

Options for bringing servers to heel

Six eight-port KVM switches to manage rack-mounted servers are put through their paces

> **KVM SWITCHES** by Alan Stevens

Rack-mounted servers are a great way to save space, especially if you can do away with the clutter – things like video displays, keyboards and mice – that goes with them. One way to do this is with remote control software, but most network managers prefer to use a keyboard, video and mouse (KVM) switch.

KVM switches are a much more robust and flexible solution, capable of providing access to multiple servers simultaneously no matter what the state of the resident operating system – right down to the Bios level. With most devices, it is just like sitting in front of a directly attached console.

On the downside, KVM switches require a fair amount of custom cabling, both to connect the local console and, more importantly, to connect the switch to each of the servers in the rack. That said, this only has to be done once and there are ways of minimising the cable bulk and complexity. Some products support the use of standard Cat5 network cabling rather than custom wiring, for example.

A hardware-based KVM also allows fast switching between server screens, using buttons on the switch or hotkey combinations and on-screen menu systems. Most also allow a degree of customisation, typically letting administrators assign user-friendly names rather than numbers to ports. There is often a measure of integrated security, with password-protected user accounts for managing access to the switch and, in some cases, individual ports and attached servers.

We tested six eight-port products designed to manage rack-mounted servers. Four are designed to route standard analogue KVM signals to a locally attached management console. The other two are KVM-over-IP products that digitise and encapsulate the signals for transmission across an IP network.



Clear displays on the front of the AdderView Matrix MP indicate the console being used and the ports being controlled

ADDER ADDERVIEW MATRIX MP

Adder's AdderView Matrix MP is capable of supporting two local consoles and eight remote hosts. Power comes from a small AC adapter and consoles are attached using USB keyboards and mice, with standard PS/2 connectors used for the servers. The server cables come in differing lengths and at the server end there is support for both USB and Sun keyboards and mice as well as standard PS/2 connections.

Brackets for rack mounting are included and the switch starts working as soon as it is powered up. Displays on the front indicate the console being used and the ports being controlled. Buttons alongside allow manual port selection, in addition to which you can use keyboard hot-keys and/or a menu-driven on-screen display (OSD).

FINDINGS

Avocent DSR Switch DSR1031

The Avocent DSR switch is expensive but also a very flexible and usable KVM-over-IP solution.

- ✓ Support for serial devices; remote console access via a browser or custom DSView software; comprehensive remote management and security features.
- ✗ DSRQ modules are expensive; DSView management tool adds significantly to overall cost.

Price £1,190 + VAT

Contact Avocent 01344 668049

→ www.avocent.com

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FINDINGS

AdderView Matrix MP AVM-208MP

Adder's AdderView Matrix MP offers good value, with support for two local consoles and an intuitive management interface.

- ✓ Support for two local consoles; long cable length; multi-platform cables; simple interface; optional KVM-over-IP add-on.
- ✗ Cables can be bulky.

Price £539 + VAT

Contact Adder 01954 780044

→ www.adder.com

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The OSD menus are very straightforward, with the computer to be controlled selected from a list. A degree of customisation is also possible; for example, we were able to give each port a user-friendly name, set up users and specify which ports they were allowed to manage. Passwords can be used to limit access and with two local consoles you get three access modes – exclusive, shared and view-only.

Custom KVM extenders can be used to support remote consoles, while Adder's AdderLink IP (£532 + VAT) device supports remote access over Ethernet.

AVOCENT DSR SWITCH

One of two KVM-over-IP switches in this group test, the DSR1031 from Avocent is a lot more flexible and expandable than standard analogue products, but is still quite easy to set up and use.

The DSR1031 KVM-over-IP switch can be accessed remotely using Avocent's DSView software, which costs about £500 per user





Belkin's OmniView comes with a separate expansion bus that enables multiple switches to be connected together

FINDINGS

Belkin OmniView Quad-Bus Series F1DE1D8C

With its built-in expansion facilities, Belkin's OmniView Quad-Bus Series is good value for growing firms.

- ✓ Separate expansion bus to daisy-chain switches; micro-cabling system; dual-console models available; optional IP Remote Console.
- ✗ Cable length limited to 1.8 metres.

