Building for "Cloud 3.0"



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Topics



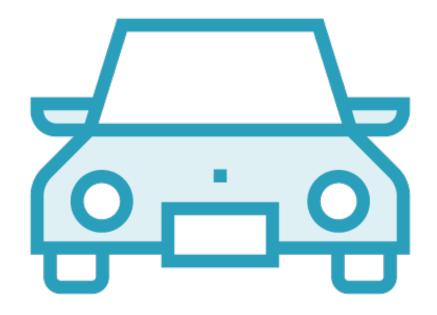
Evolving the web application

Big data

Machine learning



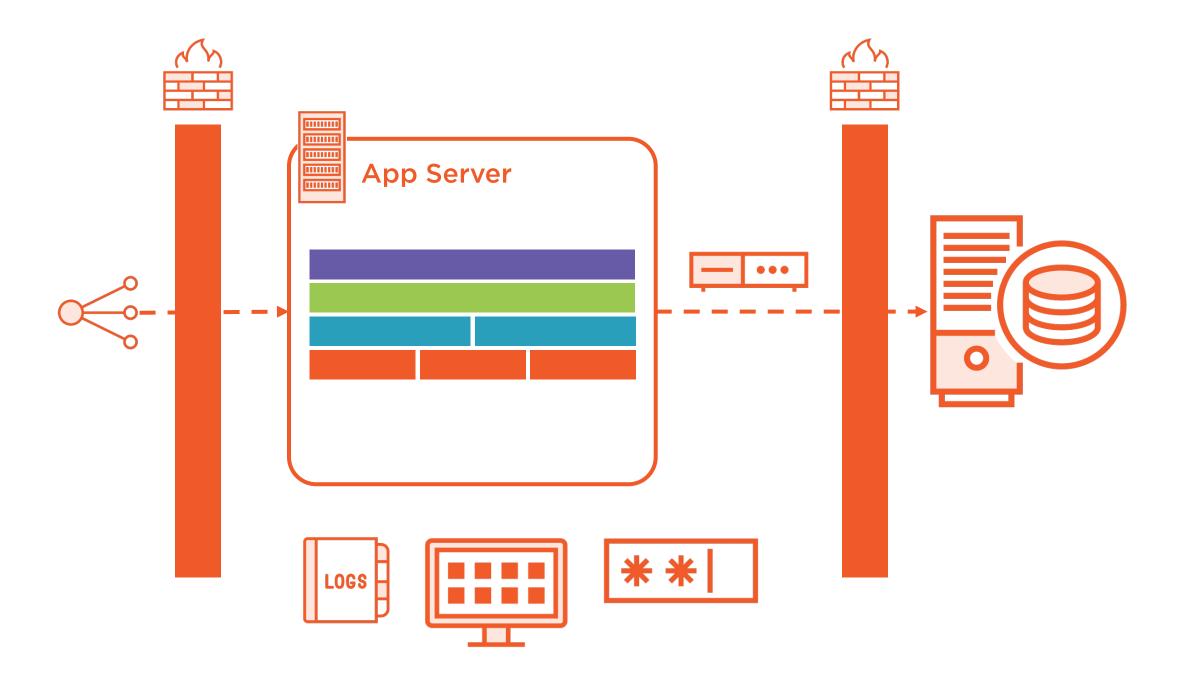
"Cloud 2.0"



