HDS Computer Guidelines

Optimized configuration for Cyclone and CloudWorx

Processor:

Cyclone performance benefits from both higher clock speed and multiple core processors. For maximum performance use a fast quad-core processor. When trying to save money go for the fastest dual-core processor you can afford (or a quad core if there is only a small premium over dual core at the same speed).

OS:

We recommend Windows XP Professional. While Cyclone and CloudWorx are supported under Vista there are a number of issues that make XP preferable. Cyclone is a 32-bit application and does not take advantage of the memory available in 64-bit versions of the OS, but runs on them in its usual 32-bit form. A 64-bit OS will itself be able to use more than 4GB of physical RAM for potential performance improvements when considering additional file caching and other programs running concurrently. CloudWorx for AutoCAD is available as a 64-bit application if you use 64-bit versions of AutoCAD 2008 or 2009.

Physical Memory:

We recommend 4GB physical RAM, or more with a 64-bit OS. The 32-bit versionof XP only uses a maximum of 3GB RAM but using 2 x 2GB DIMMs generally offers higher performance and comparable cost to 4 DIMMs (2 x 1GB + 2 x 0.5GB).Highest performance is achieved when you use memory of the highest speed thatthe motherboard supports.

Virtual Memory:

By default 32-bit Windows XP provides a 2GB address space to each application. It is possible to compile applications to use 3GB of virtual memory, but Windows must be configured to allow applications to use the memory by adding a /3GB flag to the boot.ini file (please see Microsoft for details). You will need to test to see if this results in overall better performance for the type of work you do on your computer. Cyclone versions created after June 2008 are built to use 3GB memory if the computer is configured to make it available.

Graphics:

Cyclone uses OpenGL, so a combination of fast card and good OpenGL drivers is important. PCI Express Cards with 512MB memory are now inexpensive enough to recommend as a minimum, and if you will be using a lot of texturing or will be rendering a lot of polygons (geometric objects or meshes) then you will want a faster GPU and memory. You don't really need an "extreme gaming" card or a "3D modeling workstation" card - these are not optimized for drawing point clouds, and Cyclone doesn't use many of the extensions that these cards support (e.g. filtering, etc.). The card should support at least 24-bit hardware Z-buffer at the resolution and color depth (i.e., 24 bits per pixel or 32 bits per pixel) that you will be using. If using multiple monitors (presenting separate or continuous desktops) it is desirable to select cards with additional video memory.

Hard disk:

Cyclone data sets are large, and Cyclone benefits from high performance storage. Currently, the best value that delivers good performance may be found in SATA drives. Disk performance tends to increase with the size of the drive, so 750GB and 1TB drives generally perform better than smaller drives. There are some premium drives, like 10,000 RPM SATA or SCSI that offer slightly higher performance, but these drives have considerably lower capacity and are more expensive, so your budget and performance goals will need to guide you.

RAID can increase performance, but considering the data is precious we recommend that you only consider redundant RAID types, and avoid performance-only RAID 0, which does not provide additional error checkingor guard against data loss. RAID 5, 6, and 10 all can increase performance as well as guard against data loss. RAID 10 is good if you are interested in write performance (useful when importing or unifying large clouds), but requires at least 4 identical drives and a dedicated controller. Raid 5 and 6 offer very good read performance as the number of drives in the array increases (it is possible to make arrays with 8 to 16 drives). A good raid controller is of course important in delivering the benefits of RAID; 3rd party cards generally perform much better than controllers built into motherboards.

It is also possible to configure multiple drives to enhance performance, with the OS and pagefile on one fast disk, and additional disks or RAID arrays used to store data.

Archive:

Use a tape, DVD burner or external disks to back up databases. Keep in mind that the size of databases can increase very quickly when scanning with high density or over a longer time on large projects.

Network:

If you are sharing large files or using Cyclone SERVER, then the network should be a 1 Gbps network. In order to achieve the high throughput possible with a 1 Gbps network, all components and wiring between the participating computers need to support that speed, not just the adapter on the computer. Of course the connection to the Internet may be slower, but the computers sharing data need to be connected with proper equipment and wiring.