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Introduction:

The document describes the detail features of PTF (Packet Transport Fabric) card used in Cisco Carrier Packet Transport (CPT) Devices and basic troubleshooting of it in case of fault occurrence.

Also in this documents some known issues have been published related to PTF card with some troubleshooting steps along with logs collection.

Note: This Document will describe the detail description of only fabric card not line card.

Prerequisites:

Requirements: Cisco recommends that you have basic knowledge below Layer 2 Transport: Carrier Ethernet, MPLS-Transport Profile (TP) and IP/MPLS-(TE) Layer 2 and Layer 2+ services: Carrier Ethernet - EPL, EVPL, ELAN, EVPLAN MPLS-TP – P2P Circuits (VPWS), Ring VPLS, IP/MPLS (TE) – P2P Circuits (VPWS), Multipoint (VPLS).

Components Used and related products: This document can also be used with these hardware and software versions: -Cisco CPT600-CPT-PTF256-10Gx4=-Cisco CPT200-Carrier Packet Transport Platform Release 9.5 System Software.

Background Information:

Packet-based services dominate the overall network traffic and as a result service providers are required to

migrate their existing transport networks from time-division multiplexing (TDM) networks to packet transport

networks. Service providers need next-generation transport networks that can enable and support new mesh, multipoint, and multidirectional services. By deploying packet transport networks, service providers can

benefit from statistical multiplexing, dynamic bandwidth allocation, and quality of service (QoS).

The Carrier Packet Transport (CPT) system is designed to help service providers transition from TDM networks to packet transport networks smoothly and efficiently. The CPT System is an integrated packet transport platform that enables service providers to deploy new packet transport networks.

The CPT System is the first Packet–Optical Transport System (P–OTS) built on standards-based Multiprotocol

Label Switching–Transport Profile (MPLS–TP) technology. The CPT System unifies both packet and transport technologies, giving service providers a strong foundation for next-generation transport. The CPT System is designed to support transport applications so that service providers can continue to offer existing transport services while enabling new packet services.

The CPT System is a platform that provides architectural flexibility with support for MPLS–TP, IP/MPLS, and Carrier Ethernet transport.

The CPT platform enables service providers to provide mobile back-haul, Ethernet services, and TDM services for residential and business customers.

There are two cards in the CPT System:

- Fabric card
- Line card

The CPT 50 panel is a stand-alone unit and can be connected to the CPT System. The CPT 50 panel enables you to scale the number of ports on the CPT System.

Fabric Card:

The fabric card is a single slot card with two 10 Gigabit Ethernet SFP+ ports and two 10 Gigabit Ethernet

XFP ports. The XFP ports on the fabric card support the OTN protocol. The fabric card provides high

availability and high switching capacity. The 10GE XFPs of the fabric card removes the need to deploy

additional transponders for DWDM applications.

Slot Compatibility:

On the CPT 600 shelf, install the redundant fabric cards in slots 4 and 5. There can be up to 2 fabric cards on the CPT 600 shelf. The two fabric cards on the CPT 600 shelf can both be in active mode with both cards carrying the traffic.

On the CPT 200 shelf, install the fabric card in slot 2 or 3

Line Card:

The line card has four 10 Gigabit Ethernet SFP+ ports. The line card expands the I/O capacity of CPT 200 and CPT 600 chassis by interconnecting with other line and fabric cards. It offers carrier class reliability, network flexibility, network ease of provisioning, and industrial grade Operations, Administration, and Maintenance (OAM).

The Cisco CPT 200 and 600 Packet Transport Fabric (PTF) Line Card is a non-blocking switch fabric that delivers economical, scalable, highly available, and Packet Transport services through a Unified Multiprotocol Label Switching (MPLS) network layer. The PTF 256 Gigabit non-blocking

switch fabric interconnects all Packet Transport line cards over the backplane while providing scalability and high availability active-active architecture. In addition, the PTF delivers four 10-Gigabit Ethernet ports that can be used for User-to-Network Interfaces, Network-to-Network Interfaces, and enables extension of GE interfaces through the CPT 50 satellite architecture. The PTF enable the Cisco CPT 200 and 600 provide a robust MPLS-Transport Profile (TP) infrastructure to deliver scalable Private Line, Business, Residential, Mobile Backhaul, Data Center, and Video Services.

