

FlexPod Express



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Although the FlexPod® Datacenter platform from NetApp and Cisco has been tremendously successful, we knew we needed to do something a little different to address the needs of small and midsize businesses. Companies of this size are not only extremely cost sensitive, they often have limited IT staff to manage important data center infrastructure.

FlexPod Express (formerly the ExpressPod™ platform) is an infrastructure solution intended specifically for situations in which the workloads are more modest and available IT expertise is limited. Whereas FlexPod Datacenter is designed foremost for scalability and flexibility, the primary considerations for FlexPod Express were to keep it affordable, simple to deploy, and easy to manage. To this end, FlexPod Express consists of two standard and tested configurations with an open ecosystem of infrastructure management software available to streamline management.

Judging from the reaction that FlexPod Express received when it was announced at VMworld Europe in Barcelona on October 10, 2012, NetApp and Cisco got the formula right. A record number of partners turned out to learn more.

In this article we take a closer look at FlexPod Express, including where it fits, its main components, and when to choose it.

Explore

FlexPod Express Implementation Guide

Are you ready to get started with FlexPod? Check out the “FlexPod Express Implementation Guide” for full deployment details.

[More](#)

Recent FlexPod and FlexPod Express Coverage

Since its introduction two years ago, FlexPod has been wildly popular. Check out these recent Tech OnTap® articles and blog posts from past Tech OnTap authors.

- [The Entry-Level FlexPod Solution: Right-Sized for Smaller IT Workloads](#)
 - [Building a Cloud on FlexPod: Validated Management Solutions](#)
 - [ExpressPod—Pretested Infrastructure Stack for Midsize Businesses](#)
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Figure 1) FlexPod Express data center solution from NetApp and Cisco.

Where FlexPod Express Fits

FlexPod Express was designed primarily for businesses with fewer than 500 employees. Smaller businesses need a set of features similar to FlexPod Datacenter, but cost and manageability are paramount—especially for companies that have only one or a few people handling IT.

Growing small and midsize businesses need to improve IT efficiency while also reducing complexity and cost. We designed FlexPod Express to help consolidate applications such as e-mail, collaboration, content management, and others on a single platform. With the integrated architecture and simplified processes that FlexPod Express provides, you can better manage your IT resources and ease the transition to a shared, virtualized environment.

FlexPod Express was tested up to the hypervisor level with VMware® vSphere® 5 and Microsoft® Windows Server® 2012 Hyper-V™. Over time, we'll validate FlexPod Express with other hypervisors and a variety of workloads, prioritizing the applications that are most pervasive in the markets that FlexPod Express serves.

FlexPod Express Advantages

FlexPod Express makes it easy to deploy shared infrastructure. Components are integrated and standardized for fast, repeatable, consistent deployment, eliminating much of the guesswork involved in:

- Resource procurement
- Capacity planning and sizing
- Making the transition to virtualization
- Operations and provisioning

FlexPod Express advantages include:

- **Faster deployment with less risk.** Because FlexPod Express is preconfigured and tested, you can get it up and running quickly and deploy applications faster with fewer problems.
- **Single point of management.** With partner tools such as [Cisco UCS Director](#) (formerly Cisco® Cloupia),

all of the FlexPod Express components can be managed through a single console, so you don't have to use several tools to manage compute, networks, and storage separately.

- **Enterprise features priced for small business.** FlexPod Express is competitively priced, but it doesn't sacrifice performance, features, or efficiency for affordability. It uses best-in-class components to deliver capabilities that are typically lacking in solutions targeted for smaller businesses.
- **Full integration with existing NetApp and Cisco environments.** If you already have a FlexPod Datacenter platform, existing NetApp® FAS storage, Cisco UCS servers, or Cisco Nexus® switches in your environment, FlexPod Express will interface with and work seamlessly with that equipment, and your IT staff won't need any additional training. For instance, you can replicate data from FlexPod Express to an existing FlexPod Datacenter or NetApp storage system for backup and/or disaster recovery.

