Deploying VDI with Windows Server 2012 Fast, Easy, and Fun!

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VDI FAIL

Seriously how the hell do you manage that?


Windows
Server 8
high availability
& management
virtualization
& cloud
app platform
identity
& secure access


Windows Server 8 Beta
L 16GB

VDI

RDS

RemoteFX

V

WT

MED-V

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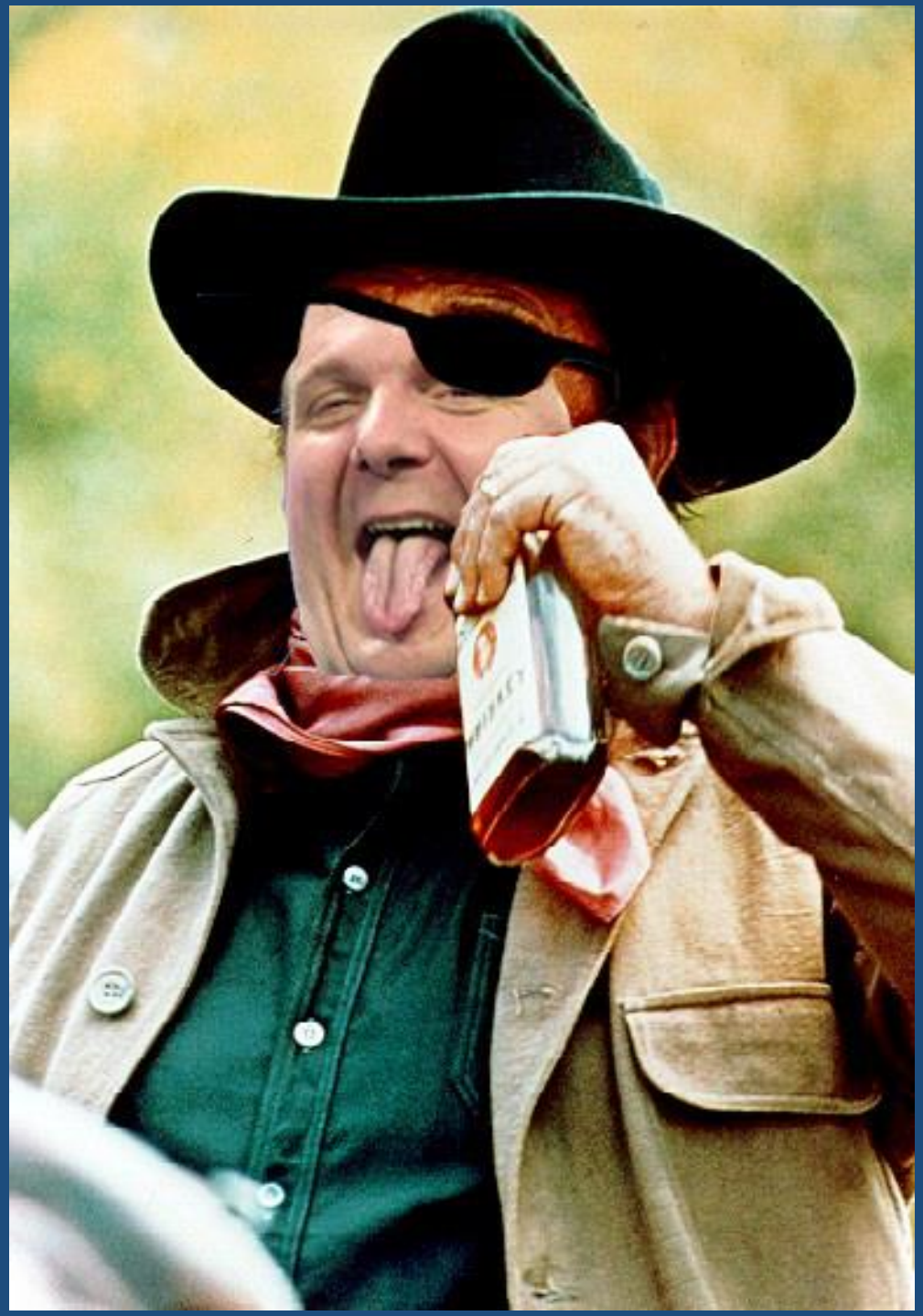
Microsoft
CITRIX
QUEST
SOFTWARE
DELL


