

# Virtual Desktop Technologies aka – It's all about VDI

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# A Little About Turner Padgett

- Founded in 1929
- 5 Offices – All in SC
- 92 Attorneys
- 250 Users
- A Special Thanks to CDW!
  - For helping me with pricing and giving me the Wyse terminal at no charge

# So what is VDI?

- **Virtual Desktop Infrastructure**
- **From PC Magazine's Encyclopedia**
  - “VMware's umbrella term for its desktop virtualization products that use VMware server virtualization and Virtual Desktop Manager (VDM). Sun VDI is Sun's desktop virtualization, also based on VMware.”
- **One Problem – It's Just Not True!**

# So what is VDI?

- **A More Accurate Definition**
  - Virtual Desktop Infrastructure (VDI) is a centralized desktop delivery solution that enables organizations to store and execute desktop workloads (OS, apps, data) on virtual machines in the datacenter, and presents the UI via a remote desktop protocol (such as RDP or ICA) to user devices. VDI is not an isolated architecture, but rather part of an enterprise's cohesive, holistic virtualization strategy across their IT infrastructure

# VDI Continued...

- VMWare is/was the 900lb gorilla but not the only one...
- Microsoft
- Citrix
  - Through purchase of XenSource
- Wyse, Quest, ClearCube, Symantec

# Benefits of VDI

- **Management of Images**
  - Centralized management
  - Rapid deployment of both OS and apps
  - Simplified patching and upgrades
  - No desktop A/V needed
  - Snapshot technology to roll back images
  - Quickly deploy new OS to selected users
  - Great for testing upgrades

# Benefits of VDI Continued...

- Security
  - Lock out external devices & prevent copying data from image to local machine
  - All data stored on network so no data loss w/ destruction or theft of devices
  - Give vendors/consultants secure images

# Benefits of VDI Continued...

- Go Green and Have Choices
  - Thin clients use less electricity than full desktop
    - Even bigger savings w/ Pano devices
  - Want to reuse PC's, Thin Client, Apple, Linux?
    - All can be used with RDP, ICA, etc.
  - All can be cheaper than buying new PC's

# Hidden Costs of VDI

- Using VDI
  - VDI (any flavor) is more expensive than TS
  - Costs more because it can do more
  - This is NOT a bad thing
  - Will TS work for you? If so, use it!

# Hidden Costs of VDI Continued...

- Not being able to get rid of legacy systems
  - Will your new VDI system entirely replace an existing system or be in addition to it?
    - Laptops? Heavy graphical users, etc.?
  - If not, you could have a negative ROI if you have to manage multiple systems for patching, A/V, scripting, etc.

# Hidden Costs of VDI Continued...

- Changes to user paradigms
  - Dedicated images or shared?
  - Apps that seem to disappear
  - Technologies like self-correcting apps/access

# Hidden Costs of VDI Continued...

- Thinking things will scale linearly
  - Can't assume that a test of 50 users on one box will mean 2000 users on 40 boxes
  - What about?
    - Bandwidth requirements?
    - Domain controller placement and quantity?
    - Backup capacity?
    - Disk I/O?

# Hidden Costs of VDI Continued...

- Storage
  - 20GB Windows image times # of users means lots of storage on expensive SANs
  - Can (and should) use thin provisioning/de-dup offerings like VMWare View Composer or Citrix Provisioning Server
  - These products work best with cloned/similar images. If that doesn't work then you still have management, backup, etc., to consider

# Hidden Costs of VDI Continued...

- Windows Licensing
  - Every VDI seat needs a VECD (Virtual Enterprise Centralized Desktop) license
    - <http://www.microsoft.com/windows/enterprise/technologies/virtualization-licensing.aspx>
    - \$23/device per year if you have SA
    - \$110/device per year if you don't
    - **If you don't keep paying, you can't use VDI!!**
    - How many of you have SA on XP/Vista currently?

# Hidden Costs of VDI continued...

- Complexity of the Unknown
  - VDI is still new
  - How will this affect support?
  - Fewer resources, forums, articles, etc.
  - All soft costs but potentially expensive

# Hidden Costs of VDI continued...

- **Non-Compatible Apps**
  - VDI is based on using ThinApp, XenApp, etc.
  - How many of your apps aren't compatible?
  - How do you deploy those apps?
    - Base VM image for each of these one-off apps?
    - If that doesn't work, a separate VM for each app?

