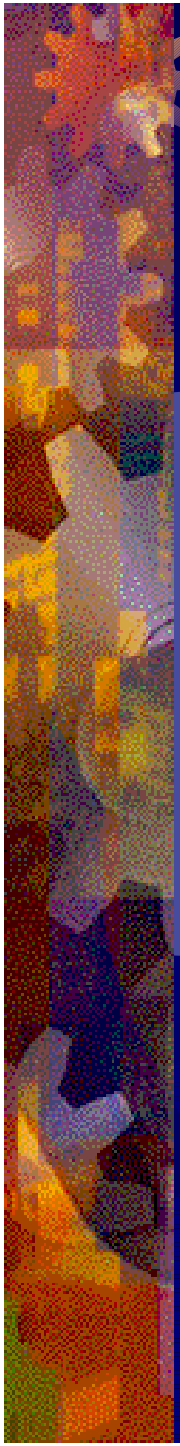


SUPERDOME

High Availability Features
“Inside the Box”

Julie J. Smith
Information Technology Organization
First Union Corporation

Introduction

- First Union Corporation
- Approximately 300 HP9000 servers
- Main Objective: Server Consolidation
- Early Market Seed Program (EMSP) Participant

Superdome

- Superdome is HP’s latest addition to the HP9000 family of servers
- HP-UX 11.i
- PA8600 RISC processor (552MHz)
- 2 to 64 processors
- Up to 192 PCI slots
- Cell based architecture
- Hard Partitions

Agenda

- List Hardware Configurations
- Discuss Complex Components and Modular Architecture
- Define Partitioning
- Discuss OnLine Addition and Replacement (OLAR)
- Define iCOD
- Discuss software functionality

Hardware Configurations

- 16 Way
- 32 Way
- 64 Way

Complex Components

- Cabinet
- GSP
- SMS

Cabinets

- Left
- Right
- I/O Expansion

GSP and SMS

- GSP is actually a board inside the Superdome Complex.
- Physical connection from terminal to GSP.
- SMS is a diagnostics workstation only. HP will use the SMS to service the Complex and perform firmware upgrades.

Modular Architecture

- Cell
- I/O Bay
- I/O Chassis
- Partition
- Crossbar

Cell Board

Partitioning

- nPartitions
  - Hard
- vPartitions
  - Soft

Hard Partitions

Each partition has its own independent resources

- CPU
- Memory
- I/O

Availability of Partitions

Partitions are independent of each other.

Example:

If there is a CPU failure, the partition comes down and deconfigures the processor, then boots back up. The Par doesn’t stay down while the cell is repaired. This is true for CPU/memory/cell boards.

Flexibility

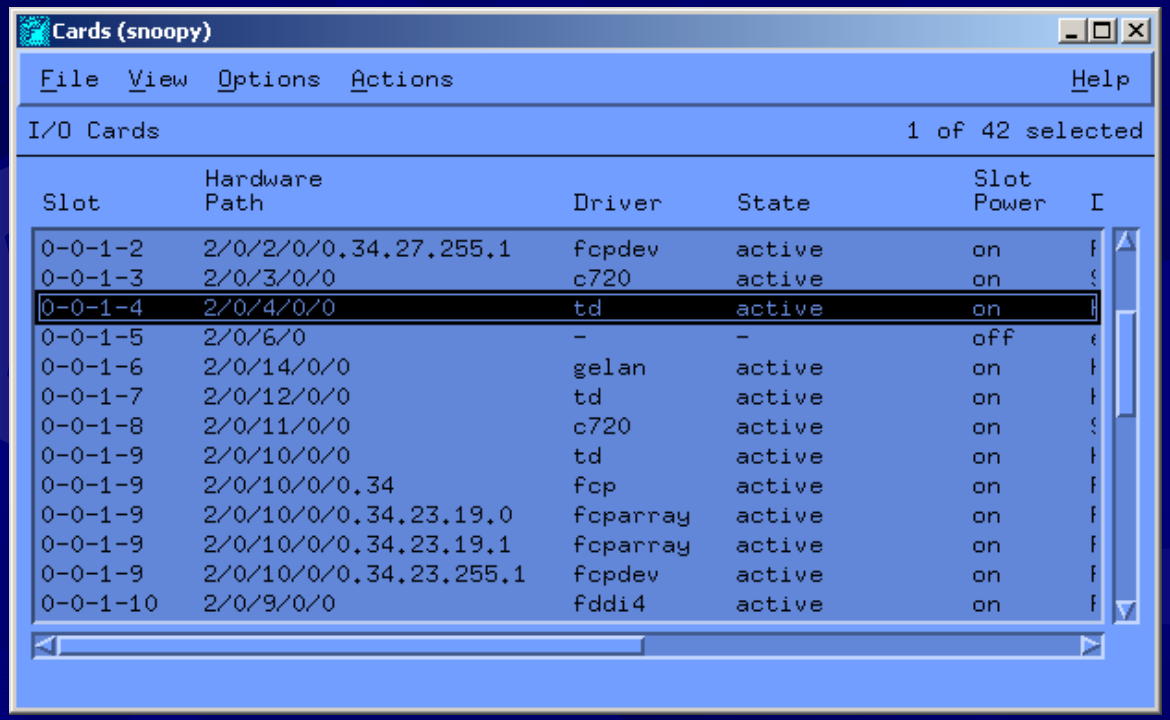
Example:

