3. Cloud IoT core

Introduction

Cloud IoT Core is a fully managed service. This ensures that you don't need to do autoscaling, replication configuration, database partitioning, or pre-provisioning of resources. One or millions of devices can be connected and Cloud IoT Core can scale to suit your needs.

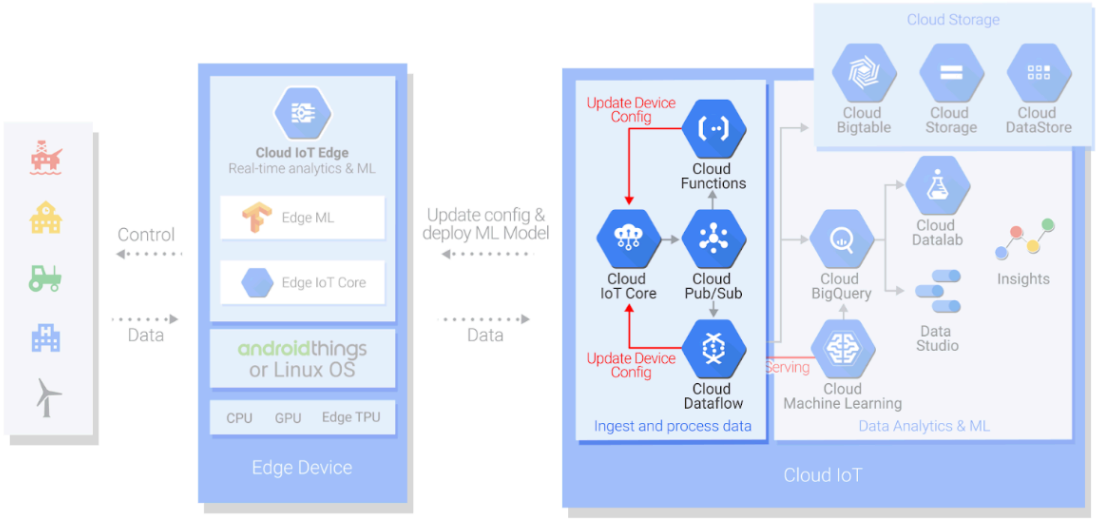

Figure 1. Cloud IoT Core (source: Google Cloud)

Cloud IoT combines the highest security level of the MQTT protocol (TLS 1.2 with certificates), and its single GLOBAL endpoint (mqtt.googleapis.com). You do not need to determine the location of the device when interacting with a device, and you do not need to duplicate its configuration in each area. The data is published automatically to Cloud Pub / Sub and is accessible globally.
The Device Manager allows you to update and control devices.

Registration Connects Devices to Google IoT Cloud

Device registration

To connect a device it needs to be registered in the device manager first. The device manager helps you to build and configure device registries. You can access the app manager via the Google Cloud Platform Console, the gcloud commands, or the REST-style API.

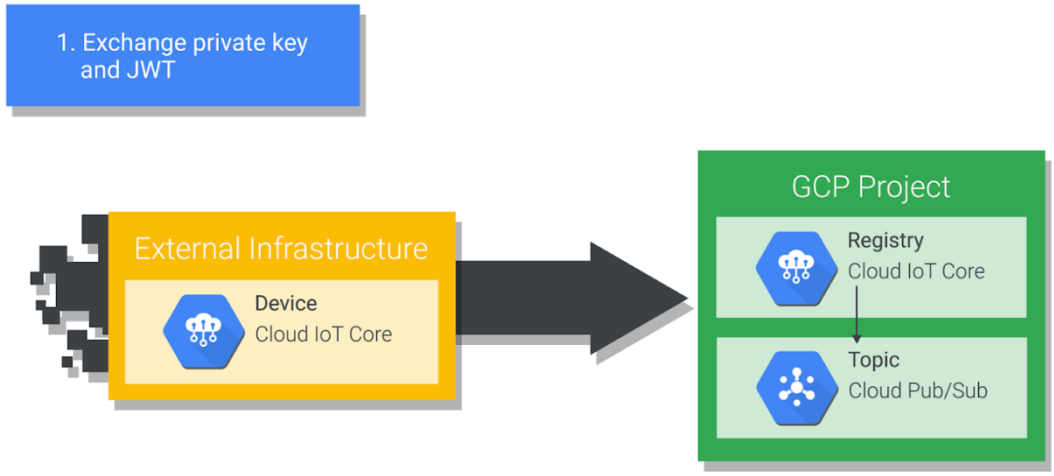

Figure 2. Device registration (source: Google Cloud)

Device registry

A Device Registry is a device container. While building a device registry, pick which protocols you want to enable: MQTT, HTTP, or both.
Each device registry is built in a particular cloud region and is a part of a cloud project.
In the cloudiot.googleapis.com service a registry is defined by its full name as: projects/{project-id}/locations/{cloud-region}/registry-id}.
The system registry is configured with one or more Cloud Pub / Sub topics to which telemetry events for all devices in that registry are released. A single topic may be used for data collection in all regions.
For every registry, the stack driver monitoring is activated automatically.
Cloud Identity and Access Management (IAM) can be used to monitor access, allow users to display, receive, or manage devices in full. Notice that for each project, Cloud IoT Core automatically grants the position of cloudiot.serviceAgent to the corresponding service account to allow publishing to Pub / Subtopics.
See Allowed Characters and Size Requirements for information on computer registry ID naming and size requirements.

References

Google Cloud LLC, 2020. *Google Cloud.* [Online]
Available at: https://cloud.google.com
[Accessed 2020].

Statista, 2020. *Internet of Things (IoT) active device connections installed base worldwide from 2015 to 2025*.* [Online]
Available at: https://www.statista.com/statistics/1101442/iot-number-of-connected-devices-worldwide/
[Accessed 2020].