

ABB Totalflow: Configuration

ABB Totalflow provides a configuration section to the Ignition Gateway that can be seen in the Configure section of the Ignition Gateway web UI. There is one configuration page - EFM ABB TOTALFLOW Settings. The page contains two tabs: Array-Register Definitions and EFM Mappings.

Support Files

The Cirrus Link default Array-Register Definitions and EFM Mapping files can be used as a starting point for configuring the EFM ABB Totalflow module.

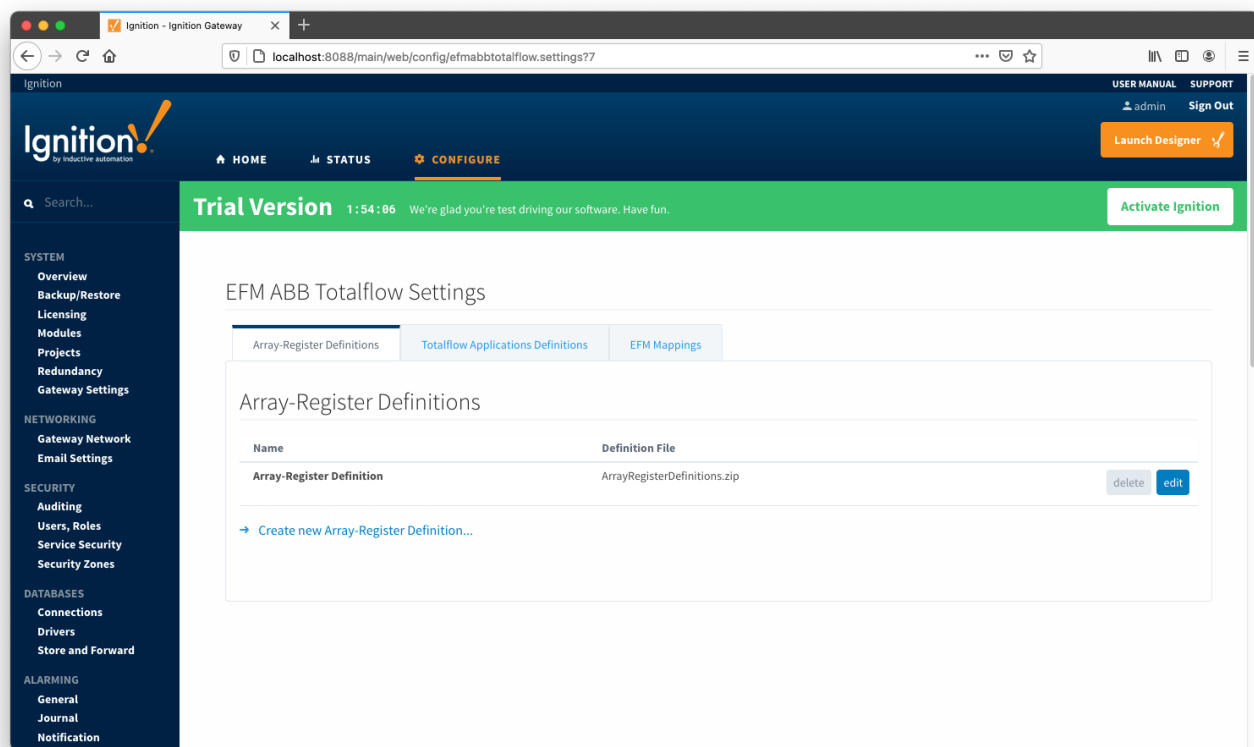
[Download Array-Register Definitions zip file here](#)

[Download Meter Periodic Mapper CSV file here](#)

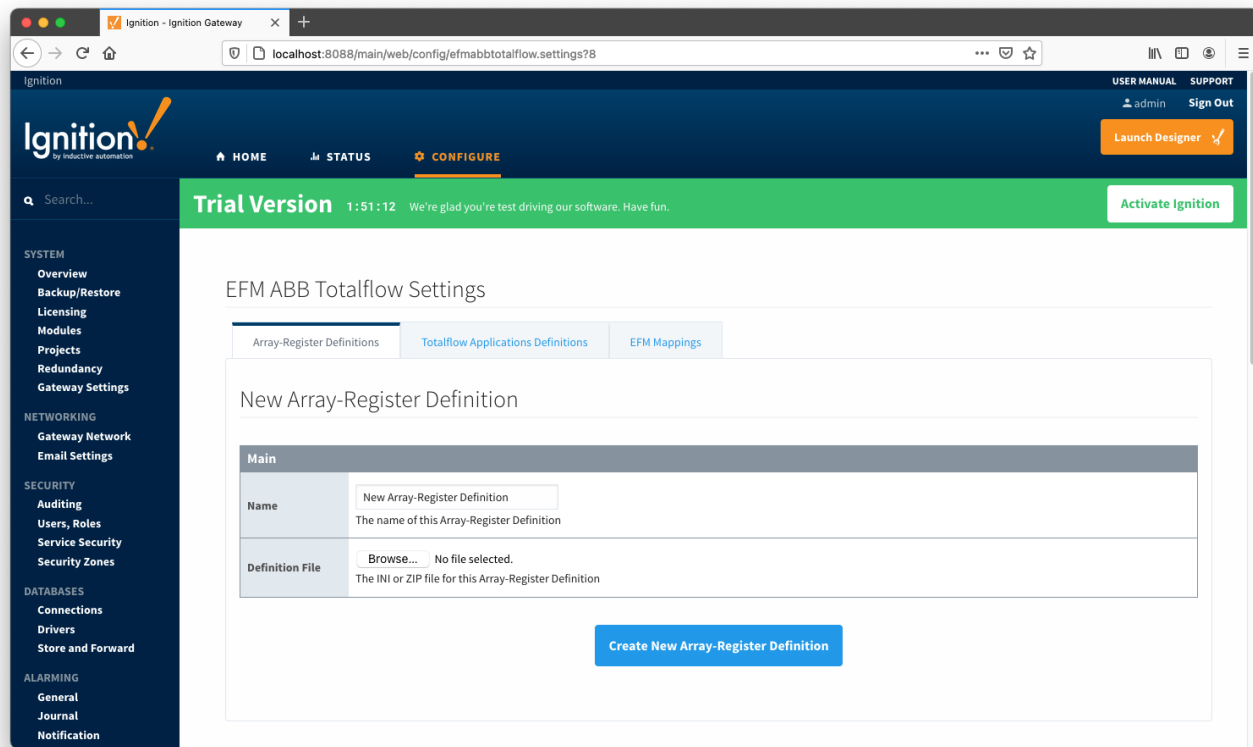
(Note these need to be thoroughly tested and reviewed in your application before they are put into production)

Array-Register Definitions

The first tab contains settings for creating sets of Array-Register Definitions:



New Array-Register Definitions can be created by following the 'Create new Array-Register Definition' link as shown below:



Main Properties

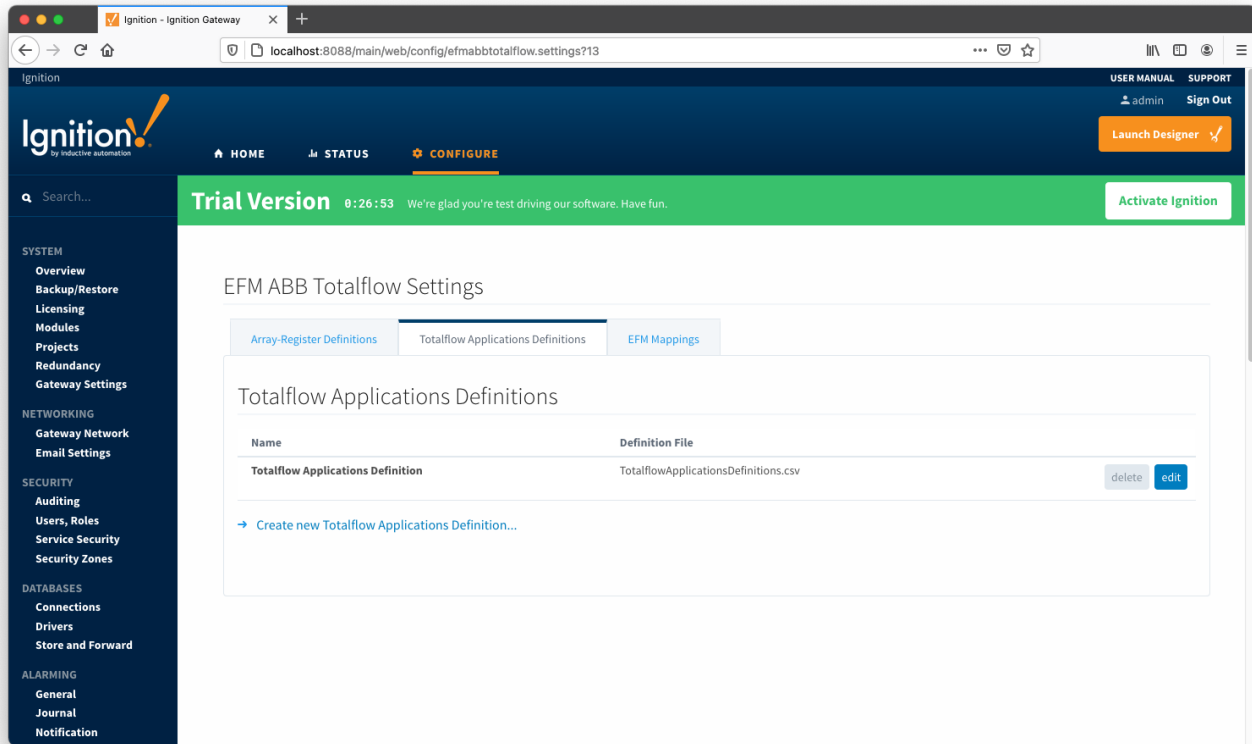
- **Name**
 - This is the friendly name of the Array-Register Definition being created
- **Definition File**
 - Click the 'Browse' button to select either ZIP archive containing INI files or individual INI file for this Array-Register Definition

Totalflow Applications Definitions

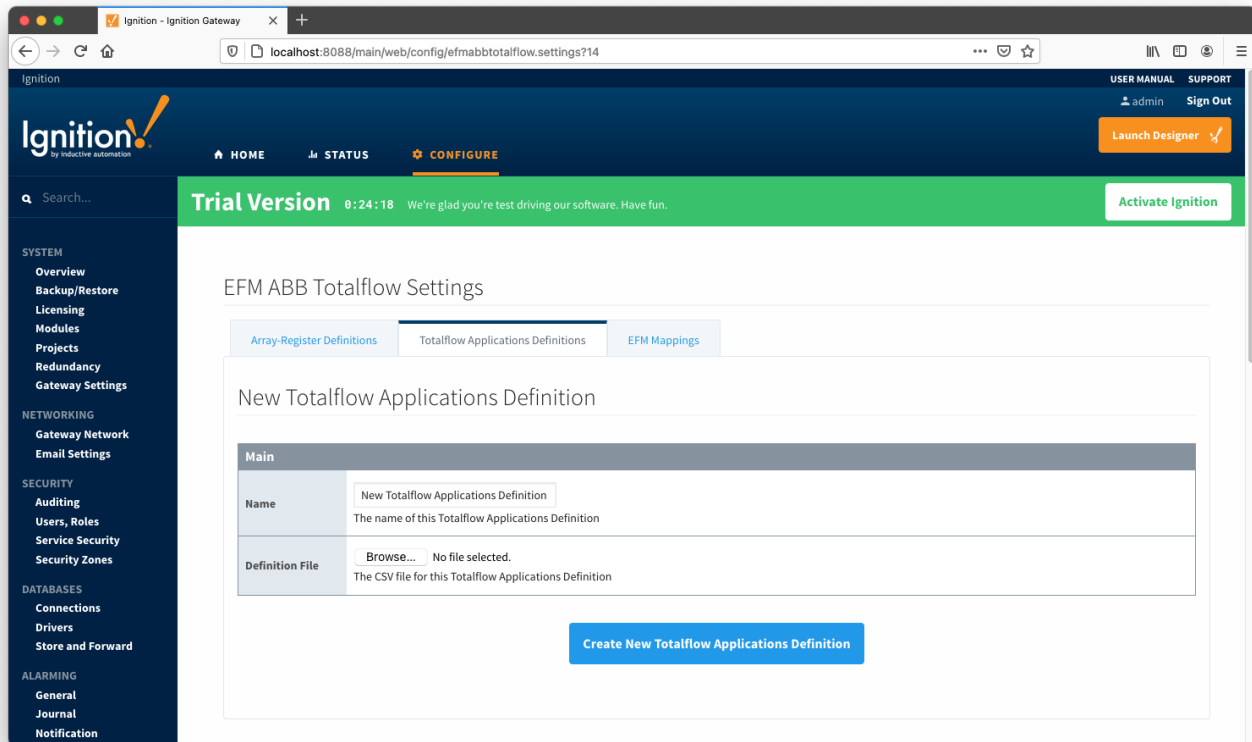
The Totalflow Applications Definitions provide the driver with application information such as:

- Enumeration number
- Name
- Type
- An optional flag (SU) that indicates that this is a 'Selectable Unit' application
- Part number(s)

The Totalflow Applications Definitions tab allows user to add new application definitions or modified existing ones that driver was build with. The tab shows all uploaded application definitions files as shown below:



A new Totalflow Applications Definition can be added by clicking on the "Create new Totalflow Applications Definition..." link.



Main Properties

- **Name**
 - This is the friendly name of the Totalflow Applications Definition being created
- **CSV File**
 - Click the 'Browse' button to select CSV file for this Totalflow Applications Definition

