

# PLUG Talk

“**iVEC** will increase Western Australia's innovative capacity and economic development through the exploration, evolution and exploitation of advanced computing technology, high-speed communications, scientific visualisation, grid technologies and e-Research infrastructure.”

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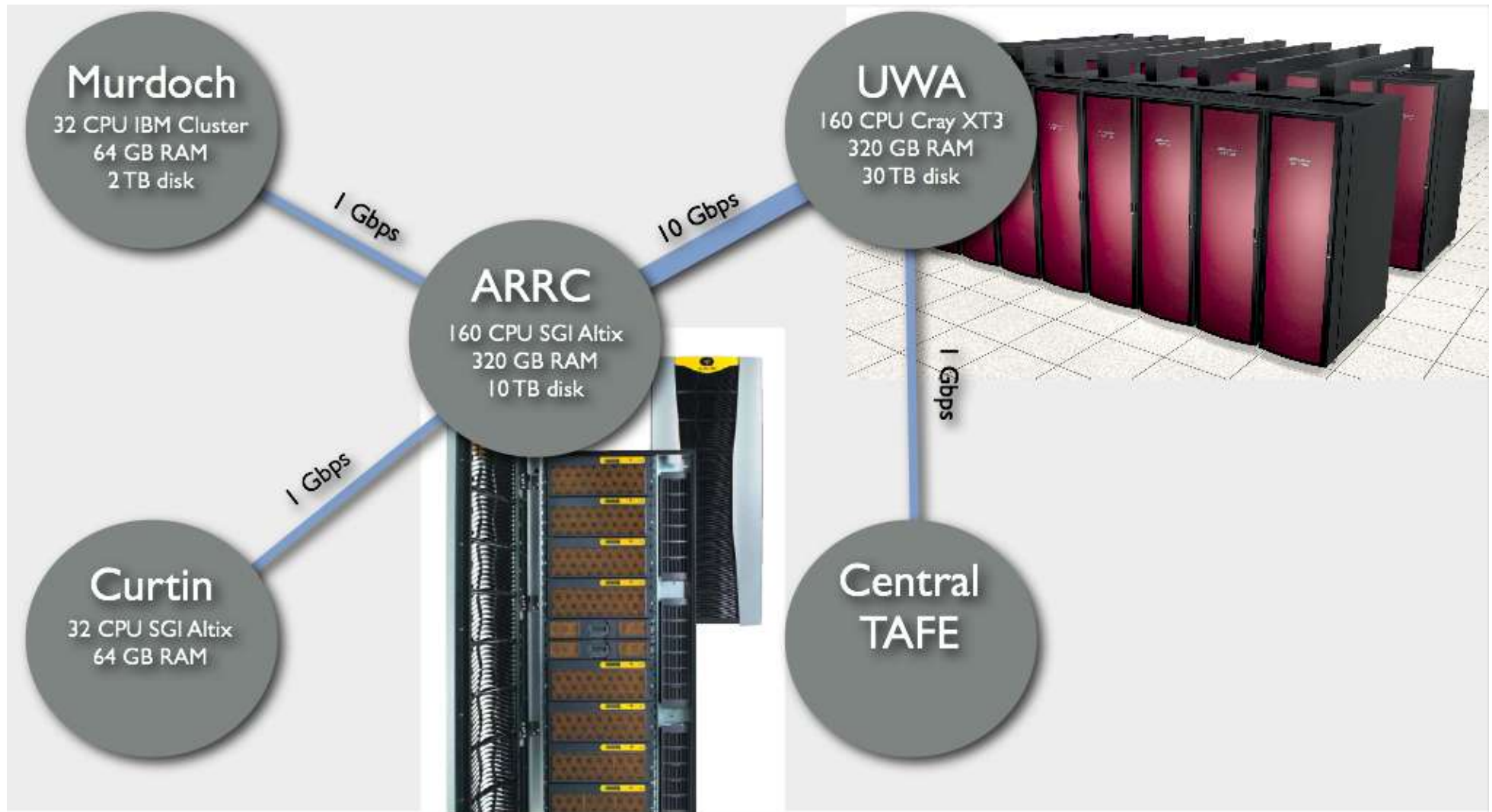
# National Partnerships



