Timing Lightning Talk

Ryan McClanahan







BOLD PEOPLE VISIONARY SCIENCE REAL IMPACT BOLD PEOPLE VISIONARY SCIENCE REAL IMPACT

Overview

Role

Filling in for Carolina while on maternity leave

All TPRs

PyDM troubleshooting display

BSA Ready flag State notation language Engines Display

PyDM troubleshooting display

Courtesy of Chris Myers

BSA Verification

Python diagnostic tool

Please hold questions

If enough interest will follow up with another presentation

Role While Carolina is Away

• Ryan

- Fill in as first contact for Carolina while she is away Sept 19 Nov 15
- In case of timing issues assign new CATERs to Ryan;
- On call for ACR Timing issues
- For timing questions email <u>timing-support@slac.stanford.edu</u>
- Upcoming plan to fix some SC BSA edge issues happening when fault buffers are running
- Future presentations about BSAS and then BLD
- Continue to work with TID and organize meetings as needed to make the needed progress while Carolina is out

• Alex

- Alex Ng is developing further the TPGGUI tools
- Alex and I will continue to work together to fulfill OPS requirements for the timing patterns.

BSA Ready Flag

ile View History Tools		bsaBufferDe	f - PyDM (on Icls-sr	v01)		\odot \odot \odot	
		SC B	09/13/2023 14:29:3 PRODUCTIO				
	User Inform	ation			Acquisition		
BSA# 23	Name	BSA Check Las	t Active Time 09/13/	23 14:25:58 OFF	BSA data:	Ready	
	User	timing team Last	Reserve Time 09/01/	23 16:48:21 ON	Percent complete	100.0 %	
Destination Expert							
Destination Mode	Y	Dest	Destination Summary				
		Destination	Current Rate	Facility Mode	e so psyp		
					SC RSVI		
Disable		LASER	0 Hz		SC_BSYL	,	
Disable		LASER SC_DIAG0	0 Hz 0 Hz	-	SC_BSYL		
Disable Exclusion		SC_DIAG0 SC_BSYD	0 Hz 100 Hz		SC_BSYL	5	
Exclusion		SC_DIAG0 SC_BSYD SC_HXR	0 Hz 100 Hz 0 Hz	NC	SC_BSYL	,	
		SC_DIAG0 SC_BSYD SC_HXR SC_SXR	0 Hz 100 Hz 0 Hz 1000 Hz		SC_BSYL		
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Exclusion		SC_DIAG0 SC_BSYD SC_HXR SC_SXR SC_DASEL	0 Hz 100 Hz 0 Hz 1000 Hz	NC	24		

Needed as data can take a long time to be ready after the acquisition

Percent Complete also added

Expert Timing Displays

CTiming Expert	Displa	у			2023/09/13 1	4:43:42.5457984
Manual Fault	BCS Fault	MPS Fault	Tag	MPS Tag	Status	
FLT Buf0 0	0	1	4080	10021		Cle
FLT Buf1 0	0	1	4079	10013		Cle
FLT Buf2 0	0	1	4081	10026		Cle
FLT Buf3 0	0	1	4082	10031		Cle
Fault Count	s	5005644		MPS	Link Disgnostics	5
PLL Change Counte	er	1		Physical Li	nk Rx	Ready
186MHz Counte	er	-736009581		Physical Li		Ready
Sync Error Counte	er	1			l Link	Ready
Interval Counte	er 📃	181999999				
Base Rate Trig Counte	er	910000		Remote		Ready
TX Clock Counte	er 📃	782478629		Rx Clock Frequ		250000200
Delta TxCl	k	23494689		Tx Clock Frequ	Jency	250000200
Tx Clock Rate(M Counts/see	:)	188		Rx Frame Error	Count	65535
Counter Rese	et 🦲	Clear		Rx Frame (Count	-960884163
IP Address	IP address r	ot applicable		RefClock Lock	Cnt	0
Firmware Version		0		RefClock Lost	Cnt	0
Allow Engines		16				
Beam Engines		16	_	RefClock I	ost	Present
Expr Engines		58	sc	Fiming Verification	Tool	Open
BSA Arrays		14				
Seq AddrWidth		11	Patte	ern Programmer sta	tus 🔵 📃	216498
FIFO AddrWidth		0	_	Pattern Programn	ner Start	Stop
HOLDOFF Fault Buffer 10000				Active Fanout sta	tus 🔵	1261487
INHIBIT Fault Buffer 90000	0000		Acti	ve Fanout comp sci	ipt Start	Stop

