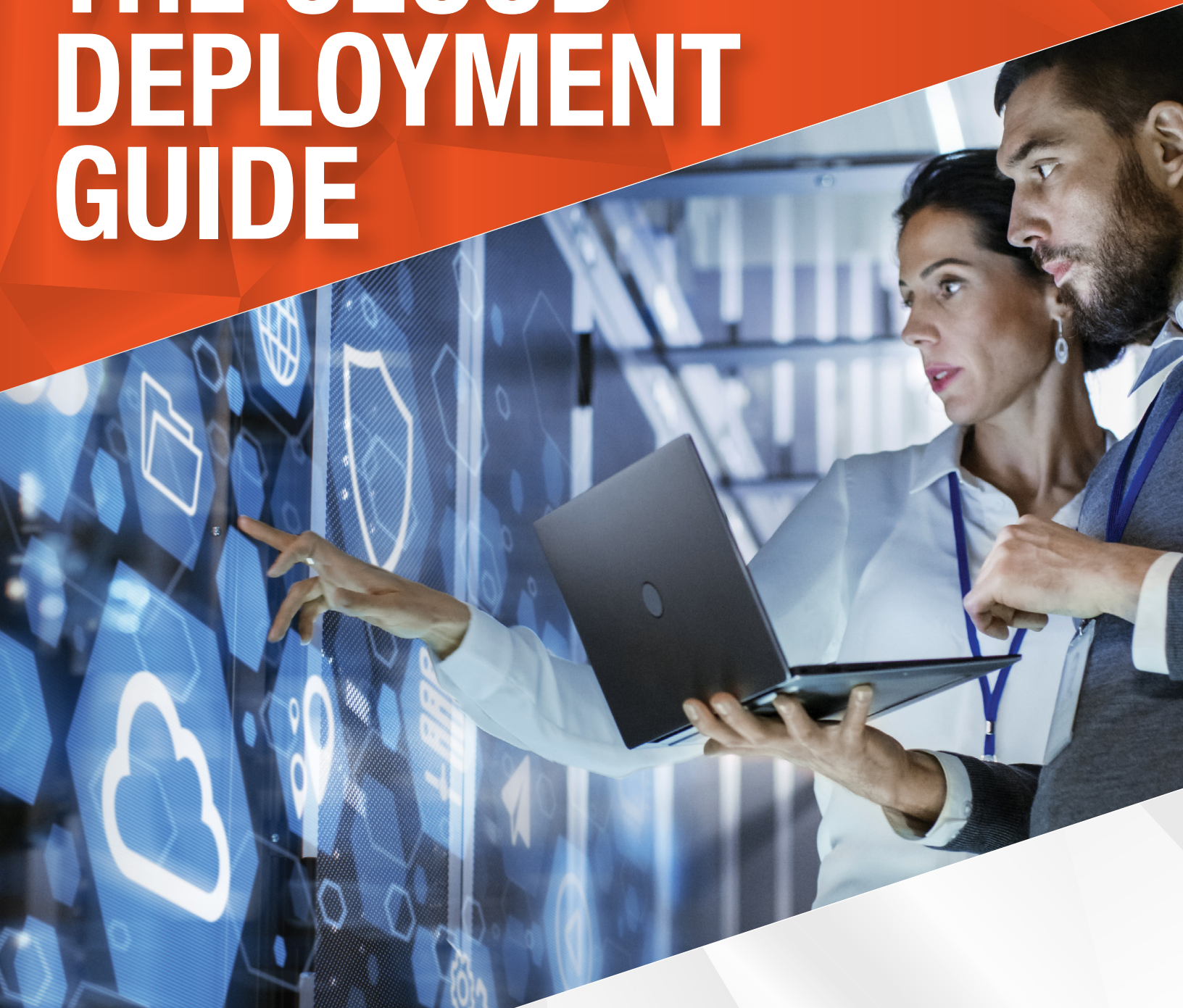


SHI AND PURE STORAGE PRESENT:
**THE CLOUD
DEPLOYMENT
GUIDE**



Three Main Challenges
Facing Organizations
When Deploying
Hybrid Cloud
Environments.



