# REDUNDANT CPU ON MTCA SYSTEM WITH PCI EXPRESS NON TRANSPARENT BRIDGE

L.Petrosyan (DESY)



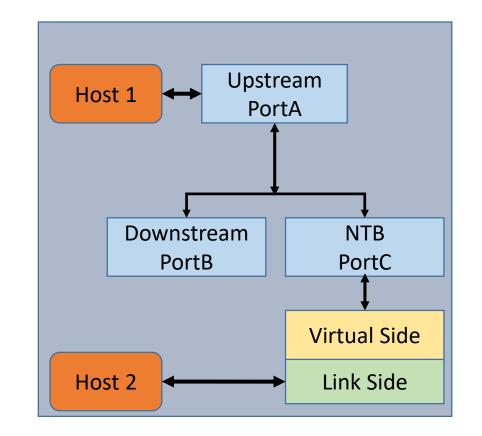
## PCI Express NTB



- NTB used to connect two independent address/Host domains
- A Non-Transparent bridge consist of two back-to-back PCIe endpoints, a Virtual and Link side endpoints.
- NTB isolates Address spaces of different Hosts by appearing as an endpoint to each side

#### **NTB Provides:**

- 1. Allow to have second CPU on MTCA system (7<sup>th</sup> MicroTCA Workshop)
- 2. Allow to have redundant CPU on MTCA system (now)





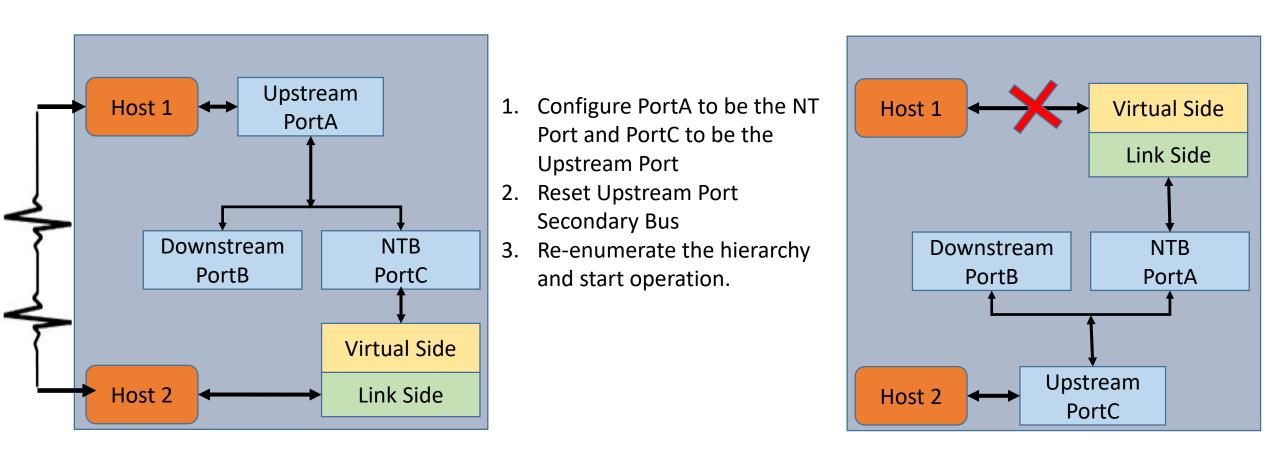


### NTB FAILOVER



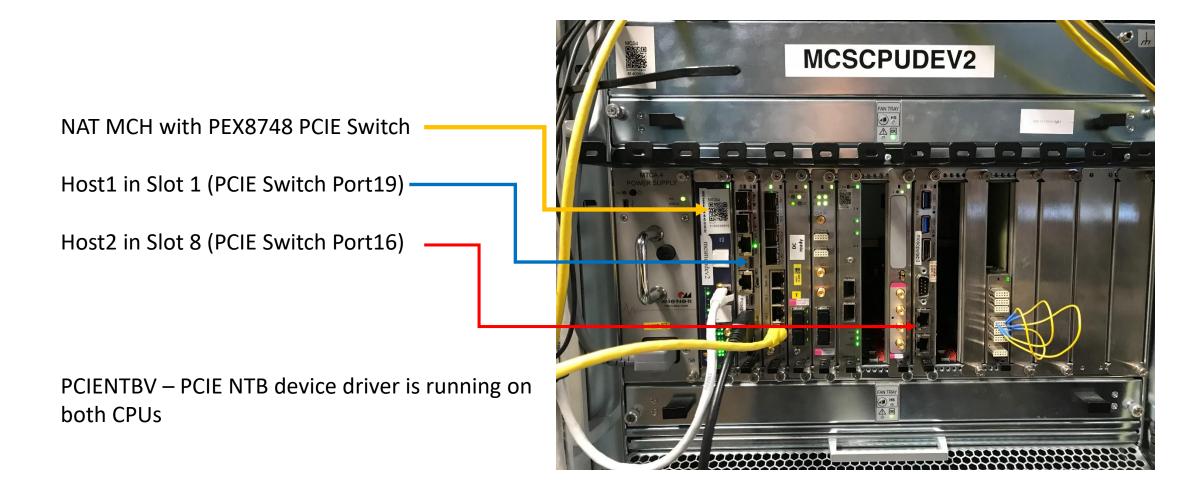
#### To protect against a failing Host taking the entire system down, a backup Host can be in place, ready to take over.

