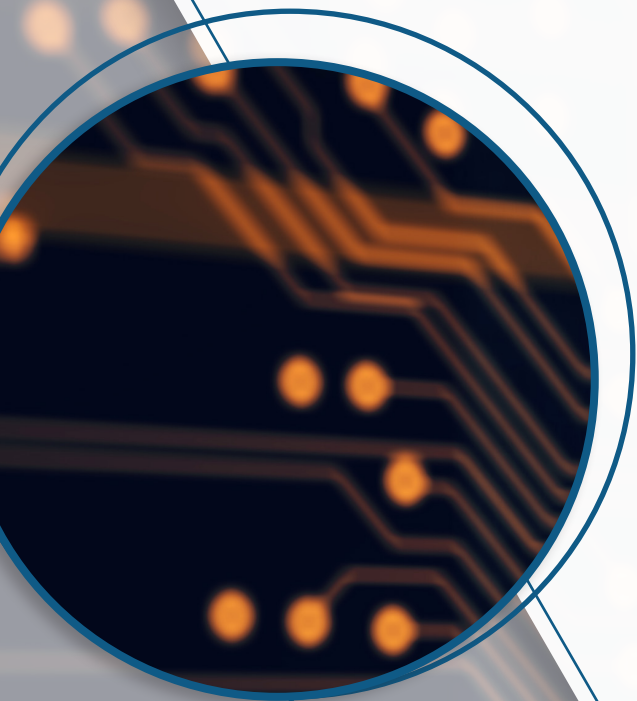




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Demand for Hybrid Clouds is Driving more Infrastructure Automation Requirements for Service Providers

COMMISSIONED BY



MAY 2020

About this paper

A Pathfinder paper navigates decision-makers through the issues surrounding a specific technology or business case, explores the business value of adoption, and recommends the range of considerations and concrete next steps in the decision-making process.

ABOUT THE AUTHOR



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Henry Baltazar is a Research Vice President for the Storage Channel at 451 Research. Henry returned to 451 Research after spending nearly three years at Forrester Research as a senior analyst serving Infrastructure & Operations Professionals and advising Forrester clients on datacenter infrastructure technologies. Henry has evaluated and tested storage hardware and software offerings for more than 15 years as an industry analyst and as a journalist.

Executive Summary

As hybrid cloud becomes more central to IT and more mission-critical workloads are deployed into public cloud, hybrid and multicloud strategies are gaining momentum. The stewardship of data across these environments is exceedingly important. Because of the complexity of these environments, the reliance on automation to manage infrastructure, containerized application deployments and data growth is a must for the success of service providers assisting enterprises with their IT transformations.

Key Findings

- By 2021, 39% of enterprises expect public cloud to be their primary application deployment venue.
- A hybrid approach to IT strategy is common for most enterprises (57%).
- Within 24 months, 90% of enterprises will have adopted AI and machine learning (ML) use cases.
- Well over three-quarters (85%) of service providers said they were likely to purchase automated infrastructure configuration and deployment software.
- Data/capacity growth is a top pain point for 31% of service providers.

