How to Assimilate an Integrity Server into Your OpenVMS Cluster

Robert L. Lyons
Systems Consultant
Resilient Systems, Inc. (www.resilientsys.com)

Background

- Built and tested a multi-architecture OpenVMS cluster in HP's New Hampshire labs October 2003 & February 2004 using Version 8.1

- Process used in previous qualification of GIGAbit Ethernet cluster interconnect and release testing for disaster tolerant computing

- Based on my previous work as member of cluster systems engineering

Background (cont'd)

- Relevant OpenVMS Versions
  - IA64 systems must run V8.1 or later
  - Alpha systems run V7.3-2 or earlier
  - VAX systems run V7.3 or earlier
  - Version V8.2 entered field test in June 2004

Overview

1. Differences in V8.1 from V7.3
2. Mixed Architecture Considerations
3. Configurations
4. V8.2 and beyond
5. Questions

Differences in V8.1 from V7.3

- Some facilities not implemented in V 8.1

No license management (disabled)
No Availability Manager (AMDS not being ported)
Limited UETP
No satellite boot
No host based shadowing
No NFS storage

Differences in V8.1 from V7.3 (cont'd)

- Sysgen parameter changes

Unused and obsolete parameters are hidden
Use SHOW/HIDDEN command to see values

17 general and 5 special parameters are affected

2 of the general parameters are cluster specific

SCSCONNCNT and NISCS_LAN_OVRHD

- very rarely used -

Differences in V8.1 from V7.3 (cont'd)

- Sysgen parameter changes (cont.)

PAGFILCNT	SWPFILCNT
UDABURSTRATE	TTY_DEFCHAR3
TAILORED	SCSCONNCNT
SD_ALLOCLASS	NISCS_LAN_OVRHD
SERVED_IO	XFMAXRATE
MAXBOBS0S1	MAXBOBS2
BJOBLIM	NJOBLIM
VECTOR_MARGIN	VECTOR_PROC
LAMAPREGS	SBIERRENABLE (special)
QBUS_MULT_INTR (special)	SA_APP (special)
EXUSRSTK (special)	BOOT_STYLE (special)

Differences in V8.1 from V7.3 (cont'd)

- Sysgen parameter changes (cont'd)

Two new parameters added

- VHPT_SIZE (virtual hash page table)
- LMF_OE

Over 30 parameters have revised values for Default, Minimum or Maximum

Provides better system function on IA64 hardware

Differences in V8.1 from V7.3 (cont'd)

- Of significance to clusters is one parameter that was not changed
  - RECNXINTERVAL default is still 20
    - **20 is the correct value for CI, DSSI, and Mem Channel interconnect**
    - **60 to 90 is the correct value for NI port**

Mixed Architecture Considerations

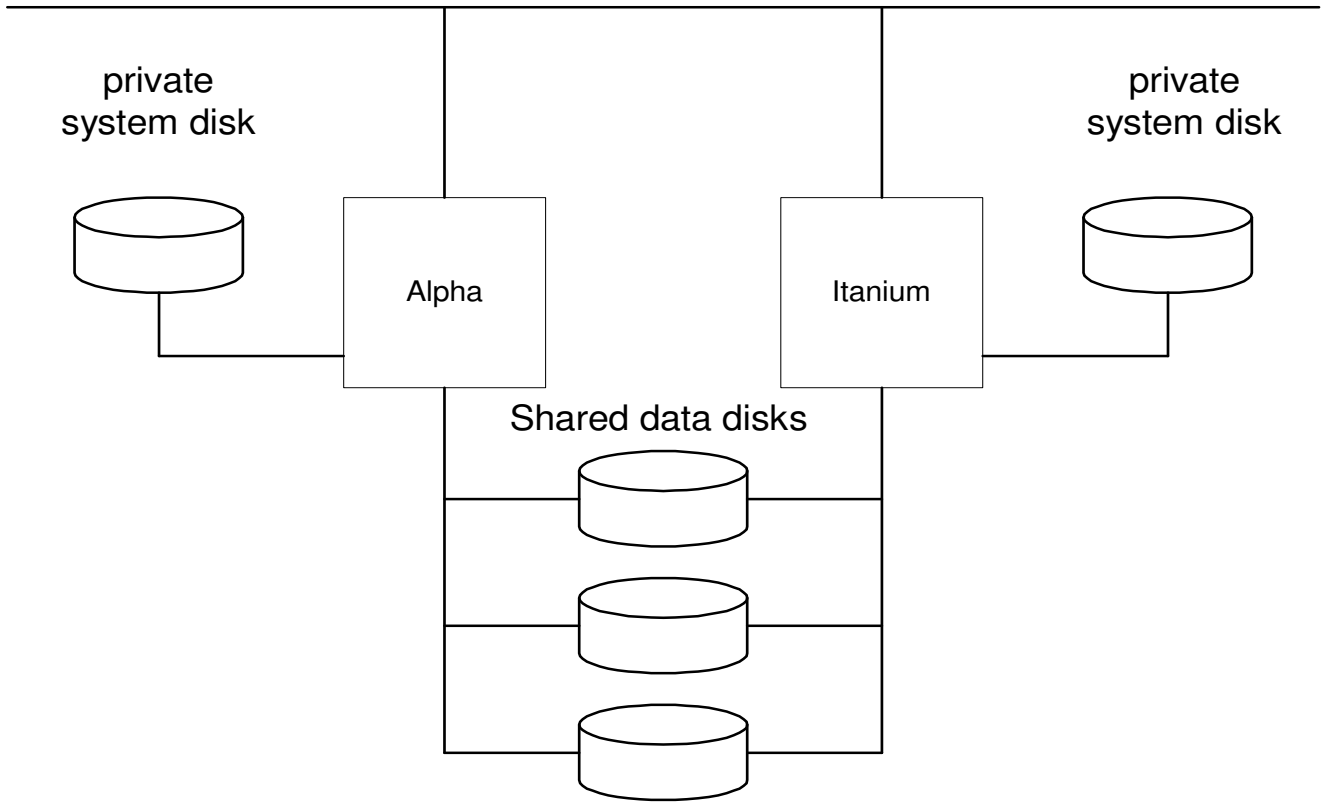
- IA64 systems must run OpenVMS 8.1
- Cluster with IA64 systems are limited to 4 members
- Cluster with IA64 nodes can not have VAX nodes
- Alphas in a cluster with IA64 systems must run 7.3-1 or 7.3-2 with patches

