

Software Development Kit Release Notes SDK 6.5.4

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Broadcom
Network Switching

Section 1: About This Document

These are the Release Notes for the Broadcom Network Switching Software Development Kit Release 6.5.4.

This document provides a general description of the release and its new features. It also describes the chips supported by the release, BCM API additions or changes, resolved issues, and any relevant open issues. The reader should refer to prior release notes for 6.5.x, as only new features or issues are described in this version of the release notes.

Section 2: Product Documentation

The following documents are available through Broadcom's Customer Support Portal, <http://support.broadcom.com>. They are the primary source of information and should be referenced when using this release:

Table 1: Product Documentation

Document	Description
56XX-PG653-R	BCM API Reference Guide. This manual describes the theory of operations of the API and all existing BCM APIs for this release.
56XX-PG707-R	Stacking Software Guide This guide describes how to use the discovery and stacking applications provided in this release.
56XX-PG819-R	Platform Guide This guide describes the SDK source and Makefile structure, abstraction and porting layers, device specific interactions, and the platform/operating system specific features of the SDK. If this is your first time working with the SDK, start with this document.

Section 3: New Devices and Systems

For any given SDK release, support for certain devices may be provided in Preview or Supported status. Devices in Table 2: Supported Switch Devices and Table 4: Supported PHYs have completed the full QA process and are intended for use in production systems. It is expected that customers would integrate the version of the SDK which provides "Supported" status for their use on actual development or production systems.

Devices in Table 3: Preview Switch Devices and Table 5: Preview PHYs are provided to allow early integration of the customer's application with the SDK APIs that support that device. This software has not been fully tested on the physical target device and should not be expected to fully function.

Table 2: Supported Switch Devices

Family	Devices	Description
BCM56160	BCM56160 B0	8x2.5GbE + 16x1GbE + 4x10GbE + 2x20GbE
	BCM56162 B0	24x1GbE + 4x1GbE, 24GbE + 2x1GbE + 2x 13GbE
	BCM56163 B0	8x1GbE + 2x10GbE
	BCM56164 B0	24x1GbE + 4x1GbE
	BCM56166 B0	8x2.5GbE + 16x1GbE + 4x10GbE + 2x20GbE
BCM53440	BCM53440 B0	8x2.5GbE + 16x1GbE + 4x10GbE + 2x20GbE
	BCM53442 B0	24x1GbE + 4x1GbE
	BCM53443 B0	8x1GbE + 2x10GbE
BCM56565	BCM56565 A0	24x10GbE + 24x1GbE+ 4x10GbE+ 2xHG[106] Ethernet Embedded Switch
	BCM56566 A0	12x MGig + 36x 1 / 2.5GE + 8x10G (uplink) + 2xHG[106]
	BCM56567 A0	48x 1 / 2.5 GE + 8x10G (uplink) + 2xHG[106]
BCM56560	BCM56560 A0	2xCAUI + 4x40GbE + 12x10GbE Ethernet Embedded Switch
BCM56760	BCM56762 A0	24x10GE + 6x40GE with support for 25GE
BCM56340	BCM56345 A0	48-port 10GbE switch with integrated CPU and 40GbE support for embedded applications
	BCM56346 A0	28-port 10GbE switch with integrated CPU for embedded applications

Table 3: Preview Switch Devices

Family	Devices	Description
BCM56270	BCM56270 A0	4x 2.5GbE Port Integrated Low-Power Carrier Ethernet Access Switch with 8x 10GbE Uplinks, and Stacking
	BCM56271 A0	4x 2.5GbE Port Integrated Low-Power Carrier Ethernet Access Switch 4x 10GbE + 4x 2.5GbE Uplinks, and Stacking
	BCM56272 A0	4x 1GbE Port Integrated Low-Power Carrier Ethernet Access Switch with 2x 10GbE Uplinks, and Stacking.
	BCM53460 A0	4x 2.5GbE Port Integrated Low-Power Carrier Ethernet Access Switch with 8x 10GbE Uplinks, and Stacking.
	BCM53461 A0	4x 1GbE Port Integrated Low-Power Carrier Ethernet Access Switch with 4x 10GbE + 4x 2.5GbE Uplinks, and Stacking.
BCM56565	BCM56565 B0	24x10GbE + 24x1GbE+ 4x10GbE+ 2xHG[106] Ethernet Embedded Switch
	BCM56566 B0	12x MGig + 36x 1 / 2.5GE + 8x10G (uplink) + 2xHG[106]
	BCM56567 B0	48x 1 / 2.5 GE + 8x10G (uplink) + 2xHG[106]

Table 3: Preview Switch Devices

Family	Devices	Description
BCM56560	BCM56560 B0	2xCAUI + 4x40GbE + 12x10GbE Ethernet Embedded Switch
BCM56760	BCM56760 B0	6x40GbE+ 48x10GbE Ethernet Embedded Switch
	BCM56762 B0	6x40GbE+ 48x10GbE Ethernet Embedded Switch
	BCM56765 B0	24x10GE + 6x40GE with support for 25GE
BCM53400	BCM53369 A0	12 x 10G + 12*1G/2.5G

Table 4: Supported PHYs

Device	Driver Family	Description	Switch qualified against
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Table 5: Preview PHYs

Device	Driver Family	Description	Switch qualified against
BCM82332	82332	1x 100G/3x 40G/12x 10G Ethernet PHY	BCM56860
BCM82793	82332	100G Gearbox for 100GBASE CR4/SR4/LR4 & SR10	BCM56860
BCM84888	84848	10G/5G/2.5G/1000/100BASE-T Transceiver	BCM56860

Section 4: New Features per Device

BCM56760/BCM56765 A0 GENERAL AVAILABILITY (GA) RELEASE

The BCM56760 family is a class of high performance, nonblocking network switching devices supporting up to 720Gbps to address performance, capacity and service requirements of next generation data center and cloud computing environment. They feature multiple integrated TSC Serdes core with support for 100GE delivering high-bandwidth, glueless network connectivity.

This release supports following port configurations: For 56760 A0

- 48x10GbE + 6x40GbE (ToR configuration)
- 72x10GbE
- 4x50GbE + 48x10GbE + 1x10GbE
- 2x100GbE + 4x40GbE + 8x25GbE + 12x10GbE + 2x10GbE

For 56765 A0

- 72x10GbE
- 2x100GbE + 48x10GbE
- 16x25GbE + 8x40GbE
- 48x10GbE + 6x40GbE
- 18x40GbE

This release provides General Availability (GA) support for BCM56760 A0 and BCM56765 A0 devices. BCM56760 B0, BCM56765 B0, BCM56762 A0, and BCM56762 B0 are supported as Preview only in this release.

SDK OVERALL FEATURE STATUS FOR BCM56760

Table 6: BCM56760/BCM56765 A0 Status of SDK features

Features	Status
L2	GA
L3	GA
L2 Multicast	GA
IP multicast	GA
DMVOQ	GA
DPVOQ	GA
Legacy Field Processor	GA
L2GRE	GA
Mac-in Mac and SPB	GA
Legacy MPLS	GA
QoS	GA
Mirror	GA
Trunk	GA
Proxy	GA
Higig Proxy	GA
Packet Rx	GA
Packet Tx	GA
Linkscan	GA
Rate	GA
Resilient Hash	GA
RTAG7 flex Hash	GA

Table 6: BCM56760/BCM56765 A0 Status of SDK features

Features	Status
Switch Control	GA
STAT legacy & flex	GA
STG	GA
Tunnel	GA
TRILL	GA
Port Extender	GA
VLAN	GA
Legacy protection switching	GA
FCoE	GA
COE subport	GA
VP-VLAN membership	GA
Legacy subport	GA
NIV	GA
UFT	GA
Cosq	GA
System and network level congestion	GA
Base MMU	GA
MMU stats	GA
MMU config tool	GA
MMU Queue structure	GA
BST (buffer statistics)	GA
cut-through	GA
E2ECC	GA
I2C	GA
Port	GA
Flexport	GA
100G Support	GA
VXLAN	GA
MPLS swap to self	GA
RiOT	GA
Multiple split horizon group	GA
MPLS Segment Routing	GA
MPLS entropy & GAL	GA
EP Redirect 2.0	GA
ALPM	GA
SER	GA
Protection switching enhancement	GA
OAM	GA
Warmboot	GA
IFP & EFP enhancements	GA
Higig-DLB	GA
LED Processor	GA
Warmboot upgrade	like-to-like and 6.5.3-to-6.5.4 upgrade verified

BCM56565/BCM56566/BCM56567 A0 GENERAL AVAILABILITY (GA) RELEASE

The BCM56565 family is a purpose built device for access and aggregation deployment in the enterprise network. The BCM56565 family offers 48 front panel ports with 24 ports of MGig that offer complete flexibility with support for 1/2.5/5/10G. In addition BCM56565 also offers 200Gbps of stacking bandwidth (HiGiG only) for the new enterprise fixed/stackable market. This release supports the following port configurations:

- 24x10GbE (MGig) + 24x1GbE + 4x10GbE (Uplink) + 2xHG[106] (stacking)
- 24x10GbE + 24x1/2.5 GbE + 1x100GbE/4x25GbE (Uplink) + 4xHG[42]
- 24x10GbE + 24x1GbE + 8x10GbE (Uplink) + 4xHG[42]
- 24x10GbE + 24x1/2.5GbE + 8x10GbE (Uplink) + 4xHG[42]
- 24x10GbE + 24x1/2.5GbE + 1x100GbE/4x25GbE (Uplink) + 2xHG[106]
- 24x10GbE + 24x1GbE + 8x10GbE (Uplink) + 2xHG[106]
- 24x10GbE + 24x1/2.5GbE + 8x10GbE (Uplink) + 2xHG[106]
- 24x10GbE + 24x1GbE + 2x100GbE (Uplink)
- 24x10GbE + 24x1/2.5GbE + 2x100GbE (Uplink)

This release provides General Availability (GA) support for BCM56565 A0, BCM56566 A0, and BCM56567 A0 devices. This release provides only preview support for BCM56565 B0, BCM56566 B0, and BCM56567 B0 devices.

SDK OVERALL FEATURE STATUS FOR BCM56565

The following list of features is supported in this release at GA quality.

Table 7: BCM56565/BCM56566/BCM56567 A0 Status of SDK features

Features	Status
L2	GA
L3	GA
L2 Multicast	GA
IP multicast	GA
DMVOQ	GA
DPVOQ	GA
Legacy Field Processor	GA
L2GRE	GA
Mac-in Mac and SPB	GA
MPLS	GA
QoS	GA
Mirror	GA
Trunk	GA
Proxy	GA
Higig Proxy	GA
Packet Rx	GA
Packet Tx	GA
Linkscan	GA
Policer	GA
Rate	GA
Resilient Hash	GA
RTAG7 flex Hash	GA
Switch Control	GA

Table 7: BCM56565/BCM56566/BCM56567 A0 Status of SDK features

Features	Status
STAT legacy & flex	GA
STG	GA
Tunnel	GA
Port Extender	GA
VLAN	GA
Legacy protection switching	GA
VP-VLAN membership	GA
Legacy subport	GA
NIV	GA
UFT	GA
Cosq	GA
System and network level congestion	GA
Base MMU	GA
MMU stats	GA
MMU config tool	GA
MMU Queue structure	GA
BST (buffer statistics)	GA
E2ECC	GA
I2C	GA
Port	GA
Flexport	GA
100G Support	GA
VXLAN	GA
RiOT	GA
Service Meter enhancement	GA
Multiple split horizon group	GA
EP Redirect 2.0	GA
ALPM	GA
SER	GA
Hierarchical Protection switching	GA
OAM	GA
Warmboot	GA
IFP & EFP enhancements	GA
Higig-DLB	GA
LED Processor	GA
Warmboot upgrade	like-to-like and 6.5.3-to-6.5.4 upgrade verified

BCM56560 A0 GENERAL AVAILABILITY (GA) RELEASE

The BCM56560 family is a class of high-performance, nonblocking network switching devices supporting up to 700Gbps switch ports bandwidth. Each device family features multiple integrated TSC Serdes Core, each with four integrated 100G SerDes transceivers and associated PCS for native support of SGMII (10/100/1000BT), XFI, XAUI, 10GBASE-KR/CR/SR, 40GBASE-KR4/CR4, XLAUI, CAUI4, and Broadcom's proprietary HiGig2(TM) at different speeds. The BCM56560 delivers high-bandwidth, glueless network connectivity up to 700 Gbps on a single chip. This release supports the following port configurations.

- 2xCAUI + 4x40GbE + 12x10GbE
- 2xCAUI + 48x10GbE + 2x10GbE
- 2xCAUI10 / HG[106] + 16x25GbE
- 6x40GbE + 24x10GbE + 2x10GbE
- 2xCAUI10+ 2xCAUI + 24x10GbE + 2x10GbE

SDK OVERALL FEATURE STATUS FOR BCM56560

The following list of features is supported in this release at GA quality.

Table 8: BCM56560 A0 Status of SDK features

Features	Status
L2	GA
L3	GA
L2 Multicast	GA
IP multicast	GA
Legacy Field Processor	GA
Mac-in Mac and SPB	GA
Legacy MPLS	GA
QoS	GA
Mirror	GA
Trunk	GA
Proxy	GA
Higig Proxy	GA
Packet Rx	GA
Packet Tx	GA
Linkscan	GA
Policer	GA
Rate	GA
Resilient Hash	GA
RTAG7 flex Hash	GA
Switch Control	GA
STAT legacy & flex	GA
STG	GA
Tunnel	GA
Port Extender	GA
VLAN	GA
Legacy protection switching	GA
COE subport	GA
VP-VLAN membership	GA
Legacy subport	GA
NIV	GA

Table 8: BCM56560 A0 Status of SDK features

Features	Status
UFT	GA
Cosq	GA
Base MMU	GA
MMU stats	GA
MMU config tool	GA
MMU Queue structure	GA
BST (buffer statistics)	GA
E2ECC	GA
I2C	GA
Port	GA
Flexport	GA
100G Support	GA
VXLAN	GA
MPLS swap to self	GA
RiOT	GA
SAT Hooks	GA
Service Meter enhancement	GA
Multiple split horizon group	GA
MPLS Segment Routing	GA
MPLS entropy & GAL	GA
EP Redirect 2.0	GA
ALPM	GA
SER	GA
Hierarchical protection switching	GA
OAM (Ethernet and MPLS)	GA
Warmboot	GA
IFP & EFP enhancements	GA
Higig-DLB	GA
LED-Processor	GA
Warmboot upgrade	like-to-like and 6.5.3-to-6.5.4 upgrade verified

BCM56270 BETA SUPPORT

The Broadcom BCM56270 is purpose-built for next-generation Carrier Ethernet Edge and Mobile Backhaul platforms. It combines a feature-rich packet processing engine, integrated hierarchical traffic manager, address management, and a non-blocking switch fabric into a single 28 nm CMOS device. The BCM56270 supports an integrated packet buffer. The BCM56270 is capable of handling L2 switching, L3 routing, metro VPN tunneling, and access control lists (ACLs). The BCM56270 virtualized architecture enables seamless support for VPLS, VPWS, MPLS-TP, PBB, and PBB-TE tunneling. In addition, the BCM56270 supports internal processing of Ethernet OAM, BFD, and BHH to enable a complete host CPU offload for these functions.

Config supported in this release: 8x1G/2.5G/10G + 4x1G/2.5G

No new bundled External PHY drivers are planned for this device. New External PHY drivers should be obtained from the Broadcom PHY team as a standalone PHY driver.

SDK FEATURE STATUS

Table 9: BCM56270 Status of SDK features

Features	Status
L2	Beta
L3	Beta
L2 Multicast	Beta
IP multicast	Beta
DMVOQ	Beta
Legacy Field Processor	Beta
Mac-in Mac and SPB	Beta
Legacy MPLS	Beta
QoS	Beta
Mirror	Beta
Trunk	Beta
Proxy	Beta
Higig Proxy	Beta
Packet Rx	Beta
Packet Tx	Beta
Linkscan	Beta
Policer	Beta
Rate	Beta
Resilient Hash	Beta
RTAG7 flex Hash	Beta
Switch Control	Beta
STAT legacy & flex	Beta
STG	Beta
Tunnel	Beta
Port Extender	Beta
VLAN	Beta
Legacy protection switching	Beta
VP-VLAN membership	Beta
Legacy subport	Beta
NIV	Beta
UFT	Beta
Cosq	Beta

Table 9: BCM56270 Status of SDK features

Features	Status
System and network level congestion	Beta
Base MMU	Beta
MMU stats	Beta
MMU Queue structure	Beta
E2ECC	Beta
I2C	Beta
Port	Beta
Flexport	Beta
LED Processor	Beta
Link PHY	Preview

BCM88060 A0 BETA SUPPORT

The Broadcom BCM88060 is a second generation Fibre Channel (FC) and Fibre Channel-over-Ethernet (FCoE) mapper. The device enables a flexible chip to be deployed in front of a data center switches to connect to FC endpoints directly. This device provides the flexibility to support FC/FCoE/Ethernet universal port capability as needed. The device incorporates the FC mapping into and out of Ethernet (FCoE) in a physical layer device. As a universal port device, the FCoE capability can optionally connect to a host of switches via a standard Ethernet when the FC universal port is needed. This release supports the following device firmware: BCM8806x version 1.0.4 (rc/firmware/BCM8806x). Please copy it to the SDK boot directory. This firmware binary (BCM8806x) must be present in the SDK boot directory for loading during initialization.

STATUS OF SUPPORTED FEATURES

Bring up of the following BCM88060 features have been completed in this SDK release. Some features have reached Beta quality as they have already entered our test regression phase. Table 10 shows the status of features in this release.

Table 10: SDK Feature Status

Feature	Status	Note
Ethernet Retimer mode - Forced	Beta	Supported speeds: 10G / 20G / 25G / 40G / 50G / 100G
Ethernet Retimer mode - Autoneg	Bringup	Supported speeds: 10G / 20G / 25G / 40G / 50G
Ethernet Gearbox mode - Autoneg/ Forced	Bringup	Supported 40G : System side 2x20G , line side 4x10G
Ethernet EBE (Extended Buffered for Ethernet mode)	Bringup	Supported all speeds: Same speed on system and line side.
Warmboot	Bringup	Tested in Linux environment with Ethernet and FCoE.
Ethernet Flexport	Bringup	Quad, Tri0, Tri1, dual, single supported.
HiGig	Bringup	Supported 42G, 106G
Boot optimization	Bringup	Tested boot and initialization timings with multiple MT2 setup.
Parallel Download with multiple MT2	Bringup	Tested with chained MT2 setup.
FCoE - Fixed mode and AN mode with TTS	Bringup	Supported speeds: 4G / 8G / 16G / 32G. With Fixed Training.
FCoE - Statistics and Events handling	Bringup	Tested inband statistics in FCoE setup.
Diagnostics	Beta	Register read/write, dsc dump, eye scan supported. Phy diag supports multistage loopback.
Traffic tests	Beta	TR19, TR72 supported.

NOTES AND KNOWN LIMITATIONS

- Tested with BCM956960 & BCM56850 SVK on PowerPC with VxWorks and Linux.
- Ethernet Repeater mode is not yet supported.
- Traffic might terminate on nonflex ports during some flexport configuration.
- Re-configuring FC from 32 to lower speed might require re-initialization.
- HiGig - tested on BCM956960KM board only.

BCM56160 B0 FAMILY GENERAL AVAILABILITY (GA) RELEASE

The B0 revision of the base BCM56160 device and the derivative SKUs are at GA quality in this release:

- B0 SKUs: BCM56160, BCM56162, BCM56163, BCM56164, BCM56166, BCM53440, BCM53442, BCM53443

This release also adds 4 new port configurations for BCM53440 SKU.

- Option 7 : 16P 1G + 8x1G/2.5G + 2P 1G/10G + 4P 1G/10G
- Option 7A: 16P 1G + 8x1G/2.5G + 4P 1G/10G + 2P 1G/10G
- Option 8 : 16P 1G + 8x1G/2.5G + 2P 25G + 4P 1G/10G
- Option 8A: 16P 1G + 8x1G/2.5G + 4P 1G/10G + 2P 25G

BCM88670-FAMILY GA RELEASE

This release is for the BCM88370-Family and BCM88670-Family product lines. In the continued SDK support, all features introduced in SDK 6.5.3 are also supported in SDK 6.5.4.

The subsequent sections describe the increment in available features compared to 6.5.3, major bug-fixes and known issues. It is extremely important to review "Backward compatible important notes" section before starting the integration of the new release.

