



Enabling Grids for E-scienceE



Client-side checking of package dependencies

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Information Society
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- RPM dependency hell first addressed 2nd quattor workshop, 2005!
- **The problem**
 - Add a package to a machine template
 - Compiles OK, deploys OK
 - Some time later (5 mins if you have monitoring, maybe weeks if not!) you notice that SPMA failed as the package has unfulfilled dependencies
 - And so almost no quattor components run ...
- **The problem of finding a solution**
 - Original investigator (SDW) tried a few things:
 - Dummy install: too slow; run YUM and parse output: different archs broke it
 - To make it efficient you need the package metadata, which is not normally available on the machine where you're compiling
- **When you start to write code, you realise you're rewriting YUM:**
- **So the solution is to use YUM (let's try again)!**

- **Very simple concept:**
 - Parse XML profile and extract list of packages **and** list of repositories
 - Create YUM repository config files for each repository in profile
 - Instruct YUM to use **only** the repositories in the profile
 - Instruct YUM to use checkdeps configuration (not system YUM config)
 - Create transaction set for YUM that includes all packages in profile
 - **Now here's the nasty bit:**
 - Set YUM output to debug and redirect to temp file
 - Call YUM function resolveDeps()
 - Parse output from YUM to determine whether it needed to add packages

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- **First you need to create YUM repositories on the server**
 - Requires up to date version of createrepo (only for >=SL5)

- **If your profile's OK you get this:**

```
[childss@frascati checkdeps]$ ./checkdeps.py -x gridgate.cs.tcd.ie.xml \
-c yum.quattor.conf -r ~/yumroot/ -g
checkdeps: Reading package list from target file gridgate.cs.tcd.ie.xml
checkdeps: Adding 1007 packages to install list
checkdeps: Calling YUM to check dependencies for package list checkdeps:
YUM didn't need to add any packages, profile seems OK.
```

- **If it's not OK you get this:**

```
[childss@frascati checkdeps]$ ./checkdeps.py \
-x gridgate.cs.tcd.ie.broken.xml -c yum.quattor.conf -r ~/yumroot/ -g
checkdeps: Reading package list from target file
gridgate.cs.tcd.ie.broken.xml
checkdeps: Adding 1006 packages to install list
checkdeps: Calling YUM to check dependencies for package list
YUM wants to add 1 new packages that are missing from profile:
Package                                Version                Needed by
=====
glite-security-voms-admin-interface    1.0.5-1.noarch        lcg-CE_torque
```

- **When it works it's great!**
 - Takes less than a minute to run
 - Easy to set up on client and server
 - Reflects repositories defined in profile
 - Normally gives accurate results

- **It is quite hard to get working**
 - Reliance on parsing YUM output makes it version-sensitive
 - Current version requires up-to-date createrepo on server (needs SL5+)
 - Even when everything's up to date, can give misleading results ...

- **Conclusion**
 - We're almost there – this is definitely the way to go
 - Parsing YUM output really doesn't work reliably
 - should consider adding "determineDeps" function to YUM that returns list of extra packages as proper Python data-structure