The PowerEdge FX architecture - scaling business performance without compromise

An adaptable IT infrastructure is critical in helping enterprises keep pace with advances in computing technology. The Dell EMC PowerEdge FX converged architecture provides a flexible, modular platform that can be easily customized to match the requirements of specific data center and multi-cloud workloads.

Overview

Enterprise computing needs are dynamically changing as business and technology leaders embrace strategic computing innovations to create opportunities and gain competitive advantage. The increasing demand for cloud computing, the expansion of mobile use, the widespread adoption of big data techniques and the rise of software defined infrastructures are driving IT decision makers to evaluate fresh approaches in the data center.

IT organizations are looking to adopt the latest application workload paradigms that industry leaders are pioneering. Wherever possible, they want to gain the economic advantages that scale-out technologies have achieved for public cloud providers.

Unfortunately, most enterprise lack the agility to rapidly support IT transformation, which hampers their ability to increase agility, scale for improved business results and simplify operations.

Scalable Architecture

To address the challenges introduced by the latest computing trends as well as to reduce reliance on legacy, siloed equipment and operations, the PowerEdge FX converged architecture is designed to give enterprises the flexibility to tailor their IT infrastructure to specific workloads — and the ability to scale and adapt that infrastructure as needs change over time with zero-growth form-factor options. PowerEdge FX helps deliver the agility, flexibility and secure foundation that businesses need to simplify their operations and increase their business results.

Innovative modular design

The PowerEdge FX architecture is based on a modular, concept that makes it easy for enterprises to focus processing resources precisely where they are needed. This concept is realized through the PowerEdge FX2 chassis, the foundation of the FX architecture. The FX2 is a 2U platform that combines the density and efficiencies of blades with the simplicity and cost advantages of rack-based systems. The FX2 hosts flexible blocks of server and storage resources while providing outstanding efficiencies through shared power, networking, I/O and management within the chassis itself. Although each server block has some local storage, the FX architecture allows servers to access multiple types of storage, such as a centralized storage area network (SAN) or direct-attached storage (DAS) in FX storage blocks. Software-defined storage environments including VMware vSAN can readily benefit with the FX2 high-density storage elements.

The PowerEdge FX architecture lets data centers easily support an IT-as-a-service approach because it is specifically designed to fit the scale-out model that this approach embraces. In data centers of all sizes, deployments incorporating the FX architecture are designed to be right-sized, efficient and cost effective.

Easy workload optimization

The ultimate power of the FX architecture lies in the flexibility it gives IT professionals when they are designing and constructing their infrastructure. A key tenet of the PowerEdge FX architecture is ease of workload optimization. By providing a wide variety of possible component options, PowerEdge FX allows data centers to tailor their infrastructure to their specific workloads with modular blocks of processing resources and to scale incrementally as needs require, as shown in the use-cases below:

Enabling businesses to achieve results

"PowerEdge FX2 provided us with a lot of performance and functionality.

The lifeline of Govers is having the ability to scale our architecture, while taking advantage of the automation provided by PowerEdge, so we can adapt to rapidly changing customer requirements..."

The FX2 modular solution has become the foundation of the firm's data-center. "The solution optimizes data throughput... The performance increases even more... which makes us very happy."

Neils Vogels
IT Manager, Govers

"We looked at the Dell EMC FX architecture coupled with VMware Virtual SAN (VSAN) for software-defined storage... Our first impression was how compact and flexible the solution was. It just integrated so well with the entire VMware virtualization stack...

Anana has seen the costs of infrastructure falling around 30 percent through the combined power of the Dell EMC FX architecture and VSAN."

Gareth Evans
Head of Infrastructure, Anana Flagship Networks

FX2/FC640 Provides Exceptional Workload Flexibility In 2U/4-Bay Chassis
Great Rack Consolidation Opportunities – 4 Servers In 2U Rack Space

Configuration	Description
FC640 / FC640 / FC640 / FC640	**4 x FC640 – Up to 224 Cores/6TB Memory/2xM.2 Raid1/8x2.5"/FN IO's** • Performance Virtualization, HPC (No low latency req.), Database - SAN, Private Clouds, SaaS/IaaS (Enterprise).
FC640 / FC640 / FD332 / FC640	**3 x FC640 + 1 x FD332 (Up to 16 x 2.5" SATA/SAS)** • Virtualization environment, more VM's and additional DAS options.
FC640 / FC640 / FD332 / FD332	**2 x FC640 + 2 x FD332 (Up to 32 x 2.5" SATA/SAS)** • SDS – vSAN, Hadoop Clusters and Database.
FC640 / FD332 / FD332 / FD332	**1 x FC640 + 3 x FD332 (Up to 48 x 2.5" SATA/SAS)** • Dense Direct Attached Storage, ScaleIO-DIY.

