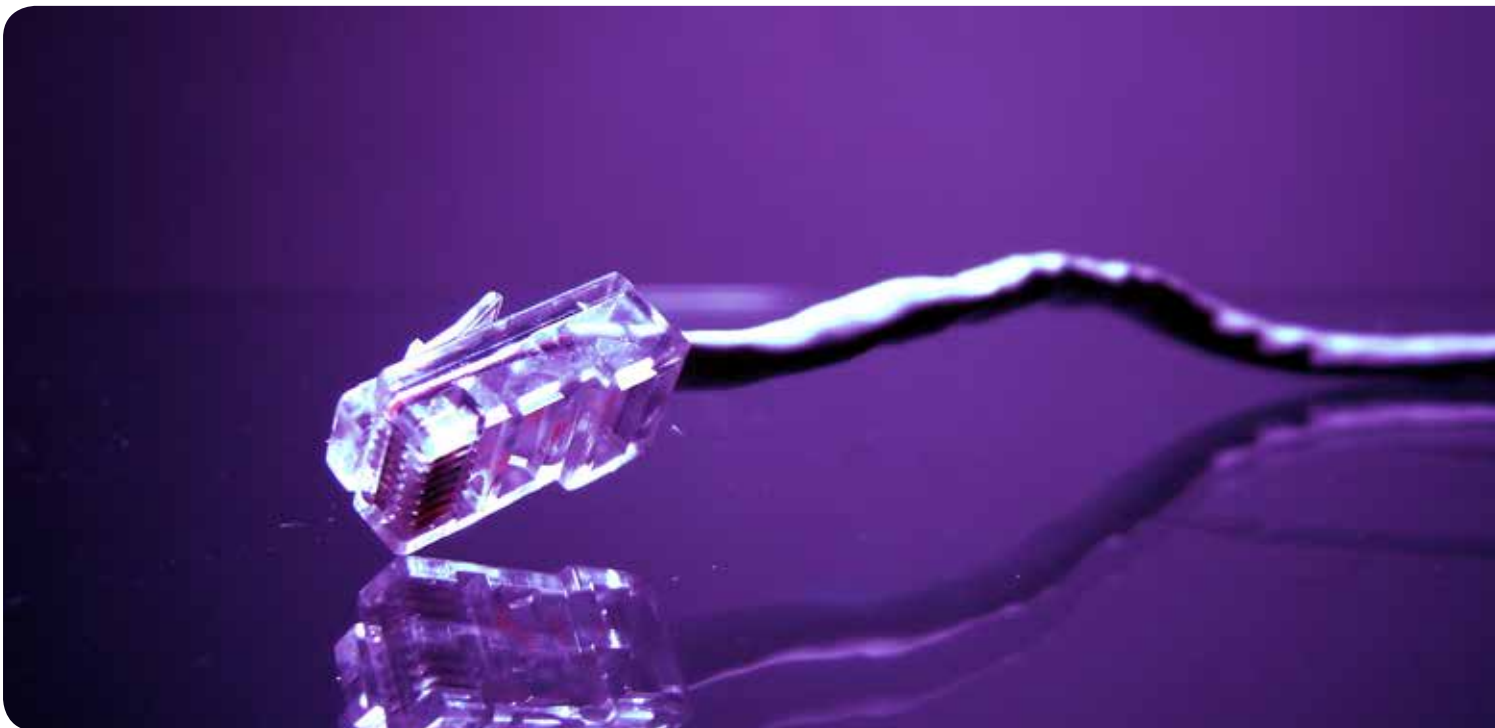# How To Guides
Choosing and Setting up a KVM Switch
in a Small Server Room

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AVOID FRUSTRATION:
Choosing the right switch
will save huge frustrations
in the future.

