

HP NetServer LH3000 with HP Rack Storage/12FC & HP Rack Storage/12 Cluster Configuration Guide

5 September 2000

(see [Versions](#) at the end of this document)

Introduction

This document defines the supported HP NetServer LH3000 configurations using the HP Rack Storage/12FC and Microsoft Cluster Server and one or two HP Rack Storage/12s. These configurations minimize single points of failure (SPOF) and provide extended availability. The specific configuration certified and supported by both Hewlett-Packard and Microsoft is defined, as are other guidelines to assist you in configuring your clustered NetServers. This guide is prescriptive; it describes the configurations supported by HP. Any deviance to these configurations can result in an inoperative cluster or an operating cluster with degraded performance, hidden SPOFs, etc., and therefore will not be supported by HP.

What's Defined in a Cluster



- [Cluster](#)
- [SPUs](#)
- [Local and Shared Storage](#)
- [Intra-cluster and Client LANs](#)
- [Shared Storage Cabling](#)

Cluster

Type of SPUs	HP NetServer LH3000 Each node must be the same model SPU, but may have different clock speeds, main memory sizes, cache sizes, and number of CPUs.
Installation	Pedestal or racked
Number of nodes	2
Shared Storage	HP Rack Storage/12FC with two FCArray Cards, HP disks, and using a HP D8602A HBA in each server. See Shared Storage below.
LANs:	
Client LAN	Any NIC that is HP and Microsoft approved. See Client LAN below.
Intra-cluster (Heartbeat) LAN	Embedded NIC with crossover cable. See Intra-cluster LAN below.
Power source	Direct from power mains, power conditioner or uninterruptible power supply (UPS) using any power conditioner or UPS. Redundant power distribution units (PDU's) are strongly recommended.
System software:	

Navigator version	L.18.02 or later
Operating System	Microsoft Windows NT Server 4.0, Enterprise Edition with Service Pack SP6A or later

SPU

Model	HP NetServer LH3000
Clock speed	733, 800, 933 MHz
No. of CPUs	2
BIOS version	4.06.24 PT or later
CPU cache	Any size
RAM	128 MB minimum. Must be HP.
No. of power supplies	2 required, 3 for redundancy, 4 for power cord redundancy
Local storage	See Local Storage below.
I/O slots	Added cards may be installed in any appropriate slot, keeping in mind the server's default boot order as listed below:
Default Boot Order	IDE CD-ROM, FDD, SE SCSI C, Embedded A, Embedded B, PCI-8, PCI-7, PCI64-6, PCI64-5, PCI64-4, PCI64-3, PCI64-2, PCI64-1
M/S Certified Configuration	P5 – Local Storage (NetRAID-1Si) P6 - Client LAN P8 - Shared Storage HBA Booted from embedded DAC

Storage

Local

Controller	May use embedded SCSI, embedded DAC, NetRAID-3Si or NetRAID-1Si.
Driver	For embedded SCSI, use sym_hi.sys version 4.12 or later. For embedded DAC and NetRAID-xSi, use mraidnt.sys version 2.24
Cabinets (Physical drive location)	SPU internal drive bays or HP external drive cabinet (e.g., HP Rack Storage/12), any number.
Disk drives (hot swap or fixed)	Must be HP.
SCSI bus	Any HP cables that meet SCSI specifications and any SCSI bus speed.
SCSI Ids	Any

Shared

HP Rack Storage/12FC	Required – D5991A
<u>Host Bus Adapter</u>	
Model	HP Fibre Channel Host Bus Adapter - D8602A
No. of HBAs	1
Driver	Hhba5100.sys 1.12 or later
RAID level	0, 1, 3, 5
<u>Cabinet</u>	
RAID arrays	Not more than 8 physical drives per logical array and not more than 8 LUNs are permitted per Rack Storage/12FC and Rack Storage/12 combination in a cluster.
No. of cabinets	1

FC Array Cards

Model	HP Fibre Channel Array Controller - D5990A
No. of cards/cabinet	2 (Requires second card be installed in the Rack Storage/12FC)
Firmware	4.64-00 or later
Status SCSI ID	5 (fixed)
Disk SCSI IDs	0 – 3, 8 – 15 (fixed)
Disk drives:	Any HP drive supported by storage enclosure including: HP 9.1 GB (7200 rpm) Low Profile Ultra2 SCSI Disk Module D6106A HP 9.1 GB (7200 rpm) Low Profile Ultra3 SCSI Disk Module P1217A HP 9.1 GB (10k rpm) Low Profile Ultra2 SCSI Disk Module D6107A HP 9.1 GB (10k rpm) Low Profile Ultra3 SCSI Disk Module P1168A HP 18.2 GB (7200 rpm) Half Height Ultra2 SCSI Disk Module D6108A HP 18.2 GB (7200 rpm) Low Profile Ultra3 SCSI Disk Module P1216A HP 18.2 GB (10k rpm) Half height Ultra2 SCSI Disk Module D7031A HP 18.2 GB (10k rpm) Low Profile Ultra3 SCSI Disk Module P1166A HP 18.2 GB (7200 rpm) Low Profile Ultra2 SCSI Disk Module D7174A HP 18.2 GB (10k rpm) Low Profile Ultra2 SCSI Disk Module D7175A HP 36.4 GB (10k rpm) Half Height Ultra2 SCSI Disk Module D8210A HP 36.4 GB (10k rpm) Low Profile Ultra3 SCSI Disk Module D9419A
Fibre-channel cables	Optical (Server to Hub only): 50 meter D6980A 100 meter D6981A Copper (Shared Storage to Hub and Server to Hub): 3 meter D6978A 5 meter D6979A 10 meter D7080A