# Hidden Costs of VDI continued...

- How well do you really know your desktop OS?
  - Need to customize your images for datacenter
    - Things like how the OS handles resource scheduling, memory, I/O access, etc.
    - FYI - XP auto-defrags system files after 3 boots which could destroy the tiny delta changes you're expecting

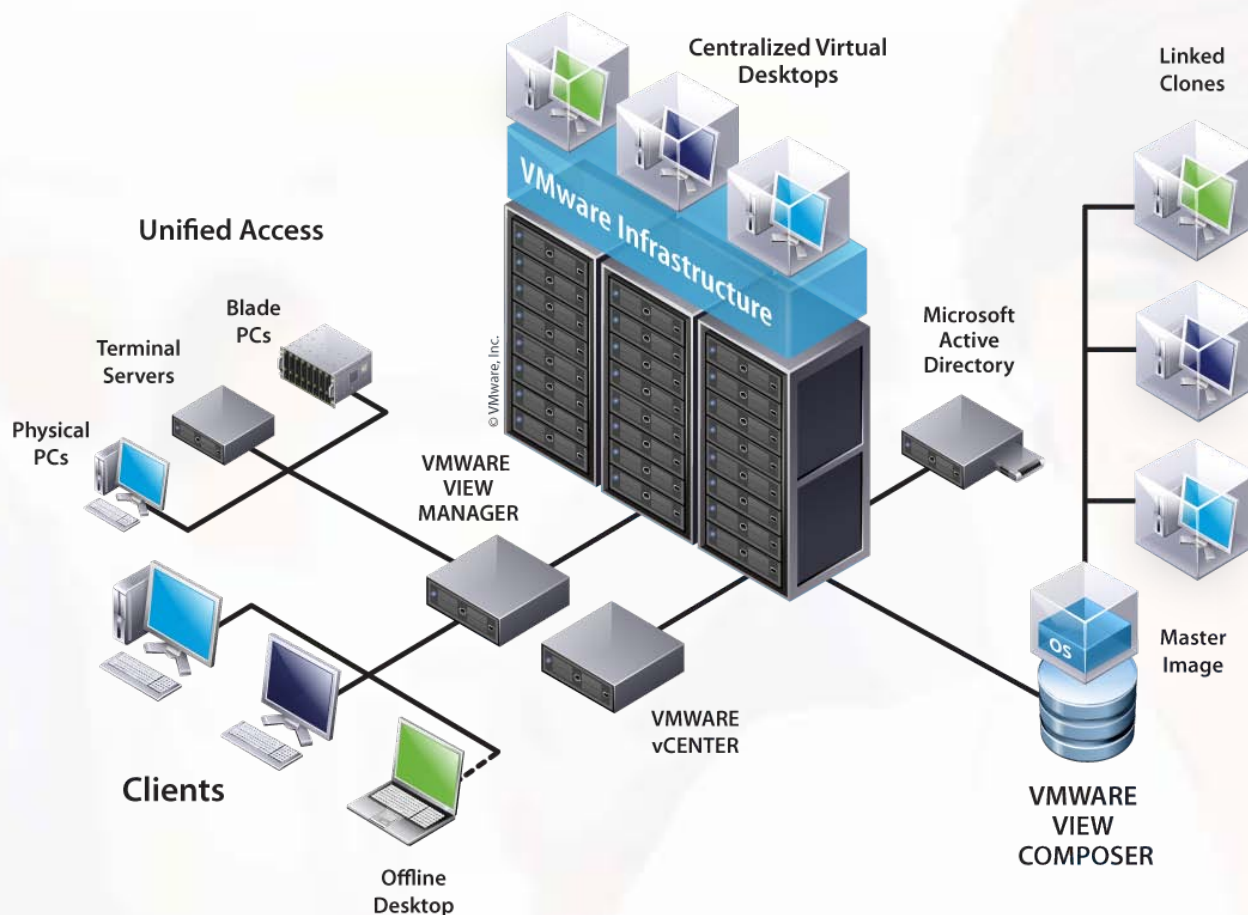
# Hidden Costs of VDI continued...

