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Why Upgrade Your Server Infrastructure Now?

IDC OPINION

Advanced IT services are the essential backbone for enterprisewide digital transformation — a journey that enables enterprises to remain competitive in a dynamic market. As enterprises undertake initiatives such as connected devices, analytics-driven business processes, social media-focused marketing, and mobile-first user experience in the quest to drive superior business outcomes, they need IT as a trusted partner to deliver a superior service experience. Internal and external customers often demand stringent and consistent service quality, which in theory should be easy to deliver with the right infrastructure in place. In reality, however, many IT organizations struggle on this front. One of the key culprits is an aging infrastructure that continues to grow in scale and complexity as more and more applications are piled on it. The inability of IT organizations to meet their commitment results in frustrated customers, which in turn results in the business incurring higher costs and ultimately risking a crucial opportunity to leapfrog the competition.

IDC found that by neglecting to upgrade their server infrastructure in a timely fashion, IT organizations can lose up to **39% of peak performance** and add up to **40% in application management costs** and up to **148% in server administration costs**.



By upgrading their infrastructure on a regular cadence, IT organizations can save millions of dollars in capital and operations costs annually, thanks to higher server performance, consolidation, management efficiency, and improved reliability.

Additionally, this allows IT organizations to:

- » Shift from a tactical support role to a strategic role that supports business process transformation and serves as a catalyst for superior business outcomes.
- » Regain the trust and confidence of their customers by meeting stringent service-level agreements (SLAs) for existing application environments.
- » Deliver on a vision to offer unprecedented cloud-scale agility and efficiency, allowing customers to accelerate development of next-generation applications and workloads.
- » Build a sustainable mechanism for IT service delivery, application modernization, and managing hybrid IT, enabling the business to quickly transform itself digitally.

IDC believes that maintaining infrastructure currency is a definitive approach for IT organizations to become agile, thus empowering their customers to accelerate development of innovative products and services, take the products and services to market faster, and ultimately seek to maintain a competitive edge in a digital world.

Executive Summary: Why Upgrade?

The benefits of upgrading server infrastructure on a regular refresh cycle far outweigh the risks. IT managers must consider new technology solutions to help address the demands of their customers and seek to achieve:

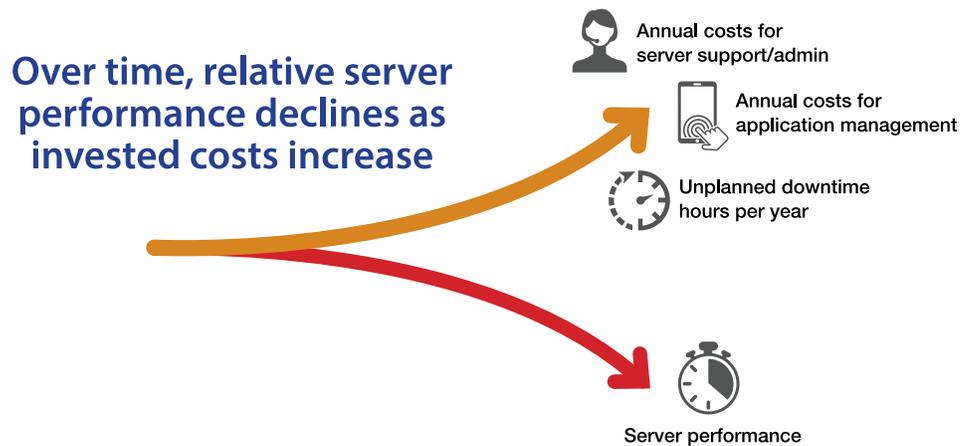
- » Improved IT management capabilities, automated and preventive support solutions, and integrated tools are needed to help better monitor the IT environment.
- » New applications under development require improved operations and support. Refreshing assets with the latest operational tools and support functionality accelerates implementation, adoption, and utilization for busy IT organizations. IT managers should look for extensive automated and proactive functionality for IT operations and support, especially across hybrid IT environments.

IDC research and analysis supports the economic benefits of refreshing IT assets on a regular schedule (see Figure 1). In a comparison of server performance and cost variables, including unplanned downtime, server support, and application management, the benefits of keeping server infrastructure up to date become apparent. While capital expenditures (capex) outright for server purchases are a real inhibitor to moving to this refresh model, leasing options are available to help mitigate this issue by managing cash flow as an operating expense (opex) instead of a capital expenditure.