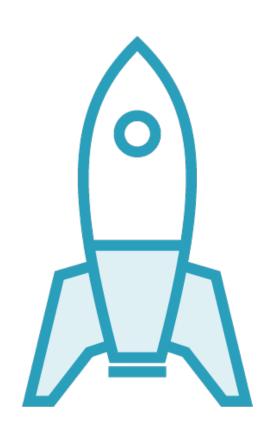
On-demand computing resources

Projection of on-premises architecture



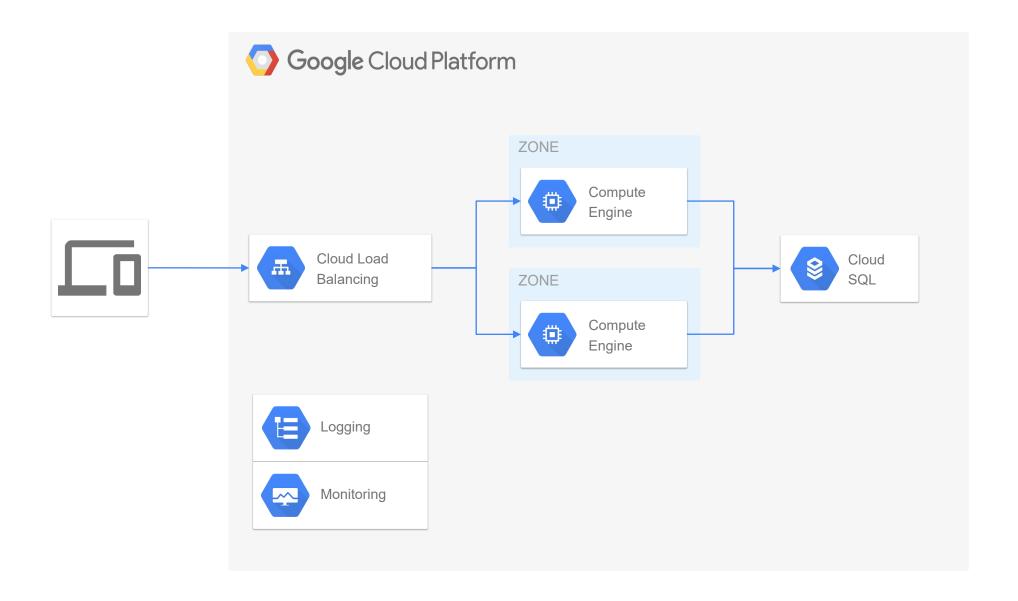


"Cloud 3.0"



Applications and functions, not VMs
Storage disaggregation, not disks
SLAs, not load balancing and scheduling
Policy, not "middle boxes"
Intelligence, not data processing





