

DATA CENTER OFFERINGS



STORAGETEK

INFORMATION *made* POWERFUL™

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Security

Access doors

- ?? To prevent unauthorized access to the Data Center

Personnel Tracking System

- ?? Constant monitoring of persons and activities in Data Center
- ?? Database Maintenance System that allows for granting and revoking of access privileges

Equipment Tracking System

- ?? Allows for tracking of any adds, relocations, removals or changes to the center or equipment

Overview:

The Data Center is secured by a badge access system. There is one door where all Data Center Traffic is to check in and out. Equipment is moved through a special door that is reserved for Operations and Key Personnel. Access to the Data Center must be approved; access times and reasons are logged for security.

Fire Suppression

Automated Fire Suppression System

- ?? Dry fire suppressant

Yearly System Inspection

Fire Extinguishers

- ?? Fire extinguishers are mounted by doors, and various places in the Data Center

Overview:

The Data Center is protected 24/7 by a dry chemical fire suppression system. This center is integrated with the rest of the facility's fire suppression and security system.

Environmental Conditions

Conditions match Manufacturer Specifications

Temperature and Humidity monitoring

Environmental Systems are Monitored by an automated alert system

Hot and Cold Aisle ways

- ?? Architecture where machines are placed back to back to create a cold aisle way for air intake and a warm aisle way for exhaust

Overview:

Temperature and humidity are measured and monitored by hydrothermographs 24/7. All air conditioning equipment is tied into a Honeywell monitoring system. Security and operations see this monitoring system.

Power Supply

All equipment is fed from an Un-interruptible Power Source (UPS)

- ?? Allows for at least sixty minutes of uptime in the event of a power failure
- ?? Equipment is powered from two different UPS sources to protect equipment
- ?? UPS Systems are on an automated alert system

Power Connections are documented and posted

- ?? All Power Connections are installed in front of the equipment (where possible)
- ?? Power Connection lines are installed in straight lines making 90 degree turns in designated aisle ways

Overview:

The Louisville site itself is powered from two power grids, Louisville and Broomfield. The Data Center is also protected by an active UPS system that allows for at least 60 minutes of uptime. Security and operations monitor the UPS and power systems. Power connections are documented and updated frequently, and meet manufacturer specifications.

Network Connectivity

Network Connectivity provided for all servers and mainframes located in the Data Center

Communications Cabling is installed in the back of equipment (when possible)

- ?? Communications cabling is labeled and documented
- ?? Fiber media is installed in a protective routing system
- ?? Communication lines are installed in straight lines making 90 degree turns in designated aisle ways

Overview:

Communication lines are labeled and documented within the Data Center. Fiber media is installed in protective routing system. Communications lines follow designated pathways.

Proactive Monitoring

PEM (Patrol Explorer Map)

- ?? Patrol agent monitors critical infrastructure components
- ?? Monitored 24/7 by Operations
- ?? Patrol Software notifies Operations of warnings and alerts
- ?? Alerts Data Center to abnormalities in Server, Application, Database and Network processes

HP Openview

- ?? Monitors server to network connectivity

Site Angel

- ?? Detailed monitoring of website performance and availability

Overview:

Proactive monitoring catches problems before they reach the critical stage. All servers, software, databases, networks and websites are monitored 24/7. This active monitoring provides excellent reliability.

Business Continuity

Mirrored Disk Redundancy

- ?? Identical disks stored in separate areas to insure the safety of critical data

Emergency response team and process

Documented Recovery Plans

- ?? Processes already in place to ensure timely restoration

Security

- ?? Both physical and electronic blocks to ensure that only authorized users have access to data

Tiered Business Continuity Offerings

- ?? Business Continuity Offerings that fit your needs and your budget

Fail-Over Servers

- ?? Identical servers that ensure critical systems have redundancy in place

Virus Control

- ?? Quarantine and clean infected areas while preventing damage to other systems
- ?? Regular updates to virus scan patterns
- ?? Multiple layer and vendor virus protection

Overview:

Business continuity gives security and peace of mind to customers who rely on critical data. The IS Data Center offers disaster recovery processes, effective data security and back up to protect vital data. There is also a Business Continuity hot-site to be opened in the Fall of 2001.

