



Kubernetes project update

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Google Cloud

Major milestones

Won developer
mindshare



35,000

Second to Linux
(PR+Issues)**

Matured
technically



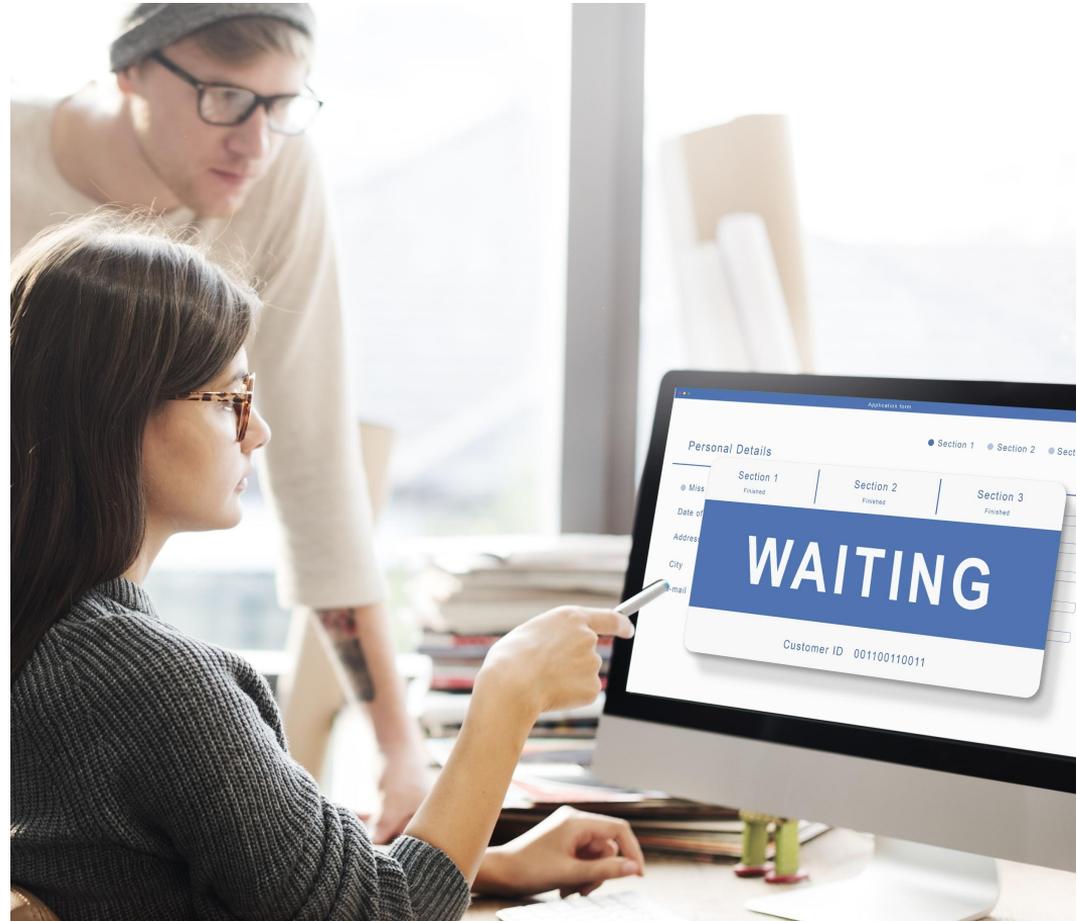
Starting in
the enterprise



54%

Most industries*

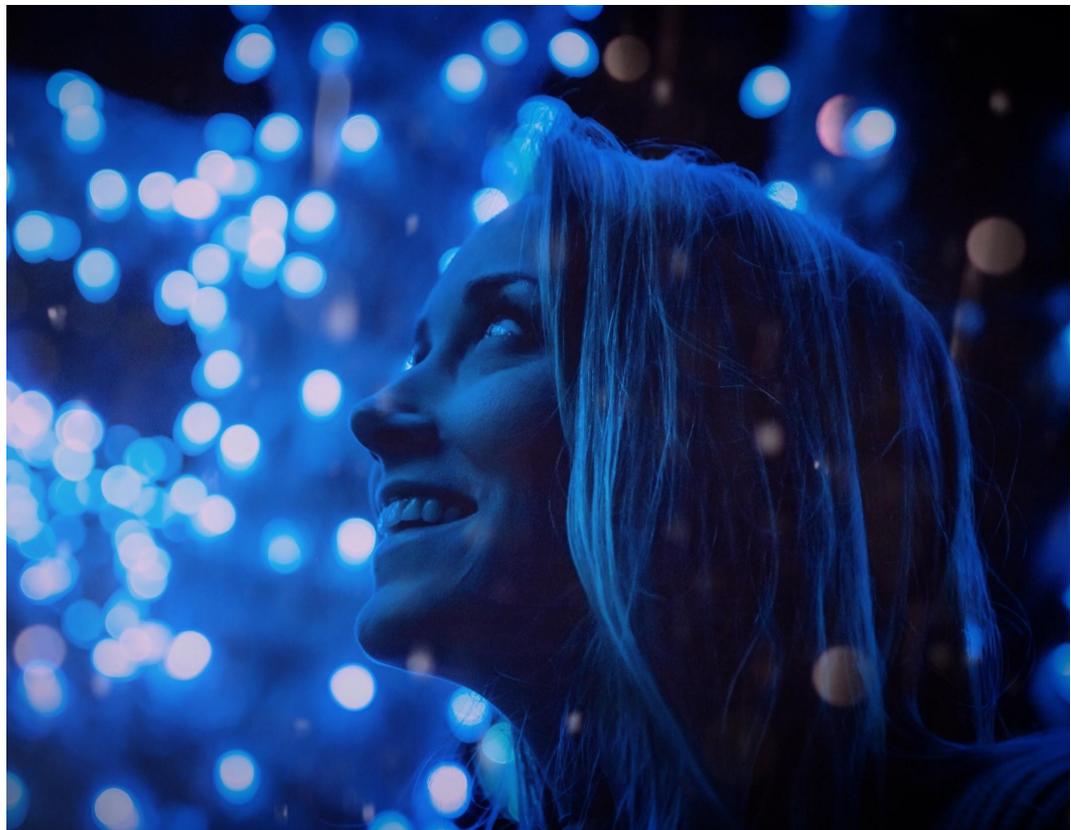
Enterprise systems ...



