The Optimized Datacenter

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EXECUTIVE SUMMARY

Nearly four in five organizations are currently focused on reducing costs within their information technology (IT) environments, despite the fact that business executives within those organizations are looking to IT to enable new business scenarios and help the organization compete in hostile market conditions.

Corporate datacenters are a focal point of this effort—first because they provide essential services to the organization, and second because they typically consume a disproportionate share of resources and budget.

Optimizing your datacenter means getting more value out of your existing datacenter resources – providing services which are more efficient, more reliable and better aligned to the changing needs of the business.

Microsoft has identified a set of projects to help you optimize your datacenter. These include upgrading the server platform, improving datacenter management, server consolidation through virtualization, modernization of the branch infrastructure, leveraging high-performance computing capabilities, and securing and managing your messaging and collaboration systems.

OVERVIEW

Now more than ever, organizations of all types and sizes are focused on reducing costs and getting more value for their budget.

Within most IT environments, one of the most significant cost drivers is the datacenter. Typical datacenter costs include IT labor costs, utilities, hardware, software, and capital costs (including real-estate costs, building and construction costs, and so forth) to house the datacenter. As a result, organizations that are able to optimize their datacenters are able to get more out of their datacenter resources while reducing operational costs.

Notes Duncan Campbell in "Top Three Datacenter Trends for 2009," "During this time of economic uncertainty, most companies need to maximize their technology investments. In 2009, datacenters will be under increased pressure to maintain high levels of efficiency and flexibility while managing costs (and in some cases actually lowering costs). Increasingly, complex business demands require businesses to modernize their datacenters, which means they'll need an initial investment that reaps a future reward."[i]

Microsoft® wants to help you get an immediate return on investment (ROI) on your technology initiatives while helping you position yourself for current and future success. The organizations that will be positioned for success in the months and years to come are those that make prudent investments now and develop capabilities to enable future success.

In this paper we will first introduce Microsoft's Infrastructure Optimization model. We will then outline steps you can take to get more value from your datacenter resources and finally walk you through seven datacenter solutions that you can implement to help optimize your datacenter.

IT PRIORITIES

If your organization is like most, you want to maximize the value of your IT investments. This usually means the following:

- *Getting Value for Money* **by Reducing Costs**. Driving operational efficiencies and getting the very most out of IT resources—in other words, maximizing the value of each dollar, Euro, or Yen spent
- *Delivering Value* **by Improving IT Service Levels.** Ensuring quality and timely IT services across the organization
- *Adding Value* **by Enabling New Business Scenarios.** Enabling new business or organizational scenarios and using IT to help the organization compete in hostile or difficult market conditions

Most IT leaders want to balance these priorities; however, in the current economic environment, reducing costs is at the top of almost everyone's list. Based on a recent study of Chief Information Officers (CIOs) and other senior IT leaders, IDC found the primary goals of IT investments in this economic environment involves "a significant shift toward cost reduction rather than revenue generation."[ii]

Unfortunately, IT requirements and challenges are increasing, not decreasing. "Applications continue to grow in number and complexity. Servers remain underutilized. Storage continues to grow but is also underutilized. And disaster-recovery plans—more important than ever—are still not fully complete."[iii]

Microsoft is committed to helping you maximize the value of your datacenter through best-practice implementation, technologies, tools, guidance, training, and services.

CORE INFRASTRUCTURE OPTIMIZATION

To help you achieve the appropriate balance among the three potential IT priorities—reducing costs, improving IT service levels, and enabling new business scenarios—Microsoft has developed a number of Optimization models. The Core IO model presents a way for you to assess the maturity level of your IT Infrastructure, of which the datacenter is a substantial part, in relation to the business goals of your organization.

The Core IO model divides IT infrastructure into four levels of Optimization maturity: Basic, Standardized, Rationalized, and Dynamic. As an IT infrastructure moves from a lower level of Optimization to higher levels, it matures from being perceived as a "cost center" (at the Basic and Standardized levels) to becoming seen as a "business enabler" (at the Rationalized level) and finally becoming recognized as a strategic "business asset" (at the Dynamic level), providing a clear competitive advantage to the organization.

