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Pure Storage Monitoring

The emerging opportunities for service providers and how
CA Unified Infrastructure Management can help



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Executive Summary

Today, your customers are in the midst of a massive paradigm shift, undertaking digital business transformation so they can compete more effectively in their dynamic markets. As they seek out technologies that can help accelerate their digital transformation, IT decision makers are increasingly gravitating toward flash-based storage products from Pure Storage. This paper offers a detailed look at the drivers that are prompting the adoption of Pure Storage solutions—and the challenges that enterprise IT teams are likely to confront when they start leveraging these technologies. The paper then introduces CA Unified Infrastructure Management (CA UIM) and shows how the solution enables service providers to deliver managed monitoring service offerings that address their customers' emerging requirements.

Storage: A Key Element of Digital Transformation

“Quite simply, data is the lifeblood of the digital business.”

The digital transformation imperative

To compete and win in the application economy, it's critical for enterprises to pursue digital business transformation. Only those organizations that become truly digital businesses will be able to operate with the speed, agility and efficiency that emerging markets will demand.

Digital transformation requires innovation across the spectrum of how digital services are developed, supported and delivered. As a result, businesses are adopting a wide range of new technologies and approaches. The following sections highlight one area that will be increasingly vital in supporting digital business transformation: storage.

Why storage is so vital to digital transformation

Storage environments will play a fundamental role in whether an organization succeeds in its digital transformation. Quite simply, data is the lifeblood of the digital business. While data volumes have been growing for some time, the trajectory keeps rising, as do the number of users, systems and services that generate, access and leverage this data.

In the application economy, the ability to deliver fast, resilient access to data stores will be essential, not just to support expanding demands of traditional applications, but to enable digital transformation initiatives. For example, to support the dynamic nature of new private cloud infrastructures, storage systems will need to become much more agile and elastic. In addition, storage evolution will be key to supporting big data implementations, Internet of Things initiatives, virtual desktop infrastructures and more.

Contending with these evolving data demands is proving increasingly challenging for IT organizations that rely on legacy storage infrastructures. These teams see complexity and costs mount, and their transformation efforts get stifled. Therefore, transforming storage environments will be key for enterprises looking to accelerate their innovation.

“When enterprise leadership considers investing in flash-based storage arrays to accelerate their digital transformation, they’re consistently turning to Pure Storage and its FlashArray//m solutions.”

The emergence of flash-based storage arrays

For organizations pursuing digital transformation, flash-based storage technologies have quickly emerged as a must-have standard. By leveraging flash memory rather than physical disks, flash-based arrays deliver inherent advantages, offering breakthroughs in scalability, cost efficiency and simplicity. In recent years, the combination of technical innovation and falling costs of flash memory enabled pragmatic adoption of flash-based storage in increasingly large-scale implementations.

Given these advantages and trends, the adoption of flash-based storage is seeing explosive growth—especially in comparison to traditional storage solutions. Overall, compared to the first quarter of 2015, worldwide enterprise storage revenue declined seven percent during the first quarter of 2016. During the same period, the all-flash array market was up 87.4 percent.¹

Pure Storage: A Strategic Enabler of Digital Business Transformation

When enterprise leadership considers investing in flash-based storage arrays to accelerate their digital transformation, they’re consistently turning to Pure Storage and its FlashArray//m solutions. Pure Storage delivers innovative storage solutions that were architected from the beginning to maximize the advantages of flash-based arrays. Compared to traditional disk-based storage approaches, FlashArray//m solutions offer a number of inherent advantages, including smaller space and power requirements, higher scalability and faster performance. Further, these solutions deliver a number of other innovations that streamline implementation and operation, such as non-disruptive upgrades and plug-and-go deployments. Through its Pure1 offerings, Pure Storage also offers cloud-based data storage management and support.

Pure Storage now also offers FlashStack, which is a family of converged infrastructure solutions. FlashStack solutions are preconfigured, integrated and complete computing environments that are composed of FlashArray//m storage, Cisco Nexus switches, Cisco UCS fabric interconnects and Cisco UCS B-series blade servers. In addition, FlashStack is available in a variety of validated architectures that feature such applications as Citrix XenDesktop, Microsoft® Exchange, Microsoft SQL Server®, Oracle, SAP, VMware Horizon and VMware vSphere.

