On-Demand Webinar

5 Ways MQTT Sparkplug Enables Smart Manufacturing

Presented By HIVEMQ

Hosted By AUTOMATION.COM

Speakers

Kudzai Manditereza
Developer Advocate, HiveMQ

kudzai.manditereza@hivemq.com

linkedin.com/in/kudzaimanditereza/

Ravi Subramanyan
Director of Industry Solutions Manufacturing, HiveMQ

Ravi.Subramanyan@hivemq.com

linkedin.com/in/jravisubra/

Goals for Digital Transformation

- Factory Automation
- Business Continuity
- Regulatory Compliance
- Reducing Costs
- Improving Operational Efficiency
- Enhancing Customer Satisfaction
- Boosting Innovation and Agility
- Increasing Competitiveness

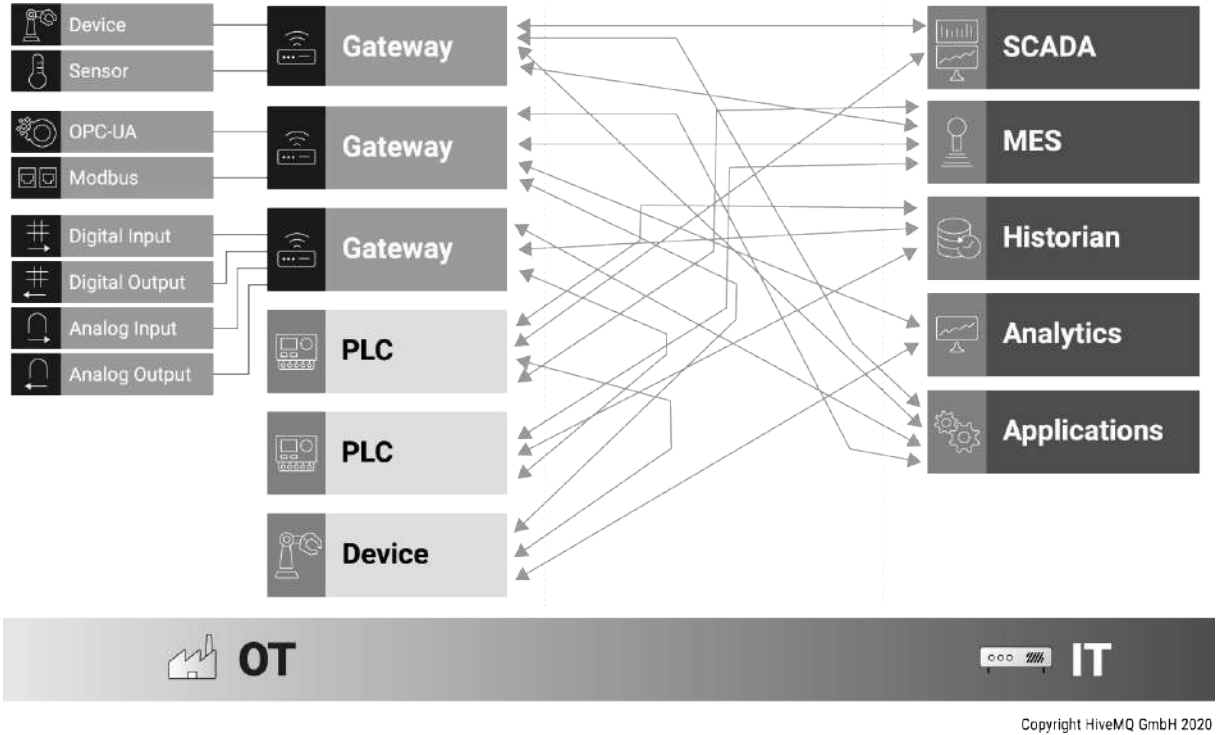
Challenges for Automation

- High Costs
- Unrealistic ROIs
- Worker Safety
- Integration and Scalability
- Lack of Flexibility
- Staffing Issues
- Cybersecurity

