Building & Managing Your Application

Google App Engine

Google Cloud Platform

Agenda

1. How Do You Troubleshoot?
2. Understanding the Quotas
3. Managing App Deployment with Versions
4. Lab Exercise

What If Something Stops Working?

Legacy app:

- Log into servers
- Review OS, apps, and logs

App Engine app:

- Runs in the cloud
- Could run in any data center

General Troubleshooting Hints:

- Check App Engine status using System Status Page and mailing list.
- Check Admin Console - instances, versions, traffic, and quota dashboard, etc.
- Look into the aggregated logs for every request in near real time

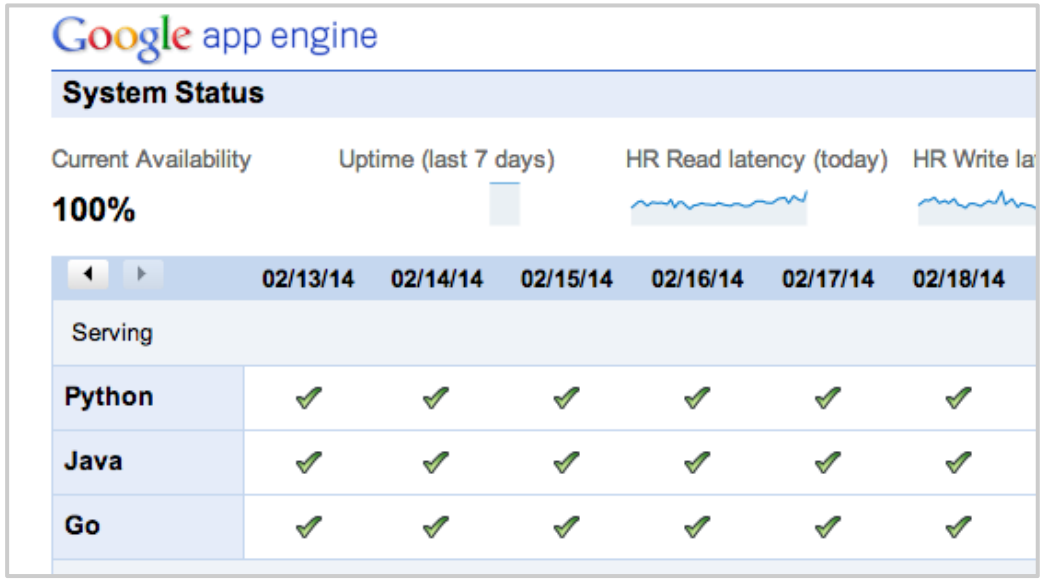
Monitor App Engine Status

Check App Engine Status:

