

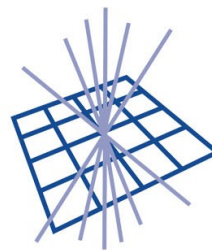
Cfengine – *Stress Reduction for System Administrators*

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GridPP

UK Computing for Particle Physics



Outline

- What is Cfengine
- Deployment / Installation
- Use at Glasgow
 - Classes
 - Daemons (30 min time slot)
 - Nagios integration
- Worked Examples
 - Funky Tricks



Background

- cfengine (originally by Mark Burgess)
- <http://www.cfengine.org>
- Plan is to describe “Finished Config”
not what to do.



Components

- **cfagent**
 - Command Line (cfagent -qv)
- **cfservd**
 - server
- **cfexecd**
 - cron version – scheduling / reporting
- **cfenvd / cfenvgraph**
 - optional
- **cfkey**
 - Generates keypairs for cfagent/cfservd
- **cfrun**
 - Remote cfservd tool
- **cfshow**
 - queries state DB



Components II

- From 2.1.16 – cfetool
 - check
 - create
 - dump
 - graph
 - import
 - info
 - update
- rrdtool style anomaly detection



Files

- Config files live in */var/cfengine/inputs*
- **update.conf**
 - How to copy policy files
- **cfserverd.conf**
 - Basic “who can get files”
- **cfagent.conf**
 - The Goal



File Syntax

action:

class::

[do stuff]



Glasgow Setup

- svr031 – management server
- 140 worker nodes
- 9 grid servers
- 10 disk servers



Classes

groups:

```
worker = ( HostRange(node,1-140) )
```

```
gridsvr = ( HostRange(svr,016-024) )
```

```
disksvr = ( HostRange(disk,032-041) )
```

Nicer names for servers

```
ce    = ( svr016 )
```

```
ui    = ( svr017 svr020 svr024 )
```

```
sitebdii = ( svr021 )
```

```
rb    = ( svr023 )
```

```
dpmdisk = ( HostRange(disk,032-036) HostRange(disk,038-041) )
```

```
clusterdisk = ( disk037 )
```



Classes II

```
## Compound groups
# Batch system nodes
torque = ( ce worker )

# Nodes which look at the autofs system
autofs = ( worker ce clusterui pandaui )

# All grid nodes
grid = ( worker gridsvr dpmdisk )

# New time classes
# (Useful as we run 2x an hour - once from cfexecd, once from cron)
Half_Hour_0 = ( Min00_05 Min05_10 Min10_15 Min15_20 Min20_25 Min25_30 )
Half_Hour_1 = ( Min30_35 Min35_40 Min40_45 Min45_50 Min50_55 Min55_60 )
```



Actions

- control:
 - actionsequence()
 - General setup / config
 - SplayTime = 25
- directories:
 - Perms/Owner/group
 - /usr/local/bin mode=755 owner=root group=wheel
 - LastNode for creating HomeDirs



actionsequence

control:

any::

- *Required*

```
actionsequence = (  
    directories  
    files  
    links  
    editfiles  
    packages  
    copy  
    disable  
    shellcommands  
    tidy  
    processes  
)
```



actions II

- files:
 - Similar to *directories* – touch to create
- links:
 - hard/relative/absolute
- editfiles:
 - scary!



editfiles example

grid::

```
{ # central logging of all syslogs to headnode  
/etc/syslog.conf  
AppendIfNoSuchLine "*.*" @master.beowulf.clus  
DefineClasses "restartsyslog"  
}
```

Copy:

- We keep a skel tree on master node
- Use copy to distribute

grid::

```
# VOMS Certs
```

```
$(skel)/grid/etc/grid-security/vomsdir mode=0644 dest=/etc/grid-security/vomsdi
```

```
# Other stuff
```

```
$(skel)/yaim/site-info.def mode=600 dest=/opt/glite/yaim/etc/site-info.def type=su
```

```
$(skel)/yaim/groups.conf mode=644 dest=/opt/glite/yaim/etc/groups.conf type=su
```

```
$(skel)/yaim/users.conf mode=644 dest=/opt/glite/yaim/etc/users.conf type=sum
```

```
$(skel)/yaim/local/config_users mode=644 dest=/opt/glite/yaim/functions/local/co
```

```
$(skel)/grid/etc/profile.d/lcgenenv.sh mode=644 dest=/etc/profile.d/lcgenenv.sh type=
```

```
$(skel)/grid/etc/profile.d/lcgenenv.csh mode=644 dest=/etc/profile.d/lcgenenv.csh typ
```



SAM / R-GMA

- Mail thread – Wrapper slowed things down

disable:

worker::

```
# Disable the SAM wrapper which uses R-GMA  
/opt/lcg/etc/jobwrapper-start.d/01-same.start  
/opt/lcg/etc/jobwrapper-end.d/01-same.end
```



Nagios Integration

- Check it's running
 - touches local file – age
 - network probe
- Should do more...



Resources

- Cfagent Website
 - <http://www.cfengine.org>
- wiki
 - <http://www.cfwiki.org>
- Books



Questions?