

# Chariot MQTT Server Usage

This document describes the basic usage of the Chariot MQTT Server through the Chariot UI.

The UI can be accessed at the following URL:

```
http://<server-url>:8080
```

When installed on [Linux](#), [Windows](#) or deployed via [Azure Marketplace](#), the default login credentials are:

```
username: admin
password: password
```

When deployed via [AWS Marketplace](#), the default login credentials are:

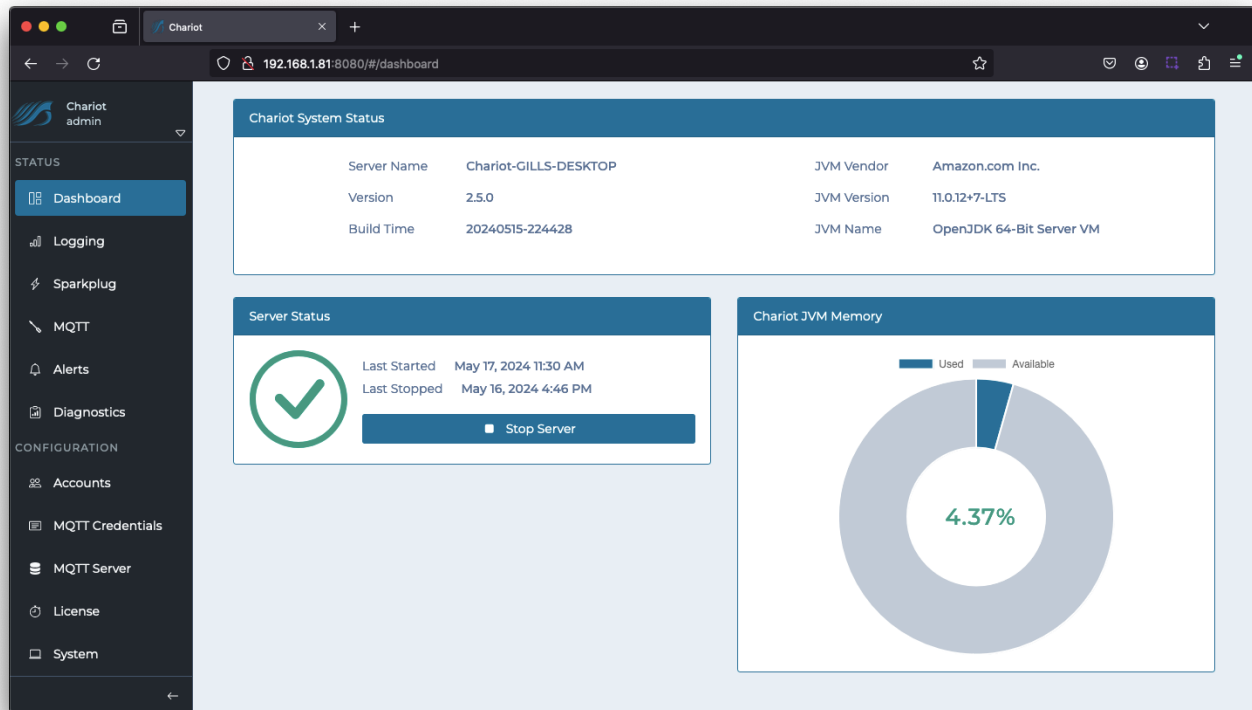
```
username: admin
password: EC instance ID for example: i-0049ac1e13e558b70
```

The Chariot MQTT Server Web UI provides the following *status* pages for monitoring server activity, logs, and data.

- [Dashboard](#)
- [Logging](#)
- [Sparkplug](#)
- [MQTT](#)
- [Alerts](#)
- [Diagnostics](#)

## Dashboard

The Chariot dashboard provides a high level view of Chariot server and system status information.

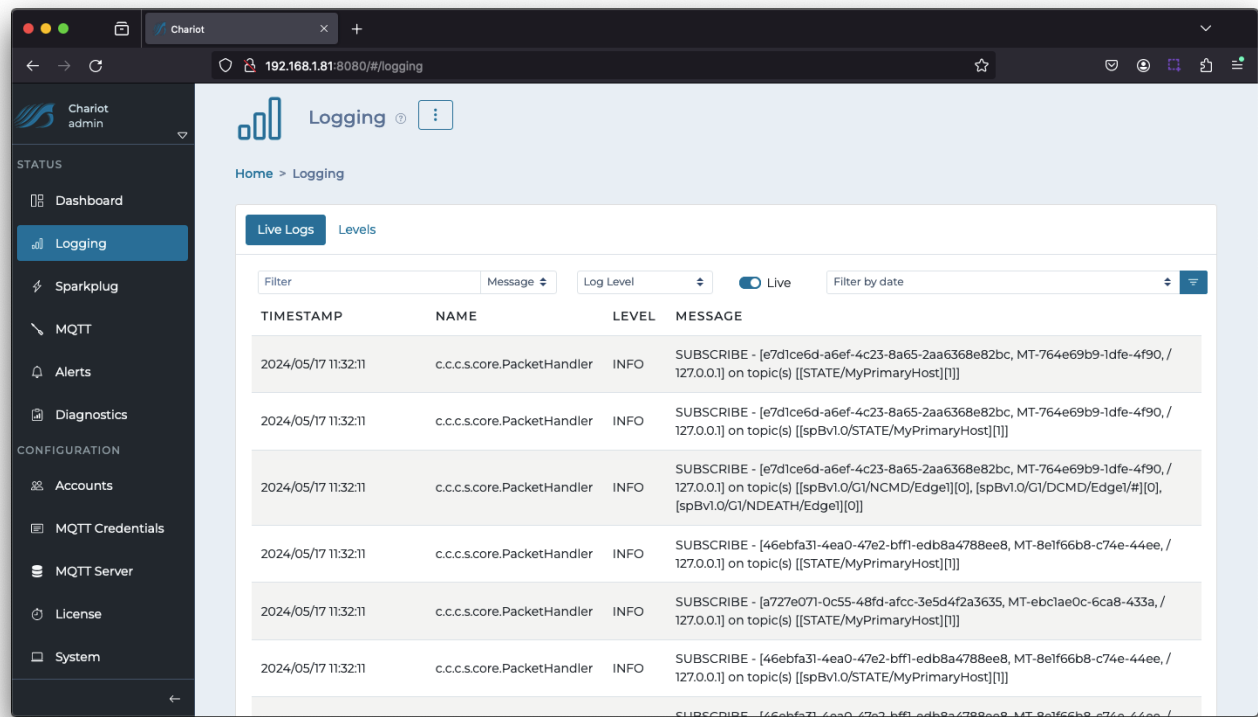


## Logging

The Logging page has two tabs when a user can either view live Chariot logs or modify log levels. Additionally, a zip file containing the Chariot logs can be downloaded.

