Analyzing Job/Machine Matches using condor_q -analyze

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Condor Week 2013
Scenarios

› Why is my job not running?
  • On any machine?
  • On a specific machine?

› Why is this glide-in not running jobs?

› How well do queued jobs match machines?

› How well do machines match jobs?

› Why does analysis sometimes “hang”?
Changes for 7.9 series

- better-analyze
- better-analyze:priority
- verbose
- machine <machine-name>
- mconstraint <constraint-expr>
- better-analyze:reverse
- analyze:summary
What’s better about –better-analyze?

- `condor_q –analyze <jobid>`
  - Stops when it gets an answer (running, hold) or when job has not yet been considered

- `condor_q –better <jobid>`
  - Same output as –analyze + more details
  - Always does match analysis
Analysis output sections

Request is running, held, etc.
Run analysis summary, of NNN machines
Requirements expression for your job is:
Your job defines the following attributes:
… your job reduces to these conditions:
Suggestions:
Example:

```
condor_q --analyze 42.0
```

42.000: Request is held.

Hold reason: Failed to initialize user log to
/home/work/ gauss_rifle/42/process.log
Example:
condor_q -better 43.0

---

43.000: Run analysis summary. Of 3979 machines, 3979 are rejected by your job's requirements
  0 reject your job because of their own requirements
  0 match and are already running your jobs
  0 match but are serving other users
  0 are available to run your job
No successful match recorded.
Last failed match: Tue Nov 20 10:58:59 2012

Reason for last match failure: no match found
Ex: condor_q –better 43.0 (2)

WARNING: Be advised:
No resources matched request's constraints

The Requirements expression for your job is:

( Machine == "node99.chtc.wisc.edu" ) &&
( MY.JobUniverse == 12 || MY.JobUniverse == 7 ||
  MY.WantFlocking || MY.WantGlidein ||
  TARGET.PoolName == "CHTC" ||
  TARGET.COLLECTOR_HOST_STRING == "kiddiepool.cs.wisc.edu" ) &&
( TARGET.Arch == "X86_64" ) && ( TARGET.OpSys == "LINUX" ) &&
( TARGET.Disk >= RequestDisk ) &&
( TARGET.Memory >= RequestMemory ) &&
( TARGET.HasFileTransfer )
Ex: `condor_q –better 43.0 (3)`

Your job defines the following attributes:

- JobUniverse = 5
- WantFlocking = undefined
- WantGlidein = undefined
- DiskUsage = 22
- ImageSize = 22
- RequestDisk = 22
- RequestMemory = 1
The Requirements expression for your job reduces to these conditions:

<table>
<thead>
<tr>
<th>Step</th>
<th>Matched</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>[0]</td>
<td>4</td>
<td>Machine == &quot;node99.chtc.wisc.edu&quot;</td>
</tr>
<tr>
<td>[8]</td>
<td>3672</td>
<td>TARGET.PoolName == &quot;CHTC&quot;</td>
</tr>
<tr>
<td>[12]</td>
<td>0</td>
<td>[0] &amp;&amp; [8]</td>
</tr>
</tbody>
</table>
Why is my job NOT running on this idle machine

› condor_q -bet <jobid> -machine <name>

› But what do you do when you get this?

…

0 are rejected by your job's requirements
1 reject your job because of their own requirements
When machines reject your job “because of their own requirements”

- `condor_q –bet:reverse –mach <machine>`
  - Counts jobs whose Requirements match this machine
  - Counts jobs that match this machine’s Requirements and START expressions
  - Analyzes machine’s Requirements and START expressions
Example: condor_q –bet:reverse

> condor_q -pool glidein.chtc.wisc.edu -bet:rev -mach glidein_15533@cmswn1332.fnal.gov

... The Requirements expression for this slot is

( START ) && ( IsValidCheckpointPlatform )

