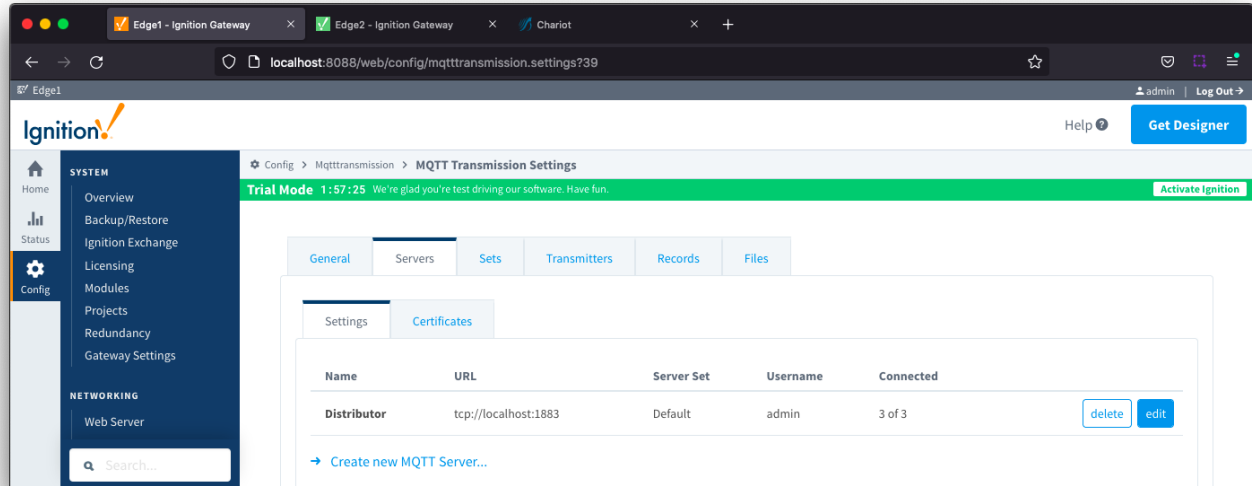


I created a Transmitter but my MQTT Transmission module does not show connections to my MQTT Server

The 'Connected' status shown on the Server tab under MQTT Transmission Settings shows the connected status of each MQTT Client created in the format *quantity MQTT Clients connected* of *quantity MQTT Clients created*.

In the example below, the Connected value 3 of 3 indicates 3 MQTT Clients are connected to the MQTT Server and 3 MQTT Clients are created.



Let's look at the scenarios when not all your MQTT Clients show as being connected.

- MQTT Clients are created but none are connecting to the specified MQTT Server
- MQTT Clients are created but not all are connecting to the specified MQTT Server
- MQTT Clients are created but some show as connecting/disconnecting from the specified MQTT Server
- No MQTT Clients are created

MQTT Clients are created but none are connecting to the specified MQTT Server

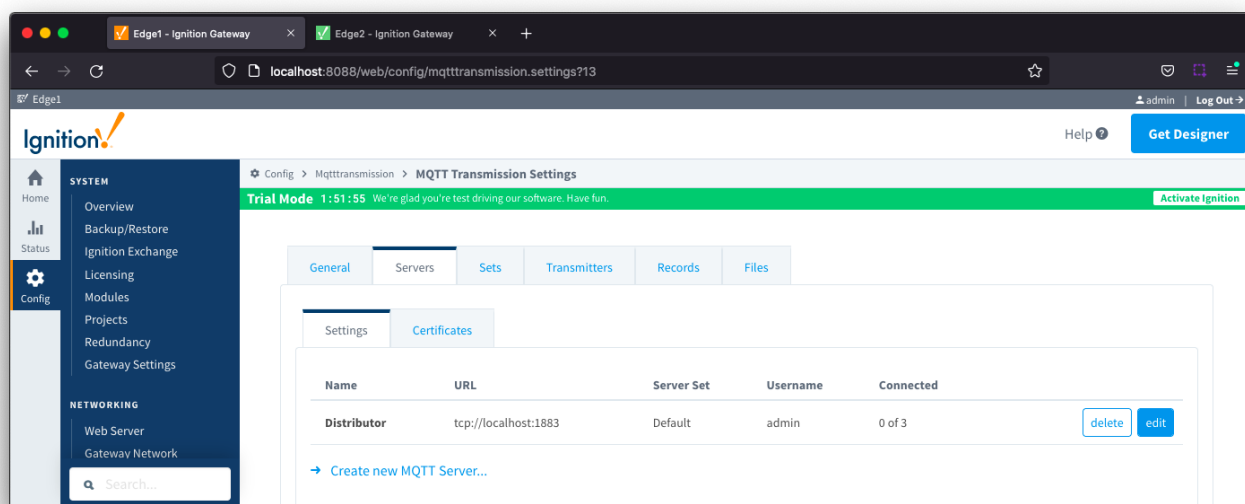


Remember that remote MQTT Clients will need to be able to establish a TCP/IP socket connection to TCP/IP ports #1883 and port #8883. On the machine hosting your MQTT Server, you must either turn off firewalls or at a minimum allow inbound connections to these ports.

Review the Microsoft [Create an Inbound Rule](#) doc for assistance on a Windows platform

Single MQTT Server configured

If you have a single MQTT Server configured, the clients are not able to connect because either the Server is unavailable, the network connection to the Server is unavailable or the connection to the Server is being refused.

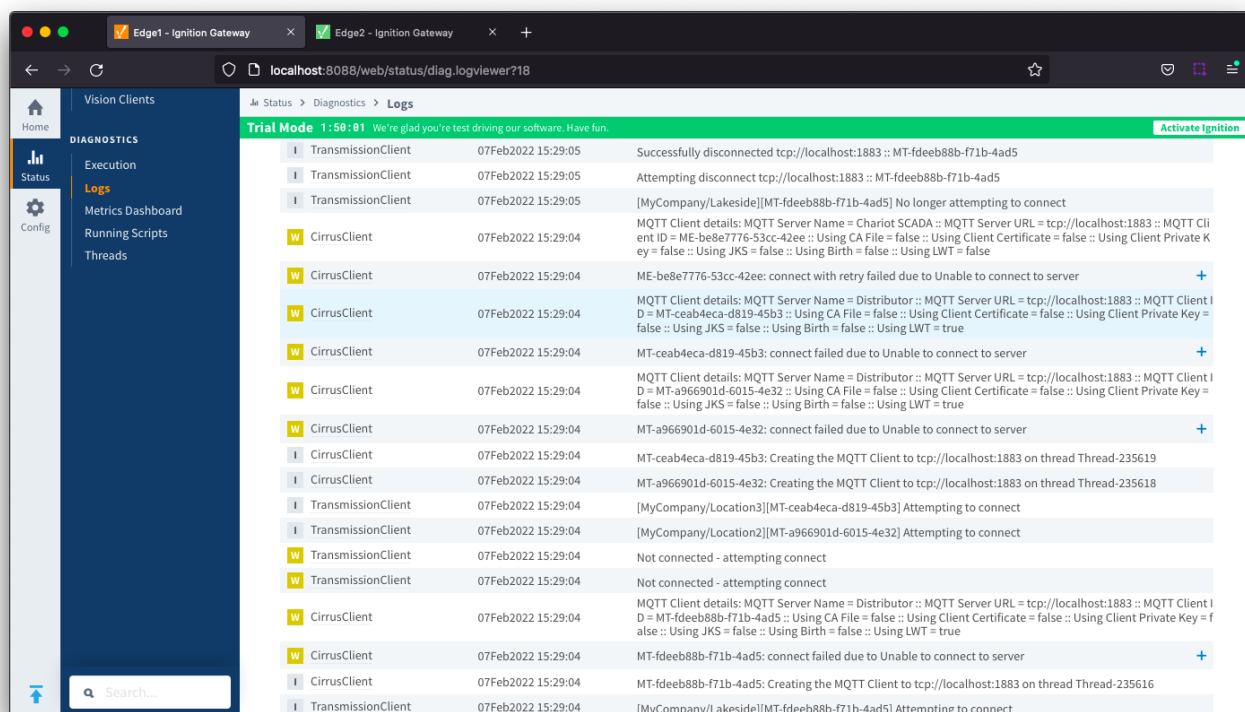


You can confirm this from the Ignition UI connected to your instance of MQTT Transmission by navigating to Status > Diagnostic > Logs.

