Managing Archiver Rules for Individual EPICS PVs in FRIB's Diagnostics System

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Motivation

- There are different types of diagnostics devices.
- The same readout card can be used for different device types.
- Each type of diagnostics device has a different desired Archiver policy.
- For example, different channels of the same Pico8 card can be connected to a Faraday Cup and a Halo Monitor Ring, which have different Archiver policies.
- Archiver Appliance rules are created and enforced at runtime based on *info* tags associated with each PV

by an independent agent called PV Auto Provisioner.

• Therefore, there's a need for assigning *info* tags in an IOC on a *per*-PV basis (as opposed to *per*-Record).

Centrally Managing Archiver Tags

- The creation of the *info* tags for the **PV Auto Provisioner** happens in the IOC itself, via **retools** functions.
- A tool was created to centrally manage the *info* tags for all IOCs, **IOC Manager**, which
- Collects existing PVs from diagnostics IOCs when they are built in **Jenkins**.
- Allows its users to create and modify tags, displaying their coverage in real time.
- Automatically opens pull requests on Stash to

IOC Manager IOCs Ho	osts Archiver Tags				🦲 Editable 💄	martins 🥜 Log Ou	
IOCs 个	diagioc_ndioc		Branch uc2 🗸		Rule 🗹 Edi		
diagioc_autocalib							
diagioc_bcm	INSTANCES	RECORDS	ALIASES	RULES	Description:		
diagioc_bcmen	1	288	0	4	Method: monitor		
diagioc_bcmreport	-			-	Rate (Hz): 1		
diagioc_bpm					Retention: inf		
diagioc_bpmarch		Import Tags from Rep	Write	Tags to Repository	Pattern: ^.*:FLUX_RD\$		
diagioc_bpmenergy	+ New 🔟 Del	ete					
diagioc_chargesel	Pattern	Descrip	tion Config (H	Iz) #Base			
diagioc_evr	Pattern	Descrip	coning (F	Records	PVs / page 5 10 15	25 50	
diagioc_fths	^.*:EVTL	RD\$	monitor:	0.1, 24			
diagioc_galil		-	inf		ioc-nd	24 PVs	
diagioc_genavg	^.*:EVTTH	IRES_CSET\$ Thresho		1, 24	FE_RFQ:ND_D1025:FLUX_RD		
diagioc_health		Setpoint			FS1_BMS:ND_D2588:FLUX_RD		
diagioc_ic	^.*:EVT_R	<pre>^.*:EVT_RD\$</pre>		1, 24	LS1_BTS:ND_D2076:FLUX_RD		
diagioc_ipmi		PD¢	12mo	1 24	LS1_CA01:ND_D1128:FLUX_RD		
diagioc_ndioc	^.*:FLUX_		monitor: inf	1, 24	LS1_CA03:ND_D1195:FLUX_RD		
diagioc_ndwarp	_				LS1_CB01:ND_D1250:FLUX_RD		
diagioc_pfmscan					LS1_CB03:ND_D1378:FLUX_RD		

Figure 1: Archiver Tags in **IOC Manager**'s Web Interface

update the tags of a specific IOC, when requested by the user.



Figure 2: Archiver Rules Workflow

Enforcing Archiver Rules at Runtime

- IOCs in production, upon start, publish their PV names and metadata to Channel Finder.
- The **PV Auto Provisioner** scans **Channel Finder** and looks for PVs that have *info* tags with key "archiver".
- The **PV Auto Provisioner**, then, ensures that the configuration it found in the *info* tag is correctly reflected in the **Archiver Appliance**.
- IOCs are automatically restarted by Puppet whenever there is a change in the production branch of their source code repository.

retools: creating regular-expression based aliases and info tags

reAddAlias "DIAG_MTCA01:PIC08_CH0:(.*)" "FE_LEBT:FC_D0796:\$1"

For each PV that matches **PV prefix**, create an alias for it by replacing **PV prefix** with alias prefix while preserving the suffix as is.

reAddInfo ".*:(FC|HMR|ND)_D.*:AVG_RD" "archive" "monitor:2.0, retention:3mo"

For each Faraday Cup, Halo Monitor Ring and Neutron Detector average reading PV, add an *info* tag with key "archive" and value "monitor:2.0, retention3mo", meaning that the PV should be sampled at most at 2Hz and retained in the archiver for 3 months.



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