

EFM Emerson ROC Quickstart

Overview

There are four main types of data that the EFM Emerson ROC driver is capable of getting from an Emerson ROC device. These are:

- TLP data
- Alarm Data
- Event Data
- History Data

TLPs are polled at a specified interval based on a poll rate and then made available via the OPC-UA interface. Alarms, events, and history are made available to MQTT Transmission to be published as immutable Record objects to an MQTT server. Typically these would be received by the MQTT Engine and MQTT Recorder modules running on a central Ignition Gateway and inserted into a database for later use or to be made available to other third party systems.

For the purposes of this document there are some definitions that are explained below.

EFM EMERSON ROC Settings

- **TLP Definitions (Global)**
 - The global TLP definitions made available to the EFM Emerson ROC module. They are uploaded to the Ignition instance in the form of specifically formatted CSV files. These TLP definitions can be reference by the configurations of the individual ROC devices that they apply to. A single Ignition Gateway may contain multiple global TLP definitions files that are used to configure different device types where the actual point types & parameters of the individual TLPs may differ across the different files and device types.
- **EFM Mappings**
 - **Configuration Mappings**
 - The configuration mapping files are used for building up EFM Configuration Records. They define which TLPs map to which fields (columns) in an EFM Configuration Record. Additionally they can provide bit and/or value mappings for the TLP values. They are uploaded to the Ignition instance in the form of specifically formatted CSV files.
 - **Periodic Mappings**
 - The periodic mapping files are used for building up EFM Periodic History Records. They define which TLPs map to which fields (columns) in an EFM Periodic History Record, the logical type of the point type table (meter, station, or input), and an archive type of the value. They are uploaded to the Ignition instance in the form of specifically formatted CSV files.

OPC-UA SERVER Devices

- **TLP Definitions (Device)**
 - These are a subset of the global TLP definition files that apply to a specific device.
- **TLP Templates**
 - TLP templates are logical groupings of TLPs. Generally TLP templates would be created so that instances of them can be used by specifying a poll group with a logical number (the 'L' parameter in a TLP).
- **TLP Poll Groups**
 - Poll groups use TLP templates in conjunction with a logical number to create a specific set of TLPs to be polled at a specified poll rate.

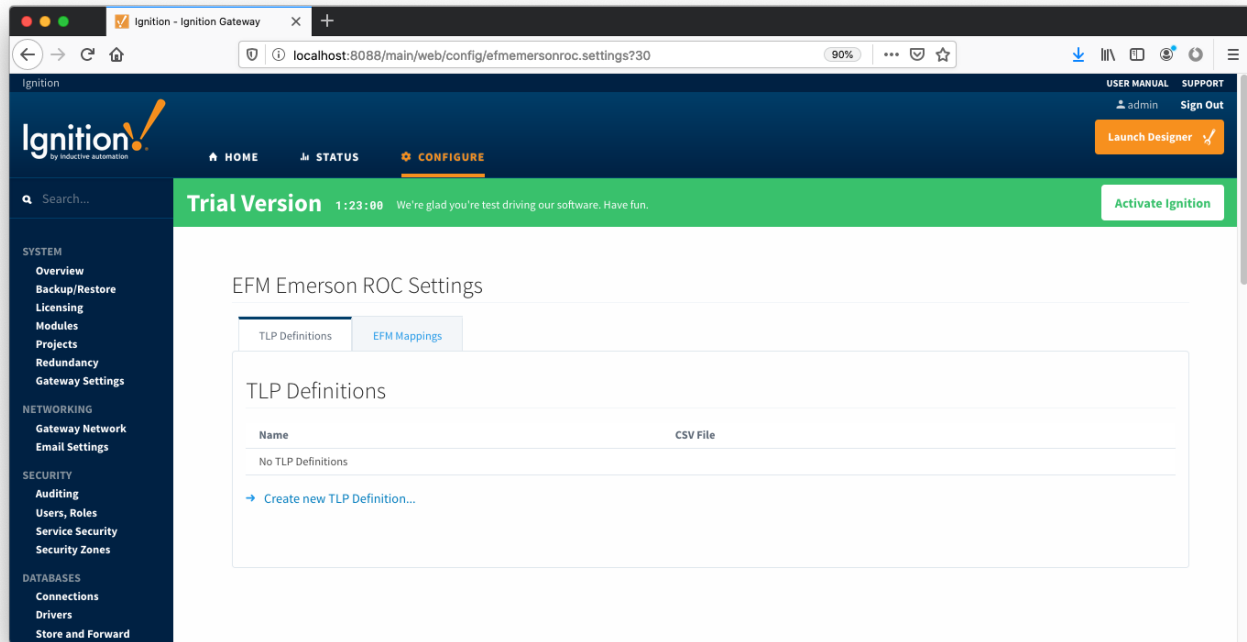
There are six basic steps to getting all of the data available from a ROC into Ignition

1. Define/upload the global TLP definitions available for all ROC devices in this Ignition instance
2. Define/upload the EFM Mappings for all ROC devices in this Ignition Instance
3. Create the base device connection to the ROC
4. Specify the subset of TLP definitions that this specific ROC uses
5. Create TLP Template(s) which define groups of TLPs should be polled as a logical group
6. Create TLP Poll Group(s) which specify the logical parameters associated with a given TLP Template
7. Use Ignition Designer to pull tags into a tag provider

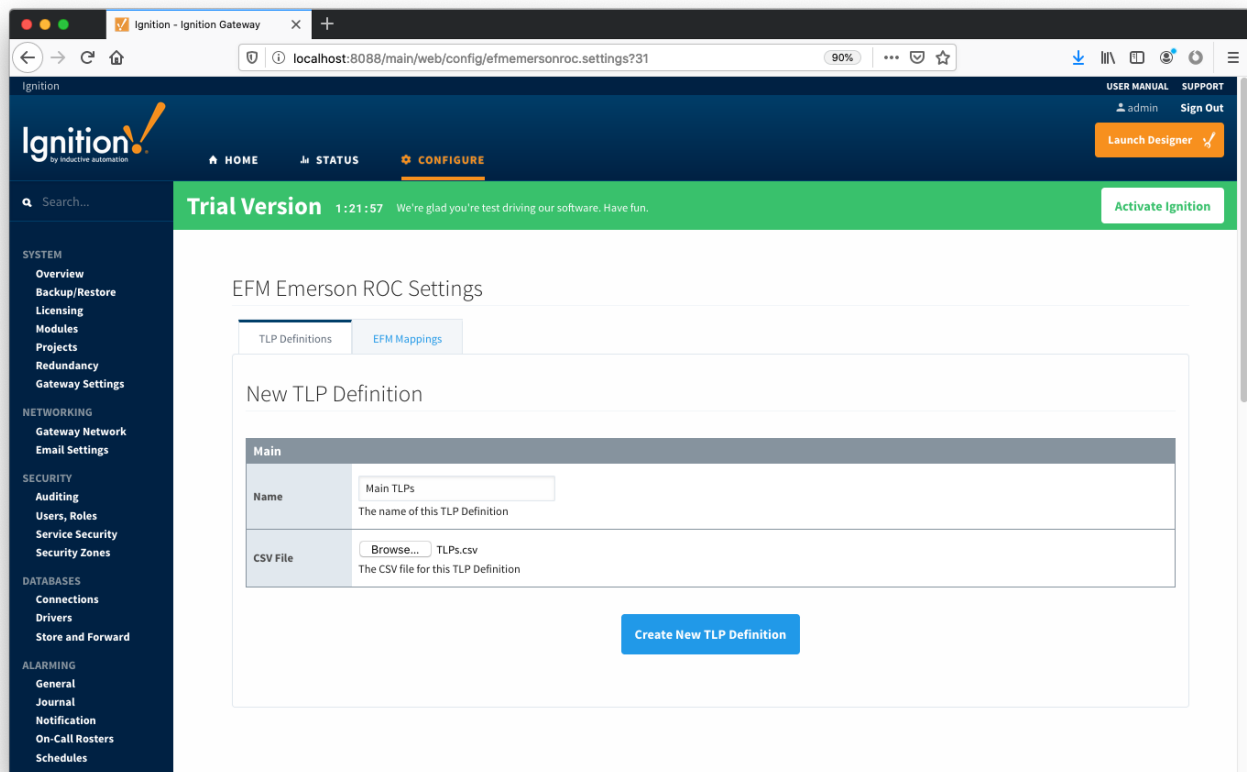
Global TLP Definitions

The EFM Emerson ROC driver module provides a configuration section to the Ignition Gateway. These can be seen in the Configure section of the Ignition Gateway web UI on the left panel near the bottom. **Note this step is required before any EFM Emerson ROC device connections can be define. Each Emerson ROC device connection will use a subset of these global TLP definitions to operate.**

Once in the configuration screen there will be a link to create new global TLP definitions. Click the link shown below to create a new one.



When creating a new global TLP definition only a name and a CSV file needs to be specified. The name can be any unique name that describes the TLPs included in that CSV file. They can be device specific TLPs or they can be TLPs associated with a specific user program.



The headers of the CSV file must be as follows:

- Point Type #
 - The 'T' parameter of a TLP - must be an integer
- Point Type Description
 - A long description of the 'T' parameter