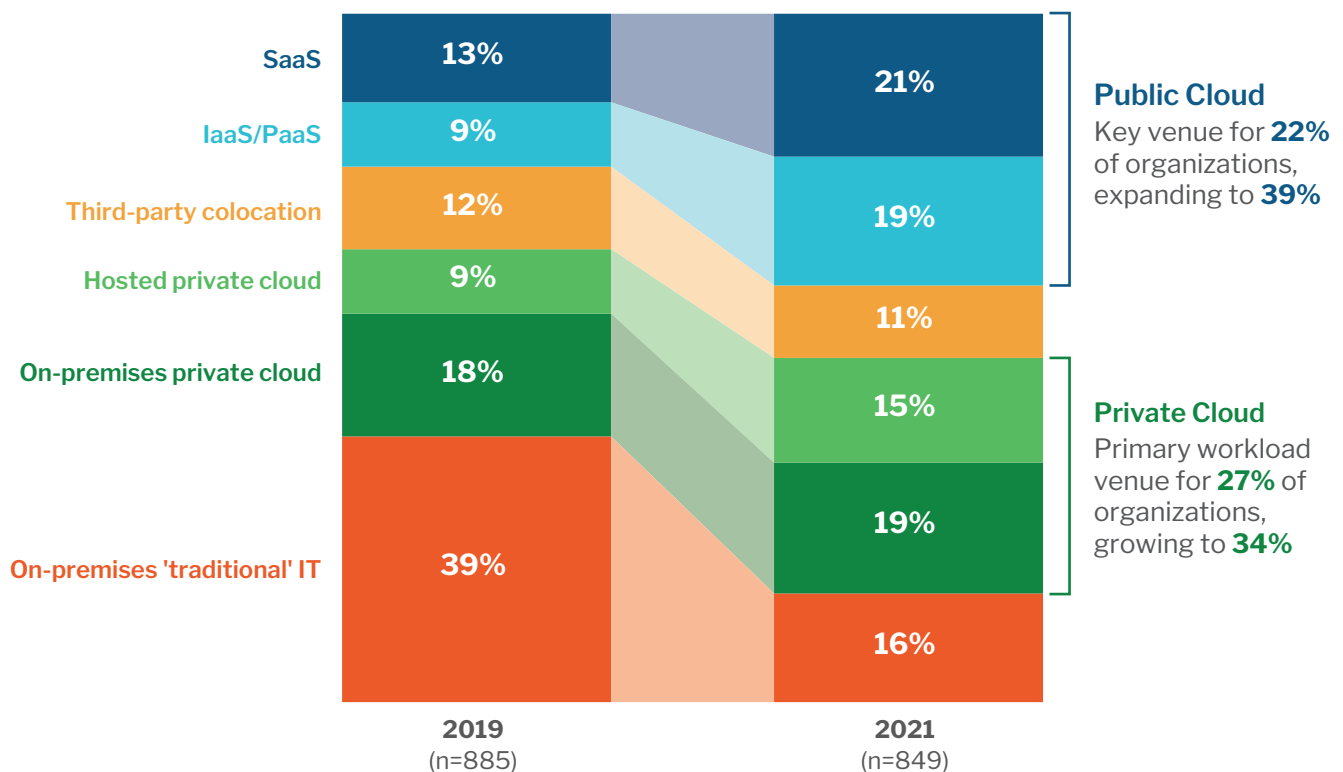
Organizations Are Increasingly Moving Workloads to Hybrid Cloud

As they undergo digital transformation throughout their organizations, enterprises are moving workloads from legacy on-premises infrastructure to a diversified hybrid architecture through a combination of hosted private cloud and public cloud resources. This introduces complexity for the operational management and security of disparate end points and environments, and the interoperability of resources within a hybrid infrastructure is often crucial to its success.

Figure 1: Primary workload deployment venue, 2019 and 2021

Source: 451 Research's Voice of the Enterprise: Digital Pulse, Workloads & Key Projects

Q: Thinking about all of your organization's workloads/applications, where are the majority of these currently deployed?
Where will the majority of these be deployed two years from now?



A vast, distributed infrastructure requires more monitoring and management, which means application developers and operations staff will have to invest more resources into orchestration, security, automation and data management. An increased infrastructure surface area becomes difficult to maintain and can interfere with an enterprise's ability to focus on its distinct business opportunity via constant network surveillance.

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Enterprises handle most cloud management in-house today. However, the expanding possibilities and accompanying complexity of cloud platforms has more users looking outside their businesses for providers of both operational (such as cost optimization or cloud-based backup) and strategic (such as cloud-native app development or hybrid architecture design) services, presenting a significant opportunity for service providers.

Hybrid and Multicloud Managed Services

In order to remain relevant, tier 2 service providers, especially MSPs, must offer hybrid and multicloud managed services that connect data with legacy and modern applications. Among respondents to 451 Research's Voice of the Enterprise: Cloud, Hosting & Managed Services, Workloads & Key Projects 2019 study, 57% of businesses anticipate a move toward a hybrid IT environment that leverages both on-premises systems and off-premises cloud/hosted resources in an integrated fashion. Organizations often find themselves developing a hybrid or multicloud strategy as a means of taking control of a complex mixed environment. Such complexity is a natural outcome of hybrid and multicloud strategies, and addressing it is one of the key ways that modern managed services deliver value. We expect that skills and services to help navigate the complexity of hybrid and multicloud environments will become a key area of new opportunity for managed services businesses associated with cloud adoption or the use of public cloud services. Designing, implementing, operating and optimizing hybrid and multicloud deployments, as well as the associated data portability, will become an increasingly important capability for companies offering managed and professional services around the use of public cloud.