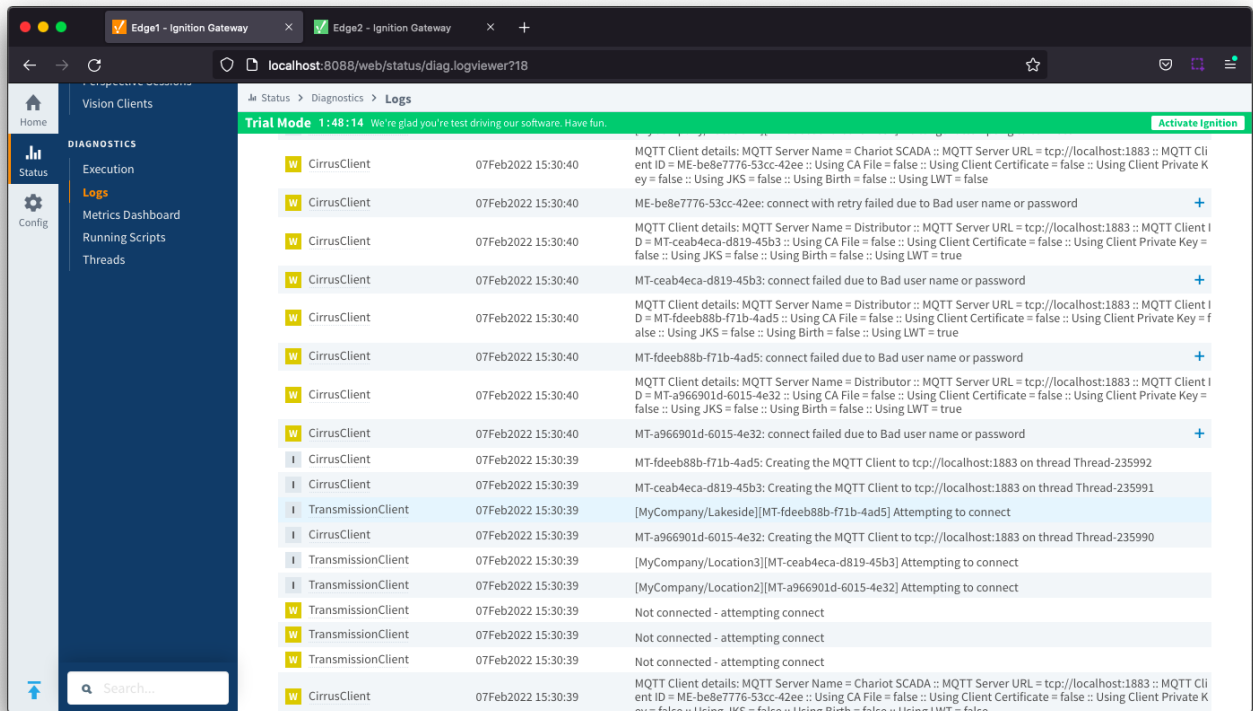


Read the user manual [Diagnostics - Logs](#) explaining how to use the Logs console in Ignition

If the Server or connection to the Server is unavailable, you will see errors logged from the TransmissionClient logger indicating that the clients continually attempting to connect and failing.

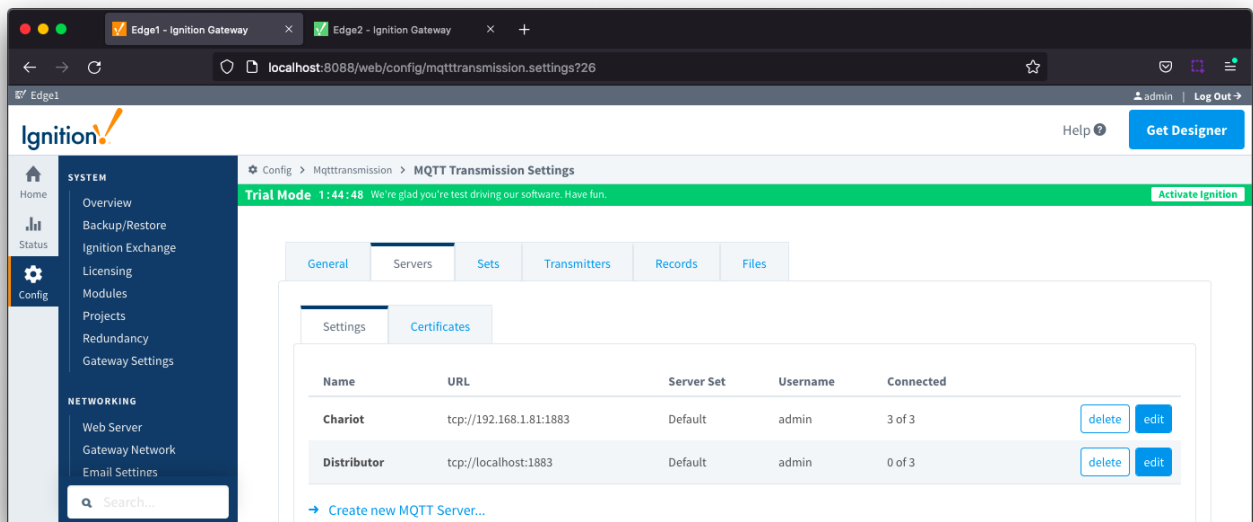


If your MQTT Server is available but requires an authenticated connection to be made and the Username/Password configured in your MQTT Transmission server is incorrect, you will also see the error Bad username or password errors logged.