# State Partnerships



# Local Resources



# National Resources

1680 cpu SGI Altix



1.2 Peta-bytes storage

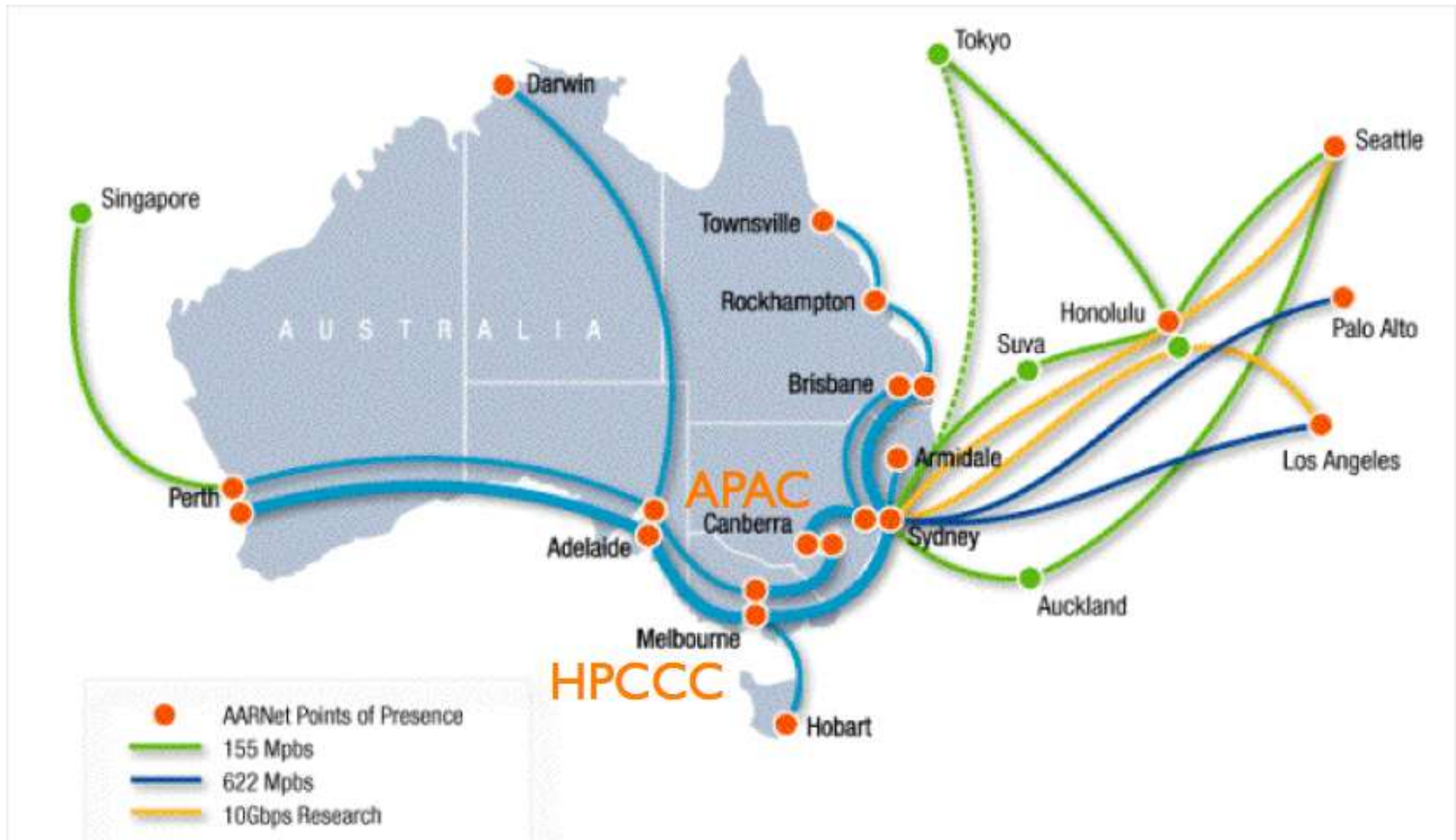


154 cpu PC cluster





# Connectivity via AARNET



# Resources available

## Locally

- 2.8 million hours of cpu time per year
- 50TB of storage
- Fast networks
- Visualisation facilities

## Nationally

- 240 thousand hours of cpu time per year
- 1.2 Peta-bytes of storage
- Fast networks