BACKWARD COMPATIBLE IMPORTANT NOTES

- General: When an IPv4oETH packet was received with IP protocol field set to '0', the parser output for the packet format qualifier was ETHoIPv4oETH. This incorrect parsing of the packet could cause erroneous processing along the pipeline. The PFC is corrected to IPv4oETH in the above case. Note that it breaks backward compatibility, for example ACL lookups on the packet format were done on such packets.
- Meter/Policer: bcmSwitchMeterAdjustInterframeGap switch control enum is deprecated, default settings are enough. Do not use the switch control.
- Meter/Policer: Packet mode for policer/metering: When calling `bcm_rate_bandwidth_set` and `bcm_policer_set`, PPS translation to kbits was changed on certain cases. Could cause different behavior on the rate limit. Be aware for the updated rate limit for packets mode is [43-65020]pps. For more information see major bugfixes.
- L2: CPU learning without DMA enabled is not available anymore. DMA is used to copy the OLP events to the CPU's memory. For CPU learning the following soc properties must be defined: `# learning_fifo_dma_buffer_size` in bytes (host memory size). Valid range is 20-327680

```
learning_fifo_dma_buffer_size=200000
```

`learning_fifo_dma_timeout` in microseconds. Valid range is 0-65535. 0 means no timeout.

```
learning_fifo_dma_timeout=32767
```

`learning_fifo_dma_threshold` valid range is 1-16384 (0x4000)

```
learning_fifo_dma_threshold=4
```

- L3: L3 route add in KAPS, now utilize the KAPS ARM and descriptor DMA by default. Note that it is breaking backward compatible of how to use KAPS ARM. The soc property `custom_feature_kaps_arm_enable` is now replaced with `dma_desc_aggregator_enable_specific_KAPS=1`. In addition the descriptor DMA is configurable using the following soc properties and their default values: `dma_desc_aggregator_chain_length_max=500`, `dma_desc_aggregator_buff_size_kb=100`, `dma_desc_aggregator_timeout_usec=1000`
- IPMC: the entry type (bridge/route) selected by the `bcm_ipmc_add/remove/get` was depended on the related IN-RIF IPMC state (enable/disable). In 6.5.4 and onward, we allow selecting the `bcm_ipmc_add/remove/get` entry type using the `BCM_IPMC_L2` for bridge entry and route otherwise. This breaks backward compatible as the decision was before according to IN-RIF state. Failure example, customer might face is: "arad_pp_dbal_entry_key_to_kbp_buffer unit 0:Error: valid qualifier in_rif after don't care qualifier". Customer will need to fix his calling sequence. To keep working in the previous way the `custom_feature_ipmc_set_entry_type_by_rif` SOC property should be set to 1.
- IPv6: IPv6 host entries (`bcm_l3_host_add`) must be supplied with `encap_id == 0`. So far the HW limitation wasn't enforced and SDK ignored the `encap_id`. IPv6 host entries also reside in KAPS and thus only FEC can be supplied. Following error information will be retrieved in case customer will set `encap_id == 0`: "IPv6 host must get FEC and info->encap_id == 0"

- MPLS/VPLS/VPWS: LIF termination profiles are internally managed by the SDK and being allocated according to user configuration from APIs `bcm_mpls_tunnel_terminator_create` and `bcm_mpls_port_add` (PWE P2P, PWE MP, MPLS LSP). In hardware only 4 LIF termination profiles are supported. In previous release, allocation of more than 4 profiles was resulting in assertion failure on certain LIF cases. This was fixed by protecting the user and to return an error when user allocates more than the 4 defined. User might now get unexpected errors when passing the limit of the number of profiles while in previous SDK version it didn't. In case it happens, please contact the local AE for consulting how to utilize correctly the LIF termination profile to the limit of valid 4.
- MPLS/VPLS/VPWS B0 only: Prior to this fix, push profiles 10-15, have been allocated regardless of the mpls label index (first or second) in an EEDB entry. This fix changes the method of allocation and creation of such profiles: 1) Profiles 10-15 may be created only by calling `bcm_mpls_port_add()` with a given profile. 2) Profiles 10-15 may be used only by the first label in an EEDB entry, with the values that created them in part 1.
- VXLAN: API `bcm_multicast_vxlan_encap_get` returns now failing when gport is VXLAN ECMP. So far, the returned information was incorrect. Instead user should call `bcm_multicast_egress_object_encap_get` for each FEC member of the ECMP group.
- BFD: BFD mask-flags is now officially supported and not by a custom feature `custom_feature_bfd_flags_clear_enable` soc property. Custom feature soc property was removed. Use `bfd_supported_flags_bitfield` - Define the three BFD flags to support. `bfd_mask_flags_bitfield` - Define the flags to mask.
- OAM: Up until 6.5.4, CFM PDU in level X which traverses a LIF that a MIP is configured on in level Y, will not be trapped / dropped even if $X < Y$. This was not according to IEEE 802.1Q standard. From 6.5.4, such CFM PDUs (which will be trapped to CPU by default, both active / passive directions (ingress / egress)). In addition, the trap code in such cases will be `trap_oam_passive` and not `trap_oam_level`.
- Flexible hashing: qualifier `bcm_field_qualify_IpProtocolCommon` behavior is changed. In current release compared to previous release, `bcm_field_qualify_ForwardingType` must be set before using the `bcm_field_qualify_IpProtocolCommon` in the SLB pre-selector in order to determine the layer in which the "next protocol" field should be set.
- Flexible hashing: there was a misconfiguration making the 16lsb LB-key value to be mask (not included). The issue is now fixed. Note this may cause different load-balancing key values compared to previous releases.
- PHY FEC: There are two types of FEC, Clause 74 and Clause 91. In previous releases, the CL91 FEC and CL74 FEC were enabled simultaneously by "BCM_PORT_PHY_CONTROL_FORWARD_ERROR_CORRECTION". CL91 FEC should be enabled by "BCM_PORT_PHY_CONTROL_FORWARD_ERROR_CORRECTION_CL91". This issue has been fixed in the release.
- SW compatibility guidelines 6.4.X to 6.5.X:

Preserving SW interface of BCM88670 device between SDK versions was a key consideration in 6.5.x device driver design.

The SW interface was modified in the following cases: Improved SW design resulting in a more intuitive API, efficiency, significantly modified or extended device functionality.

To assist the migration process from existing application configuring BCM88670 devices over 6.4.x SDK versions (6.4.10, 6.4.11), to an application configuring BCM88670 devices over 6.5.x SDK versions, a dedicate document was created: "BCM88670 BCM SDK Compatibility Guidelines 6.4.x to 6.5.x". We highly recommend going over the document. In case you don't find the document in docsafe, please approach your AE engineer to get a copy of it.

Customers that migrate existing applications over 6.4.X releases that are prior to 6.4.10, are required to do two steps: first to go over the release notes of later 6.4.X releases up to 6.4.10 (including) and fit their application configuration accordingly and then start the migration process from 6.4.X to 6.5.X.

ISSU is NOT supported from 6.4.X to 6.5.X

SDK 6.5.3 Release Notes

- Release is aligned with KBP-SDK 1.4.4 for external TCAM and KAPS.
- Scheduled warmboot is supported.

VALIDATED FEATURES

Basic data path, connectivity and Traffic Management features: None Packet Processing: None

NEW FEATURES

Basic data path, connectivity and Traffic Management features:

- ILKN non-consecutive lanes support
- LinkScan: The link status was only checked and determined by PHY status, which was not enough. Local/Remote fault checking has been added in Linkscan thread in this release.
- PHY MDIX: New API `bcm_port_mdix_set` is added to support external PHY MDIX configuration.

Packet Processing:

- Add the option of vlan in the DSP's ethernet encapsulation. See an example in `l2_cpu_learning_with_vlan` under `cint_l2_cpu_learning.c`
- Port extender 801.BR : Added multicast groups configurations. Example is available in `cint_port_extender_cb_l2_mc.c`
- ELI search was added using the `bcmSwitchHashELISearch` switch to include the EL label in the LAG and in the ECMP. Note that the ELI search available only if BOS search is enabled.
- To speed up PWE+MPLS binded EEDB entry a new field introduced in `bcm_mpls_port_add_egress_tunnel_label`. To enable it use soc property `mpls_bind_pwe_with_mpls_one_call == 1`. Note Using this soc property removes the ability to create this kind of entry using the old scenario, that is creating a PWE, fetching it with `bcm_mpls_tunnel_initiator_get()` and replacing the entry with PWE + mpls tunnel via `bcm_mpls_tunnel_initiator_create()`.
- Support for MPLS PORT FEC format C (EEI) added. To set this format flag `BCM_MPLS_PORT2_ENCAP_OPTIMIZED` is used.
- In L3, when utilizing the descriptor DMA mechanism for adding routes/FECs, it is now possible to verify that all pending writes have been committed to HW using the switch control: `bcm_switch_control_set(unit, bcmSwitchL3RouteCommit, 1)`.
- BFD flags new capability available, set by default {P,F,C} instead of {P,F,D}. Also, added the capability to mask D-flag. New soc properties introduced: `bfd_supported_flags_bitfield` - Define the three BFD flags to support. Supported values: 0x32, 0x38. `bfd_mask_flags_bitfield` - Define the flags to mask. Supported values: 0x0, 0x8, 0x2.
- Utilizing the LEM for scaling subnet entries. For IPv4 UC routes we introduced `enhanced_fib_scale_prefix_length` soc property and it is supported since 6.5.3. For more information see section Scale Subnet Entries using LEM in 88670-PG116-R (or latest revision). In 6.5.4, we introduce scaling subnet entries also for IPv6. IPv6 UC routes at two specific prefixes. Use `enhanced_fib_scale_prefix_length_ipv6_long` and `enhanced_fib_scale_prefix_length_ipv6_short`. See `cint_ipv6_fap.c` for cint example.
- LLC/SNAP headers are now parsed better for ACLs
- Added support for age status matching for `bcm_l2_replace()`
- In L3 IPv6 MC, the field `mc_ip6_mask` was added to the `bcm_ipmc_addr_t` struct which is passed to `bcm_ipmc_add/find/remove`. This field represents the IPv6 Destination mask for LPM searches. Note that this breaks backwards compatibility as this field's value is '0' by default (meaning `mc_ipv6_addr` masked).
- MIP level demultiplexer is now supported on Jericho devices. If a MIP is created on a specific LIF, OAM packets traversing that LIF with lower level (than the level of the MIP) will be trapped. The trap will be `trap_oam_passive` instead of `trap_oam_level`.
- OAM loopback support the ability to set PCP / DEI Ethernet fields on an LBM message generated by the SAT. This is done with the fields `pkt_pri`, `inner_pkt_pri` in `bcm_oam_loopback_add()`

High Availability:

- SER Interrupt: For some interrupts, the SER handling would do hard reset or software reset. In this release, an option is added to allow calling user callback instead of doing reset.
- SER Interrupt: In previous releases, if an interrupt occurred but not handled, no information was printed. In this release, interrupt info can be printed out for every interrupt routine.

Diagnostics shell:

- New command "diag pp sig" was added to diag tool. It allows viewing certain metadata, like In_LIF, Out_LIF, VSI and much much more passing between stages in the pipeline. Please use this command without any parameters to see full usage. Pay attention that this command is based on newly introduced XML DB. This DB is situated under \$SDK/src/appl/diag/dcmn and there are two options to make it accessible for diag: Link db folder to the working directory of bcm.user (config.bcm style) In -s \$SDK/\$SDK/src/appl/diag/dcmn/db \$SDK/systems/linux/user/wrx-3_7/ Establish environment variable DPP_DB_PATH that points to DB setenv DPP_DB_PATH= \$SDK/src/appl/diag/dcmn/db Environment variable takes precedence Environment variable is also efficient when working directory is changed in course of different actions, like regression testing Examples (all strings are case insensitive): Show all stages diag pp sig show=stage All signals passing between TT and FLP related to VSI diag pp sig from=TT to=FLP name=VSI First signal from ERPP block having TC as part of its name diag pp sig block=ERPP name=TC show=lucky Show only exact appearance for Out_LIF to or from Preprocessor in ERPP, not including fields diag pp sig block=ERPP stage=PRP name=Out_LIF show=exact,noexpand
- PHY Diag: External phy and system interface type were not supported for command "phy diag <unit> dsc". In this release, new arguments are added to support external phy and interface. Command example, "phy diag <unit> dsc u=1 if=sys".
- PHY PRBS: PRBS for external PHY was not supported. In this release, this feature is added and new command is added. PHY unit, interface type and poly can be specified. Command example, "phy diag <port> prbs u=1 if=sys p=3".
- PHY Diag: Added PCS related commands, "phy diag <port> pcs" "phy diag <port> pcs topo" "phy diag <port> pcs link" "phy diag <port> pcs speed" "phy diag <port> pcs aneg" "phy diag <port> pcs tfc" "phy diag <port> pcs antimers" "phy diag <port> pcs state" "phy diag <port> pcs debug"

MAJOR BUGFIXES

The list below refers to major bugfixes, and does not provide a comprehensive coverage of various bugfixes on all levels.

Basic data path, connectivity and Traffic Management features:

- Few fixes in packet mode for policer/metering:

When calling `bcm_rate_bandwidth_set` and `bcm_policer_set`, PPS translation to kbits wasn't correct and cases like 100PPS was translated to 0 by mistake. Be aware for the updated rate limit for packets mode is [43-65020]pps
When creating a meter, the max EIR and max CIR values can be set to 0xFFFFFFFF (max U32 value) in order to specify 'unlimited' values.
By mistake the API moved it to be converted to limit values.

- Fixes for credit request profiles: 1. The default application configures SCH to be SLOW (previously was LOW_DELAY). 2. The default application associates each port with its corresponding SLOW credit request profile (previously all ports associated with 10G_SLOW profile). 3. Introduce fine-tuned credit request thresholds in case of local switch (single device).
- Calling `bcm_port_loopback_set(unit,port,BCM_PORT_LOOPBACK_PHY)` on a disabled port of Falcon interface brought the port to be enabled. This issue is fixed.

- After the fix, ports status keeps no change during loopback setting.
- KBP: There was no re-transmission mechanism in KBP XPT layer in previous releases. Once transmission failed in XPT layer, it would return error to application layer. And KBP LUT initialization was not stable because of it. In this release, a re-transmission mechanism has been added into KBP XPT layer.
- EXT PHY: If external PHY AN result is 1G, system side was down. This caused traffic was blocked. This issue has been fixed in this release.
- EXT PHY: 40G ports could not be probed and loopback did not work. These issues are fixed. External PHY 40G mode works properly in this release.
- EXT PHY: The link status flipped when the external PHY worked on pcs repeater mode. This issue has been fixed in this release.

High Availability:

- Fixed incorrect caching settings for some tables and registers. Below tables are changed to be uncacheable:
KAPS_TCM SCH_MEM_01F00000 SCH_MEM_30000000 ILKN_PMH_PORT_0_CPU_ACCESS
ILKN_PMH_PORT_1_CPU_ACCESS ILKN_PML_PORT_0_CPU_ACCESS
ILKN_PML_PORT_1_CPU_ACCESS Below tables are changed to be cacheable:
PPDB_A_FEC_ENTRY_FORMAT_A PPDB_A_FEC_ENTRY_FORMAT_B
PPDB_A_FEC_ENTRY_FORMAT_C PPDB_A_FEC_ENTRY_FORMAT_NULL
PPDB_A_FEC_ENTRY_GENERAL PPDB_B_LARGE_EM_FORMAT_1 PPDB_B_LARGE_EM_FORMAT_2
PPDB_B_LARGE_EM_FORMAT_3_TYPE_0 PPDB_B_LARGE_EM_FORMAT_3_TYPE_1
PPDB_B_LARGE_EM_FORMAT_SLB_COUNTER PPDB_B_LARGE_EM_LEARN_FORMAT
IPS_QPM_1_NO_SYS_RED
- `bcm_petra_rx_init()` might return error during parallel initialization. This issue is fixed.
- `DRCx_PhyCdrAboveTh` interrupt might be triggered during soft reset. This bug has been fixed.
- In previous releases, some cacheable tables didn't initialize properly, led to SER recovery failed at the first time. In this release, this problem is fixed.

Packet Processing:

- Fixed API `bcm_l2_replace_match` field group replacement value
- `bcmSwitchMeterAdjustInterframeGap` - should not be used anymore, default settings are enough.
- OAM server is now functional
- OAM/BFD statistics is now functional
- UDH functionality with OAM/BFD is now fully validated & supported, following exceptions exist: 1. OAMP Generic Reply Messages does not take UDH into account, i.e. LMR/DMR not functional. 2. OAM protection packet "raw" mode is not functional with UDH (`bcm_oam_protection_packet_header_set`). 3. 1DM format is not functional with UDH
- An issue that can cause the IN-RIF profiles to behave in an unexpected way (drop packets) when either the `ext_ip4_double_capacity_fwd_table_size` or the `ipmc_l3mcastl2_mode` SOC properties were used was fixed.
- In case of replacing mpls port entry with same push profile properties as the existing the update will not free allocated memory.
- OAM: OAM endpoints may interfere with split horizon or other filters at the egress. Even after endpoints were removed this was observed.
- If a MEP has both SLM and DM entries and the DM is deleted, the SLM turns into LM.
- Public IPv4 LEM (VRF!=0) that was done in parallel to private (VRF!=0) is now fixed
- OAM: Due to HW limitation, in case of on demand DM, endpoint id 3 lsbs cannot be 0. Added error indication on that.
- VPWS tagged mode (flexible cross connect from PWE2AC/PWE2PWE): Double tagged processing was nonfunctional due to wrong key construction of double tagged program. Program selection is fixed as well.
- Fix an issue with `bcm_oam_endpoint_action_set` on MIPs which prevents packets that should be trapped at the egress from being trapped

ERRATA

The list below relates to major open bugs that are not resolved:

Basic data path, connectivity and Traffic Management features:

- PM4x10 WB sin't supported.

Packet Processing:

- OAM UP-MEP default profiles (multiple egress default LIF-profiles) is not functional
- UDH functionality with OAM/BFD: 1. OAMP Generic Reply Messages does not take UDH into account, i.e. LMR/DMR not functional. 2. OAM protection packet "raw" mode is not functional with UDH (`bcm_oam_protection_packet_header_set`). 3. 1DM format is not functional with UDH

BCM88470-FAMILY BETA RELEASE

This release is a beta version for the BCM88470-Family product line, following previously released bring-up EA versions. This release is meant for the silicone bring-up, and is not meant as a stable or feature reach release. The subsequent sections describe the features validated for this release, known issues and bring-up guidelines. It is extremely important to review "Backward compatible important notes" section before starting the integration of the new release.

BACKWARD COMPATIBLE IMPORTANT NOTES

- See BCM88670-Family "Backward compatible important notes" section.
- Overlay: From 6.5.4, SDK initialize Native-VLAN-Editing block.

Native-VLAN-Editing is used for both ROO applications and L2VPN applications (e.g VPLS, VXLAN, TRILL, NVGRE).

In 6.5.4, unlike previous versions, in case incoming untagged Ethernet packet is encapsulated with a L2VPN tunnel, a native vlan tag will be added, with vlan = Native-VSI. Untagged Ethernet packet can be untagged Ethernet or tagged Ethernet which has been untagged at IVE by an action of remove tags.

To keep the native Ethernet header unchanged as in previous releases, the user has couple of options:

1) Define a default native AC to keep the Ethernet untagged.

For calling sequence, see in `cint_utils_vlan.c`, function `vlan_native_default_out_ac_allocate_and_set`

Note: The main inconvenient is that a full bank is allocated for 1 native AC in case Native-VLAN-Editing is not used by the customer.

2) Define the default vlan edit profile to be 1. (instead of default 0)

For calling sequence, see in `cint_utils_vlan.c`, function `vlan_default_ve_profile_set`

Note:

The benefit of this solution is that it doesn't allocate a full bank for 1 native AC.

The inconvenient is that it's a global configuration and it changes not only the Native-VLAN-Editing but also the Egress-VLAN-editing

i.e. the Ethernet of the tunnel will no longer be tagged by default as well.

To change the Egress-VLAN-editing, it will require a dedicated Overlay-AC. This solution is convenient for application where an AC performs vlan editing on the Ethernet header of the tunnel. We recommend this approach since Egress-VLAN-Editing is used by most applications.

