

Webinar

Accelerate Industry 4.0 with Event-Native API Management and MQTT

Hosted By  **HIVEMQ**

In Collaboration with gravitee.io



Speakers



Alex Drag

Director of Product Marketing, Gravitee.io

✉ Alex.drag@graviteesource.com

 [linkedin.com/in/alexdrag/](https://www.linkedin.com/in/alexdrag/)



Ravi Subramanian

Director of Industry Solutions Manufacturing, HiveMQ

✉ Ravi.subramanian@hivemq.com

 [linkedin.com/in/ravisubra/](https://www.linkedin.com/in/ravisubra/)



Global Trends & Challenges in Manufacturing



- **Material shortage** leads to reduced output and difficult planning
- **Carbon Footprint & Energy Cost** has increasing impact on profit margins
- **Security Vulnerabilities** become major business risk
- **Global Supply Chains** are more fragile than imagined
- **Demographic & Society Changes** lead to skills shortage & lack of young talent
- **Regulations & Bureaucracy** becomes an increasing burden

Components of Smart Manufacturing



Automation



Cybersecurity



Advanced Analytics



Industry 4.0



Smart Sensors



Cloud Computing



AI/ML

Power of Smart Manufacturing through I4.0, IIoT & AI



[McKinsey Report: Capturing the true value of Industry 4.0](#)

- 30-50% reductions in machine downtime
- 10-30% increases in throughput
- 15-30% improvements in labor productivity
- 85% more accurate forecasting

IIoT enables AI to learn from your production process by connecting it to your physical assets & to automatically adjust & optimize it

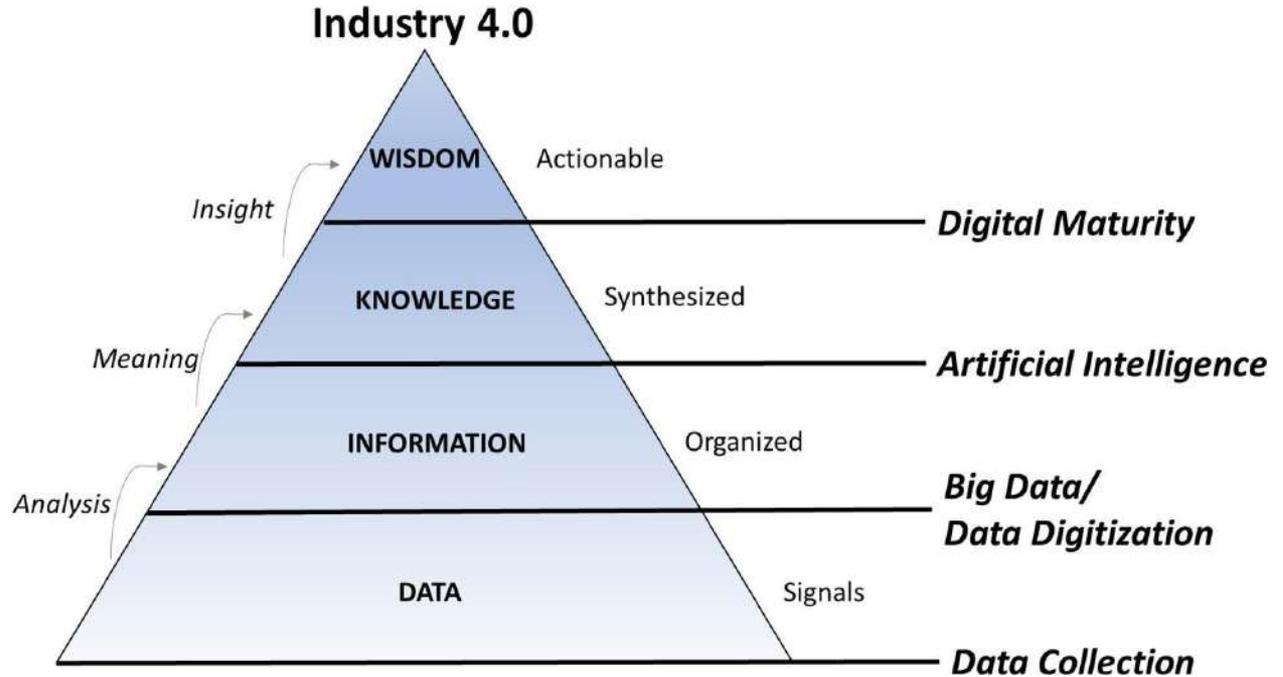
Short & Long Term Impact on Business



- **Automation** → reduce workforce, eliminate repetitive / unhealthy work & be the most attractive employer
- **Operational efficiency** → increased productivity with higher margins
- **Shorter and more optimized supply chains** → strategic flexibility to mitigate globalization risks
- **Secure communication between plants, data center & cloud** → eliminate business interruption risk
- Enable **new product innovation** through further adoption