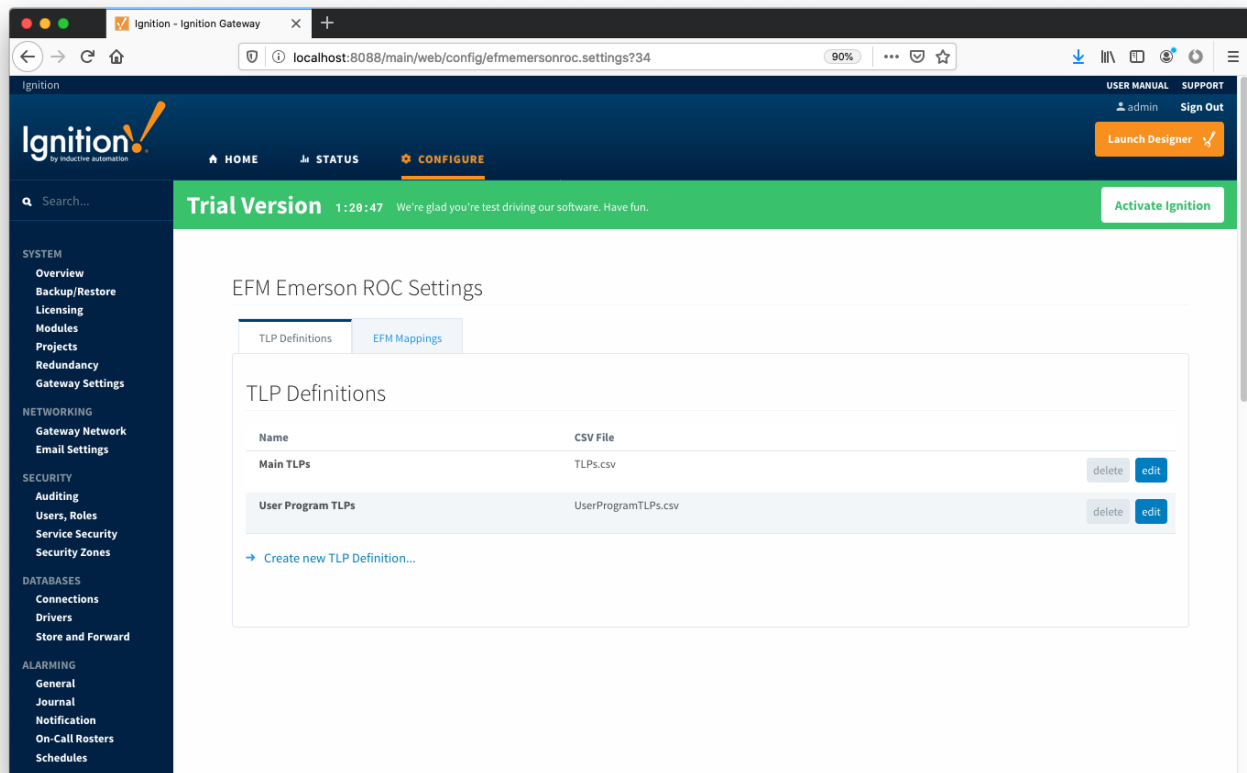
- Point Type Abbreviation
 - The abbreviation of the 'T' parameter
- Parameter Number
 - The 'P' parameter of the TLP - must be an integer
- Parameter Name
 - The descriptive name of the TLP
- Parameter Description
 - The description of the TLP
- Parameter Abbreviation
 - This becomes the default tag name of the parameter in Ignition. It can be changed in any TLP template where it is defined.
- Access
 - The access value for the TLP. Must be either R/O or R/W
- DataType
 - The datatype of the TLP. Must be one of the following:
 - BIN
 - Binary value
 - 1 byte
 - Ignition Type: Byte
 - AC
 - ASCII String Value
 - Variable number of bytes
 - Ignition Type: String
 - INT8
 - Signed 8-bit Value
 - 1 byte
 - Ignition Type: Short
 - INT16
 - Signed 16-bit Value
 - 2 bytes
 - Ignition Type: Short
 - INT32
 - Signed 32-bit Value
 - 4 bytes
 - Ignition Type: Integer
 - UINT8
 - Unsigned 8-bit Value
 - 1 byte
 - Ignition Type: Short
 - UINT16
 - Unsigned 16-bit Value
 - 2 bytes
 - Ignition Type: Integer
 - UINT32
 - Unsigned 32-bit Value
 - 4 bytes
 - Ignition Type: Long
 - FL
 - 4-byte Floating-Point Value
 - 4 bytes
 - Ignition Type: Float
 - FLP
 - Same as FL
 - 4-byte Floating-Point Value
 - 4 bytes
 - Ignition Type: Float
 - DBL
 - 8-byte Floating-Point Value
 - 8 bytes
 - Ignition Type: Double
 - TIME
 - 4 byte ROC representation of time
 - TLP
 - 3 byte ROC representation of a TLP
 - HOURMINUTE
 - 2 byte ROC representation of hour and minute
 - FLOAT
 - Same as FL
 - 4-byte Floating-Point Value
 - 4 bytes
 - Ignition Type: Float
 - DOUBLE
 - Same as DBL
 - 8-byte Floating-Point Value
 - 8 bytes
 - Ignition Type: Double
 - DT6
 - 6 byte ROC representation of time
- Length
 - The length of the the value. For example INT8 is 1, INT16 is 2, for an AC type it is variable and dependent on the specific TLP.

Below is an example of a properly formatted global TLP CSV file:

```
Point Type #,Point Type Description,Point Type Abbreviation,Parameter Number,Parameter Name,Parameter
Description,Parameter Abbreviation,Access,DataType,Length
1,Discrete Inputs,DIN,0,Point Tag ID,,TAG,R/W,AC,10
1,Discrete Inputs,DIN,1,Filter,,FILTER,R/W,UINT8,1
1,Discrete Inputs,DIN,2,Status,,STATUS,R/W,UINT8,1
1,Discrete Inputs,DIN,3,Mode,,MODE,R/W,BIN,1
1,Discrete Inputs,DIN,4,Alarm Code,,ALARM,R/O,BIN,1
1,Discrete Inputs,DIN,5,Accumulated Value,,ACCUM,R/W,UINT32,4
1,Discrete Inputs,DIN,6,On Counter,,ONCTR,R/W,UINT32,4
1,Discrete Inputs,DIN,7,Off Counter,,OFFCTR,R/W,UINT32,4
1,Discrete Inputs,DIN,8,0% Pulse Width,,MINCNT,R/W,INT16,2
1,Discrete Inputs,DIN,9,100% Pulse Width,,MAXCNT,R/W,INT16,2
```

An example global TLPs file can be found here: [TLPs.csv](#)

This can be uploaded to the Emerson ROC driver configuration and called 'Main TLPs'. Once complete, it will look similar to what is shown below.



EFM Mappings

Configuration Mappings

The configuration mapping files are used for building up EFM Configuration Records. They define which TLPs map to which fields (columns) in an EFM Configuration Record. Additionally they can provide bit and/or value mappings for the TLP values.

These mappings are CSV files with the following values:

- *Column Name*
 - The name of the EFM Configuration Record field
- *Column Data Type*
 - The datatype of the EFM Configuration Record. Must be one of the following:

- VARCHAR
 - NUMBER
- *TLP Point Type*
 - The 'T' parameter of a TLP - must be an integer
- *TLP Parameter Number*
 - The 'P' parameter of a TLP - must be an integer
- *Bits*
 - An optional declaration of the bits to use from the value of the TLP
 - An ordered, colon-delimited, list of bit positions
 - Examples:
 - If the TLP value is a byte and only the first (least significant) bit is used, this value would be: 0
 - If the TLP value is a byte and the 2nd and 3rd bits are used, this value would be: 2:3
- *Event Value Mapping*
 - An optional, semicolon delimited mapping of the TLP values to the values that will be stored in the EFM Event Record
 - If using only certain bits the values themselves will need to be ordered, colon delimited lists of bit values
- *Config Value Mapping*
 - An optional, semicolon delimited mapping of the TLP values to the values that will be stored in the EFM Configuration Record
 - If using only certain bits the values themselves will need to be ordered, colon delimited lists of bit values

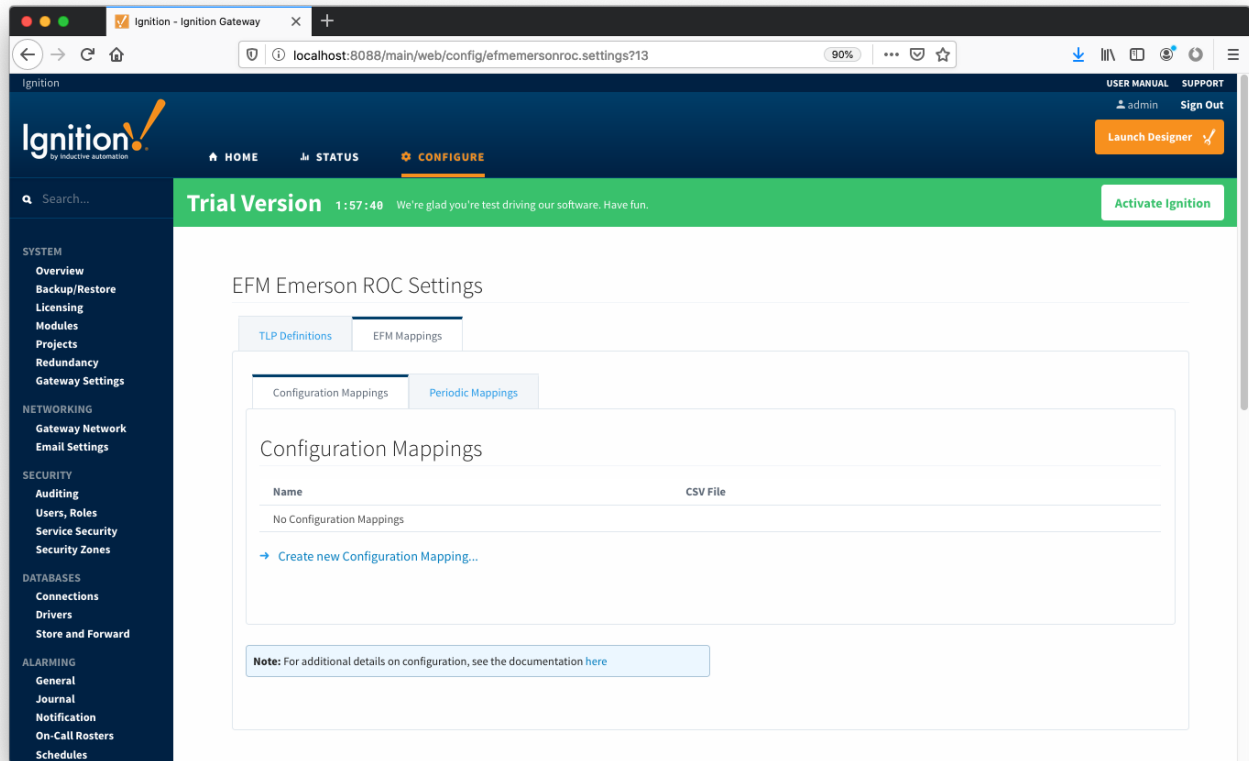
Below is an example of a properly formatted Configuration Mapping file:

```

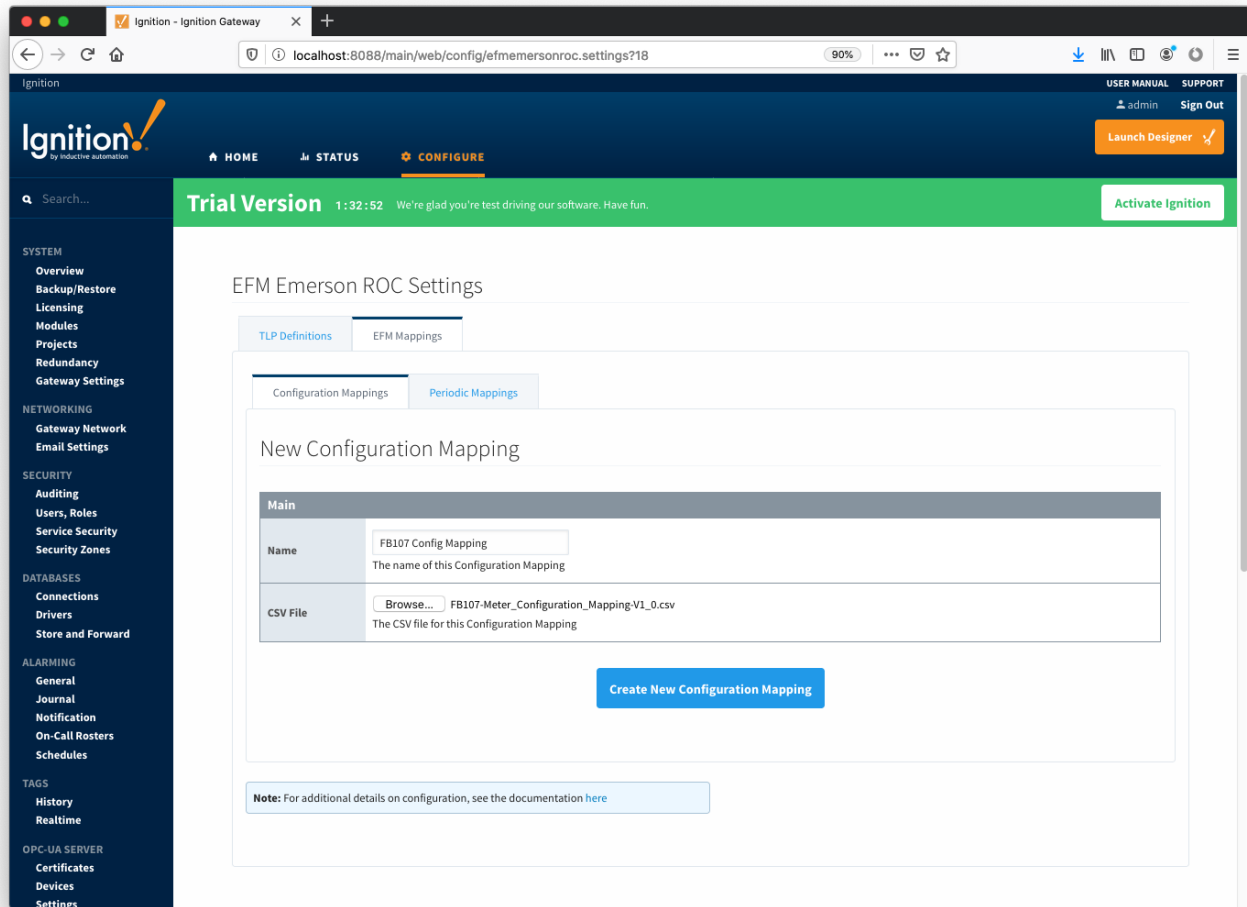
mtr_point_tag,VARCHAR,46,0,,,
mtr_description,VARCHAR,46,1,,,
mtr_serial,VARCHAR,46,0,,,
plate_dia,NUMBER,46,10,,,
plate_temp,NUMBER,46,11,,,
plate_mat,VARCHAR,46,12,,,0=Stainless;1=Monel;2=Carbon;3=304 SS;4=316 SS;5=Monel 400
k_fctr,NUMBER,46,43,,,
pipe_dia,NUMBER,46,7,,,
pipe_temp,NUMBER,46,8,,,
pipe_mat,VARCHAR,46,9,,,0=Stainless;1=Monel;2=Carbon;3=304 SS;4=316 SS;5=Monel 400
atmos_press,NUMBER,46,15,,,
alt,NUMBER,46,20,,,
lat,NUMBER,46,21,,,
base_press,NUMBER,46,13,,,
base_temp,NUMBER,46,14,,,
cntrct_hr,NUMBER,15,10,,,
calc_mthd,VARCHAR,47,72,,,AGA3-92=AGA-3 1992;AGA7-96=AGA-7
fpv_mthd,VARCHAR,47,73,,,AGA8-92 Gross 1=AGA-8 Gross 1 1992;AGA8-92 Detailed=AGA-8 Detail 1992
mtr_taps,VARCHAR,46,4,0,,0=Flange;1=Pipe
sp_tap,VARCHAR,46,4,2,,0=Downstream;1=Upstream
sp_typ,VARCHAR,46,4,3,,0=Gauge;1=Absolute
mtr_typ,VARCHAR,46,2,1,,0=Orifice;1=Turbine
live_analysis,VARCHAR,46,3,5,,0=No;1=Yes
live_btu,VARCHAR,46,4,4,,0=Yes;1=No
live_grav,VARCHAR,46,4,1,,0=Yes;1=No
lo_flo_ctoff,NUMBER,46,43,,,
specf_heat_ratio,NUMBER,46,19,,,
btu_base,VARCHAR,46,3,3:4,0:0=0;0:1=1;1:0=2;1:1=3,0:0=Dry;0:1=As Delivered;1:0=Wet;1:1=As Delivered
mass_heating_val,NUMBER,46,17,,,
specf_gravity,NUMBER,46,16,,,
viscosity,NUMBER,46,18,,,
carbon_dioxide,NUMBER,46,24,,,
nitrogen,NUMBER,46,23,,,
methane,NUMBER,46,28,,,
ethane,NUMBER,46,29,,,
propane,NUMBER,46,30,,,
isobutane,NUMBER,46,32,,,
butane,NUMBER,46,31,,,
isopentane,NUMBER,46,34,,,
pentane,NUMBER,46,33,,,
hexane,NUMBER,46,35,,,
heptane,NUMBER,46,36,,,
octane,NUMBER,46,37,,,
nonane,NUMBER,46,38,,,
decane,NUMBER,46,39,,,
oxygen,NUMBER,46,40,,,
water,NUMBER,46,26,,,
hydrogen_sulfide,NUMBER,46,25,,,
helium,NUMBER,46,27,,,
hydrogen,NUMBER,46,42,,,
carbon_monoxide,NUMBER,46,41,,,
argon,NUMBER,46,85,,,

