



## EXECUTIVE BRIEF

# Disaster Recovery to the Cloud Is Becoming Effective, Affordable, and Easy

Sponsored by: Microsoft

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## EXECUTIVE SUMMARY

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Data is the currency of modern business, and vigorously protecting this data is imperative, regardless of industry or company size – from small and medium-sized business (SMB) to enterprise to hosted service provider (HSP). The penalty for prolonged downtime or data loss can be severe. In the 3rd Platform era, in which mobile, big data, cloud, and social networking are transforming IT, data of systems of record is being joined by a tsunami of data from systems of engagement, and together they form the basis for data of insight from which competitive advantage is obtained.

New technological advancements in the form of disaster recovery as a service (DRaaS) will allow SMBs to obtain levels of protection that they could not afford until now and large firms to begin protecting other data than just tier 1 at acceptable cost. Large enterprises might even consider investigating a switch from using a DR provider to DRaaS when their DR contract is up for renewal.

This Executive Brief discusses how DRaaS has come to fruition and takes an in-depth look at one specific DRaaS solution: Microsoft Azure Site Recovery (ASR), which enables the failover of Hyper-V and vSphere virtual machines (VMs), as well as physical instances that are running on-premises, to Microsoft Azure.

## MARKET OVERVIEW

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Unplanned downtime can have damaging effects on a business' customer relations, revenue, reputation, and regulatory compliance, with even a short amount of downtime costing an organization from thousands to hundreds of thousands of dollars, or more.

The majority of mission-critical workloads are running on x86 systems today, and classic availability software that has been used in the past can be costly to acquire and complex to implement. Because of this, medium-sized firms sometimes elect to avoid the expense and live dangerously – without an availability solution. Larger firms often choose to protect only their first-tier applications, not the lower tiers.

But the cost of downtime can be severe. In-depth survey-based IDC research shows that the average annual revenue loss per hour of downtime in midsize companies varies significantly by industry sector: nearly \$60,000 for manufacturing firms, \$158,000 for healthcare businesses, as much as \$400,000 for retail businesses, and nearly \$10 million for financial firms.

## DISASTER RECOVERY

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Disaster recovery is based on replication, which mirrors data across a network, either in real time (continuous replication) or at intervals (snapshot-based replication). The technology is typically used to move data from a local source location to one or more remote target locations. Asynchronous replication allows for data to be written to the target as the source moves on to the next block while a log keeps track of synchronicity, making the process fast enough to bridge long distances with fewer latency-related slowdowns. As a result, replication over a WAN has become an ideal underlying technology for DR to prevent data loss in the event of a regional catastrophe.

Replication and DR have their origins in maintaining data integrity and availability of storage-based data. However, in the virtualized environments of today, the distinctions between protecting a VM (or a group of VMs on a given server) and replicating one or more VMs so as to recover the data a VM contains in case of a disaster are becoming blurry. Hypervisors are just as capable of replicating a VM as they are of executing a VM failover. What's more, disaster recovery has been among the first high-availability (HA) technologies to blaze a trail to the public cloud and transform into DRaaS. DRaaS eliminates the hardware redundancy required with other solutions, replicating VMs to the cloud.

## FOCUS ON MICROSOFT AZURE SITE RECOVERY

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Microsoft Azure Site Recovery enables the failover of Hyper-V and VMware VMs, as well as physical instances, that are running on-premises to targets that are on-premises, at a hosting service provider, or on the Azure cloud. By enabling failover of a VM or physical machine to Azure, Microsoft is entering the DRaaS market, providing SMBs, enterprises, and HSPs with the ability to achieve DR without needing to invest in a costly duplicate infrastructure.

### How ASR Works

Data replication with ASR can be fully automated through policies set by IT and executed in coordination with one of the following features in Windows Server: Hyper-V Replica, System Center, SQL Server AlwaysOn, array-based replication, or ASR-integrated InMage.

The ASR service resides on Microsoft Azure and remotely monitors VMs in a customer's datacenter. Recovery plans are kept in the Azure Management Portal. IT has the ability to design very simple recovery plans or highly customized scenarios using PowerShell scripts. Unlike in traditional DR environments, the testing of recovery plans is noninvasive, and it can be done without the cost, complexity, and downtime of a traditional DR test.

ASR comes with encryption capabilities for all source-target combinations and communications with ASR, whether on-premises or in Azure. ASR supports customers' compliance requirements by facilitating frequent DR drills via test failovers, which, according to Microsoft, will not impact production. The test results are automatically captured in a presentable Excel report that meets auditing requirements.