To provide value, MSPs will need to manage the interoperability between legacy on-premises infrastructure and cloud environments. While it will be important for MSPs to remain conscious of legacy workloads, there should also be an understanding that application modernization is a desired end state for all but the most challenging legacy applications. Accelerating the move to the cloud will encourage enterprises with transformative goals in mind. According to 451 Research's Voice of the Enterprise: Cloud, Hosting and Managed Services: Vendor Evaluations 2018 survey, the most desired expertise that businesses expect to outsource is cloud platform expertise.

A strong service provider opportunity exists around helping enterprises access the skills necessary to succeed with cloud. Among these skills are security expertise, cloud architecture, and cloud orchestration and management because these are among the skills most lacking within enterprise IT departments. While businesses indicate plans to emphasize training and hiring in their approach to solve skills gaps, consulting, managed services and outsourcing services are also part of the mix. This represents a clear service provider opportunity, but are they prepared?

Key Elements of Hybrid Cloud Management are also Top Challenges

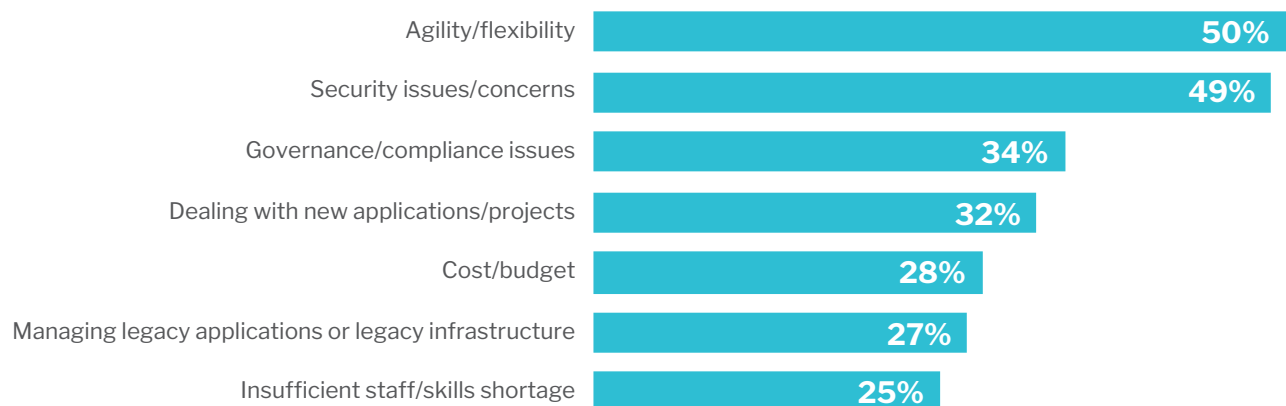
The key elements for hybrid cloud management – agility, security, compliance and cost management – are also the top technical challenges for all service providers. Providing a managed service for hybrid and multicloud does not just translate into design, implementation, migration and management across multiple environments; there is also a need for deeper expertise to access advanced capabilities found within the individual environments, achieved through potential partnerships with a wider ecosystem of service providers. Additionally, this includes expertise in identifying the best venues for enterprise workloads, deploying those workloads into the correct environments and continuously re-evaluating those assessments in the face of evolving enterprise requirements.

Because new applications, databases and other technologies are constantly added to the mix, service providers continually need to master and learn new skills. This is a difficult task for many service providers to accomplish due to the size of their technical support staff. Providers can't continually increase staff/headcount to account for new technology; instead, the same staff is expected to do more and learn new things every year. Hence routine activities need to be automated so service provider support staff can focus on continuously increasing their technical skills.

Figure 2: Top pain points regarding IT environments

Source: 451 Research's Voice of the Service Provider: Infrastructure Evolution 2019

Q: Currently, what are the top overall pain points with regard to the IT environments used for customer-facing services in your company?



From a security perspective, a large hybrid cloud environment creates a much larger attack surface. Monitoring a larger network manually can distract from necessary business practices. To maintain security and overall visibility into their hybrid networks, enterprises will look to MSPs to carry the load. Outsourcing security processes allows developers to focus on their core competency of writing and testing code.

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To remain cost-competitive, agile and relevant in the shadow of the hyperscalers, service providers must invest in automation and tools that will allow them to scale the business without a corresponding increase in headcount. They will struggle to keep pace with the competition otherwise. Cloud performance management and monitoring tools are also critical as providers scale and maintain performance levels. Ninety-five percent of service providers allocate spending in this area, with the majority remaining at the same funding level in the next budget cycle. Those that are increasing spending have larger estates and are adding the ability to monitor hybrid and multicloud deployments.