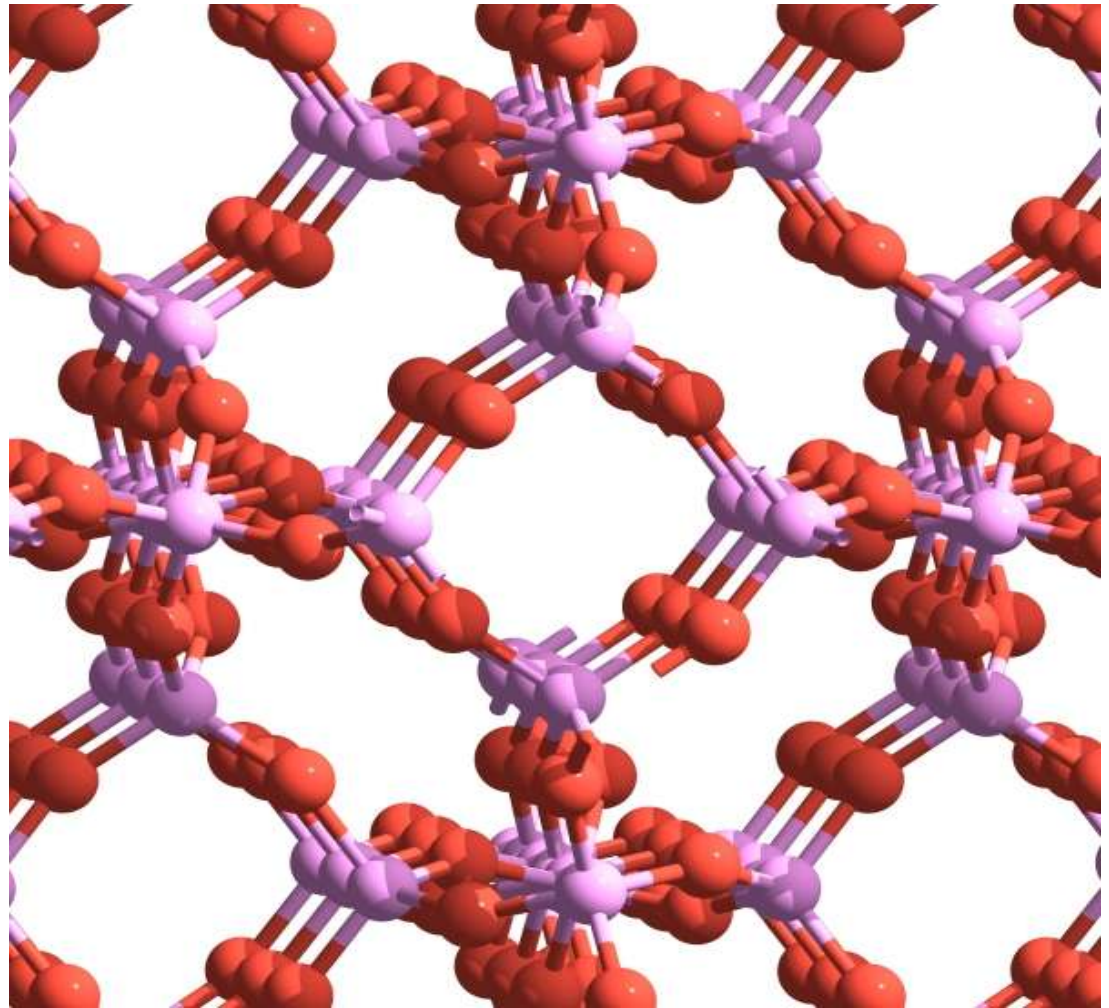
## Expertise

# Scientific Computing

Electronic properties of:

- semiconductors
- molecular crystals
- zeolites as heterogeneous catalysts

2,300 atoms on 64 CPUs in 6 hours using 100GB of memory.