EFM Mappings

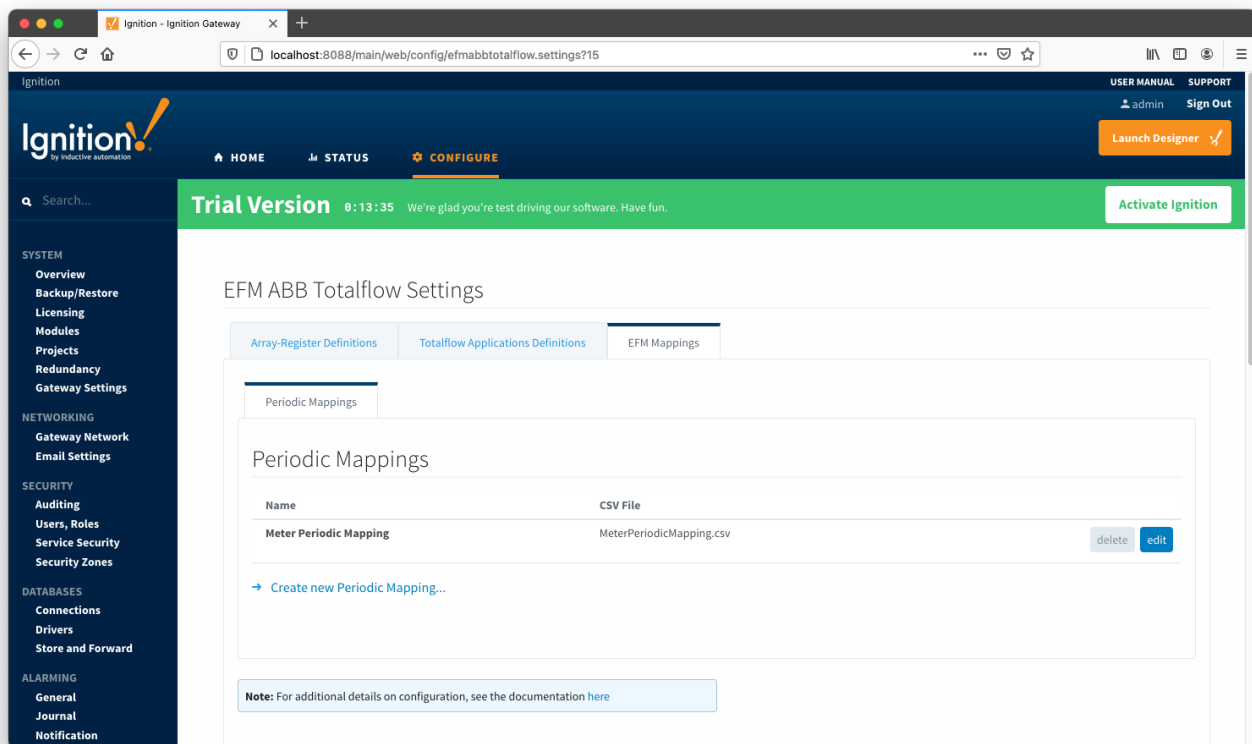
The EFM Mappings are used for publishing EFM Records representing Daily and Periodic History entries that are polled from a device.

Periodic Mappings

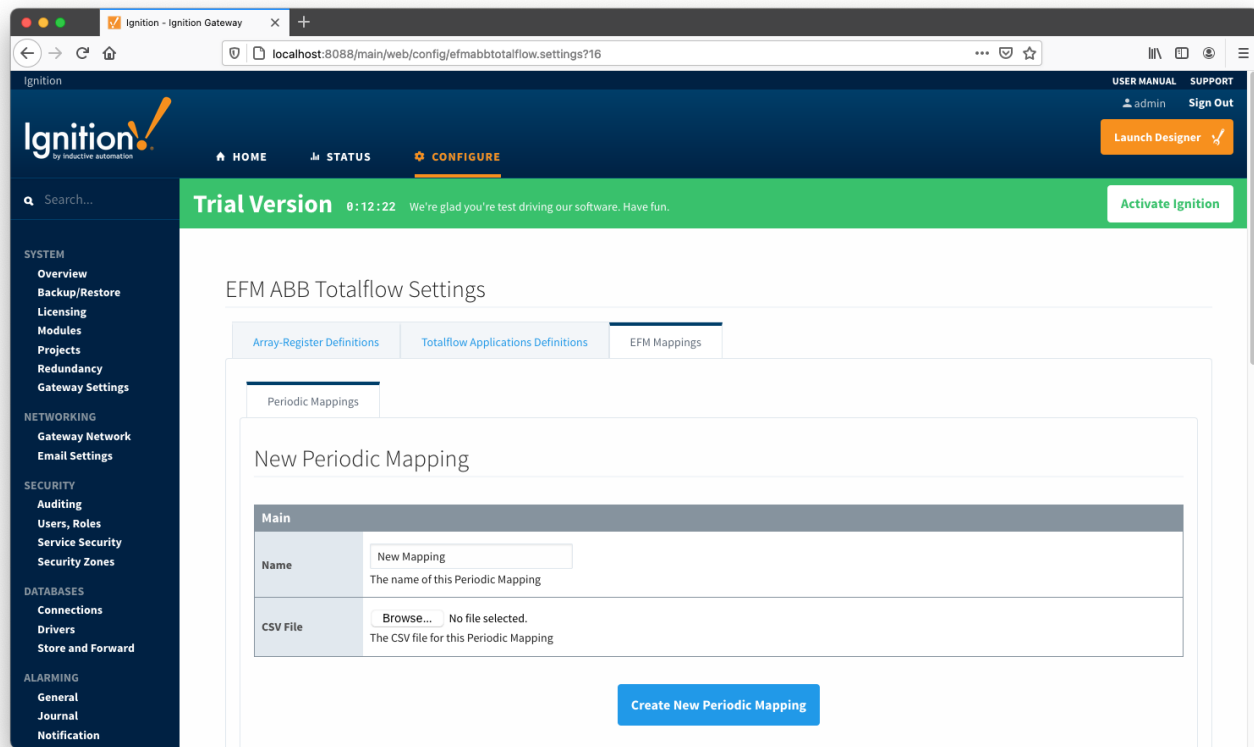
The periodic mapping files are used for building up EFM Daily and Periodic History Records. They define column names for record's fields.

Click [here](#) for more details on the content of these mapping files.

The Periodic Mappings tab shows all uploaded Periodic Mapping files as shown below:



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

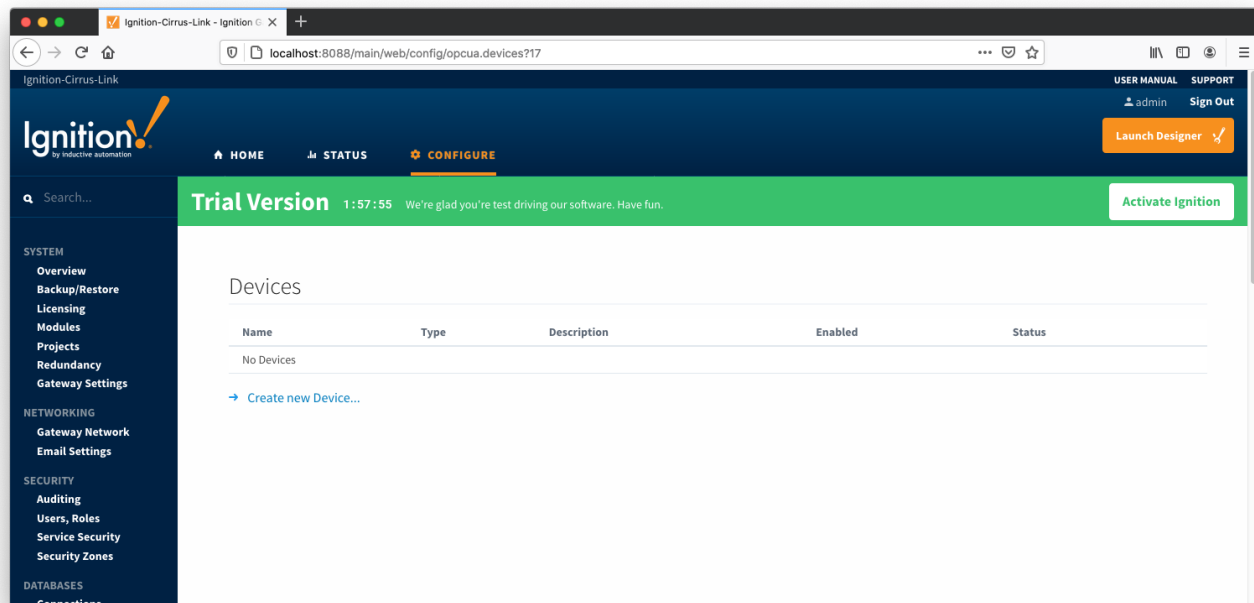


Main Properties

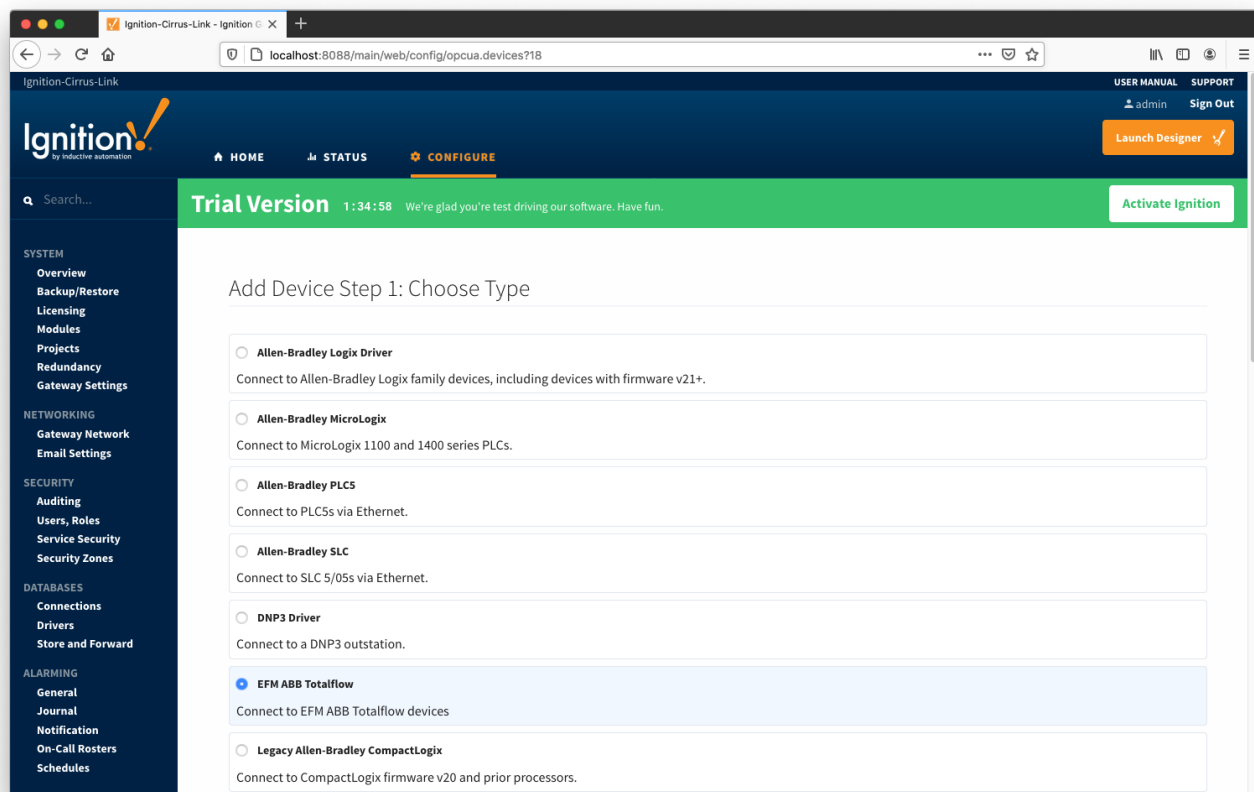
- **Name**
 - This is the friendly name of the Periodic Mapping being created
- **CSV File**
 - Click the 'Browse' button to select CSV file for this Periodic Mapping

ABB Totalflow Device Connection

Device connection for ABB Totalflow module can be configured via OPC-UA SERVER. Selecting *OPC-UA SERVER Devices* opens respective configuration page as shown below:



New ABB Totalflow device can be created by following the 'Create new Device...' link and choosing 'EFM ABB Totalflow' device as shown below:



This opens the 'New Device' configuration mage for ABB Totalflow Device:

Ignition - Ignition Gateway

localhost:8088/main/web/config/opcua.devices?33

80%

Settings

MQTT RECORDER

Settings

MQTT TRANSMISSION

History

Settings

Import Policies

Array-Register Template Import Policy

UPDATE

Array-Register Template Import Policy selector.
(default: UPDATE)

Poll Group Import Policy

UPDATE

Poll Group Import Policy selector.
(default: UPDATE)

DB2 Protocol

Station ID

ABB Totalflow Station ID

Keep Alive

0

Connection keep alive time (in seconds). To disable 'keep-alive' polls, set to 0.
(default: 0)

Host Timeout

3000

Timeout (in milliseconds) to wait for a reply from the host.
(default: 3,000)

Poll EOT Timeout

700

Time (in milliseconds) to wait to ensure there are no more packets to receive.
(default: 700)

Auto-Discovery EOT Timeout

2000

Time (in milliseconds) to wait to ensure there are no more packets to receive.
(default: 2,000)

Number Retries

3

Number of retries if DB2 request is NAKed.
(default: 3)

Supervisory Frames

3

Number of supervisory frames.
(default: 3)

Password

DB2 Protocol Security Code. If device is set with default security code, leave blank.

Password

Re-type password for verification.

RBAC

RBAC Enabled

☐

A flag indicating that RBAC is enabled on the device and therefore the X_RBAC frame needs to be included in the DB2 request message.

Operator ID

Set Operator ID if RBAC is enabled on the device.

Ignition - Ignition Gateway

localhost:8088/main/web/config/opcua.devices733

80%

RBAC	
RBAC Enabled	<input type="checkbox"/> A flag indicating that RBAC is enabled on the device and therefore the X_RBAC frame needs to be included in the DB2 request message.
Operator ID	<input type="text"/> Set Operator ID if RBAC is enabled on the device.
Password	<input type="password"/> Set Operator password if RBAC is enabled on the device.
Password	<input type="password"/> Re-type password for verification.

Date/Time	
Date Time Offset	<input type="text"/> The date time offset of the Totalflow device clock from the Ignition system running this driver in seconds.