Capacity Planning

Identify needs for new software applications and growth requirements

- ?? Determine server capacity needs
- ?? Determine disk requirements
- ?? Confer with software designers, database managers and systems administrators to determine system specifications to run the application
- ?? Engineers then configure servers and disks to specifications
- ?? Knowledge of mainframe, SAP, SUN and HP UNIX

Application Performance Modeling

- ?? Loadrunner and Application Expert
- ?? Both of these tools simulate transaction workloads on servers

Overview:

Capacity planning ensures that StorageTek's products are affordable high performance solutions. Capacity planning offers the technical knowledge and support to design and implement new software and systems.

Client-Server Maintenance and Support

System design and installation

- ?? Technical architecture
- ?? Hardware platforms: HP, Sun, Compaq
- ?? Operating Systems: NT, HP/Unix, Solaris, Linux

24/7 Support

Systems Administrators

- ?? Maintain the server environment

Web Support

- ?? Maintain Web Infrastructure

Data Moves

- ?? Execute data migrations for server upgrades and downtimes

Overview:

Systems Administrators and Systems Engineers configure and maintain all StorageTek servers, Operating Systems, storage devices and associated applications.

Mainframe Project Development and Support

Environment for Development

- ?? OS/390, Z05 and VM support
- ?? Raised floor with 10 functioning mainframe CPUs
- ?? Labs designed to test tape, virtual tape and disk products

Environments for testing

- ?? Recreate specific environments to test in production environments

System Engineering Support

- ?? Raised floor to recreate environments for customer sites
- ?? Dedicated Systems Engineer for each business group
 - ?? Identify customer needs, recommend appropriate components and configure products to meet customer's needs

Overview:

Computing Services has 11 total mainframe CPUs. 10 are used for development and one is used for Production. The Engineering Computing Center's labs are designed to test tape, virtual tape and disk products. Computing Services also handles some product education requirements for StorageTek. Systems Engineers design and configure solutions tailored to individual customer needs.

Change Management

Coordinate and schedule changes

- ?? Changes made to any system including: hardware, software, application, database, network or environmental in the IS Data Center are scheduled to minimize service interruption
- ?? Allows for proper notification to customers and key stakeholders so their processes will not be interrupted

Back-out Plans

- ?? Scheduling requires an effective back out plan in case something goes wrong

Overview:

The Change Management program is a balance that makes sure that everyone who will be affected by an outage or major change knows that it will occur. Planning also allows for the smallest impact on worker productivity.

Preliminary Customer Assessment (PCA)

Beginning of Product Development Cycle

- ?? Provides input on customer needs for a proposed idea
- ?? Gives insight into the Business Group's strategy and direction

Review Panel to follow an idea through various points of development

- ?? Idea is presented to IS Business and Technical personnel
 - ?? Presentation includes financials, architecture and value proposition
- ?? Review an idea and offer constructive input

Written reviews of idea and presentations

- ?? Includes possible Data Center financial savings and product integrations

Overview:

The PCA team monitors a product idea through the development process. A review panel provides written assessments on value, functionality and architecture. The PCA team maintains StorageTek's commitment to excellence by ensuring that each project is monitored and improved wherever possible.

External Product Evaluation Testing (EPE)

Final Phase of product testing before the product is sent to customers.

- ?? Testing product in a real world environment
- ?? "Customer View" for proposed enhancements and new products/solutions
- ?? Provide customer requirements to designers
- ?? Documented product feedback and recommendations
- ?? Discover, report and help debug problems

- ?? Verify product functionality
- ?? Validate Performance
- ✍✍ **Showcase StorageTek Products/Solutions**
- ?? Maintains the “Use What We Sell” philosophy

Overview:

IS provides EPE testing as the final phase of internal testing. EPE is the first simulated production environment. The goal is for IS to experience new product pain/gain prior to the external customer. EPE also gives StorageTek the ability to showcase new products during customer Data Center tours.

Storage Management

- ✍✍ **Provide all disk and tape services**
- ✍✍ **World Class Storage Area Network deployed for disk environment**
 - ?? Allows non-disruptive growth
 - ?? Removes storage traffic from the LAN
- ✍✍ **Backups**
 - ?? Full Backups on tape every two weeks
 - ?? Incremental tape backups daily
 - ?? Remote backups
- ✍✍ **Restoration**
 - ?? Vital software and data stored to disk can be quickly restored
- ✍✍ **StorageTek is contracted with Arcus Vaulting Services**
 - ?? Tapes are stored in fireproof cases in a secure site
 - ?? If something were to happen to the StorageTek campus all critical data would be safe with Arcus

Overview:

Storage Management is designed to store critical data without any interruption. Backups, SAN and Arcus Vaulting Services ensure that data is securely stored in different locations, retrievable and can be quickly restored in the event of an emergency.