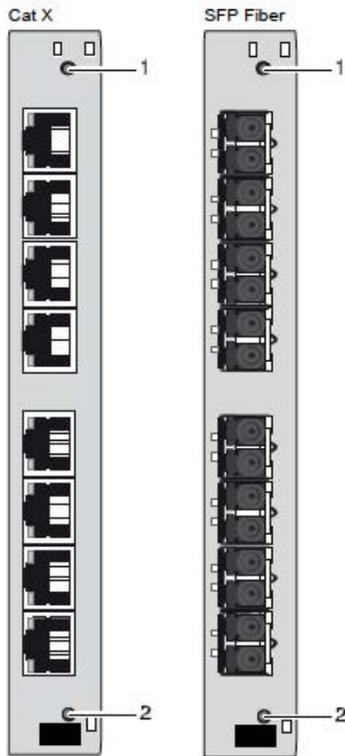


## Orion Matrix Grid (Addendum to the Orion XTender User Manual)

The **Orion Matrix Grid (MGrid)** is a method of connecting together up to 16 Orion Digital Matrix Switches within a local network to create a virtual super-matrix switching system where operators can access all connected computers within the MGrid from any connected console, in real-time. Individual users will notice only a single matrix switch and are unaware of the substructure of the virtual super-matrix. The dynamic architecture of the MGrid makes it possible to access all CPU sources bi-directionally from each workstation, even if they are physically separated from each other.

The MGrid can be easily established using existing CATx or fiber I/O cards on each switch, or by using the fiber I/O matrix grid card for multiple simultaneous grid interconnect sessions. Matrix grid software is pre-installed on each Orion Matrix Switch, and can be accessed via OSD or the Java administrative tool.



CATx I/O card      Fiber I/O card  
1 & 2 = LED status

**On the Orion-X Matrix Switch**, the CATx and fiber I/O cards are individual 8-port cards. Each port supports either a KVM transmitter or receiver connection or an inter-switch grid line. The CATx interface is RJ45 and the fiber interface is a duplex single-mode fiber with LC connectors. Additional I/O cards can be added to each switch to support the total number of I/O lines required.



Orion-X switch with CATx and fiber I/O cards

**The Fiber I/O Matrix Grid Card (FMGrid)** is a single slot card that fits a single 8-port slot on the Orion-X Switch. The FMGrid card can be used to establish up to eight simultaneous KVM sessions on a single LC duplex fiber cable. The advantages of the FMGrid card over the standard fiber I/O card are;



Orion fiber matrix grid card

- *Reduction of the required number of cables and infrastructure*
- *Fewer cables compared to grid lines on a standard I/O board*
- *Plug-and-play for easy installation*
- *Flexibility for routing 4+4 ports to different MGrid cards in a ring topology*

The FMGrid card is able to support the same number of active sessions as a fully populated standard 8-port fiber I/O card, without any reduction in performance. With two Orion switches connected together in direct topology mode, the number of grid line connections can be 1 or 2, depending on the number of simultaneous KVM sessions required between the 2 switches. With multiple Orion switches connected in ring mode, any user is able to access any CPU device on any connected switch subject to correct configuration and access permission levels. When configured in ring mode, there are 4 active grid lines on each I/O port, with the management of the grid lines handled by the system software (see diagrams on next page). The fiber cable distance can be up to 10km (SFP dependent).

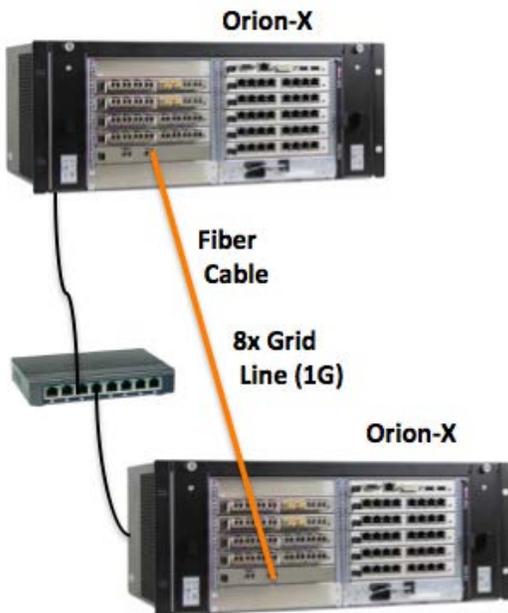
**The Orion-XC Matrix Switch** port configurations are fixed in either a 1U or 2U chassis. Orion-XC switches have either CATx or fiber interface, or with some models, a mix of CATx and fiber lines is available.