- **Ever-Changing Vendor Products**
  - With “regular” Citrix or TS you knew what you were getting for years and knew what to expect
    - Compare now with both VMWare and Citrix having released 2 major products in 12 months
    - More time spent learning and testing new versions, features, products
    - Do these changes require additional hardware/software upgrades?

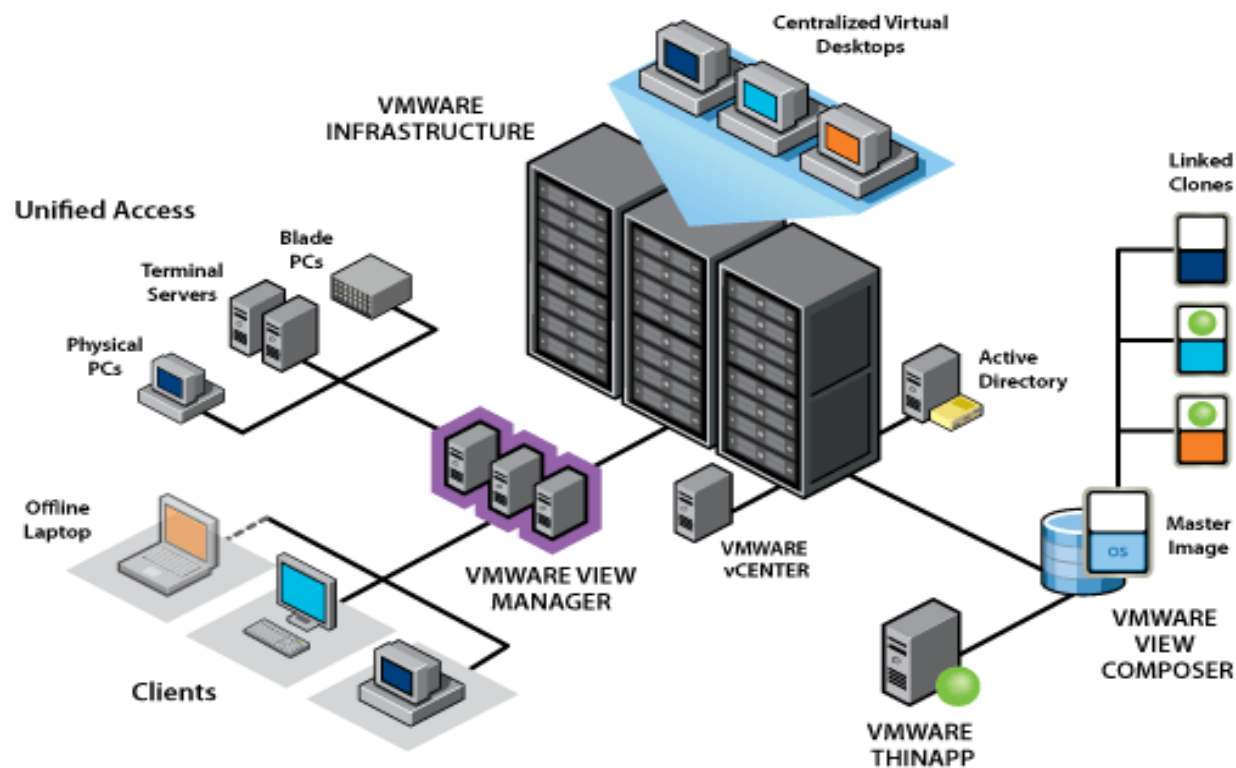
# The Basics of VDI

- **Client Device**
  - Thin client, PC, etc..
- **Connection Broker & Hypervisor**
  - VMWare, Citrix, MS RDS, Wyse, etc.
- **Virtual Desktop**
  - XP Pro, Vista, Windows 7, etc.
- **Application Virtualization**
  - Delivers the apps to the desktop

# How VDI Works - VMWare



# How VDI Works - VMWare



# How VDI Works – VMWare View

- **Key Components of VMWare View**
  - **VI3 (now vSphere 4) Platform**
    - Group back-end host servers for redundancy, VCB, automated failover, dynamic load-balancing
  - **VMWare View Manager 3**
    - NOT managed within Virtual Center – Uses VDMS
    - Streamlines mgmt, provisioning & deployment. Access virtual desktops hosted on VI3, TS, Blade PC's or remote physical PC's.
    - Upgrades & patches from a single console

# How VDI Works – VMWare View continued...

- VMWare View Composer
  - Uses Linked Clones to create desktops that share virtual disks w/ master image. User data is separated from desktop so image can be updated in one place w/o affecting user desktops.
- VMWare ThinApp
  - App virtualization – Run multiple versions of an app on the same desktop or run same version on multiple OS w/o modifications. Reduce storage needs and simplifies app mgmt.