Introduction

If you've got a small server room with a handful to 20 servers, the chances are that you will need a KVM switch. KVM switches are popular devices and so there are a huge range of options available from very simple low cost personal switches to sophisticated devices with integrated KVM-over-IP and matrix switching capabilities. Although they are sometimes viewed as a kind of commodity item, there are very significant differences between different solutions and even more so than with many other bits of server room equipment so it's important to buy the right solution. In the simplest case, a KVM switch enables you to place a keyboard, monitor and mouse in your server room and switch this between servers when you want to configure them, install new software or just monitor what's going on. This is really convenient and, unlike software or remote access technologies, works across all hardware and software platforms with both new and old computers.

The KVM switch is often the technology that you will be relying on when urgent work needs to be done on your servers so it's usually not the wisest strategy to buy the cheapest option. The reason is that the KVM user experience can vary significantly between KVM devices. A good KVM switch will work faultlessly every time that you use it but this is not the case with every switch. If you ask around IT professionals the chances are that you will find someone who has had a poor experience with KVM switches. Typical such experiences may include switches that hang randomly or where the mouse goes crazy every so often necessitating a reboot of the KVM switch or, even worse, a reboot of the computers themselves. Such problems can be quite a big deal if the KVM switch is connected to critical servers. Other reports can include endlessly repeating key strokes, computers that fail to boot in the required video resolution, lazy mice and keys that get stuck down for no reason. Coping with such issues whilst you are trying to get your company's email back online can be frustrating to say the least. So making the right KVM choice is more important than you might initially think.

CATx 'access modules' allow you to connect any type of computer to the switch
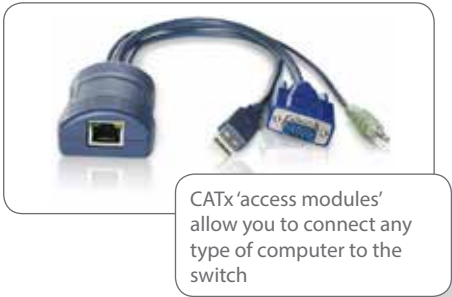
What to look for

So, what should you be looking for when you are considering buying a KVM switch for a small server room? Larger server room and enterprise KVM switches are almost always based around "CATx" technology nowadays. These switches use a small "dongle" that connects to the computer and cheap, thin, ubiquitous "CATx" (i.e. CAT5, CAT5e, CAT6 etc.) cable to connect the dongle to the KVM switch. This approach is favored because it enables several advantages at the same time. The dongles enable the KVM switch to be connected to any computer style by simply choosing the right dongle (PS/2, USB, Sun etc). Internal "keep alive" circuitry within the dongles means that the KVM switch can be disconnected or re-powered without affecting the computers. The keep alive circuitry constantly emulates the presence of a keyboard and mouse to the computer and this helps to improve the reliability of the KVM system. The CATx style cables mean that the KVM switch itself can be physically small rather than being half the size of a bus - always important in small server rooms that almost inevitably become space constrained. And last, but by no means least, the CATx cables are much thinner and easier to manage than more traditional bulky KVM cables, which can be cumbersome to route around and under racks and equipment shelves. If you pile up the KVM cables that you may need to connect a small server room with, say, 10 computers, the space that these traditional cables occupy can be quite astonishing. With more computers the problem just gets worse. In comparison, CATx cables take up relatively little space and have the advantage that they can be disconnected at both ends and neatly fed through small holes and routed easily around corners. It's hardly surprising therefore that CATx KVM switches have become so popular in larger deployments. However, these advantages are also now being appreciated by small server room purchasers too and CATx style switches are fast becoming the preferred solution for most server rooms with more than say four servers. Finally, it's always worth getting a KVM switch with an OSD (On-Screen-Display) for use in a server room because you won't always remember what computer you've connected to what port.

