CS 240 Computer Systems

#21: Data Storage, IaaS, PaaS, SaaS, and AWS

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Wade Fagen-Ulmschneider

Data Storage
Central to almost all cloud applications is data and there are many solutions to data storage available.

[Option 1]: In-Memory Storage
Idea:

Advantages:

Disadvantages:

Examples of Use:

[Option 2]: File-Backed Disk Storage
Idea:

Advantages:

Disadvantages:

Examples of Use:

[Option 3]: Key-Value Stores
Idea:

Advantages:

Disadvantages:

[Option 4]: Document Store ("NoSQL" Databases)
Idea:

Advantages:

Disadvantages:

[Option 5]: Relational Database
Idea:

Advantages:

Disadvantages:

[Other Options]: Specialized Data Stores

X as a Service
As you develop apps and tools, you will have to make design decisions on what platforms to manage yourself. There are four traditional layers of abstraction you can design around:

1.

2.

3.

4.

	IaaS	**PaaS**	**SaaS**
Apps			
Data			
Libraries/Binaries			
OS			
Virtualization			
Storage			
Networking			
Hardware			

AWS and GCP Services
[Amazon EC2] ⇔ [Google Compute Engine / App Engine]:

[Amazon S3] ⇔ [Google Cloud Storage]:

[Amazon ElastiCache] ⇔ [Google Memorystore]:

[Amazon DocumentDB] ⇔ [Google Datastore]:

[Amazon Amplify] ⇔ [Google Firebase]:

[Amazon RDS] ⇔ [Google Cloud SQL]:

[Amazon CloudFront] ⇔ [Google Cloud CDN]:

[Amazon EMR] ⇔ [Google BigTable]: