ByteNite

Distributed Computing

The most innovative grid computing system powered by common devices

Introduction

Grid computing

Grid computing is

Unpredictable

Due to the lack of centralized scheduling and data characterization the extimation of processing time is extremely complex and inaccurate.

Unreliable

In a system based only on retail devices contribution there is no guarantee that the job will be correctly completed.

Inefficient

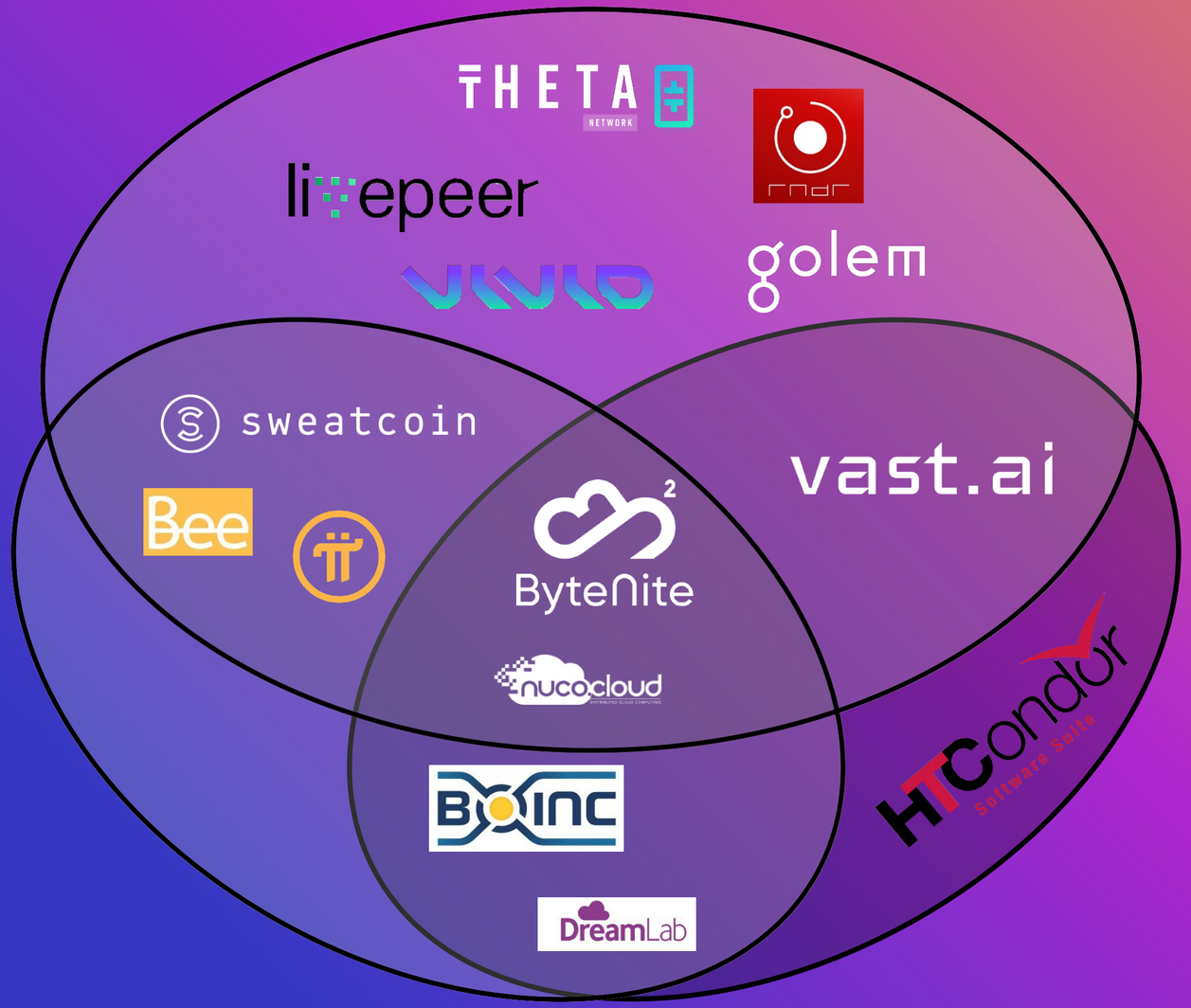
Every computing task should be replicated to ensure data integrity, requiring more resource than a system where data is verified by a trusted machine.

Introduction

Grid computing

User Reward

In a sharing economy scenario, user reward is a key driver to product adoption



Supports mobile devices

Worldwide smartphones and tablets are more than 5 times the number of desktop and laptop PCs

Centralized Architecture

As opposed to blockchains, centralized systems allow to schedule processing tasks more efficiently

Introduction

Cloud computing

Cloud computing is

The lack of competition in the cloud computing market allows cloud providers to charge customers *more than twice the cost* of running their infrastructure.

Cloud computing struggles to achieve vertical scalability (i.e. more processing power for one single task) at reasonable costs and thus it performs poorly on single tasks.

Even the best performing hyperscale data center have a significant share of electricity usage in non-IT equipment, such as cooling and cable losses.

Why bytenite

Our solution

A cloud platform powered by a grid computing system, where customers can buy computationally intensive services with incredible performance at low cost.

Computing platform

SaaS platform accessible throuch web UI and APIs

Core system

Data preparation, scheduling, monitoring, validation and post ptocessing

Worker app

Mobile and desktop applications for capacity provisioning

Why bytenite

Our advantages

We are fast. We are affordable. We are flexible. We are sustainable.

Speed

Thanks to massive parallelization ByteNite can achieve unmatched speed in computationaly intensive tasks

Affordability

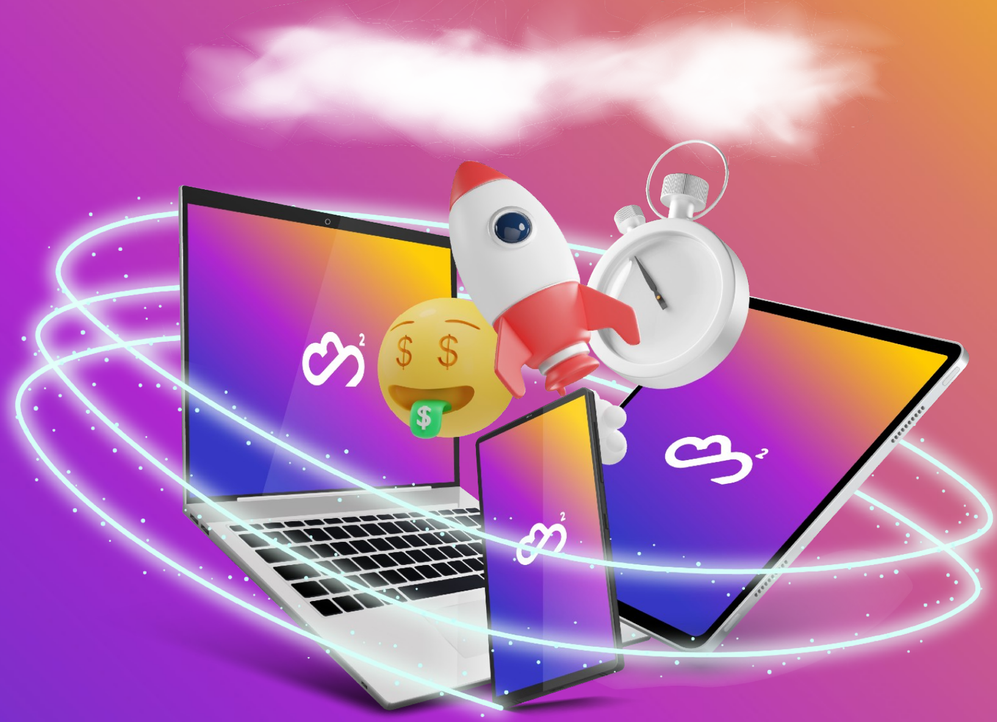
We harness idle capacity from retail devices, so our costs are significantly lower than cloud providers

Flexibility

Configurable tradeoff between speed and price

Sustainability

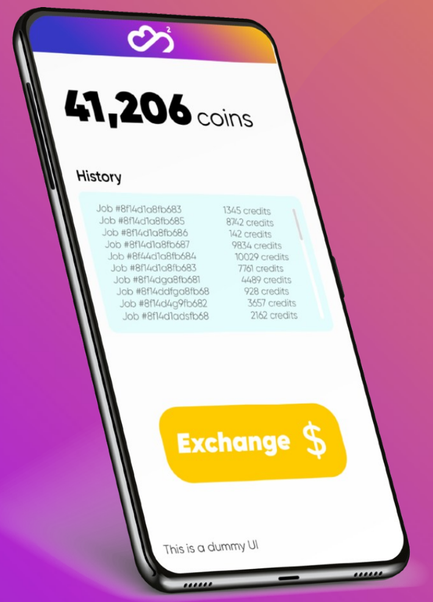
Our grid doesn't need active cooling, air conditioning, UPS and other energy hungry data center infrastructure



Why bytenite

Social impact

6+ billion devices
are idle 8h a day,
providing an enormous
unexploited
computing capacity