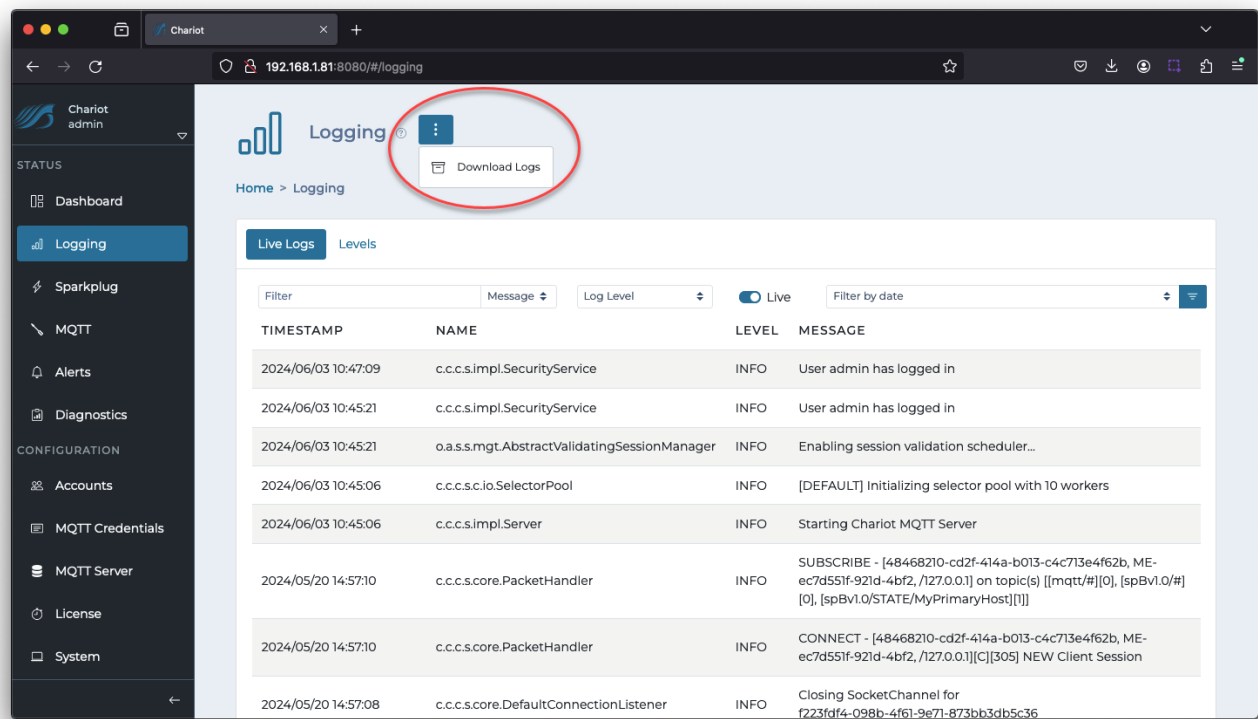
## Live Logs

Live Chariot logs can be viewed on the Live logs tab. The live logs can be filtered by matching message text or selecting a minimum log level. A live toggle allows for enabling/disabling live log updates to the page.



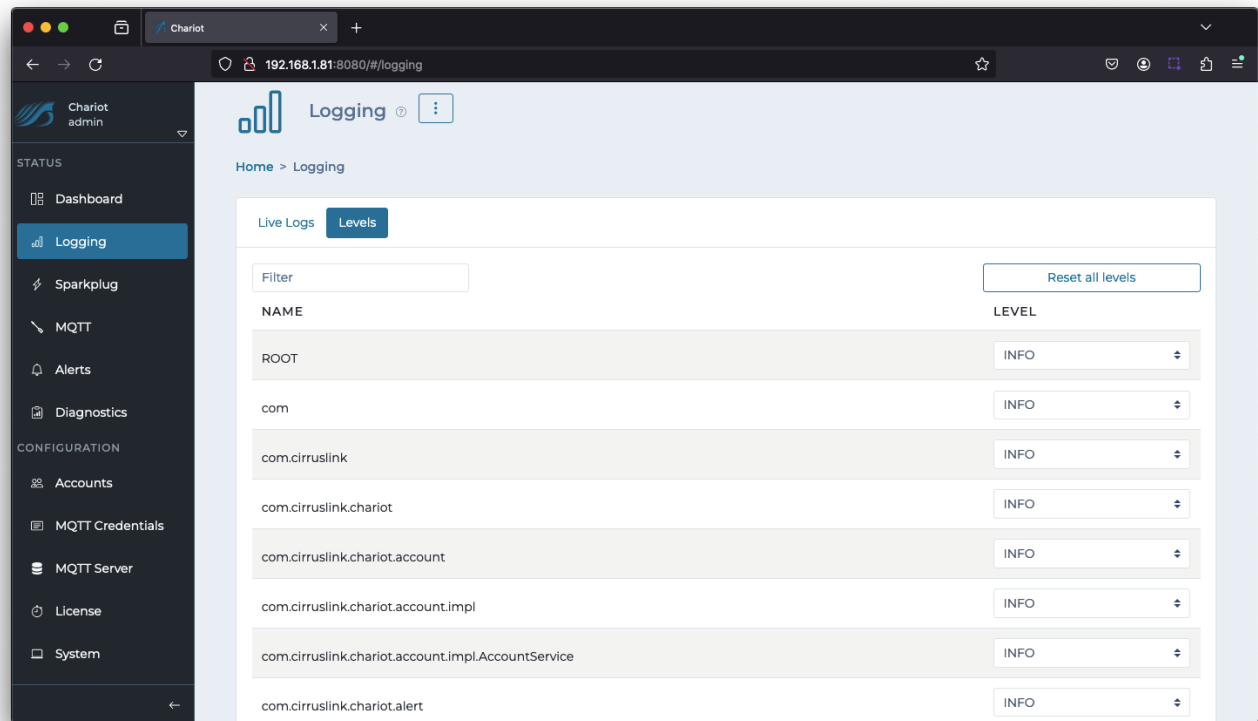
## Download Logs

The menu button at the top of the page contains an option for downloading a zip file containing the Chariot logs.



Log Levels

The second tabs allows for modifying log levels. The log levels can be filtered by name and each logger can have the level set to one of: TRACE, DEBUG, INFO, WARN, and ERROR.

