



Managing the Dynamic Desktop

Using Microsoft System Center

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Executive Summary

The growing needs of today's workforce demand that IT become more agile in how it provides access to desktop and device resources such as applications and corporate data. As a result, IT organizations struggle to provide the computing flexibility required by the modern workforce while balancing organizational requirements of compliance, security and reliability. System Center desktop solutions enable IT to empower users by streamlining the connection of any authorized user to the applications or resources they need—regardless of their location or connectivity. System Center achieves this by managing the delivery of traditional, virtual application, mobile, streamed and virtual desktop infrastructure, providing both secure access and the consistent, optimized performance that today's users expect.

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Introduction

For IT professionals responsible for deploying, managing and securing the desktop resources of their organizations, new challenges are emerging. Workforce and work style changes require access to applications and data in more ways than ever. Users now expect work environments to reflect their mobile lifestyles. Organizations are supporting this user mobility, as they believe employing these users will lead to productivity improvements and a competitive advantage.

Unfortunately, the concepts of the traveling worker versus the mobile worker can be confusing when it comes to managing their user desktop experiences. The traveling worker simply requires access to network resources from a remote location while the mobile worker may start the day accessing applications from his or her home desktop, later login using a mobile device from a customer site, then visiting the office to conduct a Microsoft Live Meeting, before finally completing a last minute order using a web terminal at an Internet café late at night. While few users will have all of these experiences in one day, it is a reality that many IT professionals must support this range of user experiences, while at the same time ensuring regulatory or internal policy compliance, security, and a satisfactory user experience.

With these dynamic desktop environments, IT departments face three main challenges as they seek to deploy, manage and secure:

- Delivering the applications, data and resources to an ever-increasing range of user types and through a variety of access methods
- Effectively managing the variety of infrastructures needed to meet these requirements while delivering an optimized user experience
- Maintaining security and meeting compliance requirements as these approaches proliferate

This white paper begins with an exploration of these issues before examining how Microsoft's System Center desktop solutions help IT organizations reconcile the competing demands of security and open access to resources by streamlining the connection of any authorized user to the appropriate application, regardless of their location or connectivity. System Center delivers management of this through a unified set of solutions that provide secure access and the consistent, optimized performance that users expect.

An Increasing Range of User Types and Access Requirements

In the past, most users were very predictable to manage as they required a static set of applications and worked primarily in the confines of their office. With new work styles and a new generation of users who are conditioned by experiences in their personal lives to expect seamless access to the resources they need, there are new challenges developing for IT professionals who manage the desktop experience.

As mobile computing has become more ubiquitous, user-centric computing scenarios have evolved out of the necessity to give users access to the resources they need, when they need them. This introduces significant complexity for IT organizations because each user type or usage scenario has different computing requirements and must be managed differently, as outlined below:

- **Office Knowledge Workers** – generally work from a local dedicated PC running a variety of productivity applications. The IT challenge is to deliver a personalized experience that ensures high productivity levels. In addition, office hoteling (sharing one office among multiple users, divided up by times of the day) introduces the

challenges of a single machine serving multiple user profiles, requirements, and applications.

- **Mobile Knowledge Workers** – require secure access to business-critical applications and other corporate resources via a variety of environments and devices, from wherever they are. IT departments face the challenge of providing the flexibility that these users need while ensuring that data security is not compromised. In addition, IT must have a means to maximize worker productivity while minimizing the risk of unauthorized access to corporate data in the event of a lost or stolen device.
- **Contract and offshore workers** – need access to corporate computing resources, yet often fall under different security constraints, compliance policies and often bandwidth limitations than full time workers. Compliance requirements alone may necessitate partitioning of outsourced workers from the day-to-day access that full time users enjoy. Those stipulations, whether driven by legal requirements or organizational policy, present a significant challenge to IT professionals.
- **Task Workers** – such as call center employees, warehouse workers, and retail employees, typically require one or just a few applications to get their jobs done. These users typically don't have a dedicated workstation. Instead, they must be able to access their applications from any computer in their workplace. IT organizations need a solution that enables them to deliver only the required applications that task workers can securely share on multiple devices in the organization.
- **Remote Workers** – effectively have the same requirements as knowledge workers, but must be managed differently as these users often work outside the corporate firewall. IT departments need a way to provide them with secure access to their work environment through a single, controlled access point.