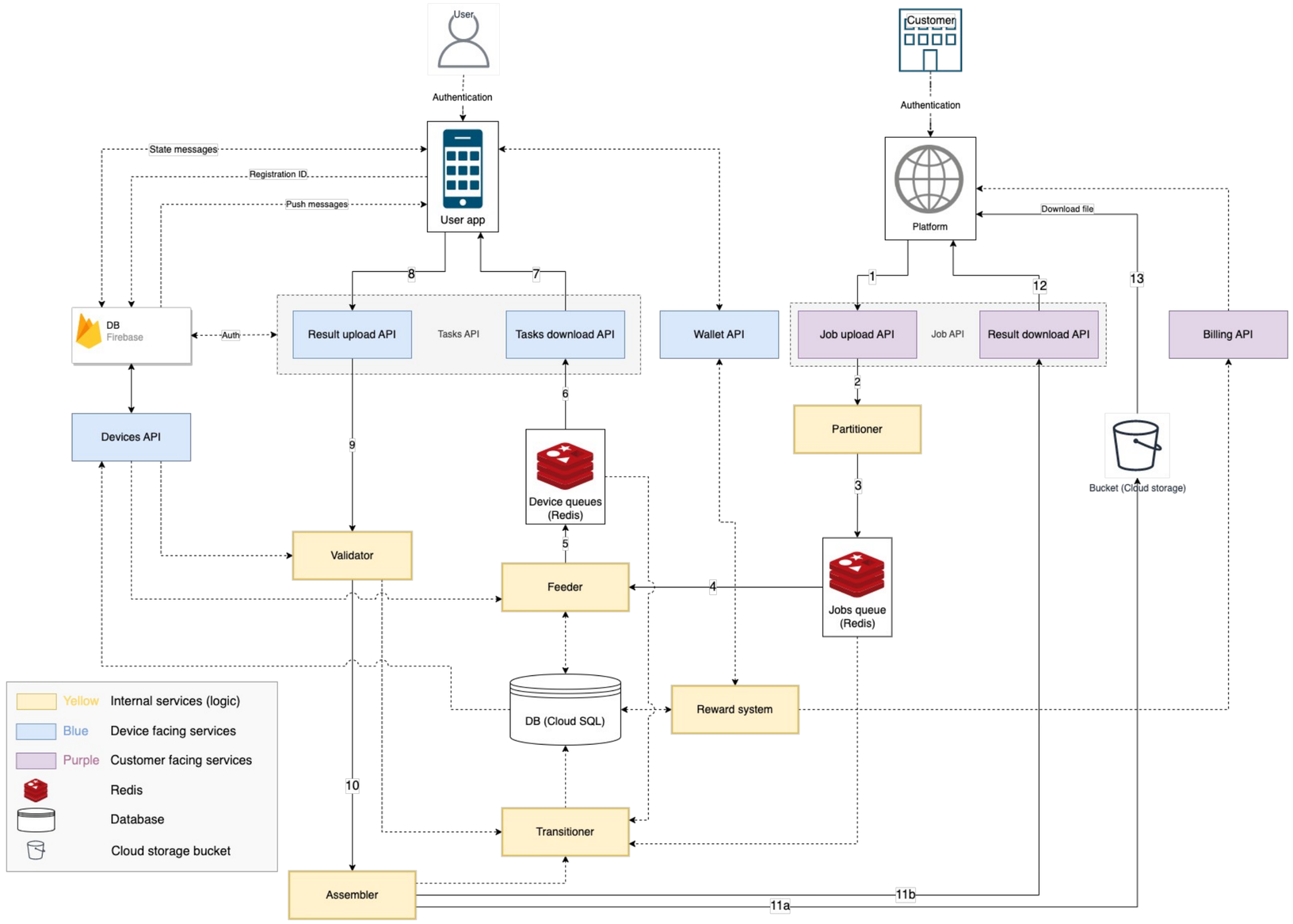


Users can
pull out a value of
$100/mo out of
their devices

Geographically
distributed computing
systems allow to
save 37% energy
compared to server
farms

System architecture

Overview



Data ingestion

The Partitioner verifies the integrity of data and splits it into smaller chunks

Scheduling

Tasks are sorted according to a availability of computing resources and job requirements

