A Technique for Moving Large Datasets over High-Performance Long Distance Networks

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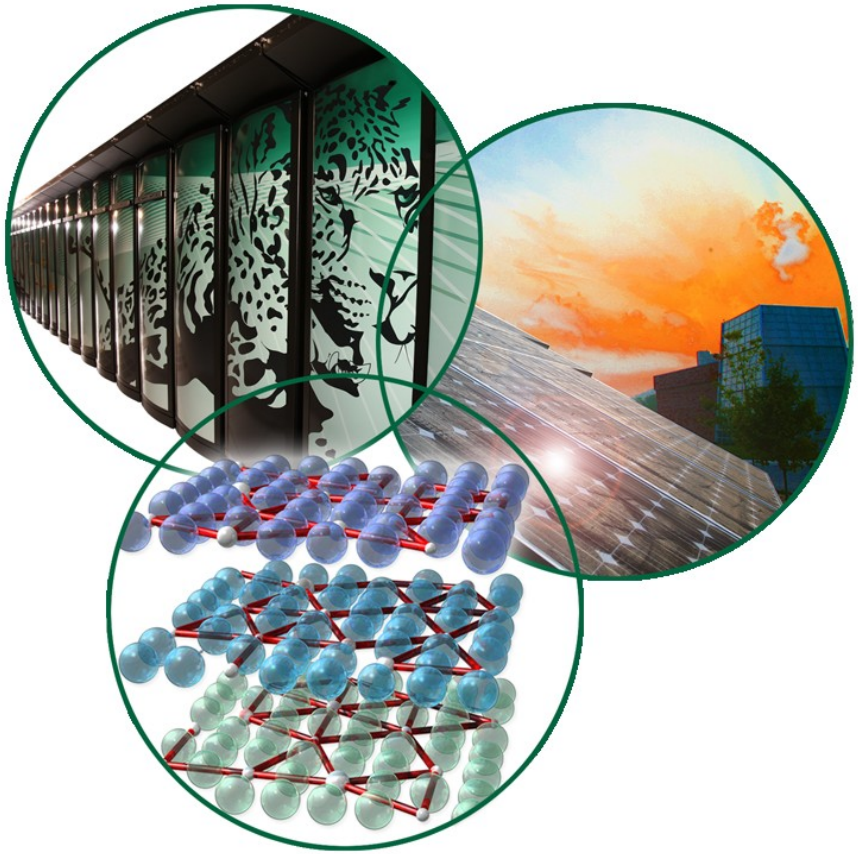