For more information see: Native-VLAN-Editing capabilities in 8847X-AG302-R section "Native Ethernet VLAN Editing Stage" and changes between 88670 and 88470 on Native VLAN editing in 8867X_8847X-AG100-R Section "IP Routing Over Overlays"

- L3: BCM88470 introduce the capability of enable/disable My-MAC termination according to In-RIF (L3 interface).

One can use BCM flags `BCM_L3_INGRESS_ROUTE_DISABLE*` flags in `bcm_l3_ingress_create` API to disable the matching protocol (IPv4UC, IPv4MC, IPv6UC, IPv6MC or MPLS). Because of that, the default behavior was changed in case packet is L3 but My-MAC termination is disabled for the In-RIF. In BCM88670, in that case a trap was invoked (My-MAC disable IPv4/MPLS) while in BCM88470, the packet will be forwarded according to ETH header. This is the expected behavior.

VALIDATED FEATURES

Unless stated otherwise, features validation for this release covered legacy (BCM88660-compatible) modes, and not the new modes added for BCM88370-Family and BCM88670-Family devices.

Basic data path, connectivity and Traffic Management features:

- Register & Memory access including DMA
- Supported SKUs: Qumran-AX: 88470, 88470P, 88471,88473 Kalia: and 88476, 88476P
- Device core mode: dual-core symmetrical
- Interfaces:
- SRAM, DDR4 at 1.6GHz
- CPU RX/TX (packet DMA)
- NIF 156.25MHz and 125MHz
- NIF: 10GE: KR/XFI, RXAUI, XAUI 40GE: XLGE 100GE ILKN
- Only 12.5G.
- Eagle and Falcon on same port isn't allowed. QSGMII
- Forwarding: Unicast Multicast mirroring
- CosQ: End-to-end scheduling Ingress and Egress compensation VOQ ingress queue creation. Mapping by-destination and by-flow-id Tail Drop Credit watch dog Egress queuing: number of priorities per port: 1/2/8 Undersubscribed CoE (mapping multiple ports, no Flow Control)
- Counters: SNMP counters Internal (diagnostics) counters
- Packet forwarding - ITMH, Force-FWD
- Fabric connectivity with FE device (Kalia only)
- Link Bonding
- Extender multicast

Packet Processing:

- Diagnostics
- Port
- STG
- L2-Forwarding
- L2-Learning
- VLAN-Translation
- VLAN
- VSWITCH
- L3-IPv4-UC
- L3-IPv6-UC
- L3-Interface-RIF
- L3-Egress-ARP
- L3-Egress-FEC
- L3-ECMP
- L2VPN
- L3VPN
- MPLS
- VPLS

- VPWS
- Tunnel-IPv4
- Protection (Ingress, FEC, Egress, 1:1, 1+1)
- VXLAN
- EVPN (without additional FRR label)
- PON general feature except subnet anti-spoofing
- PON MAC limit
- TRILL

PACKET PROCESSING NEW FEATURES ROADMAP

Table 11: New Features Roadmap

Feature/Bug fix	SDK JIRA	Roadmap item	Documentation	Timeframe & Notes
Bridging Into PWE Tagged Mode Tunnel with Service Delimiting Tags	SDK-92490	Native-VLAN-Editing: Bridging into VPLS tagged mode tunnel	8847X-AG302-R document, section Deeper Encapsulation Command Stack, example Bridging Into PWE Tagged Mode Tunnel with Service Delimiting Tags	6.5.5
IP UC Routing Into VXLAN Tunnel		ROO VXLAN	8847X-AG302-R document, section Deeper Encapsulation Command Stack, IP UC Routing Into VXLAN Tunnel	6.5.4 (Done)
Segment Routing, IP UC Routing Into Six Deep MPLS Tunnel		Egress MPLS additional labels (porting from Jericho/QMX) (see timeframe note)	8847X-AG302-R document, section Deeper Encapsulation Command Stack, Segment Routing, IP UC Routing Into Six Deep MPLS Tunnel (L3VPN Into Deep MPLS Stack)	Not planned, instead, SDK offers the same solution as 88670/88370, for more information see "Egress MPLS Additional Labels" section in document 88670-PG11X-R, porting is planned in 6.5.5.
Native Ethernet Encapsulation Stage		Native-VLAN-Editing: Bridging into VPLS tagged mode tunnel	8847X-AG302-R document, section ETPP Native Ethernet Encapsulation and Native Ethernet Editing Stage	6.5.4 (Done)
Native Ethernet VLAN Editing Stage {VSI, Global-OutLIF}		Native-VLAN-Editing: Bridging into VPLS tagged mode tunnel	8847X-AG302-R document, section Native Ethernet VLAN Editing Stage	6.5.4 (Done)
Native Ethernet VLAN Editing Stage {VSI, Global-OutLIF.Profile.Domain})			8847X-AG302-R document, section Native Ethernet VLAN Editing Stage	Not planned
Native Ethernet VLAN Editing Stage default EEDB entry		Native-VLAN-Editing: Bridging into VPLS tagged mode tunnel	8847X-AG302-R document, section Native Ethernet VLAN Editing Stage	6.5.4 (Done). Note: Only 2 fixed options are available in SDK for default EEDB entry.

Table 11: New Features Roadmap

Feature/Bug fix	SDK JIRA	Roadmap item	Documentation	Timeframe & Notes
Three Ethernet VLAN Tags Parsing	SDK-89417	3 Ethernet VLAN tags parsing	8847X-AG302-R document, section Three Ethernet VLAN Tags Parsing	6.5.5
Support for Additional VLAN Tag TPIDs		Support for additional VLAN tag TPIDs	8847X-AG302-R document, section Support for Additional VLAN Tag TPIDs	6.5.4 (Done)
MPLS Termination After IP-Tunnel Termination			8847X-AG302-R document, section, MPLS Termination After IP-Tunnel Termination	Not planned
Ingress VLAN Edits PCP-DEI to Include Meter Result Information	SDK-73606	Ingress VLAN considers meter results	8847X-AG302-R document, section, Ingress VLAN Edits PCP-DEI to Include Meter Result Information	6.5.4 (Done)
TPID transparent EVE	SDK-73610	VSWITCH	8847X-PG1XX-R document, section Basic VLAN Translation	6.5.4 (Done)
Imposition of Special Labels		MPLS imposition enhancements	8847X-AG302-R document, section MPLS Imposition Enhancements	6.5.4 (Done)
Independent TTL and EXP Inheritance Models		MPLS imposition enhancements	8847X-AG302-R document, section MPLS Imposition Enhancements	6.5.4 (Done)
ITPP Network Headers Termination (Forwarding Copy)		None	8847X-AG302-R document, section, Ingress Transmit Packet Processor Enhancements	6.5.4 (Done)
ITPP Fallback2bridge			8847X-AG302-R document, section, Ingress Transmit Packet Processor Enhancements	Not planned (see errata issue EID#15 in 8847X-ES101-R)
KAPS Database Hit Bit per Entry	SDK-75711	KAPS DB hit bit per entry	8847X-AG302-R document, section, KAPS Database Hit Bit per Entry	6.5.7
Routing enablers first my-mac		L3 (v4, v6)	Will be documented in the next UM version (88470-PG1XX-R)	6.5.4 (Done), note that the feature changes the default behavior of QAX compared to Jericho (see "Backward compatible important notes")
L2CP functionality per OutLIF	SDK-75719	VSWITCH	Will be documented in the next UM version (88470-PG1XX-R)	6.5.5

Table 11: New Features Roadmap

Feature/Bug fix	SDK JIRA	Roadmap item	Documentation	Timeframe & Notes
OAM MEP-DB - Additional data may store Loss Measurement (LM)/ Delay Measurement (DM) statistics		LM/DM	88470-AG100-R, section Database Enhancements, 8867X_8847X-AG10X-R section Adding Delay/Loss Measurement to Accelerated MEP	6.5.4 (Done)
OAM 48B flexible Maintenance Association Identifier (MAID)	SDK-98807	MAID 48B (New)	88470-AG100-R, section Database Enhancements	6.5.6
OAM Unicast continuity check message (CCMs)			88470-AG100-R, section Database Enhancements	Not planned
BFD jitter			88470-AG100-R, section New features	Not planned
BFD Authentication			88470-AG100-R, section New features	Not planned
OAM/BFD Additional TLVs on CCM/BFD packets			88470-AG100-R, section New features	Not planned
OAM/BFD On-Demand TX Machine	SDK-73623	On demand delay measurement, loss measurement (new), BFD in demand mode (New)	88470-AG100-R, section New features	6.5.7
OAM Delay Measurement Statistics Enhancements			88470-AG100-R, section New features	Not planned, SDK supports only two-way delay.
OAM Configurable Opcodes Have Their Own Maintenance Domain (MD) Levels			88470-AG100-R, section Bug Fixes and Improvements	Not planned. SDK supports AIS the same as Jericho solution. LCK is not planned.
OAM Punted Packets Include the Source of Failure		Punt packets	88470-AG100-R, section Bug Fixes and Improvements	6.5.4 (Done)
OAM RFC 6374			88470-AG100-R, section Bug Fixes and Improvements	Not planned
OAM Configurable Transmission Rates for Y.1731 messages			88470-AG100-R, section Bug Fixes and Improvements	Not planned. SDK solution is the same as Jericho (Static values, not configured)
OAM Hierarchical-LM per MD-level (2 levels) - B0 only	SDK-75703	Hierarchical LM: Per MD-Level (2 counters) (New)	TBD	6.5.7
OAM Hierarchical-LM per LIF (2 levels) - B0 only	SDK-75703	Hierarchical LM: Per LIF (New)	TBD	6.5.7
OAM RDI automatic assertion for multipoint services	SDK-75726	Automatic RDI assertion	TBD	6.5.5
OAM separate report mode for LM and DM	SDK-88515	LM/DM	TBD	6.5.7

Table 11: New Features Roadmap

Feature/Bug fix	SDK JIRA	Roadmap item	Documentation	Timeframe & Notes
OAM Downmep injection new mode (Egress PP)	SDK-88994	LM/DM, Legacy Y.1731 over MPLS-TP (GAL), over PWE (ACH)	TBD	6.5.6
BFD VCCV Type 3		Legacy BFD over IPv4, over IPv4 over LSP, over PWE (ACH)		6.5.4 (Done)
BFD your-discr=0 trap	SDK-75728	Legacy BFD over IPv4, over IPv4 over LSP, over PWE (ACH)		6.5.6
BFD IPv6 OAMP		BFD over IPv6 (new) - TBD	TBD	TBD
Validity Checks May Be Disabled per MEP Profile			88470-AG100-R, section Bug Fixes and Improvements	Not planned, SDK does not expose this functionality explicit, but per feature requirement (for example 48B MAID will disable MAID verification)
Increase Punt profiles to 16		Punt packets	88470-AG100-R, section Database Enhancements	6.5.4 (Done)
Loss Measurement (LM) and Synthetic Loss Measurement (SLM) Coexist - per LIF decision	SDK-75710	LM or SLM per LIF basis (New)	88470-AG100-R, section Bug Fixes and Improvements	6.5.7

MAJOR BUGFIXES

Packet Processing:

- EEDB Top banks (Used for application like protection pointer and EVPN) wasn't functional. This is fixed.
- The number of RIFs in the system adjusted as according to SPEC to up to 16K
- Added Extender support for untagged packets.

KNOWN ISSUES

Network Interface:

- Only the interfaces indicated above are validated. If any interface that is currently not supported is blocking initial bring-up, please consult with Broadcom AE.
- Auto-training and Auto-negotiation protocols are not validated at this stage
- SAT is not functional
- Control message of Link Bonding is not supported
- Policer/Meter is not functional , depended on CGM block which its work is not completed

Packet Processing:

- OAM/BFD statistics is not functional
- OAM - delay measurement using 1DM is not functional.
- OAM LB is not functional
- BFD echo is not functional
- OAM Y.1711 is not functional
- SPB is not functional

- BFD IPv4 Single-hop detect multiplier check is not functional
- Egress-FRR additional MPLS label is not functional (in both regular MPLS case and EVPN case)
- Egress MPLS additional labels (up to 6 MPLS labels same solution as Jericho) is not functional
- MIM ROO MC is not supported in Qumran/Kalia-A0
- KBP is not functional
- ERSPAN is not functional
- Hashing (Configured, Flexible) is not functional
- DCB (Extender, EVB) is not functional
- L2GRE is not functional
- ECN-PP is not functional
- PON subnet anti-spoofing
- ROO over Port extender (802.1BR) is not functional
- Missing range limitations when providing the EEDB ARP Entry for VxLAN

BRING-UP GUIDELINES

REFERENCE DOCUMENTATION

Multiple documents describing relevant HW and SW aspects are available, including:

SW DOCUMENTATION

- 88X7X-PG2xx: Traffic Manager Theory of Operation This document describes theory of operation and provides driver reference for the BCM88670 device series.
- 88470-PG1xx: BCM-API Packet Processing: Theory of Operation This document describes BCM-API for the BCM88470 device packet processing capabilities, and how to configure it for networking applications.
- 8867X_8847X-AG10X-R : BCM88670/BCM88470 Software Compatibility Guide

HW ARCHITECTURE SPECS

- 88470_88476-AG2xx: Traffic Management Architecture This document describes the BCM88470/6 traffic management architecture and fabric adapter. It is intended for system architects and anyone else seeking an understanding of the features and capabilities that the BCM8847x traffic management architecture provides.
- 8847X-AG3xx: BCM8847X Packet Processor Enhancements This document is intended for system architects and anyone else seeking an understanding of the features and capabilities that the BCM8847x Packet processing architecture provides.
- 88470-AG1xx: OAM enhancements This document provides an overview of the OAM functions supported in BCM8847x and explains how each OAM function is supported. It is intended for use by system architects and anyone else seeking an understanding of the OAM features in the BCM8847x switching device.

DIAGNOSTICS SHELL

The diagnostics commands below are useful for debugging. All the diagnostics are called from the BCM shell. If you type the diagnostic incorrectly, usage will be printed. The following diag shell commands are validated:

- General diag count g - display a graphical representation of the device counters show counters: MIB counters clear counters
- NIF/Ports: diag nif - display link status information. diag port_db (diag port) - display ports information, mapping to PMs, channels etc.
- Packet DMA: "tx" shell command
- PP: diag pp kbp kaps_show diag dbal

PORT MAPPING

- Core association must be defined upon initialization, using the new format of BCM8867x:
- `ucode_port.port<logical-port-id>.<unit>` =
`<Interface_name>.<channel_num>:core_<core-id>.<tm- port-id>`

DRAM INTERFACE

It is recommended to start the bring-up in "SRAM-only" mode. Before trying to use DRAM. SOC properties: `ext_ram_present=0` to work in SRAM-only mode.

- When working with DRAM, change `ext_ram_present=<0|1|21|22|3>` according to the number of DRAM interfaces - see details in the UM (88x7x-PG2xx).
- When working with DRAM, please note that for each device, for the first time you need to run DRAM PHY calibration. Once calibration parameters are determined, they can be saved and restored upon later initializations to significantly reduce initialization time. See Driver Reference- DRAM PHY Tuning section in the UM for details.

NETWORK LANE SWAP AND POLARITY CONFIGURATION

Network Interface Lane swap and polarity - the direction of configuration for both RX and TX is from front panel to device.

For example, for the swap configuration described below the correct swap-mapping is 0x0321.

```
Device lane0 ' front panel lane3
Device lane1 ' front panel lane0
Device lane2 ' front panel lane1
Device lane3 ' front panel lane2
```

PROGRAMMABLE ITMH

ITMH (Ingress Traffic Management Header) in 8867x format works.

BCM88770 (FE3600) RELEASE

The Broadcom BCM88770 (formerly named BCM88950) is the fourth generation in the Dune product line of Fabric Element (FE) devices. This is a sustain release of BCM88950 driver, with all major features supported.

IMPORTANT NOTES

- The default DCS thresholds were optimized: RCI, GCI, LLFC, Drop.

MAJOR BUGFIXES

- None

BCM88660 (ARAD+), BCM88650 (ARAD) RELEASE

This is a sustain release of BCM88660, BCM88650 driver, with all major features supported.

IMPORTANT NOTES

- OAM: Packets with higher MDL than the MEP should be counted for LM statistics.

For example when setting an endpoint at Level 4 on LIF X, and a packet arrives with Level 5 on LIF X then that packet should be counted as a data packet, not as a control packet. This may affect LM counting statistics on older versions (on older versions such packets were not counted).

- See BCM88670-Family GA release section, important: SW compatibility guidelines 6.4.X to 6.5.X.

MAJOR BUGFIXES

DMA: There were some inconsistent problems between memories and caches which executed DMA operation. It might cause that the data between SW tables and HW tables were different. This has been fixed in this release.

ERRATA

The list below relates to major open bugs that are not resolved.

Basic data path, connectivity and Traffic Management features: None

Packet Processing: None

NEW EXTERNAL PHY SUPPORT

BCM82332 SUPPORT

The BCM82332 is a low-power, low-latency PHY with optional gearbox, integrating CDR, adaptive equalizer, and pre-emphasis functions supporting 100 GbE/40 GbE/10 GbE/1GBASE-X applications. The BCM82332 is specifically designed to interoperate with devices using Flexport technology, including the BCM56860 Trident-II+. The BCM82332 has two main mission modes: retimer and gearbox. Retimer mode is primarily for 10 GbE, 40 GbE, and OLT4.10. In this mode, 12 lanes of 10 Gbps bidirectional data are retimed. 10 GbE, 40 GbE, and OTL4.10 protocols can be mixed in retimer mode. Gearbox mode adapts four lanes of 25 Gbps line-side data to 10 lanes of 10 Gbps system-side data (CAUI). Gearbox mode supports both 100 GbE and OTU4. Features supported in this release at Bringup level and have been tested with the BCM56860 switch device:

- Speeds/Modes 10G: SR, LR, ER, CR, CX, KR, XFI, SFI 40G: SR4, LR4, ER4, CR4, KR4, XLAUI, XLPP1 100G Gearbox: SR4, LR4, ER4, CR4, KR4, CAUI, VSR, CAC2C, CAC2M 100G Pass-through: SR10, LR10, CR10, KR10, CAUI, CAC2C, CAC2M, VSR
- Broadcast firmware download (firmware version D006)
- Diagnostics features such as PRBS, Eyescan, DSC, PCS link mon.
- Auto negotiation with 40G CR4 and KR4 and 100G Gearbox mode with CR4 and KR4 interfaces
- Digital and Remote loopback.
- FEC supported in 100G Gearbox mode.
- Polarity, Power, Tx/Rx lane reset, Tx/Rx data path reset, Tx/Rx squelch.
- PLL and AN interrupts.
- Analog parameter configurations such as Tx FIR, driver current and DFE tap settings.
- DFE mode configurations such as enabling/disabling of DFE, BR DFE, LP DFE.
- HG modes for 11G with KR, CR, XFI, 42G with KR4, CR4, XLAUI , 106G with KR4, CR4, CAUI in Gearbox and KR10, CR10, CAUI in pass-through.
- GPIO pin configuration.

Current device limitations in this release:

- Flexport is not yet supported
- OTN is not yet supported
- Module read/write is not yet supported
- IEEE HiGIG is not yet supported
- 1G support is not present
- `serdes_if_type` config param modifies the line side interface of the external PHY
- At 100G mode, ports are not coming up when system side lanes selected between 1 to 10 or 2 to 11.
- System side training has issues on 100G for CR10.
- 100G per lane control on line side

BCM82864 SUPPORT

The BCM82864 is a 40Gbps PMA Gearbox phy that demultiplexes eight 20Gbps channels to sixteen 10Gbps channels supporting Ethernet and Optical TransportNetworking(OTN). Additionally the device will operate in 100GbE mode where the BCM82864 supports two full-duplex 100Gbps ports. All features supported in this release with the following limitations:

- PRBS does not lock for higher PRBS polynomials[P15,P28,P31,P58] in CAUI* interfaces in 100G/106G and XLAUI/XLPP1/SR2/LR2 in 40G dual modes
- Phy loopback test (Tr19) fails for Repeater mode
- TH packet drop for if=CAUIC2C/CAUIC2M/CAUI in 106G, 100G NORMAL Mode(Repeater & Retimer

INTEROPERABILITY TESTING FOR NEW PHY/SWITCH COMBINATIONS

The following switch and PHY combinations have been interoperability tested in the SDK 6.5.4 release. Below lists only the features that have been tested and supported in this release.

