

HOW-TO GUIDE Store Ignition Historian Data in Canary

This Technical Note contains all the information required to store Ignition historian data in Canary.

Element8 Tech Note

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1.Introduction

Canary can be configured as an Ignition Data Historian. This technical note describes the principal points to follow for a successful configuration.

Canary is a single historian solution which is a performant time-series database. It consists of three components, Data Collection, Data Storage and Data Analytics. Canary's NoSQL data historian is the engine that delivers enterprise level solutions. HTML based trending, dashboarding and automated solutions are delivered through the web-based reporting tool Axiom.

Ignition is an industrial application platform for collecting data, designing and deploying industrial applications throughout an enterprise. It empowers the creation of any kind of industrial application including SCADA, MES, IIoT, reporting, alarming and more.

To set up the connection between these two components, you will need to install a Canary module in Ignition and configure the connection to write the data to Canary.

There are 4 main steps that you need to follow to connect, store and forward data from and to Ignition and Canary:

- 1. Basic Information
- 2. Download and install Canary module for Ignition
- 3. Configuration of writing data to Canary
- 4. Configuration of reading data from Canary

These steps are described in greater detail in the following sections

2.Basic Information

We have a general architecture here with simulated PLC's that are producing data and being forwarded to an Ignition Server. This server has a VM and we will be installing the Canary Module to read data out of that server and move it to another VM, which is the Canary Server where the Canary system is installed.



The Canary System will make it easy to process your data by using Ignition's Tag Historian Module along with the Canary Module to write Ignition data to the Canary NoSQL Historian database. It can read both raw and aggregated process data back from Canary and publish it to Ignition controls.

The whole idea is to eliminate the use and management of a traditional historical database.

3. Download and install Canary Module for Ignition

You will need to download the Canary Module for Ignition. It is free to download by clicking on the link below. It will take you to the Canary website where you can download the module:

The Canary Module for Ignition

canary	Product Pricing Partners Support Contact Try Canary
The Canary Module Power Your Ignition Solution With The	e for Ignition Canary NoSQL Historian
The Canary System will make it easy to use your process data:	Download Module
 Use Ignition's Tag Historian Module along with the C Module to write Ignition data to the Canary NoSQL Historian database 	Canary First Name*
 Read both raw and aggregated process data back fr Canary and publish it to Ignition Controls 	rom Business Email*
 Supercharge your projects with even more trending dashboarding features Never worry about managing a historical database a 	Phone Number*
To try the Canary System and module for Ignition for yourself. Complete and get started with your own 90 day trial.	the form Company Name*

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Notificate Tag		Chartes the log featury system for time-series log featury date	
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You will need to fill out your details on the right-hand side of the page in order to receive an email with the download link. Once you have received the email, click on the link and a new page will open in your browser. Click on the "Download Module" button and the download will start automatically

The Canary Module for Ignition 8
Download Module
Current Release - 21.0.0
The Canary Module for Ignition 8 will begin following the same version numbering as the Canary System. For this new module release, you will need to first uninstall your previous Canary module. All previous configurations of Canary Providers and Canary Collectors will remain.
New features include:

- Supports the Min/Max data aggregate
- Works with Perspectives Power Chart

This documentation assumes that you have Ignition installed and your Gateway configured.

1. Launch your Ignition Gateway. Navigate to the "Config" section and click on the "Modules" option. This is where you need to install the Canary module that you downloaded in the previous section



2. Scroll down the page past all the modules, until you see the option to "Install or Upgrade a Module...". Click on the link

Install or Upgrade a Module	
Note: For details about a module's status, see the Module Status page.	

3. Click on the "Choose File" button, navigate to where you saved the download and open the file. Note that your file needs to have the *.modl extension to be accepted. Click on the "Install" button

Ŷ		
To install a module, choose its *.mod1 file and press "Install".		
To upgrade a module, install the new version on top of the existing version. Modules can be downloaded from our website.		
Choose File Canary-Historian-Module-21-0-0.modl		
	Install	

4. You will be prompted with a confirmation screen that describes the modules' certificate details. If you agree, tick the checkbox to agree and click on the "Add Certificate and Install Module" button

a trusted Certificate Authority.				
certificates and install the module				
	l certificates and install the module			

5. Upon successful installation, you will be redirected to the Module page, and when you scroll down to the bottom of the page, you will be able to view the Canary certificate and module there

w Certificate					
ame	Version	Description	License	State	
anary Historian Module	21.0.0 (b20210406)	Integrates the Canary System with Ignition. Allows for the historization of Ignition tags to the Canary Historian while also adding the Canary Historian as a Tag History Provider for Ignition Components.	Free	Running	uninstall restart

4. Configuration of writing data to Canary

This documentation assumes your Canary Historian Server is already configured, which will include the Canary Admin and Sender Service.