Enterprise systems ...



**Dream: what if
Enterprise SW
could be agile,
efficient and
scalable**





Security

Applications

Experience



Security

Applications

Experience

Kubernetes security progress



2

Network Policy 1.7

1.7 Stable Using a network plug-in, set and enforce which pods can communicate with each other and other network endpoints. (By default, pods accept traffic from any source.)

1.7 Encrypted Secrets

1.7 Alpha Using the EncryptionConfig, encrypt data in etcd (including secrets!) at the application layer. (By default, secrets use plaintext.)

3

RBAC 1.8

1.6 Beta, 1.8 Stable Using RBAC, you can control user and application access to resources.

4

1.8 TLS Cert Rotation

1.7 Alpha, 1.8 Beta For cert authority in your cluster, rotate the kubelet's client and server certs

5

PodSecurityPolicy

1.4 Alpha, 1.8 Beta Using PodSecurityPolicy, define a set of conditions for a pod to be accepted to run in a cluster. These can include run as user, privilege escalation, and SELinux.

Threat Detection in Kubernetes



New!
5 partner
integrations



New Kubernetes Engine resources In Cloud Security Command Center

The screenshot shows the Google Cloud Security Command Center interface. The left sidebar contains navigation options: Security Command Center, Identity-Aware Proxy, and Encryption Keys. The main content area is divided into two sections: Assets and Findings.

Assets

Type	Total	New	Deleted
ORGANIZATION	1	0	0
PROJECT	17	0	0
APPLICATION	11	0	0
SERVICE	8	0	0
ADDRESS	1	0	0
DISK	5	0	0
FIREWALL	32	0	0
INSTANCE	5	0	0
NETWORK	8	0	0
ROUTE	128	0	0
SUBNETWORK	120	0	0
KIND	1	0	0
BUCKET	37	0	0

[View all assets](#)

Findings

Findings: Summary

772 total security findings for the organization

Type	Count
SENSITIVE_INFORMATION_SCANNER	544
CLOUD_SECURITY_SCANNER	228

[Go to Findings Summary](#)

Findings: Security scanner

228 total security findings for the organization

Type	Count
MIXED_CONTENT	64
OUTDATED_LIBRARY	1
XSS_CALLBACK	114
XSS_ERROR	48
XSS_FLASH_INJECTION	3

[View all security findings](#)

Findings: DLP scanner

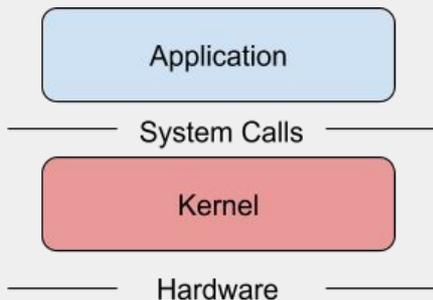
544 total PII findings for the organization

PII type	Count
CREDIT_CARD_NUMBER	90
EMAIL_ADDRESS	112
FKA_CODE	87
IBAN_CODE	59
IP_ADDRESS	73

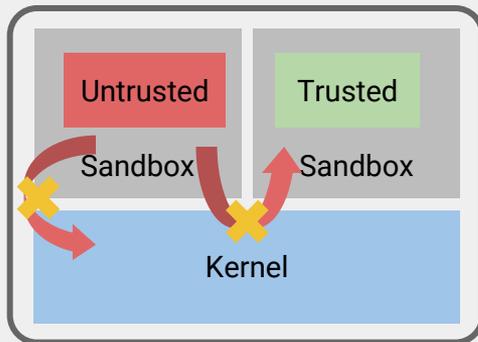
[View all PII findings](#)