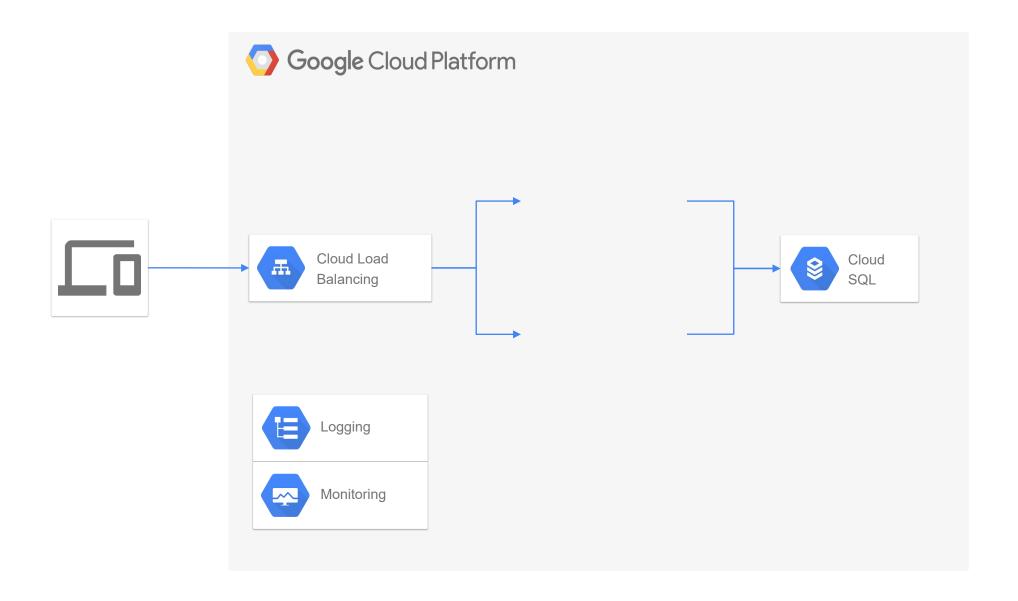


Managed logging and monitoring

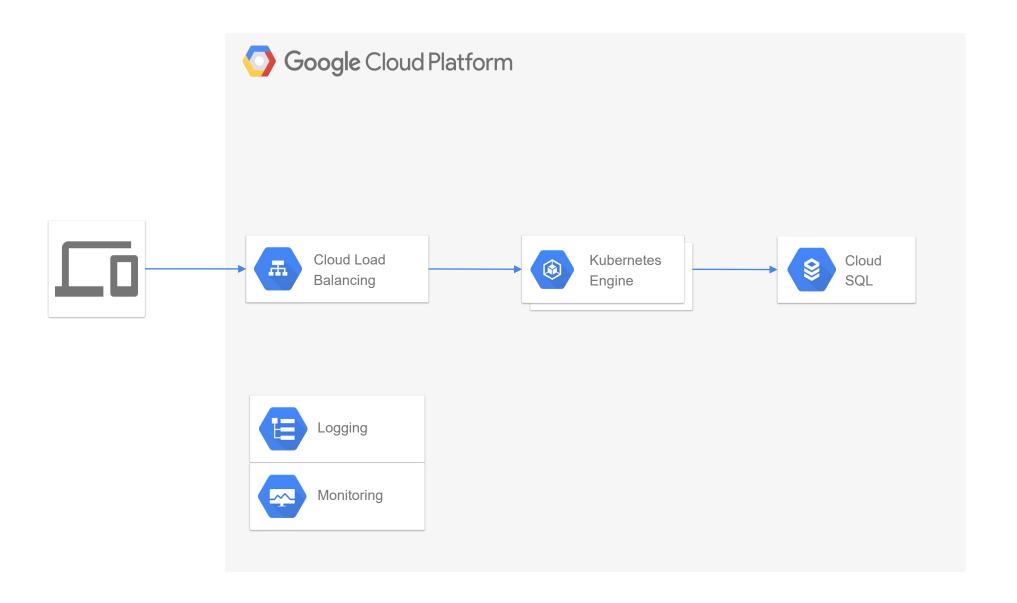
Declarative network policy

Task automation











Benefits of Container Orchestration



Technical: Increase density

Architectural: Decomposition

Organizational: End-to-end teams



Processing Events



Cloud PubSub



Cloud Dataflow



Cloud PubSub



Fully managed, message broker

Follows the publish/subscribe messaging pattern

"At least once" message delivery

Ordering is not guaranteed



Cloud Dataflow



Unified data processing platform for batch and streaming workloads

