Extending the connectivity
of XT3 system nodes

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Agenda

➢ Introduction

➢ Boot node: connectivity requirements and solution

➢ SDB node: connectivity requirements and solution

➢ CSCS XT3: Current day to day operation

➢ CSCS XT3: Remaining unmet requirements

➢ Summary

Introduction: Acronyms

- SMW : System Management Workstation
- SDB   : System Database
- MDS   : Lustre Meta Data Server
- OSS   : Lustre Object Storage Server
- NAT   : Network Address Translation
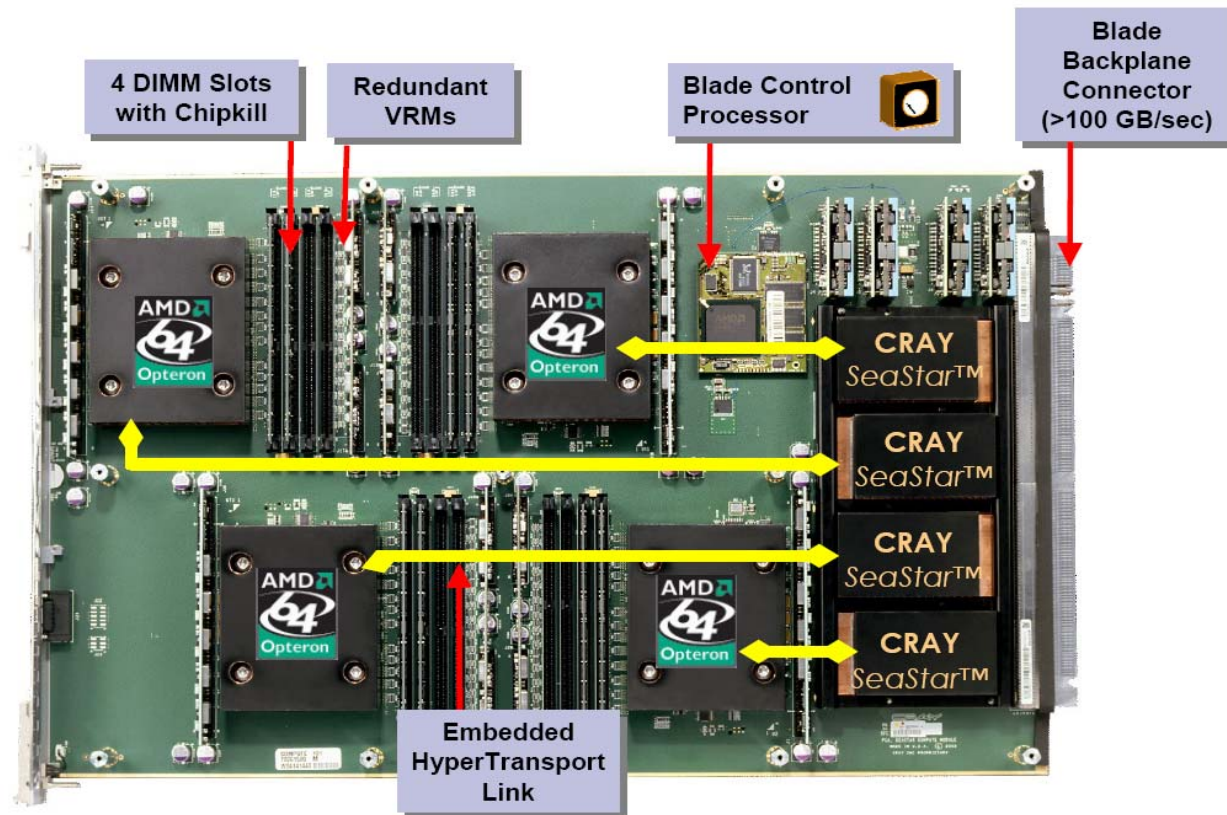- NTP   : Network Time Protocol

Introduction: XT3 nodes

- **Boot node (1)**
- **SDB node (1)**
- OSS/MDS (Lustre nodes) (12)
- Login nodes (6)
- MOM nodes (2)
- Service nodes (4)
- Compute node (1100)

