Campus Days
14.-16. januar 2010

Session W-01

Nyt og lækkert i Windows Server 2008 R2

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Windows Server 2008 R2

Microsoft TechNet

Windows Server 2008 R2
Technology Investment Areas

Virtualization

Hyper-V™ with Live Migration

Hot Add/Remove VM Storage

Remote Desktop Services

Management

Power Management

Windows PowerShell

AD Administrative Center

Best Practices Analyzer

Web

IIS 7.5

ASP .NET on Server Core

Enhanced FTP and WebDAV

Administration Modules & Cmdlets

Solid Foundation for Enterprise Workloads

Scalability and Reliability

256 Core Support
Componentization
Boot from SAN or VHD
Support for Solid-state Devices
File Classification Infrastructure

Better Together with Windows 7

DirectAccess™
BranchCache™
Enhanced Group Policies
RemoteApp & Desktop Connections

Windows Server 2008 R2

Virtualization

Windows Server 2008 R2

Overview

- Virtualization in WS08R2:
  - Server virtualization with Hyper-V
  - Presentation virtualization with RDS

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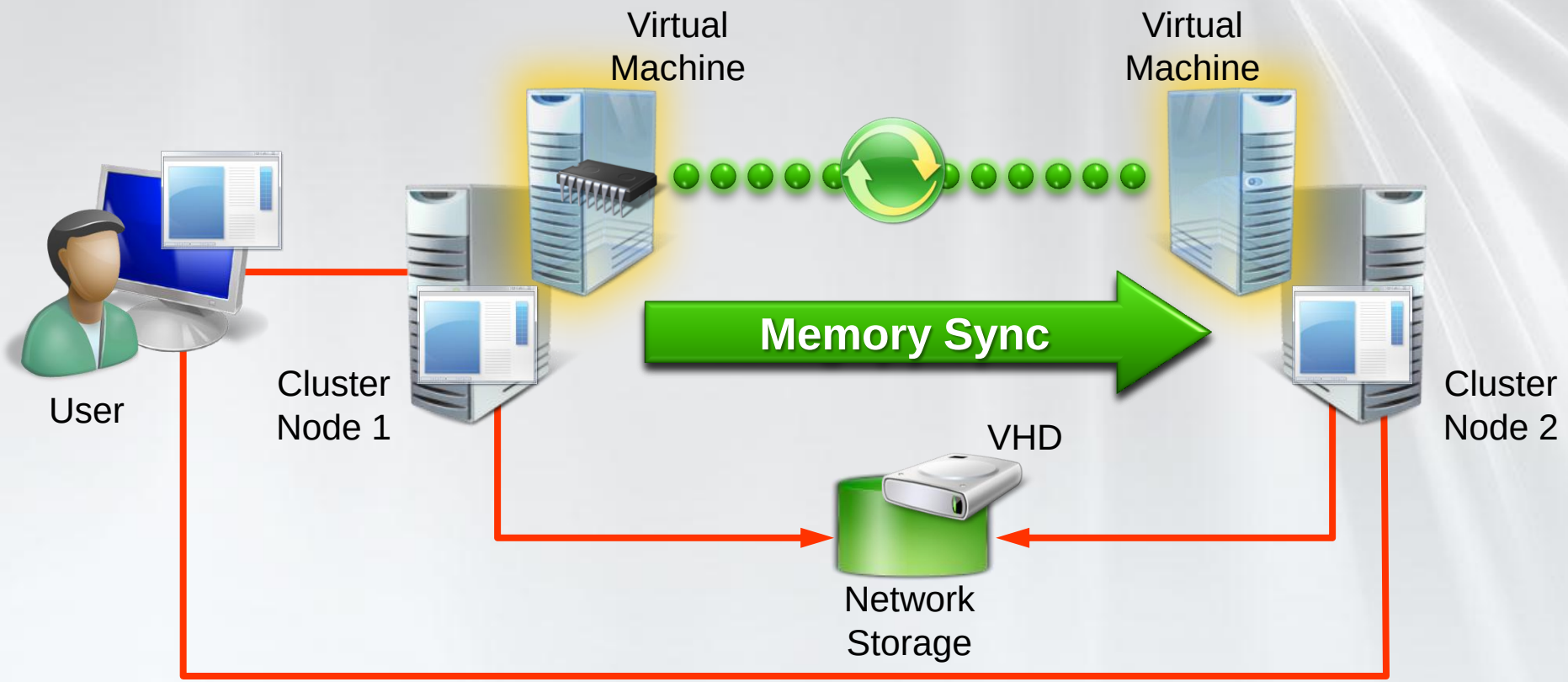
Increasing Availability
Live Migration



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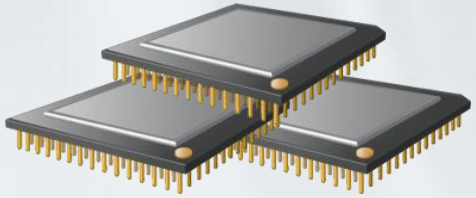
64 Logical Processor Support

- Overview
  - Provides Hyper-V the ability to utilizes up to 64 of the logical processor pool presented to Windows Server 2008 R2
- Benefits
  - Significantly increases host server density
  - Easily provide multiple processers per virtual machine



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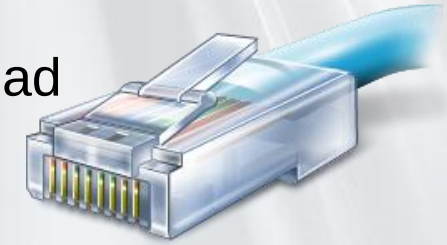
VM Chimney (TCP Offload Support)

- Overview
  - TCP/IP traffic in a VM can be offloaded to a physical NIC on the host computer. (disabled by default)
- Benefits
  - Reduce CPU burden
  - Networking offload to improve performance
  - Live Migration is fully supported with Full TCP Offload
- Cautions:
  - Not all applications benefit from Chimney
    - Works best for long-lived connections with large data transfers
    - Applications with pre-posted buffers
  - Chimney capable hardware supports a fixed number of offloaded connections – shared between all VMs



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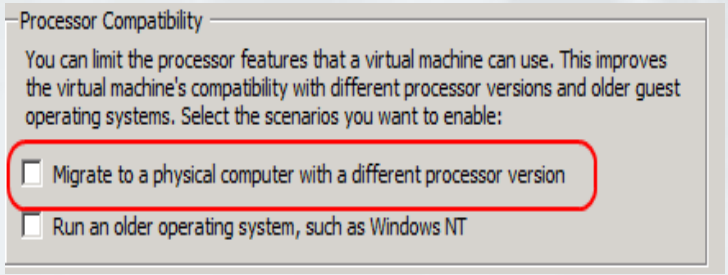
Virtual Machine Queue (VMQ)

- Overview
  - NIC can DMA packets directly into VM memory
    - VM Device buffer gets assigned to one of the queues
    - Avoids packet copies in the VSP
    - Avoids route lookup in the virtual switch (VMQ Queue ID)
  - Allows the NIC to essentially appear as multiple NICs on the physical host (queues)
  - Disabled by default
- Benefits
  - Host no longer has device DMA data in its own buffer resulting in a shorter path length for I/O (performance gain)

Processor Compatibility Mode

- Overview
  - Allows Live Migration across different CPU versions within the same processor family (i.e. Intel-to-Intel and AMD-to-AMD).
    - Does NOT enable cross platform from Intel to AMD or vice versa.
  - Configure compatibility on a per-VM basis.
  - Abstracts the VM down to the lowest common denominator in terms of instruction sets available to the VM.
- Benefits
  - Provides a great deal of migration flexibility within clusters.
  - Enables migration across a broader range of Hyper-V host hardware.
  - No specific hardware requirements needed.



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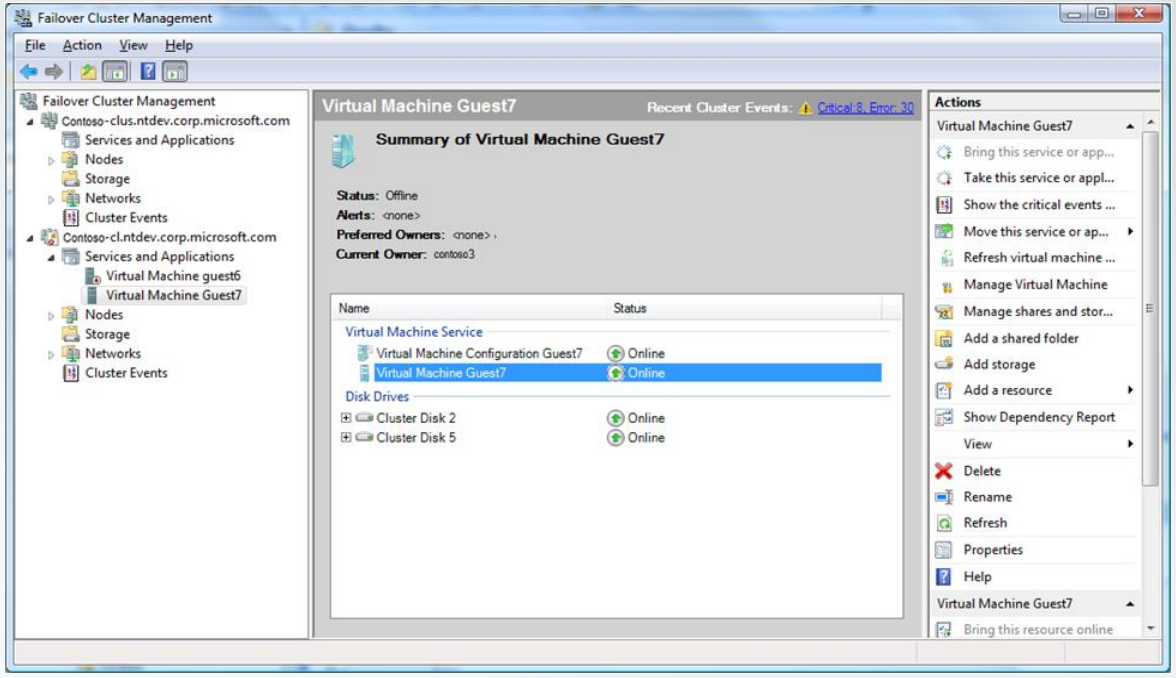
Streamlining Virtualization Management