Full Line Rate Packet Processing & Traffic Management

256Gnon-blocking full duplex Switching Fabric

2x10GEG.709Enable XFP

2x10GEUNI/NNI/Satellite Interconnect

Fig-1 Card view



Features and Benefits:

Cisco CPT 200 and 600 PTF offers:

- 256 Gbps of non-blocking fully redundant switching fabric
- Distributed forwarding and control planes for higher performance
- Modularized system components in both hardware and software, isolating failure and faults to subsystem and component
- Hardware-based signalling for the fabric: support for near zero packet loss on switchover
- Built-in redundancy in hardware components such as the route switch processor (RSP), switch fabric, control-plane chassis control bus, and power supplies, thereby avoiding a single

point of failure

- 4 port of 10Gbps Ethernet Interfaces that operate as UNI, NNI, & Satellite architecture extension
- Hardware based Bidirectional Forwarding Detection (BFD) processing and control that provide transport SLA detection times.

With integrated synchronization circuitry and dedicated backplane timing traces for accessing the shelf controllers Stratum-3 subsystem, the CPT 200 and 600 PTF Line Card provides standards-based line-interface functions for delivering and deriving transport-class network timing, enabling support of network-synchronized services and applications such as mobile backhaul and migration of TDM services.

The PTF also consolidating Unified MPLS transport and DWDM networking by integrating the G.709 OTN layer with both I.7 and I.4 Enhanced Forward Error Correction (EFEC) into two 10GE ports. The G.709 provides visibility into the DWDM transmission system to permit rapid detection and recovery from transmission-layer and DWDM impairments and G.709 can also be configured for proactive protection if signal degradation is detected; it prevents traffic loss and link outage. The Enhanced Forward Error Correction extends transmission-layer performance, delivering extended performance over an amplified system without the cost of regeneration or transponders.

Useful commands for basic troubleshooting:

TELNET/PING TO CARDS:

- #Test platform telnet (or ping) 192.168.191.<slot no> <telnet from active PTF to any slot, including FOGs>
- #Test platform telnet (or ping) 192.168.190.225 <telnet from active PTF to slot 1 TNC>
- #Test platform telnet (or ping) 192.168.190.226 <telnet from active PTF to slot 8 TNC>

Active PTF commands:

#show redundancy config-sync failures prc <Config Sync: Bulk-sync failure due to PRC mismatch. Please check the full list of PRC failures via>

172.16.50.26#show red config-sync failures prc

#term mon <enables log messages to the terminal >

#term no mon < undo the above >

ALARMS

#Fmea alarms <FMEA is online diag task run on each card>

#Fmea active dump

ALL IOS LOGS to be collected for PTF card:

#Show tech-support <for log collection>

#Show logging < to display the 4 reload reasons>

#Clear logging <clears logging stored in log buffer>

PPMs Related:

#test ppmagent sfpdump sfpdump <0-49> (This is used as pluggable inventory and any ppm related issues, this should be fetch first.)

Observations and Some known issues:

- CSCui18866: BCM SDK error in PTF console "BCM SDK-3-BCM_ERR_MSG_ALERT" - partial fix.
- CSCub37662: PTF card intermittent failure --FPGA Initb error.
- CSCua68104: PTF reboots continuously when it is Power On continuously for few days.
- CSCuc64508: Hostname change for Active/Standby PTF after manual SSO.
- CSCug40521: DB loss is happening during DB restore/Dual PTF reset.
- CSCtz68644: Intermittent PTF Failure.

Related links:

http://www.cisco.com/c/en/us/products/collateral/optical-networking/carrier-packet-transport-cpt-system/data_sheet_c78-633749.html?cachemode=refresh

http://products.mcisco.com/c/en/us/products/collateral/optical-networking/carrier-packet-transport-cpt-system/qa_c67-635049.pdf

http://www.cisco.com/c/en/us/td/docs/optical/cpt/r9_3/configuration/guide/cpt93_configuration/cpt93_configuration_chapter_011.html