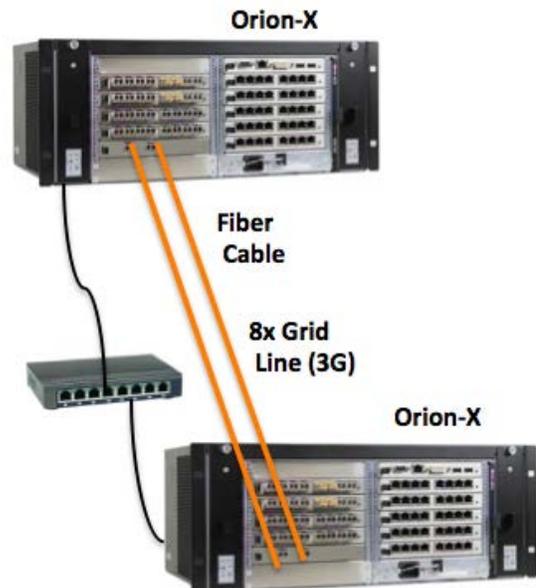
Orion-XC 32-port CATx switch

In an MGrid configuration, the KVM (keyboard, video and mouse) data is transmitted across the CATx or fiber grid lines between connected users and CPU's.

The system management and system data (i.e., number of connected switches, settings of each switch, CPU details, port numbers, permissions etc) is communicated via the IP port on each switch. A PC running java tools software can be connected to the Orion switch to provide Java based management of the entire Orion switching system.

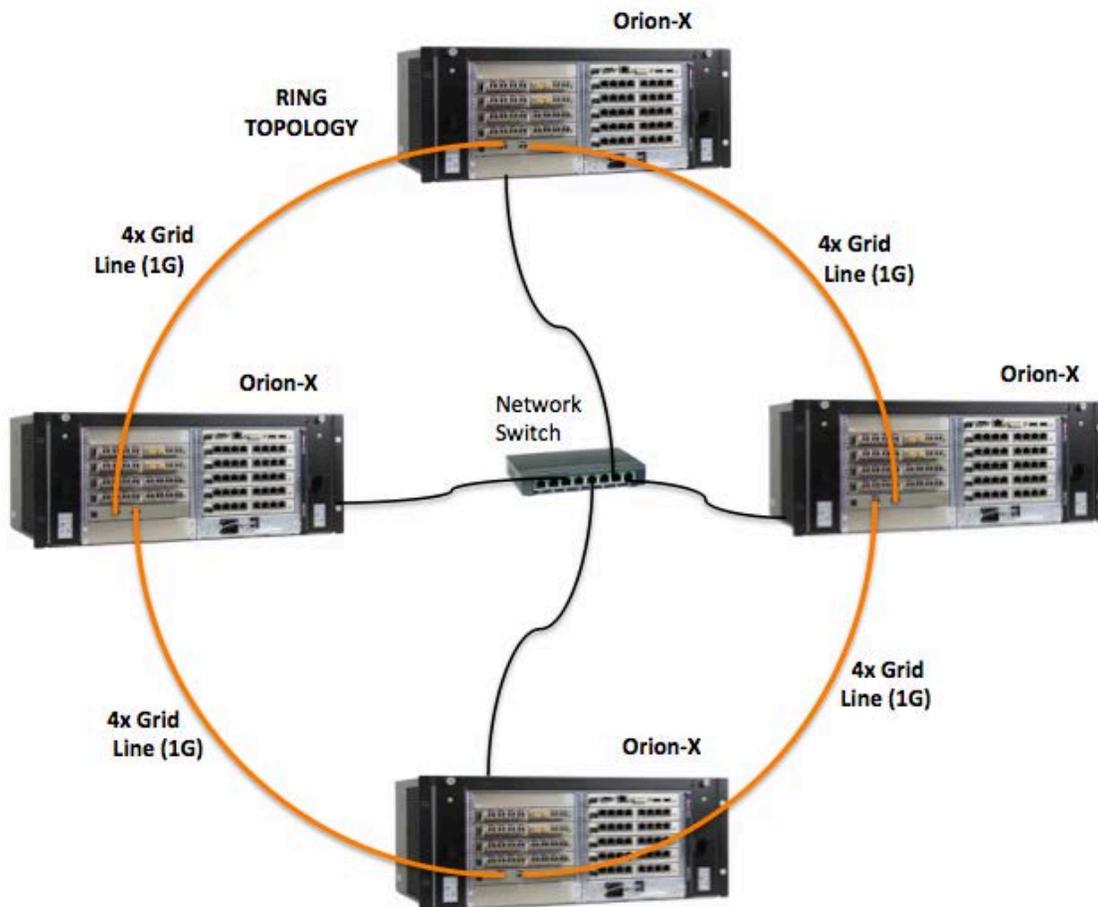


Matrix grid direct topology between two Orion switches Supports 8 simultaneous KVM sessions on the fiber link