BCM56160 AND BCM54292

Features supported:

- 1G Autoneg SGMII
- Diagnostics: Supported

BCM56560, BCM56565, BCM56760 AND BCM84848

Features supported:

- 1G Auto Negotiation on XGMII
- 100M forced speed on XGMII
- PHY loopback - not supported on BCM84858 at 2.5G speed in this release.
- Diagnostics: Supported

BCM56760 AND BCM54140

Features supported:

- 10/100/1G
- Loopback
- Diagnostics: Supported

Section 5: Things to note

This section lists items that require special attention.

SBX DEVICE DEPRECATION IN SDK 6.5.4

Starting in SDK 6.5.4, the following devices will no longer be built as part of the SDK releases going forward:

- BCM88020_A0, BCM88025_A0, BCM88030_A0, BCM88130_A0, BCM88230_A0

NOTES AND CONSIDERATIONS OF WARMBOOT FOR SPECIFIC DEVICES AND FEATURES

WARMBOOT: VALIDATED WARMBOOT UPGRADES.

Following warmboot upgrades have been validated in this release.

Table 12: Validated Warmboot upgrades

Software upgrade Supported	
6.5.3 to 6.5.4	Yes
6.4.11 to 6.5.4	Yes

Warmboot testing and issue resolution has focused on the following family of devices:

- BCM53400/BCM56060
- BCM56150
- BCM56220
- BCM56340
- BCM56440
- BCM56450
- BCM56640
- BCM56840
- BCM56850
- BCM56860
- BCM56960
- BCM56160
- BCM56760
- BCM56565
- BCM56560

WARMBOOT - SCACHE MEMORY REQUIREMENTS FOR BCM56560, BCM56565 AND BCM56760

To avoid warmboot failure due to out of memory, BCM56560, BCM56565 and BCM56760 devices require 4MB size of scache memory.

BCM56960 WARMBOOT COSQ CONSIDERATIONS

In SDK 6.5.3, average `refresh_time` was divided by 8 and was set into hardware which was not a correct behavior. On BCM56960, average queue size is recalculated every 1us, not 8us as on prior devices, so there was no need to divide average `refresh_time` by 8. In SDK 6.5.4, this behavior has been corrected in `bcm_th_cosq_discard_port_set`. There may be issues seen during upgrade from 6.5.3 to 6.5.4 related to this change.

BCM56450/BCM56460 WARMBOOT VPLS CONSIDERATIONS

In the 6.4.11 release, the network group ID in the split horizon group feature was set to zero by default for access ports. From 6.5.3 onward, a valid network group ID for access ports is being set after introducing software state for virtual ports.

BCM56760 WARMBOOT COSQ CONSIDERATIONS

During warmboot upgrade from 6.5.3 to 6.5.4 on BCM56760 and BCM56765, failures may be seen due to get not matching set value for cosq gport when using `bcm_cosq_subport_flow_control_set/get`. The patch for SDK-97508 should be applied to 6.5.3 before performing the upgrade.

KNOWN DOWNGRADE LIMITATIONS

DOWNGRADE TO 6.5.3 ON BCM56960, BCM56850

In this release, the scache structure for VP information is not compatible with the previous 6.5.3 release. This will result in the failures of VXLAN module on the downgrade from 6.5.4 to 6.5.3. Before the downgrade, the patches of SDK-95131 and SDK-97263 should be applied to the 6.5.3 release. In BCM56960 Field Processor code, TLV enums and its properties were freed after Ingress Stage Recovery whereas that was required for all stages like EM and Compression recovery as well. alloc/free functions for TLV enum and related properties have been added and added free at the right place after recovery of all the stages are completed. The patch for SDK-96219 should be applied to SDK 6.5.3 to resolve these issues present in IFP/EM/Compression during downgrade. Also in BCM56960 Field Processor code in 6.5.3, below issues were addressed during downgrade:

- Qset recovery for Group Qset , recovery of UDF and ExactMatch related internal qualifiers was not correct causing group qualifier set to be wrong.
- Group Internal Flags sync and recover
- Recovery types corrected for a set of TLVs
- VFP and EFP - Hints Id Sync version corrections.

The patch for SDK-97444 should be applied to SDK 6.5.3 to resolve these issues present in FP code.

DOWNGRADE TO 6.4.11 ON BCM56960

Flex counters are created based on counter group mode. In SDK 6.5.4, 31 different group modes are supported while only 25 are supported in 6.4.11. During downgrade from 6.5.4 to 6.4.11, counter created with group mode id greater than 24 cannot be recovered since these are invalid group IDs in 6.4.11.

PORTMOD CONSIDERATIONS

Warmboot for ports using PM4x10 macros will have the same level of support as 6.5.3. Specifically BCM88670 family and BCM88470 family devices do not support warmboot when using PM4x10 ports. A patch for providing this support will be delivered in a future SDK release.

10G LOOPBACK FUNCTION ONLY WORKS WHEN LINKS ARE UP ON THE PORT ON WHICH LOOPBACK IS DESIRED

For PHY 84848 PHY, a recent change in the software driver impacts how the speed value of a port is returned. The port speed is only returned correctly when the port has links up and PHY loopback functions use this returned value of speed. When loopback is set for at 10G speeds without link up on the port, loopback does not get set correctly. As a result any packets that are sent on the loopback path may not be received back properly. To work around this issue, connect a cable on the port that you need a loopback on so that the link is up, and then run loopback. Broadcom is working on a fix in a future release for this problem.

INTERNAL LOOPBACK LIMITATION ON BCM848XX DEVICES

For 84848, 84858, 84868, and 84888 PHY devices with AN enabled, internal loopback does not function unless port is cabled to a link partner to enable link up. Broadcom is working on a fix to resolve this issue in a future release.

BCM82780 INTERFACE CONSIDERATIONS

If using BCM82780 40G mode with interface type CR4/LR4/SR4/KR4, it is required to set the system interface config side to XLAUI/KR4. For example:

```
phy_sys_interface_xe0=15 /* to set it to XLAUI */
```

If using BCM82780 10G mode, it is required to set the external PHY primary core number config variable in the config file. If the MDIO address of the first port for a given core is 0x20., the config variable should be set as follows:

```
Xphy_primary_core_num_32=0x20
Xphy_primary_core_num_33=0x20
Xphy_primary_core_num_34=0x20
Xphy_primary_core_num_35=0x20
```

The syntax is : Xphy_primary_core_num_<mdio address in decimal>=<primary port mdio address>

In BCM82780 if the port is in KR4 mode, should the user intend to change the interface the command needs to be executed twice:

```
>port xe0,xel if=xlaui sp=40000 an=0
>port xe0,xel if=xlaui sp=40000 an=0 /* to change interface from KR4 to
XLAUI */
```

RECENT PHY INTERFACE LIBRARY CHANGES

The 100G interface for BCM56860, BCM86375, and BCM88560 devices required extensive changes to the interface library called "Portmod". Between SDK 6.5.2 and 6.5.3, BCM5686x operations for "Portmod" with BCM8279x family was verified and BCM8279x has achieved GA quality. For legacy 10G/40G devices, the "Portmod" changes required the shim layer to be created to enable the drivers to connect to the Falcon and Eagle cores. This work was completed in between SDK 6.5.2 and 6.5.3, thus making these legacy PHYs operational with the Portmod capable switches noted above.

CHECKS FOR INVALID SPEED AND ENCAPSULATION MODE FOR BCM56860 IN SDK 6.5.3

Checks for invalid speed and encapsulation mode configurations on sister ports were added for `bcm_port_speed_set()` and `bcm_port_encap_set()` in SDK 6.5.3 only. However, the validation cases were incorrect thus resulting in the APIs rejecting certain configurations that are valid. These validations have been removed in SDK 6.5.4. The correct validation will be added in a future SDK release. Customers should apply the patch in SDK-91782 on SDK 6.5.3 until movement to 6.5.4 is planned.

DEFAULT CONFIG.BCM CHANGE FROM LOSSLESS TO LOSSY

In this release, the default MMU setting has been changed from the standard lossless default to lossy in config.bcm for newly GA devices 56760, 56565, and 56560. Devices with GA support in prior SDK releases remain with the lossless default. This will be the direction going forward for all new devices, while legacy devices default will remain as is.

ENGINEERING SUPPORT STATEMENT FOR OLDER XGS SDK RELEASES

The following releases are now out of XGS engineering support since they are older than 12 months since release:

- SDK 6.4.x releases: 6.4.5, 6.4.4, 6.4.3, 6.4.2, 6.4.1, 6.4.0
- All SDK 6.3.x and older releases

Service impacting defects will be reviewed and potentially addressed on these older releases. Support for non-service impacting defects will only be provided to customers running a SDK release that is less than 12 months old. The following table Table 13: Resolved issues and improvements per older XGS device family shows the number of issues and improvements that have been added to our supported SDK releases by device over the past 12 months. While the table shows individual devices, many issues and improvements will apply to multiple products, e.g. BCM56850 and BCM56860, or all XGS products.

Table 13: Resolved issues and improvements per older XGS device family

Device specific issues	Bugs resolved in the past 12 months	Improvements added in the past 12 months
BCM56850 family	382	158
BCM56840_PLUS	70	9
BCM56340 family	74	20
BCM56640 family	129	32
BCM56450 family	227	48
BCM56150 family	31	1
BCM56440 family	59	12
BCM53440 family	72	26

ALERT ON END OF MAINTENANCE RELEASE CYCLE FOR SDK 6.4

The SDK 6.4.11 release is the last official maintenance release under the SDK 6.4 delivery stream. For new designs or software releases, customers should plan on moving to this or future 6.5.x releases.

ALERT ON FUTURE EXTERNAL PHY DRIVER SDK SUPPORT

Starting in CY3Q16, Broadcom will be providing only discrete drivers for new external PHY devices. Drivers for new external PHYs will not be integrated in the SDK. Broadcom will support standalone drivers for External PHYs which customers can integrate into their software stack. Legacy PHY driver code that has been tested against legacy switch devices will continue to be supported.

Section 6: Summary of BCM API changes and enhancements

This section summarizes BCM API changes in this release. Complete documentation will be available in the Network Switching Software Programmer's Guide number 56XX-PG654-R.

For the full list of API support by Broadcom device, please reference the file SDK-6.5.x-Support-Matrix.xlsx in the sdk-all-6.5.x/RELDPCS directory in the release package.

BCM MODULES

The BCM APIs are classified into API groups called 'modules'. The following table lists the new BCM modules and their string equivalents.

Table 14: BCM Module IDs

BCM Module ID	String Equivalent
BCM_MODULE_LB	lb

BFD STATUS FLAGS

New BFD Status Flags are added in this release.

Table 15: BFD Status Flags Definitions

Status Flag	Status Description
BCM_BFD_STATUS_LOCAL_ADMIN_DOWN	BFD Local State Admin.
BCM_BFD_STATUS_LOCAL_DOWN	BFD Local State Down.
BCM_BFD_STATUS_LOCAL_INIT	BFD Local State Init.
BCM_BFD_STATUS_LOCAL_UP	BFD Local State Up.
BCM_BFD_STATUS_REMOTE_ADMIN_DOWN	BFD Remote State
BCM_BFD_STATUS_REMOTE_DOWN	BFD Remote State Down.
BCM_BFD_STATUS_REMOTE_INIT	BFD Remote State Init.
BCM_BFD_STATUS_REMOTE_UP	BFD Remote State Up.
BCM_BFD_STATUS_LOCAL_DIAG_CODE_NONE	BFD Local Diag None.
BCM_BFD_STATUS_LOCAL_DIAG_CODE_CTRL_DETECT_TIME_EXPIRED	BFD Local Diag Detect.
BCM_BFD_STATUS_LOCAL_DIAG_CODE_ECHO_FAILED	BFD Local Diag Echo.
BCM_BFD_STATUS_LOCAL_DIAG_CODE_NEIGHBOR_SIGNED_SESSION_DOWN	BFD Neighbor Signaled.
BCM_BFD_STATUS_LOCAL_DIAG_CODE_FORWARDING_PLANE_RESET	Local diag Forwarding.
BCM_BFD_STATUS_LOCAL_DIAG_CODE_PATH_DOWN	Local diag Path Down.
BCM_BFD_STATUS_LOCAL_DIAG_CODE_CONCATENATED_PATH_DOWN	Local Diag Concatenated Path Down.
BCM_BFD_STATUS_LOCAL_DIAG_CODE_ADMIN_DOWN	Local Diag Administratively Down.
BCM_BFD_STATUS_LOCAL_DIAG_CODE_REVERSE_CONCATENATED_PATH_DOWN	Local Diag Reverse Concatenated Path Down.
BCM_BFD_STATUS_LOCAL_DIAG_CODE_MISCONNECTIVITY_DEFECT	Local Diag Mis conn Defect.

New BFD Event types are added in this release.

Table 16: BFD Event Types

Event type	Description
bcmBFDEventEndpointMisConnectivityDefect	Mis-connectivity defect has been detected on an endpoint
bcmBFDEventEndpointMisConnectivityDefectClear	Mis-connectivity defect has been cleared on an endpoint

BFD Status Structure The BFD Status structure is used for retrieving BFD Session and Diag status of each endpoint along with endpoint id.

```
typedef struct bcm_bfd_status_s {
    bcm_bfd_endpoint_t endpoint_id;
    uint32 session_status;
} bcm_bfd_status_t;
```

BFD discard statistics Structure Incoming bfd packets discarded statistics.

```
typedef struct bcm_bfd_discard_stat_s {
    uint32 bfd_ver_err;
    uint32 bfd_len_err;
    uint32 bfd_detect_mult;
    uint32 bfd_my_disc;
    uint32 bfd_p_f_bit;
    uint32 bfd_m_bit;
    uint32 bfd_auth_type_mismatch;
    uint32 bfd_auth_simple_err;
    uint32 bfd_auth_m_shal_err;
    uint32 bfd_sess_mismatch;
} bcm_bfd_discard_stat_t;
```

bcm_bfd_status_multi_get

Retrieve all required Session status for valid BFD end points

Syntax

```
#include <bcm/bfd.h>
int
int bcm_bfd_status_multi_get(
    int unit,
    int max_endpoints,
    bcm_bfd_status_t *status_arr,
    int *count);
```

Parameters

unit	(IN) Unit number.
max_endpoints (IN)	Number of max endpoints
status_arr	(OUT) Pointer to all Session required data
count	(OUT) Pointer to number of actual endpoints created

Description

Retrieve all required Session status for valid BFD end points.

Returns

BCM_E_NONE	Operation completed successfully
BCM_E_PARAM	Null pointer to SHA1 information structure
BCM_E_MEMORY	Unable to allocate memory
BCM_E_INTERNAL	Unable to obtain/release resource lock / Failed to read or write resource

bcm_bfd_discard_stat_set

Reset the bfd discarded statistics in FW.

Syntax

```
#include <bcm/bfd.h>
int
bcm_bfd_discard_stat_set(
    int unit,
    bcm_bfd_discard_stat_t *discarded_info);
```

Parameters

unit	(IN) Unit number
discarded_info	(OUT) Discarded info

Description

Reset the bfd discarded statistics in FW.

Returns

BCM_E_NONE	Operation completed successfully
BCM_E_PARAM	Null pointer to discarded info
BCM_E_MEMORY	Unable to allocate memory
BCM_E_INTERNAL	Unable to obtain/release resource lock / Failed to read or write resource

bcm_bfd_discard_stat_get

Get the bfd discarded statistics from FW.

Syntax

```
#include <bcm/bfd.h>
int
bcm_bfd_discard_stat_get(
    int unit,
    bcm_bfd_discard_stat_t *discarded_info);
```

Parameters

<code>unit</code>	(IN) Unit number
<code>discarded_info</code>	(OUT) Discarded info

Description

Get the bfd discarded statistics from FW.

Returns

<code>BCM_E_NONE</code>	Operation completed successfully
<code>BCM_E_PARAM</code>	Null pointer to discarded info
<code>BCM_E_MEMORY</code>	Unable to allocate memory
<code>BCM_E_INTERNAL</code>	Unable to obtain/release resource lock / Failed to read or write resource

CLASS OF SERVICE QUEUE CONFIGURATION

New Cosq control type is added.

Table 17: CoSQ Control Type Values

Value	Description	Arg value
bcmCosqControlIngressLatencyEnable	enable latency measurements between IRPP and ITTP	

New Cosq classifier flag is added.

Table 18: BCM_COSQ_CLASSIFIER Flags

Name	Purpose
BCM_COSQ_CLASSIFIER_L3_EGRESS	Classifier consists of egress object

bcm_cosq_icgm_resource_stat_get

get cosq ingress congestion resource statistics

Syntax

```
#include <bcm/cosq.h>
int bcm_cosq_icgm_resource_stat_get(
    int unit,
    bcm_cosq_icgm_resource_stat_key_t *stat_key,
    uint64 *value);
```

Parameters

unit	BCM device number
stat_key	(IN) key
value	(OUT) value

Description

get cosq ingress congestion resource statistics

Table 19: bcm_cosq_icgm_resource_stat_type_t

Name
bcmCosqIcgmMinFreeBDB
bcmCosqIcgmMinFreeOcbBuffers
bcmCosqIcgmMinFreeMiniMcBuffers
bcmCosqIcgmMinFreeFullMcBuffers
bcmCosqIcgmMinFreeVoqDramBDB
bcmCosqIcgmMinFreeVoqOcbBDB

Table 19: bcm_cosq_icgm_resource_stat_type_t

Name
bcmCosqICgmMinFreeSramBuffers
bcmCosqICgmMinFreeSramPDB

```

/* cosq_icgm_resource_stat_key structure */
typedef struct bcm_cosq_icgm_resource_stat_key_s {
    bcm_gport_t gport; /* gport value */
    uint32 flags; /* flags */
    bcm_cosq_icgm_resource_stat_type_t stat_type; /* statistics type */
} bcm_cosq_icgm_resource_stat_key_t;

```

Returns

BCM_E_NONE
 BCM_E_XXX

bcm_cosq_max_latency_pkts_get

get cosq ingress congestion resource statistics

Syntax

```

#include <bcm/cosq.h>
int bcm_cosq_max_latency_pkts_get(
    int unit,
    bcm_gport_t gport,
    uint32 flags,
    int max_count,
    bcm_cosq_max_latency_pkts_t *max_latency_pkts,
    int *actual_count)

```

Parameters

unit	BCM device number
gport	(IN) gport
flags	(IN) flags
max_count	(IN) max_count
max_latency_pkts	(OUT) max_latency_pkts
actual_count	(OUT) actual_count

Description

This API will be used to get the highest latency values that was measured for packets in the ingress between IRPP and ITPP.

```

/* This structure contain the latency data that was measured in the ingress

```

```
for a packet */
typedef struct bcm_cosq_max_latency_pkts_s {
    bcm_gport_t dest_gport; /* will return modport gport */
    bcm_cos_queue_t cosq; /* cosq */
    uint64 latency; /* latency measured */
    uint32 latency_flow; /* latency flow */
} bcm_cosq_max_latency_pkts_t;
```

Returns

BCM_E_NONE
BCM_E_XXX

FCMAP

New FCMAP flags are added in this release.

```
#define BCM_FCMAP_ATTR2_FEC_ENABLE_16G_MASK      (0x1 << 5)
#define BCM_FCMAP_ATTR2_FEC_ENABLE_32G_MASK      (0x1 << 6)
```

FIELD PROCESSOR

New Field qualifiers are added.

Table 20: Field Qualifiers

Qualifier	Purpose
bcmFieldQualifyGeneratedTtl	Get match criteria for bcmFieldQualifyGeneratedTtl qualifier from the field entry.
bcmFieldQualifyIpMulticastCompatible	Packet is compatible for multicast.

New Field actions are added.

Table 21: Field Actions for bcm_field_action_add

Action	Description	param0	param1
bcmFieldActionForward	Set Forwarding destination raw value	destination raw value (19 bit)	n/a
bcmFieldActionTrapCodeQualifier	Set Trap destination value (trap code + forward strength+ snoop strength) in addition to configurable value that further resolves the cause of the trap in the context of the CPU-Trap-Code	destination trap value (19 bit)	trap code qualifier
bcmFieldActionPphSnoopCode	Set the PPH Snoop code value	pph snoop code (2 bits)	n/a

Double action values is used in order to set which actions are going to be run for the specified double action. When using a double action, the user can choose whether to run both actions, one of the actions, or no actions for the double action in use. This functionality is controlled by giving one of the values in this table as the "param1" when adding the action to the entry.

Table 22: Double Action Values

Value	Description
FieldDoubleActionNone	Run no action
FieldDoubleActionFirst	Run first action
FieldDoubleActionSecond	Run second action
FieldDoubleActionBoth	Run both actions

bcm_field_qualify_GeneratedTtl

This API Qualify on forwarding TTL. may be selected on tunnel basis to be taken from the tunnel layer or forwarding layer.

