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BEST PRACTICES for Storage Management and High Availability in your Microsoft Data Center

Keeping your storage system, data, and applications available to your users when and where they need it, reliably and without fail, requires a solid set of operational practices and technologies that enable IT to deliver on the service level requirements of business users. These requirements go across business and departmental boundaries and should be established as fundamental underlying goals of IT throughout the enterprise. The combination of management practices and software will enable IT to meet the storage, availability and disaster recovery requirements of the business.

Single Management Infrastructure

While there are several methods and applications designed to manage storage, application availability, and disaster recovery, the most efficient method throughout the enterprise requires standardizing on a management platform that supports all of the software and hardware that you are deploying. Management needs to support both physical and virtual servers, clustering (local and remote), and offer reporting and proactive alerting services that cover the gamut of data center storage, availability, and disaster recovery operations. Support should be cross-platform, allowing the implementation of a similar tool set and associated standardized procedures across operating systems (Windows, UNIX, and Linux).

Efficient Storage Utilization

By its very nature, storage is dynamic and it is very easy to waste resources by investing in more storage than is necessary to meet the current requests and estimated near future needs of application owners. Efficient online storage administration gives IT the ability to make storage available, as necessary, by allowing dynamic growth or reallocation of storage to services and applications that need storage now, while adjusting the amount and location of storage and data throughout the enterprise to meet short and longer term business needs. Support for technologies such as storage virtualization and the ability to reclaim unused storage, redesign improperly configured storage or to move data from one type of storage to another while systems and applications remain online allow for a reduction in both storage and operational expenses. It is imperative that online storage operations have consistency in both physical and virtual environments—differing functionality, differing infrastructure software which leads to differing operational processes increase resource investment costs. For example, migration of storage while the Windows Server and application are online in the physical environment should also translate to the virtual environment—online storage migration while the Hyper-V virtual machine remains online—without having to rely on different tool sets to complete this task.

High Availability & Disaster Recovery

Achieving high availability and disaster recovery needs to be architected for the application from an end to end perspective—storage through server through application. For applications with critical data on shared storage, availability from the host to the critical shared storage can be achieved through the use of multi-pathing. In a Windows environment, multi-pathing should adhere to the Microsoft MPIO framework, provide a broad coverage

of array support, and provide additional benefits of tuning the I/O load balancing configuration to the right algorithm that best suits the environment and performance of the application and advanced path management.

Clustering and replication, whether the topology is local, stretch, or wide area, address many of the high-availability and disaster recovery needs of enterprise IT organizations from a server and application perspective. For optimum availability, there needs to be direct support and built in knowledge for standard enterprise Windows applications and services such as Microsoft Exchange Server, Microsoft SQL Server, Microsoft SharePoint Server, Microsoft IIS and Microsoft File and Print services. Additionally, this support and protection should be extensible to both physical and virtual environments. Cluster support should have no single point of failure, and should be able to automatically, and gracefully, move supported applications and necessary data to an available server with little or no impact on the end-user experience. Both software- and hardware-based replication technologies should be supported, ensuring that a local or stretch topology can be easily extended to wide area, to achieve truly integrated application and data disaster recovery.

Ease of Use

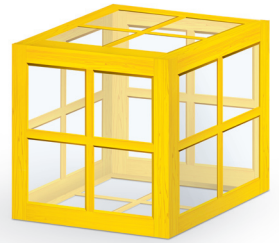
Storage management, availability, and disaster recovery software is often complex and difficult to install and configure. This tends to cause IT users to not take full advantage of the software's available features. The best solutions will offer wizard-driven installation and configuration options—not just for the basic installation and setup but also for the more complex high availability and disaster recovery configurations. You also should be able to fine tune the configurations as more information is obtained on use and operation.

Automation

Automation capabilities cover a broad spectrum of requirements, from the generation of system or application reports to dynamic I/O balancing, intelligent and optimized application movement based on a system workload to optimizing the tuning of storage and availability operations. Ideally this automation requires a minimum of IT interaction to configure and maintain. Storage management, availability and disaster recovery software should be capable of allowing IT to set conditions and from that point utilize the conditions established by IT to optimize the performance of the storage and applications, generate automatic alerts, create reports, or any combination of these actions that allow for a more efficient storage operation and reliable availability environment. For example, as the software detects a failing disk, it would generate an alert, begin the automated migration of data to a healthy disk, and generate a report on the process when complete, allowing IT to see what has occurred and the corrective action taken to address the impending failure. In addition, automated testing of capabilities and features related to clustering and high availability, such as being able to test fail-over without disturbing the production instance of an application, can provide a high level of confidence in the availability and disaster recovery solution without the business impact of downtime or the operational impact of building and testing an entire replica environment.

Optimized ROI

Getting the greatest value for the money spent on IT storage, availability, and disaster recovery technologies should be a guiding principle for storage management. Throwing money at storage, may appear to solve a problem in the short term, but in fact complicates the situation and adds unnecessary cost and overhead in the long term. Similarly, investing in manual procedures and rebuild only scenarios to achieve high availability and disaster recovery may appear like a short term cost saver; however, the operational overhead to keep these procedures up to date and tested, in addition to the increased likelihood of error in a real failure situation will adversely affect operational investment in the environment and the reliability to recover in the long term. Focusing on the value of the deployed solution and optimizing the ROI for the existing infrastructure not only saves money but provides a more effective storage, availability and disaster recovery delivery solution.



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You depend on Windows® software. But managing it can drain resources if your solutions are scattered. Our comprehensive approach helps you secure, manage, and recover your Windows environments efficiently. So you can use your resources to drive your business forward.

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