FlexPod Express Details

FlexPod Express uses NetApp and Cisco components and has been fully validated by both NetApp and Cisco. It comes in two standard configurations based on Cisco Nexus 3048 switches, Cisco UCS C220 M3 rack-mounted servers, and either a NetApp FAS2220 or NetApp FAS2240 storage system.

Table 1) FlexPod Express configurations.

FlexPod Express Configuration	Nexus 3048 Switches	UCS C220 M3 Servers	NetApp Storage System	Drives/Capacity (standard)
Small	2	2	FAS2220A*	12X600GB/7.2TB
Medium	2	4	FAS2240A*	24X600GB/14.4TB

*HA pair

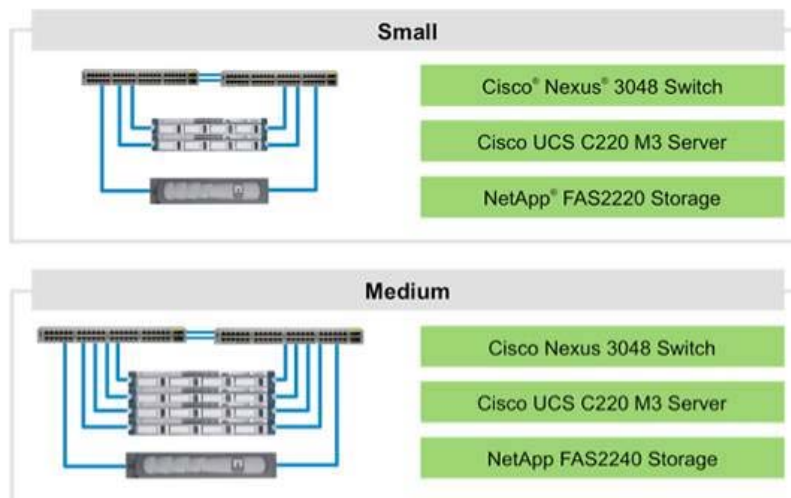


Figure 2) FlexPod Express is available in small and medium configurations.

Storage

FlexPod Express utilizes NetApp FAS2200 series storage systems running Data ONTAP® 8.1.1 or later software operating in 7-Mode. All storage is configured with two storage controllers for high availability (HA), so if one controller fails for any reason, the other takes over its workload. You can also have a single controller take over the entire workload, allowing nondisruptive maintenance.

The NetApp [FAS2220](#) is used in the small configuration and supports 12 drives internally and up to 2 additional

disk shelves, for a total of 60 drives. The NetApp [FAS2240](#) is supplied with the medium configuration and supports up to 24 drives internally and up to 144 total disk drives using external shelves. The Unified Storage Architecture of the FAS2200 series allows it to be configured to meet both NAS (NFS and CIFS) and SAN (iSCSI) data-access requirements. It delivers all the capabilities you would expect from a NetApp storage platform, including Integrated Data Protection and leading storage efficiency, with built-in support for thin provisioning, deduplication, and compression.

The FAS2200 series runs the same Data ONTAP operating environment as larger NetApp platforms, so it provides the same capabilities and is managed the same way. Staff trained on other FAS storage systems or FlexPod will find the FAS2200 series and FlexPod Express just as easy to configure and use.

Server Hardware

On the compute side, FlexPod Express configurations provide two or four Cisco Unified Computing System (UCS) C220 M3 rack servers, each with two 8-core CPUs and 64GB of memory. This is a 1U, high-density, general-purpose server optimized to deliver high performance for a large range of business workloads, including:

- Databases and middleware
- High-performance virtual desktops
- IT and web infrastructure

Network

The Cisco Nexus 3000 Series switches supplied with FlexPod Express are low-latency, high-density layer 2/3 switches that offer mission-critical features including Virtual PortChannel and Network Address Translation (NAT). The Nexus 3048 used in FlexPod Express is a 1RU switch that supports 48 100/1000 Mbps RJ-45 ports and four 1/10 Gbps SFP+ uplink ports. The Nexus 3000 Series runs the same version of NX-OS as the Nexus 5000 Series switches, so there's consistency.

