

## Checklist for Virtual Server Best Practices

### THREE VIRTUAL SERVER BEST PRACTICES THAT COST-EFFECTIVELY ACCELERATE DATA DELIVERY FOR TODAY'S APPLICATIONS

Server virtualization improves data center efficiency by allowing fewer physical hosts to support larger amounts of virtual servers. Because it's easy to spin up virtual machines, there can be a significant impact on the storage environment. Increased numbers of virtual servers result in greater capacity requirements and unpredictable performance needs as new applications are spun up and spun down. As a result, it is difficult for IT teams to predict how much storage they need.

To fully realize the economic benefits of server virtualization, you need a highly scalable storage system that can adapt to the rapidly changing performance and capacity needs of virtualized business applications. You also need to deliver increased uptime to prevent outages that could impact a greater number of virtual servers. To meet 24/7 expectations, look for a resilient design that supports nondisruptive migration, thin provisioning, automated storage tiering and continuous data protection.

The following best practices show how a storage system can help you accelerate application performance, ensure continuous operations and simplify virtual machine management.

#### ❑ 1. ENSURE APPLICATION PERFORMANCE ACROSS WORKLOADS AND CHANGING END-USER DEMANDS

Virtual machines create dense environments that reduce the data center footprint and minimize power and cooling costs. However, physical servers with a high virtual machine count can undermine storage performance with unpredictable I/O traffic, inconsistent response times and an inability to guarantee response-time service levels. Deploying more hard disk drives (HDDs) to improve response times can help but leads to massive overprovisioning and higher IT costs.

Flash-optimized storage makes high workload densities possible by delivering sub-millisecond response times and consistent, high performance under heavy loads. To support growing capacity requirements, having flash is not enough. A scalable hybrid architecture that tightly and seamlessly integrates flash and hard disk drives (HDD) together is needed. As a result, you can automatically migrate workload data across tiers for the best performance and price.

**Advantage:** When flash is an integrated part of the solution, you can deploy less storage to meet particular performance requirements. When performance and capacity are important, it is essential to consider a system with true flash tiering. Tiering lets you easily move data between flash and disk for cost and performance optimization, and do it fast enough that there is no significant lag in response time. These advantages lower the total cost of ownership and significantly reduce data center floor space.

#### ❑ 2. ENABLE CONTINUOUS OPERATIONS AND DATA INTEGRITY

Traditional data protection revolved around deploying resource-intensive backup agents on physical servers to copy and move data from production storage to a back-end disk or tape target. These agents consumed extensive resources, such as CPU, memory and bandwidth. Since server virtualization eliminates this wasted capacity, the route to data protection must change with a storage platform that is tightly tied to a virtualization platform.

By leveraging snapshots, clones, replication and operational resilience, it is possible to offload server overhead and create protection tiers based on data importance. Moving inactive data to a content store with built-in data protection can reduce the amount of storage you need to protect and the time it takes to protect it. Finally, use intelligent, application-aware protection to protect only what has changed and recover only what is essential.

**Advantage:** Efficient copy management performed at the machine level can support up to 100 million clones and 100 million snapshots per file system. A global-active device feature with active-active stretched clusters provides the highest levels of continuous availability. It can drive recovery point objective (RPO) and recovery time objective (RTO) to zero, because a full set of applications and processes is already running and available at a second location. This technology allows you to move virtual machines to balance workloads or provide technology updates. It ensures nondisruptive migration and supports hybrid cloud.

### ❑ 3. AUTOMATE STORAGE MANAGEMENT TO REDUCE COMPLEXITY

As virtual machine deployments continue to grow and take on more applications and users, IT administrators need a more automated approach to managing virtualized environments. Storage management tools must integrate with server, network and virtualization management tools to increase management efficiency for the administrator and reduce the risk of errors capable of causing outages.

In a virtualized environment, management teams benefit from end-to-end visibility of the environment, including hypervisor-specific views for the quick delivery of alert and report function analysis. They also need storage resource management tools capable of consolidating reports on utilization, performance against service level objectives, and the rate of data growth. This level of reporting allows a virtualization administrator or business owner to audit resource usage and plan for the future.

**Advantage:** Centralized management automates routine tasks, including the provisioning of virtual machines with storage features and functions, and eliminates management layers for streamlined, error-free efficiency. Automated performance management ensures continual performance monitoring and optimal placement of virtual machines based on available disk space and current I/O load. Fully automatic failback and planned migration dramatically improve RTOs. Centralized reporting defines and establishes service levels for applications running in virtualized environments.

### TURN SERVER VIRTUALIZATION INTO A WIN-WIN

Rapid growth of virtual servers and the need for around-the-clock availability can add storage complexity and cost to virtualized environments. To take advantage of the data consolidation savings that server virtualization promises, you need a storage system that offloads storage-intensive processing from the server hosts to increase virtual machine density, improve performance and reduce workload contention. The system should extend these benefits to legacy-attached storage via external storage virtualization.

Want to simplify server virtualization management and support, enable continuous availability and meet mission-critical business needs? Find out how our scalable Hitachi Virtual Storage Platform family and tight integration with VMware can maximize performance, ensure resilience and automate management in your virtual server environment.



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