- Hyper-V Management Console
- PowerShell command-line interface
- System Center Virtual Machine Manager 2008



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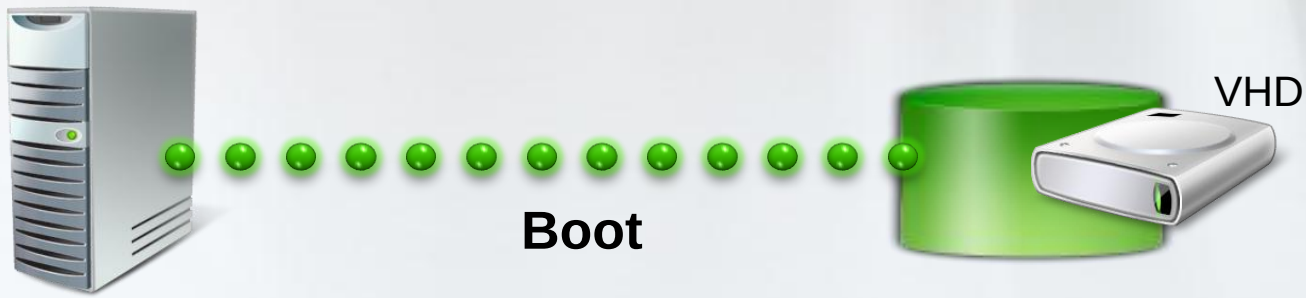
Simplifying Deployment

- Boot from .vhd
  - Enables pre-configuration of virtual and physical computers
  - Reduces the number of managed images
  - Simplifies test deployments



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Remote Desktop Services in R2

RDS and VDI – An Integrated Solution

- Single broker to connect users to sessions or virtual machines, out of the box solution for VDI scenarios with Hyper-V

Improving the User Experience

- Experience rich multimedia, VoIP integration, aero glass remoting, true multi-monitor support

RemoteApp & Desktop Connections

- Centrally hosted applications integrated into start menu, desktop, etc. Can personalize a non-work PC with work applications without installing them locally

Improved Management Tool Set

- Reduce repetitive task with RDS Powershell support, improved application install, connection broker install & profile management

Platform Investments

- Multiple levels of extensibility for custom partner solutions for Remote Desktop Services & VDI based solutions

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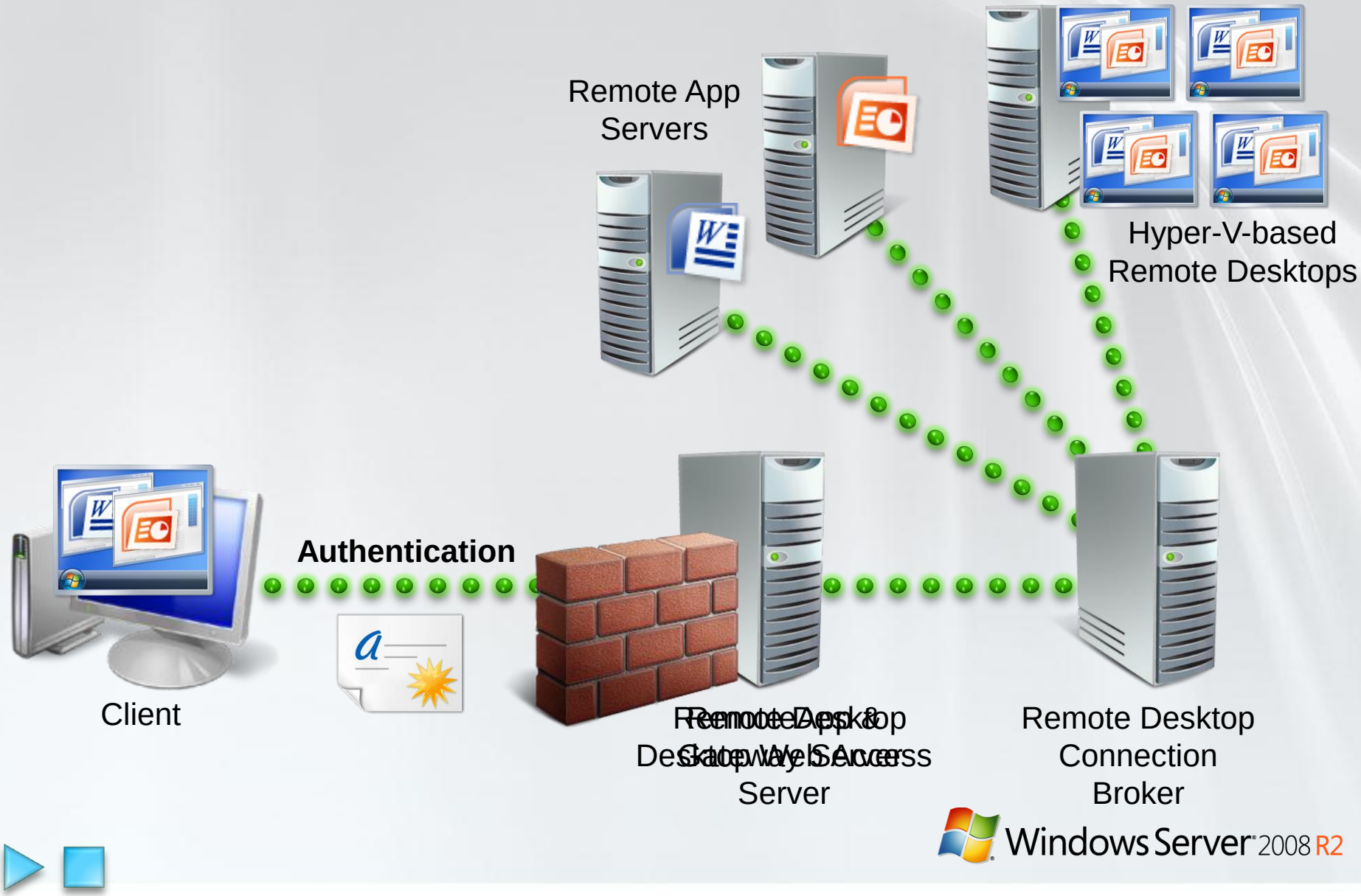
RDS & VDI – An Integrated Solution



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Management

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Overview

- Power management
- Streamlined administration
- Windows PowerShell remote scenarios
- PowerShell graphical interface
- Extending Windows PowerShell scripts
- AD & Identity management
- Best Practice Analyzers

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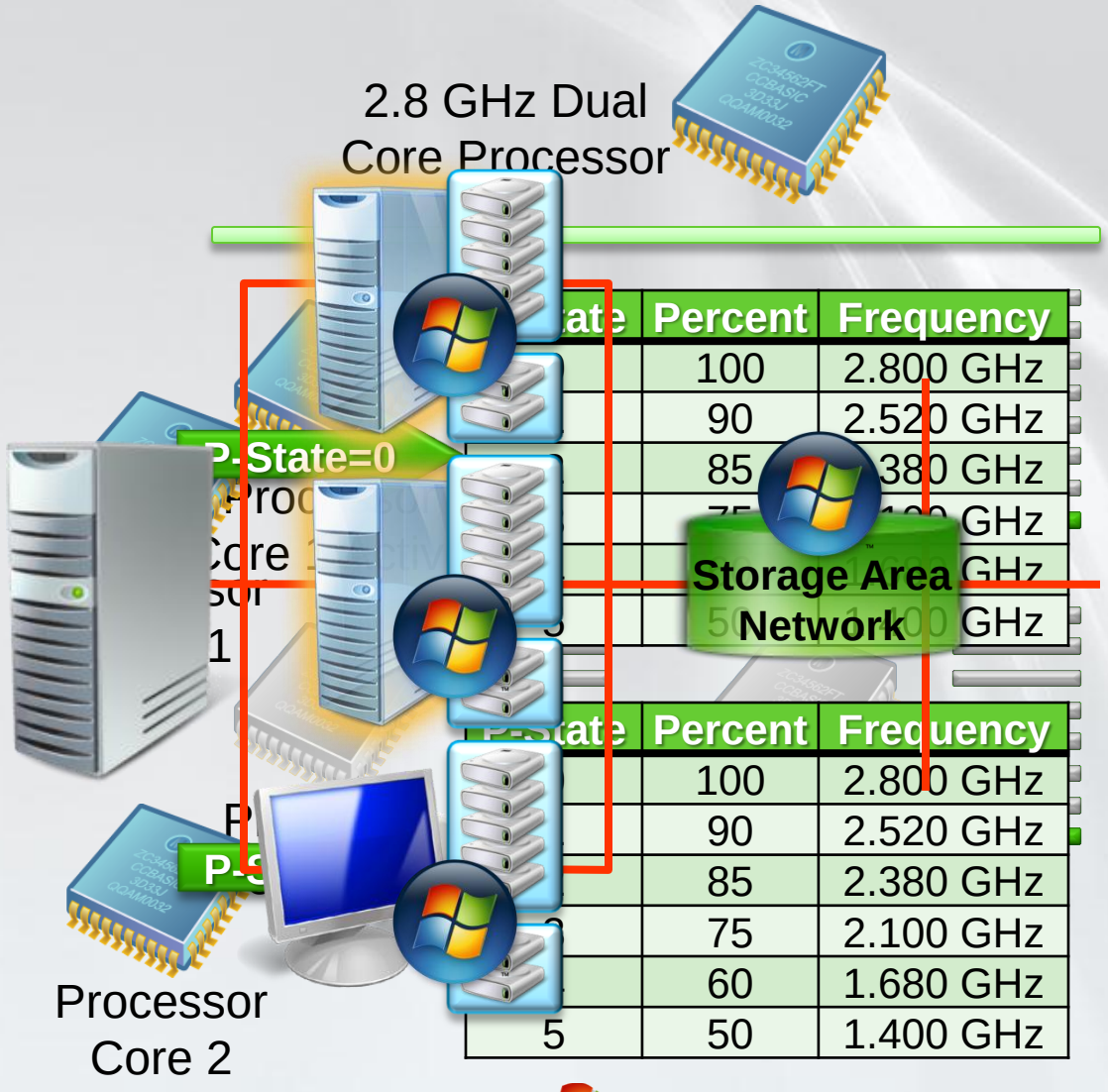
Power Management