Multiple independent environments can exist for applications, test, production environments or for applications that require different patch levels, etc.

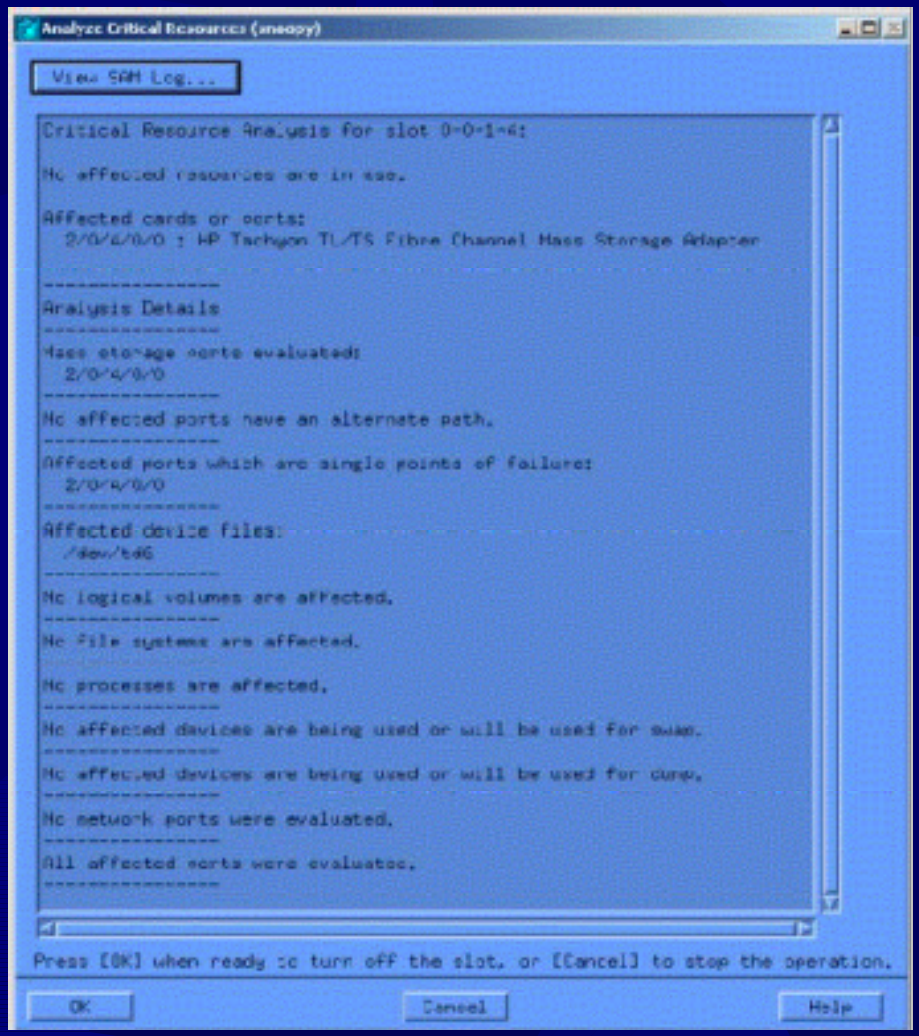
OLAR - Online Addition and Replacement of I/O Components

- PCI I/O cards and chassis
- Per-slot power control
- Allows you to add a new card and replace an existing card without requiring a reboot

