

FlexPod: Flexible Data Center Infrastructure to Accelerate Application Deployment

IT Seeking Faster Infrastructure Options

Speed of Business Demands More Complete Solutions

Businesses continue to exert pressure on IT to be faster and reduce costs. However, the majority of IT budgets are spent on maintaining equipment, leaving only a small amount for new projects and innovation. In cases in which IT has the funds to deploy new systems, it typically takes them weeks, if not months, of design, planning, procurement, deployment, and testing to do so.

To reduce the time and cost of deploying infrastructure and applications, companies are adopting a converged infrastructure approach. According to one industry analyst, "In a few years, we'll move away from people buying the piece parts... Whatever they buy has to be designed and tested to work together."¹ By deploying converged solutions that leverage shared resources, IT teams are slashing design, planning, and testing phases by months.

FlexPod Accelerates Application Deployment

Prevalidated Architectures Reduce Time and Risk for Leading Business Applications

Enterprises and service providers alike need tested, documented, and supported infrastructure solutions that support both virtualized and nonvirtualized environments. They seek solutions that can leverage existing IT investments, be managed with existing frameworks and tools, and scale without disruption to meet future growth and organizational objectives.

The FlexPod[®] data center platform, jointly developed by NetApp and Cisco, is a flexible converged infrastructure platform composed of prevalidated storage, networking, and server technologies. It's designed to increase IT responsiveness to business needs while reducing the overall cost of computing with maximum uptime and minimal risk.

Investment Protection with Standardized, Flexible IT

Together, NetApp and Cisco offer a data center platform that's ready for virtualized environments yet is flexible enough to grow at your own pace to a fully private cloud. The FlexPod unified architecture runs multiple workloads on all protocols and fits right into your current infrastructure, leveraging existing resources and minimizing or eliminating technology replacement costs.

KEY FEATURES

Speed Deployment

Improve IT agility and reduce deployment time from months to weeks with a flexible, prevalidated architecture that shortens the time needed to design, plan, and test.

Enhance Efficiency

Slash both administration time and TCO by 50% with a converged virtualized infrastructure that is easier to manage and more efficiently stores data than the alternatives.

Reduce Risk

Minimize business disruption with a prevalidated platform built on a defined architecture that eliminates deployment guesswork and accommodates ongoing workload optimization.

1. Peter Ffolkes, analyst 451 Group, "TheInfoPro: 'Sea Change' Towards Converged Infrastructure," Data Center Knowledge, 1/21/2013.

FlexPod components are integrated and standardized to help you achieve timely, repeatable, consistent deployments that eliminate guesswork and minimize risk. As a result, you can understand and better predict the exact power, floor space, usable capacity, performance, and cost of each FlexPod deployment.

Scalability for Any Cloud Solution

FlexPod is offered in three solution categories that are designed to meet your specific capacity and performance requirements.

- **FlexPod Express** is ideal for midsized businesses and branch offices. It can be used as a cost-effective starting point for infrastructure consolidation and virtualization solutions.
- **FlexPod Datacenter** is suited for large enterprises and cloud service providers with mature IT processes and rapid growth expectations and who want to deploy a highly scalable shared infrastructure for multiple business-critical applications.
- **FlexPod Select** supports environments with a need for high-performance computing or very large data capacity, including big data analytics, scientific computing, and dedicated application optimization.

Any of the FlexPod solutions can be scaled up or out and duplicated in modular fashion to fit your future growth needs. They can also scale to a larger FlexPod configuration with a clearly defined upgrade path that leverages all existing components and management processes.

Proven Across a Broad Range of Environments

FlexPod has been pretested and jointly validated with popular hypervisors, operating systems, applications, and infrastructure software, including:

- VMware® vSphere®
- VMware View™
- Citrix XenDesktop
- Red Hat Enterprise Linux®
- Oracle® (RAC, JD Edwards, Oracle Linux, Oracle VM Server)
- SAP®
- Microsoft® Exchange, SQL Server®, and SharePoint®
- Microsoft Private Cloud
- Hortonworks Data Platform
- Cloudera's Distribution including Apache Hadoop
- NetApp SnapProtect™ technology
- Cisco® Nexus® Data Center switches

FlexPod can be optimized to support several of these workloads simultaneously. NetApp and Cisco have also jointly developed reference architectures to help you integrate and flex the solution to meet your specific requirements for the following critical environments.

