# Product Overview

Managing a highly distributed cloud-edge-IoT infrastructure and applications requires various skill sets, within a single team or across multiple organisations. This complexity also brings forth concerns about governance, security and efficient data management. SixSq created the comprehensive B2B Platform-as-a-Service (PaaS) Nuvla.io to streamline and alleviate this management complexity.

The **Nuvla.io** B2B platform and marketplace empowers users to remotely manage their edge devices and apps across edge and cloud. Nuvla.io supports proprietary as well as purchased apps from the marketplace.

With Nuvla.io, users can easily create, deploy and update apps on their edge devices or cloud. In a few clicks, they can establish a robust first layer of raw data processing at the edge, sending only relevant data to the cloud. This efficient process optimises data transfer and reduces unnecessary overhead.
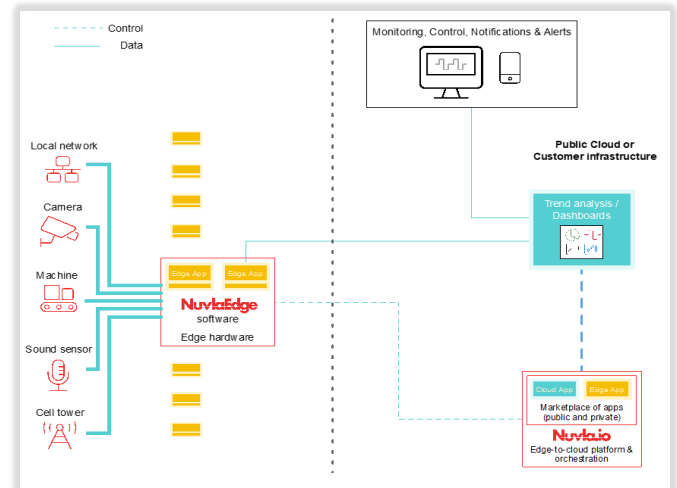
NuvlaEdge software runs on a range of hardware platforms as small as Raspberry Pi, enabling its integration with IoT sensors at the edge. By establishing a secured connection with the Nuvla.io platform, NuvlaEdge facilitates remote management and real-time monitoring of edge devices, providing teams with enhanced control and visibility over their edge infrastructure.

Nuvla.io Platform & Apps Marketplace: Main Features

Near-data processing: Process data in near-real time with apps deployed at the edge. Nuvla.io supports standard protocols (e.g. MQTT, ModBus) to facilitate data collection from sensors.

Container-native & cloud-neutral: Nuvla.io is container native. Simply capture your app in the platform, including the endpoint of a Docker Registry, with credentials, and the platform will be able to deploy your app at scale.

As Docker and Kubernetes are supported by virtually all public and private clouds, Nuvla.io can be used with any cloud provider.

IPR protection: The Nuvla.io marketplace supports private Docker registries and credentials. This ensures only paying customers have access to any given version of the Docker images, therefore protecting vendor intellectual property.

Governance: Control all aspects of application deployment, access and data management,

including a clear audit trail and fine-grain authentication and authorisation, as well as event notifications.

Future-proof: The Nuvla.io marketplace provides a complete lifecycle for apps deployed by customers on their edge and cloud infrastructures. App vendors and authors are able to provide updates regularly, which Nuvla.io can apply with customer consent. Customers can add, remove and swap apps at any time, to support their evolving business.

Automated and scalable: The Nuvla.io platform allows to manage at scale apps deployed at the edge and in the cloud. Nuvla.io gives you a single pane of glass to monitor and manage your edge-to-cloud fleet.

Powerful API: Nuvla.io exposes a uniform and extensible HTTP-based REST API alongside the platform's rich Web UI. This API allows developers to integrate Nuvla.io into third-party systems, script it and even use it as *Infrastructure as code* (IaC).

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# NuvlaEdge software: Main Features

Hardware-agnostic: Compatible with most ARM and x86 platforms (H/W certification process available).

Connectivity: Certified for all common forms of IP connectivity, the NuvlaEdge powered edge device can communicate on mobile (3G, 4G and 5G), Ethernet, Wi-Fi and even satellite.

Container-ready: Any application packaged as Docker containers, and built for your hardware platform (e.g. ARM, x86) can be captured in Nuvla.io, and deployed on a NuvlaEdge-powered edge device. You can also manage multi-container apps using Docker Compose, Swarm or Kubernetes.

