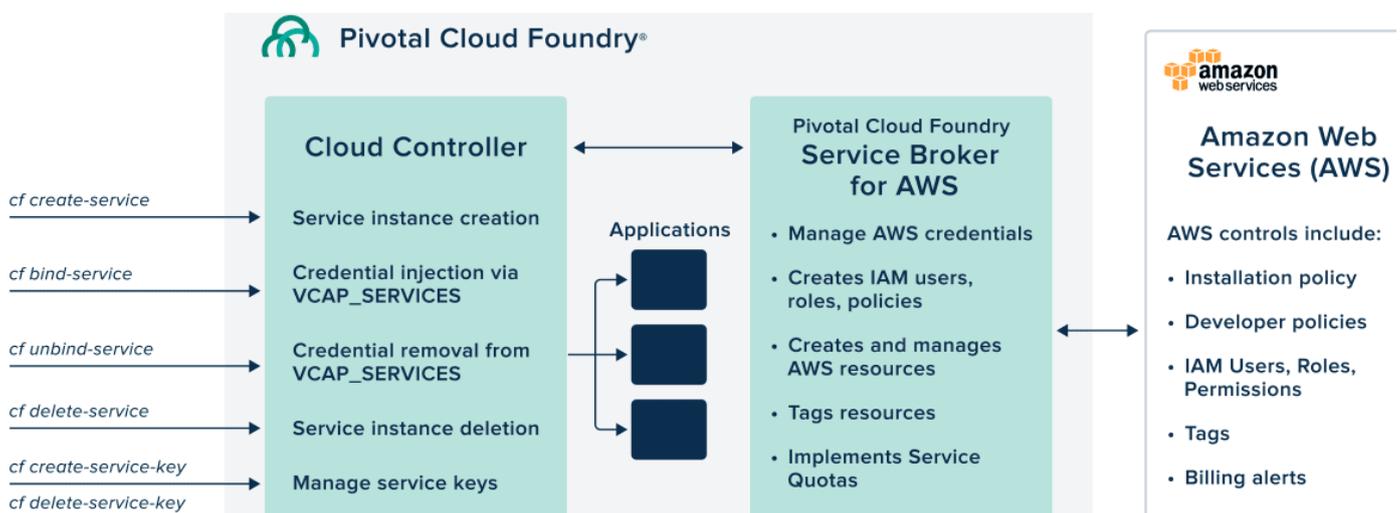


PCF on AWS

AWS provide support on its cloud platform (IaaS) to implement PCF. AWS also provides service broker utilizing AWS feature for PCF. Following services are supported.

- Amazon RDS for PostgreSQL
- Amazon S3
- Amazon RDS for MySQL
- Amazon Aurora
- Amazon RDS for SQL Server
- Amazon Dynamo DB
- Amazon RDS for Oracle Database
- Amazon RDS for Maria DB
- Amazon SQS

Integration of PCF on AWS



Integration Feature-:

Option to **broker a connection** to a service running external to Pivotal Cloud Foundry.

Option to create and destroy the service instance **on demand** as required.

Version choice. Operators can let developers choose between multiple versions of the software when creating an instance.

Encryption at rest. Stored data is encrypted.

Multi-Availability Zone support. Make use of multiple availability zones in cloud deployments to support failover.

Quotas. Operators can place limits on service instance counts.

PCF on Google Cloud Platform (GCP)