Core Infrastructure Optimization
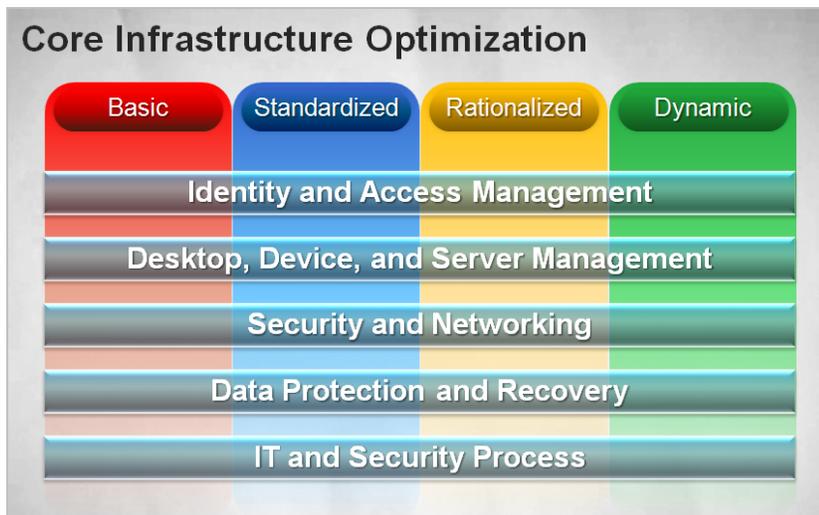
The Core IO model can help you think about strategies for optimizing your infrastructure. It shifts the focus away from "what technologies do I need to buy?" and helps you focus on what capabilities and best practices you can implement to improve your IT infrastructure. Examples include automation, a managed and consolidated IT infrastructure, dynamic resource usage, and more. Once the necessary best practices are identified and defined, then you can find and deploy the technologies that will best help achieve those practices.

Benefits of Core Infrastructure Optimization

As your organization moves from one level of Optimization to another, you should be able to reduce IT costs, improve IT service levels, and enhance agility to enable new business scenarios.

In a recent report, it was determined that organizations can achieve significant cost savings by optimizing their datacenter: "Organizations can achieve big savings by adopting core infrastructure best practices for mission-critical server workloads. In the email and collaboration workloads [for example], organizations that adopted core infrastructure best practices reported IT labor costs of more than $10,000 per server per year less than those that did not."[iv]

Another benefit of Optimization is that while costs go down, service levels increase. As the capabilities within an IT environment become more standardized and automated, IT staff members have more time to proactively address issues, decreasing the need for reactive practices like fielding help-desk calls.

Finally, IT scalability increases while the amount of time it takes to roll out a new technology decreases. This increase in IT agility means that IT is able to align more quickly to the changing needs of the business.

THE OPTIMIZED DATACENTER

A datacenter is only as good as the services it delivers to the business. An optimized datacenter delivers services which are more efficient, more reliable, and better aligned to the changing needs of the business. To help you deliver services in this way and get more value from your existing datacenter resources, we have identified the following steps:

- **Ensure a Scalable and Reliable Platform.** The server platform is the foundation of the server infrastructure. A scalable platform is one which leverages technologies like server virtualization to provide the agility to respond more quickly to the changing needs of the business while driving down hardware and facilities costs. A reliable platform provides a stable and controlled environment for business-critical applications so that service levels can be agreed upon and ensured.

- **Unify Physical and Virtual Environments.** To harness the power of server virtualization, it is critical that an organization can manage across physical and virtual server environments with relative ease. This reduces the complexities of deploying and running virtual environments, improves control over the IT infrastructure, and enables an organization to fully realize the increased efficiencies and agility that virtualization technologies provide.