# How VDI Works – VMWare

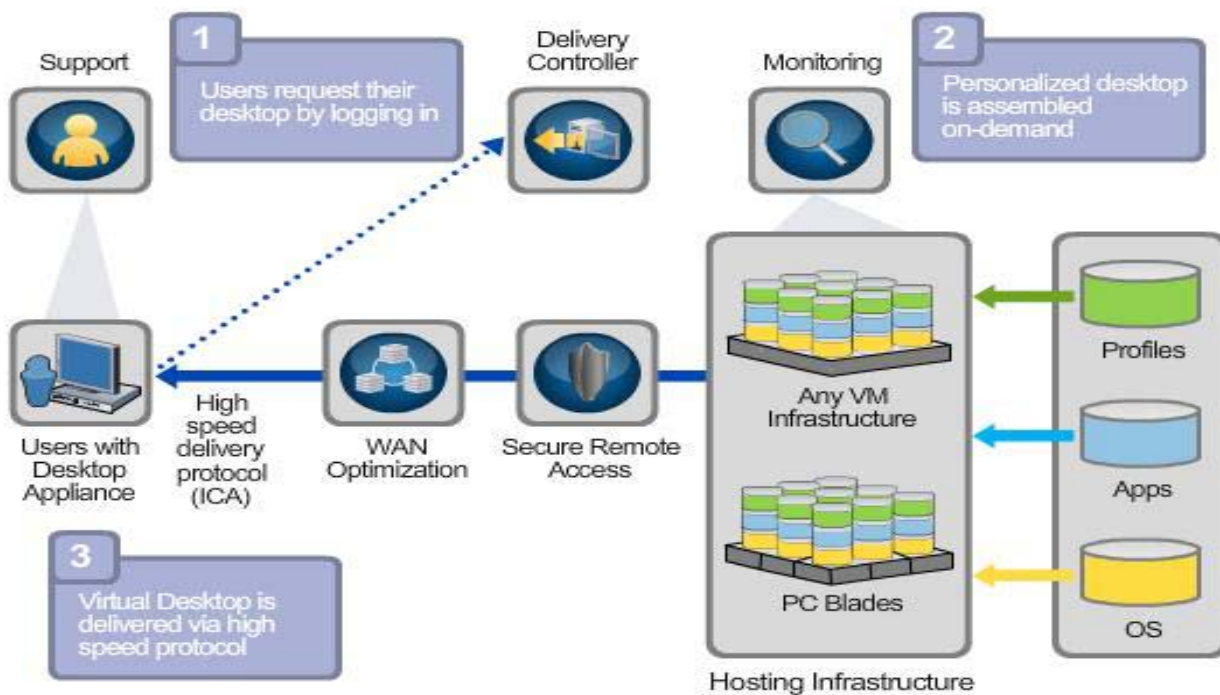
## View continued...

- Offline Desktop (was experimental)
  - Allows complete virtual desktops to move back and forth from datacenter with security in place. Changes are sync'd when device is back in the office.
  - Allows use of VDI for those not in the office
  - Also can be setup to take advantage of local resources to run virtual desktops

# How VDI Works – Xen

## XenDesktop technology

How desktop delivery works



# How VDI Works – XenDesktop continued...

- **Key Components of XenDesktop**
  - **Delivery Control**
    - Authenticates users, manages desktop environment & brokers connection to desktop
  - **Virtual Desktop Agent**
    - Installed on VM, enables direct connections between client & desktop
  - **Desktop Receiver**
    - Installed on endpoint, enables high-speed connection to desktop

# How VDI Works – XenDesktop continued...

- XenApp - Integrated Application Delivery
  - Virtualizes & delivers hosted/streamed apps to desktops in the datacenter
- Secure Desktop Delivery – SSL VPN
  - Secures connections from outside world utilizing Citrix Access Gateway in DMZ
- WAN Optimization
  - Citrix Access Gateway can be used w/ QoS and Citrix Repeater to optimize user experience