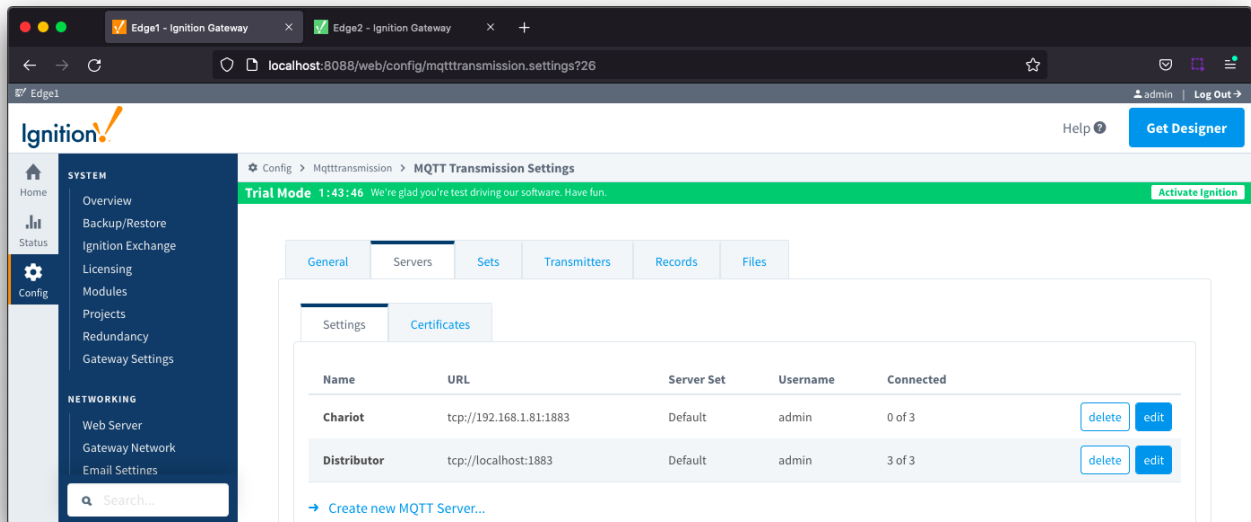


Multiple MQTT Servers in server set

If you have multiple MQTT Servers configured within the same Server Set, the MQTT Clients will only connect to one server in the set. You would expect that only one server would show MQTT Clients connected as in the example below:



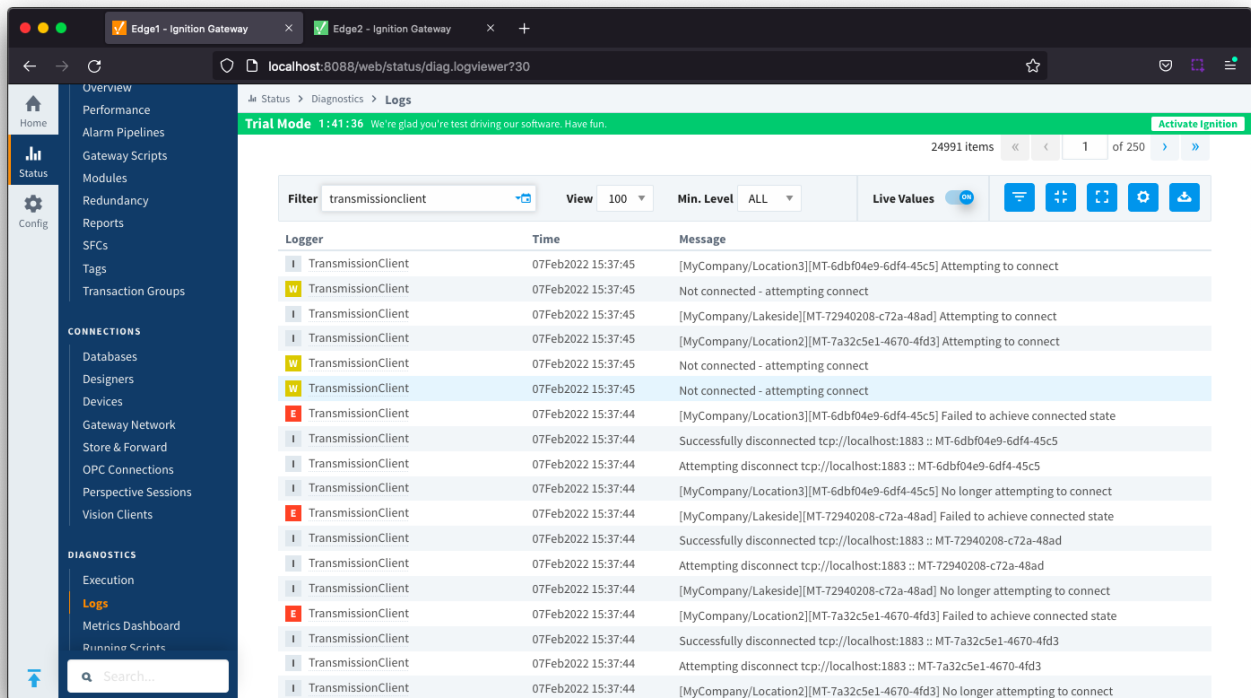
If the MQTT Clients lose connection to the connected server, they will attempt to connect to the next server in the set until a connection is established.



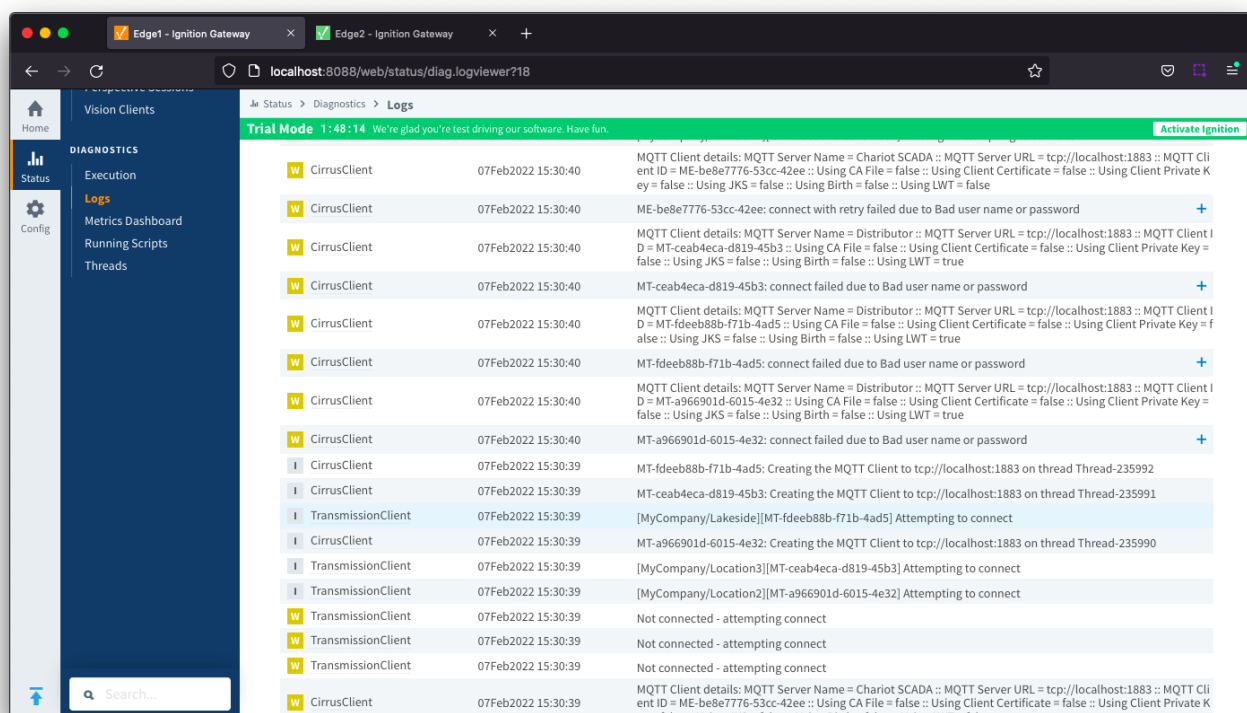
If none of the servers defined in the server set are available, you will see errors logged from the TransmissionClient logger indicating that the clients continually attempting to connect and failing.

You can confirm this from the Ignition UI connected to your instance of MQTT Transmission and navigating to Status > Diagnostic > Logs.