Records	
Alarm Source	<div>PERIODIC_HISTORY_RECORDS</div> <div>Alarm Source Selector (i.e. Periodic History or Alarm Log record). (default: PERIODIC_HISTORY_RECORDS)</div>
Alarm Scan Rate	<div>-1</div> <div>The rate in seconds that Alarm Log Records are scanned. To disable Alarm polls, set to -1. Set to 0 to poll on notification from the 'Record Info' scanner. (default: -1)</div>
Event Scan Rate	<div>0</div> <div>The rate in seconds that Event Records are scanned. To disable Event polls, set to -1. Set to 0 to poll on notification from the 'Record Info' scanner. (default: 0)</div>
Periodic History Scan Rate	<div>0</div> <div>The rate in seconds that Periodic History Records are scanned. To disable Periodic History polls, set to -1. Set to 0 to poll on notification from the 'Record Info' scanner. (default: 0)</div>
Daily History Scan Rate	<div>0</div> <div>The rate in seconds that Daily History Records are scanned. To disable Daily History polls, set to -1. Set to 0 to poll on notification from the 'Record Info' scanner. (default: 0)</div>
Record Info Scan Rate	<div>-1</div> <div>The rate in seconds for 'Record Info Registers' (i.e. History, Event and Alarm record capacity, last sequence number, etc.) to be scanned. If new Event, History, or Alarm Log records are detected, respective poller(s) will be notified. To disable 'RecordInfo' polls, set to -1. Set to 0 for one-shot 'Record Info' poll. (default: -1)</div>
Max Records To Read	<div>100</div> <div>Maximum number of records to read in one poll. (default: 100)</div>
Periodic Mapping	<div>- none -</div> <div>The mapping of Totalflow LOG_PERIOD and DAILY structures to Flowcal Meter Periodic Transactions.</div>

Ignition - Ignition Gateway

localhost:8088/main/web/config/opcua.devices?33

80%

Daily History Scan Rate: 0
The rate in seconds that Daily History Records are scanned. To disable Daily History polls, set to -1. Set to 0 to poll on notification from the 'Record Info' scanner.
(default: 0)

Record Info Scan Rate: -1
The rate in seconds for 'Record Info Registers' (i.e. History, Event and Alarm record capacity, last sequence number, etc.) to be scanned. If new Event, History, or Alarm Log records are detected, respective poller(s) will be notified. To disable 'RecordInfo' polls, set to -1. Set to 0 for one-shot 'Record Info' poll.
(default: -1)

Max Records To Read: 100
Maximum number of records to read in one poll.
(default: 100)

Periodic Mapping: - none -
The mapping of Totalflow LOG_PERIOD and DAILY structures to Flowcal Meter Periodic Transactions.

Records Signature

Enable Signature: ☐ Enables a digital signature field on all Records.

Hashing Algorithm: Choose One
The hashing algorithm to use when generating the digital signature.

Password:
The password used to generate the PBE secret key for encrypting the digital signature.

Password:
Re-type password for verification.

Sparkplug

Group ID: Group_e1efa8ae-c8c
An ID representing a logical grouping of Edge Nodes and Devices.

Edge Node ID: EdgeNode_5a3186a0-71e
An ID representing an Edge or Network (EoN) Node.

Device ID: Device_9bf85cf9-cf7
An ID representing a Device.

Miscellaneous

Use INI Categories: ☒ Append INI Category names to tag folder paths.

Create New Device

inductive automation
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General

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

Device

- **Board Type**
 - G3 - ABB G3 Flow Computer
 - G4 - ABB G4 Flow Computer
 - NGC - ABB Natural Gas Chromatograph

Connectivity

- **Hostname**
 - Hostname or IP address of the device
- **TCP Port**
 - TCP Port of the device.
- **Socket Timeout**
 - TCP socket operation (i.e. connect and read) timeout in seconds. A timeout of zero is interpreted as an infinite timeout. To use system default, set to -1.
- **Connection Type**

- Connection type selector. Either maintain one connection or establish new connection per each transaction. The ON_DEMAND option is recommended.
 - PERSISTENT - The ABB Totalflow driver keeps a TCP connection open and this connection is being shared by all polling threads.
 - ON DEMAND - A TCP connection is opened by each polling thread when it needs to poll and closed upon completion. Note that ABB Totalflow device still allows only one connection at a time.

Auto Setup

- **Enable auto-discovery**
 - Enables ABB Totalflow driver to run application auto-discovery at startup and re-configuration.
- **Add All Totalflow Application Definitions**
 - Automatically add all Totalflow Applications definitions configured within the ABB Totalflow driver module.
- **Add All Array-Register Definitions**
 - Automatically add all the Array-Register definitions configured within the ABB Totalflow driver module.
- **Auto-Generate Templates and Poll Groups**
 - Automatically generates default Array-Register templates and default poll group on startup and reconfiguration. Note that the driver will create a default Array-Register template for specific application type (enumeration) if the following criteria are met
 - Polling is enabled in the 'Totalflow Applications Panel' for at least one of applications of this type.
 - There should not be no custom template(s) for this application type.

Import Policies

- **Array-Register Template Import Policy**
 - UPDATE - update existing Array-Register Templates
 - REPLACE - replace existing Array-Register Templates
- **Poll Group Import Policy**
 - UPDATE - update existing poll groups
 - REPLACE - replace existing poll groups

DB2 Protocol

- **Station ID**
 - Station ID of this ABB Totalflow device.
- **Keep Alive**
 - Time interval (in seconds) between 'keep-alive' polls that may be required to maintain PERSISTENT connection if ABB Totalflow device is configured to disconnect on inactivity. To disable 'keep-alive' polls, set to 0.
- **Host Timeout**
 - Timeout (in milliseconds) to wait for a reply from the host. The default value is 3000 milliseconds.
- **Poll EOT Timeout**
 - Time (in milliseconds) to wait to ensure there are no more packets to receive. The default value is 700 milliseconds.
- **Auto-Discovery EOT timeout**
 - Time (in milliseconds) to wait to ensure there are no more packets to receive during auto-discovery. The default value is 2000 milliseconds.
- **Number Retries**
 - Number of retries if DB2 request is NAKed.
- **Supervisory Frames**
 - Number of DB2 supervisory frames.
- **Password**
 - DB2 Protocol Security Code. If device is set with default security code of 0000, leave blank.

RBAC

- **RBAC Enabled**
 - Enables Role-Based Access Control (RBAC) is enabled on the device and therefore the X_RBAC frame needs to be included in the DB2 request message.
- **Operator ID**
 - Operator ID. If RBAC is not enabled on the device, leave blank.
- **Password**
 - Operator password. If RBAC is enabled on the device, leave blank.

Date/Time

- **Date Time Offset**
 - The date time offset of the Totalflow device clock from the Ignition system running this driver in seconds.

Records

- **Alarm Source**
 - Alarm source selector.
 - PERIODIC-HISTORY_RECORDS - alarms are obtained from Periodic History records.
 - ALARM_LOG_RECORDS - alarms are obtained from Alarm Log records.
- **Alarm Scan Rate**

- The rate in seconds that Alarm Log Records are scanned. Set to 0 to poll on notification from the 'Record Info' scanner. To disable Alarm polls, set to -1.
- **Event Scan Rate**
 - The rate in seconds that Event Records are scanned. Set to 0 to poll on notification from the 'Record Info' scanner. To disable Event polls, set to -1.
- **Periodic History Scan Rate**
 - The rate in seconds that Periodic History Records are scanned. Set to 0 to poll on notification from the 'Record Info' scanner. To disable Periodic History polls, set to -1.
- **Daily History Scan Rate**
 - The rate in seconds that Daily History Records are scanned. Set to 0 to poll on notification from the 'Record Info' scanner. To disable Daily History polls, set to -1.
- **Record Info Scan Rate**
 - The rate in seconds for the 'Record Info Registers' (i.e. History, Event and Alarm record capacity, last sequence number, etc.) to be scanned. If new Event, History, or Alarm Log records are detected, respective poller(s) will be notified. To disable 'RecordInfo' polls, set to -1. Set to 0 for one-shot 'Record Info' poll.
- **Max. Records to Read**
 - Maximum number of records to read in one poll.
- **Periodic Mapping**
 - The mapping of Totalflow LOG_PERIOD and DAILY structures to Flowcal Meter Periodic Transactions.

