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Enterprise KVM Solutions by ATEN

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# Application Guide

Matrix KVM Solution for Network Operating  
Center (NOC)



## 📌 *Centralized Control and Management*

With the increasing number of servers housed in data centers, along with the operators needed to work on them, an increasing number of companies are building control rooms – also known as Network Operating Centers (or NOCs) as an adjunct to the data center for controlling, monitoring, and managing their entire installation infrastructure, and enhancing and optimizing management through the centralized control that results.

This makes the ability to extend the distance between the servers and the consoles that control them – allowing all the servers to be reached from a centralized control location – an absolute necessity. Since the data center can cover a large area, the distance from the servers to the control room can become very large. When adopting a new solution that consolidates all the consoles in a central control room, the distance factor becomes a critical concern. In addition, another two of the most important concerns data center or server room administrators face are security and stability issues. Yet another critical factor is high quality data communications between the consoles and the servers. For example, high quality video throughput is essential to allow multiple operators to implement essential tasks in real time.

## 📌 *Mission*

ATEN's mission is to offer a solution that allows all the servers in a data center to be managed from a dedicated control room. The solution must provide secure access and high quality data throughput between the consoles and the servers over extended distances. Reducing signal transmission delay for essential real-time operation as well as maintaining high video quality is a critical concern in developing this solution. Providing the capability to throw multiple computer images up to a video wall as well as onto individual user's desktop console is another absolute requirement. Moreover, in such a large installation, since access and control conflicts may arise among several operators working on the system at the same time, the solution must provide a means for the operators to exclusively control or share access.

Finally, the solution must provide a way of integrating a large number of servers and consoles having different interfaces and running on different platforms in order to simplify operations and reduce overall installation costs through a comprehensive management capability.

## ↓ Solution

### **Multiple Control, Ultimate Security** **Matrix KVM Switch**

*KM0532/KM0932 5/9-Console 32-Port Matrix KVM Switch*

*KM0032 32-Port Matrix Expansion KVM Switch*



ATEN Matrix KVM Switches are designed for modern data centers that require reliable, high security access and control of multiple servers. With non-blocked access and flexible expansion support, Matrix KVM switches offer high quality video sessions for secure, real-time control of your entire data center devices.

With automatic skew compensation and Auto Signal Compensation (ASC) techniques, Matrix KVM switches provide greatly enhanced video quality via Cat 5e/6 cabling – 1280x1024 @60Hz for up to 300 meters. The industry's first full screen Graphical User Interface offers a tree view list of installed devices – providing smooth navigation and convenient access and control – not only saving on training time and costs; but increasing user efficiency, as well.

The KM0932/KM0532 is the first Matrix KVM Switch to offer both audio and virtual media features. Being audio enabled, the sound output and beeps from the servers allow administrators to identify and troubleshoot system problems easily. The sound capability is also ideal for presentation facilities, or studio applications. The Virtual Media function allows USB storage devices to be shared among all the servers – allowing operators to perform file transfers or install applications and OS patches from a single console – reducing down-time and saving maintenance costs.

Servers can be power controlled remotely when the Matrix KVM Switch is used in conjunction with ALTUSEN's PN0108 Power Over the NET™ power management device. Its Power Association function enables the switch's KVM ports to be associated with a PN0108's power outlets – allowing power management of the server attached to the port from the switch's interface. If a server has a dual power supply, secondary power association support lets you associate a second outlet port and synchronize the operation for both power supplies.

The Matrix KVM switch is designed with dual power supplies, to minimize downtime and offer 24/7 reliability to ensure the highest level of availability for your server room or data center. With high availability, high reliability, high integration, and high security, an ATEN Matrix KVM Switch is the best solution for large server rooms and data centers.

## >> Console Modules & KVM Adapter Cables

The Matrix KVM Switch's modular design – using console modules to link the console devices (keyboards, monitors, and mice) to the switch, and KVM Adapter Cables to link the switch to the servers – allows for a high degree of platform and interface integration. You can have PS/2 and USB interfaces; Win, Linux, Mac, and Sun platforms; all working together smoothly on the same installation. The use of RJ-45 connectors and Cat 5e/6 cabling eliminates bulky traditional cables, and makes for more reliable throughput and a neat, efficient, uncluttered work environment.