✓ Read the user manual [Diagnostics - Logs](#) explaining how to use the Logs console in Ignition



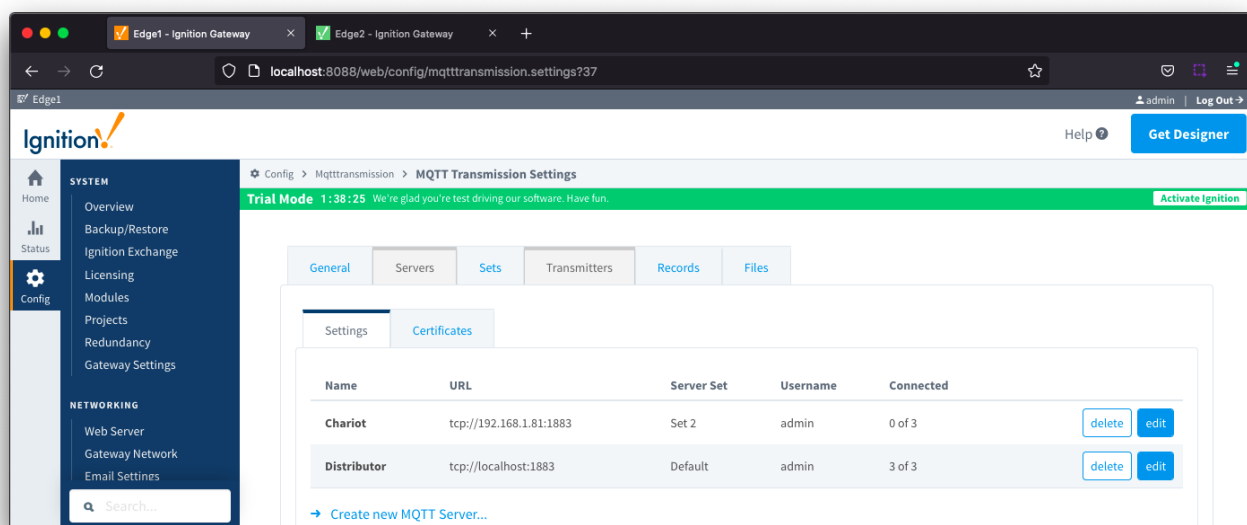
If your MQTT Server is available but requires an authenticated connection to be made and the Username/Password configured in your MQTT Transmission server is incorrect, you will also see the error Bad username or password errors logged.

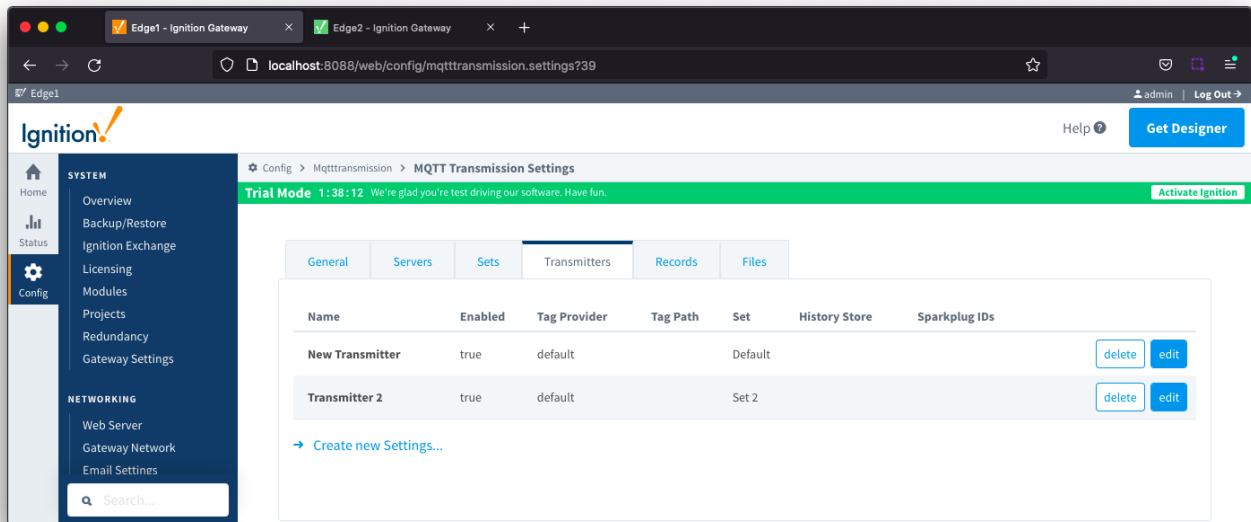


Multiple MQTT Servers not in a server set

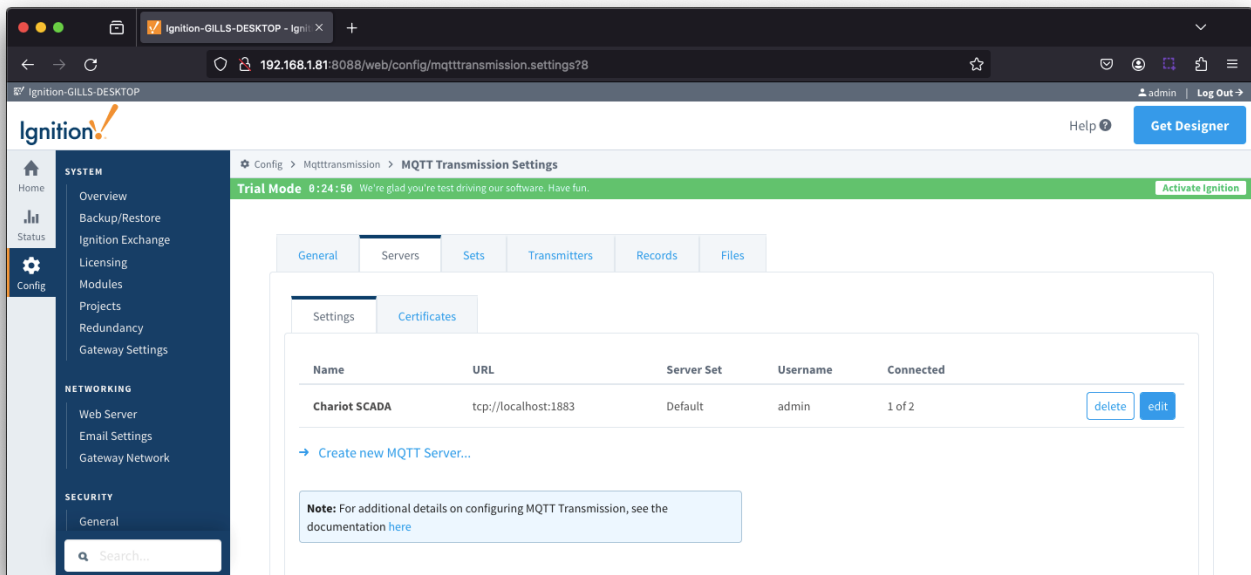
If you have multiple MQTT Servers configured in different Server Sets and Transmitters configured to use those different sets, the MQTT Client connections are independent for each Server Set.

Follow the trouble shooting steps for a [Single MQTT Server configured](#) for a each server showing MQTT Clients that are not connected.





MQTT Clients are created but not all are connecting to the specified MQTT Server



In this instance, you most likely have an ACL at the MQTT Server that is preventing a specific MQTT Transmission client from connecting.

Review [MQTT Distributor Access Control Lists](#) for additional information.

