



VDI and UCM

System Center Virtual Machine Manager 2012

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Microsoft® Solution Center

Agenda

- ~~Introduction (Jarrod, Keith)~~
- ~~Consumerization of IT and UCM (30 min, Jason)~~
- ~~Part 1 – System Center Configuration Manager 2012 and UCM (45 min, David)~~
- ~~Break (15 min)~~
- Part 2 – System Center Virtual Machine Manager and UCM (45 min, Jason)
- Part 3 – User Environment Virtualization (30 Min, David)
- Close, Surveys, Drawings (Jarrod)

What is VDI

Who here is familiar with VDI?

- Virtual Desktop Infrastructure
- Virtual machines of client OS running on a hypervisor in a datacenter
- The concept of VDI is to store and run desktop workloads (OS, Data, Apps) in a server-based VM in a datacenter and allow a user to interact with a desktop presented through RDP.
- VDI is not a standalone solution but instead of a cohesive, holistic virtualization strategy to support Microsoft's vision of Dynamic IT.

Who here is using some implementation of VDI?

What Is Virtual Desktop Infrastructure (VDI)?

VDI

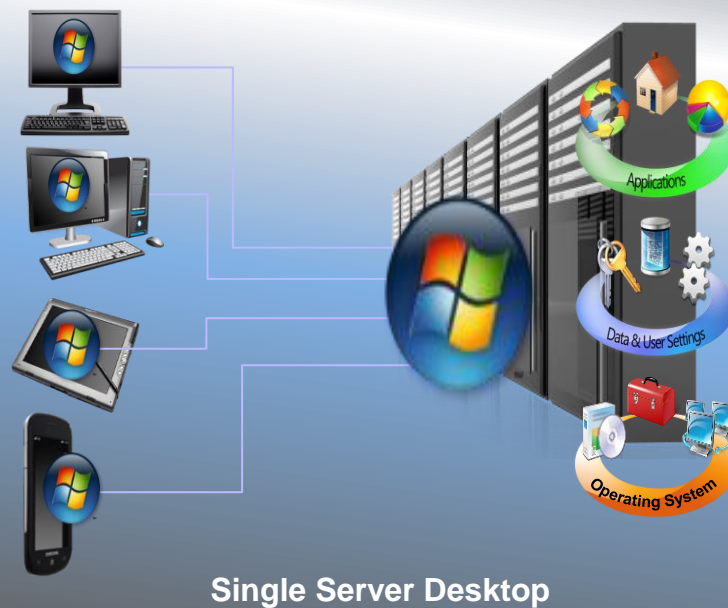
Full Client Desktops Running as Virtual Machines (VMs)



