A guide to cloud-based disaster recovery

A complete guide to disaster recovery services, Dell.com/cloudservices
Disaster recovery is a subset, a small part of overall business continuity. It is the process of saving data with the sole purpose of being able to recover it in the event of a disaster. The root of disaster recovery is that data is kept in a secondary site, and plans are made on how that data will be recovered so that the business can access it again.

On the other side, business continuity typically refers to the management, oversight and planning involved with ensuring the continuous operation of IT functions in the case of system or enterprise disasters. The elements necessary for successful business continuity include the plant (location), staffing and equipment, as well as the actual data recovery procedures.

Business continuity is not data centric, it is business centric.
Forty percent of businesses do not reopen after a disaster and another 25 percent fail within one year according to the Federal Emergency Management Agency (FEMA). Similar statistics from the United States Small Business Administration indicate that over 90 percent of businesses fail within two years after being struck by a disaster. The advent of sophisticated cloud services can help your business survive manmade or natural disasters.

Disaster recovery (DR) is about preparing for and recovering from a disaster. Any event that has a negative impact on your business continuity or finances could be termed a disaster — including hardware or software failure, network outage, power outage, physical damage to a building (such as fire or flooding) or even human error.

To minimize the impact of a disaster, you need to invest time and resources to plan, prepare, rehearse, document, train and update processes to deal with events. The amount of investment for the disaster recovery planning of a particular system can vary dramatically depending on the cost of a potential outage. The approaches range from minimal investments to full-scale availability and fault tolerance. Proper preparation for DR is a must, and our cloud partner, Amazon Web Services (AWS), has a white paper that outlines some of the best practices to improve your disaster recovery plans and processes.

Disaster recovery is a continual process of analysis and improvement as your business and systems evolve. For each business service, you need to establish an acceptable recovery point and time, and then build an appropriate DR solution.

In a traditional physical environment, a typical approach would normally involve the duplication of infrastructure to ensure the availability of spare capacity in a disaster scenario. This infrastructure needs to be procured, installed and maintained so that it is ready to deal with the anticipated capacity requirements. Under normal operational circumstances, this infrastructure would typically be underutilized or over provisioned.

A DR option builds on managed backup by enabling this restore capability. The primary compute resources can exist on premise, in colocation racks or on a cloud. The scenario remains the same: There has been a disaster at the primary site and all compute and storage resources (such as the on-premise server room) are offline or destroyed. Cloud-based DR exists to restore full services within the time set in the service-level agreement (SLA). This SLA is based on two determining factors: recovery point objective and recovery time objective.

Recovery point objective (RPO):
- Determines how far back you want to go to restore data from the backup — the recovery point in time — as part of your SLA. This cannot be a timeframe more frequent than the backup schedule. So if the managed backup is scheduled for every 24 hours, the best-case RPO will be 24 hours. If the frequency is shorter, the RPO can be sooner. Some companies may choose to pay a higher fee for more frequent synchronization, allowing a shorter RPO window (such as a recovery point objective of four hours).

Recovery time objective (RTO):
- Determines how quickly you can expect service to be restored (such as the compute resources are spun up and the data is live) with this being enshrined in SLA. An RTO of four hours is commonplace. Many companies pay more for an RTO of one hour. At its most extreme, some pay for a live/live environment where service can be cut across nearly instantaneously, but that is prohibitively expensive for most.

The RPO and RTO combine to form the service level you expect the service provider to maintain. In short, it’s an indication of how far back to go and how quickly to restore. So a 24-hour RPO and four-hour RTO would mean that you would expect data to be no more than 24 hours old and service to be restored in less than four hours.
Dell Disaster Recovery as a Service

Dell can help simplify business continuity planning for your organization with Dell Disaster Recovery as a Service with Dell Cloud Dedicated Service (Dell DRaaS), our hosted private cloud. Focusing on common recoverability scenarios, it offers a single-tenant solution with multiple data center facilities, so you can match each workload to the most appropriate DR location, optimizing performance and ensuring that business continuity plans meet the necessary RTO and RPO.

With Dell DRaaS, you can relax knowing that you have the cloud infrastructure necessary to support your mission-critical applications. Dell DRaaS is an enterprise-class, private cloud infrastructure hosted in a Dell data center and connected to a self- or Dell-managed private cloud infrastructure at your facility. With continuous replication between sites, you can rely on the success of your cloud business continuity plans.

