PARI's Information Technology (IT) infrastructure is built upon three foundations:

- Network connectivity through campus-wide fiber-optic backbones and direct fiber to both the commodity Internet and the North Carolina Research and Education Network (NCREN)
- Network services and storage capacity provided by server-grade hardware and software in redundant on-campus data centers
- Network and service high-availability through carrier-grade power filtering and power interruption backup systems

PARI's extensive fiber optic network consists of over 75 miles of precision glass fiber routed through nearly five miles of conduit, tunnel and fiber duct throughout the campus. Carrier-grade core switches and routers, manufactured by networking giants Cisco and Brocade, reliably carry data at multi-gigabit rates throughout the campus and to our regional network service providers.

Network nodes using carrier-grade components were chosen for their manageability, scalability and reliability. Following the industry standard three-tiered modular design approach, each access node has multiple links to the distribution and core. Each distribution node has redundant power supplies. Each core node additionally contains redundant processors and interfaces to provide greater reliability.

Essential network services are provided using high quality computer hardware with solid server-class operating systems and software. These servers provide email, basic addressing services, redundant file storage services with an offsite mirror, firewall-protected Internet connectivity, encrypted virtual private networks for secure remote access, and a rich dynamic website with many live data sources to local and Internet users. These servers additionally provide secure remote control of radio and optical instruments, such as the Smiley radio telescope. Virtualization technologies are used to improve service availability and reduce the potential for radio frequency interference that would adversely impact our radio astronomy operations. Four EMC^2 Clariion arrays, totaling nearly 400 terabytes in capacity, provide reliable and secure storage of data.

All critical network systems are provided regulated uninterruptible power, using carrier-grade uninterruptable power systems. Diesel generators, that can provide power for at least 30 days without refueling, automatically provide power for longer-term outages.

PARI understands that high-speed, reliable and secure networking, compute and storage services located in redundant data centers are cornerstones of a productive user experience, and has designed and built infrastructure suited to the demanding needs of the instruments of science and their users.