

ноw-то guide Merging datasets on Canary Views

This Technical Note contains all the information required to merge datasets and display them in the Canary Views.

Element8 Tech Note

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1. Introduction

This technical note will discuss how to merge multiple Datasets to view all tags on one Virtual View. Security will be enabled to restrict and enable certain users to access and interact with the View.

Datasets are groups of logically associated tags stored within the Canary Historian. Your Historian can consist of multiple Datasets that are sourced from multiple data collectors.

Virtual Views is a tool that provides the ability to add and manage additional data context on top of the historical record for applications and clients, hence they are created on top of the Historian.

They can reshape historized tag formats without altering the actual data in the physical storage. This includes data structure changes, tag aliasing, and asset modelling. You can restrict data access and viewing by creating security-based permissions to clients based on the data they are allowed to view inside the Historian.

In essence, the Virtual Views is the filter that the client looks through to browse, retrieve tags and read data from the Historian. This allows the administrator to control what the client can access and interact with.

By creating Virtual Views, you create a unified tag naming structure that simplifies the generation of reports based on historian data and trend data.

Security is handled by controlling the View access in the Canary Admin application.

There are 3 main steps that you need to follow to merge Datasets on Virtual Views:

- 1. Create Virtual View for multiple Datasets
- 2. Define rules for View
- 3. Set up client security

These steps are described in greater detail in the following sections.

2. Install CSV Data Collector component

The first step is to create a Virtual View sourced from multiple Datasets. Ensure that all necessary Datasets have been created and houses data. This can be done in the Historian tool on the Canary Admin application

- 🤰 Canary Administrator localhost 💌 ? 😑 📼 🛪 Home Connected to Localhost Messages Licenses Receiver Sender Logger Historian OPC Collector Calculation Views Events CSV Collector SQL Collector MOTT Collecto Axiom canary
- 1. Launch the Canary Admin application and navigate to the "Views" panel

2. At the top left corner, you will notice a "Views" panel. In the top right corner of this panel, there is down facing arrow. Click on this arrow to access the Views options

VIEWS		
Current Connections	0	
Total Connections:	9	
Request Count:	95	
Request/Sec:	0.0	
TVQ Count:	0	
TVQ/Sec:	0.0	

3. Click on the "Create New View" button

	1
CREATE NEW VIEW	
	_

4. The "Create View" window will appear. Fill in the relevant details to create a new View:

Create View				Х
View Name:				
Source Views:	•	Û		
Properties:				
ADD SOURCE			ОК	CANCEL

- View Name: The name of your model view
- Source Views: This is where you select the View from which you want to base the new model. Once a View has been created, it can be used in other Views. This will allow a "master" View that will update "children" Views
- Properties: Here you can specify metadata if you wish. Separate the properties by a semicolon followed by a space
- 5. Once you have added a source for a DataSet, you can add another by clicking on the "Add Source" button. You can add multiple sources.

View Name:	MergedDataSets		
Source Views:	LAURA-LEEST1093.CSV	DataSet 🗲 🛍	
Properties:			
ADD SOURCE		ок	CANCEL

Your "Source Views" will look something like this, once you have added all your Datasets. Click "OK" to create the View.

Create Viev	w ×
View Name: Source Views:	MergedDataSets
Properties:	LAURA-LEEST1093.OPC UA 🗲 🛍
ADD SOURCE	OK CANCEL

3. Define rules for View

After creating your new View which is sourced from multiple Datasets, the View will automatically display the page as seen below. This is where you can define Asset and Model Rules for this Model.