Processing

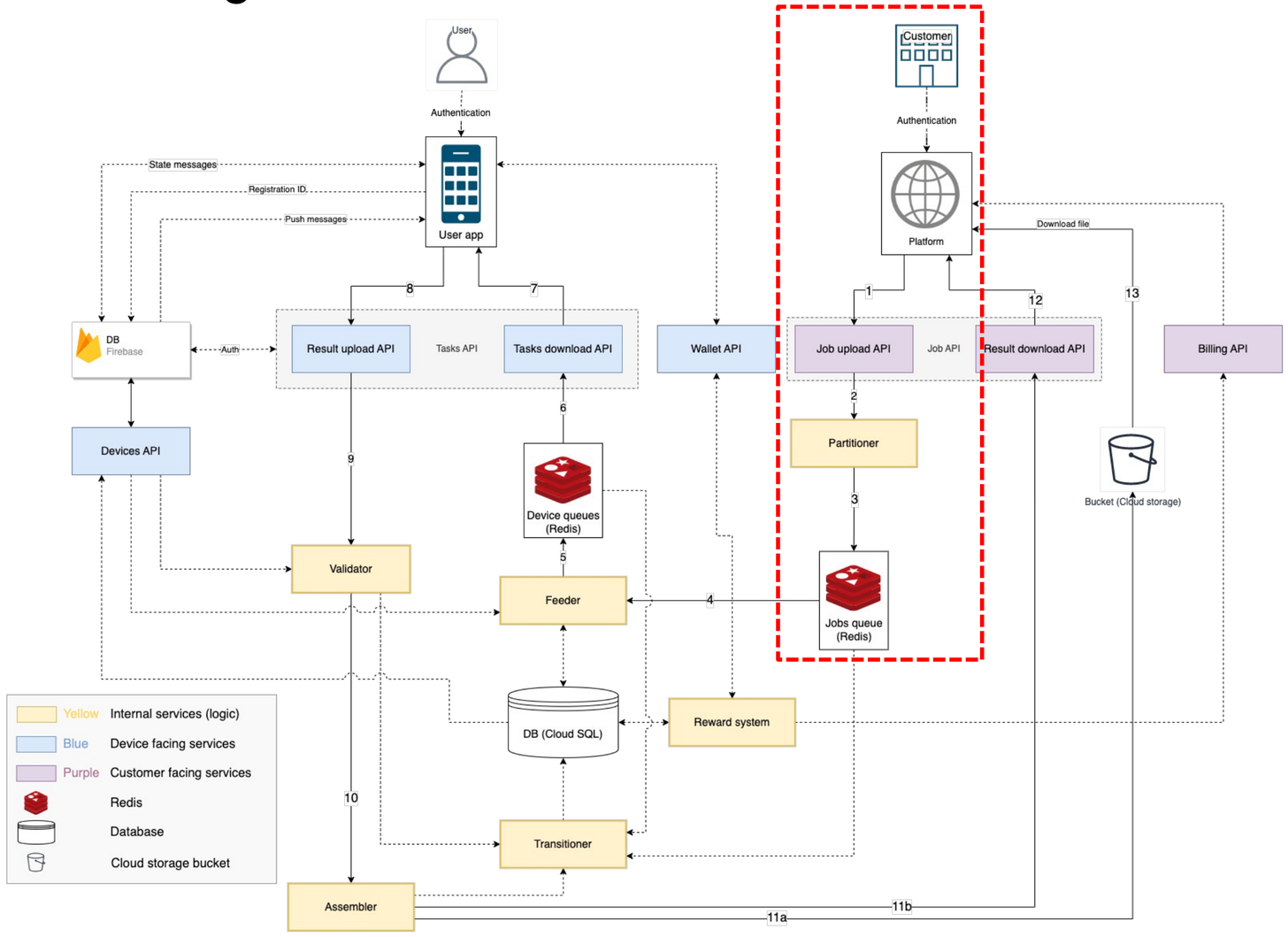
Chunks are downloaded by the worker devices along with the Python script to run.

Postprocessing

Processed data is verified and merged into larger chunks to build the final output

System architecture

Data ingestion



Jobs API

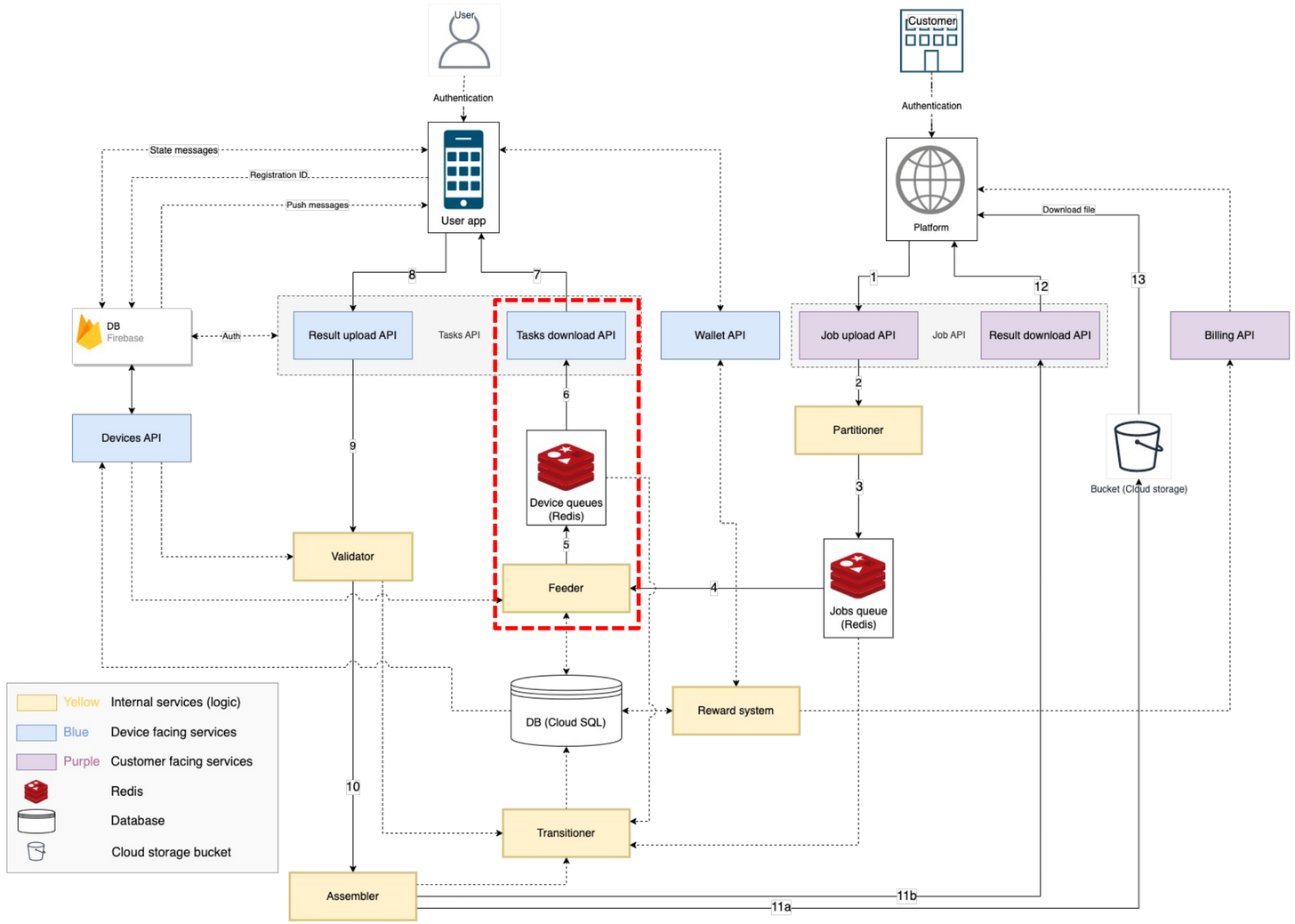
The Jobs APIs allow the Computing Platform to create and configure new jobs, send input
data, send and receive state updates, and fetch download links

