NSF/IUCRC CAC PROJECT

INTEGRATED VISUALIZING, MONITORING, AND MANAGING HPC SYSTEMS

Jie Li

Doctoral Student, TTU

01/08/2020

Advisors:

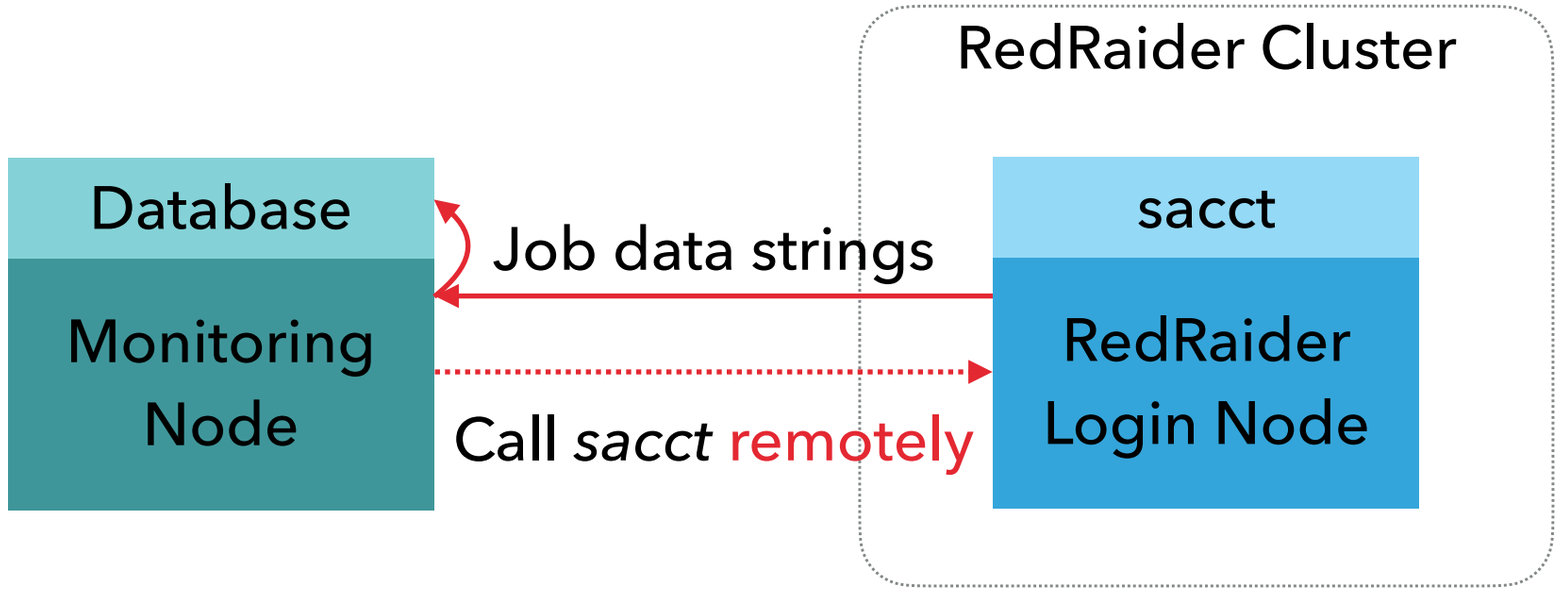
Mr. Jon Hass, SW Architect, Dell Inc.