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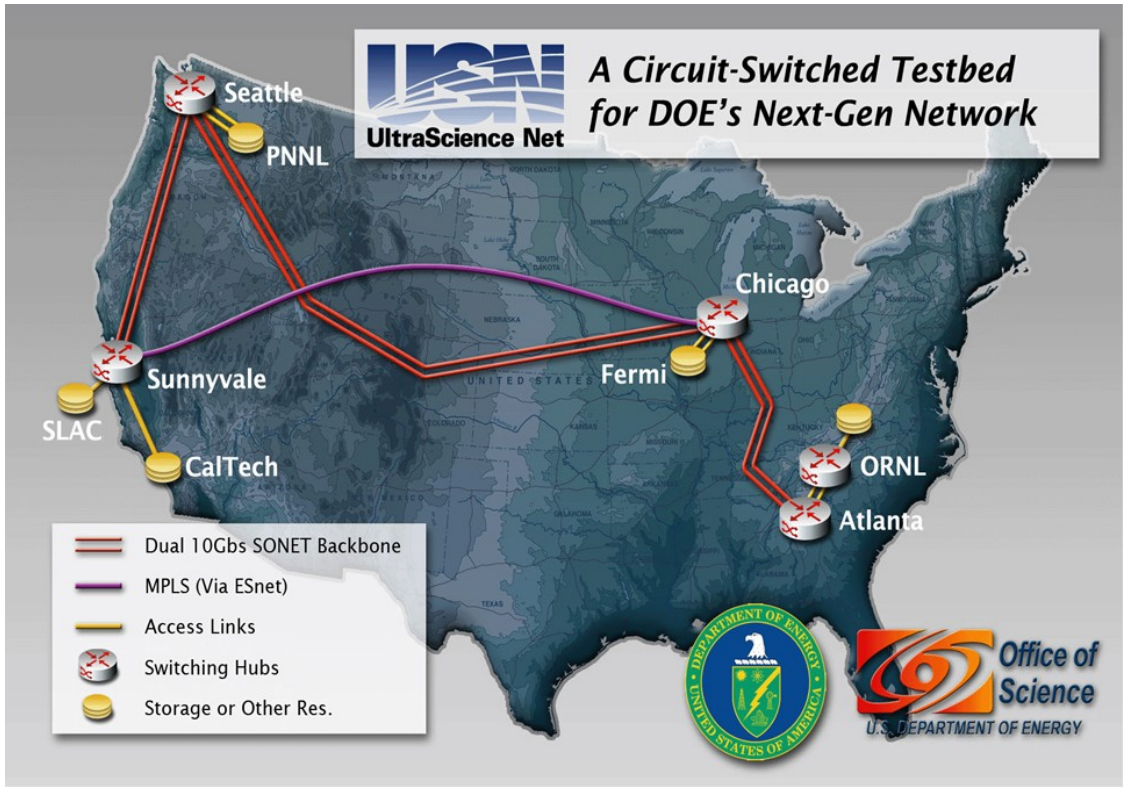
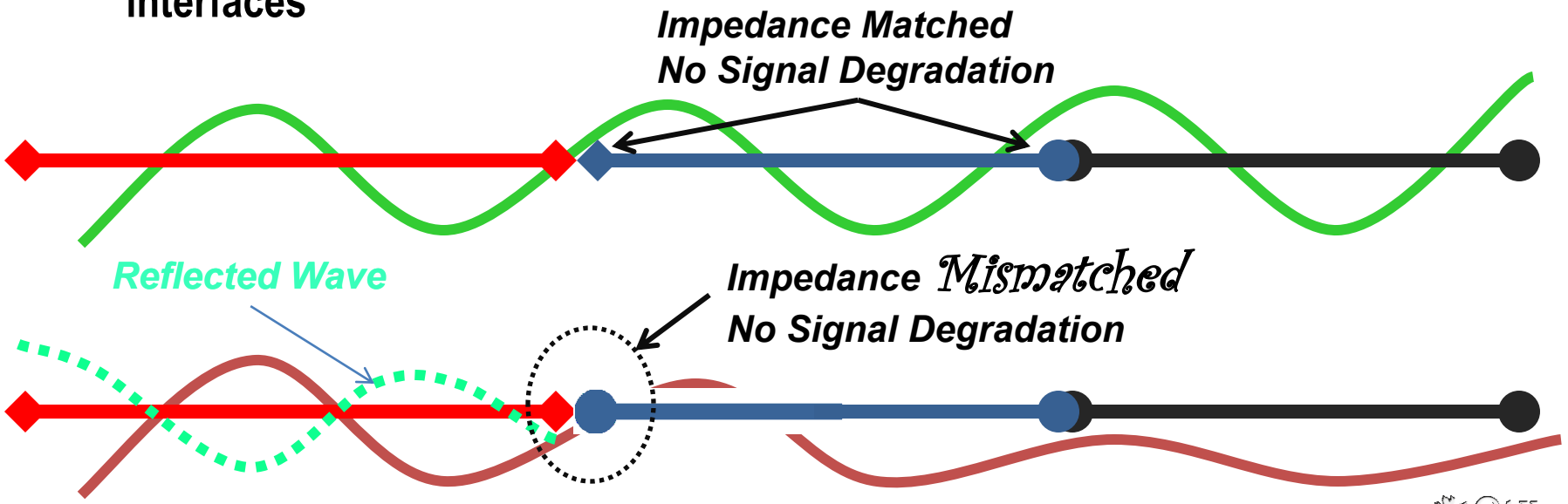
Network Overview



