Technology briefing

Matrix Grid

Features:

- **Dynamically couples KVM switches together to form a virtual super-matrix**

- **Flat network structure allows the highest level of switching flexibility**

- **Free choice of access from any position**

- **Seamless, transparent operation**

- **Individual KVM switches may be several kilometres apart using fibre interconnection**

Introduction

KVM enterprise switches are designed to provide transparent connection between computers and user workstations and are available as single devices up to 288 ports. This is adequate for most installations in commercial and industrial applications. However in some cases more ports may be required. In these instances it is necessary to combine multiple switches to perform as a single unit.

There are also situations in which it may be advantageous to link several individual switches into one virtual switch, for example where single switches are each serving different a local building but some users require access to computers beyond their own location. Other applications, such as redundancy and off-site back-up, may also require network designs that can be facilitated by Matrix Grid.

Matrix Grid is a new interconnection topography and software application that transparently connects multiple matrices together to form a single virtual matrix. It automatically and seamlessly manages the interconnection and prioritisation of users between their own workstation and all computers on the virtual super-matrix; wherever they are physically located on the network of switches.

Individual users experience a single matrix switch and are unaware of the substructure of the virtual super-matrix. The dynamic architecture of Matrix Grid makes it possible to access all sources from each workstation, even if they are separated away from each other by several kilometres.
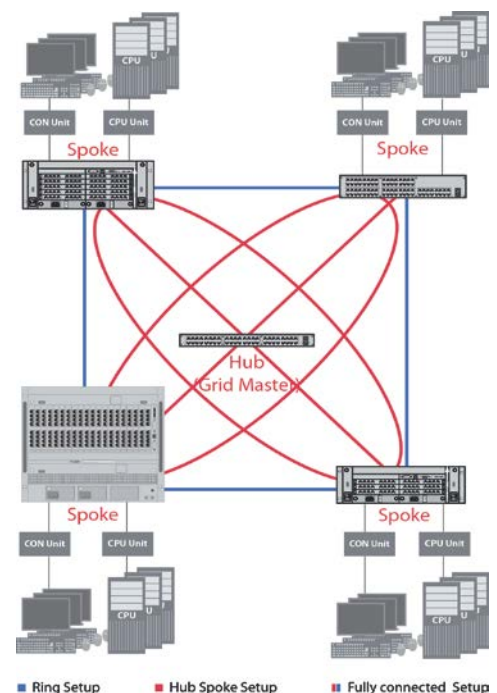
Connection methodology

In order to provide the greatest level of flexibility and real-time availability of sources across the network, Matrix Grid has been designed as an intelligent network control system that connects users to computers across different matrix switches.

Up to 16 separate switches can be interconnected in one virtual matrix. One physical switch is automatically designated as the Grid Master and the remainder as Spoke switches. Individual tie-lines define the total number of simultaneous connections that may be made between switches; each Grid Line taking up one of the I/O ports on each pair of switch connections.

In many installations there may be several Grid Lines between switches in the matrix with a selection of several possible direct and indirect routes between any two points. The Grid Master provides overall control and decision-making within Matrix Grid to dynamically determine the most efficient path between Spoke switches at the time of request. An assessment is made of the shortest path using the least number of links and that path is used to make the connection. In the majority of connections a direct point-to-point connection will be used. The system includes full status monitoring of constituent components and should any unit fail, connections are automatically remade.

The Grid Master provides ultimate control and management of the Matrix Grid system and virtual super-matrix. It is not a requirement that data flows through that matrix switch.

Operation

In operation the full virtual matrix acts in exactly the same manner as individual matrices with full non-blocking access between source and workstations and full administrative control of connection paths using the normal Java tool, OSD or network interfaces. The administrator (super-user) can restrict user access to specific source computers using the normal Access Rights control and can connect or disconnect users by means of the Force commands. These commands are available across the whole network to users with administration rights.

Global settings for CON and CPU Units apply across the whole network.

Video Distribution

Any video accessed across a Grid Line by a switch can be further distributed to users on the receiving switch with no limitation. Control of the source can be made available to a number of users if the global setting for the Shared Access feature is activated for the Con Unit.

Configuration Wizard

A configuration wizard is available to assist in the identification of switches connected to the same network and to configure them to operate together as a virtual switch.

The Configuration Wizard automates the set up and configuration of all matrix switches in the matrix grid, assisting the administrator in defining names and locations of individual matrices and checking that the correct software is installed across the whole system. It ensures that the correct firmware is installed and that all matrices are on the same TCP/IP network. At all stages in the configuration, connected matrices are checked and tested for compatibility.

Once activated the virtual switch matrix forming the matrix grid will operate as a single system. The administrator can then assign the normal operational parameters and restrictions in the normal way.

Availability

Matrix Grid is available in Software Bundle 4.