



# Building Business Continuity and Enabling Smart Disaster Recovery with Azure Site Recovery (ASR)

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## Executive Summary — ———

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Disaster recovery (DR) is a critical element of an organization's business continuity plans. Today's competitive markets and demanding customers necessitate organizations to provide uninterrupted services. Significant financial risk to the business along with mandates from investors, regulatory and compliance requirements and increasing use of technology are the key factors that drive DR plans.

A robust DR plan is imperative; essential best practices include ensuring all applications and mission-critical data is backed up at a secondary location and testing the plan to cover all disasters. Other aspects to consider include well defined SLAs and prioritizing applications for recovery. Leveraging Disaster Recovery as a Service (DRaaS) beyond DR can help companies use cloud for different applications.

Conventional DR solutions are not comprehensive to meet the growing needs of companies. DRaaS helps small and medium sized businesses with the necessary skills and expertise to set up a DR plan on their own, while minimizing capital expenditure and allowing businesses to use DR services as needed. This white paper elaborates on Microsoft's ASR which offers a robust DRaaS solution to enhance business continuity and helps organizations build a DR plan suited to their needs. ASR is cost-effective as it does not require an expensive DR facility and supporting software and hardware.

This paper also discusses the ease of implementing ASR is easy as it automatically replicates critical workloads to Microsoft Azure or to a secondary data center and also enhances the resilience of business-critical applications. The easy setup also includes registering the servers in Site Recovery vault that coordinates and orchestrates data replication, failover, and recovery between the client's on-premises site and Azure. ASR also offers significant benefits including reduced Total Cost of Ownership (TCO) , easy and flexible configurations, high availability, minimal data loss and replication to multiple servers.

GAVS is uniquely positioned to effectively harness the capabilities of ASR to deliver unique DR plans with best-in-class Azure tools and practices.

## The Importance of Disaster Recovery for Today's Organizations

The importance of DR for today's organizations cannot be over emphasized. Regardless of industry and size, DR forms a big part of an organization's business continuity plan as clients demand uninterrupted services in a hyper-connected world. When an unforeseen event takes place hindering operations, an organization needs to recover as quickly as possible and continue to provide services to its clients. Disasters or catastrophes can be in any form - data security breaches, natural disasters, or acts of terrorism. The recent earthquake in Nepal is a prime example of how natural or man-made disasters affect the economy and businesses. It is reported that Nepal lost about 35% of its gross domestic product due to this disaster\*. Adequate DR capabilities are critical to minimizing financial losses, preventing loss of reputation and reducing risks to clients.



Over \$2.8 trillion – Economic losses between 1970 and 2013 globally from natural disasters



\$110 billion in 2014 – Cost to the global economy due to natural and man-made disasters



324 – Total number of disasters reported globally

DR has become an integral strategy for today's organizations that are increasingly relying on automation and high up-times for their application services and hardware. It primarily focuses on ensuring the availability of IT and its systems that support business-critical in case of a disaster.

The key factors that are driving businesses to manage risk by creating business continuity and DR plans include:

- **Pre-investment mandate from investors** – Stringent requirements of investors in assessing the business and information technology (IT) practices as part of the due diligence process
- **Regulatory and compliance requirements** – Given the economic and financial crises over the past several years, regulatory and compliance requirements have become stringent, especially in the banking and financial services industries. Across other industries as well, regulatory requirements include severe penalties and other repercussions for lack of robust business continuity and DR plans

- **Increasing dependence on technology** – Technology is all pervasive in today's businesses, whether it is customers, suppliers, or internal governance. The emergence of technology trends such as digital, mobile, virtualization, and Internet of Things have further increased the complexity of today's businesses and necessitate a robust DR plan
- **High cost of disruption to business** – Natural or man-made disasters, technology disruptions and other hindrances have significant cost impact on the profitability of a business. Downtime in some industries can lead to legal and other costs as well, not just the loss of reputation and brand image