The passive Host2 is waiting for the active Hos1t to fail. When the Virtual side Host1 fail, passive Host2 initiates the sequence:





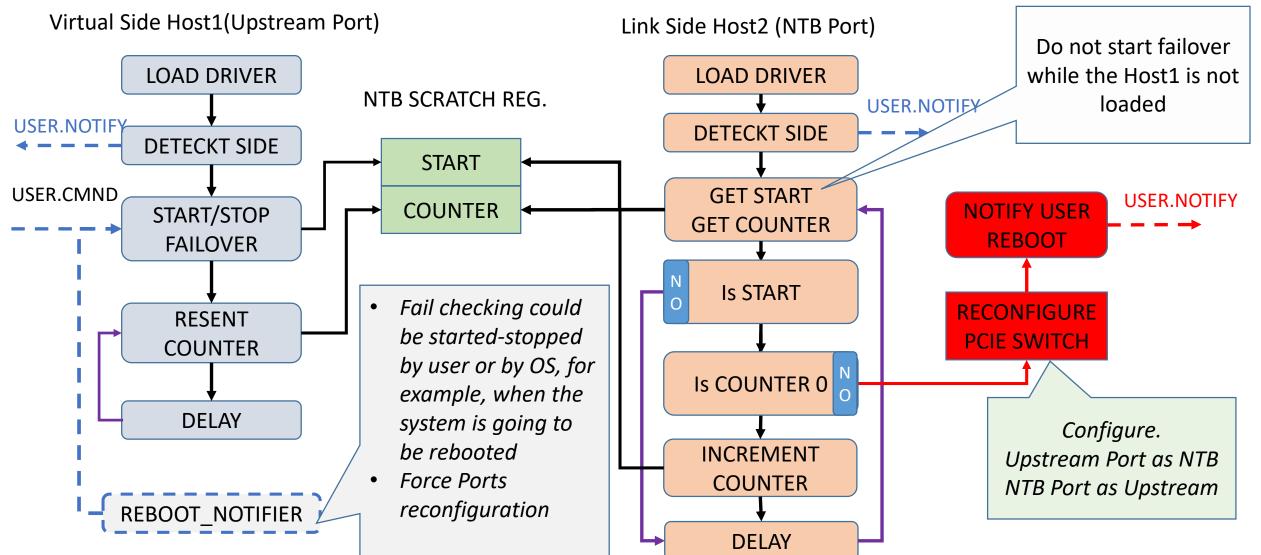
















#### Virtual Side Host 1. All AMC cards are visible from this side

NTB Endpoint in slot 8 (Port 16, 10:00.0)

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080.0 PCI bridge: PLX Technology, Inc. PLX 9784 083 080.0 PCI bridge: PLX Technology, Inc. PLX 9784 083 081.0 Signal processing controller: Xllink Corporat 089.0 Signal processing controller: Xllink Technology, 080.0 Bridge: PLX Technology, Inc. PLX 9782 083 080.0 Bridge: PLX 1800 080.0 Brid	Lane, 12-Port Lane, 12-Port La	PCI Express Ge PCI Express Gen 3 ( X710 for 10GbE X710 for 10GbE X710 for 10GbE Connection (r nee Connection)	n 3 (8 GT/s) 5 n 3 (8 GT/s) 5 sr 3 (8 GT/s) 5 sr 4 (rev 02) crev 03) (rev 03)	witch, 27 x 271 witch, 27 x 271	nn FCBGA (rev o nn FCBGA (rev o	a) a) a) a) a) a) a)						
000.0 FCI pridge: PLX Technology, Inc. PLX 9784 08, 000.0 FCI pridge: PLX Technology, Inc. PLX 9784 08, 010.0 FCI pridge: PLX Technology, Inc. PLX 9784 08, 020.0 FCI pridge: PLX Technology, Inc. PLX 9784 08, 020.0 FCI pridge: PLX Technology, Inc. PLX 9784 08, 020.0 FCI pridge: PLX Technology, Inc. PLX 9784 08, 030.0 FCI pridge: PLX Technology, Inc. PLX 9732 02, 030.0 FCI pridge: PLX Technology, Inc. PLX 9732 02, 030.0 FCI pridge: FLX FCI pridice TX FLX 000 00 01000 030.0 FCI pridge: FLX FCI pridice TX FLX 000 000000000000000000000000000000	Lane, 12-Port Lane, 12-Port La	PCI Express Ge PCI Express Ge 8 8 8 22.bit 66MHz p x710 for 10GDE X710 for 10GDE	n 3 (8 GT/s) S n 3 (8 GT/s) S gitizer 21) CTs TOBUE B 8.0 GT/s) Swit SFP+ (rev 02) SFP+ (rev 03) (rev 03)	witch, 27 x 27 witch, 27 x 27 x 27 witch, 27 x 27 x	nn FCBGA (rev o nn FCBGA (rev o	a) a) a) a) a) a) a)			ound			
00.0 PCI bridge: PLX Technology, Inc. PEX 8748 48; 00.0 PCI bridge: PLX Technology, Inc. PEX 8748 48; 01.0 PCI bridge: PLX Technology, Inc. PEX 8748 48; 03.0 PCI bridge: PLX Technology, Inc. PEX 8748 48; 04.0 PCI bridge: PLX Technology, Inc. PEX 8748 48; 05.0 PCI bridge: PLX Technology, Inc. PEX 8748 48; 05.0 Signal processing controller: XILIN Corporat 09.0 Signal processing controller: XILIN Technology, 09.0 Fidge: PLX Technology, Inc. PEX 8728 42; 09.0 Bridge: PLX Technology, Inc. PEX 8728 22; 10.0 Bridge: PLX Tec	Lane, 12-Port Lane, 12-Port La	PCI Express Ge PCI Express Ge B0-Lx HTG.4 Di 8214 21 Bridge (rev 32.bit 56Mtz D 22.bit 56Mtz D 23.bit 56Mtz D 24.bit 56Mtz D 25.bit 56Mtz D 2	n 3 (8 GT/s) 5 n 3 (8 GT/s) 5 sFP+ (rev 02) cT = <u>5</u> TP4 (rev 02) (rev 03) (rev 03) (rev 03) oller SM961/PM	witch, 27 x 277 witch, 27 x 27	nn FCBGA (rev o nn FCBGA (rev o	a) a) a) a) a) a) a)						

