BLACK BOX®
NETWORK SERVICES

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SERVSWITCH AFFINITY
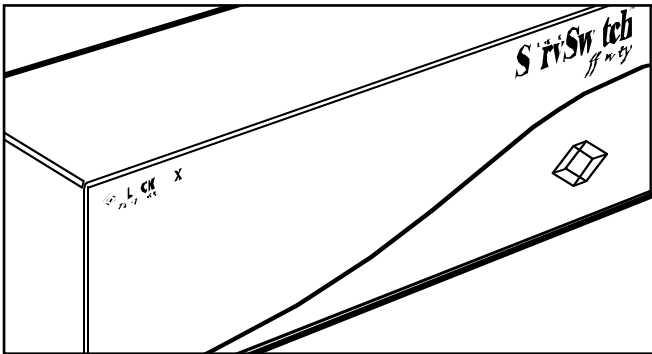
Affordable many-to-many multiplatform KVM switching.

Key Features

▶ *As many as 16 users have keyboard/mouse/ video control over as many as 1024 PC, Sun, RS/6000, SGI, HP, and/or Alpha computers.*

▶ *Easily expandable with plug-in port cards and flexible cabling.*

▶ *Free lifetime firmware upgrades.*

▶ *Supports video resolutions up to 1280 x 1024.*

▶ *High levels of security, including passwords and access profiles.*

▶ *Controlled through on-screen display, with additional keyboard commands and a terminal-based serial-port options menu.*

▶ *Some models have redundant power supplies.*

Is your server room growing by leaps and bounds? Wouldn't it be nice to have a keyboard/video/ mouse-switching system that could keep up with all the hardware, all the users, the constant changes, and the realities of your budget?

Our ServSwitch™ Affinity could be the one. It will support most major hardware platforms, including IBM® PS/2®, PC/AT®, and RS/6000®; Sun®; SGI™; HP® 700 and 9000 series; and Compaq® Alpha™. IBM type computers can use any keyboard mode and any of a variety of mouse types. Video can be any of several types at up to 1280 x 1024 resolution.

You can attach as many as 16 computers to a single unit or 1024 computers to a daisychained Affinity system. Either way, you can also attach up to 4, 8, or 16 independent users; more users can be connected, but they'll have to contend for access.

Here's how it works: Each ServSwitch Affinity has four slots for port cards. 0 x 4 port cards (product code KV1300C) have four CPU (computer) ports and a serial port only; 1 x 4 cards (KV1301C-R2) also have a KVM (user) port.

The Affinity chassis also has a fifth, top slot used for expansion purposes; the 16-user models have a matching sixth, bottom slot. 4-user models ship with a termi-nator card (KV1304C) installed in the expansion slot; you can swap in a 4-User Expansion Card (KV1305C) if you'll be daisychaining the Affinity. 8- and 16-user models, which are designed to be part of a daisychain, come without anything installed in the expansion slot(s). You need to purchase and install an 8-User Expansion Card (KV1306C) for each slot for the unit to work.

One difference between the three 4-user Affinity models with single power supplies is which cards they're preinstalled with; see the start of **Ordering Information** on page 4 for a list of which cards come with each model. The 4-User Standalone Chassis models (as well as the 1 x 4 port card) also offer serial emulation. This enables access to any RS-232 serial device.

Add capacity to your Affinity system at any time by installing port cards in vacant slots or add more chassis to a daisychain.

The port card's serial ports are used for terminal-based initial system configuration; they are also used to upgrade the Affinity's firmware (upgrades are free for the lifetime of the Affinity!).

The ServSwitch Affinity's main controls are its on-screen menus (with a full range of configuration and operating functions). These menus are augmented by a number of keyboard commands.

For added security, the Affinity supports password-protected access groups. Computers can belong to multiple groups, but users can only belong to one. Users will only be able to access the computers in their group.

When users do access computers, they'll have one of four assigned access levels: view only (no keyboard/mouse control), share (view access until current user becomes inactive, then add keyboard and mouse), control (sole control but others can view), or private (sole control, no one else can interrupt or view).

Models with dual, redundant power supplies are available. If one power supply fails, the other powers the load until you install a replacement supply.

