Google App Engine and Google Cloud Datastore

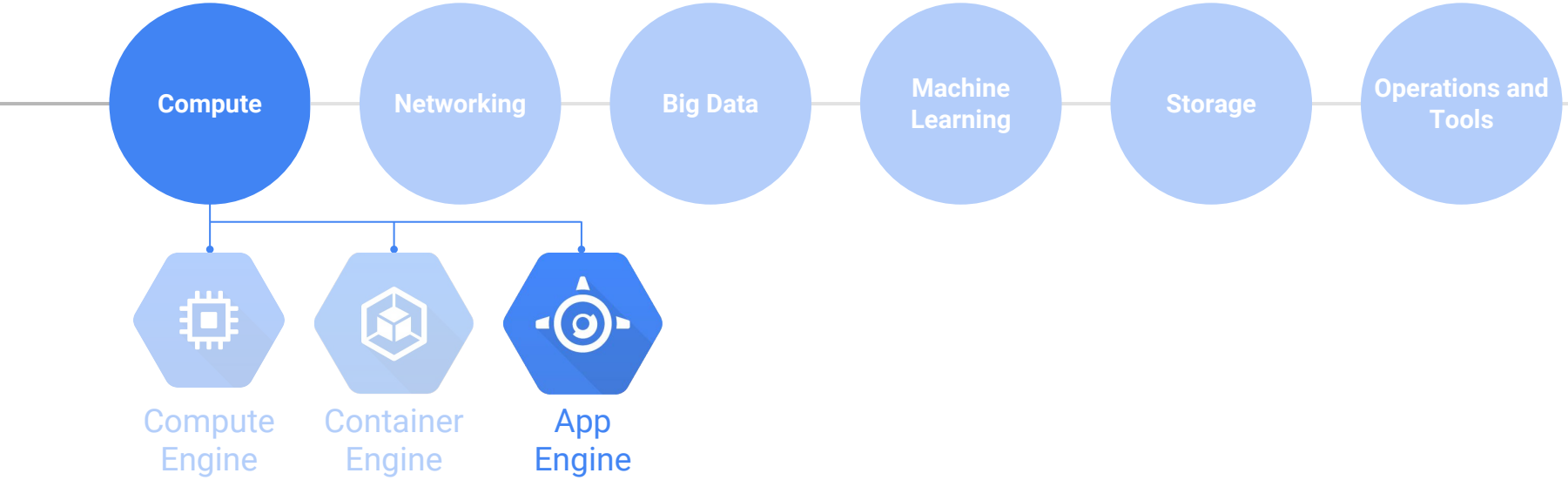
Google Cloud Platform Fundamentals

V2.0

Agenda

1. Overview and Customer Stories
2. Google App Engine Standard Environment
3. Google App Engine Flexible Environment
4. Google Cloud Endpoints
5. Google Cloud Datastore
6. Quiz & Lab

Google Cloud Platform



What is Google App Engine

- A platform (platform as a service) for building scalable web applications and mobile backends
- App Engine makes deployment, maintenance, and scalability easy so you can focus on innovation

IaaS and PaaS

Compute Engine

App Engine

Towards managed infrastructure (DevOps)

Towards managed services (NoOps)

IaaS

Raw compute, storage and network

More granular control

PaaS

Preset run-times

Java, Go, PHP, Python...

Focus is application logic

Pay for what you allocate

More management overhead

Pay for what you use

Less management overhead

Snapchat

"App Engine enabled us to focus on developing the application. We wouldn't have gotten here without the ease of development that App Engine gave us."

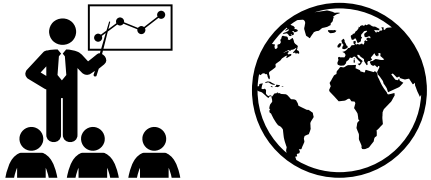
Bobby Murphy, CTO

Snapchat sends

700 million

photos and videos each day

Google App Engine scaled seamlessly during growth to **millions of users**



Small team is able to innovate quickly and expand **globally**

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App Engine Standard Environment (1 of 2)

- ***Managed*** runtimes for specific versions
  of Java, Python, PHP & Go
- Autoscale workloads to meet demand
- Free daily quota, usage based pricing