Mixed Architecture Considerations (cont'd)

- IA64 and Alpha system disks must be different spindle
- A cluster common disk is needed to share:
  - Common authorization file and rights list
  - Common Queue manager database
  - Common network database

Mixed Architecture Considerations (cont'd)

Sample configuration with private and shared disks



Mixed Architecture Considerations (cont'd)

- Standard cluster interconnect is through the network 10MB 100MB 1000MB
- Standard shared storage is through Fibre Channel
- No CI, DSSI or Memory channel so many existing sites will be using MSCP serving

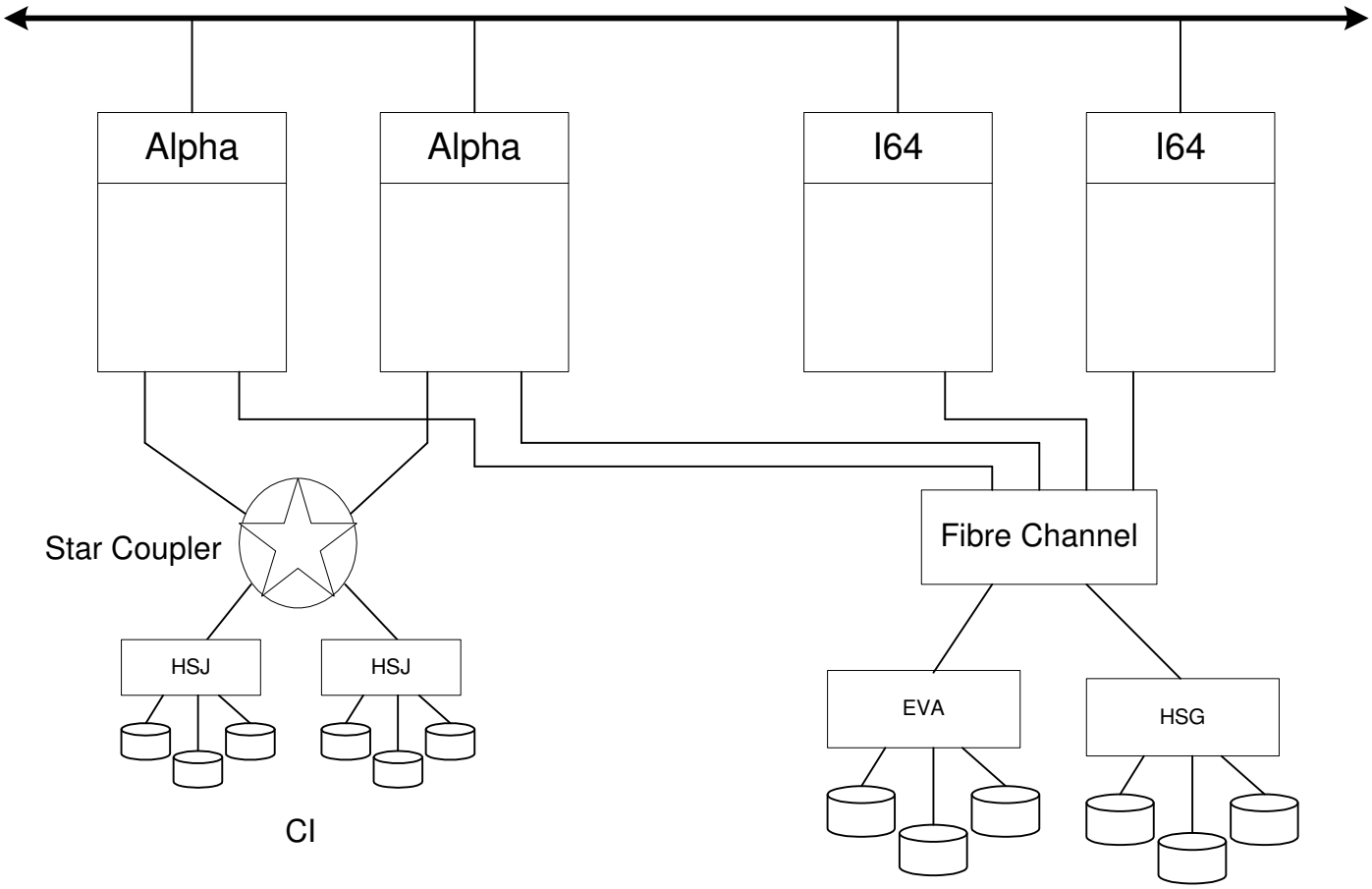
Mixed Architecture Considerations (cont'd)