Dell's comprehensive suite of technology solutions and associated services is specifically designed for improving IT operations and support across the entire infrastructure. This can help IT organizations streamline IT operations and improve IT service quality. As the advanced capabilities of Dell systems continually evolve, updating systems on a regular refresh cadence can keep organizations on the leading edge of technology.

FIGURE 1

Why Upgrade Now?



Source: IDC, 2016

Situation Overview

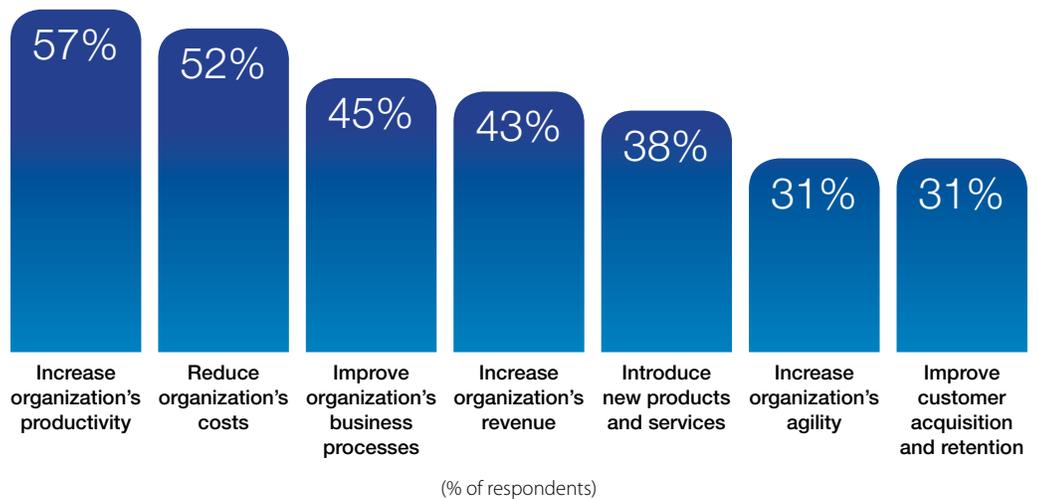
IT Organizations Drive Business Opportunity

The IT market is in a state of transition, evolving to what IDC calls the 3rd Platform. This paradigm shift to the next era of computing is driven by innovations in cloud, big data, mobility, and social technologies. Companies in all industries are in the beginning stages of a digital transformation with IT as the key player. Progressive enterprises are seeking to leverage 3rd Platform technologies to create new business opportunities and competitive differentiation through new products and services, new business models, and new ways of engaging customers. In a sharp departure from the traditional role of supporting business operations, CIOs are asked to drive business opportunities with IT.

Many enterprises see this as both an opportunity and a challenge. Another shift is a dramatic change in the competitive landscape, leading to more unpredictability for IT. New and emerging competitors are often “born in the cloud,” while existing competitors are adopting cloud platforms in various shapes and forms. For their part, customers and end users expect ubiquitous IT with access to an organization’s applications and data at any time, from any location and any device. Internally, line-of-business (LOB) units are focused on integrating new data sources into real-time analytics for decision-making processes. Increasingly, IT investments are tied to specific business initiatives (see Figure 2).

FIGURE 2

Business Initiatives



Q. Which of the following business initiatives will be significant in driving IT investments at your organization?

n = 242

Source: IDC, 2015

Noticeably, IT capabilities have become a critical factor to the success of any business. More than ever, this requires the company to run a reliable and agile IT environment. It is incumbent on the CIO to empower the IT organization to sustain a modern infrastructure with the latest generation of server technology.

Current Datacenter Refresh Approaches

The pace of business is in a constant state of acceleration, which in turn places additional requirements on the CIO role and the IT organization as a whole. IT needs to deliver mobile and cloud capabilities to applications in addition to managing new service models. It is essential for IT staff members to be excellent multitaskers to handle all that is expected

of them. They must account for maintaining the life-cycle schedule of IT, among their many tasks. While setting up net-new services garners a significant amount of attention, keeping up with the refresh cycle of the IT hardware is paradoxically considered routine. In reality, updating IT hardware at a pace that keeps up with today's accelerating competitive environment is imperative to delivering value to the business. In effect, IT drives business opportunity, and a lack of change within the IT environment is a risk factor for economic loss.

