

Portability Improvements

Chapel version 1.20

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chapel_info@cray.com



chapel-lang.org



[@ChapelLanguage](https://twitter.com/ChapelLanguage)

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Outline

- [ofi Comm Layer](#)
- [Chapel Module for Cray Shasta](#)



ofi Comm Layer



ofi Comm : Background, This Effort

Background: Ongoing development of a libfabric-based comm layer

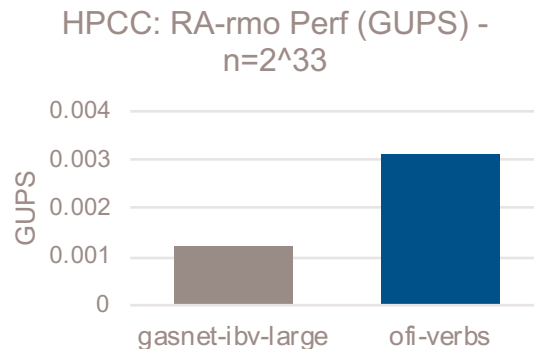
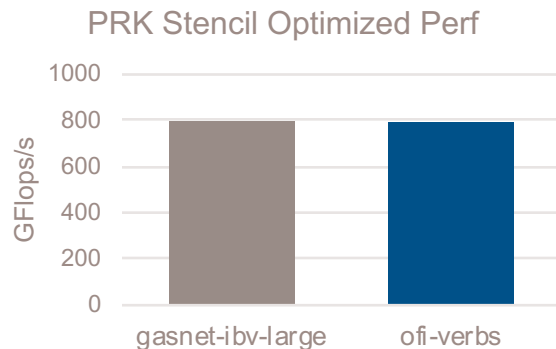
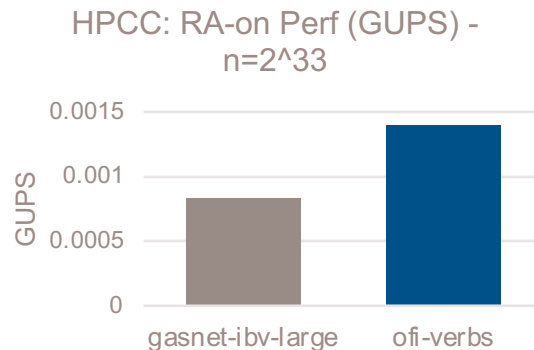
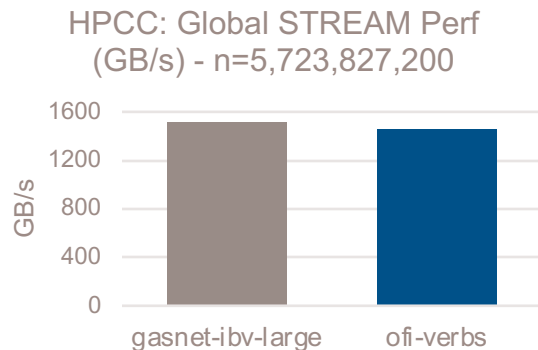
- In 1.19, mostly passed testing on linux64 with sockets provider
- Performance was poor

This Effort: Improved both portability and performance

- Platforms and providers:
 - ✓ linux64 (sockets, tcp)
 - ✓ darwin (sockets, tcp)
 - ✓ Cray CS, other IB-based (sockets, tcp, verbs)
 - ✓ Cray XC (gni, sockets, tcp)
- Performance is on par with comm=gasnet
 - but with some slow cases and much more variability across benchmarks

