

**Webinar**

# Accelerating Your IoT Project in the Cloud

From Idea to Production in Under 5 Minutes

Presented by  **HIVEMQ**

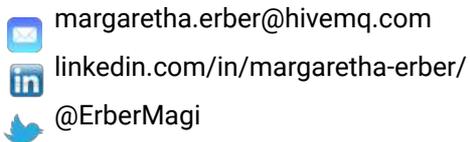


# Speaker



**Magi Erber**

Senior Product Manager at HiveMQ



Magi Erber is a Senior Product Manager with a focus on Cloud SaaS solutions and a passion for exceeding customer expectations. She is committed to delivering not just solutions, but experiences that delight, translating visionary ideas into tangible, innovative realities within the IoT landscape.

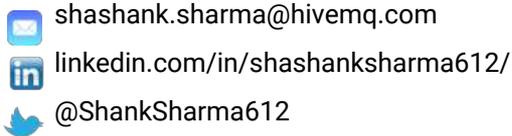


# Speaker



**Shashank Sharma**

Product Marketing Manager at HiveMQ



Shashank Sharma is a product marketing manager at HiveMQ. He is passionate about technology and enabling developer-centric workflows. He has previous experience in application software tooling, autonomous driving, and numerical computing.

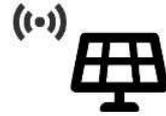


## Problem at Hand

Remote monitoring for a Solar Power Plant

Resource Constraints

Solution must scale



Solar panel and sensors



Battery



Inverter



Database



Data Analyst



Plant operator



Maintenance Engineer

*Caption: Power Plant Components (left) vs Stakeholders (right)*

## Thoughts while starting the project

Which protocols to use?

Which tooling to use?

How much time will need?

How much money will I need?





# Challenges Taking an IoT Use-Case From Idea to Production





## Organizational Challenges

01

Reliability of business-critical systems

02

Scalability to meet demand

03

Cost efficiency of connectivity

04

Time to market



# Technical Challenges

01

End-to-end security

02

Observability of connected devices

03

Integration with other systems

04

User experience

# Questions

---

**What challenges are you currently facing in your project?**

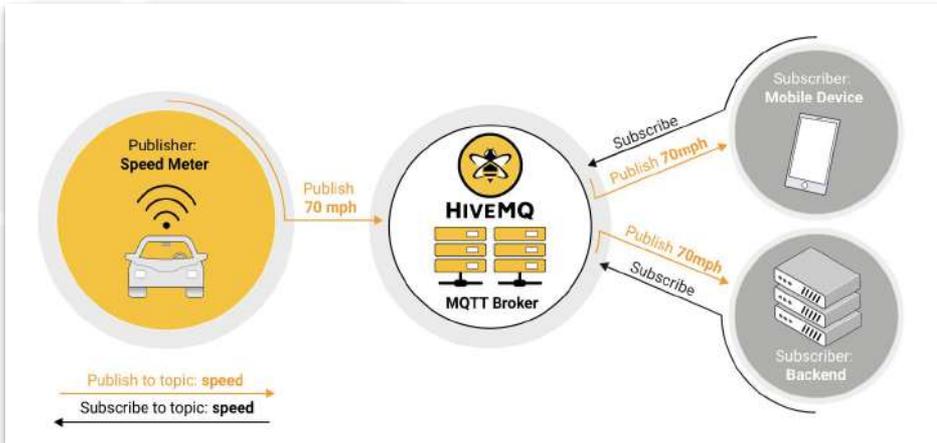


---

# MQTT - Boosting Agility and Speed in Production



# Why MQTT for IoT



The MQTT protocol is the **de facto standard** for IoT

## Open and vendor-neutral Protocol

Enables flexible interoperability of heterogeneous components

## Decoupled Pub/Sub architecture

Enables dynamic configuration of the system

## Optimized for unreliable networks

Enables reliable communication with less overhead

# Why MQTT for IoT



The MQTT protocol is the **de facto standard** for IoT

## Scalable and flexible where needed

Enables quick adoption of changed requirements or new demands

## Supports real-time communication

Enables event-driven architecture and reduced bandwidth

## Built for (constrained) devices

Enables to save energy and use resources efficiently

---

**An Easy-To-Use ,  
Fully-Managed  
Solution For Faster  
Time-to-Market**



# Can a Cloud-Based Solution Help?

***“The future of IoT is in the cloud. In a world that is connected 24/7, cloud computing is a backbone that needs to be reliable and available to make real-time decisions.” - Joe Weinman***

