Cray XT3/XT4 Software: Status and Plans

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Abstract

- This presentation will discuss the current status of software and development plans for the CRAY XT3 and XT4 systems, including the Cray XT4 programming environment status and future direction (compilers, programming models, scientific libraries, and tools). A review of major milestones and accomplishments over the past year will be presented.

Talking Points

- Major Accomplishments
- Current Activities
- The Road Forward

Major Accomplishments: Unicos/lc Releases

- **1.4 GA release in June 2006**
  - Current release: 1.4.50
  - Updates since GA: 14

- **1.5 LA release in August 2006**
  - Extensive testing at ORNL prior to GA release

- **1.5 GA in December 2006**
  - Initial support for Cray XT4
  - Current release: 1.5.45
  - Updates since GA: 7

Major Accomplishments: New Product Support

- Cray XT4
  - First install in November 2006 (68 cabinets)
  - Two installations in January 2007 (102 cabinets, 11 cabinets)

Major Accomplishments: New Product Support

- Dual Core support on SIO nodes
  - Initial availability in December 2006
    - Limited to customers with Cray SeaStar 2
    - Required upgrade to v1.5
  - Plan to upgrade Cray SeaStar 1.2 -> Cray SeaStar 2 in February 2007
  - Problem identified in March initially thought to be a dual core SIO problem (v1.5.43)
    - Problem traced to a Portals locking issue
      - Fix generated
      - Field Notice will be released soon

Current Activities

Release 2.0 Preview

- **Key Features**
  - Support for multiple Compute Node OS
    - Catamount/Qk
    - CNL
  - PBS Pro 8.1 release
  - Lustre upgrade
    - Version 1.4.9 from Cluster File Systems.
  - SuSE SLES 10 kernel
    - Linux 2.6.16 kernel on Service Nodes

Release 2.0 Preview

- Key Features: Compute-node selection
  - Users now have more control over the selection of the compute nodes on which to run their applications.
  - Users select nodes on the basis of desired characteristics (node attributes)
  - Placement scheduler schedules jobs based on the node attributes as well as administrator defined attributes
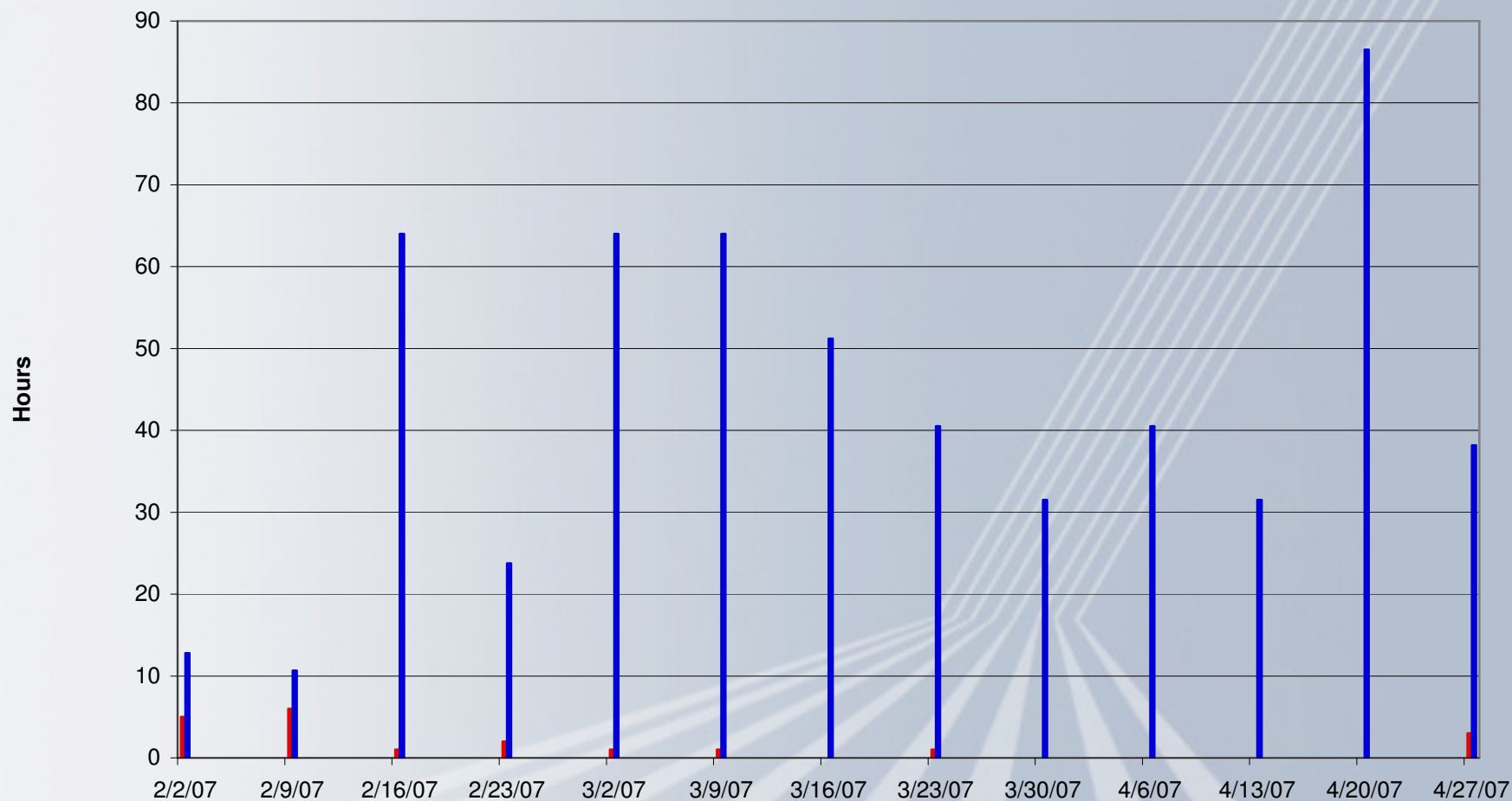
Release 2.0 Preview

