Moving CHTC from RHEL 6 to RHEL 7

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HTCondor Week 2017
Migration without Migraines
Actually from SL $\rightarrow$ CentOS, not RHEL

Need `decryptfs` for encrypted sandbox

(Actually CentOSplus...)
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<td>5%</td>
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Who are EL 7 only users?

TensorFlow

NVIDIA
Who are EL 6 only users?

- Standard universe jobs that have started
- And... ????
# Tomorrow’s CHTC Users

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Moving CHTC machines -> RHEL 7
Moving CHTC machines -> CentOS7
Moving CHTC machines -> CentOS7

Easy – not the focus of this talk
Moving CHTC jobs -> CentOS7
Moving CHTC users -> CentOS7
Containers as an Infrastructure, or as jobs?
  • Caal or CaJ?
Containers as job require user work to setup
Tricky for GPU jobs
GOAL: minimize user work!
The Time is now!

- CHTC formed a team in Nov 2016
  - Condor + Ops + RCF + OSG
- Controlled transition with minimum user pain
Plan on a slide

Before: Every job gets EL 6

Phase 1:
  • Roll out some # of EL 7 machines, but
  • Default to EL6, users can opt into EL7 or BOTH
  • Communicate to EVERY user

Flag Day!
  • Default to EL7, users can opt into EL6 or BOTH
CHTC Pool

CHTC submit machines

jobs

CHTC execute machines

foreign execute machines (flocking, OSG glidein, etc.)

Foreign submit machines
CHTC Pool

Want all configuration changes in our Schedds – it’s the point we control the most!
Attributes: Useful and Otherwise

Find the EL attribute?

How to force a job to land here?

OpSys = "LINUX"
OpSysAndVer = "CentOS7"
OpSysLongName = "CentOS Linux release 7.3.1611 (Core)"
OpSysMajorVer = 7
OpSysName = "CentOS"
OpSysShortName = "CentOS"
OpSysVer = 703
Forcing a job to EL 7

Requirements = OpSysMajorVer == 7

Submit file

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Works with no startd changes – existing glideins, etc.!
Forcing a job to either

\[
\text{Requirements} =
\begin{align*}
& (\text{OpSysMajorVer} == 6) \\
\lor & (\text{OpSysMajorVer} == 7)
\end{align*}
\]

Submit file

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Pop Quiz: What about default?

Requirements = nothing said

Submit file
Hint: APPEND_REQUIREMENTS won’t work

APPEND_REQUIREMENTS is unconditional!

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Schedd xforms to the Rescue!

# https://htcondor-wiki.cs.wisc.edu/index.cgi/wiki?p=OsMigrationHints
JOB_TRANSFORM_NAMES = EL, EL_VER
JOB_TRANSFORM_EL @= end

REQUIREMENTS JobUniverse == 5 && Regexp("OpSysMajorVer", UnParse(Requirements), "i") != false && Regexp("\"WINDOWS\"", UnParse(Requirements)) != false
SET Requirements (Target.OpSysMajorVer == 6) && $(MY.Requirements)
@end

JOB_TRANSFORM_EL_VER @= end
[
  eval_set_WantELVer =
  !isError(int(Regexp(Regexp("OpSysMajorVer[[:space:]]*=[?]?=[[:space:]]*([0-9])"), UnParse(Requirements), "\\\\1", "i"))) ? 0 :
  int(Regexp("OpSysMajorVer[[:space:]]*=[?]?=[[:space:]]*([0-9])"), UnParse(Requirements), "\\\\1", "i"));
]
@end
Schedd xforms to the Rescue!

Regexp("OpSysMajorVer", UnParse(Requirements), "i")
Engineering vs. Science

Requirements = blah blah blah

Requirements = (Target.OpSysMajorVer == 6) && blah blah blah
Engineering vs. Science

Requirements = OpSysMajorVer == 7 && blah
Current Status

~ 10 % of CHTC pool running CentOS 7
Some users invited to try CentOS 7

   Every one successfully running EL 6 binaries on CentOS 7 with no changes!

No transform surprises!
Future work

- What about OSG?
  - How to ask for EL6 vs EL7?
- Keep working with users
Users need RHEL 7 sooner than you may think

With some work, transition may be less painful for them than you may think