Data Maturity Model

Data Maturity Model for Industry 4.0



Data Collection Value Creation Loop

Gather

Gather data and signals from the field

Analyze

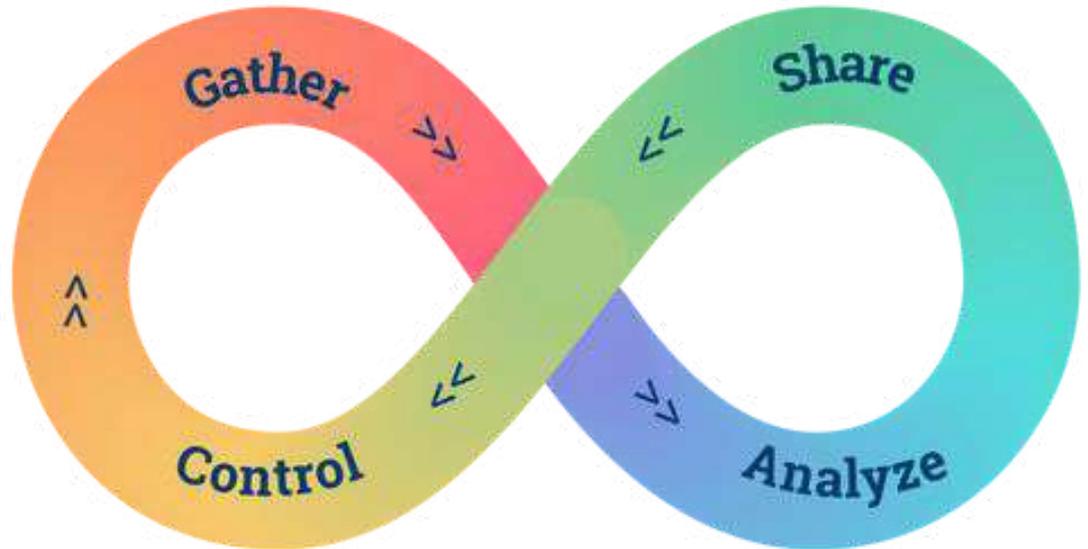
Analyze on Edge or Cloud

Share

Share with enterprise systems

Control

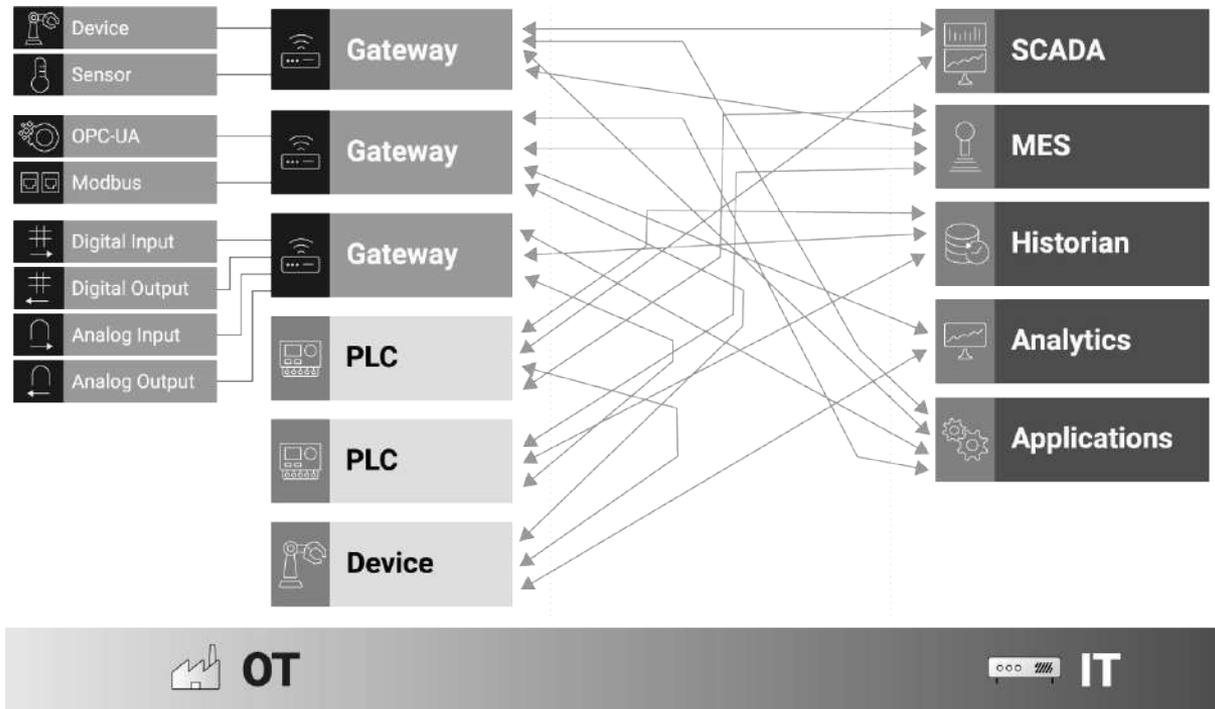
Control and manage the endpoints in the field