## Best Practices in Business Continuity and Disaster Recovery

The most important elements of effective DR is creating a robust plan and assigning team members to implement the plan. In addition, there are several best practices that an organization can follow. These include:

- Ensuring all applications and mission-critical data is backed up at a separate secondary location other than the primary data center
- Testing the DR plan to ensure it covers all types of disasters and verifying whether all the recovery procedures are adequate
- Defining SLAs for every aspect of the operations processes and their recovery in case of a disaster
- Continuously reviewing and testing the DR plan, with a review of the infrastructure between the key stakeholders. Also, with cloud-based DR, teams can take advantage of scripted tests, on-demand resources, and technology that allows them to test any time without disrupting applications
- Ensuring that the recovery plan prioritizes applications in the order in which they need to be recovered, frequency of their replication, and the retention of the recovery points. Not doing so can result in wastage of resources or loss of data
- Being compliant with a thorough understanding of information that your teams are required to store,

\*<http://www.bloomberg.com/news/articles/2015-04-27/counting-the-economic-cost-of-natural-disasters>

how long they must store it, where it must be stored, and who can access it

- Using DRaaS as a stepping stone to the cloud. Companies should consider whether a DRaaS provider can support capacity requirements beyond DR. Effective DRaaS providers also offer IaaS (infrastructure as a service), allowing businesses to use the cloud for different applications

## Key Elements and Functionality of Azure Site Recovery (ASR)

Traditionally, businesses have required extensive infrastructure as well as robust risk assessment and evaluation of several storage solutions in order to support their business continuity plans. However, conventional DR solutions are not always comprehensive enough to cater to increasing demands for quality and accuracy, such as no data loss, quick recovery, and support of multiple environments. In addition, they result in heavy cost overheads. As a result, DRaaS is gaining popularity, especially among small- and medium-sized businesses that lack the necessary skills and expertise to set up a DR plan on their own. It minimizes capital expenditure and allows businesses to use DR services as needed. ASR from Microsoft offers a robust DRaaS solution to strengthen business continuity and helps organizations build a DR (BCDR) plan suited to their needs.

ASR is a leading cloud-based DR service that addresses the client's business requirements, and does not require an expensive DR facility and supporting software and hardware. It optimizes business performance and enables agility.

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 offsite 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 enhances the resilience of business-critical applications by safeguarding, replicating, and implementing a failover of Virtual Machines (VMs) directly to the Azure data center. It also provides bespoke recovery plans to ensure one-click failovers and fallbacks that are consistently accurate in order to help clients achieve their Recovery Time Objective (RTO) goals. ASR's near-synchronous data replication provides backup every 30 seconds to meet variable RPO. Figure 1 provides an overview of the working of ASR.

