Webinar

Future Proofing Your IoT Environment with a Multi-Cloud Approach

Presented by HIVEMQ

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Speakers

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AGENDA

- Exploring the ‘Multi-Cloud Approach’ in an IoT Environment
- Factors to consider when evaluating MQTT data ingestion solutions for the Multi-Cloud
- HiveMQ: The central nervous system of your Multi-Cloud IoT Infrastructure
- See it in Action — Live Demo with Peter Jüntgen
- Q&A Session

Consider a Real-World Scenario

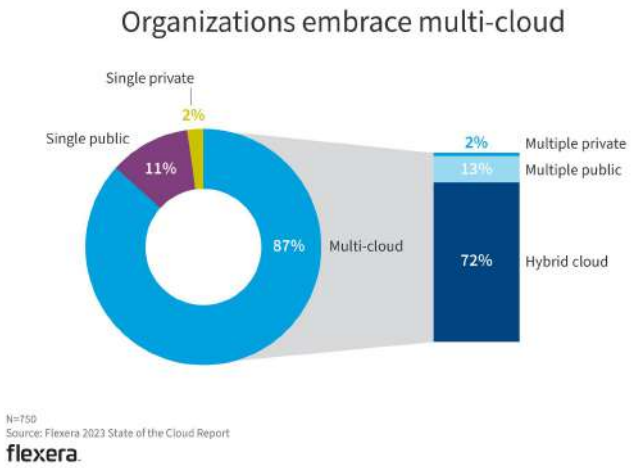
Visualize a car-sharing platform that provides 24/7 on-demand rent-to-drive service throughout Europe.

- Utilizes MQTT to connect vehicles with the Cloud
- Uses it for real-time monitoring of its fleet (e.g maintenance)
- Tech stack built on a single cloud vendor

Potential risks of relying on one cloud vendor:

- Single Point of Failure
- Downtime and Revenue Loss
- Lack of Flexibility (vendor lock-in)
- Compliance and Security Risks

The Multi-Cloud Approach Explained



Multi-Cloud – a strategy to utilize multiple clouds for optimal

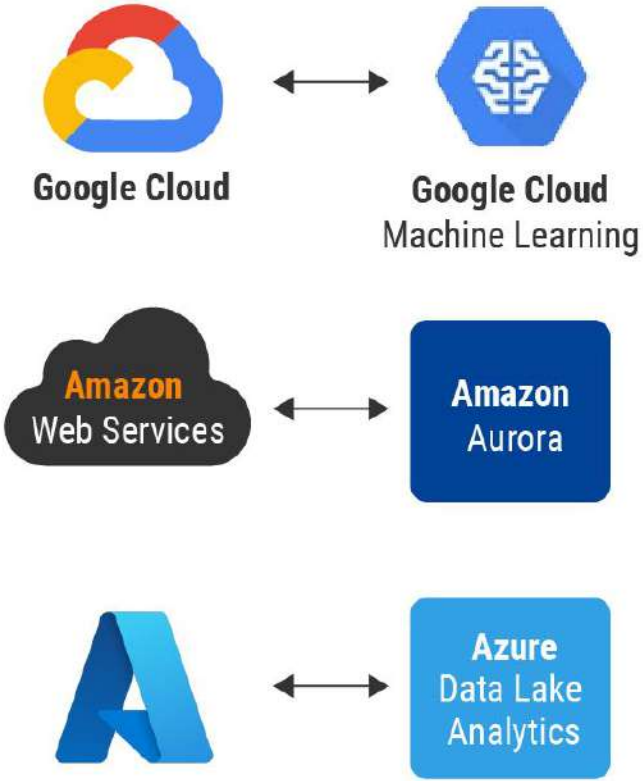
- Workload performance
- Cost efficiency
- Resource availability

Why is the Multi-Cloud Approach Important?

- Take advantage of the unique strengths of each cloud provider
- Mitigate the risks of vendor lock-in and single points of failure
- Enable workload portability
- Disaster recovery

Chart Credits: Flexera 2023 State of the Cloud
URL: https://info.flexera.com/CM-REPORT-State-of-the-Cloud

The Multi-Cloud Approach in IoT Environments



What does the Multi-Cloud approach look like in IoT Environments?