### Console Modules



#### KA7230

##### PS/2-USB Console Module

- PS/2 and USB interface
- RS-232 Port
- Dual RJ-45 Ports
- External PC Port



#### KA7240

##### Virtual Media PS/2-USB Console Module

- PS/2 and USB interface
- RS-232 Port
- Dual RJ-45 Ports
- External PC Port
- Virtual Media Port
- Audio Ports
- Automatic Skew Compensation



### KVM Adapter Cables



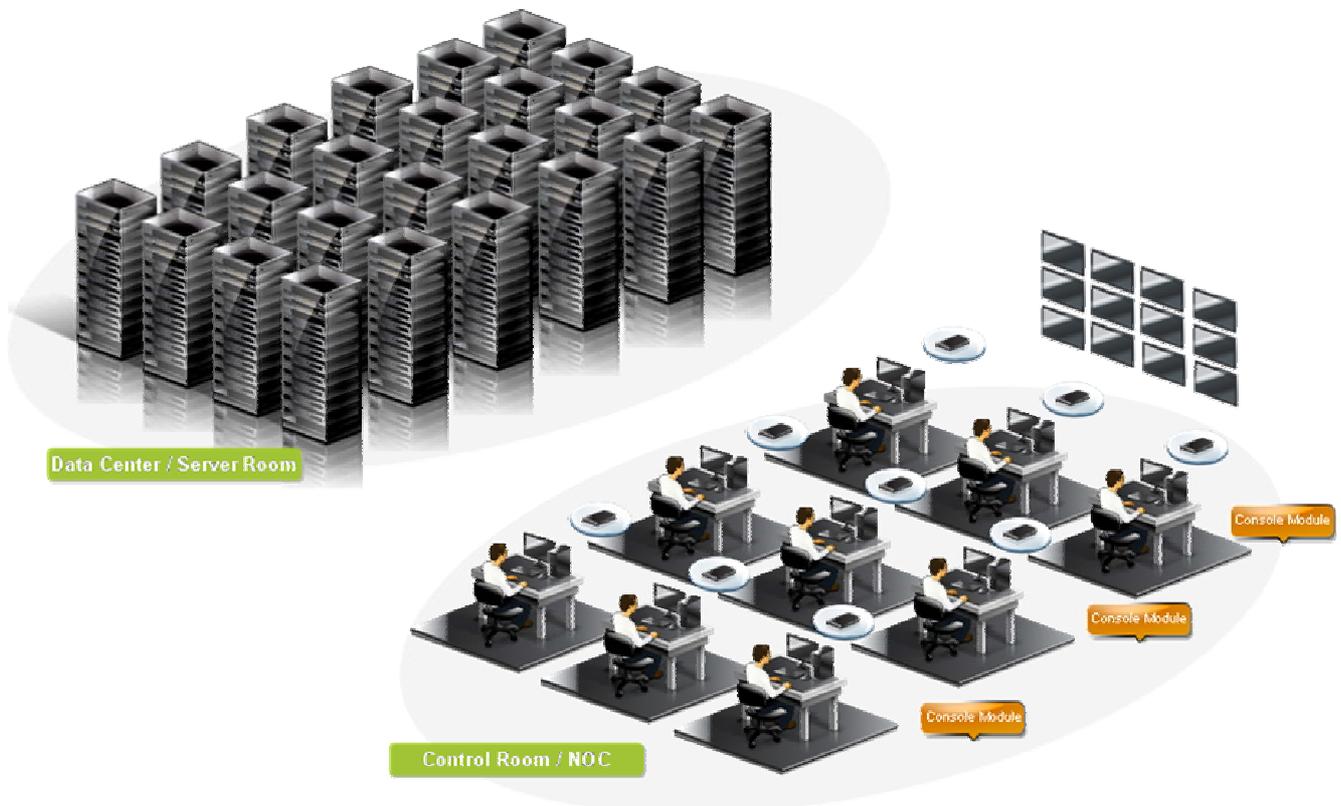
Function	Model Number
For PS/2 computers	KA7120, KA9120
For Sun legacy computers	KA7130, KA9130
For serial devices	KA7140, KA9140
For USB computers (including Sun and Mac)	KA7170, KA9170
For USB computers – Virtual Media and Audio support	KA7176

