

Portability Improvements

Chapel version 1.20
September 19, 2019

- ✉ chapel_info@cray.com
- 🌐 chapel-lang.org
- 🐦 @ChapelLanguage



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

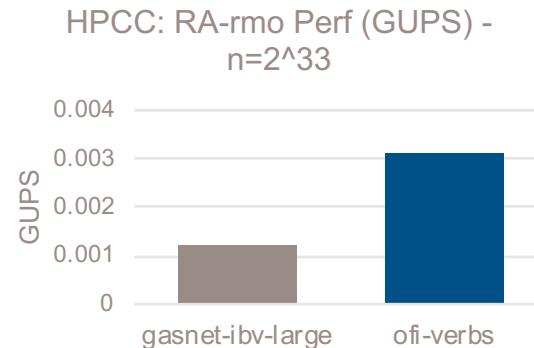
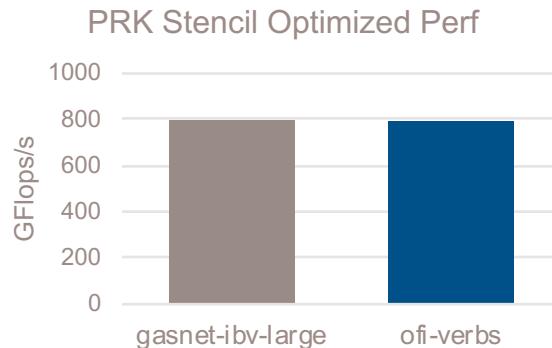
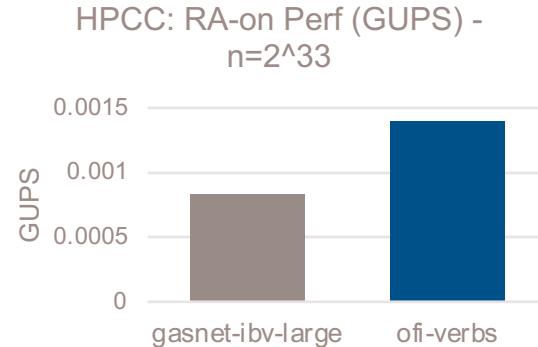
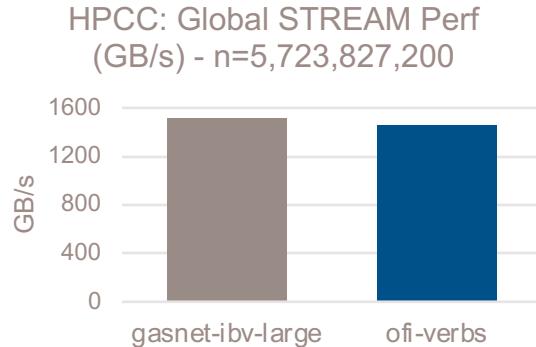
- In 1.19, mostly passed testing on linux64 with sockets provider
- Performance was poor