vmware



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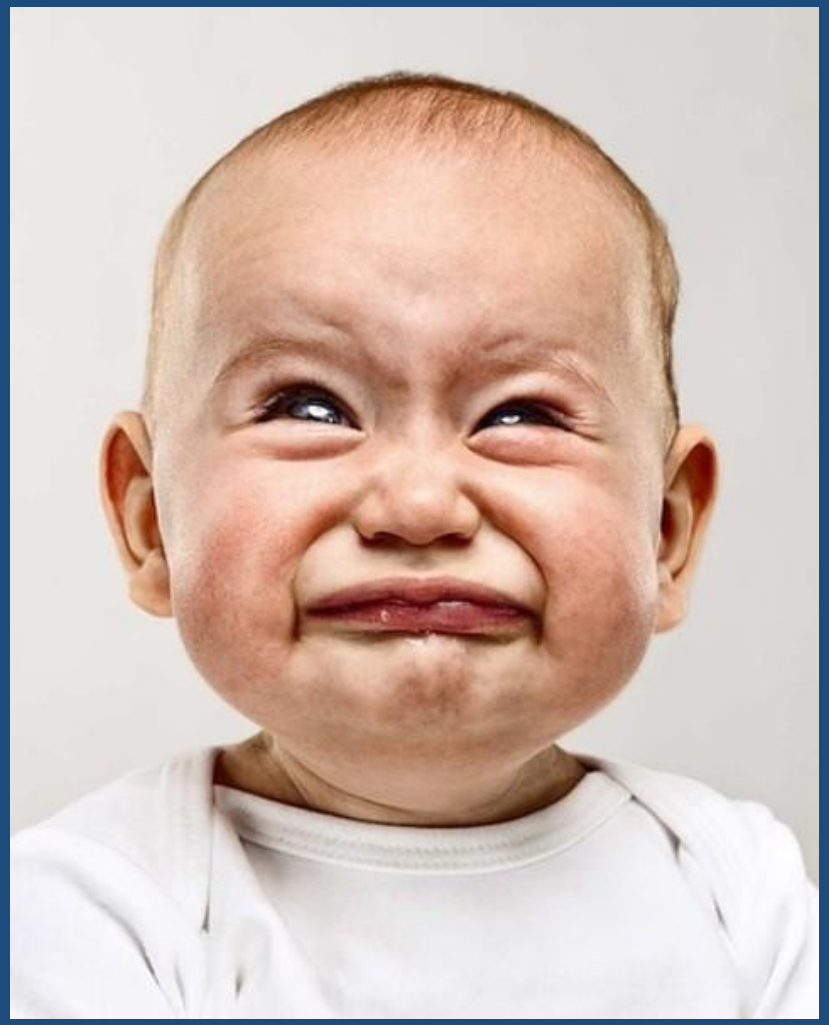
And Then There's Licensing…



VDA

CDL

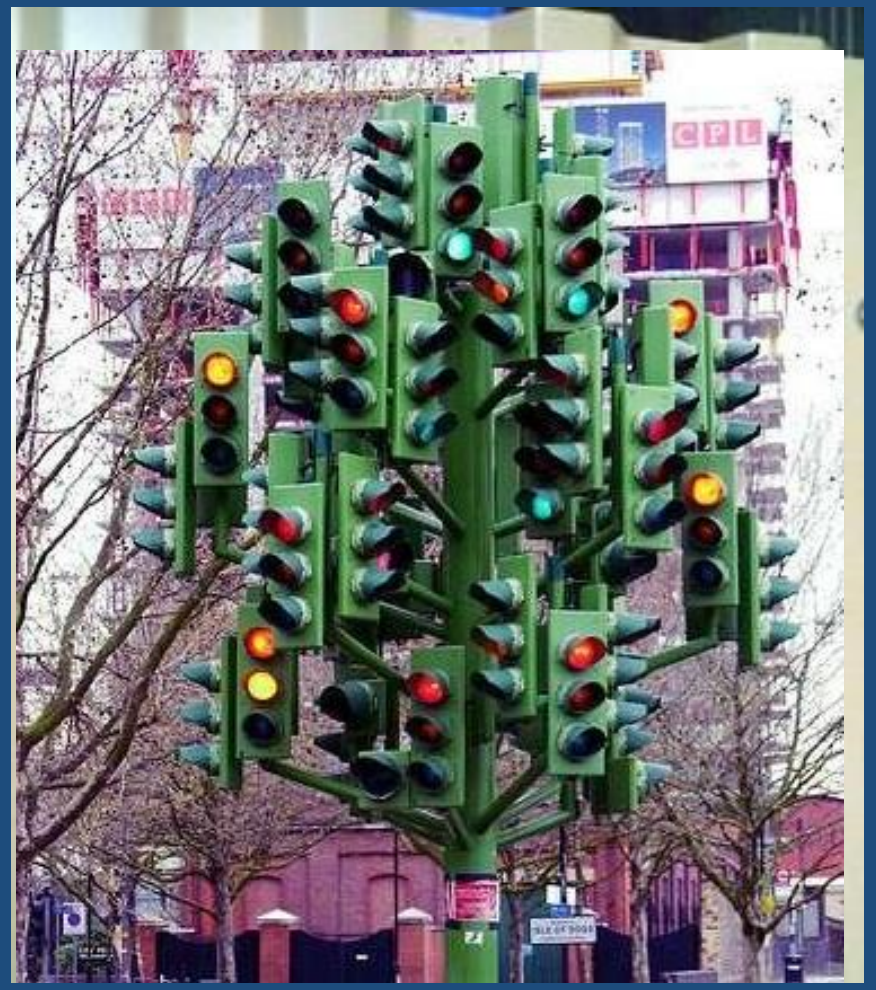
PDL

SPLA

PNUL

PUL

SA



"Insane and completely unnecessary"

More Cool Stuff for Hyper-V

- Storage Live Migration… finally.
- VHDX
- Networking
  - Support for FC Adapters in Guests
  - SR-IOV (Single-root I/O Virtualization) Direct access to the physical network adapter
  - PVLAN's
  - Router Guard, Trunking, Data Center Bridging, and lots more
- Supports AD Servers… Umm, OK.