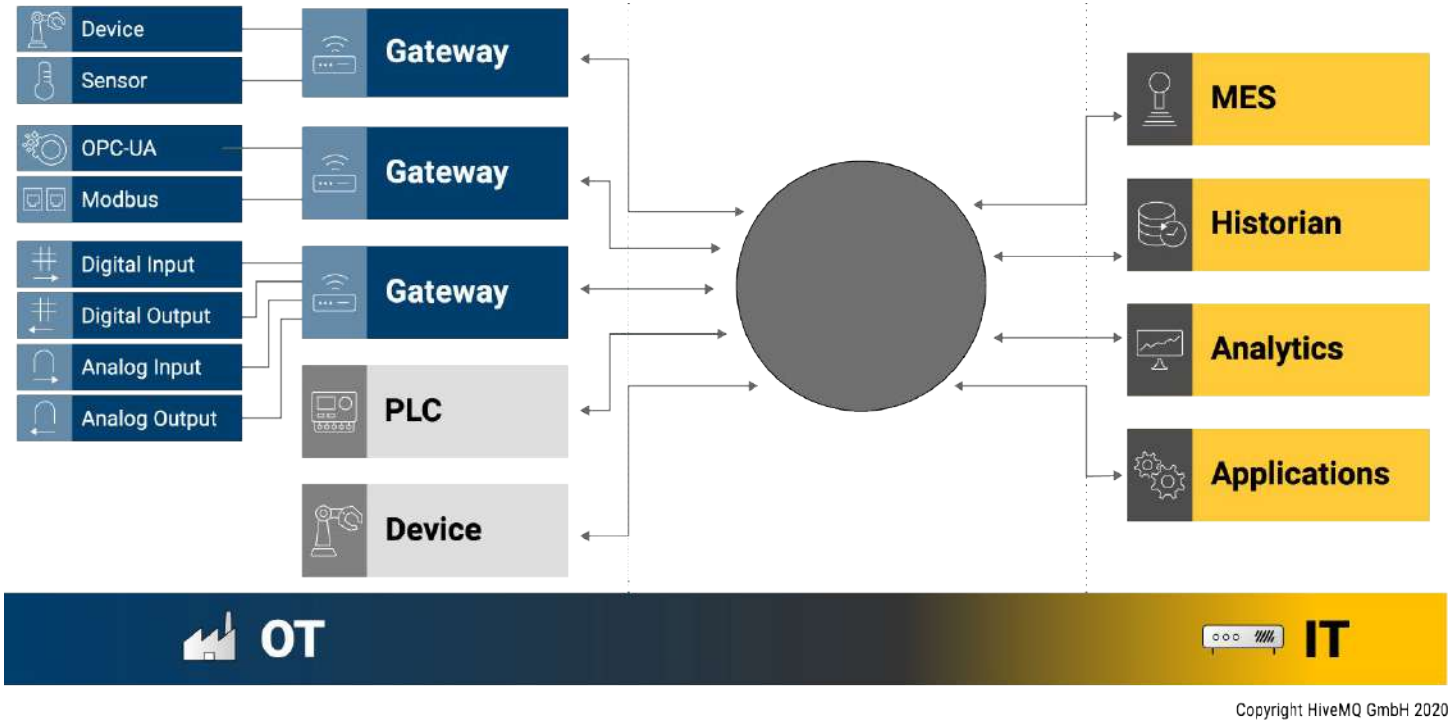
Goal for Modernization

- Accessing real-time data
- Digitizing equipment health inspections
- Allowing modular automation in a manufacturing plant
- Optimizing manufacturing process
- Identifying bottlenecks
- Enabling digital traceability

