Multi-tenant cloud service enables automated, one-click recovery for enterprise applications

A single outage can make business owners painfully aware of the importance of disaster recovery (DR) planning. However, an effective DR strategy is about more than simply anticipating a data center outage—it’s about ensuring minimal business impact. Unfortunately, the lack of a DR plan can have far reaching consequences. According to the National Archives and Records Administration, 93% of businesses that lose their data centers for ten or more days will file bankruptcy within a year.

Enterprises must pro-actively address the potential business impact that a data center outage would have on the organization, and the true costs associated with losing access to mission critical applications. At the same time, enterprises must determine reasonable expectations for the length of recovery downtime (the recovery time objective, or RTO), and how much data loss is acceptable, if any (the recovery point objective, or RPO).

Establishing a DR plan aligned with business needs and operational imperatives can create challenges for organizations with demanding RPO and RTO requirements but little appetite for the investment, deployment, and on-going management of a DR environment.

Managed storage solutions offer enterprises a cost-effective approach to ensuring business continuity (BC) without sacrificing reliable, single-click recovery of vital data and applications. In fact, IDC projects Storage-in-the-Cloud to be a $15B market by 2015, with a 35.3% CAGR for Continuity (Fig. 1).
Service providers (SPs) with managed storage solutions are ideally positioned to add business continuity to their portfolio of managed offerings by adding replication and recovery services and making these new value-added services available to their installed base. With a combination of managed network, storage and data center infrastructure already in place, service providers can quickly offer hybrid cloud service models supporting enterprise business continuity.

A storage-in-the-cloud offering delivers added value to existing customers, while enabling providers to reclaim underutilized capacity, affording network providers easy access to on-net customer locations, and allowing many data center operators to leverage the customer data they have within their premises.

For the smaller enterprise with DR needs but limited resources to deploy and manage a DR solution, cloud multi-tenancy can make new offerings very attractive and affordable, with no capital investment to amortize, more predictable running cost, and service level guarantees.

**DISASTER RECOVERY TO THE CLOUD**

The first model of business continuity through a cloud service, DR to the Cloud, addresses the complete restoration of business operations by replicating the enterprise private cloud application environment, in addition to replicating the data hosted by the applications running in that private cloud (Fig. 2).

Unlike a backup model, where data must be restored to the original, running application environment, when a disaster prevents the data center from returning to normal operations DR to the Cloud allows the replicated data to be brought up at the service provider site, temporarily running on a replicated application environment to ensure complete continuity of business operations until service at the original customer site can be restored.

**DISASTER RECOVERY IN THE CLOUD**

The second model of business continuity through a cloud service, Disaster Recovery in the Cloud, additionally addresses outages within the service provider environment, providing another level of protection for the enterprise in that the primary service provider data site (Site A in Fig. 3) is now replicated to a geographically disparate secondary site (Site B in Fig. 3), potentially outside the directly affected geography in a regional disaster.

This model simultaneously provides business continuity for service provider operations as well as the service provider’s customers.

**DISASTER RECOVERY AS A SERVICE**

The EMC DRaaS solution brings economic justification for cloud-based high availability and protection, reducing financial risk and creating value for both providers and DRaaS customers.

This DRaaS solution lets service providers extend a cloud-based recovery service to a variety of customer categories, from on-premise, managed customer environments, to single or multi-tenant hybrid or off-premise public clouds, offering substantial economic benefits through resource sharing and more efficient recovery scenarios leveraging cloud-based automation.

The EMC DRaaS solution addresses three challenges providers face when building an In-the-Cloud DR solution.
EMC RECOVERPOINT
Offering point-in-time recoverability from mixed server and storage environments through synchronous or asynchronous replication, EMC RecoverPoint (RPA) is an enterprise-scale solution designed to protect application data on heterogeneous SAN-attached servers and storage arrays. Customers implementing RecoverPoint have experienced dramatic improvements in application protection and recovery times compared to traditional host and array snapshots.

EMC VNX SERIES STORAGE
Optimized for virtual applications, EMC VNX series delivers high-performing unified storage with unsurpassed simplicity and efficiency, letting service providers achieve new levels of performance, protection, compliance, and ease of management. In this solution, VNX adds significant value by hosting RecoverPoint write-splitting, essential to the replication function. Additionally, VNX handles connectivity to both FC and iSCSI initiators, simultaneously supporting both SAN networking block storage environments.

