Google Cloud Computing Foundation Course
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Lecture-41
Cloud Pub_Sub

Cloud pub/sub is our own managed message service and you will learn about this next. Cloud pub/sub is a real-time messaging service that allows you to capture data and rapidly pass massive amounts of messages between other GCP services and other software applications. Think of it as a connector that removes the time that you would typically spend managing operations.

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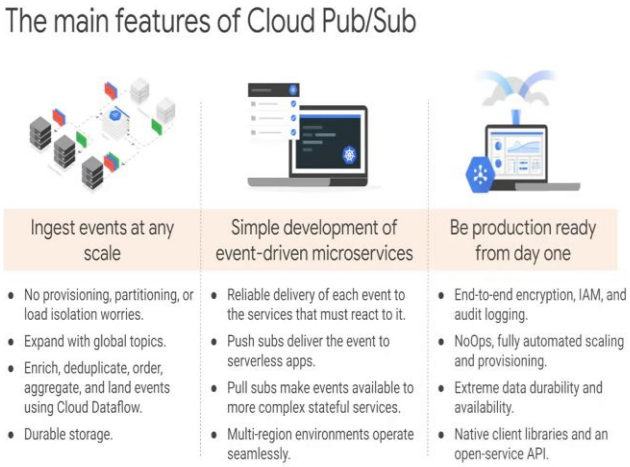

Well in the primary use cases for inter app messaging is to ingest streaming event data. Cloud pub/sub allows you to make your events accessible through messaging middleware. Cloud pub/sub will reliably deliver each event to the services that must react to it. Upon event publications a cloud pub/sub push subscriptions deliver the events as server less apps running in cloud functions App Engine or cloud run.

Pull subscriptions make it available to more complex stateful services running in Google kubernetes engine or cloud dataflow. And multi region environments operate seamlessly because of the global nature of cloud pub/sub. Cloud pub/sub lets you focus on application logic regardless of location or scale. The service is minimal and easy to start with but also eliminates

the operational, scaling, compliance and security surprises then evety reveal themselves in software projects. Always on features include end-to-end encryption, Identity and Access Management and audit logging.

It also includes no ops, fully automated scaling and provisioning with virtually unlimited throughput. Further features of cloud pub/sub include extreme data durability and availability with synchronous cross zone replication as well as native client libraries in major languages and an open service API.

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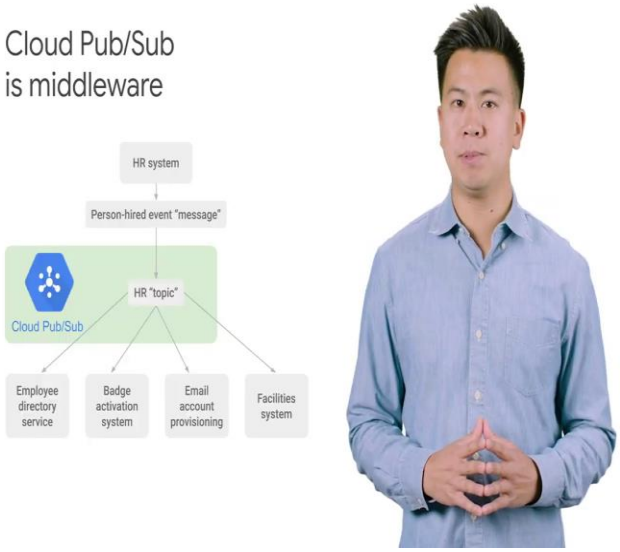

Cloud pub/sub is called middleware because it is positioned between applications. It is used between data gathering and processing systems. For example if an organization is hiring a new employee the company's HR system can use cloud pub/sub to notify their other business systems that a new employee has been hired, pass on relevant information and initiate actions. Cloud pub/sub is often found in the middle of systems like this.

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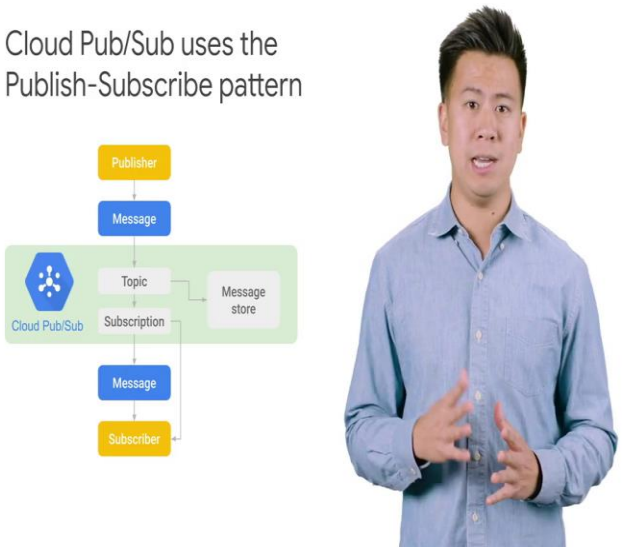

Publisher applications can send messages to a topic and subscriber applications can subscribe to that topic to receive the message when the subscriber is ready. This can take place asynchronously. It is important to understand that subscribers only receive messages from the initial publisher. It is best practice when using cloud pub/sub with GCP tools to specify a subscription instead of a topic for reading.

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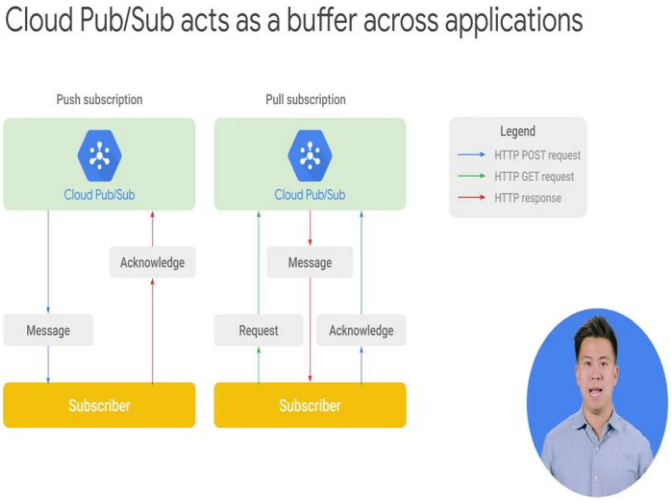

Cloud pub/sub acts as a buffer between sending and receiving across software applications which makes it easier for developers to connect applications. For example cloud pub/sub can be used to guarantee the email messages get delivered swiftly to online users as well as offline users when they come back online. Cloud pub/sub can act as a shock absorber within the architecture. If

there is a sudden influx of messages cloud pub/sub avoids the risk of overwhelming the consumers of those messages because it will absorb the sudden increase in messages and the consumers can continue to pull as many messages as they can handle at once. Messages can be pushed to any secure web server or pulled from anywhere on the internet.

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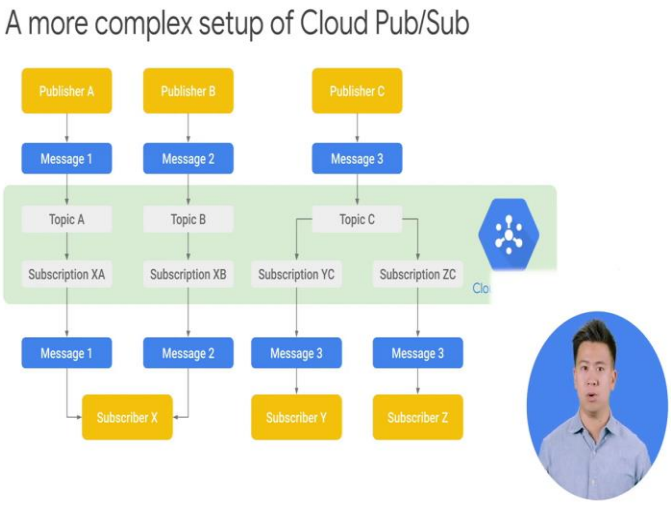

This topology represents a slightly more complex setup of cloud pub/sub. Note that everything in the green box is part of the cloud pub/sub managed service. You would supply to publishers and subscribers by writing applications or leveraging other managed services.