```

The Configuration Mappings tab shows all uploaded Configuration Mapping files.



A new Configuration Mapping can be added by clicking on the "Create New Configuration Mapping..." link.



Periodic Mappings

periodic mapping files are used for building up EFM Periodic History Records. They define which TLPs map to which fields (columns) in an EFM Periodic History Record, the logical type of the point type table (meter, station, or input), and an archive type of the value.

These mappings are CSV files with the following values:

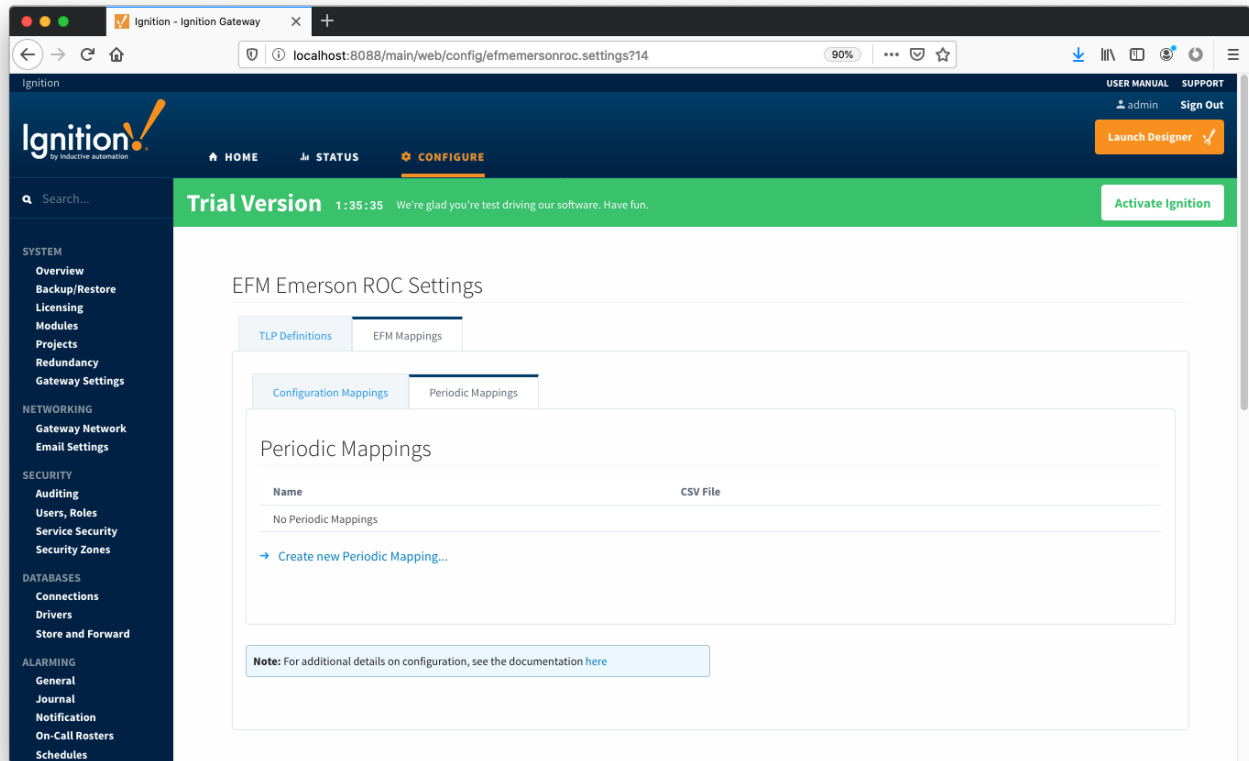
- *TLP Point Type*
 - The 'T' parameter of a TLP - must be an integer
- *TLP Parameter Number*
 - The 'P' parameter of a TLP - must be an integer
- *Logical Type*
 - The type that the 'L' parameter of a TLP represents. Must be one of the following:
 - "M" for Meter
 - "I" for Input
 - "S" for Station
 - "" (blank) for Unknown
- *Archive Type*
 - The archive type of the TLP. Must be one of the following:
 - Average
 - Accumulated
 - Current
 - Totalize
 - Unknown
 - Undefined
 - UserCData
 - UserCTime
 - FSTTimeM
 - FSTValue
 - FSTTimeD
 - FSTTime
- *Column Name*
 - The name of the EFM Configuration Record field

- *Column Data Type*
 - The datatype of the EFM Configuration Record. Must be one of the following:
 - VARCHAR
 - NUMBER

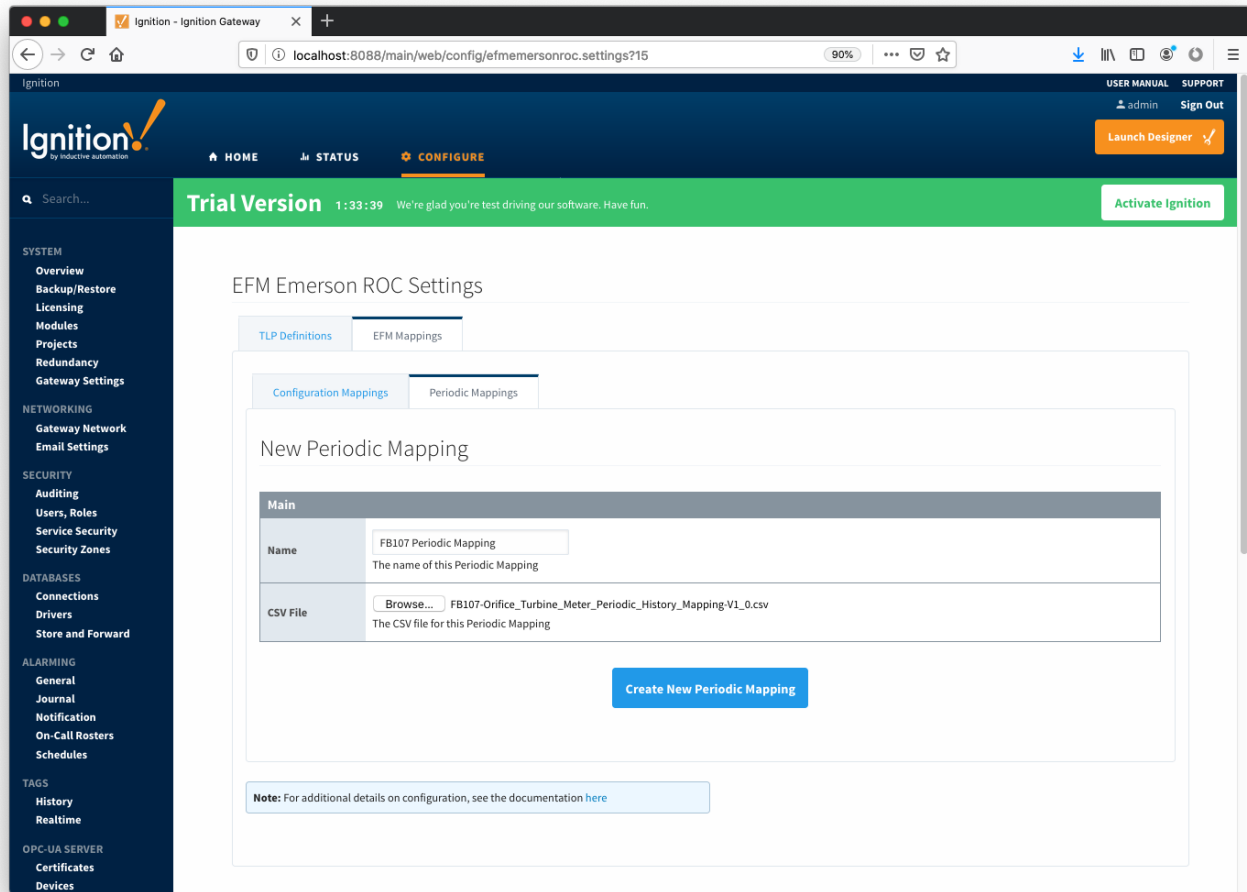
Below is an example of a properly formatted Periodic Mapping file:

```
47,41,M,Totalize,flo,NUMBER
46,51,M,Average,dp_avg,NUMBER
47,49,M,Totalize,dp_avg,NUMBER
47,59,M,Totalize,pulses,NUMBER
5,16,I,Totalize,pulses,NUMBER
46,52,M,Average,sp_avg,NUMBER
46,53,M,Average,temp_avg,NUMBER
5,18,I,Totalize,raw_vol,NUMBER
47,4,M,Average,ext_avg,NUMBER
47,51,M,Totalize,ext_avg,NUMBER
47,16,M,Average,multiplier_val,NUMBER
47,0,M,Accumulated,flo_rate,NUMBER
47,1,M,Accumulated,engry_rate,NUMBER
47,12,M,Unknown,compressibility,NUMBER
47,15,M,Unknown,compressibility,NUMBER
46,17,M,Average,btu_avg,NUMBER
46,16,M,Average,specf_gravity_avg,NUMBER
46,24,M,Average,carbon_dioxide_avg,NUMBER
46,23,M,Average,nitrogen_avg,NUMBER
46,28,M,Average,methane_avg,NUMBER
46,29,M,Average,ethane_avg,NUMBER
46,30,M,Average,propane_avg,NUMBER
46,32,M,Average,isobutane_avg,NUMBER
46,31,M,Average,butane_avg,NUMBER
46,34,M,Average,isopentane_avg,NUMBER
46,33,M,Average,pentane_avg,NUMBER
46,35,M,Average,hexane_avg,NUMBER
46,36,M,Average,heptane_avg,NUMBER
46,40,M,Average,oxygen_avg,NUMBER
46,26,M,Average,water_avg,NUMBER
46,25,M,Average,hydrogen_sulfide_avg,NUMBER
46,27,M,Average,helium_avg,NUMBER
46,19,M,Unknown,specf_heat_ratio,NUMBER
46,18,M,Unknown,viscosity,NUMBER
46,37,M,Average,octane_avg,NUMBER
46,38,M,Average,nonane_avg,NUMBER
46,39,M,Average,decane_avg,NUMBER
46,42,M,Average,hydrogen_avg,NUMBER
46,41,M,Average,argon_avg,NUMBER
```

