NSF CC* and CICI PI Workshop
September 24-25, 2019 | Minneapolis, MN

NSF Program (either CC or CICI): CC

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PI: Edmund Yeh
co-PIs: Harvey Newman, Craig Partridge

Project Title: SANDIE: SDN-Assisted NDN for Data Intensive Experiments

Edmund Yeh
Professor
Northeastern University
eyeh@ece.neu.edu

Harvey Newman
Professor
Caltech
newman@hep.caltech.edu

Craig Partridge
Professor
Colorado State University
craig.partridge@colostate.edu

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CC* Integration: *SANDIE: SDN Assisted NDN for Data Intensive Experiments*

CHALLENGES

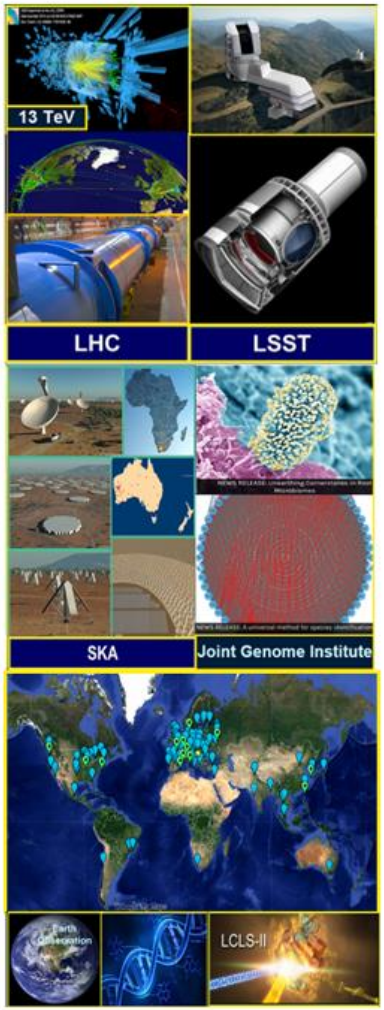
- LHC program in HEP is world's largest data intensive application: handling One Exabyte by ~2018 at hundreds of sites
- Global data distribution, processing, access, analysis; large but limited computing, storage, network resources

APPROACH

- Use Named Data Networking (NDN) to redesign LHC HEP network; optimize workflow

SOLUTIONS + Deliverables

- Deploy NDN edge caches with SSDs & 40G/100G network interfaces at 7 sites; combine with larger core caches
- *Simultaneously optimize caching ("hot" datasets), forwarding, and congestion control* in both the network core and site edges
- Development of naming scheme and attributes for *fast access and efficient communication in HEP and other fields*



SCIENTIFIC and BROADER IMPACT

- Lay groundwork for an NDN-based data distribution and access system for data-intensive science fields
- Benefit user community through lowered costs, faster data access and standardized naming structures
- Engage next generation of scientists in emerging concepts of future Internet architectures for data intensive applications
- Advance, extend and test the NDN paradigm to encompass the most data intensive research applications of global extent

TEAM

- Northeastern
- Caltech
- Colorado State
- In partnership with other LHC sites and the NDN project team