- Core Parking
- Adjusting P-states
- Centralized storage



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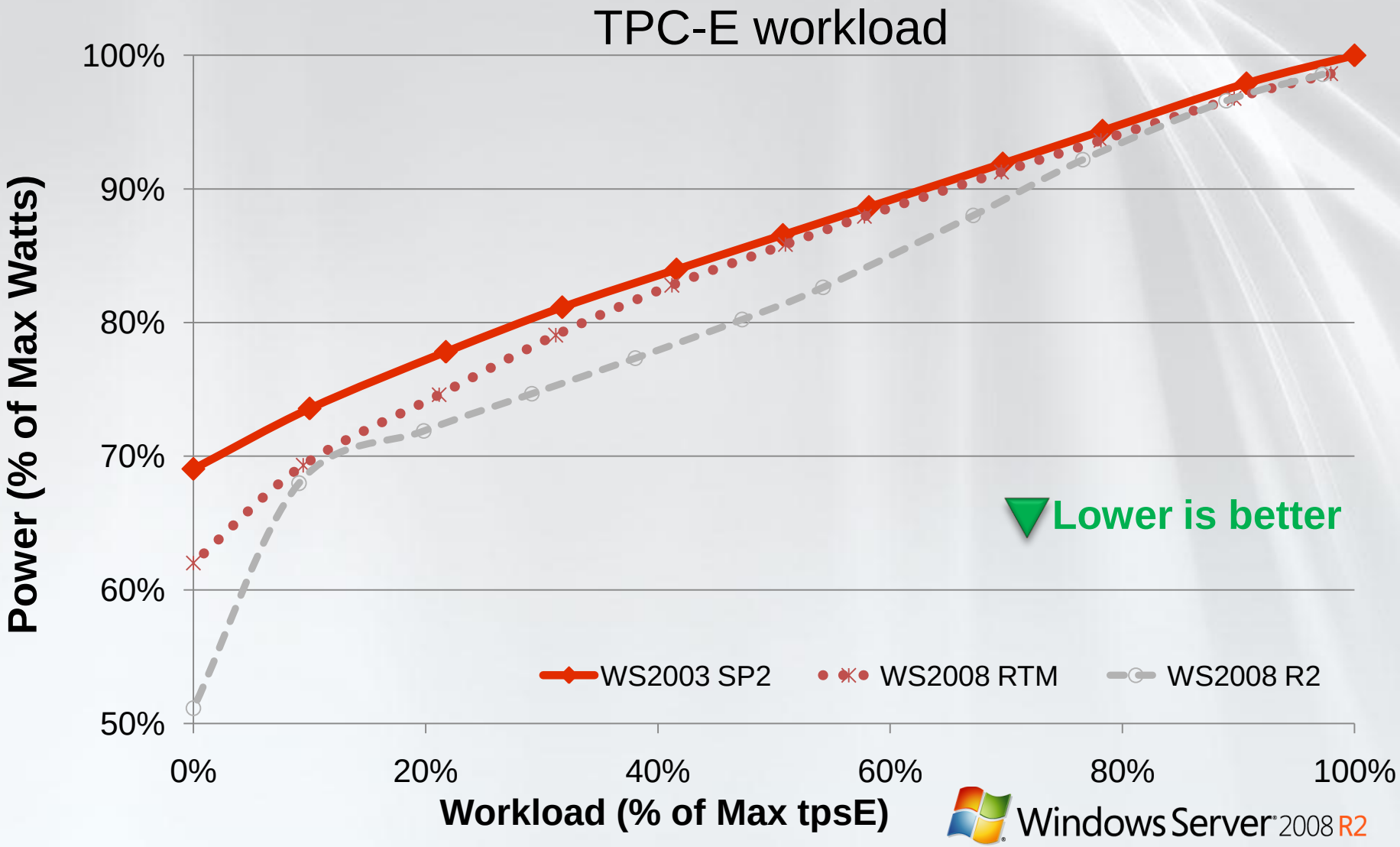
Power Savings

WS03 vs. WS08 RTM vs. R2



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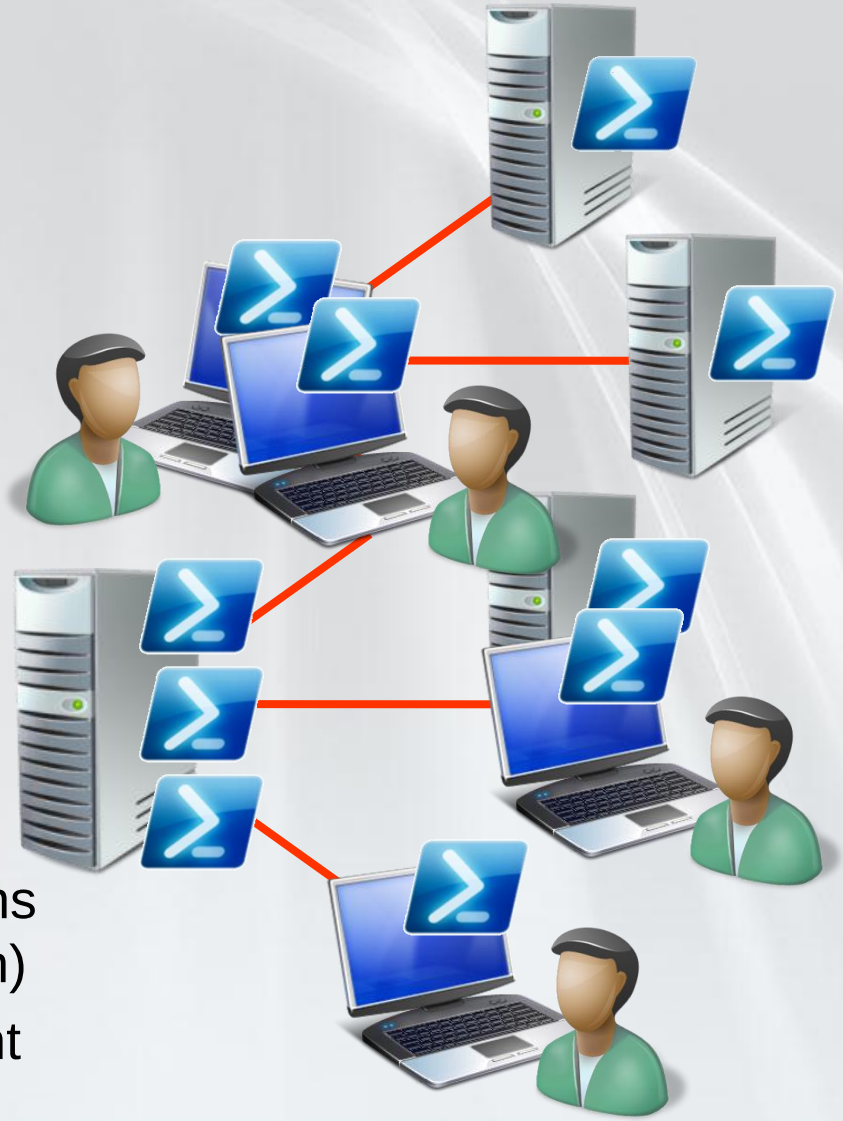
New & Improved Consoles

Management console	Improvements
Server Manager	• Provides support for remote management of computers
Active Directory Administrative Center	• Leverages capabilities provided by PowerShell • Task driven user interface
IIS Manager	• Leverages capabilities provided by PowerShell • Task driven user interface
Hyper-V™	• New VM management consoles • Updated SCVMM support

Remote PowerShell Scenarios

- **Fan-Out (1 to Many)**
  - Send the script
  - Select properties – Allows you to specify which properties to bring back
  - Throttling – limits number of concurrent operations
  - Async support – Runs the command in background on client
- **Fan-In (Many to 1)**
  - Hosting model
  - Share static data between sessions (eg: cmdlet metadata from snap-in)
  - Send progress information to client (eg: Connecting, Connected)



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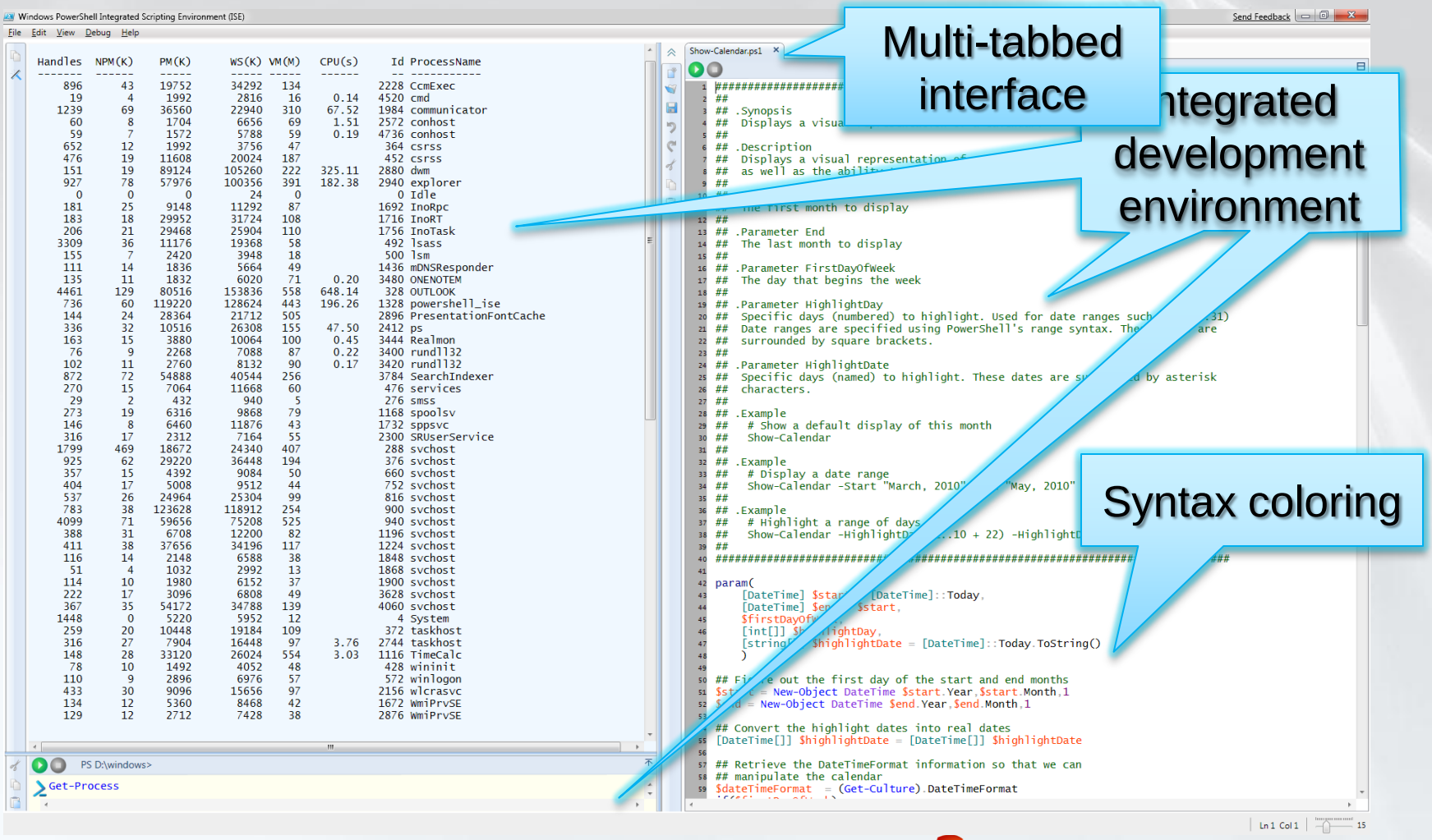
The PowerShell Graphical Interfaces