- Diverse — to reduce risks
- Flexible — to adapt to changes quickly
- Optimized — for operational and cost efficiency

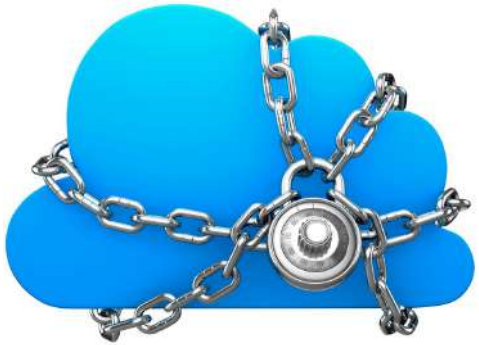
One-size fits all doesn't cut it anymore

- IoT solutions require multiple technologies

For instance, a company may use:

- AWS — Storage/Database
  - Amazon S3 and Amazon Aurora
- Google Cloud for Machine Learning
  - Cloud AI Platform
- Azure — Edge Computing + Analytics
  - IoT Edge and Synapse Analytics

Key Advantages of the Multi-Cloud Approach



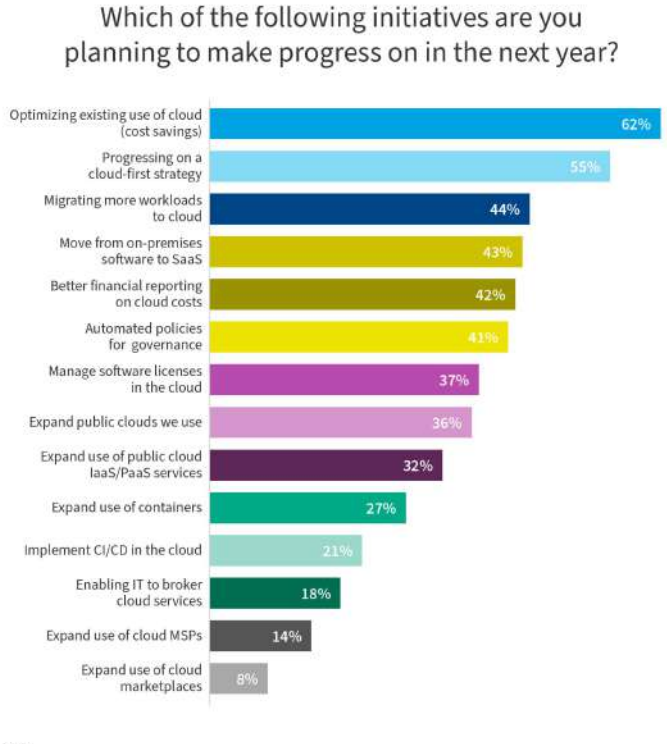
Vendor lock-in:

A situation where a customer becomes heavily dependent on a single vendor's technology stack.

Avoid Vendor Lock-In:

- Selecting a single vendor for several services is **highly** risky
- By avoiding vendor lock-in, organizations can:
  - Reduce the risk of single points of failure
  - Are flexible — can switch between providers, if needed
  - Select the best solution for different functions
  - Utilize new cutting-edge cloud services (when available)

Key Advantages of the Multi-Cloud Approach



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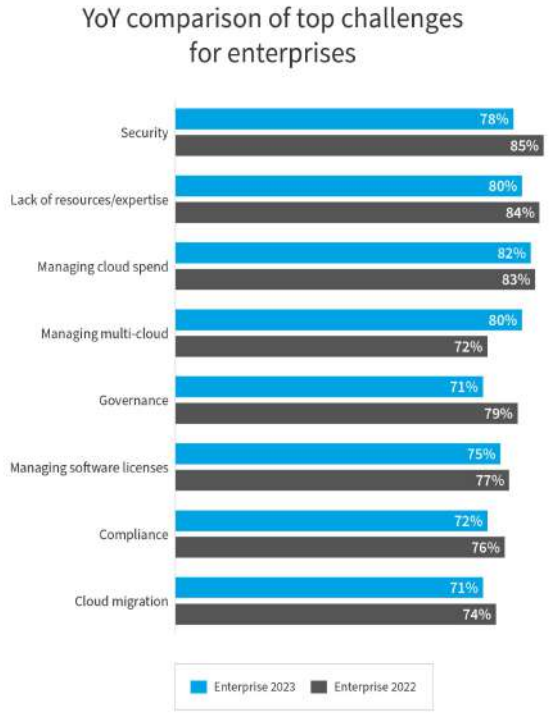
Cost Optimization:

