

Slurm + GCP

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SLUG 2019

- GCP Plug/Overview
 - V2 features/func
- Slurm + GCP work
 - HPC Days demo?
 - This is 20-30 minutes
 - V3
- UNC POC
 - Bursting from on-premise
 - scenario/infrastructure
 - results/numbers?
 - nss-slurm

In 1H 2019

Slurm-GCP scripts spun up over 400K nodes within GCP

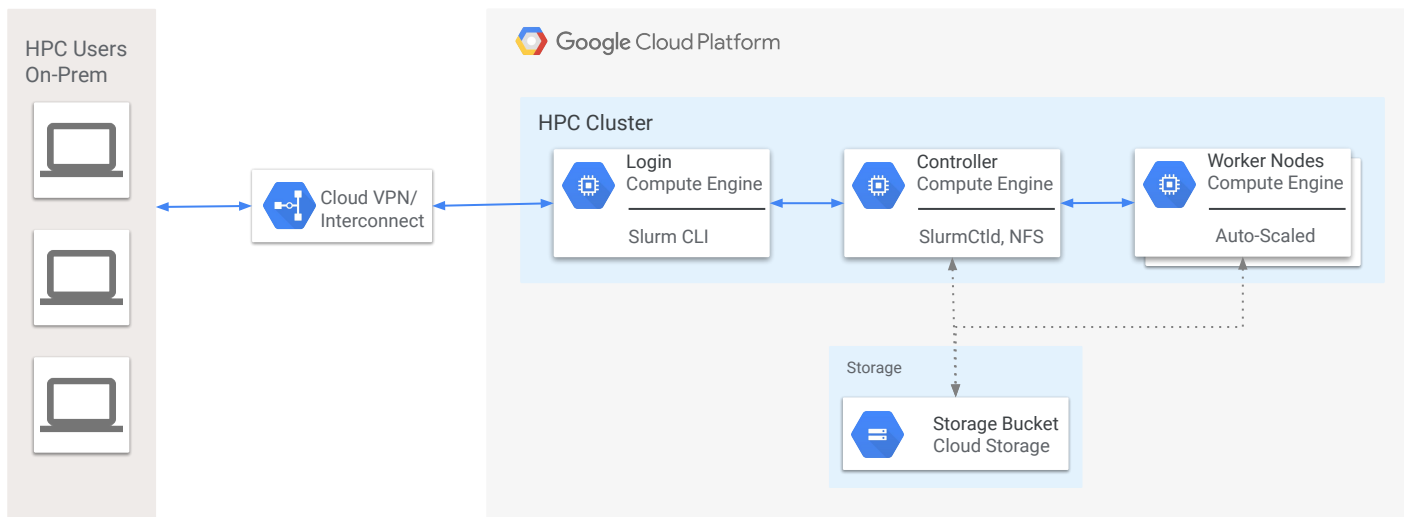
Slurm GCP Scripts v2 Improvements

- Preemptible VM support
- Image-based scaling
- Attachable GPUs
- Attachable secondary disks
- Scalability
- Burst to 5000 nodes < 10m
- 19.05 cloud capabilities