"Cloudeconomics: The Business Value of Cloud Computing," Wiley Publishing



# Cloud-based MQTT Platform - a Viable Solution?

**Centralized and fully-managed**

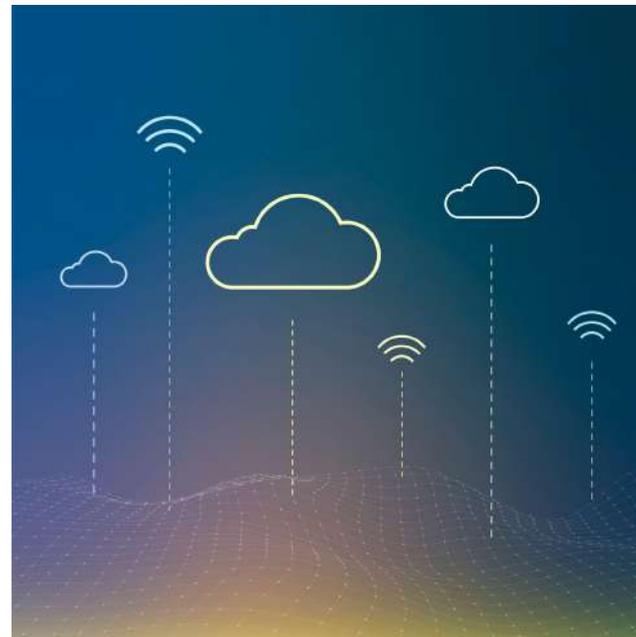
**Built-in security**

**Ready-to-use observability tools**

**Adherence to MQTT standard**

**Cost-effective**

**Great user-experience**



# A Viable Solution for me?



**Small engineering team**

**No dedicated operations team**

**Constrained on time**

**Constrained on budget**

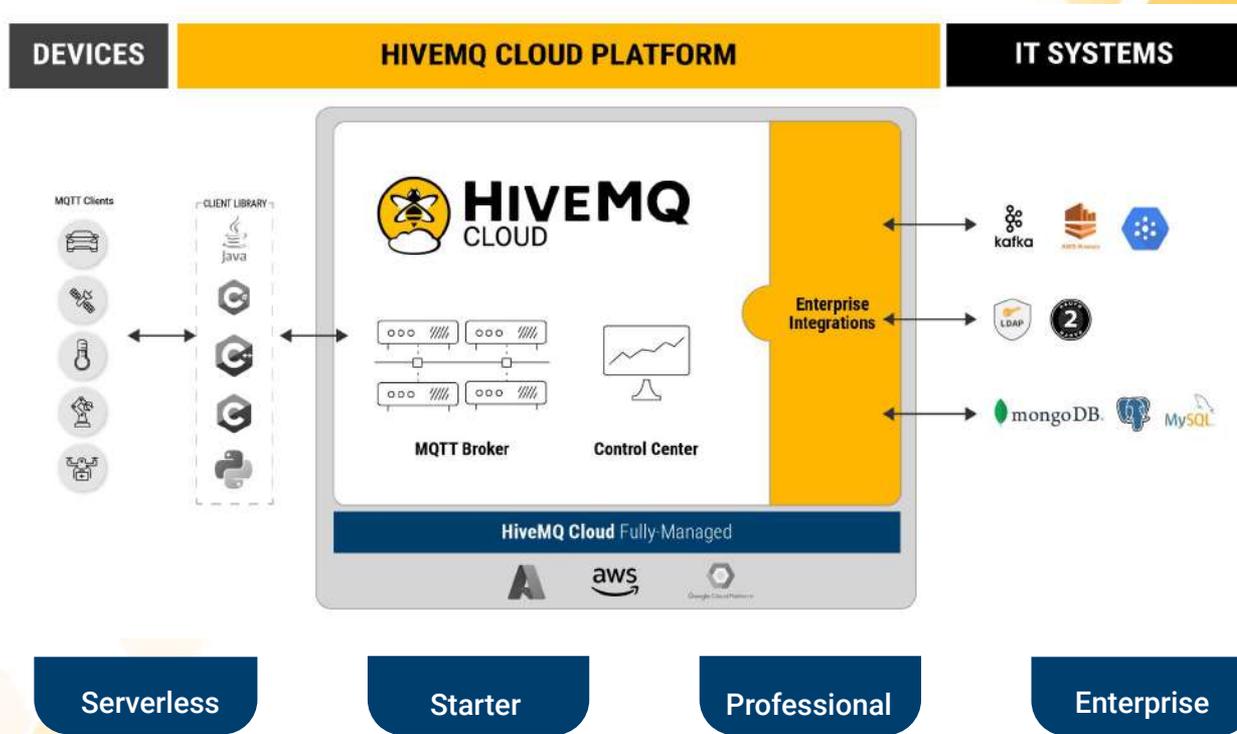


---

# HiveMQ Cloud Starter



# HiveMQ Cloud - A Fully-Managed MQTT Platform



# Easy and Quick to Start

Sign-up and create a cluster in minutes

Easy to onboard

Intuitive user experience

The screenshot shows the 'Create cluster' page in the HiveMQ console. The main heading is 'Configure your HiveMQ Cloud plan'. The page is divided into several sections:

- Name your cluster:** A text input field containing 'My Starter Cluster'.
- Choose your subscription:** Two options are shown: 'Starter Plan' (selected) and 'Professional Plan'.
- Select your tier:** A dropdown menu.
- Select your cloud service provider:** Two options are shown: 'aws' (selected) and 'Microsoft Azure'.
- Select your region:** A dropdown menu showing 'Frankfurt (eu-central-1)'.
- Your Selection:** A summary box showing the cost: 'Your total cost is based on the number of hours used and the number of messages processed.' It lists '€0.34 / started hour' and '€0.80 / million messages'. A 'Next Step: Billing Details' button is at the bottom.
- Starter:** A box describing the Starter plan as a 'Complete MQTT platform for testing and small-scale production'. It lists features: 'Single-tenant MQTT platform', 'No fees for connections', '99.95% uptime with Multi-AZ', and 'Up to 24/7 Support'.