- Leverage competitive pricing by utilizing multiple cloud providers
- Negotiate better deals by diversifying cloud usage
- Optimize cloud resource allocation
  - Select the most cost-effective provider for each workload
- Minimize data transfer and bandwidth costs
  - Locate workloads closer to end-users

Challenges with the Multi-Cloud Approach in IoT



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Complexity and Costs:

- Managing compatibility and cloud spend between multiple cloud providers

Integration:

- Integrating data and services across different cloud providers

Compatibility and Operatibility:

- Custom solutions used to integrate services and data across the multi-cloud

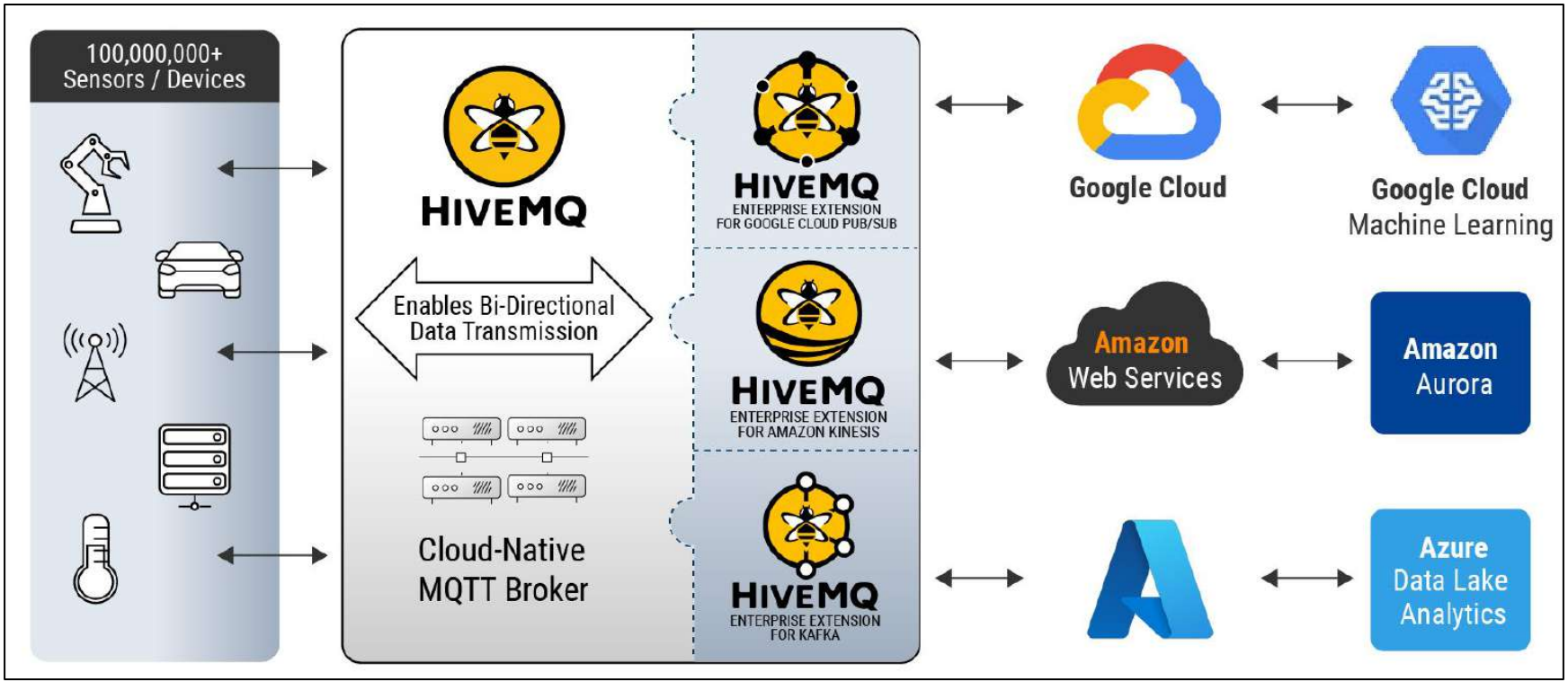
Governance:

- Compliance with data privacy and security regulations (e.g. GDPR, CPRA)
- Managing access and permissions across the multi-cloud