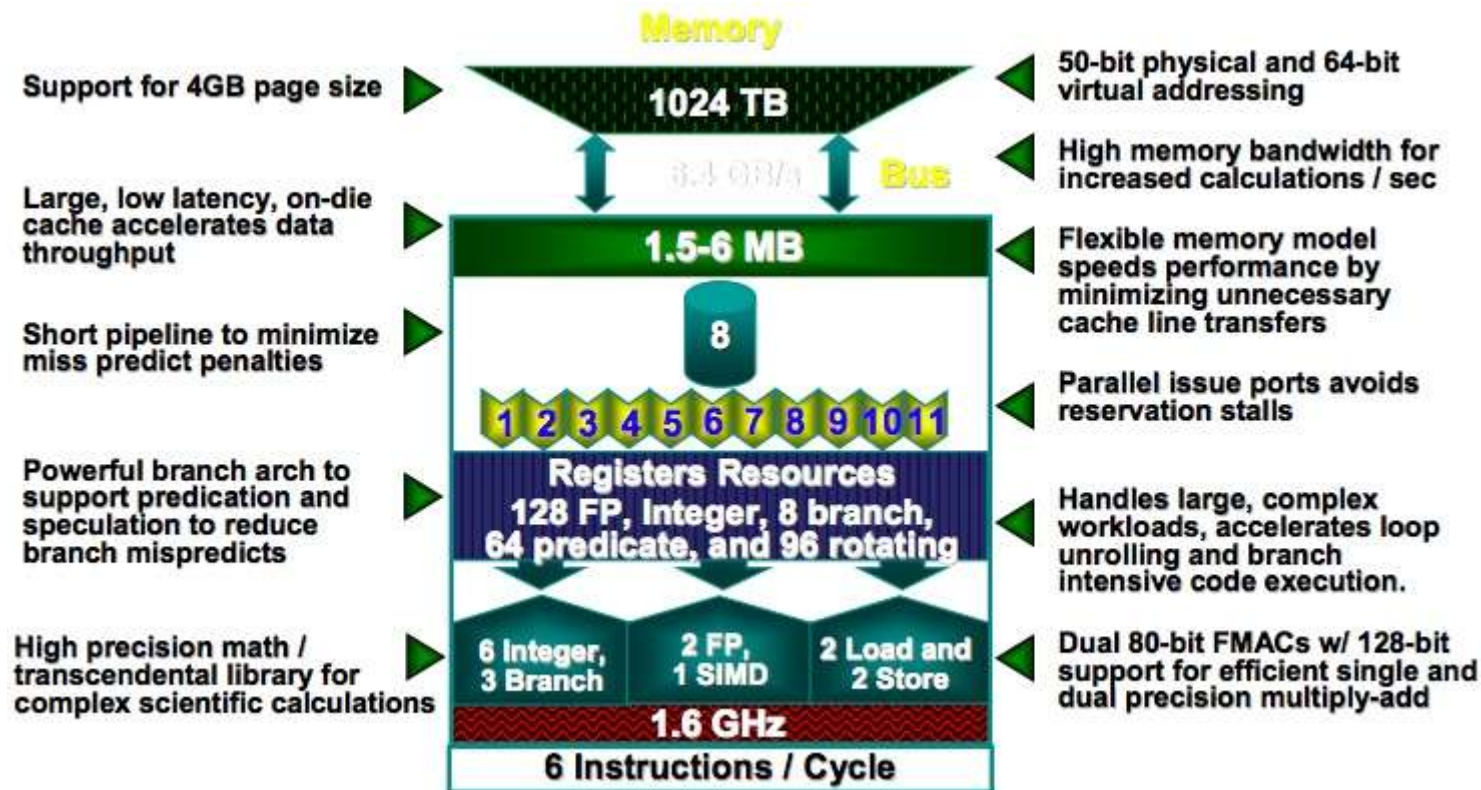
# SGI Altix 3700 Bx2

- 160 Itanium2 processors
- 1.5 GHz
  - 4 MB cache
  - 6 GFlops/cpu
- 320 GB shared memory
  - 2 GB/cpu
  - 10.5 GB/s
- 10 TB disk
  - 466 MB/s
- 4 TB tape