Dr. Alan Sill, Managing Director, HPCC, TTU

Dr. Yong Chen, Associate Professor, CS Dept, TTU

Dr. Tommy Dang, Assistant Professor, CS Dept, TTU

SLURM CLI



- **sacct** - Generates detailed accounting information about individual jobs or job steps
  - Filtering options by user, computer, partition, time, etc.
- **sreport** - Generates aggregated accounting reports
  - Reports resource usage by user, cluster, partition, etc.
  - Do not reported about individual jobs or steps
- **sstat** - Generates very detailed accounting report about individual currently running job or job step

```
$ sacct –format=partition,nodelist,group,user,jobname,jobid,
submit,start,end,exitcode,cputimeraw,tresusageintot,
tresusageouttot,maxvmsize,alloccpus,ntasks,cluster,timelimitraw,
reqmem –p
```

REST API 20.02 VS 20.11

```
"\slurm\v0.0.35\job\{job_id}": {
 "get": {
    "responses": {
    "200": {
     "description": "job information"
    },
    "500": {
     "description": "job not found"
    }
  }
},
```

Slurm 20.02

```
"\slurm\v0.0.36\job\{job_id}": {
    "get": {
     "responses": {
       "200": {
        "description": "job(s) information",
        "content": {
         "application\json": {
          "schema": {
           "$ref": "#\components\schemas\v0.0.36_jobs_response"
          }
         },
         "application\x-yaml": {
          "schema": {
           "$ref": "#\components\schemas\v0.0.36_jobs_response"
          }
         }
        }
       },
       "default": {
        "description": "job not found"
       }
     }
   },
```

Slurm 20.11

REST API 20.02 VS 20.11

```
"job_resources": {
    },
    "nodes": 2,
    "node_index": [
     0,
     1
    ],
```

Slurm 20.02

```
"job_resources": {
     "nodes": "compute-14-[13-14]",
     "allocated_cpus": 4,
     "allocated_hosts": 2,
     "allocated_nodes": {
      "0": {
       "sockets": {
        "0": "unassigned",
        "1": "unassigned"
       },
      },
     "cores": {
      "0": "unassigned",
      "1": "unassigned",
      "2": "unassigned",
      "3": "unassigned",
      "4": "unassigned",
      "5": "unassigned"
     },
     "memory": 24084,
     "cpus": 12
    },
```

```
    "1": {
     "sockets": {
      "0": "unassigned",
      "1": "unassigned"
     },
     "cores": {
      "0": "unassigned",
      "1": "unassigned",
      "2": "unassigned",
      "3": "unassigned",
      "4": "unassigned",
      "5": "unassigned"
     },
     "memory": 24084,
     "cpus": 12
    }
   }
  },
```