Evaluating Multi-Cloud MQTT Data Integration Solutions

- **Scalability**:
  - Handle data at scale, generated from millions of devices
- **Security**:
  - Secure communication between devices and the cloud
- **Reliability**:
  - Ensure reliable bi-directional data transmission
- **Integration**:
  - Connect and work with other MQTT brokers + Platforms
- **Support and Documentation:**
  - Have reliable technical support and detailed documentation

HiveMQ is the Central Nervous System of IoT

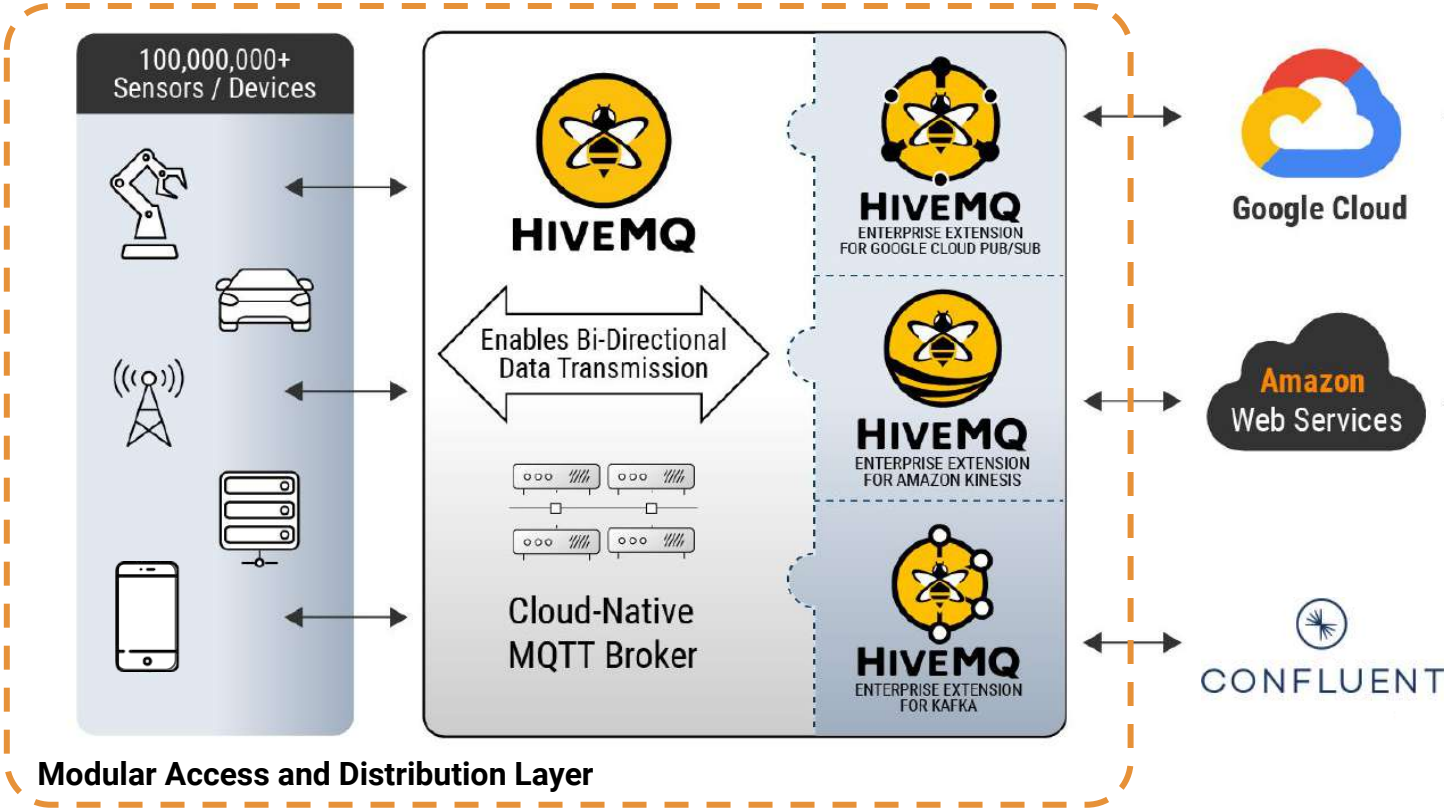


Live Demo with Peter Jüntgen

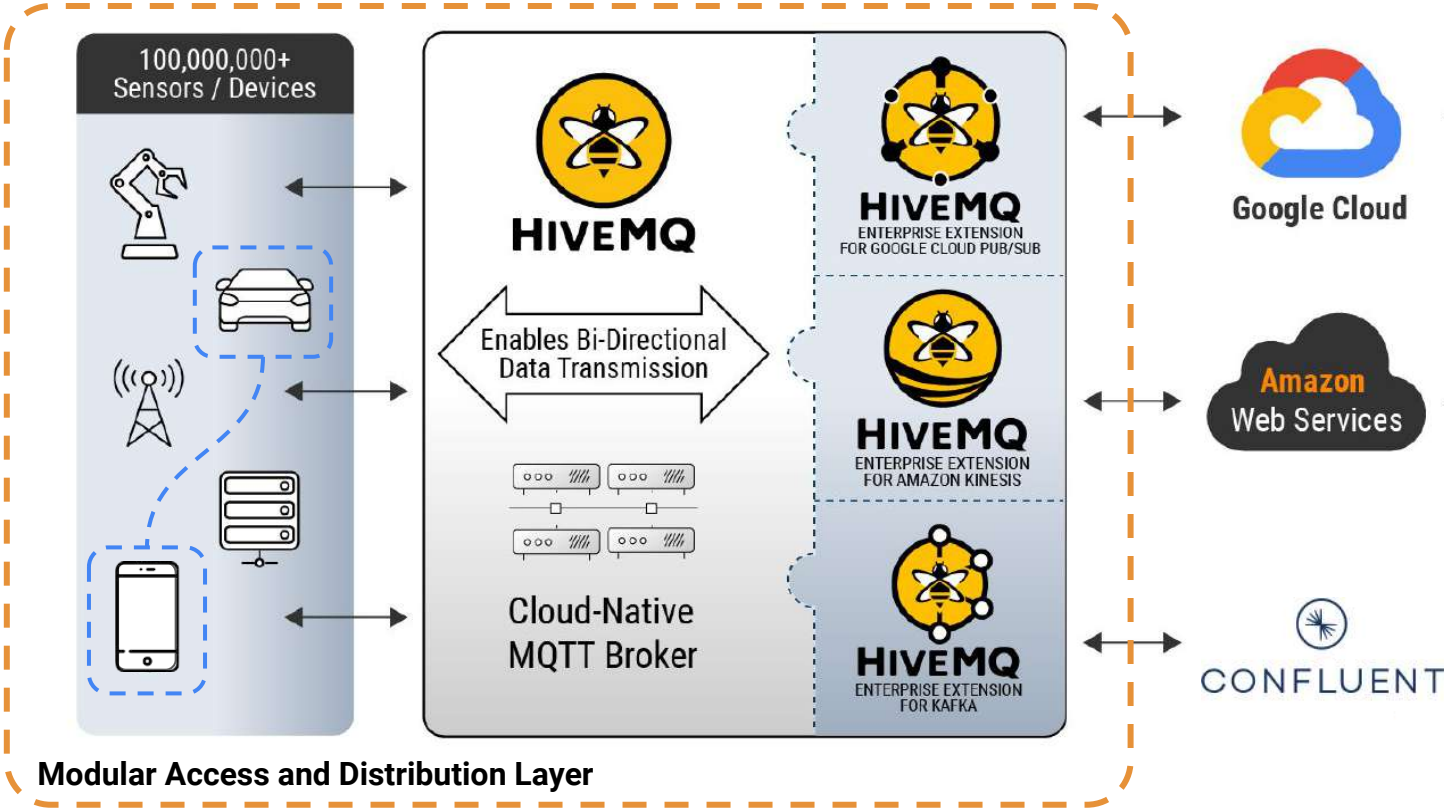
Director of Solution Engineering @ HiveMQ

