Digital business transformation is bringing to life a blossoming of our collective connectedness. It is fundamentally reshaping everything we do—creating uncountable opportunities. Around the world, no company, regardless of industry or size, is exempt from the pressures of this transformation. Rapid shifts in technology, including cloud computing, the Internet of things (IoT), and big data, are forcing businesses like yours to think differently about IT investments and how to take advantage of the new opportunities they present. As you seek to adopt new business models and build on your digital investments—including your SAP landscapes—a simplified IT infrastructure that can scale and adapt with the requirements of applications is critical.

To add value back to the business, your IT organization needs an infrastructure that doesn’t require endless maintenance, but quickly and easily delivers your SAP applications with outstanding control, speed, and scale. Many experiment with the latest and greatest technologies to improve application delivery to their stakeholders, but end up with more complex systems that require expertise that is difficult to find.

Together, Cisco and NetApp have developed a platform that reimagines converged infrastructure using a FlexPod® solution designed for today’s environment and the future of IT. Accelerate every application in your SAP landscape without disruption, dramatically improve data center economics, and prepare your infrastructure for the future with confidence. FlexPod solutions continue to evolve with innovative technology—delivering the proven performance, proven agility, and proven value required for today’s enterprise.

**Foundational**

The Cisco® and NetApp® FlexPod solution described in this document uses the
What makes this solution different

We’ve taken a number of steps to help ensure that our approach delivers value. This solution is:

- Foundational technology for your entire SAP landscape
- Proven agility that is more responsive to your business needs
- Proven performance from the computing, networking, and storage components
- Reduced risk with prevalidated design and SAP HANA backup strategy
- Proven value with fewer components, greater return on investment (ROI), and lower total cost of ownership (TCO)
- Innovative use of latest technology, including a 40-Gbps unified fabric and all-flash storage

Figure 1) A foundational solution for your SAP deployments

Cisco Unified Computing System™ (Cisco UCS®) platform, Cisco Nexus® Family switches, and the NetApp All-Flash FAS (AFF) storage system. Cisco UCS is the number-one SAP HANA server infrastructure according to “Infrastructure for Business Analytics: SAP,” (IDC document US42198216, December 2016). The solution provides an excellent foundational infrastructure for your SAP HANA system and applications. It eases SAP lifecycle management with replication, provisioning, cloning, and refresh processes and makes deployment of test and development systems fast and repeatable. FlexPod is flexible and agile enough to support either a traditional SAP HANA deployment or SAP HANA as a service. You can build on the speed, quality, and flexibility for which FlexPod is known (Figure 1).

FlexPod is a leader in the converged systems market, according to the "Worldwide Quarterly Converged Systems Tracker" (IDC, Q4 2016). We call this system integrated infrastructure because it is more than components loosely connected and sold as a solution. FlexPod is integrated to give you a single point of management and control for the entire infrastructure. We have jointly invested many thousands of hours in validating this FlexPod solution. A Cisco Validated Design describes how it can be deployed for SAP HANA and SAP landscape applications through SAP Tailored Datacenter Integration (TDI) deployments. And with FlexPod Cooperative Support and Cisco Solution Support, you can be assured any issues that may arise will be resolved quickly and efficiently.

Proven Agility

FlexPod solutions have the time-tested capability to securely and quickly respond to business demands. The base infrastructure can be deployed quickly and efficiently to accelerate time to value for your SAP HANA and landscape applications. Because
of its agility, FlexPod is an outstanding foundation for any cloud strategy. It allows you to easily manage and protect your data across the application stack and in the cloud so that you can access and migrate data where and when you need it. FlexPod’s exceptional scalability allows you to buy what you need today and easily scale out or scale up as your business needs demand. With this solution, you can scale up to 4 terabytes (TB) on a single node and scale out to up to sixteen 2-TB nodes. This capability reduces the risk of capacity shortfalls and provides a cost-efficient expansion path.

Proven Performance
This integrated infrastructure solution combines the power of Cisco UCS blade and rack servers and NetApp AFF storage connected with Cisco Nexus 9300 platform switches.