Some years ago, many server room KVM switches were still based around PS/2 connections and many traditional-style KVM switches on the market today still support just this style of connection on the KVM console side. However, many modern keyboards are USB nowadays and PS/2 keyboards are becoming less easy to find. If you're planning to use a USB keyboard, it's worth checking that your new KVM switch supports USB on the KVM console end. Most CATx style KVM switches support a choice of connection styles for the computer connections and so you don't need to worry here. Another potential banana skin comes in the area of DDC support which can sometimes cause issues, particularly if you are running newer computers or want to use wide screen monitors. To avoid issues in

If you have DDC problems with existing switches, the DDC Ghost is a simple remedy

Example rear panel of a Matrix switch

this area the safest option is to choose a KVM switch that clones its DDC EDID data from the monitor. One aspect that you won't often see on a KVM switch vendor's spec sheets is the switch's latency characteristic but this is nevertheless important (latency is the time that the switch takes to process the keyboard and mouse data). This can vary significantly between switches and the user can see a high latency switch because the mouse will have a strangely spongy feel to its movement which makes the switch awkward to use. And don't forget that the number of servers in your server room will almost inevitably grow significantly over time so it's important to buy a KVM switch solution that has a designed-in expansion or cascade facility - don't think that you can just connect one to another - this may be electrically possible but if it's not a fully designed-in cascade strategy it will leave you with a whole load of operational confusion.
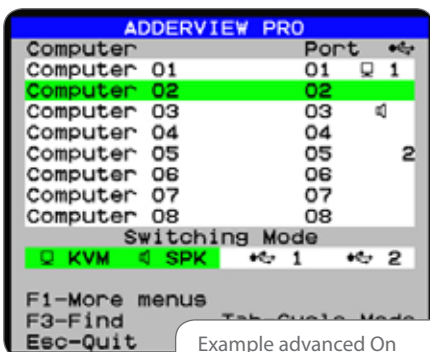
Once you've sorted out the basic KVM switch requirements, you will need to decide the class of KVM switch that you need. Matrix switches enable two or more users to work on different computers at the same time and tend to be specified when the numbers of computers becomes larger. For many small server room requirements a single channel KVM switch may well be sufficient, particularly when you bear in mind that many computers have built in remote access capabilities too and that these are typically used alongside a KVM switching function. But perhaps the most important decision when choosing a KVM switch for a small server room is whether or not you want built-in remote access capabilities.

There are two remote access technologies that are typically employed on KVM switches. CATx extension technology enables you to place a remote access unit up to 1000 feet away from the KVM switch and connect it via CATx trunk cabling. This technology is relatively cheap and gives a great user experience. The alternative is a built in KVM-over-IP engine that enables you to connect to the KVM switch over your IP network from anywhere in the world. This function is more expensive but tends to be really popular with users because it provides a single point of access to all the computers, is simple to administer and enables computers to be maintained from anywhere within the organization or around the world. Many KVM switches with KVM-over-IP functions will also enable you to link up RS232 controlled power switches. Coupling these two devices together makes for a very powerful solution because you can fully reboot computers remotely. Such solutions are ideal for use in branch offices or for companies that outsource their computer maintenance.

If you are considering a switch with a built in KVM-over-IP function, there are several aspects that are worth considering and again, KVM switches vary

