# Day to Day Maintenance of an HTCondor-CE

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# Staying Updated

- Ensure your HTCSS packages are up-to-date
  ```
  yum update 'htcondor-ce*' 'condor*'
  ```
- Subscribe to htcondor-users to get informed of the latest release announcements
  https://htcondor.org/mail-lists/#user
- Want to test changes before applying them to production? Try the HTCSS development container (contains a local HTCondor and Slurm):
  https://github.com/htcondor/htcondor-ce/blob/V5-branch/tests/containers/README.dev.md

# HTCondor-CE Config Refresher

- HTCondor-CE configuration lives in `/etc/condor-ce/`
  - Main configuration file in `/etc/condor-ce/condor_config`
  - Add local configuration to `/etc/condor-ce/config.d/` (files processed in lexicographic order)
  - Add authentication mappings to `/etc/condor-ce/mapfiles.d/`
- `condor_ce_config_val` to inspect config values
- `condor_ce_reconfig` to apply new configuration
- ...or restart the condor-ce service just to be sure

# Inspecting the Job Queue

condor_ce_q can be used to show glideins that have been submitted to your CE

```
[blin@lhcb-ce ~]$ condor_ce_q | tail
WARNING: GSI authentication is enabled by your security configuration! GSI is no longer support
d.
For details, see https://htcondor.org/news/plan-to-replace-gst-in-htcss/
osgvopilot   ID: 183499   10/10 10:37      _        1        _        _         1 183499.0
osgvopilot   ID: 183500   10/10 10:37      _        1        _        _         1 183500.0
osgvopilot   ID: 183501   10/10 10:39      _        1        _        _         1 183501.0
osgvopilot   ID: 183502   10/10 10:39      _        1        _        _         1 183502.0
osgvopilot   ID: 183503   10/10 10:44      _        1        _        _         1 183503.0
glowvopilot ID: 183504   10/10 10:44      _        1        _        _         1 183504.0

Total for query: 19 jobs; 6 completed, 0 removed, 0 idle, 12 running, 1 held, 0 suspended
Total for all users: 19 jobs; 6 completed, 0 removed, 0 idle, 12 running, 1 held, 0 suspended
```

# Inspecting the Job Queue

- condor_ce_q takes all the same options as condor_q!
- 'Spooling input data files' is a common, harmless hold reason

```
[blin@lhcb-ce ~]$ condor_ce_q -held
WARNING: GSI authentication is enabled by your security configuration! GSI is no longer supported.
For details, see https://htcondor.org/news/plan-to-replace-gst-in-htcss/


-- Schedd: lhcb-ce.chtc.wisc.edu : <128.104.100.65:9619?... @ 10/10/22 10:43:19
 ID         OWNER           HELD_SINCE  HOLD_REASON
183457.0    osgvopilot      10/10 08:43 Spooling input data files

Total for query: 1 jobs; 0 completed, 0 removed, 0 idle, 0 running, 1 held, 0 suspended
Total for all users: 18 jobs; 7 completed, 0 removed, 0 idle, 10 running, 1 held, 0 suspended
```

# Verify CE Daemons

- Ensure all of the CE daemons are running with `condor_ce_status`
- If not, check `/var/log/condor-ce/` (errors can often be found in the MasterLog, SchedLog, or CollectorLog)

```
[blin@lhcb-ce ~]$ condor_ce_status -any
WARNING: GSI authentication is enabled by your security configuration! GSI is no longer supporte
d.
For details, see https://htcondor.org/news/plan-to-replace-gst-in-htcss/
MyType              TargetType          Name

Collector           None                My Pool - lhcb-ce.chtc.wisc.edu@lhcb-ce.c
Submitter           None                glowvopilot@users.htcondor.org
Job_Router          None                htcondor-ce@lhcb-ce.chtc.wisc.edu
Scheduler           None                lhcb-ce.chtc.wisc.edu
DaemonMaster        None                lhcb-ce.chtc.wisc.edu
Submitter           None                osgvopilot@users.htcondor.org
```