Open-source: The NuvlaEdge code can be found on GitHub.

Low-footprint. The NuvlaEdge software only takes 150 MB of memory, leaving the rest for running apps.
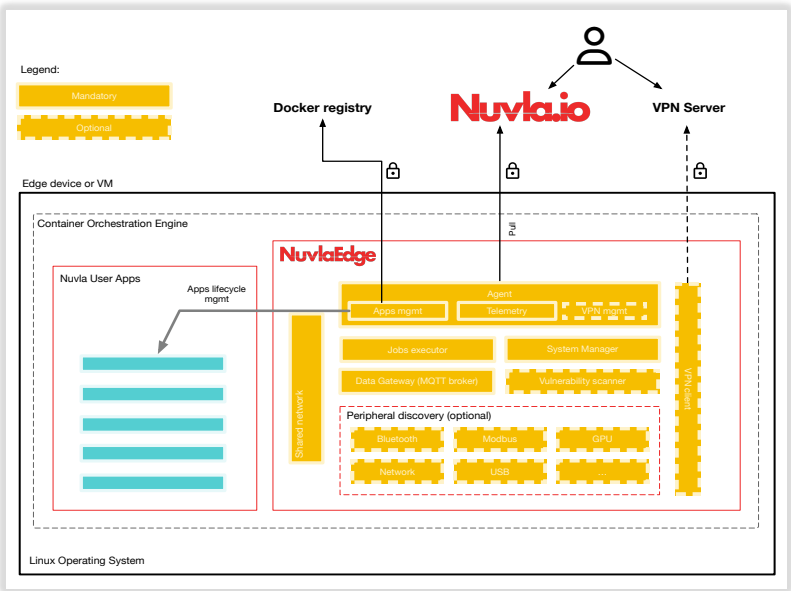
The big picture: A typical edge infrastructure
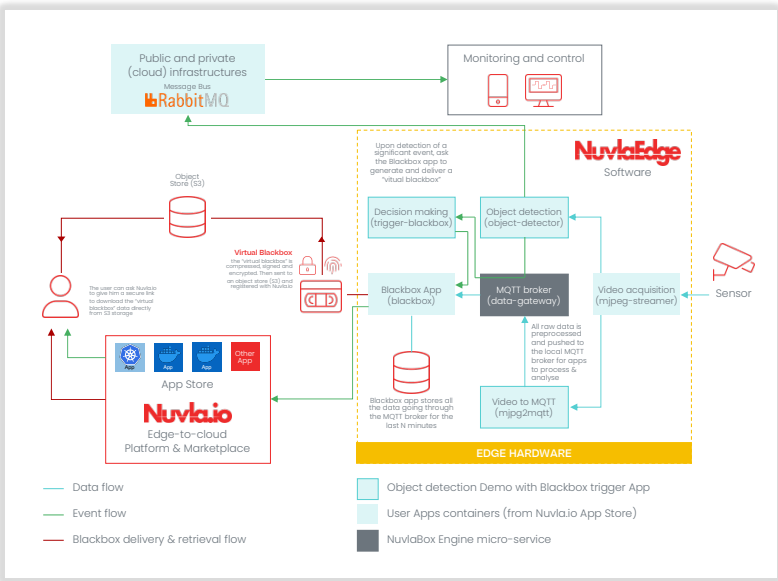
This diagram represents an IoT-edge-cloud setup involving the NuvlaEdge software, running on the edge device, and the Nuvla.io platform and marketplace, running in the cloud.

The objective here is to detect a target-object on a live video feed. Whenever the object is recognised, the details of the associated event are encrypted and securely saved in a user defined dedicated object store on the cloud.

How does it work?

Video is captured by the camera sensor, connected to an edge device running NuvlaEdge. On this edge device, the user has deployed apps for data acquisition and near data processing.

Here, thanks to the video acquisition app (mjpeg-streamer container), raw data flows from the sensor to the MQTT broker, where the near data processing app (object-detector) analyses the data. If the target is recognised, the decision making container (trigger-blackbox) triggers the "Blackbox" app, which records event details on a dedicated object store. From Nuvla.io, the user gets notified automatically with a secured link to retrieve the data from an object store in its selected public or private cloud provider.

Unleash the power of Edge Computing with Nuvla.io

Application Centric | Cloud Neutral | Container Native