DATASHEET

VMware IT Outcomes: High Availability and Resilient Infrastructure
Improved Availability, Data Protection, and Disaster Recovery

AT A GLANCE

Automated application availability and recovery, locally or across sites and hybrid cloud, with self-service, policy-driven disaster recovery protection for applications.

BENEFITS

• Simple, cost-effective protection and reduced downtime for all applications and services
• Reduced complexity through automation
• Improved reliability and compliance
• 50 percent lower disaster recovery management costs

High Availability and Resilient Infrastructure

Introduction

A software-defined data center (SDDC) built on VMware technologies and services provides unique capabilities that help IT organizations achieve outcomes such as greater data center efficiency, improved security, high availability, and faster delivery of infrastructure and applications.

A VMware high availability and resilient infrastructure solution ensures both availability and recoverability of virtualized workloads. It then extends a menu of business continuity/disaster recovery (BC/DR) options to application owners. The solution is easily adopted and can be scaled as organizations mature through three stages.

By leveraging the capabilities of an SDDC based on VMware technologies, providing high availability for all workloads, organizations can expect the following benefits:

• Reduced CapEx on hardware at both primary and recovery sites
• Minimal downtime from local or site failures
• Flexible deployment models for disaster recovery
• Lower OpEx to manage application availability and data protection.

At the core of these capabilities is VMware vSphere® with Operations Management™, providing a platform with intrinsic availability and recoverability features on which to deploy mission-critical workloads. vSphere with Operations Management ensures that data is always available and that applications and services are not interrupted when infrastructure fails.

VMware vCloud® Air™ Disaster Recovery extends cloud-based disaster recovery to all applications, with no additional CapEx.

Through automated disaster recovery plans in VMware vCenter™ Site Recover Manager™, OpEx for disaster recovery management is reduced, the risk of downtime from site outages is mitigated, and SLA objectives are guaranteed.

Leveraging self-service options in VMware vRealize™ Automation™, application tenants and business units can quickly provision and protect workloads without IT involvement. Application owners select the availability and recovery time objective (RTO) and recovery point objective (RPO) options that fit their SLA requirements and budget. These options are transparently implemented and enforced to guarantee protection of the application across a resilient hybrid cloud infrastructure.

The result is a highly available and resilient infrastructure on which to deploy mission-critical workloads, with simple, cost-effective disaster recovery and automated, self-service protection of applications in the SDDC.

Stage 1: High Availability, Data Protection, and Disaster Recovery as a Service

vSphere with Operations Management
vCloud Air Disaster Recovery

The first stage begins with IT’s delivering resilient infrastructure, high availability, and data protection for all virtualized workloads in the on-premises data center and extending protection using cloud-based disaster recovery.
vSphere, the world’s leading server virtualization platform, provides customers with a private cloud infrastructure that has high availability, data protection, and resiliency built in. By leveraging the features of vSphere, IT provides an infrastructure capable of supporting the most demanding SLAs.

The following are among the availability, continuity, and data protection components of vSphere:

- **VMware vSphere vMotion®** enables the live migration of running virtual machines from one physical server to another with zero downtime. vSphere vMotion is a key enabling technology for creating the dynamic, available, and self-optimizing data center.

- **VMware vSphere Storage vMotion®** enables live migration of virtual machine disk files within and across storage arrays while maintaining continuous service availability and complete transaction integrity.

- **VMware vSphere High Availability** (vSphere HA) provides easy-to-use, cost-effective, high availability for applications running in virtual machines. In the event of physical server failure, affected virtual machines are automatically restarted on other production servers with spare capacity.

- **VMware vSphere App HA** monitors the status of application services running in the guest operating system (OS) and performs remediation if the service is unavailable.

- **VMware vSphere Fault Tolerance** (vSphere FT) provides continuous availability for applications in the event of server failures by creating a live shadow instance of a virtual machine that is in virtual lockstep with the primary instance. By enabling instantaneous failover between the two instances in the event of hardware failure, vSphere FT eliminates even the smallest chance of disruption.

- **VMware vRealize Operations™** enables IT to identify health, risk, and efficiency issues before they cause downtime.

- **VMware vSphere Replication™** offers virtual machine-level replication with low RPOs so exact copies of critical virtual machines are available at an alternate site during a disaster.

- **VMware vSphere Data Protection™** provides proven, efficient, and simple backup and recovery functionality. The entire state of the virtual machine—disks, configuration, and memory state—is backed up and is simply restored to the exact point in time that the backup image was captured.

**Cloud-Based Disaster Recovery**

Leveraging vCloud Air Disaster Recovery enables IT to provide offsite disaster recovery with no additional infrastructure and to extend the same protection to remote sites with no additional CapEx. It offers simple, cost-effective offsite disaster recovery for workloads based on vSphere. Warm standby capacity is reserved on VMware vCloud Air while asynchronous replication, provided by vSphere Replication, replicates virtual machines to the cloud with RPOs as low as 15 minutes.