# Log Levels

- Useful for temporary debugging
- Log level can be adjusted per daemon (e.g, `SCHEDD_DEBUG`) or across all daemons (`ALL_DEBUG`)
- Most common, helpful log levels for HTCondor-CE:
    - `D_CAT D_ALL:2` - shows the log level for each line (helpful for debugging HTCondor bugs!) and increases the log level of general messages
    - `D_SECURITY` - show verbose authentication messages
    - `D_NETWORK` - show messages for TCP/UDP connections
- Warning, this makes logs very chatty! Adjust the log sizes and number of logs kept:
    - `MAX_<SUBSYS>_LOG` - Max size of each log file, e.g. `MAX_JOB_ROUTER_LOG`
    - `MAX_NUM_<SUBSYS>_LOG` - Max number of logs kept, e.g. `MAX_NUM_JOB_ROUTER_LOG`

# Troubleshooting Job Submission
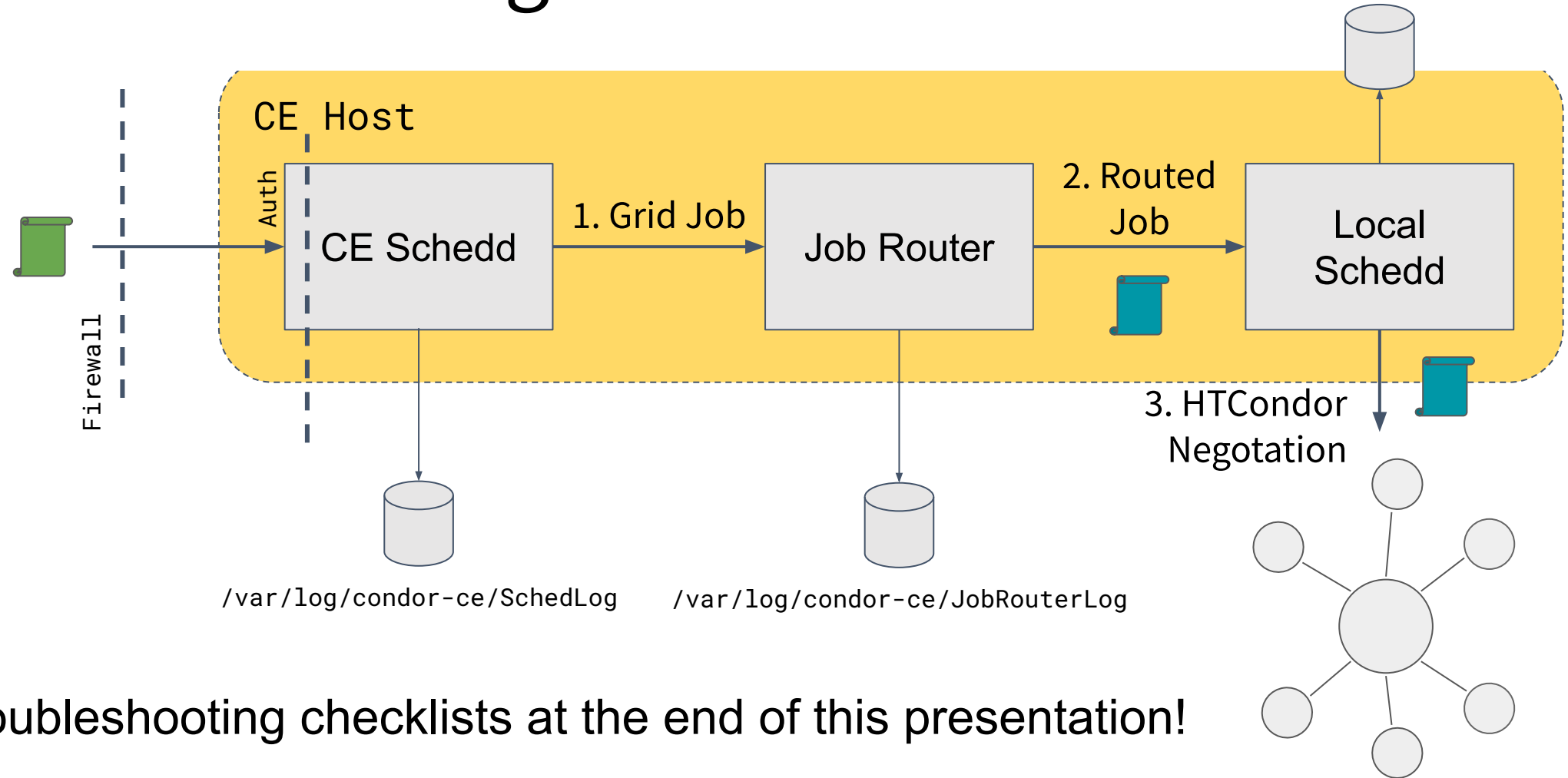


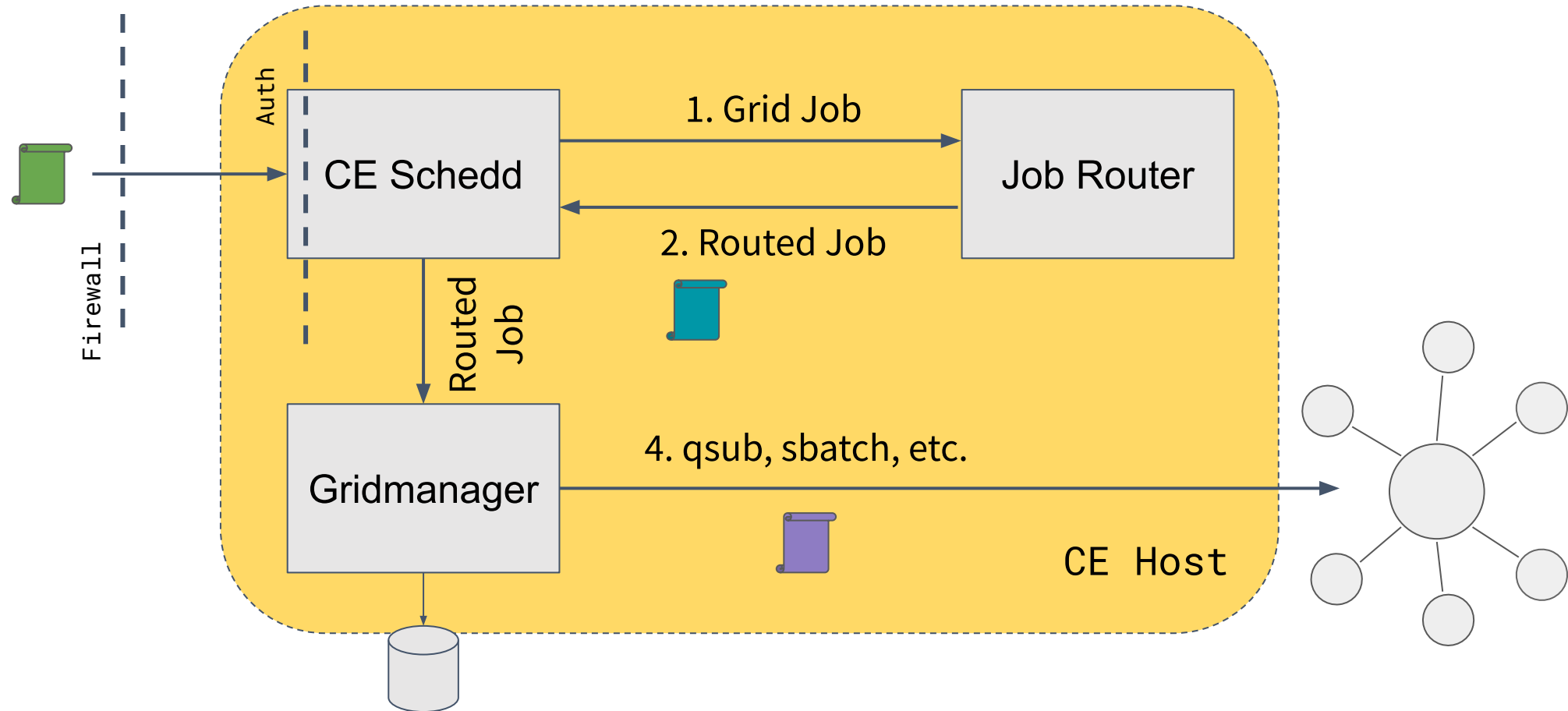See troubleshooting checklists at the end of this presentation!