- System Status Page

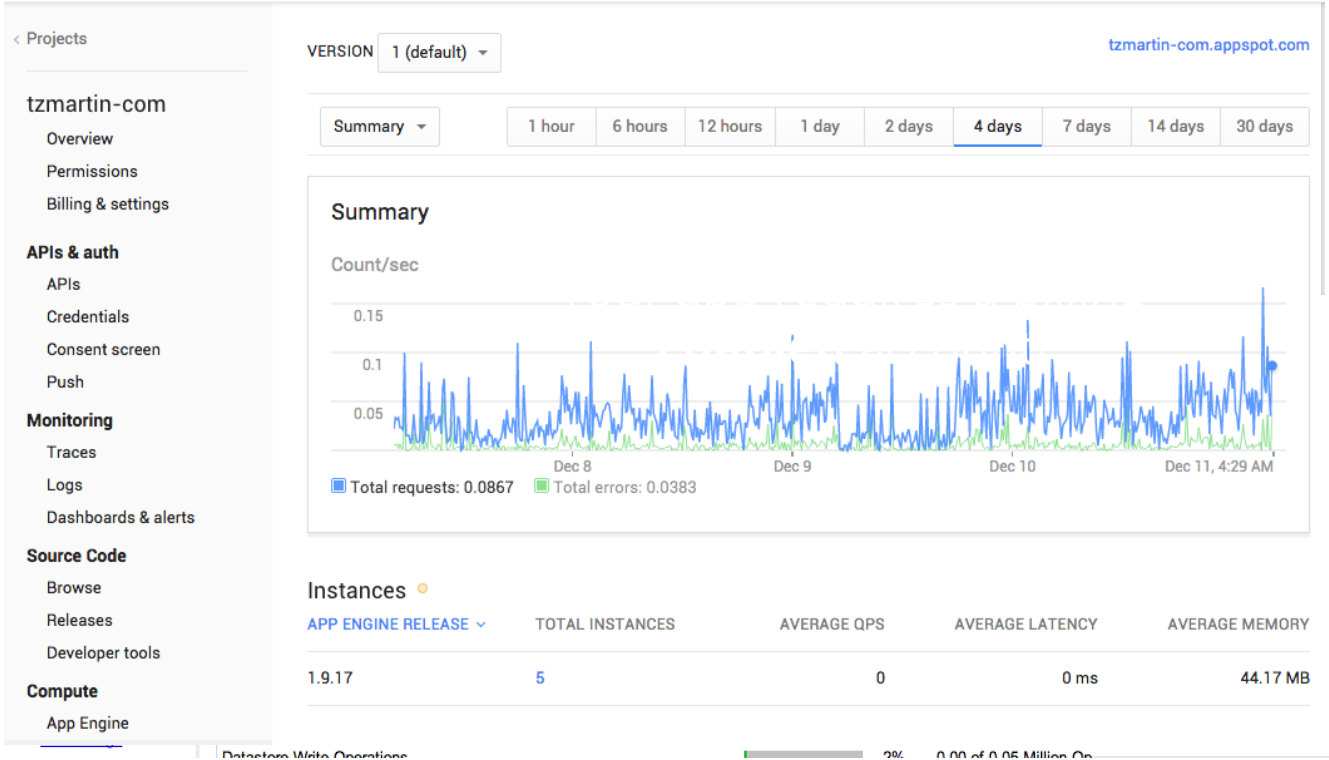
Receive Incident Notification:

- google-appengine-downtime-notify



App Engine Admin Console

Use this: https://console.developers.google.com



Important Admin Console Pages

For daily monitoring, use:

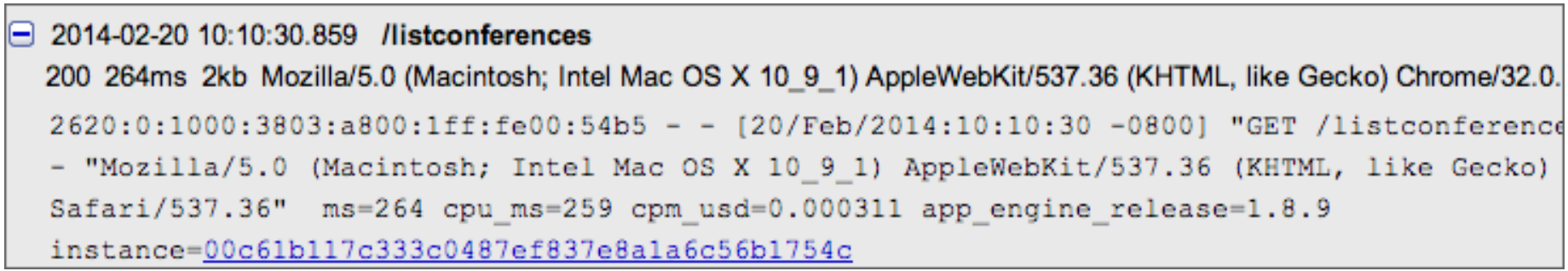
- Dashboard (the first page)
- Instances Page
- Quota Page
- Logs Page

For app configuration and deployment, use:

- Application Settings Page
- Versions Page

Admin Console Page - Logs

Request Log vs. Application Log



Log Management

- Store max 1 GB of logs for 90 days (free)
- Save logs for 365 days (at $0.026 / GB / month)
- Logging in production vs in staging environment
- Use API to pull logs out of App Engine into GCS and BigQuery

If you expect lots of logs, make sure to enable billing

What is the most common issues that causes application failure in App Engine?

Quota Error

Google App Engine

Understand the Quotas

Google Cloud Platform

What Is Quota?