# How VDI Works – XenDesktop continued...

- EdgeSight Performance Monitoring
  - Monitors and alerts on info from virtual machines
- Support
  - GoToAssist built-in to support remote users
- EasyCall Voice Services
  - Allows users to initiate a call from their desktop and have it connect the call between the corporate PBX and any nearby phone

# How VDI Works – MS VDI

- From the MS website:
  - “Before organizations adopt VDI across all their users, they need to carefully evaluate if VDI will help solve their current business problems. Although VDI does have some tangible benefits for specific users, we encourage customers to separate facts from hype, so as to make a sound decision on the most cost effective way to optimize their desktops.”

# How VDI Works – MS VDI

- #1 “VDI is NOT the same as desktop virtualization.
  - VDI is just one technology to help virtualize your desktop, and definitely not the simplest technology to deploy. Organizations can reduce desktop costs and improve management today by implementing Application Virtualization and Windows Vista folder redirection and roaming profiles. Other desktop virtualization technologies such as MED-V can help reduce the cost of OS upgrades, and Remote Desktop Services can deliver desktop and applications sessions to users at a lower cost. Therefore, enterprises looking to virtualize their desktop infrastructure should consider all their technology options and their respective benefits to determine the best architecture for their needs.”

# How VDI Works – MS VDI

- #2 “VDI benefits specific users, and is not the solution for all desktop problems.
  - VDI requires constant connectivity to the network and cannot be used for mobile workers. Additionally, current VDI technology does not provide an optimum user experience for remote users, especially for multimedia intensive applications. For connected standard workers, VDI may prove to be cost-prohibitive when compared to the rich desktop, and therefore may not be the preferred solution. Microsoft recommends that organizations profile their users to determine the optimal desktop solution.”

# How VDI Works – MS VDI

- “VDI is best suited for contract and offshore workers, for users who need access to their work environment from anywhere, including from a non-company owned PC, as well as enterprise customers with a centralized desktop strategy for office workers. For larger deployments which require connection brokering capabilities as part of the solution, Microsoft is partnering with third party vendors such as Citrix Systems to provide a complete and scalable end-to-end solution to customers.”

