DCO Operations

Interesting Statistics

- As of October 2011 there are 502 computers in the DCO, connected to 24 network switches, 50 power distributors and 23 remote console servers with a total of 1795 cables
- There are a total of 2468 CPU cores, 6.7 TiB of memory and 1384.6 TB of disk space across 1722 spindles
- Eight air conditioners within the zones process hot air back to normal building temperatures
- 13 sensor nodes monitor environmental conditions in the room; most equipment can send email to alert to adverse conditions

OpenCirrus Cluster:

- 78 servers x 2 CPUs x 4 cores/CPU = 624 cores
- Memory: 16 GB per server, 1.22 TB total
- Storage: 109 TB across 156 spindles
- Network: 2x 1GbE per node, 1x 10 GbE per 39 servers

Preliminary vCloud Cluster:

- 1248 cores and 3.8 TiB RAM across 128 servers
- Local Storage: 20.8 TB across 288 spindles
- Shared storage: 145 TB across 250 spindles
- 10 GbE to each node

Opencloud Cluster:

- 64 servers x 2 CPUs x 4 cores/CPU = 512 cores
- Memory: 16 GB/server x 64 servers = 1 TB total
- Storage: 256 TB across 256 spindles
- Network 10 GbE to the node, 40 GbE uplink per 32 servers

Storage Nodes:

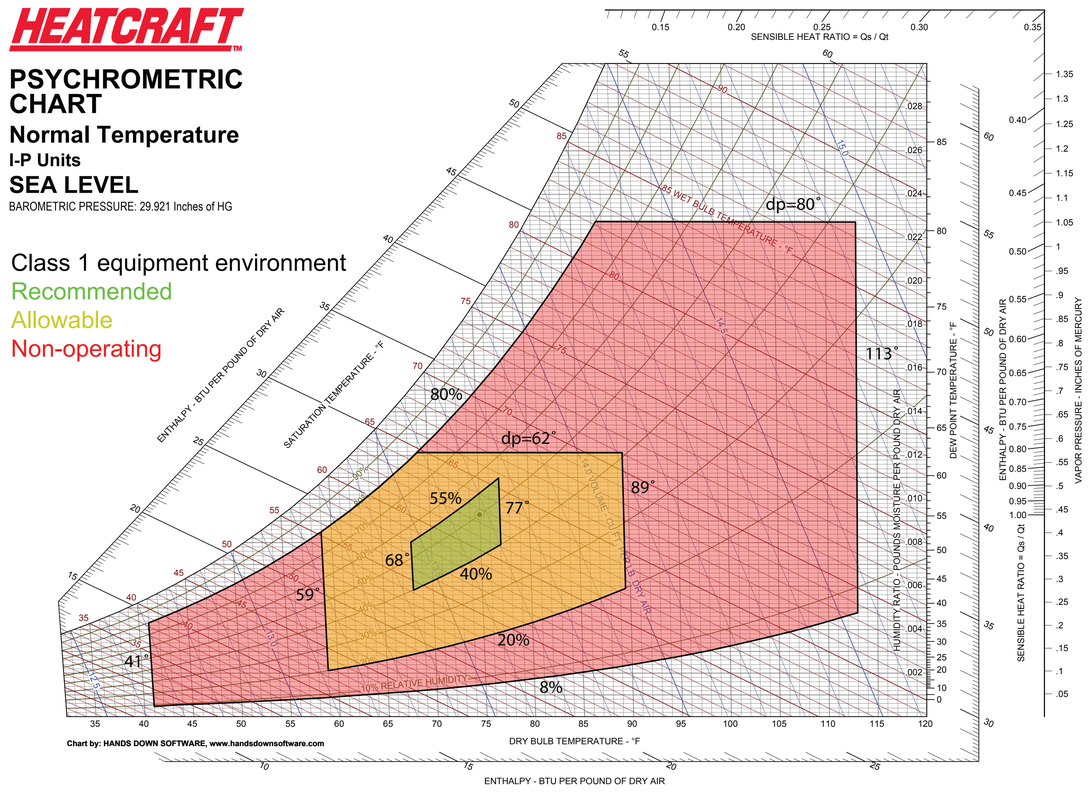
- 13 servers with 16 x 1.5 TB disks per server
- 208 TB across 208 spindles
- 10 GbE to each node

Head end nodes:

- 4 servers x 1 CPU x 4 cores = 16 cores
- Memory: 32 GB/server x 4 servers = 128 GB total
- Storage: 12 TB across 8 spindles

Remainder of DCO:

- 206 servers
- Memory: 236 GiB
- 98.5 TB storage across 418 spindles
- 1 GbE to each node, 4x 1GbE uplink per rack



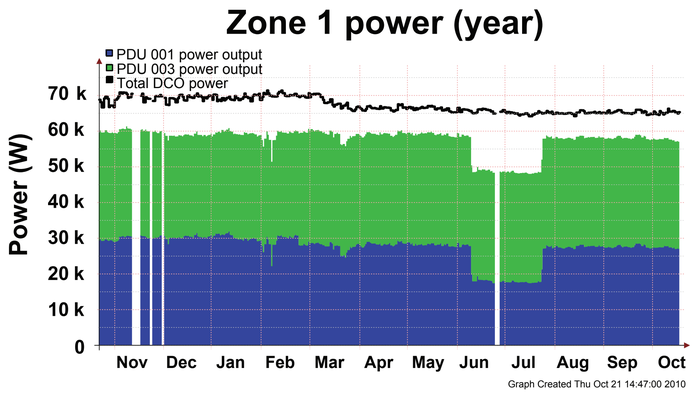
- Psychrometric chart is annotated with the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) recommendations for Class 1 computing equipment
- This chart is valid for the intake air of the machines hosted within the DCO

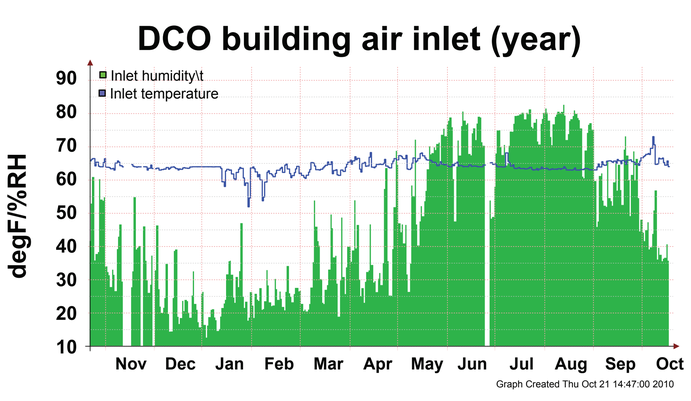
TEMPERATURE AND HUMIDITY

- Temp and humidity of the building's fresh air as supplied to the DCO
- Over the last year, temperature remained nearly constant
- Humidity was controlled by the DCO air conditioners at all times during the year

ELECTRICAL POWER CONSUMED IN THE DCO

- There are currently five power distribution units within the computing zone, each having a capacity of around 70 kW
- The difference in the total power usage shown consists of around 6 kW of losses along with the power needed to humidify and heat the air





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