Industry 4.0 Reference Architecture with Unified Namespace

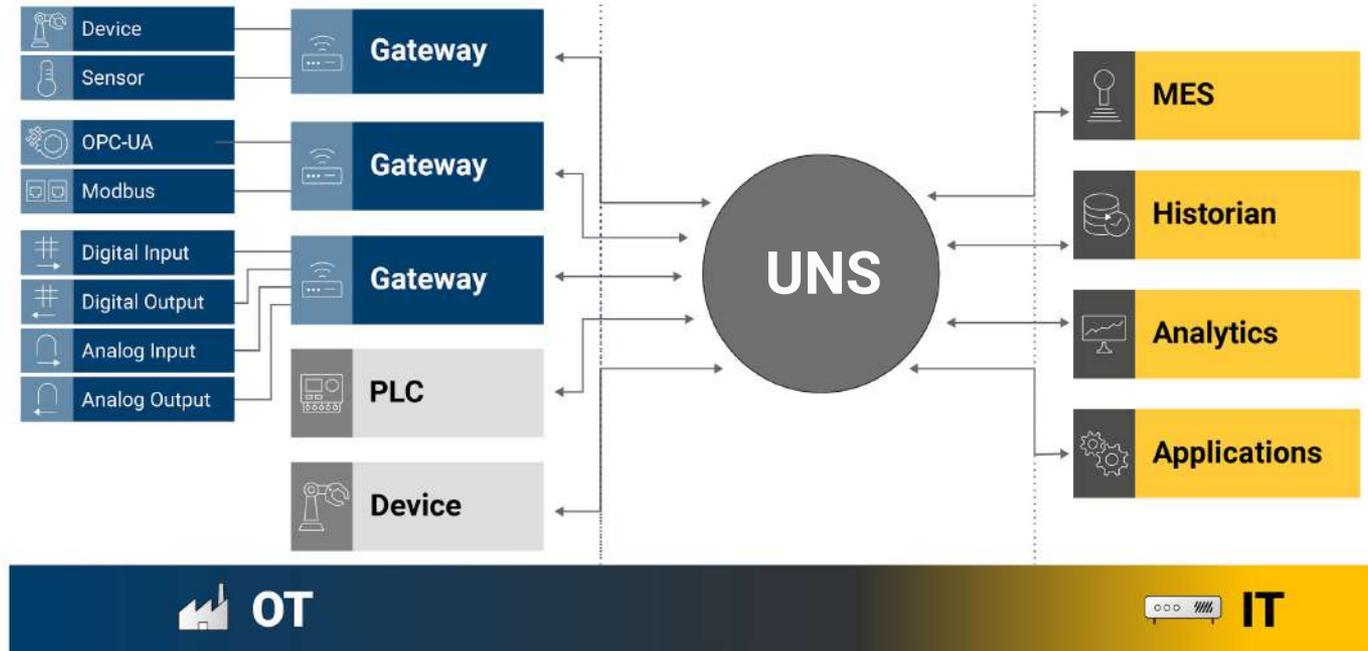


Technical Challenge - Data Integration Complexity



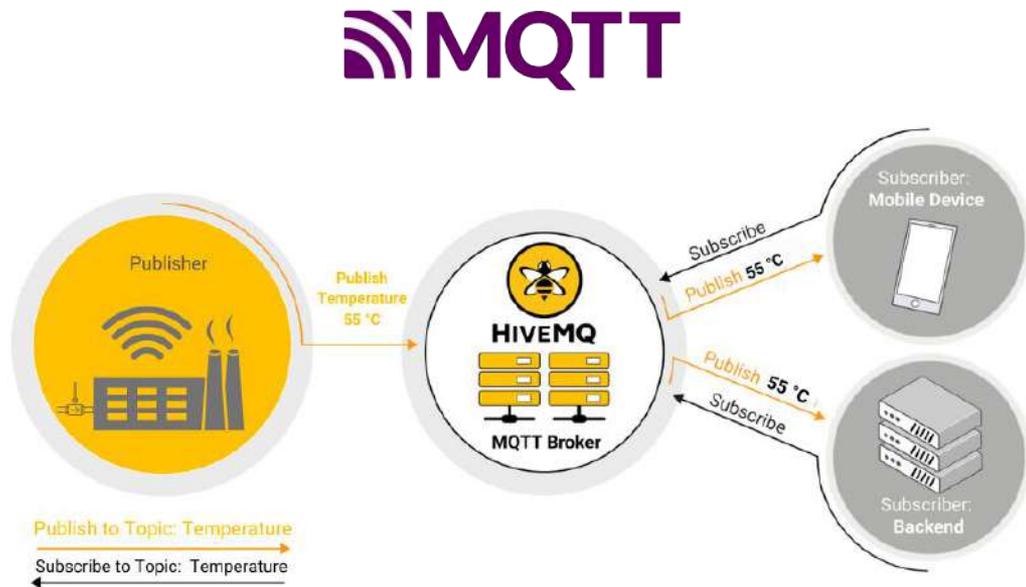
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Next Generation: Consolidated interoperable Architecture

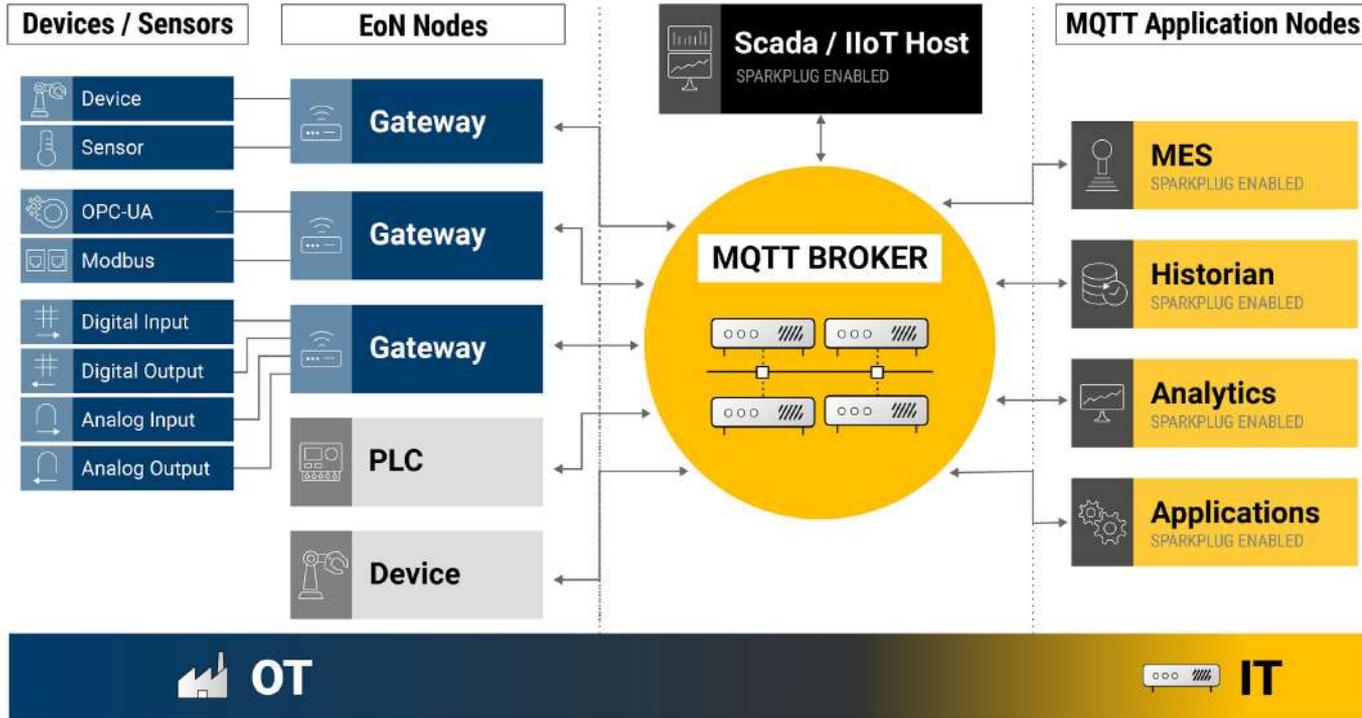


What is MQTT?