Partitioner

The Partitioner verifies the integrity of data uploaded by the users through the Computing Platform, and splits it into smaller chunks suitable for worker devices. A task record is created for every chunk, and the record ID is queued on Redis queue.

System architecture

Scheduling



Feeder

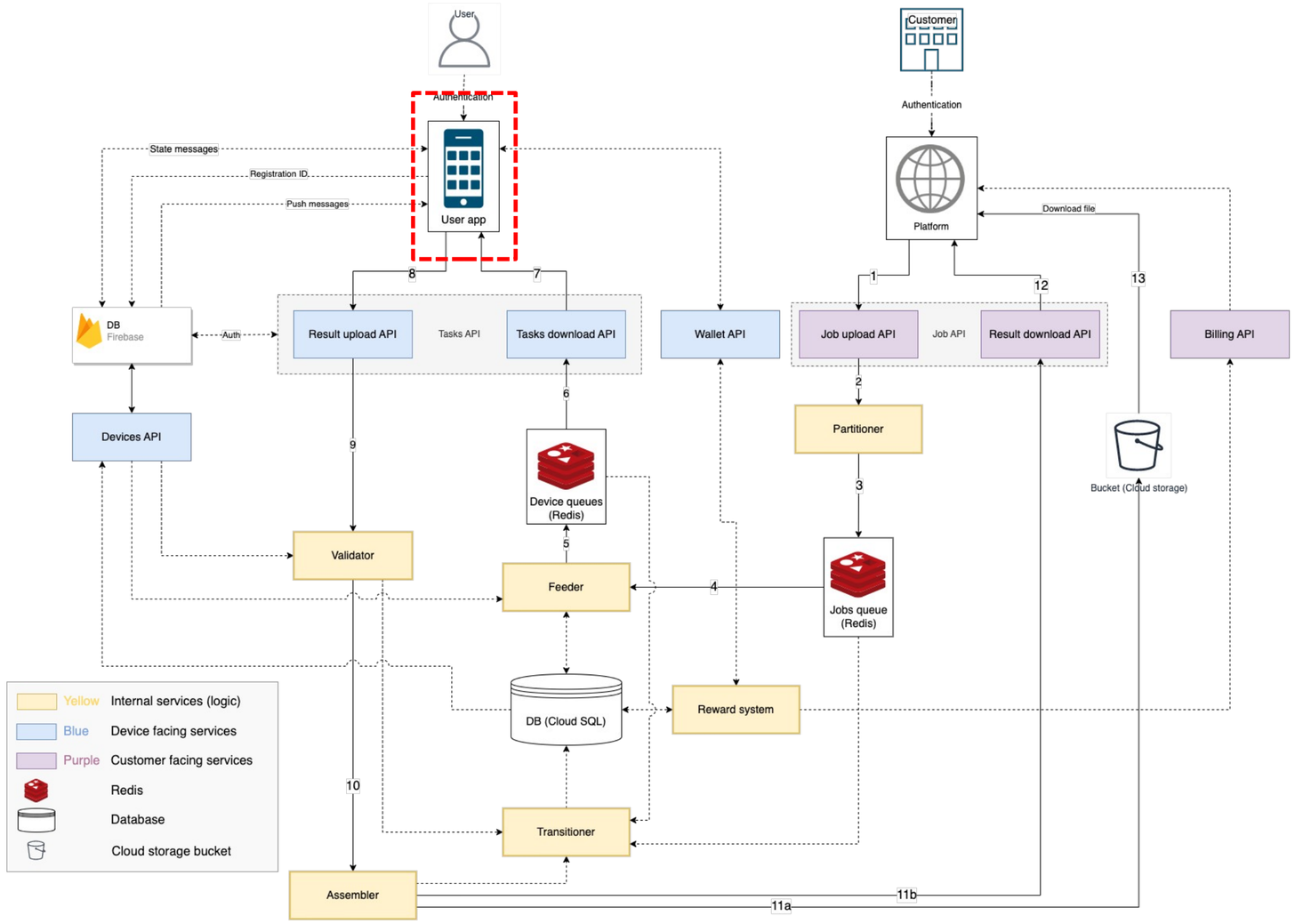
The Feeder manages and supervises the whole task scheduling system. It takes chunks from partitioner queue and puts them in a Job specific task queue ready to be consumed by the Tasks API. Tasks are sorted according to a scheduling algorithm that considers the availability of computing resources in the grid, the job's requirements, and the user's preferences.

