



Market Central, Inc Application Note

SwitchMaster® R5000 Series Switching System USAF Air Gap Network Access Control Application

SwitchMaster® R5000 switching systems were recently deployed by the United States Air Force (USAF) as a means to control the access of network devices (Users and Servers) to the network infrastructure (Core and Edge Switches). The USAF wanted to prevent security breaches in a sensitive network and needed to have the ability to physically remove via an air gap clusters of users or servers completely from their network upon detection of any threats. They chose an R5000 Gang Switching System for several reasons!

1. **Physical Size-** The R5000 chassis requires only 2U of rack space. The data center where these units are housed is very dense with typically only a few spaces available in each secure data cabinet or rack. The space savings coupled with the port density served as key motivating factors for the decision to move forward.
2. **Scalability-** Scalable to 255 devices across a system, SwitchMaster® provides a manageable growth path as the device clusters increased.
3. **Future-Proof Investment-** SwitchMaster® is the only COTS solution that has been tested to meet the requirements of a TIA Compliant Category-6 Cabling Infrastructure which enables the solution to support 10/100/1,000/ and 10,000 Mbps Ethernet. Furthermore, fiber optic switching modules are also available and can be installed into the solution at any time.
4. **Physical Layer-** SwitchMaster® is a layer-1 switching solution that uses proprietary relay or precision movement micro-mirror technology. Since our technology operates at the foundation in the OSI model, our switches appear to the connected devices they are attached to as nothing more than a cable connection. In a perfect world the ideal way of removing a device from a network is to unplug the network connection. SwitchMaster® solutions does just that when applied to network access control.
5. **Reliability-** A primary feature designed into our proprietary relay and mirror technology is a unique latching circuit. When a port has been selected, that connection is maintained until the port or system has selected another connection state. This holds true even when power has been removed from the system, and was another key factor for the application design. The USAF did not want to risk unauthorized changes to the connected port states.
6. **Flexible System Control-** The SwitchMaster® system can be controlled locally or remotely. Local control is achieved via front panel toggle switches. Our standard solution also enabled the network administrator to control the connections via a serial console port and/or an Ethernet IP-Connection.

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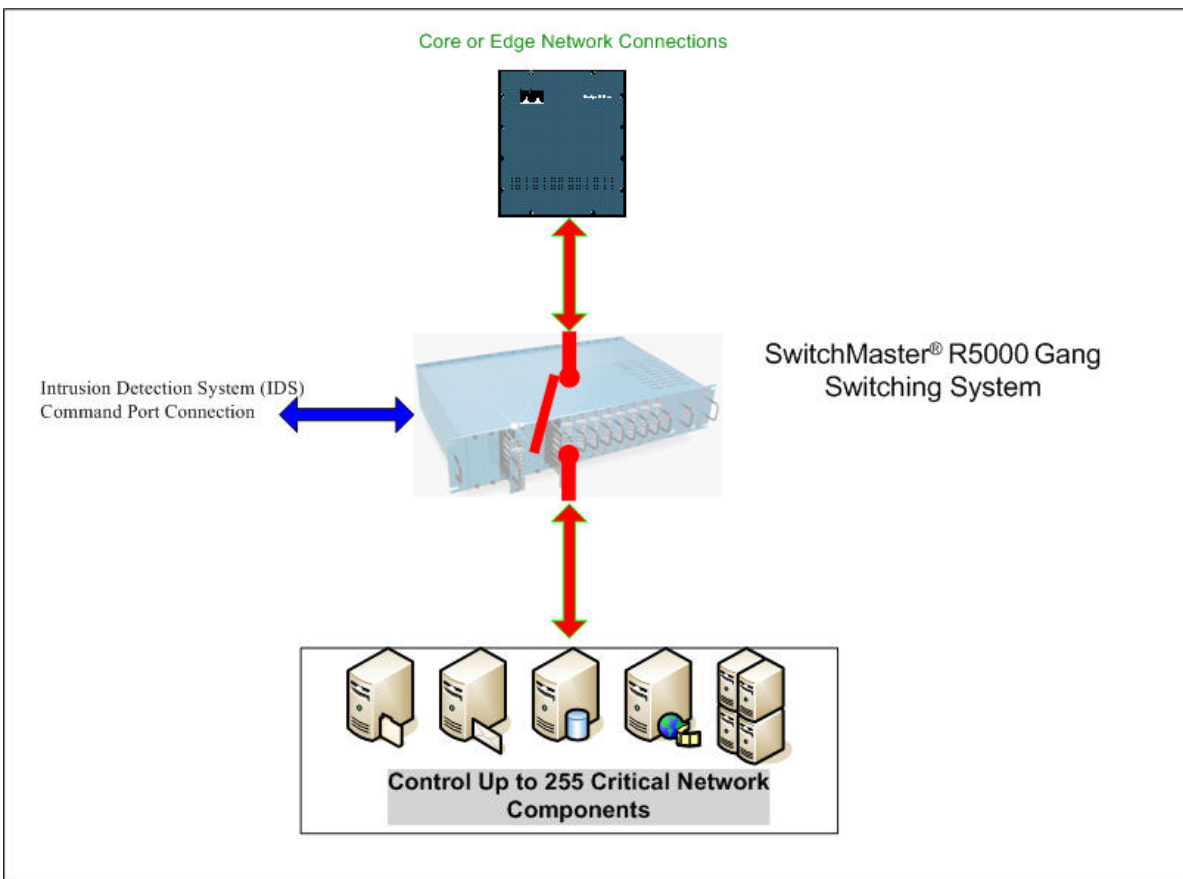




Implementing this Network Access Control solution using the SwitchMaster® R5000 Series was quite simple. The SwitchMaster® R5000 Chassis was fully loaded with Category-6 A/B Switch Modules. The common or “C”-Port on each switch module was connected to a workstation or server. The A-ports were attached to the network switch, and the B-ports were left unconnected.

During normal operation, the common ports are connected to the network devices through port-A on the R5000 switching system. If the network intrusion detection system determines that the network is under attack, the network administrator simply diverts all of the common ports to the unused B-Ports, thus isolating the data contained on the servers or workstations from hostile intrusions. This switching action can be performed via the front panel switches or remotely with a serial console or IP-Ethernet connection. After the threat is eliminated, the network administrator simply re-establishes the device connection to the network.

Contact our sales engineering team to learn more about flexible network access control solutions using our SwitchMaster® ganged switching systems.



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