Today's worker usually does not care *how* application delivery occurs, as long as it is painless, seamless and functional. The challenge for IT organizations is to deliver a consistent, quality experience that enables all users, regardless of their type, location or device, to get their jobs done, while minimizing the cost and effort of managing that experience. At the same time, security must be maintained at all times, for all user types.

Increased Infrastructure Complexity

This new range of user types adds unparalleled complexity to IT infrastructure management. Each of the user types above will often require a specific set of infrastructure components to support them. Today's IT environments must be dynamic and highly available, supporting a broad range of services and devices that give users access to the resources they need, when they need them. All the while, IT administrators must continually ensure that corporate data and resources remain secure.

The first challenge is managing and tracking the myriad of devices that access the network. Many users today have multiple devices—a desktop at home, a laptop and a mobile device, for example. While some of the devices are under the immediate control of IT, workers often use personal devices to check mail, store data, access files and more. Without integrated tools that track and manage these devices, the organization is exposed to greater security risks.

Another challenge is that many users want greater control over their hardware and software—they want the flexibility to install applications, experiment with new technology and manage the configuration of their Windows desktops. Conversely, IT wants greater control of users' PCs in order to more easily manage and secure these desktops—fewer configurations to track, assured compliance with patches and software updates, and better data security. All of this means IT must find a way to give users the autonomy that they demand while maintaining the level of IT control necessary to ensure security and to minimize downtime.

In addition, as organizations adopt new technologies, they gain performance and cost benefits but can face additional levels of management complexity. Without the proper tools to manage this complexity, service levels are negatively impacted, and it is difficult to control operating expenses because IT staff must focus on performing day-to-day management tasks across this range of infrastructures instead of improving service delivery.

Security and Compliance

Adding to the management complexity of today's IT environments are the requirements to ensure that systems are secure and that they comply with government regulations and internal policies. As mobility grows, so do these concerns and the requirement for management of those systems. One primary desktop compliance concern is the protection of confidential or sensitive business data. A recent study by the Ponemon Institute, states that "eighty-one percent of 484 survey respondents report that their organizations have experienced one or more lost or missing laptop computers containing sensitive or confidential business information in the past 12-month period." (Ponemon, L (2006). Confidential Data at Risk. *CSO, Security and Risk*. Retrieved 5/25/08: <http://www.csoonline.com/article/220993>)

Meeting the compliance expectations of auditors, regulatory bodies, partners, and customers is no easy task, especially when there is no single desktop configuration or access method employed by users. As a result, IT professionals have had to dedicate vast amounts of time and resources to ensure their systems remain compliant. This leads to a requirement for integrated tools that record and store the information required to manage, monitor, and report on business processes, enabling IT organizations to retrieve the information quickly when required.

To support their organizations effectively, IT professionals must establish and comply with corporate security and configuration standards. This is a critical business function that helps improve operational efficiencies and enhance security by providing guidelines and practices for configuring and managing IT environments. Once established, IT professionals must be able to monitor and enforce compliance with those policies so that they can quickly identify non-compliant systems and remediate the non-compliance before the performance or security of the network is jeopardized. However, this must be done across the variety of clients (such as a Windows Mobile device), infrastructures and access methods discussed above, requiring a centralized approach in order to control costs.

Managing the Dynamic Desktop: A Solutions-based Approach

Microsoft understands the challenges IT professionals face in delivering the computing capabilities and access to resources that empower users to be more productive, while managing the associated costs and complexities. It is from this understanding that Microsoft's vision of Dynamic IT has emerged. With Dynamic IT, Microsoft provides customers with the technical innovation necessary to make their IT organizations a strategic asset for their business and to reduce costs and management complexities. Microsoft provides an end-to-end approach that enables organizations to embrace new technologies and strategies that help them to build and manage toward the vision of the dynamic desktop. This approach has informed the development of the solutions outlined below. (For more on Dynamic IT please visit <http://www.microsoft.com/presspass/press/2007/jun07/06-04DynamicITVideos.mspx>)

As organizations move toward a dynamic state, important changes occur. Users get access to the resources they need, when they need them. As IT services adapt to changing business needs, desktop management is fully automated, and resources are dynamically provisioned. Organizations embrace new technologies to this end state for example, many are virtualizing their infrastructures and implementing centralized, policy-based management of both physical and virtual assets.

Virtualization has become a key enabling technology to the overall goal of Dynamic IT. This not only helps organizations make the most of their resources, it also supports their efforts to provide flexible environments that can easily be managed to meet user requirements.