Out-GridView

Graphical PowerShell



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Extending PowerShell Scripts

- Advanced functions
- Call .NET APIs
- Improved debugging
- Event log subscription
- Write cmdlets in PowerShell script
- Script translation
- New cmdlets
- Community site
  - Powershellcommunity.org

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AD & Identity Management

- Active Directory server role enhancements
  - New forest functional level
  - Windows PowerShell management
  - Microsoft System Center Management Pack
- Active Directory Administrative Center
  - Recycle Bin
  - Offline domain join
  - Managed service accounts
- Active Directory Federated Services update
  - Authentication assurance

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Configuration Assurance

- Integrated Best Practice Analyzer
  - Validates configuration information
  - Enhances infrastructure reliability
  - Improves compliance with service level agreements

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Scalability and Reliability

Solid Foundation for Enterprise Workloads

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Overview

- Performance & Scalability
- File Classification Infrastructure
- Failover Clustering
- Storage Performance
- Backup & Recovery

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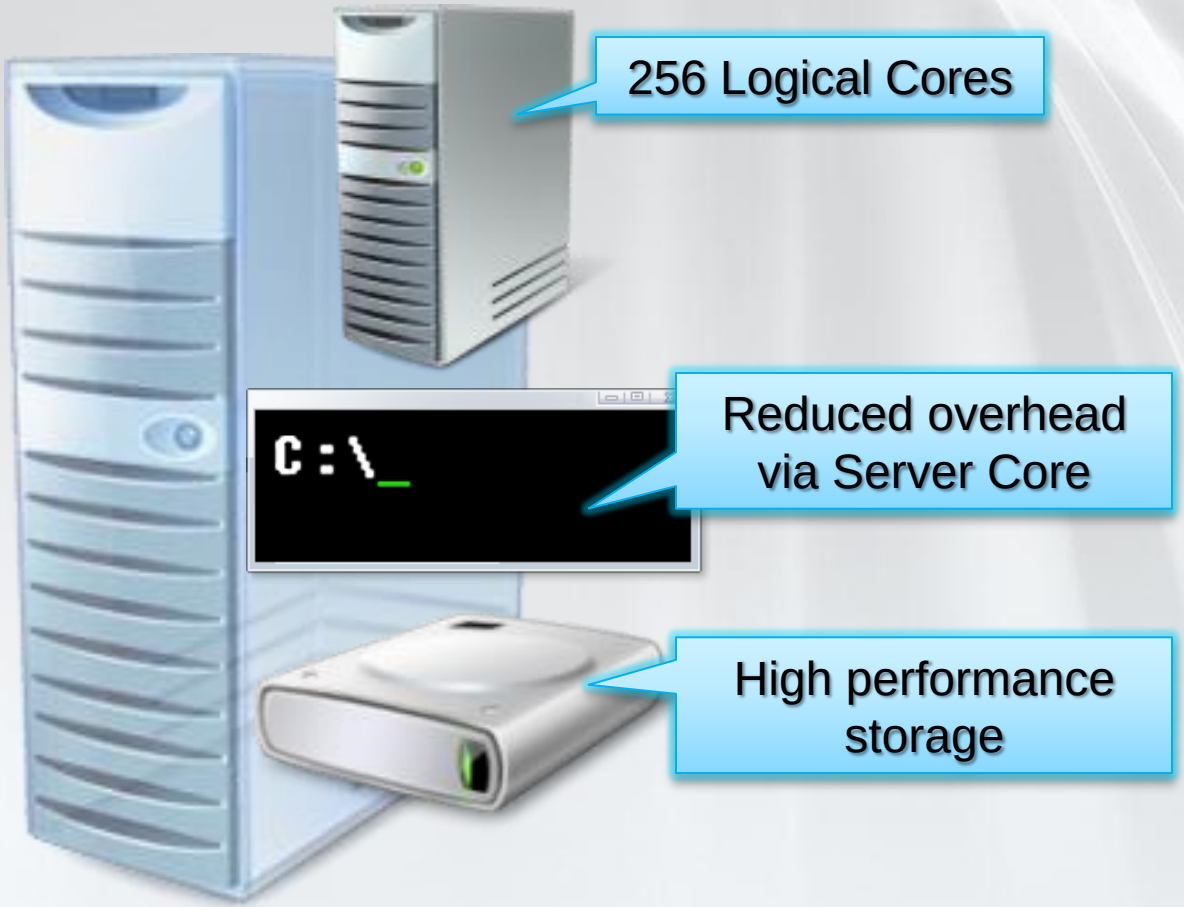
Performance and Scalability



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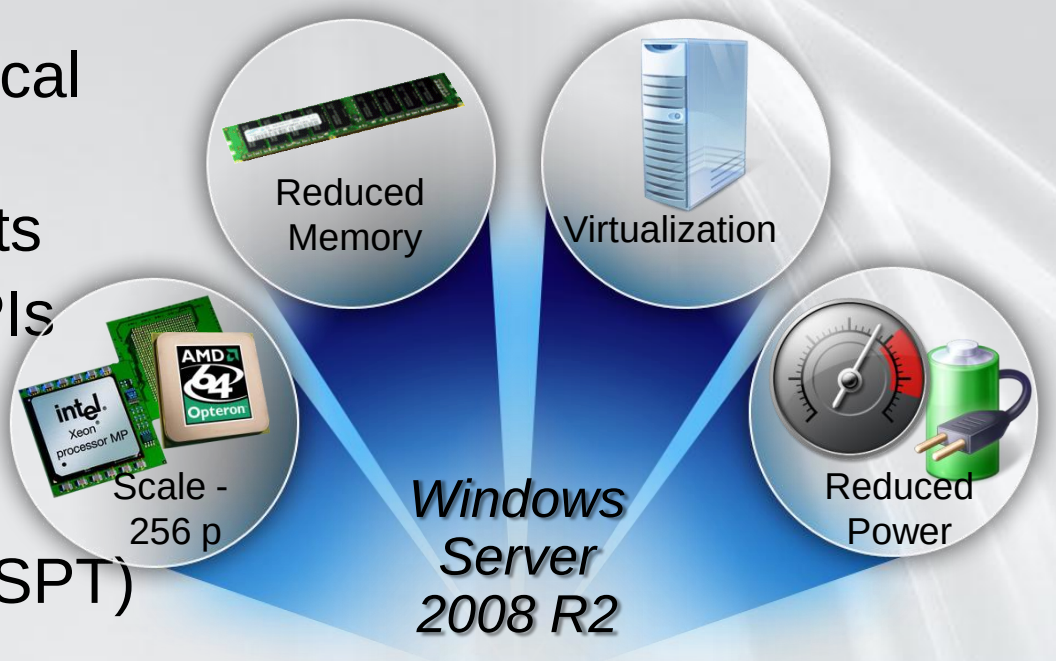
Performance & Scalability

- CPUs
  - Support for 256 Logical Processors (LP)
  - NUMA enhancements
  - System Topology APIs
- Virtualization
  - Live Migration
  - SLAT support (NPT/SPT)
  - NUMA scheduling improvements
- Power
  - Improved Processor Power Management Policies & additional optimization of Windows Server component power usage



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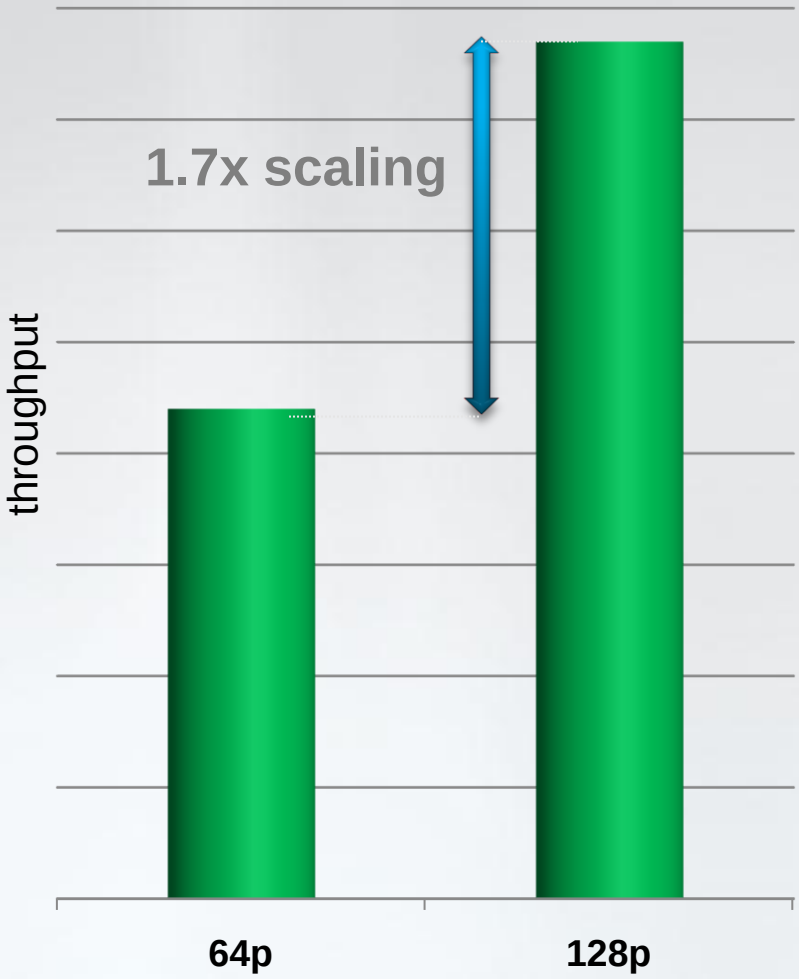
Performance & Scalability
Continued…