Syntax

```
#include <bcm/field.h>

int
bcm_field_qualify_GeneratedTtl(
    int unit,
    bcm_field_entry_t entry,
    uint32 data,
    uint32 mask);
```

Parameters

unit	(IN) Unit number
entry	(IN) Field entry ID
data	(IN) Qualifier match data
mask	(IN) Qualifier match mask

Description

Set match criteria for bcmFieldQualifyGeneratedTtl qualifier in the field entry.

Returns

int

bcm_field_qualify_GeneratedTtl_get

This API Qualify on forwarding TTL. may be selected on tunnel basis to be taken from the tunnel layer or forwarding layer.

Syntax

```
#include <bcm/field.h>

int
bcm_field_qualify_GeneratedTtl_get(
    int unit,
    bcm_field_entry_t entry,
    uint32 *data,
    uint32 *mask);
```

Parameters

unit	(IN) Unit number
entry	(IN) Field entry ID
data	(OUT) Qualifier match data
mask	(OUT) Qualifier match mask

Description

Get match criteria for bcmFieldQualifyGeneratedTtl qualifier from the field entry.

Returns

int

bcm_field_qualify_IpMulticastCompatible

Set match criteria for bcmFieldQualifyIpMulticastCompatible

Syntax

```
#include <bcm/field.h>
```

```
int  
bcm_field_qualify_IpMulticastCompatible(  
    int unit,  
    bcm_field_entry_t entry,  
    uint32 data,  
    uint32 mask);
```

Parameters

unit	(IN) Unit number
entry	(IN) Field entry ID
data	(IN) Qualifier match data
mask	(IN) Qualifier match mask

Description

Set match criteria for bcmFieldQualifyIpMulticastCompatible

Returns

int

bcm_field_qualify_IpMulticastCompatible_get

Set match criteria for bcmFieldQualifyIpMulticastCompatible_get

Syntax

```
#include <bcm/field.h>
```

```
int  
bcm_field_qualify_IpMulticastCompatible_get(  
    int unit,  
    bcm_field_entry_t entry,  
    uint32 *data,  
    uint32 *mask);
```

Parameters

<code>unit</code>	(IN) Unit number
<code>entry</code>	(IN) Field entry ID
<code>data</code>	(OUT) Qualifier match data
<code>mask</code>	(OUT) Qualifier match mask

Description

Set match criteria for `bcmFieldQualifyIpMulticastCompatible_get`

Returns

`int`

IP MULTICAST

New member variable is added in `bcm_ipmc_addr_t`

```
typedef struct bcm_ipmc_addr_s {  
    ....  
    bcm_ip6_t      mc_ip6_mask; /* IPv6 destination subnet mask. */  
} bcm_ipmc_addr_t;
```

LAYER 3 MANAGEMENT

New member variable `counting_profile` is added in `bcm_l3_egress_t`.

```
/*
 * L3 Egress Structure
 * Description of an L3 forwarding destination.
 */
typedef struct bcm_l3_egress_s {
    ....
    int counting_profile; /* counting profile. If not required, set it to
BCM_STAT_LIF_COUNTING_PROFILE_NONE */
} bcm_l3_egress_t;
```

MPLS MANAGEMENT

New MPLS port flag is added.

Table 23: MPLS Port Flags(2)

Name	Purpose
BCM_MPLS_PORT2_ENCAP_OPTIMIZED	Indicate that FEC should be set as format C (EEI).

New member variable is added in `bcm_mpls_port_t`.

```
typedef struct bcm_mpls_port_s {
    ....
    bcm_mpls_egress_label_t egress_tunnel_label; /* A mpls tunnel to be
binded with the pwe */
} bcm_mpls_port_t;
```


OPERATIONS, ADMINISTRATION, AND MAINTENANCE

New OAM Group Fault Flag is added.

Table 24: OAM Group Fault Flag Definitions

Fault Flag	Description
BCM_OAM_GROUP_FAULT_CCM_MAC	A CCM Mac defect has occurred in this group

OAM Y.1711 objects is defined in this release.

```
/* OAM additional data for mpls network */
typedef struct bcm_oam_mpls_network_info_s {
    uint8 function_type; /* FFD:0x07 or CV:0x01 */
    bcm_ip6_t lsr_id;
    uint32 lsp_id;
} bcm_oam_mpls_network_info_t;
```

Table 25: Constants for FFD frequency defined by Y.1711

Macro	Description
BCM_OAM_ENDPOINT_FFD_FREQUENCY_10MS	10ms
BCM_OAM_ENDPOINT_FFD_FREQUENCY_20MS	20ms
BCM_OAM_ENDPOINT_FFD_FREQUENCY_50MS	50ms
BCM_OAM_ENDPOINT_FFD_FREQUENCY_100MS	100ms
BCM_OAM_ENDPOINT_FFD_FREQUENCY_200MS	200ms
BCM_OAM_ENDPOINT_FFD_FREQUENCY_500MS	500ms

bcm_oam_mpls_network_info_t is added in OAM endpoint info structure.

```
typedef struct bcm_oam_endpoint_info_s {
    ....
    bcm_oam_mpls_network_info_t mpls_network_info; /* MPLS networks
information */
    ....
} bcm_oam_endpoint_info_t;
```

bcm_oam_trunk_ports_add

Add ports to trunk mapping to port-trunk database in OAM

Syntax

```
#include <bcm/oam.h>
int bcm_oam_trunk_ports_add (int unit,
                             bcm_gport_t trunk_gport,
                             int max_ports,
```

```
bcm_gport_t *port_arr);
```

Parameters

unit	(IN) BCM device number.
trunk_gport	(IN) Trunk's gport to which ports need to be mapped.
max_ports	(IN) Size of the port array.
port_arr	(IN) Array of gports of ports which need to be mapped to the trunk.

Description

Add ports (specified by `port_arr`) to trunk (specified by `trunk_gport`) mapping to port-trunk database in OAM

Returns

BCM_E_NONE	Operation completed successfully
BCM_E_TIMEOUT	Unable to obtain resource lock
BCM_E_INIT	Module not initialized
BCM_E_PARAM	Invalid parameter passed
BCM_E_INTERNAL	Unable to release resource lock / Failed to read or write register

bcm_oam_trunk_ports_delete

Delete ports to trunk mapping from port-trunk database in OAM

Syntax

```
#include <bcm/oam.h>
int bcm_oam_trunk_ports_delete (int unit,
                                bcm_gport_t trunk_gport,
                                int max_ports,
                                bcm_gport_t *port_arr);
```

Parameters

unit	(IN) BCM device number.
trunk_gport	(IN) Trunk's gport to which ports need to be un-mapped from.
max_ports	(IN) Size of the port array.
port_arr	(IN) Array of gports of ports which need to be un-mapped from the trunk.

Description

Delete ports (specified by `port_arr`) to trunk (specified by `trunk_gport`) mapping from port-trunk database in OAM

Returns

BCM_E_NONE	Operation completed successfully
BCM_E_TIMEOUT	Unable to obtain resource lock
BCM_E_INIT	Module not initialized
BCM_E_PARAM	Invalid parameter passed
BCM_E_INTERNAL	Unable to release resource lock / Failed to read or write register

bcm_oam_trunk_ports_get

Get ports to trunk mapping from port-trunk database in OAM

Syntax

```
#include <bcm/oam.h>
int bcm_oam_trunk_ports_get (int unit,
                             bcm_gport_t trunk_gport,
                             int max_ports,
                             bcm_gport_t *port_arr,
                             int *port_count);
```

Parameters

unit	(IN) BCM device number.
trunk_gport	(IN) Trunk's gport to which ports mapped needs to be got.
max_ports	(IN) Size of the port array.
port_arr	(OUT) Array of gports of ports which are mapped to the trunk.
port_count	(OUT) Count of ports filled inside the array.

Description

Get list of ports mapped to trunk from port-trunk database in OAM

Returns

BCM_E_NONE	Operation completed successfully
BCM_E_TIMEOUT	Unable to obtain resource lock
BCM_E_INIT	Module not initialized
BCM_E_PARAM	Invalid parameter passed
BCM_E_INTERNAL	Unable to release resource lock / Failed to read or write register

POLICER

New API `bcm_policer_group_get` is added.

`bcm_policer_group_get`

Get the list of policer members for a given policer group represented by its base policer id.

Syntax

```
#include <bcm/policer.h>
int
bcm_policer_group_get(
    int unit,
    bcm_policer_t base_policer_id,
    int member_max,
    bcm_policer_t *member_array,
    int *member_count);
```

Parameters

<code>unit</code>	(IN) Unit number.
<code>base_policer_id</code>	(IN) base policer id of the given policer group
<code>member_max</code>	(IN) Maximum number of policers to return in the <code>member_array</code> parameter
<code>member_array</code>	(OUT) place to store policer members of the given policer group represented by its <code>base_policer_id</code> . Memory need to be allocated by the end user before calling the API.
<code>member_count</code>	(OUT) place to store total number of policers configured in the given policer group represented by <code>base_policer_id</code>

Description

Returns the list of "`member_max`" policers in "`member_array`" for a given policer group (in ascending order of priority as `member_array[0]` lowest priority policer, `member_array[1]` next higher priority policer and so on for cascaded/coupled cascaded modes). In case, `member_max` ≤ 0 , returns `member_count` as actual number of policer configured. Otherwise, `member_array` is filled from 0 to (`member_max`-1) and `member_count` return actual number of policers configured in the group.

Returns

BCM_E_XXX

PORT

New Port extended abilities are added.

Table 26: EXTENDED_PORT_ABILITY_s

BCM_PORT_ABILITY_FEC_CL74	Ability to support CL74 FEC
BCM_PORT_ABILITY_FEC_CL91	Ability to support CL91 FEC

New Port interface value is added.

loc=PORT_INTERFACE_table

New port add flag is added.

Table 27: Port add Flags

Flag	Meaning
BCM_PORT_ADD_TDM_QUEUEING_ON	TDM queuing is on for this port, it's handled as a TDM interleaved port.

New port control types are added.

Table 28:

bcmPortControlBridge	Enable/Disable local port bridging
bcmPortControlPreserveDscpIngress	Set DSCP preserve enable on incoming LIF.
bcmPortControlPreserveDscpEgress	Set DSCP preserve enable on outgoing LIF.
bcmPortControlPWETerminationPortModeEnable	Enable PWE termination port mode on a port, if enabled, PWE label termination lookup key will be <port+label>.
bcmPortControlOuterPolicerRemark	DP profile to remark outer PCP-DEI.
bcmPortControlInnerPolicerRemark	DP profile to remark inner PCP-DEI.

New port phy control types are added.

Table 29: bcm_port_phy_control_t

BCM_PORT_PHY_CONTROL_RX_LANE_SQUELCH	Suppress Serdes RX incoming signals without cable unplugged or plugged.
BCM_PORT_PHY_CONTROL_SOFTWARE_RX_LOS_LINK_WAIT_TIMER_US	Configure RX_LOS_LINK_WAIT_TIMER value in us.
BCM_PORT_PHY_CONTROL_SOFTWARE_RX_LOS_RESTART_TIMER_US	Configure RX_LOS_RESTART_TIMER value in us.
BCM_PORT_PHY_CONTROL_MGBASET_802P3BZ_PRIORITY	Specify MGBASE-T Broadcom or IEEE 802.3bz 5GBase-T & 2.5GBase-T mode
BCM_PORT_PHY_CONTROL_UNRELIABLE_LOS	Configuration of "unreliable_los" bit.
BCM_PORT_PHY_CONTROL_FIRMWARE_CL72_RESTART_TIMEOUT_ENABLE	enable cl72 restart timeout on the firmware

Table 29: bcm_port_phy_control_t

BCM_PORT_PHY_CONTROL_RX_LANE_SQUELCH	Suppress Serdes RX incoming signals without cable unplugged or plugged.
BCM_PORT_PHY_CONTROL_FIRMWARE_CL72_AUTO_POLARITY_ENABLE	enable cl72 auto polarity on the firmware

New port match criteria are added.

Table 30: Generic Port Match Criteria

BCM_PORT_MATCH_PORT_VPN	Logical Port + VPN
BCM_PORT_MATCH_PORT_EXTENDED_PORT_VID_INITIAL_VLAN	Mod/port/trunk + Extender port VID + initial VLAN

New flag for bcm_port_match_info_t is added.

New port control filter disable flag is added.

Table 31: Port CONTROL FILTER DISABLE Flags

Flag	Meaning
BCM_PORT_CONTROL_FILTER_DISABLE_ALL	Disable all egress filters

PRECISION TIME PROTOCOL

New members are added in `bcm_ptp_tod_source_t`.

```
typedef enum bcm_ptp_tod_source_e {
    ...
    bcmPTPTODSourceSerial1,
    bcmPTPTODSourceSerial2,
    bcmPTPTODSourceSerial3,
    ...
} bcm_ptp_tod_source_t;

typedef struct bcm_ptp_phase_offset_s {
    int64 reported_phase_offset; /* Current servo-reported offset between
localtime and the recovered clock */
    int64 delta_phase_offset; /* Application-supplied offset to
compensate for known path asymmetry */
    int64 fixed_phase_offset; /* fixed phase offset */
    int use_fixed_phase_offset; /* Boolean flag to use fixed_phase_offset
or not */
} bcm_ptp_phase_offset_t;
```

bcm_ptp_phase_offset_set

Set phase offsets for path asymmetry compensation

Syntax

```
#include <bcm/ptp.h>
int bcm_ptp_phase_offset_set(
    int unit,
    bcm_ptp_stack_id_t ptp_id,
    int clock_num,
    const bcm_ptp_phase_offset_t *offset)
```

Parameters

<code>unit</code>	- (IN) Unit number.
<code>ptp_id</code>	- (IN) PTP stack ID.
<code>clock_num</code>	- (IN) PTP clock number.
<code>offset</code>	- (IN) PTP servo phase holdover state offsets

Description

Set phase offset for path asymmetry

Returns

BCM_E_NONE	Operation completed successfully
------------	----------------------------------

bcm_ptp_phase_offset_get

Get phase offsets for path asymmetry compensation

Syntax

```
#include <bcm/ptp.h>
int bcm_ptp_phase_offset_get(
    int unit,
    bcm_ptp_stack_id_t ptp_id,
    int clock_num,
    bcm_ptp_phase_offset_t *offset)
```

Parameters

unit	- (IN) Unit number.
ptp_id	- (IN) PTP stack ID.
clock_num	- (IN) PTP clock number.
offset	- (OUT) PTP servo phase holdover state offsets

Description

Get phase offset for path asymmetry

Returns

BCM_E_NONE	Operation completed successfully
------------	----------------------------------

SERVICE ACTIVATION TEST (SAT)

New member variable flags is added in bcm_sat_gtf_bandwidth_t.

```
typedef struct bcm_sat_gtf_bandwidth_s {
    uint32 flags;
    uint32 rate;          /* traffic rate. Units: kbps */
    uint32 max_burst;     /* traffic burst. Units: kbit */
} bcm_sat_gtf_bandwidth_t;
```

Table 32: SAT GTF Rate Flag Definitions

BCM_SAT_GTF_RATE_IN_BYTES	<i>If set, gtf rate is configured in bytes per second</i>
BCM_SAT_GTF_RATE_IN_PACKETS	If set, gtf rate is configured in packets per second

STATISTICS

New counting source of a counter engine is added.

```
typedef enum bcm_stat_counter_source_type_e {  
  
    bcmStatCounterSourceEgressReceiveTm = 18,  
    ....  
} bcm_stat_counter_source_type_t;
```

New stat counter config flags are added.

Table 33: Counter Config Flags

Flag	description
BCM_STAT_COUNTER_IGNORE_COLORS	Ignore colors from counter set mapping.
BCM_STAT_COUNTER_IGNORE_DISPOSITION	Ignore disposition (forward or drop) from counter set mapping.

PACKET TRANSMIT AND RECEIVE

New rx trap codes are added.

Table 34: Rx Trap Codes.

<i>Trap Code</i>	<i>Description</i>
bcmRxTrapEgSer	To be used upon ERPP memory unrecoverable error
bcmRxTrapEgTxSerTrap	To be used upon ETPP memory unrecoverable error

SWITCH CONTROL

New switch type values are added.

Table 35: Switch Type Values

Value	Description	Arg Value
bcmSwitchDowngrade	Set the devices for a Warmboot Downgrade to the Warmboot version mentioned.	0x1 - 0xFFFF
bcmSwitchHashELISearch	Enable ELI search and the use of the EL label for LAG and ECMP load balancing.	TRUE/FALSE
bcmSwitchCrashRecoveryMode	This instructs the SDK to change the Crash Recovery operation mode possible values 0:off 1:API 2:on demand.	0/1/2
bcmSwitchCrCommit	If working in on demand CR, use this to trigger a commit.	TRUE
bcmSwitchCrLastTransactionStatus	Query after a crash if last transaction went through.	TRUE/FALSE
SwitchCrCouldNotRecover	When working in Crash Recovery Mode, Query after A crash if program successfully recovered.	TRUE/FALSE
SwitchHWL2Freeze	Freeze/thaw L2 H/W activity.	TRUE/FALSE
bcmSwitchHashIPv6NextHeaderUseExtensionHeader0	Hash Control to select the IPv6 Next Header field for hash Block A. If set, use Extension Header, else use current Next Header field.	TRUE/FALSE
bcmSwitchHashIPv6NextHeaderUseExtensionHeader1	Hash Control to select the IPv6 Next Header field for hash Block B. If set, use Extension Header, else use current Next Header field.	TRUE/FALSE
bcmSwitchHashUseFlowSelLbidNonUnicast	Enable/Disable flow based hashing for non-unicast LBID.	TRUE/FALSE
bcmSwitchHashUseFlowSelLbidUnicast	Enable/Disable flow based hashing for unicast LBID.	TRUE/FALSE
bcmSwitchHashUseFlowSelHigigTrunkNonUnicast	Enable/Disable flow based hashing for non-unicast Higig Trunk.	TRUE/FALSE
bcmSwitchHashUseFlowSelHigigTrunkUnicast	Enable/Disable flow based hashing for unicast Higig Trunk.	TRUE/FALSE
bcmSwitchHashUseFlowSelHigigTrunkFailover	Enable/Disable flow based hashing for Higig Trunk Failover.	TRUE/FALSE
bcmSwitchHashUseFlowSelTrunkNonUnicast	Enable/Disable flow based hashing for non-unicast Trunk.	TRUE/FALSE
bcmSwitchHashUseFlowSelEntropy	Enable/Disable flow based hashing for Entropy.	TRUE/FALSE
bcmSwitchHashUseFlowSelVxlanEcmp	Enable/Disable flow based hashing for VXLAN ECMP.	TRUE/FALSE

Table 35: Switch Type Values

Value	Description	Arg Value
bcmSwitchHashEcmpBitsCount	Hash Select for ECMP to determine the number of bits of the 16-bit ECMP hash value.	10 - 16, default: 10 <ul style="list-style-type: none"> • 10: used hash bits are 0-9 • 11: used hash bits are 0-10 • 12: used hash bits are 0-11 • 13: used hash bits are 0-12 • 14: used hash bits are 0-13 • 15: used hash bits are 0-14 • 16: All 16 bits are used • Others: Invalid
bcmSwitchDefaultNativeOutVlanPort	Default native out VLAN Port.	TRUE/FALSE
bcmSwitchDefaultEgressVlanEditClassId	Default Vlan Edit Class Id for Egress VLAN translation.	TRUE/FALSE
bcmSwitchGtpDetectEnable	Enable/disable the capability for GTP packet detection.	TRUE/FALSE
bcmSwitchGtpHdrFirstByte	Setup the value for GTP Header First Byte.	0-255, 8 bit number
bcmSwitchGtpHdrFirstByteMask	Setup the mask for GTP Header First Byte.	0-255, 8 bit number
bcmSwitchHashGtpTeidEnable0	Enable using the Tunnel endpoint id for hashing, for GTP pkts.	TRUE/FALSE
bcmSwitchHashGtpTeidEnable1	Enable using the Tunnel endpoint id for hashing, for GTP pkts.	TRUE/FALSE
bcmSwitchEccSingleBitErrorEvent	Enable/Disable 1bit ECC error reporting for all the memories which are protected by ECC logic and whose Parity/ECC error could only be corrected by H/W.	TRUE/FALSE
bcmSwitchHeaderCompensationPerPacket	Set the header compensation of packets according to the MSBs of its CUD.	
bcmSwitchHashSelectControl	BCM56700/BCM56800/BCM56580 field selection control for enhanced hashing algorithm.	<ul style="list-style-type: none"> • BCM_HASH_FIELD0_DISABLE_VXLAN - selection 0 for tunnel VXLAN pkts • BCM_HASH_FIELD1_DISABLE_VXLAN - selection 1 for tunnel VXLAN pkts

New switch event control action types are added.

