FlexPod

Solution Brief

Keep Your Business Applications Running

FlexPod Datacenter with Microsoft SQL Server 2017 Always On technology

The FlexPod® data center solution is built on a NetApp and Cisco partnership that spans 20 years. Cisco and NetApp have teamed for more than 9 years to develop the FlexPod converged infrastructure solution portfolio. A proven converged infrastructure market leader, FlexPod has generated billions in revenue since its entry into the market. FlexPod is tailored to meet the specific needs of your business and your database challenges, supported by validated designs that encompass more than 170 deployment scenarios and delivery models.

FlexPod powers your applications with the latest platform innovations and industry-leading performance. New applications include artificial intelligence (AI) and machine learning (ML), new VDI FlexPod CVDs (Citrix and VMware), Oracle 12cR2 RAC, SAP vHANA, and SQL Server 2017.

The unmatched versatility of FlexPod enables you to embrace the cloud with confidence. New technologies include next-generation fabric interconnect, cloud-connection, all-flash arrays, NetApp AFF A800 storage arrays, support for 100GbE and 32GB FC, and end-to-end NVMe over Fibre Channel. New technologies and leading-edge applications are constantly being added to the vast FlexPod workload portfolio. Customers are assured that FlexPod is a trusted platform worldwide and that their converged infrastructure investment is protected.

Keeping Pace in a Nonstop Business Environment

In today's competitive environment, nonstop access to applications is crucial to success. That's why many organizations use FlexPod running Microsoft SQL Server 2017 software with Always On technology. With this innovative solution, you can help ensure that your OLTP and other business applications continue to run, and that you can stay ahead of your competitors.

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Business Benefits

Take the guesswork out of deployments with pretested and validated solutions (Cisco Validated Designs, CVD) for Microsoft SQL Server.

- Documented end-to-end reference architectures
- Faster time to value
- Reduced implementation error and guesswork

Deploy highly available infrastructure to keep systems and applications running.

- Redundant hardware and multipathing, no single point of failure
- Eliminate provisioning errors with Cisco Unified Computing System™ Manager (UCS® Manager) server automation
- Recreate and deploy new servers in minutes, not days

Lower TCO by getting more work done with the same resources—or even fewer.

- Lower licensing costs with ultra-fast all-flash storage
- Lower costs with world-record-breaking[1] servers
- Less hypervisor overhead

Rely on FlexPod NetApp AFF Storage Arrays.

- Minimize your data center footprint by storing 2PB of data in a 4U compact system with 5 to 10 times the SSD storage savings, delivered by inline data reduction technologies
- Unify data management across SAN and NAS environments
- Employ the industry's first end-to-end NVMe-based enterprise all-flash array that delivers up to 11.4 million IOPS and over 700PB effective capacity

Rely on cooperative or solution support from NetApp, Cisco, or a partner to resolve issues and keep your systems and business running.

- Cooperative support, optionally led by NetApp, Cisco, or channel partners
- Single company support, optionally led by NetApp, Cisco, or a partner
- Seasoned support models through multiple generations and thousands of customers

Increase SQL Server 2017 Performance with All FlexPod Components.

- Cisco UCS servers have set more than 150 world performance records[1] to date, with 4 benchmarks on SQL Server
- CVD uses end-to-end 40GbE Ethernet iSCSI SAN throughout
- Balanced system design harnesses the power of all record-breaking components

Accelerate Deployment with an Integrated Infrastructure Approach

The FlexPod preconfigured infrastructure reduces the complexity of your business application environments. Tested, validated, and documented through a Cisco Validated Design, the solution reduces risk and guesswork by giving your architects and administrators a guidebook for implementing the solution. By following the guidelines in this CVD, you can create a highly available application infrastructure that protects against compromise while delivering a simplified, standardized, and trusted approach for the use and management of your IT resources

The SQL Server 2017 solution uses the FlexPod Datacenter platform based on the Cisco Unified Computing System (Cisco UCS) Integrated Infrastructure. It combines Cisco UCS B200 M5 Blade Servers; Cisco Nexus® 9000 Series Switches; next-generation, cloud-connected NetApp AFF A-Series Arrays; VMware ESXi 6.7 or Microsoft Windows Hyper-V server 2016 virtualization software; and Microsoft SQL Server 2017 database software with Always On technology. You can run your SQL Server databases and business applications with confidence on a highly available infrastructure that's easy to deploy and manage and that supports near-site or geographically dispersed disaster recovery.