- Memory Footprint Reduction
  - General OS memory reductions
  - Reductions in non-paged memory
  - Trigger start of drivers and services

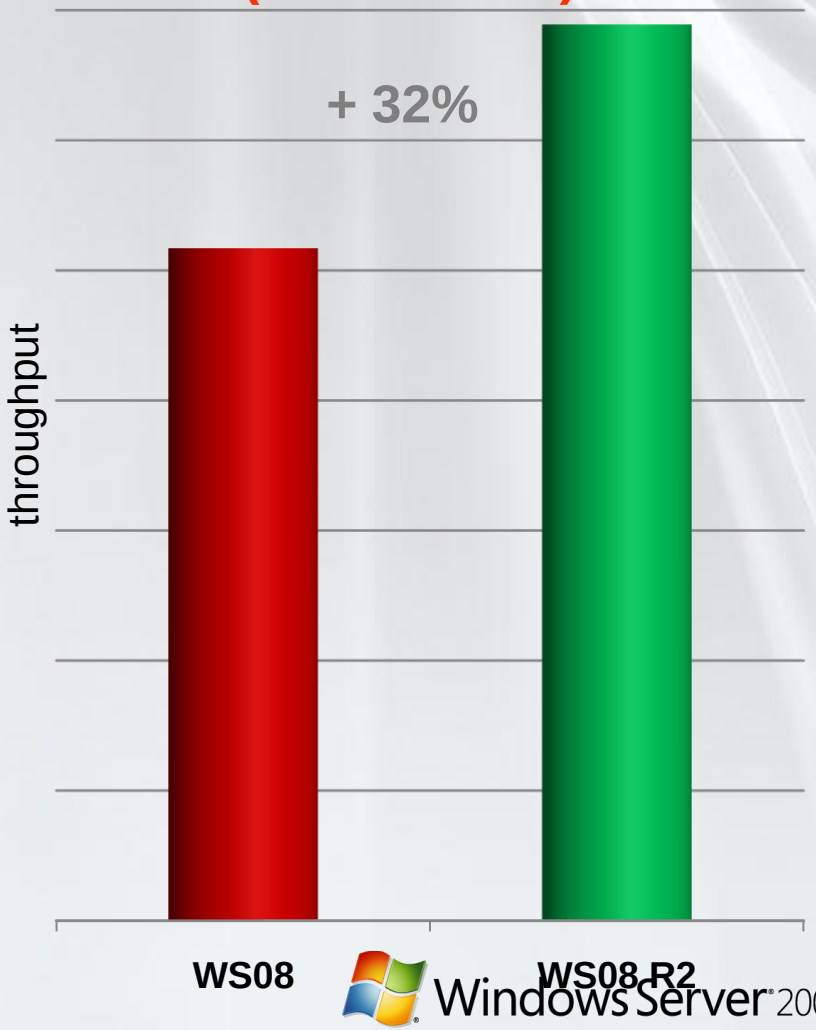
- Wide Area Network
  - File copy improvements (per-file round trips reduced
    - Downloads: 5 (old) to 3 (new)
    - Uploads: 4 (old) to 3 (new)

Scaling Improvements

OLTP SQL Server Workload



FSCT File Server Workload (16 core server)



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Document Management in the Box

- Market Drivers
- Policy Definition
- File Classification Infrastructure
- The FCI Ecosystem

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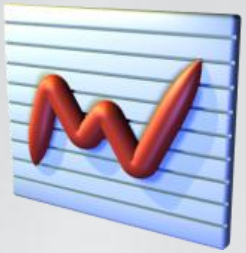
Customer challenges - cost and risk

Storage growth



Storage cost

Compliance

Security and Information leakage

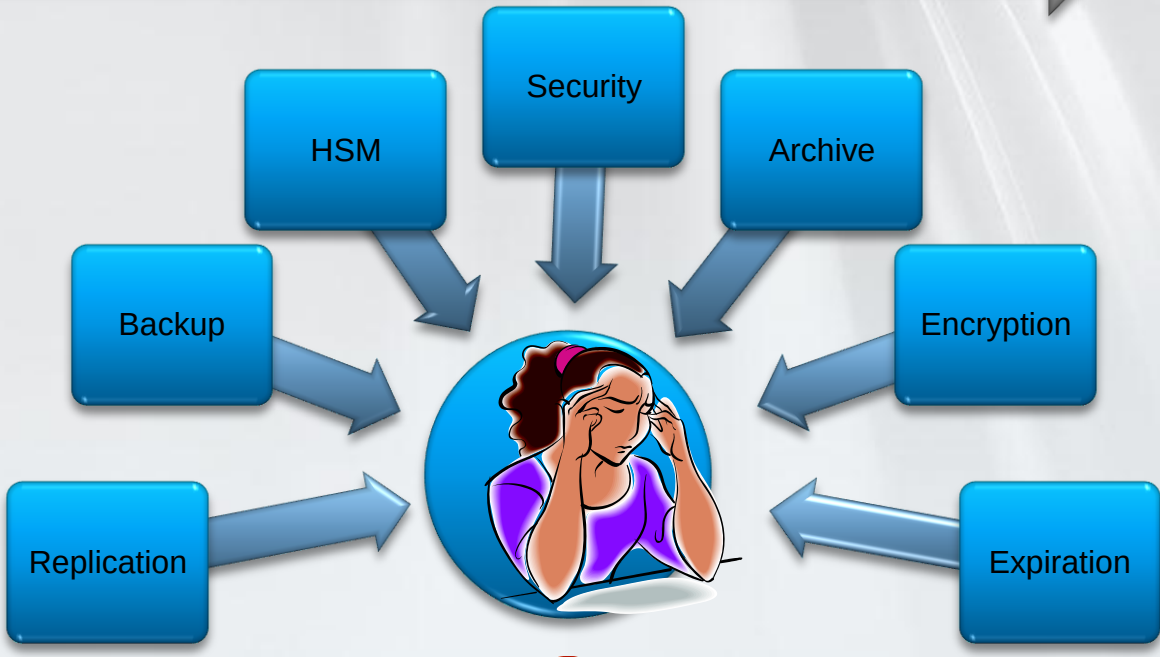
Increasing data management needs / many data management products

Cost

- File server storage growth - 51% CAGR CY08-CY12 (IDC)
- Storage cost decreasing in only 30% (IDC)
- Flat IT storage budgets
- Stale data - ~60%

Risk

- New and changing regulations (SOX, HIPPA, GLBA …)
- eDiscovery fines: US companies >$1B yearly (Fulbright & Jaworski LLP 11/06)
- 246,091,423 - Total number of records containing sensitive personal information involved in security breaches in the U.S. since January 2005
- $90 to $305 per record (Forrester: in "Calculating the Cost of a Security Breach")



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Manage data based on business value

Step 1:

Classify data

+

Step 2:

Apply policy according to classification

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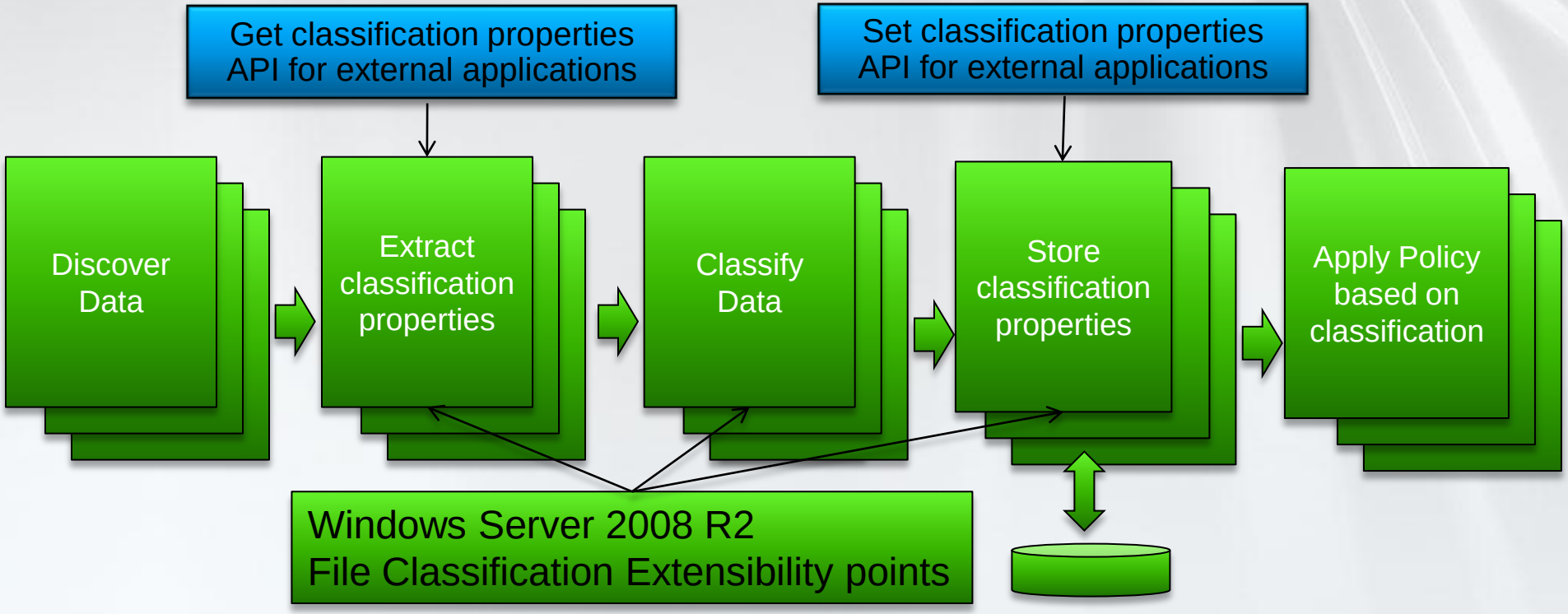
File Classification Infrastructure

