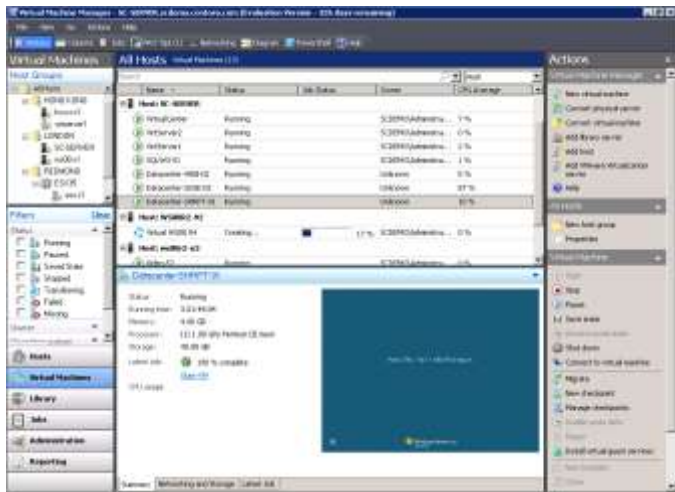




# Microsoft® System Center

## Server Consolidation through Virtualization



Microsoft customers discussing data center management prioritize server consolidation as a critical business requirement. With the real cost savings and benefits that can be realized with virtualization, such as reduced server sprawl, increasing returns on hardware, and more, many organizations are applying a strategy for virtualization.

Achieving an optimal virtualized infrastructure is not easy. Challenges that organizations have to address include:

- **Virtualization candidate identification:** The need to identify servers that are good candidates to be virtualized, and become guest systems.
- **Virtualization host identification:** The requirement to identify servers that have sufficient resources to host virtual guest systems and their workloads.
- **Physical to virtual migration:** The desire to transform physical servers into virtualized guest systems, rather than rebuild from the ground up.
- **Determination of where to locate guest systems:** The need to determine the best virtualization host that can handle the requirements of the guest system.

## Intelligent Server Consolidation with System Center

Microsoft® System Center delivers powerful capabilities to simplify, automate, and accelerate a server consolidation strategy. With support for Microsoft Hyper-V, Microsoft Virtual Server, and VMware ESX™ Server, along with its ability to easily align with process frameworks such as ITIL<sup>1</sup>, System Center is ideally placed to start a new server consolidation project, fit into an existing virtualization strategy, or help consolidate servers into a Microsoft-based virtualization technology.

Leveraging information that System Center already collects about your environment, along with its powerful management capabilities, organizations are empowered to:

### Identify candidates for server virtualization:

Selected servers can then be transformed by System Center into virtualized entities, with options to leave the server online or take it offline.

### Validate candidates for virtualization hosts:

Using System Center, selected servers can be provisioned or reconfigured with Hyper-V and setup for health and performance monitoring.

### Intelligently assign guest systems to virtualization hosts:

System Center takes the guesswork out of placing virtual guest servers, proposing the best host for each virtual guest based on calculations that evaluate guest server requirements against host capabilities.

### Simplify virtualization management:

Even after consolidation projects are complete, System Center continues to provide day to day management of your virtualized datacenter, including the movement, configuration, monitoring, and backup of virtual machines and their workloads.

<sup>1</sup> IT Infrastructure Library (see <http://www.itil-officialsite.com/home/home.asp>)

## Key Benefits

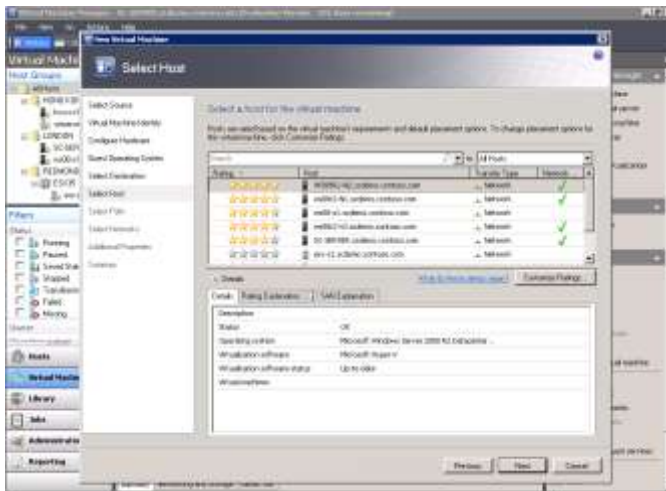
Using System Center, customers can quickly identify benefits in the following areas:

**Maximization of IT Resources:** Leveraging information that it collects from across your environment, System Center helps maximize your available IT resources by identifying: systems that should be virtualized; servers that are underutilized and ideal candidates to act as virtual hosts; where virtualized guest servers should be placed for optimal performance.

**Operational agility:** By automating the consolidation of existing servers into virtualized guests – along with the streamlined provisioning of virtualization hosts, and the intelligent placement of virtualized guest servers to appropriate hosts – System Center quickly delivers an optimized virtual infrastructure that can quickly scale to meet changing demands, priorities and operational incidents through provisioning and migration of new and existing virtual systems.

**Leverages existing skills:** Maximizes existing Windows Server® and System Center expertise through familiar interfaces, terminology, and end-user experiences; minimizing the need for extensive retraining of administrators.

**Supports key virtualization technologies:** With support for key virtualization technologies including Microsoft Hyper-V, Microsoft Virtual Server, and VMware ESX Server; System Centers simplifying the alignment of multiple virtualization technologies to continue and accelerate server consolidation efforts.



System Center calculates which hosts are best suited to host a guest server, removing any guesswork in placing guest systems across your datacenter

## Core Capabilities

System Center delivers powerful capabilities that help organizations streamline and simplify the planning, implementation, and subsequent management of your server consolidation projects.

### Informed Guidance for Server Consolidation

System Center provides informed guidance on selecting systems to be virtualization hosts, or guest systems.

**Virtualization Candidates report:** This report identifies which physical servers should be transitioned to virtual systems. The data provided includes:

- Historical performance data, such as CPU, memory, and disk usage.
- Server configuration, including the number of processors, RAM, and more.

### Virtualization host server identification:

Virtualization host server candidates can be identified using System Center reports that show system memory, CPU, and disk utilization over time.

### Powerful, Automated Conversion Capabilities

System Center automates the physical-to-virtual (P2V) and virtual-to-virtual (V2V) system conversion processes.

**P2V conversions:** For P2V conversions supported on Windows Server 2008, Windows Server 2003, and Windows 2000 Server, System Center provides the following benefits:

- Online P2V conversions enable servers to remain available. Online P2V conversions leverage the Volume Shadow Copy Service (VSS) to copy data to a new Virtual Hard Drive (VHD) while the original server continues to service user requests.
- Offline P2V conversions restart the computer into the Windows Pre-installation Environment (Windows PE) before converting the physical disks into VHDs.

**V2V conversions:** V2V enables host-to-host migrations or transitions to a common Microsoft virtualization technology. The benefits provided in this scenario include:

- Migration support for Hyper-V and Virtual Server from Hyper-V, Virtual Server, and VMware ESX Server.
- Supports license consolidation with migration support for VMware ESX server to VMware ESX server.

**PowerShell™ integration:** PowerShell integration enables a scripted approach to machine consolidation which improves the ability to integrate and automate with other processes or solutions.

## Intelligent Placement

System Center helps take the guesswork out of determining where based to locate a virtual machine, using built-in calculations and user-selectable preferences.

**Virtual Machine Deployment wizard:** Uses information already collected by System Center on your environment to calculate and recommend the most suitable virtualization hosts for a guest system.