Price £539.99 + VAT

Contact Belkin 01933 352000

→ www.belkin.com

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The switch itself can be rack mounted with a choice of PS/2 or USB connectors for the local console. A single Ethernet port connects to the network and alongside there is a pair of connectors to remotely manage power using Avocent's optional SPC distribution products.

Remote servers are linked using custom DSRIQ modules. Little bigger than a matchbox, these attach to keyboard, video and mouse ports with a UTP port to connect back to the switch using ordinary Ethernet patch leads (up to 10 metres). DSRIQ modules are available for PS/2, USB and Sun keyboards/mice and also serial devices.

They are a very neat and easy solution to reduce cabling bulk, but cost much more than any of the other products we tested.

The DSR1031 can be used like a conventional KVM, by sitting in front of the local console and selecting attached servers using hotkeys or an on-screen menu system called Oscar. For maximum flexibility, administrators can also link to the Avocent switch remotely.

Some switches do this via a browser but this had optional virtual media facilities and could only be managed

using Avocent's custom DSView software (costing about £500 + VAT per user). This allows multiple switches to be managed together with comprehensive security facilities available to restrict access.

Only one console, local or remote, can be active on this model but two- and four-user systems are available if preferred. As with other IP-based products, performance is just as sharp as with an analogue KVM.

BELKIN OMNIVIEW QUAD-BUS

The OmniView Quad-Bus Series sits at the high end of Belkin's KVM switch family. It is distinguished by its independent expansion bus, which enables multiple switches to be connected to manage up to 248 remote systems. Eight-port and 16-port models are available with support for one or two local consoles; our test switch, however, was an eight-port, single console model.

Installation was simple. USB and PS/2 connectors are provided for the local console, and there are just four connectors for the remote servers alongside plugs for the expansion bus. Only four are needed because each cable connects to two hosts, helping to reduce cable bulk. PS/2, USB and Sun cables are all available, though the maximum length of 1.8 metres is a little restrictive.

DIP switches must be set if daisy-chaining, but our standalone switch started working immediately we powered it up. Ports can then be selected from the buttons on the front or via hotkeys. There is also an on-screen menu system called IntelliView, with some nice customisation features.

User-friendly names can be assigned to the ports and access can be limited using the built-in password-protected user accounts. Only five of these are provided and their names

The Fujitsu Servis KVM's on-screen menus allow users to assign names to individual ports but there are no facilities to define users

cannot be altered, but this is not a major limitation.

A decent user manual is supplied on CD-ROM and we had no problems with the Belkin OmniView in our tests. We also tried the optional OmniView Remote IP Console (£560 + VAT), which simply replaces the local console to add KVM-over-IP remote console facilities.

FUJITSU SERVIS KVM

Fujitsu sent us an eight-port switch from its Servis KVM family, a range which also includes four-port and 16-port models.

Rack-mounting brackets are an optional extra on the eight-port Servis switch we tested. This sports both USB and PS/2 connectors for the local console connection, plus a set of custom ports to connect to the servers. The cables required are available in 1.8-metre, 3-metre and 5-metre lengths, with a choice of PS/2, USB or Sun connectors, as required. The integrated DIP switches are only used to enable or disable the default hotkey settings, and to set the country and power modes, meaning that in most cases they can be left alone.

When the servers are powered up, the Servis KVM switch will also power

FINDINGS

Fujitsu Servis KVM FS-1008MU

The Fujitsu Servis KVM is a perfectly adequate KVM system that is let down by a somewhat basic management interface.

- ✓ Simple to install and use; USB and PS/2 connectors for local console; optional Cat5 extender for remote console support.
- ✗ Basic on-screen display; no user accounts or password protection.

Price £470 + VAT

Contact Fujitsu 0208 573 4444

→ www.fel.fujitsu.com

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EDITOR'S CHOICE



The Raritan MasterConsole's Java-based remote management interface includes facilities to adjust switch settings

FINDINGS

Raritan MasterConsole IP MCIP18-PAC

The MasterConsole IP is more expensive than an analogue switch, but is worth the extra money if remote server management is a priority.

✓ KVM-over-IP remote access from a browser; support for multiple view-only consoles; no special management software required; comprehensive security.