Slurm 20.11

REST API 20.02 VS 20.11

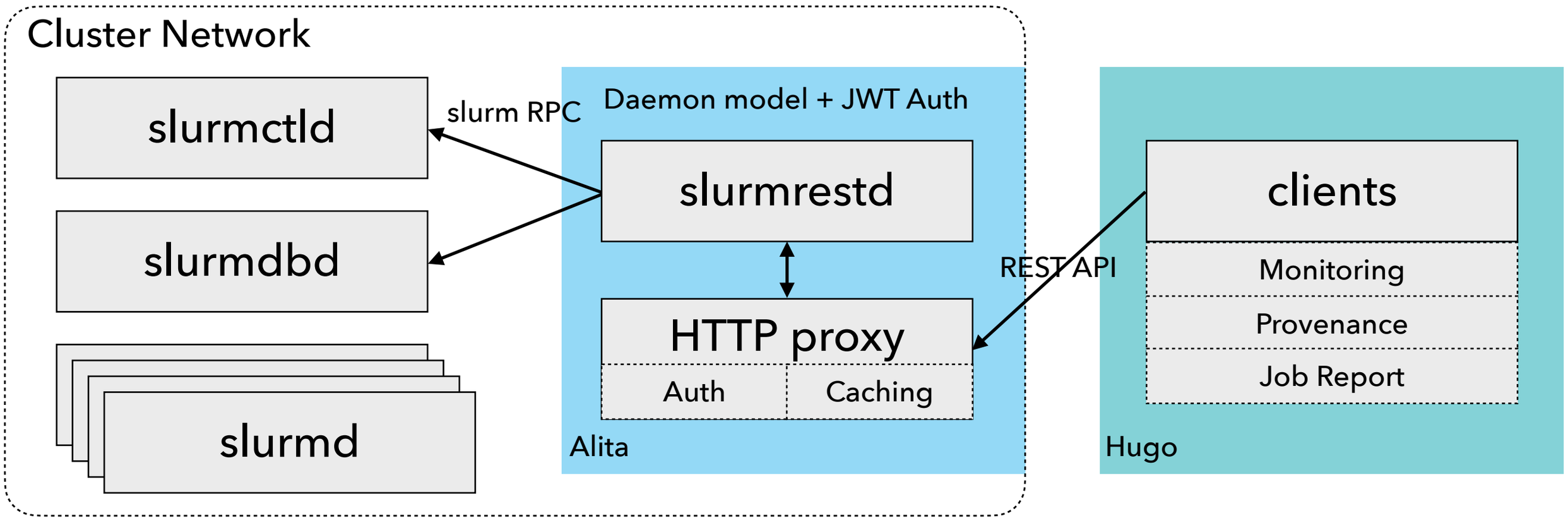

```
"nodes": {
   "compute-14-13": {
     "architecture": "x86_64",
     "burstbuffer_network_address": "",
     "boards": 1,
     "boot_time": 1592924815,
     "cores": 6,
     "cpu_binding": 0,
     "cpu_load": 1,
     "free_memory": 23244,
     "cpus": 12,
     "features": "",
     "active_features": "",
     "gres": "",
     "gres_drained": "",
     "gres_used": "",
     "mcs_label": "",
     "name": "compute-14-13",
     "next_state_after_reboot": "invalid",
     "address": "compute-14-13",
     "hostname": "compute-14-13",
     "state": "allocated",
     "operating_system": "Linux 3.10.0-957.1.3.el7.x86_64 #1 SMP Thu Nov 29 14:49:43
UTC 2018",
     "owner": null,
     "port": 6818,
     "real_memory": 24093,
     "reason": "",
     "reason_changed_at": 0,
     "reason_set_by_user": "",
     "slurmd_start_time": 1594661035,
     "sockets": 2,
     "threads": 1,
     "temporary_disk": 0,
     "weight": 1,
     "tres": "cpu=12,mem=24093M,billing=12",
     "slurmd_version": "20.02.3"
   },
```


Slurm 20.02


```
"nodes": [
 {
   "architecture": "x86_64",
   "burstbuffer_network_address": "",
   "boards": 1,
   "boot_time": 1592924815,
   "cores": 6,
   "cpu_binding": 0,
   "cpu_load": 3,
   "free_memory": 22773,
   "cpus": 12,
   "features": "",
   "active_features": "",
   "gres": "",
   "gres_drained": "N\/A",
   "gres_used": "",
   "mcs_label": "",
   "name": "compute-14-13",
   "next_state_after_reboot": "invalid",
   "address": "compute-14-13",
   "hostname": "compute-14-13",
   "state": "idle",
   "operating_system": "Linux 3.10.0-957.1.3.el7.x86_64 #1 SMP Thu Nov 29 14:49:43
UTC 2018",
   "owner": null,
   "port": 6818,
   "real_memory": 24093,
   "reason": "",
   "reason_changed_at": 0,
   "reason_set_by_user": "",
   "slurmd_start_time": 1609986851,
   "sockets": 2,
   "threads": 1,
   "temporary_disk": 0,
   "weight": 1,
   "tres": "cpu=12,mem=24093M,billing=12",
   "slurmd_version": "20.11.0"
  },
```


Slurm 20.11

DEPLOY REST API - FOR MONITORING PURPOSE



Todo list:

- Add Alita to the RedRaider Cluster
- Alita needs internet access to install new packages
- Configure Slurm for JWT Authentication support (for remote connection).
  - Ref: https://slurm.schedmd.com/jwt.html
- Add a privileged user to run slurmrestd in daemon model.
  - e.g.: slurmrestd -vvv -a rest_auth/jwt localhost:9997

Ref: https://slurm.schedmd.com/SLUG20/REST_API.pdf

DEPLOY REST API - FOR MONITORING PURPOSE

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