Sandboxed Containers

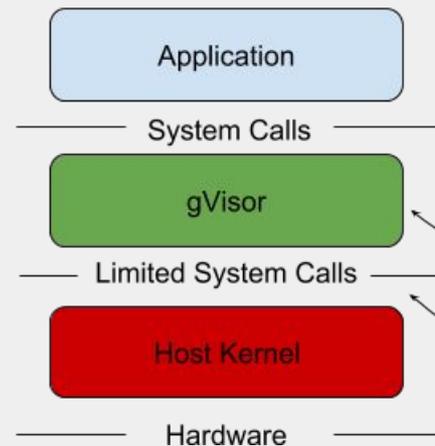
Traditional Containers



Sandboxed Containers



gVisor



Independent Kernel
Virtualization-based
Strong Isolation



Security

Applications

Experience

Kubernetes applications progress

1

Batch workloads: Cronjobs beta & Spark 1.8

Cronjobs controller for scheduling jobs beta. Native Spark integration with Kubernetes

2

Workload Controllers GA, Local Storage beta 1.9

DaemonSet, Deployment, ReplicaSet, StatefulSet let users run applications. Local storage is now available as persistent volume for higher performance.

3

GPUs 1.9

Kubernetes added support for GPUs for accelerating machine learning workloads.

4

Container Storage Interface beta 1.10

Enables third party storage providers to expose new storage systems in Kubernetes, making Kubernetes truly extensible

Automating stateful applications

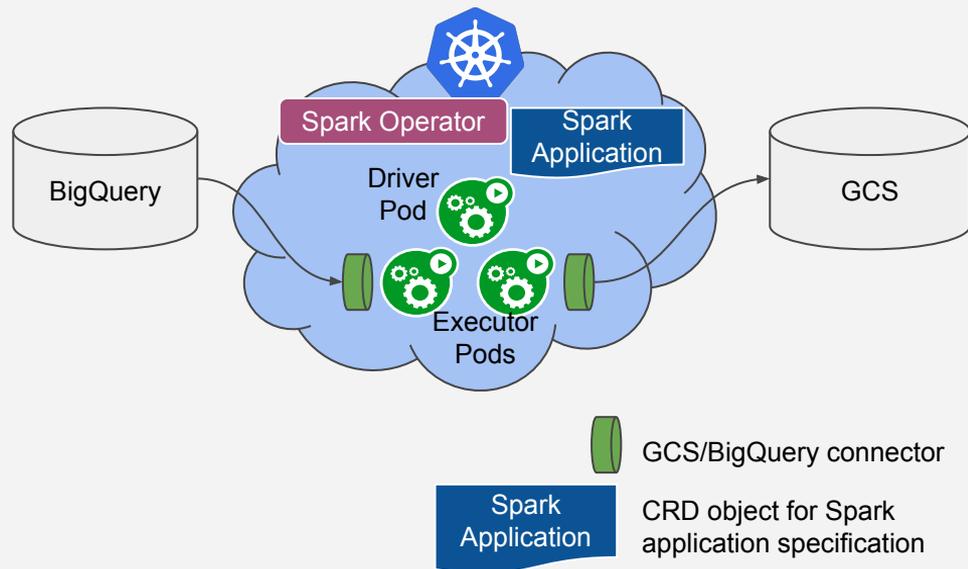
Application operators automate lifecycle operations, backup / restore, monitoring and scaling

- With custom logic specific to the app
- Extend Kubernetes API to easily manage app lifecycle

▶ **Get started with complex stateful apps in <10 mins!**



GCP Spark Operator on Kubernetes



Kubernetes Monitoring

- ✓ **Comprehensive Kubernetes observability** at scale, right out of the box.
- ✓ **Works with Open Source:** Seamless integration with Prometheus.
- ✓ **Runs anywhere:** Pre-integrated on GCP, easily configured on hybrid cloud.
- ✓ **Fully managed, unified solution:** reduces cost of using disparate tools to keep Kubernetes apps fast and available
- ✓ **Unlocks Google's SRE best practices** to developers and operators



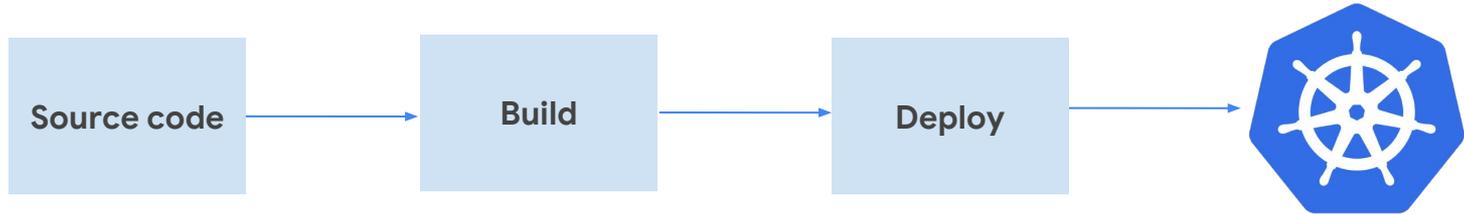


Security

Application

Experience

Developer experience



Continuous
Development

Summary: Horsepower + Users





Thank you

Google Cloud