Pure Storage: pure momentum

In four years of selling into the storage market, Pure Storage has emerged as a top-ten vendor worldwide, and is growing about 10 times faster than the rest of the competitors in that list.² Following are a few other points that attest to the company’s market momentum:

- **Analyst validation.** Pure Storage was listed as a leader in the 2016 Gartner Magic Quadrant for Solid-State Arrays.
- **Customer adoption.** More than 2,300 customers now use technology from Pure Storage. The company’s customers represent a wide range of industries and regions. Customers also range in size and include small enterprises as well as the Fortune 500—where the company now has 20 percent market penetration.³

¹ IDC, “Worldwide Enterprise Storage Market Sees Continued Decline in First Quarter, According to IDC,” June 3, 2016, URL: <https://www.idc.com/getdoc.jsp?containerId=prUS41282316>

² The Register, “Q. What do you call a sales-growing letdown? A. Pure Storage,” Chris Mellor, May 26, 2016, URL: http://www.theregister.co.uk/2016/05/26/pure_q1_fy17_results/

³ 24/7 Wall St., “Is This the Turnaround Pure Storage Shareholders Are Looking For?”, Chris Lange, August 26, 2016, URL: <http://247wallst.com/technology-3/2016/08/26/is-this-the-turnaround-pure-storage-shareholders-are-looking-for/>

“Working with multiple tools, teams fundamentally lack insights into the performance of the end-to-end infrastructure and the business services that users rely on.”

- **Sales growth.** In the company’s most recent financial reports, Pure Storage announced year-over-year quarterly growth of 92.8 percent.⁴ Between 2016 and 2018, revenues are predicted to grow from \$440 million to \$1 billion.⁵
- **Channel-driven growth.** Channel partners accounted for 80 percent of new customer wins in the company’s most recent quarter, and the top five partners are seeing triple-digit annual growth in their Pure Storage business.⁶

Customer Challenges

Once deployed, FlashArray//m and FlashStack systems represent critical elements of the IT infrastructure. If these systems encounter downtime or performance issues, it can have an immediate and significant impact on customer-facing services, workplace productivity and company revenues. Consequently, establishing effective, continuous monitoring of Pure Storage implementations is critical. To be effective, organizations need to gain robust capabilities for tracking and managing performance, availability, utilization and service levels.

However, for many enterprise IT teams, it will be difficult to establish, operate and support the required monitoring capabilities. While Pure Storage provides monitoring services through its Pure1 offering, leveraging this functionality means that internal IT teams will need to learn, work with and integrate another tool—when they may already have many monitoring tools in place. Running multiple, disparate monitoring tools can present a number of challenges:

- **Disjointed alerting.** With myriad monitoring tools, IT teams are exposed to inconsistent, fragmented alerting, with each tool generating unique data, alerts and escalation processes. Not only does this mean a lot of work in compiling and aggregating data for reporting, but administrators may have to deal with issues like so-called “alarm blizzards” when one system failure has a ripple effect on other systems.
- **Time-consuming troubleshooting.** When issues arise, administrators struggle because distinct teams each need to check their own tools to try and identify the source, adding to the effort and complexity associated with managing IT environments.
- **Limited insights into service levels.** Working with multiple tools, teams fundamentally lack insights into the performance of the end-to-end infrastructure and the business services that users rely on. IT teams have a hard time gaining timely, useful insights needed to pre-empt issues, so they remain consumed with reacting to issues after the fact, and service levels suffer.
- **Lack of holistic insights for capacity planning.** Relying on isolated tools, IT teams struggle to track resource utilization across various storage silos. As a result, it is time consuming and difficult to intelligently allocate workloads and make optimized infrastructure investments.