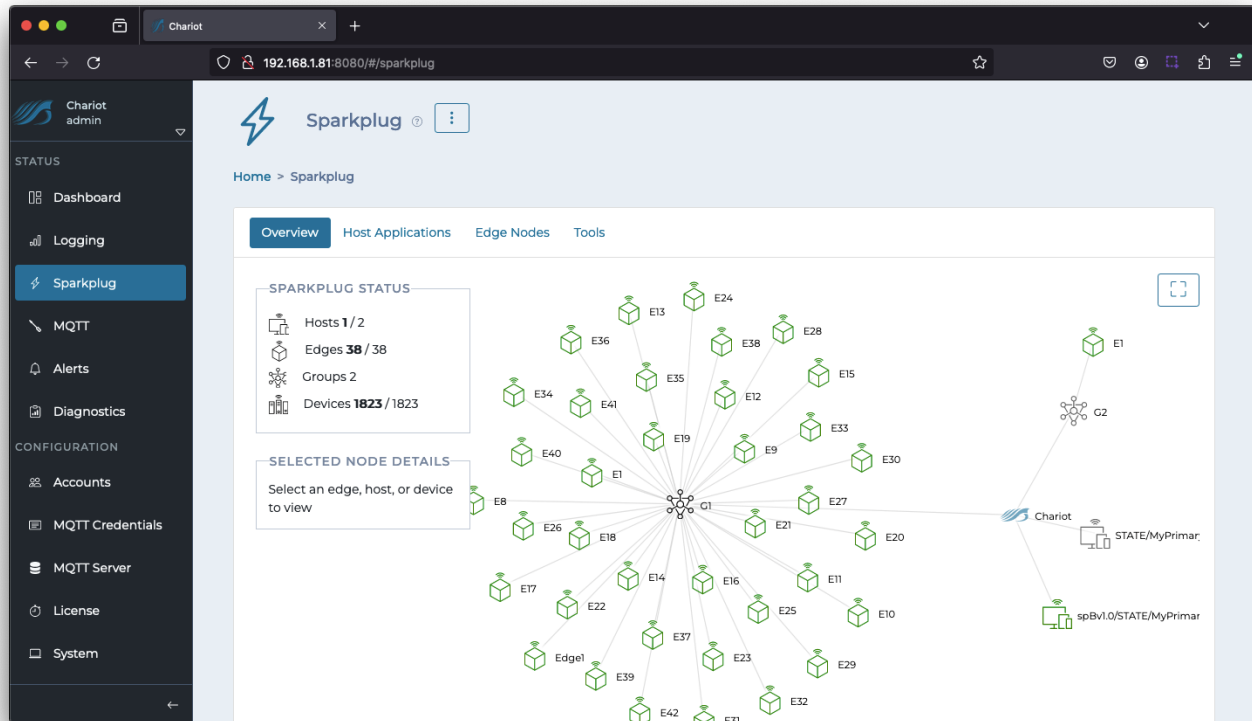


# Sparkplug

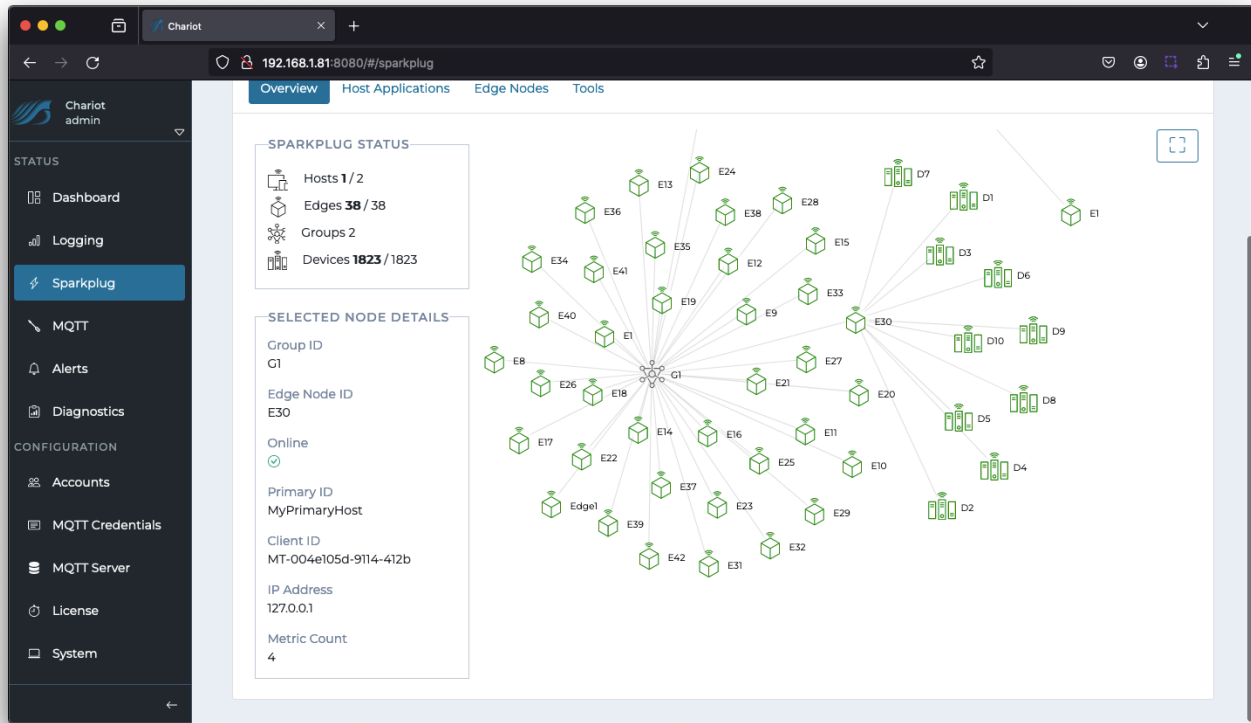
The Sparkplug page tracks data from Sparkplug MQTT clients that are connected to the Chariot MQTT server. The tracking can be disabled by clicking on the menu button at the top.

## Overview

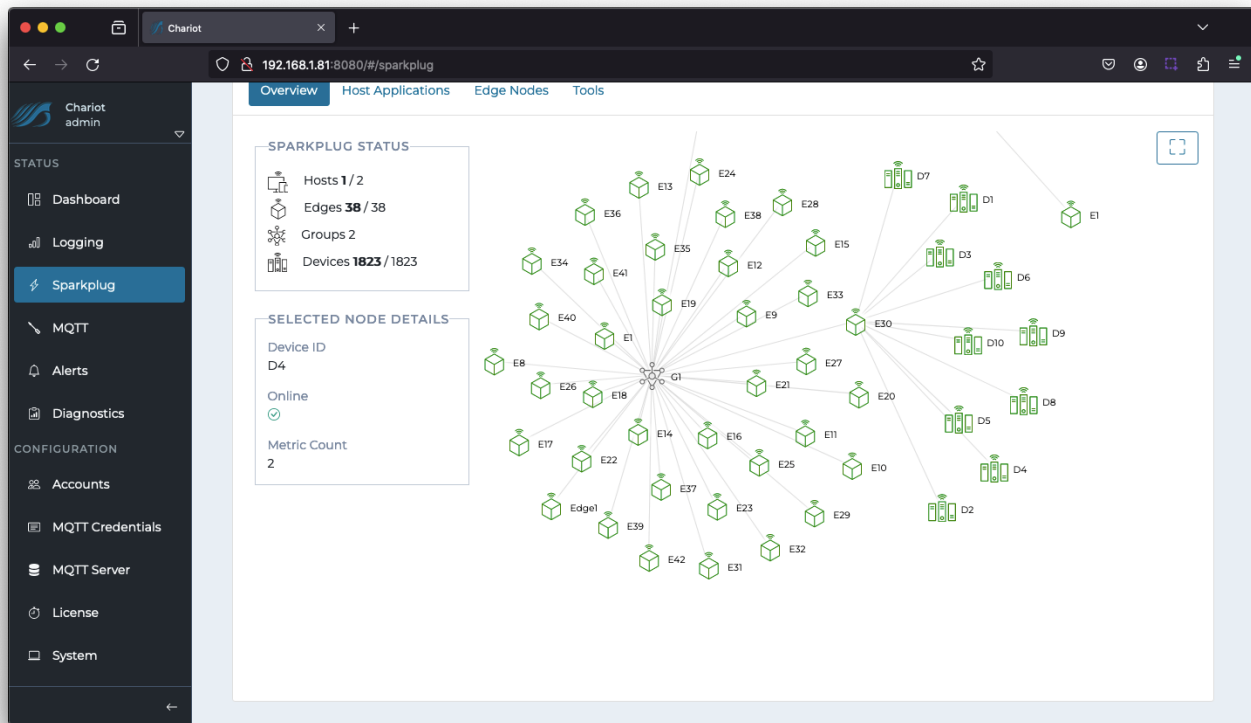
The Overview tab provides a dynamic representation of the Sparkplug Host Applications, Groups, Edge Nodes, and Devices that are being tracked by Chariot.



Selecting a specific Edge Node will display the Edge Node details and explode the Devices associated with the Edge Node

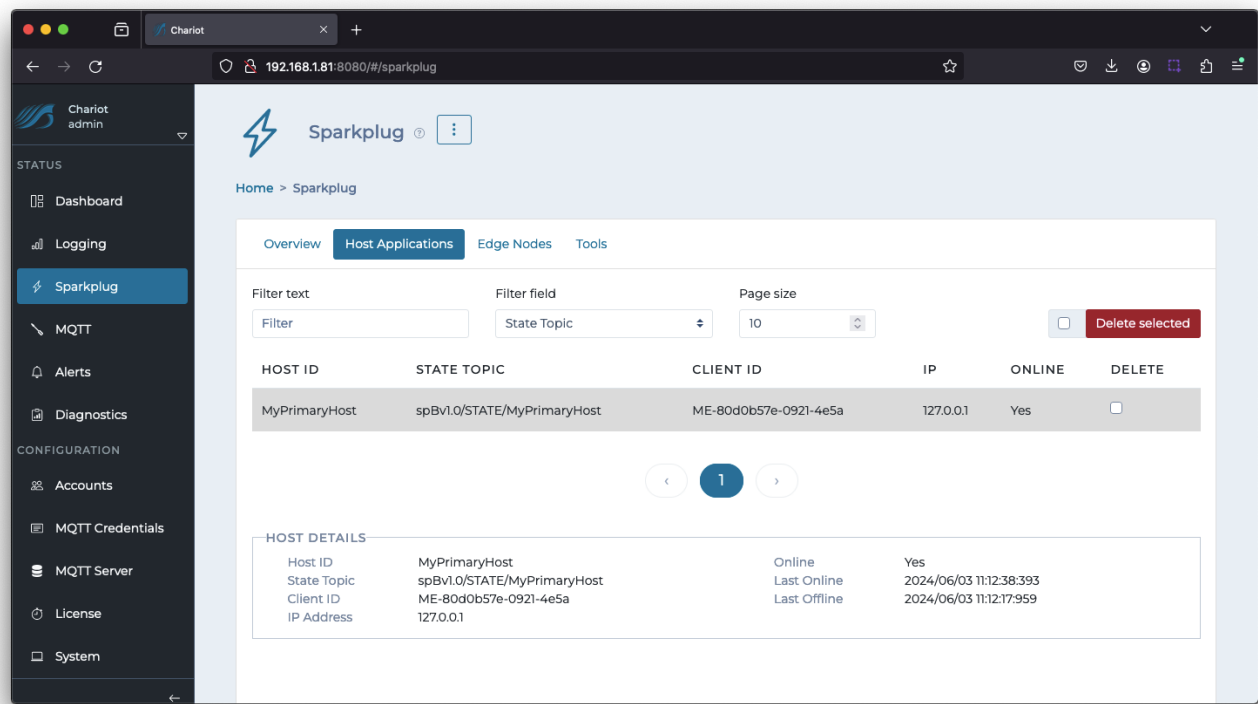


Selecting a specific Device will display the Device details



## Host Applications

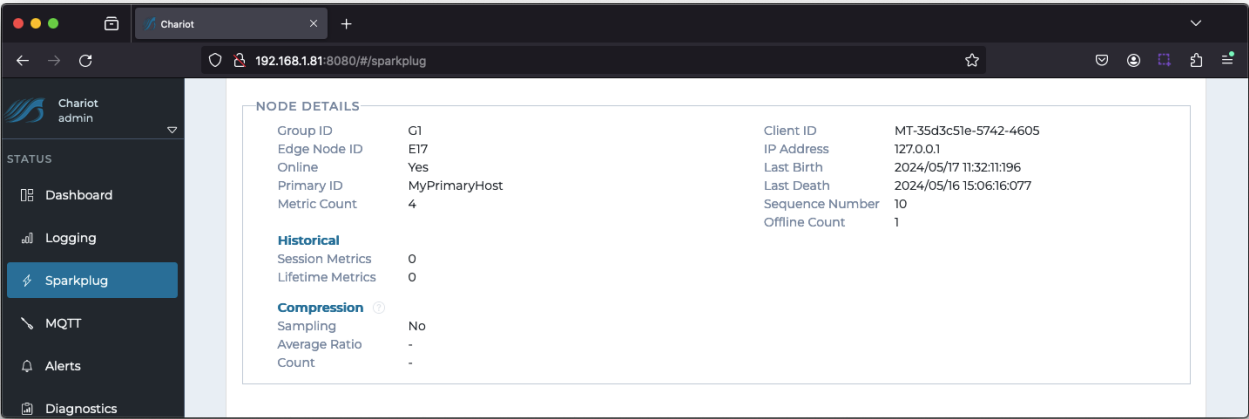
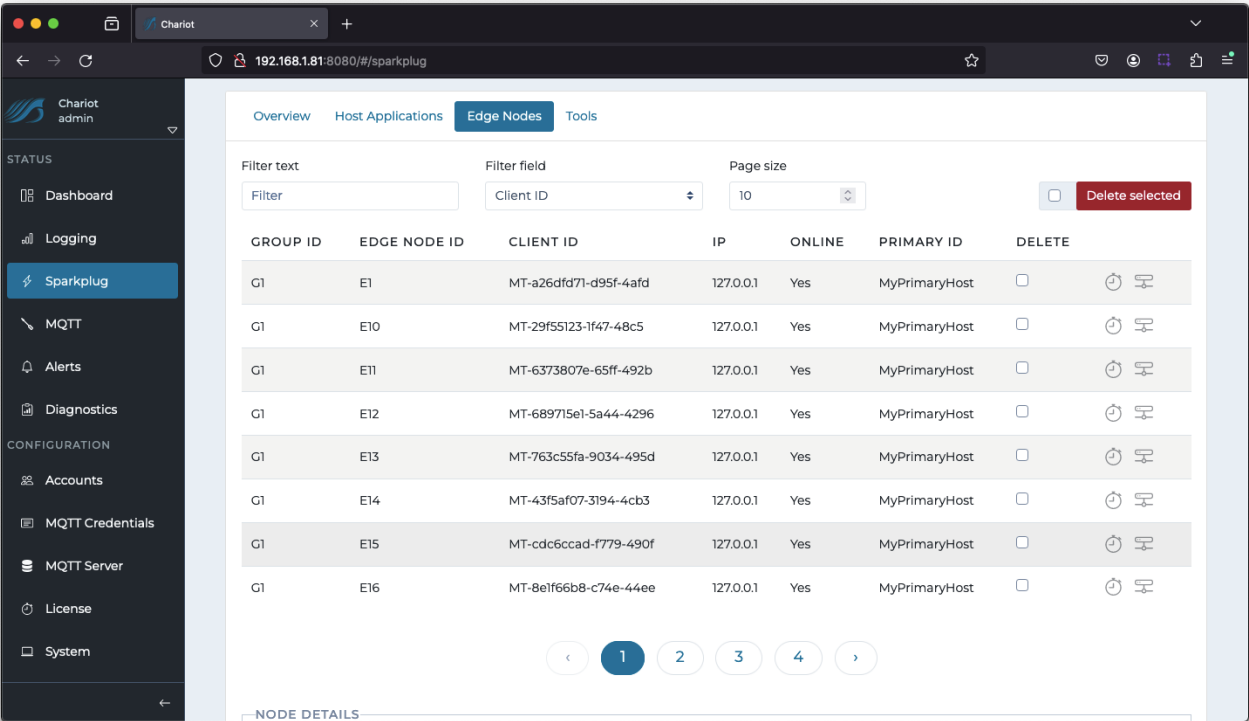
The Host Applications tab will show all Sparkplug Host applications that Chariot is tracking. Selecting a host application from the list will show additional details such as the last time it was online or offline.



## Edge Nodes

The Edge Nodes tab will show all Sparkplug Edge Nodes and any Devices that Chariot is tracking. Selecting an Edge Node from the list will show additional details and also populate the list of the Edge Node's Devices below.

Buttons on the far right of each Edge Node entry in the list provide tools for sampling compression and downloading the Sparkplug Edge Node birth (NBIRTH) and Device birth (DBIRTH) payloads in JSON format.



