Documentation on Network Security

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## Organization

DataHaven is a medium-sized company that provides data management and storage solutions to businesses of all sizes. Founded in 2009, DataHaven has grown steadily over the past decade, earning a reputation for its expertise in data security, reliability, and scalability.

## Organizational Structure

DataHaven's organizational structure is designed to support its mission of providing secure, reliable, and scalable data management and storage solutions to businesses of all sizes. The company's structure is divided into three main divisions:

* Operations: The Operations division is responsible for the day-to-day management of DataHaven's data centers, including physical security, equipment maintenance, and disaster recovery.
* Technology: The Technology division is responsible for developing and maintaining DataHaven's data management and storage platforms. The division also includes teams of engineers and scientists who are responsible for research and development, security, and compliance.
* Sales and Marketing: The Sales and Marketing division is responsible for generating leads, developing relationships with potential clients, and closing deals. The division also includes teams of marketing professionals who are responsible for creating and executing marketing campaigns.

## Organizational Functions

DataHaven offers a comprehensive suite of data management and storage services, including:

* Data Migration: DataHaven helps businesses migrate their data from legacy systems to modern cloud-based platforms.
* Data Warehousing: DataHaven provides secure and scalable data warehousing solutions for businesses of all sizes.
* Data Analytics: DataHaven offers a variety of data analytics services, including data cleansing, data transformation, and data visualization.
* Data Security: DataHaven is committed to protecting its clients' data with state-of-the-art security measures.
* Data Governance: DataHaven helps businesses establish and implement data governance policies and procedures.

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## Security requirements

As this company is involved in handling data storage, data management, handling and tracking of customer data, etc, the company must withhold important physical and technical security measures including:

* Implementing physical access controls to restrict entry to authorized personnel only. This may include security guards, access badges, mantrap doors, and video surveillance.
* Designating secure areas for storing sensitive data and equipment. These areas should be protected from environmental hazards, such as fire, flood, and power outages.
* Encrypting sensitive data at rest and in transit to protect it from unauthorized access. Use strong encryption algorithms and manage encryption keys securely.
* Implementing network security measures to protect against unauthorized access, malware, and other cyberattacks. This may include firewalls, intrusion detection/prevention systems (IDS/IPS), and network segmentation.

## Features and Capabilities of Networking Technologies

DataHaven, as a leading provider of data management and storage solutions, relies heavily on networking technologies to ensure the secure, reliable, and scalable transmission of data for its clients. The company employs a range of networking technologies and capabilities to support its operations and deliver exceptional service to its customers.

Key Features of DataHaven's Networking Technologies

1. High-Speed Data Transmission: DataHaven utilizes high-speed fiber optic cables and cutting-edge network equipment to facilitate the rapid transfer of large volumes of data between its data centers and client networks.
2. Redundant Network Architecture: DataHaven employs a redundant network architecture to ensure continuous connectivity and minimize downtime. This includes multiple network paths, backup routers, and failover mechanisms to maintain service even in the event of hardware failures or network disruptions.
3. Advanced Routing and Traffic Management: DataHaven implements sophisticated routing protocols and traffic management techniques to optimize network performance and minimize latency. This ensures that data is transmitted efficiently and delivered to clients with minimal delays.
4. Comprehensive Security Measures: DataHaven employs a comprehensive suite of security measures to protect its clients' data from unauthorized access, modification, or destruction. This includes firewalls, intrusion detection and prevention systems (IDS/IPS), and encryption protocols.

## Data security risks

Being that DataHaven handles important data for third-party companies, it faces a number of data security risks. These risks can be categorized into three main areas:

* Data breaches: These threats are the most common ones. Data breaches are the unauthorized access and/or disclosure of confidential information or private data. Data breaches can be caused by malicious actors exploiting vulnerabilities in systems or applications, as well as human errors such as accidental disclosure of sensitive data. (Tran, 2023)
* Unauthorized access: Unauthorized access refers to individuals gaining access to an organization’s data, networks, endpoints, applications or devices, without permission. It is closely related to authentication – a process that verifies a user’s identity when they access a system. Broken, or misconfigured authentication mechanisms are a main cause of access by unauthorized parties. (cynet, 2019)
* Data loss: Data loss have many causes most of which are by a hard drive crash or system failure (Gillis, 2023)
* Denial-of-Service (DoS): A denial-of-service (DoS) attack is a cyberattack that attempts to keep the authorized users of a device or network from using that device or network. DoS attacks use two primary strategies to accomplish that goal. The first — and most popular — strategy is flooding: overwhelming a device or network with traffic. The second strategy is crashing services: exploiting weaknesses in the device or network’s security in order to cause it to shut down. (BYOS, 2023)

## Data Security Measures and Prevention

Here are some recommendations for companies that handle important data for third-party companies:

* Data breaches: Access control measures, regular audits, and security assessments should be put in place to safeguard your data and prevent data breaches from happening. Organizations should also implement access policies and enforce the principle of least privilege as providing access to sensitive data. Additionally, they should use encryption technologies for data-in-transit and account for regular backups in case of data loss. (Tran, 2023)
* Unauthorized access:

1. Strong Password Policy—Enforce best practices for user passwords—force users to select long passwords including letters, numbers and special characters, and change passwords frequently. Educate users to avoid using terms that can be guessed in a brute force attack, inform them about routine password updating, and to tell them to avoid sharing passwords across systems.
2. Two Factor Authentication (2FA)—One of the best ways to prevent unauthorized access in your organization is to supplement knowledge-based factors with additional authentication methods:

* Possession factors — authentication via objects possessed by the user. For example, a mobile phone, a security token or a physical card.
* Inherence factors — authentication via something the user is or has. This includes biometric authentication using fingerprints, iris scans or voice recognition. (cynet, 2019)
* Data Loss: A Data Loss Prevention (DLP) Policy is a set of rules and regulations that an organization has in place in order to protect the company’s assets from unauthorized access or use. A Data Loss Prevention policy will typically cover what types of information are considered confidential, and how that information should be protected. Data Loss Prevention can be used to protect personally identifiable information (PII), internal information such as employee records and financial documents, intellectual property (IP), and more. The policy may also include requirements for encrypting certain types of data when it is stored outside of the company’s premises. (Murphy, 2023)
* Denial-of-Service (DoS): Preventing a DoS attack can be challenging, but there are several effective techniques: Preventing a DoS attack can be challenging, but there are several effective techniques

1. **Network segmentation** - Segmenting networks into smaller, more manageable pieces, can limit the impact of a DoS attack. This can be done by creating VLANs, and firewalls can limit the spread of an attack.
2. **Load balancing** - Distributing traffic across multiple servers, a DoS attack can be prevented from overwhelming a single server or resource. Load balancing can be achieved using hardware or software solutions.
3. **IP blocking** - Blocking traffic from known or suspected malicious sources can prevent DoS traffic from reaching its target.
4. **Rate limiting** - Limiting the rate of traffic to reach a server or resource can prevent a DoS attack from overwhelming it.
5. **Content Delivery Networks (CDNs)** - Distributing website content across multiple locations makes it more difficult for an attack to bring down an entire site.

## Conclusion

As the organization handles a large amount of important data, upholding preventative measures for data security risks are very important

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