# Tracking HTCondor Batch System Jobs
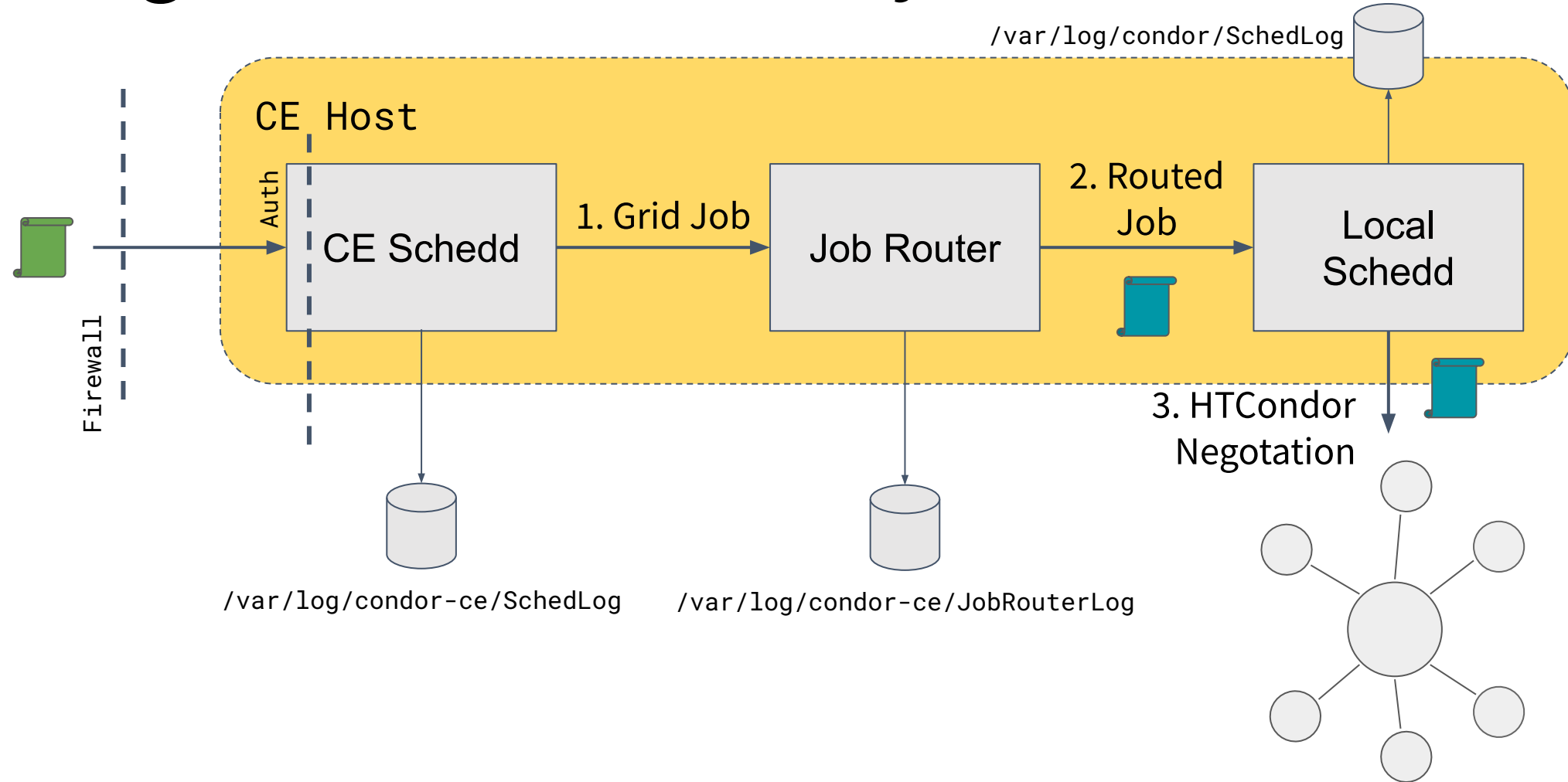
# Tracking HTCondor Batch System Jobs

- Find the chain of job IDs using one of the following methods:
  - Query the CE schedd: `condor_ce_q <GRID JOB ID> -af RoutedToJobId`
  - Find relevant lines in the JobRouterLog
    09/17/14 15:00:57 JobRouter (src=86.0,`dest=205.0`,route=Local_Condor): claimed job
  - Query the local schedd: `condor_q <ROUTED JOB ID> -af RoutedFromJobId`
  - Similarly for completed jobs:
    `condor_ce_history -match 1 <GRID JOB ID> -af RoutedToJobId`
    `condor_history -match 1 <ROUTED JOB ID> -af RoutedFromJobId`

- [https://htcondor.com/htcondor-ce/v5/troubleshooting/common-issues/#htcondor-batch-systems](https://htcondor.com/htcondor-ce/v5/troubleshooting/common-issues/#htcondor-batch-systems)