Hub	Required
Model	HP D6976A 6-port fibre channel
Quantity	1

HP Rack Storage/12	Optional
Number of cabinets:	1 – 2
Model	HP NetServer Rack Storage/12 - D5989B plus two D6025B SCSI cards for each cabinet
Status SCSI ID	5 (fixed)
Disk SCSI IDs	0 – 3, 8 – 15 (fixed)
Disk drives:	Same as HP Rack Storage/12FC
Cables	Any HP LVD SCSI cables from the following list: 1 meter D7131A 2.5 meter D6020A 5 meter D6982A 10 meter D6983A

LANs

Intra-cluster (Heartbeat) LAN

Client LAN

LAN connection	HP D5954A crossover cable or equivalent The intra-cluster LAN may only be used for cluster node communication via a crossover cable. It may not be used for client communication.	Any LAN
NIC:		
Model	Embedded NIC	Any that is on both the HP Tested Products List and the Microsoft Hardware Compatibility List.
Driver	3.27.00.0001 or later	Vendor supported driver. If the NIC used is the same as the embedded NIC (D5013A/B), then the Client LAN must use the same driver as the Intra-cluster LAN.
No. of NICs	1	1 minimum

Shared Storage Cabling

This part of the guide defines the allowable cabling configuration for clusters using the HP NetServer LH3000, one required HP Rack Storage/12FC and one or two optional HP Rack Storage/12s. Only this cabling configuration and these cables are supported.




Fibre-channel HBA with GBIC

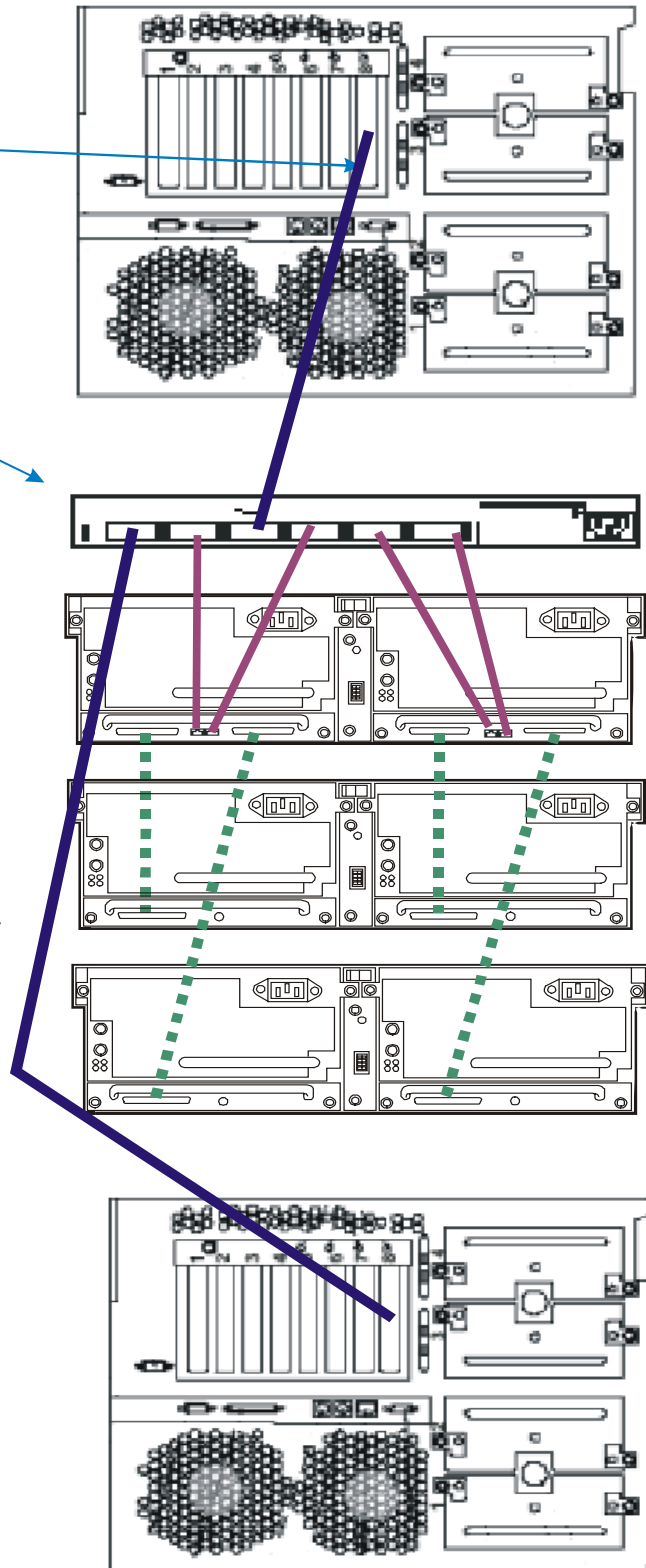
6-port Fibre-channel Hub with GBICs.