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

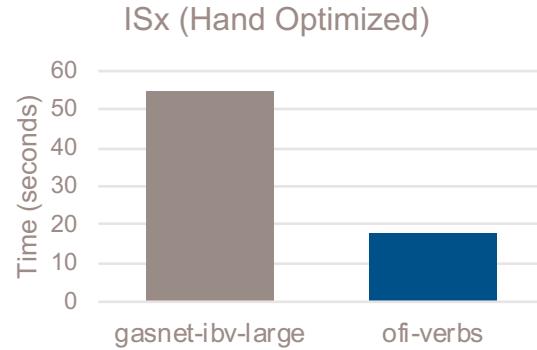
ofi Comm: Benchmark Performance

- 16-node Cray CS, InfiniBand network



ofi Comm: Benchmark Time

- 16-node Cray CS,
InfiniBand network

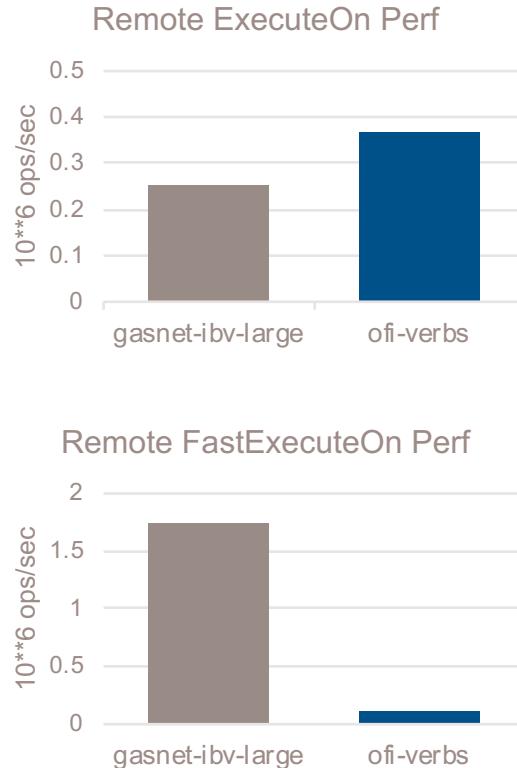
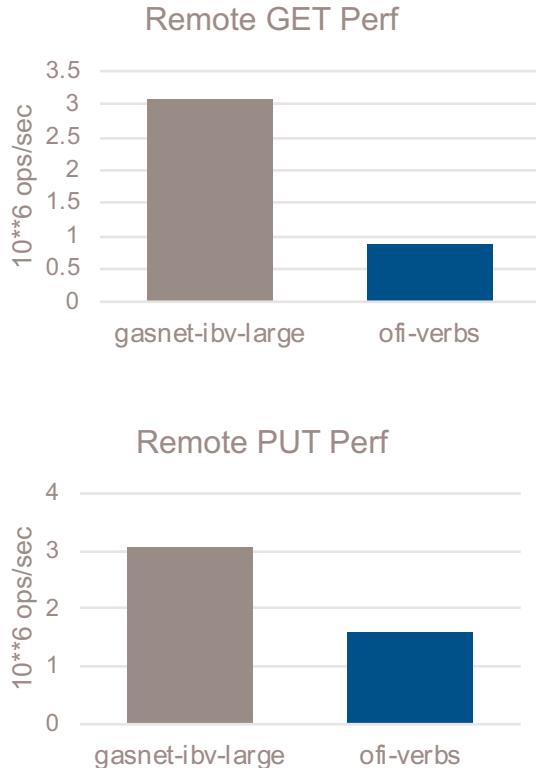


ofi Comm: Microbenchmark Performance

- 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

CRAY
a Hewlett Packard Enterprise company

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

CRAY
a Hewlett Packard Enterprise company

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



FORWARD LOOKING STATEMENTS

This presentation may contain forward-looking statements that involve risks, uncertainties and assumptions. If the risks or uncertainties ever materialize or the assumptions prove incorrect, the results of Hewlett Packard Enterprise Company and its consolidated subsidiaries ("Hewlett Packard Enterprise") may differ materially from those expressed or implied by such forward-looking statements and assumptions. All statements other than statements of historical fact are statements that could be deemed forward-looking statements, including but not limited to any statements regarding the expected benefits and costs of the transaction contemplated by this presentation; the expected timing of the completion of the transaction; the ability of HPE, its subsidiaries and Cray to complete the transaction considering the various conditions to the transaction, some of which are outside the parties' control, including those conditions related to regulatory approvals; projections of revenue, margins, expenses, net earnings, net earnings per share, cash flows, or other financial items; any statements concerning the expected development, performance, market share or competitive performance relating to products or services; any statements regarding current or future macroeconomic trends or events and the impact of those trends and events on Hewlett Packard Enterprise and its financial performance; any statements of expectation or belief; and any statements of assumptions underlying any of the foregoing. Risks, uncertainties and assumptions include the possibility that expected benefits of the transaction described in this presentation may not materialize as expected; that the transaction may not be timely completed, if at all; that, prior to the completion of the transaction, Cray's business may not perform as expected due to transaction-related uncertainty or other factors; that the parties are unable to successfully implement integration strategies; the need to address the many challenges facing Hewlett Packard Enterprise's businesses; the competitive pressures faced by Hewlett Packard Enterprise's businesses; risks associated with executing Hewlett Packard Enterprise's strategy; the impact of macroeconomic and geopolitical trends and events; the development and transition of new products and services and the enhancement of existing products and services to meet customer needs and respond to emerging technological trends; and other risks that are described in our Fiscal Year 2018 Annual Report on Form 10-K, and that are otherwise described or updated from time to time in Hewlett Packard Enterprise's other filings with the Securities and Exchange Commission, including but not limited to our subsequent Quarterly Reports on Form 10-Q. Hewlett Packard Enterprise assumes no obligation and does not intend to update these forward-looking statements.



THANK YOU

QUESTIONS?

-  chapel_info@cray.com
-  [@ChapelLanguage](https://twitter.com/ChapelLanguage)
-  chapel-lang.org



- cray.com 
- [@cray_inc](https://twitter.com/cray_inc) 
- linkedin.com/company/cray-inc-/ 