



Optimize Your Core Infrastructure

Microsoft Corporation | Dynamic IT for the People-Ready Business

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Dynamic IT for the People-Ready Business





Executive Summary

Intended Audience

This white paper is best suited for information technology (IT) directors, managers, and staff that are responsible for their organization's core infrastructure, including servers, desktops and laptops, and networks. Others who might benefit include business executives who oversee an organization's IT operations and line-of-business (LOB) managers who rely on IT solutions to facilitate their strategic objectives.

Organization Characteristics

Organizations of all sizes can derive positive results from the information and recommendations included in this white paper. That said Microsoft has found that companies with 250 or more personal computers (PCs) or multiple data centers can achieve the greatest results from this paper.

Objective

The objective of this white paper is to help you understand the benefits of optimizing your core infrastructure and giving you information and insights to help you determine which core-infrastructure solutions can provide you with the greatest benefit now. Once you have a sense for the solutions that are right for your organization, you are encouraged to talk with your Microsoft account representative or Microsoft partner to learn more about that solution and develop a plan to improve the optimization of your core infrastructure. This paper also provides some recommendations on how to get started.

Abstract

IT professionals are under increasing pressure to support the strategic objectives of their organizations and yet are challenged to do so in light of growing IT complexity. Infrastructure Optimization provides a methodology and guidance to help IT managers identify the current level of optimization in their IT infrastructure and select priorities and projects that can help them progress from a basic level of infrastructure maturity to a dynamic level. In the process, organizations can improve their capabilities in the areas of Identity and Access Management; Desktop, Device, and Server Management; Security and Networking; Data Protection and Recovery; and IT and Security Process.

In terms of core infrastructure, Microsoft provides solutions in four key areas: Server Infrastructure Optimization, Branch Infrastructure Optimization, Virtualization, and Desktop Infrastructure Optimization. Guidance is provided in this paper to help IT leaders determine which solution areas to focus on to achieve the most immediate results.



Introduction

Never before have the pressures and expectations placed on IT departments been so great. In an ever-changing global marketplace, companies are looking for every opportunity to gain a competitive advantage and simultaneously grow revenue, profits, and customer loyalty. IT is playing a critical role in supporting those efforts.

Unfortunately, many IT departments struggle to fulfill the expectations placed upon them as facilitators of strategic progress. One reason is that many IT departments find that the majority of their time and budget is spent maintaining what they already have instead of developing new, strategic capabilities. In fact, according to many analysts' estimates, up to 80 percent of IT budget is currently spent on maintenance.

One of the primary factors causing this imbalance is IT complexity. Most IT managers must deal with multiple desktop and server environments, the integration of legacy and modern systems and workloads, and various point solutions that have been deployed to support and manage these systems. Unfortunately, these point solutions often add their own level of complexity for IT.

Amplifying the problem is the pace of change that organizations face today. Whether in business, government, or nonprofit sectors, technological innovation and global competition or other factors create a dynamic environment where it becomes more difficult for IT to meet changing needs on a timely basis. Consequently, aligning current business requirements and IT priorities becomes a constant point of friction—and the less agile the IT organization, the greater the potential for misalignment.

IT is playing a critical role in helping businesses gain a competitive advantage and grow revenue, profits, and customer loyalty.

Infrastructure Optimization

To meet these challenges, leading companies are turning to a process where they assess their infrastructures in light of common IT capabilities and plan multiyear improvements that involve specific projects to mature these capabilities in a logical, sequential manner. The end result is a dynamic IT environment. Done right, a dynamic IT infrastructure helps people accomplish more and drives a more competitive business, establishing IT as a trusted enabler of business success.

Managers who recognize the strategic value of a dynamic IT infrastructure think differently about the investments that they make. They look for opportunities to reduce complexity, automate routine processes, and incorporate flexibility into system resources. They understand that a great technology or tool isn't helpful if it cannot be integrated into the existing systems-management toolset. They recognize that while lowering costs is a necessary goal, unlocking the potential of knowledge workers and supporting competitive business processes add even more value to an organization. Most importantly, managers in a dynamic IT environment view every investment in the context of a systematic and structured progression—not necessarily to a defined end, but as an evolution toward building flexibility, efficiency, and agility.

Microsoft Infrastructure Optimization has been developed using industry best practices and Microsoft experiences with its enterprise customers. It provides a methodology to help you, Microsoft, and Microsoft technology partners assess and improve your technology infrastructure. It is based on Gartner's Infrastructure Maturity Model and the Architecture Maturity Model from the Massachusetts Institute of Technology (MIT). Infrastructure Optimization helps you understand and subsequently improve the current state of your IT infrastructure while enabling you to identify the positive effects on cost, security, availability, and agility.

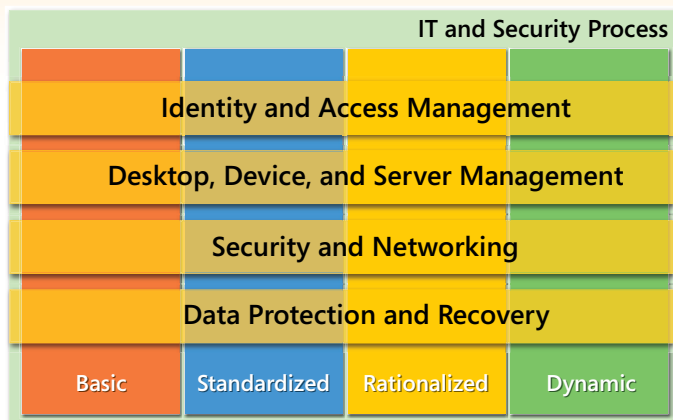
To assist companies and particularly IT leaders and staff in achieving a dynamic IT environment, Microsoft has developed a methodology and framework to help you improve the level of optimization in your IT infrastructure. Different aspects of these "optimization" efforts focus on a company's core infrastructure, business-productivity infrastructure, and application platform.