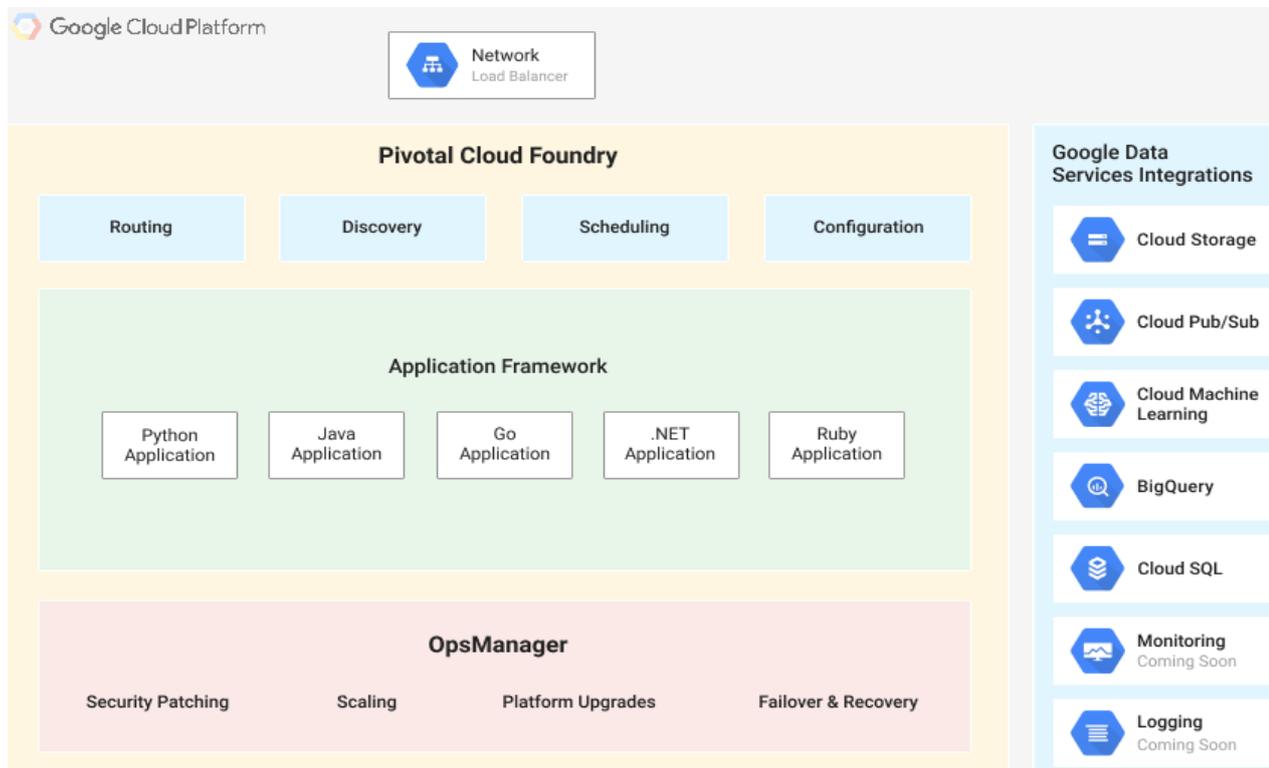
GCP also support PCF in its cloud Platform (IaaS).

PCF assembles applications and their dependencies using buildpacks and utilizing Cloud Storage.

A PCF deployment on GCP also utilizes Google's load balancer, and other software-defined networking features such as subnetworks and firewall rules.

PCF allows administrators to register a service broker, which allows application developers to leverage GCP's data services natively

Basic integration is given in below diagram



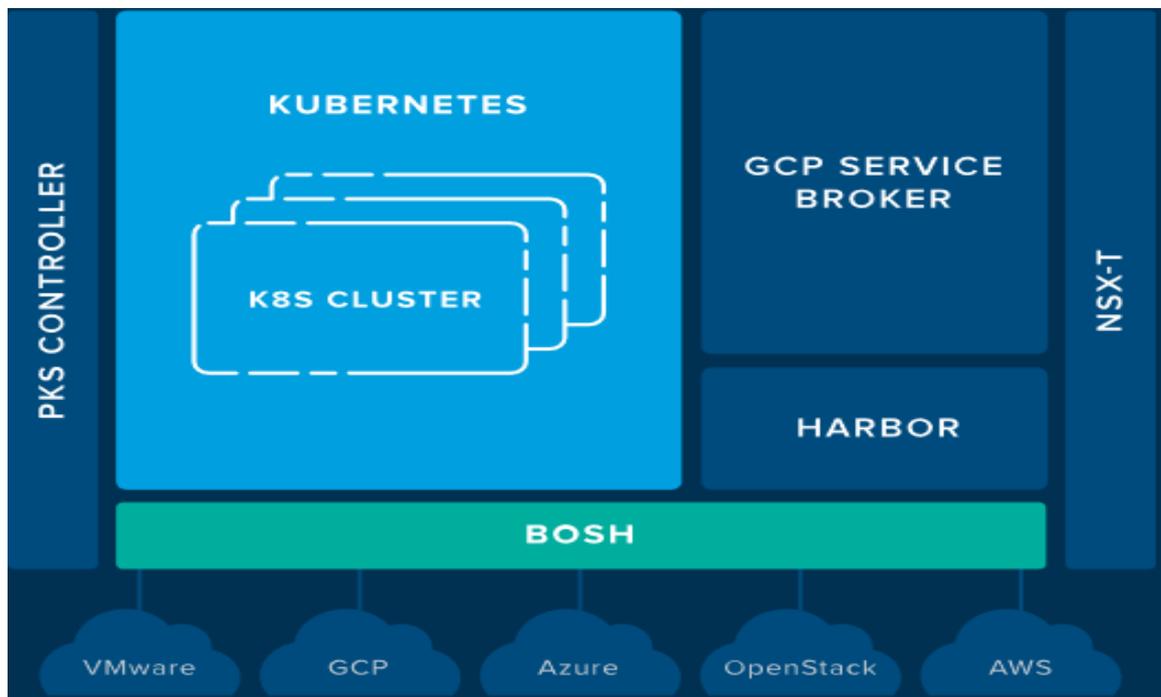
Benefit of using PCF on GCP

- Use Google's load balancer to scale apps to 1M+ requests in seconds without the need for pre-warming
- Create multi-region global Pivotal Cloud Foundry deployments by tying them together with Google's HTTP(s) Load Balancer
- Save up to 30% with sustained use discounts for long running virtual machines
- Save up to 80% with pre-emptible Virtual Machines for applications that can handle virtual machine restarts
- Fully tailor your Pivotal Cloud Foundry Deployment Virtual Machines with Google Compute Engine custom machine types
- Consume many of Google's big data services through the Google service broker, and store your application data in a resilient and distributed manner

GCP and PKS

Google and Pivotal entered in collaboration for PKS (Pivotal container services).

