The Creighton University Division of Information Technology (DoIT) - Research Computing provides collaborative services and support for researchers working on scholarly endeavors across all academic disciplines. A faculty federated and shared, high performance computing, or “HPC” system is available for students, faculty and staff to utilize which includes capabilities to execute large-scale computing projects, temporary storage of large data sets and files, high-speed data transfers, and support for managing computational scripts and queries. DoIT, working in collaboration with the University Committee on Research Computing, provides consulting in computational science and assists faculty and researchers pursuing research computing oriented projects.

On-campus HPC resources include a variety of physical servers comprised of: 3 HyperV servers, 10 Nodes for parallel CPU computations, Dell ME4 based SAN, and a highly available switching fabric. Together these systems provide over 100TB of data storage, hundreds of CPU cores, and several TB of RAM. The Creighton core network is built on top of the industry leading Cisco Nexus platform providing connectivity at 10, 40, and even 100Gbps. The HPC environment also has its own dedicated switching fabric made up of over 100 10Gbps ports and more than 1 billion packets per second and nearly 2Tbps of switching capacity.

These systems work together to provide a n easily scalable system to support HPC and Creighton's mission. All servers that are available to the internet are secured in a DMZ zone with a hardware firewall. Local software firewalls are also used on each public server.

Public server access is monitored at the hardware firewall location, by an outside monitoring company. DoIT also monitors public servers, at the server software location, to help guarantee security. Operating system patches and hotfixes are implemented in a timely fashion and can be managed remotely in an emergency. All servers are physically located in the Creighton Data Center (2,141 sq. ft.) located central to campus providing a facility for HPC (i.e., computing clusters), data storage facilities, centralized backup, and disaster recovery. The center offers exceptional power standards exceeding the total system load, with capacity for growth and operating with a back-up UPS system (Leibert 1610) at 150KVA. A redundant diesel power generator is located on-site and has a capacity of 499 gallons of fuel at 500KV. The data center also has a state-of-the-art dedicated HVAC system, with specialized fire suppression (FM200). In addition to the day-to-day operations of the facility, the DoIT Data Center Operations (DCO) team provides infrastructure, personnel and processes to support a diverse suite of services.