Core Infrastructure Optimization

Core Infrastructure Optimization (Core IO) provides a comprehensive, proven, and efficient methodology to help improve your infrastructure. Core IO is supported with a model, enabling technologies, services, and tools and guidance. Core IO can help you control your IT costs and increase your organization's ability to successfully implement IT projects.

Model

The Core IO model provides a way to think about the challenges that you face, prioritize the areas you want to focus on improving, and organize your activities to pursue those priorities. The model outlines a progression through four levels of optimization and illustrates the strategic value and business benefits of moving from a "basic" level of optimization, where the infrastructure is generally considered a "cost center," toward a "dynamic" infrastructure, where the business value of the infrastructure is clearly understood and is viewed as a strategic asset.



Technologies

Supporting each of the Infrastructure Optimization capabilities are technologies that have been designed to facilitate your progression from a basic level of optimization through to a dynamic level.

Services

Together, Microsoft Services and an extensive network of Microsoft technology partners provide industry-leading expertise to assist you with your optimization efforts. Microsoft Services has developed a number of Core IO service offerings based on industry best practices, plus Microsoft has established criteria and associated competencies in the Microsoft Partner Program to enable partners to certify that they have the required expertise in delivering advanced-infrastructure solutions.

Tools and Guidance

Microsoft has built an extensive set of resources that fit within the context of Core IO to help you deploy and manage solutions more effectively. These tools and solution guides are free and increase the likelihood of a successful implementation.

Infrastructure Optimization Benefits

Core IO from Microsoft is designed to help control IT costs, improve security and availability, and increase agility to enable customers like you to spend less time and money on maintenance and devote more time to creating and facilitating new capabilities and services to advance the business. Benefits of optimizing your core infrastructure include:

Control Costs

Higher levels of IT maturity can result in savings of up to 80 percent in IT labor costs.¹

Improve Security and Availability

An optimized core infrastructure can lead to greater business continuity, enhanced compliance, and better, more secure access to network resources.

Increase Agility

Organizations can achieve notable improvements in the ability to provide faster, more responsive IT service and increase agility.²

Case Study: City of Edinburgh Council

One example of an organization that achieved a number of benefits by optimizing its core infrastructure was the City of Edinburgh Council. Based in Scotland's capital city, the City of Edinburgh Council has 20,000 employees and provides a range of services from more than 70 principal locations to 480,000 citizens, businesses, and organizations. The council inherited a complex, disparate environment with dozens of desktop operating systems, many aged core mainframe systems, and significant challenges related to obsolescence. It did not know how many desktop computers were in its environment or how to manage them. The council embarked on a service-led IT transformation program to stabilize its network and refresh and upgrade core business systems. Among the specific results the council expects to achieve are

- Total savings over five years of approximately £6.4 million
- Payback period of just 14 months
- Transformation costs of £7.8 million
- £40 million of capital receipts to the council from selling 18 sites and moving 2,500 information workers into one building



What Should You Expect from an Optimized Infrastructure?

As you optimize your infrastructure, you can expect to achieve some of the following results:

IT is a strategic enabler and source of competitive advantage

- Resource utilization will be optimized and your IT department will be able to provide needed capabilities within budget and people constraints.
- Business needs can be anticipated and addressed proactively.
- IT will be more flexible and responsive to changes and will be able to scale up more quickly and provision new resources when demand surges.

Security threats are manageable and condition monitoring prevents disruption

- Security management is integrated across desktops, servers, and the network edge; breaches are rare and controlled.
- Applying security patches across the organization is streamlined and near real time.
- Automation allows patch timing to follow urgency and load-balancing requirements.

Major software deployments are streamlined and applications are kept current

- Software distribution is highly automated and preproduction testing is reduced.
- Updates are managed centrally and conformity is assured.
- IT has good visibility into software license use and is able to accurately forecast future needs.

Compliance with IT policy is automatic, uniform, and self-documenting

- Configurations across desktops and servers are controlled, reducing security vulnerabilities and help-desk requests.
- Confidential data is protected.
- Regulatory compliance is robust and streamlined.

Business units see IT as a valued partner

- Costs are lower and easily justified and better planning and management result in forward planning and resource optimization.
- Downtime events are less frequent and of shorter duration.
- IT and business stakeholders are fully aligned and proactively working together.

Assessing Your Need for Infrastructure Optimization

When do you know that your IT infrastructure is in need of serious attention? Usually the signs are all around. IT operations run inefficiently. Projects are reactive. On the surface, security seems to be adequate, yet issues arise often enough to cause concern. The environment is hard to control, costs are high, and internal customers are frustrated by poor service levels and low responsiveness.

Characteristics of an organization requiring Infrastructure Optimization include:

Complex infrastructure and management processes

- High costs associated with providing basic IT capabilities.
- Little control over client-computer configurations.
- Branch locations are in silos and require dedicated IT resources.

Infrastructure can't keep up with changing business needs

- Demand spikes create service interruptions.
- Increases in the cost of utilities impinge on basic IT services.
- Business opportunities are missed and managers are frustrated with IT.

IT consumed with routine tasks and "putting out fires"

- Reactive stance to security threats with a focus on clean up instead of prevention.
- Service disruptions are frequent.
- Security management is cumbersome and inconsistent.