Technical Challenge - Data Integration Complexity

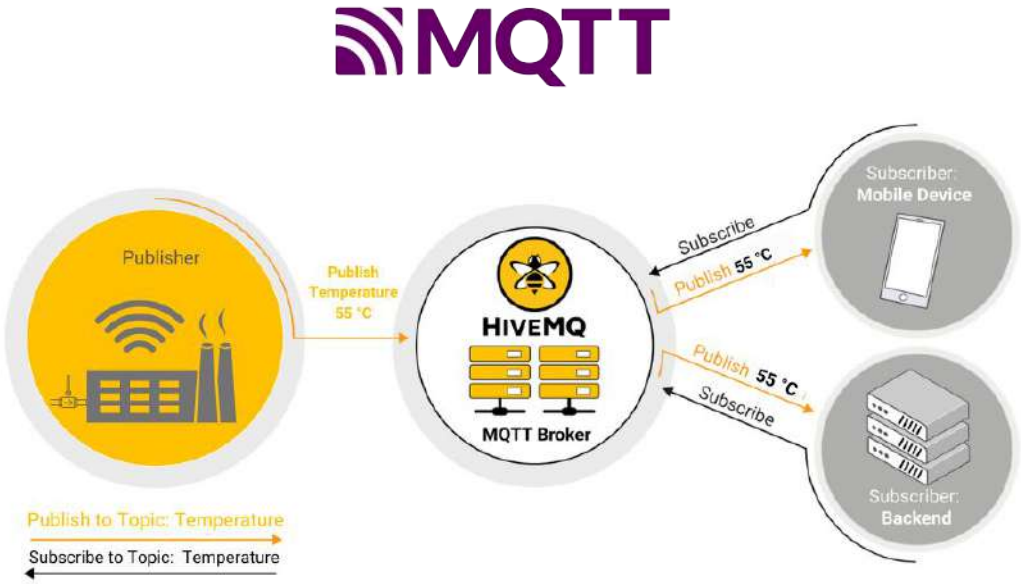


Solution - Decoupled Architecture



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



Introducing MQTT Sparkplug

What is Sparkplug?

Sparkplug

- Open Source Software Specification for increasing MQTT interoperability, developed especially in the field of IIoT and Industry 4.0
- Provides MQTT Clients Framework to seamlessly integrate data from their applications, sensors devices and gateways within the MQTT Infrastructure in a bi-directional and interoperable way.

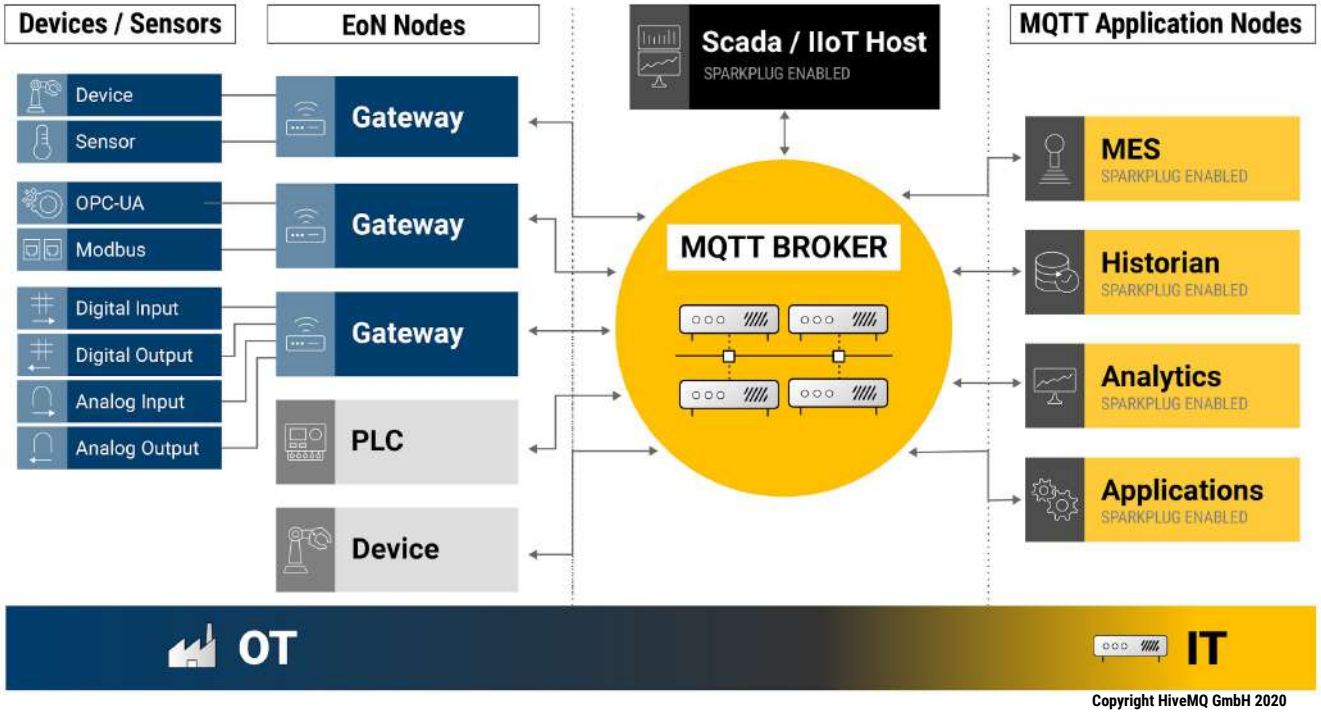
What does Sparkplug offer for IIoT?