NOTES

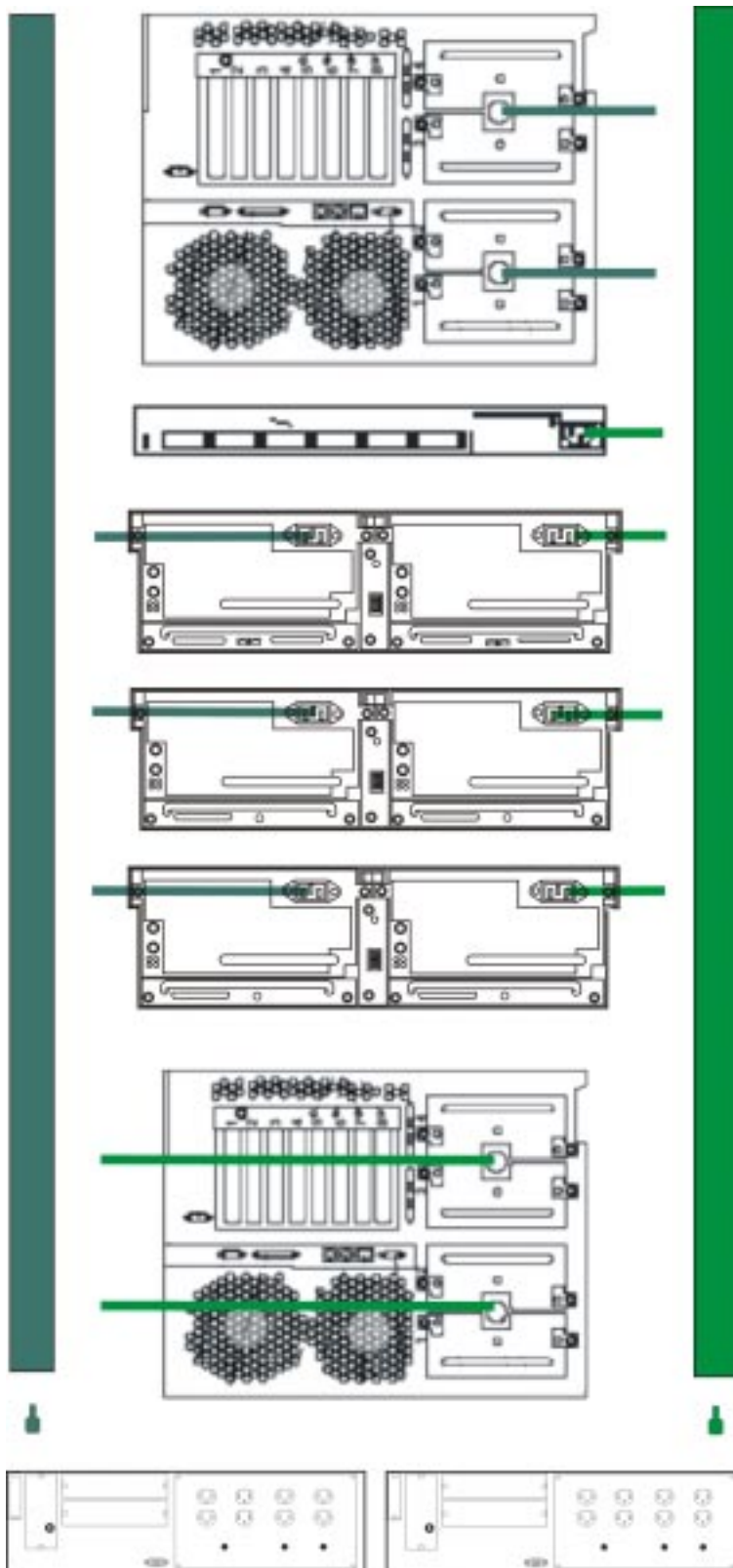
1. The HBA and NIC may be installed in PCI slots as follows:
 Client LAN in slot P6
 Intra-cluster LAN (embedded NIC)
 FC HBA in P8
2. The bottom two shared storage devices are SCSI HP Rack Storage/12's and are optional to the cluster configuration.

LEGEND

-  Heavy (blue) lines are fibre channel Optical or Copper cables. See inside this guide for specifications.
-  Solid red lines are copper fibre channel.
-  Dashed (green) lines are offset SCSI cables. See inside this guide for specifications.



HP Microsoft Cluster using HP Rack Storage/12FC and Rack Storage/12 and 6 Port Fibre Channel Hub



Power Cabling to Separate Power Circuits

Versions

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|------------------|---|
| 5 September 2000 | Added power cord note. |
| 25 August 2000 | Rewrote intro; added 900 MHz, new boot device specs, Ultra3 drives. |
| 18 May 2000 | Initial release |