1. Open the Canary Admin application on your Ignition Gateway and navigate to the Sender tile

Home					
		Connected	to Localhost		
	Services Historian: Running Receiver: Running Sender: Running Loggor: Running Vrews: Running Events: Running Calculation: Running Autom: Running Mirror: Running	Messages (Last 24 Hours) Warn: 8 Error: 24 Fatal: 0	Licenses Canary Historian: 5.000 Tagr (59/64) Axion: 3 Users (60/60) Excel Add-In: 5 Users (13/14) API Connector: 1 Users (59/60)	Admin Remote Enabled: True Users Allowed: 1 Users Denied: 0 Service Version: 21.3.0.21172 Client Version: 21.3.0.21172	
	Historian DataSets: 3 Licensed Tags: 68 Hendles (RVH): 0 / 85 UpdateSec: 42.1 Version: 21.3.0.21172	Receiver Sessions: 1 Updates: 206.121 Updates/Sec 30 Errors: 20 Version: 21.3.0.21172	Sender Sesion: 1 Tag: 51 Buffer: 0 Store/Sec: 30 Send/Sec: 30 Error: 1,039 Version: 21.3.0.21172	Logger Sessions: 0 Tag: 0 Logging: 0 Version: 21.3.0.21172	
	OPC Collector Group: 1 Jag: 51 Logging 51 Error: 1 Versior: 21.3.021172	Views Clients: 0 Vews: 4 Security: Disabled Version: 21.3.0.21172	Events Monitoving: 0 Orecks in Last Mirc 0 In Progress: 0 Last 24 Hours: 0 Total: 0 Version: 21.3.0.21172	Calculation Calculations active: 0 Willing to tags: 0 Calculated this hour: 0 Calculated to day: 0 Version: 21.3.0.21172	A
	Publisher Enabled: 0 Connected: 0 Togs: 0 Assets: 0 Sent: 0 Errors: 0 Versior: 21.3.0.21172	Axiom Clients: 0 Browae: True Graphics: True Version: 213.0.21172	Mirror Session:: 0 Enabled: 0 Running: 0 Version: 21.3.0.21172	CygNet Collector	
X	CSV Collector Directories: 1 Quinued: 0 Processed: 0 Tag:: 0 TVOs: 0 Versior: 21.3.0.21172	SQL Collector	Groups: 0 Connections: 0 Tags: 0 TVQ/sec: 0 Version: 213.0.21172	canary	

 Use the "Configuration" menu at the bottom of the screen and open the "Endpoints" menu on the left-hand side. Click on "Https – Anonymous (Web API)" to enable it, and make sure it uses port 55253. Click on the "Apply" button at the top of the red bar to apply the changes



3. Select the "Access" menu on the left-hand side and click on the "Add" button in the Allow window

Home Sen	der ×		
Credentials	ALLOW	ADD	REMOVE
Endpoints Access	Administrators		

4. Add "Anonymous Logon" to the Allow window and click on the "Check Names" button. When the name is underlined, you can click on the "OK" button

Select User or Group	×
Select this object type:	
User, Group, or Built-in security principal	Object Types
From this location:	
LAURA-LEEST1093	Locations
Enter the object name to select (examples):	
Enter the object name to select (examples): ANONYMOUS LOGON	Check Names
Enter the object name to select (examples):	Check Names
Enter the object name to select (examples):	Check Names

5. Once added to the Allow window, click on the "Apply" button at the top of the window

🔰 Canary Admir	nistrator			LOCALHOST	? _	
Home Sen	ider ×					
Credentials	Sender Configuration Changes				APPLY	CANCEL
	ALLOW	ADD REMOVE	DENY		ADD	REMOVE
	Administrators					
ACCESS	ANONYMOUS LOGON					

6. Navigate to the Ignition Gateway and open the Config menu like before. Scroll down until you find the "Configure Collectors" option under the "CANARY" heading

	Notification	
-	On-Call Rosters	
Config	Schedules	
	TAGS	
	History	
	Realtime	
	OPC CLIENT	
	OPC Connections	
	OPC Quick Client	
	OPC UA	l
	Device Connections	
	Security	
	Server Settings	
	BACNET	
	Local Devices	
1	CANARY	
	Configure Collectors	
	Configure Providers	

7. Select "Create New Collector"

No Historian Collectors			
NO HISTOHAILCOILECTORS			
Create new Collector			

Configure Canary as a tag Storage Provider within Ignition by completing the following fields:

Name:

The display name of the Storage Provider instance.