START is ( ( true ) &&
( ( x509userproxssubject isn't undefined ) &&
( ( GLIDEIN_REQUIRE_VOMS is undefined ) ||
( GLIDEIN_REQUIRE_VOMS is false ) ||
( TARGET.x509userproxyfirstfqan isn't undefined ) ) && ( true ) ) &&
( TARGET.WantGlidein && ( ( isUndefined(osg_site_whitelist) ||
stringListMember(GLIDEIN_Site, osg_site_whitelist) is true ) &&
( isUndefined(osg_site_blacklist) ||
stringListMember(GLIDEIN_Site, osg_site_blacklist) isn't true ) ) ) ) &&
( x509UserProxySubject isn't undefined &&
( ( isUndefined(TARGET.estimated_run_hours) ||
TARGET.estimated_run_hours * 3600 <= GLIDEIN_ToDie - CurrentTime ) ) ) ) ) &&
( ( ( GLIDEIN_ToRetire is undefined ) ||
( CurrentTime < GLIDEIN_ToRetire ) ) )
This slot defines the following attributes:

- **CheckpointPlatform** = "LINUX X86_64 2.6.x normal N/A"
- **CurrentTime** = 1366606640
- **GLIDEIN_REQUIRE_VOMS** = true
- **GLIDEIN_Site** = "FNAL"
- **GLIDEIN_ToDie** = 1366822155
- **GLIDEIN_ToRetire** = 1366787355
- **IsValidCheckpointPlatform** = true

Ex: condor_q –bet:reverse (2)
The Requirements expression for this slot reduces to these conditions:

<table>
<thead>
<tr>
<th>Step</th>
<th>Matched</th>
<th>Condition</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>[1]</td>
<td>0</td>
<td>x509userproxysubject isnt undefined</td>
<td></td>
</tr>
<tr>
<td>[5]</td>
<td>0</td>
<td>TARGET.x509userproxyfirstfqan isnt undefined</td>
<td></td>
</tr>
<tr>
<td>[12]</td>
<td>210</td>
<td>isUndefined(osg_site_whitelist)</td>
<td></td>
</tr>
<tr>
<td>[15]</td>
<td>210</td>
<td>isUndefined(osg_site_blacklist)</td>
<td></td>
</tr>
<tr>
<td>[21]</td>
<td>0</td>
<td>x509UserProxySubject isnt undefined</td>
<td></td>
</tr>
<tr>
<td>[22]</td>
<td>210</td>
<td>isUndefined(TARGET.estimated_run_hours)</td>
<td></td>
</tr>
</tbody>
</table>
Ex: condor_q –bet:reverse (4)

glidein_15533@cmswn12.fnal.gov: Run analysis summary of 1877 jobs.
  0 (0.00 %) match both slot and job requirements.
  0 match the requirements of this slot.
  782 have job requirements that match this slot.
How well do jobs match?

```bash
condor_q –ana:sum [<user>]
```

### Analyzing matches for 4099 slots

<table>
<thead>
<tr>
<th>JobId</th>
<th>Autocluster</th>
<th>Matches</th>
<th>Machine</th>
<th>Running</th>
<th>Serving</th>
</tr>
</thead>
<tbody>
<tr>
<td>JobId</td>
<td>Members/Idle</td>
<td>Requirement</td>
<td>Rejects</td>
<td>Users</td>
<td>Job</td>
</tr>
<tr>
<td>------------</td>
<td>-------------</td>
<td>-----------</td>
<td>---------</td>
<td>--------</td>
<td>------</td>
</tr>
<tr>
<td>23724675.0</td>
<td>1/0</td>
<td>3371</td>
<td>706</td>
<td>1/4</td>
<td>2330</td>
</tr>
<tr>
<td>23724668.0</td>
<td>1/0</td>
<td>3455</td>
<td>779</td>
<td>1/9</td>
<td>2335</td>
</tr>
<tr>
<td>24161055.0</td>
<td>7/7</td>
<td>16</td>
<td>0</td>
<td>100/300</td>
<td>2118</td>
</tr>
<tr>
<td>24175421.0</td>
<td>92/0</td>
<td>100/0</td>
<td>3178</td>
<td>47/0</td>
<td>2118</td>
</tr>
<tr>
<td>24175550.0</td>
<td>16/0</td>
<td>3178</td>
<td>47/0</td>
<td>92/300</td>
<td>2118</td>
</tr>
<tr>
<td>23989910.0</td>
<td>47/0</td>
<td>3418</td>
<td>717</td>
<td>47/17</td>
<td>2362</td>
</tr>
<tr>
<td>23861860.0</td>
<td>17/0</td>
<td>1380</td>
<td>430</td>
<td>0</td>
<td>646</td>
</tr>
<tr>
<td>23559579.0</td>
<td>1/1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>23724669.0</td>
<td>1/0</td>
<td>3455</td>
<td>779</td>
<td>1/9</td>
<td>2335</td>
</tr>
<tr>
<td>23859855.0</td>
<td>8/0</td>
<td>1380</td>
<td>430</td>
<td>0</td>
<td>646</td>
</tr>
<tr>
<td>24212524.0</td>
<td>7/0</td>
<td>40</td>
<td>0</td>
<td>7/17</td>
<td>0</td>
</tr>
<tr>
<td>18151825.0</td>
<td>5/0</td>
<td>3181</td>
<td>509</td>
<td>0</td>
<td>2382</td>
</tr>
</tbody>
</table>
How well do machines match?

```bash
condor_q -ana:sum,rev [mconst <const>]
```