- A standard binary publish-subscribe messaging protocol designed for fast and reliable data transport between devices especially under very constrained conditions
- Constraints include unreliable network connectivity, limited bandwidth, limited battery power, and so on
- Built on top of TCP/IP
- Ideal for the Industrial Internet of Things



Sparkplug Architecture enabled by MQTT



Introducing HiveMQ



Introduction to HiveMQ

- **Founded in 2012**, based outside of Munich
- HiveMQ helps **move data to and from connected devices** in an **efficient, fast and reliable** manner
- 160+ employees
- **180+ customers** with production IoT applications



Technology **Fast 50**
2018



SIEMENS

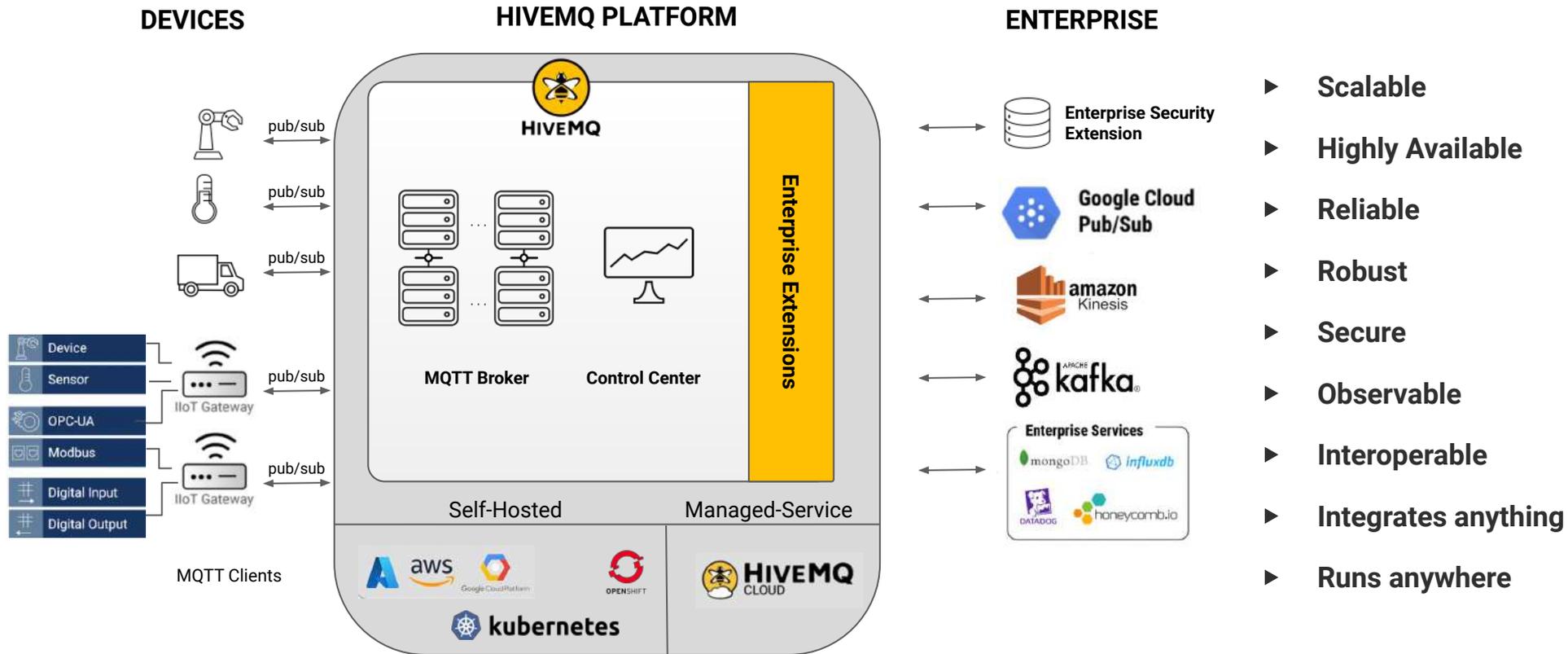


OASIS MQTT TC
Helped standardize IoT
Standard



Eclipse IoT working group
Member

Enterprise MQTT Platform



- ▶ Scalable
- ▶ Highly Available
- ▶ Reliable
- ▶ Robust
- ▶ Secure
- ▶ Observable
- ▶ Interoperable
- ▶ Integrates anything
- ▶ Runs anywhere

HiveMQ Extension Overview



Seamlessly integrates MQTT messages into the Kafka messaging flow



Enable crucial security features for safe and secure enterprise IT and OT deployments



A Scalable & Secure solution that bridges a HiveMQ cluster with any other MQTT broker



Seamlessly integrates the HiveMQ platform with Google Cloud, enabling MQTT data transmission at hyper-scale



Trace MQTT data end-to-end, using OpenTelemetry and monitor 1,500+ metrics via your APM solution



Quickly move your MQTT data from the broker directly into AWS via Amazon Kinesis Data Streams

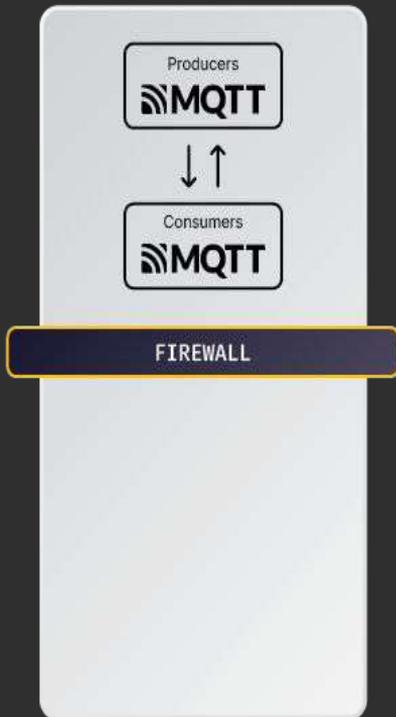
Where does API Management fit in?

