



[www.chameleoncloud.org](http://www.chameleoncloud.org)

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

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*GENI Engineering Conference (GEC) 22  
March, 24th,  
Washington, DC*

APRIL 10, 2015

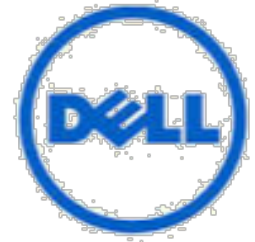
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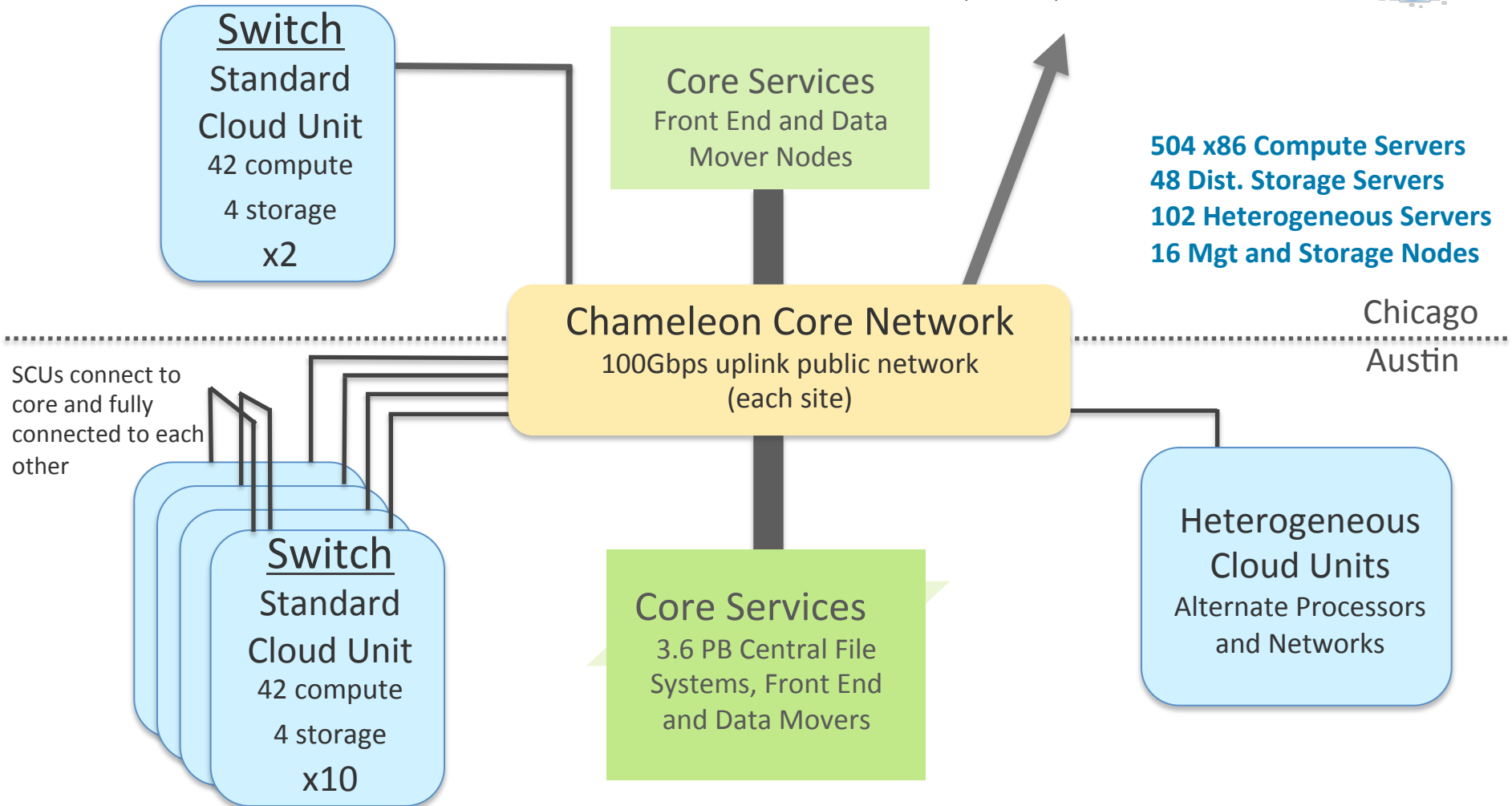
# CHAMELEON: A FLEXIBLE AND POWERFUL EXPERIMENTAL INSTRUMENT

- ▶ **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



To UTSA, GENI, Future Partners



# 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
  - ▶ 38 projects, 76 users, 27 institutions
- ▶ April 2015: Technology Preview: Initial bare metal reconfiguration capabilities available on FutureGrid UC&TACC resources for Early Users: demo later today
- ▶ 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](http://www.chameleoncloud.org)
- ▶ “Stay in touch”
- ▶ FutureGrid@Chameleon
- ▶ 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
- ▶ Chameleon Demo at 1:30 PM (Williamsburg) today!

# 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*