Two Common Approaches

Server refresh practices within the majority of IT organizations broadly fall into one of two categories:

- » **Scheduled refreshes.** In this approach, servers have a specified life cycle that is most often based on the associated maintenance contract, depreciation schedule of the server acquisition cost, or leasing period. The time frame of the schedules usually ranges from three to five years, depending on the server classification. Servers running mission-critical or business applications that have higher demands typically have shorter life cycles. By comparison, servers running general applications (collaborative, infrastructure applications) have longer life cycles because the workload doesn't tax the hardware as much as mission-critical apps do. The routine nature of scheduled refreshes enables predictable planning for budget consideration. IT managers are able to plan for funding ahead of time and schedule the planned upgrade in accordance with other IT projects.
- » **Ad hoc refreshes.** A specific event can trigger a hardware upgrade. The event may be known to the IT organization and therefore planned ahead, such as an OS upgrade or a change in application requirements. The event could also be unplanned and necessitate a reaction from the IT staff, such as a hardware failure. There are also some refreshes that are not driven primarily by server infrastructure requirements such as datacenter consolidation or expansion. In this ad hoc scenario, server purchases are directly linked to the associated projects; the hardware configurations can be aligned with the performance requirements of the specific project as well. This keeps hardware and software in sync and modernized, as opposed to having new applications run on aging hardware.

In a fast-paced, multifaceted environment, IT may devote more attention to net-new tasks and initiatives. An unavoidable event that necessitates an upgrade will usually force the IT staff to refresh the servers. In the case of the servers that follow a set schedule, the refresh task is often seen as a sizable undertaking requiring time and resources. Even though the IT staff is aware of the impending end-of-life time frame for servers, typically, the staff is overburdened. In addition to the day-to-day maintenance tasks, the staff is also expected

to deliver new services to the business. While most CIOs and IT managers recognize the importance of updating to the latest IT infrastructure, strapped IT departments are inundated by operational issues and are therefore unable to devote time to the kinds of tasks that can help the organization achieve business outcomes. The result: Routine server refreshes are often delayed.

Common Barriers to Upgrading

An overburdened IT staff is not the only inhibiting factor; logistical challenges as well as capital expenditure considerations can hinder server refreshes. Indeed, scheduling and budget challenges are primary reasons why enterprises are slow to adopt new systems. While these inhibitors are significant, IDC believes there are profound business and technology reasons why IT organizations should pursue a more proactive approach. IDC recommends that IT organizations maintain and refresh their IT environments on a regular schedule.

1. Scheduling Resources

Server upgrades can be time and resource intensive, especially if legacy and/or mission-critical applications are involved. IT managers must make considerable effort to plan and schedule the necessary staff resources to facilitate a server refresh. The retirement of old systems, deployment of new systems, and the subsequent migration of applications and data are time-consuming tasks. Throughout the process, multiple groups of IT professionals are involved, from server administrators and storage and networking staff to project managers, procurement managers, and LOB managers. The complexity of scheduling and the strain on staff can be significant, a situation that is exacerbated if no single employee has primary responsibility for a hardware refresh.

The scheduled time line of a refresh can also be impacted by an organization's uncertainty regarding technology shifts. The anticipation of a change in server technology (i.e., a new-generation processor) can lead to indecision and delay upgrade efforts. IT and LOB managers also may hesitate because of the possibility of migrating applications to the cloud.

2. Budget Constraints

Technology trends come and go. The one constant in the industry is that budgets are always under pressure. Refreshing server hardware can require a significant capital outlay; leaders can be wary of the cost and consequently delay a refresh by asking IT managers to maintain the current systems in a "get by for now" approach.

A constrained budget is also a challenge because IT must appropriately allocate funds across multiple projects. Certain high-profile IT projects may receive priority, thereby further delaying upgrades.