# Tracking Non-HTCondor Batch System Jobs



/var/log/condor-ce/GridmanagerLog.<user>

# Tracking Non-HTCondor Batch System Jobs

- For non-HTCondor batch systems, find the batch system job ID:
    - Query the CE schedd routed job:
    ```
    $ condor_ce_q <ROUTED JOB ID> -af GridJobId
    <snip> lsf/20141206/482046
    ```
    - If the batch system jobs have completed, find relevant lines in the GridmanagerLog. Look for <BATCH SYSTEM>/<DATE>/<JOB ID>
    ```
    lsf/20141206/482046
    ```
    - Alternatively, for completed jobs with HTCondor >= 8.8.11 or >= 8.9.9:
    ```
    $ condor_ce_history <ROUTED JOB ID> -match 1 -af GridJobId
    ```
- https://htcondor.com/htcondor-ce/v5/troubleshooting/common-issues/#non-htcondor-batch-systems

# Troubleshooting the Gridmanager

If you see failures during the GM_SUBMIT phase, this means that the Batch GAHP/BLAHP is having issues submitting jobs to the local batch system

1. Verify that local job submission to the batch system works
2. Set the following in /usr/libexec/condor/glite/etc/batch_gahp.config:
   `blah_debug_save_submit_info=<DIR_NAME>`
   This saves generated submit files that HTCondor-CE uses for submission to <DIR_NAME>
3. Test local job submission with the generated file
4. Please report any issues found this way!

https://htcondor-ce.readthedocs.io/en/latest/troubleshooting/troubleshooting/#for-non-htcondor-batch-systems

# Troubleshooting the Gridmanager

A successful query of the local LSF batch system by the Gridmanager daemon

```
09/17/14 15:07:24 [25543] (87.0) gm state change: GM_SUBMITTED -> GM_POLL_ACTIVE
09/17/14 15:07:24 [25543] GAHP[25563] <- 'BLAH_JOB_STATUS 3 lsf/20140917/482046'
09/17/14 15:07:24 [25543] GAHP[25563] -> 'S'
09/17/14 15:07:25 [25543] GAHP[25563] <- 'RESULTS'
09/17/14 15:07:25 [25543] GAHP[25563] -> 'R'
09/17/14 15:07:25 [25543] GAHP[25563] -> 'S' '1'
09/17/14 15:07:25 [25543] GAHP[25563] -> '3' '0' 'No Error' '4' '[ BatchjobId = "482046";
JobStatus = 4; ExitCode = 0; WorkerNode = "atl-prod08" ]'
```

https://htcondor-ce.readthedocs.io/en/latest/troubleshooting/troubleshooting/#for-non-htcondor-batch-systems

# Troubleshooting the Gridmanager

## Routed job ID

```
09/17/14 15:07:24 [25543] (87.0) gm state change: GM_SUBMITTED -> GM_POLL_ACTIVE
09/17/14 15:07:24 [25543] GAHP[25563] <- 'BLAH_JOB_STATUS 3 lsf/20140917/482046'
09/17/14 15:07:24 [25543] GAHP[25563] -> 'S'
09/17/14 15:07:25 [25543] GAHP[25563] <- 'RESULTS'
09/17/14 15:07:25 [25543] GAHP[25563] -> 'R'
09/17/14 15:07:25 [25543] GAHP[25563] -> 'S' '1'
09/17/14 15:07:25 [25543] GAHP[25563] -> '3' '0' 'No Error' '4' '[ BatchjobId = "482046";
JobStatus = 4; ExitCode = 0; WorkerNode = "atl-prod08" ]'
```

https://htcondor-ce.readthedocs.io/en/latest/troubleshooting/troubleshooting/#for-non-htcondor-batch-systems

# Troubleshooting the Gridmanager

## LSF job ID

```
09/17/14 15:07:24 [25543] (87.0) gm state change: GM_SUBMITTED -> GM_POLL_ACTIVE
09/17/14 15:07:24 [25543] GAHP[25563] <- 'BLAH_JOB_STATUS 3 lsf/20140917/482046'
09/17/14 15:07:24 [25543] GAHP[25563] -> 'S'
09/17/14 15:07:25 [25543] GAHP[25563] <- 'RESULTS'
09/17/14 15:07:25 [25543] GAHP[25563] -> 'R'
09/17/14 15:07:25 [25543] GAHP[25563] -> 'S' '1'
09/17/14 15:07:25 [25543] GAHP[25563] -> '3' '0' 'No Error' '4' '[ BatchjobId = "482046";
JobStatus = 4; ExitCode = 0; WorkerNode = "atl-prod08" ]'
```

https://htcondor-ce.readthedocs.io/en/latest/troubleshooting/troubleshooting/#for-non-htcondor-batch-systems