Quota is a limit on resource usage to protect the App Engine system

Resources with Quotas

- Incoming/Outgoing Bandwidth
- Datastore usage
- Mail
- Others
  - Code/Static Data/Logs
  - Channel/XMPP
  - Task Queue
  - URL Fetch
- Quota dashboard in Admin Console

App will get *Quota Errors* if exceeded

Types of Quotas

Daily Quota

- Daily Limit
- Refreshed @ midnight Pacific Time (PST)

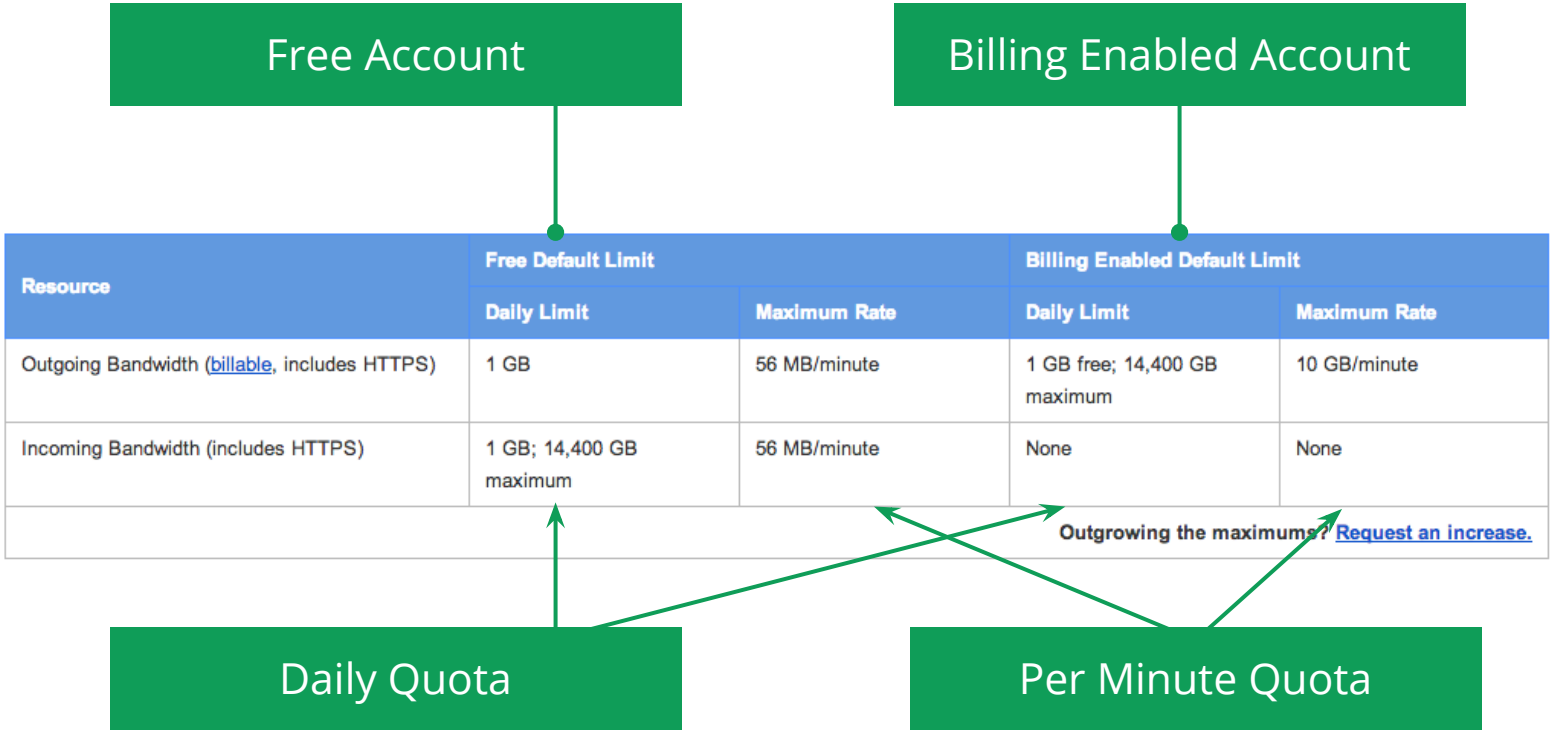
Per-minute Quotas

- Maximum Rate
- Refreshed every minute

Notes

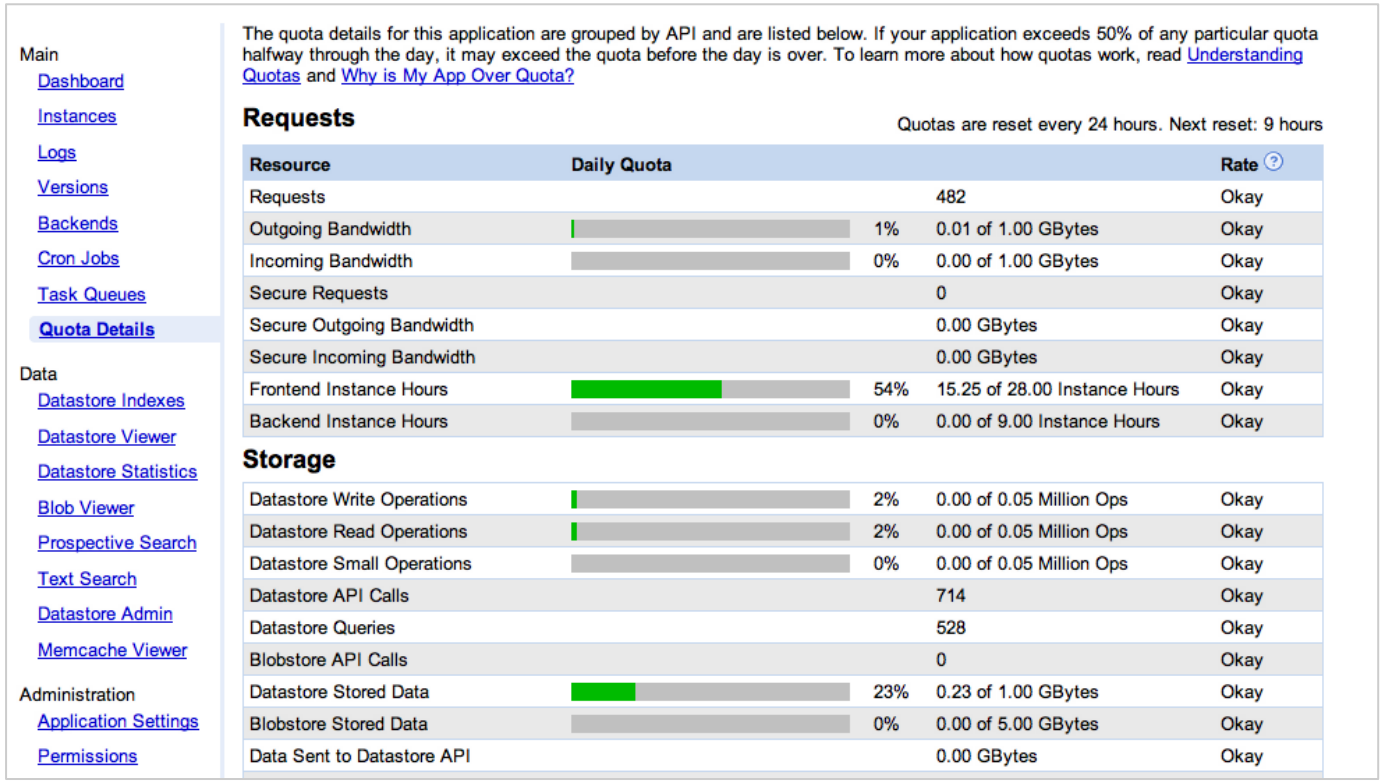
- Different limits for free accounts and billed accounts
- For billed account, most quota limits are soft limits

Example - Incoming/Outgoing Bandwidth Quotas



Resource	Free Default Limit		Billing Enabled Default Limit	
	Daily Limit	Maximum Rate	Daily Limit	Maximum Rate
Outgoing Bandwidth (billable, includes HTTPS)	1 GB	56 MB/minute	1 GB free; 14,400 GB maximum	10 GB/minute
Incoming Bandwidth (includes HTTPS)	1 GB; 14,400 GB maximum	56 MB/minute	None	None
Outgrowing the maximums? Request an increase.				

Admin Console Page - Quota Details



How Do You Handle Quota Errors?

Quota Error

- Java: OverQuotaException
- Python: OverQuotaError
- For bandwidth and instance hour quota: HTTP 403 Forbidden
    - Code is never executed in these cases

To avoid *Quota Errors* your app could catch and handle Errors/Exceptions gracefully - Cost vs. Benefits?