Sender Service:

Assuming you are following best practices and your Ignition Gateway is running on a Windows platform, this should be 'localhost', otherwise enter the machine name or IP address of where the Sender Service is located

Sender Service Port:

55253 by default

Anonymous:

Enabled by default

Username, Change Password, and Password:

All unnecessary if Anonymous is enabled. Leave blank.

Historian:

The machine name or IP address of your Canary Historian. It is recommended this not be the same machine as your Ignition Gateway.

DataSet:

The name of the DataSet you wish to log all tags from this Storage Provider to. As a best practice it is recommended to keep each DataSet to less than 25,000 tags. Additionally, the DataSet is part of a tag's name. Logging the same tag to more than one DataSet will result in more than one historical record. The DataSet will automatically be corrected for you within Canary as soon as you begin logging.

Lower Case Tag Paths:

By default Canary will copy the case structure of your Ignition tag names. If you enable this field you will force all upper case to lower case and will result in your Canary tag names being entirely lower case. Note, Canary is case sensitive and will create separate historical tags if case does not match.

The page will look something like this. Click on "Save Changes" when complete

Name	Canary 1 🕒 Name of the Sender Service to create.
Sender Service	localhost Location of Canary Sender Service (default localhost)
Sender Service Port	55253 Canary Sender Service Port (default: 55,253)
Anonymous	Sender Service security disabled? (default: true)
Username	Username for authentication (only if security is enabled)
Change Password?	Check this box to change the existing password.
Password	Password for authentication (only if security is enabled)
Password	Re-type password for verification.
Historian	canaryhistorian Location of Canary Historian
DataSet	Ignition 1 DataSet within Canary Historian in which to log data
Lower Case TagPaths	Force TagPaths to Lower Case (default: false)

You may create additional Collectors to enable additional logging to additional datasets. It is recommended that you keep a one-to-one relationship for your Collectors sessions to datasets, meaning do not create multiple Collectors logging to the same dataset.

8. Open an Ignition project and navigate to a tag you wish to enable history for. Right-click on the tag and select "Edit Tag"

default			
roperties		Details	
11 💱 📼 🔩 🔩 + 🗈		Documentation	Diagnostics
Value Source	Expression * ^		
Data Type	Float 👻		
Expression	getMillis(now()) * 1.75 🧪		
Execution Mode	Event Driven 👻		
Numeric Properties			
Deadband	0.0001		
Deadband Mode	Absolute 👻		
Scale Mode	Off 👻		
Engineering Units	· · · · · · · · · · · · · · · · · · ·		
Engineering Low Limit	0.0		
Engineering High Limit	100.0		
Engineering Limit Mode	No_Clamp 👻		
Format String	#,##0.##		
Meta Data Properties			
Tooltip			
Documentation			
Security			
Access Rights	Read/Write 👻		
r Scripting			
Tag Event Scripts	0 event scripts 🥒		
Alarms			
Alarms	No alarms 🧪		
Alarm Eval Enabled	true		
History			
History Enabled	truo		
Storage Provider	canary 1 👻		
Deadband Style	Discrete		
Deadband Mode	Absolute 👻		
Historical Deadband	0.0		
Sample Mode	On Change 🔹		
Min Time Between Samples	1		
Min Time Units	Seconds •		
Max Time Between Samples	0		
Max Time Units	Hours		

You can enable history for a tag and select he newly created Canary Collector as the Storage Provider. Since the module is built on top of Ignition's Tag History Module you can take advantage of all the history settings that include deadbands, tag groups and min/max times between samples.