Programming model is Apache Beam



Towards a New Architecture

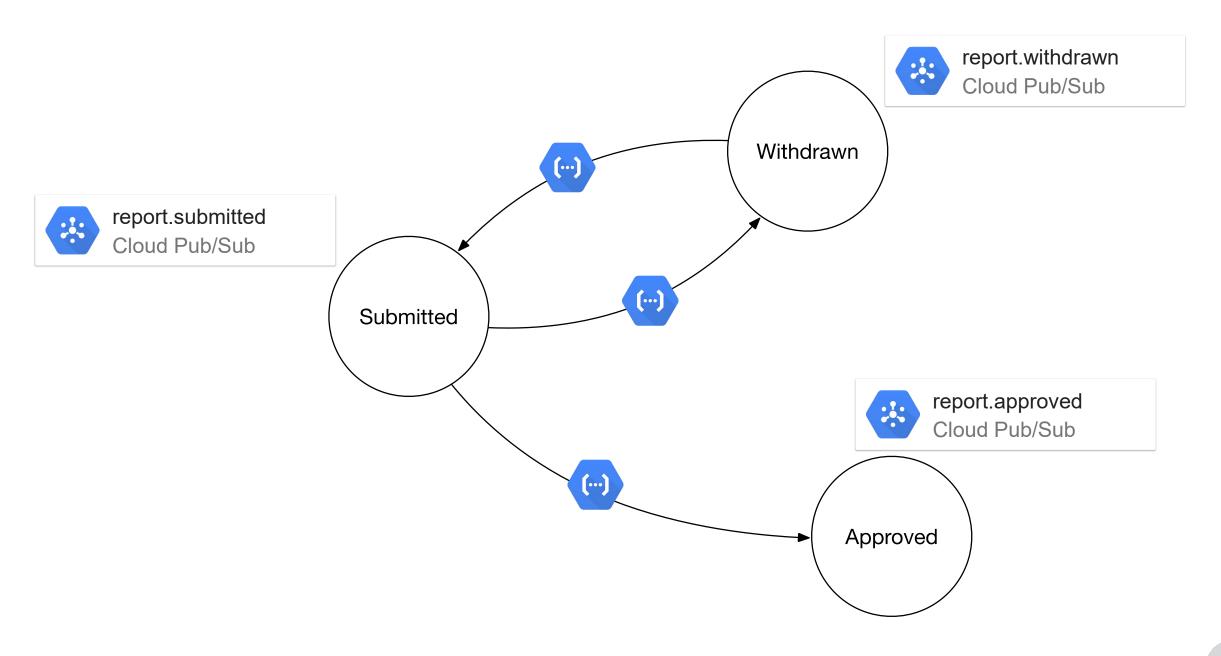


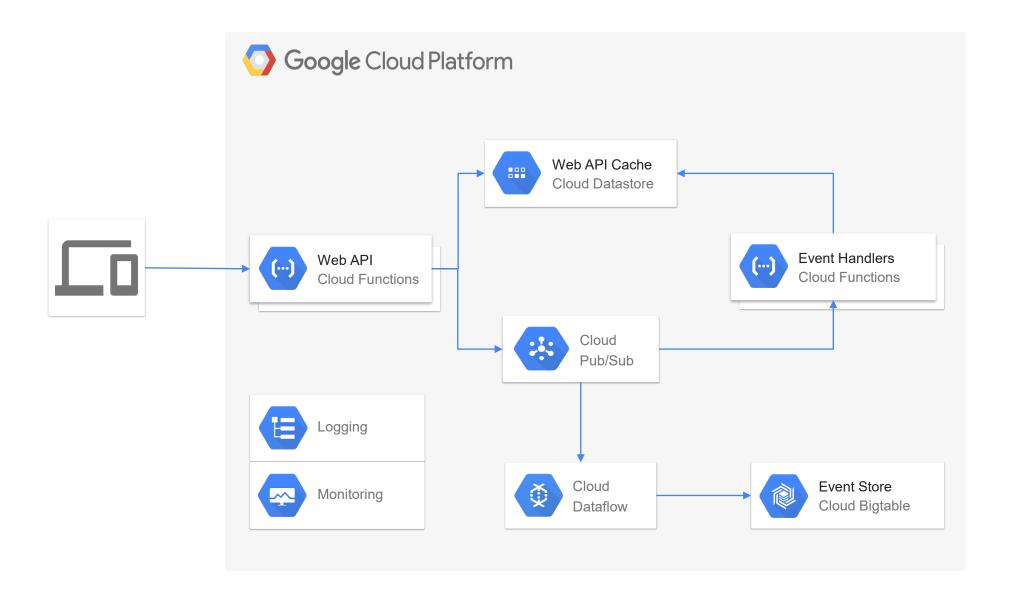
Related terms: Event sourcing, CQRS, Kappa

System is a single state machine

State machine is implemented using PubSub topics and subscriptions

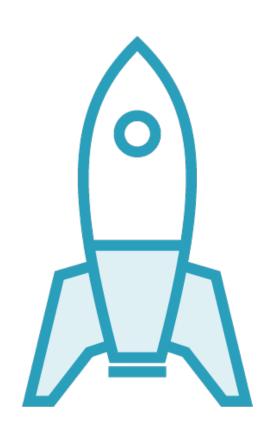








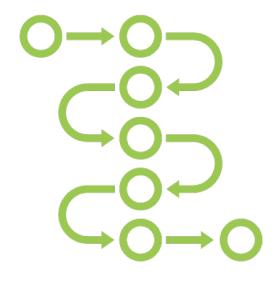
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Traditional Business Applications



Transactional Applications



Data Applications



Intelligence, not data processing.