More Cool Stuff for Hyper-V

- Automated Node Draining
- Cluster Aware Everything**
- VHDX
- Replica's supporting clustering
- Live Merge of Snapshots and VHD's
- SCVMM no longer required for provisioning
- Pooled desktops no longer hold bad state (stateless pooling & revert)
- Client Hyper-V
- And on, and on

Switch to MS deck

Virtualization in Windows Server 2012




Hyper-V before Windows Server 2012

Hyper-V history

- Introduced with Windows Server 2008
- New version in Windows Server 2008 R2
- Update with Windows Server 2008 R2 SP1

Two manifestations of Hyper-V

- Hypervisor-based virtualization feature of Windows Server 2008 R2
- Microsoft Hyper-V Server, a free standalone product containing only:
  - Windows Hypervisor
  - Windows Server driver model
  - Virtualization components

Windows Server 2008 R2 improvements to Hyper-V

- Increased availability for moving virtual machines
- Increased availability for adding and removing virtual machine storage
- Improved management of virtual data centers
- Simplified method for physical and virtual computer deployments
- Hyper-V processor compatibility mode for live migration
- Improved virtual networking performance
- Improved virtual machine memory management

A More Complete Virtualization Platform

Hyper-V in Windows Server 2012

- More secure multi-tenancy
- Flexible infrastructure, when and where you need it
- Scale, performance, and density
- High availability

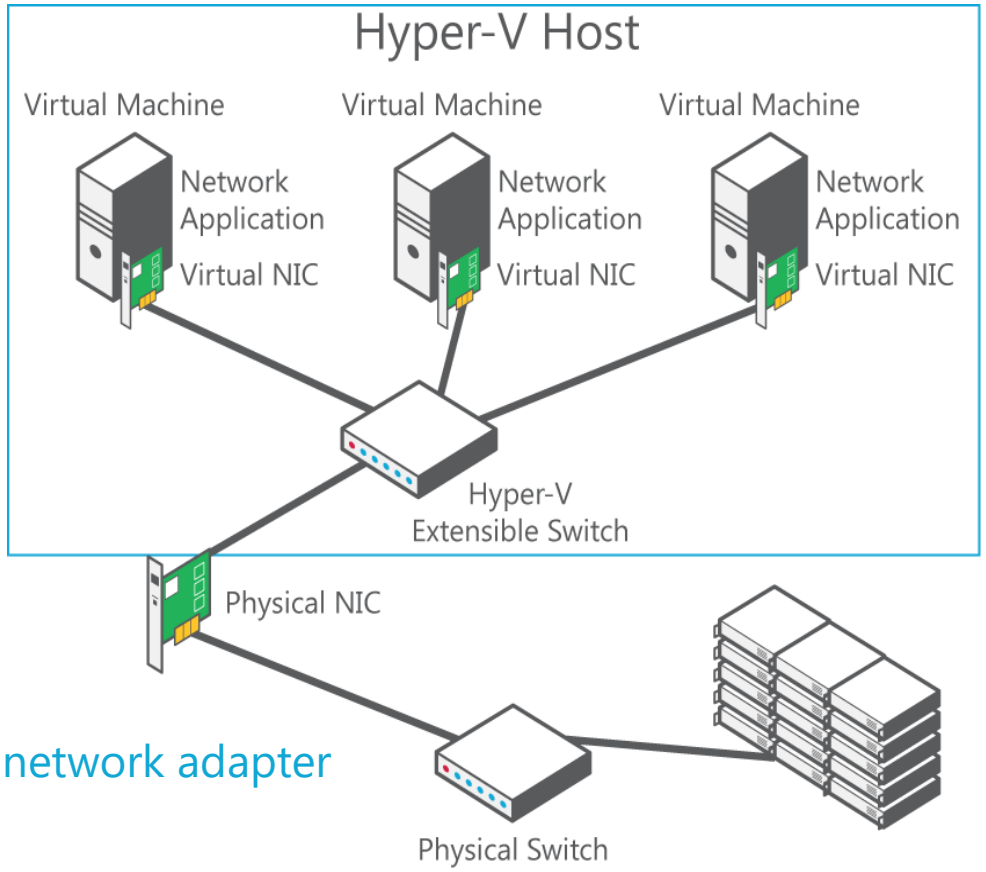
More Secure Multi-tenancy

Multi-tenant security and isolation

Extending the Hyper-V Extensible Switch for new capabilities

Helps ensure that each customer's data is completely separate and secure from other customers' information.

