Google Cloud

Building Resilient Streaming Systems on GCP

Agenda

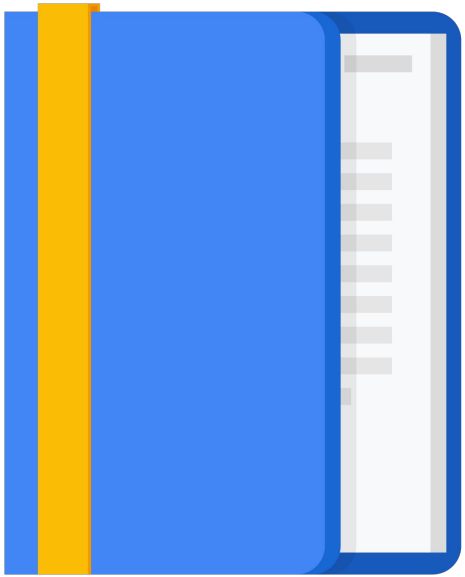
Processing Streaming Data

Cloud Pub/Sub

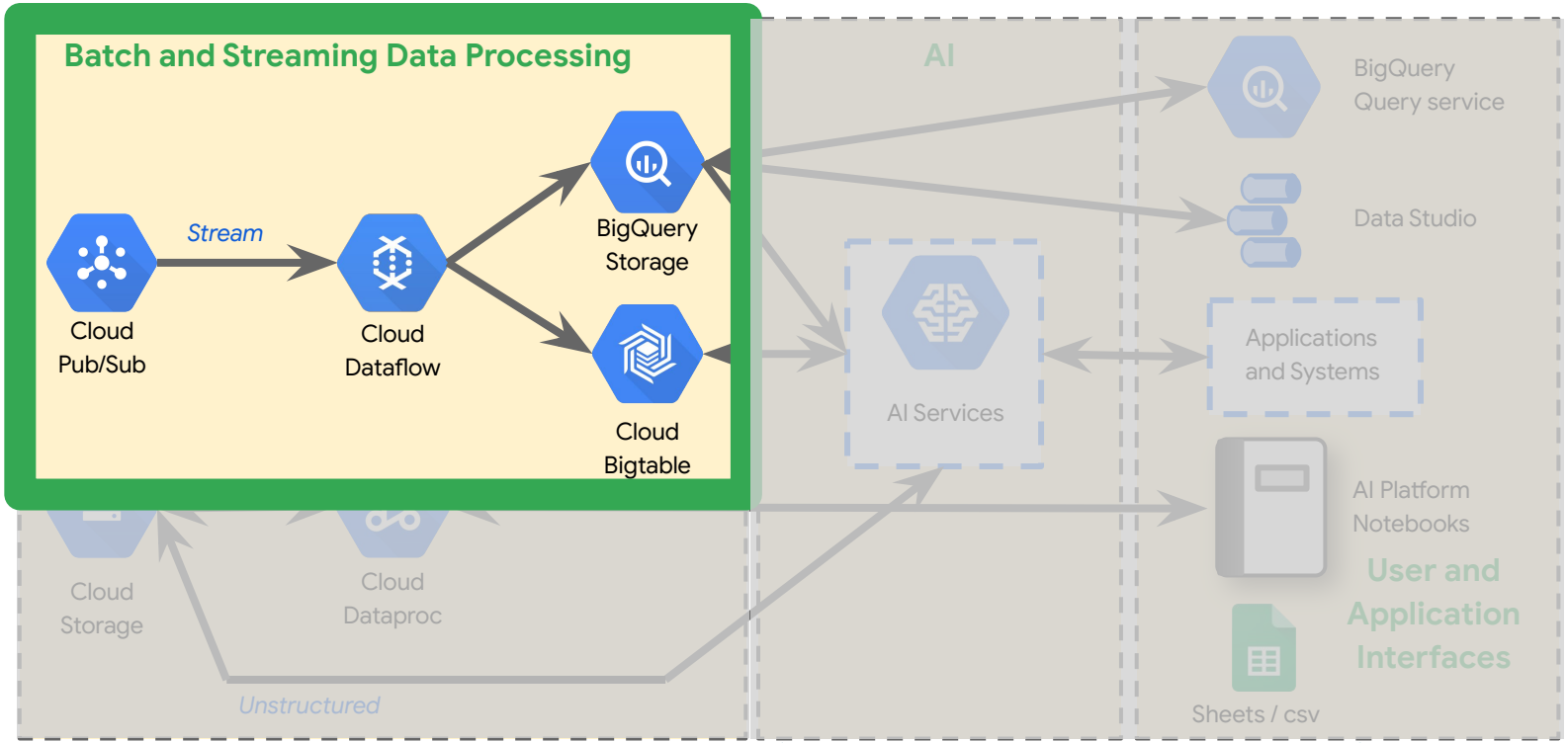
Cloud Dataflow Streaming Features

BigQuery and Bigtable Streaming Features

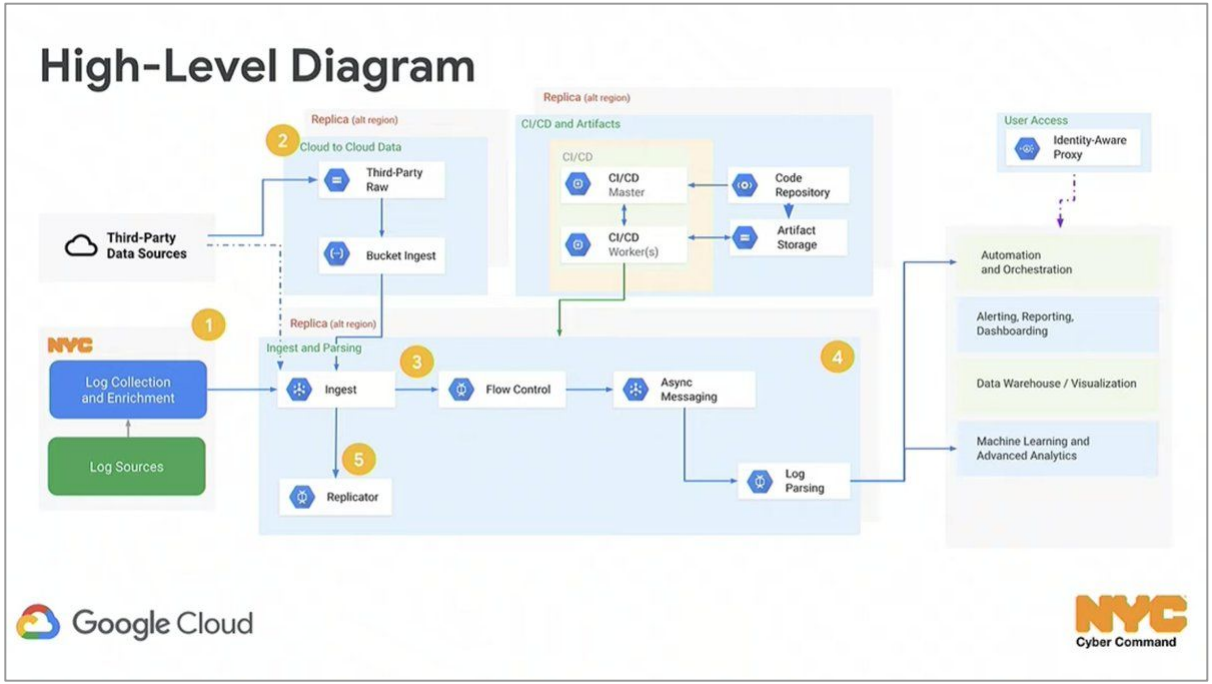
Advanced BigQuery Functionality



Streaming Data Processing



Many enterprises want to enable their analysts to be able to make decisions in real-time; NYC3 did it

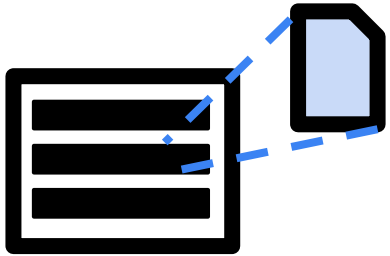


"Real time is king, and that's the only data valuable to us,"