Reasons for a Regular Upgrade Schedule

IDC has identified six compelling reasons why regular refreshes make financial and operational sense (see Figure 3). Maintaining a modern IT infrastructure enables the business to be more agile in a competitive marketplace. With applications and data accessible at any time, from any location, and from any device, end users can rely on ubiquitous IT services. Today's business environment dictates that IT needs to be agile to enable the organization to adapt to change quickly. Older server generations can be rigid and result in less business flexibility. Hence a lagging refresh schedule can adversely affect IT and the business. IDC notes the following justifications for regularly scheduled refreshes.

FIGURE 3

Reasons to Upgrade on a Regular Cadence

-  Relative server performance declines as invested costs increase
-  New features improve management efficiency
-  Soon to expire warranties
-  Optimized systems improve performance
-  Improved reliability via reduced system failure
-  Financing options help budget challenges

Source: IDC, 2016

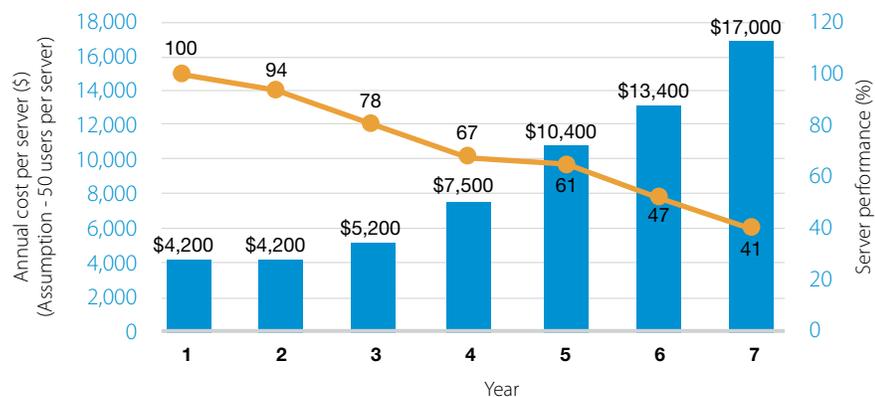
Relative Server Performance Declines as Invested Costs Increase

Datacenter environments are complex and are becoming more so with the advent of virtualization, convergence, and consolidation. Increasingly, datacenter systems are tied together to work in unison, making the management of that environment more complex over time. With each new iteration of servers come new firmware and drivers. Adding components into an environment without retiring older assets has the potential to cause issues. Thus managing environments in an "ad hoc" manner can generate exorbitant operational costs.

IDC research shows how costs and performance change dramatically over the life cycle of a server. Server performance erodes on average by 14% annually so that by the fifth year in, it has 40% of the performance as when it was new. The combination of lower performance and higher failure rates grows unplanned downtime by 20% annually. The rate of these changes do not occur at a steady state; rather, it doubles in the fourth to fifth year as companies are looking to upgrade their applications. This incompatibility between server and application drives up costs for server support and application management (see Figures 4 and 5). Unexpected outages, downtime, and poorly performing applications caused by aging systems reduce employee productivity and can have a negative impact on revenue and customer satisfaction and churn.

FIGURE 4

Year-to-Year Changes in Relative Server Performance for Invested Costs



Source: IDC, 2015

- Server support/administration
- Server performance (relative to year 1)

New Features Improve Management Efficiency

Newer systems have better capabilities with regard to asset management — a key priority for organizations. Up-to-date management tools allow for better tracking and analysis of what workloads are running where and how they are performing. These management capabilities are especially important to consider as businesses scale quickly. More granular levels of system information provide better guidance for datacenter and business planning.

- » Assets have the latest firmware and patching updates.
- » Devices are secure and in compliance with enterprise and government specifications.

Economics

As servers age beyond the optimal replacement cycle, relative server performance declines as support costs increase. The deltas between year 1 of operation and year 5 are as follows:

Server performance drops
39%

Annual cost per server support increases
148%

Annual application management cost increases
40%

Unplanned downtime hours rise
62%

Soon-to-Expire Warranties

The cost of maintaining older systems is expensive for vendors, which, in turn, makes that system more expensive to maintain for the enterprise. Fewer, more difficult to find replacement parts and higher labor cost due to more frequent failures (which impacts business) should be reasons alone to upgrade. Service contracts typically expire after three to five years, which follows the average life cycle of a server. Procuring a new server is often more economical than extending the service contract on a legacy system.