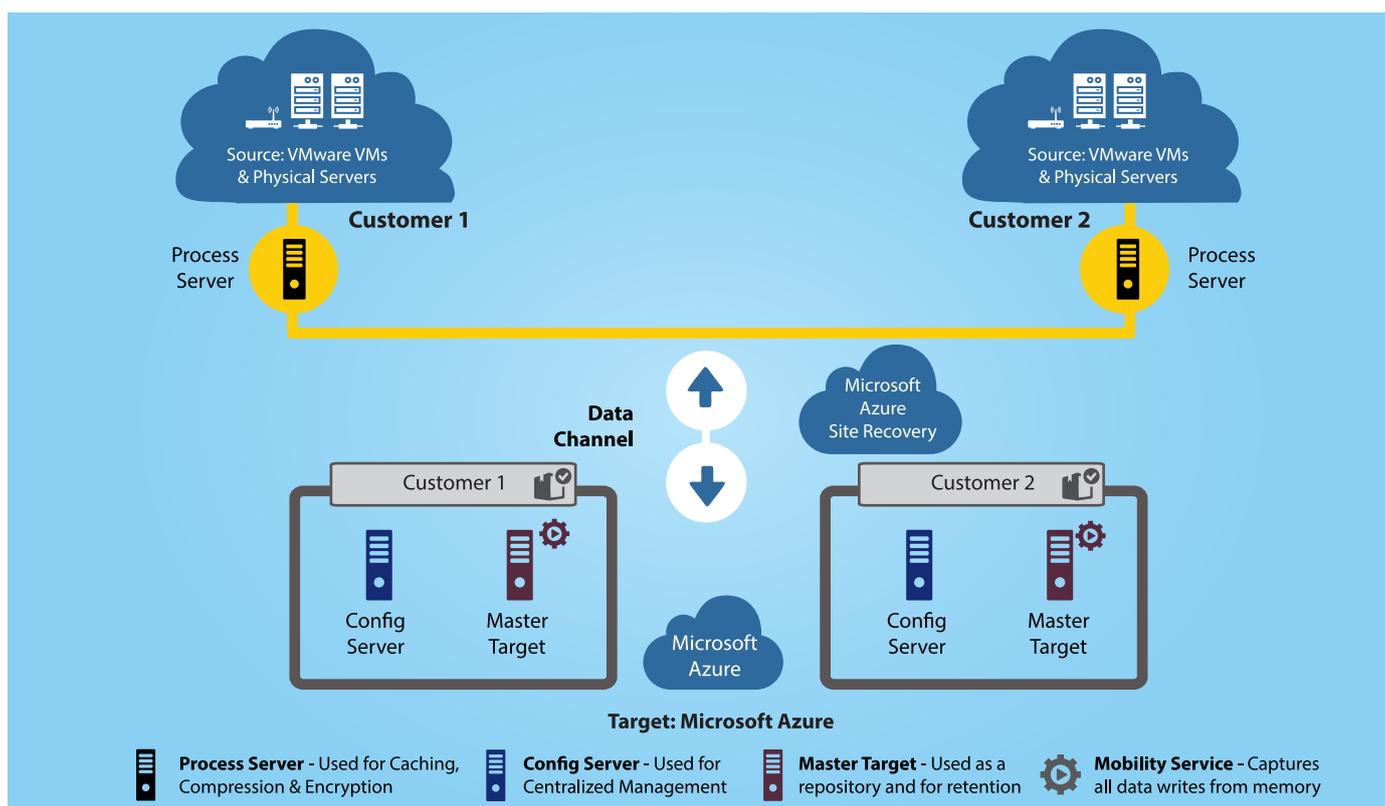


Figure 1: How ASR works

## Implementing ASR: How it Works

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ASR is an easy-to-implement solution due to the simplicity of its setup. The servers are registered in a Site Recovery vault that coordinates and orchestrates data replication, failover, and recovery between the client's on-premises site and Azure.

Additionally, ASR also enables the following:

- Clients' environment can be protected by automating the replication of the virtual machines with pre-determined policies and controls. Site Recovery can protect Hyper-V, VMware and physical servers, and Azure or the secondary data center can be used as a secondary recovery site
- ASR helps automate the orderly recovery of services in the event of a site outage at the primary data center. Applications can be brought up in an orchestrated fashion to help restore service quickly. Recovery plans are simple to create through the Azure management portal, where they are stored. Clients can also customize networks by mapping virtual networks between the primary and recovery sites
- Clients can replicate workloads and migrate applications to Azure easily. In the meantime, they can also create reports and conduct analytics on copies of production workloads in Azure without impacting users
- Site Recovery monitors the state of the clients' protected instances continuously and remotely from Azure. All communications are encrypted and data is also encrypted during replication

## Benefits of Azure Site Recovery

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Azure Site Recovery offers significant benefits in comparison to an in-house managed secondary site. These include:

- **No CAPEX and reduced TCO:** Using Site Recovery as a service ensures that there is no capital expenditure (Capex), optimized operating expenditure (Opex), and reduced TCO for the organization planning the backup strategy. Organizations can save the costs of buying DR hardware and in maintaining the setup with overheads such as additional personnel, cooling temperature, etc.