Not to be confused with

Session Virtualization

Single Server Desktop Being Shared via Sessions



- Better application compatibility
- VM level isolation

- Higher scalability
- No user admin rights

MS VDI Roles

- Five main roles comprise base VDI solution

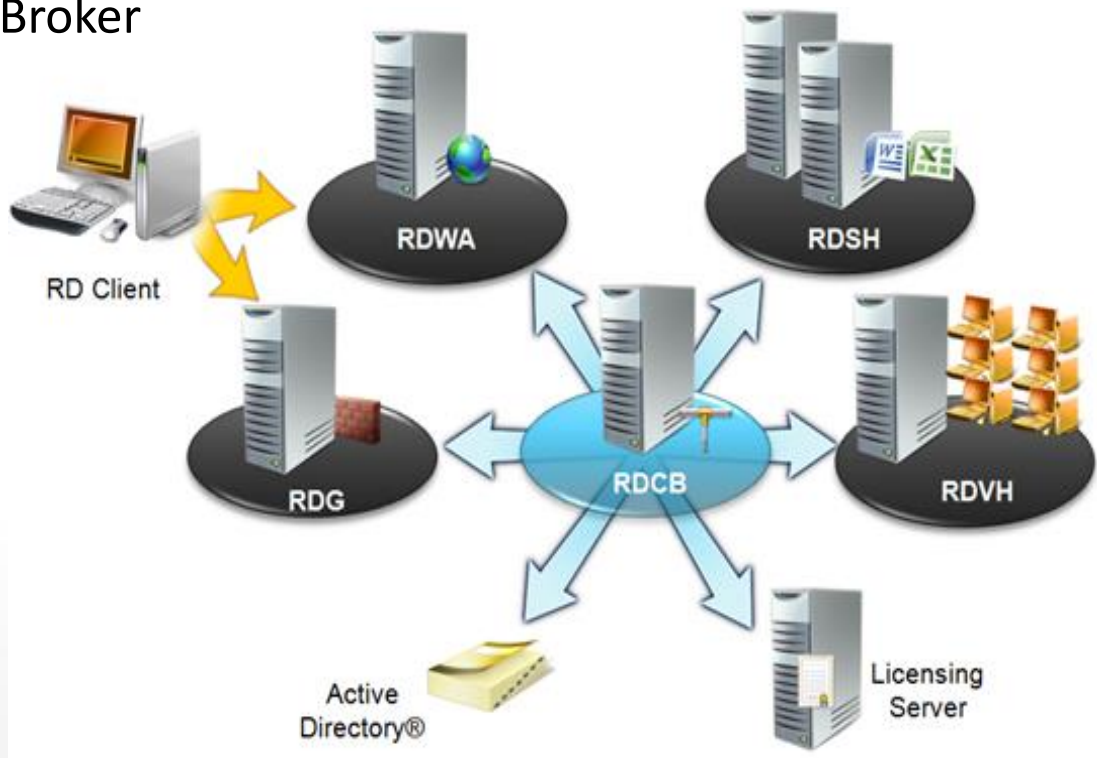
RDVH – RD Virtualization Host

RDSH – RD Session Host

RDCB – RD Connection Broker

RDWA – RD Web Access

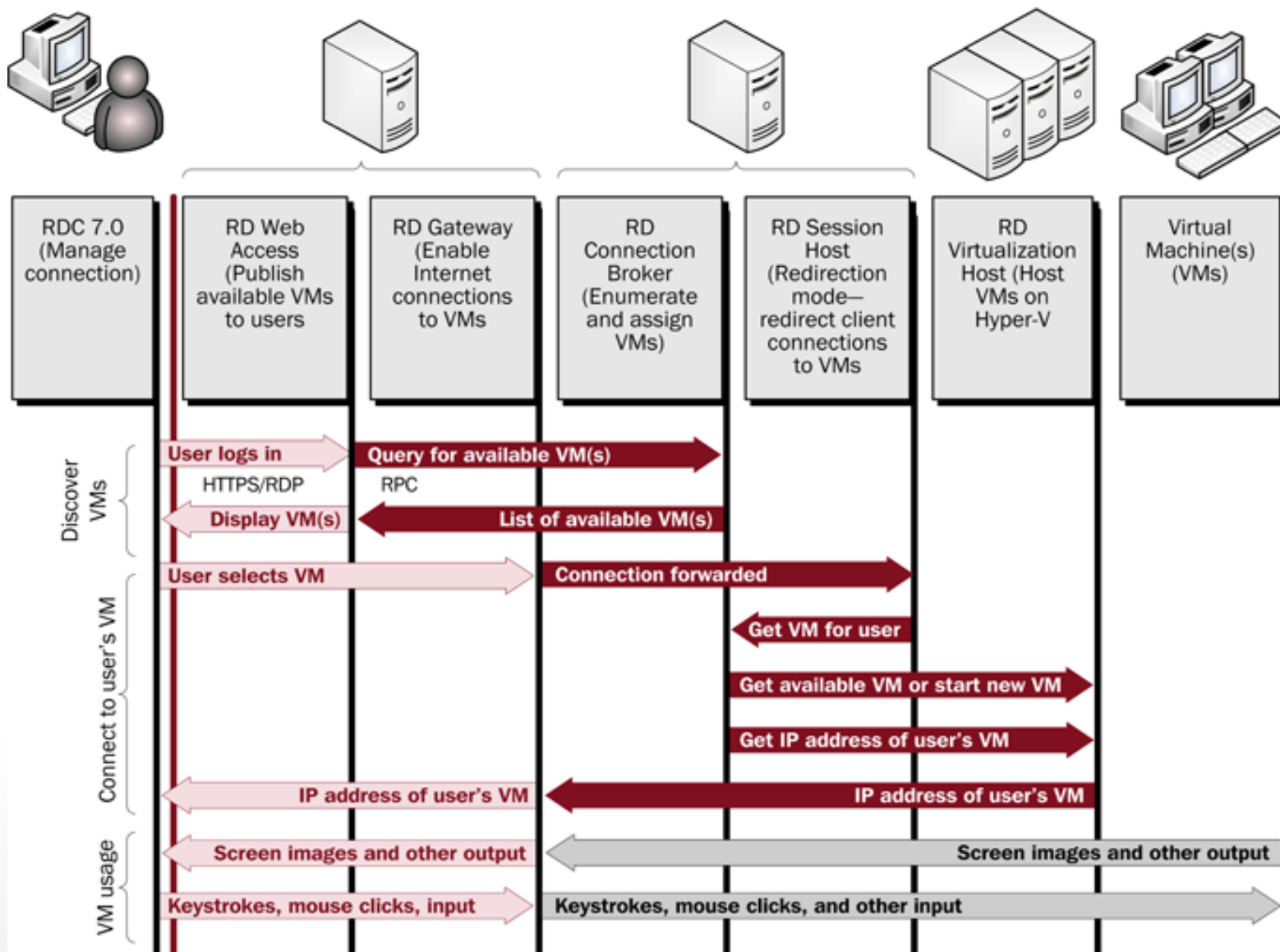
RDG – RD Gateway



Demo

- Server Roles
- Pools

How a user requests a pooled VM



Why VDI

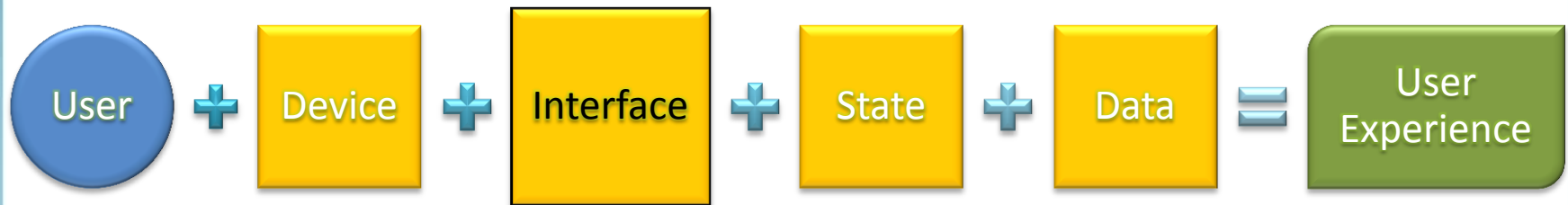
- What were the reasons we used to be pushed to VDI?
 - “Ease your Windows 7 migration”
 - “Eliminate hardware refresh”
 - “Spend allot now to save some later”
 - These could arguably not have been the right drivers a few years ago
- What are some reasons now?
 - Ease your unmanaged device migration
 - BYOD
 - Control access to data
 - Implement as part of a strategy

Why VDI

- VDI with VM pools is similar to RDS (formerly terminal services)
- Runs Client OS instead of Server OS (can only offer client OS)
- Each VM is it's own instance
 - User can have full admin rights and control
 - Can handle more complex work – dedicated resources on a full desktop
- Runs software that cannot run with concurrent users
- Runs software that is not able to run on a server
- Lifecycle management

- Great 3rd Party support and extensibility – Quest workspace, Citrix XenDesktop

How does it fit into UCM?



- Another way to provide flexibility while still being able to secure data
- OS is in your datacenter, so it is always available for patching and policy
- Desktop Location Independence
