

echoMountain - Rock Solid™



## World Class Data Center Features

Our best practices for world class performance,  
reliability and service



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## Best-Practices Protection™ Services



EchoMountain adheres to Cisco® Powered Network Program's criteria and checklists for Data Center Best Practices for stringent performance and service requirements. There are four objectives for meeting these high performance objectives: Security, availability, scalability, and management.

Please visit:

[http://www.cisco.com/application/pdf/en/us/guest/netso/ns206/c654/cdccont\\_0900aecd80122977.pdf](http://www.cisco.com/application/pdf/en/us/guest/netso/ns206/c654/cdccont_0900aecd80122977.pdf)

For more information on Cisco Powered Network Program Data Center Best Practices Checklist.

### CCTV Digital Recorders



All aspects of our data center are monitored and recorded via color, hi-resolution digital cameras:

- CCTV digital camera coverage of entire data center, including cages, with archival system.
- CCTV integrated with access control and alarm system.
- Motion-detection for lighting and CCTV coverage.

### Redundant and Precise HVAC Systems



Air control is critical in maintaining reliable, fast, and efficient performance for our client's enterprise server equipment. To create the right environment, Our data centers are fitted with a comprehensive HVAC system that delivers constant, ideal air conditions. With our universal policy of N+1 redundancy, each and every data center contains a constant, cool environment that is conducive to our client's mission-critical servers and operations.

To provide optimum conditions for server operation and minimize downtime due to server failure, the HVAC system provides appropriate airflow, temperature and humidity. Redundancy features provide additional protection for our client's mission critical operations. Air-cooled package chillers arranged in N+1 redundancy configuration and backed up by generator supply is adopted to provide round-the-clock chilled water supply to the precision air conditioner units throughout the data center.

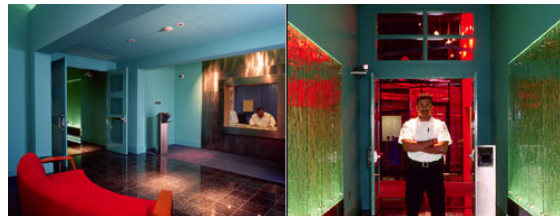
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### 24x7x365 Onsite Security



Our data center is staffed with 24-hour security officers to augment the physical security features of the data center, providing financial-grade protection of your mission-critical Internet operations. Visitors are screened upon entry to verify their identity with a valid government-issued form of identification and escorted to their destinations by security staff personnel. All access history is recorded for audit by clients, as needed.

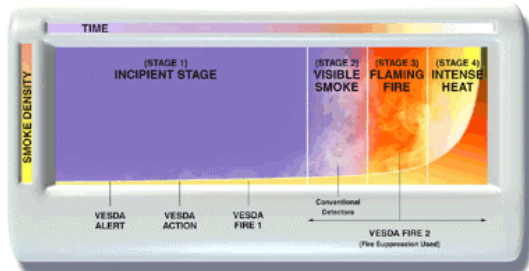
A fully monitored "mantrap" separates the welcome lobby area from the main lobby of the data center. The shipping and receiving area are walled off from the colocation area making the mantrap the only accessible entryway into the colocation area. All access points in the data center are controlled and monitored with biometric hand scanners and CCTV cameras.

In addition, our data center has:

- 24x7x365 onsite security
- Silent alarm and automatic notification of appropriate law enforcement officials protect all exterior entrances.
- Motion-detection for lighting and CCTV coverage.
- All equipment personal items checked upon arrival before entry into data center.
- All exterior walls are bullet resistant with Kevlar wrapping.

## Very Early Smoke Detection Apparatus (VESDA)

All fires have four stages: Incipient (pre-combustion), Visible Smoke, Flaming Fire, and Intense Heat. This chart shows the progression of fire over a time period.



Note that the incipient stage of smoldering fires provides the widest window of opportunity to detect and control the spread of fire. VESDA smoke detectors are configured to generate multiple alarms within this window, to provide the time needed to help minimize or prevent fire loss.

The smoke signature detection system constantly monitors the data center for specific events and can pinpoint the physical location of an event immediately upon detection.

Benefits include:

- Earliest possible warning of a potential fire, ensuring the most reliable protection of assets and property.
- The world's most reliable early warning smoke detection system, avoiding the occurrence of nuisance alarms.

