

App Engine Standard Environment Runtimes

The App Engine standard environment has two generations of runtime environments. The second generation runtimes significantly improve the capabilities of App Engine and remove some of the limitations of the first generation runtimes. This page describes the similarities and differences between the first and second generation runtimes.

	Second generation	First generation
Supported languages	Python 3 Java 11 Node.js PHP 7 Ruby Go 1.12+	Python 2.7 Java 8 PHP 5.5 Go 1.11
Language extension and system library support	Any extension or library	Python 2.7, PHP 5.5: Allowlisted extensions and libraries Java 8, Go 1.11: Any extension or library
Supported APIs	For accessing Google Cloud services, use Open Source Cloud Client Libraries	Proprietary App Engine APIs
	For image processing, imgix (https://www.imgix.com/) is recommended. Otherwise, use Rethumb (https://rethumb.com/) if you prefer having a free tier.	Images App Engine API
	For messaging, use a third-party mail provider such as SendGrid (https://sendgrid.com/), Mailgun (https://www.mailgun.com/), or Mailjet (https://www.mailjet.com/).	Mail App Engine API

	Second generation	First generation
	For caching app data, create a Cloud Memorystore (/memorystore/docs/redis/quickstart-gcloud) instance and connect it to your app using Serverless VPC Access (/appengine/docs/standard/java11/connecting-vpc)	Memcache App Engine API
	For searchable document indexes, host any full-text search database such as ElasticSearch on Compute Engine and access it from your service.	Search App Engine API
	For push queues, use Cloud Tasks (https://cloud.google.com/tasks/docs/). For pull queues, use Cloud Pub/Sub (https://cloud.google.com/pubsub/docs/).	Task Queue App Engine API
	For user authentication, use any HTTP-based authentication system, such as OAuth 2.0, or Firebase Authentication (https://firebase.google.com/docs/auth/).	Users App Engine API
External network access	Full access	Python 2.7, PHP 5.5: Via URL Fetch API Java 8, Go 1.11: Full access
File system access	Read/write access to <code>/tmp</code>	Python 2.7, PHP 5.5: None Java 8, Go 1.11: Read/write access to <code>/tmp</code>
Language runtime	Unmodified, open source runtime	Modified for App Engine
Isolation mechanism	gVisor-based (https://github.com/google/gvisor) container sandbox	Proprietary

App Engine first generation runtime support

There are no plans to deprecate additional App Engine first generation runtimes at this time. The second generation runtimes represent the future direction of App Engine; however,

developers and customers using the first generation runtimes will continue to receive support and feature updates.

Similarities between first and second generation runtimes

- Nearly instantaneous scale-up time to respond to traffic spikes.
- Applications are built using the same build process.
- Same SLA for GA services.
- Identical `gcloud` command support and the same GCP console interface.
- Free tier.

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