-- Noam Dorogoyer, New York City Cyber Command

Article in GCN: https://gcn.com/articles/2019/08/01/nyc-cloud-cyber-pipeline.aspx
Talk at GCP NEXT 2019: https://www.youtube.com/watch?v=x4yQY8yhVJY

Streaming is data processing for unbounded data sets



Bounded Data
(Batch)

Finite data set
Usually complete
Time of elements is usually disregarded
Typically at rest
Held in durable storage

Unbounded Data
(Stream)

Infinite data set
Never complete
Time of elements is usually significant
Typically in motion
Held in temporary storage

Stream analytics has many applications

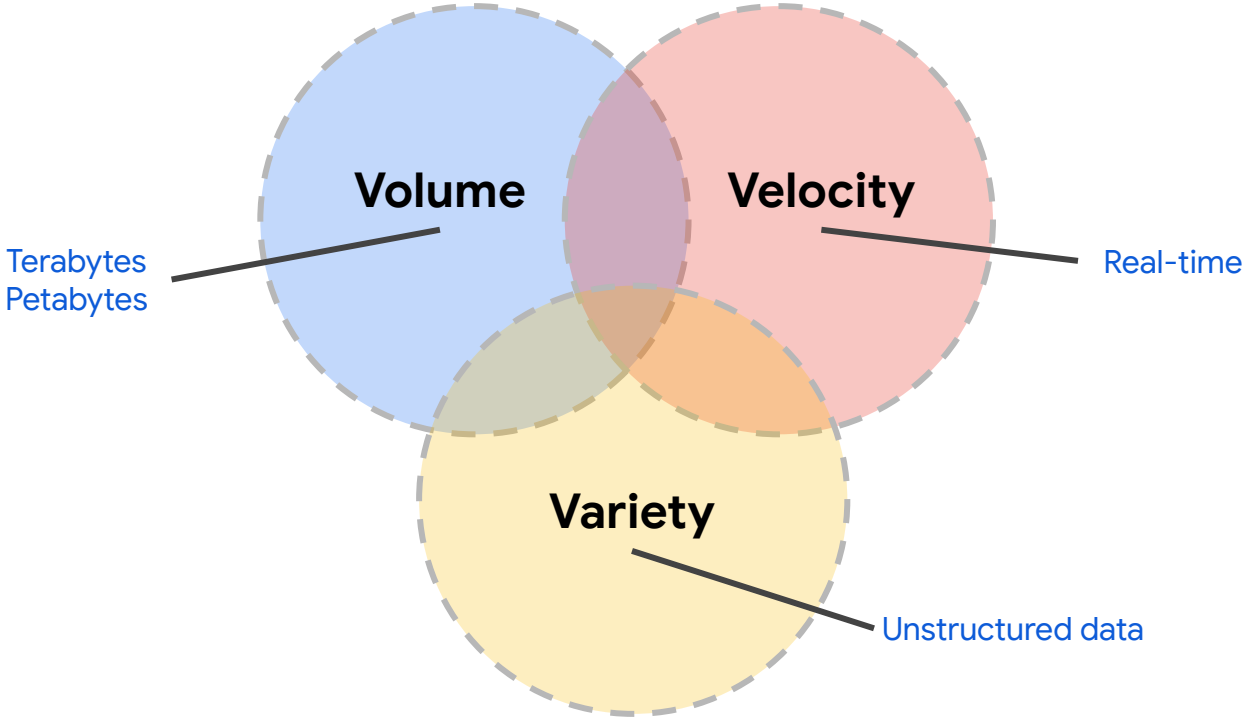
Data integration
(10 sec - 10 min)

- Data warehouses becomes real-time
- Take load off source databases with change data capture (CDC)
- Microservices require databases and caches

Online decisions
(100 ms - 10 sec)

- Real-time recommendations
- Fraud detection
- Gaming events
- Finance back office apps

How to handle data volume, velocity, and variety?