#### Link Side Host 2. Only NTB Endpoint is visible

0 0 0 rootsmicksouled 30m root				1			
	8 C mtca-Monitor	CA-MONITOR-pciehp					
0 upgraded, 0 newly installed, 0 to remove and 224 not upgraded. root@mcscpulab3:-# apt-get install esdadio-dkms	Scan PCle Bus	Run PCIe-Monitor	Rescan Bus	Quit			
Reading package lists Done			1				
Building dependency tree		1 Dev:					
Reading state information Done The following NEW packages will be installed:		0000:02:01.0	_				
esdadio-dkms		10b5:8717	_				
0 upgraded, 1 newly installed, 0 to remove and 224 not upgraded. Need to get 8.882 B of archives.							
After this operation, 52.2 kB of additional disk space will be used.		SWITCH ON					
Get:1 http://doocspkgs.desy.de/pub/doocs xenial/main amd64 esdadio-dkms all 1.0.32-xenial1 [8,882 B] Fetched 8.882 B in 0s (200 kB/s)		LSPCI					
Selecting previously unselected package esdadio-dkms.		DEV:	_				
(Reading database 109974 files and directories currently installed.) Preparing to unpack/esdadio-dkms 1.0.32-xenial1 all.deb		0000:03:00.0	_				
Unpacking esdadio-dkms (1.0.32-xenial)		IDs:	_				
Setting up esdadio-dkms (1.0.32-xenial1) Loading new esdadio-1.0.32-xenial1 DKMS files		10b5:87a0	_				
Loading new espanoi-1.0.32-xentali DANS (LLES		10b5:87a0	_				
Building only for 4.4.0-139-generic		Driver:					
Building initial module for 4.4.0-139-generic Done.		pcientby	_				
buie.		1.0.0	_				
esdadio:		DevFile:					
Running module version sanity check. - Original module		/dev/dummy	_				
- No original module exists within this kernel		BARs:					
<ul> <li>Installation</li> <li>Installing to /lib/modules/4.4.0-139-generic/updates/dkms/</li> </ul>		262143	_				
- Instatting to / the/modules/4.4.0-159-generic/updates/dkms/		0					
depmod		0	_				
DKMS: install completed.		0	_				
root@mcscpulab3:~# mtcamonitor&		0	_				
[1] 25947 root@mcscpulab3:-# modprobe pcientby		0	_				
root@rscpulab:-# loci -Hi							
00:00.0 Host bridge: Intel Corporation 3rd Gen Core processor DRAM Controller (rev 09) 00:01.0 PCI bridge: Intel Corporation Xeon E3-1200 v2/3rd Gen Core processor PCI Express Root Port (rev 09)		PCIe-R/W					
00:01.1 PCI bridge: Intel Corporation Xeon E3-1200 v2/3rd Gen Core processor PCI Express Root Port (rev 09)		PCIe-monitor					
00:02.0 VGA compatible controller: Intel Corporation 3rd Gen Core processor Graphics Controller (rev 09) 00:14.0 USB controller: Intel Corporation 7 Series/C210 Series Chipset Family USB xHCI Host Controller (rev 04)		Bind pciedev					
00:16.0 Communication controller: Intel Corporation 7 Series/C210 Series Chipset Family MEI Controller #1 (rev 04) 00:19.0 Ethernet controller: Intel Corporation 82579LM Gigabit Network Connection (rev 04)		INFO					
00:1a.0 USB controller: Intel Corporation 7 Series/C210 Series Chipset Family USB Enhanced Host Controller #2 (rev 04) 00:1b.0 Audio device: Intel Corporation 7 Series/C210 Series Chipset Family High Definition Audio Controller (rev 04)		LSPCI					
00:1c.0 PCI bridge: Intel Corporation 7 Series/C210 Series Chipset Family PCI Express Root Port 1 (rev c4) 00:1c.4 PCI bridge: Intel Corporation 7 Series/C210 Series Chipset Family PCI Express Root Port 5 (rev c4)							
00:1d.0 USB controller: Intel Corporation 7 Series/C210 Series Chipset Family USB Enhanced Host Controller #1 (rev 04)	-			and the second second			
00:1f.0 ISA bridge: Intel Corporation QM77 Express Chipset LPC Controller (rev 04) 00:1f.2 IDE interface: Intel Corporation 7 Series Chipset Family 4-port SATA Controller [IDE mode] (rev 04)			E 1.				
00:17.2 DE UTEFTACE: INCE CORPORATION 7 SERIES CHIQSET FAMILY 4-DOIT SAIA CONTOLLET [DE MODE] (TEV 04) 00:17.3 SMBus: Intel Corporation 7 Series/C210 Series Chipset Family SMBus Controller (rev 04)			- 1				
00:1f.5 IDE interface: Intel Corporation 7 Series Chipset Family 2-port SATA Controller [IDE mode] (rev 04)							
01:00.0 PCI bridge: PLX Technology, Inc. PEX 8717 16-lane, 8-Port PCI Express Gen 3 (8.0 GT/s) Switch with DMA (rev ca) 01:00.1 System peripheral: PLX Technology. Inc. Device 87d0 (rev ca)							
01:00.2 System peripheral: PLX Technology, Inc. Device 87d0 (rev ca)			and the second se	-			
01:00.3 System peripheral: PLX Technology, Inc. Device 87d0 (rev ca) 01:00.4 System peripheral: PLX Technology, Inc. Device 87d0 (rev ca)							
02:01.0 PCI bridge: PLX Technology, Inc. Device and (lev ca) 02:01.0 PCI bridge: PLX Technology, Inc. Device and (lev ca)							
03:00.0 PCI bridge: PLX Technology, Inc. Device 8748 (rev ca)			and the second s				
08:00.0 Ethernet controller: Intel Corporation 82580 Gigabit Backplane Connection (rev 01) 08:00.1 Ethernet controller: Intel Corporation 82580 Gigabit Backplane Connection (rev 01)							
09:00.0 Ethernet controller: Intel Corporation 82574L Gigabit Network Connection			and the second second				
root@ncscpulab3:-#		Balling and the second	Statistics.				