Cisco UCS Blade and Rack Servers
Cisco UCS blade servers deliver enterprise-class performance, reliability, and expandability to your SAP environment. These servers harness the power of the latest Intel® Xeon® processor family and have three mezzanine connectors to provide advanced I/O connectivity. Cisco UCS rack servers are versatile, high-density, enterprise infrastructure and application servers. They deliver world-record-setting performance for a wide range of enterprise workloads, including virtualization, collaboration, and bare-metal applications. These servers are all connected through Cisco UCS fabric interconnects. These implement a unified fabric with Cisco SingleConnect technology and provide a single point of management with Cisco UCS Manager. SingleConnect technology is an end-to-end I/O architecture that incorporates Cisco UCS virtual interface cards (VICs), Cisco UCS fabric interconnects, and Cisco fabric extender technology to connect every Cisco UCS server with a single network fabric. Cisco UCS servers have achieved more than 110 performance world records in the eight years that they have been on the market.

NetApp AFF Storage
NetApp AFF storage systems accelerate your SAP environment with the fastest unified scale-out all-flash array, with up to 7 million I/O operations per second (IOPS) and latency of less than a millisecond. NetApp AFF is the top-performing enterprise all-flash array among the major storage providers and among the top three overall on the SPC-1 performance list. Built on NetApp Data ONTAP™ data management software, this storage system efficiently manages and protects all your data to increase usable capacity and reduce costs. Now, with NetApp SnapCreator and the SAP HANA plug-in, you can protect your in-memory SAP HANA data reliably and quickly without affecting SAP HANA performance. The NetApp AFF A300 array can scale to an effective capacity of 285 petabytes (PB) of efficient flash storage.

Cisco Nexus 9300 Platform Switches
Cisco UCS and NetApp AFF storage are connected through Cisco Nexus 9300 platform switches, providing end-to-end 40 Gigabit Ethernet connectivity. These high-performance, low-latency switches offer exceptional power efficiency at cloud scale. Your SAP environment will gain pervasive visibility and high-performance connectivity with built-in Cisco Tetration Analytics™ sensors and intelligent buffers. The Cisco Tetration Analytics solution dramatically simplifies your zero-trust implementations. It provides visibility into everything in your data center in real time.
It uses behavior-based application insight and machine learning to build dynamic policy models and automate enforcement.

**Proven Value**

From the beginning, FlexPod solutions have been built to provide excellent value. With them, you can start small and incrementally grow your FlexPod infrastructure, allowing you to invest only when you need to do so. This approach saves initial capital expenditures (CapEx) and greatly reduces the amount of infrastructure that you need to overprovision and manage, thereby reducing operating expenses (OpEx).

For SAP upgrades, you can save 45 percent in your project timeline, with your SAP environment ready to test in hours, rather than days or weeks. And your development lifecycle can be reduced by 25 percent or more, for faster time to value.

On average, our customers have experienced 50 percent lower costs for managing SAP data and 70 to 75 percent green IT savings. The solution optimizes both hardware and human resources through its unified fabric, programmable infrastructure, and data management software. The unified fabric reduces the number of networking components that your staff needs to cable, install, and manage. Its wire-once architecture enables zero-touch management of the infrastructure. After the solution is cabled, this programmable infrastructure is managed through a point-and-click GUI, where you create the best infrastructure for your SAP environment. The data management software optimizes capacity through the use of inline deduplication, inline compression, inline data compaction, thin provisioning, and cloning.

NetApp advantages include data reduction and extended system life, with a 6-year flash-storage warranty. With the NetApp All-Flash Guarantee program, you use less storage, with up to a 5:1 data reduction based on your workload. According to primary research reported in the white paper “The Business Value of Cisco UCS Integrated Infrastructure Solutions for Running SAP Workloads” (IDC document #US41084916, March 2016), SAP users running on Cisco products achieved a 528 percent return on investment (ROI), averaged US$20.4 million in 5-year business benefits, and broke even with their initial investment within nine months.

**Innovation You Can Trust**

IT is your new business advantage, and choosing the right infrastructure has never been as important. Together, Cisco and NetApp reimagined converged infrastructure with FlexPod. For six years, thousands of customers around the world have relied on FlexPod to increase business opportunities in the face of a changing IT landscape.

FlexPod continues to evolve with innovative technology, delivering the proven performance, proven agility, and proven value required for your SAP landscape. Supported by more than 250 combined years of engineering investment, you can accelerate your applications without disruption, improve data center economics, and build infrastructure that will serve you into the future with confidence.