CIDR Center for Inherited Disease Research
Johns Hopkins University

CIDR Informatics Infrastructure

As CIDR's capacity and service offerings increase, the servers and network on which our work depends evolve continually. Here is an overview of CIDR's current Informatics infrastructure. For greater detail or if you have questions, please contact us at the email address given below.

Data Center

The original CIDR server room was expanded in 2008, nearly doubling the size to 315 square feet. Additional space was recently renovated to state-of-the-art standards and brought online in October 2014, adding another 681 sq. ft. and thereby tripling available server room space, as well as adding a new generator capable of providing emergency power to all 22 of the new equipment racks when these are fully populated. Both server rooms are electronically secured, with full environmental controls and fire suppression. The new server room is physically distant in the same building, providing moderate resilience to minor disasters. Over 170kVA of UPS capacity provides continuously filtered power and, in the event of external power outages, several minutes of bridging power until the building generators activate.

Computing and Storage

The compute cluster consists of 36 fast compute nodes plus several many-core large-memory servers, totaling over 615 compute cores, 5TB RAM and 52TB of local storage. A Bina Box provides dedicated capacity for rapid whole genome sequencing analysis. Storage systems include a 65TB XIO fibrechannel SANS for provisioning disk to servers, plus over 1.5 petabytes of Isilon network-attached storage (including 17TB of solid-state disk for metadata acceleration) in separate clusters for production data and archival storage, with 4 dedicated Dell Ocarina file compression appliances. A Quantum i500 tape platform, consisting of 10 ultra-fast LTO-5 tape drives and 211 tape slots in a robotic library and running CommVault Sympana backup software, serves all these systems.

Connectivity

The core network fabric is composed of 6 Brocade 10-gigabit optical switches (140 ports total) with 13 new 1-gigabit copper edge switches (624 ports) and additional fibrechannel connections between the 2nd and 4th floor server rooms, providing massive data movement capability protected by a McAfee Enterprise Firewall. Data distribution is via secure connections from an Aspera cluster (a group of browser-enabled file transfer servers) at up to 300 megabits per session through a 1 gig-E network connection to the outside world, or a 40 gig-E internal connection to the Johns Hopkins research community.