Virtualization offers the ability to separate computing layers, providing the flexibility and foundation for adaptive application delivery. Traditionally, the desktop computing model has been one where the hardware, operating system, applications, and user data and settings are bonded to a single computer. Separating these layers enables IT professionals to make changes to any layer—independent of what happens in the other layers. Microsoft offers several virtualization capabilities, including:

- **Application Virtualization** – provides the ability to deliver and run applications on a desktop without modifying the desktop operating system’s registry and file stores
- **Presentation Virtualization** – also known as Terminal Services, allows remote users to host screen updates while all processing functions remain server based
- **Desktop Virtualization** – allows multiple operating systems to run on a desktop at any given time
- **Server Virtualization** – provides the ability to run several operating system workloads on one physical machine

These capabilities are delivered through a variety of Microsoft technologies including Windows Vista, Windows Server 2008 and the Microsoft Desktop Optimization Pack (MDOP). These in combination with System Center make desktop management more efficient, easing change management and user migration.

Comprehensive Management to Achieve the Dynamic Desktop

Microsoft’s System Center supports the realization of the Dynamic IT vision by providing a unified, policy-based solution for managing both physical and virtual environments. This allows IT professionals to handle enterprise-wide provisioning and change management all from a central location.

The System Center desktop management solutions provide the capabilities that allow IT be more agile in its delivery of services to the desktop users, without introducing overwhelming management complexity. By blending the right combinations of technologies, System Center desktop management solutions allow IT departments to:

- Respond to the evolving and varying needs of business
- Support security and compliance of the desktop, mobile device, and network
- Optimize the user experience by ensuring the health and performance of the system

Respond to the evolving and varying needs of business users

The core of any IT operation is the delivery of applications necessary to perform daily business functions. Traditionally, IT professionals delivered these applications in a one-to-one, device-oriented way. Users consuming the applications on their desktops, laptops or mobile devices limited their interaction with IT unless an application was broken, needed updating or otherwise surfaced a problem when they used it.

Traditionally, a successful application deployment was one where the application installed itself on a desktop automatically, with personalized settings customized by configuration management software. While traditional “push” models of application delivery remain one of the variety of core requirements, the diversity of today’s users means expanding application delivery options that allow for more flexible deployment and consumption of applications.

System Center has evolved and adapted to meet these needs by enabling a variety of deployment scenarios ranging from traditional deployment to virtual or streamed applications, terminal services, and virtual desktops—all managed from a single environment. This reduces the complexity and effort to deliver the resources users require.

With the combined solutions offered by System Center desktop solutions, users can work in a more dynamic, easy-to-operate environment where any given user can log into any managed desktop connected to the corporate network and have the same familiar environment. In such scenarios, access to applications and data are at the user's fingertips whether in the office or mobile, connected or occasionally connected.

Support security and compliance of the desktop and network

As IT environments become more flexible, supporting a diverse user base that accesses network resources from many different locations and devices, the network is exposed to greater security risks and potential compliance violations. Therefore, in addition to ensuring that desktop systems on the network are up to date and meet the company's requirements for system health, network perimeters must also protect the network from roaming devices that may be vulnerable to security exploits.

System Center desktop solutions provide capabilities that help security and compliance efforts through ensuring both desktop and network access policies are adhered to. IT organizations can easily define required and prohibited policies, and then report on compliance against those policies. Before it grants a computer access to the network, the solution validates the computer's health and compliance with corporate policies. If the computer does not comply with these policies, it is quarantined and then automatically updated or patched before being given access to network resources. This is achieved through tight integration with the Windows Server 2008 Network Access Protection (NAP) capabilities.

Optimizing user productivity and experience

To ensure a smooth-functioning network that supports the broad range of today's users, IT organizations must deploy, manage and secure their entire IT infrastructure. This requires more than reactive reporting. Proactively monitoring desktop issues across the network offers the opportunity to remediate situations before they become incidents that impact the execution of the business processes that deliver success for the organization. Monitoring and maintaining system health is important to ensure continued worker productivity and to optimize the user experience. To do this, administrators must have a clear picture of their IT environment and then be able to respond intelligently to the information provided.

System Center desktop solutions, using Microsoft and third-party knowledge, enable administrators to optimize the user experience, leveraging real-time and trend information to identify, diagnose and remotely repair client health and performance issues.

