NOAA R&D HPCS RFP
Appendix A.2
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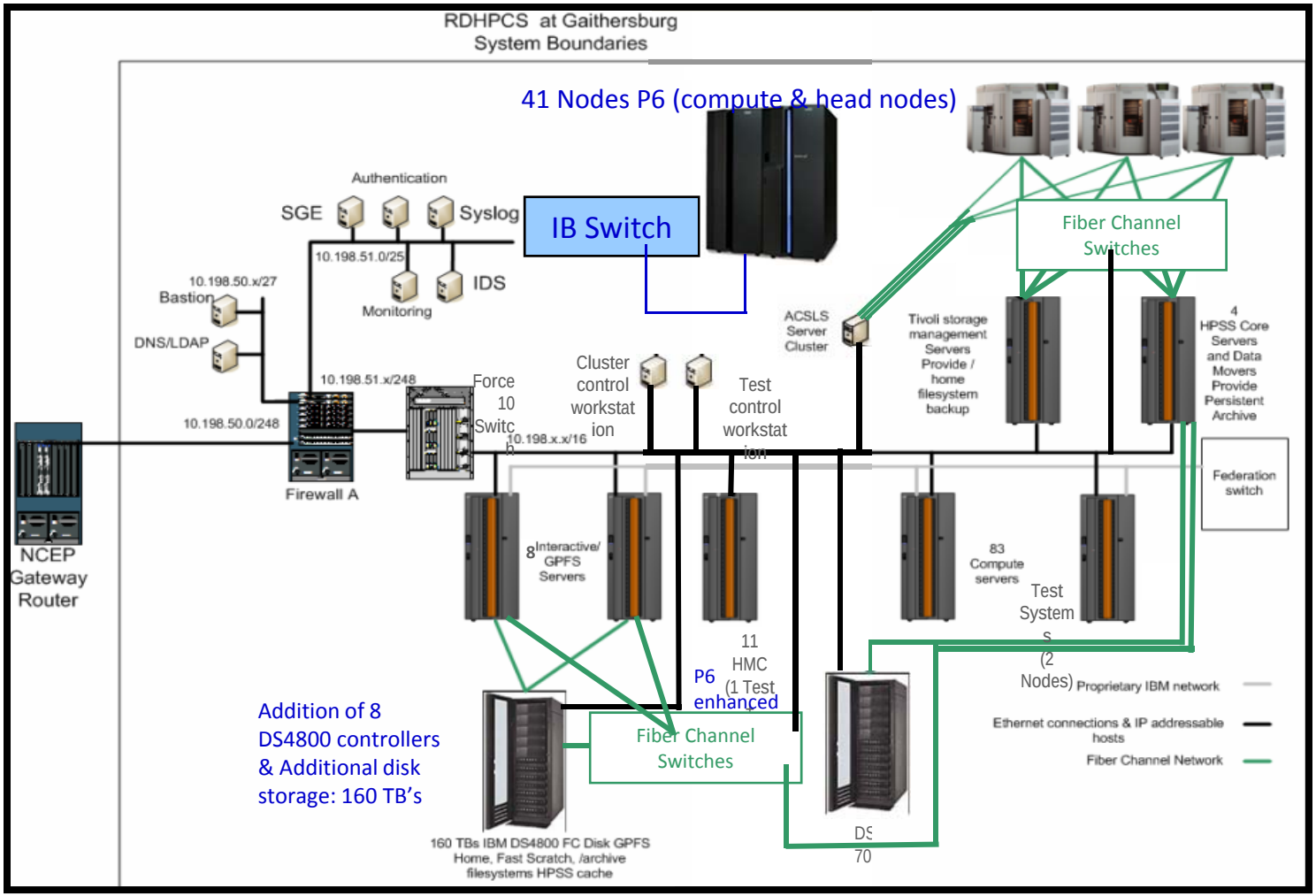
Current R&D HPCS Architecture
Gaithersburg