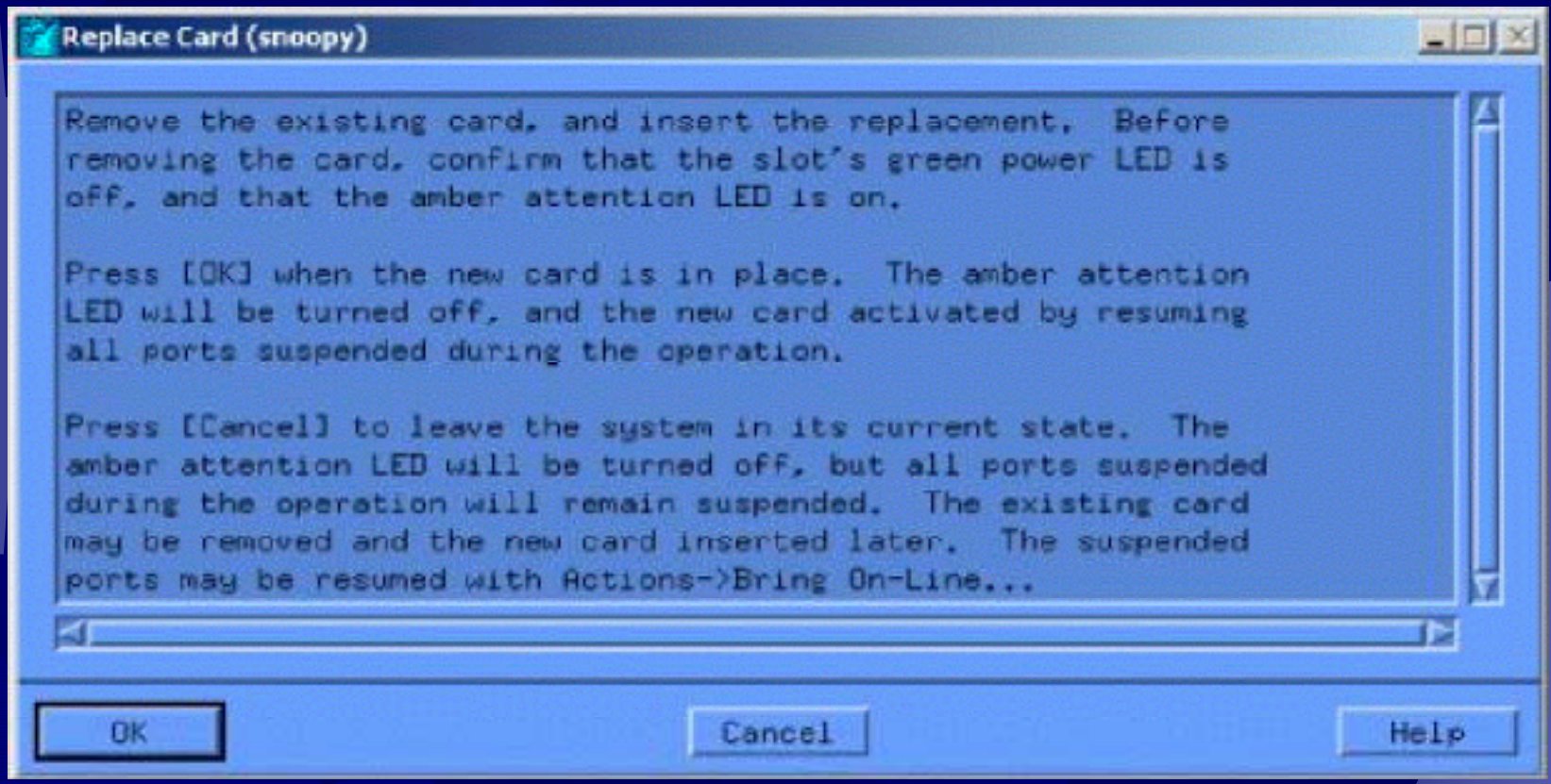
OLAR of a PCI Card



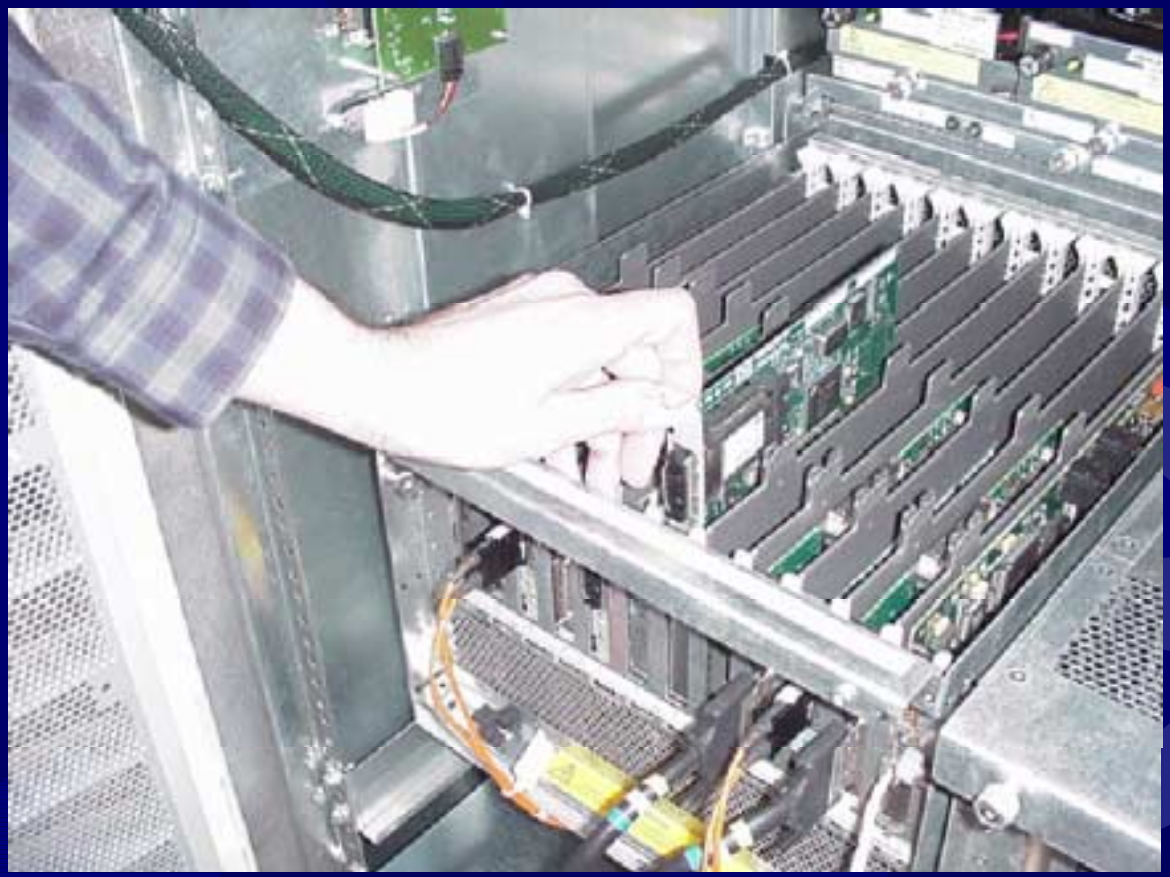
OLAR of a PCI Card



OLAR of a PCI Card



OLAR of a PCI Card



OLAR - Online Addition and Replacement of Cell Boards

When a dynamic kernel is available, the dynamic addition and deletion of cell boards will be supported.

OLAR - Online Addition and Replacement of Partitions

Partitions can be added without affecting the other partitions in the complex.

iCOD - Instant Capacity on Demand

- Access to additional CPU resources beyond what was originally purchased.
- Availability Feature as well as Scalability.
- In the future, dynamic resizing of partitions will be available.

Software Features

- Parmgr – GUI based menus (like SAM). Has detailed logging facility that keeps track of all changes.
- Parcreate, parremove, parmodify, parstatus
- Rad – Command line options for OLAR
- Frupower, fruled

Parmanager


File View Options Go Complex Partition Cell I/O Details Analysis Help
Complex Name:Maximus
MyComplex
Partition 0 (par0)
Available Resources
'MyComplex->Partition 0 (par0)'
Hardware Location
Actual Usage
CPU Status
Memory Status
Connected To
cab0, cell0 active core 1 deconfig ok cab0, bay1, chassis3