The Periodic Mappings tab shows all uploaded Periodic Mapping files.



A new Periodic History Mapping can be added by clicking on the "Create New Periodic Mapping..." link.

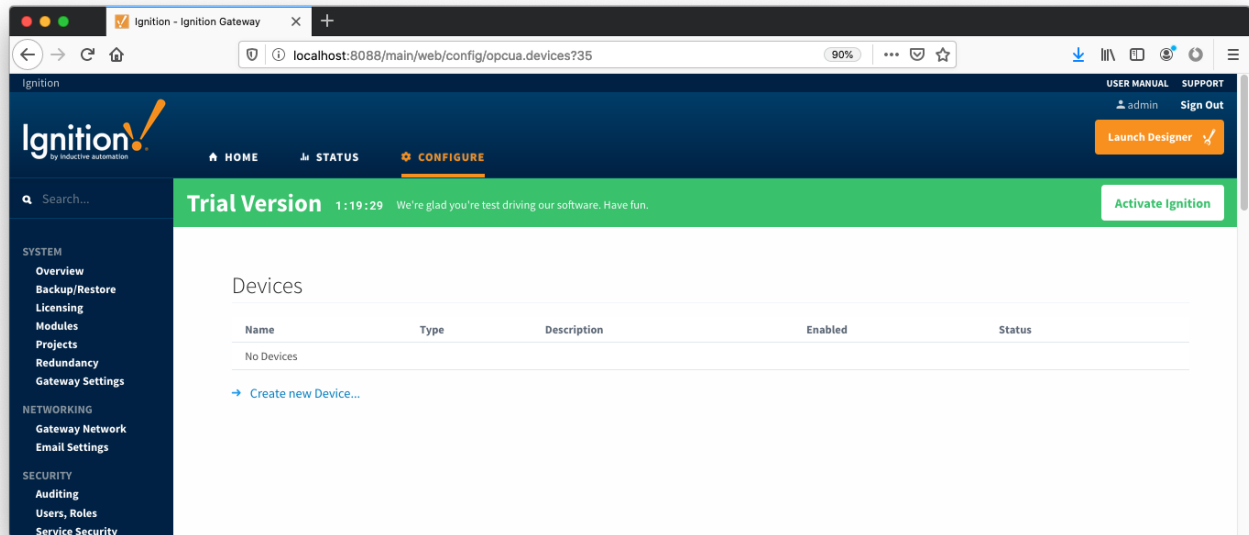


At this point device connections can be created using these global TLP definitions.

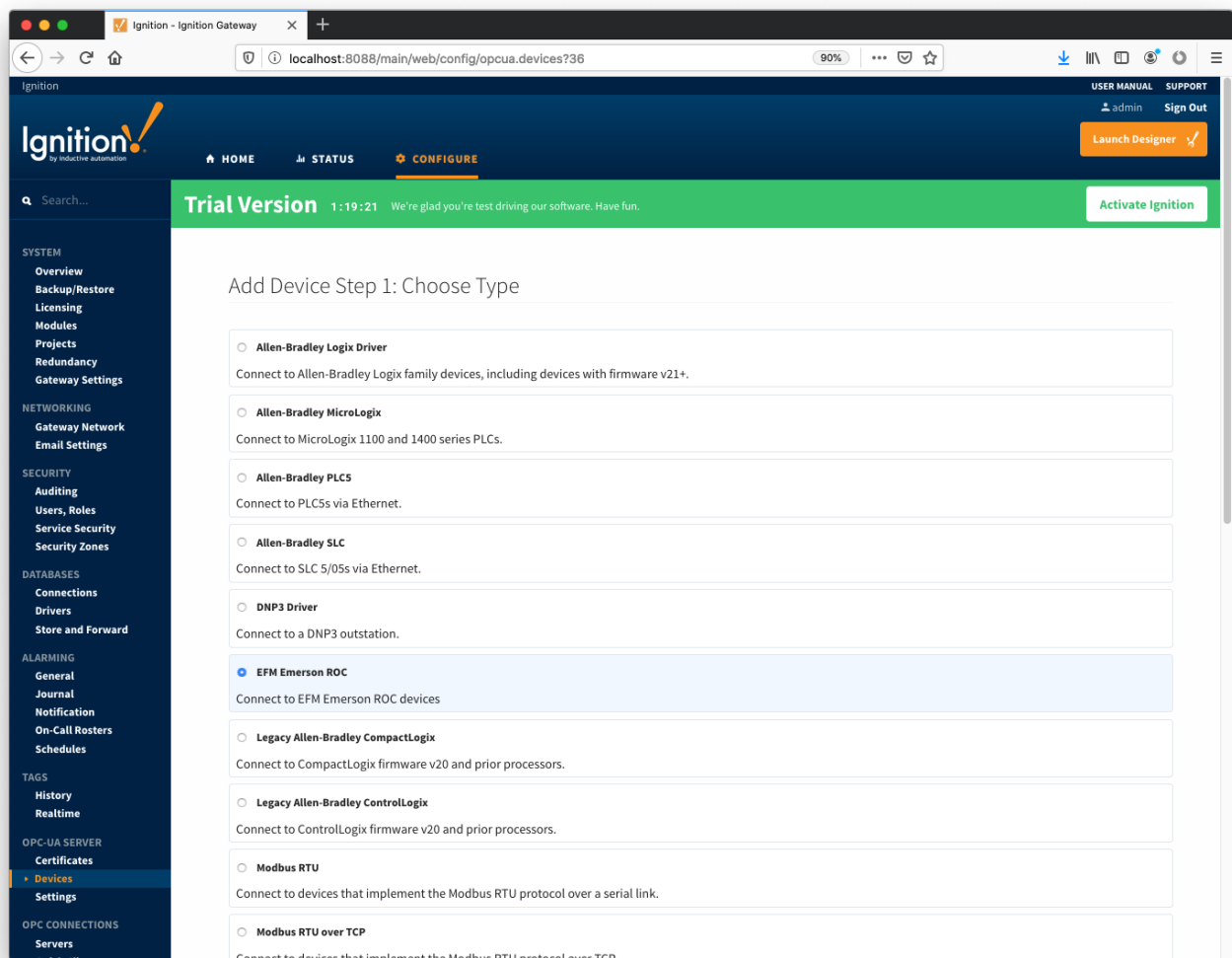
Creating a Device Connection

Configuring an Emerson ROC device connection is done as is with any other driver using the OPC-UA interface. Begin by clicking the Configure tab at the top of the Ignition Gateway web UI and scrolling down to the OPC-UA Server's Devices section and clicking it as shown below.

Once done you will see the following. Click the 'Create new Device...' link to create the Emerson ROC device connection.



After clicking the 'Create new Device...' link you will see the following. Select the 'EFM Emerson ROC' and click 'Next' at the bottom of the page.



When creating a new device you will see the following.

The screenshot shows the Ignition Gateway web interface. The top navigation bar includes links for HOME, STATUS, and CONFIGURE. The CONFIGURE tab is active. A green banner at the top indicates 'Trial Version 1:23:43' and includes an 'Activate Ignition' button. The left sidebar contains navigation links for SYSTEM, NETWORKING, SECURITY, DATABASES, ALARMING, TAGS, OPC-UA SERVER, OPC CONNECTIONS, MOBILE, and ENTERPRISE ADMINISTRATION. The main content area is titled 'New Device' and contains two sections: 'General' and 'Connectivity'.

General	
Name	<input type="text"/>
Description	<input type="text"/>
Enabled	<input checked="" type="checkbox"/> (default: true)

Connectivity	
Protocol Type	Choose One Specific Protocol Type of the device.
Hostname	Hostname/IP address of the device.
TCP Port	TCP Port of the device.
ROC Unit Code	Station Address Unit Code of the ROC unit
ROC Group Code	Station Address Group Code of the ROC unit
Host Unit Code	Station Address Unit Code of the host (this driver)
Host Group Code	Station Address Group Code of the host (this driver)
Periodic Mapping	- none - The mapping of TLPs to Flowcal Meter Periodic Transactions

The following describes the parameters that can be set here.

General

- **Name**
 - Device name
- **Description**
 - Device description
- **Enabled**
 - Device enabled

Connectivity

- **Protocol Type**
 - Specific Protocol Type of the device
 - ROC
 - ROC_PLUS
- **Hostname**
 - Hostname or IP address of the device
- **TCP Port**
 - TCP Port of the device.
- **ROC Unit Code**
 - Station Address Unit Code of the ROC unit
- **ROC Group Code**
 - Station Address Group Code of the ROC unit
- **Host Unit Code**

- Station Address Unit Code of the host (this driver)
- **Host Group Code**
 - Station Address Group Code of the host (this driver)
- **Periodic Mapping**
 - Select a Periodic History Mapping (see above) if History polling will be enabled
- **Configuration Mapping**
 - Select a Configuration Mapping (see above) if any Configuration, Event, or History polling will be enabled
- **Add All TLP Definitions**
 - If selected, all TLP definitions configured within the module (see above) will be automatically added to this Device configuration. This is a convenient way to easily add TLP definitions to a Device without having to manually add them after the Device has been initially configured. If the module contains one or more TLP definitions that are not compatible with the device being configured, leave this option disabled and configure the TLP Definitions manually after the device has been configured.