Benefits of a Solution-based approach to Desktop Management

System Center desktop solutions bring together the technologies and best practices that help IT become more dynamic and agile in the ways in which they provide access to applications and corporate resources. This approach delivers a number of key capabilities and benefits, including:

- An integrated management system for the physical and virtual desktop infrastructure, leading to lower costs through improved efficiencies
- Management from the hardware through the operating system, application, data, and user settings layers that supports delivering an improved user experience
- Deep, embedded knowledge from Microsoft and its partners that ensures all parts of the desktop experience can be managed effectively

- Integration of management capabilities with other desktop infrastructure technologies from Microsoft, reducing the effort expended by IT to holistically manage their entire environment

System Center Desktop Management Solutions

System Center desktop solutions provide the technologies that enable IT to empower users by streamlining the connection of any authorized user to any application, regardless of their location or connectivity. These solutions support IT in managing the delivery of traditional, virtualized, streamed and virtual desktop infrastructures through a unified system that provides both secure access and the consistent, optimized performance that users expect.

System Center desktop management solutions include technologies that give IT departments the following capabilities:

- Adaptive operating system and application delivery
- Managed user access
- Optimized desktop health and performance

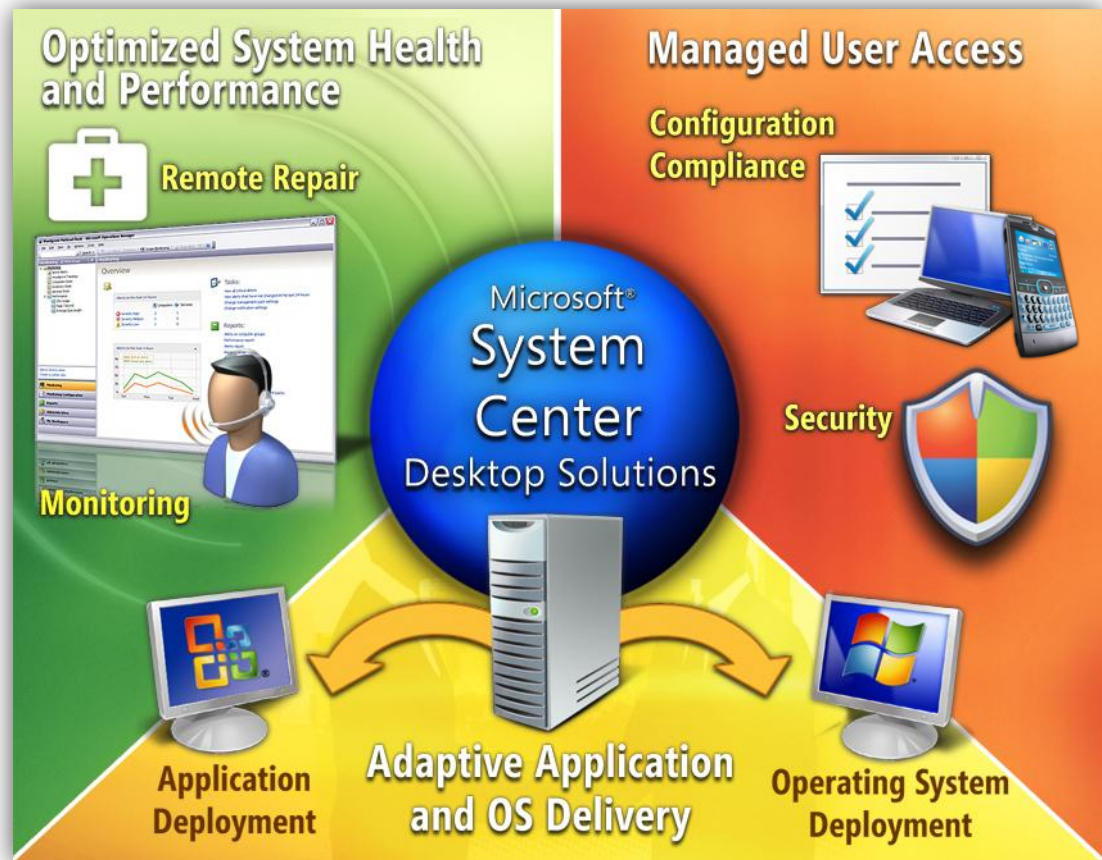


Figure - Microsoft System Center desktop solutions provide secure access and the consistent, optimized performance that users expect.

