

# Remote Visualization in Healthcare

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# Business Requirements

- Secure Centralized Access to Mosaic Oncology Suite
- High Performance
- Easily Scalable
- Locally Redundant (N+2)
- Datacenter Redundant for DR/BC
- Virtualized Using VMware
- All VMware guests Windows 2008 R2

# The Environment

- National Healthcare Provider with multiple locations nationally
- Single NVidia K1 Grid card per host
- HP DL380 Gen8 Hosts
- VMware vSphere v5.5
- Citrix XenApp 6.5 Guests (Windows 2008 R2)

# Virtual Desktop Infrastructure

- Single user per GPU (vGPU not GA from VMware at the time)
- Simple to manage
- Higher cost
  - Hardware and supporting infrastructure
  - Licensing
- Better GPU performance per user
- Storage performance is key

# Server Based Computing

- GPU access is shared amongst user sessions
- Allows for more users per GPU
- Can be complex to manage
- Lower cost than VDI
  - Hardware and supporting infrastructure
  - Licensing

# Deployment Considerations

- vGPU not used due to lack of VMware GA at the time of architecture
- New versions of VMware may require vCenter upgrades
- Citrix Provisioning Services does not currently support GPU pass-through with XenApp
- K1 cards have 4 assignable GPUs
  - Up to 4 VM's per card
  - VM's are "stuck" to VMware host

# Manual Testing

- Good for initial functional testing
- Used to develop scripted approach
- Bad idea to use this to develop performance baselines – too many variables
- Tools used
  - Standard Windows System Monitoring
  - GPUZ

# Automated Testing

- Use for creating performance and load baselines
- Controlled variables
- Vendor estimates are generally conservative
- Testing and Metric Suites
  - Loadrunner
  - Citrix Edgesight



# Networking Considerations

- Bandwidth and latency key considerations
  - MOSAIC requires <10ms to local resources
  - User experience suffered with 200ms or greater for remote sessions
- Remote Access pathing
- Security Devices (e.g. VPN, NetScaler ICA passthrough, etc.)

# Continuous Improvement

- Exploration of hardware advances released since initial architecture (e.g. UCS, HP Blades, etc.)
- Nvidia vGPU now GA in VMware
- Load Testing Using LoginVSI
  - Has Graphics Framework available for advanced metrics

Thank You!

Contact Information

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