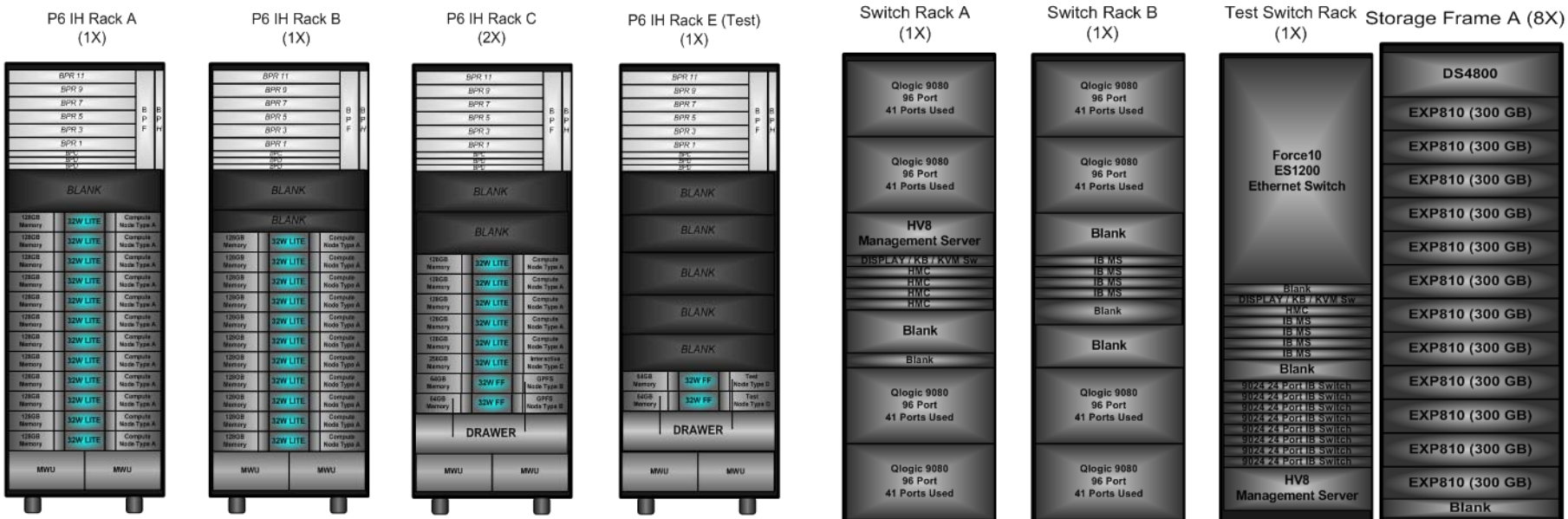
07 October 2009

Attribute	Initial Delivery	Midlife Delivery
TFLOPs peak	10.5 TFlops	23.5TFlops
# of Cores	1328 1.9GHz Power5+ compute 64 2.2GHz Power5+ interactive/GPFS	1248 4.7GHz Power6
# of Nodes	91	39
# of Compute nodes	83 (16-way, 32GB Memory, 1.9GHz)	33 (32-way, 128GB Memory, 4.7GHz)
# of Interactive nodes	4 (8-way, 16GB Memory, 2.2GHz)	2 (32-way, 256GB Memory, 4.7GHz)
# of GPFS Nodes	4 (8-way, 16GB Memory, 2.2GHz)	4 (32-way, 64GB Memory, 4.7GHz)
Memory: Cluster Total	2.7 TB	5.1TB
Interconnect	Federation HPS	Infiniband
RAID Disk: Cluster Total	160 TBs RAID-5 Formatted Disk	160 TBs RAID-5 Formatted Disk

Gaithersburg System Layout



Gaithersburg Frame Definitions



Node Frames:

33 x 32W 4.7GHz P6 compute nodes
4 x 32W 4.7GHz GPFS nodes
2 x 32W 4.7GHz Interactive nodes
2 x 32W 4.7GHz test nodes

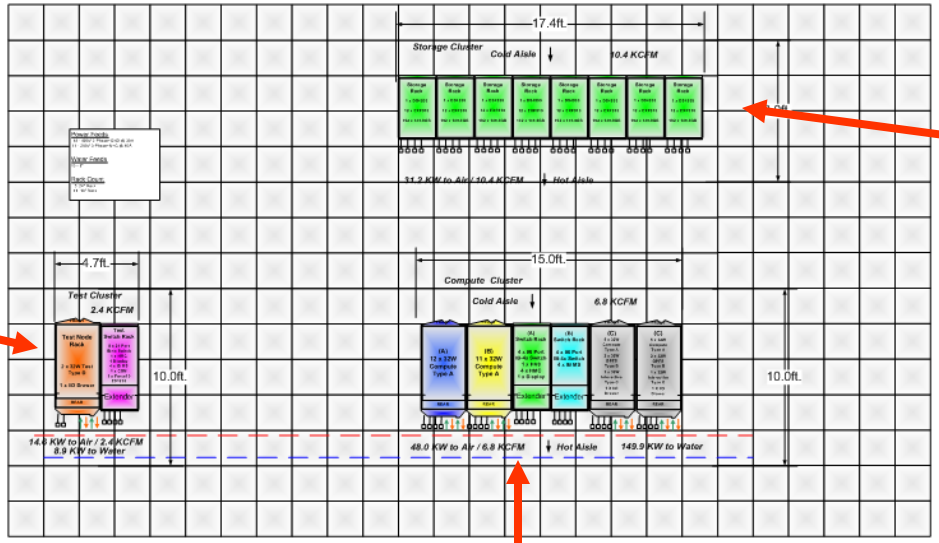
Switch Frames:

Compute cluster: 8 x 96 Port Switch, 41 Ports Utilized each
Test cluster: 8 x 24 Port Switch, 4 Ports Utilized each

Storage Frame:

225.5 TB RAW storage, 160TB formatted

Floor Plan



139 sq ft storage cluster, 8 x racks each with:
1 DS4800 controller,
192 x 146.6GB disk

47 Sq ft test Cluster
Test node rack: 2 nodes
Test switch rack: 8x24 port IB-4x switch,
1 HMC,
1 Display,
4x IB MS

150 sq ft Compute Cluster, 6 racks
From left to right:
Frame 1: 12 compute nodes
Frame 2: 11 compute nodes
Switch A: 4x96 port IB-4x switch, 1x HV8 MS, 4 x HMC, 1x Display
Switch B: 4x96 port IB-4x switch, 4 x IB MS
Frame 3 and 4: each having 5 compute nodes, 2 GPFS nodes, 1 Interactive node