DEVICE ID	ONLINE	LAST BIRTH	LAST DEATH	
D1	Yes	2024/05/17 11:32:11:672	2024/05/16 15:06:16:077	
D10	Yes	2024/05/17 11:32:11:548	2024/05/16 15:06:16:077	
D2	Yes	2024/05/17 11:32:11:725	2024/05/16 15:06:16:077	
D3	Yes	2024/05/17 11:32:11:741	2024/05/16 15:06:16:077	
D4	Yes	2024/05/17 11:32:11:466	2024/05/16 15:06:16:077	
D5	Yes	2024/05/17 11:32:11:472	2024/05/16 15:06:16:077	
D6	Yes	2024/05/17 11:32:11:542	2024/05/16 15:06:16:077	
D7	Yes	2024/05/17 11:32:11:594	2024/05/16 15:06:16:077	

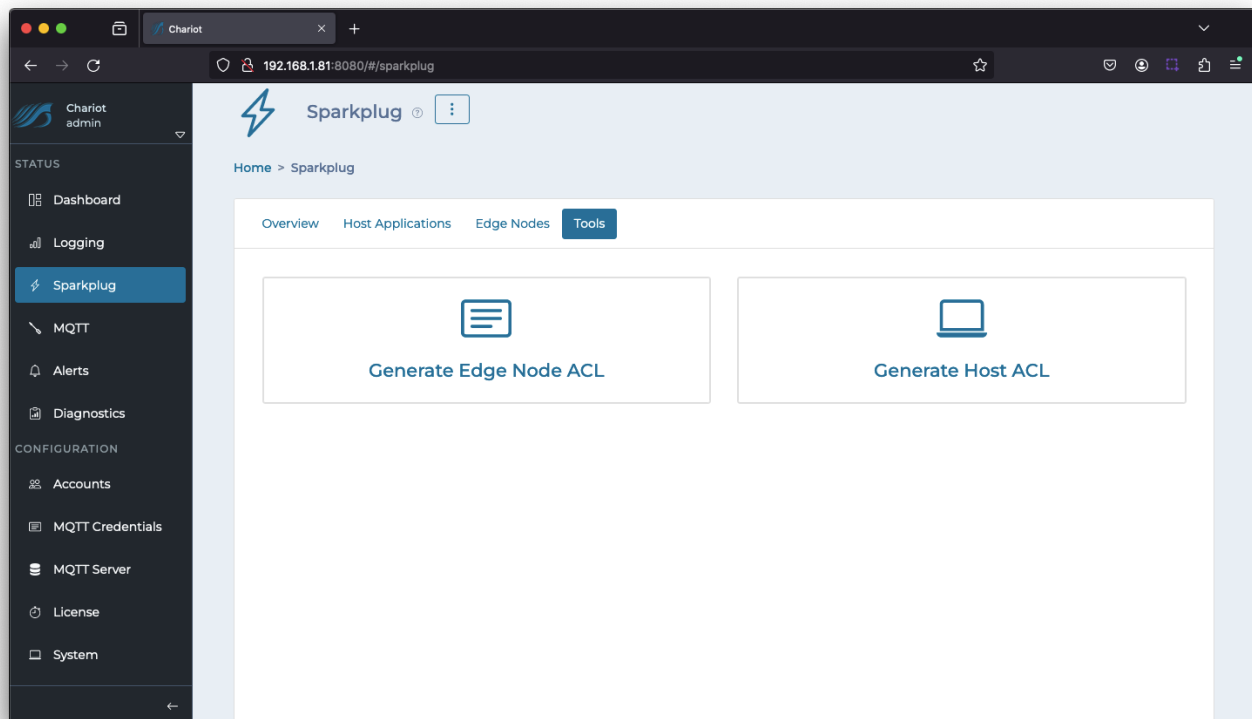
  

DEVICE DETAILS			
Device ID	D5	Last Birth	2024/05/17 11:32:11:472
Online	Yes	Last Death	2024/05/16 15:06:16:077
Metric Count	2		
<b>Historical</b>			
Session Metrics	0		
Lifetime Metrics	0		

## Tools

The Tools tab allows you to generate Access Control Lists (ACLs) needed for Hosts and Edge Nodes.

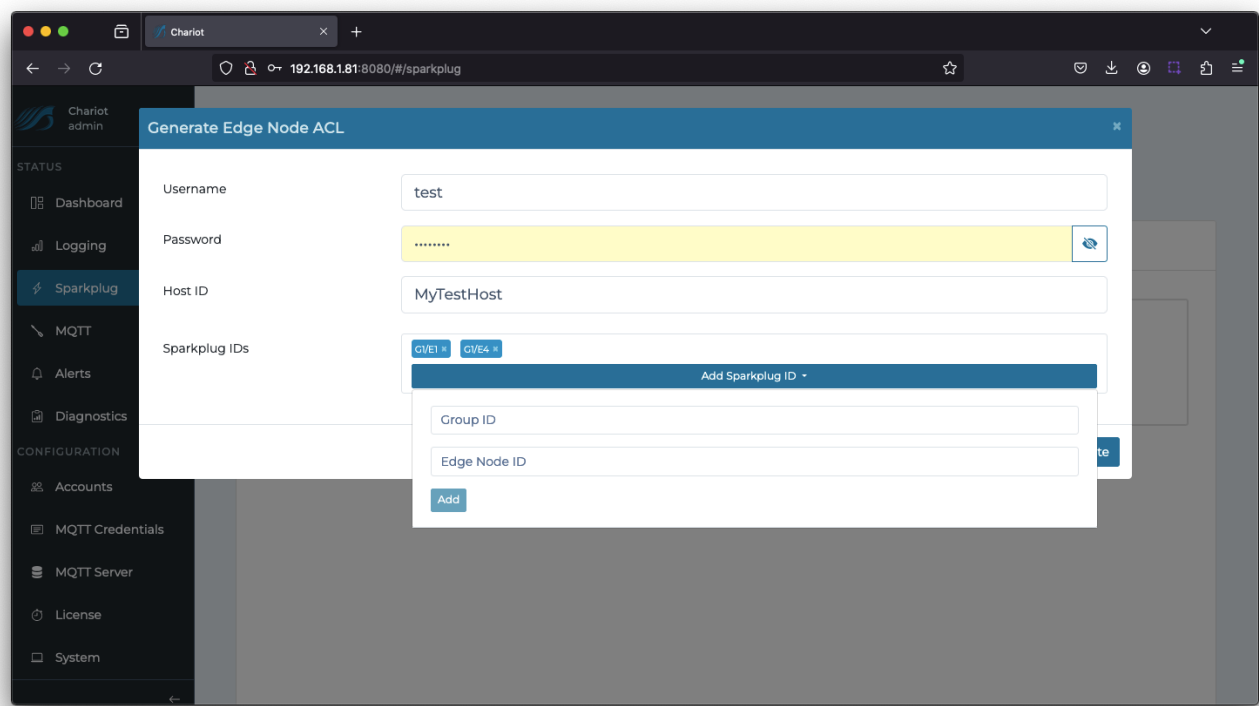
ACLs define the topics that a client can publish and subscribe on and generating an ACL through the Sparkplug Tools will automatically add the the credentials to the MQTT Credentials section of the Chariot configuration.



Select Generate Edge Node ACL to generate the ACLs for a Sparkplug client. Enter the client username, password and Primary Host ID (if needed). Add the required Sparkplug Edge Node IDs and select create.

