



Securing Production Workloads: Business Continuity and Disaster Recovery with Azure Site Recovery

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Disasters, whether internal or external, can cause significant damage to an organization. While adequate disaster recovery (DR) is necessary to safeguard against all threats, DR may often be overlooked due to cost or complexity issues. However, with the emergence of cloud computing, DR can be cost-effectively implemented across all workloads - not just critical workloads. Cloud computing also facilitates virtualization that positively impacts disaster recovery. Virtualization abstracts the physical server components, eliminates the need for replicating equipment, simplifies the recovery process, and improves Recovery Point Objective (RPO).

Azure Site Recovery (ASR) helps orchestrate simple DR plans by automatically replicating critical workloads to Microsoft Azure or to a secondary data center. The data is continuously synchronized and can be recovered in case of a disaster. It also mitigates the challenge of ensuring secure data migration from on-premise to cloud site platforms by ensuring unified data transfers to Azure or to alternate data centers.

This paper discusses how ASR can enhance the resilience of business-critical applications by safeguarding, replicating, and implementing a failover of VMs directly to Azure data center. It also describes how ASR can provide several benefits and ensure business continuity with an effective DR strategy.

Rethinking DR with Cloud Computing

Disasters, either man-made or natural, are unpredictable and can cause serious disruptions to business. Disruptions in the IT environment such as failure of software or hardware, infrastructure issues, power outages or even manual errors can result in financial, legal or reputational risks to businesses - amounting in billions. Adequate data protection and recovery measures are no longer an option, but a must-have in today's highly-connected and competitive world. In addition, the prevailing stringent regulatory environment makes it imperative for businesses to disaster proof their organizations. The good news is that with enterprises increasingly adopting cloud computing, mitigating disasters is becoming simpler and more cost effective.

Cloud computing enables cost-effective disaster recovery (DR) not just for "mission critical" workloads but for any workload. It facilitates virtualization and this has significantly altered the approach to disaster recovery. Virtualization means that the server, including the operating system, applications, patches and data are captured in a virtual server. This virtual server can be duplicated or backed up to an off-site data center, and transferred to a virtual host very quickly. The virtual server is hardware agnostic, and the operating system, applications, patches and data can be safely and accurately transferred from one data center to another, while reducing the effort of reloading each component of the server. This can dramatically reduce recovery time.

Hybrid Cloud: The Ideal Solution for DR

No one debates the importance of or the need for DR in today's business environment. However, there is no denying the fact that DR plans have traditionally been costly, complex, resource intensive, and prone to errors. They necessitate large budgets and a highly-skilled IT team for implementation - from extensive configuration and setup necessary to maintain the system to administering complex mechanisms for DR drills. With these challenges, many workloads are not protected, rendering them vulnerable and leaving the organization exposed to several compliance and other issues. In addition, sourcing DR solutions from multiple vendors also creates challenges. As a result, organizations try to economize by placing the secondary data centers very

close to their primary facilities, or compromising on performance and redundancy in network connections, backups and server clusters. However, on-premise recovery sites or a co-located site can entail several challenges and may not be as secure or cost effective.

To combat challenges with traditional DR systems, organizations are now investing aggressively in cloud as part of their IT strategy. Meticulously designed hybrid cloud architecture provides the perfect solution for ensuring business continuity and disaster recovery. It can help implement cost-effective, flexible and agile disaster recovery without a huge capital outlay or operational investments. By harnessing the cloud for compute, backup storage or the entire secondary infrastructure, organizations can protect sensitive production data, and meet the objectives of recovery time and recovery point, while optimizing DR costs.

With Disaster-Recovery-as-a-Service (DRaaS), the hybrid cloud presents another approach to disaster recovery. The cloud can be utilized as the secondary off-site location to store a copy of data. In essence, the hybrid cloud offers a wide range of benefits that companies seek in disaster recovery solutions such as geographic reach, fixed pricing, and managed services. There are also other advantages such as live replication of data in real time, managed services with remote operation of data, and virtualization.