Adaptive Application and Operating System Delivery Solutions

The Microsoft System Center adaptive operating system and application delivery solutions help IT bring users and applications together, regardless of their location or connectivity, creating a nimble environment that is ready to respond to changing business conditions. They provide a centralized method of managing the automated deployment and configuration of operating systems and the variety of application delivery methods available to customers, both physical and virtual. These solutions include:

- **Adaptive Application Delivery** – Enables IT to proactively deliver to the evolving and varying needs of business users through flexible options for managed client application delivery such as traditional software deployment, virtual or streamed applications, and terminal services or virtual desktops.
- **Simplified Vista Deployment** – Securely automates the deployment of the operating system by reducing the image size, and separating applications and drivers from core OS images. This enables IT to standardize to a single or small set of base images.

Adaptive Application Delivery

The adaptive application delivery solution helps IT departments respond to the evolving and varying needs of users through adaptive application technologies that provide flexible options for deployment of virtual or streamed applications, terminal services and virtual desktops as well as traditional software deployment.

The solution includes the ability for IT administrators to deploy and provision virtual application packages to a desktop. This allows a user to execute this application without any machine settings or creating application-to-application conflicts or application-to-operating-system conflicts. The virtual applications themselves are cached to allow offline use. Additionally the adaptive application delivery solution also allows the provisioning and management of applications that will be presented to users via Microsoft Terminal Services.

As previously discussed, individual users are likely to cross many roles in a single day. The following outlines how System Center supports the adaptive delivery of applications and provides access to the resources required by each role:

- **Office Knowledge Workers** - Ensures that the right set of knowledge worker applications are installed and customized based on the user profile. Further ensures that the workstation has been configured based on organizational policy and that non-compliant systems are patched or updated before accessing network resources.
- **Mobile Knowledge Workers** - Delivers applications, completely installed and configured, based on user profiles so the user can access them whether connected or disconnected. Additionally, configures Folder Redirection so that work created while disconnected automatically replicates to the network for backup purposes.
- **Contract and Offshore Workers** - Manages the provisioning of virtual desktops hosted in the organization's data center, allowing access to corporate resources required for contract and offshore workers.
- **Task Workers** - Configures workstations based on a scoped policy, only installing applications specific to the tasks required, keeping licensing and support requirements to a minimum.
- **Remote Workers** - Ensures that when users require Terminal Services sessions to work remotely, their data has been replicated. It also provides application installation and configuration to provision a Terminal Services session nearly identical to a user's regular office-bound desktop.

The adaptive application delivery solution ensures a consistent user experience across these various access methods, thus optimizing this experience in-line with the user's particular

needs. A key benefit for the IT Professional of this approach is the centralizing of management of this wider range of application delivery methods thus increasing control and reducing costs.

Simplified Vista Deployment

The simplified vista deployment solution focuses on delivering as simple a deployment of Windows Vista (or other operating systems) as possible. It allows IT Professionals to plan, design, deploy and manage their Windows Vista images.

The solution can quickly determine the upgrade readiness of an organization's desktops through integrated reporting capabilities. This works alongside the Windows Vista Application Compatibility Toolkit (ACT) that determines the impact of the operating system upgrade on specific applications, supporting the prioritization of compatibility testing efforts. When incompatibility issues arise, System Center can mitigate these issues by delivering applications via the virtualization methods outlined in the previous section—through Virtual Desktop, PC virtualization, application virtualization or presentation virtualization.

Once the planning and design of desktop images is complete, System Center further simplifies this deployment process by reducing the image size by separating applications and drivers from the core OS image. The drivers are stored in a library, allowing their deployment at runtime; IT professionals can then deploy these images automatically using the task sequence based deployment, patch and update capabilities available in the solution. Alternative delivery models are also available to support organizations or sites with specific needs – including those with low or no network bandwidth connection to their desktops.

Managed User Access

The System Center managed user access solutions delivers peace of mind to the organization through tools that help ensure security through the assured compliance of the desktop and network to defined policies. With the range of user types, access methods, and infrastructure components needed to support them, the managed user access solutions focus on ensuring that out-of-compliance desktops do not put organizational assets at risk. These solutions include:

- **End-Point Security Management** - Comprehensive end-point security, together with Windows Server 2008 and Forefront, that enables the secure access an evolving user population requires, irrespective of the access mechanism. This is achieved through enforced compliance with system health policy definitions before connecting with the corporate network.
- **Configuration Compliance** - Assess systems compliance against established configuration baselines showing the gap between what is required and what is reality for each desktop and providing ways to fix them.