cab0, cell1 active 2 deconfig ok –
cab0, cell2 active 1 deconfig ok cab0, bay0, chassis1
cab0, cell3 active 2 deconfig ok –
cab0, bay0, chassis1 active – – cab0, cell2
cab0, bay1, chassis3 active – – cab0, cell0
6 objects
1 selected

Availability

- Superdome is a “Highly Available” system, it is not Fault Tolerant.
- Single Points of Failure (SPOF’s)
  - FEPS
  - UGUY
  - HUCB
- “MC Service Guard in a Box”

Repairability

- N+1 CPU’s with iCOD
- OLARable components
- Hot-swap N+1 components
  - Fans
  - Power supplies
  - Backplane power converters

Software that can Further Enhance Availability

- HAO
- EMS
- PRM
- SCM

Summary

- Superdome Hardware Configurations
- Cells
- Partitions
- OLAR
- iCOD
- Software Features

References and Where to Go for More Information

- www.docs.hp.com
- Free Online Seminars offered on:
  http://education.itresourcecenter.hp.com
- http://www.hp.com/products1/unixservers/highend/superdome/index.html
- Managing Superdome Complexes: A Guide for HP-UX System Administrators
- Superdome Installation Guide
- Instant Capacity on Demand (iCOD) Release Notes
- Planning Superdome Configurations Whitepaper

A Special Thanks to…

Our local HP Account Team

Superdome Response Center Engineers

HP Engineering Team