⁴ Forbes, “Pure Storage Posts Earnings Beat In Second Fiscal Quarter, Sending Its Stock Soaring,” Alex Konrad, August 25, 2016, URL: <http://www.forbes.com/sites/alexkonrad/2016/08/25/pure-storage-posts-earnings-beat-in-second-fiscal-quarter-soaring-its-stock/#3354dad52de3>

⁵ Financial Times, Pure Storage, Inc., URL: <http://markets.ft.com/data/equities/tearsheet/forecasts?s=PSTG:NYQ>

⁶ ChannelE2E, “Pure Storage Earnings: Partners Drive 80% of New Wins,” Joe Panettieri, August 25, 2016, URL: <https://www.channel2e.com/2016/08/25/pure-storage-earnings-partners-drive-80-of-new-wins/>

“Delivering these monitoring services can help you grow your offerings, revenues and market share.”

Finally, in spite of all their benefits, flash-array storage systems represent fundamentally new technologies for most internal enterprise IT teams. Particularly if they're not staffed with solid-state array experts, internal teams may struggle to contend with ongoing efforts like fragmentation, tuning, clustering and synchronization and so on. As a result, performance can suffer, cost savings can be eroded and digital transformation efforts can be impeded.

The Opportunity: Managed Monitoring Services for Pure Storage

Given their proliferation in the market, solutions from Pure Storage are likely to play an increasingly prominent role in your existing customer accounts and prospect organizations. By establishing expertise and services around Pure Storage solutions and deployments, your service provider business can gain a significant competitive advantage.

In working with existing clients that haven't yet employed flash-based storage arrays, your organization can leverage expertise with solutions like FlashArray//m and FlashStack, and deliver significant value by offering initial consulting and integration services. Your organization can help with evaluations, architecting implementations and assisting with deployments.

You can gain further differentiation for these offerings by bundling in high-value and differentiated monitoring services. In addition, monitoring services can represent a great way to build a presence in new accounts that have already implemented FlashArray//m.

By delivering compelling managed monitoring services, you can establish your organization as a trusted partner and expand your presence in your accounts. Delivering these monitoring services can help you grow your offerings, revenues and market share.

The Solution: Deliver Compelling Managed Monitoring Services with CA Unified Infrastructure Management

Delivering managed monitoring services represents a compelling opportunity for many service provider businesses. However, the only way service providers can establish monitoring services that stand out in the marketplace and deliver compelling value to customers is by leveraging robust, enterprise-grade monitoring platforms.

That's why so many of the world's most successful service providers build their monitoring services on CA Unified Infrastructure Management (CA UIM). CA UIM offers a range of technological advantages that service providers around the world are leveraging to improve service, expand offerings and boost margins. Browse the sections below to learn more about these unique strengths, and the services the solution can power.

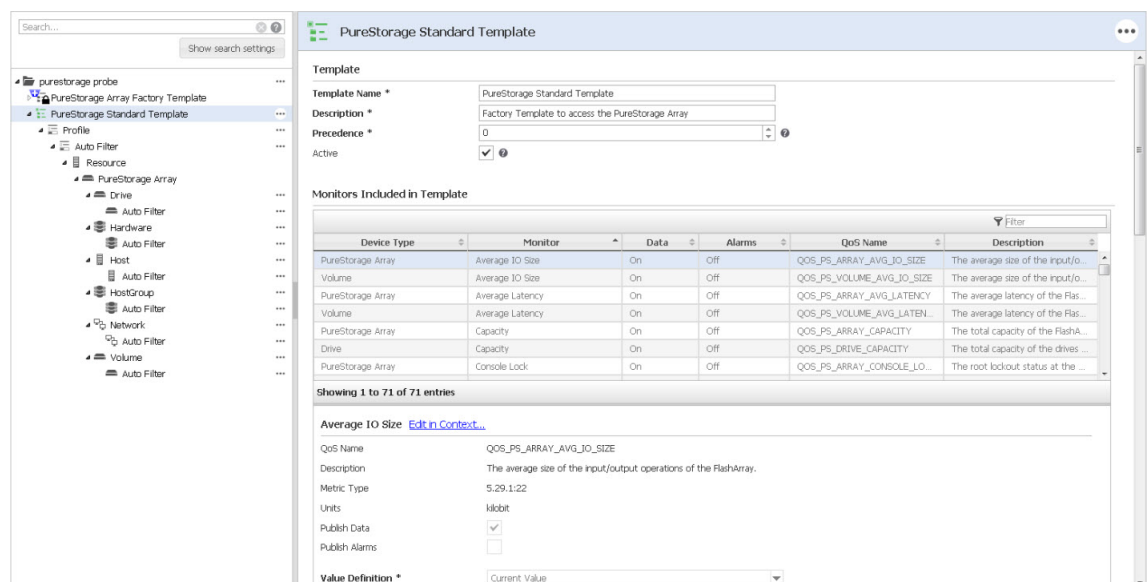
Comprehensive capabilities that fuel unified monitoring services