End-Point Security Management

The end-point security management solution provides comprehensive end-point security that protects the integrity of private networks enforcing compliance with system health policy definitions, configuration baselines (for example having the required software updates installed), and, through integration with Microsoft Forefront security technology, security software configuration requirements.

Through integration with Network Access Protection (NAP), a policy enforcement platform built into Windows Vista and Windows Server 2008, System Center desktop solutions help provide continuous network protection and quarantine support for both perimeter and core systems to ensure that computers connecting or communicating on the network meet the organization's requirements for system health.

To keep systems up to date, System Center extends the use of Windows Server Update Services, allowing automatic or user-driven updates of critical and optional patches. This is

delivered via an internet-based deployment model. These capabilities allow IT Professionals to govern which updates to approve and deploy, while giving users the option to bring their desktops into compliance manually or to allow the system to do it automatically.

System Center delivers updates to devices connected to the corporate network, as well as internal and internet-based clients. This allows timely software updates to occur regardless of how often a user's computer is connected to the internal network.

System Center also provides comprehensive end-point security to managed Windows Mobile 6.1 devices. These mobile-optimized capabilities secure the managed device and help to control the applications used upon it. This is achieved through both the ability to configure applications on the mobile device and through a mobile specific firewall that adds to the security of an organization's existing mobile device infrastructure. This solution also supports the user productivity efforts described elsewhere in this paper through capabilities such as fast reconnect and session persistence.

Configuration Compliance

To enhance the availability, security and performance of systems, System Center desktop solutions provides desired configuration management that allows IT administrators to assess systems compliance against established configuration baselines. Administrators can easily monitor and capture configuration information of devices across their network and evaluate the compliance of those devices against regulatory and corporate requirements. They can remediate non-compliant systems with software distribution that targets computers identified as not compliant.

Configuration packs provide configuration settings, security settings and relevant system knowledge. These configuration packs are best practices that Microsoft and other software vendors create to identify common configuration errors for applications and operating systems that compromise system availability.