With the following ACL, the Transmission client My MQTT Group/PLC 1 is able to connect and subscribe but client My MQTT Group/PLC 2 is not authorized to connect with the LWT of spBv1.0/My MQTT Group/NDEATH/PLC 2.

```
R #, w spBv1.0/My MQTT Group/+/PLC 1/#
```


E	TransmissionClient	17Apr2024 16:46:32	[My MQTT Group/PLC 2][MT-59ad4f90-91b7-48ee] Failed to achieve connected state
I	TransmissionClient	17Apr2024 16:46:32	Attempting disconnect tcp://localhost:1883 :: MT-59ad4f90-91b7-48ee with sendDisconnect=false, publishLwt=true, waitForLwt=false, resetForceTagScan=false
I	TransmissionClient	17Apr2024 16:46:32	[My MQTT Group/PLC 2][MT-59ad4f90-91b7-48ee] No longer attempting to connect
W	TahuClient	17Apr2024 16:46:31	MT-59ad4f90-91b7-48ee: MQTT Client details: MQTT Server Name = Chariot SCADA :: MQTT Server URL = tcp://localhost:1883 :: MQTT Client ID = MT-59ad4f90-91b7-48ee :: Using Birth = false :: Using LWT = true
W	TahuClient	17Apr2024 16:46:31	MT-59ad4f90-91b7-48ee: connect failed due to Not authorized to connect +
I	DefaultConnectionListener	17Apr2024 16:46:31	Closing SocketChannel for 78d8dcc9-4b41-42e2-ae3a-b27073995c5b
W	PacketHandler	17Apr2024 16:46:31	CONNECT - Failed LWT authorization [client ID: MT-59ad4f90-91b7-48ee, username: admin, topic: spBv1.0/My MQTT Group/NDEATH/PLC 2]
I	PacketHandler	17Apr2024 16:46:31	CONNECT - [78d8dcc9-4b41-42e2-ae3a-b27073995c5b, MT-59ad4f90-91b7-48ee, /127.0.0.1] [305] NEW Client Session
I	TahuClient	17Apr2024 16:46:31	MT-59ad4f90-91b7-48ee: Creating the MQTT Client to tcp://localhost:1883 on thread Thread-74922
I	TransmissionClient	17Apr2024 16:46:31	[My MQTT Group/PLC 2][MT-59ad4f90-91b7-48ee] Attempting to connect
I	TransmissionClient	17Apr2024 16:46:31	[My MQTT Group/PLC 2][] Not connected - attempting connect with isStayRunning=true
I	TransmissionClient	17Apr2024 16:46:30	Successfully disconnected tcp://localhost:1883 :: MT-59ad4f90-91b7-48ee

If an MQTT Transmission client attempts to subscribe on a topic that is not allowed by the ACL for that client, the connection will fail and the client will not attempt to reconnect.

With the following ACL, the Transmission client is not able to subscribe to the NCMD and DCMD topics

```
R spBv1.0/My MQTT Group/NDEATH/PLC 1, W #
```

E	TransmissionClient	17Apr2024 15:45:45	Failed to subscribe to TARGET elements +
W	PacketHandler	17Apr2024 15:45:45	SUBSCRIBE - [00ec923c-7d33-4180-a2f8-0f8f5ed726e1, MT-18ac06d8-60c1-44a8, /127.0.0.1] Failed: Not authorized for username admin on topic 'spBv1.0/My MQTT Group/DCMD/PLC 1/#' with QoS 0
W	PacketHandler	17Apr2024 15:45:45	SUBSCRIBE - [00ec923c-7d33-4180-a2f8-0f8f5ed726e1, MT-18ac06d8-60c1-44a8, /127.0.0.1] Failed: Not authorized for username admin on topic 'spBv1.0/My MQTT Group/NCMD/PLC 1' with QoS 0
I	PacketHandler	17Apr2024 15:45:45	SUBSCRIBE - [00ec923c-7d33-4180-a2f8-0f8f5ed726e1, MT-18ac06d8-60c1-44a8, /127.0.0.1] on topic(s) [[spBv1.0/My MQTT Group/NCMD/PLC 1][0], [spBv1.0/My MQTT Group/DCMD/PLC 1/#][0], [spBv1.0/My MQTT Group/NDEATH/PLC 1][0]]
I	TransmissionClient	17Apr2024 15:45:45	[My MQTT Group/PLC 1][MT-18ac06d8-60c1-44a8] Connected to the MQTT Server
I	TransmissionMqttCallback	17Apr2024 15:45:44	Connect complete for to tcp://localhost:1883 for MT-18ac06d8-60c1-44a8 - waiting for transition to online based on primary host status
I	TahuClient	17Apr2024 15:45:44	MT-18ac06d8-60c1-44a8: Connected to tcp://localhost:1883
I	TahuClient	17Apr2024 15:45:44	MT-18ac06d8-60c1-44a8: connect succeeded

If an MQTT Transmission client attempts to publish on a topic that is not allowed by the ACL for that client, the connection will be forcefully closed and the client will attempt to reconnect.

With the following ACL, the Transmission client can publish the NBIRTH for PLC 1 but is not able to publish the DBIRTH for edge node device D1

```
R #, W spBv1.0/My MQTT Group/+/PLC 1
```

			ent=null, metaData=null, properties=null, value=219, isNull=false]], seq=null, uuid=null, body=null]	
E	TransmissionMqttCallback	17Apr2024 13:44:26	Connection lost	+
W	TransmissionMqttCallback	17Apr2024 13:44:26	MQTT connection lost for MT-01f6c22a-76e7-436c	
W	PacketHandler	17Apr2024 13:44:26	PUBLISH - Failed authorization [client ID: MT-01f6c22a-76e7-436c, username: admin, topic: spBv1.0/My MQTT Group/DBIRTH/PLC 1/D1]	
I	DefaultConnectionListener	17Apr2024 13:44:26	Forcefully closing SocketChannel for 719dee55-8977-40cc-8472-3af22e49e3b1	
I	TransmissionClient	17Apr2024 13:44:26	History flush (in-order) completed successfully for My MQTT Group/PLC 1	
D	SparkplugPayloadHandler	17Apr2024 13:44:26	Got Sparkplug message: spBv1.0/My MQTT Group/NBIRTH/PLC 1	
T	SparkplugPayloadHandler	17Apr2024 13:44:26	On topic=spBv1.0/My MQTT Group/NBIRTH/PLC 1: Incoming payload: SparkplugBPayload [timestamp=1713379464882, metrics=[Metric [name=Node Control/Next Server, alias=null, timestamp=1713379464882, dataType=Boolean, isHistorical=null, isTransient=null, metaData=null, properties=null, value=false, isNull=false], Metric [name=Node Info/Transmission Version, alias=null, timestamp=1713379464882, dataType=String, isHistorical=null, isTransient=null, metaData=null, properties=null, value=4.0.21 (b2024012622), isNull=false], Metric [name=Node Control/Rebirth, alias=null, timestamp=1713379464882, dataType=Boolean, isHistorical=null, isTransient=null, metaData=null, properties=null, value=false, isNull=false], Metric [name=bdSeq, alias=null, timestamp=1713379466885, dataType=Int64, isHistorical=null, isTransient=null, metaData=null, properties=null, value=219, isNull=false]], seq=0, uuid=null, body=null]	
I	TransmissionClient	17Apr2024 13:44:26	Bringing My MQTT Group/PLC 1 online with CACHED history store Birth certs	
I	TransmissionClient	17Apr2024 13:44:26	[MAIN THREAD] Handling transition to online with globalInOrderFlushingActive=true, historyEnabled=true, inOrderHistory=true	
I	PacketHandler	17Apr2024 13:44:26	SUBSCRIBE - [719dee55-8977-40cc-8472-3af22e49e3b1, MT-01f6c22a-76e7-436c, /127.0.0.1] on topic(s) [[spBv1.0/My MQTT Group/NCMD/PLC 1][0], [spBv1.0/My MQTT Group/DCMD/PLC 1/#][0], [spBv1.0/My MQTT Group/NDEATH/PLC 1][0]]	
I	TransmissionClient	17Apr2024 13:44:26	[My MQTT Group/PLC 1][MT-01f6c22a-76e7-436c] Connected to the MQTT Server	
I	TransmissionMqttCallback	17Apr2024 13:44:26	Connect complete for to tcp://localhost:1883 for MT-01f6c22a-76e7-436c - waiting for transition to online based on primary host status	
I	TahuClient	17Apr2024 13:44:26	MT-01f6c22a-76e7-436c: Connected to tcp://localhost:1883	
I	TahuClient	17Apr2024 13:44:26	MT-01f6c22a-76e7-436c: connect succeeded	

