VIRTUALIZATION

• On-Premises
  • Citrix XenDesktop
  • VMWare View
  • Citrix XenApp

• Cloud
  • AWS GPU Workspace
  • Azure NV-Series
  • Fra.me
VIRTUALIZING ARCGIS PRO

- Required Technologies
  - Servers + GPU
  - Hypervisor
  - Remote Display Protocol

VMWare
Microsoft
Citrix
Nvidia GRID Driver
Nvidia GRID M60 cards
Virtualization Server
ArcGIS Pro VM
ArcGIS Pro VM
ArcGIS Pro VM
ArcGIS Pro VM
Desktop
Tablet
Phone
Client End Points
ArcGIS Pro
ArcGIS Pro
Cloud Access Software
## ARCGIS PRO

### ARCHITECTURAL CONSIDERATIONS

<table>
<thead>
<tr>
<th><strong>Pro</strong></th>
<th><strong>ArcMap</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>2&lt;sup&gt;nd&lt;/sup&gt; largest repository of spatial capability on this planet</td>
<td>• Largest repository of spatial capability on this planet</td>
</tr>
<tr>
<td>64 Bit</td>
<td>• 32 Bit</td>
</tr>
<tr>
<td>Multi-threaded</td>
<td>• Single-threaded</td>
</tr>
<tr>
<td>DirectX / OpenGL</td>
<td>• Windows GDI+</td>
</tr>
</tbody>
</table>
VIRTUALIZATION PRESENTATION PIPELINE ON-PREMISE

- On-Premise Server resources
  - Local virtualization servers
  - VMWare Horizon View
  - Citrix XenDesktop

- Requires
  - Shared GPUs
    - Nvidia GRID Manager
    - Ex. VMWare, Citrix

Prior to sending to client:
- Graphics Optimization.
- Encoding/compression

1. DirectX Call
2. Nvidia GRID Manager
3. Graphics Decode & Rendering
4. Client Machine

Virtuaization Server

Nvidia GRID cards
CHALLENGES WITH XENAPP

ArcGIS Pro will not work with Citrix XenApp

Unable to share GPU

XenApp is within Windows Server

XenApp Sessions 1~3 get necessary FrameBuffer

XenApp Sessions 4+ queued on GPUs

Terrible UX
CLOUD VIRTUALIZATION

- Azure
  - NV-Series 6
- AWS
  - GPU Workspace
VIRTUALIZATION PRESENTATION PIPELINE
CLOUD - BASED

• Datacenter resources
• Multiple geographic regions
• Requires
  • Shared GPUs
    • Ex.VMWare, Citrix
  • Dedicated GPUs
    • Pass-through (Nvidia Grid Mgr)
    • DDA (MS WinServer 2016)
AZURE NV-SERIES + TERADICI PCOIP

- Azure NV-Series
  - Virtualization infrastructure
  - GPU
- Teradici PCoIP
  - Remote Display Protocol

![Diagram showing Azure NV-Series, Teradici PCoIP, and client end points connected to NV-Series 6 VM with Nvidia GRID M60 card and Thin Client App.](image-url)
ARCGIS DESKTOP VIRTUALIZATION APPLIANCE

- Dell R730 Precision Rack Server
- 3.75 TB SSD storage
- 275 GB RAM
- 2x Nvidia GRID M60 cards

- VM configuration
  - 6 virtual CPUs
  - 8GB RAM
  - 1GB Frame Buffer*

- VM/Server Density
  - Using the 2Q
  - 24 VMs per Dell R730
ArcGIS Pro Virtualization

ArcGIS Pro as a hosted application running on the following virtualized environments

<table>
<thead>
<tr>
<th>Virtual Desktop Infrastructure (VDI)**</th>
<th>Citrix XenDesktop 7.6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citrix XenDesktop 7.6</td>
<td>Windows Server 2012 R2 x64 vV</td>
</tr>
<tr>
<td>VMware View 6.3 Horizon View</td>
<td>vLite 8.0.5 D1501.4366</td>
</tr>
</tbody>
</table>

**Citrix VDI certified with NVIDIA GRID driver 340.68/340.27

**Microsoft VDI certified with NVIDIA GRID driver 340.68/340.27

**VMware VDI certified with NVIDIA GRID driver 340.68/340.27

<table>
<thead>
<tr>
<th>Citrix XenApp®</th>
<th>Hosted OS</th>
<th>Minimum-OS version</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citrix XenApp 6.5</td>
<td>Windows Server 2008 R2</td>
<td>SP1</td>
</tr>
<tr>
<td>Citrix XenApp 7.6</td>
<td>Windows Server 2012 R2</td>
<td>SP1</td>
</tr>
</tbody>
</table>

** GPU compatible with your virtualization platform is recommended.

System Requirements

Community

ArcGIS Desktop Virtual Appliance ADVA

Pro virtualizes for any organization
THANKS FOR ATTENDING

JMEZA@ESRI.COM
RDANZLEY@ESRI.COM