



University of Colorado **Boulder**

Research Computing

“Computing and data
beyond the desktop.”



Primary services

Summit

Heterogeneous Haswell / Knights Landing / Pascal compute cluster with OPA interconnect and GPFS storage

Blanca

Multi-generational “Condo” cluster primarily based on M1000e bladecenter

PetaLibrary

Active and Active Archive data storage (under active refresh)

Science Network / DMZ

Dedicated 10/40 GbE campus-wide network plane



Clients

CU Boulder researchers, faculty, students

Highly mixed workload: from single-core scripting and interactive Matlab to many-node traditional HPC; from statistical humanities studies and image processing to cognitive science and brain imaging, chemical and biological engineering, climate research, weather forecasting, and aerospace modeling.

CSU researchers, faculty, students

Summit was a joint proposal between CU Boulder and CSU. Among other areas, particularly brings genetics and genomics workloads.

Rocky Mountain Advanced Computing Consortium

Regional access for under-served consortium members as part of NSF grant.



OPA at Research Computing

Summit interconnect

- Connects Summit compute nodes together for MPI in a 2:1 oversubscribed fabric using 1u/48p switches at core and edge. MPI performance as described.

GPFS via DDN GRIDScaler

Performance lower than expected, but acceptable. Still hoping for RDMA improvements in OPA 10.4+. Won some quorum and connectivity issues.

mmsysmon.py

Severe performance impact, no official mechanism to disable.

