NVIDIA GRID™
A True PC Experience for Everyone Anywhere
AGENDA

Who is NVIDIA
Why Every PC Has a GPU
NVIDIA GRID - GPUs for Virtual Computing
Solutions Roadmaps
Resources at NVIDIA
Jensen Huang, NVIDIA Co-Founder and CEO, was featured in Mark Templeton’s Citrix Synergy Keynote.
What is a GPU?

**CPU**
Optimized for Serial Tasks

**GPU Accelerator**
Optimized for Many Parallel Tasks
CPU Pizza Delivery

PROCESS
Delivery truck delivers one pizza and then moves to next house
NVIDIA GPU Pizza Delivery

PROCESS
Many deliveries to many houses
Every notebook, tablet and smartphone has a GPU

GPUs delivers a better visual experience by offloading work that the CPU is not efficient at processing (Direct X, OpenGL, Video)
Placeholder for Video to reduce file size. Video starts automatically.
Visual Realism & Accuracy

- Complex materials surfaces, reflections and shadows
- Fast & Interactive Performance
Visual Realism & Accuracy

- Full Scene Anti-Alliancing removes jagged edges
- Industry Standard for >12 Years
- Professional Modes - No compromise performance, models stay interactive
Placeholder for Video to reduce file size. Video starts automatically.
NVIDIA GRID + Citrix
(for Virtual Computing)

PRO APPLICATION PERFORMANCE
Industry’s best performance on leading Design and Manufacturing applications

LEADER IN RELIABILITY AND STABILITY
Mission critical Drivers certified on 100+ applications and industry’s best support

PREFERRED, TRUSTED BRAND
NVIDIA Quadro professional graphics have 90% share in Workstation Market
<table>
<thead>
<tr>
<th></th>
<th>NVIDIA GRID K1</th>
<th>NVIDIA GRID K2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GPU</strong></td>
<td>4 Kepler GPUs</td>
<td>2 High End Kepler GPUs</td>
</tr>
<tr>
<td><strong>CUDA Cores</strong></td>
<td>768 (192/GPU)</td>
<td>3072 (1536/GPU)</td>
</tr>
<tr>
<td><strong>Memory Size</strong></td>
<td>16GB DDR3 (4GB/GPU)</td>
<td>8GB GDDR5 (4GB/GPU)</td>
</tr>
<tr>
<td><strong>Max Power</strong></td>
<td>130 W</td>
<td>225 W</td>
</tr>
<tr>
<td><strong>Cost</strong></td>
<td>$2,000</td>
<td>$3,750</td>
</tr>
<tr>
<td><strong>Number of Users</strong></td>
<td>Up to 32</td>
<td>Up to 16</td>
</tr>
</tbody>
</table>

*Number of users depends on software solution, workload, and screen resolution*
NVIDIA GRID Partners
NVIDIA GRID™ vGPU™ is the hardware virtualization of the GPU which allows multiple virtual machines to interact directly with a GPU.
# GRID vGPU Profiles

<table>
<thead>
<tr>
<th>Card</th>
<th>Physical GPUs</th>
<th>Virtual GPU</th>
<th>Use Case</th>
<th>Frame Buffer (MB)</th>
<th>Virtual Display Heads</th>
<th>Maximum Resolution</th>
<th>Maximum vGPUs per GPU</th>
<th>Maximum vGPUs per Board</th>
<th>Cost per User</th>
</tr>
</thead>
<tbody>
<tr>
<td>GRID K2</td>
<td>2</td>
<td>GRID K280Q</td>
<td>High-end Designer</td>
<td>4096</td>
<td>4</td>
<td>2560x1600</td>
<td>1</td>
<td>2</td>
<td>$1875</td>
</tr>
<tr>
<td>GRID K2</td>
<td>2</td>
<td>GRID K260Q</td>
<td>Typical Designer</td>
<td>2048</td>
<td>4</td>
<td>2560x1600</td>
<td>2</td>
<td>4</td>
<td>$937</td>
</tr>
<tr>
<td>GRID K2</td>
<td>2</td>
<td>GRID K240Q</td>
<td>Entry-Level Designer</td>
<td>1024</td>
<td>2</td>
<td>2560x1600</td>
<td>4</td>
<td>8</td>
<td>$469</td>
</tr>
<tr>
<td>GRID K2</td>
<td>2</td>
<td>GRID K200</td>
<td>Power User / Knowledge Wkr</td>
<td>256</td>
<td>2</td>
<td>1920x1200</td>
<td>8</td>
<td>16</td>
<td>$235</td>
</tr>
<tr>
<td>GRID K1</td>
<td>4</td>
<td>GRID K140Q</td>
<td>Basic Designer</td>
<td>1024</td>
<td>2</td>
<td>2560x1600</td>
<td>4</td>
<td>16</td>
<td>$125</td>
</tr>
<tr>
<td>GRID K1</td>
<td>4</td>
<td>GRID K100</td>
<td>Power User / Knowledge Wkr</td>
<td>256</td>
<td>2</td>
<td>1920x1200</td>
<td>8</td>
<td>32</td>
<td>$63</td>
</tr>
</tbody>
</table>
Previously had to synchronize datacenters between 7 satellite offices on a daily basis

3,000 CAD Engineers now supported by 3 worldwide data centers

**Key Benefit**
6% increase in productivity because people could work from home ***paid for the whole project

- Large Assembly Load time decreased by 2X
- CAD user satisfaction >30%
- Load Times Decrease
- Duplication Errors Decrease
- Non-Authors Can now Access 3D models through PLM
Budget Justification
ROI demonstrated through enabling work beyond the office
Payback in under 18 months including all infrastructure (>1,000 servers)

Key Learning on how to Drive Adoption
User benefits need to outweigh risks (mobility, performance)
Users accept zero performance degradation (1% isn’t acceptable)
The best presentation is a demonstration
Let the end users have hands on to believe their applications will perform the same or better
GRID Resources

GRID Website
www.nvidia.com/vdi

Sign up for the monthly GRID VDI Newsletter
http://tinyurl.com/gridinfo

Questions? Email us
GRIDteam@nvidia.com
NVIDIA GRID YouTube Channel
http://tinyurl.com/gridvideos