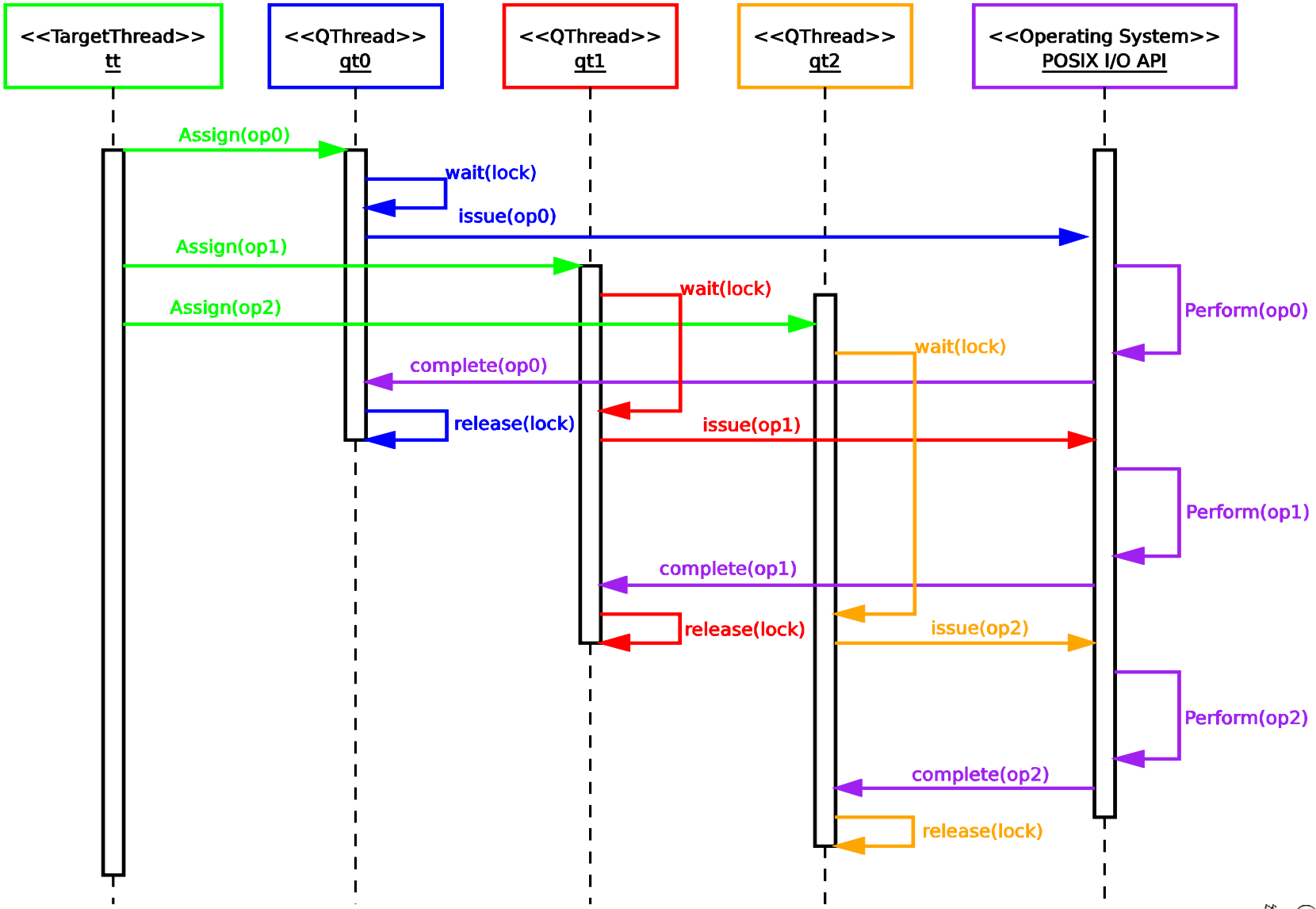
- **Easily configurable dedicated network**
- **2 dedicated lambdas (1 for each loop endpoint)**
  - **9.6 Gbps**

