Dar es Salaam Institute of Technology – DIT (Tanzania)

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Background

- 1957, establishment of Dar es Salaam Technical Institute aimed to provide vocational training in the country, included technical secondary school courses and training for Technical Assistants.

- 1962, changed to become Dar es Salaam Technical College (DTC), the first formal technical training institute in the country, offered Ordinary Technician Diploma programmes in Civil, Electrical, Telecommunication and Mechanical Engineering, later upgraded into three year Full Technician Certificate courses in 1970/1 and Diploma in Engineering which later on replaced by Advanced Diploma in Engineering in 1991.

- Then in 1997, Dar es Salaam Institute of Technology (DIT) established by the Act of Parliament.

- Up-to-date: 7 courses in Ordinary Diploma Programmes, 5 courses in Bachelor of Engineering and 2 Post-graduate Studies in collaboration with Leeds Metropolitan University – (UK).
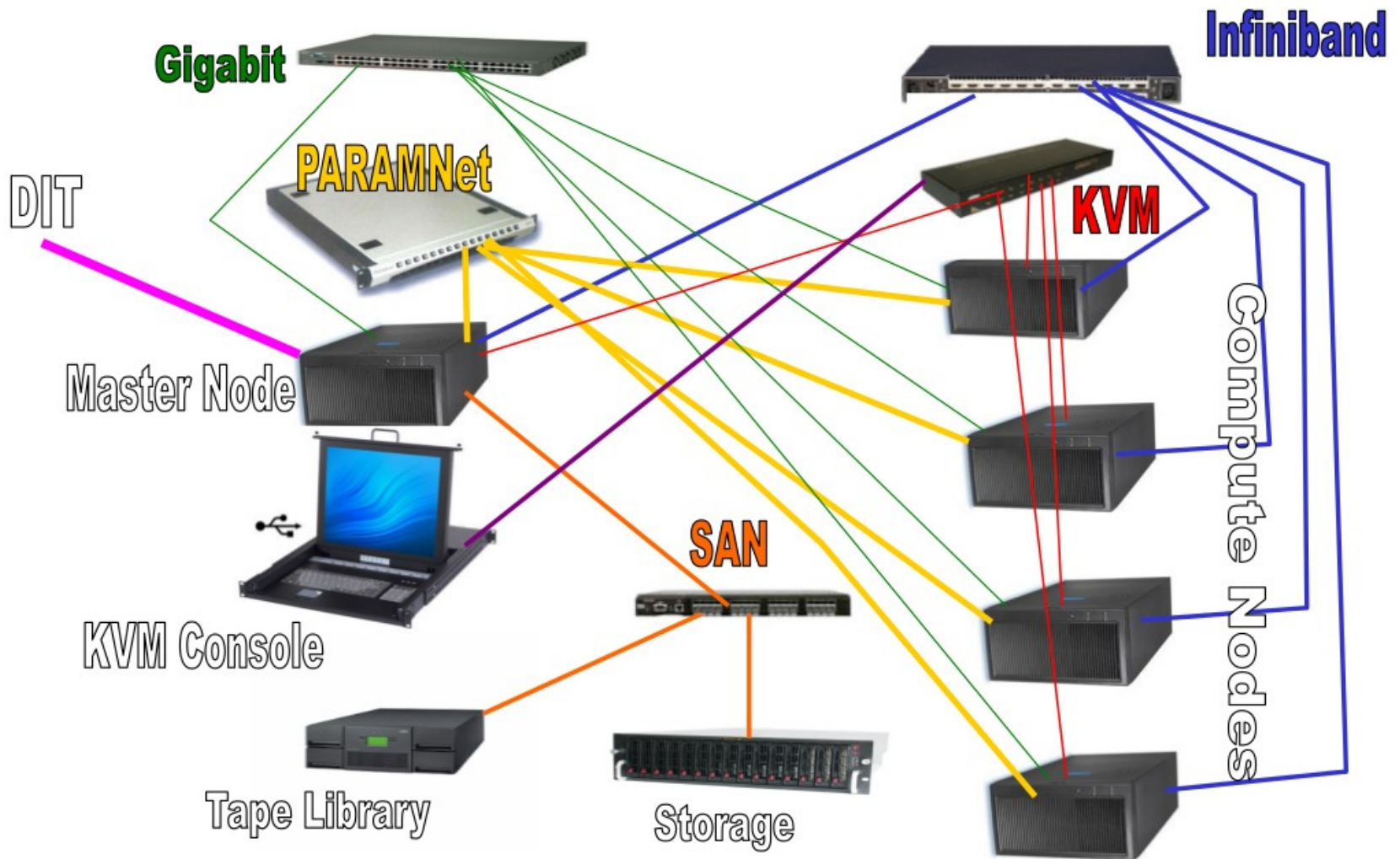
- Read more: www.dit.ac.tz

India – Tanzania Centre of Excellence in ICT - ITCoEICT

- The ITCoEICT, established in 2009 as a result of friendly-relation between two countries Tanzania and India.

- For Tanzania the agency is DIT and for India is India Center for Development of Advanced Computing (CDAC).

- In 2011, Dr Jakaya Kikwete, The President of Tanzania and Dr Manmohan Singh, The Prime Minister of India launch The inauguration of ITCoEICT at DIT.

- The inauguration came after the government of India donate HPC facility to Tanzania government and DIT is responsible to manage the facility.

- In research activities, the centre is involved in many projects example e-Infrastructures for Africa (EI4Africa), Africa Grid Science Gateway and collaborate with Tanzania Education and Research Network (TERNET), the National REN.