GitHub - eclipse-sparkplug/sparkplug

Sparkplug defines:

- MQTT Topic Namespace
- MQTT State Management
- MQTT Payload

MQTT Sparkplug Architecture



How Does a Multi-Vendor Solution Work?

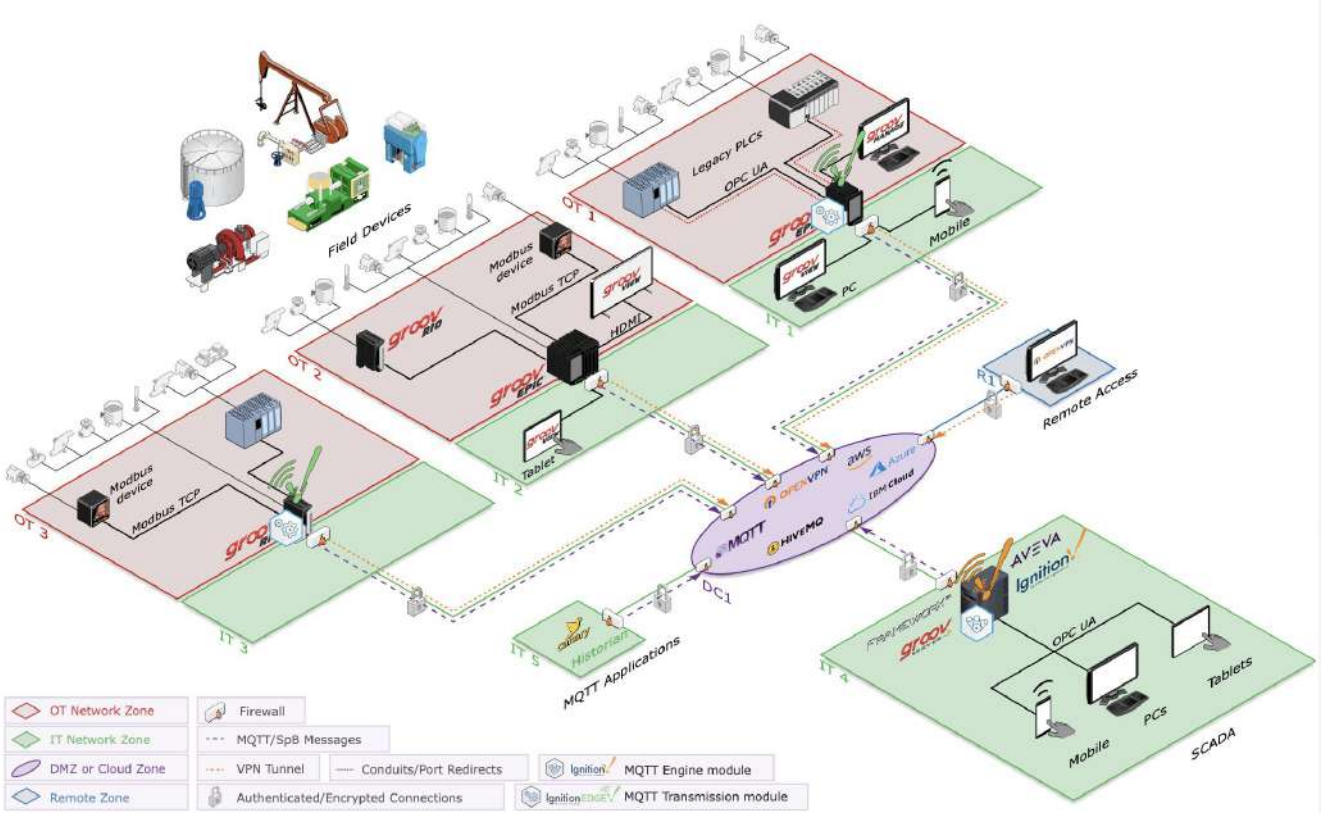


Image Credit : [Opto22]