6





#### Heartbeats messages on the Link Side Host2 NTB devise driver

Host1 is OK	Host1 Fail		
abs Dir:/root			
File Edit View Search Terminal	Help		
sOct 24 14:52:5 mcscpulab3 kern		LLLLLLLLLPCIEDEV_TIMER: LINK SIDE SCRATCH_REG 0	
Oct 24 14:52:55 mcscpulab3 kern	el: [184592.438573] \$\$\$\$\$	\$\$\$\$\$\$\$PCIEDEV_TIMER: EXPIRED AT 4341040497 DATA2	
		\$\$\$\$\$\$\$PCIEDEV_TIMER: EXPIRED AT 4341040499 DATA 2 LINK SIDE 1	Licing NAT MCH Diag tool, we can see the DCIE
		LLLLLLLLLPCIEDEV_TIMER: LINK SIDE 1	Using NAT MCH Diag tool, we can see the PCIE
rOct 24 14:52:55 mcscpulab3 kern		LLLLLLLLLPCIEDEV_TIMER: LINK SIDE SCRATCH_REG 1	
eOct 24 14:52:57 mcscpulab3 kern eOct 24 14:52:58 mcscpulab3 kern		<pre>\$</pre>	Switch Upstream Port Register is changed
SOct 24 14:52:58 McScpulabs kern SOct 24 14:52:58 mcscpulab3 kern		LLLLLLLLLLPCIEDEV_IIMER: LINK SIDE 1	
eOct 24 14:52:58 mcscpulab3 kern		LLLLLLLLLLLCIEDEV_TIMER: LINK SIDE SCRATCH_REG 1	
tOct 24 14:53:00 mcscpulab3 kern		\$\$\$\$\$\$\$\$PCIEDEV TIMER: EXPIRED AT 4341041497 DATA2	
iOct 24 14:53:00 mcscpulab3 kern	el: [184596.447089] \$\$\$\$\$	\$\$\$\$\$\$\$PCIEDEV_TIMER: EXPIRED AT 4341041498 DATA 2 LINK SIDE 1	PCIE (RET=0/0x0):
tOct 24 14:53:00 mcscpulab3 kern		LLLLLLLLPCIEDEV_TIMER: LINK SIDE 1	PCIE (RET=0/0x0): 8
eOct 24 14:53:00 mcscpulab3 kern		LLLLLLLLLPCIEDEV_TIMER: LINK SIDE SCRATCH_REG 1	select hub module (0=MCH1, 1=MCH2) (RET=0/0x0): LSHM(0): FRU 9 sensor 79 LUN 0 '1V8' voltage 'lower r
70ct 24 14:53:02 mcscpulab3 kern		\$\$\$\$\$\$\$\$PCIEDEV_TIMER: EXPIRED AT 4341041997 DATA2	LSHM(0): FRU 9 sensor 79 LUN 0 '1V8' voltage 'lower non-critical go low' -deassertion
70ct 24 14:53:02 mcscpulab3 kern 70ct 24 14:53:02 mcscpulab3 kern	et: [184598.44/215] \$\$\$\$\$ a], [194598.456944]	<pre>\$</pre>	
70ct 24 14:55:02 Mcscpulabs kern 70ct 24 14:53:02 mcscpulab3 kern		LLLLLLLLLPCIEDEV_TIMER: LINK SIDE I	Enter port (RET=0/0x0):
eOct 24 14:53:02 Mcscpulab3 kern	el: [184600.438547] \$\$\$\$\$	\$\$\$\$\$\$\$\$\$PCIEDEV_TIMER: EXPIRED AT 4341042497 DATA2	Enter address (RET=864/0x360):
Oct 24 14:53:04 mcscpulab3 kern		\$\$\$\$\$\$\$\$PCIEDEV_TIMER: EXPIRED AT 4341042498 DATA 2 LINK SIDE 1	Enter access mode (0=TP, 1=NT-L or 2=NT-V) (RET=0/0x0): LSHM(0): FRU 9 sensor 79 LUN 0 '1V8' voltage
Oct 24 14:53:04 mcscpulab3 kern		LLLLLLLLLPCIEDEV_TIMER: LINK SIDE 1	LSHM(0): FRU 9 sensor 79 LUN 0 '1V8' voltage 'lower non-critical go low' -deassertion
Oct 24 14:53:04 mcscpulab3 kern	el: [184600.464883] LLLLLI	LLLLLLLLLPCIEDEV_TIMER: LINK SIDE SCRATCH_REG 1	
