Cluster Storage Systems - A Quick Overview

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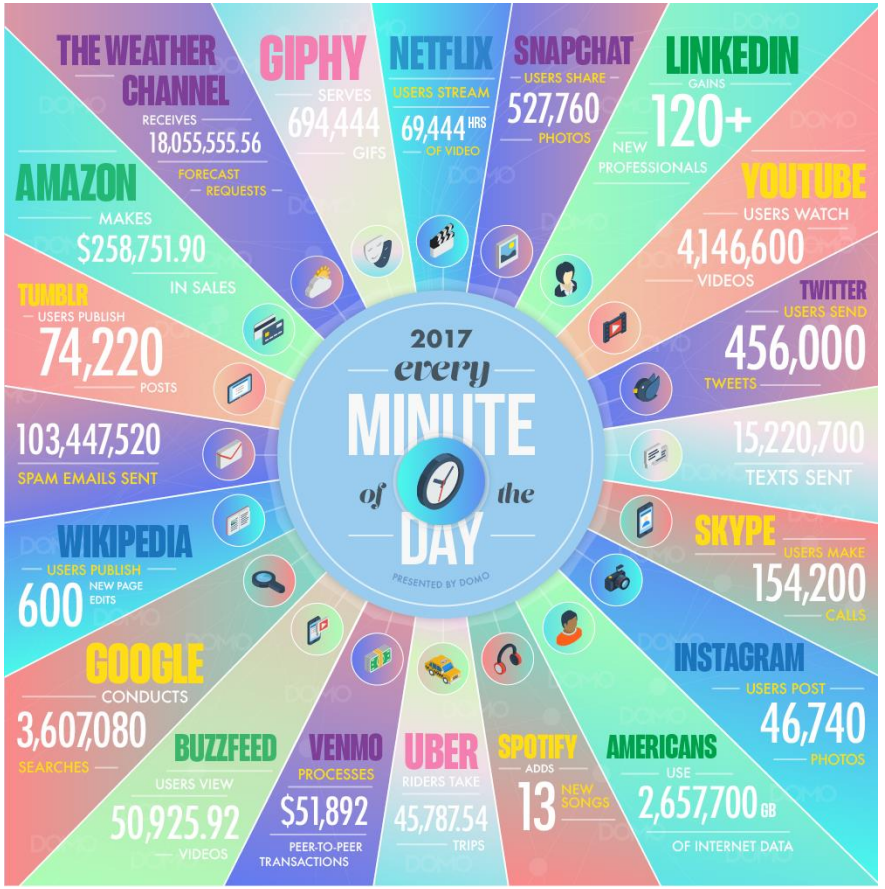
Web-Scale Apps

- Applications that are hosted in massive-scale computing infrastructures such as data centers
- Used by millions of geographically distributed users
  - Via web browsers, mobile clients, etc.
- Produce, store, consume massive amounts of data
  - Scale is hard to comprehend

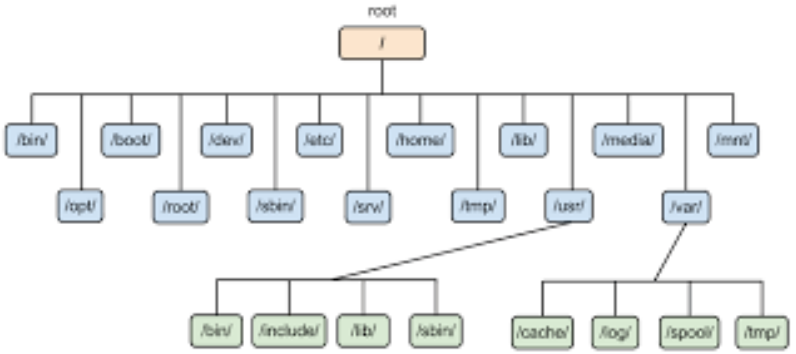


Storage Systems

- For the next few weeks, we focus on massive scale storage systems
- Today, cluster scale storage
- Then, strongly consistent storage
- Then, wide area storage

Type of Storage Systems

File systems for unstructured data



Databases for structured data

Name	FName	City	Age	Salary
Smith	John	3	35	$280
Doe	Jane	1	28	$325
Brown	Scott	3	41	$265
Howard	Shemp	4	48	$359
Taylor	Tom	2	22	$250

Scalable File Systems

- Requirements
  - Bulk storage
  - High throughput
  - Scalable
  - Fault tolerant
- Key idea for scaling: separate metadata and data operations
  - Metadata is smaller, requires strong consistency for correct file system operation
  - Data is much larger, requires high throughput

Scalable Databases

- Requirements
  - Bulk storage
  - High throughput
  - Scalable
  - Fault tolerant
  - Structured data, data locality
  - Random accesses
  - Low latency
  - Reasonable consistency