Dell DRaaS helps you over hurdles like cost, complexity and unreliability typically found with traditional DR solutions. It features proven VMware Site Recovery Manager replication that delivers:

- High-speed backup of physical and virtual machines
- Low-resource consumption virtual appliance deployment
- Support for multiple hosts and hundreds of virtual machines
- Archive integrity and reliability

Dell DRaaS essentially does three things:

- Dell DRaaS simplifies the setup and ongoing management of recovery and migration plans. Customers can replace traditional, manual runbooks with centralized recovery plans, reducing the time required for setup from weeks to minutes.
- Dell DRaaS automates the orchestration of the failover process to the secondary site, as well as the failback to the production environment. Failover and failback automation eliminates errors inherent with manual processes.

Transcend disaster recovery obstacles with Dell Cloud Disaster Recovery as a Service

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and eliminates complexity. This level of automation also enables users to test their recovery plans without disruption as frequently as required, increasing the predictability of RTO and, ultimately, the level of confidence in the recovery plan.

- Dell DRaaS supports the flexibility to choose from different replication solutions. Dell DRaaS uses vSphere Replication, the industry’s first hypervisor-based replication, which is included with the vSphere platform. Dell DRaaS also supports a very broad range of array-based replication products from major storage and replication vendors.

Dell can provide consulting services to help develop your DR plan.

Dell can also provide some of the most advanced IP to provide application level business continue through using Dell Software IP such as Shareplax when it comes to enterprise workloads.

Dell delivers:
- A flexible, reliable platform for hosting traditional mission-critical applications
- Optimal virtual machine performance with single-tenant private cloud environment
- Complete security with SecureWorks-managed infrastructure and optional application monitoring
- Comprehensive data protection including seven-day rolling snapshots, local backup and recovery and off-site disaster recovery
- Service options including server colocation, OS management and support and networking
- Vertical industry compliance with federal and state regulations including Health Insurance Portability and Accountability Act (HIPAA) and Health IT for Economic and Clinical Health (HITECH) and Payment Card Industry (PCI)
AWS, a subsidiary of Amazon.com, is a cloud-focused service provider with a very pure vision of highly automated, cost-effective IT capabilities, delivered in a flexible, on-demand manner. They have partnered with Dell to provide a do-it-yourself (DIY) solution. You have the freedom to select replication software that connects to AWS. A prerequisite is ongoing use of Dell Cloud Manager.

Every enterprise has a different level of tolerance for business interruptions and, therefore, a wide variety of disaster recovery preferences — ranging from solutions that provide a few hours of downtime to seamless failover.

Amazon Web Services’ leading service provides a cost-efficient and optimized DR capability. Smart DR offers three design methods that meet a wide variety of recovery needs using a combination of AWS services. These include:

- **Cold**: providing the lowest RTO of one business day or less
- **Pilot light**: delivers a moderate RTO of four hours or less
- **Warm**: a lightning-fast RTO of one hour or less (and the most expensive option)

You can use the AWS cloud to enable faster disaster recovery of your critical IT systems — without incurring the infrastructure expense of a second physical site. The AWS cloud supports many popular DR architectures, from pilot-light environments that are ready to scale at a moment’s notice to hot-standby environments that enable rapid failover.

The idea of the pilot light is an analogy that comes from the gas heater. In a gas heater, a small idle flame that’s always on can quickly ignite the entire furnace to heat up a house as needed. This is similar to a backup and restore scenario; however, you must ensure that you have the most critical core elements of your system already configured and running in AWS (the pilot light). When the time comes for recovery, you would then rapidly provision a full-scale production environment around the critical core.
Infrastructure elements for the pilot light itself typically include your database servers, which would be replicating data to Amazon Elastic Compute Cloud (EC2). Depending on the system, there may be other critical data outside of the database that needs to be replicated to AWS. This is the critical core of the system (the pilot light) around which all other infrastructure pieces in AWS can quickly be provisioned (the rest of the furnace) to restore the complete system. With data centers in 10 regions around the world, AWS provides a set of cloud-based disaster recovery services that enable rapid recovery of your IT infrastructure and data.

