**Carnegie Mellon University**

**Campus Cloud and Campus Cloud Plus Facilities**

**Campus Cloud** is a local private cloud service offered to Carnegie Mellon University affiliates. It is built on VMWare ESX technology, using Dell servers, with both PureStorage and Nimble SANs. This system provides a facility for running virtual machines for most types of intel-based server operating systems to be managed by the individual customer.

**Campus Cloud Plus** is an additional layer of support on top of the Campus Cloud offering where system and optionally database administration is provided for certain tightly managed operating systems, such as Red Hat Enterprise Linux or Windows Server. It entails a higher level of documentation and security review than the regular environment. It is often the preferred choice when data protection, security, and/or auditing concerns are critical.

These services are supported by enterprise-class underlying technology managed by the Central IT department for Carnegie Mellon University and the infrastructure supports thousands of virtual machines.

**Networking**

Carnegie Mellon operates a fully-interconnected, multimedia, multiprotocol campus network. The system incorporates state-of-the-art commercial technology and spans all campus buildings in a redundant 10Gbps backbone infrastructure that enables access to all campus systems as well as providing redundant external access to Internet2 and the commercial internet. The Campus Cloud infrastructure makes use of this networking via multiple 10Gbps uplinks per physical host, with multiple 40Gbps uplinks in the datacenter network.

**Physical**

Campus Cloud equipment is primarily housed within the Cyert Hall Data Center located at 4910 Forbes Ave. in Pittsburgh, Pennsylvania (on the campus of Carnegie Mellon University). Specifications:

* Server/storage cabinets placement on an 18” deep raised floor area of 5,108 square feet
* Backup power provided via a one megawatt generator and a quantity of three of 225KVA Uninterruptable Power Supply systems arranged in a N+2 configuration
* Primary cooling is provided by five 20 ton Computer Room Air Handlers (CRAHs)
* Backup cooling is provided by a 100 ton chiller located on the building’s rooftop
* Fire suppression is provided by a pre-action sprinkler system with release heads mounted to the ceiling at a height of 10 foot (from the surface of the raised floor) as well as a subfloor suppression system equipped with an Ecora gas release system.
* Security is provided by a video surveillance system and a door access control system. Visitors must be accompanied by full time staff and need to sign into a kiosk before entering the data center. Records/recordings of the video surveillance, access control, automated key boxes and visitor kiosk are archived.
* Environmental monitoring is provided by various temperature/humidity sensors located throughout the data center as well as in every cabinet. Leak detection systems are located throughout the data center as well as surrounding areas.

**Disaster Recovery**

Expedient hosts the primary disaster recovery site where a replica of all backup data for Campus Cloud is hosted. The location is Nova Place 1 Allegheny Center, Pittsburgh, PA 15212. Expedient’s web presence is at: <https://www.expedient.com/>