

Yale

The Impact of Yale's Science Network on its HPC Environment

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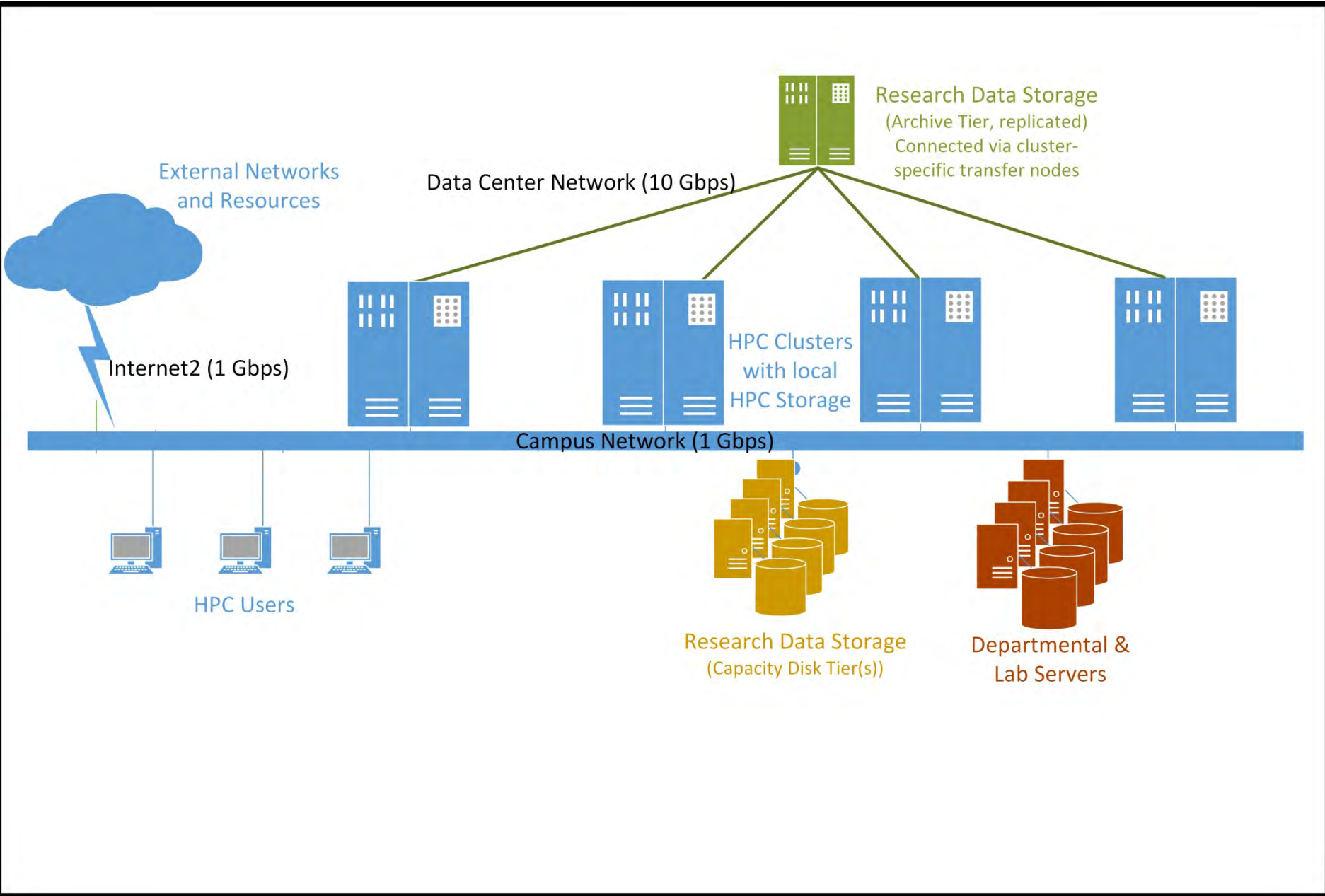
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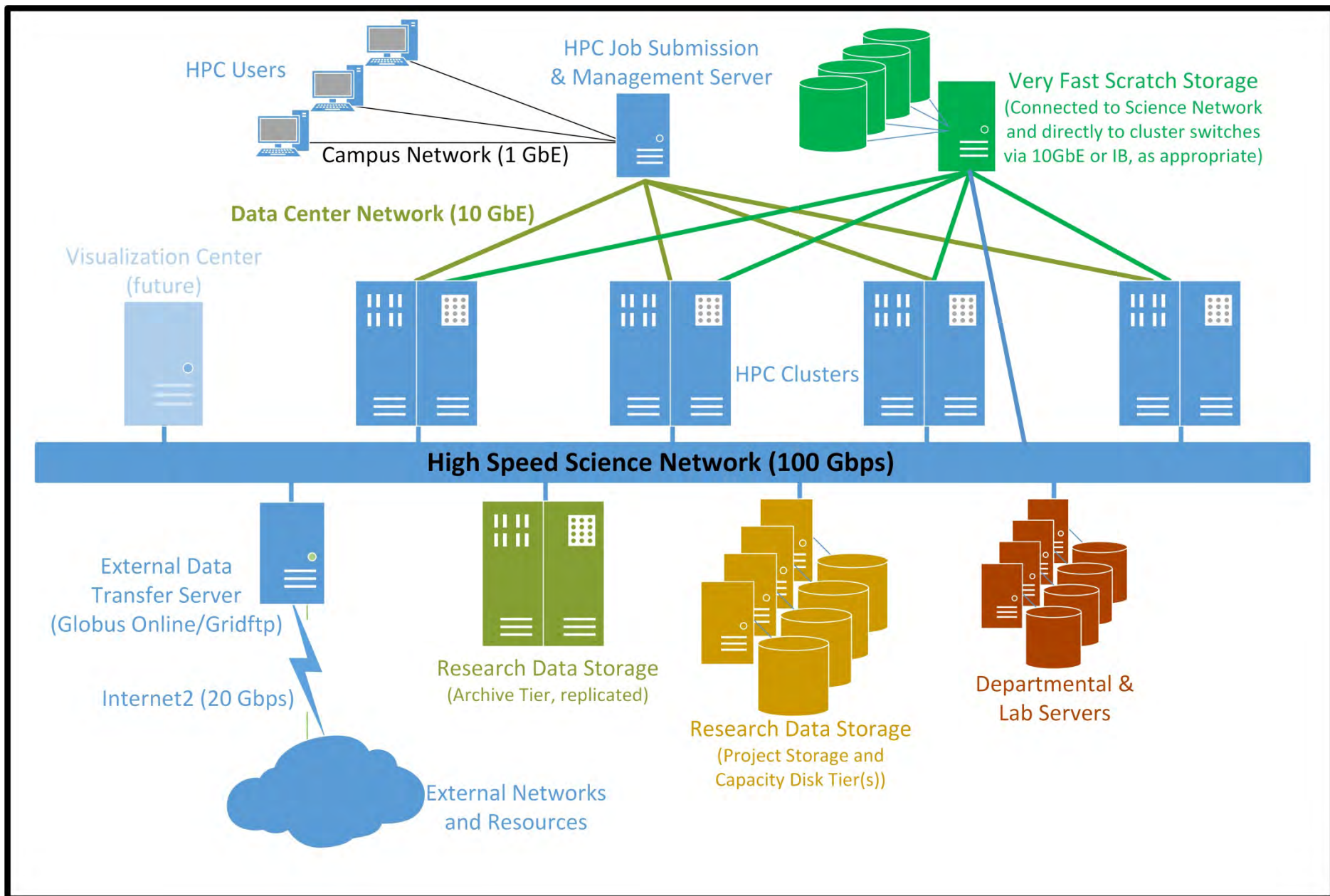
Yale's HPC Environment