Multi-tenant Security and Isolation



NIC = network adapter

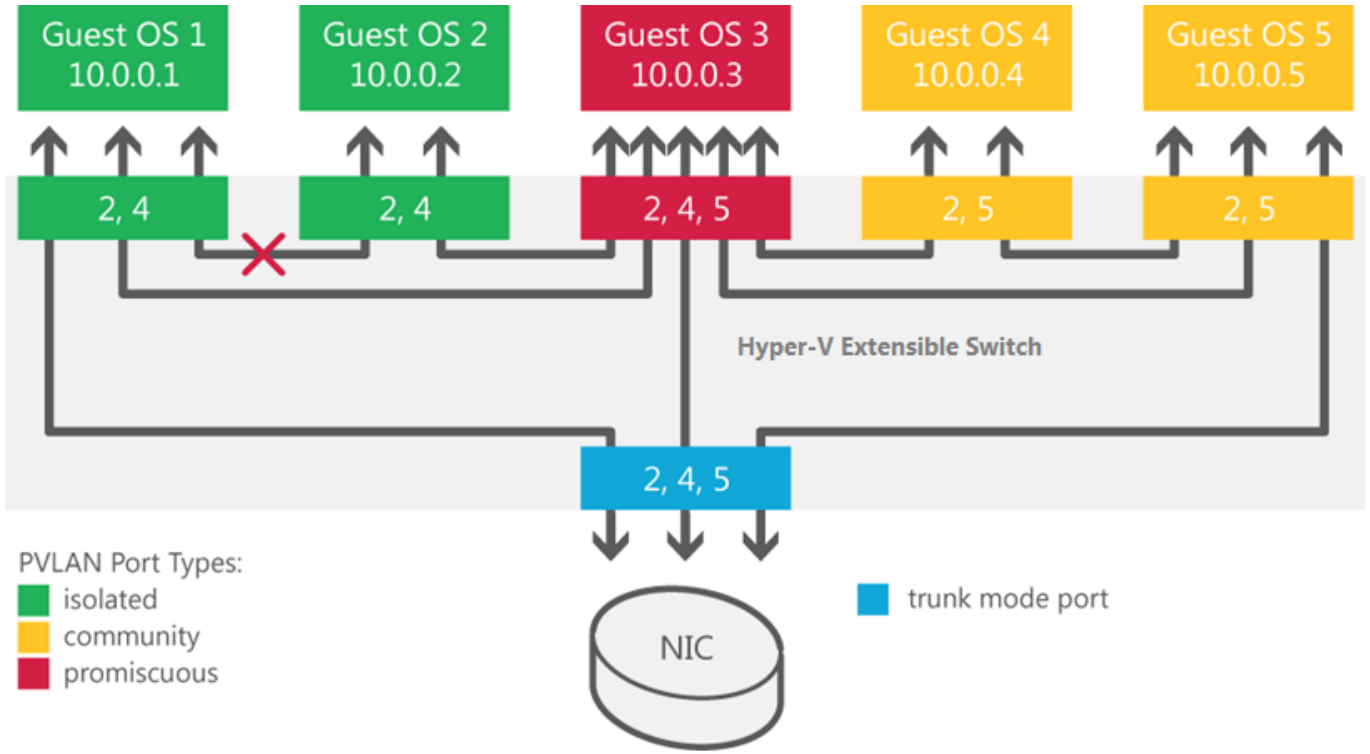
Hyper-V Extensible Switch

- New feature
- Handles network traffic between:
  - Virtual machines
  - The external network
  - The host operating system
- Layer-2 virtual interface
- Programmatically managed
- Extensible

Multi-tenant Security and Isolation

Private virtual LAN (PVLAN)

- Isolate virtual machines from other virtual machines in your data center.
- Create community groups of virtual machines that can exchange data packets.



Example PVLAN:
– Primary VLAN ID is 2
– Secondary VLAN IDs are 4 and 5

Flexible Infrastructure, When and Where You Need It

Scale beyond VLANs with Hyper-V network virtualization

Migrate virtual machines without downtime

Move virtual machine storage with minimal downtime

Reliably import virtual machines

Merge snapshots while the virtual machine is running

Use new automation support for Hyper-V

Adding and moving servers is now faster and easier.

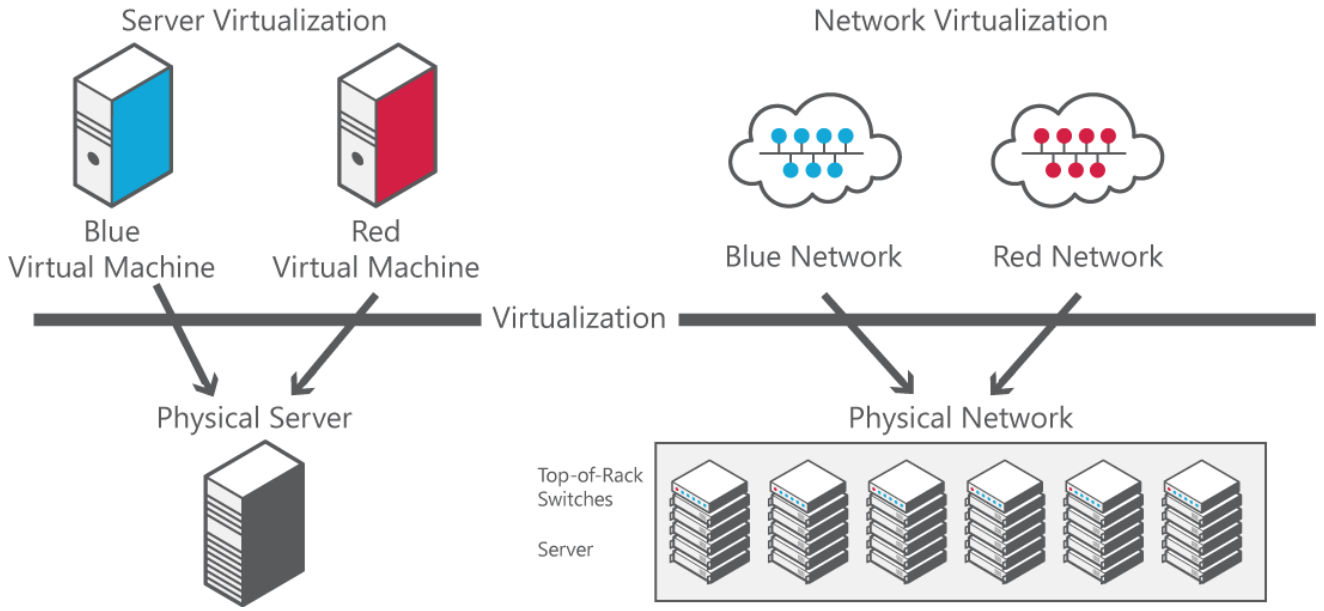
Scale Beyond VLANS With Hyper-V Network Virtualization

