MQTT Assignment

Internet of Things

Name: Bhavishya Sharma
Roll No: CS20MTECH12006

HQ: General Flow

1. Connect to the MQTT Broker
2. Subscribe to all UAVs
3. Wait for all UAVs to connect
4. Send location for all 6 vehicles in a single message
5. Wait for Tracking info from all UAVs
6. Repeat from Step-3

UAV: General Flow

1. Connect to the MQTT Broker
2. Set 'WILL' as offline with RETAIN=True (used for synchronisation)
3. Subscribe to all other UAVs
4. Subscribe to HQ
5. Update own status to online
6. Wait for all other UAVs to connect
7. Wait for Vehicle Location
8. Send own location to all other UAVs
9. Wait for location from all other UAVs
10. Calculate distance between each vehicle and each UAV
11. Find own target vehicle. If 2 UAVs have same minimum distance to a vehicle, UAV with higher UAV_ID get priority.
12. Send tracking info to HQ
13. Repeat from Step-7

Metrics:

Note: These metrices do not include synchronisation messages.

Total Clients: 7

HQ: 1
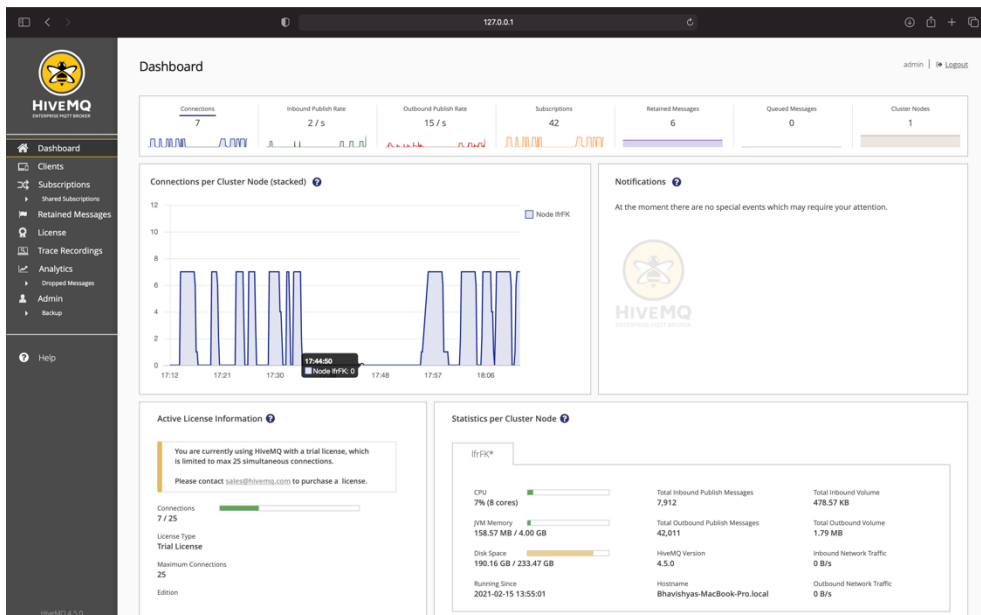UAVs: 6

Total Subscriptions: 42

HQ Subscriptions: 6 UAVs
Per UAV Subscriptions: 5 UAVs + 1 HQ

Inbound Publish Rate: 13 Messages / 10 Seconds

HQ Messages: 1 / 10 Seconds
Per UAV Messages: 2 / 10 Seconds (Location + Tracking)

Outbound Publish Rate: 42 Messages / 10 Seconds

To HQ Messages: 6 / 10 Seconds (Tracking)
To UAV Messages: 6 / 10 Seconds (1 Vehicle Location + 5 UAV Locations)

Dashboard

HiveMQ
ENTERPRISE MQTT BROKER

- Dashboard
- Clients
- Subscriptions
  - Shared Subscriptions
- Retained Messages
- License
- Trace Recordings
- Analytics
  - Dropped Messages
- Admin
  - Backup

- Help

HiveMQ 4.5.0

Connections	Inbound Publish Rate	Outbound Publish Rate	Subscriptions	Retained Messages	Queued Messages	Cluster Nodes
7	2 / s	15 / s	42	6	0	1

Connections per Cluster Node (stacked)

☐ Node IfrFK

17:44:50
■ Node IfrFK: 0

12 / 10 / 8 / 6 / 4 / 2 / 0

17:12 17:21 17:30 17:48 17:57 18:06

Notifications

At the moment there are no special events which may require your attention.

HiveMQ
ENTERPRISE MQTT BROKER

Active License Information

You are currently using HiveMQ with a trial license, which is limited to max 25 simultaneous connections.

Please contact sales@hivemq.com to purchase a license.

Connections
7 / 25

License Type
Trial License

Maximum Connections
25

Edition

Statistics per Cluster Node

IfrFK*

CPU 7% (8 cores)	Total Inbound Publish Messages 7,912	Total Inbound Volume 478.57 KB
JVM Memory 158.57 MB / 4.00 GB	Total Outbound Publish Messages 42,011	Total Outbound Volume 1.79 MB
Disk Space 190.16 GB / 233.47 GB	HiveMQ Version 4.5.0	Inbound Network Traffic 0 B/s
Running Since 2021-02-15 13:55:01	Hostname Bhavishyas-MacBook-Pro.local	Outbound Network Traffic 0 B/s

---

Clients

Snapshot of all available MQTT sessions **1s** ago.

⟳ Refresh Snapshot

Client ID ▲	Connected	Queue Size Current	Maximum	Username	IP Address
	All ▾				
hq	✔	0	1,000	admin	192.168.0.195
uav_1	✔	0	1,000	admin	192.168.0.195
uav_2	✔	0	1,000	admin	192.168.0.195
uav_3	✔	0	1,000	admin	192.168.0.195
uav_4	✔	0	1,000	admin	192.168.0.195
uav_5	✔	0	1,000	admin	192.168.0.195
uav_6	✔	0	1,000	admin	192.168.0.195

Entry **1-7** of **7** / Page **1** of **1**

☐ Client is Connected   ☐ Client is not Connected

Retained Message Detail

Topic
uav/1

⟳ Refresh Page   ← Prev   Next →

Message Information

General
Topic
uav/1

QoS
2 - Exactly Once

Payload Size
16 B

🔍 Show Payload

Expiry
Creation Date
2021-02-16 18:11:08

Message Expiry

Message Metadata
No message metadata available

Payload Metadata
No payload metadata available

User Properties

No user properties available

Payload

Show as
UTF-8 String ▾

Content
{"online": true}
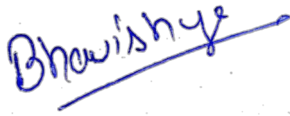
📋 Copy to clipboard   ⬇ Download as raw file   ✔ OK

PLAGIARISM STATEMENT

I certify that this assignment/report is my own work, based on my personal study and/or research and that I have acknowledged all material and sources used in its preparation, whether they be books, articles, reports, lecture notes, and any other kind of document, electronic or personal communication. I also certify that this assignment/report has not previously been submitted for assessment in any other course, except where specific permission has been granted from all course instructors involved, or at any other time in this course, and that I have not copied in part or whole or otherwise plagiarised the work of other students and/or persons. I pledge to uphold the principles of honesty and responsibility at CSE@IITH. In addition, I understand my responsibility to report honour violations by other students if I become aware of it.

Name: Bhavishya Sharma
Roll No: CS20MTECH12006

Signature