

Data Storage in the Cloud

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Outline

- Describe cloud-based storage solution
- Describe cloud-based databases
- Pros and Cons
- Case studies

Evolution of Network Storage

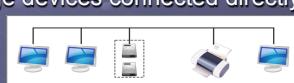
File server



- Server with large disk capacity
- Sharing, replication and storage large files

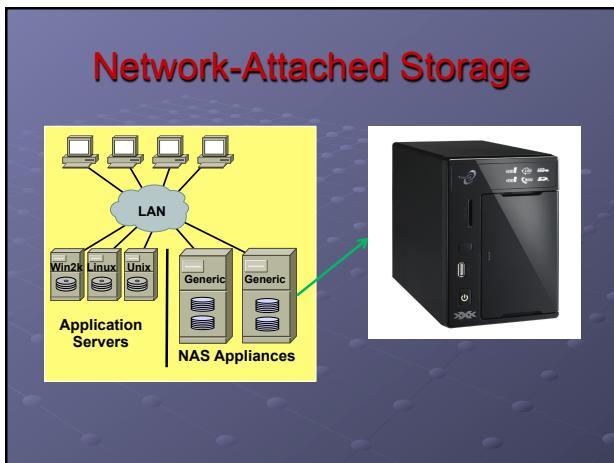
Storage-area networks (SAN)

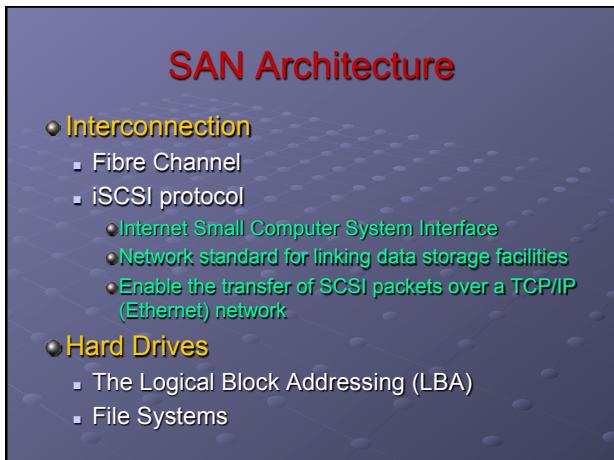
- Storage devices connected directly to network

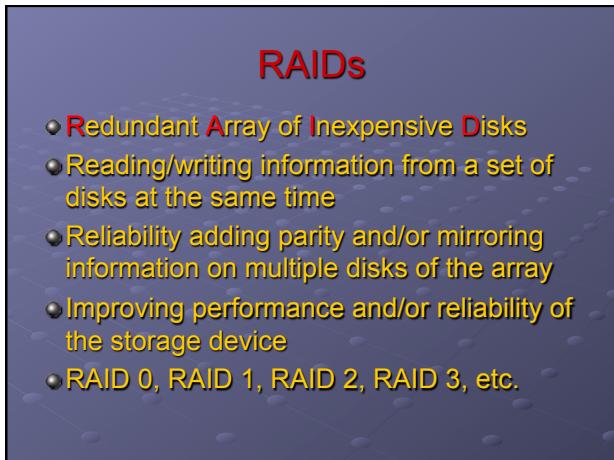


- Network-attached storage (NAS)

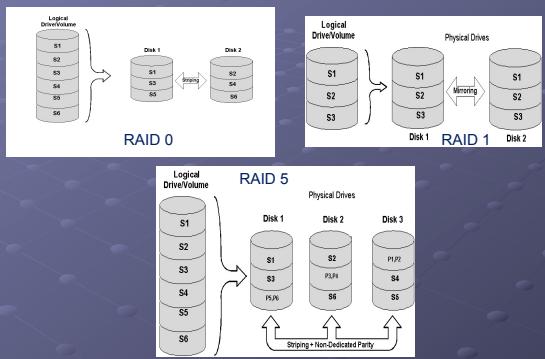
Cloud-based Data Storage







Examples of RAIDs



Advantages of SANs

- **Reliability**
 - Data striping across multiple volumes
 - Reconstruction of the file content
 - **Performance**
 - Less system overhead
 - **Compatibility**
 - Support common file systems
 - **Ease of performing backups**