5. Configuration of reading data from Canary

1. Open the Canary Admin application on your Ignition Gateway and navigate to the Views tile

🤰 Canary Admini	strator			LOCALHOST	• ? 💶 🗆 🗙
Home					
		Connected 1	to Localhost		
	Services	Messages	Licenses	Admin	
	Historian: Running Receiver: Running Logger: Running Views: Running Events: Running Calculation: Running Axion: Running Mirror: Running	(Last 24 Hours) Warn: 6 Error: 23 Fatal: 0	Canary Historian: 5000 Tags (59/60) Auton: 3 Users (60/60) Excel Add-In: 5 Users (13/14) API Connector: 1 Users (59/60)	Remote Enabled: True Users Allowed: 1 Users Denixed: 0 Service Version: 213.0.21172 Client Version: 21.3.0.21172	
	Historian	Receiver	Sender	Logger	
	DataSets: 3 Licensed Tags: 68 Handles (R/W): 0 / 34 Updates/Sec: 16.4 Version: 21.3.0.21172	Sessions: 1 Tags: 0 Updates: 0 Updates/Sec: 0 Errors: 0 Version: 21.3.0.21172	Sessions: 1 Tags: 51 Buffer: 0 Store/Sec: 0 Errors: 1 Version: 21.3.0.21172	Sessions: 0 Tags: 0 Logging: 0 Version: 21.3.0.21172	
	OPC Collector	Views	Events	Calculation	
	Sessions: 1 Groups: 1 Tags: 51 Logging: 51 Errors: 1 Version: 21.3.0.21172	Clients: 0 Views: 4 Socurity: Disabled Version: 21.3.0.21172	Monitoring: 0 Checks in Last Mir: 0 In Progress: 0 Last 24 Hours: 0 Total: 0 Version: 21.3.0.21172	Calculations active: 0 Writing to tags: 0 Calculated this hour: 0 Calculated today: 0 Version: 21.3.0.21172	
	Publisher Enabled: 0 Connected: 0 Tage: 0 Assets: 0 Sent: 0 Errors: 0 Versior: 21.3.0.21172	Axiom Client: 0 Browse: True Graphics: True Version: 21.3.0.21172	Mirror Session:: 0 Enabled: 0 Running: 0 Version: 21.3.0.21172	CygNet Collector	
	CSV Collector	SQL Collector	MQTT Collector		
- 72	Directories: 1 Queued: 0 Processed: 0 Tags: 0 TVQs: 0 Version: 21.3.0.21172	Connections: 0 Tags: 0 TVQs: 0 Version: 21.3.0.21172	Groups: 0 Connections: 0 Tags: 0 TVQ/sec: 0 Version: 21.3.0.21172	canary	
			None X		

 Use the "Configuration" menu at the bottom of the screen and open the "Endpoints" menu on the left-hand side. Click on "Https – Anonymous (Web API)" to enable it, and make sure it uses port 55253. Click on the "Apply" button at the top of the red bar to apply the changes



3. Add "Anonymous Logon" to the Allow window in the "Access" menu like before

me vi	ews ×						
	ALLOW	ADD	REMOVE	DENY		ADD	REMOVE
Cess	Everyone						
	ANONYMOUS LOGON						
	ALLOW (Secure Endpoint)	(DENY	DENY (Secure Endpoint)	ALLOW	REMOVE	REFRESH
	ALLOW (Secure Endpoint)		DENY	DENY (Secure Endpoint)	ALLOW	REMOVE	REFRESH
	ALLOW (Secure Endpoint)		DENY	DENY (Secure Endpoint)	ALLOW	REMOVE	REFRESH
	ALLOW (Secure Endpoint)		DENY	DENY (Secure Endpoint)	ALLOW	REMOVE	REFRESH
	ALLOW (Secure Endpoint)		DENY	DENY (Secure Endpoint)	ALLOW	REMOVE	REFRESH
	ALLOW (Secure Endpoint)		DENY	DENY (Secure Endpoint)	ALLOW	REMOVE	REFRESH
	ALLOW (Secure Endpoint)		DENY	DENY (Secure Endpoint)	ALLOW	REMOVE	REFRESH
	ALLOW (Secure Endpoint)		DENY	DENY (Secure Endpoint)	ALLOW	REMOVE	REFRESH
	ALLOW (Secure Endpoint)		DENY	DENY (Secure Endpoint)	ALLOW	REMOVE	REFRESH

4. Navigate to the Ignition Gateway and open the Config menu like before. Scroll down until you find the "Configure Providers" option under the "CANARY" heading



5. Select "Create new Provider"

History Provider Name	Hostname	Port	Verbose Logging Enabled	
No Historian Providers				
Create new Provider				
create new Providen				

Configure Canary as a tag History Provider within Ignition by completing the following fields:

The name you wish to be displayed as a Tag History Provider.
Hostname:
Machine name or IP address of the Canary Historian.
Port:
Default to 55235.
Anonymous:
Enabled by default.
Username, Change Password, and Password:
Blank by default.