The benefits of using AWS for disaster recovery:
- **Fast performance**: Fast disk-based storage and retrieval of files.
- **No tape**: Eliminate costs associated with transporting, storing and retrieving tape media and associated tape backup software.
- **Compliance**: Fast retrieval of files allows you to avoid fines for missing compliance deadlines.
- **Elasticity**: Add any amount of data, quickly. Easily expire and delete without handling media.
- **Security**: Secure and durable cloud DR platform with industry-recognized certifications and audits.
- **Cost savings**: You set the RTO and RPO depending on the application; from mission-critical to business-critical, you have the option to apply the resources you need to restore your business after an interruption.

We have developed a number of assets to help you learn more about Amazon Web Services. These include:
- A complete customer presentation on AWS Disaster Recovery
- An AWS white paper outlining the building blocks needed to set up a DR solution
- An animated *two-minute video* posing a hypothetical business problem and how it was solved

If you have any questions about Amazon Web Services, please contact a Dell representative.

“AWS allowed us to implement a strategy at a fraction of the cost of us doing it ourselves.”
— Augusto Rosa
Operations Shaw Media

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ScaleMatrix

Minimize the impact of a potential disaster and maintain or quickly resume critical operations with Dell Disaster Recovery as a Service (DRaaS) with ScaleMatrix. We provide a variety of disaster recovery plans — ranging from ice, cold, warm and hot — to support your specific needs.

Create a backup of your data using Dell Disaster Recovery as a Service with ScaleMatrix’s near-line cloud storage by seeding to the cloud — using the representational state transfer (REST) application program interface (API) — supported by backup software or third-party gateway to the ScaleMatrix facility in San Diego, California or Katy, Texas. You are required to provision a backup media server with incumbent backup software to a virtual machine (VM) within the ScaleMatrix public cloud. ScaleMatrix is not responsible for any pre-configuration of guest operating systems, incumbent backup virtualization API hooks or physical-to-virtual configurations.

Ice

Utilizes existing backup software and provides:
- Service-level agreement:
- 48 hours from notification of failure of production site/application (based on pre-negotiated resource pool)
- Recovery time objective: 48 hours
- Recovery point objective: 24 hours
Enjoy daily backups of your data with the help of Dell NetVault backup software and ScaleMatrix to manage disaster recovery. This is accomplished by maintaining and applying daily full backups that target live standby VMs. A scheduled nightly backup occurs — replicated to a ScaleMatrix data center and then merged with a preconfigured live VM at an offsite disaster recovery facility. A disaster recovery VM consists of a point-in-time copy of a production system no older than 24 hours.

Upon notification, the live standby environment will be turned into a mirror production environment by applying additional pre-negotiated compute resources.

Experience byte-level disk-to-disk backup and data deduplication with the help of Dell NetVault SmartDisk and ScaleMatrix to manage disaster recovery and drive lower recovery point objectives — to less than 24 hours. Six recovery point snapshots are taken during the day (every four hours), replicated to a data center and merged with a live standby VM. Domain Name System (DNS) records are changed to ScaleMatrix’s public IPs and time-to-live can be modified in the flush cache in under five minutes.

Upon notification, the live standby environment will be turned into a mirror production environment by applying additional pre-negotiated compute resources.
Create application-aware, disk-to-disk backup and data deduplication with the help of Dell NetVault SmartDisk and ScaleMatrix to manage disaster recovery and drive lower recovery point objectives — to less than four hours.

Hot

Creates hourly snapshots and provides:
- Recovery time objective: four hours
- Recovery point objective: one to two hours

Create application-aware, disk-to-disk backup and data deduplication with the help of Dell NetVault SmartDisk and ScaleMatrix to manage disaster recovery and drive lower recovery point objectives — to less than four hours. 24 recovery point snapshots will be taken during the day (every hour), replicated to a data center and merged with a live standby VM. DNS resolution is facilitated by a global traffic manager (GTM), allowing for near-transparent DNS/IP changes automatically.
Dell partner guarantee

Dell recognizes that cloud pricing can be volatile, and if any element of the service provided by a partner is reduced in cost, the cost savings is immediately reflected in your bill.

Regardless of which partner or partners are used, a single invoice for services comes from Dell on a net 30-day basis.

Providing the broadest cloud ecosystem in the industry

Global coverage

Multiple cloud platforms
Proprietary | Microsoft | VMware | OpenStack | CloudStack

Most popular use cases
Vertical apps | Disaster recovery | ERP and CRM | Scale-out web infrastructure | Test and development | Productivity apps | Computational analysis

For more information about any of our service offerings, please visit Dell.com/services or contact your Dell representative.