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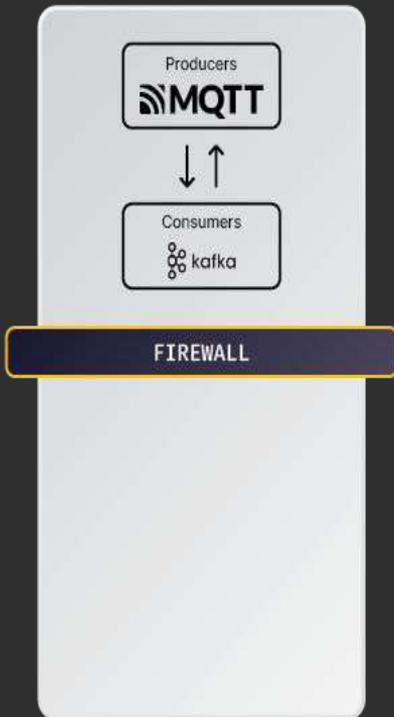


At the end of the day, we're talking about how and where information moves.

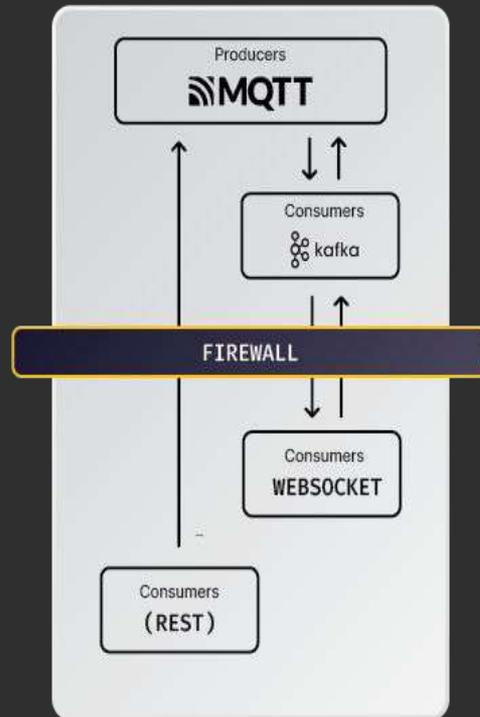
"Eventing" internal systems



Bringing the power of events to other internal systems



Unleashing your events and real-time data



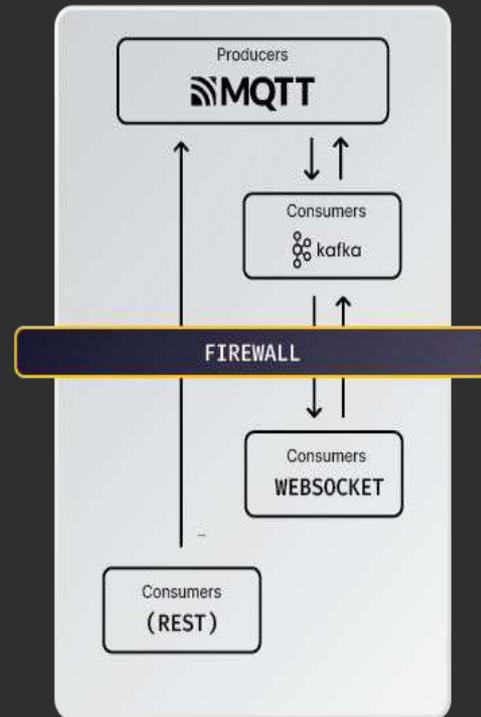
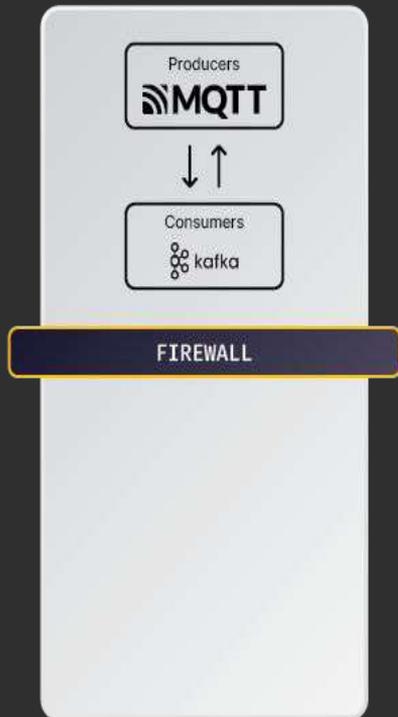
The promised land: unleashing your events and real-time data

Challenges

- Major security risks and concerns
- Upskilling to MQTT, Kafka, Websocket, etc. for teams that are used to building apps that just call a Gateway REST API and/or backend REST API
- Mediating between everything
- Discovering access to this data and getting access to services

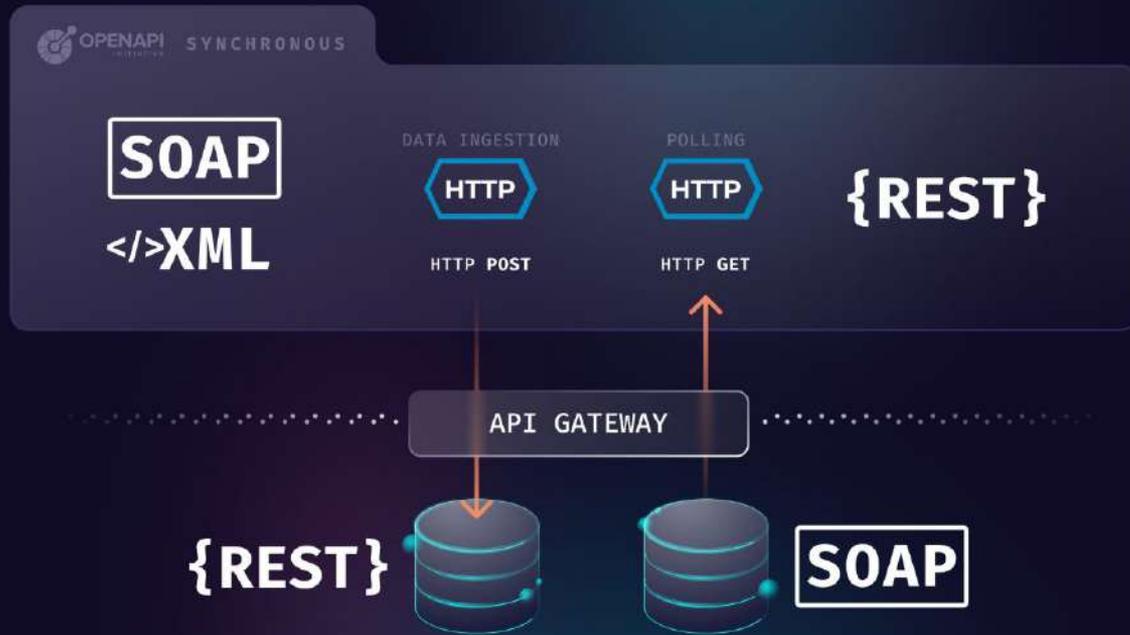
Solution set

- Event broker (like HiveMQ)
- MQTT skillset
- **Event-native API Management**

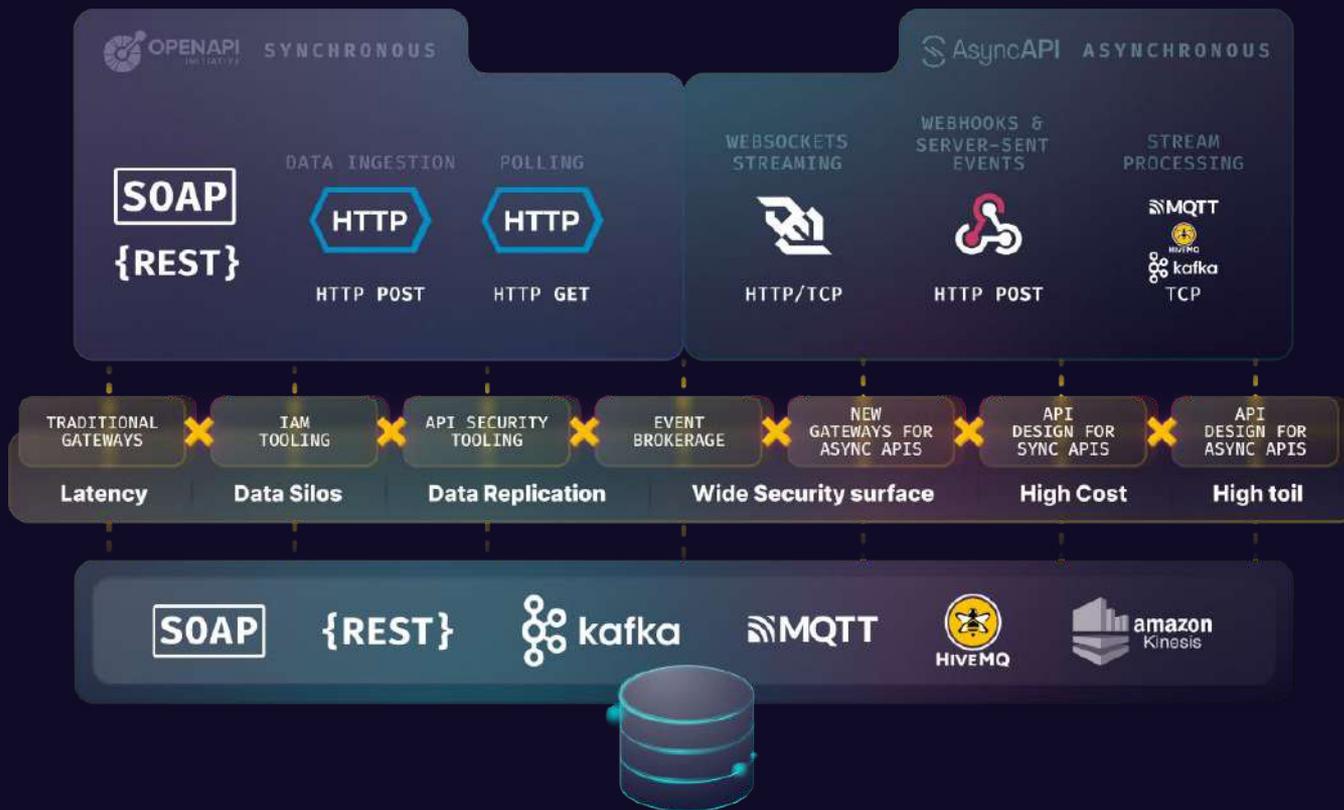


But what is “Event-native” API Management?

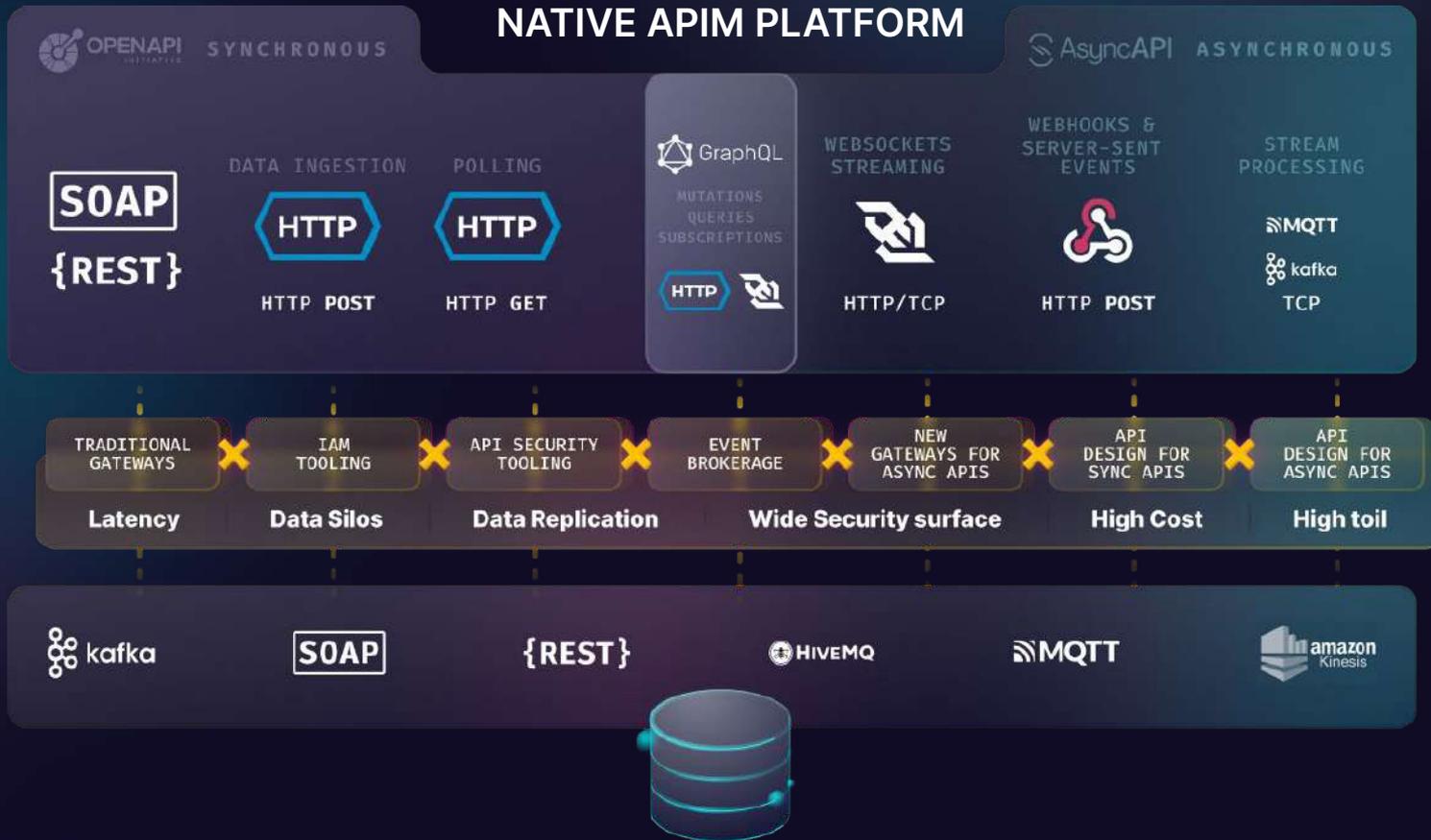
We all lived
in a simpler time.