W WS with connections: 0 al Connections: 10 quest/count: 105 quest/count: 00 Q Count: 0 Q/Sec: 0.0		Model Changes	REPLACE	MergedDa ASSET TYPE	ttaSets Defined Rules MATCHED	DUPLICATES INSTANCES	CREATE PAUSE CA
WS rrent Connections: 0 al Connections: 10 quest Count: 105 quest/Sec: 0.0 Q Count: 0 Q/Sec: 0.0		Model Changes	REPLACE	MergedDa	staSets Defined Rules MATCHED	DUPLICATES INSTANCES	CREATE PAUSE CA
W							
w							
AME	VALUE						
		ADD Unassigned Asset	EDIT REMO	VE ASSET DEPINITION	RULE DETAILS TAG	TRACING	PROPERTI
		TAG COUNT: 68 EXC	CLUDED COUNT: 0 INST	ANCE COUNT: 0 RULE: 0 of	0 CHECKS: 0 REPLACES:	: 0 TAGS IN ASSETS: 0	

Before clicking on the "Create" button, you can browse the tags to ensure that the data has been collected from the correct Datasets and create Rules to enable simpler viewing of the tag data.

To view the data, click on the "Unassigned" drop-down arrow in the yellow bar at the bottom of the screen.

a cariary riarrin iscrator					L	OCALHOST 💌 ?	_ = ×
Home Views ×							
VIEW VIEW							
VIEWS	Model Changes					CREATE	PAUSE
Current Connections: 0 Total Connections: 11			MergedData	Sets Defined Rules			
Request Count: 121	MATCH	DEDI ACE	ACCET TYDE	MATCHED	DUDUCATES		TIME (MC)
Request/Sec: 0.0	MAICH	REPLACE	ASSETTIPE	MAICHED	DUPLICATES	ANCES EXCLUDE	TIME (MS)
TVQ Count: 0 TVQ/Sec: 00							
1VQ/sec. 0.0							
	ADD			RULE DETAILS	AG TRACING		PROPERTIES
	O Unassigned Asset Type:	Tag Count: 68 Child Asset	s: 0				
	VIEW NAME			PHYSICAL NAME			
	CSVDataSet.Gen1_ActPwrReq			localhost.CSVDataSet.G	en1_ActPwrReq		
	CSVDataSet.Gen1_Current_L2			localhost.CSVDataSet.G	en1_Current_L2		
	CSVDataSet.Gen1_Current_L3			localhost.CSVDataSet.G	en1_Current_L3		
	CSVDataSet.Gen1_Ubat			localhost.CSVDataSet.G	en1_Ubat		
	CSVDataSet.PT100StsValue			localhost.CSVDataSet.P	T100StsValue		
VIEW (J)	CSVDataSet.PT151StsValue			localhost.CSVDataSet.P	T151StsValue		
NAME	CSVDataSet.PT1631StsValue			localhost.CSVDataSet.P	T1631StsValue		
NAME VALUE	OPC UADemandPoll			localhost.OPC UADem	andPoll		
	OPC UADescription			localhost.OPC UADesc	ription		
	OPC UADeviceId			localhost.OPC UADevi	celd		
	OPC UAEnabled			localhost.OPC UAEnab	led		
	OPC UAError			localhost.OPC UAError	£		
	OPC UANoError			localhost.OPC UANoE	rror		
	OPC UAScanMode			localhost.OPC UAScan	Mode		
	OPC UAScanRateMs			localhost.OPC UAScan	RateMs		
	OPC UASecondsInError			localhost.OPC UASeco	ndsInError		
	OPC UASimulated			localhost.OPC UASimu	ilated		
	OPC UA.020-Boiler001-FT-001-	-PV		localhost.OPC UA.020-E	loiler001-FT-001-PV		
	OPC UA.020-Boiler001-PT-001-	-PV		localhost.OPC UA.020-E	loiler001-PT-001-PV		
		Db /		localhost OPC UA 020-P	loiler001-TT-001-PV		
	OPC UA 020-Boiler001-TT-001-	-PV					

Once you have confirmed the correctness of the data, go ahead and start by creating rules for the model. Click on the "Add" button in the top panel.

Model Changes						CREATE	AUSE CANCEL
		MergedDataSets	Defined Rules				
MATCH	REPLACE	ASSET TYPE	MATCHED	DUPLICATES	INSTANCES	EXCLUDE	TIME (MS)

When you create Rules, they will be displayed in the top panel and all information regarding that rule will be displayed as well. This includes the number of matches, duplicates, instances, exclusions and response time to populate.