Records Signature

- **Enable Signature**
 - Enables a digital signature field on all Records.
- **Algorithm**
 - The hashing algorithm to use when generating the digital signature.
- **Password**
 - The password used to generate the PBE secret key for encrypting the digital signature.

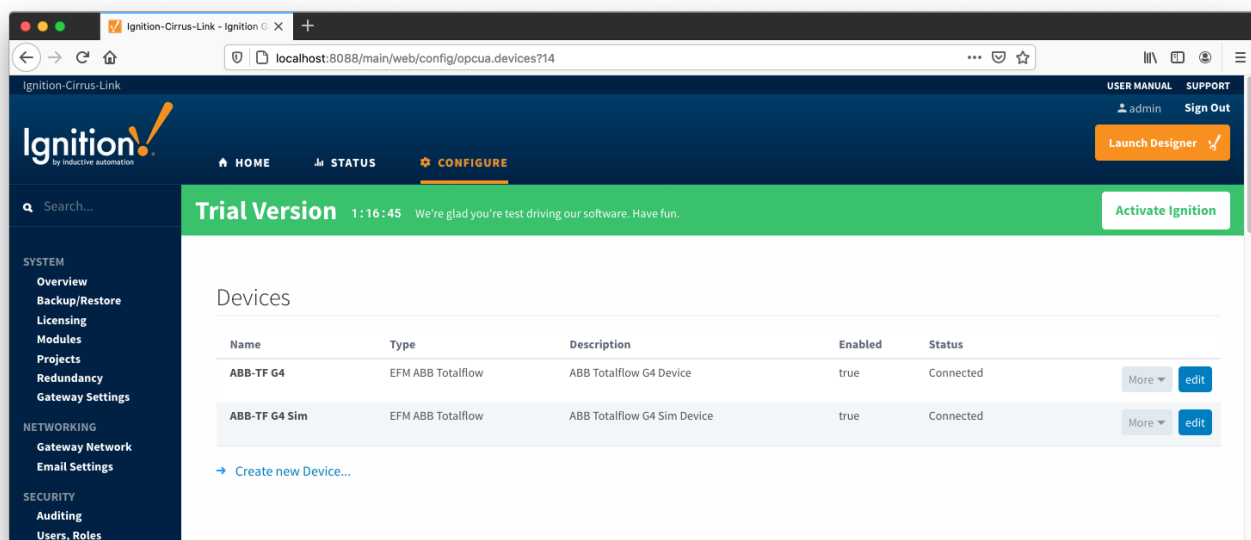
Sparkplug

- **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

Miscellaneous

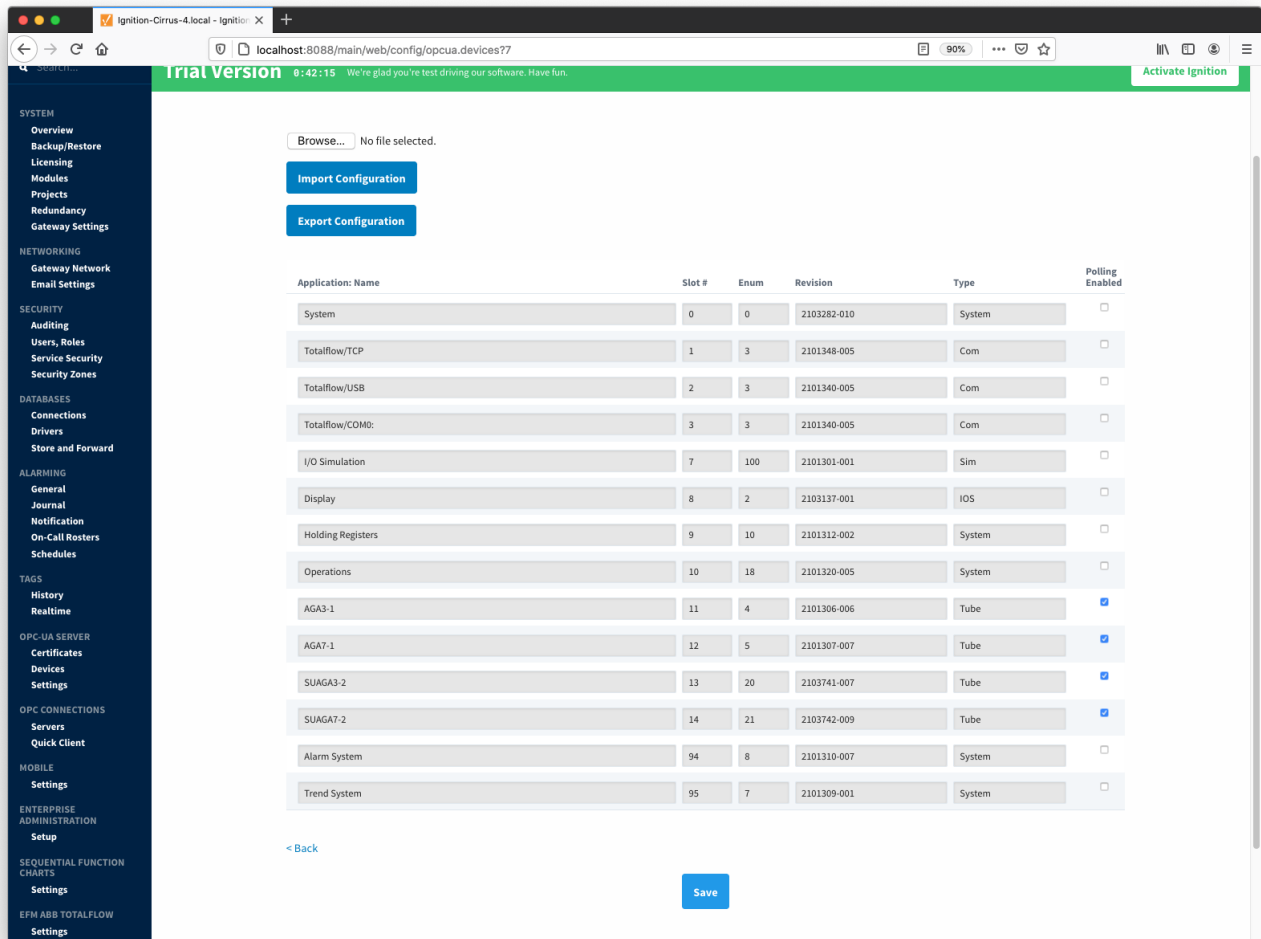
- **Use INI Categories**
 - Enables appending INI Category names to tag folder paths

When all ABB Totalflow devices are configured, the Devices page will look as shown below:

