



PowerEdge MX-Series Storage Options and Use Cases

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SUMMARY

Storage technologies have been evolving at an accelerated rate driven primarily by changes in workloads. Solutions like virtualization, big data and in-memory databases utilize storage in very different ways. This evolution results in customers needing flexibility in their server infrastructure to meet these diverse needs.

The PowerEdge MX-Series has been designed specifically to reduce this complexity while at the same time, deliver the robust, flexible storage architecture that customers need to optimize for all of these environments.

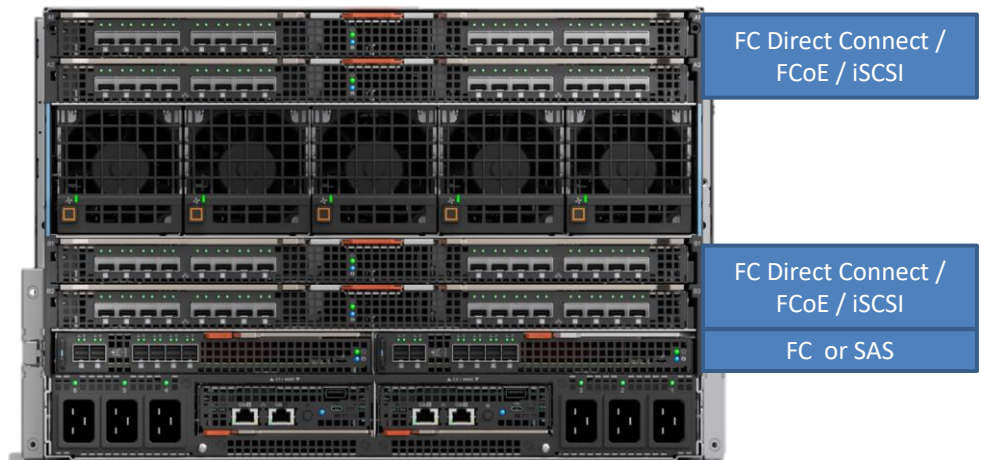
Background

In many cases, workloads are now optimized for specific storage solutions. Virtualization environments benefit from the low latency, high capacity capabilities of Software Defined Storage (SDS). Scale-up In-memory Databases benefit from locally attached SSD's for faster Database loading and Scale-out In-memory Databases require low latency shared storage solutions like SAN for shared access to data and fast database loading.

Adding to this complexity is wealth of options available for connection to storage environments. Traditional storage attach would include Fibre Channel (FC) or iSCSI and in recent years, Fibre Channel over Ethernet (FCoE). Conversely, newer technologies, like SDS, benefit from large pools of locally attached SAS storage using internal drive and/or JBOD enclosures.

MX storage connectivity options

To meet these diverse needs, the MX-Series has been designed to deliver a wealth of storage connectivity options. Traditional SAN connections are available through a pair of redundant Brocade 32Gb FC switches. In environments where SAS is required, the FC switches can be replaced with a pair of redundant SAS switches that connect to the optional MX5016s drive sled, with future support for external SAS JBOD enclosures. Traditional iSCSI, FCoE, and FC NPIV support is built into the integrated network switches and customers have the option to also use these devices to connect directly to a Dell EMC or 3rd party SAN.



FC direct connect allows a Fibre Channel storage array to connect directly to the MX9116n Fabric Switching Engine (FSE) without the use of external FC switches. In this mode, SAN access becomes available to all servers in the connected chassis as well as all servers installed in the chassis that are connected to the MX Scalable Fabric.



Internal Storage expansion

For customers looking to take advantage of SDS or simply to utilize SAS as their primary disk storage, the new MX-series offers enhanced local drive support with up to 6 hot plug drives in the MX740c and 8 hot plug drives in the MX840c. Both models also support 2 internal mirrored M.2 drives with the optional BOSS card. Additional expansion is available with the MX5016s storage sled. This sled houses up to 16 x 2.5" dual port SAS drives which connect through a pair of redundant SAS switches to provide additional storage internal to the enclosure. Drives hosted in this sled can be dedicated to a single server, be divided amongst all of the servers or, have their capacity aggregated and shared amongst all of the servers in the enclosure in operating environments that support this mode. For more demanding environments, multiple MX5016s sleds can be added to a single enclosure to increase the number of disks available to the servers.



External Storage expansion

For customers looking to connect to an existing FC SAN, the optional redundant FC switches support connection speeds of up to 32Gb/s and integrate into existing SAN fabrics without compromise.

Integration with existing FCoE or iSCSI environments can be accomplished natively through the optional Ethernet switch options for the MX. For FCoE, these switches can be configured to pass traffic directly through to an external gateway. Additionally, the MX9116n FSE can be configured as an NPIV gateway to an existing Brocade or Cisco MDS SAN.

As noted above, the MX9116n FSE can also be directly connected to a Dell EMC or 3rd party FC storage array. This mode provides access to shared storage that is dedicated to the devices connected to the MX Scalable Fabric and reduces complexity and latency to serve demanding application environments like big data.

Conclusion

As workloads have evolved, storage technologies have been dramatically affected. Customers now find that they often require multiple storage options in their environment to meet this need. Optimizing storage for a virtualization environment often means deploying a Software Defined Storage solutions like Microsoft Storage Spaces, VMWare vSAN or Dell EMC ScaleIO. This approach requires large pools of server based storage devices. Optimizing for solutions like in-memory database can be more complex with scale-up solutions requiring extremely fast server based storage and scale-out solutions benefiting from SAN based storage solutions. Similarly, big data solutions may require extremely large pools of centralized storage to deliver the capacity necessary for large data-sets.

Regardless of the storage technology required, the PowerEdge MX-Series delivers. From multiple connection options for SAN to a robust, flexible architecture for server based storage, customers can configure the MX system for uncompromised storage optimization.