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DATA CENTER SPECIFICATIONS

The SMI Data Vault servers are located in a secure enterprise-grade datacenter located in Atlanta, GA. This facility has 99.999% reliability and features the following:

Security

- State of the art data center ID system and security including video surveillance and recording.
- All entrances to the data center have biometric scanning in combination with card key to prevent unauthorized access.
- 10 foot razor fence and armed security guards 24/7/365.

Power

- 4 Main, State of the art, UPS Systems
- 3 Generators with in- ground 5000 gallon fuel tanks to ensure power if there is an outage. Each is rated 1.5 megawatt and 800 KVA.
- A connection to the most reliable power grid in the state of Georgia through quad vaults on 4 feeds. This grid protects the main hospital in Atlanta so it is on a last outage program for critical services and was extensively upgraded for the Olympics. For the last 5 years the generators have only been used for testing.

Environmental Controls

- Eight 22-ton Redundant Liebert Air systems providing consistent temperature and humidity range in the datacenter.
- Continual environmental monitoring in each cabinet and through the data center, with threshold alarms providing early warning of anomalous conditions.

Network

- Redundant Cisco BGP routing and switching infrastructure with cold spares on site. If equipment failure occurs, there is no interruption of service.
- 10 Gig Metro Ethernet ring for the core routing. Dual feeds of all aggregation routers ensure 100% uptime - some of the best in the business.
- Avaya ANS BGP management system optimizing the routes on the 6 gig network in real time, 7000 times per minute based upon trace route performance, to ensure that our servers have the highest performance routing.
- State of the art monitoring system for all devices with instant failure notification.
- 6 backbone providers who are publicly peered with 12 providers including Earthlink. Our current network consists of Gigabit links to Abovenet, XO, PCC-BTN, SAVVIS, Telia, Level 3 and the Atlanta Internet Exchange public peering point. The Network depends on a few large pipes from

quality providers to handle spikes in traffic and the occasional Denial of Service attack as well as unknown traffic patterns in the case of a primary link failure. The network minimum Internet backbone connection is a 1 Gig pipe.

ENVIRONMENTAL AWARENESS

When data centers were first being built, nobody really thought much about things like energy efficiency and environmental impact. But we're helping to change that. While servers and storage still require a significant power supply of electricity, a carefully maintained indoor environment, and fail-safe backup systems, we're developing new ways to do it all in a more sustainable way.

When Bigger is Not Better

The temptation for any successful organization is to build the largest, most impressive structure you can afford. But according to the Leadership in Energy and Environmental Design (LEED) Green Building Rating System, developed by the U.S. Green Building Council, the less material you use in the construction of your building the better. We've built our Data Center with a minimum of materials that are not required for effective operation. A grand entryway may be impressive to a few clients, but the more drywall, marble and paint that goes into a facility the more energy is required to make and install those materials. And using more materials also results in more volatile organic compound being produced in the manufacturing of the materials. It also takes energy to transport these materials, which, along with their byproducts, end up in our landfills.

Keeping Cool and Still Using Less

Heat Pumps to Recycle Data Center BTUs

It doesn't take many computers to generate a lot of heat, but it's important to their stability that they run in a carefully controlled climate. Many data centers use additional gas or electricity to heat and cool the non-data portions of their facilities. But we're implementing heat pumps that utilize the heat from the data center to heat the offices and generator rooms in the winter and utilize the data centers highly efficient cooling towers to provide cooling to the offices in the summer. This not only saves us money on burning gas or electricity to heat the space, but is more environmentally friendly. Our use of well water for the cooling towers also provides geothermal heat removal since all the water being input to the towers is from the earth at a constant 55 degrees Fahrenheit which removes BTUs from the water and building naturally.



An A/C Unit Cooling the Server Area

Geothermal Cooling

Another cooling resource we're exploring is the use of well water in an outside cooling tower. As mentioned above it gives us natural BTU removal through geothermal cooling but it also gives us a big savings in water replacement and reduces the amount of electricity needed to distribute city water over long distances and the harmful chemicals used in its treatment for drinking purification, as well conserves potable water in the city's watershed.

Air to Air Heat Exchange

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Optimizing Pumps and Fans for Better Efficiency

Under the old way of designing a cooling system, you'd hire an engineering to come in and do a Doppler flow study on your water distribution pipes to make sure that the pumps when running at full speed were providing enough gallons per minute to your air conditioning units to remove enough BTUs from the air. Then you would manually adjust flow restricting valves that would "balance" your system to the proper amount. This is highly inefficient because pumps running at 100% are using most of their energy to achieve the last 30% of the motor curve. Also, when the amount of water the pump is able to move is restricted, it works harder, uses more energy, and reduces its effective life.



Water Pumps Fueling the A/C Units

State of the Art VFD and Computer Optimizing Systems

To avoid wasting this energy we use Variable Frequency Drives (VFDs) on our air conditioning pumps and fans. A VFD will provide the right amount of electricity so the motor can operate in the most efficient manner. It's not working harder just smarter.

We're also cutting energy usage on the cooling fans on our water chillers. They used to be run by a sensor that would turn them on or off at a certain water temperature. This meant that the motors were constantly cycling on and off. A large amount of current is required for a startup and as the motor ran a full capacity it was wasting half of its input energy.

Now our building computer monitors the water temperature. And by using VFD's to control the speed of the fans, they run efficiently all the time, avoiding the startup draw and doing a better job of maintaining a constant temperature. Again, this saves money on power cost and on equipment wear and tear.

How Backup Generators Can Do Better On Their Tests

Every data center has to have backup power generators, which run on natural gas or diesel, and these generators must be tested on a regular basis to make sure they're fully functional should a catastrophic power outage occur. But until recently, all the electricity created by the generators was wasted. We test our backup generators "under load," meaning we actually run our Data Center on the power they generate. This not only saves electricity but give us a better idea of how they perform in a real power emergency. The generator manufacturers recommend testing them under load but few data centers choose to do this. We save 250 gallons of diesel per month from needless exhaust into the environment – or 3000 gallons per year.



Backup Power Generators

Cutting Needless Packaging By Up To 66%

Because we're constantly upgrading, we receive a steady stream of new equipment and supplies. Unfortunately, it's not readily recyclable in most areas and a huge amount of "filler" ends up in landfills. To cut down on needless packing materials, we've requested that our suppliers ship our new equipment to us in bulk packaging when possible.



And Recycling Just About Everything

We recycle all of our cardboard, metals and our old computers. Nothing goes to landfills except non recyclable garbage.

We're serious about our commitment to the environment. As a customer, you can be sure that we're doing our best to be Atlanta's least wasteful, most energy efficient Data Center.