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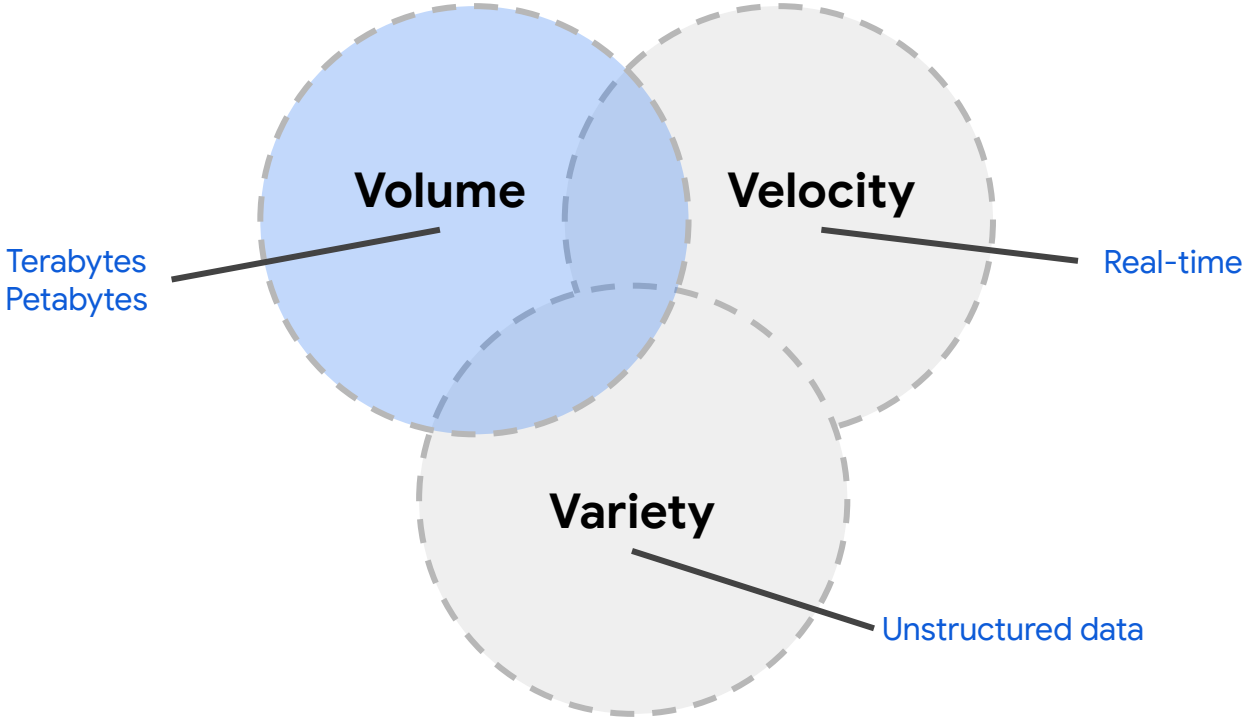

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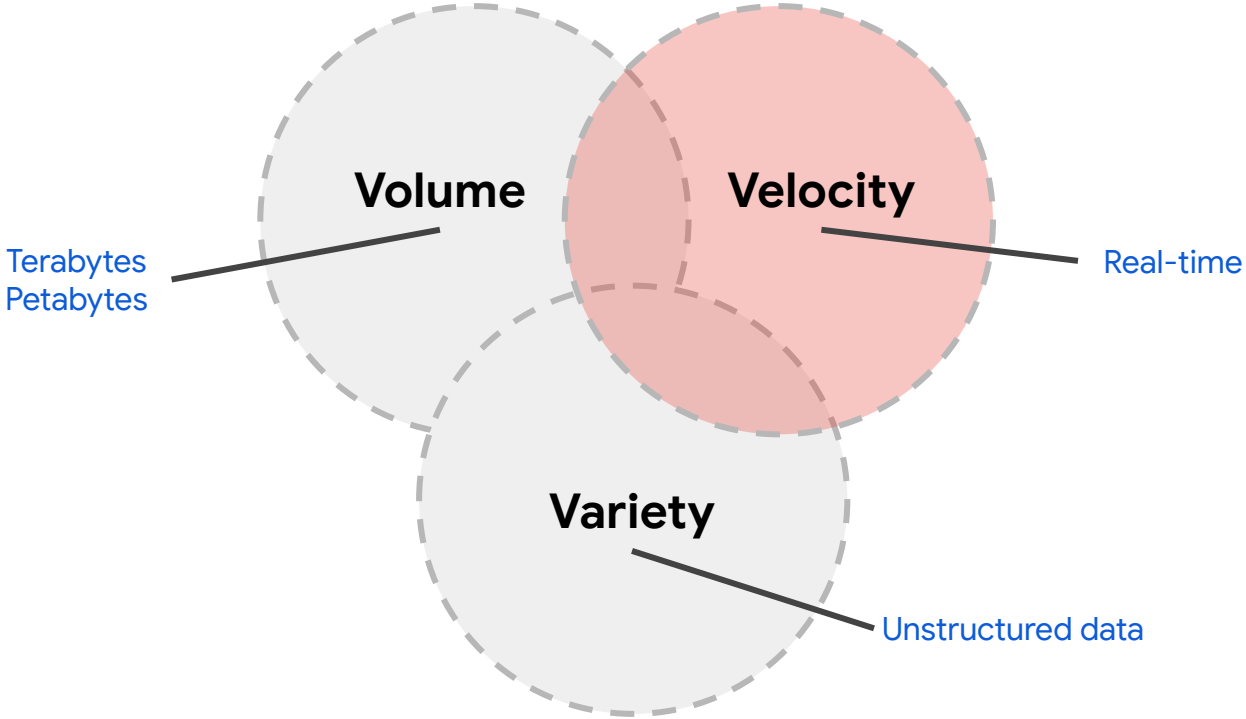