Specifications

Hardware Required: Monitor that supports your computers' highest video standard; in multiplatform applications, should be multisync model that can video from either composite sync or separate horizontal/vertical sync signals

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

Standards:

With original Serv cabling: VGA (colour or monochrome/page white) video;

With original Serv cabling (minimal) or coaxial cabling (recommended): SVGA video;

With coaxial cabling: XGA (colour or monochrome), Sun, RS/6000, or SGI video

Interfaces:

On CPU ports and user ports of Port Cards and IN 1 and OUT 1 ports of primary expansion cards:

Proprietary composite of: IBM PS/2, PC/AT, or Sun compatible keyboard; PS/2, RS-232 serial (except on user ports), or Sun compatible mouse; and Video (see **Standards** above);

IN 1 and OUT 1 also carry system-control signals;

On expansion cards' other IN and OUT ports: Proprietary video composite (see **Standards** above);

On serial ports of port cards: EIA/TIA RS-232 proprietarily pinned on RJ-12 ("6-wire RJ-11") connectors, DTE

Resolution: Up to 1280 x 1024, but will depend on the length of CPU and user cables in your system

Serial (RS-232) Characteristics:

Protocol: Asynchronous;

Data format: 8 data bits, 1 stop bit, no parity (fixed);

Data rate: 9600 or 57,600 bps

Maximum Distance:

20 ft. (6.1 m) of CPU or user cable—possibly as much as 100 ft. (30.5 m) if cable is coaxial, depending on CPUs, monitor, and video resolution— from any Affinity port card to any device attached to it;

100 ft. (30.5 m) of expansion cable between any two Affinity units;

50 ft. (15.2 m) of serial cable from the RS-232 port of any Affinity port card to a computer's serial port

User Controls:

For system: Keyboard commands and on-screen menus;

On Affinity chassis: Rear-mounted ON/OFF rocker switch(es); KV13xDA models: (2); All other models: (1);

On all expansion cards (KV1305C and KV1306C): Board-mounted BUS/RING jumper;

On 8-user expansion cards (KV1306C): (2) Board-mounted jumper blocks for user-port numbering

Connectors:

All chassis: (1) IEC 320 power;

KV132A-R2: Also has (10) DB25 female, (2) RJ-11;

KV134A-R2: Also has (20) DB25 female, (4) RJ-11;

KV1300C: (4) DB25 female;

KV1301C-R2: (5) DB25 female;

KV1305C: (2) DB15 female, (2) DB15 male;

KV140 series cables: (1) DB15 female, (1) DB15 male;

KV180 series cables: (1) HD15 male, (1) HD15 female

Indicators:

All models: ON/OFF switch(es) are dark when ServSwitch Affinity is OFF, backlit when Affinity is ON;

KV13xDA models: (3) Front-mounted power-supply status LEDs:

(1) for supply 1 (the upper transformer), lit while supply is outputting power;

(1) for supply 2 (the lower transformer), lit while supply is outputting power;

(1) for the Affinity chassis (marked "SYSTEM"), lit while either supply is outputting power unless internal diodes have failed

Temperature Tolerance:

32 to 113˚F (0 to 45˚C)

Humidity Tolerance:

5 to 80% noncondensing

Maximum Altitude:

10,000 ft. (3048 m)

Enclosure: Steel

Fuses: KV13xDA models: Autoresetting switch fuses that cut in when power surges exceed the maximum ratings of the chassis

Power:

Input: 90 to 264 VAC, 47 to 63 Hz, 700 mA from AC outlet(s) through included power cord(s) and inlet(s) into internal transformer(s):

KV13xDA models: Dual transformers with separate AC inlets, electrically isolated from one another;

All other models: Single transformer;

Consumption: Up to 40 VA (40 watts)

Size:

KV139A and KV139DA chassis: 7"H (4U) x 16.7"W x 7"D (17.8 x 42.4 x 17.8 cm);

All other Affinity chassis: 5.25"H (3U) x 16.7"W x 7"D (13.3 x 42.4 x 17.8 cm);

Port cards and expansion cards: 0.9"H x 13.9"W x 4.8"D (2.3 x 35.3 x 12.2 cm);

Terminator card (4-user models only): 0.4"H x 2.1"W x 0.8"D (1 x 5.3 x 2 cm)

Weight:

KV130A, KV130DA, KV138A, and KV138DA: 10.5 lb. (4.8 kg);

KV132A-R2: 12 lb. (5.4 kg);

KV134A-R2: 14 lb. (6.4 kg);

KV139A and KV139DA: 11 lb. (5 kg);

KV1300C, KV1301C-R2, and KV1306C: 0.9 lb. (0.4 kg);

