**UCF Facilities**

**Advanced Research Computing Center**

UCF is home to the Advanced Research Computing Center (ARCC). This is capable of housing a variety of high-end computational resources, including existing infrastructure such two High Performance Computing clusters. The ARCC is located in the Central Florida Research Park adjacent to the UCF Orlando campus. The ARCC is a full member of Florida’s Sunshine State Education and Research Computing Alliance (SSERCA).

The ARCC houses two High Performance Computing ("HPC") clusters, Stokes and Newton, and 1.2 PB of storage. Stokes provides 192 compute nodes, about 8,500 compute cores and 100/200 Gb/s HDR InfiniBand interconnect between all nodes. Newton is a GPU accelerated cluster with a total of 42 NVidia Tesla V100 GPUs and 90 Nvidia Tesla H100 GPUs across 54 nodes with either 100 Gb/s EDR or 100/200 GB/s HDR InfiniBand.

The ARCC machine room is outfitted with 3-phase, 208-volt 60-amp power, as well as industrial scale UPS modules and a separate generator from the main building for critical ARCC equipment. It also has four redundant, industrial-scale air conditioning units. There is sufficient power, cooling, and rack space for the proposed equipment.

In addition, the ARCC maintains a dedicated research network and Science Demilitarized Zone (DMZ) for high-speed, low-latency data needs for research. This network has direct, unfettered access to the Internet2 and implements a frictionless 10 Gb connection from the border router to wall jack. This research network is also available for use for the current project.

**Advanced Research Network (Science DMZ)**

UCF's Research Network was implemented in 2013 based on funds from CC\*IIE grants. The primary goal of the research network is to provide high-speed access for researchers and equipment to campus resources. The Research Network also provides a direct link from the campus to Internet2 resources. As a secondary focus, the Research network provides a platform to monitor bandwidth through perfSONAR.

The UCF Research Network currently uses Extreme Network switches at the building distribution and researcher access layer. Extreme Networks were chosen due to their inexpensive cost for dense access ports and direct support for OpenFlow SDN capabilities. During the summer of 2023, UCF will begin a project to integrate the research network onto enterprise Cisco switches. This change will allow the university to focus on a combined high-speed network for research and enterprise traffic. Locations with research network requirements will feature Cisco Catalyst 9500, 9400 and 9300x switches. The Catalyst 9k platform provides increased bandwidth and higher port speeds at researcher locations. The enterprise network relies on Cisco routers at the core to provide access to advanced networking features, high availability and line speed routing needed to support a service provider level of quality.

The Research Network is directly linked to the buildings housing the College of Engineering and Computer Science, the College of Sciences and the Modeling and Simulation program. These locations provide direct access for research members to connect to UCF perfSONAR nodes, High Performance Computing (HPC), Software Defined Networks (SDN) and Data Transfer Nodes (DTN) within campus, as well as Internet2 resources. UCF is currently in the process of upgrading our edge connectivity to regional campuses and Interet2 with provider Florida Lambda Rail (FLR) to support up to 100G connectivity to Internet2 with redundancy.