- Extensible infrastructure-Partner ecosystem
- Inbox end to end scenarios
- Integration with SharePoint



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Componentization

- The OS as Components
  - Install only what you need
- Example: Server Core, Branch RoDC
  - Server = Kernel, TCP/IP & Security
  - Role = Active Directory Services
  - Features = BitLocker

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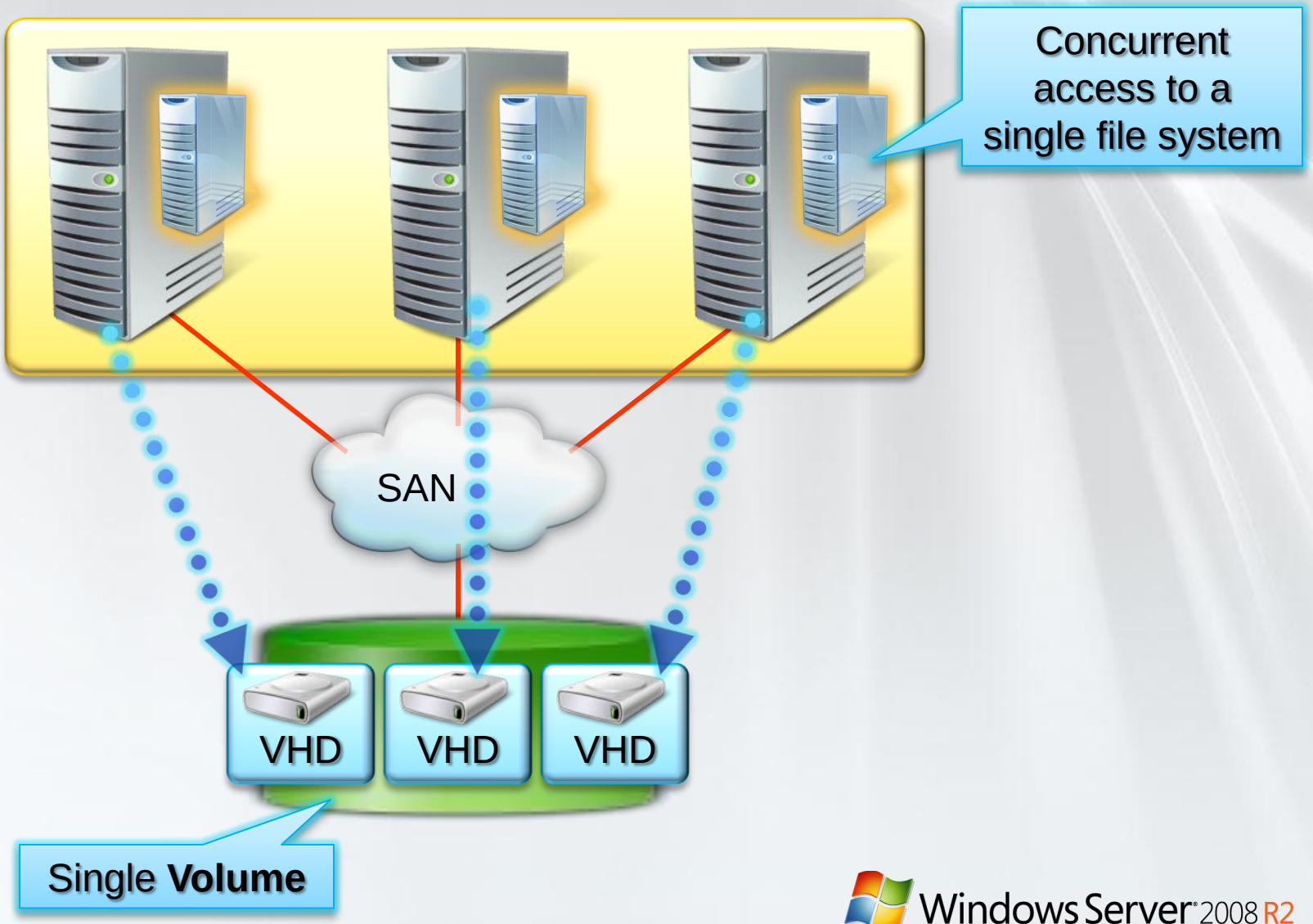
Cluster Shared Volumes



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Improvements in Recovery and Backup

- Windows Server Backup
- Recovering disk volumes using LUN Resynchronization
- Integration with System Center Data Protection Manager 2007

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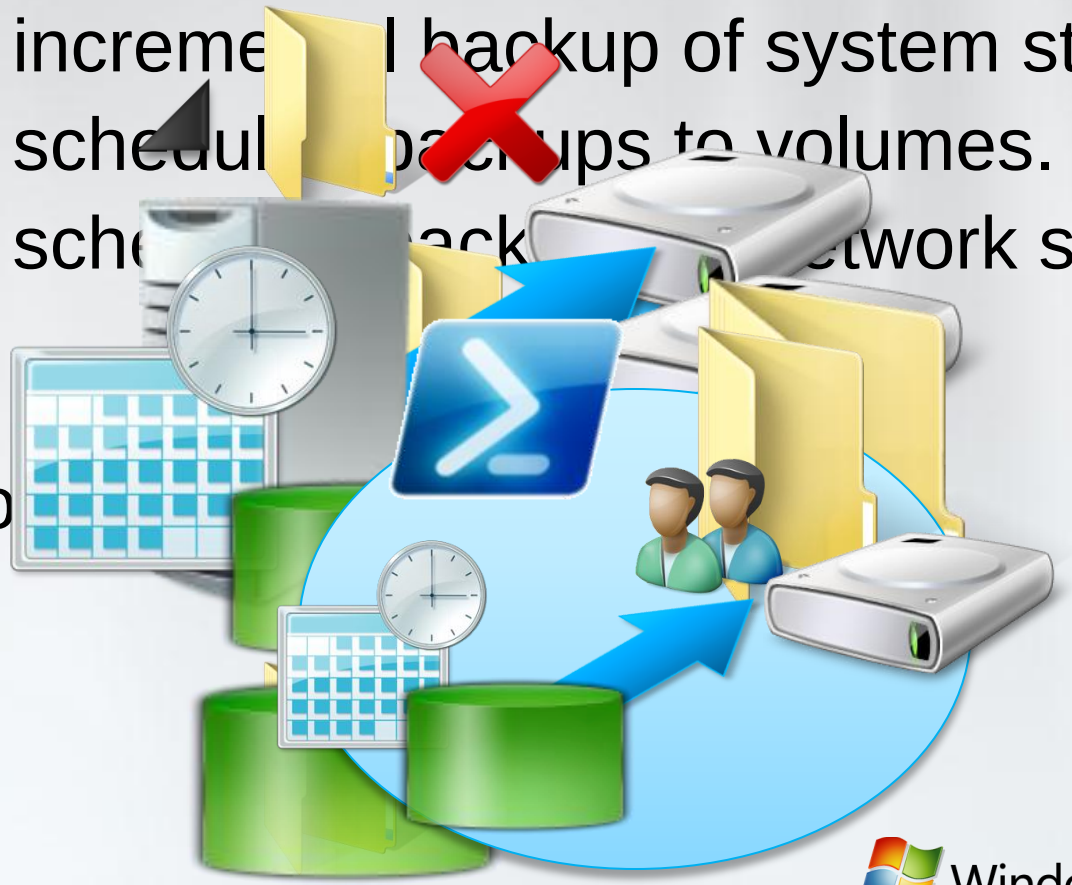
Improvements in Windows Server Backup

- Backup specific files and folders.
- Perform increme l backup of system state.
- Perform schedul ups to volumes.
- Perform sche ack twork shared folders.
- Manage using Po



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Improvements in Full Volume Recovery

- Comparison of LUN Resynchronization and Volume Shadow Copy Service
- Comparison of LUN Resynchronization and LUN Swap
- LUN Resynchronization benefits
- Recovery using LUN Resynchronization

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New Security for DNS Services

Windows Server 2008 R2's new DNSsec feature:

- Allows DNS Client to verify authenticity of DNS records
- Create protected DNS zones in DNS Server
- DNS Client can be Windows 7 or Windows Server 2008 R2
- DNS Server must be Windows Server 2008 R2

Windows Server 2008 R2

LUN Resynchronization and Volume Shadow Copy Service

LUN Resynchronization	Traditional Volume Shadow Copy Service
Recovers entire LUN (which may contain multiple volumes).	Recovers only a volume.
Performed by storage array hardware.	Performed by server computer
Typically takes less time than restoring by using traditional Volume Shadow Copy Service.	Typically takes more time than restoring by using LUN resynchronization.

LUN Resynchronization and LUN Swap

LUN Resynchronization	LUN Swap
Source (shadow copy) LUN remains unmodified after the resynchronization completes.	Source (shadow copy) LUN becomes the active LUN and is modified.
Performed by storage array hardware. Destination LUN contains the same information as the source LUN, but also any information written during the resynchronization.	Contains only the information on the source LUN.
Source LUN can be used for recovery again.	Must create another shadow copy to perform recovery.
Requires the destination LUN exists and is usable.	Destination LUN does not have to exist or can be unusable.
Source LUN can exist on slower, less expensive storage.	Source LUN must have the same performance as the production LUN.

Solid Foundation
for Enterprise
Workloads
Better
Together
Windows Server 2008 R2

Oveview

- DirectAccess™
- BranchCache™
- Read-Only DFS for branch security
- Serving Up the Virtual Desktop
- Protection for Mobile Data

DirectAccess™

- Remote access is now ubiquitous
- Comprehensive anywhere access for Windows 7 and Windows Server 2008 R2
  - Seamless, always-on, secure connectivity; no separate client software required
  - Utilizes networking technologies already in Windows Server 2008
  - No separate action required to connect to corpnet while remote. Corpnet is simply there.
  - Leverages policy-based network access
  - Enables desktop management regardless of client location.