Table 36: bcm_switch_event_control_action_t

Name	Purpose
bcmSwitchEventUnmaskAndClearDisable	Skip clearing and enabling the asserted interrupt at the end of event corrective action.
bcmSwitchEventForceUnmask	Skip enabling interrupt action for asserted interrupt at the end of event corrective action, if the interrupt is not cleared.

New switch tpid types are added.

```
typedef enum bcm_switch_tpid_type_e {
    ....
    bcmTpidTypeMimPayloadOuter,      /* Matched TPID of Transit MIM Payload
for Parser */
    bcmTpidTypeVxlanPayloadOuter,    /* Matched TPID of Transit VXLAN
Payload for Parser */
    bcmTpidTypeL2grePayloadOuter,    /* Matched TPID of Transit L2GRE
Payload for Parser */
} bcm_switch_tpid_type_t;
```

New switch agm type is added.

```
typedef enum bcm_switch_agm_type_e {
    ....
    bcmSwitchAgmTypeL3EcmpOverlay = 3, /* Forwarding group is an Overlay Ecmp
Trunk group */
} bcm_switch_agm_type_t;
```

New switch match service type is added.

```
typedef enum bcm_switch_match_service_e {
    ....
    bcmSwitchMatchServiceGtp = 2,      /* GPRS Tunnel Protocol packets.
Required fields: match_type,
src_port, dst_port. */
    ....
} bcm_switch_match_service_t;
```

New Types and member variables for `bcm_switch_match_config_info_t` are added.

```
typedef struct bcm_switch_match_config_info_s {
    ....
    uint8 match_criteria; /* Match criteria for GPRS Tunnel Protocol packets
*/
    #define BCM_SWITCH_GTP_MATCH_DST_PORT      0x1
    #define BCM_SWITCH_GTP_MATCH_SRC_PORT      0x2
    #define BCM_SWITCH_GTP_MATCH_SRC_OR_DST_PORT 0x3
    #define BCM_SWITCH_GTP_MATCH_SRC_AND_DST_PORT 0x4

    uint16 dst_port;      /* Matched destination port */
    uint16 src_port;      /* Matched source port */
} bcm_switch_match_config_info_t;
```

The following macro will convert sdk version to warmboot version which will be used as input parameter to `bcmSwitch-Downgrade` switch control.

```
#define BCM_SWITCH_SDK_TO_WARMBOOT_VERSION_GET(_major_release,
_minor_release, _patch_level, _warmboot_ver) \n      (_warmboot_ver) =
((( (_major_release) & 0xFF) << 16 ) | (((_minor_release) & 0xFF) << 8 ) |
((( _patch_level) & 0xFF)))

/* For example, to convert sdk version 6.5.4 to warm boot version */
```

```
int unit = 0;
uint32 warmboot_version;
uint8 _major_release = 6;
uint8 _minor_release = 5;
uint8 _patch_level   = 4;
print
BCM_SWITCH_SDK_TO_WARMBOOT_VERSION_GET(&_major_release,&_minor_release,&_patch
_level, &warmboot_version);
```

TRUNKING (LINK AGGREGATION)

bcm_trunk_gport_add

Add a GPORT ID for the specified trunk.

Syntax

```
#include <bcm/trunk.h>
int bcm_trunk_gport_add(int unit, bcm_trunk_t tid, bcm_gport_t gport)
```

Parameters

unit	BCM device number
tid	Trunk group
gport	GPORT ID

Description

This API can be used to add a GPORT ID corresponding to a trunk.

The GPORT ID returned in this API is a MODPORT type. Therefore this call will fail on devices without a module ID.

Returns

BCM_E_NONE	No Error
BCM_E_UNAVAIL	Feature unavailable
BCM_E_PARAM	Invalid Parameter
BCM_E_XXX	Error occurred

bcm_trunk_gport_get_all

Get all the GPORT ID for the specified trunk.

Syntax

```
#include <bcm/trunk.h>
int bcm_trunk_gport_get_all(int unit, bcm_trunk_t tid, int gport_size,
                           bcm_gport_t *gport_array, int *count)
```


Parameters

<code>unit</code>	BCM device number
<code>tid</code>	Trunk group
<code>gport_size</code>	Max size of gport array
<code>gport_array</code>	GPORT array
<code>count</code>	GPORT count

Description

This API can be used to get all the GPORT ID corresponding to a trunk.

Returns

<code>BCM_E_NONE</code>	No Error
<code>BCM_E_UNAVAIL</code>	Feature unavailable
<code>BCM_E_PARAM</code>	Invalid Parameter
<code>BCM_E_XXX</code>	Error occurred

bcm_trunk_gport_delete

Delete the GPORT ID for the specified trunk.

Syntax

```
#include <bcm/trunk.h>
int bcm_trunk_gport_delete(int unit, bcm_trunk_t tid, bcm_gport_t gport)
```

Parameters

<code>unit</code>	BCM device number
<code>tid</code>	Trunk group
<code>gport</code>	GPORT ID

Description

This API can be used to delete the GPORT ID corresponding to a trunk.

The GPORT ID returned in this API is a MODPORT type. Therefore this call will fail on devices without a module ID.

Returns

BCM_E_NONE	No Error
BCM_E_UNAVAIL	Feature unavailable
BCM_E_PARAM	Invalid Parameter
BCM_E_XXX	Error occurred

bcm_trunk_gport_delete_all

Delete all the GPORT ID for the specified trunk.

Syntax

```
#include <bcm/trunk.h>
int bcm_trunk_gport_delete_all(int unit, bcm_trunk_t tid)
```

Parameters

unit	BCM device number
tid	Trunk group

Description

This API can be used to delete all the GPORT ID corresponding to a trunk.

Returns

BCM_E_NONE	No Error
BCM_E_UNAVAIL	Feature unavailable
BCM_E_PARAM	Invalid Parameter
BCM_E_XXX	Error occurred

VLAN MANAGEMENT

The TPID actions are defined in `bcm_vlan_tpid_action_t`. New actions are added.

Table 37:

VLAN tpid Actions	Description
<code>bcmVlanTpidActionInner</code>	Use packet's inner tpid.
<code>bcmVlanTpidActionOuter</code>	Use packet's outer tpid.

New VLAN gport flag is added.

Table 38: VLAN gport flags

Flag	Description
<code>BCM_VLAN_GPORT_ADD_EGRESS_L3_ONLY</code>	Egress VLAN membership check for L3 interface only, used for physical port GPORT only.

Table 39: VLAN gport flags

Flag	Description
<code>BCM_VLAN_PORT_NATIVE</code>	Creates a native vlan port.

New VLAN action flag is added.

Table 40: VLAN action flags

Flag	Value	Description
<code>BCM_VLAN_ACTION_SET_VLAN_CHECKS_DISABLE</code>	<code>0x0080</code>	Disable spanning tree and ingress port VLAN membership checks.

Section 7: Test Statistics

HOW TO READ THE DATA

The below tables represent a spread of data gathered per-device, per-suite, per-release. The percentages represent the aggregate rate of failure for that suite when run against all variants of the family of devices.

OVERVIEW

Each suite listed below is indicative of a specific module. Golden refers to a suite of tests that takes representation across multiple modules and serves as a sanity regression. Each suite contains tests of various types, loosely categorized as shown in Table 43: Suite Test Types

Table 41: Suite Test Types

Test Categories	Description
Configuration Tests	Tests that verify that each API functions appropriately and can configure the device as expected.
Functionality Tests	Tests that further validate each of the API through functional use often requiring traffic to be run through the system.
Semantic Tests	Tests that ensure that the proper error handling mechanisms are working and users cannot crash the device through the API.

LINUX KERNEL VERSIONS USED IN THIS RELEASE

In SDK 6.5.4, the following Linux kernel versions were used in our development and regression cycles with these main CPUs:

- BCM9XLP208XMC (WRX): 3.10.59
- BCM958625XMC (RSX): 3.6.5
- BCM98548PPCXMC (GTO): 4.4
- BCM98548PPCXMC (XLR): 3.14

Please refer to the Broadcom Network Switching Software Platform Guide for more details about these CPUs.

TOTAL TESTS

The below data in Table 44: Tests per Module represents the number of unique cases for each release.

Note that although a particular test case will execute for each and every chip, it is only counted once.

Table 42: Tests per Module

	sdk-6.5.4	sdk-6.5.3	sdk-6.5.2
golden	154	154	154
warmboot	2764	1242	812
bfd	75	63	37
bhh	61	46	43
chip	9	9	9
cint	77	73	60
coe	591	568	568
cosq	639	588	513
custom	7	7	7
ea	108	108	108
eav	19	19	19
extender	49	49	45
fabric	7	7	7
failover	10	10	8
fcoe	37	37	37
field	1415	1404	1339
higigproxy	129	129	129
infra	114	114	114
ipfix	17	17	17
ipmc	116	116	116
l2	337	337	329
l2gre	33	33	13
l3	522	506	494
l3.alpm	512	476	356
link	26	26	26
mim	46	46	19
mirror	173	173	173
misc	20	20	20
mpls	465	461	362
multicast	29	28	25
niv	65	65	58
oam	358	344	271
pkt	44	44	44
port	374	372	360
proxy	37	37	37
ptp	115	115	115
qos	13	13	13
rate	21	21	21
rtag7	43	43	42
rx	25	25	25
ser	157	157	157
stack	117	117	117

Table 42: Tests per Module

	sdk-6.5.4	sdk-6.5.3	sdk-6.5.2
stat	386	386	351
stg	42	42	42
switch	197	197	197
time	33	33	33
tlvMsg	13	13	13
trill	47	47	40
trunk	223	223	219
tunnel	133	133	123
subport	31	31	31
vlan	240	239	233
vxlan	206	206	174
wlan	17	17	17
Test Suite Total	11498	9786	8692

API TEST RESULTS

Below tables show percentages of failures for corresponding test suites per SDK release.

ALL DEVICES

Note: This section represents aggregate results for all devices in the release.

Table 43: Tests Results

	sdk-6.5.4	sdk-6.5.3	sdk-6.5.2
golden	0.1 %	0.2 %	0.1 %
warmboot	0.1 %	0.1 %	0.5 %
bcm.bfd	0.0 %	0.0 %	0.0 %
bcm.bhh	0.0 %	0.0 %	0.0 %
bcm.chip	0.0 %	0.0 %	0.0 %
bcm.cint	0.0 %	0.0 %	0.0 %
bcm.coe	0.2 %	0.1 %	0.2 %
bcm.cosq	0.2 %	0.1 %	0.2 %
bcm.custom	0.0 %	0.0 %	0.0 %
bcm.ea	0.0 %	0.0 %	0.0 %
bcm.eav	0.0 %	0.0 %	0.0 %
bcm.extender	0.0 %	0.0 %	0.1 %
bcm.fabric	0.0 %	0.0 %	0.0 %
bcm.failover	0.0 %	0.0 %	0.0 %
bcm.fcoe	0.0 %	0.0 %	0.0 %
bcm.field	0.2 %	0.2 %	0.3 %
bcm.higigproxy	0.0 %	0.0 %	0.0 %
bcm.infra	0.0 %	0.0 %	0.0 %
bcm.ipfix	0.0 %	0.5 %	0.5 %
bcm.ipmc	0.1 %	0.0 %	0.3 %
bcm.l2	0.1 %	0.1 %	0.2 %
bcm.l2gre	0.0 %	0.0 %	0.0 %
bcm.l3	0.1 %	0.1 %	0.1 %
bcm.l3.alpm	0.0 %	0.0 %	0.1 %
bcm.link	0.0 %	0.0 %	0.0 %
bcm.mim	0.0 %	0.0 %	0.0 %
bcm.mirror	0.1 %	0.1 %	0.2 %
bcm.misc	0.0 %	0.0 %	0.1 %
bcm.mpls	0.0 %	0.0 %	0.1 %
bcm.multicast	0.1 %	0.0 %	0.1 %
bcm.niv	0.0 %	0.0 %	0.0 %
bcm.oam	0.1 %	0.0 %	0.1 %
bcm.pkt	0.0 %	0.0 %	0.0 %
bcm.port	0.4 %	0.5 %	0.5 %
bcm.proxy	0.0 %	0.0 %	0.0 %
bcm.ptp	0.0 %	0.0 %	0.0 %
bcm.qos	0.0 %	0.0 %	0.0 %
bcm.rate	0.0 %	0.0 %	0.0 %
bcm.rtag7	0.0 %	0.1 %	0.0 %
bcm.rx	0.0 %	0.0 %	0.1 %

Table 43: Tests Results

	sdk-6.5.4	sdk-6.5.3	sdk-6.5.2
bcm.ser	0.0 %	0.0 %	0.3 %
bcm.stack	0.0 %	0.1 %	0.0 %
bcm.stat	0.1 %	0.1 %	0.1 %
bcm.stg	0.0 %	0.0 %	0.0 %
bcm.switch	0.1 %	0.0 %	0.1 %
bcm.time	0.0 %	0.0 %	0.0 %
bcm.tlvMsg	0.0 %	0.0 %	0.0 %
bcm.trill	0.0 %	0.0 %	0.0 %
bcm.trunk	0.1 %	0.1 %	0.1 %
bcm.tunnel	0.0 %	0.0 %	0.0 %
bcm.subport	0.0 %	0.0 %	0.0 %
bcm.vlan	0.1 %	0.0 %	0.0 %
bcm.vxlan	0.0 %	0.0 %	0.0 %
bcm.wlan	0.0 %	0.0 %	0.0 %
Test Suite Total	0.2 %	0.3 %	0.3 %

TRIDENT2

Table 44: Test Results

	sdk-6.5.4	sdk-6.5.3	sdk-6.5.2
golden	0.0 %	0.0 %	0.0 %
warmboot	0.1 %	0.1 %	0.1 %
bcm.bfd	0.0 %	0.0 %	0.0 %
bcm.chip	0.0 %	0.0 %	0.0 %
bcm.cint	0.0 %	0.0 %	0.0 %
bcm.cosq	0.0 %	0.0 %	0.0 %
bcm.custom	0.0 %	0.0 %	0.0 %
bcm.ea	0.0 %	0.0 %	0.0 %
bcm.eav	0.0 %	0.0 %	0.0 %
bcm.extender	0.0 %	0.0 %	0.0 %
bcm.fabric	0.0 %	0.0 %	0.0 %
bcm.failover	0.0 %	0.0 %	0.0 %
bcm.fcoe	0.0 %	0.0 %	0.0 %
bcm.field	0.1 %	0.1 %	0.1 %
bcm.higigproxy	0.0 %	0.0 %	0.0 %
bcm.infra	0.0 %	0.0 %	0.0 %
bcm.ipfix	0.0 %	0.0 %	0.0 %
bcm.ipmc	0.0 %	0.1 %	0.0 %
bcm.l2	0.0 %	0.1 %	0.0 %
bcm.l2gre	0.0 %	0.0 %	0.0 %
bcm.l3	0.0 %	0.0 %	0.0 %
bcm.l3.alpm	0.0 %	0.0 %	0.0 %
bcm.link	0.0 %	0.0 %	0.0 %
bcm.mim	0.0 %	0.0 %	0.0 %
bcm.mirror	0.0 %	0.0 %	0.0 %
bcm.misc	0.0 %	0.0 %	0.0 %
bcm.mpls	0.0 %	0.0 %	0.0 %

Table 44: Test Results

	sdk-6.5.4	sdk-6.5.3	sdk-6.5.2
bcm.multicast	0.0 %	0.0 %	0.0 %
bcm.niv	0.0 %	0.0 %	0.0 %
bcm.oam	0.0 %	0.0 %	0.0 %
bcm.pkt	0.0 %	0.0 %	0.0 %
bcm.port	0.0 %	0.1 %	0.0 %
bcm.proxy	0.0 %	0.0 %	0.0 %
bcm.ptp	0.0 %	0.0 %	0.0 %
bcm.qos	0.0 %	0.0 %	0.0 %
bcm.rate	0.0 %	0.0 %	0.0 %
bcm.rtag7	0.0 %	0.0 %	0.0 %
bcm.rx	0.0 %	0.0 %	0.0 %
bcm.ser	0.0 %	0.0 %	0.0 %
bcm.stack	0.0 %	0.0 %	0.0 %
bcm.stat	0.0 %	0.0 %	0.0 %
bcm.stg	0.0 %	0.0 %	0.0 %
bcm.switch	0.0 %	0.0 %	0.0 %
bcm.time	0.0 %	0.0 %	0.0 %
bcm.tlvMsg	0.0 %	0.0 %	0.0 %
bcm.trill	0.0 %	0.0 %	0.0 %
bcm.trunk	0.0 %	0.0 %	0.0 %
bcm.tunnel	0.0 %	0.0 %	0.0 %
bcm.subport	0.0 %	0.0 %	0.0 %
bcm.vlan	0.0 %	0.0 %	0.0 %
bcm.vxlan	0.0 %	0.0 %	0.0 %
bcm.wlan	0.0 %	0.0 %	0.0 %
Test Suite Total	0.1 %	0.1 %	0.1 %

TRIUMPH3

Table 45: Test Results

	sdk-6.5.4	sdk-6.5.3	sdk-6.5.2
golden	0.1 %	0.2 %	0.0 %
warmboot	0.0 %	0.1 %	0.4 %
bcm.bfd	0.0 %	0.0 %	0.0 %
bcm.bhh	0.0 %	0.0 %	0.0 %
bcm.chip	0.0 %	0.0 %	0.0 %
bcm.cint	0.0 %	0.0 %	0.0 %
bcm.cosq	0.0 %	0.0 %	0.0 %
bcm.custom	0.0 %	0.0 %	0.0 %
bcm.ea	0.0 %	0.0 %	0.0 %
bcm.eav	0.0 %	0.0 %	0.0 %
bcm.extender	0.0 %	0.0 %	0.0 %
bcm.fabric	0.0 %	0.0 %	0.0 %
bcm.failover	0.0 %	0.0 %	0.0 %
bcm.fcoe	0.0 %	0.0 %	0.0 %
bcm.field	0.1 %	0.1 %	0.1 %
bcm.higigproxy	0.0 %	0.0 %	0.0 %

Table 45: Test Results

	sdk-6.5.4	sdk-6.5.3	sdk-6.5.2
bcm.infra	0.0 %	0.0 %	0.1 %
bcm.ipfix	0.0 %	0.0 %	0.0 %
bcm.ipmc	0.0 %	0.0 %	0.0 %
bcm.l2	0.0 %	0.0 %	0.2 %
bcm.l2gre	0.0 %	0.0 %	0.0 %
bcm.l3	0.0 %	0.0 %	0.1 %
bcm.link	0.0 %	0.0 %	0.0 %
bcm.mim	0.0 %	0.0 %	0.0 %
bcm.mirror	0.0 %	0.0 %	0.0 %
bcm.misc	0.0 %	0.0 %	0.0 %
bcm.mpls	0.0 %	0.0 %	0.0 %
bcm.multicast	0.0 %	0.0 %	0.0 %
bcm.niv	0.0 %	0.0 %	0.0 %
bcm.oam	0.0 %	0.0 %	0.3 %
bcm.pkt	0.0 %	0.0 %	0.0 %
bcm.port	1.0 %	1.4 %	1.3 %
bcm.proxy	0.0 %	0.0 %	0.0 %
bcm.ptp	0.0 %	0.0 %	0.0 %
bcm.qos	0.0 %	0.0 %	0.0 %
bcm.rate	0.0 %	0.0 %	0.0 %
bcm.rtag7	0.0 %	0.0 %	0.0 %
bcm.rx	0.0 %	0.0 %	0.0 %
bcm.ser	0.0 %	0.0 %	0.0 %
bcm.stack	0.0 %	0.0 %	0.0 %
bcm.stat	0.0 %	0.0 %	0.0 %
bcm.stg	0.0 %	0.0 %	0.0 %
bcm.switch	0.0 %	0.0 %	0.0 %
bcm.time	0.0 %	0.0 %	0.0 %
bcm.tlvMsg	0.0 %	0.0 %	0.0 %
bcm.trill	0.0 %	0.0 %	0.0 %
bcm.trunk	0.0 %	0.0 %	0.0 %
bcm.tunnel	0.0 %	0.0 %	0.0 %
bcm.subport	0.0 %	0.0 %	0.0 %
bcm.vlan	0.0 %	0.0 %	0.0 %
bcm.vxlan	0.0 %	0.0 %	0.0 %
bcm.wlan	0.0 %	0.0 %	0.0 %
Test Suite Total	0.1 %	0.1 %	0.2 %