BSA Verification

BSA Ver	ification Diagnostic	s - PyDM (or	n Icls-srv0	1) 💿 🔿 🗵
File View History	Tools			
LCLS SC Event	BSA Ve	rify Dia	g	09/13/2023 14:45:27 PRODUCTION
•	•••			BSA Buffer List
DIAG 0 BSY	SCH SCS FULL			
SCH RATE	0		SCS RATE	0
Script Readback	EXITING: rate <= 0			
Times Ran	5389			
Timer (sec)	576 / 900	(Run	🏟 Reset Tag
Latch		Latch		Clear Latch
🕸 Open Tag File	\$	Open Human Re	edable Log	

Pair down eget tag so users are and not

• This makes BSA Ready flag faster (take 3-10s rather than 60s timeout)

Help identify which PVs are not participating in BSA

Help identify issues with BSA

Script for each destination

Only runs diag if there is rate

TPR Display

						DDC					09/13/2023 14	:54:.
EVENT					AUT	-NJ					PRODU	стіс
	Previous		BS	SY0					•		Next	
EVR	IOC Location	Туре	Pattern	Fiducial	RX Link: Status	Last Cou 2 sec	int RE	SET	Expert Display			
IOC:BSY0:BP01	B136-2522	врм	Pattern	360.0	ON	0 38	36 RE	SET	EVR BP0	1		
IOC:BSY0:IM01	B136-2546	Toroid	Pattern	360.0	ON	0	2 RE	SET	EVR IMO	1		
IOC:BSY0:MP01	B005-Rm112-404-19	MPS	Pattern	360.0	ON	0	0 RE	SET	EVR MPC	01		
OC:MCC0:BC01	B005-208	Wire Scanner	Pattern	360.0	ON	0 2	24 RE	SET	EVR BCC	01		
IOC:SYS0:BD01	8005-2930		Pattern	360.0	ON	0 2	20 RE	SET	EVR BDC	01		
IOC:SYS0:BD02	B005-2930		Pattern	360.0	ON	0 2	21. RE	SET	EVR BDC	12		
SIOC:BSY0:TR01	cpu-sys0-fb01		Pattern	360.0	ON	0	0 RE	SET	EVR TRO	1		
SIOC:BSY0:TR02	cpu-sys0-fb02		Pattern	360.0	ON	0	0 RE	SET	EVR TRO	2		
OC:SYS0:GN01	cpu-sys0-fb02		Pattern	360.0	ON	0	0 RE	SET	EVR GN	01		
SIOC:SYS0:LG01	cpu-sys0-fb02		Pattern	360.0	ON	0	0 RE	SET	EVR LGO	1		
NOC:SYS0:EG02	SIOC:SYS0:LG02:LO	•	Pattern	2:FIDUCIALRATE	YS0:LG0	NKERR RRCN		SET	EVR LGC	12		
TPR	IOC Location	Mode	Type		R Version	IX Link: itatus Latch		Timi	ngCore ERRC Decoding		Expert Display	
TPR	IOC Location	Mode	Туре	Fiducial	R Version S	IX Link: itatus Latch	RESET	Timi . [ngCore ERRC Decoding)R Counts: Disparity	Display	
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TPR PR:BSYH:BP01:0 PR:BSYH:BP02:0	IOC Location cpu-sph-sp06 cpu-bsyh-sp01	Mode	Туре врм врм	Fiducial	Version S Vo Error Vo Error	IX Link: Status Latch	RESET RESET	Timi	ngCore ERRC Decoding	OR Counts: Disparity 24768192	Display TPR:BSYH:BP01:0 TPR:BSYH:BP02:0	
TPR PR:BSYH:BP01:0 PR:BSYH:BP02:0 PR:BSYH:BP03:0	IOC Location cpU-spI-sp06 cpu-bsyI-sp01 cpu-bsyI-sp01	Mode	Type BPM BPM BPM	Fiducial	Version S S Vo Error Vo Error Vo Error	IX Link: itatus Latch	RESET RESET RESET	Timi • [ngCore ERRC Decoding 10614186 -1 90728473	DR Counts: Disparity 24768192 -1 -1757359622	Display TPR:BSYH:BP01:0 TPR:BSYH:BP02:0 TPR:BSYH:BP03:0	
TPR PR:BSYH:BP01:0 PR:BSYH:BP02:0 PR:BSYH:BP03:0 PR:BSYH:MP01:0	IOC Location cpu-sph-sp06 cpu-bsyh-sp01 cpu-bsyh-sp01 cpu-bsyh-sp01	Mode	Туре врм врм	Fiducial	Version S No Error No Error No Error No Error	IX Link: Status Latch	RESET RESET	Timi • [ngCore ERRC Decoding	OR Counts: Disparity 24768192	Display TPR:BSYH:BP01:0 TPR:BSYH:BP02:0 TPR:BSYH:BP03:0 TPR:BSYH:MP01:0	
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Easy way to view all TPRs and EVRs