 - Change focus from asset-centric to user-centric
 - Delivers secure desktop to unsecure devices
 - Controls access to data

When to use VDI

- Not a solution that fits every need
- Generally more expensive upfront cost
- Similar to Remote Desktop Services but instead use it

 - If you need to provide local admin rights
 - If you need a workstation OS
 - If an app cannot run with multiple users accessing at same time
 - If an app cannot run with other applications
 - If an app is data/bandwidth intensive
 - If you need a machine faster than can be provisioned through other means (hardware failure, staffing ramp-up, loss, DR)

Keys to making VDI successful

- Understand where generalizations in work can be made
 - Provides basis for pools
- Use data redirection – allows you to control state and data
- Leverage SCCM 2012 Applications
- Provide multiple ways to access (Remote Apps and Desktops, RDWA, RDG)
- Scale appropriately
 - VMM for under 1000
 - Quest or Citrix (or others) for larger
- Manage resources
 - Understand spinning up pool VMs in the morning could impact farm
 - Set policies for shutting down VMs after inactivity to free up pool resources
 - Leverage VMM for on-demand utilization

Pooled vs Personal

- 2 types of VMs available in VDI – Pooled and Personal
- Personal
 - Assigned, dedicated virtual machine
 - User data can be saved to VM
 - Similar to managing normal desktop
 - Requires full resources (processor, memory, disk) to run and maintain
- Pooled
 - Duplicate VMs make up pool
 - User cannot save to VM (reverts back to original state when user logs off)
 - Can lower resource need because only need to scale for number of concurrent VMs running.

