High Speed Interconnection Network Performance Studies

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10-Gigabit Ethernet (10GigE)

- Used to interconnect different networks.
- Pros
  - Routable
- Cons
  - High latency
  - Low bandwidth

Infiniband

- Used for connections between processor nodes and I/O nodes such as storage devices.
- Single Data Rate (SDR)
  - Transfers data at 10 Gbps at 4x
- Dual Data Rate (DDR)
  - Transfers data at 20 Gbps at 4x

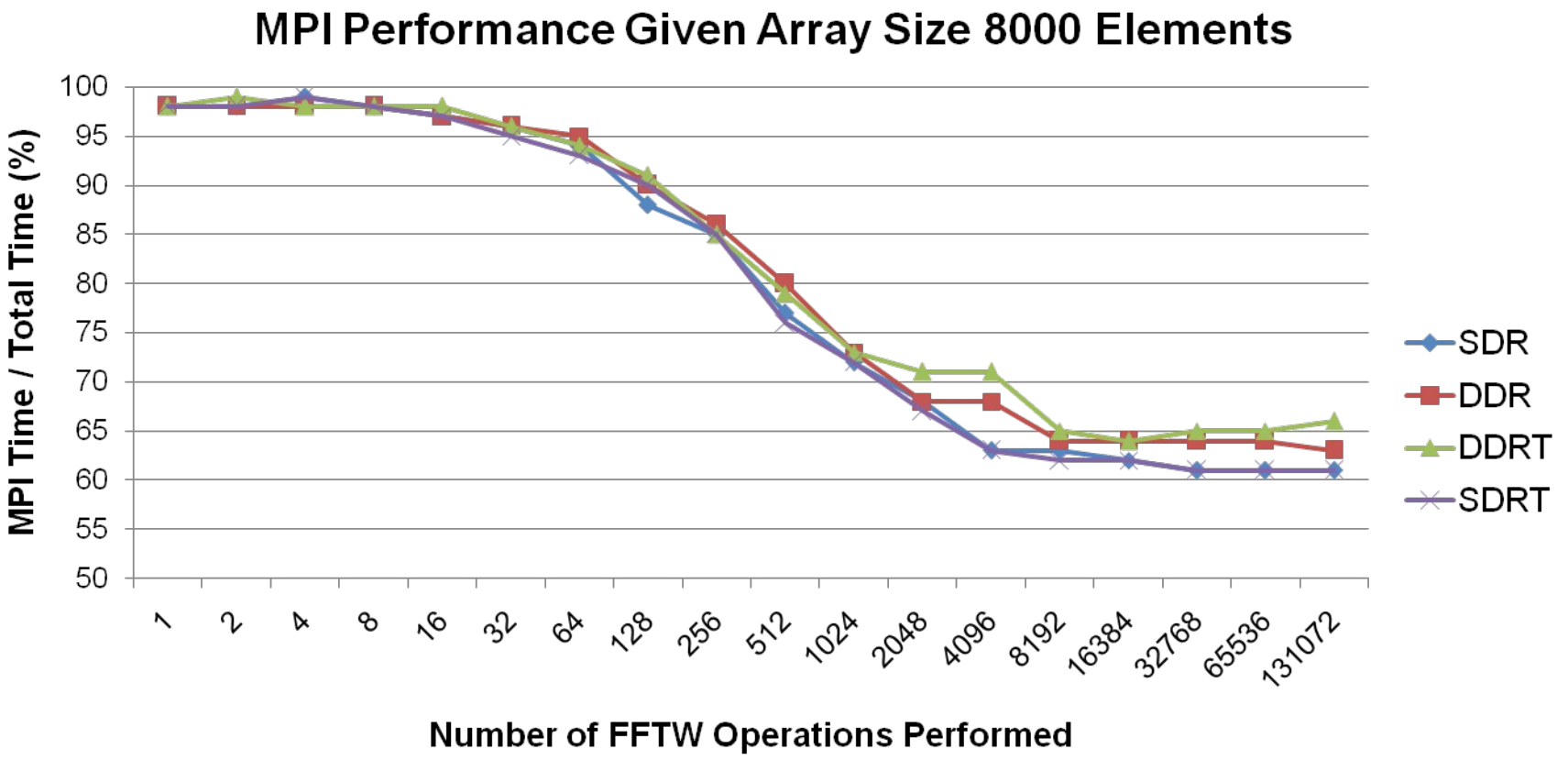
Infiniband (continued)

