BE UNSTOPPABLE
OPEN WORKS

BETTER TOGETHER: MARIADB SKYSQL RUNNING ON GOOGLE CLOUD PLATFORM

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NAMAN SHAH, PRODUCT DIRECTOR, MARIADB
Data listed as top growth area in CNCF Survey 2022

- **Databases** has the highest growth at 48%
- **Messaging and Big data** also data apps with Kafka, Spark...

Source: CNCF 2022 Survey
STATEFUL APPLICATIONS ON GCE
Stateful applications on Kubernetes

According to the [Data on Kubernetes report](#), 70% of Kubernetes customers run stateful Apps.

<table>
<thead>
<tr>
<th>Top Stateful Applications</th>
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</thead>
<tbody>
<tr>
<td>MariaDB</td>
</tr>
<tr>
<td>Redis</td>
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<tr>
<td>MySql</td>
</tr>
<tr>
<td>Mongo</td>
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<tr>
<td>Elastic</td>
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</tbody>
</table>
Exponential growth as customers see benefits on GKE

Exponential growth with stateful clusters doubling each year on GKE

Google now a gold sponsor on Data on Kubernetes (source)
Spectrum of Stateful Apps on GKE

**Do it yourself (DIY)**
- Eg. MariaDB, postgresql
  - Apps deployed as container images and managed by customers

**Kubernetes Operator**
- Eg. Elastic operator
  - Apps deployed as container images with management shared with operator contracts.

**Data SaaS**
- Eg. MariaDB SkySQL
  - Apps that are fully managed Saas solutions for end users

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<table>
<thead>
<tr>
<th>Self Managed</th>
<th>Partially Managed</th>
<th>Fully Managed</th>
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</table>
## Why DIY customers choose GKE

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Built in orchestration</strong></td>
<td>GKE for stateful apps gives customers out of the box CI/CD, config as code and stateful primitives, built-in backup</td>
</tr>
<tr>
<td><strong>Organizational gravity</strong></td>
<td>Running both stateless and stateful apps on Kubernetes removes silos and leverages economies of scale in organizational expertise</td>
</tr>
<tr>
<td><strong>Ecosystem</strong></td>
<td>Operators allow simple one click install a database on our GKE clusters.</td>
</tr>
</tbody>
</table>
## Why SaaS customers choose GKE

<table>
<thead>
<tr>
<th>Multi-cloud infrastructure</th>
<th>The need to run anywhere, including across clouds, is a salient feature of a SaaS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Built-in capabilities</td>
<td>Out of the box cost allocation for unit economics, built-in capabilities like Backup for GKE, blue-green for safe deployments</td>
</tr>
<tr>
<td>Empathy</td>
<td>Saas uses use Kubernetes themselves for their stateless applications and running on Kubernetes builds empathy</td>
</tr>
</tbody>
</table>
GKE Stateful Platform

DIY
- Backup for GKE

Operator
- Safe upgrades
- Workload Migration

Data Saas
- OSS

GKE Stateful Management Platform

GCP Storage Infrastructure
- Persistent Disk
- Cloud Filestore
- Local SSD
- GCS
Built-in automated backups

Backup for GKE

Fully managed backup and restore plans

- Fine grained controls for automated backup plans by cluster or namespace
- IAM based policy control
- Restore within clusters or across clusters
Upgrade stateful apps with peace of mind

Safe upgrades

Extensive controls for safe rollout

- Maintenance and exclusion windows
- Built-in blue-green deployments with rollback
- Kubernetes pod disruption budgets
## Extensive selection w/ GCP storage integrations

<table>
<thead>
<tr>
<th></th>
<th>Cloud Filestore</th>
<th>Persistent Disk</th>
<th>Local SSD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Storage</strong></td>
<td>Persistent storage for applications that need NFS and multiple readers and writers</td>
<td>Persistent storage for good price-performance and flexible sizes</td>
<td>Performant Ephemeral storage</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Capabilities</strong></td>
<td>Regional by default with Filestore Enterprise.</td>
<td>Zonal with option of read only regional</td>
<td>Zonal</td>
</tr>
<tr>
<td><strong>Applications</strong></td>
<td>Content management systems, rendering and media processing</td>
<td>Databases, Boot disk, Message queues, Cloud IDE</td>
<td>AI/ML, Analytics, Caches</td>
</tr>
</tbody>
</table>
Takeaways

01 Day 2 ops is a day 1 consideration
Set up pod disruption, safe rollout best practices along with observability to ensure streamlined day 2 ops

03 DIY or SaaS based on level of control
You can DIY for more control over the stateful app or just use a SaaS and have everything managed

02 Storage choice based on use case
Choose a storage class that best suits your application needs eg. PD for databases, Filestore for content management, Local SSD for AI/ML

04 GKE for modern stateful applications
Use out of the box capabilities to ensure best practices for stateful apps to keep them up to date, available, observable and protected. Use GKE Autopilot for added simplicity
SKYSQL ON GOOGLE CLOUD
17 global regions in SkySQL
Leveraging wide range of services
Certificate Authority service
SkySQL is built on Kubernetes and leverages unparalleled GKE capabilities
SKYSQL ON GKE

Build once, run anywhere

Kubernetes gives us the ability to support multi-cloud deployments and enables us to cater to our customers across clouds.

Modern Orchestration

Running on a capable platform with built-in features for stateful applications allows SkySQL to scale, deploy safely and manage.

Customer Empathy

SkySQL customers run their stateless applications on Kubernetes. Running SkySQL on GKE helps us build the same vocabulary and architecture familiarity with our customers.

[Proprietary to MariaDB]
SkySQL Cloud Database Service Architecture (Detailed Version)

Legend:
- VPC
- Public Subnet
- Private Subnet
- Kubernetes Cluster (AWS – EKS, GCP – GKE)
- MaxScale Intelligent Data Proxy
- Enterprise Server
- ColumnStore Engine
- Xpand (Distributed SQL)
SKYSQL ON GKE

Operational Ease

- Ease of managing hundreds of clusters and their control planes
- GKE UI and API to manage our global workloads, services, ingress and config maps
- Kubernetes control plane and nodes upgrade without impacting availability
NEXT STEPS

Check out these sources to learn more about MariaDB

- **OpenWorks sessions to watch**
  - SkySQL vs. AWS RDS vs. GCP Cloud SQL
  - Fireside chat: Best Practices for Migrating Your On-Premises MariaDB Deployment to SkySQL

- **Visit the [Marketplace today](#)**

- **Create your [Google account](#) today**

- **Try SkySQL for free**
  - Try the full SkySQL service with a $500 credit, including ticketed support
  - [https://mariadb.com/products/skysql/get-started/](https://mariadb.com/products/skysql/get-started/)
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