Deployments are protracted or avoided altogether

- Resources are delayed for extended periods, both during preparation and rollout.
- Security and software updates are manual, slow, and inconsistently applied.
- New capabilities are delayed, hurting business competitiveness.

Inconsistent compliance with security and governance policies

- Security alerts and threats disrupt normal operations.
- Backup and recovery are inconsistent and unreliable.
- E-mail inboxes are inundated with spam.

Organizations that have not yet optimized their core infrastructures struggle with management problems, and often the problems are compounded when improvement projects are adopted that do not address the root causes for inefficiency and poor performance. These root causes generally include system complexity and outdated, labor-intensive processes. Similarly, many companies undertake projects to support important business processes, but their underlying technical infrastructures are not ready to accommodate the new capabilities and the promised benefits are never achieved—or they are achieved at considerable cost.



Using the Infrastructure Optimization Model

Embarking on an Infrastructure Optimization journey involves committing to a *process*, not necessarily a single vendor or technology platform. While the Infrastructure Optimization models can help identify near-term projects that will close gaps and solve current pain points, building a long-term improvement plan can ensure an infrastructure that scales to the needs of the business, captures value from past IT investments, and provides a robust platform on which to build knowledge-worker and LOB applications.

The Infrastructure Optimization models are tools to help organize IT development priorities and effectively plan the journey to a dynamic IT environment over a multiyear period. Using the models successfully involves a few basic steps, supported by a more comprehensive internal assessment by your IT team. Microsoft and its partners have extensive experience guiding organizations through the process and are a great resource to draw upon.

STEP 1 Identify Where You Are

Profile the technologies, processes, and policies that you have in place across your desktop, data center, and network infrastructure. Examine specific capabilities and map where your organization stands by maturity level. As you map out your IT maturity in each of the capabilities, pay particular attention to projects that are being built on a soft foundation—in other words, make sure you do not build advanced capabilities on top of basic capabilities that are weak and should have been replaced before the more advanced capability was implemented. You may need to reprioritize or cancel projects that looked good in isolation but are not appropriate for your current situation.

STEP 2 Identify Your Destination and Map Out a Long-term Improvement Plan

While most organizations will strive toward a dynamic state, in some industries it might make sense to focus solely on cost optimization. The next step in the process is to identify the right destination for your organization.

Perhaps the most valuable aspect of the Infrastructure Optimization models is their ability to aid multiyear planning. Identifying near-term projects that lay a foundation and long-term initiatives that advance business competitiveness provides a working road map for budget planning, resource allocation, and securing business buy in. This approach also ensures that your improvement projects are balanced and that necessary points of integration are identified and addressed.

STEP 3 Implement Appropriate High-impact Projects to Progress in the Model

There will undoubtedly be many more deficiencies and gaps than you can address in a single budget year. That is fine. Infrastructure Optimization is designed to help prioritize and sequence the projects you undertake in a logical manner. As you look at the deficiencies in your infrastructure, identify those that have the following characteristics:

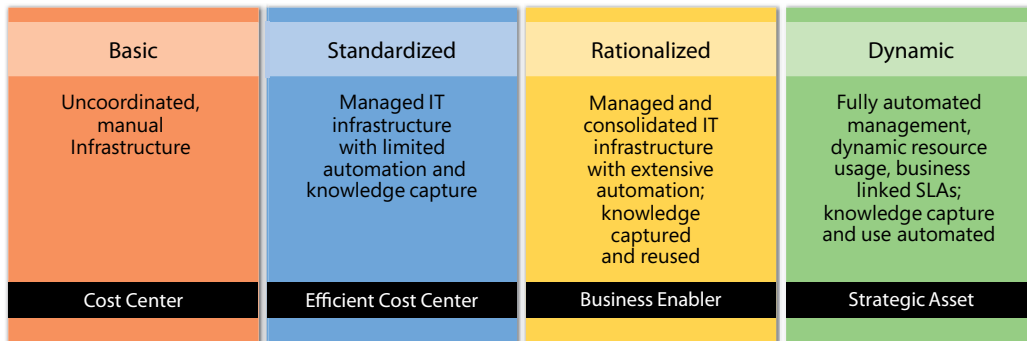
- There is a significant lag in the maturity for a specific capability relative to the others.
- A critical capability that can be the basis of competitiveness or differentiation is missing or not fully developed.
- Future solutions have dependencies upon capabilities that are not yet in place.

Managing the specific projects in the context of a dynamic IT vision puts the work of the IT organization in a language that business and administrative leadership can understand and appreciate.

To accomplish steps 1 and 2, it can be helpful to review the descriptions of the different levels of maturity to see which best describes your current situation (step 1). By reviewing these descriptions, you can also determine where you want to go (step 2).

Levels of Maturity

Infrastructure Optimization identifies a maturity level for each of your IT capabilities based on your current technologies and processes. It can also help identify and prioritize improvement efforts. No matter which of the IT capabilities you focus on, you can advance your business toward a state of dynamic IT for that capability. The levels of maturity include basic, standardized, rationalized, and dynamic.



Basic

A basic level of Infrastructure Optimization is characterized by manual, localized process with minimal central control:

- IT governance is negligible, as policies for security and compliance are nonexistent or inconsistently enforced.
- The overall health of applications and services is unknown due to a lack of tools and resources.
- There is no vehicle for sharing accumulated knowledge across IT.
- The environment is hard for IT to control and has high desktop and server-management costs. IT is often reactive to security threats.
- Software deployments, security updates, and services are provided in a high-touch, high-cost manner.

