

LHCb Computing Infrastructure at Warwick

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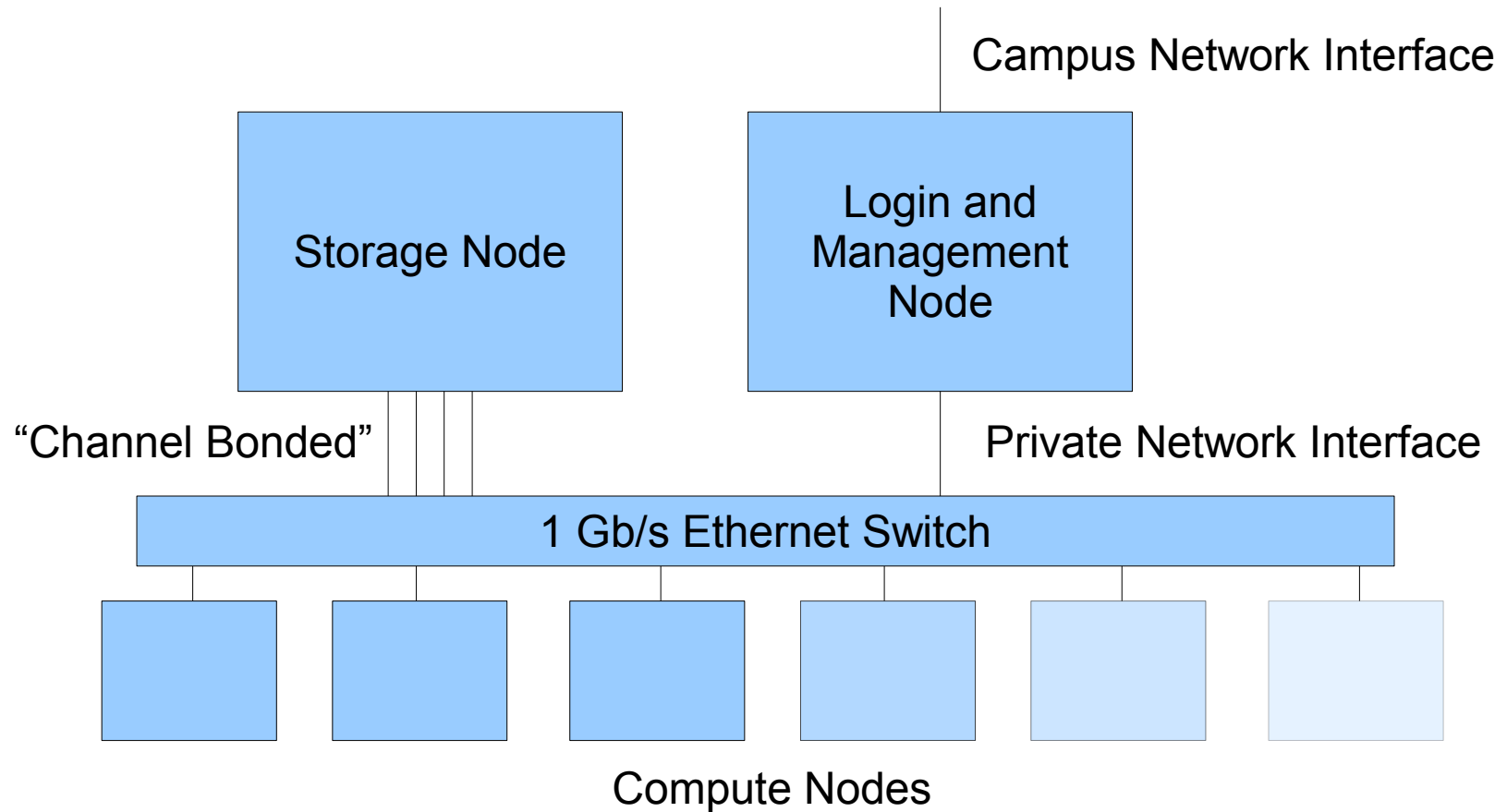
Introduction

- As Ben mentioned, our desktop is openSUSE
- Can't run the LHCb software stack
- So need some computing infrastructure for LHCb
- Tim Gershon's ERC grant provided money to build a small compute farm for this purpose
- Tender process recently completed, delivery expected end of July