Open Source on Github: <https://github.com/schedmd/slurm-gcp>

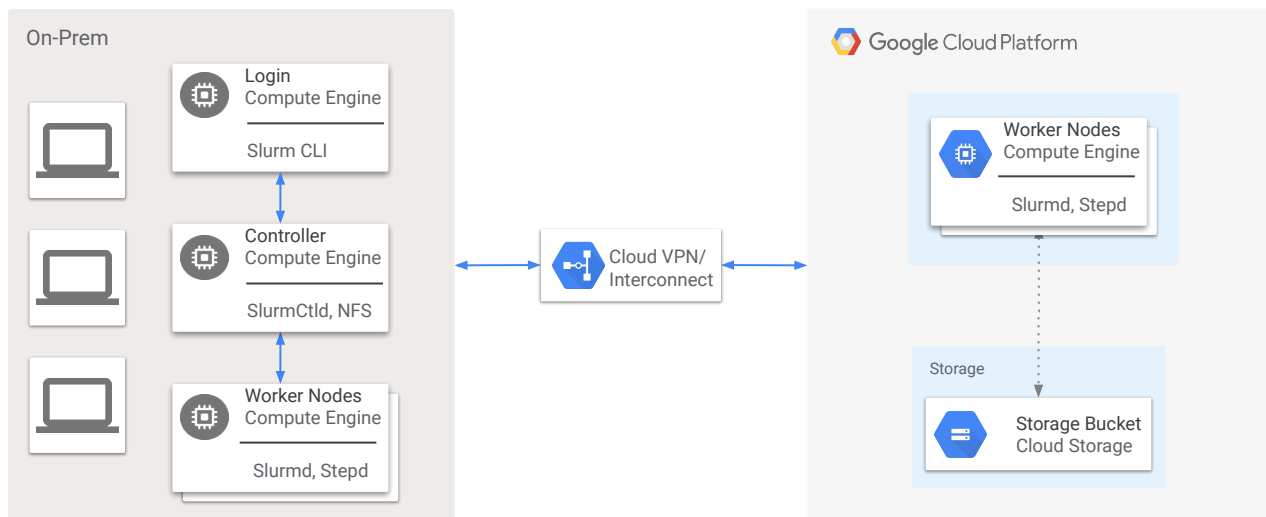
Cloud Slurm

Architecture: Slurm Auto-Scaling Cluster



Hybrid Slurm

Architecture: Slurm Burst to Cloud



Slurm 19.05 Cloud Improvements

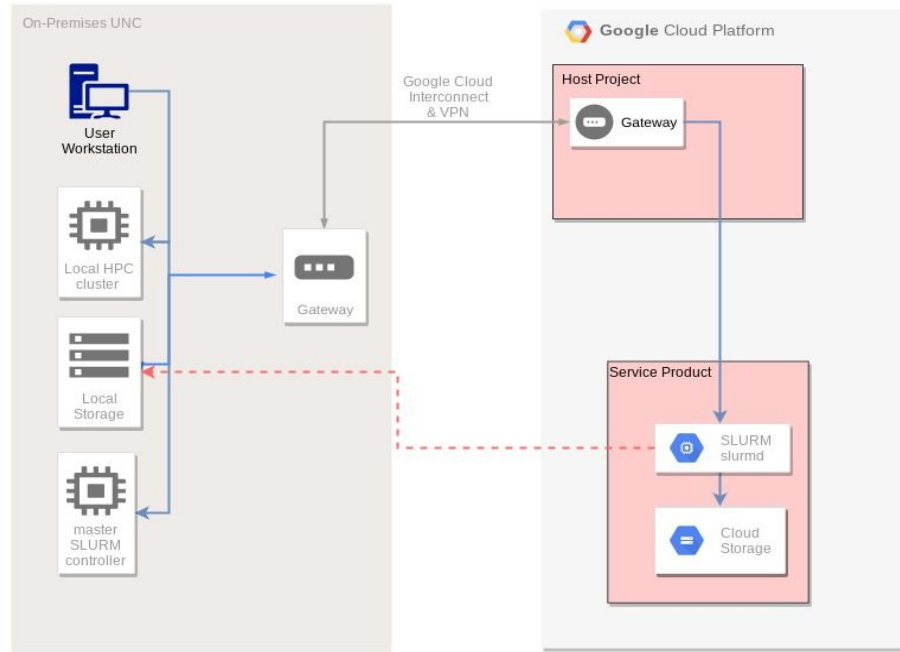
- Better responsiveness to creation and deletion of nodes
- Efficient allocation of nodes
- nss_slurm

Hybrid Slurm: Acme University

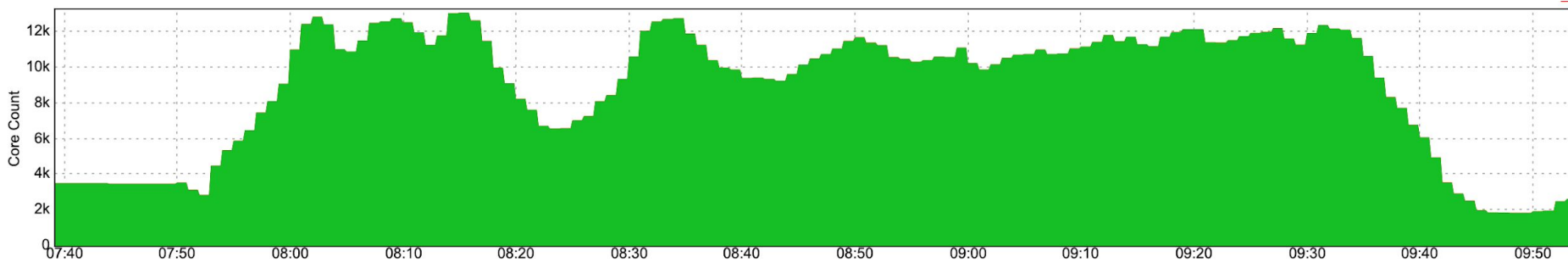
Foundational Elements

- Networking
 - VPN / Interconnect for [hybrid networking](#)
 - [Bi-directional DNS](#) for node resolution
- Storage
 - Mounted on-premise NFS
 - Dedicated Interconnect Recommended (10Gbps)
- Authentication
 - nss_slurm
- Compute
 - Pre-baked image with requisite drivers (i.e CUDA)

Acme Architecture



Acme Scale



Bursted from 4K to 12K cores in 10 mins

Whats coming in 2020

- Multiple Partitions
- Terraform integration
- Even faster scaling
- Storage options flexibility
- NFS; LUSTRE; GCS
- OMPI Support
- External Database (Cloud SQL)
- Hybrid Configuration

Demo

Burst from 0 to 1000 nodes in under 10 min

Using Elastifile managed service

QUESTIONS?