How network virtualization works:

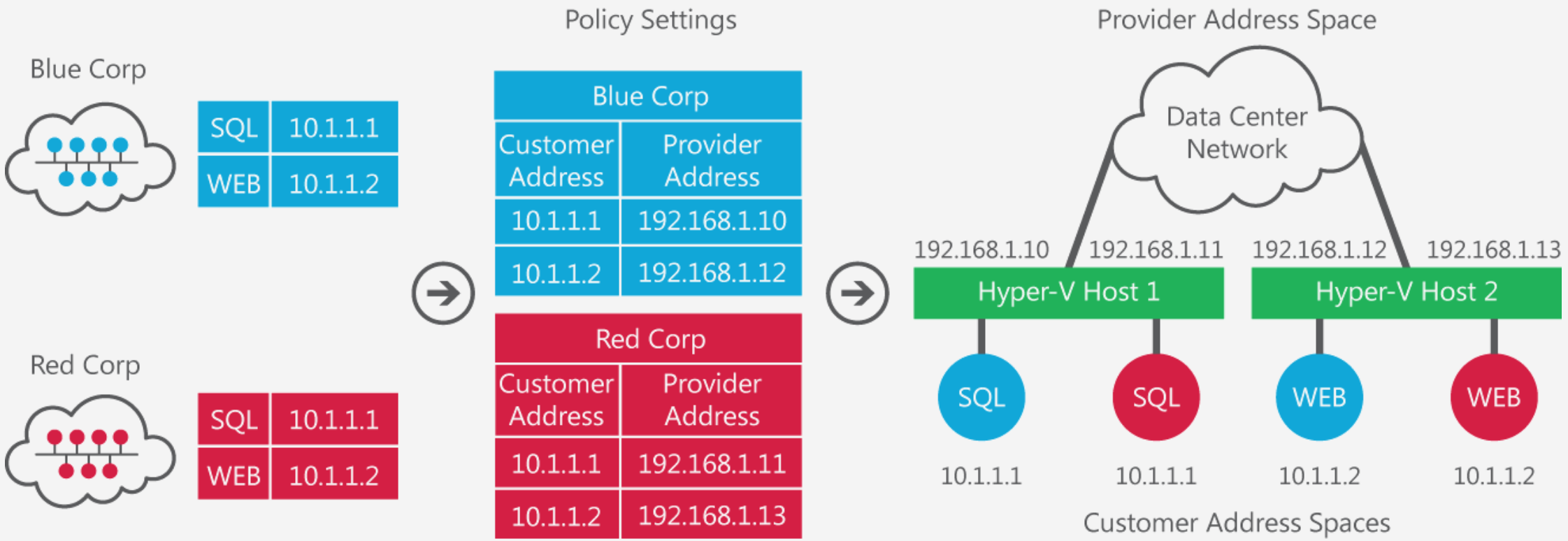
- Two IP addresses for each virtual machine
- General Routing Encapsulation (GRE)
- IP address rewrite
- Policy management server

Problems solved:

- Removes VLAN constraints
- Eliminates hierarchical IP address assignment for virtual machines



Network Virtualization Example



Migrate Virtual Machines Without Downtime

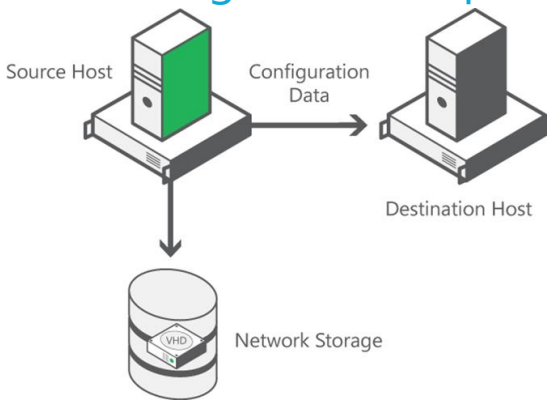
SMB-Share-based Live Migration

- Storage remains on SMB Share

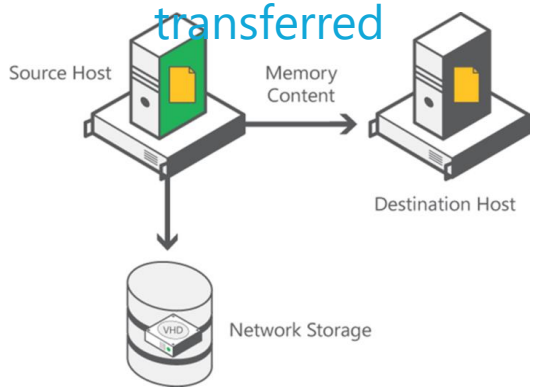
Improvements

- Faster migration and simultaneous migration
- Live migration outside a clustered environment