MQTT Clients are created but show as connecting/disconnecting from the specified MQTT Server

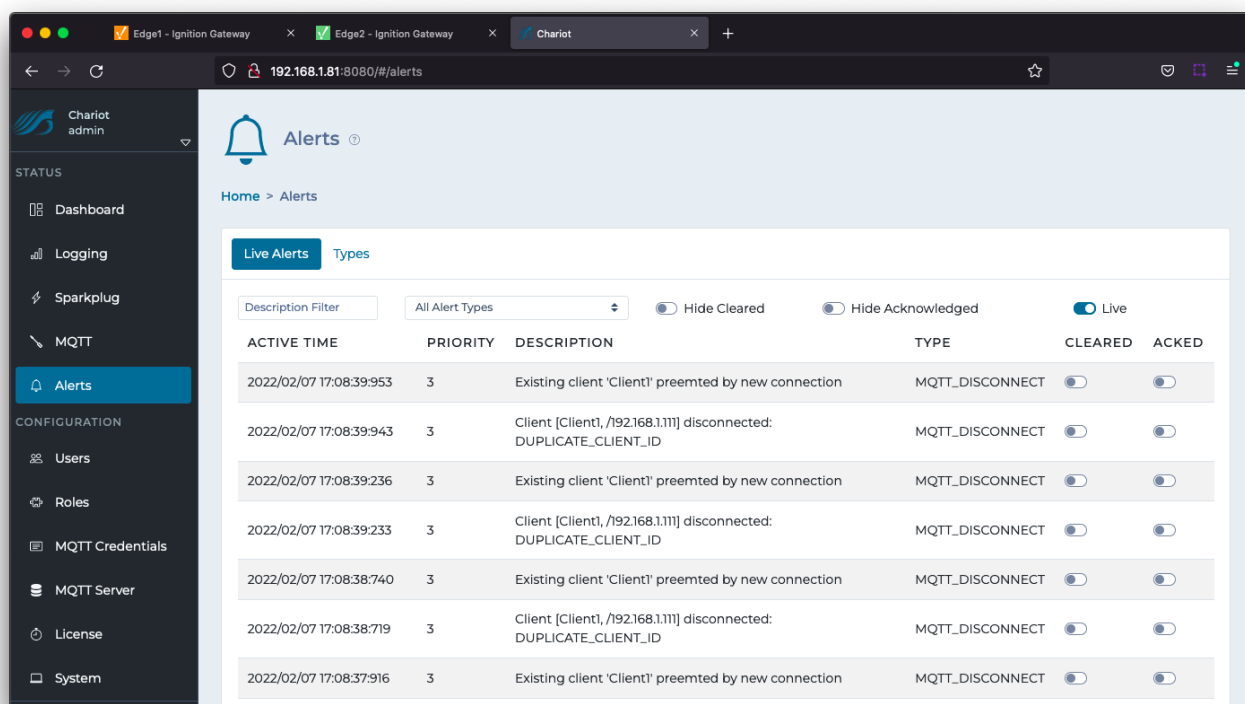
In this instance, you most likely have a ClientID collision at the MQTT Server. Colliding MQTT Client IDs occur when there are two or more MQTT clients connecting to an MQTT broker using the same Client ID. The broker uses the Client ID to identify the client and the current state of the client and therefore this ID must be unique per client and broker.

Let's confirm by checking the connection status of the Edge Nodes with your [Chariot](#) or [MQTT Distributor](#) server instance.

Chariot

From the Chariot UI navigate to Alerts in the left menu bar. Select Types and enable the alerts for MQTT_DISCONNECT

Under Live Alerts, if we can see in the logs that Chariot is logging the DUPLICATE_CLIENT_ID description, as shown below, you have Colliding Client IDs.



The screenshot shows the Chariot Alerts page in a web browser. The left sidebar contains navigation links for STATUS (Dashboard, Logging, Sparkplug, MQTT, Alerts) and CONFIGURATION (Users, Roles, MQTT Credentials, MQTT Server, License, System). The main content area is titled 'Alerts' and shows a list of live alerts. The alerts are filtered by 'All Alert Types' and 'Live' is selected. The table below shows the details of the alerts.

ACTIVE TIME	PRIORITY	DESCRIPTION	TYPE	CLEARED	ACKED
2022/02/07 17:08:39:953	3	Existing client 'Client1' preempted by new connection	MQTT_DISCONNECT	☐	☐
2022/02/07 17:08:39:943	3	Client [Client1, /192.168.1.111] disconnected: DUPLICATE_CLIENT_ID	MQTT_DISCONNECT	☐	☐
2022/02/07 17:08:39:236	3	Existing client 'Client1' preempted by new connection	MQTT_DISCONNECT	☐	☐
2022/02/07 17:08:39:233	3	Client [Client1, /192.168.1.111] disconnected: DUPLICATE_CLIENT_ID	MQTT_DISCONNECT	☐	☐
2022/02/07 17:08:38:740	3	Existing client 'Client1' preempted by new connection	MQTT_DISCONNECT	☐	☐
2022/02/07 17:08:38:719	3	Client [Client1, /192.168.1.111] disconnected: DUPLICATE_CLIENT_ID	MQTT_DISCONNECT	☐	☐
2022/02/07 17:08:37:916	3	Existing client 'Client1' preempted by new connection	MQTT_DISCONNECT	☐	☐

MQTT Distributor

From the Ignition UI connected to your instance of MQTT Distributor, navigate to Status > Diagnostic > Logs.



Read the user manual [Diagnostic - Logs](#) explaining how to use the Logs console in Ignition

If we can see in the logs that the MQTT broker is continually forcefully disconnecting an existing connection to allow another client with the same Client ID to connect, as shown below, you have [Colliding Client IDs](#).

The logging shows both the Client Id and associated IP address.

If running MQTT Distributor 4.0.13 or earlier, set the debug level for the io.moquette.spi.impl.ProtocolProcessor logger to TRACE and set the filter of the Logs view to ProtocolProcessor.

The screenshot shows the Ignition Gateway web interface. The top navigation bar includes 'Home', 'SYSTEMS', and 'CONNECTIONS'. The 'SYSTEMS' section is expanded, showing 'Overview', 'Performance', 'Alarm Pipelines', 'Gateway Scripts', 'Modules', 'Redundancy', 'Reports', 'SFCs', 'Tags', and 'Transaction Groups'. The 'CONNECTIONS' section is also expanded, showing 'Databases', 'Designers', 'Devices', 'Gateway Network', 'Store & Forward', 'OPC Connections', 'Perspective Sessions', and 'Vision Clients'. The main area displays the 'Logs' view with a table of log entries. The filter is set to 'type to filter' and the view is set to '100'. The log entries show various MQTT-related events such as session removal, connection loss, and connection creation.