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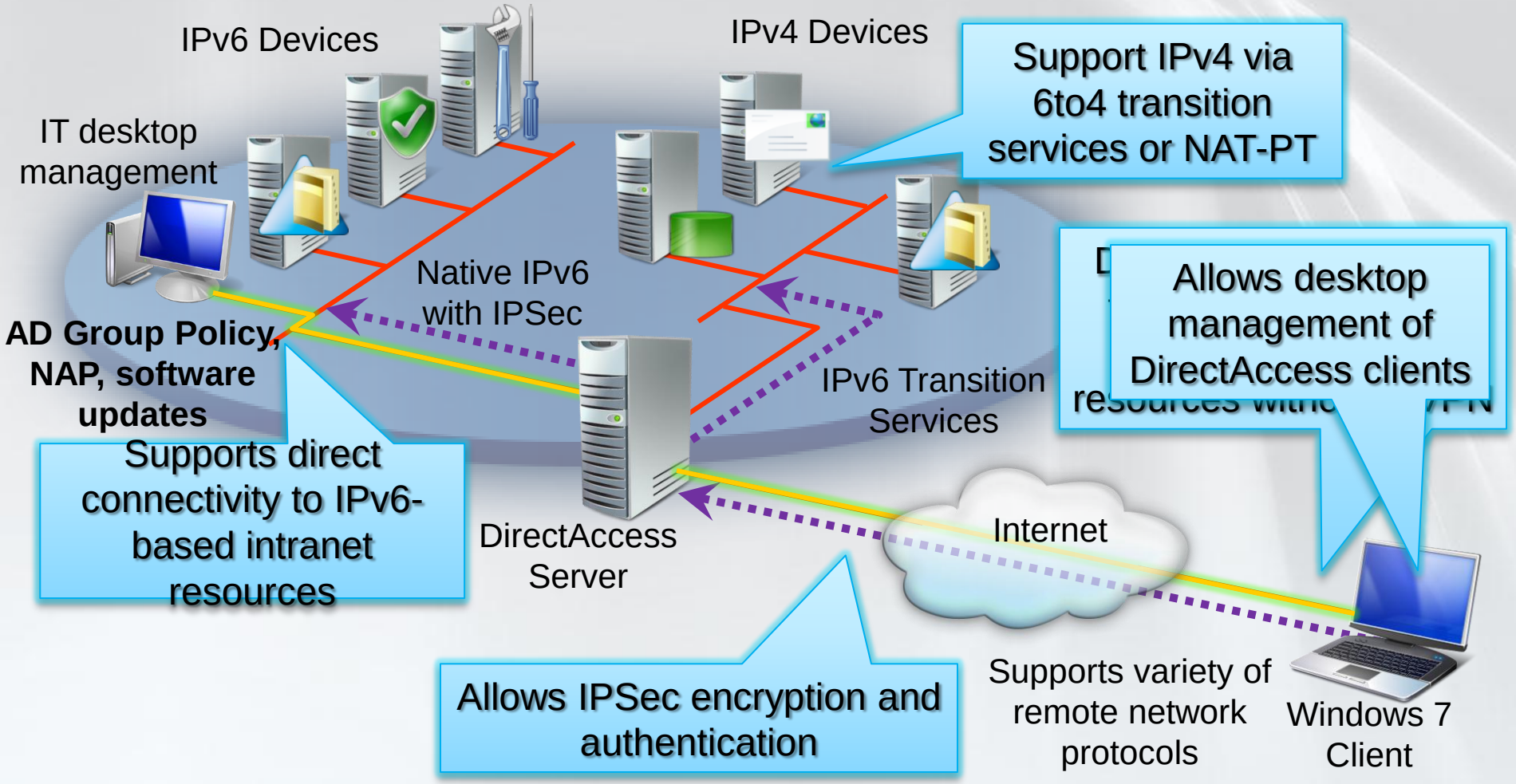
DirectAccess



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BranchCache™

- Reduces Wide Area Network (WAN) link utilization
- Completely transparent to the user
- Supports end-to-end encryption between clients and servers
- HTTP, SMB and BITS protocols are optimized
- Two deployment models:
  - Distributed mode
  - Hosted caching

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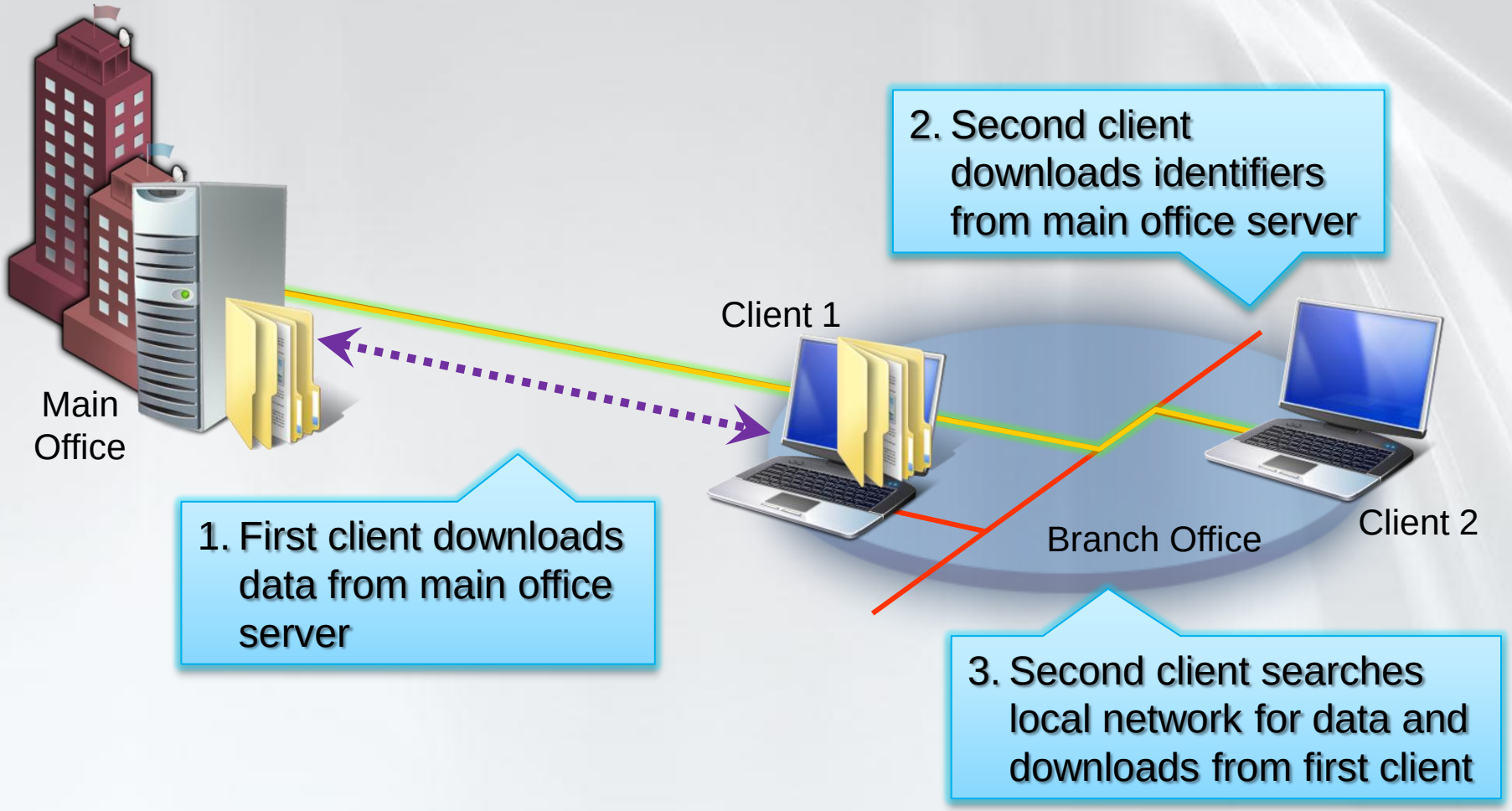
Improving Branch Performance
Distributed Mode



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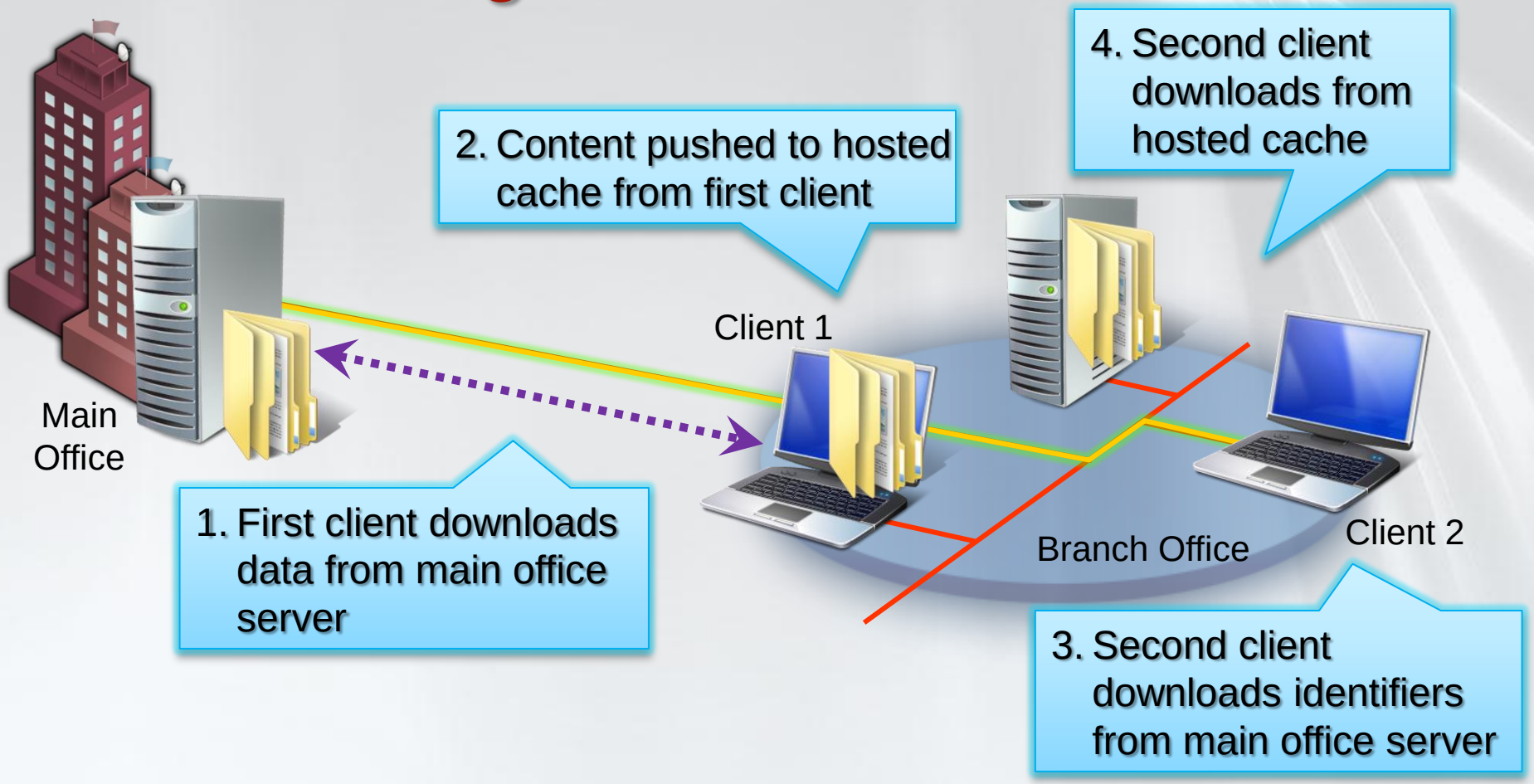
Improving Branch Performance
Hosted Caching



