



## Data Center Overview

**Virtual Management Technologies** (VMT), through a unique partnership with Quality Technology Services, provides a Carrier Class 376,000 square-foot data center located in Suwanee, Georgia (suburb of Atlanta, GA). We also provide a second data center for redundancy and replication services.



The Data Center's unique design includes multiple and redundant high-speed Internet connections, state-of-the-art security systems and procedures. Secured customer access is available on a 24x7x365 basis.

## Data Center Facility

The Data Center is hardened structurally:

- The facility is a tilt-up concrete structure, consisting of reinforced steel.
- The roof was reconstructed as a component of the Data Center mission critical systems. Its 4-ply design provides an enhanced water and vapor-proofing membrane.
- The ceiling is dual reinforced.
- The building is rated for 85 mph force/Level 2/Hurricane.
- The facility has a video system covering interior and exterior space
- Thirty (30) foot embankments surround the north and west side of the property. The facility sits approximately 90 feet above the 100-year flood line. Security gates on the north side of the facility restrict access to the rear of facility where loading docks, generators, and some operational equipment are located.

## Power

The facility is supplied with power from two separate grids. The Constant Power System (CPS) or Diesel UPS, feeds redundant power busses for the building. This configuration does not require batteries or a cutover of the customer power to provide continuous power. Therefore, an N + 1 redundancy is accomplished both at the supply of power, and at the CPS. Approximately 75,000 gallons of diesel fuel is maintained on site, which, under current load, is approximately nine (9) days worth run-time. (The facility has never lost power on the data center floor.)

### Uninterruptible Electrical Power

The data center facility power grid is protected in its entirety by eleven (11) on-site backup generators. Six (6) of these Hitec 2.0 Megawatt CPS generators are dedicated to the entire data center floor. The Hitec Inc. system's patented design utilizes an induction coupler to provide continual power while the diesel engines prepare to provide essential power to the data center floor. The comprehensive Hitec system continually conditions power to the data center floor so that even the slightest sag in voltage is detected and managed, preventing any systems on the floor from being affected.

The Hitec system was selected over static UPS systems for its simplicity, reliability, and maintainability. Static UPS systems also have space limitations and inherent environmental risks.

### **Protection From On-Site Transformer Failures**

The resiliency and reliability of the power system is of mission critical importance. The data center's Service Level Agreement (SLA) calls for 100% power availability. At the heart of the power system is the redundant transformers located on the east border of the property. These transformers are owned and operated by Georgia Power. Each transformer is monitored by the Hitec automation system.

As part of the commissioning process, these systems were repeatedly tested to simulate Georgia Power transformer failures. The Hitec system can detect the slightest variation in voltage from these transformers. Should conditions occur that would cause transformer performance degradation, an alarm would be triggered within the building automation system (SCADA) and the Hitec CPS system would automatically engage and begin to provide power to the data center floor immediately. Should a situation occur causing a transformer failure, active cubical switches attached to all five (5) on-site transformers would allow the Data Center to switch to the next available transformer and to disengage the CPS systems when voltage has been restored to normal operating level from the transformer.

### **Grounding**

The Data Center has 352 vertical 8-inch lightning terminals located on the roof. Each lightning terminal spike is connected with .5 inch copper cable. Over 16,000 feet of cable is being used for the lightning grounding system. This 16,000 feet of cable is grounded at 36 locations on the perimeter of the building and is buried 2 feet into the ground.

In addition to the lightning ground system, this facility is equipped with a designated counterpoise-grounding grid specifically designated for the data center floor and transport areas. This grounding grid is tied to an earth field, building steel, and the water main. The grid is also tied to the data center raised floor support structure.

### **Fuel**

The Data Center stores 78,000 gallons of diesel fuel for our farm generators. Contracts are in place for immediate fuel replenishment in the event of an emergency.

### **HVAC**

The Data Center is designed with a multi-million dollar cooling system that utilizes eight cooling towers, five 1,050-ton Trane chillers, and over 100 Liebert air handlers. The entire system is managed by Metasys, an automated software program design to control both temperature and humidity. Each 36-ton Liebert air handler is fitted with an external sensor that monitors the air throughout the entire data center, providing real-time feedback on all environmental zones.