Logger	Time	Message
ProtocolProcessor	07Feb2022 17:16:52	Removing session from session store with sessionStolen=true
ProtocolProcessor	07Feb2022 17:16:52	Process Connection Lost for Client1 :: true :: [id: 0x348e2ee0, /127.0.0.1:50641 -> /127.0.0.1:1883]
ProtocolProcessor	07Feb2022 17:16:52	Connect create session <[id: 0x6400a11d, /127.0.0.1:50643 => /127.0.0.1:1883]>
ProtocolProcessor	07Feb2022 17:16:52	Connect with keepAlive 30 s
ProtocolProcessor	07Feb2022 17:16:52	Existing connection with same client ID <Client1>, forced to close
ProtocolProcessor	07Feb2022 17:16:52	Found an existing connection with same client ID <Client1>, forcing to close
ProtocolProcessor	07Feb2022 17:16:52	CONNECT for client <Client1>
TransmissionMqttCallback	07Feb2022 17:16:52	Connect complete for to tcp://192.168.1.81:1883 for Client1 - waiting for transition to online based on primary host status
CirrusClient	07Feb2022 17:16:52	Client1: Connected to tcp://192.168.1.81:1883
CirrusClient	07Feb2022 17:16:52	Client1: connect succeeded
TransmissionMqttCallback	07Feb2022 17:16:52	Connection lost
TransmissionMqttCallback	07Feb2022 17:16:52	MQTT connection lost for Client1
SparkplugTransmissionClient	07Feb2022 17:16:52	Publishing DBIRTH on Topic: spBv1.0/MyCompany/DBIRTH/Location2/PLC2

If running MQTT Distributor 4.0.14 or later, set the debug level for the com.cirruslink.chariot.server.core.PacketHandler logger to TRACE and set the filter of the logs to PacketHandler.

The screenshot shows the Ignition Gateway web interface with the filter set to 'packethandler'. The log table shows entries for PacketHandler with messages related to MQTT subscriptions and connections.

Logger	Time	Message
PacketHandler	03May2023 17:42:25	SUBSCRIBE - [f5eab3f8-3a91-46ec-9fc4-90dc49e0db43, MT-1714a23f-36f8-4d72, /127.0.0.1] on topic(s) [[STATE/iamHost][1]]
PacketHandler	03May2023 17:42:25	SUBSCRIBE - [f5eab3f8-3a91-46ec-9fc4-90dc49e0db43, MT-1714a23f-36f8-4d72, /127.0.0.1] on topic(s) [[spBv1.0/STATE/iamHost][1]]
PacketHandler	03May2023 17:42:25	SUBSCRIBE - [f5eab3f8-3a91-46ec-9fc4-90dc49e0db43, MT-1714a23f-36f8-4d72, /127.0.0.1] on topic(s) [[spBv1.0/G1/NCMD/E2][0], [spBv1.0/G1/DCMD/E2/#][0], [spBv1.0/G1/NDEATH/E2][0]]
PacketHandler	03May2023 17:42:25	CONNECT - Active client session with ID: MT-1714a23f-36f8-4d72, address: /192.168.1.106 already exists, ending it
PacketHandler	03May2023 17:42:25	CONNECT - [d1920936-a91e-4b7e-9236-9975372c360d, MT-1714a23f-36f8-4d72, /127.0.0.1] Known Client Session
PacketHandler	03May2023 17:42:25	SUBSCRIBE - [d1920936-a91e-4b7e-9236-9975372c360d, MT-1714a23f-36f8-4d72, /192.168.1.106] on topic(s) [[spBv1.0/SasolATP_TagProvider/NCMD/E1][0], [spBv1.0/SasolATP_TagProvider/DCMD/E1/#][0], [spBv1.0/SasolATP_TagProvider/NDEATH/E1][0]]
PacketHandler	03May2023 17:42:24	CONNECT - Active client session with ID: MT-1714a23f-36f8-4d72, address: /127.0.0.1 already exists, ending it
PacketHandler	03May2023 17:42:24	CONNECT - [f830d8ec-6bed-4a77-808c-28e5499e17ca, MT-1714a23f-36f8-4d72, /192.168.1.106] Known Client Session
PacketHandler	03May2023 17:42:23	SUBSCRIBE - [f830d8ec-6bed-4a77-808c-28e5499e17ca, MT-1714a23f-36f8-4d72, /127.0.0.1] on topic(s) [[STATE/iamHost][1]]
PacketHandler	03May2023 17:42:23	SUBSCRIBE - [f830d8ec-6bed-4a77-808c-28e5499e17ca, MT-1714a23f-36f8-4d72, /127.0.0.1] on topic(s) [[spBv1.0/STATE/iamHost][1]]

Resolving Colliding Client IDs

To resolve the colliding Client IDs you will need to review your system configurations on the physical Edge Nodes identified and remove the conflicts.

In the logs if you see different IP addresses for the Edge Nodes attempting to connect with the same Client ID, then the same MQTT Client ID has been set on different physical Edge Nodes. Review the configuration for physical Edge Nodes with these IP addresses.

If in the logs you see the same IP address for the Edge Nodes attempting to connect with the same Client ID then either:

1. The MQTT Client ID is set on a single physical Edge Node device where a single Transmitter is dynamically picking up multiple virtual Edge Nodes.
2. The MQTT Client ID is set on a single physical Edge Node where multiple transmitters are configured for one or more virtual Edge Nodes.

In either of these two setups, the MQTT connection for each virtual Edge Node requires a unique Client ID. The Client ID in the the MQTT Transmission Configuration should be left blank allowing MQTT Transmission to auto-generate unique Client IDs for each Edge Node connection.





Refer to the [MQTT Transmission Transmitters and Tag Trees](#) Tutorial/HowTo for detail on how a virtual Edge Node is dynamically created.

No MQTT Clients are created

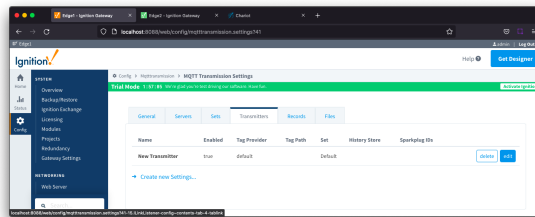
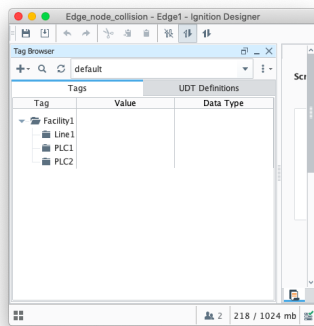
A unique MQTT Client is created for each valid EdgeNodeID identified by the MQTT Transmission module.

If no MQTT Clients have been created, the MQTT Transmission module was not able to identify any configured EdgeNode. There is no requirement for the Edge Node to contain any tag data.

