

quattor/Aquilon updates

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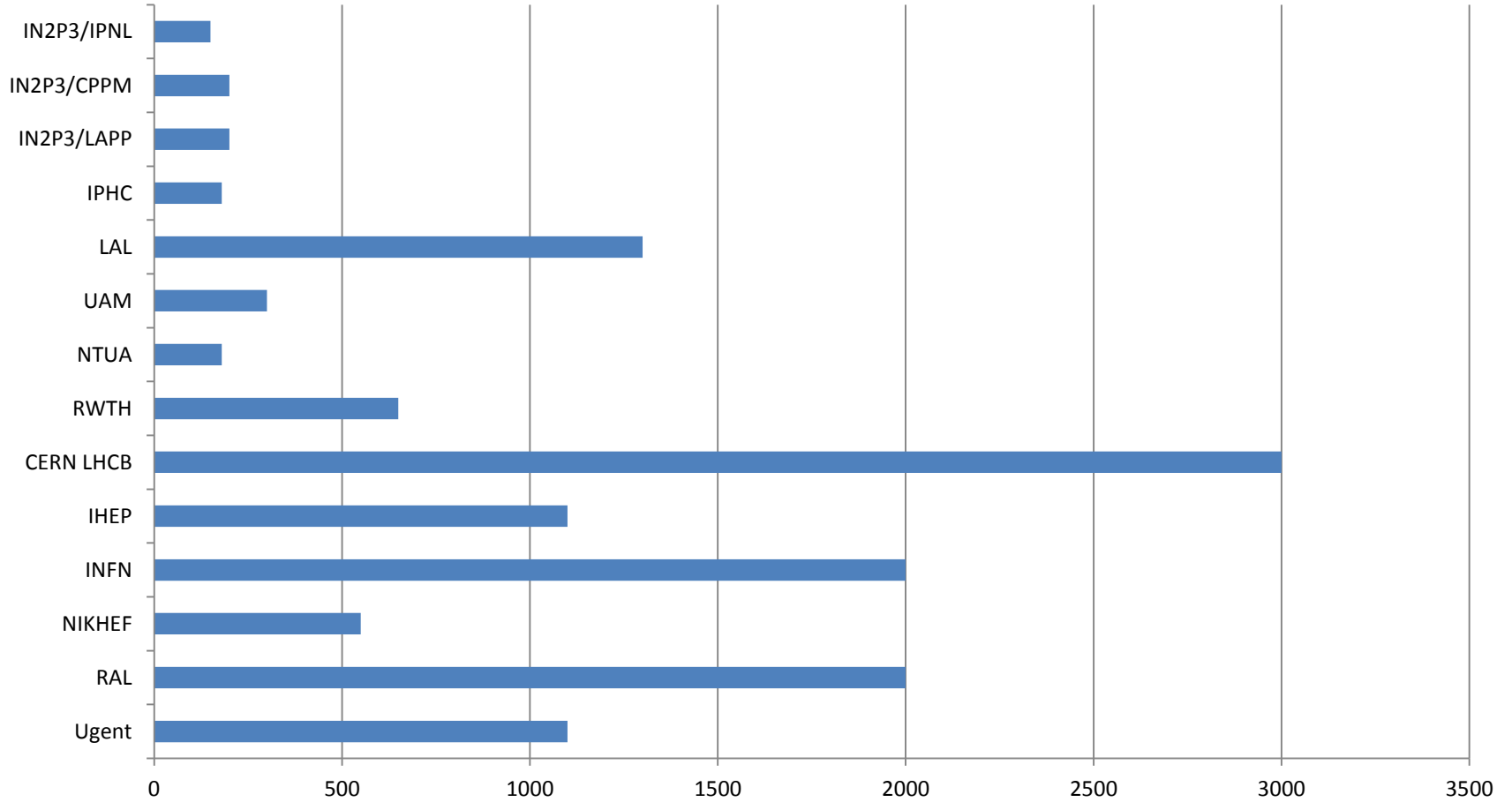
RAL Tier 1

STFC Scientific Computing Department

Quattor

- [Quattor](#) provides a powerful, and modular set of tools for the **automated installation, configuration, and management** of large IT infrastructures.
- Open sourced, community effort
- Supports RHEL5/6 compatibles, Fedora, Solaris 11, MacOSX

