SOLUTION BRIEF

TOP 5 REASONS TO CHOOSE FLASHSTACK FOR HEALTHCARE

1. Scale, Upgrade, Avoid Downtime with Stateless Technology

2. Management Designed for the Data Center and the Organization

3. Promote Innovation Through Simplified Upgrades: Cisco UCS Infrastructure and Evergreen Storage

4. Designed for Performance and Reliability

5. Simplicity, Ease-of-Use, and Cost Reduction

New IT service delivery methodologies are revolutionizing how hospital IT departments function and how IT staff and clinicians access the applications that make them successful. Demands on IT have necessitated a change to on-demand services and self-service models, and there is increasing focus on time-to-value for IT projects.

Now, organizations are finding new ways to onboard users, optimize workloads, and deliver secure, rich content to a broad and geographically diverse user base. These organizations aim to deploy workloads such as EHR, clinical applications, analytics, Oracle, Exchange, virtual desktop infrastructure (VDI), and more. When it comes to platforms like Oracle, for example, new IT models are designed to consolidate data warehouse workloads onto a single platform, helping to reduce database sprawl.

According to Gartner, the use of cloud computing is growing. In 2016, this growth rose to become the bulk of new IT spending. For many organizations, these years will be the defining years for cloud as private cloud begins to give way to hybrid cloud, with nearly half of large enterprises expected to have hybrid cloud deployments by the end of 2017.

FlashStack

"Overall, there are very real trends toward cloud platforms and also toward massively scalable processing. Virtualization, service orientation, and the Internet have converged to sponsor a phenomenon that enables individuals and businesses to choose how they'll acquire or deliver IT services, with reduced emphasis on the constraints of traditional software and hardware licensing models," said Chris Howard, Research Vice President at Gartner. "Services delivered through the cloud will foster an economy based on delivery and consumption of everything from storage to computation to video to finance deduction management."

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CHRIS HOWARD
Research Vice President at Gartner

The increased focus on cloud and service delivery has resulted in the creation of the next generation of converged architecture. Today's converged infrastructure (CI) solutions are smarter, simpler, smaller, and much more efficient than ever before. They are also based on newer technologies, and have direct integration with virtualization and cloud solutions. And organizations are already seeing the big benefits of converged infrastructure. Gartner expects it to be the fastest-growing segment of the overall market for integrated systems, reaching almost $5 billion by 2019.

Dramatic benefits, both technical and financial, are the driving factors around the converged-

infrastructure adoption boom. According to the IDC Worldwide Quarterly Converged Systems Tracker, the worldwide converged systems market increased revenue 4.6 percent year over year to $2.6 billion during the first quarter of 2017 (Q1'17). Solutions such as FlashStack have revolutionized the deployment of converged infrastructure by creating powerful efficiencies for the data center and the organization. With that in mind, let's examine the top 5 reasons to go with FlashStack when deploying your next-generation workload:

1. Scale, Upgrade, Avoid Downtime with Stateless Technology. When you work with Cisco technologies, you're using powerful Cisco UCS servers with UCS Manager service profiles. This type of architecture allows you to create workload deployments where identity is abstracted from the underlying physical hardware. Cisco Unified Computing System™ (Cisco UCS®) hardware is defined within a service profile, while the Pure Storage FlashArray is likewise stateless and resilient. Using simple tools, you can configure how, where, and when workload instances are deployed. These instances can be EHR, VDI, an Oracle database, an Exchange environment, SAP/HANA, or a range of others. Stateless technologies allow administrators to configure MAC, World Wide Name (WWN), Unique Universal ID (UUID), boot details, firmware, and even basic input/output system (BIOS) settings in software, through simple management interfaces. With a stateless architecture, you create the industry's most agile converged infrastructure. Most of all, it's important to see how agility directly translates to scalability.

Creating Next-Generation Scalability

The beauty of FlashStack is that you can scale all of your components extremely efficiently. For example, FlashArray controllers' front-end ports are all active but the back-end ports are active/passive to allow for failover. Also, FlashArray shelves can be expanded in the same way as Cisco UCS blade chassis can (capacity becomes available instantly and I/O begins to be balanced immediately). Integrated with the ability to create powerful levels of scale, FlashStack also allows this balancing to happen with zero downtime.

Designed for Maximum Availability

Flash modules can be swapped for higher-capacity modules the same way as blades can be swapped for new CPUs/greater memory dual in-line memory modules (DIMMs) and as new technology becomes available, older modules can be replaced by shelf evacuation. No downtime, no complete equipment upgrades—just pure efficiency around workload delivery and scale.

2. Management Designed for the Data Center and the Health System. FlashStack is designed to simplify the deployment,

monitoring, ongoing management, and upgrading of data center infrastructure. Consider the fact that Cisco UCS Director automates the configuration of Cisco UCS, Nexus switches, and Pure Storage. These automated workflows can be used for much more than just FlashStack configuration or deployment; they can enable automated resource provisioning and IT-as-a-service delivery. Advanced features help management go even further by bringing in features such as:

- Capacity and inventory views and reports
- Hypervisor end-to-end workflow automation for Small Computer System Interface over IP (iSCSI) and Fibre Channel
- Cisco UCS Bare metal agent (Preboot Execution Environment [PXE] boot) image bootstrapping
- Provisioning tasks with rollback
- Automated deployment of virtual-machine instances