KATANA2

Table 46: Test Results

	sdk-6.5.4	sdk-6.5.3	sdk-6.5.2
golden	0.0 %	0.0 %	0.1 %
warmboot	0.0 %	0.1 %	0.9 %
bcm.bfd	0.0 %	0.0 %	0.0 %
bcm.bhh	0.0 %	0.0 %	0.0 %
bcm.chip	0.0 %	0.0 %	0.0 %

Table 46: Test Results

	sdk-6.5.4	sdk-6.5.3	sdk-6.5.2
bcm.cint	0.0 %	0.0 %	0.0 %
bcm.coe	0.1 %	0.1 %	0.1 %
bcm.cosq	0.1 %	0.1 %	0.1 %
bcm.custom	0.0 %	0.0 %	0.0 %
bcm.ea	0.0 %	0.0 %	0.0 %
bcm.eav	0.0 %	0.0 %	0.0 %
bcm.extender	0.0 %	0.0 %	0.0 %
bcm.fabric	0.0 %	0.0 %	0.0 %
bcm.failover	0.0 %	0.0 %	0.0 %
bcm.fcoe	0.0 %	0.0 %	0.0 %
bcm.field	0.2 %	0.2 %	0.3 %
bcm.higigproxy	0.0 %	0.0 %	0.0 %
bcm.infra	0.0 %	0.0 %	0.0 %
bcm.ipfix	0.0 %	0.0 %	0.0 %
bcm.ipmc	0.0 %	0.0 %	0.0 %
bcm.l2	0.0 %	0.0 %	0.0 %
bcm.l2gre	0.0 %	0.0 %	0.0 %
bcm.l3	0.0 %	0.0 %	0.0 %
bcm.link	0.0 %	0.0 %	0.0 %
bcm.mim	0.0 %	0.0 %	0.0 %
bcm.mirror	0.1 %	0.1 %	0.1 %
bcm.misc	0.0 %	0.0 %	0.0 %
bcm.mpls	0.0 %	0.0 %	0.0 %
bcm.multicast	0.0 %	0.0 %	0.0 %
bcm.niv	0.0 %	0.0 %	0.0 %
bcm.oam	0.0 %	0.0 %	0.0 %
bcm.pkt	0.0 %	0.0 %	0.0 %
bcm.port	0.4 %	0.7 %	0.5 %
bcm.proxy	0.0 %	0.0 %	0.0 %
bcm.ptp	0.0 %	0.0 %	0.0 %
bcm.qos	0.0 %	0.0 %	0.0 %
bcm.rate	0.0 %	0.0 %	0.0 %
bcm.rtag7	0.0 %	0.0 %	0.0 %
bcm.rx	0.0 %	0.0 %	0.0 %
bcm.ser	0.0 %	0.0 %	0.0 %
bcm.stack	0.0 %	0.0 %	0.0 %
bcm.stat	0.1 %	0.1 %	0.0 %
bcm.stg	0.0 %	0.0 %	0.0 %
bcm.switch	0.0 %	0.0 %	0.0 %
bcm.time	0.0 %	0.0 %	0.0 %
bcm.tlvMsg	0.0 %	0.0 %	0.0 %
bcm.trill	0.0 %	0.0 %	0.0 %
bcm.trunk	0.0 %	0.0 %	0.0 %
bcm.tunnel	0.0 %	0.0 %	0.0 %
bcm.subport	0.0 %	0.0 %	0.0 %
bcm.vlan	0.0 %	0.0 %	0.0 %
bcm.vxlan	0.0 %	0.0 %	0.0 %
bcm.wlan	0.0 %	0.0 %	0.0 %
Test Suite Total	0.1 %	0.2 %	0.2 %

GREYHOUND

Table 47: Test Results

	sdk-6.5.4	sdk-6.5.3	sdk-6.5.2
golden	0.0 %	0.3 %	0.0 %
warmboot	0.0 %	0.0 %	0.1 %
bcm.chip	0.0 %	0.0 %	0.0 %
bcm.cint	0.0 %	0.0 %	0.0 %
bcm.coe	0.0 %	0.0 %	0.0 %
bcm.cosq	0.0 %	0.0 %	0.0 %
bcm.custom	0.0 %	0.0 %	0.0 %
bcm.ea	0.0 %	0.0 %	0.0 %
bcm.eav	0.0 %	0.0 %	0.0 %
bcm.extender	0.0 %	0.0 %	0.0 %
bcm.fabric	0.0 %	0.0 %	0.0 %
bcm.failover	0.0 %	0.0 %	0.0 %
bcm.fcoe	0.0 %	0.0 %	0.0 %
bcm.field	0.0 %	0.0 %	0.0 %
bcm.higigproxy	0.0 %	0.0 %	0.0 %
bcm.infra	0.0 %	0.0 %	0.0 %
bcm.ipfix	0.0 %	0.0 %	0.0 %
bcm.ipmc	0.0 %	0.0 %	0.0 %
bcm.l2	0.0 %	0.0 %	0.0 %
bcm.l2gre	0.0 %	0.0 %	0.0 %
bcm.l3	0.0 %	0.0 %	0.0 %
bcm.link	0.0 %	0.0 %	0.0 %
bcm.mim	0.0 %	0.0 %	0.0 %
bcm.mirror	0.0 %	1.3 %	0.0 %
bcm.misc	0.0 %	0.0 %	0.0 %
bcm.mpls	0.0 %	0.0 %	0.0 %
bcm.multicast	0.0 %	0.0 %	0.0 %
bcm.niv	0.0 %	0.0 %	0.0 %
bcm.oam	0.0 %	0.0 %	0.0 %
bcm.pkt	0.0 %	0.0 %	0.0 %
bcm.port	0.5 %	0.7 %	0.5 %
bcm.proxy	0.0 %	0.0 %	0.0 %
bcm.ptp	0.0 %	0.0 %	0.0 %
bcm.qos	0.0 %	0.0 %	0.0 %
bcm.rate	0.0 %	0.0 %	0.0 %
bcm.rtag7	0.0 %	0.0 %	0.0 %
bcm.rx	0.0 %	0.0 %	0.0 %
bcm.ser	0.0 %	0.0 %	0.0 %
bcm.stack	0.0 %	0.0 %	0.0 %
bcm.stat	0.0 %	0.1 %	0.0 %
bcm.stg	0.0 %	0.0 %	0.0 %
bcm.switch	0.0 %	0.0 %	0.0 %
bcm.time	0.0 %	0.0 %	0.0 %
bcm.tlvMsg	0.0 %	0.0 %	0.0 %
bcm.trill	0.0 %	0.0 %	0.0 %
bcm.trunk	0.0 %	0.0 %	0.0 %

Table 47: Test Results

	sdk-6.5.4	sdk-6.5.3	sdk-6.5.2
bcm.tunnel	0.0 %	0.0 %	0.0 %
bcm.subport	0.0 %	0.0 %	0.0 %
bcm.vlan	0.0 %	0.0 %	0.0 %
bcm.vxlan	0.0 %	0.0 %	0.0 %
bcm.wlan	0.0 %	0.0 %	0.0 %
Test Suite Total	0.1 %	0.1 %	0.1 %

TOMAHAWK

Table 48: Test Results

	sdk-6.5.4	sdk-6.5.3	sdk-6.5.2
golden	0.0 %	0.1 %	0.1 %
warmboot	0.1 %	0.1 %	0.1 %
bcm.chip	0.0 %	0.0 %	0.0 %
bcm.cint	0.0 %	0.0 %	0.0 %
bcm.coe	0.0 %	0.0 %	0.0 %
bcm.cosq	0.3 %	0.3 %	0.3 %
bcm.custom	0.0 %	0.0 %	0.0 %
bcm.ea	0.0 %	0.0 %	0.0 %
bcm.eav	0.0 %	0.0 %	0.0 %
bcm.extender	0.0 %	0.0 %	0.0 %
bcm.fabric	0.0 %	0.0 %	0.0 %
bcm.failover	0.0 %	0.0 %	0.0 %
bcm.fcoe	0.0 %	0.0 %	0.0 %
bcm.field	0.3 %	0.3 %	0.3 %
bcm.higigproxy	0.0 %	0.0 %	0.0 %
bcm.infra	0.0 %	0.0 %	0.0 %
bcm.ipfix	0.0 %	0.0 %	0.0 %
bcm.ipmc	0.0 %	0.0 %	0.4 %
bcm.l2	0.0 %	0.0 %	0.2 %
bcm.l2gre	0.0 %	0.0 %	0.0 %
bcm.l3	0.0 %	0.0 %	0.0 %
bcm.l3.alpm	0.0 %	0.0 %	0.0 %
bcm.link	0.0 %	0.0 %	0.0 %
bcm.mim	0.0 %	0.0 %	0.0 %
bcm.mirror	0.1 %	0.4 %	0.0 %
bcm.misc	0.0 %	0.0 %	0.0 %
bcm.mpls	0.0 %	0.0 %	0.0 %
bcm.multicast	0.0 %	0.0 %	0.0 %
bcm.niv	0.0 %	0.0 %	0.0 %
bcm.oam	0.0 %	0.0 %	0.0 %
bcm.pkt	0.0 %	0.0 %	0.0 %
bcm.port	0.1 %	0.1 %	0.0 %
bcm.proxy	0.0 %	0.0 %	0.0 %
bcm.ptp	0.0 %	0.0 %	0.0 %
bcm.qos	0.0 %	0.0 %	0.0 %
bcm.rate	0.0 %	0.0 %	0.0 %

Table 48: Test Results

	sdk-6.5.4	sdk-6.5.3	sdk-6.5.2
bcm.rtag7	0.0 %	0.0 %	0.0 %
bcm.rx	0.0 %	0.0 %	0.0 %
bcm.ser	0.0 %	0.0 %	0.0 %
bcm.stack	0.0 %	0.0 %	0.0 %
bcm.stat	0.0 %	0.0 %	0.2 %
bcm.stg	0.0 %	0.0 %	0.0 %
bcm.switch	0.0 %	0.0 %	0.1 %
bcm.time	0.0 %	0.0 %	0.0 %
bcm.tlvMsg	0.0 %	0.0 %	0.0 %
bcm.trill	0.0 %	0.0 %	0.0 %
bcm.trunk	0.0 %	0.0 %	0.0 %
bcm.tunnel	0.0 %	0.0 %	0.0 %
bcm.subport	0.0 %	0.0 %	0.0 %
bcm.vlan	0.0 %	0.0 %	0.0 %
bcm.vxlan	0.0 %	0.0 %	0.0 %
bcm.wlan	0.0 %	0.0 %	0.0 %
Test Suite Total	0.2 %	0.2 %	0.2 %

TRIDENT2+

Table 49: Test Results

	sdk-6.5.4	sdk-6.5.3	sdk-6.5.2
golden	0.0 %	0.0 %	0.0 %
warmboot	0.1 %	0.1 %	0.2 %
bcm.chip	0.0 %	0.0 %	0.0 %
bcm.cosq	0.0 %	0.0 %	0.0 %
bcm.custom	0.0 %	0.0 %	0.0 %
bcm.eav	0.0 %	0.0 %	0.0 %
bcm.extender	0.0 %	0.0 %	0.0 %
bcm.fabric	0.0 %	0.0 %	0.0 %
bcm.failover	0.0 %	0.0 %	0.0 %
bcm.fcoe	0.0 %	0.0 %	0.0 %
bcm.field	0.1 %	0.1 %	0.2 %
bcm.higigproxy	0.0 %	0.0 %	0.0 %
bcm.ipfix	0.0 %	0.0 %	0.0 %
bcm.ipmc	0.0 %	0.0 %	0.2 %
bcm.l2	0.0 %	0.0 %	0.1 %
bcm.l2gre	0.0 %	0.0 %	0.0 %
bcm.l3	0.0 %	0.0 %	0.1 %
bcm.l3.alpm	0.0 %	0.0 %	0.0 %
bcm.link	0.0 %	0.0 %	0.0 %
bcm.mim	0.0 %	0.0 %	0.0 %
bcm.mirror	0.0 %	0.0 %	0.0 %
bcm.misc	0.0 %	0.0 %	0.0 %
bcm.mpls	0.0 %	0.0 %	0.0 %
bcm.multicast	0.0 %	0.0 %	0.0 %
bcm.niv	0.0 %	0.0 %	0.0 %

Table 49: Test Results

	sdk-6.5.4	sdk-6.5.3	sdk-6.5.2
bcm.oam	0.0 %	0.0 %	0.0 %
bcm.pkt	0.0 %	0.0 %	0.0 %
bcm.port	0.0 %	0.1 %	0.2 %
bcm.proxy	0.0 %	0.0 %	0.0 %
bcm.ptp	0.0 %	0.0 %	0.0 %
bcm.qos	0.0 %	0.0 %	0.0 %
bcm.rate	0.0 %	0.0 %	0.0 %
bcm.rtag7	0.0 %	0.0 %	0.0 %
bcm.rx	0.0 %	0.0 %	0.0 %
bcm.ser	0.0 %	0.0 %	0.0 %
bcm.stack	0.0 %	0.0 %	0.0 %
bcm.stat	0.0 %	0.0 %	0.0 %
bcm.stg	0.0 %	0.0 %	0.0 %
bcm.switch	0.0 %	0.0 %	0.0 %
bcm.time	0.0 %	0.0 %	0.0 %
bcm.trill	0.0 %	0.0 %	0.0 %
bcm.trunk	0.0 %	0.0 %	0.0 %
bcm.tunnel	0.0 %	0.0 %	0.0 %
bcm.subport	0.0 %	0.0 %	0.0 %
bcm.vlan	0.0 %	0.0 %	0.1 %
bcm.vxlan	0.0 %	0.0 %	0.1 %
bcm.wlan	0.0 %	0.0 %	0.0 %
Test Suite Total	0.1 %	0.1 %	0.2 %

SABER2

Table 50: Test Results

	sdk-6.5.4	sdk-6.5.3	sdk-6.5.2
golden	0.0 %	0.1 %	0.2 %
warmboot	0.0 %	0.1 %	1.4 %
bcm.chip	0.0 %	0.0 %	0.0 %
bcm.coe	0.1 %	0.1 %	0.9 %
bcm.cosq	0.1 %	0.1 %	0.0 %
bcm.custom	0.0 %	0.0 %	0.0 %
bcm.eav	0.0 %	0.0 %	0.0 %
bcm.extender	0.0 %	0.0 %	0.0 %
bcm.fabric	0.0 %	0.0 %	0.0 %
bcm.failover	0.0 %	0.0 %	0.0 %
bcm.fcoe	0.0 %	0.0 %	0.0 %
bcm.field	0.1 %	0.1 %	0.3 %
bcm.higigproxy	0.0 %	0.0 %	0.0 %
bcm.ipfix	0.0 %	0.0 %	0.0 %
bcm.ipmc	0.0 %	0.0 %	0.0 %
bcm.l2	0.0 %	0.0 %	0.1 %
bcm.l2gre	0.0 %	0.0 %	0.0 %
bcm.l3	0.0 %	0.0 %	0.2 %
bcm.link	0.0 %	0.0 %	0.0 %

Table 50: Test Results

	sdk-6.5.4	sdk-6.5.3	sdk-6.5.2
bcm.mim	0.0 %	0.0 %	0.0 %
bcm.mirror	0.0 %	0.0 %	0.0 %
bcm.misc	0.0 %	0.0 %	0.0 %
bcm.mpls	0.0 %	0.0 %	0.0 %
bcm.multicast	0.0 %	0.0 %	0.0 %
bcm.niv	0.0 %	0.0 %	0.0 %
bcm.oam	0.0 %	0.0 %	0.0 %
bcm.pkt	0.0 %	0.0 %	0.0 %
bcm.port	0.4 %	0.5 %	0.6 %
bcm.proxy	0.0 %	0.0 %	0.0 %
bcm.ptp	0.0 %	0.0 %	0.0 %
bcm.qos	0.0 %	0.0 %	0.0 %
bcm.rate	0.0 %	0.0 %	0.0 %
bcm.rtag7	0.0 %	0.0 %	0.0 %
bcm.rx	0.0 %	0.0 %	0.0 %
bcm.ser	0.0 %	0.0 %	0.0 %
bcm.stack	0.0 %	0.0 %	0.0 %
bcm.stat	0.1 %	0.1 %	0.1 %
bcm.stg	0.0 %	0.0 %	0.0 %
bcm.switch	0.0 %	0.0 %	0.2 %
bcm.time	0.0 %	0.0 %	0.0 %
bcm.trill	0.0 %	0.0 %	0.0 %
bcm.trunk	0.0 %	0.0 %	0.0 %
bcm.tunnel	0.0 %	0.0 %	0.0 %
bcm.subport	0.0 %	0.0 %	0.0 %
bcm.vlan	0.0 %	0.0 %	0.0 %
bcm.vxlan	0.0 %	0.0 %	0.0 %
bcm.wlan	0.0 %	0.0 %	0.0 %
Test Suite Total	0.1 %	0.1 %	0.3 %

HURRICANE3

Table 51: Test Results

	sdk-6.5.4	sdk-6.5.3	sdk-6.5.2
golden	0.0 %	0.0 %	0.0 %
warmboot	0.1 %	0.1 %	1.4 %
bcm.chip	0.0 %	0.0 %	0.0 %
bcm.cosq	0.0 %	0.0 %	0.0 %
bcm.custom	0.0 %	0.0 %	0.0 %
bcm.eav	0.0 %	0.0 %	0.0 %
bcm.extender	0.0 %	0.0 %	0.0 %
bcm.fabric	0.0 %	0.0 %	0.0 %
bcm.failover	0.0 %	0.0 %	0.0 %
bcm.fcoe	0.0 %	0.0 %	0.0 %
bcm.field	0.0 %	0.0 %	0.0 %
bcm.higigproxy	0.0 %	0.0 %	0.0 %
bcm.ipfix	0.0 %	0.0 %	0.0 %

Table 51: Test Results

	sdk-6.5.4	sdk-6.5.3	sdk-6.5.2
bcm.ipmc	0.0 %	0.0 %	0.0 %
bcm.l2	0.0 %	0.0 %	0.0 %
bcm.l2gre	0.0 %	0.0 %	0.0 %
bcm.l3	0.0 %	0.0 %	0.0 %
bcm.link	0.0 %	0.0 %	0.0 %
bcm.mim	0.0 %	0.0 %	0.0 %
bcm.mirror	0.0 %	0.0 %	0.0 %
bcm.misc	0.0 %	0.0 %	0.0 %
bcm.mpls	0.0 %	0.0 %	0.0 %
bcm.multicast	0.0 %	0.0 %	0.0 %
bcm.niv	0.0 %	0.0 %	0.0 %
bcm.pkt	0.0 %	0.0 %	0.0 %
bcm.port	0.2 %	0.5 %	0.4 %
bcm.proxy	0.0 %	0.0 %	0.0 %
bcm.ptp	0.0 %	0.0 %	0.0 %
bcm.qos	0.0 %	0.0 %	0.0 %
bcm.rate	0.0 %	0.0 %	0.0 %
bcm.rtag7	0.0 %	0.0 %	0.0 %
bcm.rx	0.0 %	0.0 %	0.0 %
bcm.ser	0.0 %	0.0 %	0.0 %
bcm.stack	0.0 %	0.0 %	0.0 %
bcm.stat	0.0 %	0.0 %	0.0 %
bcm.stg	0.0 %	0.0 %	0.0 %
bcm.switch	0.0 %	0.0 %	0.0 %
bcm.time	0.0 %	0.0 %	0.0 %
bcm.trill	0.0 %	0.0 %	0.0 %
bcm.trunk	0.0 %	0.0 %	0.0 %
bcm.tunnel	0.0 %	0.0 %	0.0 %
bcm.subport	0.0 %	0.0 %	0.0 %
bcm.vlan	0.0 %	0.0 %	0.0 %
bcm.vxlan	0.0 %	0.0 %	0.0 %
bcm.wlan	0.0 %	0.0 %	0.0 %
Test Suite Total	0.1 %	0.1 %	0.1 %