5 Ways MQTT Sparkplug Enables Smart Manufacturing

How MQTT Sparkplug enables smart manufacturing

1 Real-time Data Sharing

- With MQTT Sparkplug, manufacturers can monitor and control processes, equipment, and products efficiently, as the data exchange between devices and systems happens in real time.
- Result: Manufacturers can improve efficiency, reduce downtime, and increase product quality.

How MQTT Sparkplug enables smart manufacturing

2 Improved Collaboration

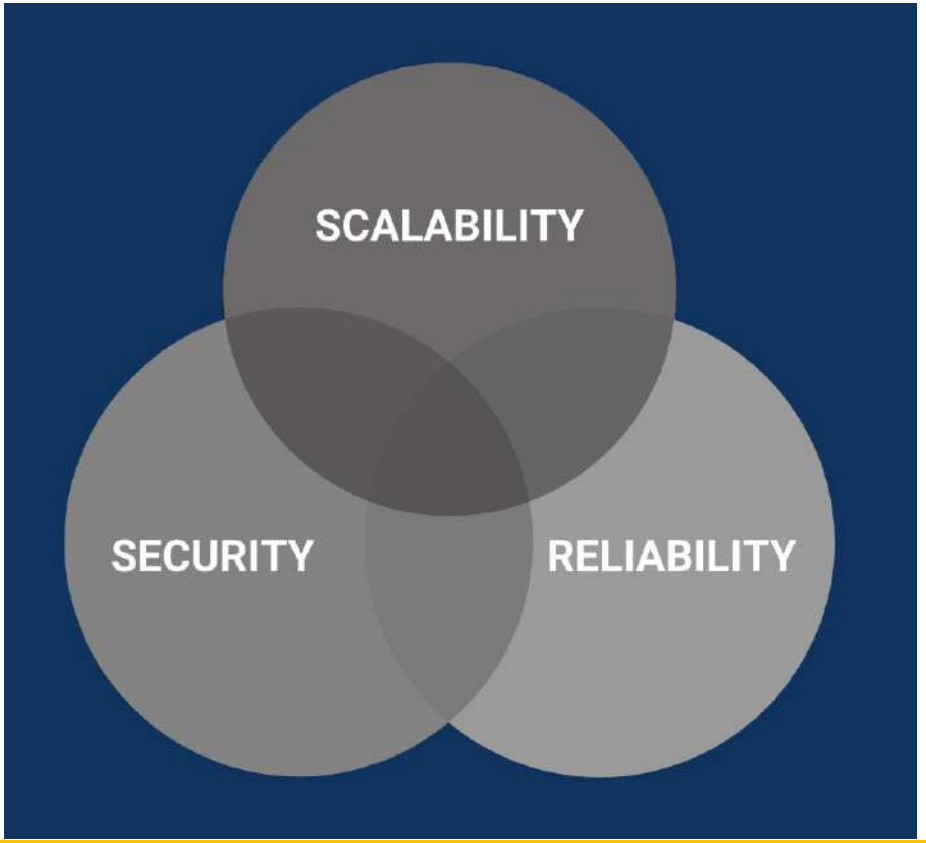
- MQTT Sparkplug establishes a single source of truth for data from all siloed OT legacy equipment, enabling and defining it for IT.
- This supports collaboration and data sharing among different teams and departments, enabling manufacturers to use data across the organization better.

How MQTT Sparkplug enables smart manufacturing

3 Eliminates Custom Programming

- MQTT Sparkplug removes the need to program custom scripts to integrate data.
- Instead, with Sparkplug you can use tools on platforms to configure systems and devices through a graphical interface.
- This dramatically reduces the risk and life-cycle costs of adding custom software in smart manufacturing ecosystem.