- Two Logical HPC Centers
 - Arts & Sciences: 1,100 nodes; 10,000 cores; 2.4 PB usable storage
 - Major applications: Climatology (G&G); Astrophysics; High Energy Physics; Chemistry; Engineering; Energy Sciences; Social Sciences
 - Biomedical: 500 nodes; 6,100 cores; >3 PB usable storage
 - Major applications: Genomics and related biomedical computation
 - ~50% dedicated to Yale Center for Genome Analysis
- Over 800 active users in past year, millions of jobs

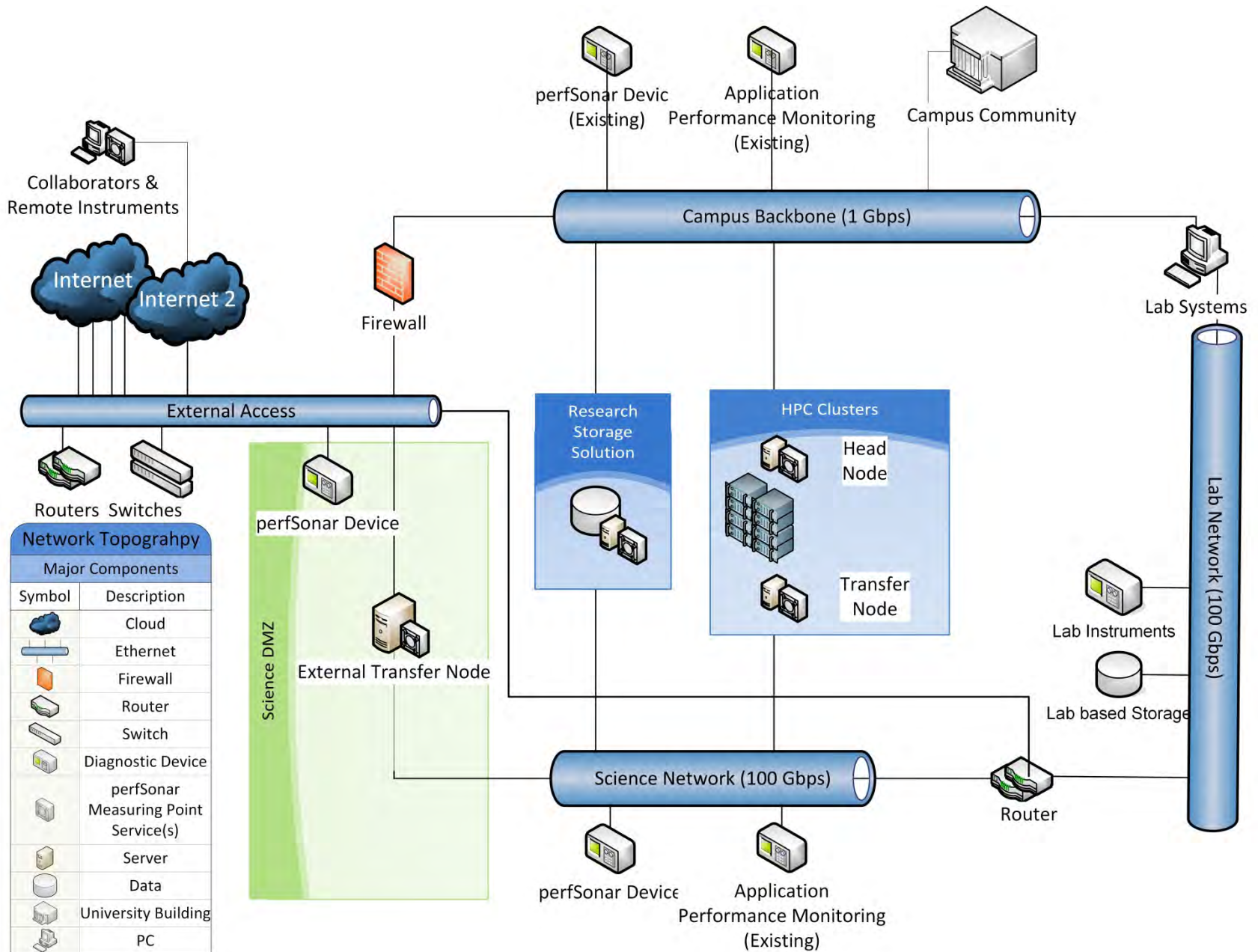
Pre-CC-NIE HPC Architecture



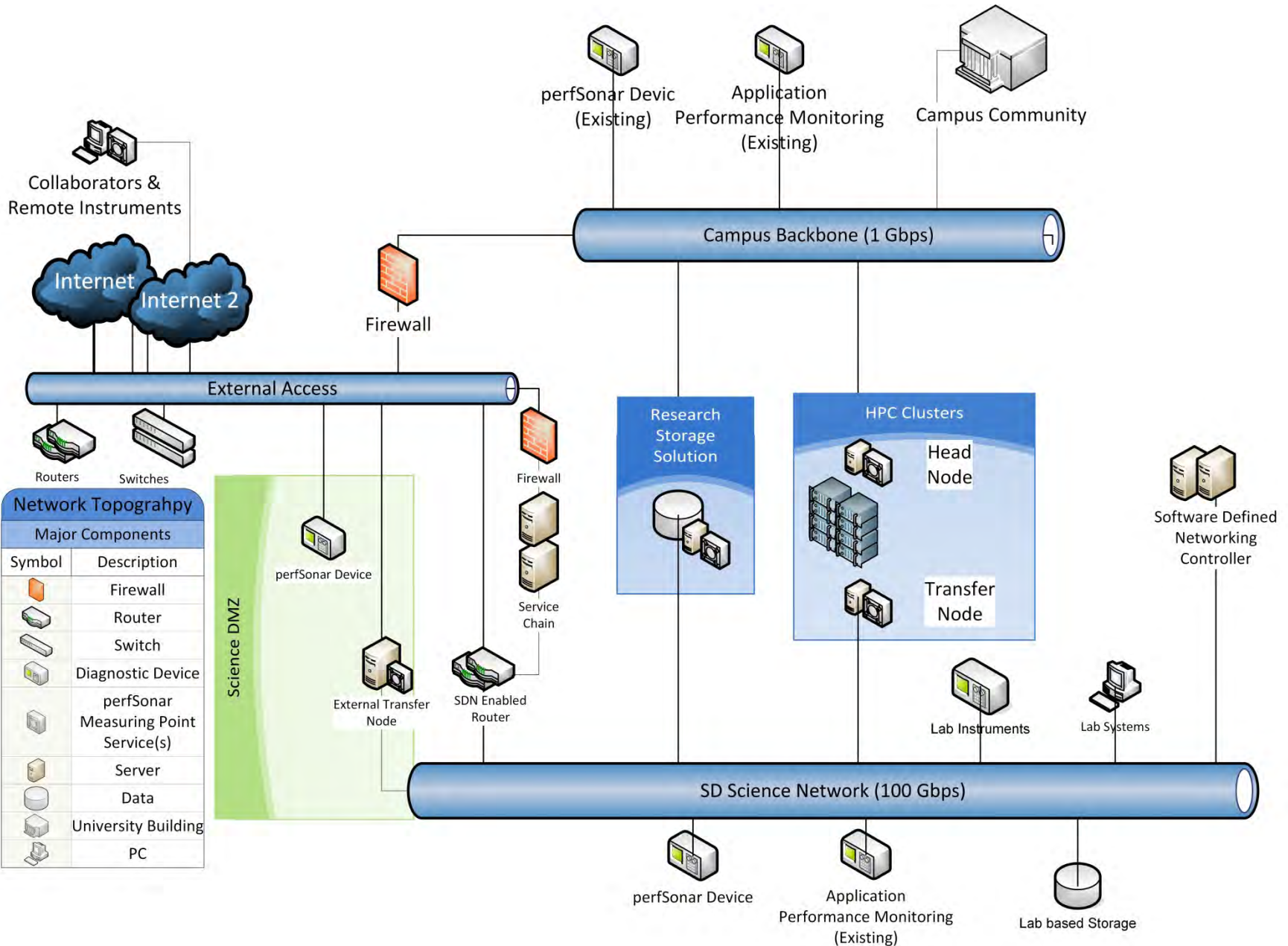
Target HPC Architecture (Deployment in Progress)



Post-CC-NIE Campus Network Architecture



Future: Software-Defined Network Architecture



Network Topography

Major Components

Symbol	Description
	Firewall
	Router
	Switch
	Diagnostic Device
	perfSonar Measuring Point Service(s)
	Server
	Data
	University Building
	PC