# How VDI Works – MS VDI



# How VDI Works – MS VDI

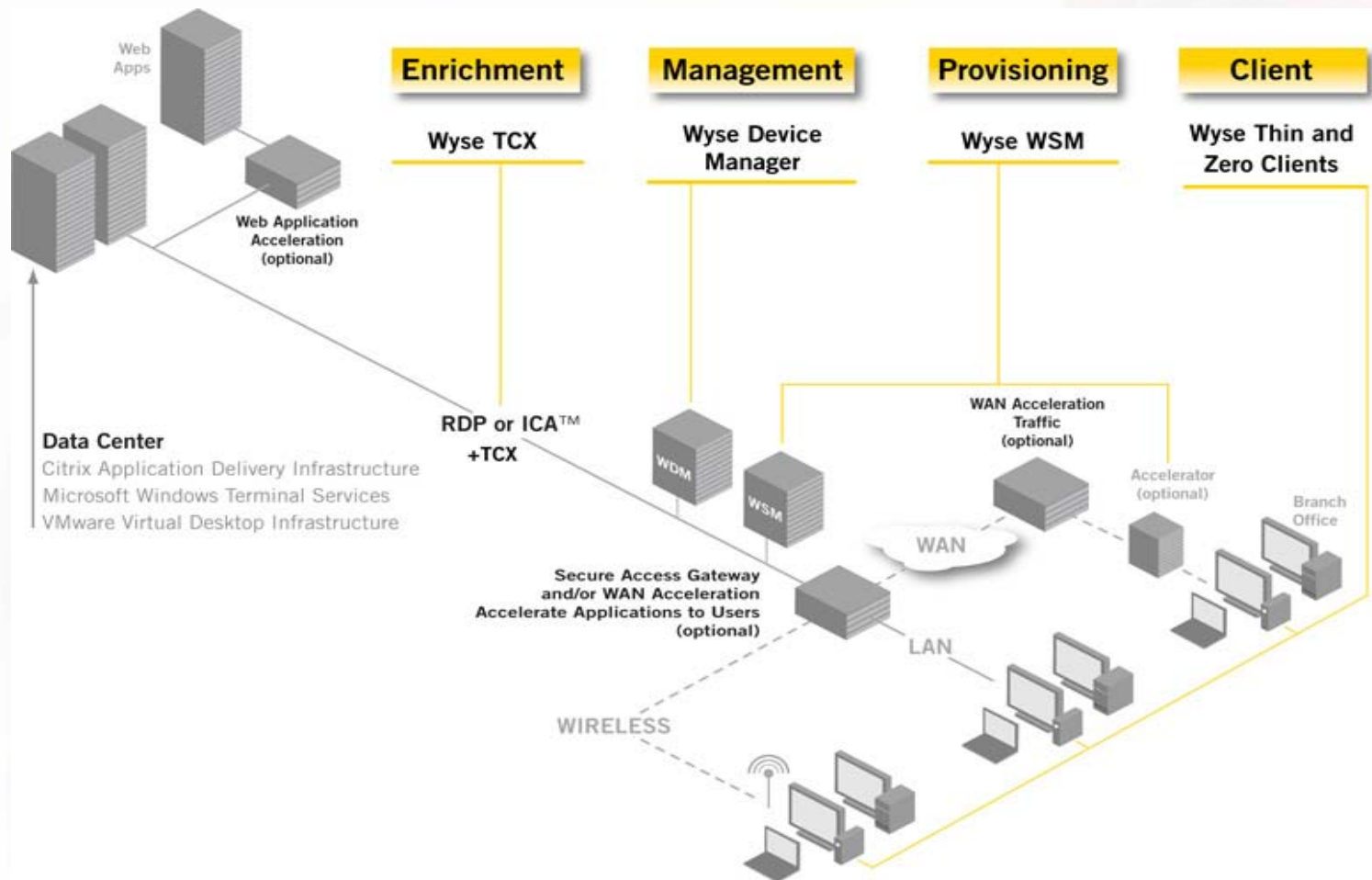
- The core components of Microsoft VDI are:
  - Windows Server 2008 with Hyper-V
  - System Center Virtual Machine Manager 2008
  - Windows Vista Enterprise Centralized Desktop (VECD)
  - Dynamic Virtual Desktops
    - Microsoft Application Virtualization (App-V) — Part of the Microsoft Desktop Optimization Pack and delivers desktop apps that are never installed and are dynamically delivered on demand
    - 2008 Terminal Services RemoteApp (Application Streaming) — Virtualizes the presentation of specific applications in a virtualized desktop.

# How VDI Works – MS VDI

## – MDOP – Suite of Technologies – Requires SA

- **Microsoft Application Virtualization** - Turns apps into centrally managed services that are never installed, never conflict and are streamed on-demand
- **Microsoft Asset Inventory Service** - Translates software service into BI and instantly depicts a complete portfolio of the desktop software
- **Microsoft Diagnostics and Recovery Toolset** - Reduces downtime and accelerates desktop repair, recovery, and troubleshooting of unbootable Windows Systems
- **Microsoft Advanced Group Policy Management** - Provides governance and control over GPO through change management and role-based administration tools
- **Microsoft System Center Desktop Error Monitoring** - Enables proactive problem management by analyzing and reporting on app and system crashes
- **Microsoft Enterprise Desktop Virtualization** - Enhances deployment and management of Virtual PC images on a Windows Desktop while also providing a seamless user experience on a Virtual PC environment independent of the local desktop configuration and operating system

# How Can I Connect TO VDI Continued... The Wyse Way



# How VDI Works – Wyse

- The core components of Wyse are:
  - Client OS - Wyse ThinOS
    - With Wyse, applications display over RDP/ICA several times faster than other full-featured OS. Because the Wyse ThinOS does not have a publicly exposed API that can be exploited by hackers, you get the utmost security from viruses and malicious software.
  - Provisioning - Wyse WSM
    - Automatically deliver OS and Apps to clients in real time over standard LANs and WANs. Zero clients and provisioning software eliminate the need for traditional thin client management tasks. Wyse WSM delivers a variety of operating systems to zero clients, including Windows 2000/XP Embedded/XP Pro. Also delivers locally required applications to users based on their role in the organization – automatically. Enables PC-only products from Citrix and others to be used on a zero client or thin client hardware without modification.
  - Management - Wyse Device Manager
    - To stay productive in an environment of emerging protocols and standards, smart hardware like thin clients must be managed efficiently and effectively. Scalable to tens of thousands of devices and beyond, Wyse Device Manager is the number one device management product for asset management, configuration management, diagnostics, and firmware updates for thin clients and supported smart devices.