How MQTT Sparkplug enables smart manufacturing



4

Scalability and Reliability

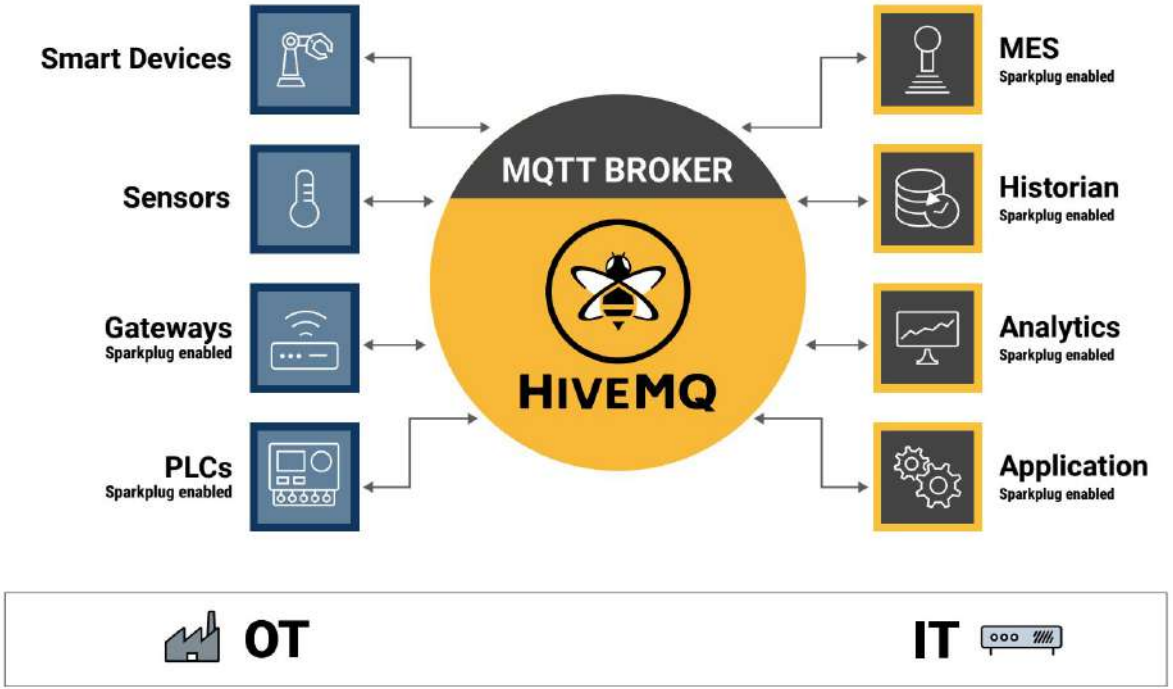
- MQTT Sparkplug supports scalable and reliable communication, with built-in mechanisms for handling large volumes of data and ensuring that messages are delivered reliably.
- This allows manufacturers to support large and complex manufacturing environments without performance degradation or data loss.

How MQTT Sparkplug enables smart manufacturing

5 Improved Data Management

- MQTT Sparkplug supports data tagging and metadata, allowing manufacturers to organize, filter, and search data more effectively.
- This increased data organization enhances data quality and supports advanced analytics and machine learning applications.

HiveMQ MQTT Platform



Sparkplug™ COMPATIBLE

- High availability
- 100% MQTT and Sparkplug compliant
- Highly Scalable
- Highly Observable
- Enterprise Security
- Extensions Framework
- Integration with OT/IT Systems

Next Steps

New to MQTT Sparkplug? [Get the MQTT Sparkplug Essentials eBook]

HIVEMQ

Get started with HiveMQ today: [https://www.hivemq.com/downloads/]

Manufacturing White Paper: [Modernizing the Smart Manufacturing Industry with MQTT]

QUESTIONS

Kudzai Manditereza

Developer Advocate at HiveMQ

kudzai.manditereza@hivemq.com

linkedin.com/in/kudzaimanditereza

Ravi Subramanyan

Director of Industry Solutions Manufacturing at HiveMQ

Ravi.subramanyan@hivemq.com

linkedin.com/in/ravisubra

Website: https://www.hivemq.com/
Linkedin: https://www.linkedin.com/company/hivemq-gmbh/
Youtube: https://www.youtube.com/@HiveMQ

THANK YOU