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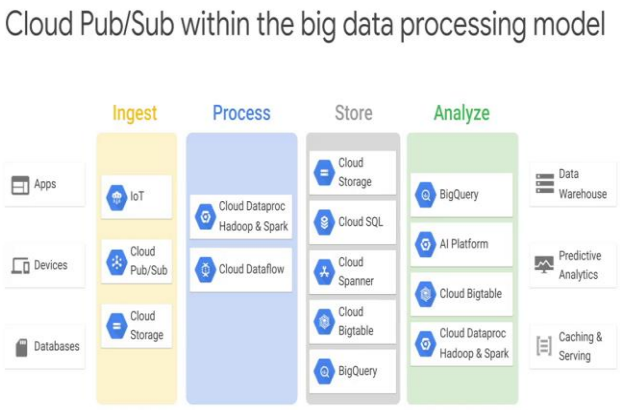

Within the common big data processing model cloud pub/sub is found in the ingest phase. Let us explore the rest of this diagram the first step in processing data is capturing and bringing it into the system. GCP has several tools to help with this including cloud IOT and cloud pub/sub. Cloud pub/sub ingests event streams from anywhere at any scale for simple reliable real-time stream analytics. The second step is to process the data.

GCP tools during this stage include cloud data proc and cloud dataflow. The third step is to store the data and ensure as the right accessibility needed. GCP tools in this stage include cloud storage, cloud sequel, cloud spanner and cloud BigTable. Finally users like you are looking to analyze the data to capture insights. GCP products for this stage include bigquery, cloud BigTable, AI platform and cloud data proc.

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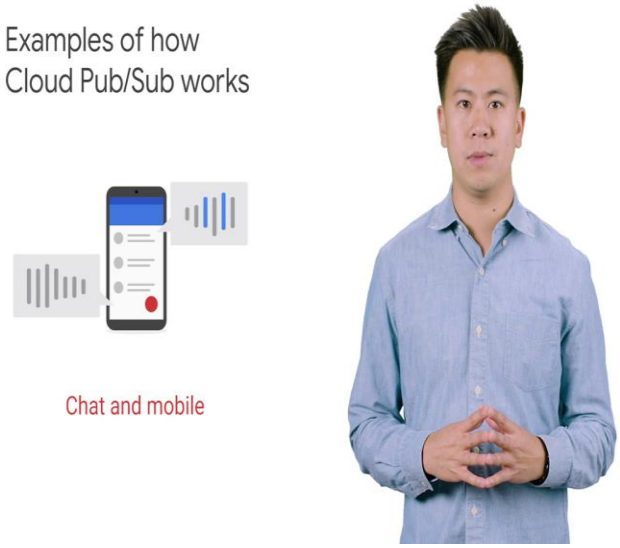

There are many examples of cloud pub/sub working. Every time your Gmail displays a new message it is because of a push notification to your browser or mobile device.

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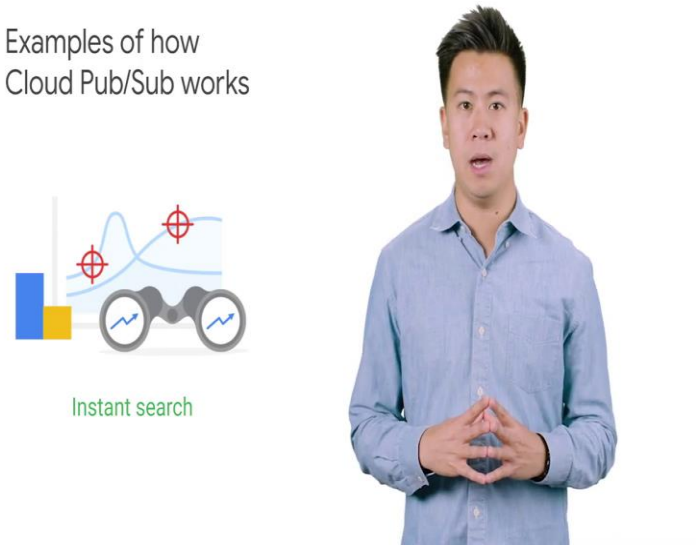

The updating of search results as you type is a feat of real-time indexing that depends on cloud pub/sub to update caches with breaking news.

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Within the most important real-time information streams for some companies is advertising revenue they can use cloud pub/sub to broadcast budgets to their entire fleet of search engines