When to use which

- Personal VM
 - Workload is specific and difficult to deploy to pooled VM
 - Data or apps need to remain
 - Special workloads require additional resources
 - Software Developers, IT admins, Designers, Long-Term Contractors
- Pooled VM
 - Workload is simple
 - Data or apps can be added on demand quickly
 - User data does not need to persist between sessions
 - User needs a VM infrequently
 - User needs a VM frequently

Demo

System Center VMM 2012

- System Center Virtual Machine Manager 2012 is solution to manage hypervisor infrastructures through a single pane of glass.
- Four key areas of focus
 - Infrastructure Enhancements
 - Fabric Management
 - Cloud Management
 - Service Management

System Center Virtual Machine Manager 2012

Deployment

Infrastructure Enhancements

HA VMM Server

Upgrade

PowerShell

Fabric

Fabric Management

Hyper-V Bare Metal Provisioning

Hyper-V, VMware, Citrix XenServer

Network Management

Storage Management

Update Management

Dynamic Optimization

Power Management

Monitoring Integration

Cloud

Cloud Management

Application Owner Usage

Cloud Capacity and Capability

Delegation and Quota

Services

Service Management

Service Templates

Application Deployment

Custom Command Execution

Image Based Servicing

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Infrastructure Enhancements

- Highly Available VMM Server
 - Addresses key customer ask
 - VMM server is now cluster aware so there's no single point of failure
- Upgrade
 - From VMM 2008 R2 SP1 to VMM 2012 RC
 - From VMM 2012 RC to VMM 2012 RTM
- Custom Properties
 - Name/Value pairs
 - No need to use Custom1..Custom10
- Powershell
 - Fully powershell scriptable
 - Powershell 2.0 – standard verbs, noun naming convention
 - Backward compatible with VMM 2008 R2 scripting interface

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Fabric Management

- Physical Servers
 - Manage multiple hypervisors – Hyper-V, VMware, Xen
 - Server hardware management – IPMI, DCMI, SMASH, Custom via Provider
 - Host provisioning – from bare metal to Hyper-V to Cluster provisioning
- Networking
 - Define Logical Networks using VLANs and Subnets per datacenter location
 - Address management for Static IPs, Load Balancer VIPs and MAC addresses
 - Automated provisioning of Load Balancers via Provider
- Storage
 - Storage Management using SMI-S
 - Discover storage arrays and pools
 - Classify storage based on throughput and capabilities
 - Discover or configure LUNs and assign to hosts and clusters
 - Rapid provisioning of VMs using snapshot cloning of LUNs

Fabric Management

- Update Management of Fabric Servers
 - Update operation control (on-demand scan and on-demand remediation)
 - Updating a Hyper-V cluster is fully automated/orchestrated
 - Integrated with Windows Server Update Server
- Dynamic Optimization (DO)
 - Cluster level workload balancing scheme to optimize VM performance
 - Leverages live migration to move workloads
- Power Optimization (PO)
 - Powers down servers to optimize power utilization
 - Leverages live migration to pack more VMs per host
- Enhanced Placement
 - Over 100 placement checks/validation
 - Support for custom placement rules
 - Multi-VM deployment for Services

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Private Cloud Management

- Private Cloud
 - Abstraction that enables opaque usage model for service and VM management
- Fabric
 - Compute: Logical grouping of hosts or host clusters in host groups
 - Storage: Storage Classifications, Pools, Providers and Arrays
 - Network: Logical Networks, IP/MAC Address Pools, Load Balancers, VIP Templates
- Delegation - User Role
 - Quota: Defines per-user limits on compute, memory, storage, number of VMs