- Pros
  - Low latency
  - High bandwidth
- Cons
  - Not routable

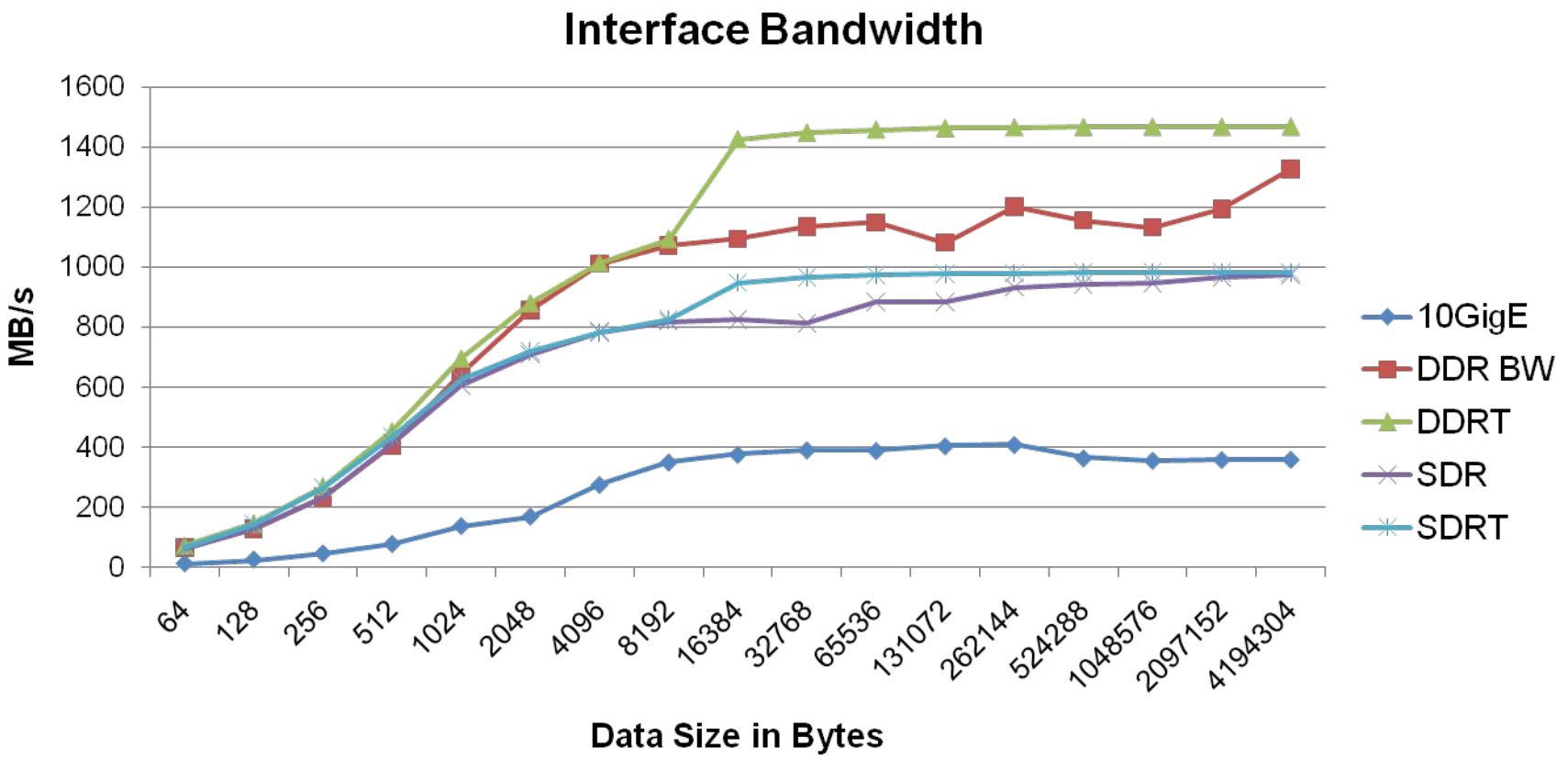
Benchmarks

- Fastest Fourier Transform in the West (FFTW)
  - Message Passing Interface Profiling (MPIP)
  - Variety of data sizes and repetitions
- Ohio State University (OSU) Benchmarks
  - Bandwidth and latency