Replicating to Azure requires a Site Recovery Vault on Azure; however, no live VMs are needed, as a failover automatically spins up the required VMs. This is a cost benefit to customers, not only because

they do not need to pay for running the VMs in Azure but also because they save on licensing fees for Microsoft workloads through DR benefits covered under Microsoft's Software Assurance. An added benefit is that ASR allows customers to migrate applications (failover, not failback) and create dev/test environments in Azure with the same replication technology.

## **ASR with InMage Technology**

Last year, Microsoft added InMage technology to ASR, which facilitates site-to-site replication and failover of physical servers as well as site-to-site replication and failover of VMware VMs. Microsoft is expected to announce that ASR leveraging InMage will also facilitate replication and failover from on-premises physical servers to Azure as well as from VMware VMs to Azure. Using InMage technology, ASR performs in-OS replication. It places an agent inside the OS of a server or a VM that is being replicated, and the agent duplicates disk writes as they happen and sends duplicated data to a dedicated-purpose server (physical or virtual). This way, the replicated server is barely used for the replication activity, which should allow for the process to be near synchronous. The dedicated-purpose server takes care of the caching, compressing, and encrypting of the data and then forwards the data to a target server, which has virtual disks attached to it and which writes the data to these disks. In case of a failover, these virtual disks disconnect from the target server and establish a link with the VMs that are replicating the source VMs, providing a near instant failover response.

## **ASR Advantages for Midsize Firms**

Microsoft believes that it delivers several distinct advantages for midsize companies:

- Targeted pricing:
  - ASR using Hyper-V does not require System Center or System Center Virtual Machine Manager (VMM). There are no up-front costs or termination fees, and users "pay only for what they use." This should also attract small businesses.
  - ASR with VMM requires System Center (and System Center VMM), but this is arguably still a more cost-effective approach than engaging traditional DR services.
- The ability to protect as few or as many VMs as necessary, whether 2 or 2,000

## **ASR Advantages for Large Enterprises**

For large enterprises, which may have tier 1 workloads well protected already, benefits include:

- ASR provides an affordable opportunity to protect lower-tier workloads and remote office and branch office applications with heterogeneous support from one DR solution. As such, ASR can also serve as an on-ramp for enterprises to try the public cloud.
- Enterprises might want to do a comparative assessment between ASR and their current DR provider to decide whether they could benefit from Microsoft's DRaaS offering.
- Enterprises can take advantage of adding storage array-based replication between SAN devices that host virtual machine data for their tier 1 workloads. With the same solution, enterprises can manage their tier 1 workloads requiring synchronous replication from array-based replication as well as other workloads that can be protected with software-based near synchronous replication.

## RECOMMENDATIONS

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IDC makes recommendations for customers in the sections that follow.

### Small Business Customers

Historically, small customers have suffered from limited budget, little IT bandwidth, and limited technical skills to implement DR. Now, cost-effective cloud-based solutions are coming onto the market that are relatively easy to implement, providing options for building a viable availability and recovery strategy.

### Midmarket Customers

Midmarket customers have typically implemented limited recovery programs, but unless they were contracted with a cloud service provider, they were unlikely to have good coverage on key application workloads. Where there was previously no viable strategy for a cost-effective, actionable solution for these customers, today there is.

### Large Customers

The largest customers in the industry have long enjoyed the benefits of availability software and complex DR services as well as the skills to implement these products. However, there were substantial costs associated with these technologies. These customers are among the most security conscious and will likely be resistant to using cloud-based availability and backup solutions. However, the implementation of site-to-site recovery for virtualized and physical infrastructure represents an attractive adjacent technology that makes sense for them.

Furthermore, large organizations and HSPs can reduce their capacity needs in existing on-premises datacenters, potentially reducing or eliminating the need to build new datacenters. Also, they can protect branch and remote offices using modern high-availability/disaster recovery/backup-as-a-service (HA/DR/BaaS) technologies.

## CONCLUSION

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The need to deliver an always-on experience is changing the urgency for businesses of all sizes, including HSPs, to develop contingency plans to keep key services and applications operational. Today, DRaaS has become a viable and consumable option for businesses of all sizes, including small and midsize companies.

Modern solutions entering the market today offer site-to-site, site-to-cloud, and cloud-to-cloud recovery options at cost-effective rates, along with the ability to script the recovery scenario on an application-by-application basis. IT professionals who are responsible for delivering HA to applications, and those who need HA but have been unable to afford it, should be considering these solutions today.

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