Optimized Systems Improve Performance

Continued consolidation onto fewer, more powerful systems provides a multitude of benefits, ranging from cost savings in power and cooling and more efficient use of datacenter space to fewer systems to physically manage and support. The memory capacity of modern server generations enables higher virtual machine density as well as larger virtual machines. This means that high-end business applications are now able to migrate and run in a virtualized environment. Fewer, more powerful systems can also lead to a reduction in the quantity of licenses needed, depending on the license agreement, and a subsequent reduction in licensing costs.

Improved Reliability via Reduced System Failure

As systems age, they are more likely to fail — typically at the most inopportune time (see Figure 5). A regular refresh cycle can help thwart system surprises. Newer systems also come with better predictive failure capabilities to provide warning of incompatibility issues or imminent system or part failures. Tying these proactive features in with a proper support contract will result in better SLAs. Support organizations will be automatically notified, and an action will be performed even before an organization realizes there is an issue. The solution will adhere to uptime SLAs that are associated with the guidelines of the contract.

Financing Options Help Budget Challenges

With technology life cycles changing rapidly, it makes financial sense for businesses to try to reduce the maintenance costs for end-of-life or end-of-services equipment by utilizing available financing models. Options that offer flexible payment solutions and consumption models allow an organization to pay as it uses the technology and aligns payment structures with business needs. Leasing enables the customer to evaluate/assess the IT value on a recurring cycle (typically quarterly) and also enables organizations to have a predictable and consistent budget with a flat fee spread over the length of the maintenance contract.

Flexible payment and consumption models for IT infrastructure, such as storage, networks, and x86 servers, are an excellent alternative to capex models. These new financial offerings allow organizations to align payments with the business value they are realizing from the new technology and solve other operational challenges as well. IDC's research confirms that collaborating with a finance partner to share in the risk created by life-cycle shifts and unforeseen equipment introductions is integral to a more productive and efficient IT investment strategy.

Reduced Unplanned Server Downtime

Servers have an optimal life span, and continued usage beyond that optimal life span causes unplanned downtime to increase. As servers age, two factors contribute to the increase in hours of downtime:

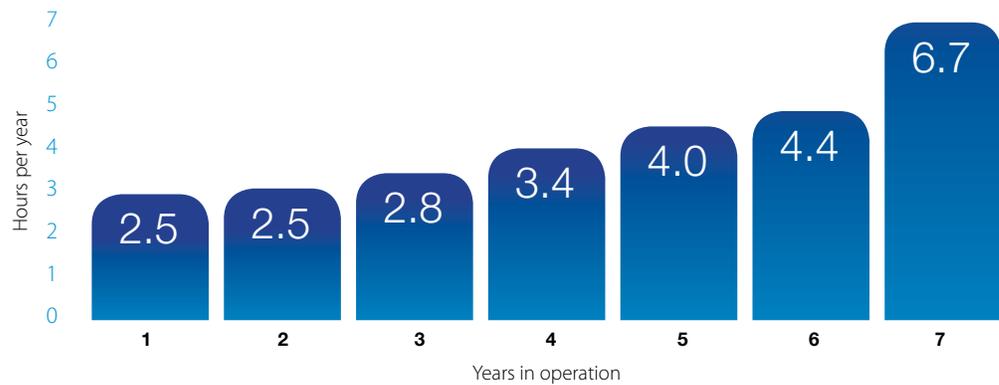
- » Server disks have a mechanical failure rate that increases with standard wear and tear over time and is accelerated by 24 x 7 usage.
- » As software is upgraded or replaced, its reliability is compromised by the declining performance of aging servers creating slowdowns or failures.

On average, companies experience 2.6 hours (per user per server) of unplanned downtime each year in the first three years of server operation and 5.0 hours (per user per server) in years five through seven (see Figure 5). Customers need to consider this because system failures can have a big impact on the business in the form of higher operational costs, associated labor resources, and disruption to application services.

To summarize, upgrading on a regular refresh cycle makes sound business sense, and vendors such as Dell have the solutions from both a financial perspective and a services perspective to help ease the transition to newer technology.

