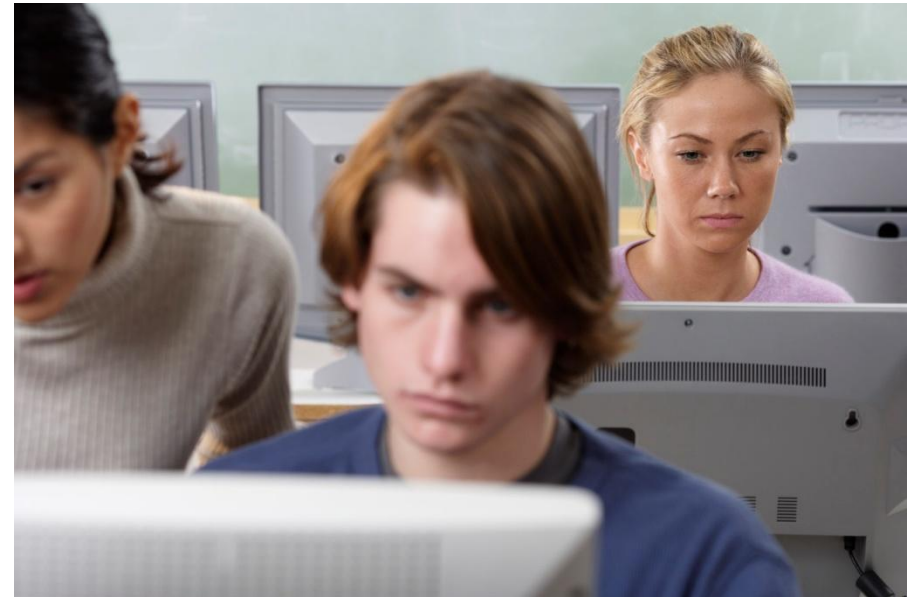


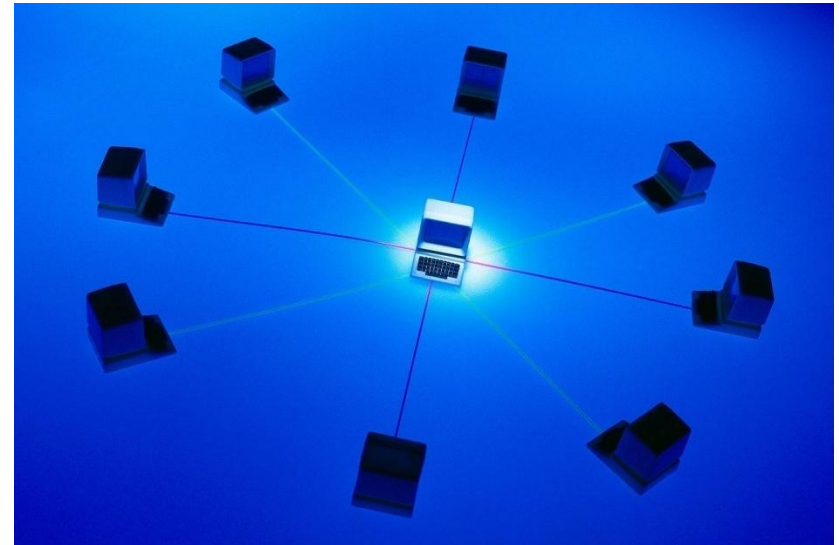
Next Generation Data Centres

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- ITC is at the centre of the business
- Convergence drives the need for more capability
- Power and cooling are major (and growing) issues
- Real estate costs continue to grow
- Green “image” is a concern
- Skills are in short supply
- The “Do Nothing” option is commercial suicide



- Heterogeneity ruled
 - 1 application per server
 - Specific storage per server
 - Highly distributed server topology
 - Multiple different skills
 - Multiple different tools
- Low utilisation rates
 - <10% CPU
 - <30% storage
- Resilience via mirroring
 - Lower utilisation