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IT Workforce-Ready Guide:

Whether your IT team members are working through a public cloud solution, moving data sets, modernizing your data protection strategy or replacing a disaster recovery data center – this guide is tailored specifically for your organization and is relevant to the following roles and responsibilities:

- IT Leadership
- Storage, Cloud and Virtualization Admins
- DevOps Engineers
- Data Architects
- Database Admins
- Developers

Overview

Building an effective cloud strategy requires more than “lifting-and-shifting” applications. It extends beyond an IT department, involving input across teams, departments and leadership. Furthermore, it requires an evaluation of OPEX and CAPEX models, resource review and considerations, technical environment assessments and more.

IT teams often struggle with getting their cloud deployment off on the right footing. To help with your public cloud journey, we have created this guide highlighting common deployment challenges, what you need to know about moving applications, and solutions to your migration challenges.



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Why Teams Face Roadblocks with Public Cloud Deployments

Skill Development Opportunities

After years of building and deploying on-premises applications for your organization, developing a number of technical skills and proficiencies has served your organization well. Utilizing the best of both on-premises and public cloud offerings can present new sets of organizational challenges.

Currently, IT teams invest and augment applications to run successfully in the cloud. Your most strategic applications should ideally be newly architected or refactored as cloud-native, based on container and microservices architecture.

For the remainder of your application environment, it may be unrealistic to refactor them into containers. Doing so requires different skills than those needed for traditional monolithic applications.

Overall Cloud Readiness

Instead of diving straight into the details of building a hybrid cloud solution, assess your overall cloud readiness and think about your migration goals.

- *Why do you want to leverage the public cloud?*
- *What issues are you trying to solve in exploring the public cloud?*

Asking these qualifying questions from the onset marries the migration process to an overarching purpose, such as launching a new line of business or ensuring disaster recovery.

As you determine your environment's cloud readiness, refer back to your big picture purpose as a guide. And as you assess your environment's cloud readiness, consider how each application was built. Was it built using distributed microservices, or as a monolithic application? What is the data footprint, and how many other pieces does it affect in the environment?

With the big picture goal defined and application details outlined, start answering technical questions related to your environment and its cloud readiness. Taking inventory of your current systems will help answer the following:

- *Have we defined security procedures and invested in security technology?*
- *Do we have cloud-ready monitoring tools, such as Pure1, Suysdig, Cisco Intersight or Datadog?*
- *Do we have, or need to consider moving to continuous integration (CI) and continuous development (CD)?*
- *Are modern automation frameworks needed for replacing legacy ones?*
- *Will the application frameworks we use on-premises work seamlessly in the Cloud, or do we need to invest in a new one?*

Looking for help on your cloud readiness? SHI has a cloud readiness assessment offering in place for our customers. [Click here](#) to learn more.

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Security and Regulations

Concerns about security, regulatory compliance and data breaches have caused some organizations to limit public cloud use. The fear being public cloud providers may have vulnerabilities, putting customer data at risk. In reality, the issue stems more from a skills gap or lack of education among an IT team – “nearly 70% of compromised cloud instances were caused by employees,” according to [IBM’s X-Force Threat Intelligence Index 2018](#).

Instead of asking, “*Is the cloud secure?*” CIOs and IT teams should really be asking, “*Are we using the cloud securely?*” The security model of legacy on-premises applications is different from cybersecurity models in the cloud. Increase protection by having your applications designed for the cloud with access layers properly configured.

Lack of data protection and redundancy

Popular cloud providers do not provide enterprise class data protection. This means you may need to create your own resiliency and data protection strategy for each application environment to prevent unplanned downtime or data loss.

Depending on the extent, data loss could be catastrophic for your organization – but preventable. This underscores the importance of working with your IT team in building a holistic, high availability redundancy plan – a plan that not only backs your data, but measures how effectively and rapidly data is recovered.

Once you have established a data loss plan, you might consider the efficiencies of object storage for long-term retention and proven durability. To prevent unplanned downtime or losing data, you could replicate your on-premises data to the cloud for access in case of recovery.



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Effectively Solving Three Public Cloud Deployment Challenges

The Data Movement Challenge

Data movement has always been a frustrating challenge since the sound of dial-up internet. Moving large amounts of data is difficult – not only because of limited bandwidth, time constraints and the type of workload – but also due to the high demands of doing business and the associated costs of a modern economy.