According to 451 Research's Voice of the Service Provider (VSP): Differentiation & Vendor Selection 2019 survey, 85% of service providers were very likely or somewhat likely to purchase automated infrastructure configuration and deployment software over time. The 451 Research VSP: Budgets and Spending 2019 survey found that 32% of service providers are increasing their spending on automated provisioning and orchestration in the next budget cycle.

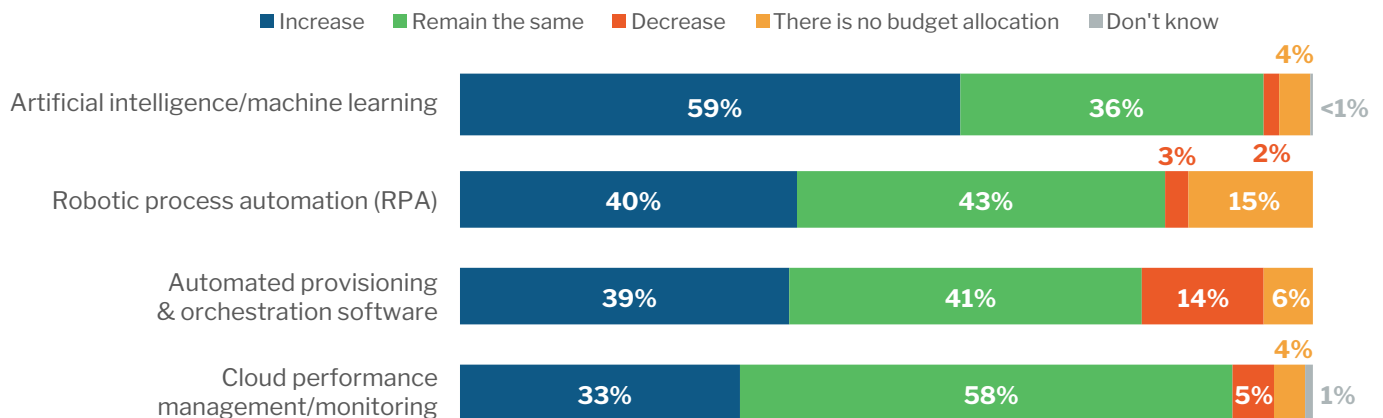
The Importance of Artificial Intelligence

For maximum automation effectiveness in the face of the hybrid challenge, MSPs should be using AI. A platform-powered service provider uses its digital business platform as the engine for the consistent development, delivery and operation of its professional services. The platform is typically modular and API-driven, and takes advantage of containers, microservices and open system components. It sits above cloud services and is designed to ingest data and draw insights from it, using automation, analytics models and machine learning to create smart workflows and manage business processes that operate within the security and governance policies designed by the IT services provider.

Figure 3: Budget allocations for customer-facing products and services

Source: 451 Research's Voice of the Service Provider: Budgets and Spending 2019

Q: Thinking of your next budget cycle, please indicate the budget allocation for each of these areas as they relate to your customer-facing products or services.



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Currently, 35% of service providers have AI-/ML-based product applications to support their customer-facing business. Within 24 months, 90% will have adopted AI and ML use cases. Integrators, regional cloud providers, MSPs and SaaS providers have goals to automate or optimize most customer-facing processes. The benefits that AI brings in terms of automation and optimization can be applied to a wide spectrum of operational processes for a wide variety of results. Given that a service provider is brimming with processes, tasks, analyses, procedures and operations just waiting to be augmented and automated by machine learning, there are several ways in which the technology can bear fruit for adoptees.

Service providers must also be prepared to explain AI systems, data security and the governance of these new technologies. As enterprises increasingly turn to service providers to manage AI/ML-based services, providers have a major opportunity to provide the potentially enormous compute resources demanded by AI and machine learning workloads, which will impact decision-making around IT infrastructure and the choice of service provider partners. Some of the business will inevitably go to the hyperscalers, but not all given the varying concerns some organizations have about them in terms of conflicts of interest, geography and price, among other issues.

Storage vendors operating in a hybrid environment will need to adhere to multiple levels of AI-enabled automation. These include ensuring storage is API-driven, has AI-enabled tools, and has security built in.