**Adjustable virtualization host selection prioritizations:** Enables users to set system-wide placement settings to weight virtualization host selection, focusing on:

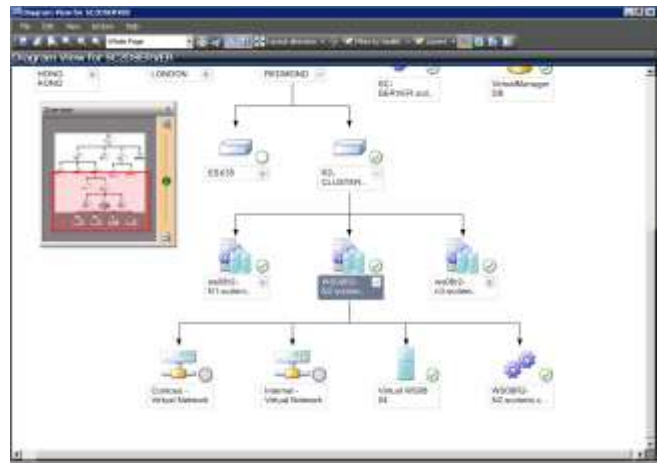
- Load balancing – Hosts rated based on minimizing the processing load on any one host
- Resource maximization – Hosts rated based on consolidating as many virtual machines as possible on that host.

**Ability to re-weight the importance of resources for virtualized guest systems:** Helps assure optimal placement of a particular virtual guest server by allowing administrators to prioritize the resource requirements (CPU, memory, disk I/O and network utilization) of that virtual guest.

**Shared data SAN storage pool:** Provides the ability to create a shared data SAN storage pool which can be simultaneously accessed by all physical and logical servers and workloads.\*

## Comprehensive, Ongoing Physical and Virtual Server Management

Even after server consolidation projects are completed, System Center helps assure the continued health and performance of those systems.



**System Center delivers integrated, end-to-end monitoring and management of your virtualization hosts, virtualized systems, and their workloads; after consolidation efforts.**

**Improved monitoring ability:** Monitors both Windows Server (including Hyper-V and Virtual Server) and VMware ESX virtualization hosts.

**Proactive modeling and management of the entire virtual environment, application operating system and host:** Delivers an integrated, end-to-end monitoring and management experience of both physical and virtual environments.\*

**Delegation of administrative capabilities:** Facilitates fine-grained control over who is able to monitor and manage all, or part of, your virtualized infrastructure.

**Performance Resource Optimization (PRO):** Provides a dynamic and event-based capability that enables rules and policies to be set to dynamically respond to incidents to assure availability of virtualized systems and workloads.

**Reporting validates the success of consolidation efforts:** Provides the ability to use System Center reporting to track the success of consolidation efforts, and the ongoing monitoring of the virtualized infrastructure with the following reports:

- **Virtual Machine Utilization:** Shows the average, total, and maximum usage for virtual machine processors, memory, and disk space.
- **Host Utilization:** Shows the number of virtual machines running per host, identifies the average, total, and maximums for host processors, memory and disk space.
- **Host Utilization Growth:** Shows the percentage growth of host resources and number of virtual machines running for a particular time period.

## System Center integration

Delivers integration across System Center including:

- **Configuration Management:** Provides centralized and automated software provisioning, update and management across physical and virtual servers.
- **Server Compliance:** Delivers configuration controls, consolidated reporting, and centralized security event collection.
- **End-to-end monitoring:** Provides end-to-end visibility into the health and performance of virtualization hosts, guest servers, and their workloads.
- **Data protection and recovery:** Delivers backup and reliability capabilities to applications and services running in physical and virtual environments.

## System Center Datacenter Management Solutions

System Center Datacenter Management Solutions address greater interoperability, openness and choice while improving overall operational efficiency. Key capabilities include:

**Datacenter service health and performance:** Monitors and validates the health and performance of general IT services in addition to the different components that comprise those services.

**Server consolidation through virtualization:** Intelligently consolidates servers, assuring the optimal allocation of virtualized guests to available server hosts.

**Compliance and Windows Server security assurance:** Centralizes configuration and security event monitoring which helps to satisfy compliance requirements.

**Datacenter business continuity with virtualization:** Aligns virtualization with backup and restore functionality to assure the fastest possible restoration of IT services from unplanned outages.

**Automated and centralized deployment, provisioning, and Windows Server updates:** Simplifies the deployment and maintenance of physical and virtual Windows Servers; all through an integrated management system.

For more information, visit

<http://www.microsoft.com/systemcenter/en/us/dyna/mic-data-centers.aspx>

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\* Functionality not provided directly through System Center, but through solutions from partners who extend the System Center platform – such as Sanbolic, vKernel, and others.