## State-of-the-Art Fire Suppression



A state-of-the-art fire suppression system constantly monitors the physical environment for smoke, chemicals and other hazardous materials that might spark a fire. Our data centers use a dual-interlock pre-action sprinkler system throughout the facilities. These pipes are dry - filled with compressed air - until two alarm conditions are reached thereby releasing the valve to charge the system. Water is only released in the area when a sprinkler head has lost its seal, or is actuated, due to heat, AND the fire detection system has detected a fire condition. If a head is accidentally knocked off, water does not flow into the system. Any water discharged will be sprinkler-head specific, which will limit the potential for damage caused by over-spray.

Multi-zoned, dry pipe, water-based fire suppression system with sensory mechanisms (sniffers) to sample air and provide alarms prior to pressurization. Dual alarm (heat and/or smoke) activation necessary for water pressurization of system. Water only enters the fire suppression system in the event of two cross-zone alarms, and will only disperse in the event of a broken or melted sprinkler-head. Any water discharge will be sprinkler-head specific, which will limit the potential for damage caused by over-spray.

Our data centers are protected with a dual-alarmed, dual-interlock multi-zoned, dry-pipe, water-based fire suppression system armed with sensory mechanisms (HSSD) to sample the air and give alarms prior to pressurization. Production area fire suppression is provided by a multi-zoned, pre-action, dry-pipe system. In order for the system to trip, multiple cross-linked events must occur. These include detection by ceiling mounted smokeheads and smoke "sniffers" located throughout the facility. Lastly a sprinkler head must trip in order for the dry-pipe system to activate. This requires a temperature of 140 degrees F at the head location. Fire suppression is localized at the event point only."

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## Network Diversity and Performance

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Our network has been engineered from the ground up to accommodate the high-availability demands of the mission-critical systems we manage. Our Cisco-powered, Zero-Downtime Network has unique self-healing attributes that allow us to deliver a near 100% infrastructure availability guarantee. The resulting architecture is redundant in every element, from edge routers to core switches. In the event that one of these components should fail, the redundant network device will pick up the functionality without interruption of service.

Our network architecture utilizes redundant high-performance Foundry Network BigIron routing switches connected to our backbone providers. These routing switches provide high availability features for maximum network uptime by providing carrier class reliability and redundancy. These switches provide wire-speed non-blocking core performance with a maximum total switching capacity of 480 Gbps that power a world class network, delivering more than 100 times the performance of today's switches and routers.

Our network is fully meshed and redundant with 8 premium backbone providers using Border Gateway Protocol (BGP) from multiple diverse routes:

- AT&T
- UUNET
- Sprint
- Savvis
- Verio
- Level(3) Communications
- Global Crossings
- Williams

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## Gigabit VLAN Customer Network Layer

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Our customer network layer utilizes multiple redundant Cisco 3845 Integrated Services Routers that provide best-in-class routing with integrated security services such as firewall, VPN, and Intrusion Protection, all at wire speeds. Most colocation providers do not include firewall, VPN and Intrusion Detection and Protection services as part of their customer network layer.

Our internal network utilizes redundant Gigabit HP ProCurve 2848 Switches supporting Hot Standby Routing Protocol (HSRP) which provides automatic router backup and 100% uptime SLA. Each customer server with dual network ports is connected to separate HP ProCurve 2848 switches, which in turn, are connected to separate Cisco 3848 routers, providing full IP routing redundancy.

Each customer is provisioned a separate VLAN providing traffic isolation and security.

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## Network Security Infrastructure

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EchoMountain employs Cisco's Self-Defending Network utilizing Cisco Integrated Services Routers in a redundant configuration on each network segment. Unlike other providers who simply connect your equipment directly to the internet, EchoMountain utilizes a network security infrastructure that protects your mission critical servers.

Through the use of 3rd Generation systems from Cisco, our network is protected from Network Denial of Service attacks, Blended threats from worms, viruses, and trojan horses, Turbo worms and widespread system hacking.

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## Cisco IOS Firewall Services

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All clients are protected behind our Cisco IOS Firewall, a stateful inspection firewall. The firewall protects the perimeter of the EchoMountain network. Clients have the option of adding additional firewall equipment within their own VLAN.