KV1304C: 0.2 lb. (0.1 kg);
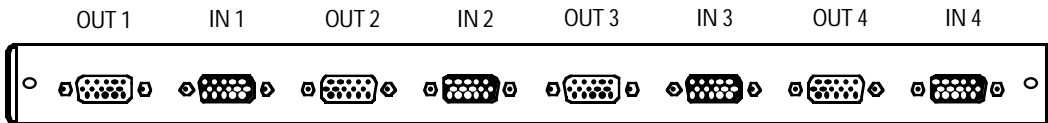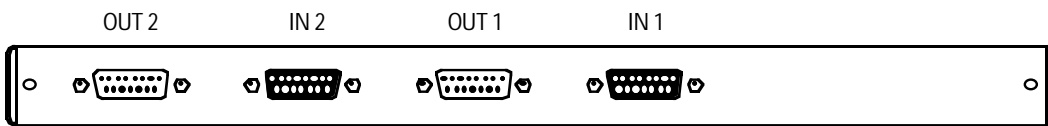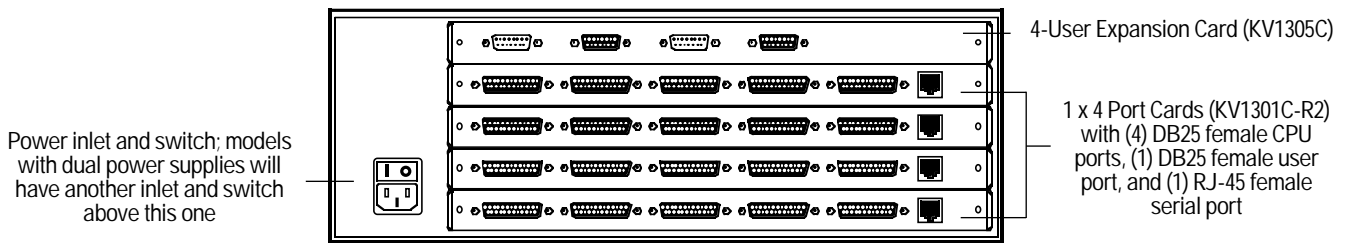
KV1305C: 0.4 lb. (0.2 kg)

If you need to share access to a large number of CPUs, think about putting in an Affinity daisychain made up of 4-user expansion chassis (like the fully loaded one shown below) or 8- or 16-user chassis. They come empty (no cards installed), but you can install one expansion card (or two in the 16-user units) and add as many as four 0 x 4 or 1 x 4 port cards to them, giving you a maximum of four, eight, or sixteen user stations and sixteen CPUs attached to each unit. (Keep in mind that however many user stations a unit is designed for, only that many video paths can be open through that unit at a time. For example, a 4-user unit only has four video paths, so if there are already four users attached to a 4-user unit, and a user at another Affinity unit selects one of the 4-user unit's CPUs, one of the 4-user unit's users—and all other users on that slot—will be locked out until the new connection ends.)

The 8-user units look very similar to the 4-user unit shown here, but they accept only 8-user expansion cards like the one shown below. The 16-user units accept two of the 8-user expansion cards. The 8-user cards have jumper blocks that you can set to control which four KVM slots are used by the users attached to the Affinity chassis that the card is installed in: KVM 1 through 4, 5 through 8, 9 through 12, or 13 through 16.

Power inlet and switch; models with dual power supplies will have another inlet and switch above this one

4-User Expansion Card (KV1305C)

1 x 4 Port Cards (KV1301C-R2) with (4) DB25 female CPU ports, (1) DB25 female user port, and (1) RJ-45 female serial port

OUT 2   IN 2   OUT 1   IN 1

DB15 female expansion ports on 4-User Expansion Card (KV1305C)

OUT 1   IN 1   OUT 2   IN 2   OUT 3   IN 3   OUT 4   IN 4

HD15 female expansion ports on 8- and 16-User Expansion Card (KV1306C)

