NEW TESTING FRAMEWORK FOR GFX

FOR INDUSTRY STANDARD PERFORMANCE AND SCALABILITY TESTING

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GRAPHIC APPLICATIONS IN VIRTUAL ENVIRONMENTS?

- How do graphic applications scale in virtual environments?

- Everyone’s asking
  - customers, vendors, application developers

- No industry standard for graphics
ANNOUNCEMENT

GPU TECHNOLOGY CONFERENCE

LOGINVSI + NVIDIA

GFX FRAMEWORK
LOGIN VSI: WHAT DO WE DO?

Real Applications
Real Data

Virtual Users with reliable, constant workload

Horizon View
XenDesktop & XenApp
Terminal Server / RDS
Login VSI is commonly referenced as a standard within the virtual desktop community and was designed for benchmarking Server Based Computing and Desktop Virtualization (VDI) solutions including Citrix XenDesktop.

"The industry now accepts this tool as the de-facto standard for user workload generation" - Microsoft

"Login VSI is the de facto standard for SBC and VDI benchmarking" - Gartner
WORKLOADS IN ALL FLAVORS

- Task Worker
- Office Worker
- Knowledge Worker
- Power User
- Customized
- Storage
- GFX Framework

- Including own applications
- To be announced
- To be announced
From Project...
- Benchmarking
- Sizing & Scaling
- Stress Testing

...To Production
- Regular Stress Testing
- Check Impact of Changes

Office 2010, VSI max: 140  
Office 2013, VSI max: 106
GRAPHICS WORKLOAD FRAMEWORK

- Industry standard framework for testing GPU applications
  - No single workload represents a “standard”

- Building on LoginVSI experience and knowledge

- Building on NVIDIA’s experience with GPU applications
WHICH GRAPHICS WORKLOAD?

AutoCAD Example

- Perhaps the most popular professional CAD application, ~10M seats
- Spans many Industries including Manufacturing, AEC, ..... 
- Strong customer interest in virtualizing
- Relatively easy to create benchmark
BENCHMARKING AUTOCAD

- AutoCAD is a large application
  - Many settings, visual styles, ...
  - No single model/assembly is correct
  - Unbounded number of variables
  - All affect “performance”

- Graphics workload
  - Constrain settings to ensure fair comparison
  - Tests multiple models (11 models)
  - Tests all visual styles (Conceptual, Hidden, Realistic, Shaded, ShadedWithEdges, ShadesOfGray, Sketchy, Wireframe, Xray)
  - Uses AutoCAD utility to spin model and measure fps
SCALE TESTING

- **Server configuration:**
  - Dell R720 w/ 2x NVIDIA GRID K2 boards, K200 Profile
  - 2x Xeon 2.6 GHz CPU, 384 GB RAM, 2.5 TB Disk RAID 5
  - XenServer 6.2 SP1 w/ NVIDIA vGPU, XenDesktop 7.1
  - Virtual machines under test = Win7 64 with AutoCAD 2014

- **Virtual client configuration**
  - HW configuration same as server
  - Each virtual client connected 1:1 with VM under test

- **Scale**
  - Scale up from 1 VM to maximum supported by config
SCALE TESTING RESULTS

Behavior you’d probably expect

Apartment Tower

- As VMs count increases
- VM performance decreases
- Different Visual Style shows different performance

Popular Visual Styles

- conceptual
- hidden
- realistic
- shaded
- shadedwithhedges
- shadedofgray
- sketchy
- wireframe
- x-ray

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<th>16 VM</th>
<th>32 VM</th>
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SCALE TESTING RESULTS

Things you maybe didn’t expect — but hey it’s not bad

- As VMs count increase
- VM performance remains level
- Consolidation headroom

**Aerial**

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SCALE TESTING RESULTS
There’s no right answer - Continuous testing after change

- Two models very different performance using the same visual style
- Would virtualization have been blamed for observed performance?
GRAPHICS TESTING FRAMEWORK - NEXT STEPS

- Complete integration into GFX framework
  - Reference results
  - Finalize overall scoring metric

- Further scale testing
  - Impact of CPU starvation
SUMMARY

- Login VSI & NVIDIA to release the GFX Testing Framework
- Framework for various 3D Applications (like AutoCad)
- Available 2H 2014
- To be continued.......

Thank you!