Standardized

At a standardized level of Infrastructure Optimization, controls are introduced through standards and policies to manage desktops, mobile devices, and servers:

- A unified directory service is used to manage resources, security policies, and network access.
- Organizations recognize the value of basic standards and policies, but these are not yet implemented across the infrastructure.
- Generally, all software deployments, software updates, and desktop services are provided in a medium-touch manner.
- Inventories of hardware and software assets are maintained through a reasonable process and license use is managed to an extent.
- Security is improved with a locked-down perimeter, though internal security may still require improvements.

Rationalized

At a rationalized level of Infrastructure Optimization, the costs associated with managing desktops and servers are at their lowest and processes and policies have been optimized:

- Security is proactive and response to threats is rapid and controlled.
- The use of zero-touch deployment helps minimize cost, reduce the time to deployment, and decrease technical challenges.
- The process for managing desktops is very low touch and the number of images is minimal.

- There is an accurate inventory of hardware and software and companies only purchase those licenses and computers that they need.
- Security measures involve strict policies and control, from desktops to servers to the firewall to the extranet.

Dynamic

When an organization achieves a dynamic level of Infrastructure Optimization, the IT infrastructure becomes a strategic enabler to help the organization stay ahead of the competition:

- Costs are fully controlled; there is integration among users and information, desktops, and servers.
- Mobile users have nearly on-site levels of service and capabilities.
- Processes are fully automated and often incorporated into the technology itself, so that IT is aligned and managed based on business needs.
- Additional investments in technology yield specific, rapid, and measurable business benefits.
- Companies use self-provisioning software and quarantine-like systems to automate software-update management and compliance with established security policies.

Core IO Capabilities

The capabilities within the Core IO model are as follows. More detailed descriptions are provided in the appendix.

Identity and Access Management

Identity and Access Management involves the administration of people and asset identities; access to resources from mobile employees, customers, and partners outside of the firewall; and solutions that should be implemented to manage and protect identity data like synchronization, password management, and user provisioning.

Desktop, Device, and Server Management

Desktop, Device, and Server Management covers the management of desktops, mobile devices, and servers, including planning and deployment for patches, operating systems, and applications across the network. It also provides guidance on how you can leverage virtualization and branch-office technologies to improve your IT infrastructure.

Security and Networking

Security and Networking involves protection for information and communications, including safeguards against unauthorized access. At the same time, Security and Networking focuses on solutions to protect the IT infrastructure from denial attacks and viruses while preserving access to corporate resources.

Data Protection and Recovery

Data Protection and Recovery covers the processes and tools that IT can use to backup, store, and restore information and applications. As information stores proliferate, organizations are under increasing pressure to protect that information and provide cost-effective and time-efficient recovery when required.

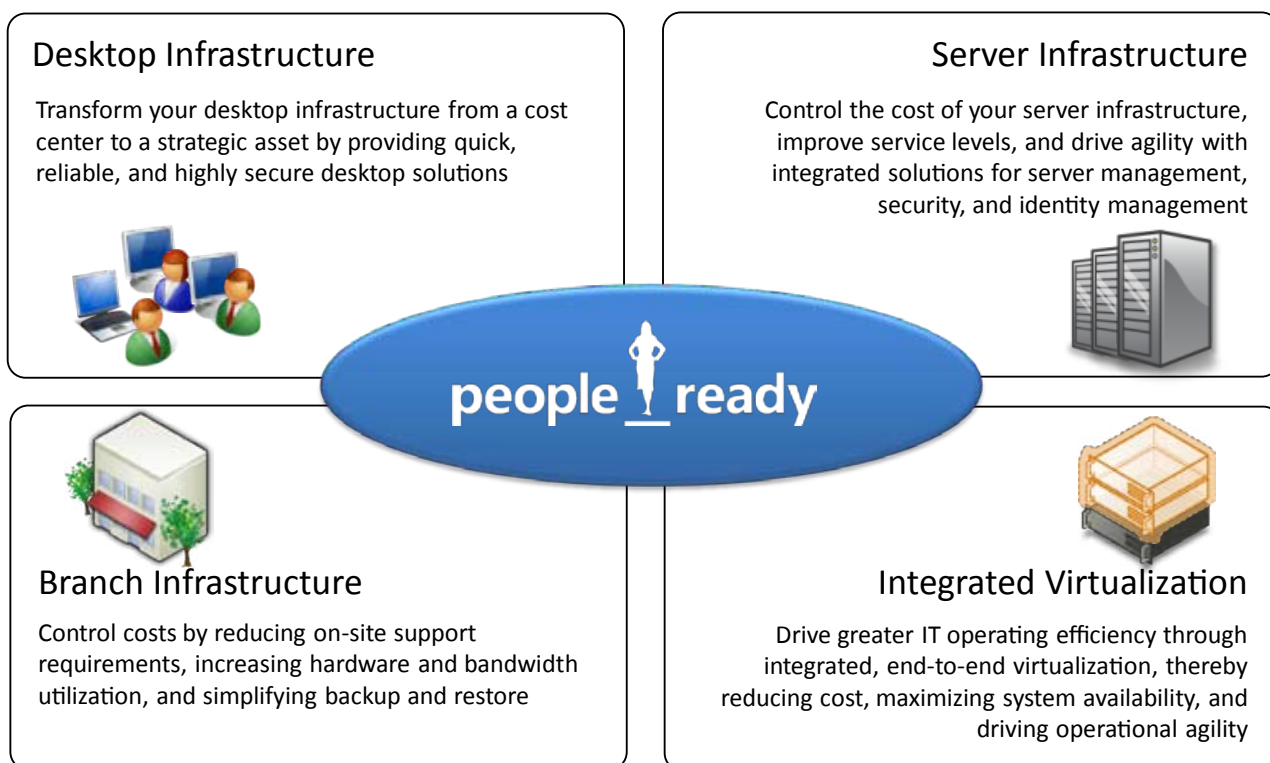
IT and Security Process

IT and Security Process provides guidance based on industry best practices on how to cost effectively design, develop, operate, and support solutions while achieving high reliability, availability, and security. Though robust technology is necessary to meet an organization's demands for reliable, available, and highly secure IT services, technology alone is not sufficient; excellent processes and trained staff with clear roles and responsibilities are also required.



