Many IT departments are turning to virtualization and Virtualized Desktop Infrastructure (VDI) technologies to help secure data, ease network management, reign in time spent on system service and support, and better meet varied and evolving end-user computing needs. However, to provide a 3D user application workload, one further technological barrier remains: GPU hardware acceleration. VMware® ESXi or ESX, in combination with AMD FirePro™ technology can help IT remove this barrier. Further, enabling GPU hardware acceleration brings enhanced visual computing experiences far beyond what is possible through traditional CPU-based virtualization. In short, it uses state-of-the-art GPU technology that resides entirely in the data center to enable a large number of graphics-rich desktop experiences, on par with physical workstations.

Virtualization lets IT run multiple virtual machines on a single physical machine, with each virtual machine sharing the resources of that one physical computer. An operating system cannot tell the difference between a virtual machine and a physical machine, nor can applications or other computers on a network. Even the virtual machine thinks it is a “real” computer. Nevertheless, a virtual machine is composed entirely of software and contains no hardware components, and as such applications rely on the CPU instead of the GPU for rendering the display and any graphics.

Until recently, IT has been limited to deploying physical systems to deliver 3D workstations graphics applications to those power-users who need to render very large and complex models with millions of triangles, such as airplanes and automobiles, or 3D animations and designs with multiple textures. While one physical machine per user (rack or blade, desktop or mobile workstation) provides exceptional performance for these power users, it can be expensive. Direct multi-GPU pass-through capabilities solve this problem.

What is Direct GPU Pass-through?

With a VMware® ESXi hypervisor installed, IT can outfit a rack or blade featuring multiple PCIe® slots with the same number of server graphics cards, and share this single host server across multiple virtual machines in a one-GPU-per-user model. Direct access to the GPU is enabled using the DirectPath I/O or PCIe™ Pass-through feature.

For example, a Dell PowerEdge R720 rack server with four AMD FirePro™ server graphics cards can serve four simultaneous 3D graphics power users and, if desired, some number of regular knowledge workers who do not need server-side graphics hardware acceleration. Because applications like high-end computer aided design and engineering, design and animation, geographic information systems and medical imaging applications are processed primarily by the GPU, there’s generally plenty of CPU power to go around on a single multi-core processor, not only for these 3D graphics power users but also for traditional office workers. Now IT has a path to transition 3D workstation graphics applications as well as 2D users to a VDI set up with all of the benefits, including having each user’s data and applications sit securely in the data center — helping to prevent data leakage.

Desktop Access from Any Device

Virtualization brings many benefits for both IT and for end users. The ability to access a desktop remotely from any device, including laptops, tablets, thin clients or smartphones, means users can always access key information and projects. This can help improve productivity and customer responsiveness, whether on the move, at the office, or at home.

AMD FirePro™ technology features dual- and single-slot server graphics cards with the memory, compute and application performance required to deliver uncompromised quality of graphics and power a computing experience on par with that of a physical workstation, all from the data center. AMD is the only company offering single-slot passively cooled server graphics cards for maximum system density.
KEY FEATURES:

- Optimized for professional graphics applications
- Passively cooled for use in rack-mount servers, blades and PCIe® expansion chassis
- Support for Microsoft® Windows Server® 2008 R2 SP1, Windows® 7 and Linux® operating systems

For more information, visit www.amd.com/firepro