- V8.1 does not currently support IA64 systems sharing the same system disk. Release notes contradict themselves on this point
- Image backup of disks are limited to an Alpha member in the cluster
- Only tape drives connected through the SAN can be shared by both architectures since TMSCP is not available in V8.1

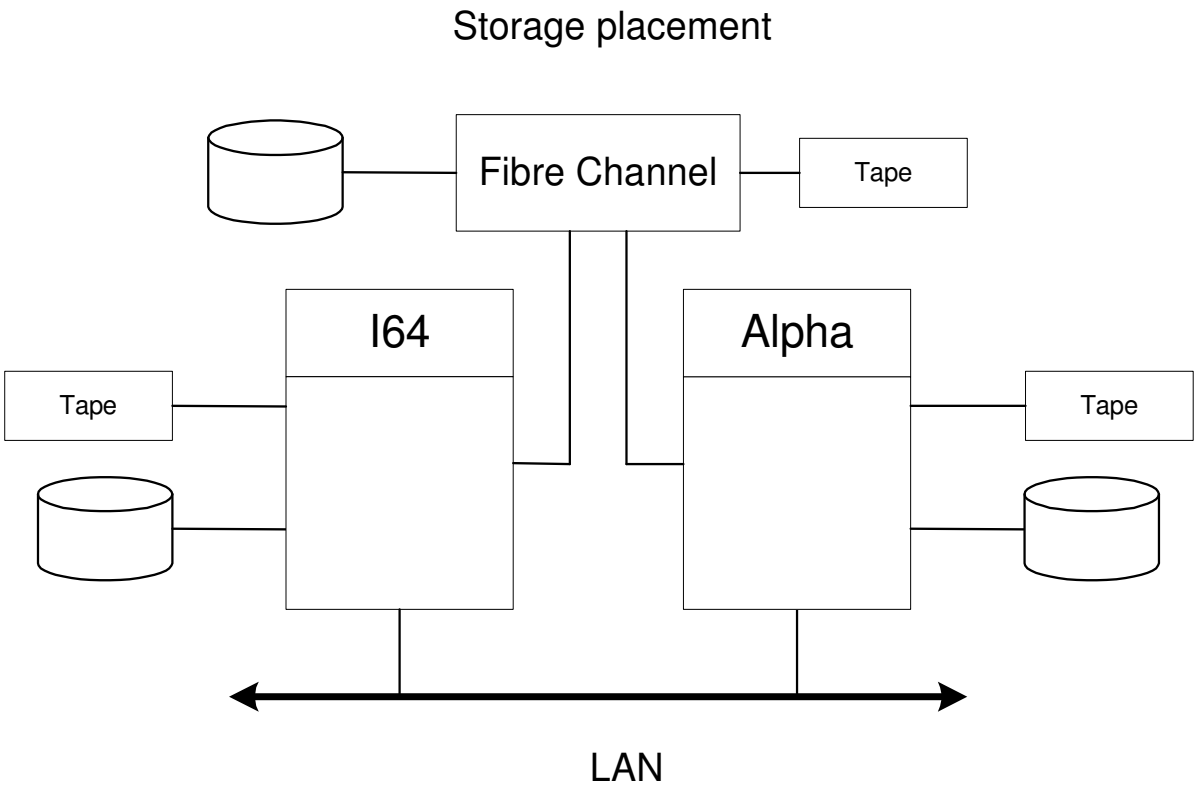
Mixed Architecture Considerations (cont'd)

- Monitor utility is not backward compatible
  - Previous recordings do not fit the new data record format
  - Using MONITOR CLUSTER does not allow a cluster wide picture with Alpha systems running pre-V8.1 O/S

Configurations



Configurations (cont'd)



Uses both shared and served disk storage

V8.2 and Beyond

- New with IA64 systems is the management console
  - Log file to save history of operations and boots
  - Separate network interface for fully remote control
  - Standard console functions for diagnostics and config

V8.2 and beyond (cont'd)

- Clusters in V8.2 expand to 16 nodes and host shadowing returns to the list of available features
- Cluster membership further raised in V8.3 along with the ability to support satellite boot
- Fibre Channel will become capable of transporting cluster interconnect traffic in V8.3

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