Example KVM over IP installation using the CATxIP1000 Switch.
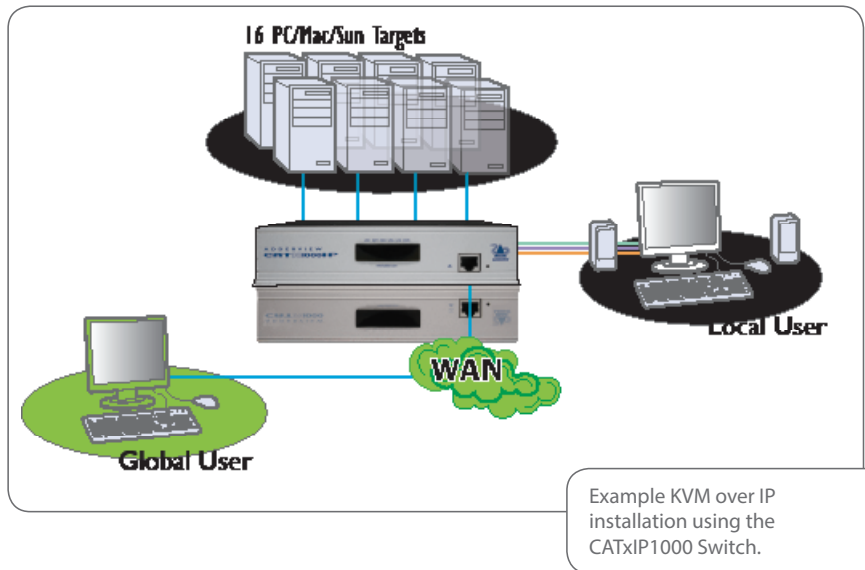
considerably in the functions and features that are offered. In order to use KVM-over-IP switches most effectively, it is important to synchronize the cursor of your viewing computer to the cursor on the target computer. A good KVM-over-IP switch will enable you to automatically calibrate and synchronize the mouse for most systems and will usually offer other strategies, such as a single mouse mode too. The ability to synchronize Windows ® accelerated mice with enhanced pointer precision is important here because it is annoying for the user to have to switch off acceleration for every user just to accommodate the limitations of the KVM switch. A good quality KVM-over-IP engine should enable synchronization to all Windows ® mice. The better grade KVM-over-IP switches will generally update the video faster and show very little screen junk (artefacts) on the video picture. A good trick for assessing video performance is to move the mouse around in a circle at about 1 rev per second looking for the phase lag between the two mice. Good performance would give a phase lag of about 10 degrees, bad performance would be around 180 degrees or more.

If you have several small server rooms in branch offices or you have a large number of potential users then it's worthwhile considering management software for your KVM-over-IP switches. Such software will integrate with Active Directory and provide a convenient way of accessing and managing access to your KVM infrastructure but varies significantly in cost and complexity between vendors. Adder provides a licence for its ADDER.NET management software with all its KVM-over-IP switches and so there is no extra cost involved. Management software is worth considering if you have more than about 20 servers, more than a couple of server rooms, more than 10 users or you wish to simplify user management and maintenance.

Example advanced On Screen Display (OSD)

KVM equipment is simple to install and maintain and provides an access method

that you can rely upon when things go wrong. Software and service processor based remote access systems are great for providing flexible access to computers but the bulk of users will still choose to use a KVM switch alongside such technologies because the KVM technology gracefully copes with the full mix of old and new hardware and software that you tend to find in small server rooms without requiring significant maintenance or administration work. KVM switches offer a single point of access to all the servers with an easy to use On-Screen-Display or KVM-over-IP menu to select between computers. You don't need to install, administer and maintain anything on the target servers. Furthermore, KVM-over-IP switches coupled with power switches give full remote control of computers including the ability to fix driver issues that would otherwise prevent the computer from booting.

It's pretty much a plug and play experience with a standard KVM switch although it's always worth configuring the OSD to show the names of your computers. Setting up a KVM-over-IP engine is also pretty straightforward and on a good KVM switch will be driven by the OSD. It's a relatively simple task of selecting a password, IP address and subnet mask and connecting the switch to your network. If a CATx style switch has been selected then the installation should be straightforward and neat. Many professional grade KVM switches will be both desk and rack mountable and so it's not normally a problem to mount the switches in the most convenient place. Administration is usually simple as most switches will enable several user profiles to be setup that give different computer access rights. The real beauty of KVM switches is that they require very little training and are generally deadly simple to use which explains their enduring popularity.

About Adder

Adder is a leading developer and manufacturer of KVM switches, video and audio extenders, KVM-over-IP devices, and remote management solutions. By empowering IT professionals to securely manage technology resources anywhere in the world, Adder solutions help customers make the best use of those resources while driving down total cost of ownership. In addition, through its advanced video and audio extension solutions, Adder is enabling the next generation of digital signage.

More information about Adder and its solutions is available at www.adder.com.

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