## Application

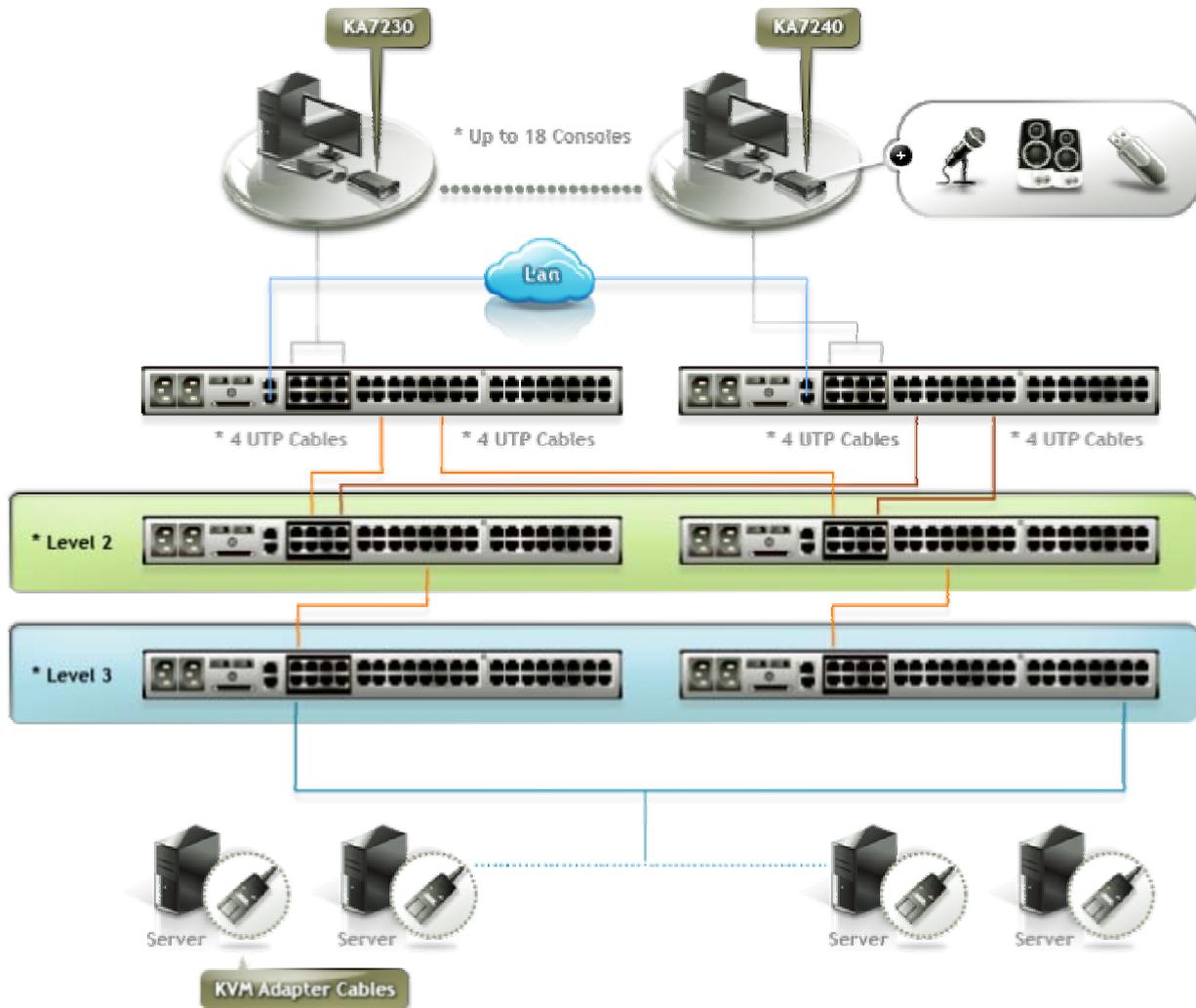
### >> Extending the distance to the control room consoles

In a Dual Root configuration, up to 18 consoles can be deployed in a secure control room at an extended distance of up to 300m from the servers they access. The installation utilizes Cat 5e/6 cabling to support data communications over such a long distance – allowing secure access with high quality video sessions. Since the Matrix KVM Switch uses Console Modules and KVM Adapter Cables, it provides a high degree of platform and interface integration. Win, Linux, Mac, and Sun platforms, using PS/2 and USB interfaces, can all be integrated and work together smoothly on the same installation.