- **Easy and flexible configurations:** A typical setup of an alternate data center can be quite cumbersome. Azure management portal helps create recovery plans that can be customized based on business requirements. The process, target, and configuration servers are registered in a Site Recovery vault. The vault configuration then manages the replication, failover, and recovery between the on-premises site and Azure data center. The simplicity of this entire configuration makes it an easy-to-implement solution
- **High on-demand availability:** RTO is one of the key requirements for reliable DR services. In Azure, the automated recovery setup along with dynamic conversion of source VMware VM disks to bootable Azure Virtual Hard Disks helps get the infrastructure up and running quickly. In the event of a site-wide downtime, applications can be restored faster with quick initialization times and network reconfigurations as a result of the low RTO
- **Near-synchronous replication with near-zero RPO:** Minimal or zero data loss is a critical requirement for an efficient DR system. ASR provides a virtualized cloud platform with Continuous Data Protection (CDP) technology that synchronizes the state of the systems continually. This ensures that when the systems come up, the needle is set to the most recent snapshot, achieving a tolerable data loss
- **Replication and failover support for heterogeneous server types:** ASR helps with the replication of multiple kinds of servers such as VMware, Hyper-V, AWS, and physical servers. VMware vCenter server managed VMs can now be replicated to and recovered in Azure. It also provides application-consistent replication for multi-VM, n-tier applications

The benefits of ASR extend beyond disaster situations. It can be used in testing in a production environment with real-time data, with no disruption to the end user. This can be done by failing over the primary site to the Azure site or a secondary data center. This is followed up with the use of the primary site for testing, reporting, and other analytics. Azure also scores highly in providing a secure operating environment, where all data communication happens in an encrypted fashion.

## The GAVS Advantage: Harnessing ASR for Business Continuity

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Microsoft Azure is an industry-leading Platform as a Service that enables your organization to concentrate more on the business capability needs than on the maintenance of supporting software and hardware. As a true cloud platform for enterprises, Azure has multiple choices, design patterns and services as part of its offerings.

GAVS effectively harnesses the capabilities of ASR to deliver unique DR plans with best-in-class Azure tools and practices along with the ITIL based principles to ensure that clients' business services are restored quickly after a disaster.

GAVS Migration Services, based on the findings of GAVS cloud assessment services ensures that the applications are migrated to cloud by following best practices without any disruption or loss of data. This service also ensures that the connectivity, security, and integration aspects of the cloud migration are maintained. Our experience in traditional data center management services is further aligned with the ITIL-aligned service delivery model. Our Azure automation tool set ensures that the day-to-day Azure management activities are fully automated to reduce operational expenses.

## Conclusion: ASR - Sustaining Businesses with Effective Disaster Recovery

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ASR provides the option of an alternate data center that continuously synchronizes the clients' data. It enables a reliable backup plan in the event of a disaster such as fire, earthquake, etc., when the primary center is not operational.

DRaaS contracts such as ASR provide businesses the much needed flexibility to adapt to growing needs or changing requirements. It helps address several challenges such as mobility, portability, and high performance. It also considerably reduces the downtime, thereby limiting the risk to the organization. When choosing an ASR service provider, organizations must ensure that the service provider has the capability to migrate applications onto the cloud following industry-wide best practices, with no data disruption involved during the migration. A competent service provider should also be able to offer the clients the flexibility in costs and resource utilization.

Utilizing the best of Azure tools and practices along with ITIL-based principles and well-defined SLAs for efficient business service management enables a robust DR implementation. Businesses that implement ASR can transform the concept of site recovery from an operational overhead to a convenient service-based framework with a pay-as-you-go model, ensuring business continuity.

## About the Author

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Pawan Kumar Dontula is a DevOps engineer with over 10 years of experience in IT. His proficiency encompasses vCloud suite, AWS, and Azure cloud technologies. With expertise in automation using PowerShell, Python, Puppet and Salt, Pawan also has deep experience in designing high-end Unix, VMware, and Windows servers.

## 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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