		XXXXXXXXXXXXXXXPCIEDEV_TIMER: VIRTUAL SIDE FAIL 4	HUB REG 0x00000360 = 0x00003013 PCIE (RET=0/0x0): Port 19 Upstream, Port 16 NTB
		: DRHD: handling fault status reg 2	
eOct 24 14:53:04 mcscpulab3 kern	el: [184600.535535] DMAR:	: INTR-REMAP: Request device [[0f:00.0] fault index a0	PCIE (RET=0/0x0):
doct 24 14:55:04 Mcscpulabs kern doct 24 14:53:06 mcscpulab3 kern		REMAP:[fault reason 34] Present field in the IRTE entry is clear SSSSSSSSPCIEDEV TIMER: EXPIRED AT 4341042997 DATA2	PCIE (RET=0/0x0):
Oct 24 14:53:00 Mcscpulab3 kern			PCIE (RET=0/0x0): LSHM(0): FRU 9 sensor 79 LUN 0 '1V8' voltage 'lower non-critical go low' -assertion
		LLLLLLLLLLPCIEDEV_TIMER: LINK SIDE 1	LSHM(0): FRU 9 sensor 79 LUN 0 '1V8' voltage 'lower non-critical go low' -deassertion
Oct 24 14:53:06 mcscpulab3 kern	el: [184602.465181] LLLLL	LLLLLLLLLPCIEDEV_TIMER: LINK SIDE SCRATCH_REG -1	
Oct 24 14:53:06 mcscpulab3 kern	el: [184602.474033] XXXXXX	XXXXXXXXXXXXXXXPCIEDEV_TIMER: VIRTUAL SIDE FAIL 5	PCIE (RET=0/0x0):
SOct 24 14:53:08 mcscpulab3 kern			PCIE (RET=0/0x0): 8
rOct 24 14:53:08 mcscpulab3 kern	el: [184604.447093] \$\$\$\$\$	\$\$\$\$\$\$\$PCIEDEV_TIMER: EXPIRED AT 4341043498 DATA 2 LINK SIDE 1	select hub module (0=MCH1, 1=MCH2) (RET= <mark>0/0x0):</mark>
		LLLLLLLLLPCIEDEV_TIMER: LINK SIDE 1	Enter port (RET=0/0x0): Dort 16 Linetroom Dort 10 NITP
		LLLLLLLLPCIEDEV_TIMER: LINK SIDE SCRATCH_REG -1 (XXXXXXXXXXXXPCIEDEV_TIMER: VIRTUAL SIDE FAIL 6	Enter address (RET=864/0x360): Port 16 Upstream, Port 19 NTB
eOct 24 14:55:08 McScpulabs kern eOct 24 14:53:10 mcscpulab3 kern			Enter access mode (0=TP, 1=NT-L or Z=NT-V) (RET=0/0x0):
tOct 24 14:53:10 mcscpulab3 kern			HUB REG 0x00000360 = 0x00003310
Oct 24 14:53:10 mcscpulab3 kern	el: [184606.457951] LLLLL	LLLLLLLLPCIEDEV_TIMER: LINK SIDE 1	PCIE (RET=0/0x0): LSHM(0): FRU 9 sensor 79 LUN 0 '1V8' voltage 'lower non-critical go low' -assertion
tOct 24 14:53:10 mcscpulab3 kern	el: [184606.465873] LLLLLI	LLLLLLLLLPCIEDEV_TIMER: LINK SIDE SCRATCH_REG -1	LSHM(0): FRU 9 sensor 79 LUN 0 '1V8' voltage 'lower non-critical go low' -deassertion
		XXXXXXXXXXXXXXXPCIEDEV_TIMER: VIRTUAL SIDE FAIL 7	LSHM(0): FRU 9 sensor 79 LUN 0 '1V8' voltage 'lower non-critical go low' -assertion
70ct 24 14:53:12 mcscpulab3 kern	el: [184608.438517] \$\$\$\$\$	\$\$\$\$\$\$\$\$PCIEDEV_TIMER: EXPIRED AT 4341044497 DATA2	LSHM(0): FRU 9 sensor 79 LUN 0 '1V8' voltage 'lower non-critical go low' -deassertion
			LSHM(0): FRU 9 sensor 79 LUN 0 '1V8' voltage 'lower non-critical go low' -assertion