The page will look something like this. Click on "Save Changes" when complete

Configuration	
History Provider Name	CanaryHistorian Name of the history provider to create. (default:)
Hostname	canaryhistorian Hostname/IP address of the Canary Historian. (default: localhost)
Port	55235 The port to connect to. (default: 55,235)
Anonymous	Connect using http when true. (default: true)
Username	Username of a windows user account. Will only be used when not anonymous.
Password	
Password	Re-type password for verification.
Verbose Logging Enabled	Additional logging will be enabled with debug. (default: false)
	Create New CanaryProviders

6. Open your Ignition Designer and browse the Canary Historian referenced above as Tag History Provider. Note, not only will you be able to browse the historian archive, but Canary will also expose any Virtual Views and Asset Models created on top of the historical record

íag	Tag History					
Tag	Queries the tag history system for time-series	tag history	data			
ndirect Tag						
ag History	Drag and drop historical tags into the sel	ected tag lis	st. You can edit the selected	tag paths and insert indirection parameters l	like "{1}" 🛛	
roperty	2					
xpression	Available Historical Tags	<	Selected Historical Tags			
roperty	 CanaryHistorian 	~ C >	Tag Path	Column Name	1	
ξL	AVIOM INC MASTER		[CanaryHistorian/de	fault:default]AVIUN Discharge Pressu	ure J	
amed Query	👻 🏐 SITE 1		[CanaryHistorian/de	rault:default]AVIUN Suction Pressure		
B Browse	VUMP A					
QL Query	-S Current				*	
ther	Discharge Pressure				(j)	
ell Update	- S Flow				ē	
unctions	- State		- Indicastion			
	Suction Pressure		Ref # Property Path			
	Valve Position					
	PUMP B					
	PUMP D					
	TANK A	*				
	Ose fully-qualified paths					
	Date Range Start Date Binding			nd Date Binding		
	Historical Root Container.Calenda	r.latchedDa	ate} 💟 🗐	{Root Container.Calendar 1.latchedDate}		
	Aggregation Mode Return Form	t Sample	Size			
	Sum 👻 Wide 👻	Interv	val 💌 15	0	■ min ▼	
	Advanced					
No Binding	Polling Mode Polling Rate Off Relative Absolute Rate = (Base	Rate) +/-	Retain Rows			
						OK Cancel

Known Issues

Historical Data and Perspectives

Currently Canary can only function as a Tag History Provider for Perspective projects thru the scripting of tag paths. The Tag History Provider U/I that was used for Vision has not yet been added to Perspectives limiting your ability to browse Canary tags. To overcome this, prepend your Canary tag paths with the following:

[CanaryHistorian/default:default]canaryhistorian/Ignition 1/Pump 1

The above example indicates 'CanaryHistorian' is the name of your Provider as configured within the History Provider Name field. Keep the 'default:default' and '[]' part of the path the same. 'canaryhistorian/Ignition 1/Pump 1' indicates the name of the Canary Historian Server (canaryhistorian), the DataSet (Ignition 1), and the tag name (Pump 1). Note, your tag name will likely be must longer as Canary respects the folder structure found within Ignition. Add the '/' between each part of tag name hierarchy.

Deleting Tags

Deleting a tag currently does not pass a NoData value to the tag within Canary. This means the tag will continue to have the timestamp extended and will appear to still be logging data. This can be fixed with a module restart.

Releasing Tag Licenses

There is currently not a mechanism within the module to release a tag license. This will be added to the next major release.

6.Summary

To follow to connect, store and forward data from and to Ignition and Canary, here is a summary of what you need to do:

- 1. Some basic Information
- 2. Download and install Canary module for Ignition
- 3. Configuration of writing data to Canary
- 4. Configuration of reading data from Canary

For additional resourcing, please direct yourself to the help center: <u>https://help.canarylabs.com/hc/en-us/articles/360049539433-How-to-Install-and-Configure-the-Canary-Module-for-Ignition</u>



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