A 'What's New' notification is visible in the bottom left, mentioning 'Streamline Integration of IoT Data via Confluent Cloud with HiveMQ Cloud Starter'.

Cluster Configuration page is easy to navigate and configure



## Interoperability via MQTT

Full Support for MQTT 3.1, 3.1.1 and 5.1

MQTT over TLS/SSL

IPv4 & IPv6, Websockets, Shared Subscriptions, Retained Messages and more..



# Fully-Managed MQTT Platform

High availability MQTT Broker in Cloud

Fully managed by HiveMQ experts zero-downtime upgrades and 24/7 support



## On-Demand Scaling

Scale to unlimited connections\*

Simple Pricing: Pay hourly

Seamless migration to Professional /Enterprise plans



*\*Connections are capped at 25,000 temporarily to provide best uptime and service.*



# Built-in Security

Secure by design

Strong access management functionality

Client certificate authentication

Name	Description	Topic	Publish	Subscribe	Retained messages	Shared Group	Shared subscribe allowed	QoS 0	QoS 1	QoS 2	Actions
Pub-sub	publish and subscribe rights	SolarPlant/#	✓	✓	✓	#	✗	✓	✓	✓	DELETE
Subscribe-only	subscribe to read data coming from plant	SolarPlant/#	✗	✓	✓	#	✗	✓	✓	✓	DELETE
publish-only-inverter	publish only right for inverters	SolarPlant/+/inverter/#	✗	✓	✓	#	✗	✓	✓	✓	DELETE

Name	Description	Permissions
InverterData	data coming from inverter	publish-only-inverter
BatteryData	data coming from battery	publish-only-battery
PlantData	data coming from plant	publish-only-plant
data analyst	data analyst will have role of subscribe only	Subscribe-only

Username	Roles
Analyst	data analyst
Operator	Operator engineer
battery	BatteryData
plant	PlantData