7





File Edit View Search Terminal Help 04:00.0 PCL bridge: PLX Technology, Inc. Device 8748 (rev ca) 04:11.0 PCL bridge: PLX Technology, Inc. Device 8748 (rev ca) 04:12.0 PCL bridge: PLX Technology, Inc. Device 8748 (rev ca) 04:13.0 PCL bridge: PLX Technology, Inc. Device 8748 (rev ca) 04:13.0 PCL bridge: PLX Technology, Inc. Device 8748 (rev ca) 06:00.0 Signal processing controller: Xilinx Corporation Device 0088 08:00.0 PCL bridge: PLX Technology, Inc. PEVER 8111 PCL Texpress-to-PCL Bridge (rev 21) 09:00.0 Signal processing controller: TEMS Technologies CnbH Device 8214 09:00.0 PCL bridge: PLX Technology, Inc. PKR 8111 PCL Texpress-to-PCL Bridge (rev 21) 09:00.0 Serial processing controller: PLX Technology, Inc. PCP0856 32-bit 66MHz PCI 00:00.0 Gommunication synchronizer: Xilinx Corporation Device 0028 00:00.0 Serial controller: Research Centre Juelich Device 0028 10:00.0 Bridge: PLX Technology, Inc. PEX 8723 22-lane, 8-Port PCL Express Cen 3 (8.1 12:00.0 Ethernet controller: Intel Corporation 82508 Gigabit Backplane Connection (1 12:00.1 Ethernet controller: Intel Corporation 82508 Gigabit Backplane Connection (1 13:00.0 Ethernet controller: Intel Corporation 82508 Gigabit Backplane Connection (1 13:00.0 Ethernet controller: Intel Corporation 82508 Gigabit Backplane Connection (1 13:00.0 Ethernet controller: Intel Corporation 82508 Gigabit Backplane Connection (1 13:00.0 Ethernet controller: Intel Corporation 82508 Gigabit Backplane Connection (1 13:00.0 Ethernet controller: Intel Corporation 82508 Gigabit Backplane Connection (1 13:00.0 Ethernet controller: Intel Corporation 82508 Gigabit Backplane Connection (1 13:00.0 Ethernet controller: Intel Corporation 82508 Gigabit Backplane Connection (1 13:00.0 Ethernet controller: Intel Corporation 82508 Gigabit Backplane Connection (1 13:00.0 Ethernet controller: Intel Corporation 82508 Gigabit Backplane Connection (1 13:00.0 Ethernet controller: Intel Corporation 82508 Gigabit Backplane Connection (1 13:00.0 Ethernet controller: Intel Corp	LSPCI	TOT-pdebo Scan PCIe Bus Dev: 0000:04:00.0 10b5:8748 SWITCH ON LSPCI DEV: IDS:	11 Dev: 0000:04:09.0 10b5:8748 SWITCH OFF LSPCI DEV: 0000:0b:04.0 ID5:	12 Dev: 0000:04:0b.0 10b5:8748 SWITCH ON LSPCI DEV: IDS:	Run PCIe-Monitor 2 Dev: 000:04:11.0 10b5:8748 SWITCH OFF LSPCI DEV: 0000:0e:00.0 IDS:	3 Dev: 0000:04:03.0 10b5:8748 SWITCH OFF LSPCI DEV: 0000:08:00.0 IDs:	4 Dev: 0000:04:01.0 1055:8748 SWITCH OFF LSPCI DEV: 0000:06:00.0 IDS:	Rescan Bus 5 Dev: 0000:04:08.0 10b5:8748 SWITCH OFF LSPCI DEV: 0000:09:00.0 IDS:	6 Dev: 0000:04:0a.0 10b5:8748 SWITCH ON LSPCI DEV: IDS:	Qu 7 Dev: 0000:04:12 1055:8748 SWITCH OFF LSPCI DEV: 0000:0f:00. IDS:	0 00000 10b5 SWIT LS 0	9 bev: 04:02.0 5:8748 FCH ON 5PCI EV: DS:	N <sup>-</sup> th CF	TB de e PC PU	evice IE sv	lost1 e driv witch 2 is l
[1] 1653 root@ncscpulab3:-# lspci -H1 00:00. Host bridge: Intel Corporation 3rd Gen Core processor DRAM Controller (rev 6	00:00		10b5:9056 12fe:0600		10ee:0020 3300:0020	1796:0019 1796:0019	10ee:0088 3300:0088	1498:8214 1498:800a		1796:0028 1796:0028					11	^ N //
00:01.0 PCI bridge: Intel Corporation Xeon E3-1200 v2/3rd Gen Core processor PCI Exp	Driver:	Driver:	Driver:	Driver:	Driver:	Driver:	Driver:	Driver:	Driver:	Driver:		iver:	Ca	n se	e all	AM
00:01.1 PCI bridge: Intel Corporation Xeon E3-1200 v2/3rd Gen Core processor PCI Exp 00:02.0 VGA compatible controller: Intel Corporation 3rd Gen Core processor Graphics	NO DRIVER		esdadio		x1timer	sis8300	pciedev	tamc532		sis8160						
00:14.0 USB controller: Intel Corporation 7 Series/C210 Series Chipset Family USB x			4.0.0		5.1.0	7.1.0	6.2.0	3.0.0		1.0.0		10	h	ost.		
00:16.0 Communication controller: Intel Corporation 7 Series/C210 Series Chipset Far 00:19.0 Ethernet controller: Intel Corporation 82579LM Gigabit Network Connection (	Devrie:	DevFile:	DevFile:	DevFile:	DevFile:	DevFile:	DevFile:	DevFile:	DevFile:	DevFile:	De	vFile:		JSL.		
00:1a.0 USB controller: Intel Corporation 7 Series/C210 Series Chipset Family USB Er 00:1b.0 Audio device: Intel Corporation 7 Series/C210 Series Chipset Family High De		BARs:	esdadios11 BARs:	BARs:	x2timers2	sis8300s3 BARs:	pciedevs4 BARs:	tamc532s5 BARs:	BARs:	sis8160s7		ARs:				
00:1c.0 PCI bridge: Intel Corporation 7 Series/C210 Series Chipset Family PCI Expres		BARS:	511	BARS:	BARs: 1048575	16383	67108863	4095	BARS:	BARs: 16383		ARS:	Ir	ie sa	me i	oictu
00:1c.4 PCI bridge: Intel Corporation 7 Series/C210 Series Chipset Family PCI Expres 00:1d.0 USB controller: Intel Corporation 7 Series/C210 Series Chipset Family USB Er	II		255		0	10585	67108863	4095		0					· · · C r	01010
00:1f.0 ISA bridge: Intel Corporation QM77 Express Chipset LPC Controller (rev 04)			65535		0		127	0		0		- 21	11.	+ 1		