Security

- **Security Enabled**
 - Whether security is enabled on the ROC device
- **Operator ID**
 - A three character operator ID
- **Password**
 - A four digit password
- **Access Level Enabled**
 - Whether or not the Access Level is enabled for the above operator on the ROC device
- **Access Level**
 - The Access Level to use (0-5) if enabled

Date/Time

- **Date Time Offset**
 - The date time offset of the ROC clock from the Ignition system running this driver in seconds
- **Sync ROC RTC**
 - Whether or not to synchronize the RTC clock with local time from the Ignition system
- **Sync Expression**
 - The Quartz Cron expression to use to schedule the synchronization of the ROC RTC (default: "0 0 0 * * ?")

Records

- **Alarm Scan Rate**
 - The rate in seconds that alarm records are scanned
 - Set to -1 to disable alarm scanning (default)
- **Event Scan Rate**
 - The rate in seconds that event records are scanned
 - Set to -1 to disable event scanning (default)
- **Minute History Scan Rate**
 - The rate in seconds that minute history records are scanned
 - Set to -1 to disable minute history scanning (default)
- **Periodic History Scan Rate**
 - The rate in seconds that periodic history records are scanned
 - Set to -1 to disable periodic history scanning (default)
- **Daily History Scan Rate**
 - The rate in seconds that daily history records are scanned
 - Set to -1 to disable daily history scanning (default)

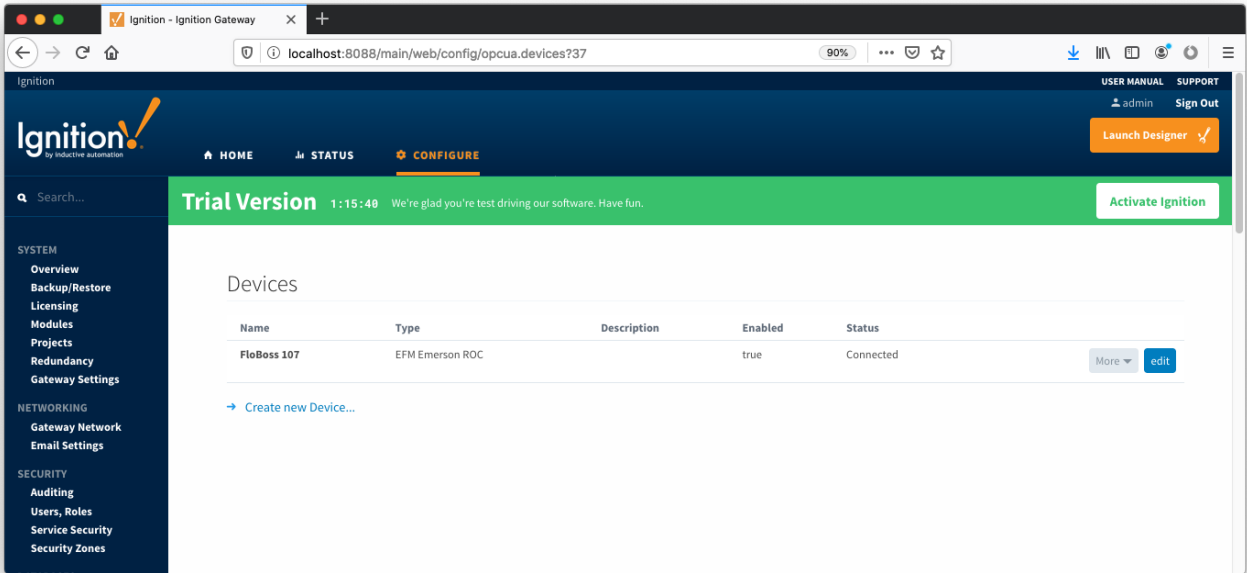
Sparkplug

- **Group ID**
 - An ID representing a logical grouping of Edge Nodes and Devices
- **Edge Node ID**
 - An ID representing an Edge or Network (EoN) Node
- **Device ID**
 - An ID representing a Device

Advanced

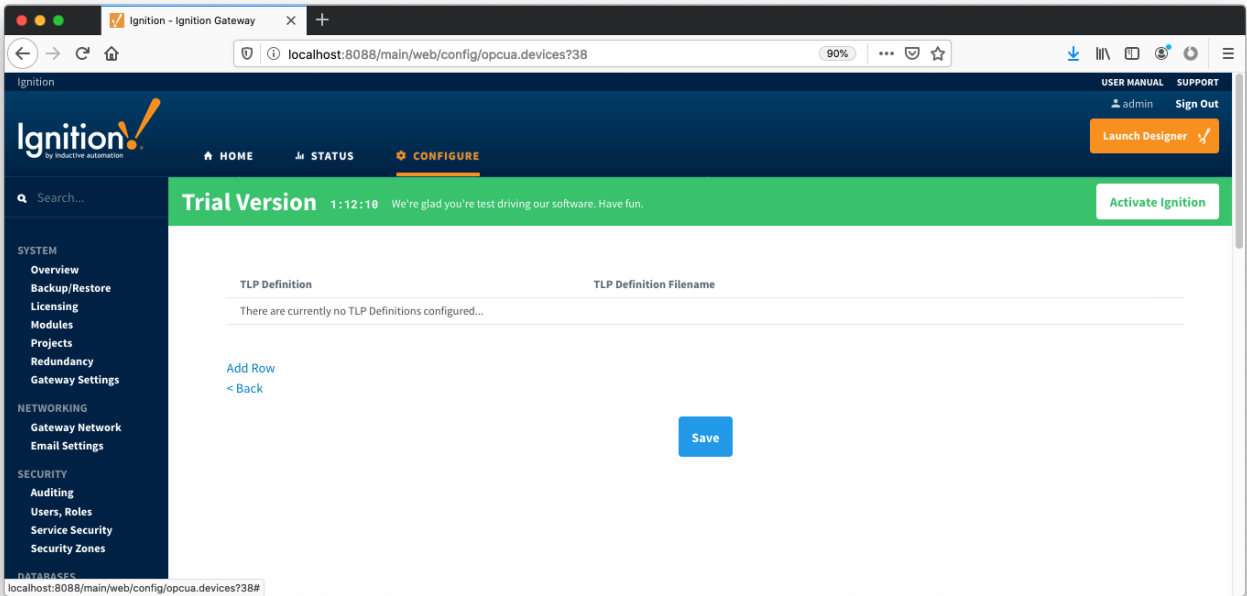
- **Serial Number**
 - The serial number to include in Records for uniqueness. Can be manually configured (example: '0001234556') or a TLP can be specified to be read from the device (example: '[15,0,14]').
- **History Time Stamp**
 - If enabled the history time stamp will be at the beginning of the period (leading), otherwise at the end of the period (trailing)
- **Read Delay**
 - The Polling Read Delay in milliseconds when polling response may be slow (recommend when using a terminal server)

Once the device is created, you should see it listed in the devices section with a status of 'Not Configured' as shown below. The next sections will show the rest of the configuration that will complete the setup.

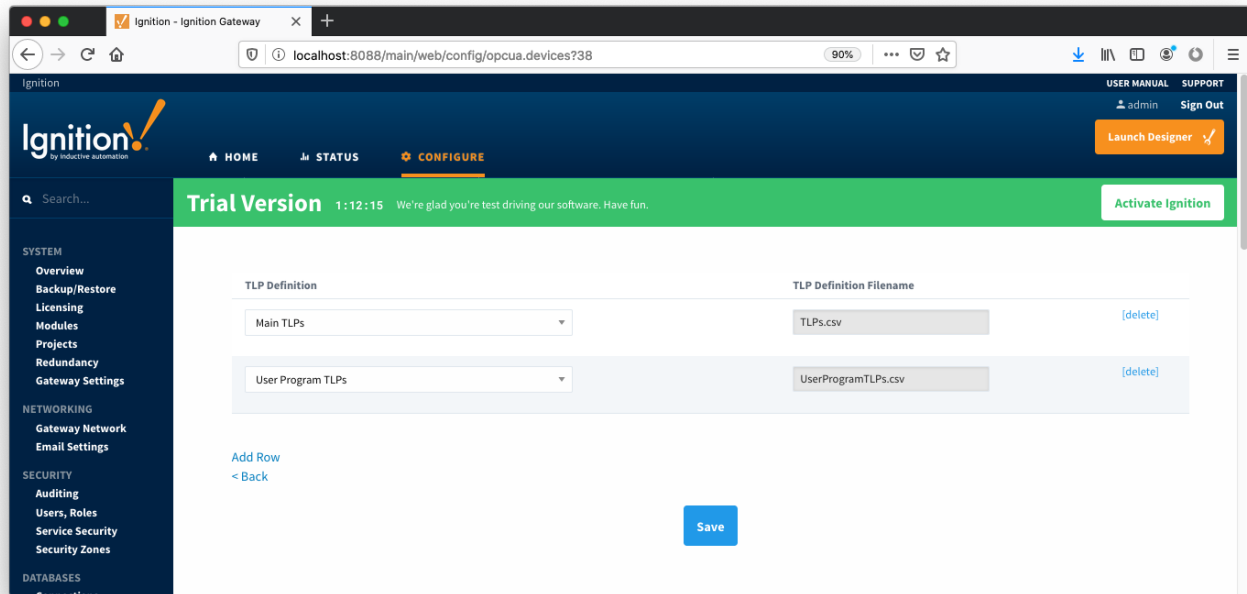


Specifying TLP Definitions for a Device

With the device now established the specific global TLP templates that are appropriate for this device must be associated with it. Do so by clicking the 'More' drop-down button and selecting 'TLP Definitions' as shown below.



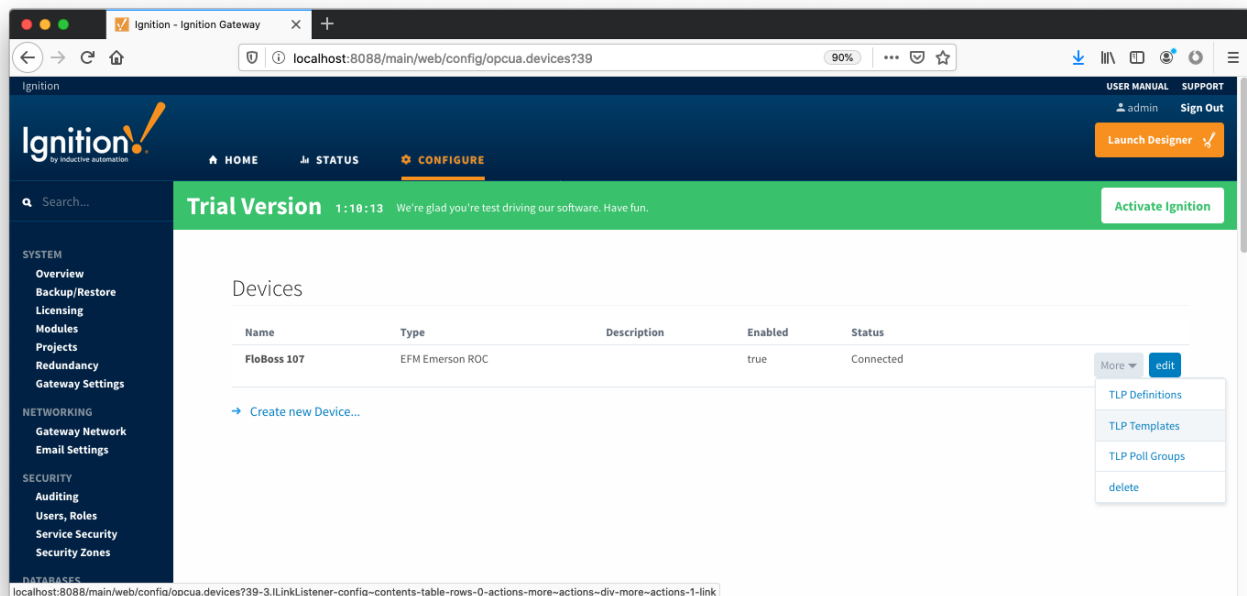
You should now see an empty list of TLP definitions (unless you used the "Add All TLP Definitions" setting). Click the 'Add Row' link that is shown below. This will show a new TLP definition with a select box to allow you to select which global TLP definition you want to associate with this device. Add as many as are appropriate for your device as shown below.