As you add these Rules, the tag data in the lower panel will update as well. On the right-hand side, the actual tag names as stored in the Historian will be displayed. On the left-hand side, the modified tag names as it will be viewed in the Virtual View is displayed.

Rules are executed in top-down order. To change the order of the Rules, you can drag and drop the rules as required. Rules also have the option to be edited or removed. Click on the rule to highlight as option, and then click on the "Edit" or "Remove" button.

You can choose between a "Model Rule" or an "Asset Rule". A Model Rule can be created to match and replace tag names or tag structures. An Asset Rule can be created to group tags into an asset.

Model Rule Parent/Child Rule Asset Rule		
Match:		
Replace:		
Exclude:		
Comment:		
OK		

Make use of RegEx to create common tag names and group them into assets. Common tags names with unique identifiers shows you where the asset is located and which other tags it impacts.

Metacharacters Defined		Metacharacter Examples		
MChar	Definition	Pattern	Sample Matches	
٨	Start of a string.	^abc	abc, abcdefg, abc123,	
\$	End of a string.	abc\$	abc, endsinabc, 123abc,	
	Any character (except \n newline)	a.c	abc, aac, acc, adc, aec,	
I	Alternation.	bill ted	ted, bill	
{}	Explicit quantifier notation.	ab{2}c	abbc	
[]	Explicit set of characters to match.	a[bB]c	abc, aBc	
()	Logical grouping of part of an expression.	(abc){2}	abcabc	
*	0 or more of previous expression.	ab*c	ac, abc, abbc, abbbc,	
+	l or more of previous expression.	ab+c	abc, abbc, abbbc,	
?	0 or 1 of previous expression; also forces minimal matching.	ab?c	ac, abc	
\	Preceding one of the above.	a\sc	a c	

Example:
Line1.020-BL001-FT-001-PV
Line2.020-BL002-PT-002-PV
Line3.020-BL001-TT-001-PV
Find:
^(Line)(\d)\.020-BL(\d\d\d)\-(\D\D)-0(\d\d)-PV
Replace:
\$1\$2.Boiler\$3.\$4\$5
Result:
Line1.Boiler001.FT01
Line2.Boiler002.PT02
Line3.Boiler001.TT01

After adding all the desired rules to conform your tag data, click on the "Create" button in the red bar to create your new View.

		MergedDataSets	Defined Rules				
MATCH	REPLACE	ASSET TYPE	MATCHED	DUPLICATES	INSTANCES	EXCLUDE	TIME (MS)

4. Set up client security

To control View access, you can enable security for the View on the Canary Admin application.

1. Click on the Views panel and select "Configuration" from the bottom menu



2. Select the "Access" option from the left side menu



3. For each category (ALLOW, DENY, ALLOW(Secure Endpoint), DENY (Secure Endpoint)), you can "Add" or "Remove" individual Windows users or groups to grant or deny access to the Views Service.

For example, to grant a user access to the Views, click on the "Add" button in the "Allow" category. In the pop-up window, you can specify which user or user group you would like to add. Click on the "Ok" button once done, and you will notice the user/group has been added under the Allow category