00:1f.2 IDE interface: Intel Corporation 7 Series Chipset Family 4-port SATA Contro 00:1f.3 SMBus: Intel Corporation 7 Series/C210 Series Chipset Family SMBus Controlle			0		0		0	0		0		-	Н	ost1		
00:1f.5 IDE interface: Intel Corporation 7 Series Chipset Family 2-port SATA Control		L	0		0			0		0		201				
01:00.0 PCI bridge: PLX Technology, Inc. PEX 8717 16-lane, 8-Port PCI Express Gen 3			0		0		0	0		0						
01:00.1 System peripheral: PLX Technology, Inc. Device 87d0 (rev ca) 01:00.2 System peripheral: PLX Technology, Inc. Device 87d0 (rev ca)	PCIe-R/W	PCIe-R/W	PCIe-R/W	PCIe-R/W	PCIe-R/W	PCIe-R/W	PCIe-R/W	PCIe-R/W	PCIe-R/W	PCIe-R/W	iehp	o RAM	ſ	Run PCIe-Monito	_	[
01:00.3 System peripheral: PLX Technology, Inc. Device 87d0 (rev ca)					·				FCIE-R/W	-	Scan PCIe Bus	ervw	1		r	1
01:00.4 System peripheral: PLX Technology, Inc. Device 87d0 (rev ca) 02:01.0 PCI bridge: PLX Technology, Inc. PEX 8717 16-lane, 8-Port PCI Express Gen 3	PCIe-monitor	PCIe-monitor	PCIe-monitor	PCIe-monitor	PCIe-monitor	PCIe-monitor	PCIe-monitor	PCIe-monitor	PCIe-monitor	PCIe-monito	r 10 PCIe-	nonito11 Dev:	12 Dev:	2 Dev:	3 Dev:	4 Dmr:
03:00.0 PCI bridge: PLX Technology, Inc. Device 8748 (rev ca)	Bind pciedev	Bind pciedev	Bind pciedev	Bind pciedev	Bind pciedev	Bind pciedev	Bind pciedev	Bind pciedev	Bind pciede	0000:02:01.0 00	000:04:00.0	0000:04:09.0	0000:04:0b.0	0000:04:11.0	0000:04:03.0	0000:04:01.0
04:00.0 PCI bridge: PLX Technology, Inc. Device 8748 (rev ca) 04:01.0 PCI bridge: PLX Technology, Inc. Device 8748 (rev ca)	INFO	INFO	INFO	INFO	INFO	INFO	INFO	INFO	INFO	1010	1065:8748	1055:8748	10b5:8748	10b5:8748	10b5:8748	10b5:8748
04:02.0 PCI bridge: PLX Technology, Inc. Device 8748 (rev ca)		INFO		INFO					INFO		SWITCH ON	SWITCH ON	SWITCH ON	SWITCH ON	SWITCH ON	SWITCH ON
04:03.0 PCI bridge: PLX Technology, Inc. Device 8748 (rev ca) 04:08.0 PCI bridge: PLX Technology, Inc. Device 8748 (rev ca)	LSPCI	LSPCI	LSPCI	LSPCI	LSPCI	LSPCI	LSPCI	LSPCI	LSPCI	LSPCI LSPCI	LSPCI	PCI LSPCI	LSPCI	LSPCI	LSPCI	LSPCI
04:09.0 PCI bridge: PLX Technology, Inc. Device 8748 (rev ca)					<u></u>					DEV:	DEV:	DEV:	DEV:	DEV:	DEV:	DEV:
04:0a.0 PCI bridge: PLX Technology, Inc. Device 8748 (rev ca) 04:0b.0 PCI bridge: PLX Technology, Inc. Device 8748 (rev ca)									00	00:03:00.0:pcie	IDs:	0000:0b:04.0 IDs:	IDs:	0000:0f:00.0 IDs:	0000:08:00.0 IDs:	0000:06:00.0 IDs:
04:11.0 PCI bridge: PLX Technology, Inc. Device 8748 (rev ca) 04:12.0 PCI bridge: PLX Technology, Inc. Device 8748 (rev ca)									100	00:00		1055:9056		10ee:0020	1796:0019	10ee:0088
04:13.0 PCI bridge: PLX Technology, Inc. Device 8748 (rev ca)										00:00 Driver:	Driver:	12fe:0600 Driver:	Driver:	3300:0020 Driver:	1796:0019 Driver:	3300:0088 Driver:
06:00.0 Signal processing controller: Xilinx Corporation Device 0088 08:00.0 Unassigned class [ff00]: Research Centre Juelich Device 0019							and the second		and an other distances	NO DRIVER		esdadio		xltimer	sis8300	pciedev
09:00.0 Signal processing controller: TEWS Technologies GmbH Device 8214										DevFile:	DevFile:	4.0.0 DevFile:	DevFile:	5.1.0 DevFile:	7.1.0 DevFile:	6.2.0 DevFile:
0a:00.0 PCI bridge: PLX Technology, Inc. PEX 8111 PCI Express-to-PCI Bridge (rev 21) 0b:04.0 Signal processing controller: PLX Technology, Inc. PCI9056 32-bit 66MHz PCI	)	an (ray ha)					and the second se			Devrie:	Devrie:	esdadios11	Devrie:	x2timers2	sis8300s3	pciedevs4
0e:00.0 Communication synchronizer: Xilinx Corporation Device 0020	<-> IOBUS Brid	ige (rev ba)					Statement of the local division of the local		and the second	BARs:	BARs:	BARs:	BARs:	BARs:	BARs:	BARs:
0f:00.0 Serial controller: Research Centre Juelich Device 0028 10:00.0 Bridge: PLX Technology, Inc. PEX 8732 32-lane, 8-Port PCI Express Gen 3 (8.0	CT/c) Switch	(50) (2)					Support of the		and the second second			511 255		0	16383 0	67108863 67108863
12:00.0 Ethernet controller: Intel Corporation 82580 Gigabit Backplane Connection (	ev 01)	(iev ca)					1000		-	20		65535		0	0	127
12:00.1 Ethernet controller: Intel Corporation 82580 Gigabit Backplane Connection ( 13:00.0 Ethernet controller: Intel Corporation 82574L Gigabit Network Connection	ev 01)						State of the local division of the local div					0		0	0	0
<pre>13:00.0 Ethernet controller: Intel Corporation 82574L Gigabit Network Connection root@mcscpulab3:~# </pre>							Section of the		-			0		0	0	0
	and the second	The second se	and the second se	the second se	the second s	the local division in which the	And in case of the local division of the loc								PCIe-R/W	PCIe-R/W
									the second	PCIe-R/W	PCIe-R/W	PCIe-R/W	PCIe-R/W	PCIe-R/W	PCIe-R/W	
and the second s										PCIe-R/W/	PCIe-R/W	PCIe-R/W PCIe-monitor	PCIe-R/W PCIe-monitor	PCIe-R/W PCIe-monitor	PCIe-R/W PCIe-monitor	PCIe-monitor