To maximize revenue potential and customer value, your service provider business needs to leverage monitoring platforms that can provide visibility across customers' IT environments and from the top to the bottom of their IT stack. CA UIM offers the comprehensive capabilities that are critical to establishing successful Pure Storage managed services:

- **Extensive FlashArray//m coverage.** CA UIM can help your business deliver compelling, high-value managed monitoring services to clients running FlashArray//m systems. With CA UIM, you can track and optimize the performance of your customers' FlashArray//m systems. The solution monitors physical and logical storage components in FlashArray//m deployments, delivering metrics on arrays, drives, hardware, hosts, host groups, network interfaces, resource response and volumes. CA UIM retrieves vital array information, such as input/output operations per second (IOPS), latency, data reduction, snapshot capacity and total bandwidth.
- **The most comprehensive coverage of cloud and hybrid IT environments.** CA UIM provides a solution for monitoring all elements across a heterogeneous IT environment—all with a single product, architecture and console. CA UIM supports more than 140 technologies, including physical and virtual servers, networks, storage systems, databases, applications, user experience, public and private clouds, power and cooling infrastructure and more. With CA UIM, you can monitor and manage virtually all business applications—whether they're running in SaaS, hosted or virtualized environments. With CA UIM, service providers can quickly address new, high-growth markets and changing customer demands.
- **Intelligent alarms and predictive analytics.** CA UIM offers sophisticated alarm functionality that enables fast, effective response when issues arise. The solution offers dynamic thresholds that minimize false alarms and improve staff productivity. In addition, with CA UIM, you can leverage predictive analytics capabilities that help you proactively identify issues before the user experience suffers. The solution can provide a prioritized list of problems that represent situations administrators should watch.
- **Multitenancy support.** CA UIM provides true multitenancy—enabling service providers to use a single instance of the solution to support many customer infrastructures. As a result, you can centrally and efficiently monitor and manage all customer environments. At the same time, the solution enables you to deliver secure, tailored reports, dashboards and portals to each customer.

Figure A.

CA UIM offers comprehensive monitoring coverage of FlashArray//m implementations.



The screenshot displays the CA UIM console interface for configuring a monitoring template. On the left, a navigation tree shows the hierarchy: **purestorage probe** > **PureStorage Array Factory Template** > **PureStorage Standard Template**. The main panel is titled **PureStorage Standard Template** and contains the following sections:

- Template:**
 - Template Name: PureStorage Standard Template
 - Description: Factory Template to access the PureStorage Array
 - Precedence: 0
 - Active: ☒
- Monitors Included in Template:** A table listing various monitors for different device types.
- Showing 1 to 71 of 71 entries**
- Average IO Size:** A detailed view for the **QOS_PS_ARRAY_AVG_IO_SIZE** monitor.

Device Type	Monitor	Data	Alarms	QoS Name	Description
PureStorage Array	Average IO Size	On	Off	QOS_PS_ARRAY_AVG_IO_SIZE	The average size of the input/output...
Volume	Average IO Size	On	Off	QOS_PS_VOLUME_AVG_IO_SIZE	The average size of the input/output...
PureStorage Array	Average Latency	On	Off	QOS_PS_ARRAY_AVG_LATENCY	The average latency of the Flas...
Volume	Average Latency	On	Off	QOS_PS_VOLUME_AVG_LATEN...	The average latency of the Flas...
PureStorage Array	Capacity	On	Off	QOS_PS_ARRAY_CAPACITY	The total capacity of the FlashA...
Drive	Capacity	On	Off	QOS_PS_DRIVE_CAPACITY	The total capacity of the drives ...
PureStorage Array	Console Lock	On	Off	QOS_PS_ARRAY_CONSOLE_LO...	The root lockout status at the ...