For instance, leveraging public cloud such as Windows Azure, as well as Hyper-V Recovery Manager (HRM), businesses can avail several advantages¹ including:

According to TechTarget, only 20% of applications are protected by DR in a typical enterprise

- Easy to adopt with Microsoft assuming responsibility for setup, configuration, and ongoing maintenance
- Pay-as-you-go model, with no extra costs for additional OS and database licenses
- Scalability to ensure availability for future business requirements
- Regulatory compliance ensured through backup in client's data center

¹http://blogs.technet.com/b/in_the_cloud/archive/2014/02/19/success-with-hybrid-cloud-by-scenario-disaster-recovery.aspx

- High availability to minimize downtime.
- Single management interface across all datacenters.
- Access from anywhere, including a phone.

Types of Hybrid Cloud Workloads that Need to Be Protected

Hybrid cloud² is a “cloud computing environment that uses a mix of on-premises, private cloud and third-party, public cloud services with orchestration between the two platforms.” Hybrid cloud allows for better flexibility and more data deployment options since it allows workloads to move between private and public clouds as per computing needs and costs.

The workloads³ are varied as per the computing requirements of individual organizations. Some of the workloads in a hybrid cloud environment include:

- **Batch:** Designed to operate in the background, these workloads can process large volumes of data. These workloads can be easily automated since they are not time sensitive and the data is well documented and predictable. As batch workloads can be executed on a regular schedule, they can be cost effective to process through public cloud services
- **Transactional:** These include automation of business processes such as billing and order processing and were traditionally restricted to a single system. However, with the emergence of e-commerce, transactional workloads need to be managed across several partners’ computing environments
- **Analytic:** Every organization uses analytics to streamline their business, engage with customers or improve business outcomes. There is vast amount of data in a hybrid environment and the emphasis is on the ability to holistically analyze the data in these workloads across public websites, private clouds, and the data warehouse. These types of analytic workloads require more real-time computing capability
- **High-performance:** These workloads are complex and require a specialized process with scientific or technical requirements. With high computing requirements, they are suited for specialized public clouds, optimized for performance

- **Database:** This is the most common type of workload, and it affects almost every environment in the data center and the cloud. A database workload can be of any size and must be managed to support the service that’s using that data

Safeguarding Workloads with Azure Site Recovery

ASR automatically replicates critical workloads to Microsoft Azure or to a secondary data center. The data is continuously synchronized and can be recovered in times of earthquakes, fire, and other unanticipated disasters. One of the challenges of DR services is ensuring secure data migration from online to off-site platforms. ASR addresses this critical concern by ensuring unified data transfers to Azure or to alternate data centers, while performing robust and periodic data validations to ensure optimal data accuracy.

ASR is an easy-to-implement solution due to the simplicity of its setup. It enhances the resilience of businesses-critical applications by safeguarding, replicating and implementing a failover of VMs directly to Azure data center. To help businesses achieve Recovery Time Objective (RTO) goals, it provides bespoke recovery plans by ensuring one-click failovers and fallbacks that are consistently accurate. ASR’s near synchronous data replication provides backup every 30 seconds to meet variable Recovery Point Objective (RPO). The servers are registered in a Site Recovery vault that coordinates and orchestrates data replication, failover, and recovery between the on-premises site and Azure.

ASR offers several DR benefits including the following:

- Supports both dedicated as well as shared infrastructure models
- Tenants do not have to go to the Azure management portal. Only service provider admin uses ASR UI in Azure portal
- Service providers are billed by Microsoft and can generate tenant specific bills

²<http://searchcloudcomputing.techtarget.com/definition/hybrid-cloud>

³<http://www.dummies.com/how-to/content/types-of-workloads-in-a-hybrid-cloud-environment.html>

- Tenant's application data does not go to the public cloud
 - For service provider as target site - application data never goes to Azure. It is always sent encrypted over network link between two data centers
 - For Azure as target site – application data goes to Azure encrypted over https. In this case, it is supported by public internet, VPN, or express route
- During steady state, organizations do not need to run their VMs in Azure. Only while performing failovers such as DR drills or real failovers, ASR automatically creates the VMs
- ASR supports Tenant level isolation when using Azure as target site

GAVS Expertise: Automated Disaster Protection with Azure Site Recovery

GAVS offers cost-effective disaster recovery services that help enterprises recover their operations quickly and effectively. We leverage Microsoft's Azure Site Recovery (ASR), a robust DRaaS solution, to optimize business performance and enable agility. Azure Site Recovery focuses on the needs of the business rather than on the maintenance of an expensive DR facility, and its supporting software and hardware.