- **Enable End-to-end Service Management.** One of the best ways to improve service delivery is by being able to manage across the length of the service lifecycle. This means being able to deploy, monitor, manage, and remediate across a range of different environments from a central location. By managing across the service in this way, an organization can ensure service levels, reduce system complexity, and reduce the costs associated with downtime.

- **Integrate Security and Access.** An Optimized Datacenter will provide both comprehensive security and broad access to information and IT services from wherever the business requires it. Ideally, this will be through the integration of protection, access, and identity-management technologies. Security solutions should integrate with the identity infrastructure and across the stack so that information is protected at all times, but can be extended to branch locations and remote users on a range of different devices, according to the needs of the business.

MICROSOFT SOLUTIONS FOR AN OPTIMIZED DATACENTER

Microsoft has a set of infrastructure solutions that can help you take these steps to get more value out of your datacenter resources. These solutions are made up of familiar and supported technologies, that integrate with your existing infrastructure and simplify the task of managing IT. We will now take a look at each of these characteristics of Microsoft infrastructure solutions to show how they can help you reduce operational costs, and then provide an overview of the solutions themselves.

Integrated Technologies

Microsoft infrastructure technologies integrate with your existing infrastructure to help drive down the costs of offering diverse business services in a heterogeneous IT environment.

Microsoft offers a range of solutions to help IT professionals provision, manage, secure, and backup mission critical servers and client machines. These solutions integrate tightly with business applications and mission-critical messaging and collaboration solutions. Furthermore, Microsoft technologies provide interoperability with common third-party platforms and technologies such as UNIX, Linux, Oracle, VMware and others through cross-platform management capabilities.

NuStar Energy adopted Microsoft technologies to take advantage of improved integration. Notes Robert Amos, Manager of Infrastructure Systems at NuStar Energy, "We now have a consistent, integrated infrastructure across the company. If management decides to acquire a new company, we can integrate the new datacenter in days rather than months."[v]

Meanwhile, Pontus Blomkvist, Service Design Manager at Banverket ICT comments, "We looked at VMware but decided against it because we wanted to benefit from the end-to-end integration that Microsoft virtualization and management technologies will provide us."[vi]

Simplified Management

One of the best ways to reduce operational costs and increase the agility of your IT infrastructure is to simplify the task of managing IT. This can be achieved through unified management across multiple environments and the automation of routine management tasks.

Unifying datacenter management requires:

- Centralized management across both physical and virtual environments
- The ability to monitor across multiple server platforms
- An end-to-end solution for management from the desktop to the datacenter
- Management of systems at headquarters and branch locations from a central location
- Being able to manage identity, access, and security solutions from within a centralized console

A unified approach provides the following benefits:

- Quick detection and remediation of issues
- Reduced complexity and increased adaptability to changing needs
- Reduced operational costs of managing and delivering IT services

Automation of key server and datacenter management processes and tasks such as deployment, patching, and dynamic resource utilization enables you to:

- Scale server deployment, patching, and data protection while simplifying upgrades and processes
- Dynamically respond to changes across operating systems, hardware, or application components to optimize use of resources
- Meet compliance requirements while eliminating manual tasks and reducing the potential for human error

AGC Automotive is experiencing the benefits of simplified management enabled by Microsoft System Center solutions. "Using System Center solutions, we've realized a 50 percent reduction in the overall time it takes to manage our data center," says Steve Gray, Manager of Support Services at AGC Automotive. "Plus, by reducing firefighting, we're able to take on a more strategic role for the company and reduce outside consulting fees."[vii]

Robert Amos, Manager of Infrastructure Systems, from NuStar Energy says, "Without Microsoft software, I would need 50 percent more people to manage our environment. Microsoft management software is important in containing costs as we grow our worldwide infrastructure."[viii]

Familiar and Supported

Microsoft's infrastructure solutions are familiar to IT workers and have consistent user interfaces across products, making them easier to deploy and use, and reducing the need for special training and software adaptation. All of this leads to lower IT costs and greater agility when responding to the changing needs of the business.