Average IO Size [Edit in Context...](#)

QoS Name: QOS_PS_ARRAY_AVG_IO_SIZE

Description: The average size of the input/output operations of the FlashArray.

Metric Type: S.29.1:22

Units: kilobit

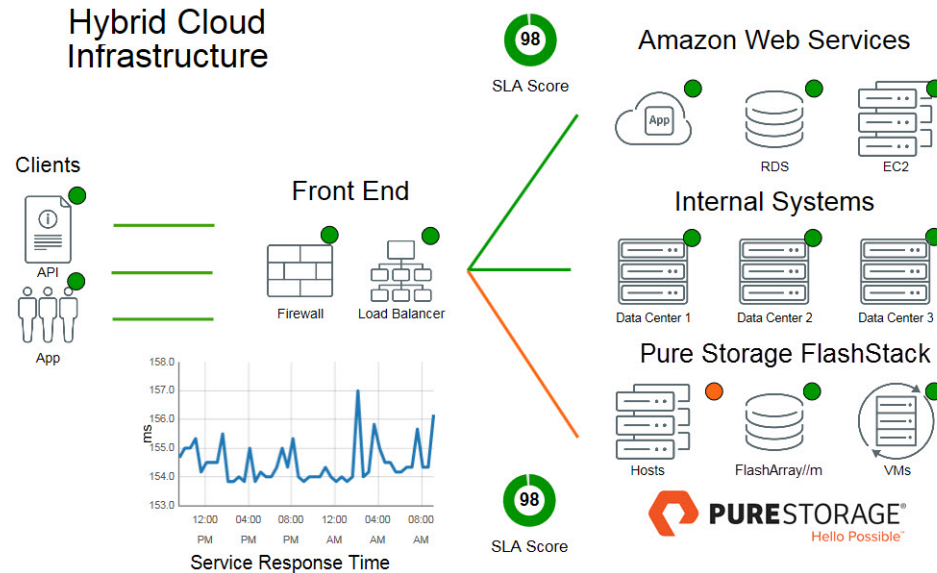
Publish Data: ☒

Publish Alarms: ☐

Value Definition: Current Value

Figure B.

With CA UIM, organizations can gain unified monitoring views of hybrid IT environments, including cloud services, FlashArray//m, FlashStack, and many other services and systems.



- **Scalability to support large-scale deployments.** Many of the world's largest cloud providers, service providers and hosting providers rely on CA UIM to deliver the high scalability required. With CA UIM, organizations get the monitoring scalability they need to serve more clients with existing staff, serve larger clients and monitor more devices and simultaneous events. CA UIM features an efficient, high-performance event processing engine that can scale to support event volumes generated from tens of thousands of servers. Plus, it offers a secure, reliable and efficient client access model that can support hundreds of concurrent connections.

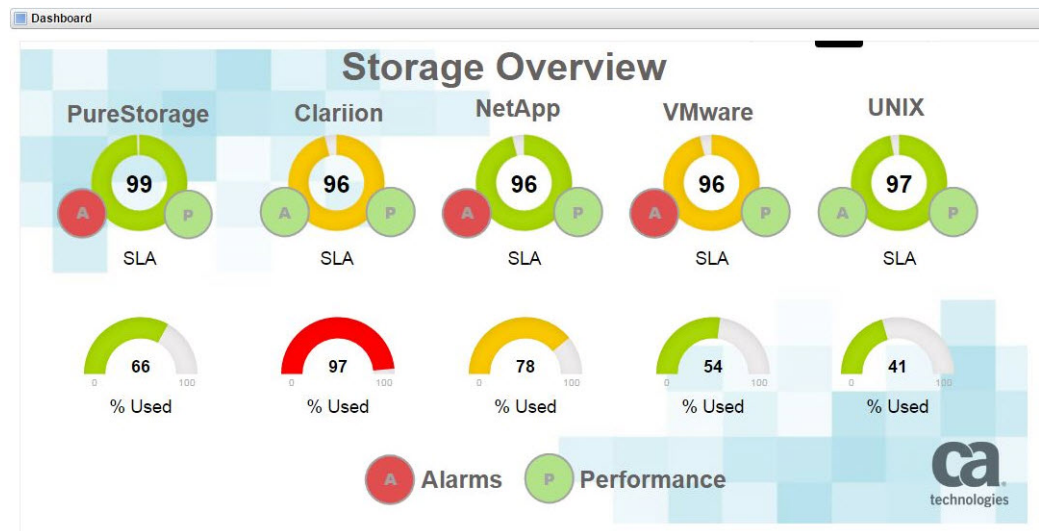
Unified monitoring services powered by CA UIM