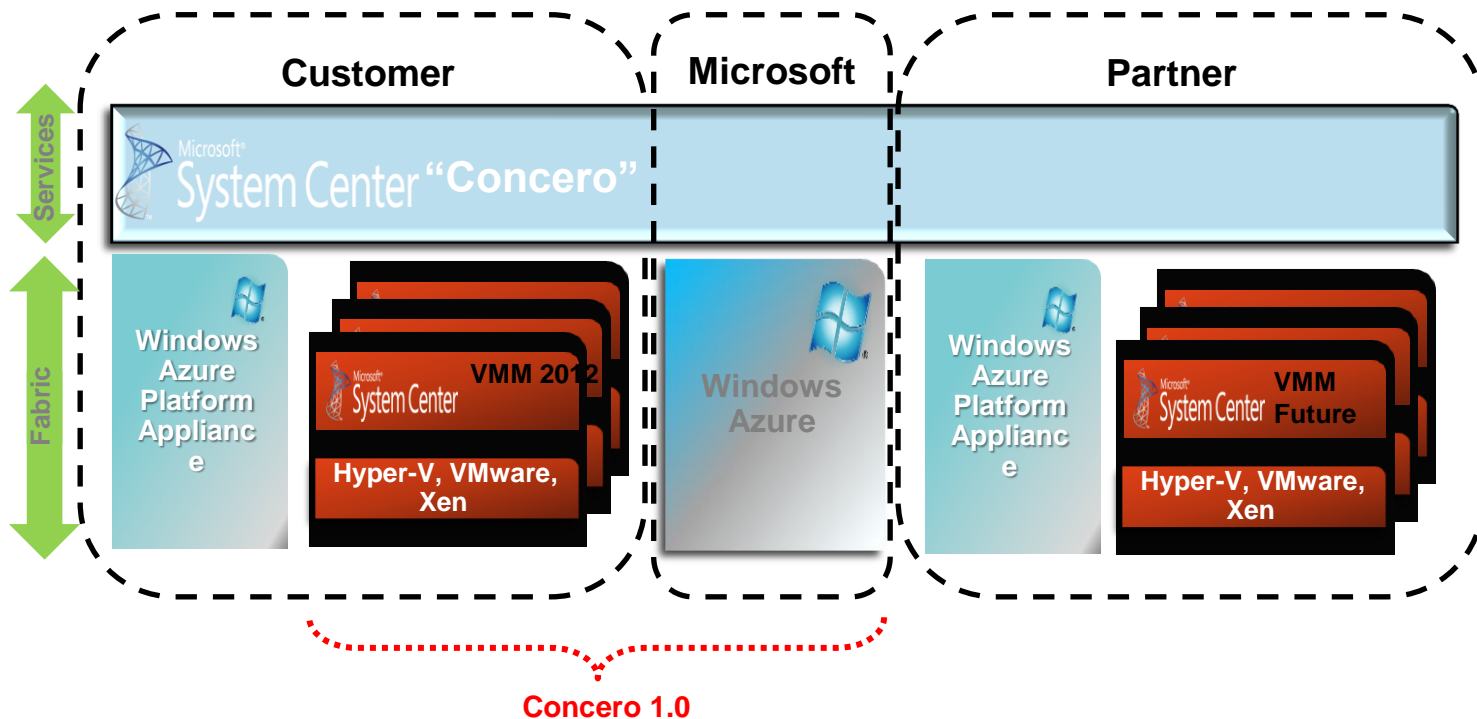
Cloud Capacity

- Cloud can expose
 - Aggregate capacity of underlying resources (vCPU, Memory, Storage)
 - Oversubscription is allowed
- Dimensions of Capacity
 - vCPUs
 - Memory
 - Storage
 - Number of deployed VMs (VMs in Library are not counted)
 - Custom Quota (to support quota points from VMM 2008 R2)

Cloud Capabilities

- Cloud can
 - Host highly available VMs
 - Allow VMs to use dynamic disks, differencing disks or fixed disks
 - Enable network optimizations
- VM “shape” limits
 - Processor Range (i.e. 1 - 4)
 - Memory Range (i.e. 16MB – 32 GB)
 - Number of disks (0 – 7)
 - Number of NICs (0 – 7)
 - ...
- Built-in set representing underlying limits for Hyper-V, Xen, VMware

Federation to Public Clouds Using "Concero"



VMM – IaaS Private Clouds

- Manage services across multiple VMM servers
- Web based – self service experience

Azure – PaaS Public Cloud

- IT Pro experience for Azure
- RBAC using on-premise domain credentials
- Single view for multiple Azure subscriptions

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Service Lifecycle Management

- Service Templates
 - Used to model a multi-tier application
 - Source of truth for deployed service configuration
- Applications
 - Built-in support for Web deploy, Server App-V, SQL DAC
 - Custom command execution for other application packages
- Image-based
 - OS separated from apps
 - Composed during deployment
- Servicing
 - Change the template and then apply that change to deployed instances
 - Upgrade domains ensures application availability during servicing

Demo

Why SCVMM 2012 for VDI?