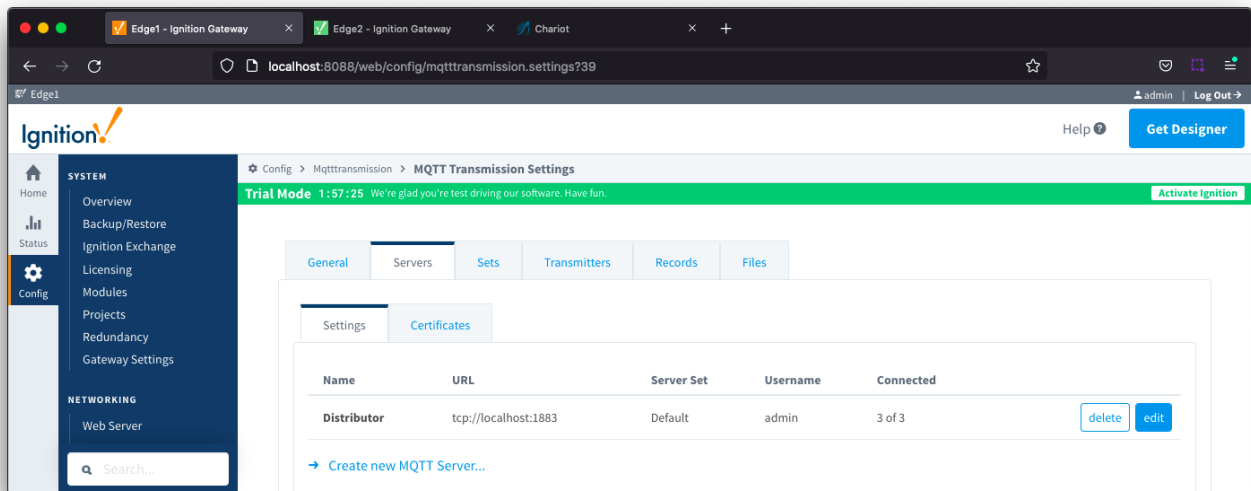


If allowing MQTT Transmission to dynamically pickup the GroupID and EdgeNodeID directly from tag folder hierarchy or you are explicitly setting the GroupID through the Sparkplug Settings configuration for your Transmitter, you need to ensure that each branch of the tag tree has at least two folder levels below the folder referenced by the Tag Path in the Transmitter settings.

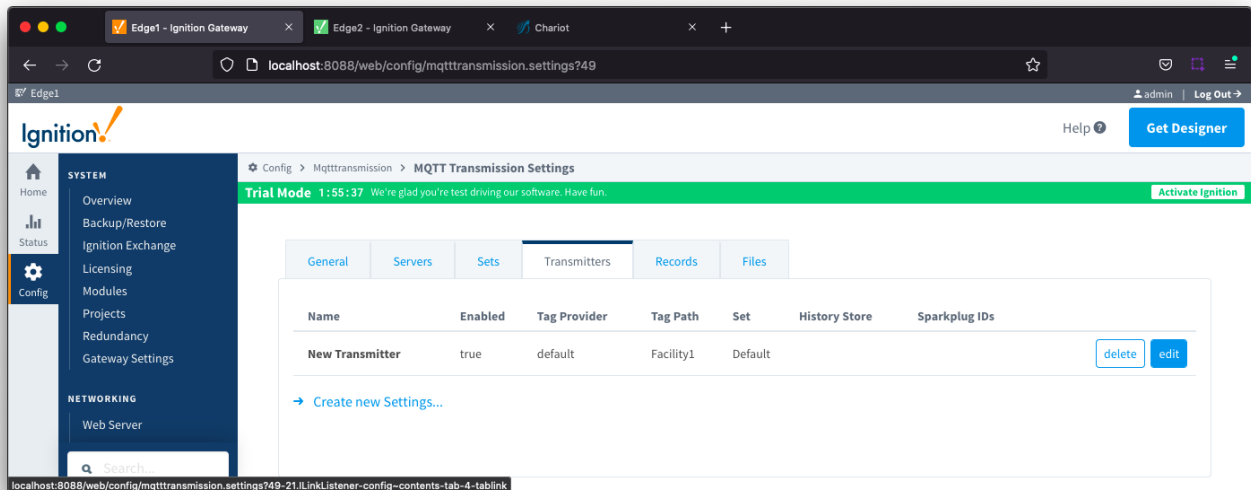
As an example, in the tag tree below we have created a two level folder structure. Using the default Transmitter configuration, the MQTT Transmission module will dynamically create three Edge Nodes named Line1, PLC1 and PLC2 each with GroupID = Facility1.



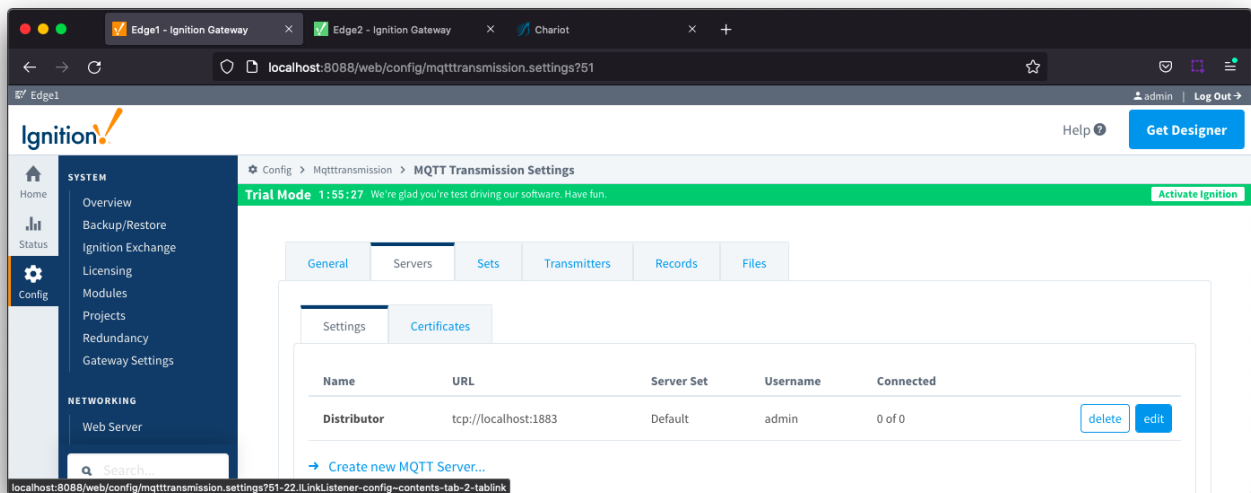
There will be an MQTT Client for each Edge Node and you will see on the Servers tab the count of the MQTT Clients and their connected status.



If we change the Transmitter configuration to add a Tag Path, say Facility1, the MQTT Transmission module will not identify any Edge Nodes. This is because the first level under Facility1 will be determined as the GroupID and there are no folders below to be used as the EdgeNodeID.



As a result the Servers tab will show 0 MQTT Clients created and connected.



Resolving lack of identified Edge Node IDs

To resolve the lack of identified Edge Node IDs, you will need to review your Transmitter and Ignition tag tree configurations.



Review the [MQTT Transmission Transmitters and Tag Trees](#) tutorial for detail on how these required elements are dynamically created

Unable to Resolve?

If the troubleshooting tips did not help you resolve your issues, please open a ticket with [Support](#) making sure to include the MQTT Transmission or MQTT Distributor logs as appropriate.

From the Ignition Logs view, select the Download icon to download a copy of the system-name.idb file to your local file system. You will need to compress (zip, 7z or rar) this file before sending to Support.

Additional Resources

- Inductive Automation's Ignition download with free trial
 - [Current Ignition Release](#)
- Cirrus Link Solutions Modules for Ignition
 - [Ignition Strategic Partner Modules](#)
- Support questions
 - Check out the Cirrus Link Forum: <https://forum.cirrus-link.com/>
 - Contact support: support@cirrus-link.com
- Sales questions
 - Email: sales@cirrus-link.com
 - Phone: +1 (844) 924-7787
- About Cirrus Link
 - <https://www.cirrus-link.com/about-us/>