FIGURE 5

Unplanned Server Downtime



For example: A company with 1,000 employees running 20 business applications on 400 servers will lose a minimum of \$183,000 (at \$70,000 annual salary for IT users) in the first year and a minimum of \$498,000 in the seventh year.

Source: IDC, 2015

Considering Dell: New Technologies for a New Business Dynamic

IT organizations have migrated their server environments to industry-standard systems in part because of the economic advantages and continuing innovations in x86 technology. Currently, business-critical workloads are able to run on these servers.

Dell is one of the largest providers of technology, solutions, and services in today's digital economy. The company's comprehensive solutions portfolio spans cloud, security, big data, IoT, mobility, and infrastructure, which are the foundations of the 3rd Platform. This year, Dell is introducing the next generation of its PowerEdge servers with enhancements across racks, towers, and modular systems. Dell continues to innovate, introducing new versatile systems that optimize application performance and simplify management operations.

In addition to new technology, Dell has initiatives designed to help organizations refresh and finance their server infrastructure.

Fast IT

Dell's latest Intel-based systems are designed to handle evolving and complex workloads through innovations in server-based storage (i.e., flash) and software-defined storage (SDS). While plenty of focus has historically been on processor and memory, advancements

in storage are necessary to optimize applications, improve utilization and availability, and reduce time to provision. Dell's newest systems offer a range of configurations, from all-flash configurations to hybrid solid state drives and hard disk drives (SSDs/HDDs), matching the unique needs of the customer workloads.

The next-generation Dell servers are designed to offer:

- » Increased time to value
- » Simpler deployment and configuration of server systems
- » Quicker time to provision application services
- » Improved scalability to meet new demands

Dell's sales and solutions consultants are trained to offer advice on IT infrastructure choices pertaining to the specific needs of a customer and that customer's IT environment. Among the services Dell provides is a customized analysis of total cost of ownership (TCO) and return on investment (ROI) for multiple server choices under consideration by a customer's IT team.

Opex Efficiency

A key innovation in Dell's system management is the automation of tasks. This results in the simplification of day-to-day operations that in turn delivers greater efficiency to IT operations by reducing manual processes and user errors.

- » **Auto-everything.** Dell's latest systems deliver new levels of automation. Embedded in every Dell system is the integrated Dell Remote Access Controller (iDRAC), which simplifies and automates systems deployment and firmware updates. iDRAC eliminates manual tasks, which reduces errors and speeds up time to production. In addition, the auto-update feature keeps systems synchronized to the firmware baselines previously defined by the IT administrator.
- » **At the box.** Dell has enhanced local management of the server system for faster deployment and convenient onsite troubleshooting. iDRAC Direct expedites local deployment via XML profile upload from a simple USB thumb drive. The server information can instantly be accessed with a laptop connected via the iDRAC management console. The time spent on troubleshooting and problem resolution can be reduced, which will minimize system and application downtime.

- » **Manage from anywhere, anytime.** Dell's new systems are designed to enable server administrators to be more efficient without the need to be onsite all the time. With OpenManage Mobile, system administrators can access their systems to get comprehensive status and error logs via a smart device. IT can manage system and networking configurations and troubleshoot errors on the fly, giving the IT administrator the time and flexibility to maintain the IT environment.

Services Optimize the IT Life Cycle

The key to enabling IT innovation and transformation in a landscape of increasing complexity is in bringing all the right pieces together. Through end-to-end life-cycle services, Dell is helping enterprises implement and use new technology to drive improved business outcomes. As organizations look to modernize their infrastructure, they need confidence that their systems will be quickly and correctly deployed, fully optimized and supported, and operating at peak performance.

Consulting-led: Getting It Right from the Start

Dell consultants help reduce the time, cost, and risk associated with implementing new technologies. With Dell's guidance and technology expertise, organizations can modernize their datacenters to take advantage of the digital era. By working with Dell, IT leaders are able to:

- » Accelerate upgrades and migrations while limiting disruptions and downtime
- » Identify opportunities for transformation to as-a-service cloud models
- » Improve application performance by optimizing server resources and architecture

Realizing Value from Day One

Dell's recently introduced ProDeploy Enterprise Suite is a set of deployment services built on a foundation of processes and best practices acquired from 30 years of experience and tens of thousands of deployments each year. The portfolio is designed to complement an organization's business model, ranging from experienced IT staff to no staff at all. By leveraging Dell's experts and partners to lead deployments — from basic installations through planning, configuration, and complex integrations — IT leaders can keep up with the technology needs of their organization while remaining focused on their core business.