3. Driving Innovation Through Simplified Upgrades: UCS Infrastructure and Evergreen Storage. Managing technology refreshes, particularly physical replacements and data migrations, is a constant challenge for enterprise IT administrators, particularly when it involves sensitive clinical data. Over time, health systems are adding more data and new applications and the storage infrastructure, inevitably, needs to grow in performance and capacity. Leading EHR applications' needs for storage capacity are growing as fast as 25 percent year-over-year. Enterprise storage solutions have traditionally imposed limitations in terms of their ability to be upgraded in place to incorporate newer storage technologies that improve performance, increase storage densities, drive efficiencies and lower overall costs. With its Evergreen maintenance model and associated future-proof design of its FlashArray modular,

software-defined architecture, the FlashStack converged infrastructure architecture aims to challenge customer preconceptions about the risk, expense and waste associated with forklift storage upgrades. In the Evergreen model, controllers are included every three years with the Evergreen Storage program as long as a maintenance contract is in place. The Evergreen Storage model enables healthcare organizations to lower their total cost of ownership TCO for storage, as they never re-buy a TB of storage. They can run and upgrade their storage with full investment protection. This model is designed to provide the following benefits:

- Upgradeable controllers for performance
- Upgradeable software for features
- Upgradeable expandable flash for capacity and density
- Long-life chassis

Designed for the Stateless Data Center: When you work with Cisco's UCS Management software, you're capable of leveraging powerful hardware and service profiles. Stateless technologies allow for the entire server identity to be abstracted in the UCS Management software.

From there, Fabric Interconnects provide both network connectivity and management capabilities for the Cisco UCS system. This means administrators can configure MAC, WWN, UUID, boot details, firmware and even BIOS settings – all in software. Furthermore, they can intelligently provision and control critical storage resources. This type of ecosystem allows you to design the industry's most agile converged infrastructure on FlashStack.

4. Designed Around Performance and Reliability. The FlashStack architecture creates a high-performance infrastructure for the most demanding users and workload profiles. You accelerate outcomes by reducing latency and introducing powerful metrics around workload performance with the Cisco® Unified Fabric coupled with a Pure Storage all-flash array. These workloads can range from VDI to high-performance database systems. Performance also means resiliency and security for sensitive clinical data. With FlashStack, enterprise deployments can enjoy a highly resilient converged infrastructure, which enables non-disruptive upgrades and

100-percent performance, even if a single component or path experiences a failure. Smooth upgradability without downtime also allows FlashStack-based data centers to take advantage of technology changes (such as higher-performance blade servers) without any penalty and without downtime. Encryption of data on the storage array is always on. Furthermore, in a virtualized environment, the process does not require a reboot of the application or virtual machine. In fact, the virtualization layer (VMware) can reposition and replace the server during the transition (vMotion off/on the host). Finally, the power of an all-flash stateless ecosystem will allow your applications to use sub-millisecond performance for real-world efficiency gains and optimal user experiences. Reliable, award-winning systems: Cisco UCS servers are consistently the highest-performing in their class, across a broad spectrum of workloads. Cisco UCS has set more than 100 world record benchmarks with their UCS architecture. Furthermore, every design has been comprehensively tested and documented by Cisco engineers to provide you with a deployment guide and best practices to help ensure faster, more reliable, and more predictable deployments.

Cisco UCS is designed for high availability with both component redundancy and connectivity to fabric interconnects.

Creating Next-Generation Scalability: The beauty of FlashStack is that you can scale all of your components extremely efficiently.

5. Simplicity, Ease-of-Use, and Cost Reduction. FlashStack goes way beyond being just another converged infrastructure system. The high data-reduction rates and small footprint of the Pure Storage arrays translate into big savings in rack space and power costs. Furthermore, when coupled with Cisco you see a drastic reduction in deployment efforts and infrastructure requirements. Consider this, Cisco UCS averages 77% reduction in cabling, helps reduce cooling and power costs by 54%, and reduces provisioning times by 83% (Source - UCS: Changing the Economics of the Datacenter). All of these advantages allow you to create superior workload density while using less cabling and fewer switches, resulting in lower data center costs, enormous simplification, easier management, and improved data center economics.

Designing Efficiency and ROI: The Pure FlashArray starts from only 8 required cables. The Cisco UCS Mini needs only 10. Furthermore, all-flash storage provides significant TCO savings in the shape of requiring less space and power. By consolidating more workloads on a smaller, converged infrastructure architecture like FlashStack, the total number of devices under management is reduced, simplifying administration and lowering operating expenses (OpEx). Furthermore, Cisco and Pure Storage have carefully validated (Cisco Validated Design and Pure Storage reference architectures) and verified the FlashStack solution architecture and its many use cases while creating a comprehensive portfolio of detailed documentation, information, and references to assist healthcare organizations in transforming their data centers to this shared infrastructure model.

Healthcare payers, providers and life science companies will need to evaluate how the data center can support their increasingly complex requirements. Solutions such as FlashStack from Pure Storage and Cisco create an innovative architecture that combines all flash storage with inline data reduction, along with powerfully scalable server and networking technologies.

FlashStack enables all-flash workload delivery to be affordable, powerful, and—most of all—simple.

GET STARTED WITH FLASHSTACK

Delayed infrastructure rollouts can affect your ability to meet agency objectives. Flash-Stack makes it easy to deploy the right virtual desktop infrastructure right from the start. This verified, lab-tested architecture helps reduce risk and guesswork by giving your IT architects and administrators a guidebook for implementation.

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www.flashstack.com

PURE STORAGE, INC. 650 CASTRO STREET, MOUNTAIN VIEW, CA 94041

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