- **Workload consolidation.** FlexPod is a versatile platform that helps you consolidate and virtualize your business applications onto less hardware. Along with improved hardware utilization, this approach frees up data center space and reduces power and cooling requirements, enabling you to slash your infrastructure costs by up to 50%.
- **Virtual desktop infrastructure.** FlexPod is an easy-to-deploy, self-contained virtual desktop solution in a rack. Its modular design facilitates rapid, repeatable deployment of thousands of virtual desktops. FlexPod integrates with, and is optimized for, VMware View and Citrix XenDesktop. A virtual desktop solution built on FlexPod provides unmatched price/performance. You gain extreme efficiencies by deduplicating up to 90% of redundant user and OS data, and I/O performance can be accelerated by up to 50% with the NetApp® Virtual Storage Tier. The extended memory technology of Cisco Unified Computing System™ provides the industry's greatest number of VMs per core density.
- **Development and test.** FlexPod enables rapid provisioning and deprovisioning of virtual resources, making it an ideal platform for development and test environments. This capability is valued in any enterprise IT shop, especially Oracle Database environments. NetApp FlexClone® software facilitates rapid dev/test setup with cloning technology that lets you deploy thousands of space-efficient VMs for new projects in minutes, accelerating time to production and time to market. Clones can also be redeployed to secondary sites, reducing preparation time for initiatives such as DR testing.

DIFFERENTIATORS

- A flexible design for differing workloads and scale, while leveraging existing IT components
- A broad range of reference architectures for popular top-tier business applications
- A cooperative support model that requires only a single ticket to resolve issues
- A choice of management and orchestration solutions

“Among the biggest benefits of FlexPod are integrated components that help enable us to centrally manage all our data center requirements.”

— **Darrell Williams,**
Director of Information Systems,
Katz, Sapper & Miller

- **Business and disaster recovery.** FlexPod can be configured with integrated data protection software to provide fast recovery from system, site, and regional outages for business continuity. The combination of NetApp MetroCluster™ and SnapMirror® technologies with Cisco UCS™ Manager and WAAS offers automated monitoring and failover as well as cost-effective replication to a secondary site for continuous protection against unplanned downtime. Our solution also lets you move virtual server and storage resources and data nondisruptively across hardware to eliminate planned downtime.
- **Secure multi-tenancy and secure separation.** FlexPod leverages the Cisco SAFE architecture and NetApp MultiStore® technology to deliver a secure multi-tenancy architecture. Secure multi-tenancy enables resources and data for each tenant—application, business unit, or customer—to be securely isolated within the FlexPod environment. It combines the data separation and service-level guarantees offered by application silos, with the efficiencies of a converged, virtualized infrastructure. FlexPod also securely separates nonvirtualized workloads across the data center and has undergone and passed several security compliance tests, PCI compliance validation, FISMA certification, and an ICSA audit.

Best-in-Class Components for Enhanced Data Center Efficiency

FlexPod includes the following components in a standardized configuration that scales from entry-level designs for hundreds of users up to high-performance big data workloads for thousands of users. This integrated solution can significantly reduce your capital and operating expenses through end-to-end virtualization and higher efficiencies at each layer.

- The Cisco Unified Computing System is a data center platform that is designed to eliminate time-consuming manual configuration, reduce TCO, and increase business agility. Cisco UCS combines compute and network resources, storage access, and virtualization into a scalable, modular system that is easily managed as a single entity by Cisco UCS Manager. The radically simplified architecture greatly reduces the number of devices that must be purchased, configured, managed, and secured. Service profile templates enable automatic, policy-based hardware configuration and deployment for large, stateless computing environments. The highly efficient Cisco UCS extended memory technology also reduces memory requirements by up to 60%.
- Cisco Nexus data center switches use award-winning unified fabric technology to identify and consolidate all network traffic onto a single simplified, cost-effective architecture based on FCoE. Cisco Nexus switches offer “zero-touch” installation, automatic configuration, enterprise-class scalability, and nondisruptive in-service upgrades. A single point of policy management also increases efficiency, availability, and security. The added option of the Cisco Nexus 7000 Series switch provides even greater networking scale, throughput, availability, and advanced features for data center interconnect requirements.
- NetApp FAS systems reduce cost and complexity for virtualized infrastructures by meeting all of your storage requirements with a single, highly scalable solution. NetApp’s unified storage platform supports all protocols, so you no longer need to purchase separate systems to accommodate different storage needs. You can slash capacity use by up to 50% with built-in deduplication and thin provisioning, and space-efficient backup and cloning. NetApp systems enhance operational efficiency with automated storage management, data protection, and security. They also optimize performance with innovative flash technologies and 10GbE and FCoE support. The clustered Data ONTAP® operating system brings a new level of nondisruptive operations, scalability, and efficiency to enterprise storage.