✗ Expensive; cabling can be bulky.

Price £1,085 + VAT

Contact Raritan 020 7614 7700

→ www.raritan.com

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up automatically. Simple LED indicators at the front show which ports are active and which one is being managed. Buttons underneath can then be used to select a specific port. Hot-key selection and a menu-driven, on-screen display are also available.

All work well enough, and the Servis KVM operated faultlessly in our tests, providing quick switching between servers with varying video resolutions and colour depths. That said, the menus were fairly basic compared with most of the other products we looked at. Names can be assigned to individual ports, making it a lot easier to know what is attached, but there are no facilities to define users or set up access passwords.

Documentation is adequate and although Fujitsu does not offer IP support, an optional Cat5 extender is available to allow the master console to be located up to 300 metres from the main switch.

RARITAN MASTERCONSOLE IP

The MasterConsole IP is a KVM-over-IP switch, one of two IP-based products in this group test. Although relatively expensive, it is no harder to deploy

than an analogue switch, and provides the added benefit of remote, browser-based management.

The rack-mountable Raritan switch we tested shipped with a full set of eight PS/2 cables and USB and Sun interface adapters are available if needed. The local console is attached using PS/2 connectors and there is a serial port for local setup plus an Ethernet connector for LAN attachment.

There are no controls or indicators on the switch itself except for power and LAN activity lights. Port selection is done using an on-screen display with facilities to name ports and limit access using pre-defined user names and customisable passwords.

Once the switch is connected remotely via a browser and the very functional Java-based remote management interface, administrators can view and manage individual servers as if they were sitting in front of the local console itself – complete with on-screen menus. On the downside, there is just a single console to control the mouse and keyboard although up to 15 other remote connections can view what is happening.

Extensive independent security controls are another bonus along with facilities to manage the KVM switch settings and view event logs. The switch can also download the required Java plug-in needed for remote access, on demand.

We were forced to tinker with the settings to get decent performance on systems with large screen sizes and lots of colours, but that apart, we had few problems and found the MasterConsole IP to be a very flexible and workable system.

As well as this eight-port model, Rose offers four-port and 16-port UltraConsoles. All can be linked using plug-in expansion cards

ROSE ULTRACONSOLE

Rose Electronics provided an eight-port switch from its UltraConsole family, which includes four-port and 16-port versions. All are rack-mountable and can be linked together using optional plug-in expansion cards, enabling up to 1,000 devices to be managed in total.

The console is attached using PS/2 connectors via an adapter cable that, in turn, plugs into a custom connector at the rear of the switch. Similar ports are provided to attach the server cables, with PS/2, USB and Sun cables available in lengths of up to 30 metres. Cables to connect to serial devices are another option; the Rose switch emulates a standard VT1000/220 terminal to manage routers and other devices with serial management ports.

Indicators on the front panel light up when devices are attached and powered on, and there are buttons to select the port to be displayed and managed. Alternatively, ports can be selected using the usual hot-key combinations or via a menu-driven on-screen display.

The menu system is pretty straightforward and there are options to name ports and configure password-protect-

FINDINGS

Rose Electronics UltraConsole UC1-1X8U

The Rose Electronics UltraConsole offers good expansion options and serial device management tools, but is a little overpriced.

✓ Serial device management; custom expansion bus to manage up to 1,000 ports; well conceived management interface.

✗ Bulky cabling

Price £810 + VAT

Contact Rose Electronics 01264 850574

→ www.rose.com

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ed user accounts. Moreover, users can be grouped and assigned profiles to manage access rights – a particularly useful facility when several switches are linked together, enabling two or more consoles to be used at once.

An IP-enabled implementation, UltraConsole Remote, is also available, plus it is possible to add an IP remote console to the standard UltraConsole switch using the separate Rose UltraLink Lite device (£778 + VAT).

EDITOR'S CHOICE

All of the KVM switches in this group provide network managers with a way to control up to eight servers from a single console. If that is all that is required, then they might as well opt for the cheapest device – the Fujitsu Servis KVM. But there are

plenty of reasons why firms might prefer to spend a little more on one of the alternatives.