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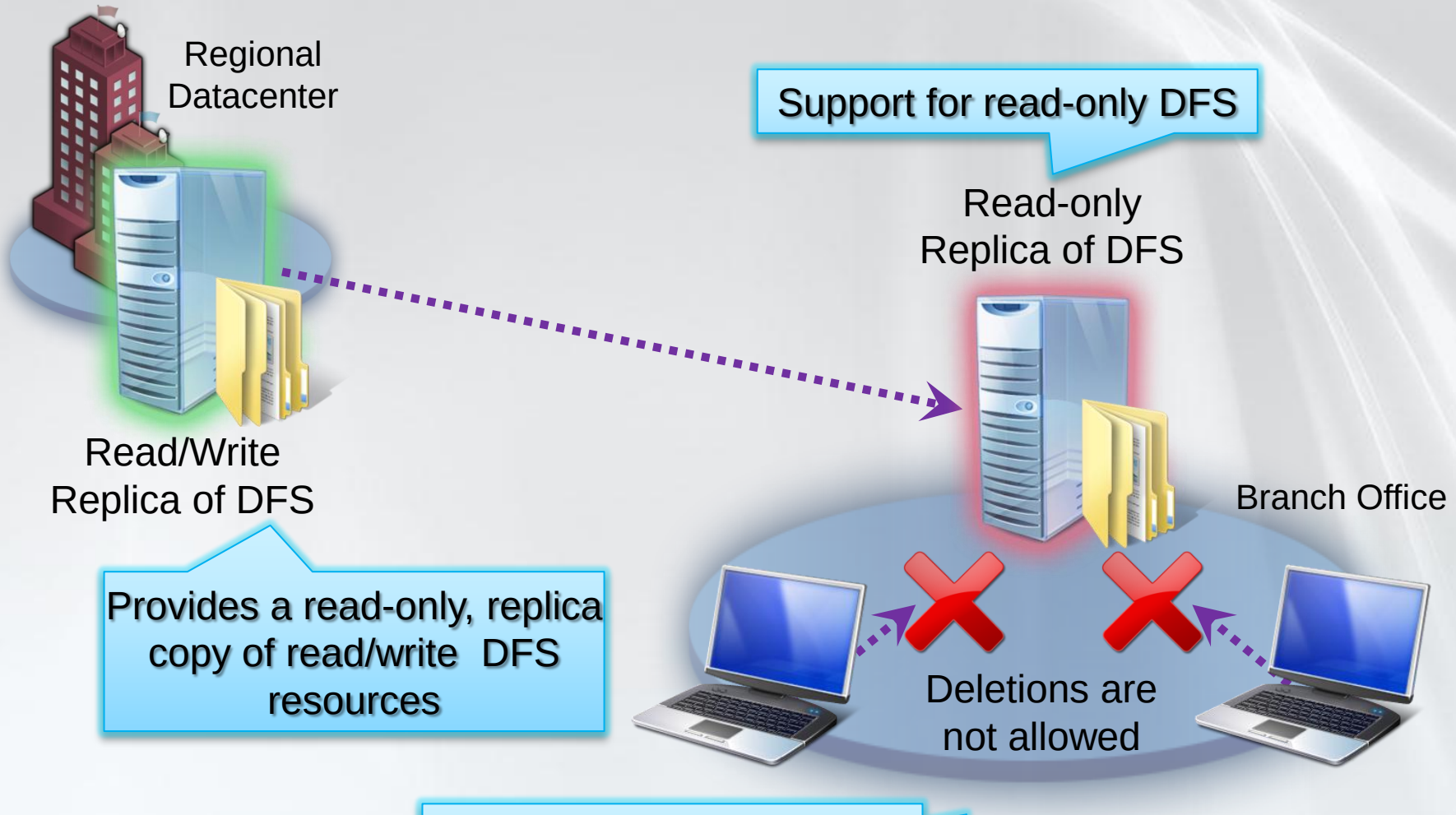
Improving Branch Office Security



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Protection for Mobile Data

- Encrypt data on removable drives
- Provided by BitLocker to Go Drive Encryption
- Store encryption keys in Windows Server 2008 R2 Active Directory

Windows Server 2008 R2
Active Directory

Windows Server 2008 R2

Web
Windows Server 2008 R2

Overview

- **Introducing** IIS 7.5
- **Expanding** IIS Manager
- **Easier** Troubleshooting
- **IIS 7.5** FTP Services
- **Extensible** architecture

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Internet Information Services

More Reliable	More Control	More Secure	More Choice
Increased availability through dynamic request handling, improved caching and powerful troubleshooting tools	**Simplified, distributed management through set of customizable administrative tools with easier application deployment for developers**	**Improved security and server protection through reduced server footprint and enhanced publishing and request filtering capabilities**	**Flexible platform with enhanced support for multiple application development platforms and media content delivery**
• Scalable Web Infrastructure • Dynamic Caching and Compression • Powerful Diagnostic Tools	• Centralized Web Management • Delegated Remote Management • Easy Application and Server Deployment	• Enhanced Server Protection • Secure Content Publishing • Improved Access Protection	• Built-in ASP.NET and PHP Support • Modular & Extensible Web Server • Integrated Media Platform

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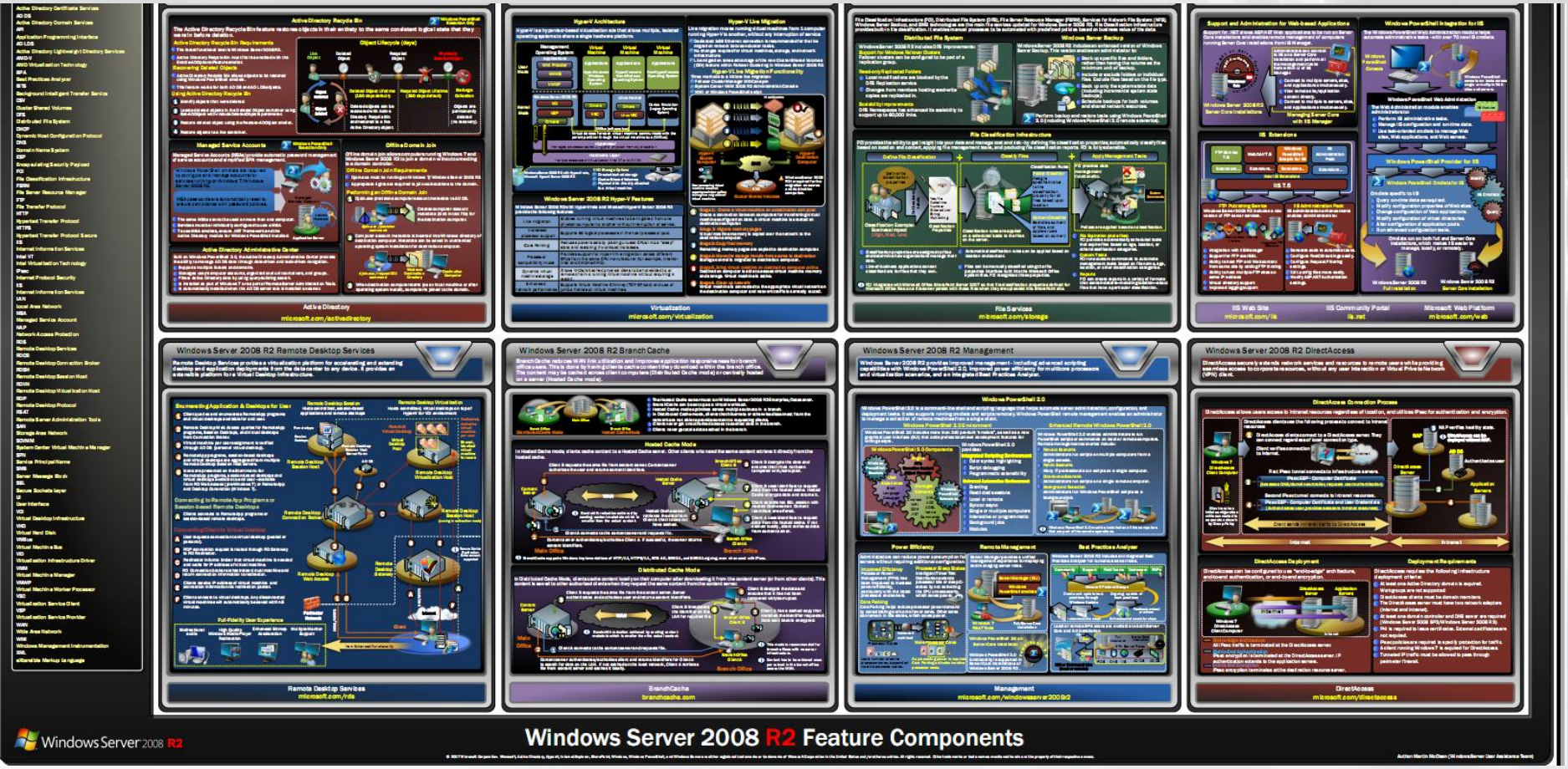
New Management Tools

- Enhanced IIS Manager
  - Configuration Editor
  - IIS Manager UI Extensions
  - Request Filtering
- Windows PowerShell Provider
- .NET on Server Core


Windows Server 2008 R2 Feature Components
Windows Server 2008 R2
Windows Server 2008 R2

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