Reduce Unplanned Downtime

The FlexPod solution is clustered and can be configured with integrated data protection software to provide fast recovery from system, site, and regional outages for business continuity. The combination of Microsoft SQL Server Always On software and NetApp SnapMirror® replication technology with Cisco UCS Manager offers automated monitoring and failover as well as cost-effective replication to a secondary site for continuous protection against unplanned downtime.

The underlying infrastructure is redundant to enhance the flexibility and availability of the solution. All hardware and software components, including network switches and physical and virtual port channels, can be failed over to help ensure that data traffic continues if a networking component becomes inaccessible. For the storage, the data protection features of the NetApp AFF A-Series arrays include RAID technologies for up to three simultaneous drive failures, active-active storage-controller failover for high availability, and multipath I/O for data-path redundancy and superior I/O performance. (The AFF A300 storage array was used for this design.) In addition, UCS M5 servers offer another unique level of redundancy; servers can be cloned exactly so that a failed server can be replaced and replicated exactly in minutes, not days or weeks.

Optimize Availability

Whether you need to add more IT resources or modify your configuration, it's necessary to keep applications running during maintenance activities. Using Cisco UCS service profiles, your IT staff can move virtual server and storage resources and data nondisruptively across hardware to reduce planned downtime. Microsoft SQL Server 2017 configurations can be replicated easily and accurately because all characteristics—server identity, firmware, server-specific attributes, personality, and I/O connectivity—can be applied automatically to reduce downtime. Another example is that with a new copy or a close copy (for example in a DR site) of a server running Microsoft SQL Server 2017, a failover or cloned copy for Windows Server Cluster or Always On can be exactly cloned in minutes, not days.

1 https://www.cisco.com/c/dam/en/us/products/collateral/servers-unified-computing/ucs-solution-overview.pdf
https://www.netapp.com/us/media/ds-3582.pdf
https://www.netapp.com/us/media/ds-netapp-solutions-for-microsoft-infographic.pdf

FlexPod delivers this unique cloning in minutes. For example, if a Microsoft SQL Server 2017 server fails over, an exact replica of the failed server can be spun up in minutes by using a UCS server profile. Resilience and redundancy can quickly be restored because FlexPod UCS servers are cloned through the UCS Manager and its service profiles. Another example would be adding a server or two to increase read capacity by using Microsoft SQL Server 2017 Always On. These close-copy servers can also be spun up or down in minutes by using UCS service profiles.

As demand changes, you can expand your environment to make more database workloads and business applications available to your users. You can purchase exactly the infrastructure you need today and scale up (by adding more resources to the FlexPod system) or scale out (by adding more FlexPod instances to your database and application infrastructure).

Make Data Accessible

Whether your deployment is large or small, it's important for your data to be available when you need it. The FlexPod SQL Server 2017 solution configures storage resources to optimize database server performance. One NetApp AFF array customer saw their SQL Server report generation time reduced from 3 to 5 hours to 10 minutes. Other AFF array customers accelerated transaction performance by up to 3 times, with latency of less than 0.7ms in peak hours. They also reduced costs by 60% to 70% compared with legacy spinning disks and improved ROI with a 6-month payback. Finally, FlexPod AFF arrays manage apps where they run best by freely moving data between on-premises infrastructure and the public cloud.

