

HPC & Cloud Convergence. What about HPC and Edge?

Ada Gavrilovska
Georgia Tech

What I thought I would like to talk about

- Results from Intel Optane DC Persistent Memory Module
- Use of AI for optimizing performance on heterogeneous memory systems
- Use of in-network accelerators for HPC workflows



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Much talk about convergence of HPC and Cloud technologies

- Broadening scope of venues such as SC
- Cloud offerings for HPC
- Vendor product positioning to span HPC/Cloud/Big Data/Analytics...
- Big data/cloud frameworks for processing, workload management in HEC machines
- Salishan 2018:
 - **Session 5: Sharing Knowledge: Cross-Talk Between HPC and the Large-Scale Data Center Community**

But Cloud is redefined with a new “Edge” tier

Return to the Edge and the End of Cloud Computing

SPEAKER

Peter Levine, Andreessen Horowitz

GARTNER REPORT

Maverick Research – The Edge Will Eat the Cloud

Learn how modern enterprises can stay competitive by adapting to an edge computing strategy to meet the rising demands of storage of apps, IoT and new user/machine interfaces.

BIG DATA

🏠 Back to Home

MWC 2018: VMware extends solutions using edge computing with Dell EMC



APRIL SLATTERY REPORTER

08 FEBRUARY 2018

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[The Little Black Book of Billie](#)

Leaping Forward: The What And Why Of Edge Computing



Forbes Dallas Business Council

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Cloud vs. Edge?

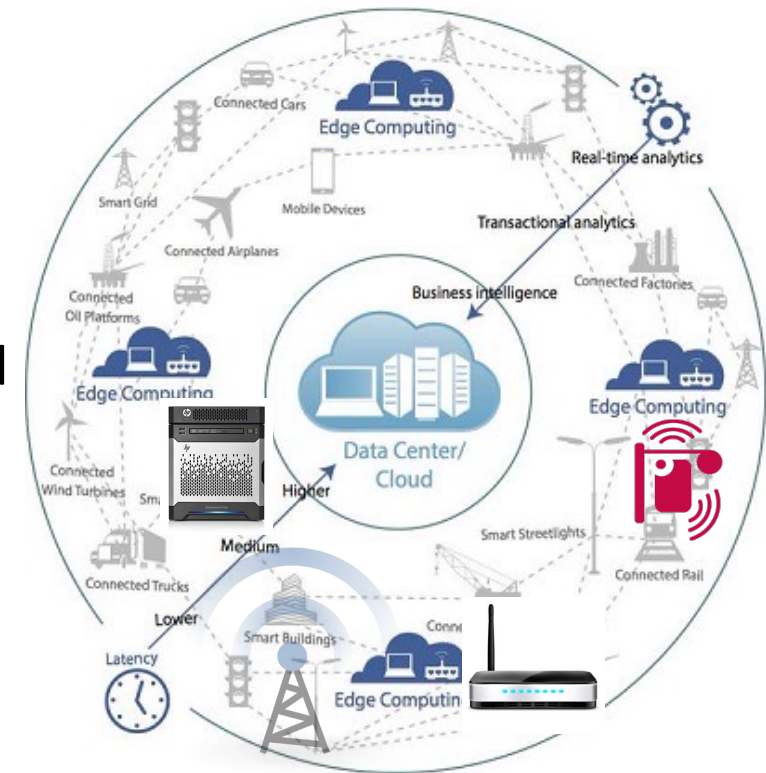
Cloud

- (Logically) Centralized
- Global
- Elastic
- Remote



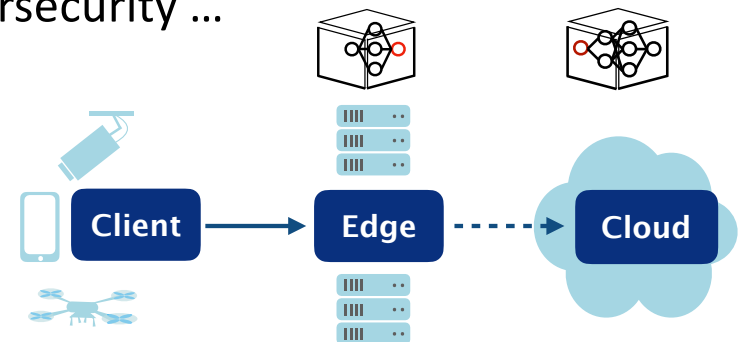
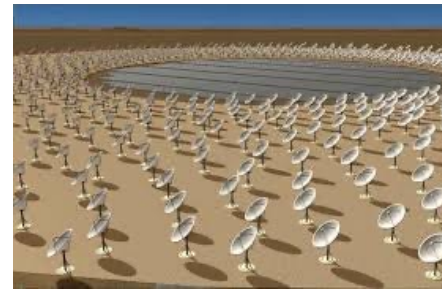
Edge

- Decentralized
- Localized
- Resource-limited
- Near-by



Is there an “Edge” in HPC?

- Of course!
- Large Instruments
- Collaborations, Science DMZs
- New Grand Challenge Applications:
 - Smart Grid/City/Infrastructure, Urban Heat Islands/Climate, Agriculture/Food Production, Personalized Healthcare/Quality of Life, Transportation/Autonomous Systems, Cybersecurity ...
- Why Edge?
 - Bandwidth, latency, privacy, ...



Can they, will they converge?

- Hardened server configurations
 - Pushed by Facebook, Google...
 - And network infrastructure operators
- Accelerators for edge analytics, data storage, ...
- Software stacks
 - Container-based
 - + uservices
- Application frameworks
 - OpenStack, CellScope, ...
- => Can HPC leverage these developments?
- <= Can HPC contribute existing technologies to advance this field?

- Panel at HPBDC'19 at IPDPS