Impedance Matching

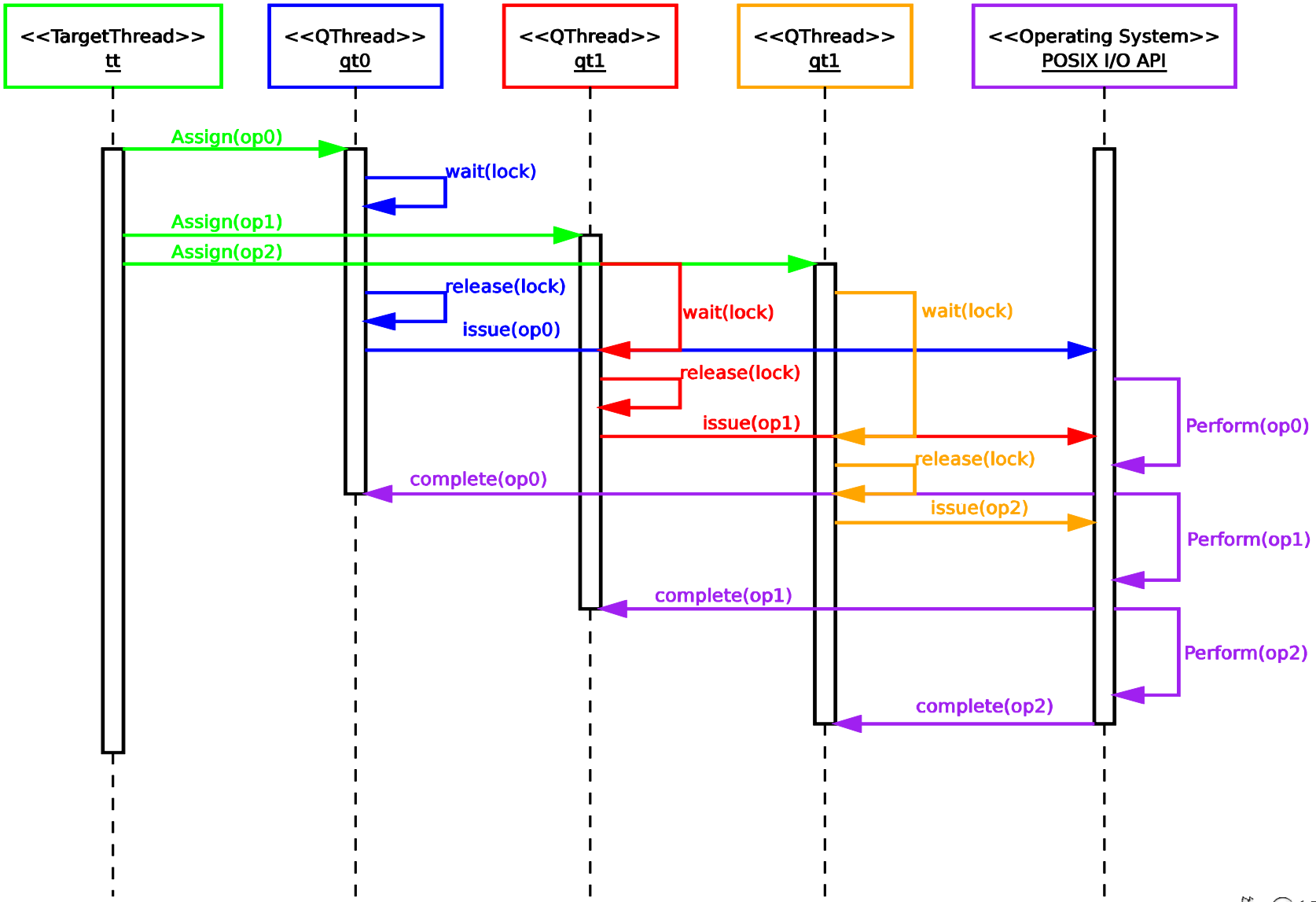
- Analogy to Transmission Line Impedance Matching
  - Consider a transmission line composed of 3 segments connected at 4 points
  - The Impedance at the connection points must be matched properly in order to maintain maximum amplitude of a the signal from one end to the other
  - An impedance mismatch results in a decrease in the signal strength/amplitude and signal noise from reflections at the mismatched interfaces