- Excellent tool for managing resources for VDI in pools of less than 1000 VMs. (Third party offerings work best for larger implementations)
- Easily provision hosts, storage, or VMs for VDI
- Integration with RDCB enables on-demand utilization of resources.
 - Example
 - personal VM off and on host that is fully utilized
 - User requests VM, but without VMM it would not be able to start
 - VMM finds hosts in the defined cloud and migrates the VM to the host and starts it
- PowerShell extends automation possibilities
- Excellent reporting and chargeback capabilities

Licensing

- Important to discuss
- VDI Standard Suite
 - System Center (SCCM, VMM, SCOM)
 - MDOP w/ APP-V for Desktops
 - RDS for VDI
 - Hyper-V
- VDI Premium Suite
 - VDI Standard +
 - Unrestricted RDS
 - App-V for RDS
- VDA
 - Virtual Desktop Access license – permits a device not covered under SA to connect (mobile devices, non-windows devices, devices not belonging to you organization or under your license agreement)

How it works

Generally speaking:

- Each device that will connect must be covered under one of the following to be permitted rights to connect:
 - SA – your workstations running Windows through SA
 - VDA – external users or devices (off-shore contractors, consultants, thin-clients, devices)
- Each device (SA or VDA) will need one VDI license
- OS license not required on VM (SA or VDA license covers it) although non-Microsoft Hypervisors may require OS licensing
- Additional licensing may be required for other MS apps (Office)
 - If SA with office installed, does not need additional office license
 - If VDA and Office installed in VM, will need office install for each VDA license.
- License is based on device, not users. If user have multiple devices, each need it. If device has multiple users, only one needed. SA/VDA permits up to 4 concurrent VMs on same license.

VDI Suite and Other Bundles

Licenses Relevant to VDI	VDI Standard Suite	VDI Premium Suite	VDI Standard Suite with MDOP	VDI Premium Suite with MDOP	Core-CAL	E-CAL	SMSE
Windows VDA / SA							
MDOP			✓	✓			
RDS-CAL (Sessions & VDI)		✓		✓			
RDS-CAL (VDI only)	✓		✓				
SCCM CML					✓	✓	
SCOM CML						✓	
SCVMM CML	✓	✓	✓	✓			
SCCM SML	✓	✓	✓	✓			✓
SCOM SML	✓	✓	✓	✓			✓
Windows Server CAL					✓	✓	

Common Virtual Desktop Infrastructure (VDI) Licensing Scenarios

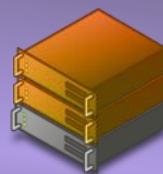
Scenario 1 – Standard Users



100 PCs with SA



80 Users



50 VMs

Scenario

My company has 100 corporate PCs covered under SA that need to access our VDI environment. However, we only have 80 users and only 50 VMs are used at any one time.

Product	Licenses	Rationale
Windows®	100 Windows SA licenses	SA provides virtual desktop access rights
Microsoft® Office	100 Microsoft Office licenses	Each device accessing Microsoft Office needs an Office license
VDI Suites	100 VDI Suites licenses	Each access device needs to be licensed for the VDI Server and Management infrastructure

Scenario 2 – Shift Workers

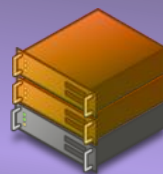


100 PCs with SA



Shift 1
Shift 2
Shift 3

300 Users



150 VMs

Scenario

My company has 100 PCs with SA, with 300 workers accessing our VDI environment in shifts. At any time, 150 VMs are being accessed using VDI.

Product	Licenses	Rationale
Windows®	100 Windows SA licenses	If PCs are already covered with SA, no additional licensing is required. Number of users does not impact licensing.
Microsoft® Office	100 Microsoft Office licenses	Each device accessing Microsoft Office needs an Office license
VDI Suites	100 licenses for VDI Suites (Standard or Premium)	Each access device needs to be licensed for the VDI server and management infrastructure

Scenario 3 – Mixed Desktop Hardware



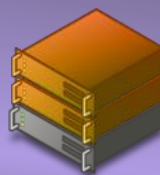
**100 PCs
with SA**



**100 Thin
Clients**



**100
Users**



**150
VMs**

Scenario

My company has 100 PCs with SA and 100 thin clients using VDI. Only 100 devices are used at a time to access 100 VMs running Windows Vista® or Windows XP.