Knowledge Is Power

As the source for hardware training, Dell Education Services offers IT professionals an expansive suite of training options to successfully implement and utilize Dell systems and related industry technologies. With a variety of delivery methods including instructor-led classroom training, self-paced online training, and virtual classroom training, Dell delivers valuable, relevant training that connects with the needs of not only the IT staff but also the entire organization.

Maximizing Uptime with Minimum Effort

Dell is continually evolving its support services offerings to address the evolving needs of customers while leveraging the latest tools and trends. ProSupport Enterprise Suite is a portfolio of services underpinned by innovative software-enabled capabilities that allow customers to select a support model based on their technology needs and resources. Customers can choose from ProSupport Plus for more mission-critical systems, ProSupport for comprehensive hardware and software support, or ProSupport Flex for Data Center to address the unique needs of very large environments. Automated, proactive, and predictive monitoring and response through SupportAssist technology allows IT leaders to reduce datacenter downtime and shift resources from maintenance to innovation.

Dell Financing Services

Implementing planned refresh cycles to keep assets current is a critical component of maintaining a modern IT environment. Leasing facilitates regular rotation of server assets by establishing a planned cadence for refresh. Moreover, IDC research has shown that leasing can lower the total cost of ownership of x86 servers by as much as 32% as a result of reduced internal support costs. When combined with other upgrade efficiencies such as decreased power and cooling costs, footprint reduction, and a reduction in the total number of systems to physically manage and support, the overall server refresh savings can be significant. Further, making payments over time can accelerate the ROI associated with a solution deployment.

Dell Financial Services (DFS) offers a wide range of flexible programs designed to ease budgeting and IT asset acquisition within current budget allocations. This provides flexibility in both regular rotation programs and changes under uncertain long-term plans. Specifically, the recently launched portfolio of Scale Ready Payment Solutions is designed to support technology acquisitions in a flexible, cost-effective way. DFS facilitates an integrated end-to-end solution spanning hardware, software, and services. This allows customers to acquire the future-ready technology when needed while preserving capital for other business investments and spreading IT costs over several budget cycles.

Challenges/Opportunities

Maintaining a modern IT environment is becoming a critical success factor for companies in most industries. End-user expectations have risen to a point where IT is expected to be ubiquitous in the same way as electricity. Unexpected outages and downtime can have direct impact on revenue and customer satisfaction, hence the need for a modern server environment. However, IDC recognizes that maintaining a regular refresh cycle is not always easy. Cost is often the primary challenge, as upgrading servers requires capital expenditures that involves budget allocation. There is also coordination across multiple IT departments and business units. The scheduling of the required resources often involves reallocating staff from other projects. These inhibitors may lead to delays and hesitation in the upgrade cycle.

Yet, despite the challenges, there are distinct benefits to proactively maintaining a modernized environment. Overall, the complexity within the server infrastructure is simplified as IT is able to reduce the amount of legacy hardware, tools, and processes. Keeping servers up to date enables the IT staff to take full advantage of enhanced management tools to drive efficiency as well as the ability to optimize systems to improve application performance. The time of refresh is an opportunity to ensure the infrastructure is tailored to the current application requirements. As business needs change so do application needs. By proactively refreshing the server base, IT is better able to deliver the services that drive the business.

Conclusion

Within the spectrum of IT initiatives and projects, the life cycle and refresh of server hardware may fall into the mundane and routine category; however, it is still a critical factor for IT to meet the needs of the business. The industry is going through an era of digital transformation; the IT organization is now taking a leading role in driving business outcomes by leveraging capabilities within the cloud, analytics, mobility, and social technologies. The increasing requirements of applications and the expanding needs of end users necessitate a proactive refresh of the IT environment. Maintaining a modernized infrastructure enables IT to remain agile in the face of change and drive the business to successful outcomes.

The [Dell website](#) contains detailed information regarding their server portfolio that can assist with your server refresh planning.

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