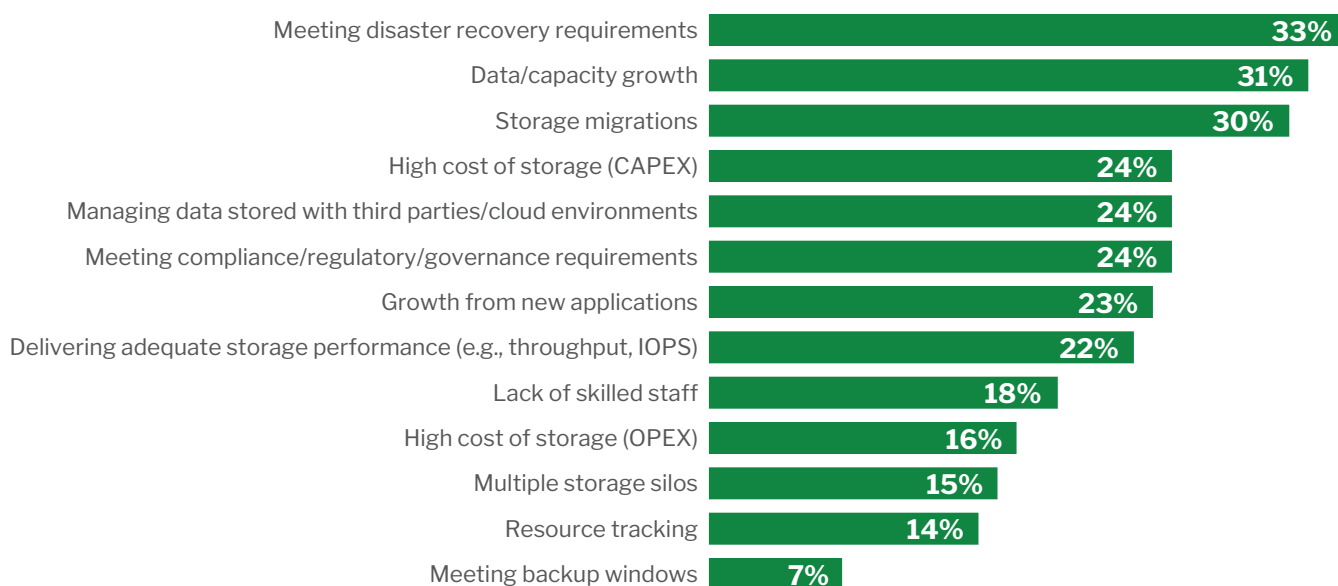
Data Protection and Flexible Storage Services Are Key for Service Providers

The challenges of storage are more complex for service providers in that they must support their own internal infrastructure needs as well as the varying needs of their customer base. Most hybrid cloud storage offerings today require a flexible mix of block, file and object services that can support a broad range of performance, collaborative and long-term data applications, and provide for business continuity/disaster recovery of service providers' systems as well as the specific needs of their customers. The chart below from our 2019 VoSP polling ranks the main storage-specific pain points for 225 service provider respondents.

Figure 4: Top storage pain points

Source: 451 Research's Voice of the Service Provider: Infrastructure Evolution 2019

Q: What are your organization's top pain points from a storage perspective?



We posed the same question to enterprises and found that there are a great many similarities between enterprises and service providers across the board. The key exception was at the top of the list: Enterprises ranked 'data/capacity growth' as the number one pain point and 'meeting disaster recovery' second, while service providers' ranking was reversed; they ranked DR number one and growth second. This makes perfect sense in that much of a service provider's storage is likely a commodity that is resold, while for enterprises, it's purely a cost center. The same is somewhat true of disaster recovery in that service providers are responsible for protecting their own data and providing disaster recovery for a broad range of customer needs, while enterprises are focused on a more global approach to DR with far fewer variables.

In terms of storage services in general, there is an evolving relationship between primary and secondary storage use cases, where primary storage for high-performance applications is focused on all-flash, block-based systems. However, modern object storage based on all-flash is already starting to gain attention for a number of applications. While hybrid disk/flash secondary storage (most often software-defined storage) spans the greatest number of use cases supporting more generalized block, file and object storage needs, there's a growing number of analytics and other performance-oriented applications that are gaining interest from customers and could benefit from data analytics and AI/ML, but organizations can't justify the capital expense of a dedicated analytics infrastructure. The availability of these specialized services and a performance-based supporting storage infrastructure could be a compelling story for service providers to attract new customers, as well as provide a platform for supporting internal analytics initiatives.