Operation Cost Estimation

Estimation of operational cost based on resource usage

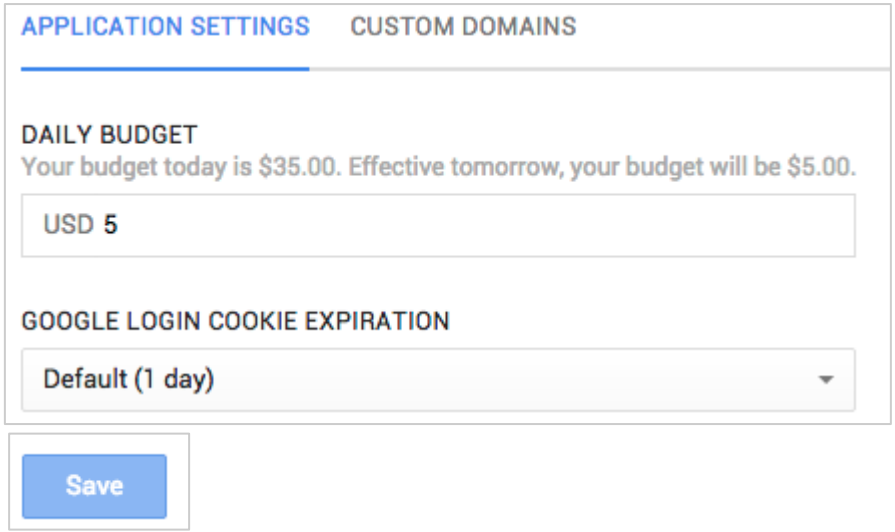
- Based on Billable Resource Unit Costs
- Limited by Max Daily Budget settings

Resource	Unit	Unit Cost
Outgoing Bandwidth	Gigabytes	$0.12
Frontend Instances (F1) *default*	Instance Hours	$0.05
Frontend Instances (F2)	Instance Hours	$0.10
Frontend Instances (F4)	Instance Hours	$0.20
Frontend Instances (F4_1G)	Instance Hours	$0.30

Setup Budget

Set max daily budget

- Protects you against unexpected costs (think accidental endless loops!)



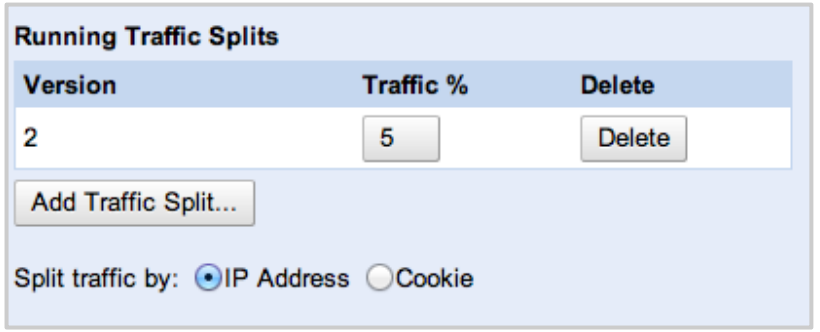
Google App Engine

Manage Application Versions

Google Cloud Platform

Manage App Versions

- Set version in:
  - Java: WEB-INF/appengine-web.xml
  - Python: app.yaml
  - Can use any valid text for version
- Deploy a version
  - Staging vs. production
  - Can split traffic cross versions
- Default version
  - Time to switch to new default version
  - Min/Max idle instances for default version
  - Datastore applies to all versions
  - Memcache applies to all versions
  - Task Queue applies to all versions



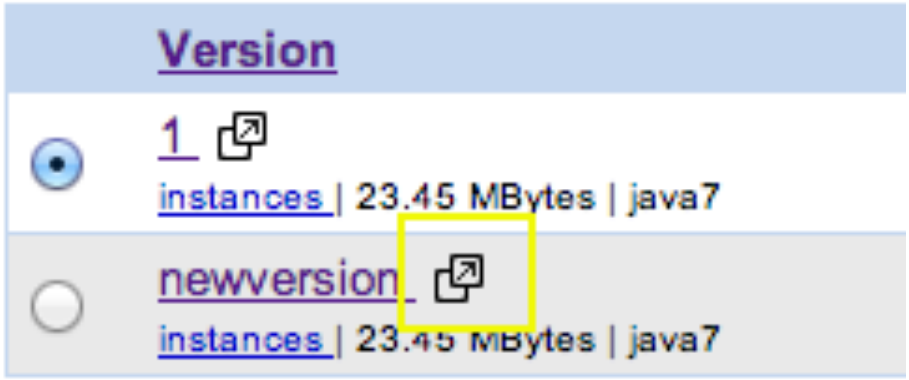
How to Refer to A Version

- Click version link in Admin Console

- URL for A Version
  - Default Version

    http://app_id.appspot.com
  - Specific Version:

    http://version.app_id.appspot.com



Quiz

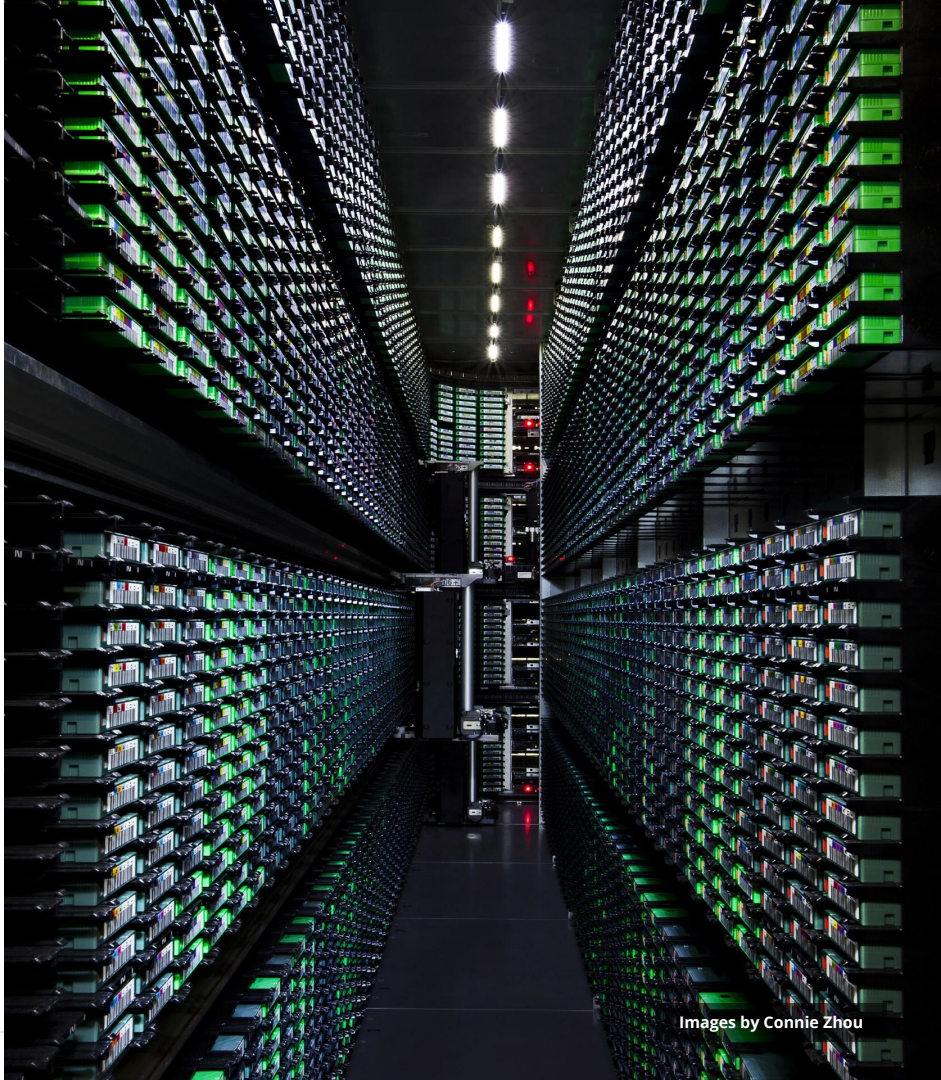
What could you find out by inspecting the App Engine **System Status Page**?
*(pick **one** answer)*

- ❑ The health of your App Engine application
- ❑ Your remaining daily quota
- ❑ The health of the App Engine system
- ❑ Notifications about planned downtime
- ❑ How many instances your application is running
- ❑ Billing settings for your application

Codelab

- Learn about the tools available in the Admin Console for monitoring your App Engine application

- Download a zip containing the skeletal application, explore the layout, then deploy it and investigate it in the Admin Console



Resources

Documents

- App Engine Document: Admin Console
- Quotas
- Billing and Budgeting Resources
- SLA
- Premier Accounts
- Billing FAQ

Articles

- Managing Your App's Resource Usage


cloud.google.com
Images by Connie Zhou