Leveraging HPX on a Raspberry Pi Cluster

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Background

What is HPX?

What was my project?

How might my project contribute to HPX?
Process

- Write a serial Monte Carlo C++ application.
- Build HPX on a Raspberry Pi.
- Parallelize the Monte Carlo application with HPX.
- Assemble a Raspberry Pi cluster.
- Modify the parallel application with HPX to run distributed across the nodes of the cluster.
- Test the scaling of the parallel and distributed applications.
Process
Results

The cluster!*
Results

HPX Parallel Scaling

Millions Of Trials Per Second

Number of Cores

Number of Cores:
1.0
2.0
3.0
4.0

Millions Of Trials Per Second:
1.0
2.0
3.0
4.0

Stellar Group
Results

HPX Distributed Scaling

Millions Of Trials Per Second

Number of Nodes

10.0  20.0  30.0  40.0  50.0  60.0
Discussion

HPX ports from the simplest to the most complex computer architectures.

The HPX Monte Carlo applications scale very efficiently on the Pi cluster, comparable to their scaling on the Rostam supercomputer.

Given more time, further demonstrations of the portability and scalability of HPX on the Raspberry Pi platform would be in order.
Thanks!

ANY QUESTIONS?

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