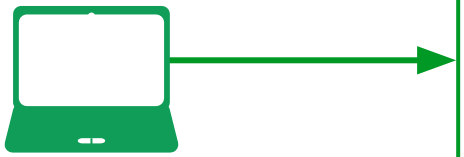
App Engine Standard Environment (2 of 2)

- SDKs for development, testing and deployment
- Need to conform to sandbox constraints:
  - No writing to local file system
  - Request timeouts at 60 seconds
  - Limit on 3rd-party software installations

Example App Engine Standard Workflow - Web Applications

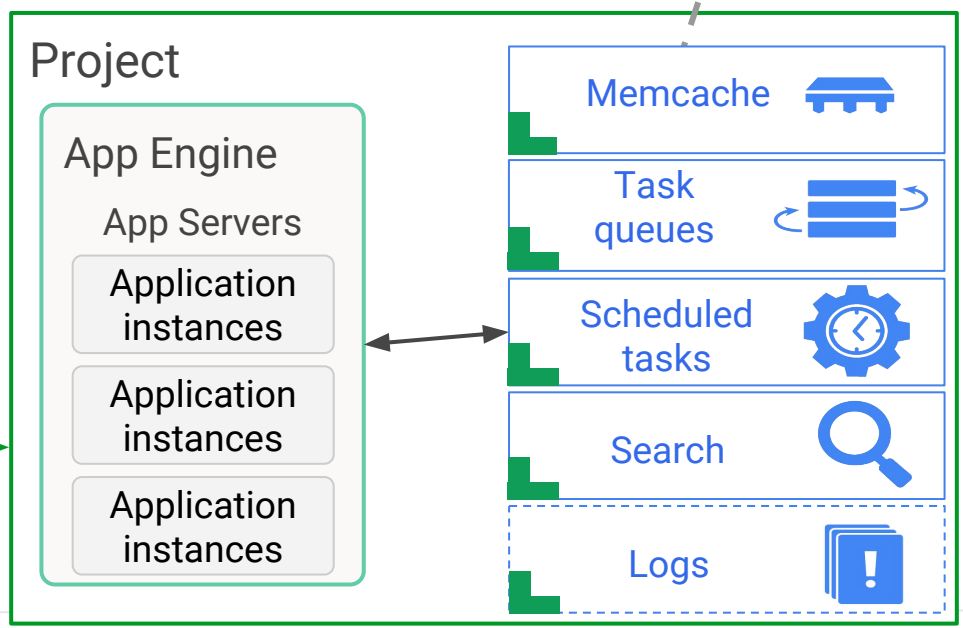
1. Develop & test the web application locally

2. Use the SDK to deploy to App Engine



3. App Engine automatically scales & reliably serves your web application

App Engine can access a variety of services using dedicated APIs



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App Engine Flexible Environment Beta (1 of 2)

- Build, deploy containerized apps with a click
- *Standard runtimes* - Python, Java, Go, Node.js - with **no sandbox constraints**
- *Custom runtime* support for **any language** that supports HTTP requests

App Engine Flexible Environment Beta (2 of 2)

- During beta pricing based on Compute Engine usage
- Local development relies on Docker
- *Standard runtimes* can access App Engine services: Datastore, Memcache, task queues, logging, users, and so on

App Engine Standard vs Flexible Environment

	Standard Environment	Flexible Environment
Instance startup	Milliseconds	Minutes
SSH access	No	Yes (not default)
Scaling	Manual, basic, automatic	Manual, automatic
Write to local disk	No	Yes (ephemeral)
Support for 3rd party binaries	No	Yes
Network access	Via App Engine services	Yes
Customizable stack	No	Yes

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Google Cloud Endpoints (1 of 2)

- Build your own API running on App Engine Standard
- Expose your API using a RESTful interface
- Includes support for OAuth 2.0 authorization
- Generate client libraries

Google Cloud Endpoints (2 of 2)

- Supports Java and Python server-side code
- Includes App Engine features
  - Scaling
  - Denial of service protection
  - High availability
- Supports iOS, Android, and JavaScript clients