When you are exploring options for moving data to the cloud, a number of factors can affect time and associated costs, including local network speed, file size, and the speed at which data can be read from your local servers. AWS provides this [pricing example](#) to give you a better idea of what to expect.

“Let’s say you want to import 10 TB into the US East region. A 50 TB Snowball device would cost \$200 for the first 10 days, and \$15 days thereafter. Data transfer in would be \$0.00 (free). So the import cost for 10 TB would be a one time \$200 (assuming 10 days or fewer). The S3 monthly charge starts at \$.03/GB, so 10 TB would cost \$302.60/month. The shipping cost would be variable depending on your location.”

Beyond size, you also run into challenges around the type of data sets being moved into the cloud. Moving static datasets, like old video footage or an owner’s manual, is a move-once process – and much easier than moving a live, running and dynamic application, with little or no downtime. Moving a dynamic workload, like a transactional database from a retail POS system, is more resource heavy because the data updates continuously.

A substantial portion of data also resides in unique formats that can be good or bad, depending on whether you want to stick with your current provider or you want to go cloud-native with your applications, which then requires converting formats or refactoring to run inside a container.



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The Data Movement Solution

Increasing the speed and efficiency of data movement comes down to having a modern, robust set of data mobility tools. Many of our customers have been introduced to a suite of data mobility solutions, purpose-built for demanding workloads, both on-premises and in the cloud.

For customer challenges related to natively replicating on-premises workloads into a public cloud, SHI recommends Pure Storage technology as a cloud option. Pure Storage's Cloud Block Store, Object Engine and FlashBlade facilitate seamless data flow in both directions in a simple and easy manner. Additionally, when Pure Storage's technology is running natively in Amazon Web Services (AWS), the array can be used to manually convert replicated data from VMware Virtual Machine Disk File (VMDK) to an Amazon Machine Image (AMI), which is the preferred format for AWS.

Another scenario related to data movement is disaster recovery. If your IT team currently runs two physical data centers – one for production and one for disaster recovery – you are paying a significant cost to keep these operational, even if you're not using them all the time. Moving the disaster recovery data center to the cloud is a cost-effective way to pay only for data replication and server usage.

If your recovery point objective (RPO) and recovery time objective (RTO) allow it, you could move your disaster recovery database to the cloud using Pure Storage's CloudSnap.

CloudSnap provides the ability to natively create snapshots of a Pure Array on your data center floor, and then replicate it to AWS or Azure. So, in the unfortunate case of disaster recovery, you would be able to quickly spin up the workload from the cloud. If you have more aggressive RPO and RTO requirements, then Pure Storage's Cloud Block would be better suited for your needs.

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The Container Storage and Scalability Challenge

If your applications were built in the pre-cloud era, you will need to ensure they are cloud-friendly. We recommend you refactor your applications to a stateless design using a micro-services-oriented architecture by leveraging containers.

Containers turn big legacy applications into smaller components containing the application, code and libraries. Leveraging containers enables true mobility by moving the application dependencies from packaging formats, such as VMDKs or VHDs, to the operating environment. In this instance, you can functionally run the application anywhere, and deploy the operating environment as long as you have the data and YAML files to rebuild the application.

Containers are growing in popularity - [RightScale's 2019 State of the Cloud](#) report says Docker container adoption rate jumped from 49% in 2018 to 57% in 2019. The same report says that Kubernetes' adoption increased from 27% to 48%.

The Container Storage and Scalability Solution

When using containers for public cloud deployment, you need to consider tools that are able to provide storage-as-a-service for your container environment – like the Pure Service Orchestrator (PSO). Pure Storage's PSO easily integrates with platforms such as Docker, Kubernetes and Mesosphere, automates the process of allocating storage, and assigns them to the workload. Developers enjoy PSO because they get the agility of the cloud with the stability and infrastructure of an on-premises environment.



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The “What to Deploy and Where” Challenge

What decisions or challenges are prompting your company’s transition into the cloud? Why does the cloud seem like a good solution? Answering these questions will help you determine where to deploy your applications. Not all of your applications may be suited for the cloud, and some may actually be required to remain on-premises. For instance, moving an application, which requires access to on-premises data, to the cloud could cause performance issues internally and for your end user. You can prevent issues with the proper workload and environment analysis before initiating your cloud strategy. The analysis will help you determine what to deploy where.