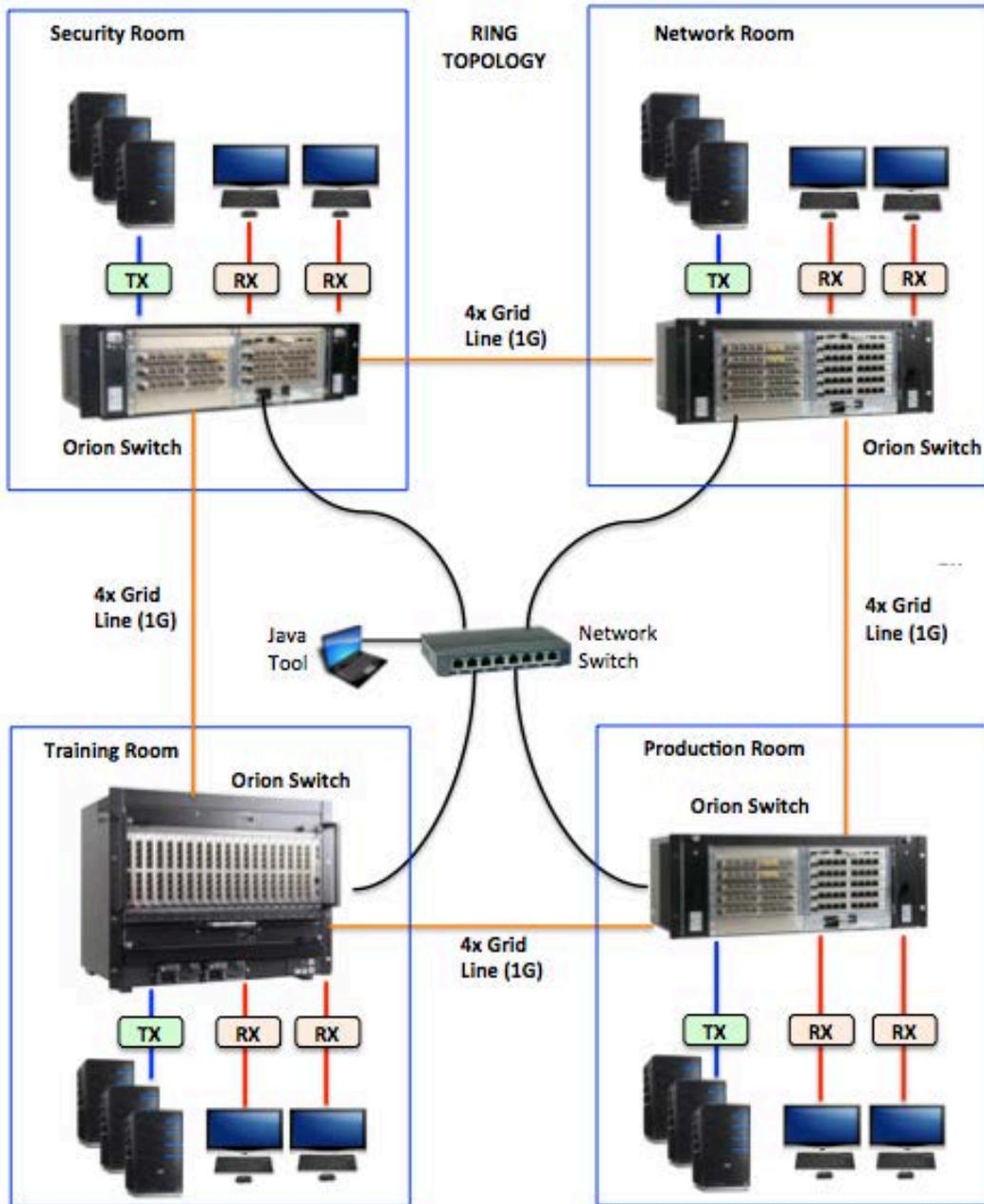


Matrix grid direct topology between two Orion switches Supports 16 simultaneous KVM sessions on the fiber links

Depending on the configuration requirement and the physical distribution of Orion KVM switches, the **MGrid** can be configured as a direct topology, a ring topology or a hub and spoke topology.



Matrix grid ring topology. Supports 4 simultaneous KVM sessions on each fiber optic grid line



Matrix Grid configuration layout

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