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.

Common File Exchange (CFX) can also be used for these record data.

Prerequisites

- Knowledge of Ignition and Cirrus Link Module Installation process
- Knowledge of MQTT Engine and MQTT Transmission configurations
- Installation of MQTT Engine, MQTT Transmission and MQTT Recorder (v4.0.x if using Ignition 8.1.x)
- Installation of latest EFM Emerson ROC module

Definitions

Module	Parameter	Definition
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 Emerson ROC Settings	EFM 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.
EFM Emerson ROC Settings	EFM 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 Device Connection	TLP Definitions	These are a subset of the global TLP definition files that apply to a specific device.
OPC UA Device Connection	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).
OPC UA Device Connection	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.

> ⊘ Review the ERD: TLP Definitions and EFM Mapping CSV formats for details on the required file formats

⊘

Configuration Steps

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

1. From EFM Emerson ROC Settings, define/upload the global TLP definitions available for all ROC devices in this Ignition instance

2. From EFM Emerson ROC Settings, define/upload the EFM Mappings for all ROC devices in this Ignition Instance

3. From OPC UA Device Connections, create the device connection to the ROC

4. For this device Connection, specify the subset of TLP definitions that this specific ROC uses

5. For this device connection, create TLP Template(s) which define groups of TLPs should be polled as a logical group

6. For this device connection, create TLP Poll Group(s) which specify the logical parameters associated with a given TLP Template

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.
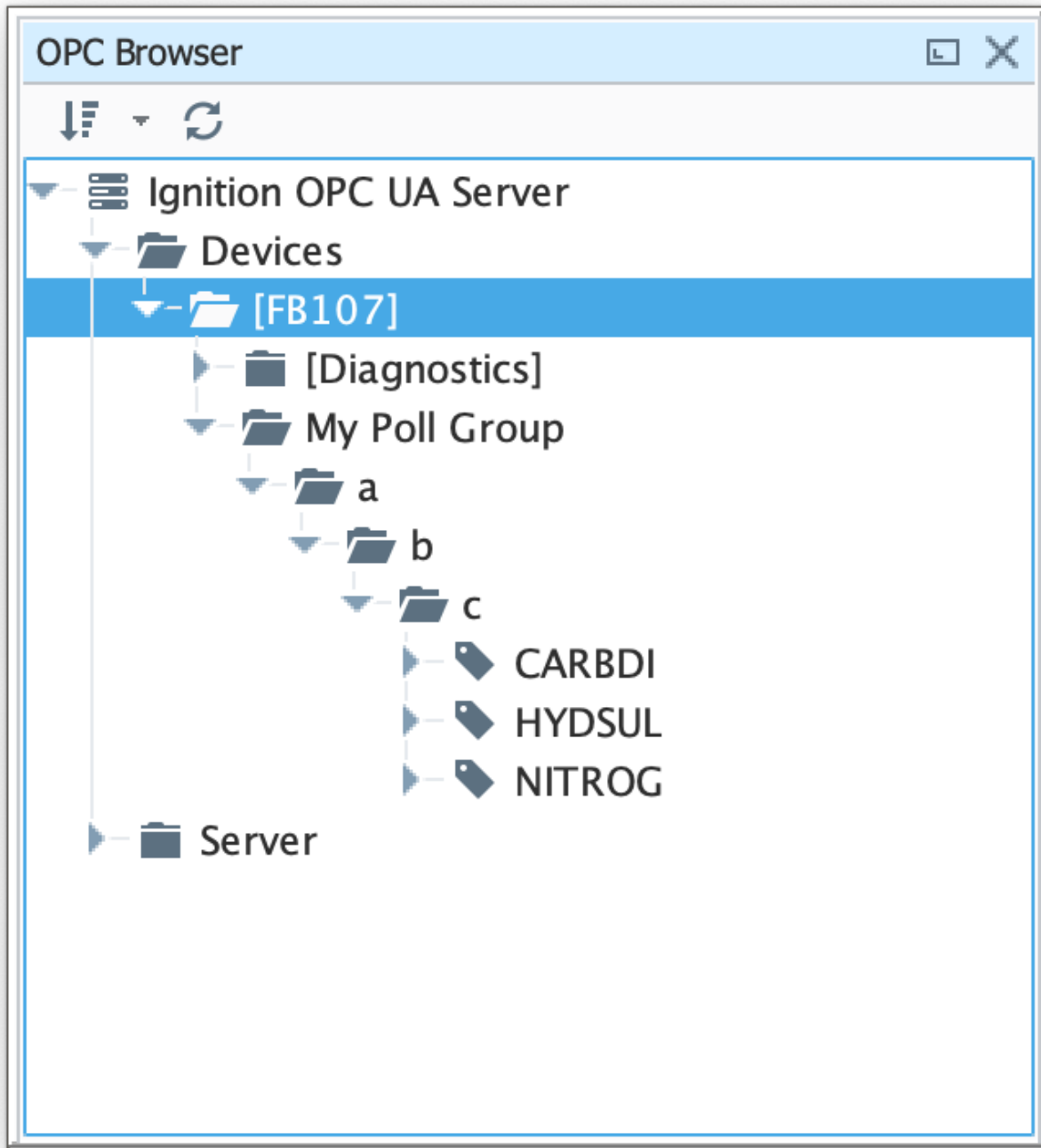
Viewing Record Data

Record data can be viewed in a couple of ways:

- Using Common File Exchange (CFX)
- Publishing as an immutable record object

Using Common File Exchange (CFX)

If using Common File Exchange (CFX), the record data will be stored/maintained in CFX.MD5 files on the local Ignition instance. See the Emerson ROC Device Connection configuration for more details.

These files can be transferred from the Edge device using any method you choose such as FTP but can also be published using the MQTT Transmission File Publishing option.

To do this, you will need to configure an MQTT Transmission File Record and set the CFX File Transfer parameter to point to that File Record and the CFX files can then be automatically published. See the Creating and Publishing Common Exchange File CFX tutorial for details.

Publish as an immutable record object

To publish 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:

At the Central Gateway:

- Setup an SQL database connection
- Configure MQTT Engine
    - Add/update the Server configuration to point to the MQTT server
- Configure MQTT Recorder and configure it to use SQL database connection (previously set up in the Ignition Gateway)

At the Edge Gateway

- Configure MQTT Transmission
    - If you do not have a Transmitter configured, create an MQTT Transmitter and set the Sparkplug Settings to the unique Group and Edge Node ID values generated by the Device Connection configuration.
    - If a Transmitter already exists, for example to publish the polled/live data, you can edit the Group and Edge Node IDs to match the existing Sparkplug Edge Node created by the Transmitter.
    - Add/update the Server configuration to point to the MQTT server
    - From Ignition Designer, use the MQTT Transmission 'Refresh' Mechanism to make sure it is connected and reporting.
- Configure EFM Emerson ROC module
    - 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.

    > ⊙ Must have a Sparkplug Group ID and Edge Node ID specified in the Device Connection configuration that matches a
    > Sparkplug Edge Node that MQTT Transmission is reporting on

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
    - 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
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