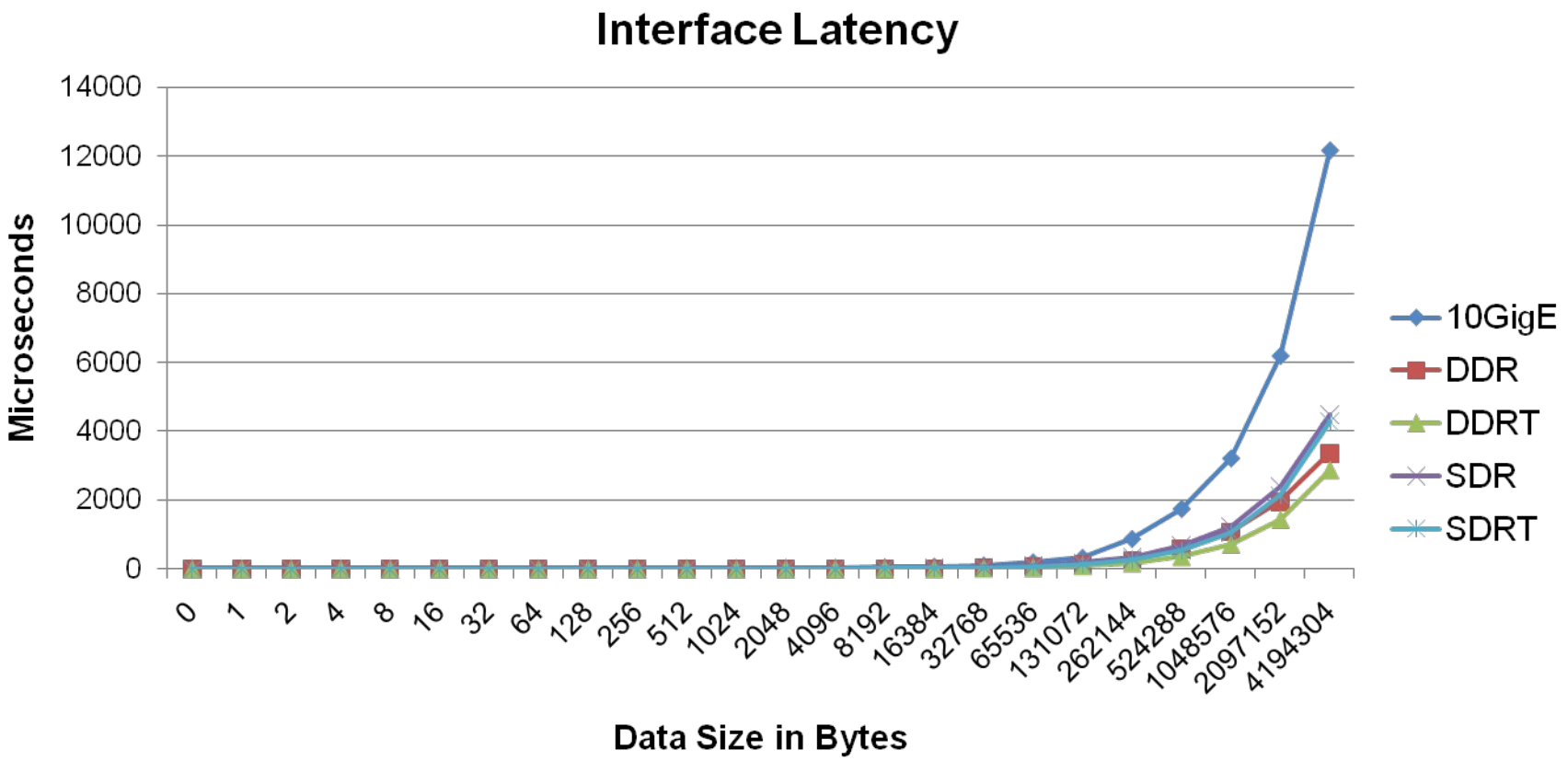
FFTW Results



OSU Results



OSU Results (continued)



Which is better?

- 10 GigE is good for network backbones but not good for computation node interconnects.
- SDR is more developed than 10 GigE but not as high of bandwidth as DDR.
- DDR is good for transferring large data sets but more expensive than SDR.