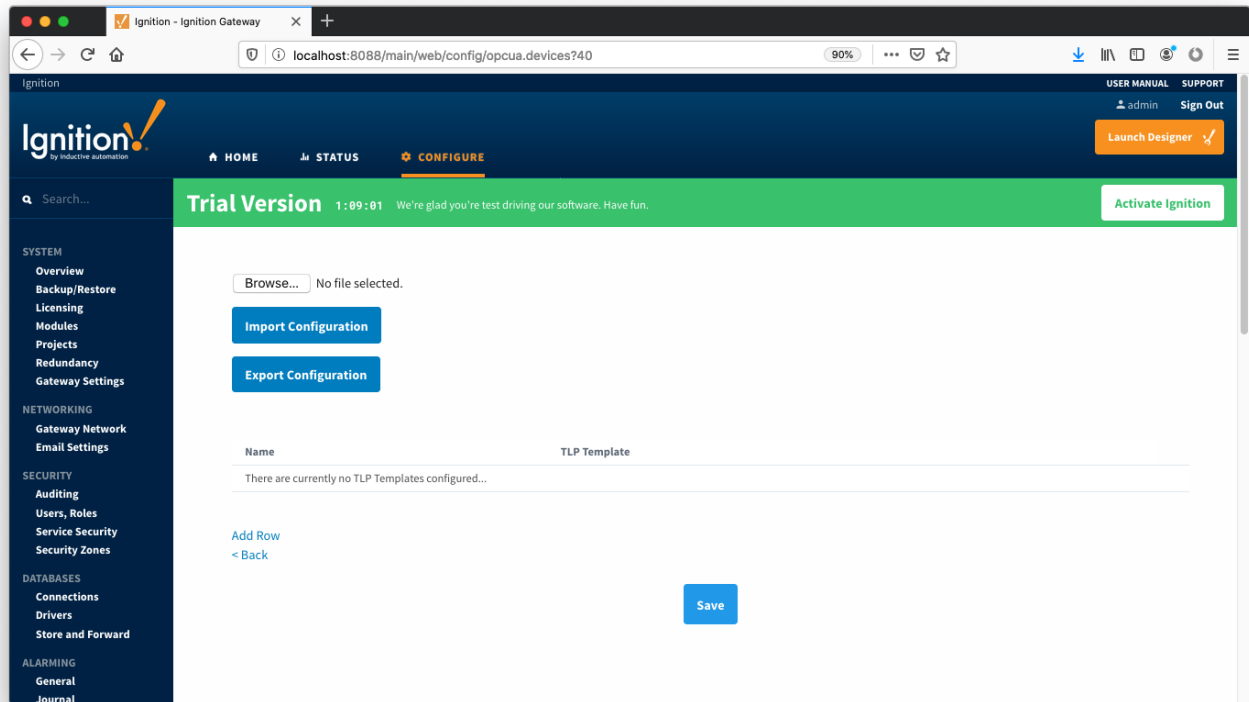
When complete, save the list and you will be taken back to the Devices list.

Creating TLP Templates for a Device

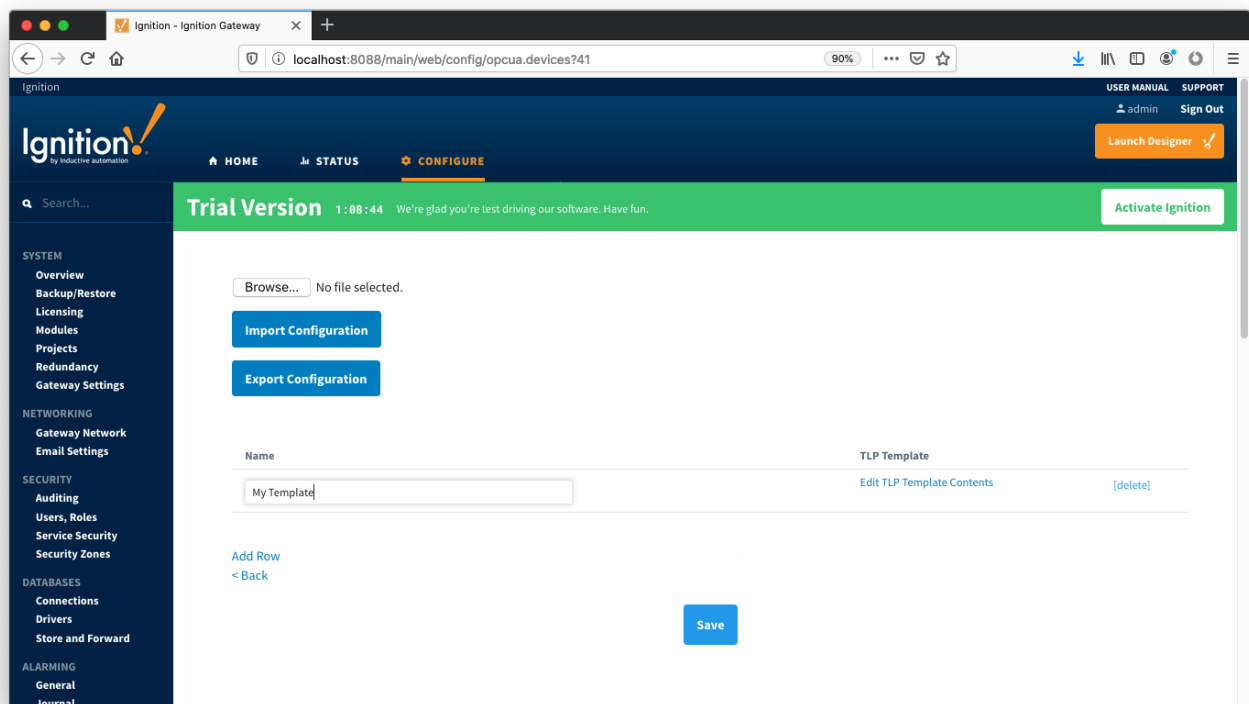
With the TLP definitions now defined for this device we can create some TLP templates to allow creation of TLP poll groups. You should also note at this point that the Status shows 'Connected' for the device. To create a TLP template, click on the 'More' drop-down menu and select 'TLP Templates' as shown below.



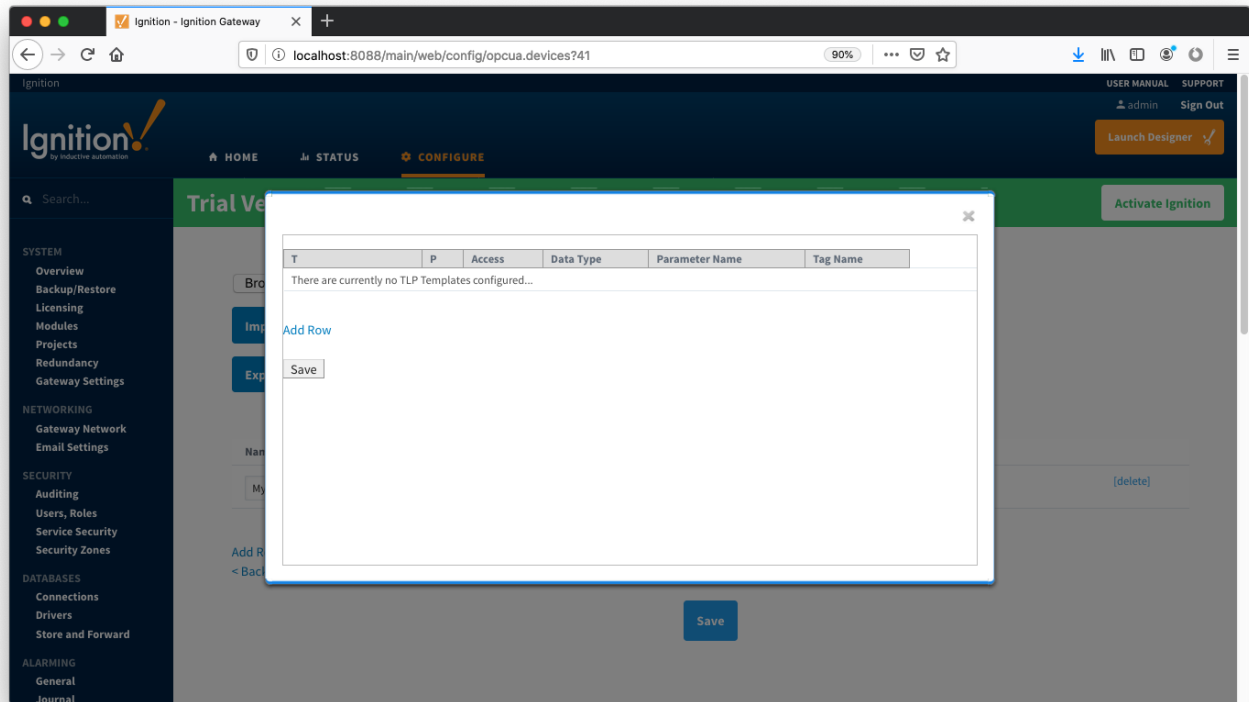
To add a TLP template, click the 'Add Row' link shown below.



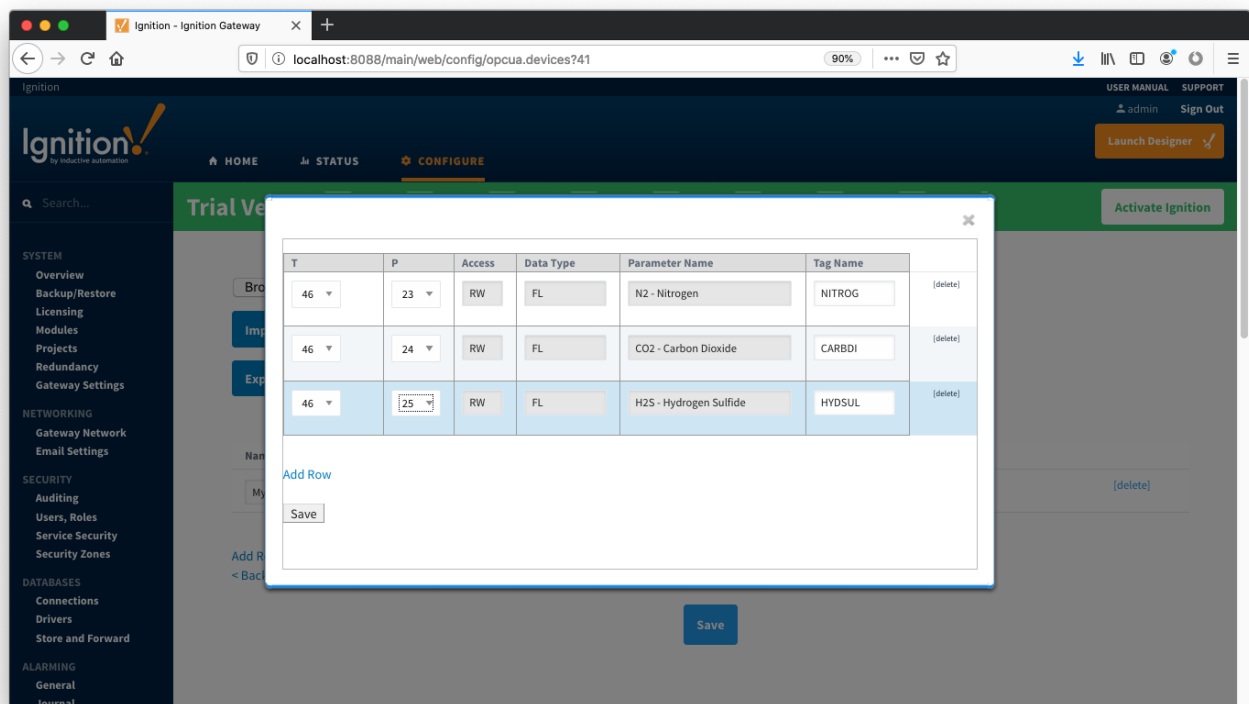
At this point you can give the new TLP template a name that makes sense. Then click the 'Edit TLP Template Contents' link next to the name field shown below.