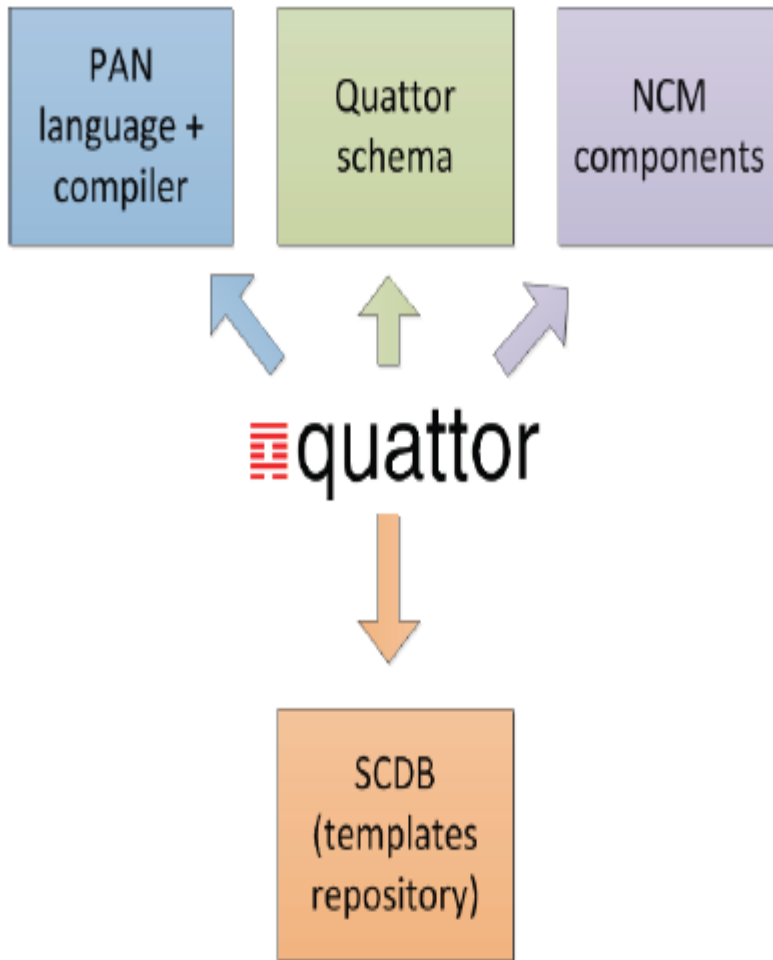
Quattor (known) usage



Configuration Databases

- CDB – the first generation of Quattor
 - CVS based
 - Unsupported
- SCDB - the second generation of Quattor
 - SVN based
 - Used by all but a couple of sites, actively supported but already 9 years old.
- Aquilon - Third generation Quattor configuration database
 - SQL+git

SCDB



- It works
- It is easier to work with and much more flexible than CDB
- Together with Quattor Working Group framework it enables a lot of configuration sharing between Grid sites

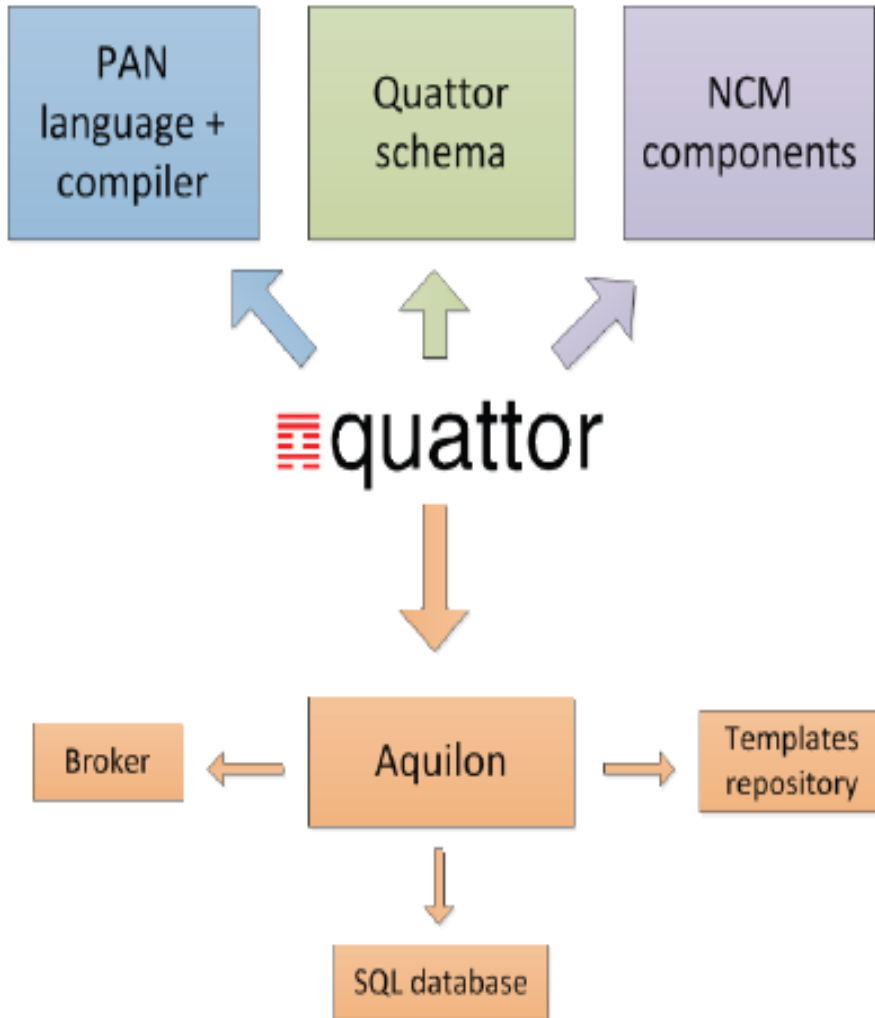
SCDB Limitations

- Changes cannot be tested on one individual machine (in an easy way)
- User has to wait for other hosts' templates to compile even they do not care about them.
- Every one is a developer editing templates, using svn
- Structured data kept in flat files
- Lots of PAN code typing, copy/pasting.