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## VPN Connectivity

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Our clients are able to connect to their server equipment through VPN Tunneling and Encryption. Our redundant, high performance VPN hardware which is embedded into the integrated services routers provide performance up to four times faster than standard VPN tunnels. Standard support is provided for software remote access clients using Cisco VPN Software Client for PCs, Macs and UNIX systems at no additional cost. Load balanced and fault tolerant VPN concentrators provide automatic distribution of load across multiple VPN servers.

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## Cisco Intrusion Detection and Prevention Systems

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EchoMountain utilizes Cisco's Intrusion Prevention System (IPS) as an in-line deep-packet, inspection-based solution that helps enable Cisco IOS Software to effectively mitigate network attacks. The IPS can drop traffic, send an alarm, or reset the connection, which enables the router to respond immediately to security threats and protect the network. Our IPS configuration protects against "most-likely" worm and attack signatures. Traffic matching these high confidence-rated worm and attack signatures which are configured to be dropped.

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## Virtual LANS

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VLANs are used to increase the security of EchoMountain's network environment. EchoMountain utilizes Layer 2 (L2) switches from HP supporting Virtual LANS or VLANs. VLANs have the ability to provide additional security in a network environment. Client network traffic is isolated within their VLAN allowing no other client to see other clients network traffic.

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## Physical Access

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Mission-critical Internet operations require the highest-level security features, and our data center delivers multi-level physical security. All areas of the center are monitored and recorded using CCTV, and all access points are controlled. The data center is staffed with 24-hour security officers to augment physical security features, providing financial grade protection of your mission-critical Internet operations. Visitors are screened upon entry to verify their identity, are escorted to their appropriate locations. Access history is recorded for audit by clients, as needed.

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### Biometric Hand Geometry Readers

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A combination of hundreds of biometric hand geometry readers are utilized, an encrypted database and visual confirmation ensure that only authorized personnel have appropriate access to our data center. Using Recognition Systems, Inc's Handkey® II Access Control Reader, echoMountain has incorporated proven, biometric technology within the framework of the data center's security system. Because authorized personnel must pass through biometric hand scanners at every access point, echoMountain is able to keep track of where and when someone has entered and exited a room or cage. Our data center has a comprehensive system where our security personnel has complete knowledge of all individuals in the data center, their whereabouts, and activities.

Our biometric hand geometry readers required pass code for access to specific areas. All authorized personnel are required to use a geometry reader to:

- Enter the "man trap" from the welcome area. The main center can only be entered through this "man trap".
- Leave the "man trap" and enter the main computer room.
- Enter each cage containing rack systems where client servers are placed.

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### Enterprise-Class Rack Systems

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Our client's servers are placed HP 10000 Series Racks. These enterprise-class rack systems combines next-generation structural integrity, rack cooling, cable management, and rack security to deliver industry leading rack security and performance.



Security Provisions – Front and rear doors are locked, which provides the necessary level of security to prevent unauthorized entry. Side panels are also locked, allowing for our entire rack rows to be secure.

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## Physical Structure

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Every feature of our data center is designed to support and protect mission-critical internet operations. Our data center design utilizes industry best-practices for quality. Our data center maintains the most rigorous ongoing maintenance routine in the industry.

All elements of the structure – building shell, exterior, floors and roof – meet or surpass local building codes and standards.

- Building shell: location-dependent seismic compliance
- Exterior: fully anonymous, no signage outside. Exterior walls tightly sealed; No windows.
- Floor: no post tension or pre-stressed slabs
- All exterior walls are bullet resistant.
- Perimeter bounded by concrete bollards/planters.
- Shipping and receiving area walled off from colocation areas.

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### Flood Control

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Built above sea-level with no basements, tightly sealed conduits, moisture barriers on exterior walls, and dedicated pump rooms; drainage/evacuation systems; moisture detection sensors. Our Data Center is certified as not being located in a 100-year flood plain. Flood sensors and monitoring in critical areas.

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### Earthquake

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Location-specific seismic compliance. Structural systems meet or exceed seismic design requirements of local building codes for lateral seismic design forces. In addition, equipment and nonstructural components, including cabinets, are anchored and braced in accordance with the requirements of the 1997 Uniform Building Code.

Rack systems are secured to the data center floor to prevent tipping over during tremors and earthquakes using a plinth kits.