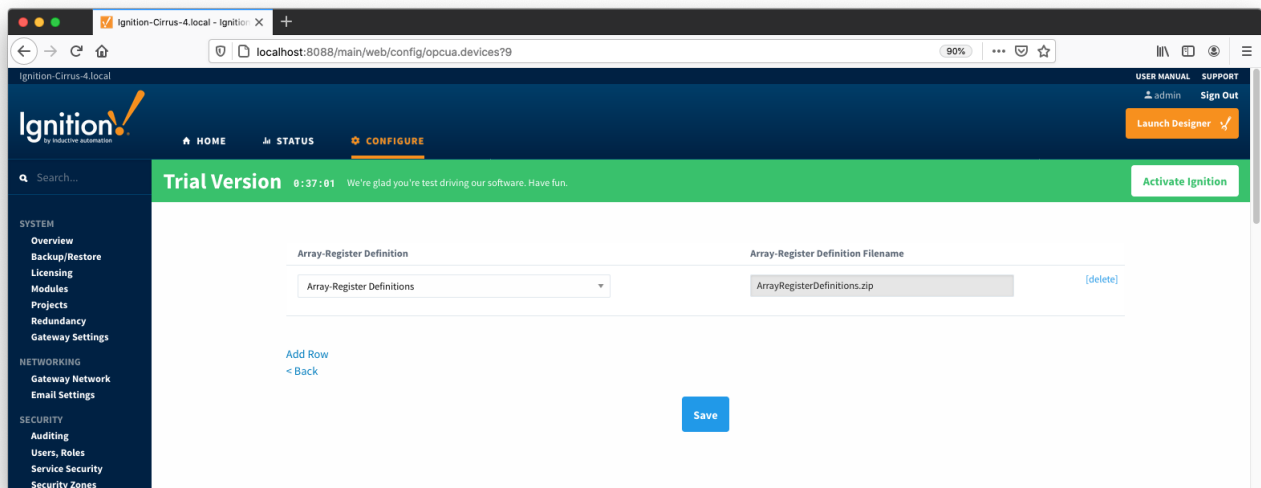


To finish configuring ABB Totalflow device, the following four things (as detailed in EFM ABB Totalflow Quickstart document) need to be done:

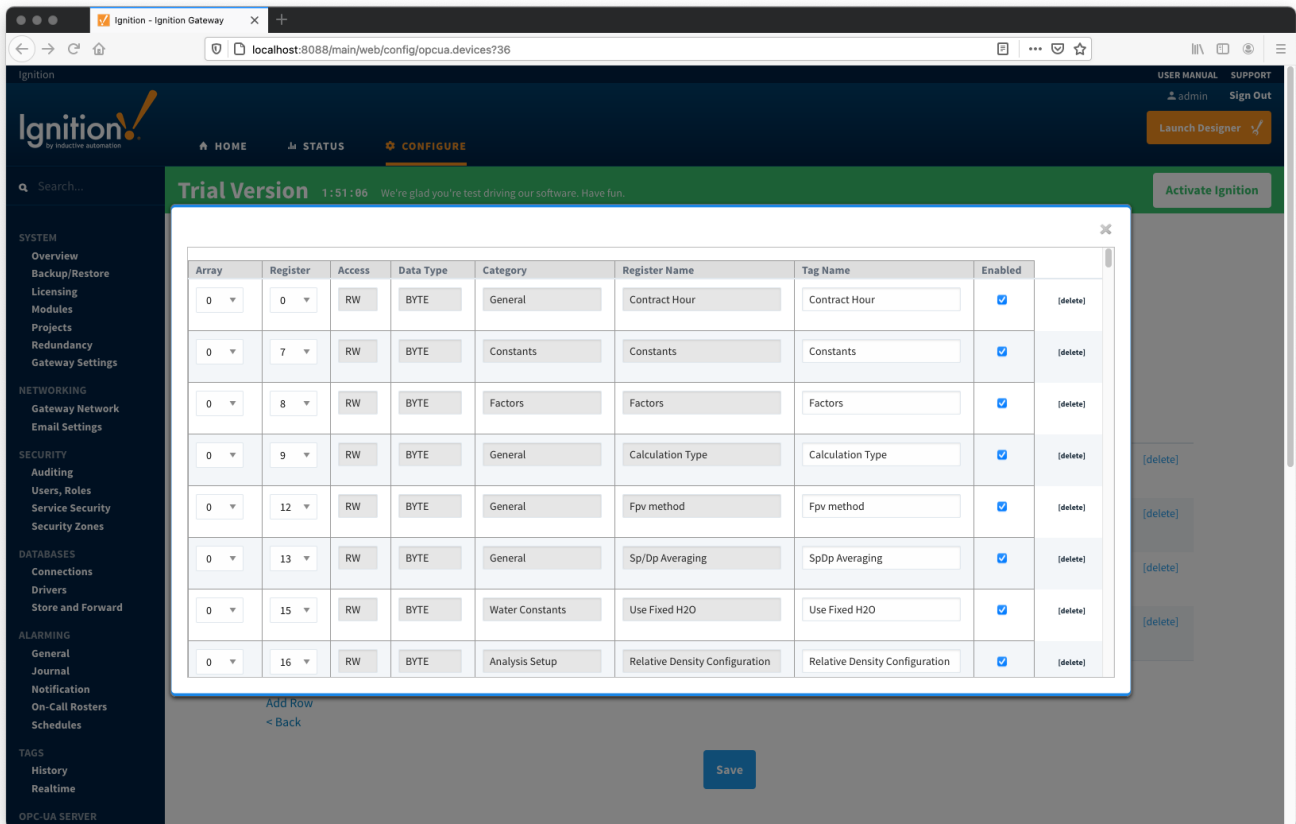
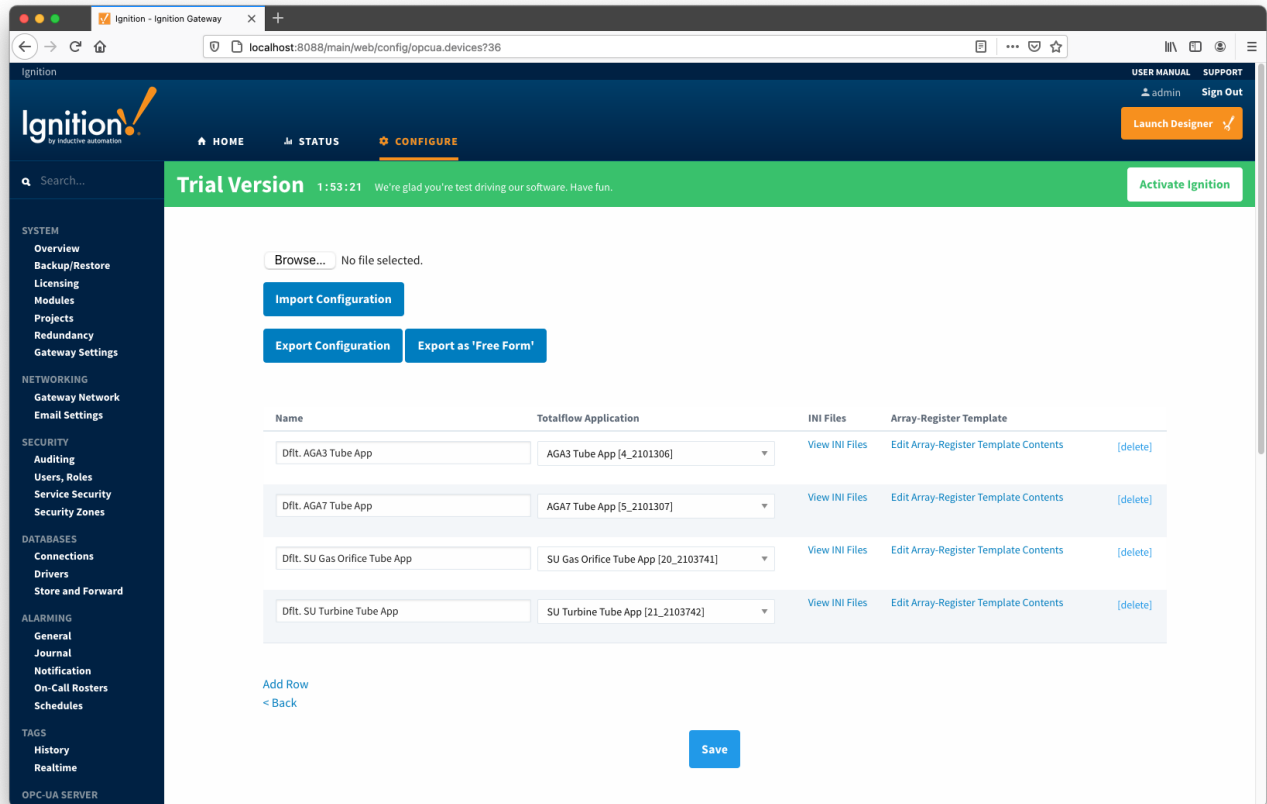
- Review auto-discovered applications and choose which application driver needs to poll.