Aquilon

- Replaces SCDB (or CDB)
- SQL database plus command line broker
 - asset information already in database
 - and updated when doing standard operations
 - Can be exploited by a tool like CMDbuild
- Templates in git
- Originally developed by Morgan Stanley
 - Manage ~30K machines (plus VMs, switches, filers)
 - Development now a collaboration between MS and Grid/HPC sites.

Aquilon



- Most information now in relational database
- No more flat files
- PAN templates when needed for that which cannot be handled by database and broker

Aquilon Concepts

- Personalities - which are made up of...
 - Features
 - Services
- Command line broker for administering system
 - Setting up hardware, rooms, racks, network etc
 - Binding features to personalities & personalities to hosts

Aquilon Concepts

- **Domains and sandboxes**
 - Domains are groupings of systems with some commonality, but some significant differences
 - Main 'prod' production domain plus however many you need, perhaps used to distinguish main facility from cloud platform, or linux machines from switches & routers
- **Sandboxes**
 - Essentially git clone where you develop configs & changes.
 - Do not make changes to 'prod' domain, merge in tested changes from sandboxes. You can 'bind' host(s) to a sandbox, only those hosts are compiled or affected by your changes. Development becomes much faster & more flexible.

Aquilon Broker

```
aq show model --all
    aq add_cpu --cpu "xeon_e5520" --vendor "intel"
aq add rack --rackid r89rack96 --column 13 --row 4 --room ups
aq search host --ip 130.246.180.88
    aq add host --hostname lcg-erasmustest.gridpp.rl.ac.uk
    aq delete continent --continent europe
```

- Deploying 'repeat' systems largely a broker operation.
- Very easy to automate operations
- Pan coding reserved for 'experts'

Quattor development status

- What was updated since last year: Everything!
- 2 workshops, Gent (October) and Bordeaux (March)
- There is now a new release process
 - Driven by release manager (Luis)
 - One new release per month (4 in total with the new scheme)
 - Previous release was 6 years ago – using HEAD ever since!
 - Lots of feedback in mailing list and github
- More releases, more feedback, more development.

Development changes

- Outdated versions no longer supported (CDB)
 - Community had switched to SCDB since 2007
 - Required additional effort which is now used elsewhere
- Migration of code and development to github almost done <https://github.com/quattor>
- Yum repository: <http://yum.quattor.org/>
- Jenkins used to test code and build rpms.

Quattor Working Group

- QWG: EMI grid site configuration components migrated to github and actively maintained by the community.
 - LAL leading the activity
 - EMI3 support in process
 - QWG configuration templates and documentation in LAL SVN, will also be migrated to github

Quattor toolkit updates

- ncm-metaconfig:
 - Filecopy replacement
 - Can make use of configuration template with schema for validation (very useful for web servers for example)
- JSON profiles now fully supported by client
- Solaris 11 port revived
 - Used in production by Morgan-Stanley
- MacOS client to configure laptops improved
- Work in progress by Morgan-Stanley to release them.

Quattor toolkit updates

- YUM support now complete
 - Previous SPMA required explicit definition of rpms and their versions
 - Full control of node rpm list, can do rollbacks but...
 - Too much work
 - Not really needed everywhere
 - Could be worked around (default versions, errata mechanism, checkdeps tool) but still..
 - New SPMA uses yum
 - Takes care of all dependencies
 - Versionlock/rollbacks supported
 - But sometimes we have conflicts (better handled in newer version)
 - Repository priorities: some repositories can confuse yum if they contain same rpm packaged differently
 - Repository snapshotting recommended – too dangerous to let all your repositories upgrade your production systems behind your back!
 - Strict control of RPMs applied only where it matters to the site, and not enforced where it doesn't

Aquilon updates

- License: Now Apache 2
- Documentation improvements
 - It is now actually possible to follow the [instructions](#) and have it up and running!
 - Aquilon/Quattor book in process
- Packaging
 - All required packages now available as rpms
 - Aquilon itself requires manual steps (linked above)
- RAL: working Aquilon broker since summer
- Ugent: since March

Aquilon at RAL

- Machine base slowly increasing: currently 28 nodes
- Migration will take some time
 - Currently developing experience and new workflows
 - Git
 - Sandboxes
 - Code reviews
 - Requires some refactoring of templates
 - Plan to migrate to yum based SPMA first
 - Will involve setting new repository with snapshotting
 - Expected to make life much easier

Conclusions

- Community active and responsive – if not so large
 - Mix of grid sites and non grid sites, research and commercial sites.
 - Happy to answer questions, short face to face hands on meetings very efficient
- Development migrated to new technologies and picking up pace
- Configuration sharing and collaboration already here

Questions?