At this point you can begin adding new TLPs by clicking the 'Add Row' link shown below.



The TLPs available to be added are based on the TLP definitions that have been made available to this specific device. Add TLPs that make sense to be grouped together in a logical group. When complete you should see something similar to what is shown below. Click the 'Save' button.

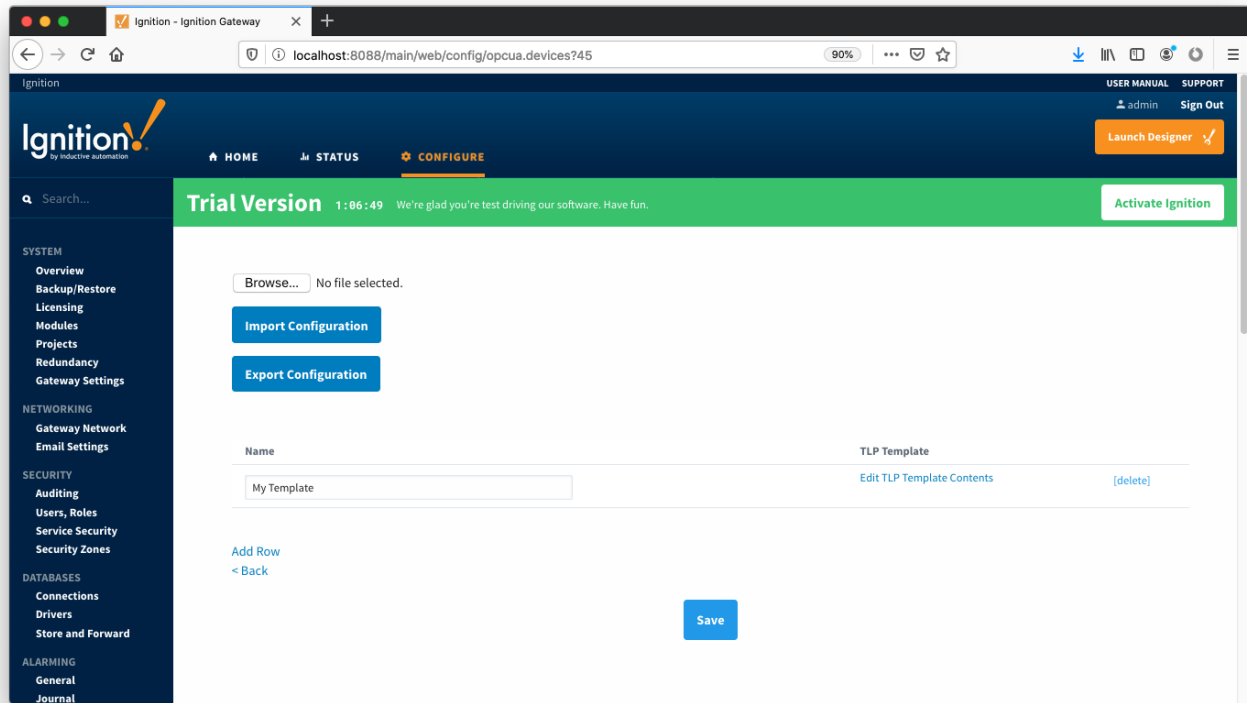


Note there are six fields available for each row of which only three can be modified. These are:

- T
 - The 'T' parameter of the TLP
- P

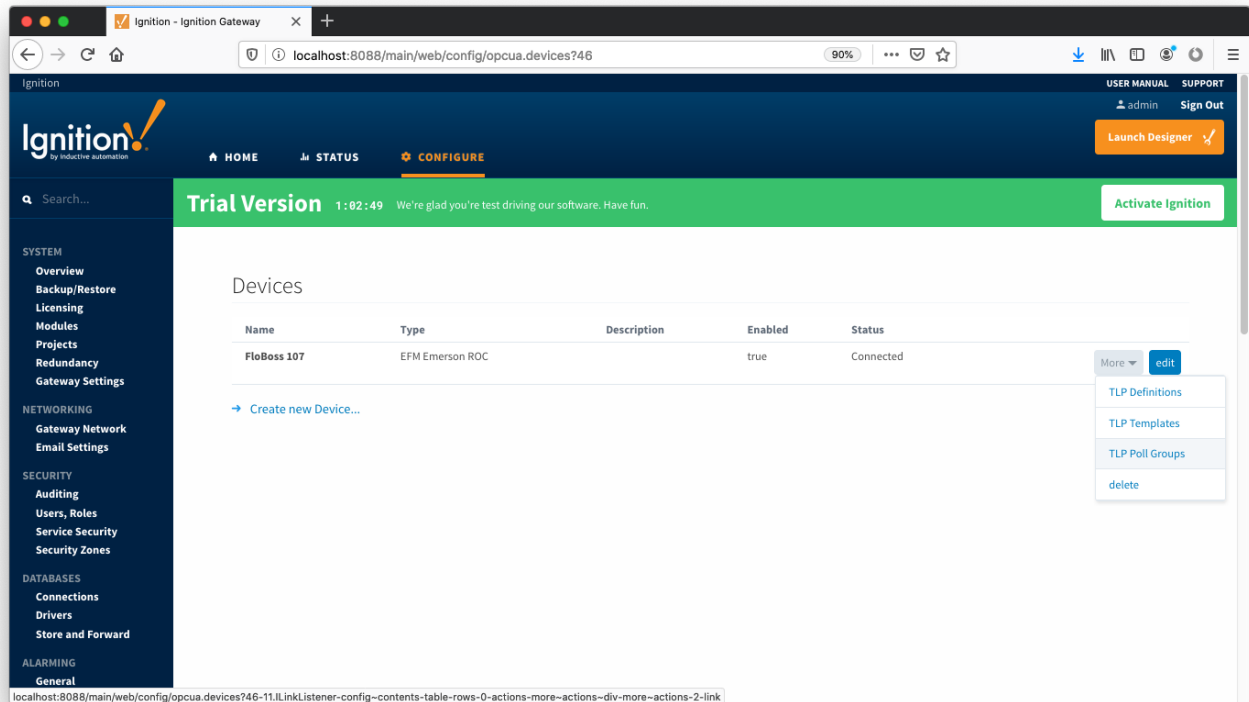
- The 'P' parameter of the TLP
- Access
 - The access for this value - either RO for 'read only' or RW for 'read/write'
 - Cannot be modified here. It is defined in the global TLP definition CSV file.
- Data Type
 - The data type for this TLP
 - Cannot be modified here. It is defined in the global TLP definition CSV file.
- Parameter Name
 - The descriptive name of this TLP
 - Cannot be modified here. It is defined in the global TLP definition CSV file.
- Tag Name
 - The tag name that will show up in Ignition for this TLP.
 - The default value comes from 'Parameter Abbreviation' of the global TLP definition CSV file. It can be changed here to any value.

Add as many templates as you'd like, then click the 'Save' button at the bottom of the page shown below.