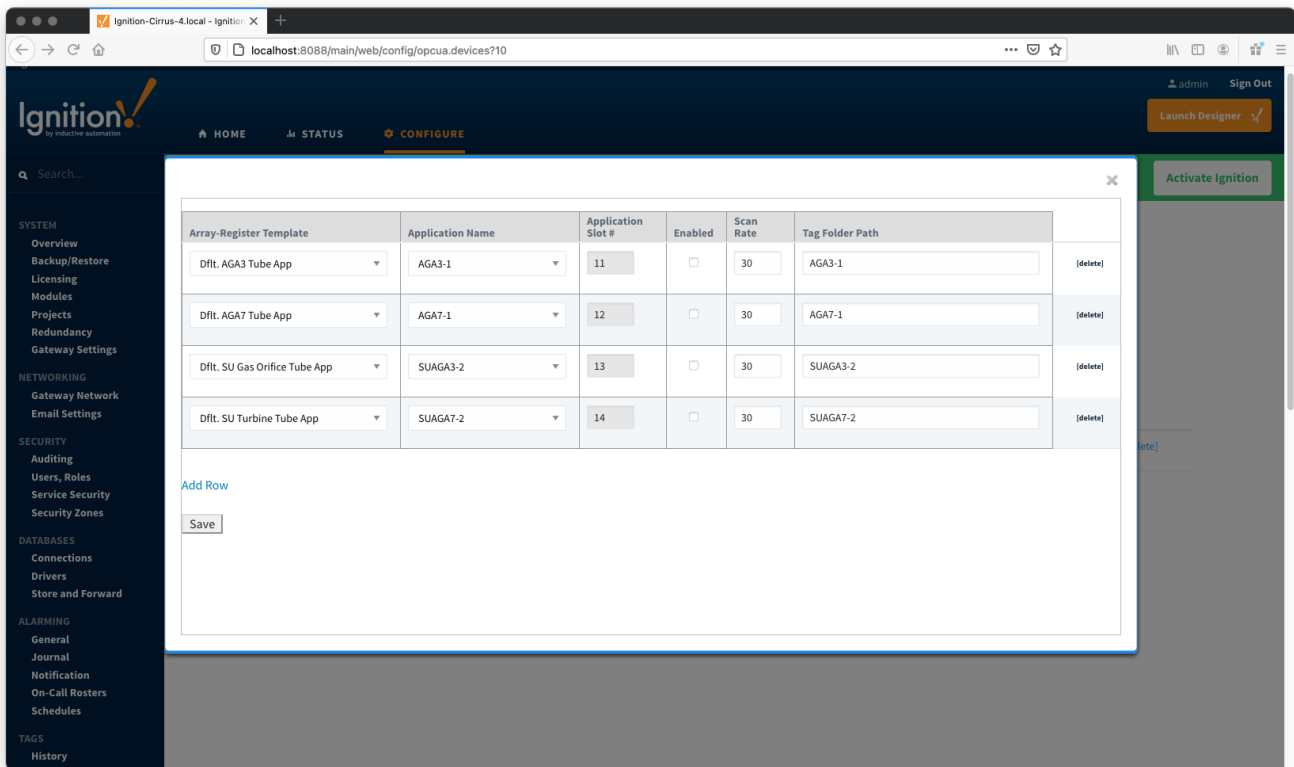
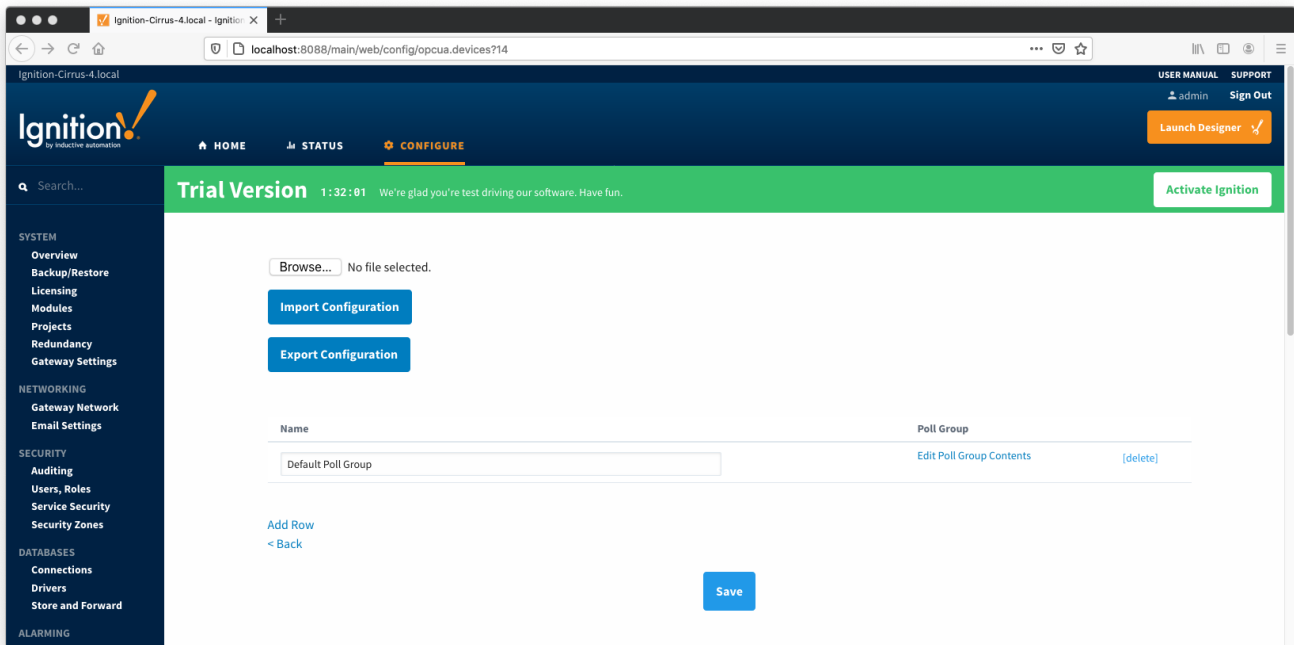
- Apply appropriate global Array-Register definitions (only if the "Add All Array-Register Definitions" configuration option was not enabled).



- Review default Array-Register Templates generated based on provided Array-Register definitions per each Totalflow application enumeration obtained during auto-discovery. Note that default Array-Register Template entry will be generated for application enumeration only if at least one of installed application of this type is enabled. Default Array-Register templates can be modified by either editing or by importing an Array-Register template CSV file.



- Configure default Poll Group by enabling poll group entries as shown below:



When this is done, the 'Devices' configuration page will show the 'Status' for each device changed from 'Connected' to the 'Polling' state.