Protectors
   For PC/AT Keyboard (5-pin DIN male/female) SP518A-R2
   For PS/2 Keyboard or Mouse (6-pin mini-DIN male/female) SP519A-R2

Autosensing Hot-Swappable Power Supply...PS150