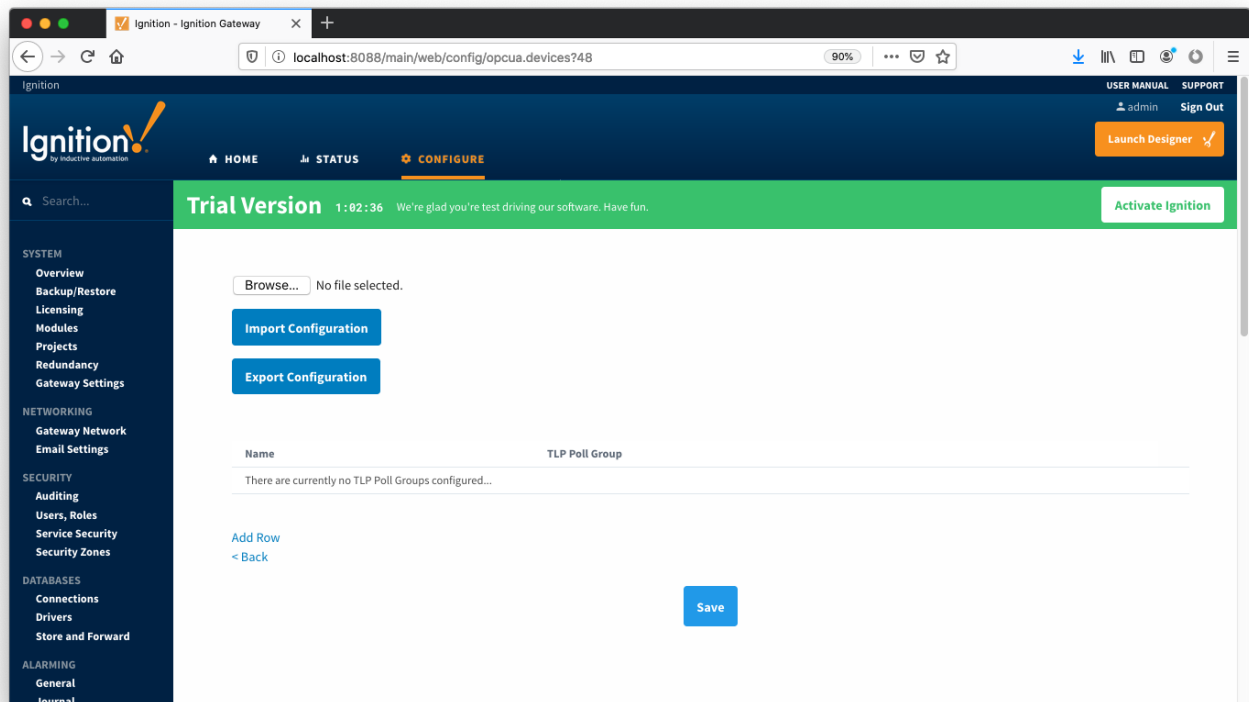


Creating TLP Poll Groups for a Device

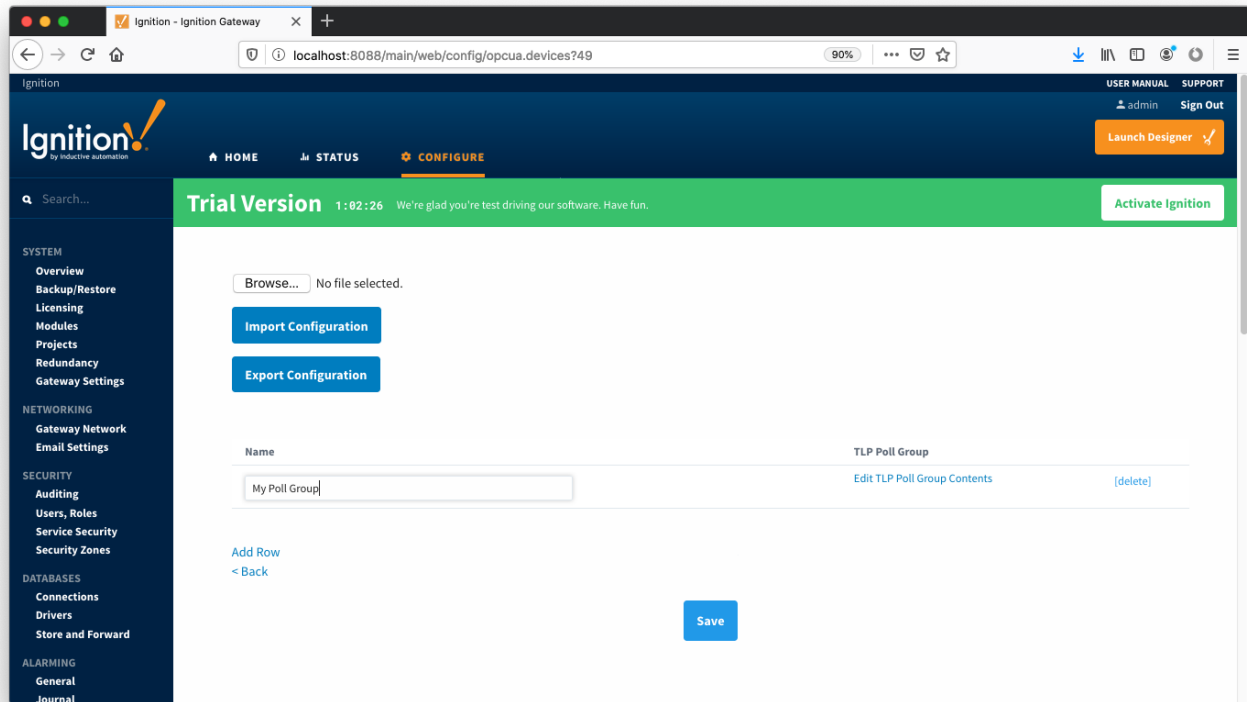
With TLP templates already defined you can now create TLP poll groups which will poll a group of TLPs via a TLP template at a specific logical number at a specified rate. Do so by selecting 'TLP Poll Groups' via the 'More' drop-down as shown below.



To add a TLP poll group, click the 'Add Row' link shown below.



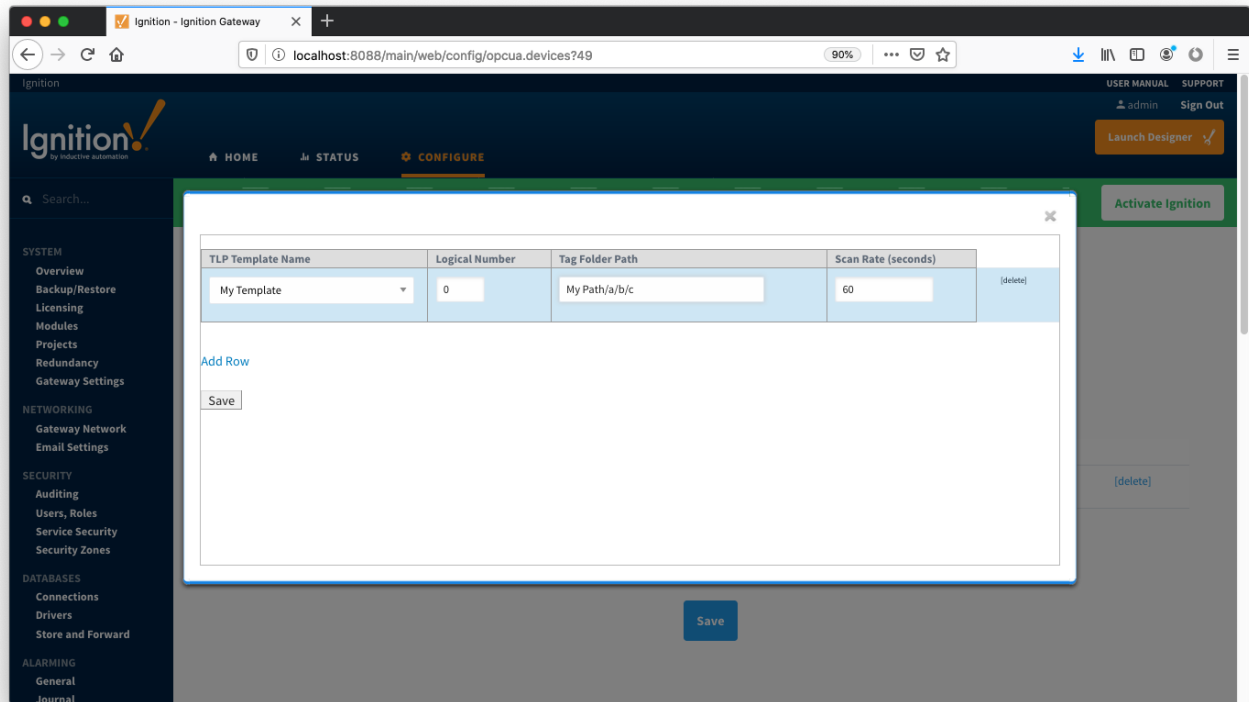
Now you can give the new TLP poll group a name that makes sense. Then click the 'Edit TLP Poll Group Contents' link next to the name field shown below.



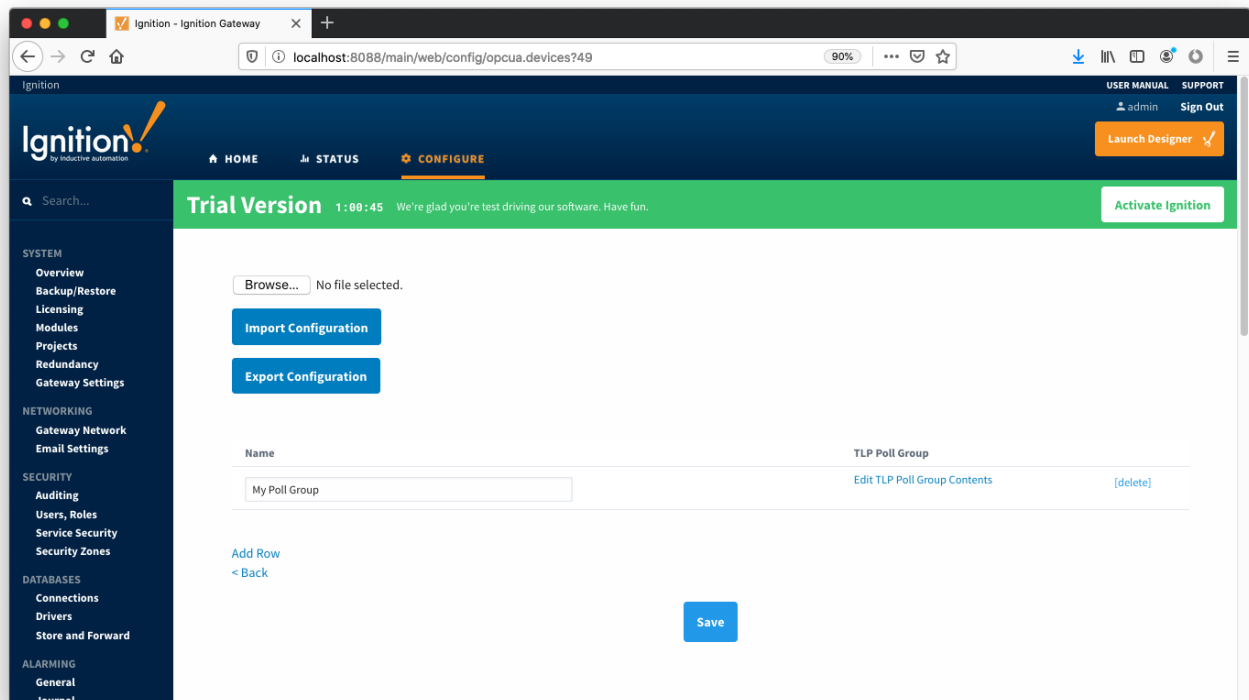
At this point you can create a poll group using one or more TLP templates as shown below. The parameters that must be set here are:

- TLP Template Name
 - The TLP template to use for this poll group
 - The TLP templates available to choose from are based on the TLP templates defined for this device
- Logical Number
 - The 'L' parameter of this TLP template.
- Tag Folder Path
 - The tag folder path to use as the base for all TLP tags in this TLP template.
- Scan Rate
 - The rate (in seconds) at which to poll all of the TLPs in this TLP template.

When complete, click the 'Save' button to save the TLP poll group.

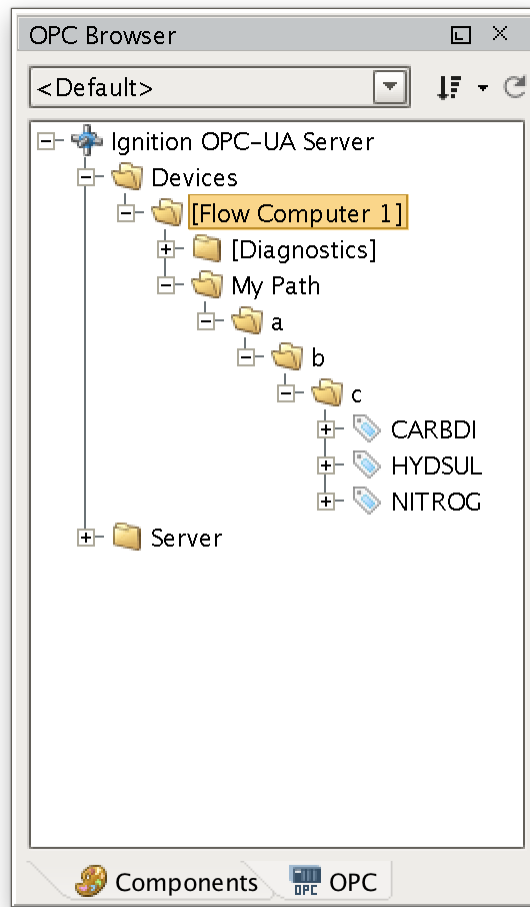


Create as many TLP poll groups as you'd like. Once complete, click the 'Save' button at the bottom of the page below.



Viewing Device TLP Data

At this point the ROC device should be fully configured. To view data in Ignition launch Ignition Designer and open the OPC Tag Browser as shown below. You should see the tags being polled from the ROC device as shown below. You can use these tags as any standard OPC tags in Ignition.



Viewing Alarm, Event, and History data

To view record data which includes ROC alarms, events, and history data you must have MQTT Transmission installed on the instance with the EFM Emerson ROC driver. In addition, the following must be set up.

- Central Gateway
 - Install and configure MQTT Engine
 - Add/update the Server configuration to point to the MQTT server
 - Install MQTT Recorder and configure it to use SQL database connection (previously set up in the Ignition Gateway)
- Edge Gateway
 - Install and configure MQTT Transmission
 - Add/update the Transmitter configuration and/or the Tag folders so that an Edge Node is reporting with a Group ID, Edge Node ID, and Device ID (for example: G1, E1, D1)
 - Add/update the Server configuration to point to the MQTT server
 - Click the "Transmission Control/Refresh" Tag to make sure it is connected and reporting.
 - Install and configure EFM Emerson ROC module
 - **[IMPORTANT]** Must have a Sparkplug Group ID, Edge Node ID, and Device ID specified in the device configuration that matches the Edge Node/Device that MQTT Transmission is reporting on
 - The Alarm, Event, and/or History poll rates in the Emerson ROC driver device configuration must be greater than zero depending on which data you wish to collect.

When all of these conditions are met, alarm, event, and/or history data will be collected, published, and stored via MQTT Recorder in the configured database.

Additional Resources

- Inductive Automation's Ignition download with free trial
 - <https://inductiveautomation.com/downloads/>
- Azure Injector download with free trial
 - <https://inductiveautomation.com/downloads/third-party-modules>
- Questions about this tutorial?
 - 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
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