HIVEMQ

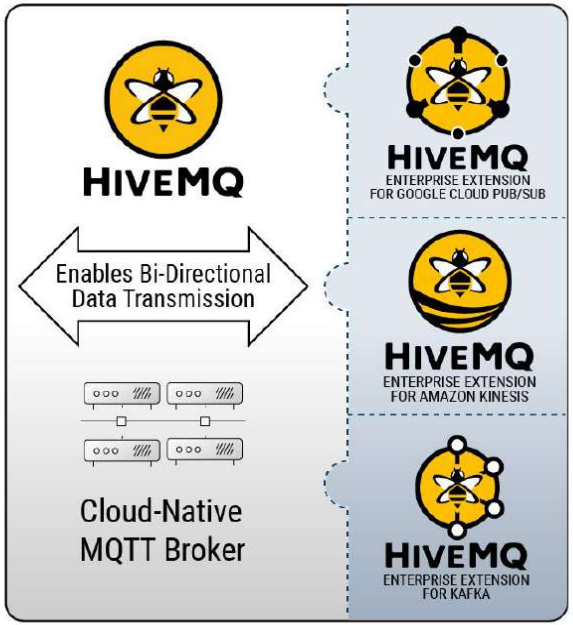
Demo Setup



Demo Setup



Local Demo Setup



- Local HiveMQ Broker
  - Evaluation License Setup
  - Amazon Kinesis Extension
  - Google Cloud Pub/Sub Extension
  - Kafka Extension

- Mappings for inbound and outbound messages
  - MQTT topic/in → Cloud topic-in
  - Cloud topic-out → MQTT topic/out

Deploying HiveMQ in the Cloud of Your Choice

- Deploy HiveMQ no the Kubernetes Platform of your choice with a few commands:
  - Option 1: Create a values file and deploy HiveMQ using a helm chart

```
hivemq:
  nodeCount: "5"
  cpu: "4"
  memory: "4Gi"
  logLevel: "DEBUG"
```

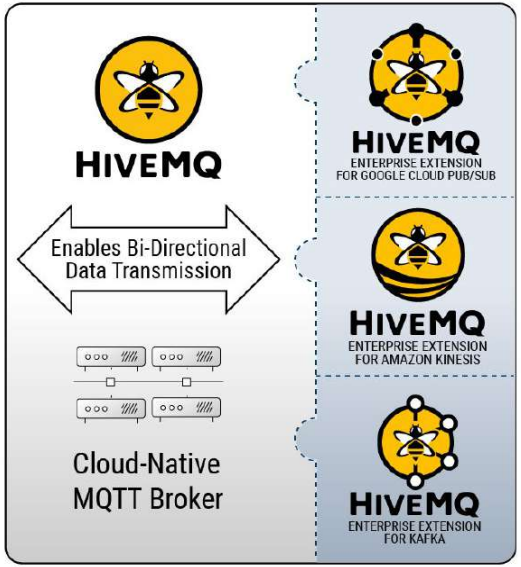
values.yml

```
helm upgrade -i hivemq-test-helm hivemq/hivemq-operator -f values.yml
```

  - Option 2: Deploy HiveMQ using a helm chart and specify parameters as options

```
helm upgrade -i hivemq-test-helm hivemq/hivemq-operator --set hivemq.nodeCount=5
```

Distributed Demo Setup



Google Cloud Platform

kubernetes

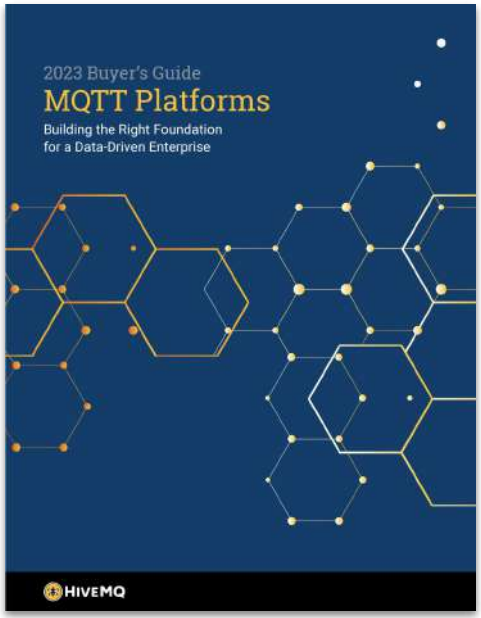
Prometheus

Grafana

Thanks for Listening!

Questions?

Resource to Get You Started



Understand how choosing the right broker is essential for building the right data foundation for your business.

Get your copy of 2023 MQTT Buyer's Guide .

Resources to Get You Started

- HiveMQ For AWS: Seamless IoT Data Integration with AWS
- HiveMQ for Google Cloud: Bring the full value of your IoT data to the Google Cloud Platform
- HiveMQ for Azure: Bring the full value of your IoT data to the Azure platform
- Streaming IoT Data and MQTT Messages to Apache Kafka

THANK YOU

Contact Details

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