

CMS and CentOS7 on worker nodes

Andrea Sciabà

Christoph Wissing

CMSSW support

- SL6 binaries cannot run on CentOS7 due to custom changes to glibc
- The software is being routinely built on CentOS7 since months
- Validation campaign not yet started, but it is expected to succeed quickly if needed
- Having the same CMSSW release used in production on different architectures is not currently supported, though
 - This implies that during an OS migration phase at sites, CentOS7 sites could run only the latest CMSSW releases and SL6 sites only the older ones

Containers at CMS sites

- T2_US_Nebraska has switched to CentOS7, using Docker and containers in production
- Docker advantages:
 - Well supported and maintained, easy to use tools
 - Integrated with HTCondor
- The HTCondor CE provides an arbitrary job transformation layer that can be used to direct jobs to use Docker and a specific image
- Similar experiences at other sites
- This shows that under certain conditions sites may migrate to CentOS7 and still transparently offer a CentOS6/SL6 environment to CMS

General approach to containers

- Distributing CMSSW and its dependencies as containers via CVMFS would bring several advantages
 - CMS would have full control of the environment
 - No dependency on the WLCG migration schedule for OS
 - Less ABI/API compatibility issues
 - Better job isolation (via cgroups)
- Current limitation is the need for root privileges to create and run containers
 - Sites would have to setup the infrastructure
 - Work on rootless containers is ongoing
- Some practical experience exists: CMSSW containers are used to run CMS workflows on NERSC supercomputers

Conclusions

- The situation for CMS is as previously reported
 - Not possible to run SL6 binaries on CentOS7 using HEP_OSlibs or other simple solutions
 - Formal CMSSW validation on CentOS7 has not started yet but when it does, it should complete reasonably quickly
 - The general opinion is that, for the future, container technologies are the best way to solve once and for all OS compatibility issues
 - Work ongoing in this direction
 - Having a tentative estimate from WLCG of the schedule to migrate to CentOS7 is essential for prioritizing work