Tasks API

The Tasks APIs allow the Worker App to fetch new tasks, download the data and programs and send back results. It also handles device disconnection and failure logic.

System architecture

Processing



Worker app

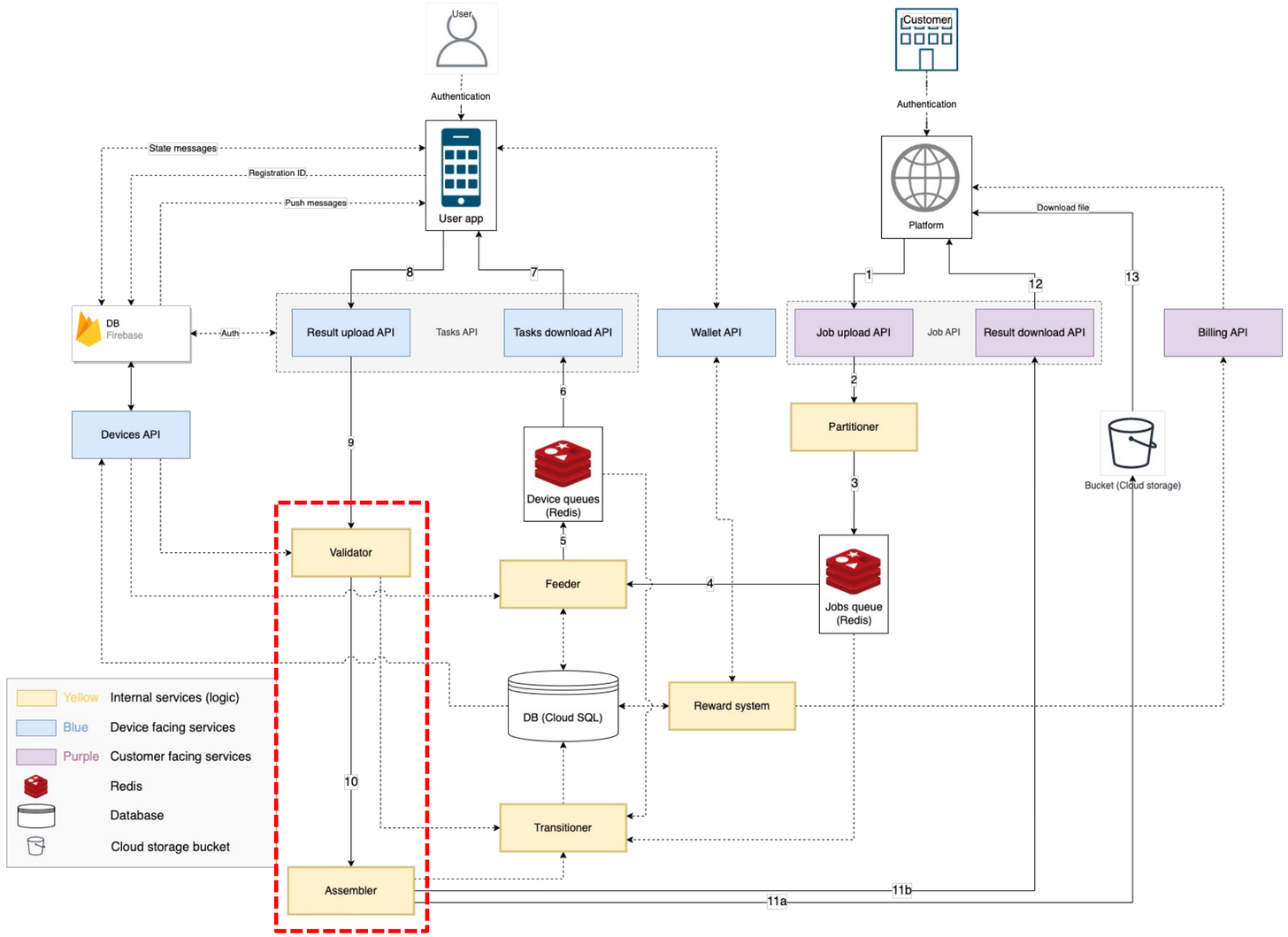
An easy to use software that runs on workers' devices and enables them to receive, queue up, process, send back, and clear up computing tasks, according to scripts shipped with each task and run inside the App.