On the 4-user expansion cards (above, top), IN 1 and OUT 1 carry signals for the port cards in slots 1 and 2, while IN 2 and OUT 2 carry signals for the port cards in slots 3 and 4.
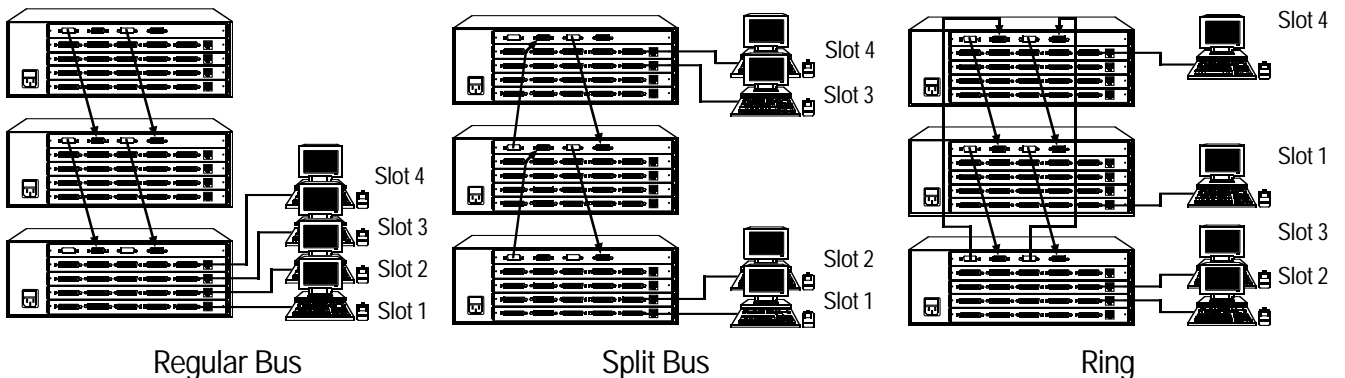
On the 8-user expansion cards (above, bottom), IN 1 and OUT 1 carry the signals for either KVM 1 and 2 or, if installed in the bottom slot of a 16-user unit, KVM 9 and 10; IN 2 and OUT 2 carry the signals for either KVM 3 and 4 or KVM 11 and 12; and so on. A pair of jumper blocks, mentioned above, determines which four KVM slots the four users on that Affinity chassis will use.

Because the control paths are carried on different connectors this way, you have maximum flexibility for designing your daisychain layout:

• If all of your users are on one chassis, use the regular bus topology (below, left).

• If you have two users on one chassis and two on another, use the "split bus" topology (below, middle).

• If your users are spread across several chassis, use the ring topology (below, right).*

Slot 4
Slot 3
Slot 2
Slot 1

Regular Bus

Slot 4
Slot 3
Slot 2
Slot 1

Split Bus

Slot 4
Slot 1
Slot 3
Slot 2

Ring

*Keep in mind that only one user at a time can use the bus that interconnects daisychained Affinity units, especially when you implement a ring topology. For example, when your Affinity units are interconnected in a ring, if any user on slot 1 selects a CPU attached to an Affinity unit other than his own, no other slot 1 user can select any CPUs.

The complete package

- The ServSwitch Affinity, including any cards and blanking plates that are normally preinstalled with your model. (Blanking plates will cover all unused slots, as well as the slot on 4-user models that the tiny terminator card is installed in.)

- A power cord.

- *KV13xDA models only:* A second power cord.

- A 6-ft. (1.8-m) serial cable with RJ-12 ("6-wire RJ-11") plugs.

- An RJ-12-to-DB9 modular adapter.

- A users' manual.

What else you might need

- CPU adapter cables, user adapter cables, and (if you're cascading) expansion cables.

- Keyboards, mice, and monitors for your users. If you're mixing platforms, we recommend true multiscan, multisync monitors capable of syncing 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 monitors must be able to accept both separate H/V sync and composite sync. (Such monitors are widely available.) We recommend that the monitors 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.

- An AC-power surge protector and uninterruptible power supply.

- Data-line surge protectors for the keyboard and mouse lines.

- *If you purchase a 4-User Expansion Chassis or an 8- or 16-User Chassis:* port cards for your CPU and user-station connections.

- *To cascade a ServSwitch Affinity:* An expansion card.

- *To rackmount a ServSwitch Affinity:* A ServSwitch Affinity rackmount kit.