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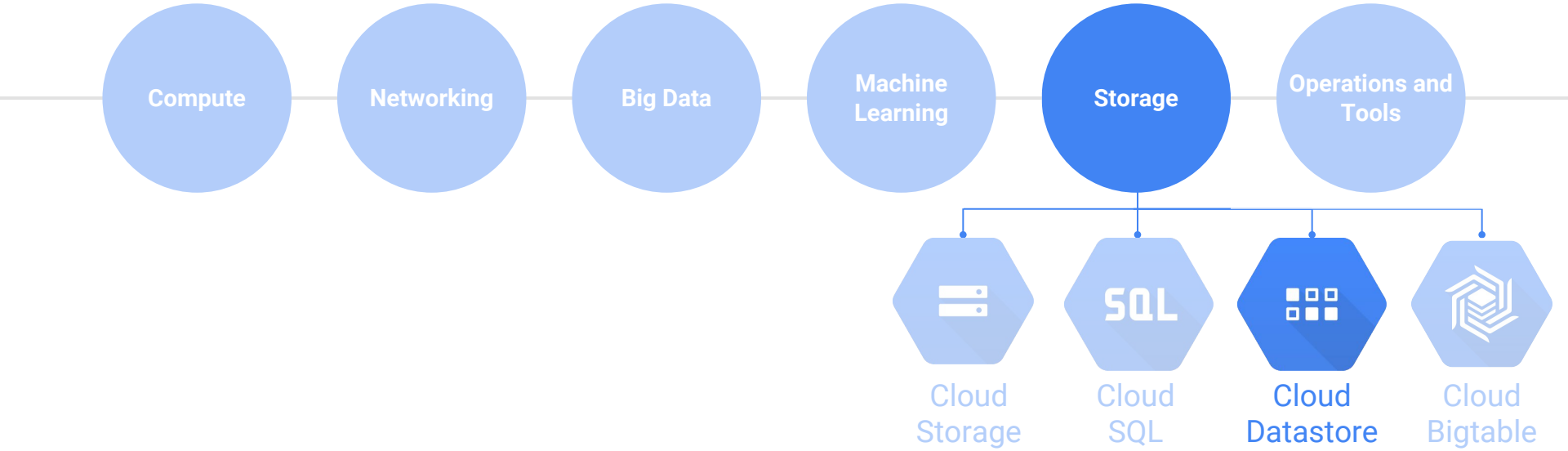

Google Cloud Datastore (1 of 2)

- Database designed for application backends
- NoSQL store for billions of rows
- Schemaless access, no need to think about underlying data structure
- Local development tools

Google Cloud Datastore (2 of 2)

- Automatic scaling and fully managed
- Built-in redundancy
- Supports ACID transactions
- Includes a free daily quota
- Access from anywhere through a RESTful interface

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Quiz

1. Name 3 differences between the App Engine Standard and App Engine Flexible Environments.
2. *True or False*: Google Cloud Datastore supports ACID transactions.

Quiz Answers

1. Name 3 advantages of using the App Engine Flexible Environment over App Engine Standard.

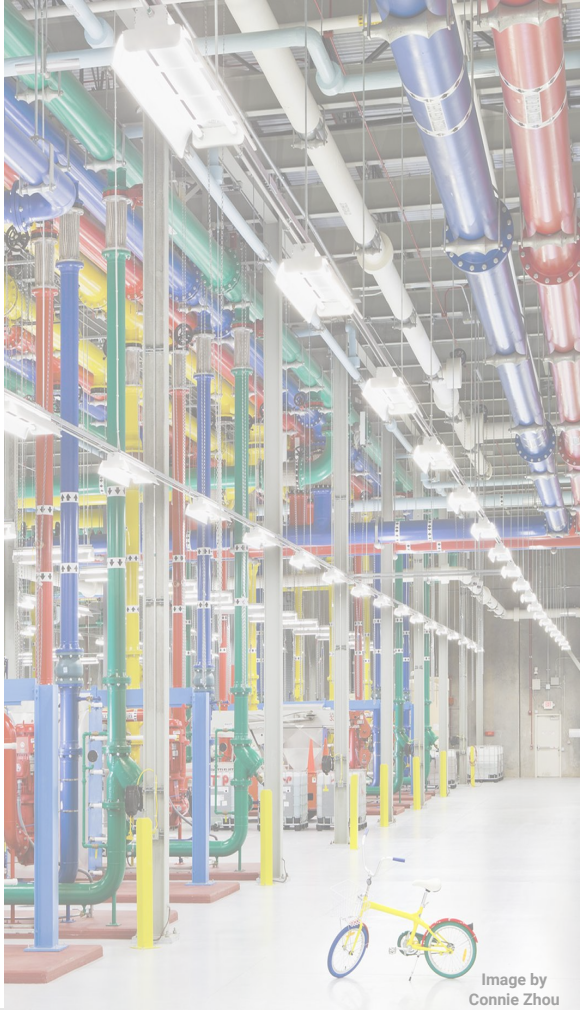
   Answer: The Flexible Environment allows SSH access, allows disk writes, and supports third-party binaries (also allows stack customization and background processes).