Permissions, Roles and Credentials can be easily managed via interactive UX

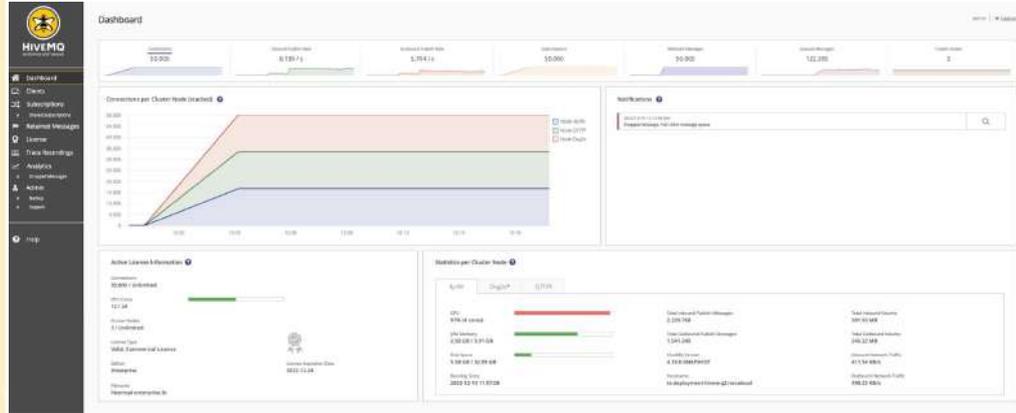


# Built-in Analytics

Observability for connected devices

Monitor Key Performance Indicators (KPIs) and metrics

Use Dashboard to debug and manage clients



Snapshot of all available MQTT sessions 1s ago

Client ID	Connected	Queue Size		Username	IP Address
		Current	Maximum		
A00	✓	0	1,000	mqtt-test	100.64.34.113
A01	✓	0	1,000	mqtt-test	100.64.34.113
A02	✓	0	1,000	mqtt-test	100.64.34.113
A03	✓	0	1,000	mqtt-test	100.64.34.113
A04	✓	0	1,000	mqtt-test	100.64.34.113
A05	✓	0	1,000	mqtt-test	100.64.34.113
A06	✓	0	1,000	mqtt-test	100.64.34.113
A07	✓	0	1,000	mqtt-test	100.64.34.113
A08	✓	0	1,000	mqtt-test	100.64.34.113
A09	✓	0	1,000	mqtt-test	100.64.34.113

Snapshot of all available retained messages 1s ago

Topic	Payload Size	Creation Date
topic/1/subscribe-000	718	2023-08-19 13:27:00
topic/1/subscribe-001	718	2023-08-19 13:27:48
topic/1/subscribe-002	718	2023-08-19 13:28:36
topic/1/subscribe-003	718	2023-08-19 13:29:24
topic/1/subscribe-004	718	2023-08-19 13:30:12
topic/1/subscribe-005	718	2023-08-19 13:31:00
topic/1/subscribe-006	718	2023-08-19 13:31:48
topic/1/subscribe-007	718	2023-08-19 13:32:36
topic/1/subscribe-008	718	2023-08-19 13:33:24
topic/1/subscribe-009	718	2023-08-19 13:34:12

Built-in dashboard and client connection overview



## Power Workflows with Broker REST APIs

Programmatic workflows for more agility

List, View, connect and disconnect clients using the REST APIs

The screenshot shows a REST client interface. At the top, there is a green button labeled 'GET' followed by the URL `/api/v1/mqtt/clients/{clientId}`. Below this, there is a section titled 'Response samples' with three buttons: '200' (highlighted in white), '400', and '404'. Underneath, there is a dropdown menu for 'Content type' set to 'application/json' and another dropdown for 'Example' set to 'offline-client'. Below these, the text 'Offline client' is displayed with 'Copy', 'Expand all', and 'Collapse all' buttons. The main content area shows a JSON response:

```
{
  - "client": {
    "id": "client-1",
    "connected": false,
    "sessionExpiryInterval": 12345,
    "messageQueueSize": 543,
    "willPresent": false
  }
}
```

*Interact programmatically with your application via REST API*



# Integrate your data with other services

Bidirectional MQTT data transport between HiveMQ Cloud and third party services

Easily configure Topic Mappings via convenient UI

Confluent Cloud currently available, Other integrations coming soon

OVERVIEW ACCESS MANAGEMENT HIVEMQ CONTROL CENTER INTEGRATIONS **NEW** WEB CLIENT GETTING STARTED API ACCESS

**CONFLUENT**

### Connection Config

**Bootstrap servers**  
Insert the list of bootstrap server URLs of the Kafka cluster you want to connect your HiveMQ broker to.  
You can add a single server URL in the format `host:port` or add multiple server URLs as a comma separated list in the format `host:port;host:port...`