### **HVAC Maintenance Areas:**

The Data Center is configured with multiple HVAC related areas, the largest of which is the central Chiller Plant located east of the data center floor. This room contains five 1050-Ton Trane chiller systems with a state-of-art water flow system, sand filters, and pumps.



## Fire Protection

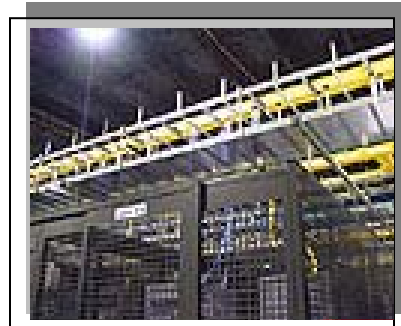
The fire detection and suppression system is designed as a 3-phase system:

- 1) The first phase is a VESDA (Very Early Smoke Detection Apparatus) system on the data center raised floor area as well as critical operational areas. VESDA sensors are above and below floor as well as over every air handler – in addition to best practices, the Data Center has additional sensors in the ceiling. The sensors detect pre-ignition signatures in the air.
- 2) The second phase is a smoke detection and fire suppression system installed to complement the VESDA system and is located throughout the facility, including the office space areas. Over 1000 smoke detection devices are used throughout the facility.
- 3) The third phase is a pre-action pipe sprinkler system with Viking heads protecting the entire facility. Pre-action means that all pipes are 'zoned' and pressurized to 40 psi allowing the detection of any change in the pressure, ensuring that there is no overhead water or leaks.

These three systems operate symbiotically to provide an extremely high level of protection for all persons coming into contact with the data center. In addition to these three systems, FM-200 is used in the Transport Room because it is the least damaging material and is contained in an air-pressured room.

## Cabling

The Data Center has approximately 130,000 square feet of contiguous raised floor space available. The raised floor is raised 48" above the concrete foundation of the building. The tile dimension is 2'x2'. The floor load bearing rating is 1,500 lbs. per tile or a total of 6,000 lbs. four point load. This provides adequate support for large computer systems and storage units without additional flooring reinforcement. The entire raised floor structure is grounded via the master ground grid.



Conduit systems designed for data center floor are divided into two separate functioning systems. The first system supplies electrical cabling from the Power Distribution Unit to individual data storage space for customers consists of 3/4" shielded flex PVC conduit and is constructed underneath the raised floor system. This is the only conduit cabling allowed under the raised floor, which helps security and stability of power supply to customers. The Data Center adheres to the Newton-based standard ladder racking system for above floor cable management.

## Water

The Data Center uses a water chiller system comprised of dual chilled pipes under the data center floor to handle cooling requirements beyond peak capacity of the data center. We have 500,000 gallons of water on-site and contracts in place for access to water reserves.

## Access Control

Due to the sensitive nature of the data and equipment stored within the Data Center, extensive security planning, design, and implementation processes were completed during the initial construction phase.

All exterior doors have been installed with monitors and alarms to deter and track any aberrant or unauthorized activity. A high percentage of interior doors are protected by biometric badge readers, allowing varying levels of access based on authorization for that area (for example, the Transport Room has *extremely limited access*). Secure doors remaining open more than ten (10) seconds cause an audible and visual alarm to sound alerting Security Officers. All alarms are tracked and analyzed.



Over seventy surveillance cameras continuously monitor the inside and outside premises of the facility. Monitors in a secure and undisclosed area of the facility are digitally recorded and stored in a security library. Real-time monitoring is performed by on-site security. Security management must pass a background check and has combined experience of over 35 years in law enforcement.

The Data Center floor is restricted to authorized personnel and customers only. Authorized individuals must have scan badges and biometric fingerprint recognition. Security Officers patrol the entire facility 24 x 7 x 365 and have specific security points throughout the facility that are checked into the security system at specific and regular timeframes. All equipment entering or leaving the facility must do so through Single Point of Entry and is recorded by the security team. Customers do not have access beneath the raised floor. If a customer requires access, Data Center personnel will provide and supervise the access.