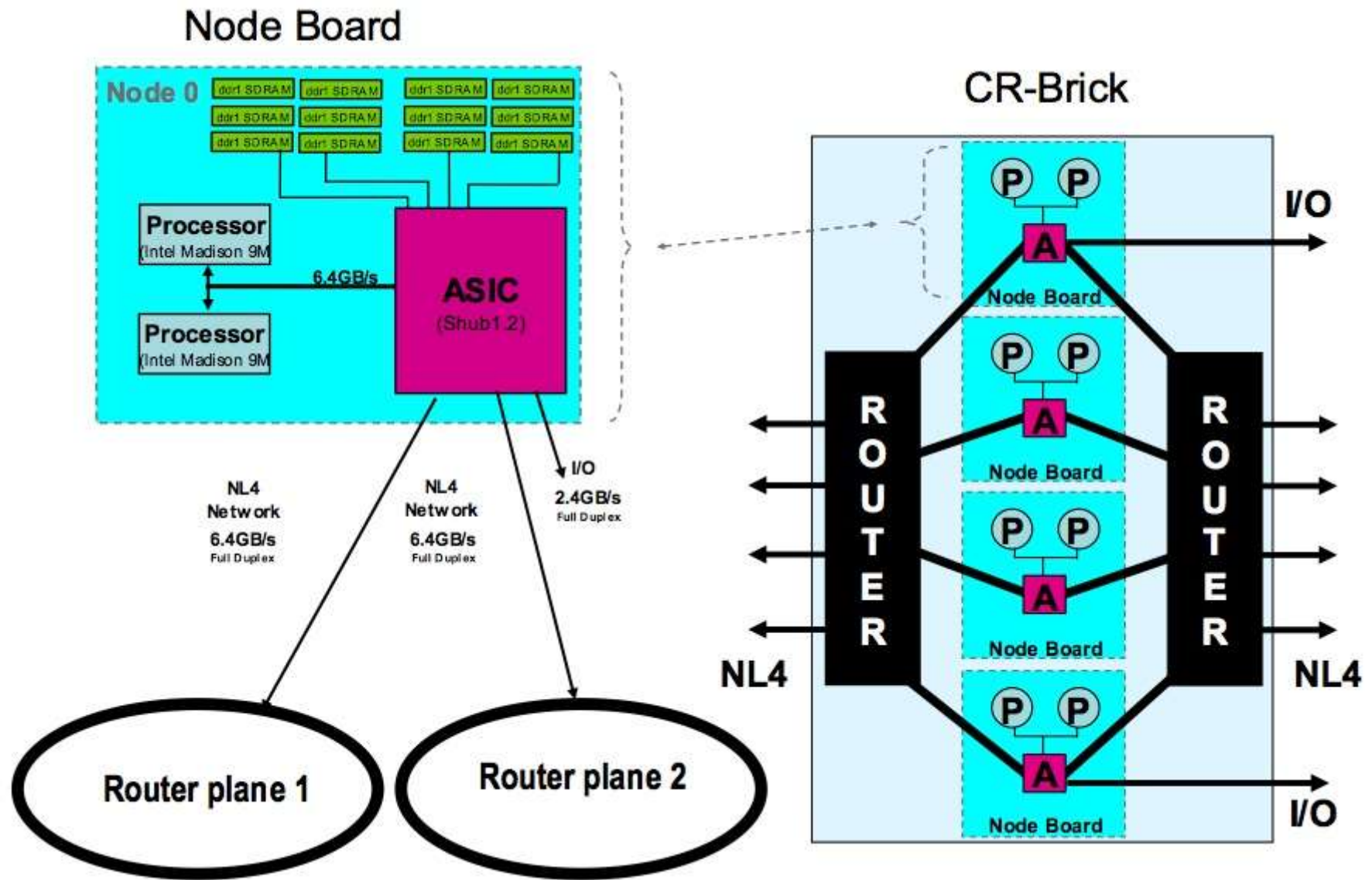
sgi®



# Itanium2 Processor

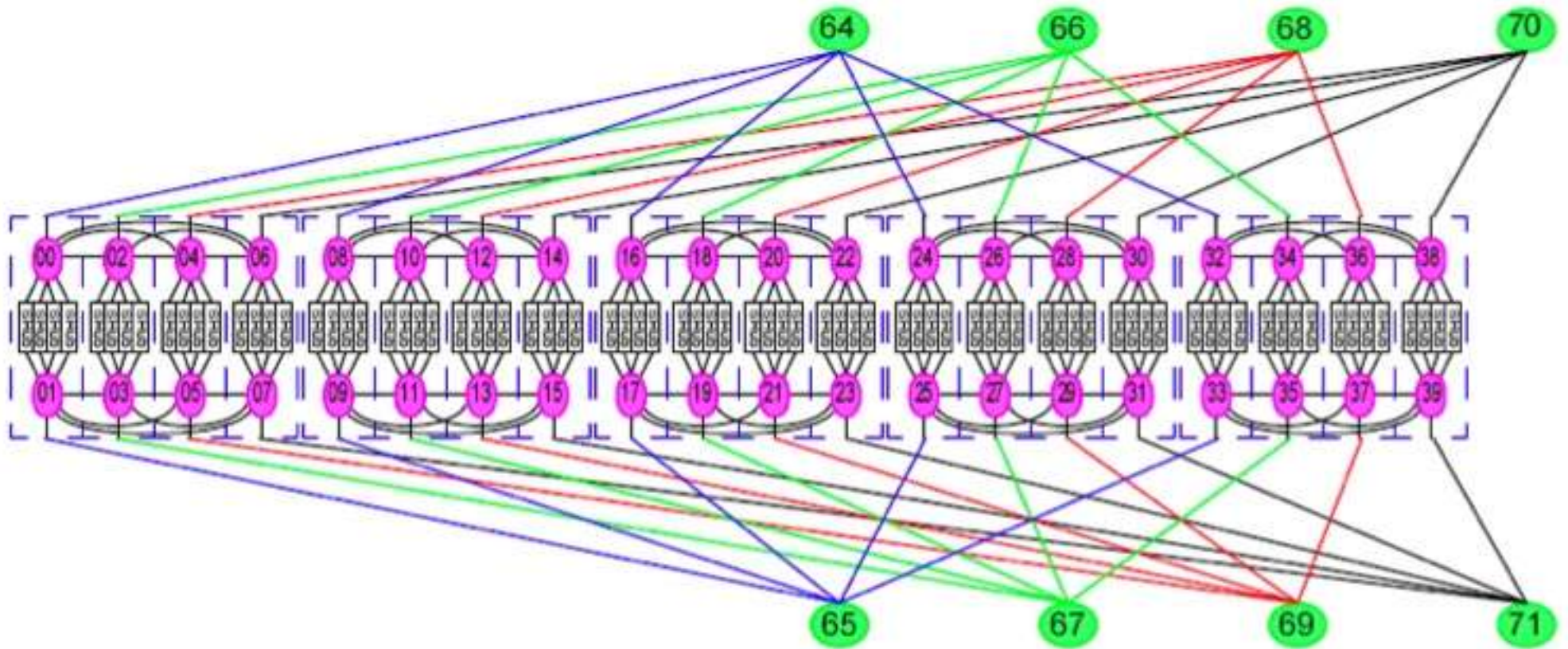


# Numa Node





# Topology



# IO - TP9500

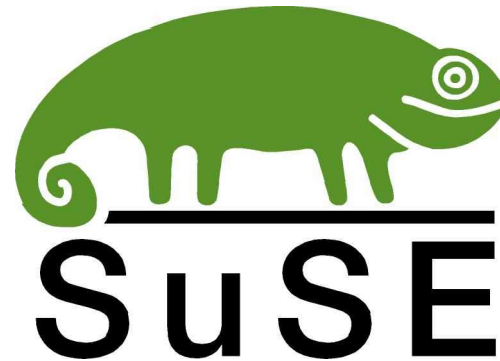
- 466MB/s Raid 5
- Dual controllers
- 2Gb/s Fiber Channel
  - 4 front-side loops
  - 4 back-side loops
- 2GB cache
  - Mirrored if desired
- 10 TB





# Software Stack

- SuSE Linux Enterprise Server 9SP2
  - CPU and MEM sets
  - High throughput IO
  - Numa aware
- SGI ProPack 4SP2
  - XPMEM/MPI
  - JOB
  - DMF/XFS/XVM
  - Math libraries
- ANU PBS
  - Job management
  - Job pre-emption
  - Job monitoring



# Tuning

- Minimum and maximum time slice (10000us-100000us)
- Minimum free memory (16GB)
- Pdflush affinity (cpu's 0-3)
- Boot cpu/mem set (cpus 0-3, mems 0-1)
- Every session in a JOB
- Try to control buffer cache
- Balance fiber loops
- Large page support (16kb)
- Waiting on page migration from SGI/SuSE

# QUESTIONS

[help@ivec.org](mailto:help@ivec.org)