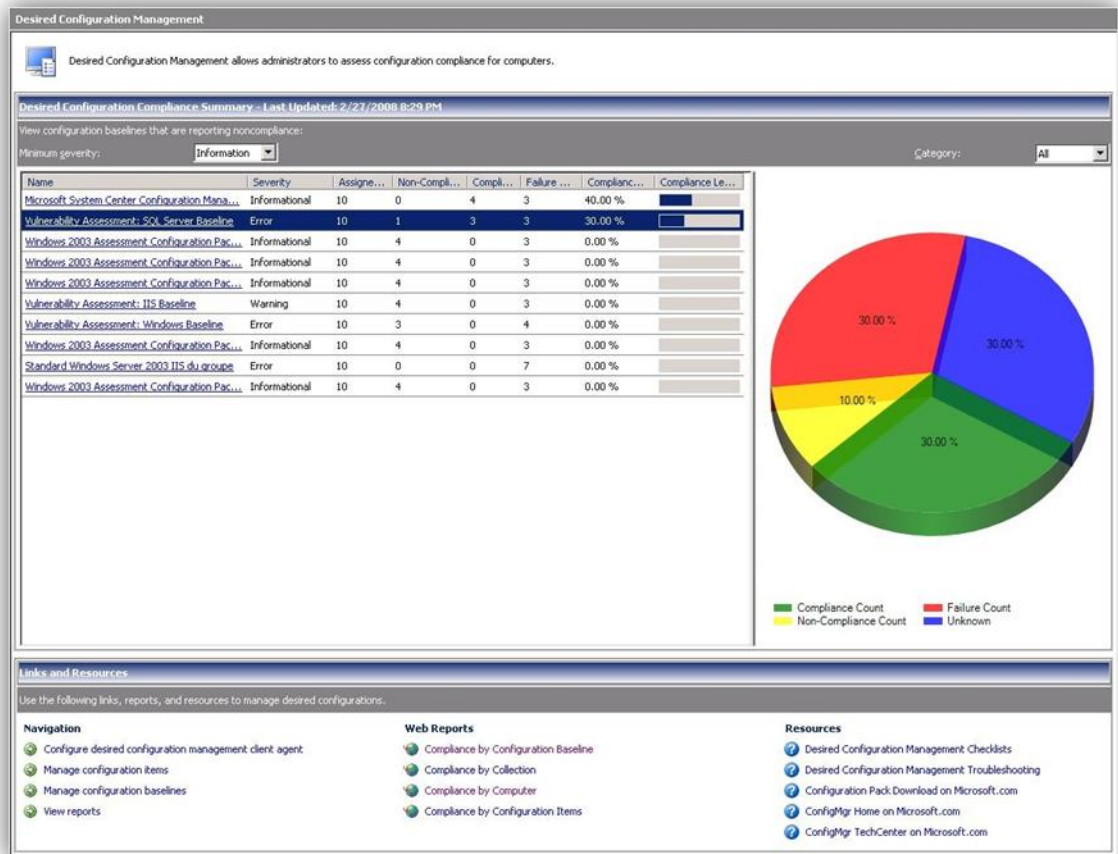


Figure - Desired Configuration Management ensures desktops meet configuration requirements.

The increasing number of mobile devices accessing network resources increases the effort that IT professionals must spend tracking and managing user's activity. This solution makes IT's role easier through both the ability to delegate tasks based on functions, thus simplifying the tracking and deployment of devices, and through streamlining the process of enrolling devices into a secure, approved list (supported by integration with Microsoft Active Directory®). Additionally, this delivers the ability to easily push policies to mobile devices. Overall, this results in an improved user experience and fewer calls to the IT help desk.

Optimized System Health and Performance

The System Center optimized health and performance solutions, using Microsoft and third-party knowledge, enable IT to optimize the user's experience. These solutions use real-time and trend information to identify, diagnose, and remotely repair client health and performance issues. The solutions are:

- **Client Infrastructure Monitoring** - Using Microsoft and third-party health and configuration knowledge, the solution provides client availability, performance and security monitoring to proactively identify problems that can impact user productivity.
- **Remote PC Diagnostic and Repair** - Enables zero-touch remote diagnosis and remediation of problems for online and out-of-band client systems to help pinpoint and troubleshoot issues that impact the user experience.

Client Infrastructure Monitoring

In order to ensure continued user productivity and to optimize the user experience, IT must ensure the user's desktop and mobile client remains healthy and properly configured. With

System Center, IT administrators can proactively monitor and identify high impact client operating system, application, and hardware issues, and then deal with these to minimize support costs and impact to user productivity. They can also monitor compliance with desired configurations to reduce problems associated with configuration drift.

Collective health and infrastructure monitoring enables support teams to report, and to be notified, when client issues are impacting a large number of users by collecting detailed availability, reliability, performance and hardware configuration information from client systems. These can then be rolled up into consolidated system views. Monitoring extends through the variety of application deployment methods outlined in this paper, including Terminal Services-based applications and to mobile devices (for both hardware and software inventory reporting).

Proactive monitoring helps improve systems availability, security and performance by letting IT address problems early on, avoiding any reduction in user productivity or failed systems.