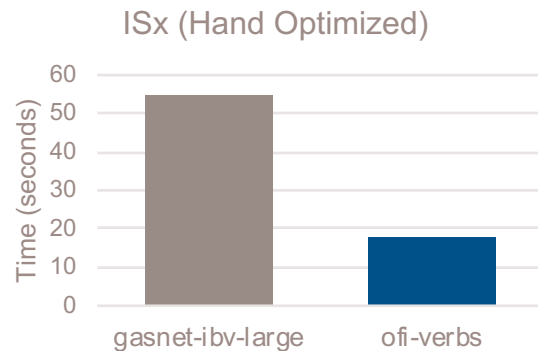
ofi Comm: Benchmark Performance

- 16-node Cray CS, InfiniBand network



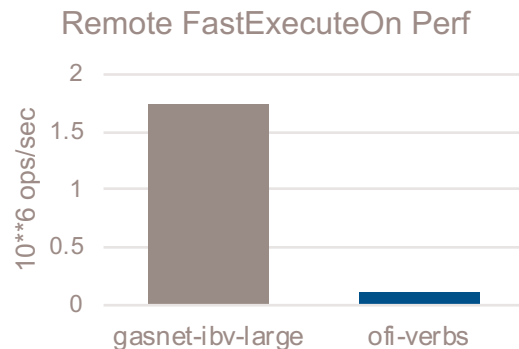
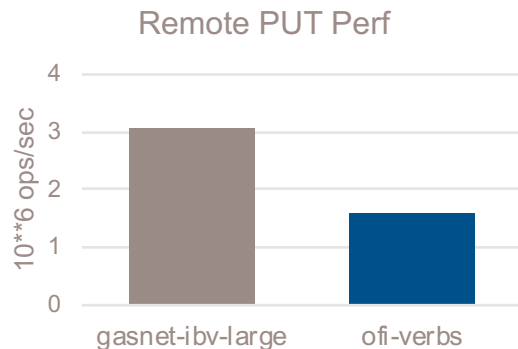
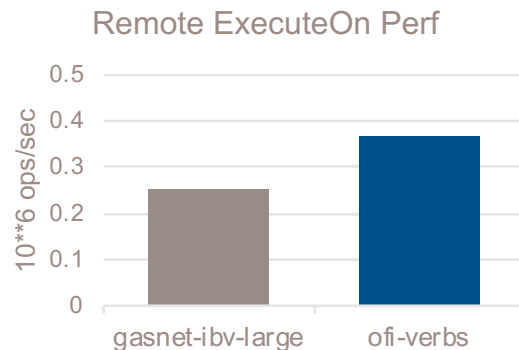
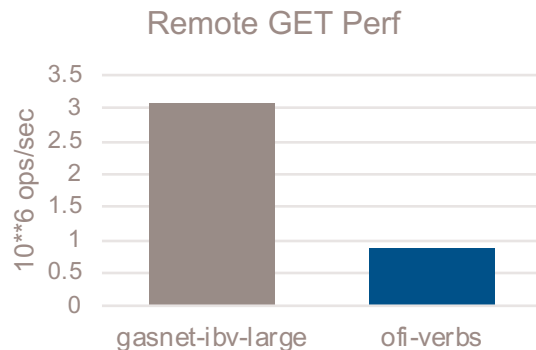
ofi Comm: Benchmark Time

- 16-node Cray CS,
InfiniBand network



ofi Comm: Microbenchmark Performance

- 16-node Cray CS, InfiniBand network



- Some performance issues still remain

ofi Comm: Next Steps

- Continue improving provider and platform portability
 - Begin nightly testing
- Continue improving performance
 - Fix slow cases
 - Reduce variability
 - Add non-blocking and unordered operations

Chapel Module for Cray Shasta



Shasta Chapel Module: Background, This Effort

Background:

- Wanted early-access Shasta customers to have pre-built Chapel
- Chapel module build scripts didn't support the new Cray Shasta platform

This Effort:

- Augmented module build scripts to add the Shasta platform
- Arranged for Shasta system images to contain the new Chapel module

Shasta Chapel Module: Impact, Status, Next Steps

Impact:

- Shasta customers can use Chapel without having to build it themselves

Status:

- Just 2 configs so far: comm=none and ofi with everything else default
- Module build scripting is *ad hoc* in a few Shasta-specific places

Next Steps:

- Expand configurations to full supported set
- Clean up *ad hoc* logic in build scripts

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chapel_info@cray.com



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