Analytics



Analytics Services



Big Query





Cloud Dataproc

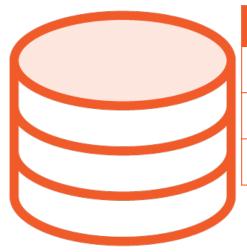


Cloud Data Studio



Cloud Datalab

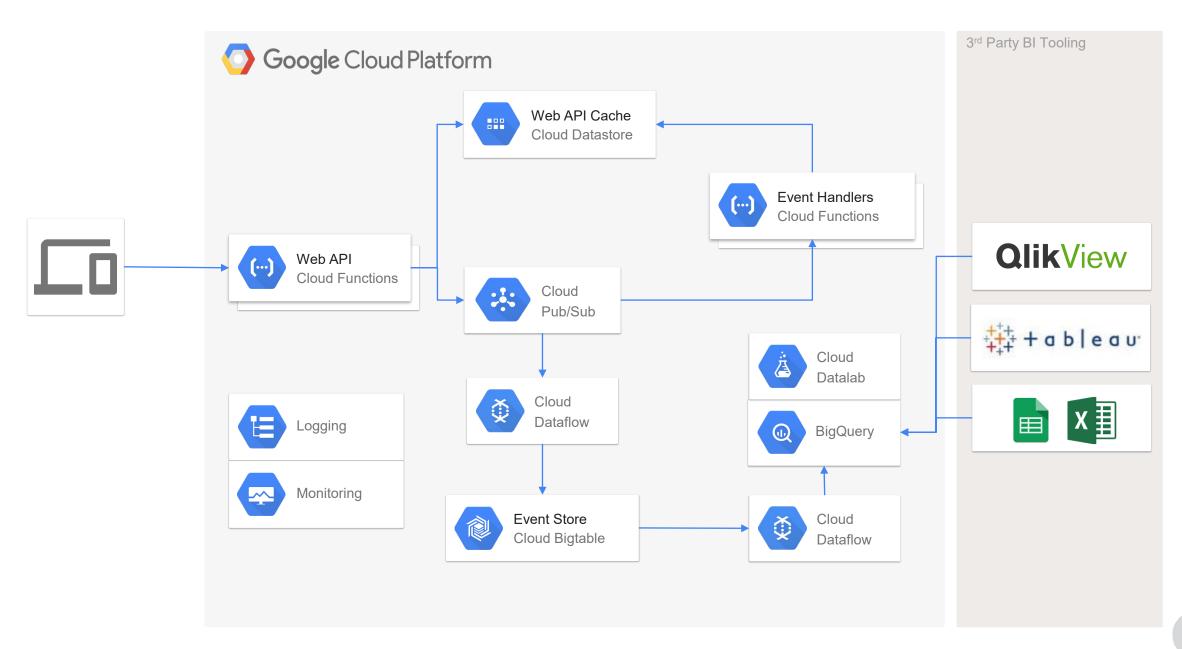




cart_ID	product_ID	qty	unit_price
1	432	1	15.95
1	654	3	3.50
1	126	1	25.00

2011-12-17T02:44:48.481Z	cart.item-added	{}
2011-12-17T02:46:15.310Z	cart.item-added	{}
2011-12-17T02:51:12.052Z	cart.item-removed	{}
2011-12-17T02:57:21.000Z	cart.item-added	{}