# Troubleshooting the Gridmanager

If there are issues, errors should show up here. If the messages do not provide enough information, run the BLAHP commands by hand:

```
/usr/libexec/condor/glite/bin/lsf_status.sh lsf/20140917/482046
```

```
09/17/14 15:07:24 [25543] (87.0) gm state change: GM_SUBMITTED -> GM_POLL_ACTIVE
09/17/14 15:07:24 [25543] GAHP[25563] <- 'BLAH_JOB_STATUS 3 lsf/20140917/482046'
09/17/14 15:07:24 [25543] GAHP[25563] -> 'S'
09/17/14 15:07:25 [25543] GAHP[25563] <- 'RESULTS'
09/17/14 15:07:25 [25543] GAHP[25563] -> 'R'
09/17/14 15:07:25 [25543] GAHP[25563] -> 'S' '1'
09/17/14 15:07:25 [25543] GAHP[25563] -> '3' '0' 'No Error' '4' '[ BatchjobId = "482046";
JobStatus = 4; ExitCode = 0; WorkerNode = "atl-prod08" ]'
```

Please report any issues found this way!

# Additional Resources

- Troubleshooting documentation
  https://htcondor.com/htcondor-ce/v5/troubleshooting/common-issues/
- Debugging tools
  https://htcondor.com/htcondor-ce/v5/troubleshooting/debugging-tools/
- Receive news about new HTCSS versions and ask questions on htcondor-users!
  https://htcondor.org/mail-lists/#user

# Questions?

# Troubleshooting Job Submission Checklist

1. No authentication errors in the SchedLog? Make sure that the firewall is open
2. Authentication errors?
   a. Set `SCHEDD_LOG = $(SCHEDD_LOG) D_CAT D_ALL:2 D_SECURITY`
   b. Ensure that `AUTH_SSL_*` configurations point to grid locations if using an IGTF cert (see [https://htcondor.com/htcondor-ce/v5/configuration/authentication/#configuring-certificates](https://htcondor.com/htcondor-ce/v5/configuration/authentication/#configuring-certificates) and `/etc/condor-ce/config.d/01-ce-auth.conf`)
   c. Make sure that mapped users exist
   d. Ensure CAs, CRLs, and VO information are up-to-date
   e. Verify CE host system clock
3. Check `/var/log/condor-ce/AuditLog` for attempted submissions

# Troubleshooting Idle CE Jobs Checklist

- Jobs are indefinitely idle? Check for job router matching issues
  - For jobs still in the queue:
    ```
    # condor_ce_q -l <JOB-ID> |
    condor_ce_job_router_info -match-jobs
    -ignore-prior-routing -jobads -
    ```
  - For jobs that have left the queue:
    https://htcondor.com/htcondor-ce/v5/troubleshooting/debugging-tools/#condor_ce_job_router_info
- Wrap ClassAd expressions with the `debug()` function, evaluation details will appear in the JobRouterLog
- Ensure that you can submit jobs to your local batch system from the CE host
- Errors will appear in the JobRouterLog and the local SchedLog if there are communication issues between HTCondor-CE and the local HTCondor

# Troubleshooting Held CE Jobs Checklist

- Find hold reasons with `condor_ce_q -held`
- **Spooling input data files:** the remote client is sending input files, should clear up after the transfer is complete
- **HTCondor-CE held job due to…**
    - **invalid job universe:** HTCondor-CE only routes vanilla, local, scheduler, and standard universe
    - **no matching routes, route job limit, or route failure threshold; see 'HTCondor-CE Troubleshooting Guide':** job sat in the queue for > 30 min without being picked up by the job router
        - No routes match the job:
          `condor_ce_q <JOB ID> | condor_ce_job_router_info -match-jobs \ -ignore-prior-routing -jobads -`
        - All routes are full: `condor_ce_router_q`
        - Route failure threshold: check the JobRouterLog or GridmanagerLog for local batch system submission failures. Fix the underlying issue and restart the HTCondor-CE services.