- SOA and Utility computing
 - Away from application, towards function
 - More re-use
 - SaaS
- Virtualisation
 - Abstraction of function from form
 - Creation of large resource pools
- Blade Computing
 - The emergence of commodity scale out
 - Has to include the use of existing scale up
- Green issues
 - Whether for real or for appearances sake
- Value Chains
 - Working directly with customers and suppliers



- Loose-coupled systems designed to provide flexibility
 - Dynamic service instances
 - Grow and shrink capabilities on the fly
 - Composite applications replace monolithic applications
- Need for service governance
 - What runs where, and when?
 - Who's doing what?
 - Security



- Making multiple resources appear as one
 - Needs asset discovery, management
 - Needs the capability to absorb new resources on the fly
- Making one resource appear as many
 - Needs to be dynamic
 - Needs to have strong security between partitions
- Provides consolidation and rationalisation capabilities
- Needs hybrid virtual/physical management
 - P2V, V2V, V2P movements
 - Disk as tape, shared resources as individual

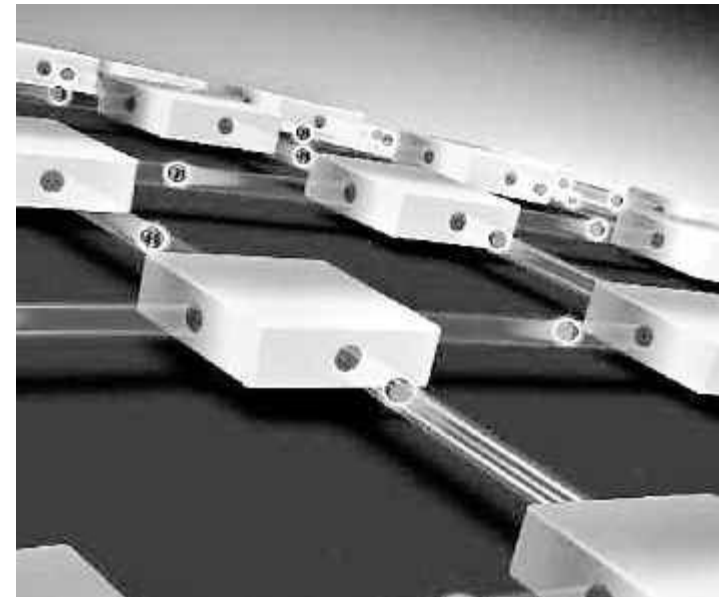
- Commodity items creating post-supercomputer capabilities
 - Removal of dependencies between form and function within chassis
 - HPC capabilities
 - Specific blade technologies
 - “Brick” Constructs
- Massive increases in performance densities
- Better overall engineering for heat and power



- Don't do Green to be Green
 - Look at business drivers
 - Power costs rising
 - Do you see your data centre power bill?
 - Who does?
 - Cooling costs rising
 - Real estate costs rising
 - More efficient resources lower power and cooling costs
 - Higher densities remove the need for real estate growth



- Massively “shared everything” environment
- Highly dynamic
 - Services provisioned and deprovisioned on the fly
- Highest levels of hardware density
 - Requires highest levels of chassis and component engineering
 - Engineered cooling and power supply is a necessity



- Rationalise and Consolidate
 - Lower your overall footprint
- Specifically designed and engineered data centre
 - Allow for growth of and changes in power/cooling
 - Allow for volume growth – but control it
 - Build for business continuity – not disaster recovery
 - Look for heat reuse
- Engineer for optimum utilisation
 - Virtualise where possible and make the most of it
 - Use a service based construct
- Build in management and maintenance

- Tomorrow's data centre requires a change in mindset
 - Total available compute capability is meaningless
 - Effectiveness matters
- Power and cooling will grow as issues as densities increase
- The design of the data center itself becomes more important
- A utility-based hardware approach, combined with a service-based function approach is the way forwards.