Core IO Solution Areas

Microsoft has identified a number of core infrastructure solution areas that companies can focus on to maximize the value of their investment in IT. These include the following:



Server Infrastructure Optimization

Control the costs of your server infrastructure, enhance security and compliance, and drive agility with integrated solutions for data center management, secure messaging and collaboration, and information protection and secure access.

You can use integrated Microsoft technologies to optimize the management and security of your server infrastructure. Businesses are demanding more processing power to succeed in today's digital marketplace. At the same time, server technology is going through a rapid transformation, with innovations in virtualization, clustering, and server consolidation that often result in greater system complexity. In this environment, successful companies are evolving their server

infrastructure from a cost center to a strategic asset, creating a more agile IT environment with improved service levels and lower total cost of ownership (TCO). The Core IO model provides best practices and specific projects to help companies realize an optimized server vision, leading to benefits such as controlled costs, improved security and availability, and increased agility.

Virtualization

Virtualization technologies work across the infrastructure to provide resource pooling and greater resource flexibility. As one example, in the case of server virtualization, you can use virtualization to run multiple operating systems concurrently on a single physical server, with each of the operating systems running as a self-contained computer.

Microsoft offers a rich set of technologies and guidance to support comprehensive virtualization across server workloads and desktop applications so that IT 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, improve business availability during planned and unplanned downtime, ensure a robust disaster-recovery process, and drive optimal resource utilization. By integrating the management of virtual workloads with the management for physical servers and the desktop infrastructure, IT departments can harness the cost benefits of server consolidation while reducing overall system complexity.

Branch Infrastructure Optimization

For IT decision makers managing a large or complex branch infrastructure, 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 data center management and security to branch locations via centralized and distributed branch-infrastructure solutions.

Effective branch solutions reduce the need for you to send IT to each location for deployments and assistance. Furthermore, the amount of IT hardware at the branch site can be consolidated. Backing up information at branch locations can be automated and centralized, while network efficiency can be maximized. Integrated, comprehensive security management brings enterprise-level security to branch offices. You can deploy or change applications across the network at the click of a button using a familiar solution that builds on and strengthens the existing Windows environment to give employees at branch locations the IT capabilities and responsiveness that employees at headquarters experience.

Desktop Infrastructure Optimization

Desktop Infrastructure Optimization enables you to reduce the complexity of your desktop infrastructure to speed deployments, streamline management, and increase security.

Factors such as globalization, workforce mobility, and security threats create unprecedented demands on IT departments to provide an optimized desktop infrastructure. Successful companies meet these demands by evolving their desktop infrastructures from cost centers to strategic assets, while at the same time reducing TCO and improving service levels and organizational agility. The Core IO model provides best practices and specific projects to help companies move toward this optimized desktop state and highlights specific solutions for PC Lifecycle Planning, Standard Image Deployment, Desktop Virtualization, Automation of IT Management, and Comprehensive Security. Additional benefits include higher system uptime and end-user productivity, enhanced protection for corporate information, and easier IT compliance.

Determining Which Solution Area to Focus On

Ask yourself the following questions to help determine which area you should focus on first:

Are you experiencing issues with low server utilization, "server sprawl," high data center costs, data center complexity, and the like?	→	Server & Virtualization
Would you like to minimize the number of desktop images in your organization, manage desktop configurations centrally via group policy, or streamline deployment and upgrades?	→	Desktop
Would you like to improve the security and availability of your messaging or collaboration environments?	→	Server
Do you have a proliferating number of directories to manage access to network resources?	→	Server
Are you challenged to ensure that the right individuals have access to the information they need, while simultaneously limiting access to those who aren't authorized?		
Would you like to implement a management solution for monitoring critical servers?	→	Server
Would you like to be able to automate secure external access to internal systems by federating identities across organizational boundaries and automate synchronization, provisioning, and de-provisioning of digital identities across enterprise systems and LOB applications by implementing a comprehensive, identity lifecycle-management solution?	→	Server
Would you like to be able to control network security at a policy level with current, unified views of the security state of the entire network, including the ability to drill-down into individual elements?	→	Server
Do you feel the need to increase security on specific server applications (such as Exchange Server, SharePoint® Server, and instant messaging) with integrated, tuned, multi-engine, anti-malware security solutions that are managed and updated from one console?	→	Server
Would you like to allow your users to protect confidential e-mail messages, safeguard access to designated documents, and protect sensitive content?	→	Server
Would you like to enable secure access from anywhere to help protect applications and data and unlock business value in the server infrastructure?	→	Server
Would you like to allow only secure and authorized access to networks and applications via an end-to-end solution that includes network-perimeter protection, strong authentication, and identity management?	→	Server
Would you like to implement integrated end-to-end virtualization for testing and production workloads?	→	Virtualization
Would you like to consolidate workloads to streamline deployment?	→	Virtualization
Would you like to reduce system complexity by managing your virtual and physical server infrastructure through a common console and streamline provisioning between physical and virtual servers?	→	Virtualization
Would you like to be able to monitor the servers in your branch offices from a central location, respond to error messages, resolve print and file issues, and prevent problems before they affect the business?	→	Branch
Do you find it difficult to balance the needs of employees at your branch locations with your need to centralize management of your IT resources?	→	Branch



Selecting a Technology Partner and Supporting Technologies

Though you would likely gain significant benefits by implementing solutions for all of the solution areas above, if you are like most business and technology professionals, you have limited budget and resources. Furthermore, your current infrastructure may already be more optimized in some areas and less optimized in others. As a result, you will likely derive the greatest benefit in the shortest amount of time if you select one solution area to focus on first. Once you have selected an area to focus on, you need to consider what technology partners and technologies you will work with to help you optimize your infrastructure.