- More about the centre: http://itcoeict.dit.ac.tz

HPC Facility – specifications

- **Master Node**
  - Dual Core AMD Opetron
  - 8GB ECC DDR2 RAM
  - 2x500GB SATA HDDs
  - PARAMNet III NIC
  - Infiniband HCA
  - FC HBA

- **Compute node**
  - Dual core AMD Opetron
  - 8GB ECC DDR2 RAM
  - 2x500GB SATA HDDs
  - PARAMNet NIC
  - Infiniband HCA

- **Storage**
  - SAN Based Storage
  - 20TB RAW Storage Space

- **Tape Library**
  - FC Based Tape Library
  - 2 x LTO4 Drives
  - 48 Slots
  - 48 LTO4 cartridges
  - 2 cleaning cartridge

- **Interconnects**
  - 8 port PARAMNetIII switch
  - 24 port silverstorm Infiniband switch
  - 24 port nortel gigabit switch

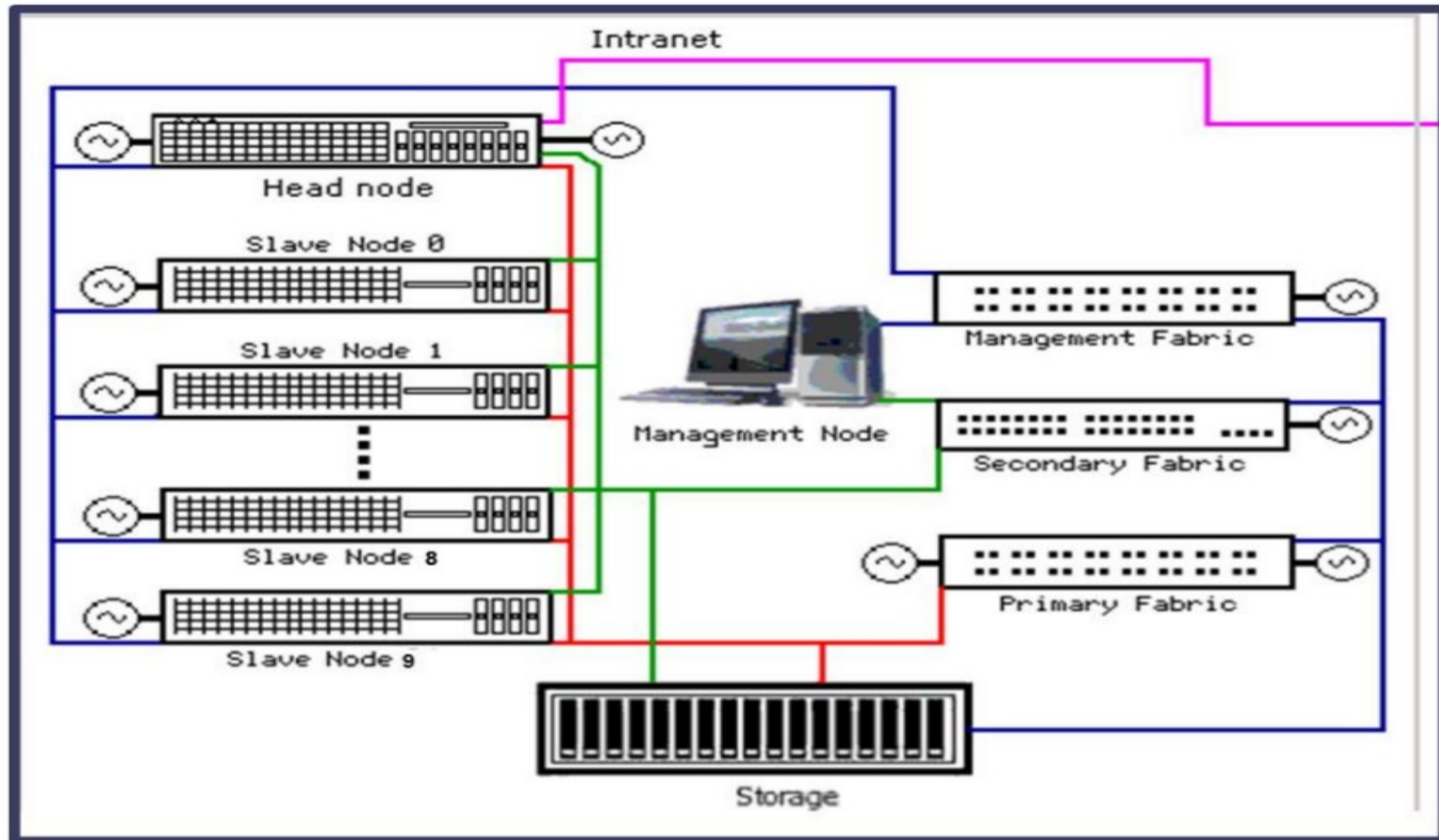# HPC Facility – Network diagram

HPC usage

- Potential users;
  - National Bureau of Statistics (NBS)
  - Capital Market and Security Authority (CMSA)
  - Tanzania Meteorology Agency (TMA)
  - DIT community
- So far only NBS uses the facility for storage.

- Applications & Tools (Commercial)
  - PBS Pro
  - PGI CDK
  - Phoenics (CFD & FEA)

- Applications & Tools (C-DAC Contribution)
  - Bio Informatics
  - WRF
  - MOM4
  - ABINIT
  - HMMER

Planned expansion

- Upgrade the PARAM Serengeti in ITCoEICT
  - Master Node
  - Computing Nodes

- Donation from the Texas Advanced Computing Centre (TACC) of the University of Texas, Austin;
  - Only the computing nodes
  - The whole system, 17 racks

Planned expansion

- Network diagram of the proposed facility

Conclusion

- After the workshop, we expect the following challenges can be solved;
    - Which OS is recommended for clusters
    - User management
    - Networking (clusters) and cluster management
    - Application installation and management

Thanks

Questions and comments