FlexPod Express substitutes Nexus 3048 switches for Nexus 5000 switches, Nexus fabric extenders, and UCS fabric interconnects used by FlexPod Datacenter. This significantly reduces the complexity and expense of the network fabric.

Management

FlexPod Express supports an open ecosystem of management software for you to pick from. For example, the Cisco UCS Director allows you to manage all resources from a single interface to provide precise control over both physical and virtual infrastructure with full management and monitoring from a unified dashboard.

Service and Support

A cooperative support model from Cisco and NetApp provides a more streamlined response to identify and quickly solve potential issues related to FlexPod Express. This is the same support model that has worked very successfully for FlexPod Datacenter. It saves you valuable time and resources when requesting support.

FlexPod Express Scaling

You can either scale up your FlexPod Express system by adding additional components or scale out your environment by adding additional FlexPod Express configurations.

FlexPod Express scales up by adding server or storage capacity in a modular fashion to meet the needs of the workload.

- Both FlexPod Express configurations can scale up to a maximum of 20 C220 M3 servers.
- The FAS2220A used in the small FlexPod Express configuration scales up to a maximum of 60 disks. The base configuration includes 12 high-performance disk drives. Additional shelves can be configured with high-performance disk drives, high-capacity disk drives, solid-state disks, or a combination. Maximum capacity depends on the type(s) of disks chosen.
- The FAS2240A used in the medium FlexPod Express configuration scales up to a maximum of 144 disks. The base configuration includes 24 high-performance disk drives. Disk options are the same as those for the FAS2220A.

FlexPod Express or FlexPod Datacenter?

FlexPod Express is an affordable, easy-to-deploy platform for environments with fewer than 500 users. Its simplicity and lower price point make it a good choice for small and midsize organizations looking to consolidate IT infrastructure. FlexPod Express can be purchased completely configured and tested to reduce the burden on IT staff.

For IT organizations with more than 500 users or those with an immediate need for growth and customization, FlexPod Datacenter may be a better choice. Starting with an entry-level configuration and scaling to very large enterprises, FlexPod Datacenter provides the management, customization, and integration necessary for successful large-scale IT deployments. FlexPod Datacenter supports higher-performance versions of Cisco UCS (including B-series blade servers) and NetApp FAS (including the industry-leading FAS6200 series). The 10-Gigabit Ethernet Nexus fabric of FlexPod Datacenter may be advantageous for high-throughput and latency-sensitive applications.

In short, choose FlexPod Express if you need a cost-effective solution to consolidate IT infrastructure and meet immediate business needs. Choose a FlexPod Datacenter solution if scalability and flexibility are your biggest concerns and your organization has immediate plans for IT growth and expansion.

Conclusion

FlexPod Express offers significant advantages for small and midsize businesses that need to consolidate IT resources and accelerate the deployment of a virtualized IT infrastructure. FlexPod Express brings together proven technologies for compute, networking, and storage in an affordable, easy-to-deploy solution that improves efficiency and reduces complexity. A detailed implementation guide streamlines the process of getting started, particularly in situations in which IT expertise is limited.

For the latest information on FlexPod Express, keep an eye on the [NetApp midsize business solutions page](#).



By David Klem, Sr. Reference Architect

David joined NetApp in 2005 as part of the original team that architected and built the NetApp Kilo-Client, a 1,700-node internal cloud used by NetApp Engineering. He now works for the NetApp Infrastructure and Cloud Enablement team, focusing on best practices and solutions for cloud-based architectures. To satisfy this mission, David speaks regularly at industry events on cloud computing and virtualization and interfaces directly with customers to understand their needs and objectives. Before joining NetApp, David worked at Cisco Systems for six years as an engineer on the Cisco Catalyst switch platform.

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