An extra KVM port on the console module allows an administrator to connect his own computer – independent of the server room deployment – to the console. In this way, he can work on his own computer at the same time that he is managing the server room deployment. With the Matrix KVM Switch's additional features, such as virtual media, audio, and a built-in RS-232 port, the Matrix KVM Solution allows operators working in the centralized control room to access and manage the distant servers as easily as if they were actually in front of them.



### <<Dual Root Configuration>>



### ➤ **Benefits**

#### ◆ **Secure Distance Extension**

Use of Cat 5e/6 cable to connect the Console Modules to the Matrix KVM Switch, and the switch to the KVM Adapter Cables, simplifies the cabling layout and is far more cost-efficient than using the bulky, expensive, cables typically used with KVM switches. The greatest benefit comes from being able to extend the distance between the consoles and the servers to up to 300m – permitting control of the server room or data center from a secure, centralized location.

#### ◆ **Console Expansion**

As a company grows, its data center requirements also grow. The Matrix KVM Switch's flexible expansion capabilities allow you add consoles and server ports as you need them. For example, the switch's Dual Root function allows you to link a second KM0932 to the first one – thereby achieving an 18-console 64-port configuration. Additional switches can also be cascaded or daisy chained from a root Matrix KVM Switch to expand the number of servers and consoles on the installation, so that your server room

deployment costs can keep exact pace with your company growth.

#### ◆ RS-232 Port Access Control

Each of the Console Modules has a built-in RS-232 port. Administrators can establish a serial terminal login to the Console Module in order to monitor the usage of all the consoles and all the ports. This function is ideal for projecting all of the console displays onto a wall in the control room for convenient monitoring of all operations, with the entire installation capable of being viewed on a port-by-port basis.

#### ◆ Graphical User Interface

The Matrix KVM Switch offers an intuitive, user friendly Graphical UI for both Console and Browser-based sessions. The composite integrated tree view of all connected devices offers convenient navigation, access, and control to the operators working in the control room.

#### ◆ Versatile Port Operation Modes

Since in a busy, centralized data center control room, multiple operators are accessing the servers at the same time, the Matrix KVM Solution supports versatile port operation modes: When a port is set to Exclusive Mode, the operator has exclusive viewing rights and operational control over the device connected to that port for as long as he continues to access it. Setting a port to Occupy Mode allows the first operator to access a port to view and control that port while other operators can only view it. If a port is set to Share Mode, multiple operators can view and control the port at the same time on a cooperative basis. Flexible Port Operation Modes enable users of the Matrix KVM Solution to collaborate with each other for the most efficient management solutions possible.

#### ◆ Superior Video Quality

Matrix KVM Switches provide high video quality – up to 1280x1024@60Hz. The video signals are transmitted via Cat 5e/6 cable to permit real-time throughput and true video quality. Auto Signal Compensation (ASC), assures optimum video resolution over extended distances, while an automatic skew compensation

function corrects color phase and timing errors that occur over long distance transmissions, as well. The Matrix KVM Solution delivers real-time, high quality, video sessions for data center operators who spend long hours working on the servers while performing their critical operations.

#### ◆ Power Association

Used in conjunction with ALTUSEN's PNO108 Power Over the NET™ power management device, a Matrix KVM Switch port can be associated with a power outlet – allowing power operation management of the server attached to the port from the switch's interface. This feature also supports associating a second outlet port (provided the server has a dual power supply), and lets you synchronize the operation for both power supplies. Power Association allows operators to manage a server's power operation with a single interface from inside the control room to reduce maintenance time and to increase management efficiency.

#### ◆ Virtual Media

Virtual Media support lets you map DVD/CD-ROMs and other storage media to servers that are connected to the switch with virtual media-capable KVM adapter cables. Virtual Media allows operators to simultaneously conduct file transfers, install applications and OS patches, and perform diagnostics on multiple selected servers from a single console in the control room as easily as if they were directly in front of the servers - reducing data center down-time and saving maintenance costs.

#### ◆ Audio Enabled

The Matrix KVM Switch supports audio functions for multimedia-capable devices connected with audio-capable KVM Adapter cables. Sound output and beeps from the servers can be heard on the console speakers – allowing an administrator working in the control room to identify and troubleshoot system problems at an early stage, minimizing repair costs.



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