Plan For & Perform A Server Upgrade

Know The Costs & Infrastructure Requirements Before You Dive In

A SUCCESSFUL SERVER UPGRADE requires plenty of forethought and up-front legwork. Beyond addressing software, component, and application compatibility issues, IT must account for possible virtualization, capacity, facility, testing, throughput, and cost factors associated with an upgrade. Plus, there's the matter of backing up data and carefully scheduling for downtime to avoid prolonged disruption to business. The following offers advice for the smooth planning and execution of a server upgrade.

First Things First

Mapping out short- and long-terms goals, along with corresponding strategies, is vital to a successful server upgrade. Mark Bowker, Enterprise Strategy Group senior analyst, says that because server upgrades often align with new IT projects, applications, or application upgrades, it's important that "IT focus on both the life cycle of the application and how it aligns with the expected life of the server and account for planned and unplanned scale." IT should also know its options. Too often, Bowker says, IT purchases a server with more capacity than needed, which provides the comfort of extra headroom but also incurs additional expense. "IT should understand what the latest processor chipset is on the market and what the stated roadmap of the chip manufacturers are," he says. "This will help avoid buying into servers that are at the end of a product lifecycle."

According to Max Haskvitz, general manager of eRacks (www .eracks.com), knowing the enterprise's hardware and networking platform is the most important aspect of a server upgrade, but having redundancy in place is also "beyond important," he says. "Network and data migration are huge issues every enterprise has to deal with; however, if done with an eye for detail, it shouldn't cause too many headaches." Prior to an upgrade, he says, back up data and ensure that planned changes will work with the network and applications. "In general, I always would request that the vendor perform the upgrade," he says. "That way it stays under warranty. If anything goes wrong, you have someone liable that's outside the company, and you will get resolution in most cases quickly."

Prep Work

Among the upgrade preparations that Charles Jansen, technical support manager at Aberdeen (www.aberdeeninc.com), suggests is meeting with decision makers to decide if an upgrade is really worthwhile, as "it may be more time- and cost-effective to purchase a new server." Additionally, schedule downtime to complete the upgrade, determine how long the server will be down—"It can take 24 to 72 hours just to build a new RAID group using 1TB/2TB/3TB drives," Jansen says—and make sure personnel will be available during that timeframe. Also ensure that vendor support will be available, and gather and review device-related documentation to limit surprises, he says.

Jansen also suggests checking the server's warranty status and whether it can be extended; double-checking and documenting specifications for the current BIOS, firmware, drivers, and internal components; and gathering server and component serial numbers in case support is required. If upgrading the CPU or memory, he says, "be certain that the system will support the additional components. Don't mix CPU steppings, and don't mix memory module ranks and speeds."

If upgrading storage, he says, check that hard drives are compatible with the existing RAID controller; document all drive models, LBA, and firmware; avoid mixing within the same RAID group; and don't use desktop-grade hard drives in RAID groups. If upgrading a RAID controller, ensure that the new controller is compatible with existing PCI-X or PCI-E slots. "Most controllers designed to run on PCI-E Gen 2 slots will not even be recognized on a PCI-E Gen 1 slot," he says. If adding external storage, verify that there's room for required storage host bus adapters, that a driver for the OS is available, and that all media and storage devices work properly, and test installation media on a test system to ensure reliability.

Test Your Work

Overall, Haskvitz advises to be prepared for anything to go wrong and take steps (clone drives, network maps, have a spare server ready, etc.) to avoid downtime. "Though some downtime will likely occur," he says, "a well-prepared team and a network with redundancy has much more risk-avoidance than upgrading a mission-critical server with no backups [or] fall backs," he says. Post-upgrade, test for throughput, bandwidth, stability, heat, and memory issues, he says. Good vendors will do this for you, he says, but IT should generally request that a 24- to 48-hour testing suite be done on new machines and on memory, CPU, or hard drive upgrades.

For servers that have been in production several years, Jansen suggests using manufacturer utilities to test existing memory and hard drives before upgrading. "RAID consistency checks and CHKDSK should be performed to verify volume integrity," he says, adding that these processes can be time-consuming on large data sets.

Bowker advises referring to hardware compatibility lists to ensure that the workload planned for the server is approved for that hardware. "Depending on the application, an extensive test of the application with a real-world workload should be [performed] on the system," he says. In some large-scale environments, this may include significant vendor participation. For less-critical projects, IT can run its standard new-install checklist, he says. $\boxed{P}$

Key Points

- IT should meet with all pertinent decision makers to determine whether an upgrade or purchasing a new server makes more long-term sense.
- IT must carefully plan for downtime and ensure all necessary personnel and component and support documentation are available before upgrade.
- Post-upgrade, IT should test for performance and reliability issues.

Action Plan

- ■ Determine the time needed to perform upgrade.
- ■ Ensure personnel and vendor support will be available.
- ■ Gather necessary warranty, installation, and support documentation.
- ■ Verify that the new components, storage, or OS are compatible with system.
- ■ Verify that any external storage devices and backup media required work properly.
- ■ Back up data on the server and test for recovery.
- ■ Perform the upgrade.
- ■ Run desired reliability and performance tests.

Get Started

Before you get started with a server upgrade or replacement, be sure to plan your budget carefully. Costs associated with a server upgrade can be staggering, says Charles Jansen, technical support manager at Aberdeen (www.aberdeeninc.com). Possible expenditures include those related to equipment, software licensing, labor, telco and power company services, facility improvements, vendor support, and downtime. Additional costs related to supporting a new platform can include those for power, network cabling, cooling, rack space, and management personnel, he says. Enterprise Storage Group analyst Mark Bowker adds that most new servers now include server virtualization, and the additional expense of server virtualization software can add up quickly if not planned for.

Top Tips

- ✔ Cover the basics. Factor in such basics as space requirements, power availability, and cooling and UPS capacity, says Mark Bowker, Enterprise Strategy Group senior analyst. "IT should establish a timeline from when they procure the server to when the application running on it goes live into production," he says. This may require collaboration with network, security, storage, and application IT teams.

- ✔ Ensure compatibility. Although seemingly obvious, make sure that upgrade components are compatible with the server. "Many times, I have seen memory just not work simply because its chipset doesn't work with the board or the board doesn't support any more memory," says Max Haskvitz, general manager of eRacks (www.eracks.com).

- ✔ Are you qualified? Only qualified personnel should be involved in an upgrade, says Charles Jansen, technical support manager at Aberdeen (www.aberdeeninc.com). This includes those "familiar with the server platform, operating system, and applications." Bowker says an upgrade may involve numerous teams, particularly those involving mission-critical applications. "Each team may need to conduct a series of tests, and the time it takes to conduct these tests should be included in the project timeline," he says. A data center operations manager will typically monitor the process, coordinate testing, and bring the server into production, he says.