**Connection security**  
Add your Kafka credentials to connect your HiveMQ broker securely to your Kafka cluster.

Bootstrap Servers (required)  
Comma separated string of server urls in the format host:port

API Key (required)

API Secret (required)

### Publish Message

Topic Name  
livingroom/temperature

Quality of Service (QoS)  
0 - At most once

Message  
{  
 "sensor\_id": "12345",  
 "timestamp": 1654312345,  
 "temperature": 25.5,  
 "unit": "Celsius"  
}

**PUBLISH** REMOVE ALL

*Easily publish messages via in-built and ready-to-use integrations*





# Application Demo

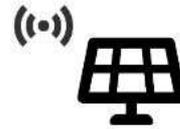


## Problem at Hand

Remote monitoring for a Solar Power Plant

Resource Constraints

Solution must scale



Solar panel and sensors



Battery



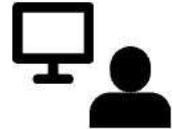
Inverter



Database



Data Analyst



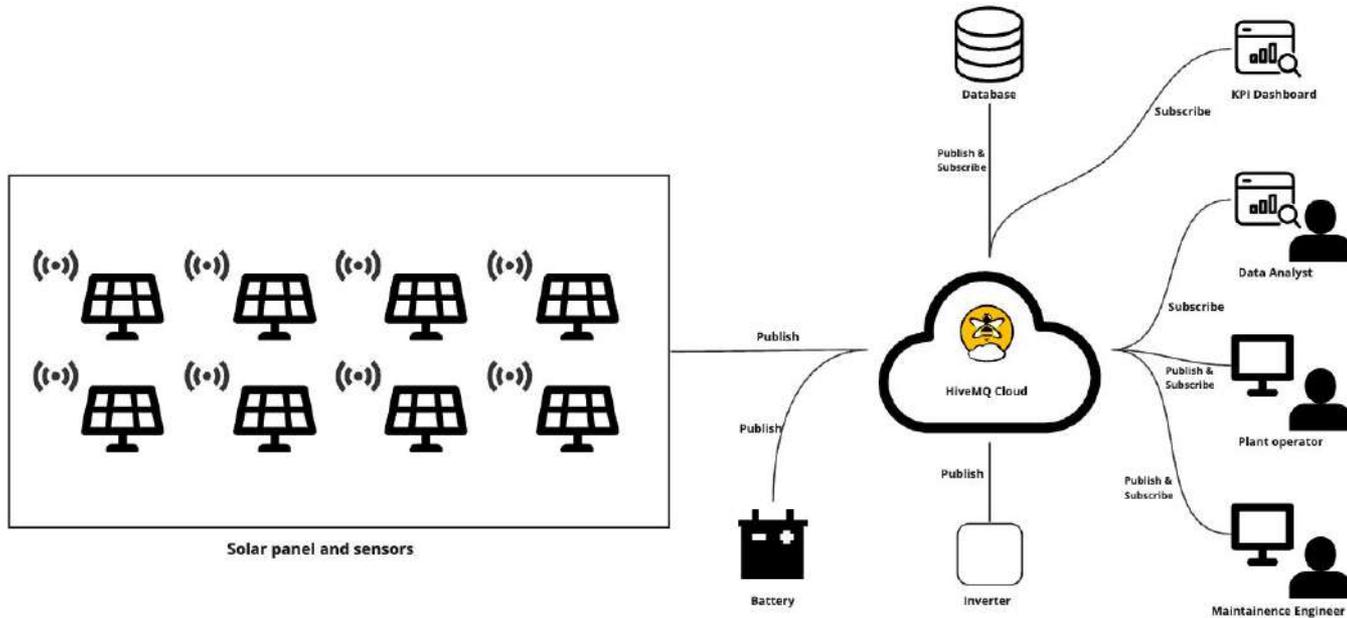
Plant operator



Maintenance Engineer

*Caption: Power Plant Components (left) vs Stakeholders(right)*

# Remote Monitoring for a Solar Power Plant

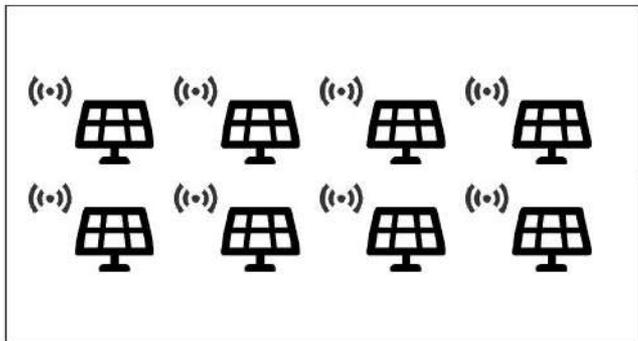


*Caption: Data flow architecture of a remote monitoring system for a solar power plant*