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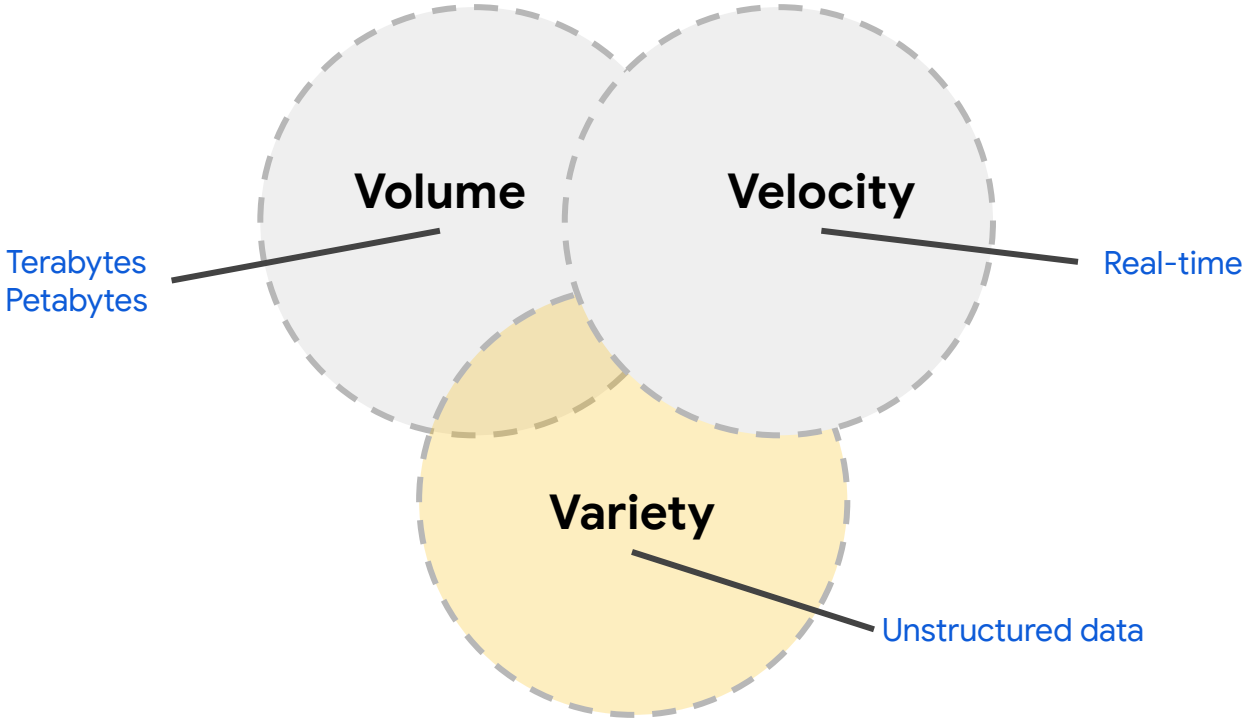
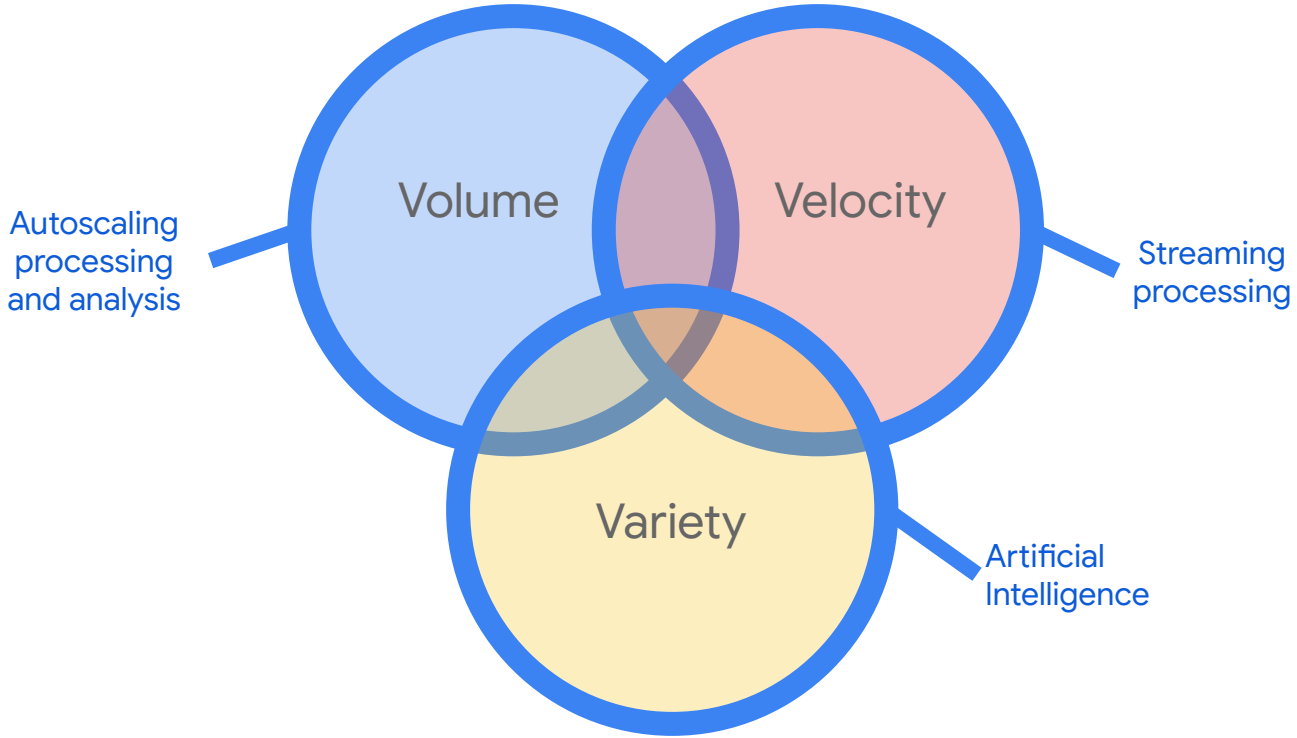