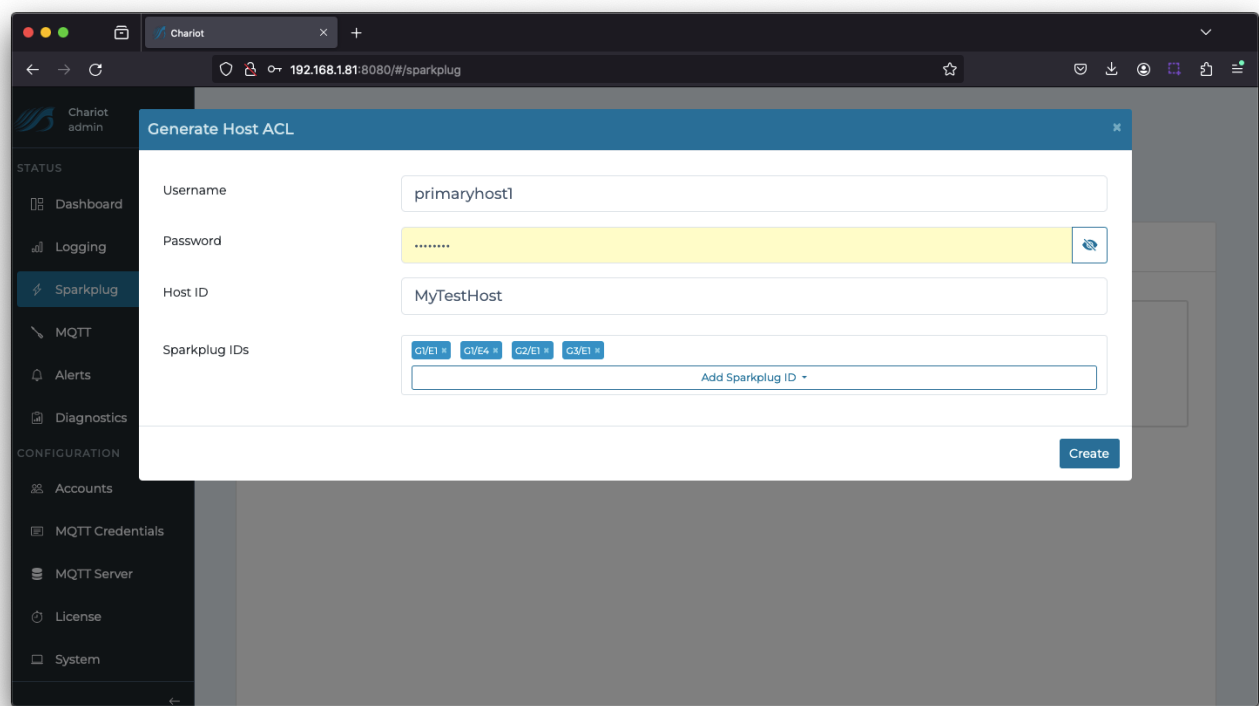


A new entry for the username/password will be added to the MQTT Credentials section of the Chariot configuration.

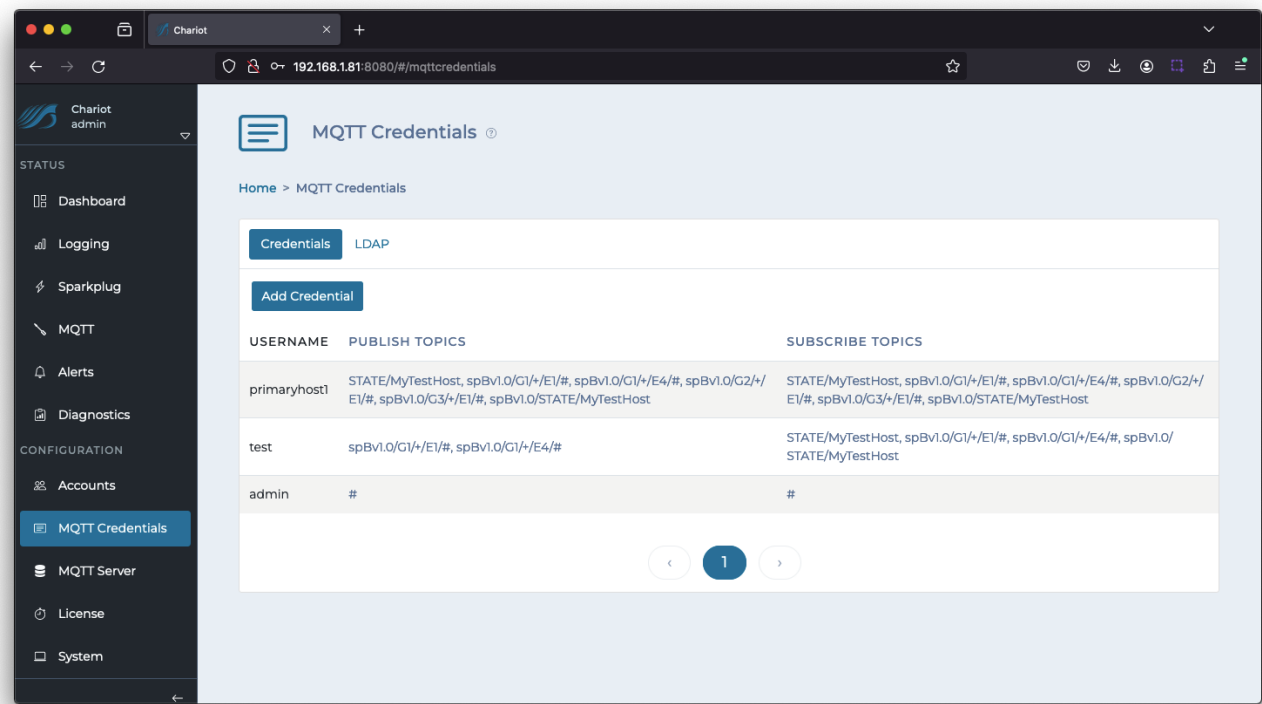


Select Generate Host ACL to generate the ACLs for a Sparkplug Primary Host client. Enter the client username, password and Primary Host ID. Add the required Sparkplug Edge Node IDs and select create.

A new entry for the username/password will be added to the MQTT Credentials section of the Chariot configuration.



For the examples above, the MQTT Credentials will have been updated as shown below:

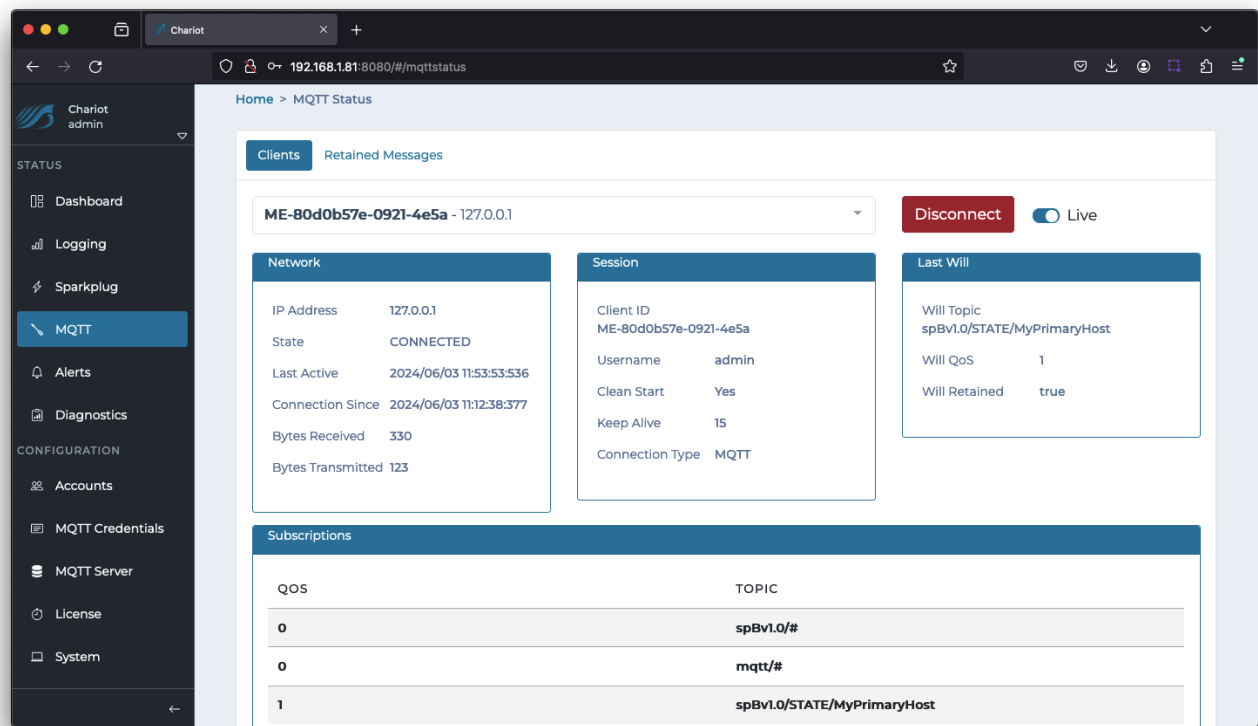
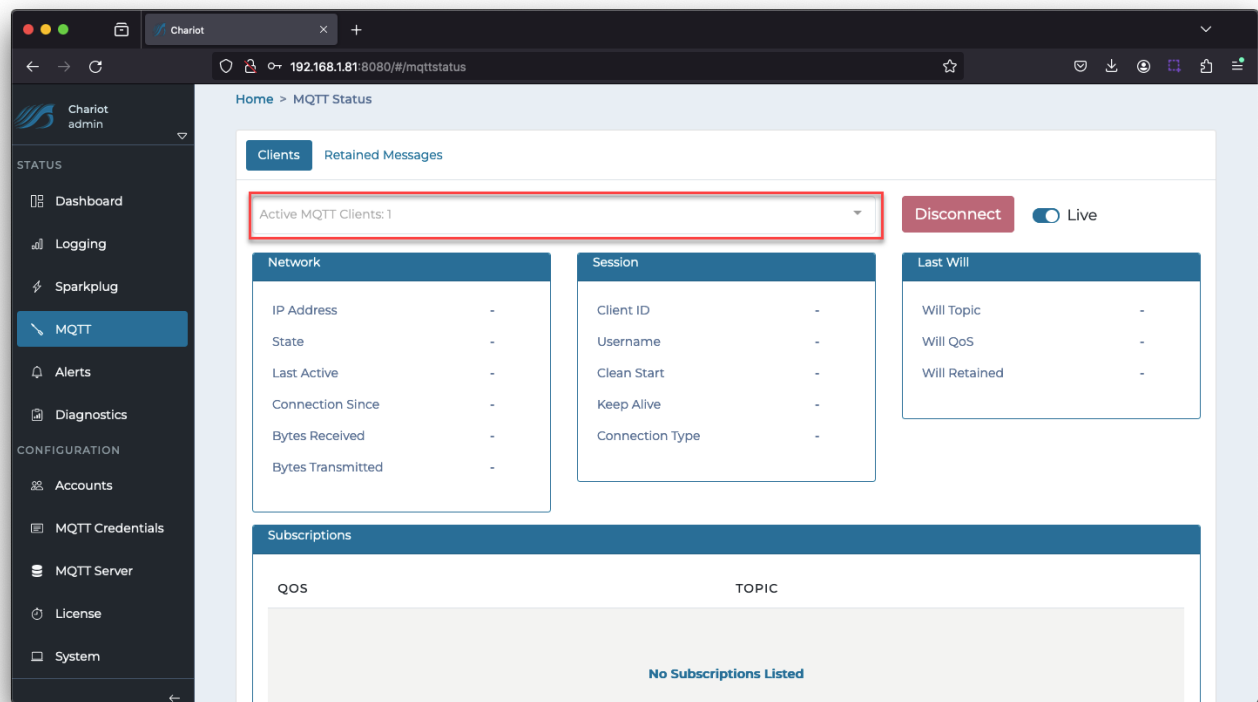