# How VDI Works – Wyse

- The core components of Wyse are:
  - Enrichment - Wyse TCX Suite
    - Think a thin client can't do that? Deliver the best user experience ever for clients connected to Microsoft Windows Terminal Services, Citrix Application Delivery, and VMware VDI. Wyse TCX Suite works with both Microsoft RDP and Citrix ICA protocols to support multiple monitors, and deliver the best multimedia experience with thin devices - ever. With TCX, in many environments, thin clients deliver a better user experience than PCs.
  - Performance - Wyse Virtual Desktop Accelerator
    - Want to improve the end user experience significantly by making their interaction with software running on remote desktops? Wyse Virtual Desktop Accelerator is a software-only solution for Wyse thin clients and supported PCs. Wyse Virtual Desktop Accelerator addresses poor network performance and delivers the best thin computing user experience for the network bandwidth allocated. Wyse Virtual Desktop Accelerator accelerates protocols such as Microsoft RDP and Citrix ICA by up to 3 times on networks with up to 300ms latency and at least 768kbps downstream bandwidth.

# How Can I Connect to VDI?

- You can use just about any machine
- Existing Windows, Mac, Linux boxes
- PanoLogic
- Thin client terminals
  - Wyse, Dell, HP, etc.
  - Could have proprietary OS, Linux, CE, etc.

# So What Will VDI Cost Me?

- All pricing is based on CDW “standard” or MS Open License pricing for the following:
  - Assumes a VM back-end already in place
  - Assumes no VDI already purchased
  - Assumes no SA on XP/Vista
  - Assumes all VM’s will be 2003 servers
  - 3 x 2-proc virtual server licenses
  - 100 virtual desktops (software only)
  - 3 years of licensing, maintenance & support

# What Will VDI Cost Me? Continued...

- VMWare

- MS Licensing

- With thin client or any OS other than XP Pro/Vista
      - 100 VECD @ \$330/seat (36 mo subscription)
    - With XP Pro/Vista OEM
      - 100 Vista SA @ \$364/seat (\$277 -1<sup>st</sup> 2 yrs + \$87/yr after)
      - 100 VECD @ \$69/seat (36 mo subscription)

- VMWare View Composer

- licensed concurrently
    - 100 @ \$392/seat

# What Will VDI Cost Me? Continued...

- Citrix

- MS Licensing

- With thin client or any OS other than XP Pro/Vista
      - 100 VECD @ \$330/seat (36 mo subscription)
    - With XP Pro/Vista OEM
      - 100 Vista SA @ \$364/seat (\$277 -1<sup>st</sup> 2 yrs + \$87/yr after)
      - 100 VECD @ \$69/seat

- XenDesktop Enterprise

- licensed concurrently - 100 @ \$325/seat
      - Includes XenApp to VDI world only

# What Will VDI Cost Me? Continued...

- Wyse
  - MS Licensing
    - With thin client or any OS other than XP Pro/Vista
      - 100 VECD @ \$330/seat (36 mo subscription)
  - Wyse WDM
    - licensed concurrently - 100 @ \$52/seat
    - optional virtual acceleration – 100 @ \$94/seat

# What Will VDI Cost Me? Continued...

- MS VDI -
  - MS Licensing
    - With thin client or any OS other than XP Pro/Vista
      - 100 VECD @ \$330/seat (36 mo subscription)
    - With XP Pro/Vista OEM
      - 100 Vista SA @ 179/seat
      - 100 Vista SA w/ MDOP @ 199/seat
        - » Includes System Center and all RD/TS for VDI
      - 100 Vista SA w/ MDOP @ 232/seat
        - » Includes above plus TS CAL & App-V to full desktops
      - 100 VECD @ \$69/seat

# Now For Some Demos!

- **VMWare View Client**
- **PanoLogic USB Remote**
- **Wyse Thin Client**

# Questions?

- Thank you all for listening
- Make sure you fill out evaluations!