ost1 fail is detected, the driver has reconfigured itch and rebooted the

is Upstream host, and we AMC modules from this

icture we had before on

Rescan Bu

5

1055:8748

SWITCH ON

LSPCI

DEV:

IDs:

1498:800a

Driver: tamc532

3.0.0

DevFile:

tamc532s BARs: 4095

PCIe-R/W

PCIe-monitor

INFO

LSPCI

INFO

LSPCI

INFO

LSPCI

INFO LSPCI

LSPCI

INFO

LSPCI

6 Dev: 0000:04:0a.0

1055:8748

SWITCH ON

LSPCI

IDs:

Driver:

DevFile:

BARs:

Dev:

10b5:8748

SWITCH ON

LSPCI

DEV:

IDs:

1796:0028

Driver:

DevFile

BARs: 16383

PCIe-R/W

PCIe-monitor

INFO

LSPCI

DO	0	CS.
DO	0	cz

8

9

Dev:

SWITCH ON

LSPCI

DEV:

IDs:

8086:1572

Driver: i40e

DevFile:

BARs: 8388607

PCIe-R/W

PCIe-monitor

LSPCI

9-1 Dev:

1055:8748

SWITCH ON

LSPCI

IDs:

Driver:

DevFile

BARs:





- The source codes can be found on <a href="https://github.com/MicroTCA">https://github.com/MicroTCA</a>
- The information and Linux packages can be found on a DOOCS web page <u>http://doocs.desy.de</u>
- Mail *doocs@desy.de*

# THANK YOU