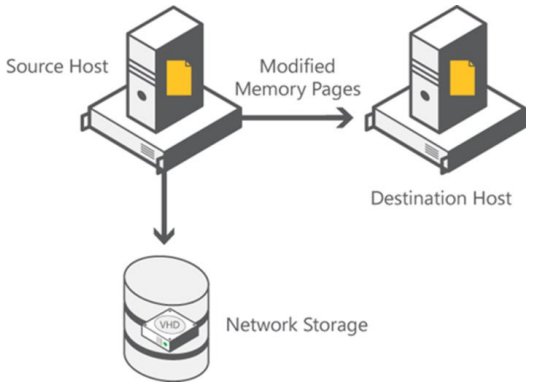
Live migration setup



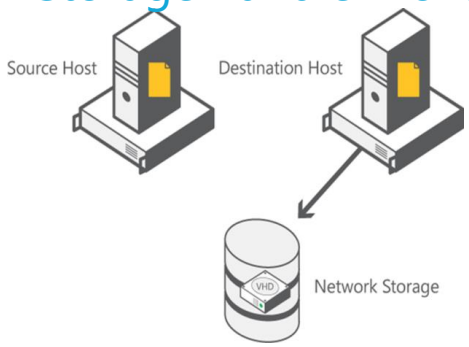
Memory page transferred



Modified pages transferred



Storage handle moved



SMB-share-based live migration

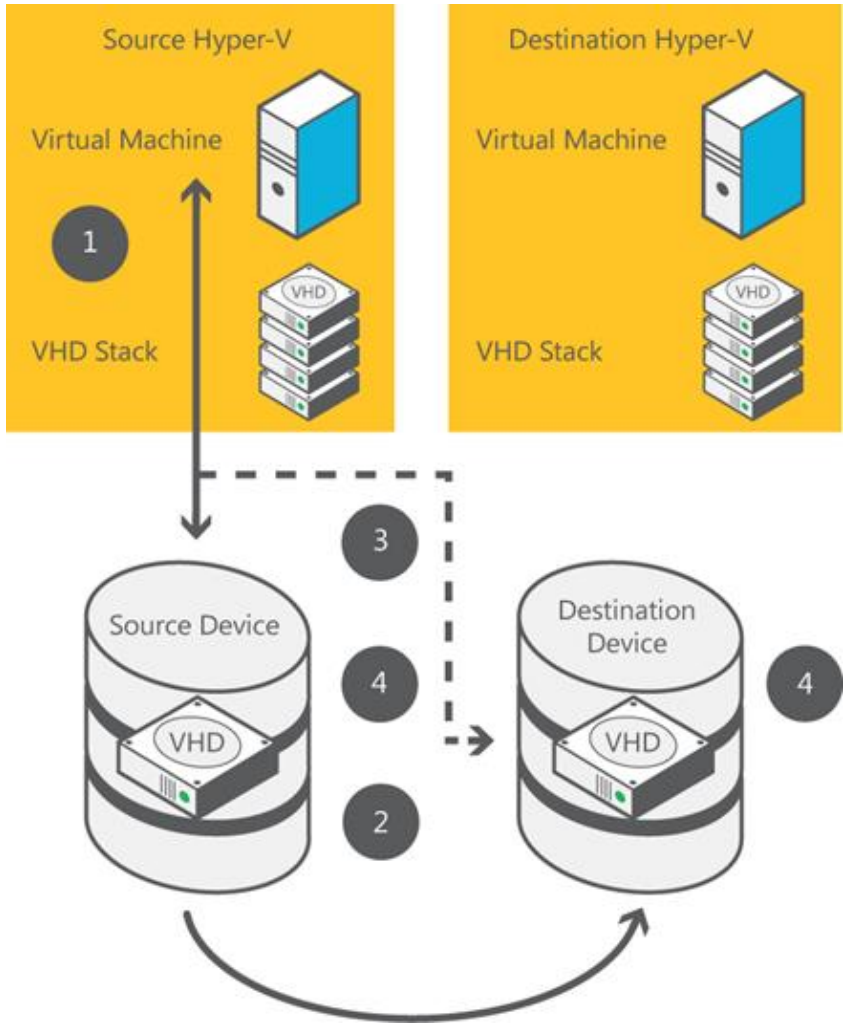
Migrate Virtual Machines Without Downtime

"Shared Nothing" Live Migration

- Virtual machine migration between two computers that do not share an infrastructure

Benefits

- Increase flexibility of virtual machine placement
- Increase administrator efficiency
- Reduce downtime for migrations across cluster boundaries



"Share nothing" live migration

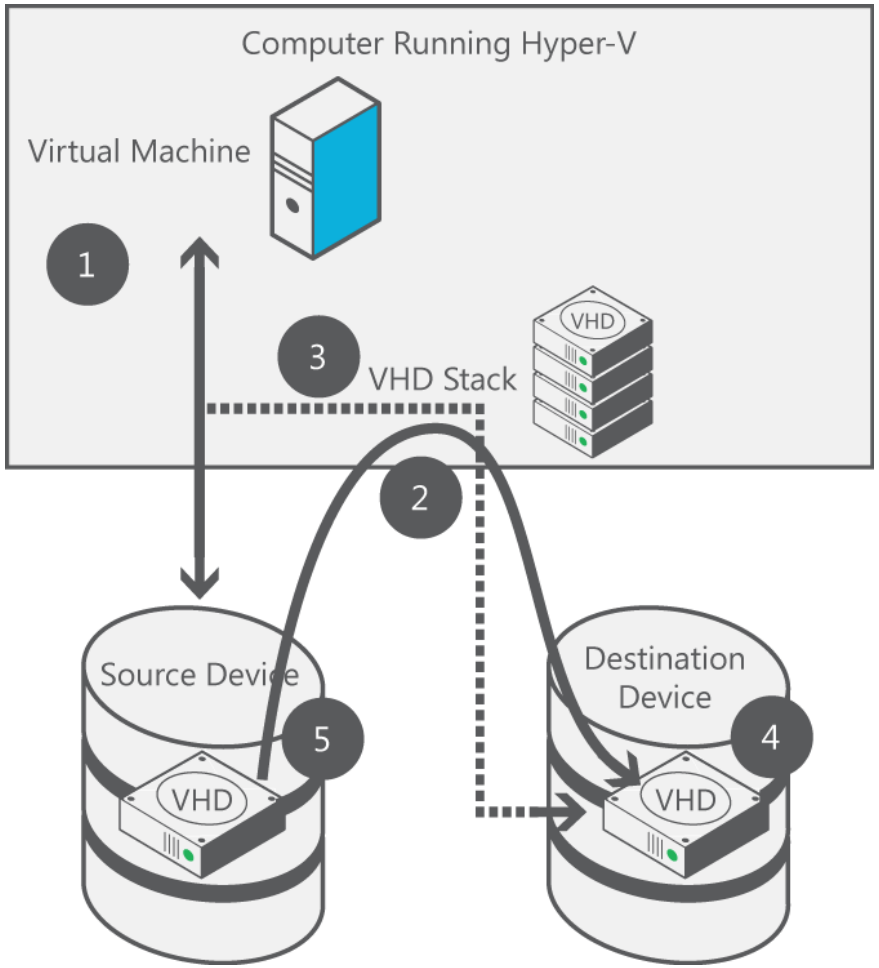
Move Virtual Machine Storage With No Downtime