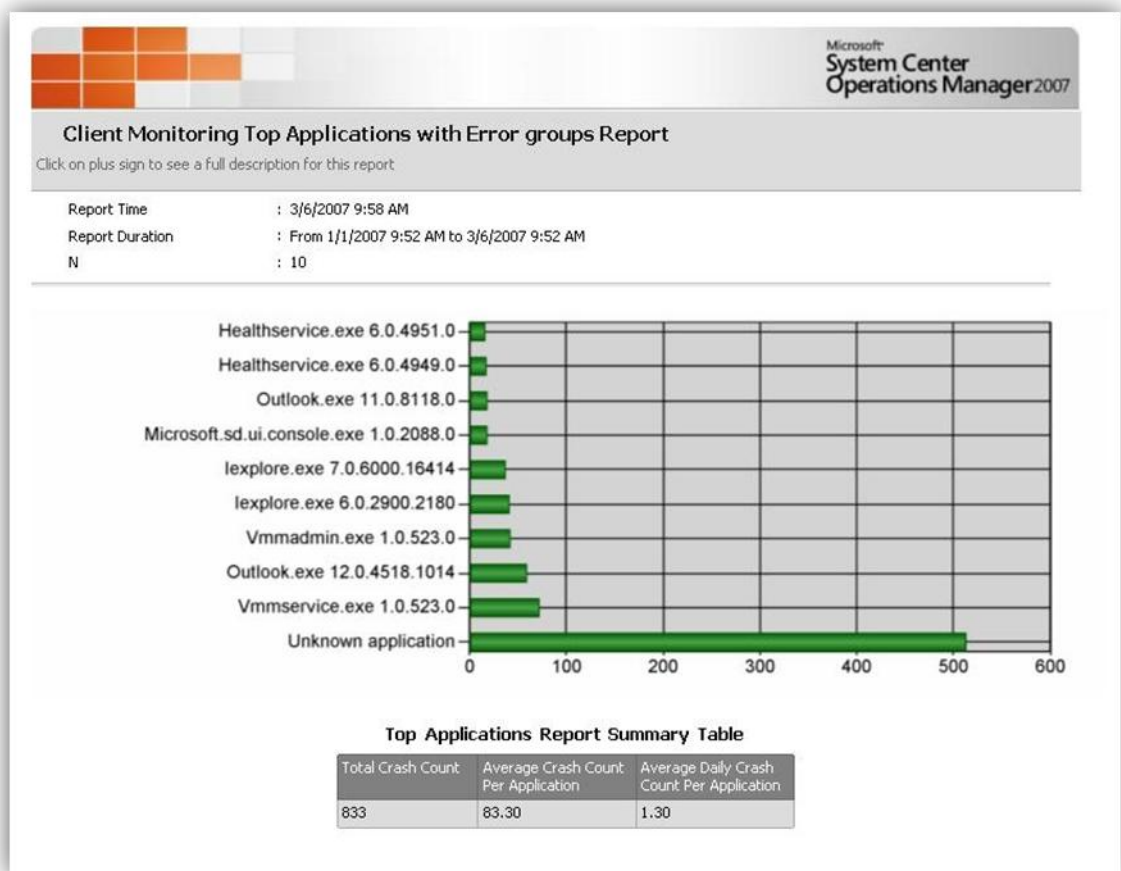


Figure - Client monitoring provides visibility into desktop health and performance.

Remote PC Diagnostic and Repair

System Center desktop solutions enable zero-touch remote diagnosis and remediation of problems for online and out-of-band client systems to help pinpoint and troubleshoot issues. This significantly reduces onsite service calls for problem resolution—even for PCs that are powered off or won't boot—improving the overall user experience.

Utilizing the integration between System Center and Intel's iAMT technology, helpdesk personnel can quickly troubleshoot problems and reduce time to resolution through reports that let them check the status of the PC configuration compared against a desired state, analyze application failure, system failure and hang data. They can then resolve problems by

automatically linking to the latest troubleshooting and resolution knowledge or leveraging diagnostic tools that monitor performance and stability and enable remediation.

Once an administrator has determined a system to be in a state that requires remote repair, the following remote actions can be taken:

- Reboot, power off or power on (if already in an off state) systems
- View and change PC BIOS as necessary
- Re-image by pointing the system to a network-hosted boot image (without using PXE)
- View a system using a command-line console to troubleshoot the boot process

These actions are available for desktops using Intel's iAMT technology and overall reduce the number and length of required visits directly to the desk or working environment of users by support staff.

For mobile devices, remote support activities extend to the ability to wipe a managed device, via web access, if it is lost or stolen.

Conclusion

As computing becomes more powerful and mobile, IT environments must become more agile to support a changing work force with ever-changing work styles. IT organizations face the challenge of providing this flexibility while ensuring the necessary levels of IT control, security and compliance. System Center desktop solutions provide a unified system that lets IT be more agile without introducing overwhelming management complexity. IT organizations can quickly respond to the varying needs of users through adaptive application and operating system deployment technologies that let them deliver the services that users need, when they need them—whether the user is in the office or mobile, connected or occasionally connected. The solution also helps IT organizations protect the security and compliance of their systems by ensuring that any device accessing the network, regardless of the connection type, is up to date and meets the company's requirements for system health.

Finally, System Center desktop solutions help IT organizations optimize the user experience by providing tools that let them keep systems functioning smoothly. Real-time and trend information helps IT staff identify, diagnose and remotely repair client health and performance issues before they affect user productivity, providing the consistent, optimized performance that today's users expect.

System Center Desktop Management Solutions

For more information on System Center, see <http://www.microsoft.com/systemcenter>

For more information on System Center Desktop Management solutions, see <http://www.microsoft.com/systemcenter/en/us/dynamic-desktops.aspx>

For more information on Microsoft Solution Accelerators, see <http://technet.microsoft.com/en-us/solutionaccelerators>

For more information on Microsoft Consulting Services, see http://www.microsoft.com/services/microsoftservices/srv_coreio.mspix

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