



Linux Clusters Institute: Introduction to Networking

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Background Survey

- Familiarity with...
 - TCP/IP – Firewalls – DMZs
 - Ethernet
 - InfiniBand /OmniPath
 - Tools:
 - Basic: ip/ipconfig, netstat
 - Advanced: tcpdump, Wireshark, ntop

What are We Trying to Accomplish?

- Fast?
 - Latency vs Bandwidth
- Reliable?
- Accessibility?
 - Public
 - Inside/outside
 - VPN
 - DMZ

TCP/IP

Necessary Background Needed:

- Public vs Private (RFC 1918) Addressing
 - 10.xx.xx.xx
 - 192.168.xx.xx
 - 172.16-31.xx.xx
- Subnetting / gateway(s)
- DNS
- IPv6

Ethernet vs InfiniBand (IB) and OmniPath (OPA)

- Most clusters have both Ethernet and IB or OPA
 - Advantages and disadvantages of each
 - (Relatively) slow Ethernet for external access, file copying, etc.
 - IB and OPA for MPI
- RDMA vs IP
- Management (PXE, Lights-Out, IPMI, infrastructure)

Internal/External Interfaces to the Cluster

- Who has access?
- Who provides access?
- What internal resources can they see
- VPN considerations
- DMZ considerations

Requirements

- High-Speed Interconnect
 - Low Latency
 - High Bandwidth
 - Reliable
 - User software support (MPI, etc)
- Internet/External Access
 - Bandwidth
 - Access to/from external sites
 - Security
 - Reliable
- Management
 - Cheap
 - Reliable Hardware/Software Support
 - PXE
 - IPMI
 - Secure (Isolation from users)

Questions?



Extra Time: Physical Layer