Live storage migration

- Move virtual hard disks (VHDs) attached to a running virtual machine

Benefits

- Manage storage in a cloud environment with greater flexibility and control
- Move storage with no downtime
- Update physical storage available to a virtual machine (such as SMB-based storage)
- Windows PowerShell cmdlets



Scale, Performance, and Density

- Hyper-V host scale and scale-up workload support
- Dynamic Memory improvements for Hyper-V
- Resource Metering in Hyper-V
- New virtual hard disk format
- Offloaded Data Transfers (ODX) support in Hyper-V
- Data Center Bridging (DCB)
- Virtual Fibre Channel in Hyper-V
- Support for 4-KB disk sectors in Hyper-V virtual disks
- Quality of Service (QoS)

Increases scalability of the data center and uses fewer servers to run more virtual machine workloads.

Hyper-V Host Scale and Scale-up Workload Support

System	Resource	Maximum number		Improvement factor
		Windows 2008 R2	Windows Server 2012 (RC)	
Host	Logical processors on hardware	64	**320**	5×
	Physical memory	1 TB	**4 TB**	4×
	Virtual processors per host	512	**1,024**	2×
Virtual machine	Virtual processors per virtual machine	4	**64**	16×
	Memory per virtual machine	64 GB	**1 TB**	16×
	Active virtual machines	384	**1,024**	2.7×
Cluster	Nodes	16	**64**	4×
	Virtual machines	1,000	**4,000**	4×

High Availability

Incremental backups

Hyper-V Replica

NIC Teaming

Hyper-V clustering enhancements

Data centers and customers can increase resilience to failures.

Hyper-V Clustering Enhancements

New features

Guest clustering via Fibre Channel

- Connects to Fibre Channel directly from within virtual machines
- Virtualizes workloads that:
  - Use direct access to Fibre Channel storage
  - Cluster guest operating systems over Fibre Channel

Encrypted cluster volumes

- Uses BitLocker Drive Encryption to enable better physical security for deployments outside of secure data centers

Clustered live migration enhancements

- Uses higher network bandwidths (up to 10 GB) to complete migrations faster

Cluster Shared Volume (CSV) 2.0

- Simplifies the configuration and operation of virtual machines
- Provides greater security and performance
- Integrates with storage arrays for out-of-the-box replication and hardware snapshots

Hyper-V Clustering Enhancements

New features

Transparent failover

- Moves file shares between nodes with little interruption to server applications, such as:
  - Configuration files
  - Virtual hard disk files
  - Snapshots in file shares over the SMB2 protocol

Hyper-V application monitoring

- Hyper-V and failover clustering work together to bring higher availability to workloads that do not officially support clustering
- Monitors services and event logs inside the virtual machine
- Determines health of virtual machine's key services

Hyper-V Clustering Enhancements

New features

Virtual machine failover prioritization

- Lets you configure virtual machine priorities
- Controls the order in which virtual machines fail over or start

In-box live migration queuing

- Lets you perform large multiselect actions to queue live migrations of multiple virtual machines

Affinity (and anti-affinity) virtual machine rules

- Lets you configure partnered virtual machines to migrate simultaneously during failover
  - Example: configure your SharePoint virtual machine and partnered SQL Server virtual machine to always fail over together to the same node
- You can specify that two virtual machines cannot coexist on the same node in a failover scenario (anti-affinity rule)

