

Simplifying Disaster Recovery with Virtualization

By Grant Aitken

Implementing disaster recovery plans is essential for organizations today. Downtime of important applications is a costly proposition, and extended downtime can even be fatal to an organization. A number of industry research reports have found that a significant amount of companies experience financial damage due to downtime each year and that a surprising portion of organizations that experience extended interruption to IT services soon go out of business.

Although “disaster recovery” often conjures up images of hurricanes, earthquakes or terrorist acts, disaster recovery plans are also relevant for protecting against more common causes of outages including power failures, cooling system failures, and human errors. For example, if a water pipe running near the datacentre bursts or someone accidentally trips the emergency power shutdown switch, the disaster recovery plan will be what is needed to get the IT environment running again successfully.

Although organizations increasingly recognize the importance of having an effective disaster recovery plan for their IT environment, most organizations’ disaster recovery plans fail to meet their requirements. Most disaster recovery plans encounter challenges that include:

- **Inability to meet the recovery time objectives (RTOs) set by the organization.** As tolerance for downtime continues to decrease, IT organizations run into significant challenges in delivering recovery that meets objectives. Recovery typically involves many complex and many manual steps such as reinstalling operating systems, reconfiguring systems and applications, and verifying the recovered configuration that slow recovery.
- **Unreliability.** Ensuring the runbooks that document recovery plans are complete, correct and up to date can be nearly impossible, increasing the risk of failures during recovery. Testing disaster recovery plans, although critical to ensure that they are reliable, is challenging and requires significant equipment and personnel resources. Hardware dependencies and application dependencies also add to the complexity of recovery and likelihood of failures during recovery.
- **Cost.** Disaster recovery solutions become exponentially more expensive as requirements increase. Traditional disaster recovery plans often require duplicating data centre infrastructure at the recovery site in order to ensure fastest and easiest recovery, effectively doubling hardware requirements for protected applications even though the infrastructure at the recovery site must sit idle the majority of the time.

Due to these challenges, organizations are often unable to protect more than, at best, a privileged few of their production systems at levels that meet their recovery objectives, putting them at significant risk. In particular, IT services running on x86 servers are often critical to the core applications running on x86 or other platforms in the datacentre.

Many organizations are turning to virtualization software to help address these challenges and enable them to deliver practical disaster recovery solutions. For one,

virtualization makes it possible to accelerate recovery. Complex multi-step procedures using specialized software for bare-metal recovery and operating system recovery can be simplified to single-step file recovery because virtual machines are hardware-independent and everything about a virtual machine — hardware configuration, firmware level, system and application installation and data — is stored in a small number of files on disk. Tools are also available that can automate many of the manual steps of failover to provide faster recovery.

Virtualization also enables organizations to deliver a more reliable disaster recovery plan. Because it simplifies disaster recovery processes, errors during recovery are much less likely, testing of disaster recovery plans is simpler, and training personnel in disaster recovery procedures is easier. The hardware-independence of virtual machines also eliminates complications that can arise due to hardware differences between primary and recovery site hardware. The automation provided by software also helps to ensure that both tests and actual failover are carried out as designed, consistently and predictably.

Virtualization makes it possible to implement disaster recovery plans at a significantly lower cost. Because virtual machines are hardware-independent, any physical server can serve as a recovery target for any virtual machine. As virtualization also makes it possible to consolidate workloads on to fewer servers, organizations can significantly reduce the cost of hardware for disaster recovery by reducing the number of servers they need at their primary site and then repurpose the extra servers for the recovery site. Additionally, by automating the recovery process organizations can significantly reduce the time spent on implementing, documenting, testing and updating recovery plans.

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