Introduction: Compute blade

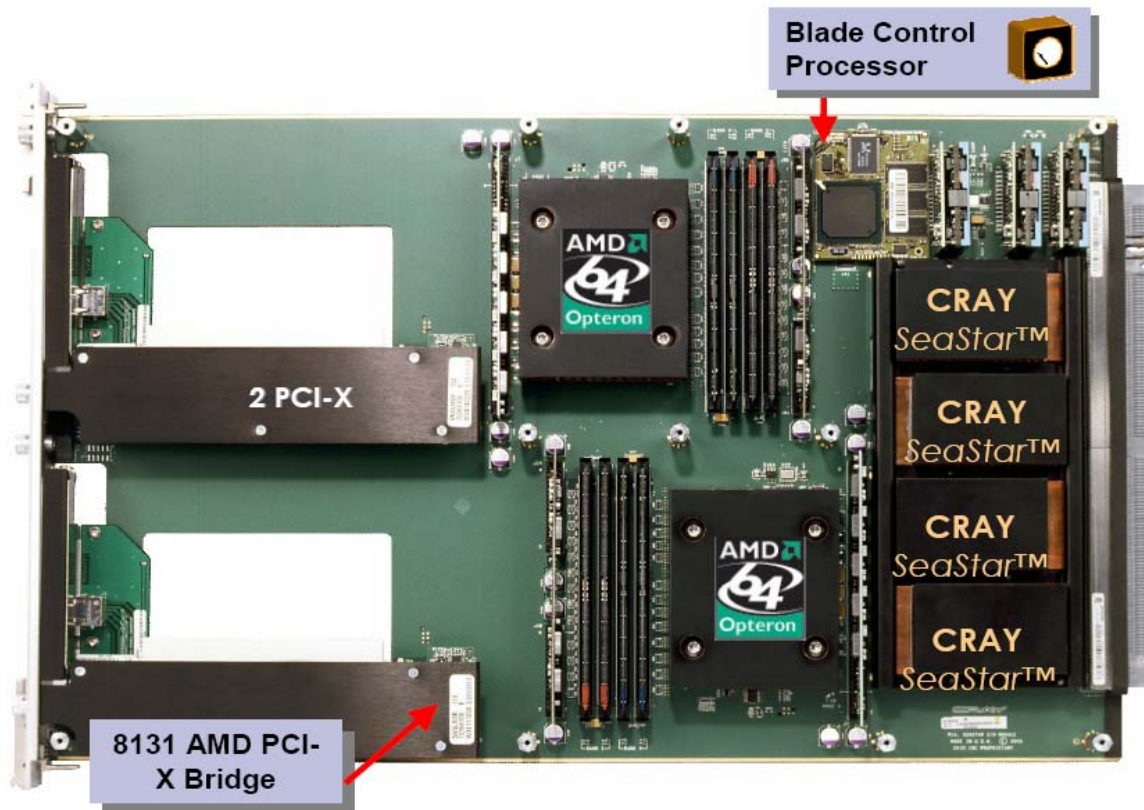# Introduction: Service Blade (for boot, SDB, login, etc.)

Blade Control Processor

2 PCI-X

AMD 64 Opteron

AMD 64 Opteron

CRAY SeaStar™

CRAY SeaStar™

CRAY SeaStar™

CRAY SeaStar™

8131 AMD PCI-X Bridge

Introduction

- Original configuration of CSCS boot and SDB node

  - Boot node: 2 PCI-X cards
    - 1 dual port FC adapter
    - 1 single port Gigabit Ethernet
  - SDB node: 1 PCI-X cards
    - 1 dual port FC adapter

Boot node connectivity: CSCS requirements

- Connectivity to external networks for:

  - "live" OS backup
  - "live" shared root backup
  - Remote system administration
  - NTP from external time server

Boot node connectivity: possible solutions

– No changes

– Use SMW or XT3 service node as router

– Configure NAT on SMW or XT3 service node

– **Replace Ethernet card with a dual port**

Boot node connectivity: CSCS solution

- **Replace single port Ethernet card with dual port card**
  - Installed card is "INTEL PRO/1000 MT dual port Server Adapter"
    - First port is connected as before to SMW from system management and network boot
    - Second port is connected to site network

Gains from extending boot node connectivity

- Backup XT3 system when running
- Direct connection to site NTP servers
- Remote boot node administration
- Email functionality

SDB node connectivity: CSCS requirements

- Connectivity to external networks
  - "live" DB backup
  - External accounting DB fetches jobs statistics from local DB
  - PBS fetches users' priorities from external accounting DB
  - PBS sends email to users

SDB node connectivity: possible solutions

– Configure NAT on XT3 service node
– **Add Ethernet card**

SDB node connectivity:
CSCS solution

- Installed Ethernet card removed from boot node
  - Card is "INTEL PRO/1000 MT Server Adapter"
    - Port is connected to site network

Gains from extending SDB node connectivity

- Access from external accounting system

- Access to external accounting system

- Direct connection to site NTP servers

- Increased SMW functionality
  - XT3 CPU and job status from SMW (xtprocadmin, xtshowcabs)

- Email functionality

How CSCS operates today

- Have a single point of management (SMW)
- Shared homes among XT3 systems

Summary: Boot additional connectivity

– "live" backup local OS and shared root

– NTP from external servers

– Remote system administration

Summary: SDB additional network connectivity

– "live" DB backup

– Access from/to CSCS accounting DB

– Access to external NTP servers

– PBS email functionality

– Additional system status informations from SMW

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Q&A