## Premium Data Center Redundant Power and UPS



Highly reliable power is imperative for critical server operations. Our entire electrical system has built-in redundancy to guarantee continuous operation even during a blackout.

UPS systems prevent power spikes, surges and brownouts while redundant backup diesel generators provide additional fuel to keep the data center powered up in the event that public utility fails. The entire electrical system has built-in redundancy to guarantee continuous operation. The overall system is N+1 redundant, including each component within the parallel electrical systems. The system includes:

- AC raceways with 2N distribution
- AC power delivery via distributed redundant UPS systems
- Batteries with at least 7 minutes full load operation
- Diesel engine generators take roughly 8 seconds to synchronize and assume load;
- 48 hours worth of generator fuel
- Contracts with multiple fuel providers
- Isolation K factor transformers used for 480 volt UPS to 208/120 volt. K factor of K20; 80 degrees Centigrade rise; copper winding, dc system fuse protection; -48 volt delivery via fuse panels; Power filtering in UPS systems.
- Redundant AC power connections to server equipment fed from diverse sources.

The power systems used are designed to meet the diverse needs of clients and are equipped with a level of redundancy that guarantees continuous operation. To ensure that our data center is always operational all the time, a multi-layer power generation system, using the highest grade equipment available, is in place. Conditioned AC and DC power with two independent A & B power buses, respectively, are available to customers. In addition, UPS, battery and diesel generators back up every power system. Every month, the backup diesel generators are tested at full load to make sure they are in proper functioning order in case of power grid failure.

### Enterprise Class Power

Each cabinet is configured with two primary 20 Amp 208V circuits and two redundant 20 Amp 208V circuits, providing 6,656 Watts of primary power to enterprise class servers.

### Mission Critical High Voltage

echoMountain utilizes 208V circuits allowing our client's servers to draw less current at 208V than at 120V. Therefore, your server will run cooler which will reduce the long-term risk of degradation or failure. Each

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receptacle has its own circuit breaker, isolating the load to your server and reducing the chance of a different load tripping your server's breaker.

Power receptacles are locking, using the twist-lock type plug, which reduces the chance of dislodging them. Furthermore, the quality of the contacts in 208V receptacles is generally higher than 120V receptacles, which greatly reduces the chance of intermittent connections.

Technically, 208V is a superior choice for powering computing equipment when compared with 120V due to lower current draw.

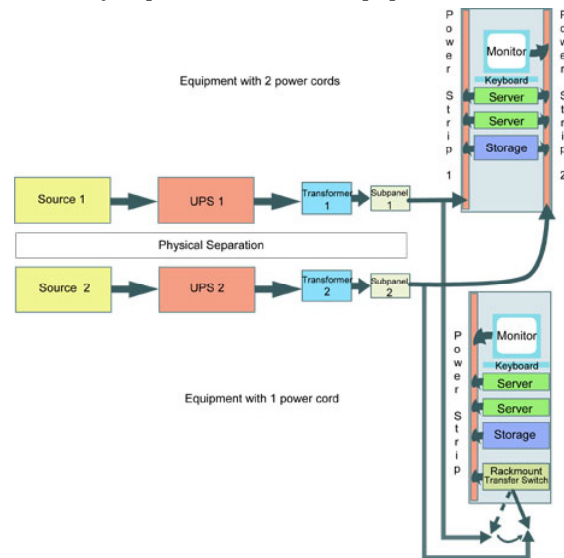
### Multiple Public Power Grids

Multiple physically separate connections to public power grid substations provides additional protection to our data center due to cut or downed power lines.

### Redundant Architecture for Single and Dual Power Supply Servers

Whether your server equipment has a single power supply or redundant power supplies. Each server cabinet utilizes an APC's Rack Automatic Transfer Switches (ATS) which supplies redundant AC power to connected equipment with single power supplies. Two 208V AC lines power each unit and if the primary AC power fails, the unit will automatically switch to the alternate power source.

For servers with redundant power supplies, each corded power supply is connected to a different APC's Switched Rack Power Distribution Units (PDU), providing full redundancy of power distribution equipment as well.



### Remote Power Management

EchoMountain utilizes APC's Switched Rack Power Distribution Units (PDU) that allow our clients to remotely control power to individual outlets allowing the recycle of power to locked-up servers via a web-based interface.