## MQTT

The MQTT page tracks the status of MQTT Clients.

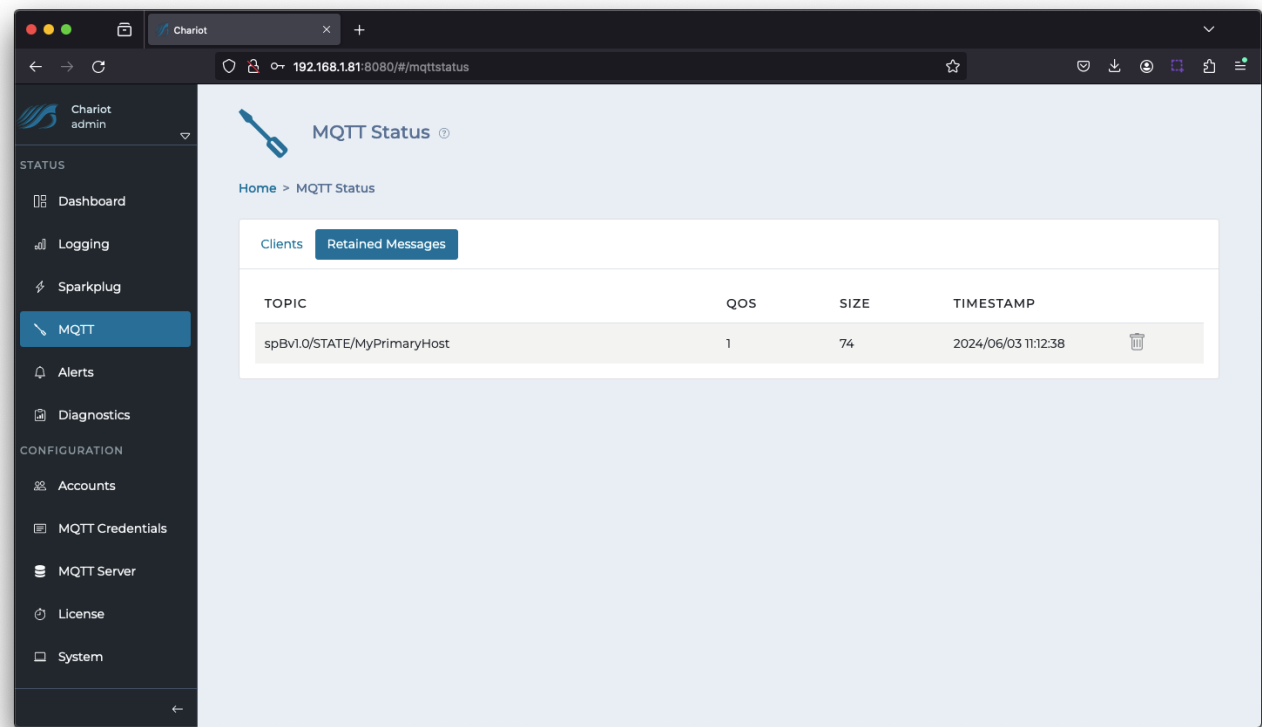
### Clients

The MQTT Clients pages show details of all clients connected to the Chariot MQTT server. A searchable dropdown list is used to select an MQTT client and view network details, session information, LWT details, and a list of subscriptions.



## Retained Messages

The Retained Messages page shows all retained messages recorded by the Chariot Server.



## Alerts

The Alerts page provides a place to view and manage any alerts that are generated in the Chariot Server

### Live Alerts

The Live Alerts tab shows a live view of alerts as they are generated. Individual alerts can be acknowledge and cleared. The alerts displayed can be filtered by matching text in the description, selecting an alert type, and/or hiding cleared or acknowledged alerts.

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Description Filter

All Alert Types

Hide Cleared

Hide Acknowledged

Live

ACTIVE TIME	PRIORITY	DESCRIPTION	TYPE	CLEARED	ACKED
2021/08/09 16:20:26:105	2	Client [ME-54048d4d-78a3-483c, /127.0.0.1] lost connection: CONNECTION_LOST	MQTT_CONNECTION_LOST	<input type="checkbox"/>	<input type="checkbox"/>
2021/08/09 16:20:09:717	2	Client [MT-50c9d251-a7d0-403d, /127.0.0.1] lost connection: CONNECTION_LOST	MQTT_CONNECTION_LOST	<input type="checkbox"/>	<input type="checkbox"/>
2021/08/09 16:20:09:715	2	Client [MT-7b127d8c-6075-4bd7, /127.0.0.1] lost connection: CONNECTION_LOST	MQTT_CONNECTION_LOST	<input type="checkbox"/>	<input type="checkbox"/>
2021/08/09 16:19:38:591	2	Client [MT-7b127d8c-6075-4bd7, /127.0.0.1] lost connection: CONNECTION_LOST	MQTT_CONNECTION_LOST	<input type="checkbox"/>	<input type="checkbox"/>
2021/08/09 16:19:38:590	2	Client [MT-50c9d251-a7d0-403d, /127.0.0.1] lost connection: CONNECTION_LOST	MQTT_CONNECTION_LOST	<input type="checkbox"/>	<input type="checkbox"/>
2021/08/09 16:19:06:842	3	Client 'MT-RPC-ccf928c9-b58f-47' connected w/o registering LWT	MQTT_LWT_NOT_REGISTERED	<input type="checkbox"/>	<input type="checkbox"/>
2021/08/09 16:19:06:526	2	Client [MT-RPC-ccf928c9-b58f-47, /127.0.0.1] lost connection: CONNECTION_LOST	MQTT_CONNECTION_LOST	<input type="checkbox"/>	<input type="checkbox"/>
2021/08/09 16:19:06:519	2	Client [MT-b5877652-9e94-4c50, /127.0.0.1] lost connection: CONNECTION_LOST	MQTT_CONNECTION_LOST	<input type="checkbox"/>	<input type="checkbox"/>
2021/08/09 16:19:06:513	2	Client [MT-31b2cfd4-60a7-4dfa, /127.0.0.1] lost connection: CONNECTION_LOST	MQTT_CONNECTION_LOST	<input type="checkbox"/>	<input type="checkbox"/>
2021/08/09 16:18:37:476	3	Client 'ME-54048d4d-78a3-483c' connected w/o registering LWT	MQTT_LWT_NOT_REGISTERED	<input type="checkbox"/>	<input type="checkbox"/>

<

1

2

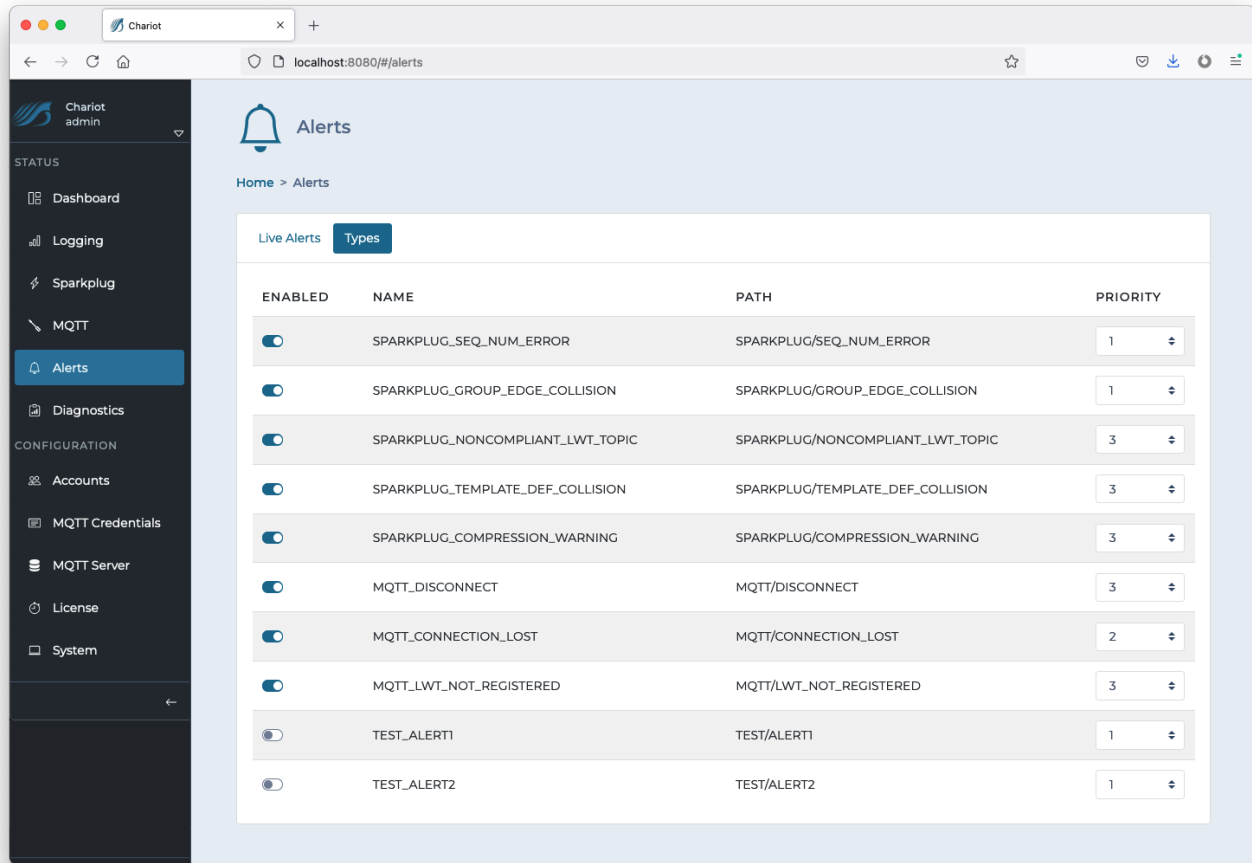
3

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>

Types

The Types tab allows for the enabling/disabling of specific alert types as well as changing the priority (1, 2, or 3).



Some of the Alert Types supported in the Chariot Server include:

- MQTT\_DISCONNECT
  - An MQTT client has disconnected
- MQTT\_CONNECTION\_LOST
  - An MQTT client has lost its connection
- MQTT\_LWT\_NOT\_REGISTERED
  - An MQTT client has connected but not registered an LWT (last will and testament)
- SPARKPLUG\_SEQ\_NUM\_ERROR
  - Messages published from a Sparkplug MQTT client have been received out of sequence
- SPARKPLUG\_GROUP\_EDGE\_COLLISION
  - Multiple Sparkplug MQTT clients are using the same Group ID and Edge Node ID
- SPARKPLUG\_NONCOMPLIANT\_LWT\_TOPIC
  - A Sparkplug MQTT Client has registered an LWT that is not compliant with the Sparkplug specification
- SPARKPLUG\_TEMPLATE\_DEF\_COLLISION
  - A Sparkplug MQTT client is publishing template definitions that conflict with previously published definitions
- SPARKPLUG\_COMPRESSION\_WARNING
  - A Sparkplug MQTT client is using data compression and the compressed data is actually larger in size than the uncompressed data

## Diagnostics

The Diagnostics page provides a view to the threads running within the Chariot Server. This information may be requested by Cirrus Link support personnel to assist in diagnosing issues with the Chariot Server.

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ID	NAME	STATE	DAEMON	STACK TRACE
1	main	WAITING	✗	Show 10
2	Reference Handler	RUNNABLE	✓	Show 3
3	Finalizer	WAITING	✓	Show 4
4	Attach Listener	RUNNABLE	✓	No traces
13	Common-Cleaner	TIMED_WAITING	✓	Show 5
14	org.apache.commons.vfs2.cache.SoftRefFilesCache\$ReleaseThread	WAITING	✓	Show 3
17	FelixDispatchQueue	WAITING	✗	Show 6
23	yajsw.pinger-0	TIMED_WAITING	✓	Show 5
24	yajsw.netty-0	RUNNABLE	✓	Show 14

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ID	NAME	STATE	DAEMON	STACK TRACE
1	main	WAITING	✗	Show 10
2	Reference Handler	RUNNABLE	✓	Hide 3
<div>java.base@11.0.12/java.lang.ref.Reference.waitForReferencePendingList(Native Method) java.base@11.0.12/java.lang.ref.Reference.processPendingReferences(Reference.java:241) java.base@11.0.12/java.lang.ref.Reference\$ReferenceHandler.run(Reference.java:213)</div>				
3	Finalizer	WAITING	✓	Show 4
4	Attach Listener	RUNNABLE	✓	No traces
13	Common-Cleaner	TIMED_WAITING	✓	Show 5
14	org.apache.commons.vfs2.cache.SoftRefFilesCache\$ReleaseThread	WAITING	✓	Show 3