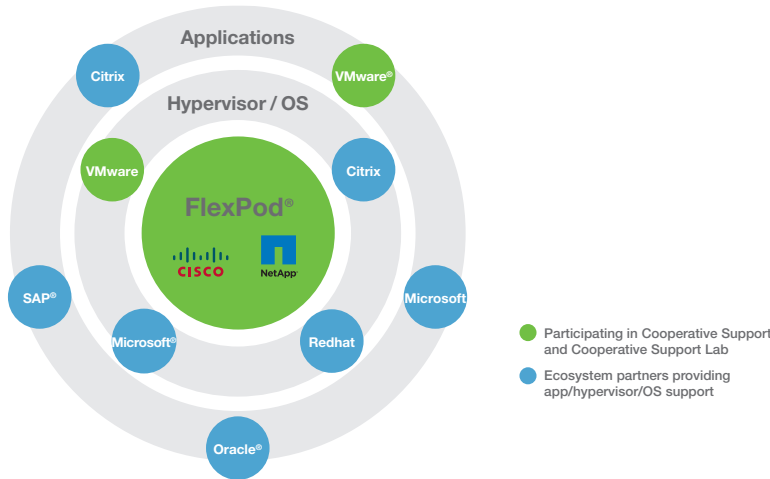
“Our executives loved the simplicity and power of the integrated stack in FlexPod. And for IT, the prevalidated architecture with prescriptive sizing and design guides reduced our risk.”

— **Wojciech Biernacki**,
IT Systems Administrator,
University of Tennessee

Cooperative Support to Speed Problem Resolution

FlexPod includes a simplified cooperative support model that is coordinated among NetApp, Cisco, and VMware. The joint support model offers global 24/7 support with streamlined response from technical experts, and it spans across new and legacy products from each company for maximum flexibility. It also includes a Cooperative Support Lab designed to replicate and rapidly resolve complex customer issues, leveraging on-site experts and state-of-the-art equipment from all three vendors.

Figure 1. Cooperative Support: An Ecosystem of Partners



NetApp and Cisco extend world-class technical support to an expanding range of hypervisor, business application, and IT management vendors through the Technical Support Alliance Network.

Choice of Management Solutions

NetApp and Cisco work with trusted partners to provide you with a choice of management solutions. The FlexPod architecture provides APIs at each layer so that it can easily integrate with a broad range of software solutions for end-to-end management. Validated FlexPod management solutions have been tested in NetApp and Cisco labs to verify that they deliver essential functionality. Together with partners, we provide a variety of capabilities, including automation and orchestration, monitoring and analytics, and configuration management.

Global Service Delivery Ecosystem

You can choose from a global network of FlexPod Premium Partners and other highly qualified solution delivery partners to implement FlexPod. These partners understand your business requirements and are certified on NetApp, Cisco, and complementary technologies to deliver a complete cloud solution that fits your business needs.

Getting Started

To learn how FlexPod enables you to build a flexible and efficient converged virtualized infrastructure today as your foundation for future-ready IT, contact your local NetApp or Cisco representative or partner. Learn more at www.netapp.com/flexpod.

© 2013 NetApp, Inc. All rights reserved. No portions of this document may be reproduced without prior written consent of NetApp, Inc. Specifications are subject to change without notice. NetApp, the NetApp logo, Go further, faster, Data ONTAP, FlexClone, FlexPod, MetroCluster, MultiStore, SnapMirror, and SnapProtect are trademarks or registered trademarks of NetApp, Inc. in the United States and/or other countries. VMware and vSphere are registered trademarks and VMware View is a trademark of VMware, Inc. Linux is a registered trademark of Linus Torvalds. Oracle is a registered trademark of Oracle Corporation. SAP is a registered trademark of SAP AG. Microsoft, SQL Server, and SharePoint are registered trademarks of Microsoft Corporation. Cisco and Nexus are registered trademarks and Unified Computing System and UCS are trademarks of Cisco Systems, Inc. All other brands or products are trademarks or registered trademarks of their respective holders and should be treated as such. DS-3467-0813



www.cisco.com
www.netapp.com