

The multitasking matrix

Ronni Guggenheim at **IHS** explores the evolution of KVM switch technology, with recent advances delivering instant switching, near-zero latency and lossless compression for a range of modern industrial applications

The practicalities of installing large noisy computers in quiet environments in insecure spaces often makes it difficult to equip offices, control centres and other computer-hungry work areas, resulting in the inefficient use of space, poor computer security and adverse environmental conditions. In many cases such as airport control towers or process plant control rooms limited available space or tough and hostile environments make it almost impossible to collocate the computer near the operator.

An excellent solution that enables computers to be installed in remote, secure, environmentally-controlled rooms yet still provide instant and full access for operators is the Keyboard, Video and Mouse (KVM) device. The basic and now quite mature KVM extender provides direct connectivity between a computer and its console.

These are still installed in large numbers, on a one-to-one basis; the user is often unaware of where the computer they are using is situated. It is possible to locate the devices several hundred metres apart using standard Cat X cables and several kilometres, using single-mode fibre and still deliver pristine full frame rate HD video up to 2560 by 2048 together with multi-channel audio. Also to incorporate high speed USB interfaces for hard disk data transfer and to control specific devices such as touch screens.

As computers become more powerful their ability to multitask effectively and to provide greater processing capability has enabled the use of shared resources. This means that single computers can be applied to several different tasks at once.

A single computer running a core set of programs can be of use to several users at different times. This has led to the next step in KVM evolution, first introduced some time ago, to incorporate several channels of KVM extenders into a single unit together with a switch that enables direct and common interconnection paths to be set up dynamically between banks of computers and individual consoles.

These devices have further evolved to offer a range of features and benefits that dramatically enhance users' working



Figure 1:
The Draco tera provides instant switching

procedures. In essence a KVM switch provides dynamic, changeable access between any user and any computer under the control of a central system management interface.

There is no restriction on where the user is, so it is possible to create virtual work areas and even to create virtual computers. In the case of a post-production studio for example, identical studios have been built with similar consoles and dedicated machine control stations that can be connected to appropriate computers at the time of use, normally under pre-configured, stored conditions.

So a production team simply selects the configuration that will connect them to the computers that run the editing and graphic programs they will be using, together with their stored video assets as and when they need them, all with instant switching and in real-time.

They are no longer restricted to a dedicated and unique studio - which frees up the studios for use by others and provides greater flexibility in location.

Transparent USB interfaces mean that dedicated control consoles can still be used within the studio, just as a locally-connected device would.

A typical KVM switch of this type is the new Draco tera range from German-based manufacturer IHSE. The chassis of these devices is available in two formats: Draco tera compact and Draco tera enterprise, catering for different sizes and numbers of ports to

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Figure 2:
The KVM switching is ideal for broadcast applications



suit individual installations, from eight ports, through five stages to a massive 288 ports.

The system uses common plug-in input and output modules handling different formats, including analogue video and digital video via DVI in both single and dual link formats up to 2560 by 1600 pixels at 60Hz.

Bidirectional audio, serial data and USB, including HID and USB2.0, can be incorporated into the streams as necessary. Future formats, such as Displayport and Thunderbolt will be supported simply by the addition of a new version of input and output module, making the system totally future-proof.

The Draco tera provides instant switching, near-zero latency and lossless compression. This makes it ideal for video switching applications as well as data, a point that differentiates this type of KVM switch from the alternative KVM over IP type in which data is packetised and transmitted through standard network switches. This technology requires data compression and unfortunately introduces a level of delay and frame dropping.

To be fully usable and totally flexible a KVM switch must have a sophisticated control system allowing it to be managed and used to its utmost potential. This product range incorporates a choice of user interfaces that allow the switch to be controlled and monitored over an IP link with a Java GUI tool, using RS232 or by means of an in-built On-Screen Display interface.

It can be configured with centralised control and monitoring, as well as user-selected configuration so that users can select a stored configuration themselves and instantly respond to situations; critical in applications such as military and security command centres where delays of even a few seconds can cause a big difference.

KVM switches are an ideal and affordable means of interconnecting computers and consoles for a wide variety of applications. They are already used widely in many business sectors including broadcast and post-production, government, banking, air traffic control maritime and medical and are set to enter many others.

The convergence of digital video and data will undoubtedly create further opportunities for this category of enterprise level, high performance modular routing system in the future.

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