As your storage capacity and performance requirements increase, you can incorporate NetApp AFF storage arrays into the environment. NetApp AFF systems help you meet your enterprise storage requirements with industry's highest performance, superior flexibility, and industry-leading data management and cloud integration. Combined with the industry's first end-to-end NVMe technologies and NetApp ONTAP® data management software, AFF systems accelerate, manage, and protect your business-critical data. With an AFF storage array, you can make an easy and risk-free transition to flash for your digital transformation. With a unified scale-out storage architecture and with NetApp Clustered Data ONTAP®, you can scale your cluster configuration to 24 nodes with nondisruptive data migration activities.

Lower Total Cost of Ownership

Economic factors continue to force IT departments to find ways to deploy more cost-effective infrastructure. FlexPod solutions based on NetApp AFF and storage arrays and Cisco UCS Integrated Infrastructure can help you build a robust and redundant environment that gets more work done with the same resources—or even fewer. With these innovative solutions, your IT staff can run more database workloads and business applications on fewer servers so that there are fewer components to buy and manage. These solutions can also reduce cabling, power, and cooling requirements and automate routine tasks to increase productivity.

With industry-leading performance and density, AFF systems can change your data center economics dramatically by reducing power consumption and rack space to a fraction of what a traditional HDD-based data center requires. AFF systems are built with innovative inline data reduction technologies, including inline compression, inline deduplication, and inline data compaction, providing space savings of 5 to 10 times, on average, for a typical use case. Some customers have reported actual space savings of much higher than 10 times.

AFF systems also significantly simplify storage management and cut support costs by eliminating performance tuning.

FlexPod Support

FlexPod solutions are sold through our solution partners, and you can choose to receive support from your solution partner, from NetApp, or from Cisco. NetApp also has multiple support offerings for FlexPod, FlexPod third-party products, and other parts of the solution stack, such as networking. NetApp offers a cooperative support model with Cisco as part of our SupportEdge Premium support package, as well as a full solution support offering. NetApp Solution Support for FlexPod is an add-on service offering.

Cooperative Support. Cooperative Support is an engagement model and a support delivery partnership between NetApp, Cisco, Microsoft, VMware, Citrix, and Red Hat. You can choose which vendor to call based on your initial assessment of the problem. This joint support partnership includes cross-training, shared communications, coordinated response, and a formal escalation process. Cooperative Support is not something you buy; it's included with the premium support offerings from all of the vendors involved.

Solution Support. NetApp offers single-point-of-contact support for FlexPod solutions. The NetApp Solution Support team has expertise in all the products in each solution stack. The NetApp Solution Support team has support-to-support access to the product or component vendor's support organizations and works with the vendors on your behalf. Cases are handled from end to end, with no hand-off or finger-pointing. NetApp Solution Support for FlexPod is a separate,optional offering on top of SupportEdge Premium.

Configuration Validation Software for FlexPod

FlexPod has optional configuration validation software, called Converged Systems Advisor, which ensures that FlexPod is always configured to best practices for optimal performance and availability. An on-premises agent combines with cloud analytics to monitor and validate the deployment of your FlexPod infrastructure. This FlexPod tool simplifies key tasks for administrative support with an automated review of more than 100 best practices, component support updates, and resilient design requirements. With continual remote monitoring and notifications, this software helps administrators prevent gaps in system supportability and protect their investment in mission-critical data center infrastructure. These capabilities simplify lifecycle management and improve productivity with infrastructure support. Converged Systems Advisor comes standard as part of NetApp Solution Support services.

Conclusion

For your IT department to remain relevant to your lines of business, it must deliver reliable systems. With FlexPod Datacenter with Microsoft SQL Server 2017 Always On technology, you can deploy a highly available solution with near-site disaster recovery capabilities. Let Cisco and NetApp help you build the IT foundation you need to keep your services and business running.

About NetApp

NetApp is the data authority for hybrid cloud. We provide a full range of hybrid cloud data services that simplify management of applications and data across cloud and on-premises environments to accelerate digital transformation. Together with our partners, we empower global organizations to unleash the full potential of their data to expand customer touchpoints, foster greater innovation, and optimize their operations. For more information, visit www.netapp.com. #DataDriven