Helpful for troubleshooting

Navigate by area

SC and NC mode

Engine Display

File View History	Taola		All Tprs - Py	DM (on Icls-srv01)					\odot
Sack Forward	A Home								
			Engine	Configuratio				09/	13/2023 14:58:0
LCLS EVENT			Engine	configuration					PRODUCTIO
			Previous	Engine: 00 - Next					
	DST00			ALW00		ALWO	Engine N	umber 0	
Engine Number	16		Engine Number	0					
Engine Description	LASER ONLY		Engine Description			Description	of the Engin	e:	
Subsequence Description	100 Hz		Subsequence Description	0 Hz				1PS	
Subsequence Index t Remove	2		Subsequence Index Remove	to 3		Latched St	-	ant State	Set State
Instruction Counter	0 Insert C	ancel	Instruction Counter	0 Insert Ca	ncel	0		13	13
Sub-Sequence Index	Description		Sub-Sequence Index	Description					
3	100 Hz	<u>^</u>	2	0 Hz	<u>^</u>	Sub-Se	quence Inde	x Start Add	ress Power Class
-1			-1			MPS00	2	0	0
-1		_	-1			MPS01	2	0	0
-1			-1			MPS02	2	0	0
-1			-1					-	
-1			-1			MPS03	2	0	0
-1			-1			MPS04	2	0	0
-1 -1			-1			MPS05	2	0	0
-1			-1		-	MPS06	2	0	0
-1								-	
Last Index	3		Last Index	2		MPS07	2	0	0
Request Rate	100		Designed Date			MPS08	2	0	0
Require Mask	1		Request Rate	0		MPS09	2	0	0
Destination (bit)	0		Subsequence Index to Run	0		MPS10	2	0	0
				0		MPS11	2	0	0
Subsequence Index to Run	3		Jump Address	0		MPS12	2	0	0
Jump Address	0		Sync	0		MPS13	2	0	0
Sync	0		Force F	leset Schedule Reset		MPS14	0	0	0
Force R	eset Schedule Reset		Torcer	benedule neset			-	-	-
SchedReset	SchedReset		SchedReset	SchedReset		MPS15	0	0	0

Courtesy of new team member Chris Myers View paired DST/ALW engines and ALW table easier Reduced visual clutter using scroll areas