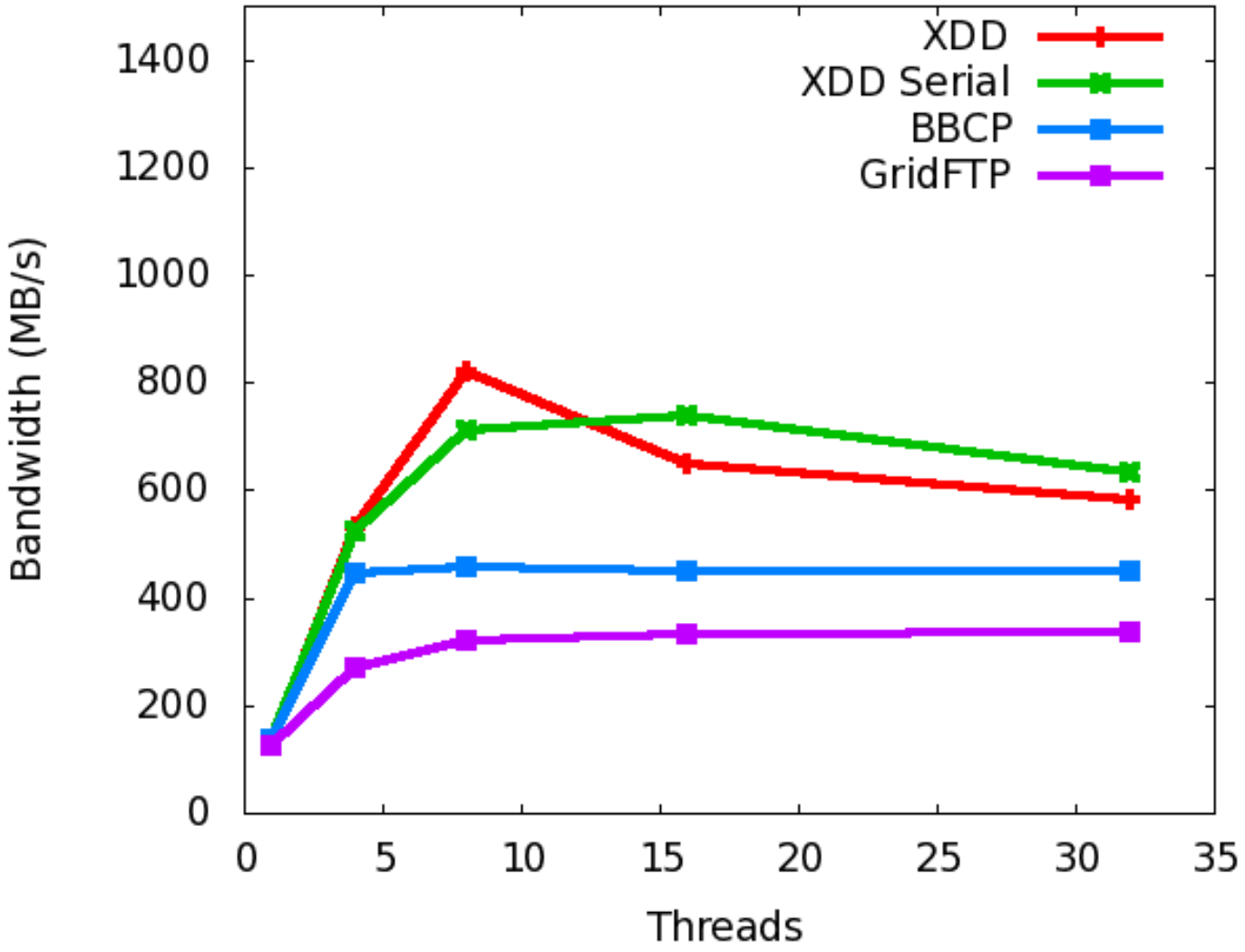
Serial Ordering



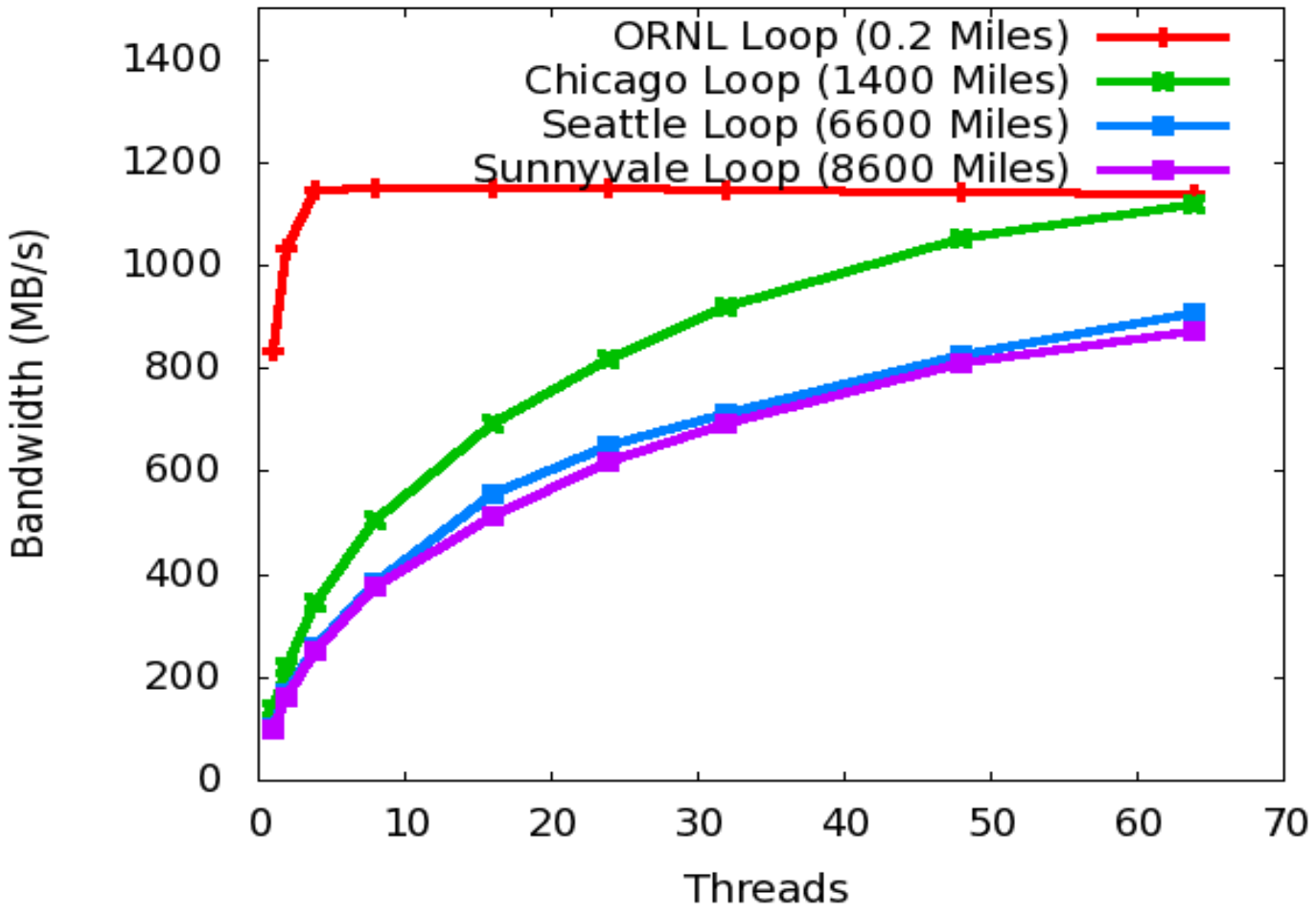
Loose Ordering



File Transfer Performance Sunnyvale Loop



File Transfer Multi-host Performance



Two source endpoints and two destination endpoints

Future Work

- Further exploration serial scheduling
- 40Gbit networks
  - Multi-NIC works now
- Parallel file system transfer scheduling
- Zero copy networking
  - Infiniband
  - UDT
- Dynamic Thread Matching
- Multiple file copy

Thank You!