Python interpreter

A customized Python interpreter runs the scripts provided with every task

System architecture

Postprocessing



Validator

The Validator verifies the integrity and correctness of results sent by the worker apps. Like the Partitioner and the Assembler, validators are specific to the kind of data that needs to be verified (e.g. video, images,text, ...)

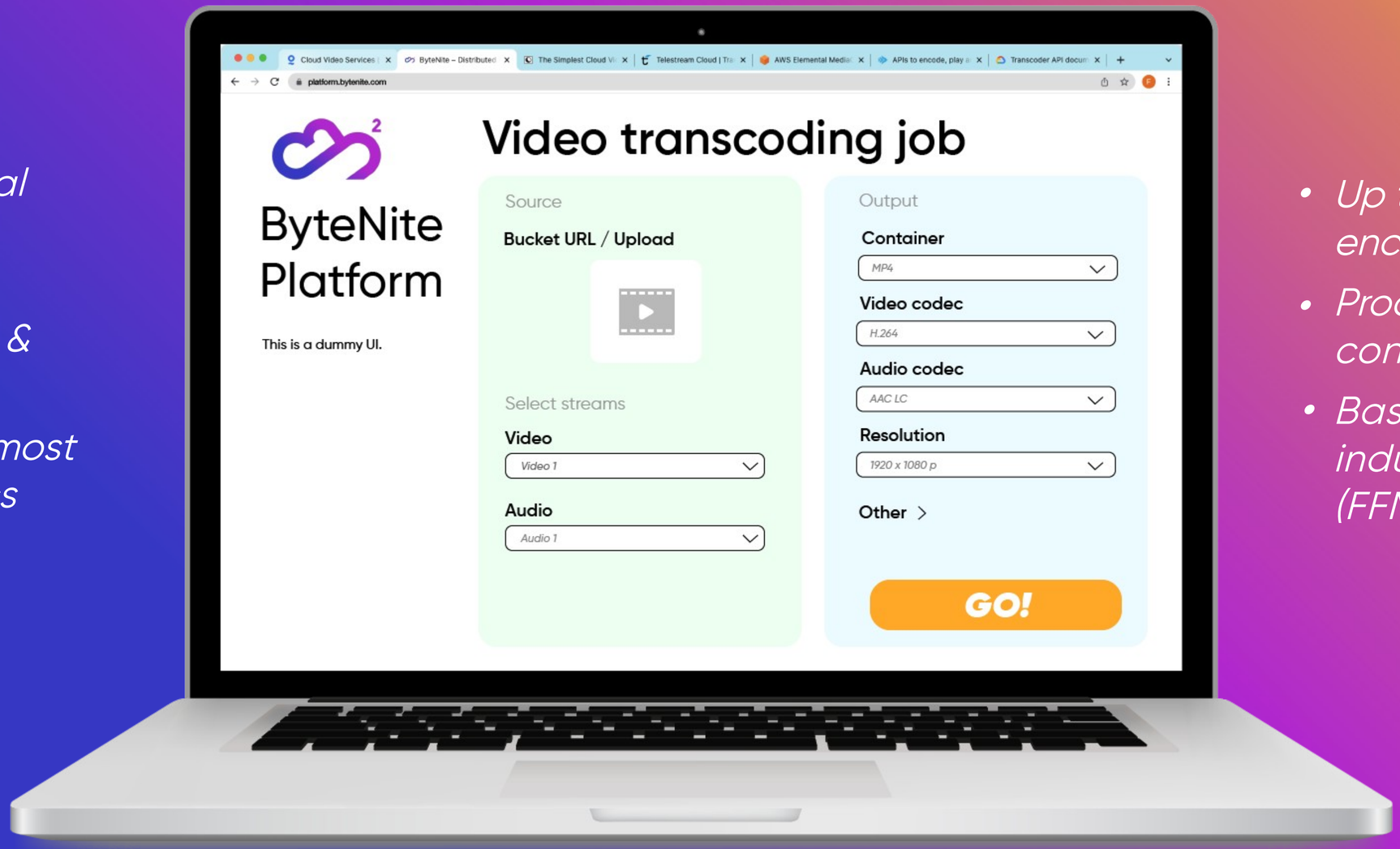
Assembler

The Assembler collects completed and validated tasks from the Validator and merges them into larger chunks until it has rebuilt the full processed data le, which is uploaded to a cloud storage bucket accessible from the Computing Platform.

