Git and HTCondor

Integrating Configuration with Version Control

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Why?
Why?

- version control
- close eye on your contributors
- collaboration
- branches to test changes
- removes layer of complexity
- efficiency (diffs)
Alternatives

- puppet
- distributed filesystem
- http
- ???
- ...and you’re probably managing these with git anyway
What problems does this solve?
HTCondor Configuration

- condor_reconfig integration
- monitoring
- configuration version analysis
- ensures homogeneity
- allows configuration version tracking (git HEAD)

For something like HTCondor, we want to see our changes immediately.
How do we accomplish this?

We need a smart, secure, access-controlled repository.

gitolite.

A repo accessible using ssh with authorized keys, which has its own configuration.

You could use Github or any git server with access control for this too!
You’re halfway done!

Lots of documentation - included in official git docs.
Repository Security
### User and Group Permissions

**Group of repos:**

<table>
<thead>
<tr>
<th>repo</th>
<th>@oss_repos</th>
</tr>
</thead>
<tbody>
<tr>
<td>RW</td>
<td>int$</td>
</tr>
<tr>
<td>RW</td>
<td>eng-</td>
</tr>
<tr>
<td>RW</td>
<td>refs/tags/rc[0-9]</td>
</tr>
<tr>
<td>RW+</td>
<td></td>
</tr>
</tbody>
</table>

- `RW int$` = @interns
- `RW eng-` = @engineers
- `RW refs/tags/rc[0-9]` = @engineers
- `RW+` = @admins
singular repo:

repo foo_bar
  RW+ = alice @teamleads
  - master = bob @devteam
  - refs/tags/v[0-9] = bob @devteam
  RW+ dev/ = bob @devteam
  RW = bob @devteam
  R = @managers
No execute nodes are allowed to push configuration changes.
HTCondor Integration
Macro Language

- executes command and evaluates stdout in config
- published master ad attribute
- `MASTER_ATTRS = $(MASTER_ATTRS) GITHEAD`
- run as master to check GITHEAD otherwise the nature of the macro language will cause the script to run every time you use `condor_config_val`, which IsTool rather than IsMaster

```
condor_config_val -name mynode.chtc.wisc.edu GITHEAD
```
HTCondor configuration:

```bash
ETC = /etc/condor
# Host-specific LOCAL file
LOCAL = $(ETC)/hosts/$(FULL_HOSTNAME).local

if $(IsMaster)
    include command : /usr/bin/sudo $(ETC)/bin/htcondorconfig_pull.sh -d $(ETC)
endif

REQUIRE_LOCAL_CONFIG_FILE = false
LOCAL_CONFIG_FILE = $(HOSTS) \ $(GLOBAL) \ $(POLICY) \ $(PLATFORM) \ $(SECURITY) \ $(LOCAL)
```
Host-specific "LOCAL" file
/etc/condor/hosts/mynode.chtc.wisc.edu.local:

include: $(ETC)/include/startd.conf
include: $(ETC)/include/ckpt_server.conf
include: $(ETC)/include/facility_cs_3370a.conf
include: $(ETC)/include/owned_by_chtc.conf
Checking for compliance:

```
$ condor_status -master -const '! IsUndefined(GitHead)' &&
   GitHead != "bcfd89a199ddb050ce6f9fbe63760fe2136488c"' -af
   githead name

7853086710d87dbbb945d379d8a05f3c69090d80 a004.chtc.wisc.edu
7853086710d87dbbb945d379d8a05f3c69090d80 a005.chtc.wisc.edu
7853086710d87dbbb945d379d8a05f3c69090d80 a006.chtc.wisc.edu
7853086710d87dbbb945d379d8a05f3c69090d80 a011.chtc.wisc.edu
```
Sudo Configuration

Allow condor user to run only **only the configuration-pulling script as root!**

```bash
user@host ~ $ cat /etc/sudoers.d/htcondor_config_pull
condor ALL=(root) NOPASSWD: /etc/condor/bin/htcondor_config_pull.sh
Defaults!/etc/condor/bin/htcondor_config_pull.sh !requiretty
```

HTCondor config permissions should be **root:root**, and writeable only by owner.
Our Script

• logs to syslog
• very basic: performs clean, reset, pull
• staggers reconfig to avoid overload
• staggering will be built into condor_reconfig in the future
Questions?
http://cs.wisc.edu/~egrasmic/condor_config
http://cs.wisc.edu/~egrasmic/htcondor_config_pull.sh

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