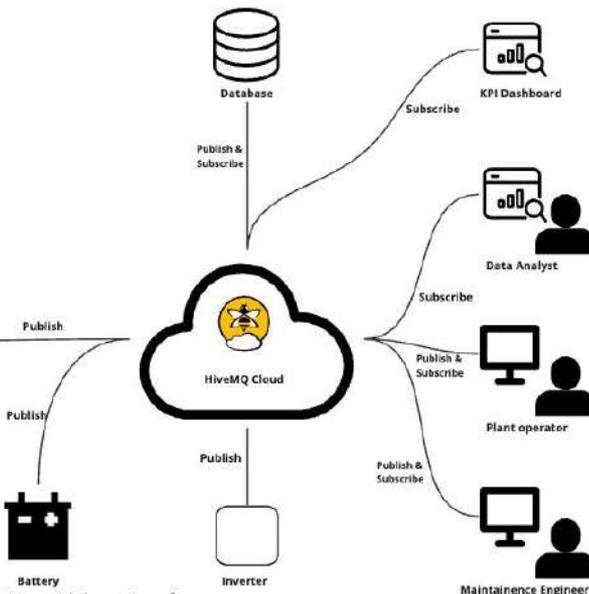
# Remote Monitoring for a Solar Power Plant

SolarPlant/Plant1/Overview/PowerOutput  
SolarPlant/Plant1/Overview/Temperature  
SolarPlant/Plant1/SolarPanel/Panel1/Voltage  
SolarPlant/Plant1/SolarPanel/Panel2/Current

SolarPlant/<Plant\_ID>/<Component\_Type>/<Component\_ID>/<Metric>



Solar panel and sensors



SolarPlant/Plant1/Battery/Battery1/ChargeLevel  
SolarPlant/Plant1/Battery/Battery2/DischargeRate

SolarPlant/Plant1/Inverter/Inverter1/Efficiency  
SolarPlant/Plant1/Inverter/Inverter2/Status

SolarPlant/Plant1/Overview/\*  
SolarPlant/Plant1/SolarPanel/\*  
SolarPlant/Plant1/Inverter/\*  
SolarPlant/Plant1/Battery/\*  
SolarPlant/Plant1/Environment/\*

SolarPlant/Plant1/Overview/  
SolarPlant/Plant1/SolarPanel/  
SolarPlant/Plant1/Inverter/  
SolarPlant/Plant1/Battery/

Caption: Data flow architecture of a remote monitoring system for a solar power plant



# Question

---

**Demo Time**



# Question

---

**What are some of the use-cases that you are working on/planning to work on?**





# Key Takeaways





## Key Takeaways

01

Taking a use-case from idea to production is challenging

02

MQTT can help boost speed and agility for production

03

A fully-managed MQTT Platform can help in certain cases

04

HiveMQ Cloud Starter can help achieve speed and flexibility needs

**ANY  
QUESTIONS?**



# Resources



[Signup for HiveMQ Cloud Starter](#) and get \$100 in free credits



[A Step-by-Step Guide to Using HiveMQ Cloud Starter](#)



[When to Move from Serverless to Starter Plan?](#)



HIVEMQ  
CLOUD

[Try HiveMQ Cloud](#)



# THANK YOU

## Contact Details

**Magi Erber:** [margaretha.erber@hivemq.com](mailto:margaretha.erber@hivemq.com) | [linkedin.com/in/margaretha-erber/](https://www.linkedin.com/in/margaretha-erber/)

**Shashank Sharma:** [shashank.sharma@hivemq.com](mailto:shashank.sharma@hivemq.com) | [linkedin.com/in/shashanksharma612/](https://www.linkedin.com/in/shashanksharma612/)

[Start for Free with Cloud Starter](#)