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Machine Learning



Machine Learning at Google



Built from internal efforts of the "Google Brain" team

Released as TensorFlow project

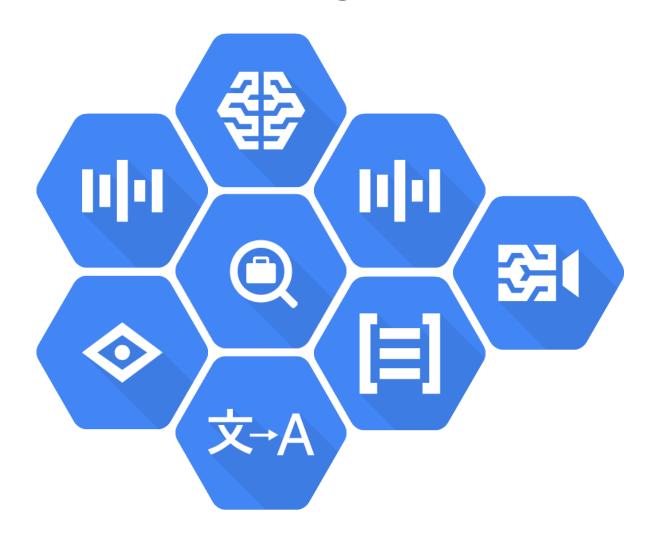
Fully-managed

Supported by custom hardware

Integrated

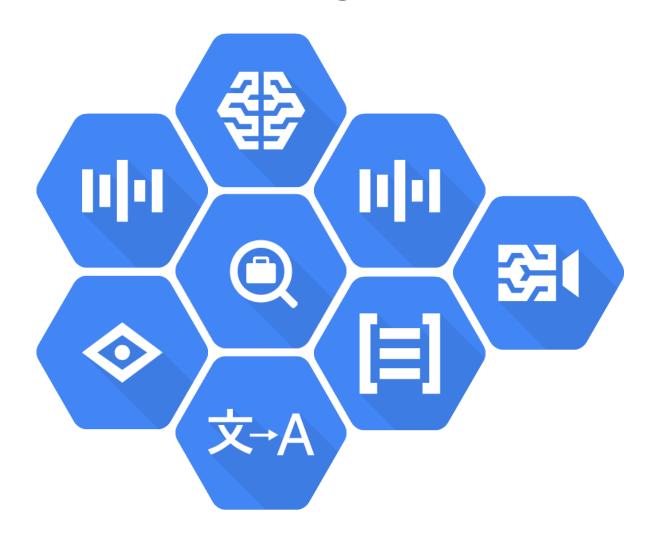


Machine Learning Services

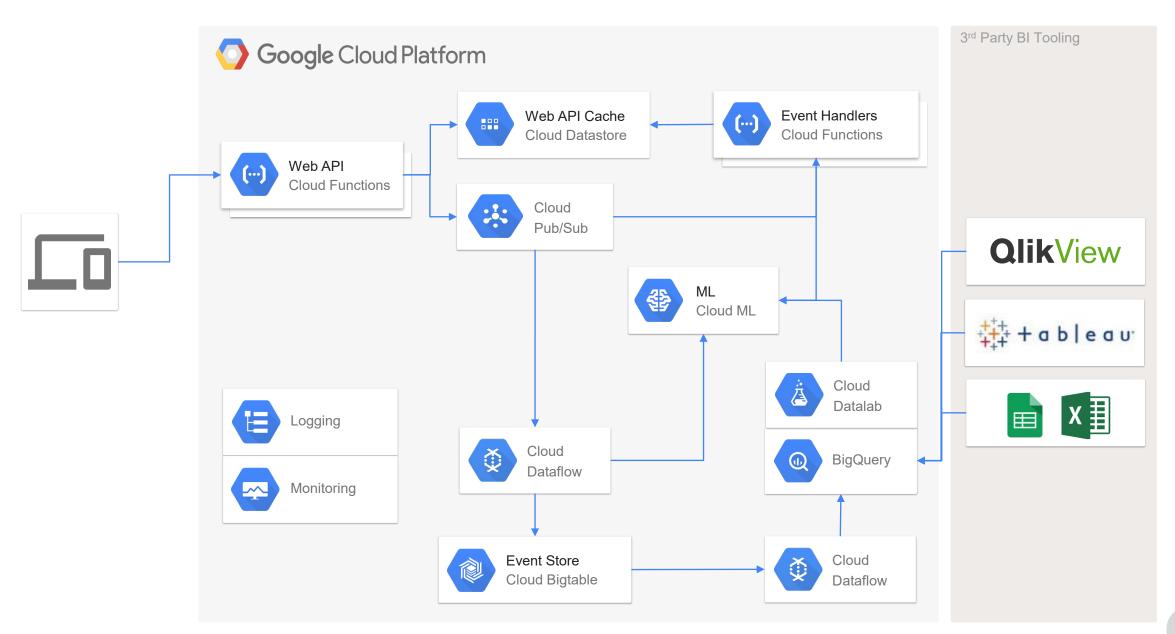




Machine Learning Services







Module Summary



Google Cloud Platform is based on a longer term "Cloud 3.0" vision

Existing systems can be incrementally evolved to Cloud 3.0

Google's layered architecture enables creation of higher level services

Big data and machine learning are key differentiators



Course Summary



Understand Google Cloud Platform

Explore platform building blocks

Apply the platform to a reference architecture