2. *True*: Google Cloud Datastore supports ACID transactions.

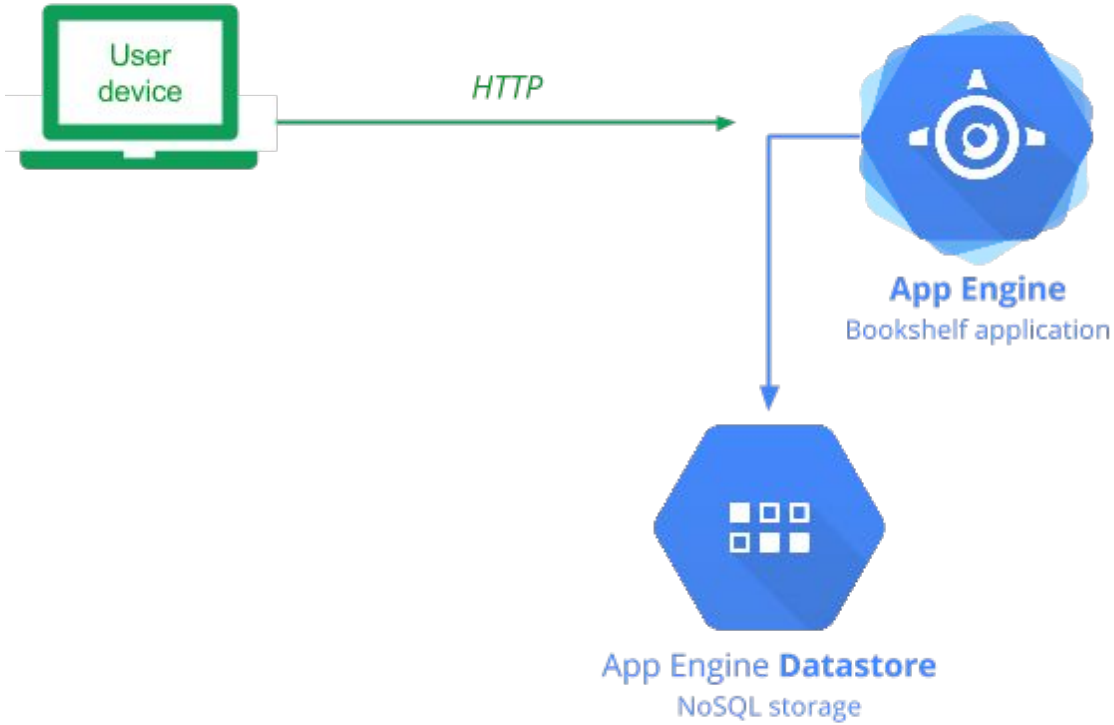
Lab (1 of 2)

Deploy the Bookshelf application to App Engine using Cloud Datastore for data persistence.

1. Clone and review the application code
2. Deploy the Bookshelf application to App Engine using Cloud Shell
3. Test the application in your browser



Lab (2 of 2)



Resources

- Overview: App Engine
  https://cloud.google.com/appengine/
- DevBytes - Your app, at scale with Google App Engine
  https://www.youtube.com/watch?v=ytT2-kL9v2o
- Datastore Concepts Overview
  https://cloud.google.com/datastore/docs/concepts/overview
- Getting started with Google Cloud Datastore API
  https://cloud.google.com/datastore/docs/datastore-api-tutorial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