Microsoft is Your Technology Partner

Microsoft is dedicated to helping organizations like yours empower employees to drive the business forward. From the start, Microsoft's goal has been to deliver software that enables people to harness their creativity, imagination, and intellect. Over the years, Microsoft has expanded that vision beyond individuals working in isolation to delivering optimized productivity solutions for dynamic teams and a geographically distributed workforce. These enterprise-ready solutions include not just software but also best practices, guidance, and implementation services so you can successfully implement a solution quickly with low cost and risk. With the latest wave of innovation, now is the ideal time to evaluate how Microsoft infrastructure solutions can best be used your organization. Microsoft remains committed to helping you realize the most value out of your IT investments and drive growth and new opportunities.

Microsoft offers a unique value proposition to our customers:

- Our software is trusted and familiar
- Our solutions are unified and comprehensive
- Our software is interoperable by design

Software That is Trusted and Familiar

When you select software that is familiar and easy to use, you reduce IT support and training costs while maximizing the productivity of your users. Every day, in every department, Microsoft dedicates itself to thinking about and understanding how people use software and then applies this knowledge to build software that is familiar and easy to use. One of Microsoft's goals is to make sure that people's experiences are consistent from application to application. Because Microsoft understands how an information worker works with software, how a system administrator manages systems, and how a

developer develops new applications and solutions, we build tools that will fit with the way your employees work and deliver a consistent, familiar experience to help them work more productively.

Solutions That are Unified and Comprehensive

Microsoft's comprehensive solution set spans the operating system platform, virtualization, management, security, and identity and access infrastructure to help equip you with the resources and technical capabilities you need to optimize your infrastructure. Microsoft solutions are designed to work together to streamline management and reduce IT complexity. Furthermore, Microsoft solutions span the various aspects of your IT environment, from the desktop to mobile devices to servers to the development platform to security and more for many of the systems in your infrastructure.

Interoperable by Design

While Microsoft products have always worked well together with minimal integration costs, the likelihood that all of your solutions are from Microsoft is low. As a result, you need solutions that provide integration and interoperability between technologies from different vendors. Microsoft delivers interoperability by design. At its most basic level, this means connecting people, data, and diverse systems. As a result, Microsoft is increasingly being recognized as a leader in enterprise platform software. In fact, according to a recent IDC survey of 500 North American organizations, the Windows Server operating system is the most popular platform for running mission-critical applications in the enterprise.³ Furthermore, IDC identified Microsoft .NET as the application-technology platform that enterprises expect to use most often for developing mission-critical applications.



Recommended Actions and Next Steps

You should consider the following actions as you work to improve the optimization of your core infrastructure:

1. If you haven't done so already, work with your Microsoft account representative or a Microsoft partner to assess the current level of maturity of your core infrastructure. You may also want to conduct your own pre-assessment using the online assessment tool available here: <http://www.microsoft.com/optimization/tools/overview.aspx>
2. Review the descriptions for each of the solutions areas outlined in this paper and decide which might be the most advantageous for your company at this time. (You may want to schedule additional meetings with Microsoft specialists to assist you in those decisions.)
3. Based on your current level of infrastructure maturity, identify technology priorities and associated projects to help you improve your core infrastructure based on the solution that is most valuable for your organization at this time.
4. Finally, proceed with confidence. The projects and methodologies have been developed by technical specialists at Microsoft, then proven and refined in real-world engagements. You can rest assured that as you optimize your core infrastructure, you can control your IT costs, improve the security and availability of your infrastructure, and increase your business agility.

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Appendix

Background on Infrastructure Optimization

Based on foundational work by Gartner (the Infrastructure Maturity Model) and MIT (the Architectural Maturity Model) and augmented by profiles of over 11,000 business and nonprofit organizations worldwide, the Microsoft Infrastructure Optimization models provide the framework that businesses can use to begin assessing the overall health of their infrastructures and to identify specific areas where improvement projects should be focused.

Businesses can use the Infrastructure Optimization models to work toward a dynamic IT environment. The model fully supports the IT Infrastructure Library (ITIL), a widely accepted industry approach to IT service management that provides a comprehensive and consistent set of systems-management best practices. In accordance with ITIL's spirit of "adopt and adapt," Microsoft has developed the Microsoft Operations Framework (MOF), which extends ITIL to support distributed environments and provides practical guidance on operationally applying ITIL best practices through people and processes.

Core IO Capability Maturity Levels

Not only does the Core IO model help you determine your level of maturity, but it also categorizes different aspects of your core infrastructure to focus your efforts. These aspects or "capabilities" focus on the key components of a company's core infrastructure. Following are detailed descriptions for each level of maturity for each of the capabilities in Core IO.

Identity and Access Management

Identity and Access Management involves the administration of people and asset identities; access to resources from mobile employees, customers, and partners outside of the firewall; and solutions that should be implemented to manage and protect identity data like synchronization, password management, and user provisioning.

