Emulating a shared storage cluster
Session A100
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Session Overview

• Introduction
• Real hardware
• Emulating it (MSA500)
• Scaling up (Fibrechannel SAN)
• Flexibility (iSCSI SAN)
Introduction
Shared Storage for Clusters

- HP OpenVMS
  - AlphaServer

- HP OpenVMS
  - AlphaServer

Disk 1
Shared Storage options for Clusters

• Shared DSSI bus (RF, EF, HSD, DECarey)
• Shared SCSI bus (RZ, HSZ)
• CI (HSC, HSJ)
• Fibre Channel (HSG, HSV)
Real hardware
Shared SCSI Bus
“Real” Shared SCSI Bus Shortcomings

• Hard to support more than 2-3 nodes
• Limited physical distance (HVD: 25m)
• SPOF’s (bus, cabinet, disk)
  – Can be remedied with HBVS
• Limited capacity
Emulated hardware
Emulated solution

HP OpenVMS

Avanti Virtual Alpha

Windows Server OS

HP Proliant Server

Ethernet Switch

dka0

disk1

TCP/IP

NIC

TCP/IP

NIC

TCP/IP

NIC

TCP/IP

NIC

TCP/IP

NIC
Using an MSA500 (or HZS)
SCSI (MSA500) Solution

• MSA500 serves disks to two Windows servers
• Very similar properties to original configuration
Using fibrechannel
Using fibrechannel

- HP OpenVMS
- Avanti Virtual Alpha
- Windows Server OS
- HP Proliant Server
- FC HBA
- NIC
- TCP/IP
- SCS
- dka0
- disk1
- Ethernet Switch
- SAN Switches
- Fibre Channel SAN (EVA, XP)
- dka0 mirror
Fibrechannel Solution

• Good Reliability
• High Performance
• Common infrastructure in many existing environments
• Expensive
Using iSCSI
iSCSI Solutions

• Choice!
• Single fabric / dual fabric?
• Dedicated iSCSI network / shared with regular TCP/IP network?
• Special iSCSI HBA’s / Regular NICs?
• Special iSCSI switches / Ethernet switches?
• Hardware / Software iSCSI targets?
• Expensive / Cheap?
Using iSCSI

HP OpenVMS

Avanti Virtual Alpha

Windows Server OS

HP Proliant Server

iSCSI HBA

TCP/IP

NIC

disk1

dka0

iSCSI SAN (e.g. P4000)

Ethernet Switch

Switches

iSCSI HBA

TCP/IP

NIC

NIC

NIC

dka0 mirror

disk1

NIC

TCP/IP

DEC net

TCP/IP

SCS

TCP/IP

TCP/IP

TCP/IP

TCP/IP

TCP/IP