Autoscaling, Machine Learning, and Streaming.



Google Cloud

GCP products help you address key challenges in stream data processing and analytics

Changing and variable volumes of data

Cloud Pub/Sub

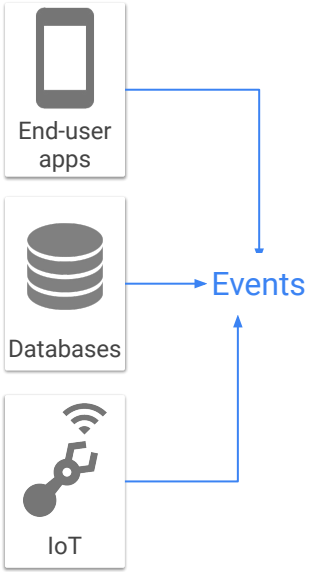
Process data without undue delays

Cloud Dataflow

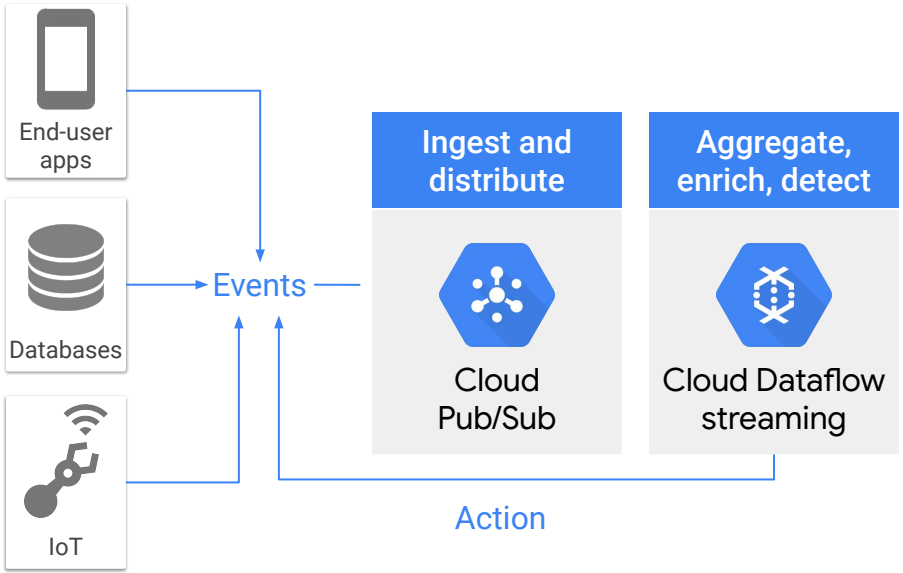
Need ad-hoc analysis and immediate insights

BigQuery

Stream analytics includes some common steps



Stream analytics includes some common steps



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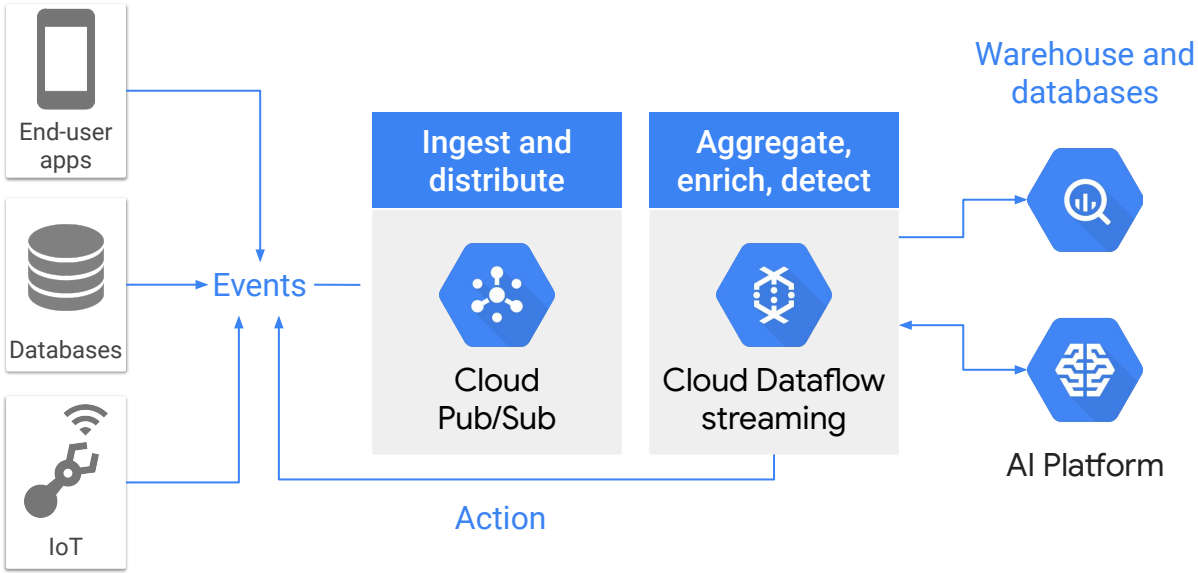

Stream analytics includes some common steps