Basic

A basic Identity and Access Management infrastructure is characterized by lax or inconsistent IT policies and standards concerning user authentication and security. Users may even have different digital identities across systems. Frequently there are no unifying server-based identity or access-management tools in place and directory services are not deployed to authenticate most users. There is limited or inconsistent use of passwords and no consistent process for granting resource access—in fact, there is little protection against unauthorized access to sensitive information. Administrative rights are poorly regulated, with most users operating in administrator mode by default, which leaves networks vulnerable to malware and increases TCO because users can make unapproved system changes, which impacts IT and especially the help desk. Organizations at this level may have difficulty complying with government regulations and a large volume of help-desk calls is common.

Standardized

Organizations at this level employ Active Directory® directory services for authentication only. Users can access the administrator mode at will and security templates are applied to standard images. There are a reduced number of digital identities and a lower volume of help-desk calls, but there are no provisions for assigning resources to specific users. Desktops are not controlled by Group Policy.

Rationalized

At this level, companies use directory tools to administer desktop and server configurations and security. At this level, companies also have solutions to protect information in place. They have implemented role-based administration and are establishing a platform for implementing regulatory compliance. These organizations are able to recover user systems and information after user errors, power outages, and technology disruptions.

Dynamic

At a dynamic level of Identity and Access Management, user provisioning is centrally managed across heterogeneous systems. Dynamic organizations use federated identity management.

Desktop, Device, and Server Management

Desktop, Device, and Server Management covers the management of desktops, mobile devices, and servers, including planning and deployment for patches, operating systems, and applications across the network. It also provides guidance on how you can leverage virtualization and branch-office technologies to improve your IT infrastructure.

Basic

There are no desktop standards for hardware, operating systems, or applications at a basic level of Desktop, Device, and Server Management, nor is the use of automated patch management widespread. Organizations do not yet have desktop-image strategies to help them maintain user productivity through the consistent use of current software. Managing multiple desktops is difficult and users experience frequent technology disruptions. There is no server monitoring. A lack of mobile-device provisioning means that these organizations have no mobile application inventory or deployment support. Help-desk call volume is high and there are long resolution times due to inconsistent desktop states.

Standardized

At this level, organizations have begun to simplify Desktop, Device, and Server Management with automated patch management and a defined set of standard desktop and server images. Desktop image strategies are based on images that include the operating system, antivirus software, management tools, productivity suites (such as the Microsoft Office system), and LOB applications. These organizations have a consistent plan to manage 80 percent of their desktops, but do not yet perform compatibility testing to ensure that each application runs correctly before it is widely deployed. They have consolidated and simplified management for 80 percent of their test environments and use monitoring solutions for 80 percent or more of their critical servers. Not only do they provision security policies including the use of PINs to block unauthorized access to mobile devices, but they also have policy-enforcement tools such as remote wipe. They have provisioning plans for both mobile devices and non-PC (embedded) devices.

Rationalized

Organizations at a rationalized level of maturity for Desktop, Device, and Server Management use the Windows Vista® operating system, Windows XP Service Pack 2 (SP2), or Windows 2000 as their primary desktop operating system to simplify patch management. They have automated their operating system image deployments to the desktop. At the server level, they have automated software distribution for 80 percent of their desktops (both physical and virtual). Automated management and tracking for hardware and software helps IT managers know what the company's assets are—and where they are located. These organizations use virtualization and centralized management tools to easily manage network servers, services, and printers in both the central network and branch locations such as branch offices. They have a consistent plan to manage their operating systems and they employ an application-compatibility testing solution. Service-level agreement (SLA) monitoring of mission-critical servers, including IT service-level reporting, means that network

problems are found, diagnosed, and fixed before they cause downtime. Certificate provisioning and authorization for mobile devices simplifies device management, and the use of 802.1x certificates helps companies protect and control access to network resources with better wireless security than what traditional WEP or non-secured networks can offer. Organizations can deliver thin-client Web applications through Wireless Application Protocol (WAP) or Hypertext Transfer Protocol (HTTP) on mobile devices to give mobile workers access to company information. The security and stability of desktop and mobile environments is consistent inside and outside the corporate firewall.

Dynamic

Companies that have achieved a level of dynamic IT employ a capacity-analysis solution to understand what capacity they already have and make sure that all their resources are being fully utilized. They use Virtual Hard Disk (VHD) manipulation for dynamic application access and recovery for desktop applications. Desktop virtualization enables the use of multiple operating systems for easy migrations and streamlined deployments. Virtual workload management and provisioning support greater control in managing utilization and balancing workloads in order to meet SLAs and changing business demands. Standard configurations for all servers, applications, and hardware types are defined, maintained, and audited. There is automated patch management for mobile and non-client-computer devices. Not only do these organizations implement model-enabled, service-level monitoring of desktops, applications, and servers, but they can also proactively manage and monitor their connected mobile devices, which use a standard operating system. IT managers have a centralized solution for pushing software installations and content to mobile devices that are continuously provisioned. Users can access LOB applications from the office and from the road.

Security and Networking

Security and Networking involves protection for information and communications, including safeguards against unauthorized access. At the same time, Security and Networking focuses on solutions to protect the IT infrastructure from denial attacks and viruses while preserving access to corporate resources.

Basic

At a basic level of maturity for Security and Networking, there is a lack of basic security standards that protect users from virus and hacker attacks. In particular, antivirus software with automated updates is not present on most desktops, there is no centralized firewall for most systems, and there are no internal servers for Domain Name System (DNS) and Dynamic Host Configuration Protocol (DHCP) networking services.

