



Technical Bulletin

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CHAOS 5.0/TOSS 2.0 Release Notes

Summary

In April 2012, Livermore Computing (LC) will begin installing the latest version of the CHAOS/TOSS software stack on its production computing clusters. CHAOS 5.0/TOSS 2.0 is based on Red Hat Enterprise Linux version 6.2 (RHEL 6.2) and represents a major upgrade of the CHAOS/TOSS operating system. This latest CHAOS version contains support for the Tri-Lab Linux Capacity Cluster 2 (TLCC2) hardware, including the Intel Sandy Bridge CPUs and QLogic Infinipath interconnect, and introduces new features and enhancements to many major components, including the Linux kernel, Lustre, and SLURM.

Because this release represents a major upgrade of the CHAOS/TOSS software stack, including the underlying Red Hat OS, binary compatibility with CHAOS 4.x and TOSS 1.x is not guaranteed. All software and applications built for CHAOS 4.x should be recompiled before being run on CHAOS 5.

The following table lists some major software updates contained in CHAOS 5.0/TOSS 2.0.

Software	CHAOS 4.4	CHAOS 5.0
Linux Kernel Base Version	2.6.18	2.6.32
Lustre	1.6.2	2.1.1
SLURM	2.1.15	2.3.3
/usr/bin/gcc	4.1.2	4.4.6
glibc	2.5	2.12

Red Hat Release Notes

The Red Hat release notes for RHEL 6.0, 6.1, and 6.2 can be viewed on the Red Hat Web site:

http://docs.redhat.com/docs/en-US/Red_Hat_Enterprise_Linux/6/html/6.0_Release_Notes/index.html

http://docs.redhat.com/docs/en-US/Red_Hat_Enterprise_Linux/6/html/6.1_Release_Notes/index.html

http://docs.redhat.com/docs/en-US/Red_Hat_Enterprise_Linux/6/html/6.2_Release_Notes/index.html

Lustre 2.1.1

The CHAOS 5.0/TOSS 2.0 release features Lustre version 2.1.1, which introduces a new architecture for the metadata server (MDS) and clients. This architecture, known as Lustre 2, establishes a stable foundation for platform portability and major performance optimizations in future Lustre releases. The architecture lays the groundwork necessary for Lustre improvements required to support Sequoia-scale file system size.

SLURM 2.3

The CHAOS 5.0/TOSS 2.0 release features an upgrade to SLURM version 2.3 (from version 2.1, distributed with TOSS 1.4). Although there have been a number of enhancements and changes to

SLURM between v2.1 and v2.3, it is not expected users will have to change their usage of SLURM with the new release. Some of the most notable changes are:

- Support for TotalView to attach to a subset of launched tasks instead of requiring the attachment to all tasks.
- Support for a default bank account and workload characterization key (wckey) per cluster within accounting.
- Added a comment field to the job record saved to the SLURM database along with a tool (`sjobexitmod`) that allows the user to modify the comment field after the job completes.
- Support for Linux control groups (cgroups) for enhanced resource management for jobs (CPUs and memory).

LCRM Emulation Library Retirement

The LCRM compatibility library will no longer be supported under CHAOS 5. (The library was created in 2006 when the Moab scheduler was installed and was intended only as a short-term solution to help users transition from LCRM to Moab.)

As part of the effort to port their codes to CHAOS 5.0, users must replace calls to `lrmgettime()` and `lrmwarn()` with `libyogrt`. Guidance on how to do this can be found online in “Options for Retrieving Remaining Time under Moab” at:

<https://computing.llnl.gov/jobs/crm/GetRemainingTime.pdf>

**If you have any questions, please contact the LC Hotline—
send e-mail to lc-hotline@llnl.gov or lc-hotline@pop.llnl.gov (SCF)
or phone (925) 422-4531**

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