- Key Features: Improved Software installation and upgrade support
  - Alternative boot root
    - Customers may now install the UNICOS/lc 2.0 release software to an alternative boot root and shared root while the system remains operational
    - The required amount of dedicated system time is reduced
  - System sets
    - System administrators can create 'system sets'
    - A 'system set' is composed of all file systems and boot images required to boot system
    - Provides a way to group and label several disk partitions on the boot RAID into a set
    - Allows easy switch between different UNICOS/lc software releases

2.0 Release Criteria Summary

- Feature Content Complete
- Reliability Metrics
  - LA: Internal system SMTTI will be >40 hours, w/ no service node failures, passes 72 hour reliability run
  - GA: Passes 72 hour reliability run in production at a customer site with at least 42 cabinets
  - SPR
    - LA: <10 Critical SPRs (relative to this release)
    - GA: No Critical or Urgent (relative to this release)

- Test Plan executed
- Performance metrics met
- Installability
- Supportability

Internal 2.0 Stability

XT 2.0 MTTI

	2/2/07	2/9/07	2/16/07	2/23/07	3/2/07	3/9/07	3/16/07	3/23/07	3/30/07	4/6/07	4/13/07	4/20/07	4/27/07
■ Interrupts	5	6	1	2	1	1	-	1	-	-	-	-	3
■ MTTI	12.8	10.7	64.0	23.8	64.0	64.0	51.2	40.5	31.5	40.5	31.5	86.5	38.2

UNICOS/lc 2.0 Release Schedule

- **Limited Availability**
  - Meets internal release criteria
  - Available for small systems
  - Target release: 2Q07

- **General Availability**
  - Production ready
  - Meets release criteria
    - Passes 72 hour reliability run on large customer system
    - No Critical SPRs related to this release
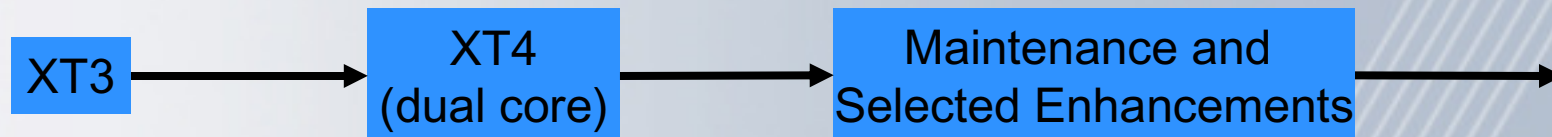 - Target release: end of 3Q07

UNICOS/lc on Internal Systems

	M	T	W	Th	F
Guppy	1.5	1.5	1.5	1.5	1.5
Perch	1.4	2.0Cat	2.0Cat	2.0	2.0
Seal	1.5	1.5	1.5	1.5	2.0Cat
Salmon	2.0	2.0	2.0	1.5	1.4
Bass (Dev)	Catamount	CNL	Catamount	CNL	Catamount
Shark	Dedicated	Dedicated	CNL	Dedicated	CNL

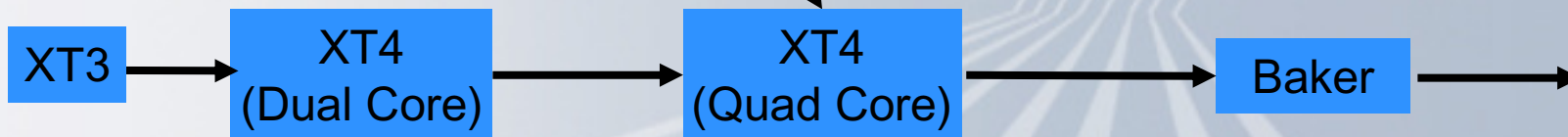# Software Futures

- New Product Support (work-in-progress)
    - Cray XT4 Quad Core
    - Cray XT4 future upgrades
    - XT4-FPGA
    - PCI-Express

- SPR Reduction
    - Plans to reduce all categories of SPRs by 10%

Questions?

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