Our dedicated IT recovery experts harness the capabilities of ASR to deliver unique DR plans. GAVS' ASR services utilize the best of Azure tools and practices coupled with the ITIL based principles to ensure that business services are restored quickly after a disaster.

Based on the results of our cloud assessment services, we ensure that applications are migrated to cloud in accordance with best practices, and there is no disruption or loss of data. We also enable connectivity, security and integration aspects of the cloud migration.

We help businesses address these issues through:

- In-depth expertise in identifying the ASR elements necessary to protect workloads and enable a quick recovery
- Proven track record of helping clients reduce downtime by enabling them to recover quickly and successfully
- Maintaining low recovery point objective and recovery time objective - within budget

- Flexible DR services and plans to accommodate changing business needs

Business Benefits of ASR integration with Windows Azure Pack/Stack

GAVS also facilitates the end-to-end implementation by ASR integration with Windows Azure Pack (WAP). ASR/WAP integration opens new opportunities for service providers to generate additional revenues from their existing customers by offering managed DR services on top of IaaS workloads. It is simple to setup and allows you to provide DR capabilities while needing few configuration changes and user training. As part of update roll up of Windows Azure Stack, cloud service providers will be able to offer Windows Azure Pack Plan or add-ons with ASR capabilities. The only additional step to configure integration between ASR and an existing WAP deployment is to download the ASR runbooks for Azure Pack and import them into service management automation. Once the initial setup is complete, the DR plans can be rolled out and ASR capabilities such as automated protection, asynchronous replication and orderly recovery of the virtual workloads can be leveraged⁴.

The business benefits resulting from our implementations include:

- **Plans and add-ons:** Customers/tenants subscribe to plans. Admins can enable optional add-ons, which tenants can add to their plan
- **Service Management Automation (SMA) runbooks:** Help deploy protection automatically, taking away the pain of manually enabling protection for each tenant
 - Runbooks auto-creates recovery site subscription when tenant subscribes to DR on primary
 - Runbooks also enable/disable DR protection for all present and future created VMs in subscription
- **Integration:** Full integration of replica VMs with Azure Pack on recovery site
 - Tenants can manage (start/stop/console or desktop connect) failed-over replica VMs from Azure Pack on recovery site
- **Monitoring:** Integration with System Center Operations Manager for replication and failover health monitoring

⁴To learn more, refer to the getting started guide on Azure Stack, Azure Site Recovery integration with WAP and the Azure blog"

Conclusion

Microsoft Azure Site Recovery is based on orchestration, or policies and plans that are converted into triggers and actions. These are suitable for the DevOps model, where developers use scripts to manage application deployment.

Even if users are reluctant to migrate to a Windows or Azure platform, the orchestration features of ASR can help them develop replicable applications and ensure non-Windows components can integrate with Azure. Emphasizing the benefits of PaaS can help Microsoft further strengthen their leadership position. With the help of ASR, Microsoft can validate PaaS as the preferred model for hybrid cloud and for hosting mission-critical components. As the next great wave of cloud opportunity begins, Microsoft Azure Site Recovery may be the first shot in the biggest cloud market battle yet.

There is no denying that DR is a critical investment for today's businesses. The need to protect an increasing number of applications from evolving threats has never been greater. Advances in technology such as the cloud enable organizations to protect their business without impacting their profits. With a deeper understanding of the power of a hybrid cloud, implementing disaster recovery is easier, more effective, and affordable. Businesses that leverage this power to protect their critical applications will gain competitive edge by enhancing business continuity.

About GAVS

GAVS Technologies (GAVS) is a global IT services & solutions provider for customers across multiple industry verticals. GAVS offers services and solutions aligned with strategic technology trends to enable enterprises take advantage of futuristic technologies such as Cloud, IoT, Managed Infrastructure, and Security services.

GAVS has been recognized as an emerging player in the Healthcare Provider IT outsourcing sector by Everest Group, and as a prominent India-based Remote Infrastructure Management player by Gartner.

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