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<tr>
<th>CAPABILITY</th>
<th>PRODUCT</th>
<th>FEATURES</th>
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<tbody>
<tr>
<td>High Availability</td>
<td>vSphere with Operations Management</td>
<td>vSphere vMotion, vSphere Storage vMotion, vSphere HA, vSphere App HA, vSphere FT</td>
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<td>Data Protection</td>
<td>vSphere Data Protection</td>
<td>Agentless, image-level backup to disk</td>
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<td>Policy-driven virtual machine selection, retention, and schedules</td>
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<td>One-step recovery of full virtual machines or individual files</td>
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<td>Continuity of Operations</td>
<td>vSphere Replication</td>
<td>Low RPO replication of full virtual machines</td>
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<td>Disaster Recovery</td>
<td>vCloud Air Disaster Recovery</td>
<td>Protection for remote office sites, using the same solution with no additional CapEx</td>
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<td>15-minute RPOs</td>
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Stage 2: Automated Disaster Recovery for vSphere Environments

VMware vCenter Site Recovery Manager, included in VMware vCloud Suite Enterprise
Stage 2 transforms the management of recovery and migration plans from complex runbooks to simple, automated recovery plans. VMware vCenter Site Recovery Manager™ provides automation for every workflow of a disaster recovery plan, from failover and reconfiguration to failback and cleanup.

vCenter Site Recovery Manager Technical Overview
vCenter Site Recovery Manager orchestrates complex failover workflows that enable IT to centralize and automate recovery plans for thousands of virtual machines. It integrates with storage replication technologies provided by third-party SAN and NAS vendors as well as with vSphere Replication. With storage consistency across primary and disaster recovery sites, vCenter Site Recovery Manager orchestrates the failover of virtual machines from the primary site to the disaster recovery site in the event of a disaster and provides nondisruptive testing of disaster recovery plans on demand. New workloads can be automatically added to vCenter Site Recovery Manager protection groups, ensuring disaster protection as new workloads are deployed.

- Frequent and nondisruptive testing of recovery plans, even during business hours, that simplifies regulatory audit compliance while increasing confidence in BC/DR capabilities
- Application-agnostic protection for workloads that enables single-solution disaster recovery regardless of the applications or operating systems that are deployed

Stage 2 Summary

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<td>Nondisruptive disaster recovery</td>
<td>vCenter Site Recovery Manager, included in vCloud Suite Enterprise</td>
<td>Automated disaster recovery failover with RTO as low as 30 minutes</td>
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<td>testing for virtualized environments</td>
<td></td>
<td>Planned migrations and disaster avoidance with zero data loss</td>
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<td>Recovery setup in minutes; support for all applications</td>
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<td>Automated reprotection and failback using original recovery plan</td>
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<td>One-click failover initiation</td>
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vCenter Site Recovery Manager Benefits
With vCenter Site Recovery Manager, IT can focus on transforming the management of recovery and migration plans and extending recovery plans to all workloads in the data center. As a result, an enterprise gets the following benefits:

- Reduced costs of as much as 50 percent for disaster recovery management and testing

Stage 3: Self-Service, Policy-Based Disaster Recovery Protection for Applications

vRealize Automation, included in vCloud Suite
With a resilient vSphere infrastructure that offers high availability and orchestrated recovery to all virtualized workloads, locally and in the cloud, IT is freed to focus on embedding failure avoidance and disaster recovery into all layers of complex enterprise applications, enforcing protection mechanisms by policy, throughout the application life cycle.

vRealize Automation offers IT the flexibility to manage multiple clouds and application blueprints, to dynamically deploy, scale, and modify application topologies in response to failures as the business demands and as policies for availability, recoverability, and backup copy retention allow.

Agility Through Automation
vRealize Automation provides a single portal in which IT and IT consumers can provision and manage multivendor, multicloud infrastructures and applications while leveraging existing infrastructure tools and processes. Workloads managed by vRealize Automation are governed by predefined policies that ensure that users receive the right resource with the appropriate service level and disaster recovery options for the job they must
perform. As a result, business units enjoy self-service provisioning and consumption of applications and services. This leads to quicker time to market for applications while reducing complexity for IT administrators.

Disaster Recovery with Business Choice
When IT offers self-service consumption to application tenants, the application owner sets availability, data protection, and recoverability for their own applications.

Personalization of services offered in the vRealize Automation self-service catalog give business units control of SLA, RPO, and RTO for their own workloads.

Policy-driven deployment enables IT to create service models to meet regulatory, security, and business requirements. Workloads deployed through the self-service portal are provisioned according to policy after the consumer personalizes the service to meet cost, placement, backup, disaster recovery, and availability SLAs.

Agility through automation introduces a development and operations (DevOps) mindset by automating end-to-end delivery and management of infrastructure to accelerate application deployment and releases.

Adaptability is realized by enabling application owners to update SLAs in response to changing business needs. An application owner can request a lower RPO or enable disaster recovery protection through vCenter Site Recovery Manager without having to engage IT.

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Summary
VMware offers a comprehensive solution for high availability, resilient infrastructure, and disaster recovery for the software-defined data center (SDDC). Data protection, local application availability, and site recovery provide protection from planned and unplanned downtime, freeing IT to focus on delivering self-service, policy-driven protection that increases business agility while ensuring compliance with business and regulatory requirements.

About IT Outcomes
VMware IT outcomes provide a framework that ties select VMware solutions to key results that customers can expect when adopting the VMware SDDC vision.

With VMware, IT organizations can achieve critical results, or outcomes, with unique capabilities that help IT respond to business requests quickly and cost-effectively, without compromising security, control, or choice.

For more information on IT outcomes, visit the VMware “IT Outcomes” Web page at: [http://www.vmware.com/it-outcomes/](http://www.vmware.com/it-outcomes/).

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Forrester. (May, 2013). The Total Economic Impact of VMware vCenter Site Recovery Manager.