Envisaged Usage of LHCb Farm

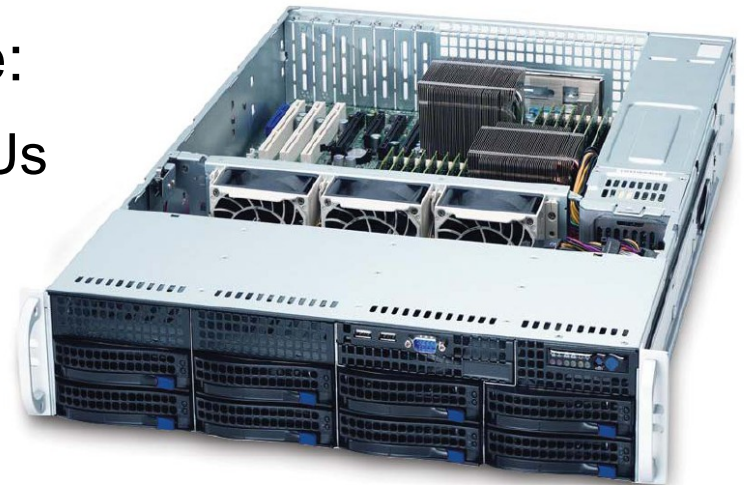
- Some provision for interactive use:
 - Compiling and linking
 - Event displays
 - Short(ish) (test) jobs
 - **No** provision for desktop activities – e.g. browsing, mail etc.
- Batch computing:
 - Generating MC (e.g. with test database)
 - Warwick now responsible for EvtGen generator
 - Longer test jobs
 - Non-LHCb-software analysis jobs (e.g. likelihood fits)
- Submission of Grid jobs (with Ganga)

Schematic



Login/Management Node

- Must have capacity to deal with multiple simultaneous login sessions, some potentially running (short) CPU/memory intensive processes
- Must also run the services to manage and monitor the cluster:
 - DHCP, DNS, batch scheduler etc.
- Must be extremely reliable
- Purchasing Viglen HX425Hi 2U node:
 - Dual Intel Xeon E5620 (quad-core) CPUs
 - 24GB RAM (3GB per core)
 - 250GB RAID 1 system disks
 - 250GB RAID 0 scratch disks
 - Redundant, hot-swappable PSUs



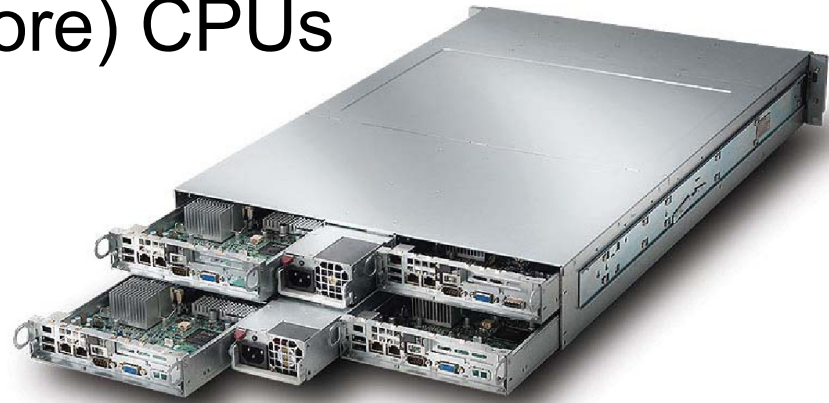
Storage Node

- Need storage for user home space
- Also a bulk storage area for datasets
- Purchasing a Viglen HX425S-36i 4U node:
 - Dual Intel Xeon E5620 (quad-core) CPUs
 - 24GB RAM
 - 250GB RAID 1 system disks
 - 15x 2TB 7,200rpm near line SAS drives
 - Redundant, hot-swappable PSUs
- Gives 26TB usable space when configured as RAID 6
- Channel bonded connection to cluster network



Compute Nodes

- Purchasing two Viglen HX425T²i 2U 4-node servers
- Each node has:
 - Dual Intel Xeon E5645 (six-core) CPUs
 - 48GB RAM (4GB per core)
 - 250GB system disk
 - 500GB RAID 0 scratch disks
- Each 2U unit has redundant power supplies
- Provides 96 cores total capacity



Infrastructure and Software

- Since this is a completely new farm we also need to purchase all the infrastructure:
 - Rack, PDU and UPS
 - Gigabit 48-port ethernet switch for cluster network
 - 10/100 48-port ethernet switch for IPMI monitoring network
 - KVM 1U rack console with 17" display
- Also purchasing Platform HPC cluster management software

Summary

- Should take delivery of our first computing cluster before end of July
 - Not a huge system but a very good start!
 - Any advice you have is most welcome!
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- Many thanks to Pete and Lawrie for their help and advice when we were preparing the technical specification for the tender