They might, for instance, want a more functional management interface, like those on the AdderView Matrix MP or the UltraConsole from Rose. Or expansion facilities, in which case the Rose switch would again be a good choice. Remote management might be important, so the Avocent DSR Switch and Raritan MasterConsole IP with their KVM-over-IP architectures could prove attractive.

To pick our recommended products, we split the switches into two groups, putting the analogue products in one and the much more expensive KVM-over-IP products in the other.

Of the analogue switches, we felt the AdderView Matrix MP offers the

best value, with support for dual consoles at a very competitive price, added benefits of affordable cables and a very usable management interface. AdderView Matrix MP is our Editor's Choice for analogue eight-port KVM switch, though closely followed by the Belkin OmniView Quad-Bus Series which, with its expansion facilities, is similarly good value for money.

The KVM-over-IP products from Avocent and Raritan are evenly balanced when it comes to setup and performance. The management facilities are similar too, although Avocent has the edge in terms of functionality with its DSView software and virtual media capabilities. However, these come at a price and the Raritan MasterConsole IP is the Editor's Choice for being a much more affordable solution. ■

Table of features

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Vendor	Adder	Avocent	Belkin	Fujitsu	Raritan	Rose Electronics
Product name	AdderView Matrix MP	DSR Switch	OmniView Quad-Bus Series	Servis KVM	MasterConsole IP	UltraConsole
Model tested	AVM-208MP	DSR1031	F1DE108C	FS-1008MU	MCIP18-PAC	UC1-1X8U
Price for switch (+ VAT)	£539	£1,190	£539.99	£469.80	£1,085	£810
Sales number	01954 780044	01344 668049	01933 352000	0208 573 4444	0207 614 7700	01264 850574
URL	www.adder.com	www.avocent.com	www.belkin.com	www.fel.fujitsu.com	www.raritan.co.uk	www.rose.com
Warranty (years)	2	2	5	3	1	2
Physical						
Dimensions – HxWxD (mm)	45x434x205	45x433x205	44x433x209	42x437x210	43x439x279	45x425x122
Rack-mountable	✓	✓	✓	✓	✓	✓
Brackets supplied	✓	✓	✓	✗	✓	Optional
Power supply	Adapter	Integrated	Integrated	Integrated	Integrated	Integrated
Cabling						
Bundled cables	✗	✗	✗	✗	✓ (8)	✗
Typical PS/2 cable price (+ VAT)	£18	£70	£16 (dual-port)	£17	£26	£23
Maximum cable length	25m	10m	1.8m	5m	9m	30m
USB support	✓	✓	✓	✓	✓	✓
Sun support	✓	✓	✓	✓	✓	✓
Serial device management	✗	✓	✗	✗	✗	✓
Remote power cycling	✗	✓ (add-on)	✗	✗	✗	✗
Other options	KVM extender for remote console access	n/a	KVM extender for remote console access	Cat5 extender for remote console access	n/a	n/a
Management console						
Console users	2	1	1*	1	1 + 15 view-only consoles	1*
Local console connection	USB	PS/2	PS/2	PS/2 or USB	PS/2	PS/2
Max screen resolution	1920x1440	1600x1200	2048x1536	1600x1200	1600x1200	1600x1280
Max screen refresh	85Hz	75Hz	85Hz	75Hz	75Hz	75Hz
DDC support	✓	✓	✓	✓	✓	✓
IP remote console	Optional - AdderLink IP unit required	Integrated	Optional - OmniView Remote IP Console required	✗	Integrated	Optional - UltraLink Lite required
Expansion						
Cascading	✓	✓	✗	✓	✓	✗
Cascade levels	4	2	n/a	2	2	n/a
Local expansion bus	✗	✗	✓	✗	✗	✓
Maximum ports	n/a	n/a	248	n/a	n/a	1,000
Operation						
On-switch port selection	✓	✗	✓	✓	✗	✓
Hot keys	✓	✓	✓	✓	✗	✓
On-screen display (OSD)	✓	✓	✓	✓	✓	✓
Port naming	✓	✓	✓	✓	✓	✓
User naming	✓	✓	✓	✗	✓	✓
Password protected access	✓	✓	✓	✗	✓	✓
Other features/options	n/a	Optional virtual media support, modem access	n/a	n/a	Modem access	n/a
*Dual console models also available						