Chameleon

www. chameleoncloud.org

# CHAMELEON: A LARGE-SCALE, RECONFIGURABLE EXPERIMENTAL ENVIRONMENT FOR CLOUD RESEARCH

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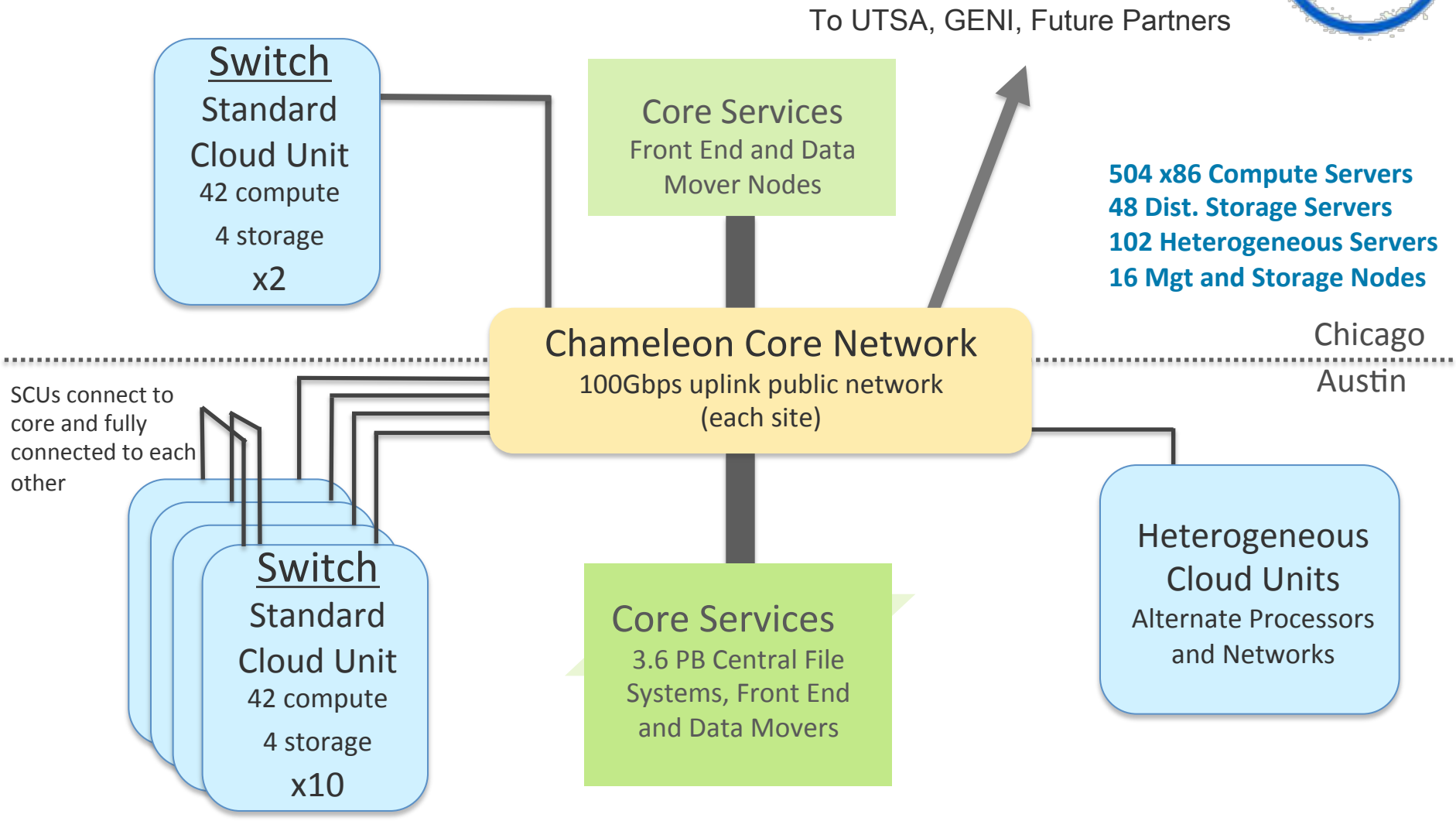
THE UNIVERSITY OF CHICAGO TACC NORTHWESTERN UNIVERSITY THE OHIO STATE UNIVERSITY UTSA NSF

# CHAMELEON: A FLEXIBLE AND POWERFUL EXPERIMENTAL INSTRUMENT

- Large-scale: "Big Data, Big Compute, Big Instrument research"
  - ~650 nodes (~14,500 cores), 5 PB disk over two sites, 2 sites connected with 100G network
- Reconfigurable: "As close as possible to having it in your lab"
  - Bare metal reconfiguration, single instrument, Chameleon appliances
  - Support for repeatable and reproducible experiments
- Connected: "One stop shopping for experimental needs"
  - Workload and Trace Archive
  - Partnerships with production clouds: CERN, OSDC, Rackspace, Google, and others
  - Partnerships with users
- Complementary: "Can't do everything ourselves"
  - Complementing GENI, Grid'5000, and other experimental testbeds

# CHAMELEON HARDWARE



# CAPABILITIES AND SUPPORTED RESEARCH

Development of new models, algorithms, platforms, auto-scaling HA, etc., innovative application and educational uses

*Persistent, reliable, shared clouds*

Repeatable experiments in new models, algorithms, platforms, auto-scaling, high-availability, cloud federation, etc.

*Isolated partition, Chameleon Appliances*

Virtualization technology (e.g., SR-IOV, accelerators), systems, networking, infrastructure-level resource management, etc.

*Isolated partition, bare metal reconfiguration: OpenStack and Grid'5000*

# PROJECT SCHEDULE

- Now: FutureGrid@Chameleon
  - Chameleon Technology Preview
  - OpenStack cloud
  - 43 projects, 81 users, 29 institutions
- Summer 2015: New hardware: large-scale homogenous partitions available to Early Users
- Fall 2015: Large-scale homogenous partitions and bare metal reconfiguration generally available
- 2015/2016: Refinements to experiment management capabilities, higher level capabilities
- Fall 2016: Heterogeneous hardware available

# GET ENGAGED

- www.chameleoncloud.org
- “Stay in touch”
- FutureGrid@Chameleon
- Technology Preview on FutureGrid hardware
- Early User Program
  - Committed users, driving and testing new capabilities, enhanced level of support
  - Sign up later today and try out Technology Preview in April

# THE TESTBED IS THERE – "JUST" ADD RESEARCH!

- Large-scale, responsive experimental testbed
  - Targeting critical research problems at scale
- Reconfigurable environment
  - Support use cases from bare metal to production clouds
- One-stop shopping for experimental needs
  - Trace and Workload Archive
- Engage the community
  - *The most important element of any experimental testbed is users and the research they work on*