Standardized

At a standardized level, antivirus software runs on desktops and non-client-computer devices, but multilayered security models have not been deployed across the network—from the perimeter through the firewall, server, desktop, and application layers. The IT infrastructure is centrally managed with some automation. A centralized firewall has been set up and organizations have internal DNS and DHCP networking services.

Rationalized

Organizations at a Rationalized level have deployed a remote-access solution to enable users to access network resources off site more securely. They have implemented secure server-to-server isolation to prevent untrusted applications from causing other applications and server instances to fail. A policy-managed firewall is in place on servers and desktops to monitor network and system activities for malicious or unwanted behavior. Centralized certificate services in a public key infrastructure (PKI) are used to secure data and manage the identification credentials of resources inside and outside the organization. Secure wireless networking has been implemented.

Dynamic

At a dynamic level, an integrated threat management and mitigation solution is in use across the client and server edges. A quarantine solution for unpatched and infected desktops and mobile devices helps isolate viruses. Organizations at this level also use Session Initiation Protocol (SIP) for secure communication through presence. Centralized, Active Directory–based group policies are used to distribute IPSec policies and filters to increase the level of security on end users' hardware.

Data Protection and Recovery

Data Protection and Recovery covers the processes and tools that IT can use to backup, store, and restore information and applications. As information stores proliferate, organizations are under increasing pressure to protect that information and provide cost-effective and time-efficient recovery when required.

Basic

Organizations at a basic level for Data Protection and Recovery have no standard data-management policies and islands of user data exist around the network in file shares, non-standard servers, personal profiles, Web sites, and local computers. Little of this information is backed up. Any data backup that does occur happens locally and there is no backup and restore process for most critical servers. A lack of archiving and backup services makes regulatory compliance difficult. Corporate data in applications and critical systems is at risk of loss due to the lack of a disaster-recovery plan. These organizations have no user-state migration available to ensure that new technology deployments are smooth and error-free. Their data-recovery processes are untested.

Standardized

At a standardized level, organizations have backup and restore processes for critical servers, though the unreliability of tape-based backups and slow data transfers are still issues. User and application-data management is not centralized. Standards have been set for local storage in users' My Documents folders, but information is not redirected or backed up. Any backup of user data occurs at the workgroup level only. There is some automation of user-state migration available for technology deployments. Recovery processes for mission-critical applications have been tested.

Rationalized

At this level, organizations have backup and restore processes for some servers through virtualization—and for all servers with SLAs. Recovery processes for both mission-critical applications and data have been tested. Information is backed up onto tape which is local area network (LAN)–based and is managed at the company level. During backups, there might be a dip in LAN and server performance. User states are preserved and restored for technology deployments. These organizations are not yet meeting all industry regulatory-compliance requirements.

Dynamic

Continuous data protection guarantees business continuity and high availability by restoring access to information and systems in minutes with failover capabilities. Dynamic IT organizations have backup and restore processes for all servers with SLAs and desktop data. At this level, comprehensive regulatory compliance becomes possible. Business-continuity services are implemented, including data classification and policy definition.

IT and Security Process

IT and Security Process provides guidance based on industry best practices on how to cost effectively design, develop, operate, and support solutions while achieving high reliability, availability, and security. Though robust technology is

necessary to meet an organization's demands for reliable, available, and highly secure IT services, technology alone is not sufficient; excellent processes and trained staff with clear roles and responsibilities are also required.

Basic

Processes are informal, with no SLAs in place, which means that end users have no contact for troubleshooting problems with the operating system or infrastructure products. Organizations at this level lack comprehensive security strategies and policies; risk assessments are either sporadically conducted or not conducted at all. What little incident-response planning there is is usually uncoordinated and antivirus controls and network security are inconsistently managed. Basic identity protection technology is in place, and user, device, and services identities are managed through basic processes. These organizations have yet to develop consistent security-policy compliance on all devices connected to the network and consistent processes to identify and update security issues on these devices. They lack a comprehensive plan and processes to classify data and apply security controls. Basic technologies are in use to protect data confidentiality and integrity.

Standardized

At this level, implied SLAs are common, though they are only expectation-based and do not reflect a formal agreement. There is a formalized help-desk function and a process for incident and problem management, but they are not fully documented. Though there is no consistent risk-assessment process, these organizations do have standard identity-protection technologies in place and a user, device, and services identity-management process. Client protection and an (undocumented) network security process are in place. Simple configuration management improves IT operational efficiency and future deployment activities, but the processes of deploying security updates to—and testing security compliance of—all network-connected IT assets are still undocumented. Identification of network-connected devices is also undocumented, as are software acquisition processes for evaluating security requirements. Standard technologies across the organization protect data confidentiality and integrity.

Rationalized

IT operations are more proactive, but the risk-assessment process is still inconsistently communicated to business owners. There is an incident-response plan, but responders specifically, and IT staff in general, are not yet sufficiently trained. IT-defined SLAs and a formalized help-desk function have been implemented, along with identity-protection technologies and processes, but organizations lack the ability to produce sufficient cost-to-benefit analyses of these and most other IT processes for business owners. IT managers can identify network-connected devices, protect them with security-compliance technologies, and efficiently deploy security updates to them. Client and server protection is in use, but there are no security solutions to provide filtering, scanning, or control of inbound content before it reaches a server (e.g., mailbox control). Testing on all acquired or developed software helps ensure that it meets security requirements. There is a managed process to classify data and apply security controls.

Dynamic

Consistent security processes and policies help protect company data. IT staff has been rigorously trained. Web-server security management is streamlined for efficiency. IT scorecards and dashboards are used to produce reports and cost-to-benefit analyses for business owners.

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(877) 744-1360 : info@tribridge.com : www.tribridge.com

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