Chassis
PowerEdge FX2

The flexible and efficient PowerEdge FX2 is a standard 2U rack-based platform with shared, redundant power and cooling, I/O fabric, and management infrastructure. It can be configured to hold half-width, quarter-width or full-width 1U blocks. The PowerEdge FX2S supports up to eight low profile PCIe 3.0 expansion slots. PowerEdge FX2 management can be performed through OpenManage systems management, Dell Remote Access Controller 9 (iDRAC9) and Chassis Management Controller (CMC) to monitor, manage, update, troubleshoot and remediate FX servers from any location.

Servers
PowerEdge FC430

This quarter-width processing option that is suited for web serving, virtualization, dedicated hosting and other midrange computing tasks. The PowerEdge FC430 is designed to be one of the densest solutions in the market supporting eight two-socket processors in a 2U chassis. Its compact form factor allows more discrete physical servers to be packed into a smaller space supporting higher levels of availability.

PowerEdge FC640

A strong foundation for corporate data centers and private clouds. The 14G Dell EMC PowerEdge FC640 readily handles demanding business applications like enterprise resource planning (ERP) large virtualization environments and multi-cloud, on-premises businesses. With high-performance processors and large memory capacity, the two-socket PowerEdge FC640 supports a wide range of scalable workloads. An FX2 chassis fully loaded with four half-width FC640s scales up to 224 cores, 96 DIMMS and 56TB of local storage with optional high-performance Express Flash NVMe PCIe storage.

PowerEdge FC830

A highly reliable solution for the most demanding workloads including large scale virtualization and database environments and business processing applications. Offering four high-performance processors and an large 48 DIMM memory capacity, the PowerEdge FC830 provides high-end horsepower with access to eight PCIe slots and support for Express Flash storage for accelerated data access.

Storage block
PowerEdge FD332

A critical component of the FX architecture, that brings storage closer to compute for accelerated processing. Each 1U, half-width PowerEdge FD332 storage block holds up to 16 small form factor, hot-plug storage drives, either HDD or SSD and can have up to two RAID controllers. Up to 48 additional drives can be housed in a FX2 chassis – resulting in massive direct attach capacity and an efficient pay-as-you grow IT model. The FD332 is ideal for Software-Defined Storage (SDS) environments including VMware vSAN Direct, enabling high performance, low latency operations.

I/O modules
FN I/O Aggregators

Flexible options for increasing the capabilities of converged infrastructure networking. 1Gb and 10Gb pass-through I/O modules, and three powerful I/O Aggregators, the PowerEdge FN410S, FN410T and FN2210S are available to simplify cable management (aggregating cables by up to 8:1). They optimize east/west server-to-server traffic within the chassis, enabling faster VM migration and significantly lowering overall latency. Two I/O modules can be housed in each FX2 chassis.

FX systems management
Advanced OpenManage systems management

CMC can monitor up to 160 servers in a single pane interface.
(20 PowerEdge FX servers with qty 8 FC430 in each FX chassis = 160 servers)

With the FX architecture, customers can leverage their experience with OpenManage and maintain all of the proven benefits of comprehensive agent-free management for the entire platform lifecycle: deploy, update, monitor and maintain.

FX customers can manage FX systems either like a rack server (locally or remotely) using the iDRAC9 with Lifecycle Controller or manage the servers and chassis collectively using embedded the Chassis Management Controller (CMC) with its easy to use web interface.

The CMC can monitor up to 20 FX systems at a glance, perform one-to-many BIOS and firmware updates, and maintain slot-based server configuration profiles that will update BIOS and firmware when a new server is installed. Each one of these abilities delivers time savings over conventional management and reduces the risk of human-entry errors by automating repetitive tasks.

Finally, OpenManage Enterprise and OpenManage Mobile provide remote monitoring and management across FX and PowerEdge servers as well as for Dell EMC storage, networking and up to a total of 8000 devices. To learn more about the entire portfolio of Dell EMC OpenManage tools and technologies, visit Dell.com/OpenManage.
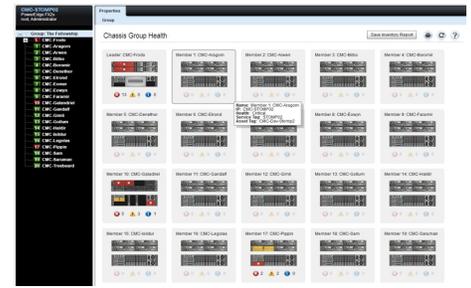
Foundation for a future-ready agile infrastructure

With the PowerEdge FX as a flexible converged architecture that can grow and advance with the latest technologies, Dell EMC enables enterprises to deploy IT infrastructure that easily adapts to the ever-shifting business and technology landscape. The PowerEdge FX and the 14G PowerEdge FC640 helps customers transform their legacy infrastructure into an agile, flexible and secure foundation for operational simplicity.

The foundations that IT decision makers invest in today are designed to support the changes that they implement tomorrow, giving enterprises the agility to remain competitive in a fast moving marketplace.

Learn more at Dell.com/FX
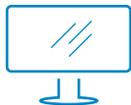
Learn more about Dell EMC modular server solutions

Contact a Dell EMC Expert

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