But...
*things quickly
changed*

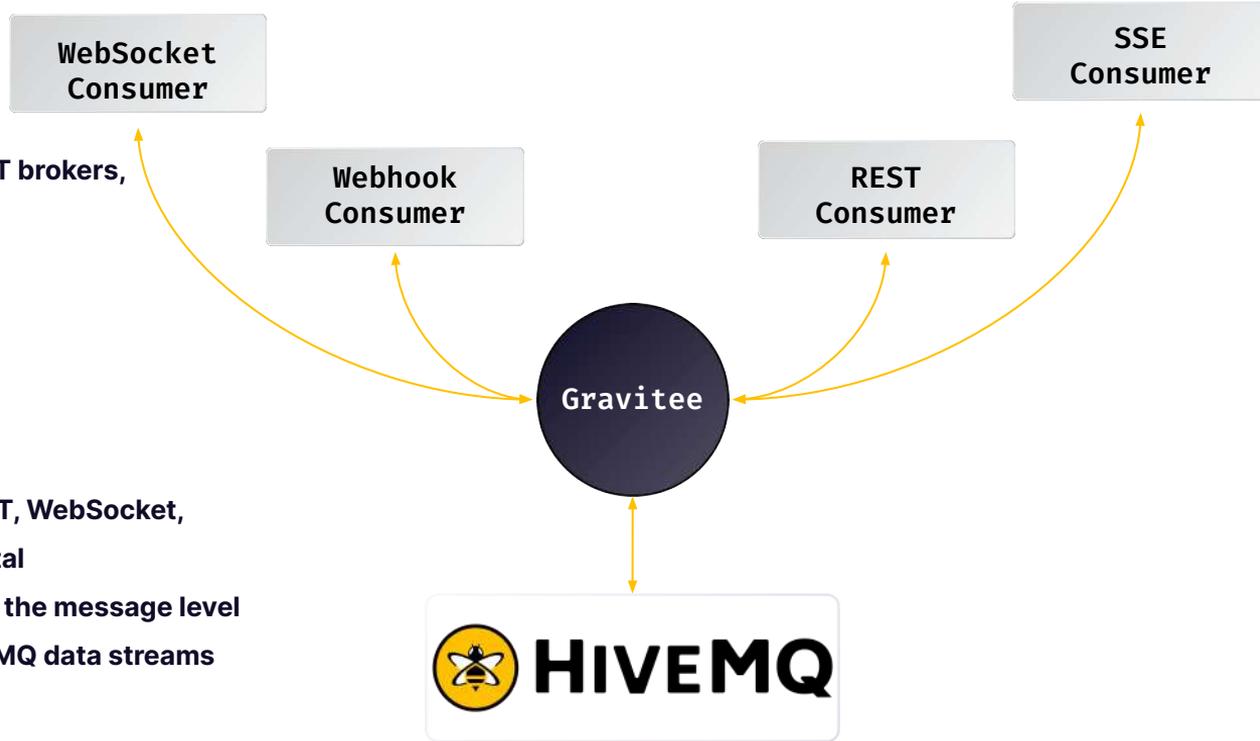


GRAVITEE EVENT NATIVE APIM PLATFORM

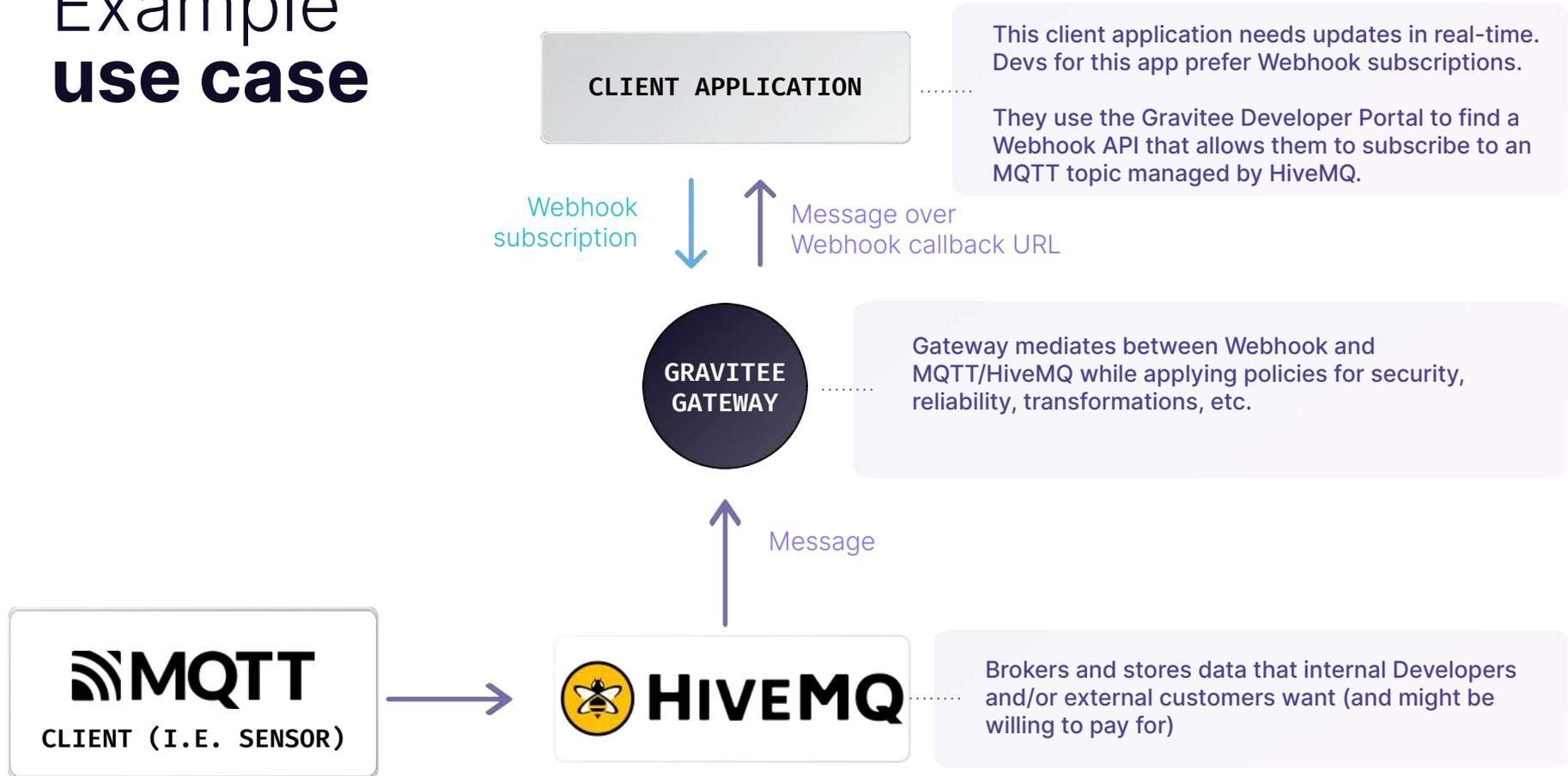


Bring the benefits of MQTT to more consumers

- MQTT backend connector supports MQTT brokers, such as HiveMQ
- Mediate between MQTT and:
 - REST
 - Websocket
 - Webhooks
 - SSE
- Expose MQTT resources as Gateway REST, WebSocket, Webhook, or SSE APIs in a Developer Portal
- Enforce security and reliability policies at the message level
- Productize and monetize MQTT and HiveMQ data streams via a self-service Developer Portal



Example use case



Time to prove it.

[Watch the Demo](#)



QUESTIONS



Alex Drag

Director of Product Marketing, Gravitee.io

✉ Alex.Drag@graviteesource.com

🌐 [linkedin.com/in/alexdrag/](https://www.linkedin.com/in/alexdrag/)

Website: <https://www.gravitee.io/>

Linkedin: [Gravitee LinkedIn](#)

Youtube: [Gravitee Youtube](#)



Ravi Subramanian

Director of Industry Solutions Manufacturing at HiveMQ

✉ Ravi.subramanian@hivemq.com

🌐 [linkedin.com/in/ravisubra](https://www.linkedin.com/in/ravisubra)

Website: <https://www.hivemq.com/>

Linkedin: [HiveMQ LinkedIn](#)

Youtube: [HiveMQ Youtube](#)



Next Steps



Get started with HiveMQ today: <https://www.hivemq.com/downloads/>



Explore Gravitee: <https://www.gravitee.io/demo>



Check out the Whitepaper: [Modernizing the Smart Manufacturing Industry with MQTT](#)



Check out the Whitepaper: [API Management for IoT with Gravitee & HiveMQ](#)

THANK YOU

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