Enterasys, a networking provider, saved more than US $200,000 after unifying its infrastructure using Microsoft infrastructure products. Notes Dan Wakefield, IT Operations Manager at Enterasys, "Microsoft tools offer a consistent look and feel. ... For IT, that simplifies management. For business users, that contributes to increased productivity."[ix]

Organizations frequently reap the benefits of using Microsoft infrastructure solutions when they discover that turnover in their IT organizations doesn't mean additional training costs for new employees, because new employees are frequently already familiar with, or even certified for, the Microsoft software solutions in the organization.

To further help organizations drive down the costs associated with deploying and running IT, Microsoft offers a wealth of free tools and guidance. These tools are designed to provide in-depth assessment reports and actionable recommendations

and reporting to help your team as they plan for, deploy, and run new solutions to your datacenter.

In addition, Microsoft has one of the largest and most skilled partner bases in the world, so it's usually easy for an organization to find a partner to provide support and development services to meet the specific needs of an organization's infrastructure.

It is this combination of familiar and supported technologies that sets Microsoft infrastructure solutions apart, helping to empower your team, reducing the operational costs associated with getting up and running on new technologies and delivering a faster return on investment.

OPTIMIZED DATACENTER SOLUTIONS

Microsoft has identified a number of core infrastructure solution areas that you can focus on to optimize your datacenter and maximize the value of your IT investments. Once implemented, these solutions can help you decrease IT operating costs, improve service levels and increase agility to enable new business scenarios.

Server Modernization with Windows Server

With the release of Windows Server® 2008 R2, organizations have access to a wealth of new capabilities that can reduce the cost of datacenter operations, enhance security and availability, extend access more broadly and improve server manageability. The opportunity for organizations is to scale these benefits to their entire server and datacenter infrastructure while maximizing the use of their resources through new approaches such as server virtualization. Because of its primary role in the server infrastructure, server modernization is a great way to accelerate the process of optimizing your datacenter.

Datacenter Management

The adoption of server-management best practices for automation, virtualization, and integrated management provides you with the opportunity to save thousands of dollars each year in operational costs. As part of the Microsoft optimized datacenter capabilities, System Center datacenter-management solutions are designed to help you take advantage of opportunities to both improve operations and lower costs.

Server Virtualization

Microsoft offers a rich set of technologies and guidance to support comprehensive virtualization across server workloads and desktop applications so that you can manage virtual and physical servers in a familiar, unified environment that reduces system complexity and improves operating efficiency. An IT infrastructure built with Microsoft virtualization and management technologies allows an enterprise to dynamically assign server resources and provision workloads through streamlined processes, improves business availability during planned and unplanned downtime, ensures a robust disaster-recovery process, and drives optimal resource utilization.

Branch Modernization

Microsoft provides a branch-infrastructure solution based on the latest Windows operating system that helps you control your IT costs, improve the security and availability of your IT resources, and increase business agility. These benefits extend beyond datacenter management and security to branch locations via centralized and distributed branch-infrastructure scenarios. Effective branch solutions reduce the need for you to send IT managers to each location for deployments and assistance.

Secure and Well-managed Exchange Server and SharePoint

Using solutions from Microsoft, a secure and well-managed Exchange Server and/or SharePoint® Server environment can reduce costs by increasing efficiency through automation, optimization, and simplification. Microsoft solutions can also help improve security, protection and compliance by providing comprehensive, layered security and improving control, reporting, and management to help achieve server compliance. Finally, Microsoft solutions can help enable anywhere access by providing more secure remote access for your mobile workers; enabling you to publish content through a centralized, policy-driven framework; and simplifying user identity information management.

High Performance Computing

High Performance Computing (HPC) provides a productive and cost-effective solution that can be deployed, managed, and extended using familiar tools and technologies. Windows HPC Server 2008 enables broader adoption of high-performance computing by providing a rich and integrated end-user experience scaling from desktop applications to server clusters. Visual Studio® 2008 development tools provide a comprehensive parallel programming environment for Windows HPC Server 2008.