The “What to Deploy and Where” Solution

Using a cloud management platform (CMP) tool, test run your applications in the cloud while analyzing scalability and cost. From there, you can pick the applications that make the most financial or operational sense to move into the cloud.

Next, you will need a solution than can help do the actual data transfer.

Luckily, Pure Storage’s technology does the heavy lifting, thanks to its highly efficient data reduction and replication technology – allowing you to quickly move to the cloud while reducing on-premises data center footprints and costs.

We recommend you run a proof of concept experiment in your cloud journey – this could start with moving a smaller application into the cloud.

Choose an application that’s not business-critical (such as a test/development version of a production application that a control group is testing), but still has enough exposure to test its public cloud viability. Try moving the application into a Platform as a Service (PaaS) provider in the cloud, allowing you to test the application without the risk of breaking something or the challenge of building a cloud presence.

Now you are ready to move an application which doesn’t require many dependencies and serves a purpose, such as a geographical distribution or influx seasonal scaling requirements, into the cloud.

If none of your applications can operate efficiently in the cloud as is, it may be time to refactor them into a more cloud-friendly format, like containers - however, this process requires more resources. Once you are able to rebuild and deploy the application in a cloud-native environment, it will run efficiently, more reliably and from anywhere you have cloud access.

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Next Steps for Public Cloud

As we move into the 2020s, the cloud landscape will only grow larger! If your company is not already moving toward a cloud-friendly infrastructure, you can expect it to happen soon.

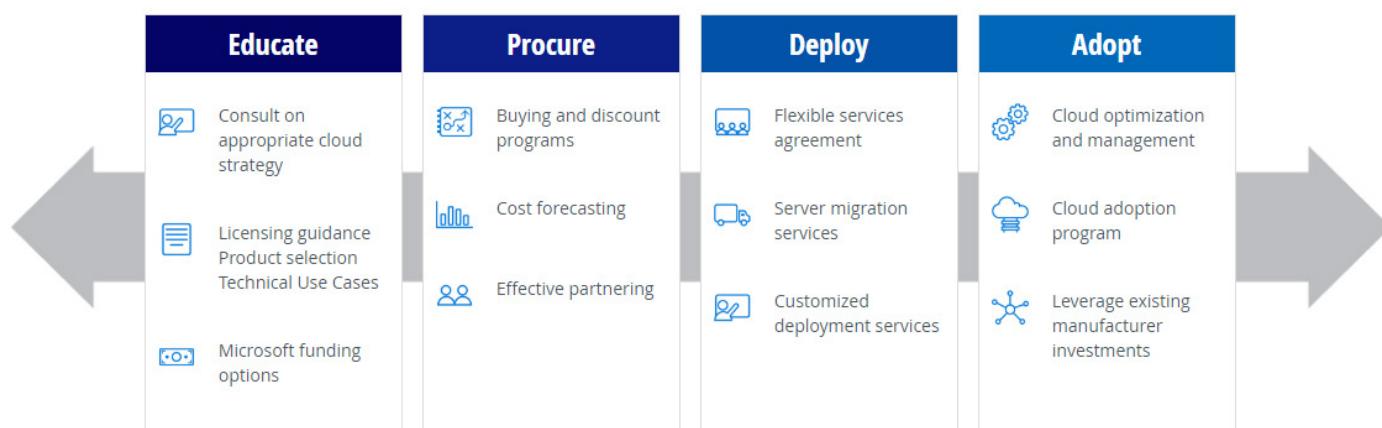
Keep pace with the competition while positioning your company for success, by following a few handy steps:

1. Research the cloud environment
2. Learn how the cloud differs from on-premises environments
3. Take inventory of your applications and networks
4. Work with a third-party team with experience in cloud migrations

Be sure to figure out what makes operational or financial sense for cloud migrations. Our technical team has helped customers build out hybrid cloud solutions with undoubted success across all verticals, including retail, manufacturing, health care, finance and more. Knowing how to evaluate applications, operating costs, cloud offerings and business goals are skills we have perfected after numerous successful migrations.

To learn more about how we can help your organization select, deploy and manage a hybrid cloud solution, connect with your SHI Account Executive today.

SHI Supports Customers in Every Stage of their Cloud Journey



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