elect this object type:	
lser, Group, or Built-in security principal	Object Types
rom this location:	
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nter the object name to select (<u>examples</u>	5):
nter the object name to select (<u>examples</u>	Check Names
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	ALLOW ADD.	. REMOVE	DENY	ADD.	REMOVE
	laurastrydom				
	ALLOW (Secure Endpoint)	DENY	DENY (Secure Endpoint)	ALLOW REMO	/E REFRESH
	ALLOW (Secure Endpoint)	DENY	DENY (Secure Endpoint)	ALLOW REMO	/E REFRESH
	ALLOW (Secure Endpoint)	DENY	DENY (Secure Endpoint)	ALLOW REMO	/E REFRESH
	ALLOW (Secure Endpoint)	DENY	DENY (Secure Endpoint)	ALLOW REMO	REFRESH
	ALLOW (Secure Endpoint)	DENY	DENY (Secure Endpoint)	ALLOW REMO	re Refresh
	ALLOW (Secure Endpoint)	DENY	DENY (Secure Endpoint)	ALLOW REMO	REFRESH
	ALLOW (Secure Endpoint)	DENY	DENY (Secure Endpoint)	ALLOW REMO	/E REFRESH
	ALLOW (Secure Endpoint)	DENY	DENY (Secure Endpoint)	ALLOW REMO	(E) REFRESH
	ALLOW (Secure Endpoint)	DENY	DENY (Secure Endpoint)	ALLOW REMO	re Refresh
	ALLOW (Secure Endpoint)	DENY	DENY (Secure Endpoint)	ALLOW REMO	re Refresh
	ALLOW (Secure Endpoint)	DENY	DENY (Secure Endpoint)	ALLOW REMO	(EFRESH

4. Click on the "Apply" button in the red bar after adding/removing users for the changes to take effect.

If you want to limit users/group to certain Views, you can restrain permissions based on Assets, DataSets and individual tags.

5. Click on the "Security" option at the bottom of the page. Navigate to the "Settings" page on the left side menu. If the security is not enabled, click on the option and click on the "Apply" button



6. Click on the "Permissions" option in the left side menu. Select the View you want to grant/revoke permissions to. If you have created Assets or DataSets, it can be viewed by expanding the View

Canary Authinistrator			LOCA	LHOST 🔻	? –	□ ×
me Views ×						
ermissions BROWSE		EXPLICIT PERMISSIONS		ADD		
▲ Views	٠					
↓ LAURA-LEEST1093		LICED	DATH	ACCESS		
ttings MergedDataSets		- OSER	PAIN	ACCESS	•	
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Gen1_ActPwrReq						
Gen1_Current_L2						
Gen1_Current_L3						
Gen1_Ubat						
PT100StsValue						
PT151StsValue						
PT1631StsValue						
✓ OPC UA		INHERITED PERMISSIONS				
_DemandPoll		USER	PATH	ACCESS		
_Description				riceroo		
_DeviceId						
_Enabled						
_Error						
_NoError						
_ScanMode						
_ScanRateMs						
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_Simulated						
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020-Boiler004-FT-001-PV	Ŧ	User	USER Access: None			
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7. Select either the View, DataSets, Assets or individual tags that you want to provide permissions to, and click on the "Add" button in the top-right corner next to Explicit Permissions. This window will pop up

PERI	MISSION (AD	D)			
Path:	ROOT				
User:	User			user	
Access:	ReadWrite		•		
		ok		cancel	

8. Click on the "user..." button to select a user or user group from the Windows user selection dialog

	×
	Object Types
	Locations
	Check Names
ОК	Cancel
	ОК

PERI	MISSION (ADD)	
Path:	ROOT	
User:	laurastrydom	user
Access:	ReadWrite 🔹	
	None	
	Read	cancel
	Write	
	ReadWrite	

Choose which Access right you want to give to the user.

Options include:

- None: User is denied all access
- Read: Access is limited to viewing only
- Write: Access is limited to writing only
- ReadWrite: User is granted full access
- 9. Click the "ok" button and then click on the "Apply" button in the red bar at the top of the screen to apply your changes.

BROWSE	EXPLICIT PERMISSIONS			ADD	EDIT	REMOVE
 Views 					СОРУ	PASTE
▶ LAURA-LEEST1093	Us	SER	PATH	ACCESS		
MergedDataSets		irastrudom	MergedDataSets OPC LIA	ReadWrite		
♦ CSVDataSet		lasayaoni	inergeabatabets.or e ort			
▶ OPC UA						
Part 3 View						
View 1						

5. Summary

To merge multiple Datasets onto one view and control user access to the view, here is a summary of what you need to do:

- 1. Create Virtual View for multiple Datasets
- 2. Define rules for View
- 3. Set up client security

For additional resourcing, please direct yourself to the Ignition user manual: <u>https://help.canarylabs.com/hc/en-us</u>



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