Commercial applications

Video transcoding

- *Cloud or local upload*
- *Transcoding, transmuxing & packaging*
- *Supporting most video codecs and formats*



- *Up to 20x encoding speed*
- *Processing speed configuration*
- *Based on a solid industry standard (FFMpeg)*

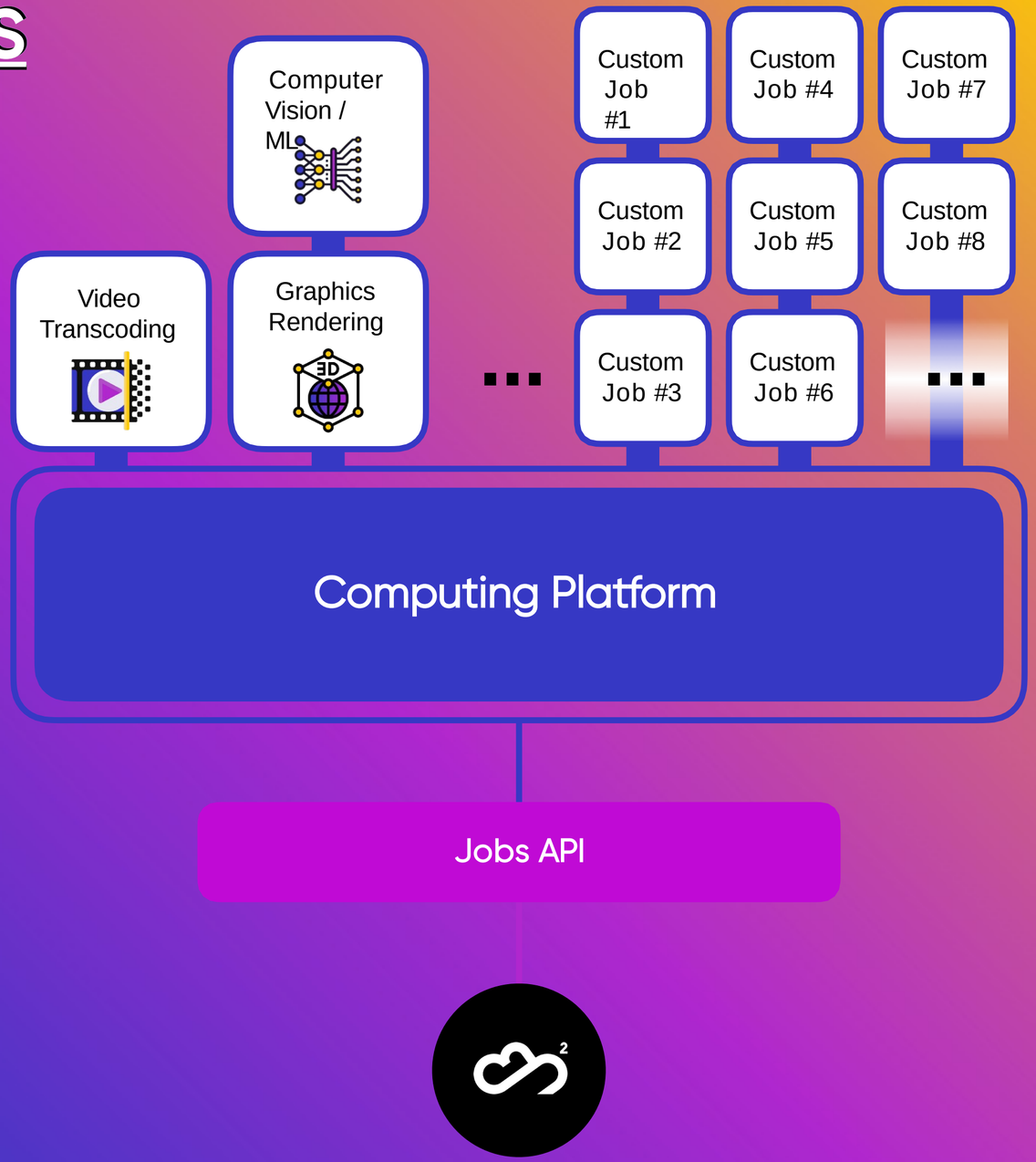
**Launch date: Q1 2023*

Commercial applications

Future developments

We won’t limit ourselves to video transcoding.

ByteNite is set to become a **general purpose, highly scalable software** for distributed computing. Every new computing job, either created by us or developed by partners and clients, will be integrated with our backend and exposed as a new service on the customer platform.



Team

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CEO & FOUNDER

Tech entrepreneur w/ mathematics and economics background

Niccolò Castelli

CTO

Software engineer for 10 years and business administration background

Raffaele Di Crosta

FOUNDER & ADVISOR

40-year experience in the electronic industry, CEO & Founder of Ksenia Security S.p.A

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ANDROID DEVELOPER

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BACKEND DEVELOPER

6-year experience in backend engineering and data science background

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ADVISOR

Silicon Valley-based entrepreneur and investor, MIT MBA, 6X Founder, 4X Exit

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