Product	Licenses	Rationale
Windows®	100 Windows SA licenses 100 Windows VDA licenses	<ul style="list-style-type: none"> ➤ 100 thin clients require licenses ➤ 100 PCs are already covered with SA, no additional licenses required
Microsoft® Office	200 Microsoft Office licenses	All PCs or thin clients accessing Microsoft Office require a license
VDI Suites	200 licenses for VDI Suites (Standard or Premium)	Each access device needs to be licensed for the VDI server and management infrastructure

Scenario 4 – Occasional Home Users



100 Employees
(each a named user of thin client at work)



Occasional Home

Scenario

My company has 100 employees who are the primary users of 100 thin clients covered under Windows® VDA at work. These employees occasionally work from home and access the corporate VMs via VDI from their personal home machine

Product	Licenses	Rationale
Windows® License	100 Windows VDA licenses for the thin clients.	VDA / SA licenses include roaming rights for the primary user of a device covered under VDA
Microsoft® Office License	100 Microsoft Office SA licenses	All corporate thin clients accessing Microsoft Office require a license For thin clients covered with Microsoft Office SA, no additional license required for home use – covered under Roaming Use Rights
VDI Suites License	100 VDI Suite licenses (standard or premium)	Each access device needs to be licensed for the VDI server and management infrastructure VDI Suite licenses include home use rights for the primary user of a device covered under VDA

Scenario 5 – 100% Home Users



100 Employees
(use work machines from home)



Full Time Home Access

Scenario

My company has 100 employees who work from home and will access corporate VMs via VDI from their authorized device at home.

Product	Licenses	Rationale
Windows® License	100 Windows VDA licenses	Employee's home PCs will have to be licensed
Microsoft® Office License	100 Microsoft Office licenses	Each device accessing Microsoft Office needs an Office license
VDI Suites License	100 licenses for VDI Suites (Standard or Premium)	Each access device needs to be licensed for the VDI server and management infrastructure

Scenario 6 – Roaming Users



300 Users



300 Thin Clients

Scenario

My company has 300 users who need to access our VDI environment via 300 thin clients. These 300 users also need to access their VDI desktops and Microsoft Office applications from non-corporate machines, such as Internet kiosks and their home PCs.

Product	Licenses	Rationale
Windows®	300 Windows VDA licenses	<ul style="list-style-type: none"> » All thin clients accessing VDI must be licensed » On VDI desktops, Windows VDA has roaming rights for the single primary user, so all non-corporate PCs outside the network are covered for the 300 users
Microsoft® Office	300 Microsoft Office SA licenses	<ul style="list-style-type: none"> » All thin clients accessing Microsoft Office must have a license » Microsoft Office SA has Roaming Use Rights for the single primary user, so all non-corporate PCs outside the network are covered for the 300 users
VDI Suites	300 licenses for VDI Suites (Standard or Premium)	<p>Each access device needs to be licensed for the VDI server and management infrastructure</p> <p>VDI Suites are device based, and also support roaming rights, so no additional licensing for the public machines</p>

Scenario 7 – Contractor-Owned PCs



100 Contractors
Jan - June



100 Contractors
June - Dec

Scenario

My company has 100 contractors who are working for 6 months, and then 100 different contractors are employed for the other 6 months. Each contractor will have one PC (owned by the contractor) to access our corporate VMs via VDI.