Unix Migration

While there are many reasons for deciding to migrate from the Unix platform, the main drivers are the high costs and staffing challenges of Unix as well as the shrinking ecosystems of packaged offerings, which can impact an organization's ability to deliver on business needs. When companies make the business decision to migrate from Unix, they must then decide on the migration approach that provides the required benefits while minimizing risk. This decision will be heavily influenced by the relative importance of existing applications. The Unix Migration solution provides the guidance and technologies needed to evaluate and implement the migration of different applications from Unix to Windows Server.

OPTIMIZED DATACENTER TECHNOLOGIES

Microsoft solutions for datacenter optimization are based on the following technologies.

Windows Server 2008

Windows Server 2008 is the most advanced Windows Server operating system yet, designed to power the next generation of networks, applications, and Web services. With Windows Server 2008, you can develop, deliver, and manage rich user experiences and applications; provide a highly secure network infrastructure; and increase technological efficiency and value within your organization. Learn more at www.microsoft.com/windowsserver2008.

System Center

System Center solutions help IT professionals manage the physical and virtual IT environments across datacenters, client computers, and devices. Using these integrated and automated management solutions, IT organizations can be more productive service providers to their businesses. Learn more at www.microsoft.com/systemcenter.

Forefront

Forefront™ security solutions help deliver end-to-end security and access to information through an integrated line of protection, access, and identity-management products. Learn more at www.microsoft.com/forefront.

Solution Accelerators

Solution Accelerators are free, authoritative resources to help IT professionals proactively plan, integrate, and operate IT systems. In particular, the server suite of solution accelerators provides guidance and automated tools to assess your hardware and to plan, deploy and securely operate Windows-based servers. Two of these tools are summarized below:

The Microsoft Assessment and Planning (MAP) Toolkit for Windows Server 2008 helps organizations gain a baseline understanding of their current IT infrastructure to provide for a smoother transition as they move to a more optimized server infrastructure. IT staffs can conduct network-wide readiness assessments for migration to Windows Server 2008 and Hyper-V™ virtualization technology with actionable recommendations for server-infrastructure optimization. It can be accessed here: http://technet.microsoft.com/en-us/solutionaccelerators/dd883226.aspx.

The Microsoft Deployment Toolkit is the recommended process and toolset to automate server deployment. It provides detailed guidance and job aids for IT staffs to implement large-scale deployment projects. It can be accessed here: http://technet.microsoft.com/en-us/solutionaccelerators/dd883226.aspx.

Learn more at technet.microsoft.com/en-us/solutionaccelerators

Licensing

The Enrollment for Core Infrastructure is a simplified and cost effective way to license core infrastructure products together for organizations standardizing on the Microsoft platform. It includes licenses for Windows Server, System Center, and Forefront products. To learn more, talk with your Microsoft account representative or Microsoft partner.

GETTING STARTED

As you begin (or continue) your Optimization efforts, we recommend the following:

1. Assess your organization's Optimization level. Use the Microsoft Infrastructure Optimization Assessment to determine the current state of your IT infrastructure.
2. Determine which of the projects outlined in this paper is most appropriate to help you optimize your datacenter resources.
3. Talk to your team about finding out more about Microsoft's free Solution Accelerator Tools.

CONCLUSION

IT executives and managers worldwide are facing a difficult challenge—to sustain and increase their level of support and service while simultaneously having to cut costs. Because of its importance to the organization, and because of its expense, the datacenter is a central area of focus. IT professionals who optimize their datacenter can reduce IT costs, improve service levels, and enhance agility to enable new business scenarios.

Through Optimization, Microsoft provides best practices, resources, and technologies to help you optimize your datacenter. Microsoft has developed a number of projects you can implement to get started today. These include Server Modernization, Datacenter Management, Server Virtualization, Branch Modernization, Secure and Well-managed Exchange Server and SharePoint, High Performance Computing and Unix Migration.

Talk with your Microsoft account representative or Microsoft partner today to learn how to get started on the path to Optimization.

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