Cloud-Based Data Storage

- Data storage resides in the cloud
 - Data Access
 - Web browser interface
 - Mounted disk drive:
 - appear locally
 - Set of API calls
 - Examples
 - Dropbox, SkyDrive, ZumoDrive, HomePipe, etc.

Examples

Company	Price	Storage	Cloud Storage Features
justcloud.com	\$3.95	Unlimited	Speed Support
livedrive	\$6.00	Unlimited	Speed Support
CBAD PLAN	\$9.00	Unlimited	Speed Support
zip cloud	\$4.95	250GB	Speed Support
SugarSync	\$7.49	60GB	Speed Support
SOS	\$9.99	100GB	Speed Support
mozy	\$5.99	50GB	Speed Support
CARBONITE	\$4.99	Unlimited	Speed Support
Dropbox	\$9.99	100GB	Speed Support
HIGHTAIL	\$15.99	Unlimited	Speed Support

JustCloud

- Unlimited Cloud Storage
- Access Files Anywhere
- Sync Multiple Computers
- Share files
- Sync Folder, Backup file
- Data Security: 256-bit
- Mobile Apps, Tracking ...
- Free Account: 15Mb storage, 50 files, 14 days
- Personal, Business accounts

Carbonite

- Unlimited Cloud Storage
- Access Files Anywhere, Sync Multiple Computers
- Share files, Sync Folder, Backup file
- Data Security: 128-bit
- Free Account: 15days
- Personal, Pro, Server

Choose the Server Pro Bundle for the ultimate protection.

The Server Pro Bundle combines all the great features you'd find in a Pro plan, with the added benefit of enterprise-level server protection. This plan starts with 500 GB of cloud storage for your servers, databases, live websites, and multiple computers. And if you ever need additional space, you can add it at any time.

Protect an unlimited number of:

- Microsoft SQL Server 2000, 2005, 2008 and 2012
- Microsoft Exchange Server 2003, 2007 and 2010
- Microsoft SharePoint 2003, 2007, MOSS 2007, MOSS 2010
- MySQL Server 5.5
- Oracle Server 10g, 11g & 11g
- HyperV Server 2008, 2012
- Windows System State
- Windows NTFS & ReFS files and folders

Advantages of using Cloud-Based Data Storage

- **Scalability**
 - Scale storage capacity (up or down)
- **Pay for use**
- **Reliability**
 - Transparent data replication
- **Ease of access**
 - Support web-based access
- **Ease of use**
 - Remote file storage area -> logical drive

Disadvantages of using Cloud-Based Data Storage

- **Performance**
 - Data accessed over the Internet
- **Security**
 - Data in the cloud?
 - -> encrypt the files, (BoxCryptor)
- **Data orphans**
 - Abandon data in cloud storage facilities -> confidential data at risk

Cloud-based Backup Systems

- **File are backup**
 - Encrypted format
- **Scheduling**
 - When backup operations are to occur
- **Retrieving**
 - Retrieving backup files easily
- **Support multi platforms**

Industry-Specific: Example

- Different data storage and access requirements
- Healthcare Industry
 - Secure electronic medical records
- Solutions
 - MS HealthVault:
 - Store medical records, prescriptions, measurements
 - Share to GP, healthcare personnel, family members
 - Set an expiration date

Understanding File Systems

- OS File systems (FS)
 - Handling storage, retrieval of files to/from a local disk
 - File operations: copy, delete, create, move,...
- Network File Systems (NFS)
 - Handling files residing on devices across network
- Cloud File Systems (CFS)
 - Handling files resided on the cloud

Network File System

Distributed file system