EMC DRAAAS AND VMWARE SITE RECOVERY MANAGER
VMware Site Recovery Manager (SRM) is the leading disaster recovery solution for virtualized application environments, assuring fast restoration of vSphere infrastructure. SRM leverages EMC RecoverPoint to centralize management of recovery plans, enabling non-disruptive testing, and automating any point in time (PiT) site recovery and migration workflows.

EMC Storage Replication Adapter (SRA), integrates SRM with RecoverPoint to support replication between sites.

THREE FOUNDATIONAL USE CASES
The RecoverPoint system, consisting of clusters of physical or virtual RecoverPoint Appliances (RPA or vRPA) at each site, can be shared by, or dedicated to tenants, depending on SP preferences, or a specific SLA being used for the service.

Some environments will contain tenants that require dedicated resources, while other tenants will have their requirements satisfied within a shared RPA System. For both DR in the Cloud and DR to the Cloud, Use Case 1 in Fig. 4 shows each RecoverPoint system (the Production

Figure 4. Use Case 1 - Dedicated RP System (DR to the Cloud and DR in the Cloud)

Production Site
Tenant A 100%
Tenant B 100%
Tenant C 100%
Tenant D 100%

Recovery Site
Tenant A
Tenant B
Tenant C
Tenant D

Figure 5. Use Case 2 - Shared RP System (DR in the Cloud only)

Production Site
Tenant A 25%
Tenant B 15%
Tenant C 50%
Tenant D 10%

Recovery Site
Tenant A
Tenant B
Tenant C
Tenant D

Figure 6. Use Case 3 - Mixed dedicated and shared RP System (DR to the Cloud and DR in the Cloud)

Production Site
Tenant A 100%
Tenant B 100%
Tenant C 100%
Tenant D

Recovery Site
Tenant A
Tenant B
Tenant C
Tenant D

Three foundational use cases
Site/Recovery Site pairs of RP clusters) as being specifically dedicated to each tenant, whether the system is physical (RPA) or virtual (vRPA).

In Fig. 5, all the resources in the RPA system are shared between the attached clients, fulfilling the DR in the Cloud model (since the SP controls the DR infrastructure at both sites), but not DR to the Cloud (where the SP does not have strict control over each customer site’s DR infrastructure). Although this example shows vRPA, the solution is similar for RPA.

RPA resources can be shared symmetrically or asymmetrically between tenants depending on service level agreement (SLA). This could mean that all tenants (four in this example), would receive an equal share of the maximum number of RPA resources, or the SP might allocate or dedicate them in a weighted fashion depending upon tenant requirements.

The use case in Fig. 6 shows how a combination of mixed and dedicated RPA or vRPA can be configured. Note that Tenant D is a multi-subtenant composite.

CONCLUSION
As organizations increase their use of SP managed services their DR challenges can also grow.

Service providers who already offer cloud-based services or traditional hosting services are ideally positioned to round out their as-a-service offerings by providing the EMC DRaaS solution to their installed base.

This solution lets service providers deploy an easy-to-use, next-generation disaster recovery offering for customers looking to simplify and automate their replication and recovery procedures today.

The EMC Disaster Recovery-as-a-Service solution
- Simplifies and automates one-click recovery of data and applications infrastructure in multi-tenant clouds, for immediate, reliable recovery from interruptions
- Efficiently scales carrier-grade business continuance to tenants at a fraction of the cost of customer-owned and maintained infrastructure
- Delivers near-zero, or zero RPOs, with RTOs measured in seconds or minutes, instead of hours or days
- Optimizes service provider operational costs across multiple tenants with heterogeneous storage arrays
- Provides orchestrated replication and recovery management, in complex, multi-tenant environments
- Lets tenants focus on revenue generating enterprise activities, instead of investing in and managing infrastructure
- Lets service providers focus on optimizing infrastructure utilization and enhancing per-subscriber revenues with differentiated offerings, for rapid, easily scaled consumption

EMC offerings in backup and recovery, enterprise content management, unified storage, big data, enterprise storage, data federation, archiving, security, and deduplication help customers move to and build IT trust in their next generation of information management, enabling them to offer IT-as-a-Service as part of their journey to cloud computing.

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