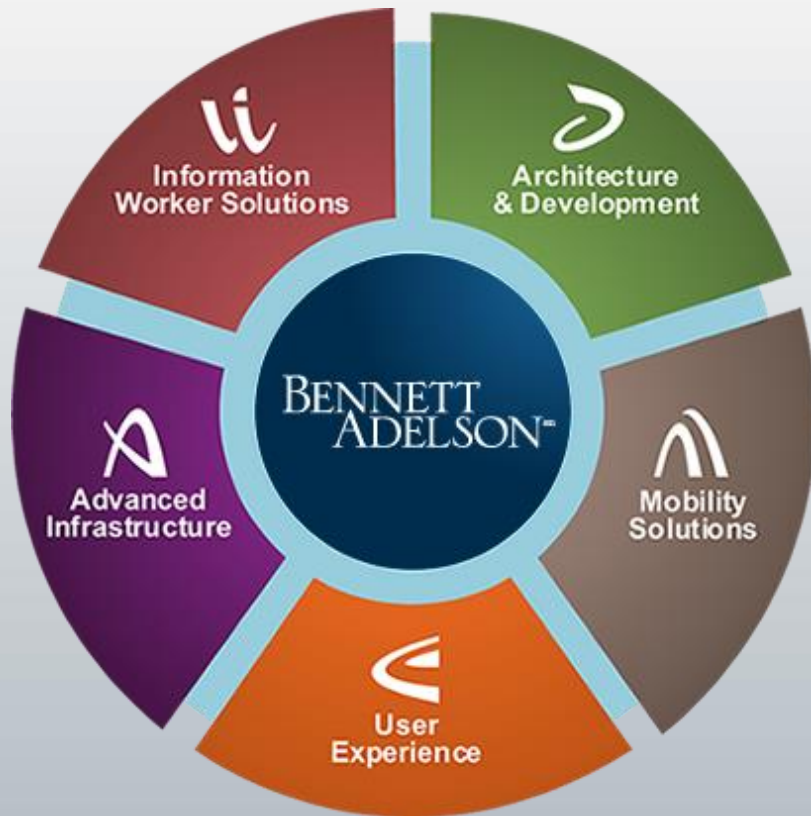
Product	Licenses	Rationale
Windows® License	100 Windows VDA licenses	Each contractor-owned PC will require a Windows VDA license, which comes with 90-day permanent reassignment rights
Microsoft® Office License	100 Microsoft Office licenses	All devices accessing Microsoft Office require a license for it, which comes with 90-day reassignment rights
VDI Suites License	100 VDI Suite licenses (Standard or Premium)	Each contractor-owned PC will require a VDI Suite license, which comes with 90-day permanent reassignment rights

What's Next

- Embrace UCM
- Engage a Microsoft Partner (Bennett Adelson) to assist in envisioning and a Proof of Concept or Pilot.
- Visit Microsoft websites and set up VDI on your own (<http://technet.microsoft.com/en-us/library/hh831585>)
- Learn more with the Desktop Virtualization Springboard (<http://technet.microsoft.com/en-us/windows/gg276319.aspx>)
- Learn more about Virtual Machine Manager 2012 on TechNet (<http://technet.microsoft.com/en-us/library/gg610610>)

Questions?

Who is Bennett Adelson?



- Practice Directors comprised of Industry Leaders and Subject Matter Experts
- Members of the Microsoft Partner Advisory Council
- Many Early Adopter & and Technology Specialist program offerings

SIGNIFICANT ACHIEVEMENTS

- 2010 Microsoft Partner of the Year Finalist
- 2011 Microsoft Partner of the Year, Heartland District

- Member of Microsoft's Application Platform Partner Advisory Council

- One of only 15 companies in the US on Microsoft's Windows Mobile All-star Team

Member of Partner Advisory Council for Software + Services

Preferred Deployment Partner for Office365

Executed one of the largest Lotus Notes to BPOS-S migrations to date

Charter Member – Cloud Kit Migration Expert

Dedicated Migration Swat Teams

Windows 7 Jumpstart Partner

Founder, Cleveland System

Center User Group



MESSAGING & COLLABORATION



Email

Portal

Unified Communications

Microsoft Online Services

OPERATIONS MANAGEMENT



System & Software Deployment

Patch Management

Monitoring and Reporting

Backup & Disaster Recovery

Virtualization & Storage

ARCHITECTURE



Identify and Directory Services

Web Platforms

Network and Security

Shared Services



Bennett Adelson Clients Include...

Microsoft®

National City

 **Nestlé**
Good Food, Good Life

Swagelok

 **meals.com**
meal planning made easy.

AMERICAN  GREETINGS

PROGRESSIVE

SMUCKER'S


EAT•N

 **Scott's.**

 **PPG Industries**
Corporate

SQUIRE SANDERS

Cleveland
Clinic
Health
System 

 **ALCAN**

JONES DAY | One Firm Worldwide



MASCO

NEC

COLUMBUS
 **Children's**
HOSPITAL

 **SUMMA**
Health System

AXENTIS™
From compliance to performance


Novelis


CardinalHealth

IMG