Conclusion

Windows Server 2012 Hyper-V is a more dynamic virtualization platform

More secure multi-tenancy

Flexible infrastructure, when and where you need it

Scale, performance, and density

High availability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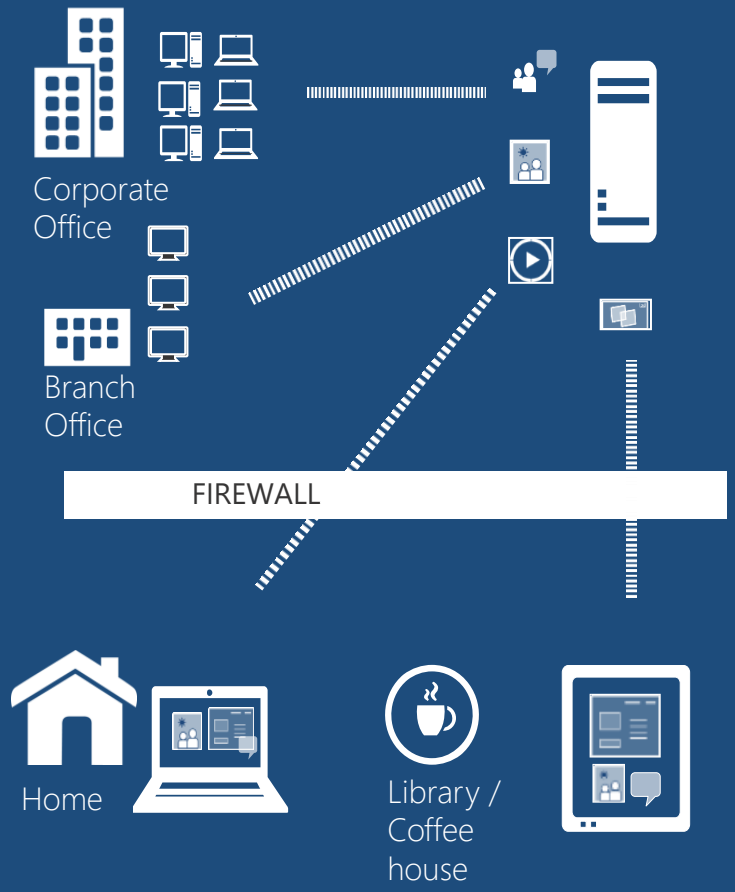
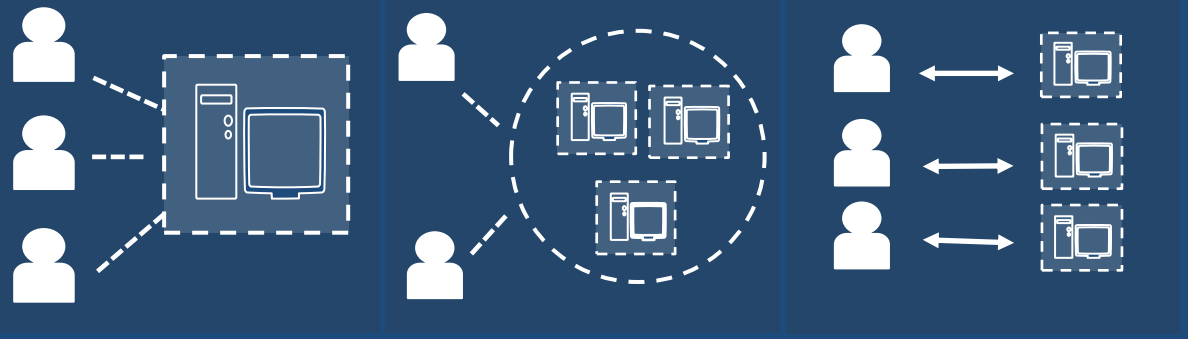
VDI with Windows Server 2012



Powered by Windows Server 2012
Remote Desktop Services

Desktop Sessions	Pooled VMs	Personal VMs



1 platform | 1 experience | 3 deployment choices

Efficient Management
Best Value for VDI
Rich Experience everywhere

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Deployments

- Desktop Sessions
- Pooled Desktops
- Personal Desktops
- User Profile Disks
- Collections

2012 VDI CHANGES

- ~~It is no longer painful.~~ It is less painful.
- PowerShell. Period.
- Server Manager is now King
- Wizards, wizards, and more wizards (Tip: turn on DE)
- Auto VM creation without SCVMM
- Maintenance update queuing (patching)
- Master Images for both personal and pooled
- No Remote Control – Say What?
- Built-in VDI alternatives – RDS & RDSH (not new, just cool)

2012 ~~VDI~~ CAPABILITIES

User Disks	▪ User disk enables personalization on pooled VMs or sessions. ▪ User data and settings are stored on a separate vhd. ▪ Simplifies deployment of lower cost VDI (pooled VMs / Sessions)
Fair Share	▪ Fairshare ensures high performance across all user VMs / Sessions ▪ Dynamically distributes resources (bandwidth, CPU and I/O) ▪ Applicable to both Sessions and VMs
Storage	▪ Direct Attached Storage, Network Attached Storage, and Clustered/SAN Storage ▪ Configuration options to optimize for tiered storage ▪ Reduce storage cost while maximizing IOPS
Highly Available	▪ Active/Active Broker ▪ Scale-out File Server, HyperV Clustering ▪ Up to 32 nodes and 4000 VMs per cluster with Hyper-V ▪ Increase density further by using RDSH (>2X compared to VMs).

What's Needed

- Quick Deploy
  - One (beefy) 2012 server, AD (RDS requirement), disk space, licenses, Gateway (?)
- Standard Deploy
  - AD, licenses, disk space, etc…
  - Connection Broker Host
  - Session Host
  - Web Access Host
  - Virtualization Host
  - RDS Gateway Host (?)

What's Really Needed First?

A Plan, Strategy, Initiative, Vision, Project… whatever you call it

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DEMO

My *Charm* Rating

Good Resources on 2012 / Hyper-V

Features Glossary on Hyper-V 3.0 - http://www.aidanfinn.com/?p=11979

Hyper-V 2012 Review – http://www.thomasmaurer.ch

TechNet 2012 Server Test Lab Guide – http://technet.microsoft.com/en-us/library/hh831585.aspx

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Thanks!