If you can use a screwdriver, you can install the rackmount kits.
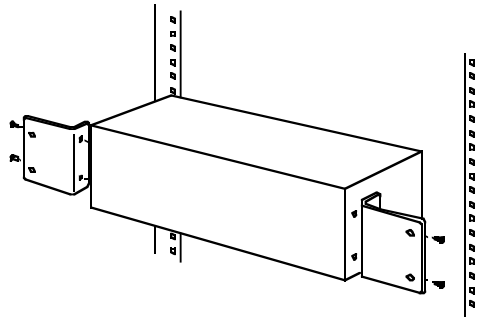
Ordering Information

ITEM	CODE
ServSwitch Affinity	
4-User Expansion Chassis (Terminator Card installed, no Port Cards installed)	
Single power supply	KV130A
Dual power supply	KV130DA
4-User Standalone Chassis:	
2 Users by 8 CPUs (Terminator Card installed, 1 x 4 Port Cards installed in slots 1 and 2)	KV132A-R2
4 Users by 16 CPUs (Terminator Card installed, 1 x 4 Port Cards installed in slots 1 through 4)	KV134A-R2
8-User Chassis (no cards installed)	
Single power supply	KV138A
Dual power supply	KV138DA
16-User Chassis (no cards installed)	
Single power supply	KV139A
Dual power supply	KV139DA
Port Cards	
0 x 4 (No Users, Four CPUs)	KV1300C
1 x 4 (One User, Four CPUs)	KV1301C-R2
4-User Terminator Card	KV1304C
4-User Expansion Card	KV1305C
8- and 16-User Expansion Card	KV1306C

▼ Ordering Information (continued)

NOTE: For CPU and User Cables, specify length by adding any of these suffixes to the product code (not all cables are available in all lengths):
"-0001" for 1 ft. (0.3 m, User Cables only),
"-0005" for 5 ft. (1.5 m),
"-0010" for 10 ft. (3 m),
"-0020" for 20 ft. (6.1 m),
"-0035" for 35 ft. (10.7 m),
"-0050" for 50 ft. (15.2 m),
"-0075" for 75 ft. (22.9 m), or
"-0100" for 100 ft. (30.5 m)

*You will need a **CPU Cable** for each CPU you attach…*
CPU/Server to ServSwitch Cables
Standard CPU Cables, available in standard lengths up to 20 ft. (6.1 m).

PS/2	Standard	EHN151
AT	Standard	EHN048

Coaxial CPU Cables—IBM and Sun styles available in all standard lengths.

PS/2	Coax	EHN282
AT	Coax	EHN382
Sun	Coax	
13W3		EHN206
VGA		EHN515
USB	Coax	EHN485

*You will need a **User Cable** for each monitor/keyboard/mouse user station you attach…*
ServSwitch to Keyboard/Monitor/Mouse Cables
Regular (non-coaxial) User Cables, available in standard lengths up to 20 ft. (6.1 m)

PS/2	Standard)	EHN154

Coaxial User Cables

PS/2		EHN283
Sun	Coax	
13W3		EHN201
VGA		EHN225
USB	Coax	EHN485A

To connect multiple chassis, order…
Expansion Cables for 4-User Units

10 ft. (3 m)	KV140010
20 ft. (6.1 m)	KV140020
35 ft. (10.7 m)	KV140035
50 ft. (15.2 m)	KV140050
100 ft. (30.5 m)	KV140100

Expansion Cables for 8- and 16-User Units

10 ft. (3 m)	KV180010
20 ft. (6.1 m)	KV180020
35 ft. (10.7 m)	KV180035
50 ft. (15.2 m)	KV180050
100 ft. (30.5 m)	KV180100

▼ *Ordering Information (continued)*

ITEM	CODE

<u>*You might also need:*</u>

Serial Cables
   DTE Cables with DB9 Female Connector
      5-ft. (1.5-m) EHN290-0005
      10-ft. (3-m) EHN290-0010
DTE Cables with DB25 Female Connector
      5-ft. (1.5-m) EHN291-0005
      10-ft. (3-m) EHN291-0010
DCE Cables with DB9 Male Connector
      5-ft. (1.5-m) EHN292-0005
      10-ft. (3-m) EHN292-0010
DCE Cables with DB25 Male Connector
      5-ft. (1.5-m) EHN293-0005
      10-ft. (3-m) EHN293-0010

Rackmount Kits
      To mount 4- or 8-User units in 19" Racks RMK19A
      To mount 4- or 8-User units in 23" Racks RMK23A
      To mount 4- or 8-User units in 24" Racks RMK24A
      To mount 16-User units in 19" Racks..RMK19A139
      To mount 16-User units in 23" Racks..RMK23A139
      To mount 16-User units in 24" Racks..RMK24A139

Surge protector for IBM PS/2 style keyboard and mouse lines (6-pin mini-DIN M/F) SP519A-R2
Surge protector for IBM PC/AT style keyboard lines (5-pin DIN M/F)...SP518A-R2

Call Black Box Tech Support for help determining your best options for AC-power backup and protection.