PKS architecture and feature as below:



Built with open-source Kubernetes

Constant compatibility with the current stable release of Kubernetes, operated by BOSH. No proprietary extensions.

PKS Controller

The control plane where you create, operate, scale, and Kubernetes clusters from the command line and API.

Harbor

Harbor extends open source Docker with vulnerability scanning, identity management, and support for multiple registries.

GCP Service Broker

The GCP Service Broker allows apps to transparently access Google Cloud APIs, from anywhere. Easily move workloads to/from Google Container Engine (GKE).

NSX-T

Network management and security out-of-the-box with VMware NSX-T. Multi-cloud, multi-hypervisor.

BOSH

BOSH provides a reliable and consistent operational experience. For any cloud.

PKS lets enterprises easily use the same container orchestration technology that Google uses for its web-scale services in their on-premise deployments. Specifically, PKS includes:

- Ops Manager tile & BOSH release within Pivotal Cloud Foundry
- On-Demand Service Broker, for deploying on-demand Kubo clusters from CF

- Google GCP Service Broker, for access to Google services to apps running on Kubo
- VMware NSX
- Integration to Wavefront and vROps monitoring tooling

Over all PKS capabilities is

- **Production-ready:** Highly available from apps to infrastructure, no single points of failure. Built-in health checks, scaling, auto-healing and rolling upgrades.
- **Fully automated Ops:** Fully automated deploy, scale, patch, upgrade. No downtime. Use CD pipelines to deploy your platform, too.
- **Multicloud** infrastructure automation: BOSH for automated infrastructure provisioning, configuration, operation, and remediation on any cloud or IaaS.
- **GCP access and compatibility:** The GCP Service Broker allows apps to transparently access Google Cloud APIs from anywhere. GKE consistency to easily move workloads to/from Google's Cloud.
- **Commercial support:** Enterprise-grade assistance from Pivotal's support network

Difference in AWS and GCP offerings-:

1. **Market share - AWS** has better market covering and industry leader with its first-mover advantage and nearly 5 years head-start, AWS offers a lot more cloud products and options. In contrast, GCP is fairly new to the scene, and although it offers comparable solutions, it still lags behind.
2. **Skills availability :** with larger market share and first mover advantage more skilled people available on AWS
3. **COST –**
 - a. **Committed use saving:** GCP does not ask for long term commitment for cost saving. User will get same cost saving after 1 month commitment as of 1 Year. In AWS long term at least 1 Year is required to get cost saving.
 - b. **Sustained use saving:** GCP also provide sustained use saving much better than AWS
4. **MYSQL support:** GCP has more advance support for MYSQL DBs.
5. **Other DB Support:** AWS has better support for other SQLs like, SQL Server, Oracle, MariaDB, Aurora
6. **Data Center :** AWS has more data centre worldwide than GCP. And also GCP cloud storage has access issue within China (outside Hongkong).
7. **Instance Support:** AWS is better in supporting large Instance, The largest GCP instance is 96 CPUs/624 GB RAM, Where as AWS support 128 CPUs and a whopping 2TB of RAM!
8. **Load Balancing:** Load balancing on AWS is different than GCP. AWS provide load balancing within region. GCP provide load balancing globally. 2nd difference is AWS ELB requires pre-warming, GCP can do it instantly with sudden traffic burst

9. **Instance migration and configuration** : GCP provides live migration of instance and better instance configuration capabilities
10. **Support Cost** : Google Minimum Support is \$150/Month minimum, where as AWS minimum support cost is \$29/month or 3% of monthly AWS usage. When we go for higher plan, GCP cost 9% of total usage bill, where as AWS cost 10% of total usage bill.

Final Verdict:

Core features

AWS and GCP both support PCF. GCP has advantages over AWS related core features as mentioned above in terms of MySQL DB support, Load balancing, migration. But AWS will have more product offering, larger instance support and more Database support with global presence of data centre.

PCF Features:

PCF can be deployed over AWS using manual configuration or using AWS cloud template and all AWS service is available through AWS service broker.

Pivotal and GCP has provided more out of the box integration between GCP and PKS. Out of the box support for GCP big data services with commercial support from pivotal and also closely working together on Customer Reliability Engineering(CRE). This gives advantage to GCP over AWS on PCF.

For sage as IaaS selection between GCP and AWS will depend up on other factors like required product, DB support needed and regional availability and depend upon requirement any one of the above can be chosen.

For PCF adoption GCP is certainly a better platform being cheaper to adoption, out of box support in PKS, and greater collaboration between GCP and PCF.