Analyzing matches for 1484 jobs

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Slot's Matches</th>
<th>Job's Matches</th>
<th>Both Matches</th>
<th>Match %</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="mailto:slot1@lab-008.wisc.edu">slot1@lab-008.wisc.edu</a></td>
<td>Stat</td>
<td>1469</td>
<td>0</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td><a href="mailto:slot2@lab-008.wisc.edu">slot2@lab-008.wisc.edu</a></td>
<td>Stat</td>
<td>1469</td>
<td>0</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td><a href="mailto:slot1@lab-037.wisc.edu">slot1@lab-037.wisc.edu</a></td>
<td>Stat</td>
<td>1469</td>
<td>0</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td><a href="mailto:slot2@lab-037.wisc.edu">slot2@lab-037.wisc.edu</a></td>
<td>Stat</td>
<td>1469</td>
<td>0</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td><a href="mailto:slot1@node002.chtc.wisc.edu">slot1@node002.chtc.wisc.edu</a></td>
<td>Part</td>
<td>1411</td>
<td>1378</td>
<td>92.79</td>
<td></td>
</tr>
<tr>
<td><a href="mailto:slot1_5@node002.chtc.wisc.edu">slot1_5@node002.chtc.wisc.edu</a></td>
<td>Dyn</td>
<td>1271</td>
<td>1178</td>
<td>79.31</td>
<td></td>
</tr>
<tr>
<td><a href="mailto:slot1_6@node002.chtc.wisc.edu">slot1_6@node002.chtc.wisc.edu</a></td>
<td>Dyn</td>
<td>84</td>
<td>72</td>
<td>4.85</td>
<td></td>
</tr>
<tr>
<td><a href="mailto:slot1_8@node002.chtc.wisc.edu">slot1_8@node002.chtc.wisc.edu</a></td>
<td>Dyn</td>
<td>1271</td>
<td>1178</td>
<td>79.31</td>
<td></td>
</tr>
<tr>
<td><a href="mailto:slot1@node006.chtc.wisc.edu">slot1@node006.chtc.wisc.edu</a></td>
<td>Part</td>
<td>0</td>
<td>1377</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td><a href="mailto:slot1_1@node006.chtc.wisc.edu">slot1_1@node006.chtc.wisc.edu</a></td>
<td>Dyn</td>
<td>1295</td>
<td>1263</td>
<td>85.04</td>
<td></td>
</tr>
</tbody>
</table>
Working offline

- **-jobads <file>**
  - `<file>` is the output of `condor_q -long` or `condor_submit -dump`

- **-slotads <file>**
  - `<file>` is the output of `condor_status -long`

- **-userprios <file>**
  - `<file>` is the output of `condor_userprio -long`
  - Use with `-better:priority`
Any Questions?