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Conclusions

Businesses are increasingly regarding public cloud platforms as more than compute and storage and are engaging with their advanced functions. The majority of these public cloud users are consuming the advanced platform functions of their vendors, including database functions, container management, analytics, machine learning and others in combination with private cloud resources that are either hosted or on-premises.

Hybrid is now considered a key tool in the ongoing optimization of workload placement and the pursuit of factors driving value behind cloud deployments; hybrid and multicloud strategies are a vehicle for making cloud work as advertised. Understanding the factors that impact workload placement is an opportunity for managed service providers to add value within the context of evolving hybrid and multicloud design. This includes services that help continuously identify the best execution venue for a workload and migrate that workload to achieve performance, security, cost and other targets. Service providers face a large ongoing challenge because of the need to provide comprehensive technical support while handling growing workloads without the ability to keep adding support staff to carry the burden.

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Pure is a true industry leader in automation and enables MSPs for the challenges of hybrid cloud. Pure has a three-pronged technology strategy to enable automation – Pure1®, cloud integration and Pure Service Orchestrator™ (PSO).

Pure 1: Pure1 is an AI (Pure1 Meta™)-driven, fleet management system that provides great simplicity, flexibility and a true IoT-like experience. Pure1's AI algorithm develops a workload DNA, (as we like to call it at Pure Storage), using data from across thousands of production arrays such as – inline deduplication rate, read I/O size, write I/O size, space usage, inline compression rate, total data reduction rate, write I/O size, write IOPS and several other data points. Leveraging this, Pure1® helps the storage administrator plan for following key scenarios that are extremely hard to do so otherwise – performance, capacity changes in the future, hardware upgrades and their impacts, and simulate anticipated changes to workloads and plan for changes to infrastructure accordingly. Pure1® has several tools like Global Dashboard, VM Analytics, Report Center, etc. that give a lot of flexibility to the storage admin to build and customize powerful automated reports and dashboards for monitoring and proactive troubleshooting in very user-friendly GUIs.

Cloud Integrations: Pure Storage delivers comprehensive integrations with VMware, Microsoft and OpenStack clouds. This provides an automated, effortless and cost-optimized hybrid-cloud infrastructure for the MSP. MSPs also get dramatic flexibility to build & launch their cloud without extra devices or software application installation, configuration & future maintenance. Pure's VMware plug-ins such as FlashArray™ plug-in for vRO (vRealize Orchestrator), Pure Storage Content pack for vRealize Log Insight, SRA (Storage Replication Adapter) for Site Recovery Manager, VMware vSphere® Metro Storage Cluster (vMSC), Vcloud Foundation (VCF), vVols, FlashArray Management Pack for vRealize Operations Manager & the FlashArray Plug-in for the vSphere Client offer out-of-the box automation of the most common workflows and complex IT tasks. Pure's API-first approach and VVD (VMware Validated Design) on Pure Storage complete this picture, providing a fully automated array experience: configuration, orchestration, provisioning, maintenance and disaster recovery activities – everything is simple. Pure's integration with System Center Virtual Machine Manager and Operations Manager allows for FlashArray volume, snapshot, health monitoring and problem detection of the MSP's Microsoft Private Cloud environment. System Center Virtual Machine Manager supports the industry standard SMI-S for management. Pure's integration with Windows Admin Center provides the capability to manage on-premises & cloud instances of FlashArray. All of the aforementioned integrations can be automated & managed using the PowerShell SDK as it is the foundation of all integrations. Similarly, Pure Storage offers a variety of integration & automated deployment solutions for +OpenStack: our Cinder driver for FlashArray helps in making cloud deployment automated, faster and simple.

Pure Service Orchestrator: Pure Service Orchestrator (PSO) is an integrated software layer that delivers container storage-as-a-service to build & deploy scale-out, microservice-based applications on demand. PSO seamlessly integrates with container orchestration frameworks, like Kubernetes, so the MSP can effortlessly deliver persistent storage support for containerized applications.

Pure's MSP customers give consistent positive feedback on how Pure Storage is helping them stay efficient in this challenging environment by giving it simple to launch hybrid cloud infrastructure quickly.

Visit [MSP Solutions with Pure Storage](#) or call 800.379.PURE to learn more.

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