By delivering comprehensive coverage of FlashArray//m environments and the entire IT infrastructure, CA UIM can help your organization maximize the business opportunities presented by the emergence of Pure Storage solutions in your markets. By leveraging CA UIM, your organization can deliver a range of monitoring services:

- **Unified FlashArray//m monitoring.** Combine CA UIM and your storage expertise and provide around-the-clock monitoring services of customers' critical FlashArray//m implementations. With CA UIM, you can deliver a compelling monitoring service that offers deep coverage of all aspects of FlashArray//m implementations. Monitor availability, performance, usage and more.
- **Unified, multivendor storage environment monitoring.** The reality is that most organizations will run FlashArray//m along with legacy storage for some time. With CA UIM, you can monitor customers' complete storage environments and provide unified visibility into FlashArray//m as well as systems from EMC, Hitachi, IBM® and NetApp.

Figure C.

CA UIM can equip users with unified dashboards that provide at-a-glance views of the capacity and availability of all their storage investments.



- Unified FlashStack monitoring.** As outlined above, FlashStack solutions are preconfigured, integrated and complete computing environments that comprise FlashArray//m storage, computing resources, networking and applications. While leveraging these packaged environments can yield a number of benefits, ultimately, customers need to ensure that each component and, most critically, each business application within the converged environment is performing optimally. With CA UIM, you can offer compelling monitoring services that give clients unified visibility into all the elements that make up the FlashStack environment.
- Unified custom application stack monitoring.** Customers may deploy FlashArray//m in a broad range of environments. Ultimately, all the heterogeneous elements that make up the environment need to be performing optimally if service level commitments are to be met. With CA UIM, you can deliver monitoring visibility that spans the customer's entire application stack, including applications, databases, servers, middleware and storage environments—including those based on FlashArray//m or a combination of platforms.
- Unified business service monitoring.** Today, any given business service your customers operate may rely on different technology stacks and hybrid IT environments, including different hosted infrastructures, cloud services and on-premises data centers. Pure Storage solutions, not to mention a wide range of other systems and technologies, can be deployed within each of these locales. Tracking service levels across these composite, hybrid environments can present a real challenge for customers, particularly if they're relying on a collection of point tools. By leveraging CA UIM, you can deliver unified visibility across these environments and track service levels from end to end, no matter where underlying components reside. As a result, your organization can provide significant, strategic value to customers.

Within each of these offering categories, your organization can provide multiple levels of service. For example, in addition to standard performance and availability monitoring, your organization can offer advanced, predictive analytics, dashboards and remediation services. With CA UIM, your organization can also provide advanced capacity planning services that leverage comprehensive visibility across technology and service silos.

Conclusion

Regardless of the markets you serve, chances are good that the customers you work with have either implemented Pure Storage solutions or may soon be doing so. By leveraging CA UIM and establishing Pure Storage monitoring services, your business can provide significant value—and help accelerate customers' digital transformation. Through these services, your organization can expand its revenues, margins and market share.

For more information about Pure Storage, visit the company's **product page** and **partner page**.

For more information about CA UIM, please visit the **product page**. For more details on how CA supports service providers, see the **CA service provider page**.



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