MAVERICK

Table 52: Test Results

	sdk-6.5.4	sdk-6.5.3	sdk-6.5.2
golden	0.0 %	0.0 %	N/A
bcm.chip	0.0 %	0.0 %	N/A
bcm.coe	0.0 %	0.0 %	N/A
bcm.cosq	0.0 %	0.0 %	N/A
bcm.custom	0.0 %	0.0 %	N/A
bcm.eav	0.0 %	0.0 %	N/A
bcm.extender	0.0 %	0.0 %	N/A
bcm.fabric	0.0 %	0.0 %	N/A
bcm.failover	0.0 %	0.0 %	N/A

Table 52: Test Results

	sdk-6.5.4	sdk-6.5.3	sdk-6.5.2
bcm.fcoe	0.0 %	0.0 %	N/A
bcm.field	0.0 %	0.0 %	N/A
bcm.higigproxy	0.0 %	0.0 %	N/A
bcm.ipfix	0.0 %	0.0 %	N/A
bcm.ipmc	0.0 %	0.0 %	N/A
bcm.l2	0.0 %	0.0 %	N/A
bcm.l2gre	0.0 %	0.0 %	N/A
bcm.l3	0.0 %	0.0 %	N/A
bcm.link	0.0 %	0.0 %	N/A
bcm.mim	0.0 %	0.0 %	N/A
bcm.mirror	0.0 %	0.0 %	N/A
bcm.misc	0.0 %	0.0 %	N/A
bcm.mpls	0.0 %	0.0 %	N/A
bcm.multicast	0.0 %	0.0 %	N/A
bcm.niv	0.0 %	0.0 %	N/A
bcm.oam	0.0 %	0.0 %	N/A
bcm.pkt	0.0 %	0.0 %	N/A
bcm.port	0.0 %	0.1 %	N/A
bcm.proxy	0.0 %	0.0 %	N/A
bcm.ptp	0.0 %	0.0 %	N/A
bcm.qos	0.0 %	0.0 %	N/A
bcm.rate	0.0 %	0.0 %	N/A
bcm.rtag7	0.0 %	0.0 %	N/A
bcm.rx	0.0 %	0.0 %	N/A
bcm.ser	0.0 %	0.0 %	N/A
bcm.stack	0.0 %	0.0 %	N/A
bcm.stat	0.0 %	0.0 %	N/A
bcm.stg	0.0 %	0.0 %	N/A
bcm.switch	0.0 %	0.0 %	N/A
bcm.time	0.0 %	0.0 %	N/A
bcm.trill	0.0 %	0.0 %	N/A
bcm.trunk	0.0 %	0.0 %	N/A
bcm.tunnel	0.0 %	0.0 %	N/A
bcm.subport	0.0 %	0.0 %	N/A
bcm.vlan	0.0 %	0.0 %	N/A
bcm.vxlan	0.0 %	0.0 %	N/A
bcm.wlan	0.0 %	0.0 %	N/A
Test Suite Total	0.1 %	0.1 %	N/A

FIREBOLT5

Table 53: Test Results

	sdk-6.5.4	sdk-6.5.3	sdk-6.5.2
golden	0.0 %	N/A	N/A
bcm.chip	0.0 %	N/A	N/A
bcm.coe	0.0 %	N/A	N/A
bcm.cosq	0.0 %	N/A	N/A

Table 53: Test Results

	sdk-6.5.4	sdk-6.5.3	sdk-6.5.2
bcm.custom	0.0 %	N/A	N/A
bcm.eav	0.0 %	N/A	N/A
bcm.extender	0.0 %	N/A	N/A
bcm.fabric	0.0 %	N/A	N/A
bcm.failover	0.0 %	N/A	N/A
bcm.fcoe	0.0 %	N/A	N/A
bcm.field	0.0 %	N/A	N/A
bcm.higigproxy	0.0 %	N/A	N/A
bcm.ipfix	0.0 %	N/A	N/A
bcm.ipmc	0.0 %	N/A	N/A
bcm.l2	0.0 %	N/A	N/A
bcm.l2gre	0.0 %	N/A	N/A
bcm.l3	0.1 %	N/A	N/A
bcm.link	0.0 %	N/A	N/A
bcm.mim	0.0 %	N/A	N/A
bcm.mirror	0.0 %	N/A	N/A
bcm.misc	0.0 %	N/A	N/A
bcm.mpls	0.0 %	N/A	N/A
bcm.multicast	0.0 %	N/A	N/A
bcm.niv	0.0 %	N/A	N/A
bcm.oam	0.0 %	N/A	N/A
bcm.pkt	0.0 %	N/A	N/A
bcm.port	0.3 %	N/A	N/A
bcm.proxy	0.0 %	N/A	N/A
bcm.ptp	0.0 %	N/A	N/A
bcm.qos	0.0 %	N/A	N/A
bcm.rate	0.0 %	N/A	N/A
bcm.rtag7	0.0 %	N/A	N/A
bcm.rx	0.0 %	N/A	N/A
bcm.ser	0.0 %	N/A	N/A
bcm.stack	0.0 %	N/A	N/A
bcm.stat	0.0 %	N/A	N/A
bcm.stg	0.0 %	N/A	N/A
bcm.switch	0.0 %	N/A	N/A
bcm.time	0.0 %	N/A	N/A
bcm.trill	0.0 %	N/A	N/A
bcm.trunk	0.0 %	N/A	N/A
bcm.tunnel	0.0 %	N/A	N/A
bcm.subport	0.0 %	N/A	N/A
bcm.vlan	0.0 %	N/A	N/A
bcm.vxlan	0.0 %	N/A	N/A
bcm.wlan	0.0 %	N/A	N/A
Test Suite Total	0.2 %	N/A	N/A

APACHE

Table 54: Test Results

	sdk-6.5.4	sdk-6.5.3	sdk-6.5.2
golden	0.0 %	N/A	N/A
bcm.chip	0.0 %	N/A	N/A
bcm.coe	0.0 %	N/A	N/A
bcm.cosq	0.0 %	N/A	N/A
bcm.custom	0.0 %	N/A	N/A
bcm.eav	0.0 %	N/A	N/A
bcm.extender	0.0 %	N/A	N/A
bcm.fabric	0.0 %	N/A	N/A
bcm.failover	0.0 %	N/A	N/A
bcm.fcoe	0.0 %	N/A	N/A
bcm.field	0.0 %	N/A	N/A
bcm.higigproxy	0.0 %	N/A	N/A
bcm.ipfix	0.0 %	N/A	N/A
bcm.ipmc	0.0 %	N/A	N/A
bcm.l2	0.0 %	N/A	N/A
bcm.l2gre	0.0 %	N/A	N/A
bcm.l3	0.0 %	N/A	N/A
bcm.link	0.0 %	N/A	N/A
bcm.mim	0.0 %	N/A	N/A
bcm.mirror	0.0 %	N/A	N/A
bcm.misc	0.0 %	N/A	N/A
bcm.mpls	0.0 %	N/A	N/A
bcm.multicast	0.0 %	N/A	N/A
bcm.niv	0.0 %	N/A	N/A
bcm.oam	0.0 %	N/A	N/A
bcm.pkt	0.0 %	N/A	N/A
bcm.port	0.0 %	N/A	N/A
bcm.proxy	0.0 %	N/A	N/A
bcm.ptp	0.0 %	N/A	N/A
bcm.qos	0.0 %	N/A	N/A
bcm.rate	0.0 %	N/A	N/A
bcm.rtag7	0.0 %	N/A	N/A
bcm.rx	0.0 %	N/A	N/A
bcm.ser	0.0 %	N/A	N/A
bcm.stack	0.0 %	N/A	N/A
bcm.stat	0.0 %	N/A	N/A
bcm.stg	0.0 %	N/A	N/A
bcm.switch	0.0 %	N/A	N/A
bcm.time	0.0 %	N/A	N/A
bcm.trill	0.0 %	N/A	N/A
bcm.trunk	0.0 %	N/A	N/A
bcm.tunnel	0.0 %	N/A	N/A
bcm.subport	0.0 %	N/A	N/A
bcm.vlan	0.0 %	N/A	N/A
bcm.vxlan	0.0 %	N/A	N/A
bcm.wlan	0.0 %	N/A	N/A

Table 54: Test Results

	sdk-6.5.4	sdk-6.5.3	sdk-6.5.2
Test Suite Total	0.1 %	N/A	N/A

PHY TEST RESULTS

Starting with SDK 6.5.2, we have increased our focus and coverage on testing specific PHY and switch combinations in order to improve our quality in this area. The tables below represent specific results from our interoperability and regression testing for the release. We have been continually working to improve our results and coverage in ongoing releases.

SQA EXTERNAL PHY

Table 55: PHY Suite

Switch Device	External Phy Device	Total Tests	% Fail
56639_A0	phy8747_phy8728_10G	148	2.03%
56846_A0	Warpcore 40G/20G/10G	148	1.35%
56850_A2	phy84856_phy84858_10G	148	4.05%
56960_A0	100GFuria_40GMuxSesto	148	1.35%
56960_A0	10GFuria_10GSesto	148	1.35%
56860_A1	phy84856_phy84858_10G	148	0.68%
56860_A0	10GQuadra28	148	0.00%
56860_A0	40GQuadra28	148	0.00%
56860_A0	100GSesto	148	3.38%
56867_A1	phy82764_10G	148	2.70%
56867_A1	phy82764_40G	148	2.70%
56960_B0	phy82864_100G	148	2.70%
56960_B0	phy82864_100G_alt	148	4.73%
56960_B0	phy82864_40GPt	148	3.38%
56960_B0	phy82864_40GPt_alt	148	4.73%
56960_B0	phy82864_10G	148	4.05%
56960_B0	phy82864_10G_alt	148	4.73%
56960_B0	phy82864_11G	148	2.70%
56960_B0	phy82864_11G_alt	148	4.05%
56960_B0	phy82864_42GPt	148	2.03%
56960_B0	phy82864_42GPt_alt	148	4.05%
56960_B0	phy82864_106G	148	2.03%
56960_B0	phy82864_106G_alt	148	4.05%
56960_B0	phy82864_40G2x20	148	4.73%
56960_B0	phy82864_40G2x20_alt	148	6.08%
56960_B0	phy82864_42G2x20	148	7.43%
56960_B0	phy82864_42G2x20_alt	148	3.38%
56960_B0	phy82864_40GMux	148	3.38%
56765_A0	phy54140_1G_Copper	148	6.08%
56765_A0	phy54140_1G_Fiber	148	4.73%
56160_B0	phy54292_1G_100M_10M	148	1.35%

INTEROP EXTERNAL PHY

Table 56: P2P Suite

Switch Device	Port Macro	Total Tests	% Fail
56560_A0	HG_G40_84328_42G	59	20.34%
56560_A0	XE_MT_84757_10G	42	11.90%
56560_A0	XE_G40_84328_10G	148	8.78%
56560_A0	XE_G40_84328_40G	98	8.16%
56560_A1	XE_QD28_82780_40G	141	0.00%
56560_A1	XE_QD28_82780_10G	171	0.00%
56560_A1	XE_SESTO_82764_40G	125	3.20%
56560_A1	_MUX		
56560_A1	CE_SESTO_82792_100	244	0.82%
56560_A1	G_343		
56560_A1	XE_SESTO_82764_40G	192	1.04%
56560_A1	_PT		
56560_A1	XE_SESTO_82764_10G	168	1.19%
56560_A1	_PT		
56560_A0	CE_DINO_82332_100G	252	0.00%
56560_A0	_PT		
56560_A0	HG_DINO_82332_11G	21	14.29%
56560_A0	HG_DINO_82332_42G	26	23.08%
56560_A0	HG_DINO_82332_106G	90	0.00%
56560_A0	_PT		
56560_A0	HG_DINO_82332_106G	68	7.35%
56560_A0	_GB		
56560_A0	CE_DINO_82332_100G	354	0.00%
56560_A0	_GB		
56560_A0	XE_DINO_82332_10G	234	0.00%
56560_A0	XE_DINO_82332_40G	231	0.00%
56560_A1	XE_G40_84328_10G	148	5.41%
56560_A1	XE_G40_84328_40G	122	3.28%
56560_A0	XE_G28_82322_10G	119	9.24%
56560_A0	XE_G28_82322_40G	98	8.16%
56560_A0	XE_54210	108	0.00%
56960_B0 (repeater)	HG_MADURA_82864_42	90	0.00%
56960_B0 (repeater)	G_PT		
56960_B0 (repeater)	CE_MADURA_82864_10	264	1.52%
56960_B0 (repeater)	0G_ALT		
56960_B0 (repeater)	XE_MADURA_82864_10	162	0.00%
56960_B0 (repeater)	G		
56960_B0 (repeater)	HG_MADURA_82864_42	90	0.00%
56960_B0 (repeater)	G_DUAL_ALT		
56960_B0 (repeater)	XE_MADURA_82864_40	186	1.08%
56960_B0 (repeater)	G_PT_ALT		
56960_B0 (repeater)	HG_MADURA_82864_42	90	0.00%
56960_B0 (repeater)	G_PT_ALT		
56960_B0 (repeater)	HG_MADURA_82864_11	90	0.00%
56960_B0 (repeater)	G		

Table 56: P2P Suite

Switch Device	Port Macro	Total Tests	% Fail
56960_B0 (repeater)	HG_MADURA_82864_10 6G_ALT	48	0.00%
56960_B0 (repeater)	XE_MADURA_82864_40 G_DUAL	156	7.05%
56960_B0 (repeater)	HG_MADURA_82864_42 G_DUAL	66	12.12%
56960_B0 (repeater)	XE_MADURA_82864_10 G_ALT	162	0.00%
56960_B0 (repeater)	HG_MADURA_82864_11 G_ALT	90	0.00%
56960_B0 (repeater)	HG_MADURA_82864_10 6G	80	20.00%
56960_B0 (repeater)	XE_MADURA_82864_40 G_DUAL_ALT	162	0.00%
56960_B0 (repeater)	CE_MADURA_82864_10 0G	244	9.43%
56960_B0 (repeater)	XE_MADURA_82864_40 G_PT	186	1.08%
56960_B1 (retimer)	HG_MADURA_82864_11 G_RETIMER	90	0.00%
56960_B1 (retimer)	XE_MADURA_82864_40 G_DUAL_ALT_RETIMER	118	6.78%
56960_B1 (retimer)	XE_MADURA_82864_40 G_PT_ALT_RETIMER	150	6.00%
56960_B1 (retimer)	HG_MADURA_82864_42 G_DUAL_ALT_RETIMER	90	0.00%
56960_B1 (retimer)	HG_MADURA_82864_42 G_PT_RETIMER	52	13.46%
56960_B1 (retimer)	HG_MADURA_82864_42 G_PT_ALT_RETIMER	52	13.46%
56960_B1 (retimer)	XE_MADURA_82864_40 G_DUAL_RETIMER	124	5.65%
56960_B1 (retimer)	CE_MADURA_82864_10 0G_RETIMER	162	1.85%
56960_B1 (retimer)	XE_MADURA_82864_10 G_RETIMER	162	0.00%
56960_B1 (retimer)	XE_MADURA_82864_10 G_ALT_RETIMER	162	0.00%
56960_B1 (retimer)	HG_MADURA_82864_42 G_DUAL_RETIMER	66	12.12%
56960_B1 (retimer)	XE_MADURA_82864_40 G_PT_RETIMER	150	6.00%
56960_B1 (retimer)	HG_MADURA_82864_11 G_ALT_RETIMER	90	0.00%

Table 57: Loopback Suite

Switch Device	Port Macro	Total Tests	% Fail
56560_A0	HG_G40_84328_42G	25	24.00%

Table 57: Loopback Suite

Switch Device	Port Macro	Total Tests	% Fail
56560_A0	XE_MT_84757_10G	10	60.00%
56560_A0	XE_G40_84328_10G	10	0.00%
56560_A0	XE_G40_84328_40G	20	20.00%
56560_A1	XE_QD28_82780_40G	47	0.00%
56560_A1	XE_QD28_82780_10G	62	0.00%
56560_A1	XE_SESTO_82764_40G _MUX	25	0.00%
56560_A1	CE_SESTO_82792_100 G_343	47	0.00%
56560_A1	XE_SESTO_82764_40G _PT	30	0.00%
56560_A1	XE_SESTO_82764_10G _PT	30	0.00%
56560_A0	CE_DINO_82332_100G _PT	56	0.00%
56560_A0	HG_DINO_82332_11G	15	20.00%
56560_A0	HG_DINO_82332_42G	15	46.67%
56560_A0	HG_DINO_82332_106G _PT	21	0.00%
56560_A0	HG_DINO_82332_106G _GB	21	0.00%
56560_A0	CE_DINO_82332_100G _GB	63	0.00%
56560_A0	XE_DINO_82332_10G	40	0.00%
56560_A0	XE_DINO_82332_40G	35	5.71%
56560_A1	XE_G40_84328_10G	40	0.00%
56560_A1	XE_G40_84328_40G	32	0.00%
56560_A0	XE_G28_82322_10G	10	0.00%
56560_A0	XE_G28_82322_40G	8	0.00%
56560_A0	XE_54210	21	0.00%
56960_B0 (repeater)	HG_MADURA_82864_42 G_PT	66	9.09%
56960_B0 (repeater)	CE_MADURA_82864_10 OG_ALT	88	6.82%
56960_B0 (repeater)	XE_MADURA_82864_10 G	66	0.00%
56960_B0 (repeater)	HG_MADURA_82864_42 G_DUAL_ALT	66	4.55%
56960_B0 (repeater)	XE_MADURA_82864_40 G_PT_ALT	66	9.09%
56960_B0 (repeater)	HG_MADURA_82864_42 G_PT_ALT	66	9.09%
56960_B0 (repeater)	HG_MADURA_82864_11 G	66	0.00%
56960_B0 (repeater)	HG_MADURA_82864_10 6G_ALT	56	0.00%
56960_B0 (repeater)	XE_MADURA_82864_40 G_DUAL	66	0.00%
56960_B0 (repeater)	HG_MADURA_82864_42 G_DUAL	66	1.52%

Table 57: Loopback Suite

Switch Device	Port Macro	Total Tests	% Fail
56960_B0 (repeater)	XE_MADURA_82864_10 G_ALT	66	0.00%
56960_B0 (repeater)	HG_MADURA_82864_11 G_ALT	66	0.00%
56960_B0 (repeater)	HG_MADURA_82864_10 6G	88	11.36%
56960_B0 (repeater)	XE_MADURA_82864_40 G_DUAL_ALT	66	0.00%
56960_B0 (repeater)	CE_MADURA_82864_10 0G	88	9.09%
56960_B0 (repeater)	XE_MADURA_82864_40 G_PT	66	9.09%
56960_B1 (retimer)	HG_MADURA_82864_11 G_RETIMER	66	0.00%
56960_B1 (retimer)	XE_MADURA_82864_40 G_DUAL_ALT_RETIMER	66	0.00%
56960_B1 (retimer)	XE_MADURA_82864_40 G_PT_ALT_RETIMER	66	0.00%
56960_B1 (retimer)	HG_MADURA_82864_42 G_DUAL_ALT_RETIMER	66	0.00%
56960_B1 (retimer)	HG_MADURA_82864_42 G_PT_RETIMER	66	0.00%
56960_B1 (retimer)	HG_MADURA_82864_42 G_PT_ALT_RETIMER	66	0.00%
56960_B1 (retimer)	XE_MADURA_82864_40 G_DUAL_RETIMER	66	0.00%
56960_B1 (retimer)	CE_MADURA_82864_10 0G_RETIMER	88	0.00%
56960_B1 (retimer)	XE_MADURA_82864_10 G_RETIMER	66	0.00%
56960_B1 (retimer)	XE_MADURA_82864_10 G_ALT_RETIMER	66	0.00%
56960_B1 (retimer)	HG_MADURA_82864_42 G_DUAL_RETIMER	66	0.00%
56960_B1 (retimer)	XE_MADURA_82864_40 G_PT_RETIMER	66	0.00%
56960_B1 (retimer)	HG_MADURA_82864_11 G_ALT_RETIMER	66	0.00%

INTEROP INTERNAL PHY

Table 58: P2P Suite

Switch Device	Port Macro	Total Tests	% Fail
56960_B1	HG_64XD53	108	0.00%
56960_B1	HG_32X106	72	0.00%
56960_B1	HG_128X27	72	0.00%
56960_B1	XE_32X100	144	0.00%
56960_B1	XE_64XD50	216	0.00%

Table 58: P2P Suite

Switch Device	Port Macro	Total Tests	% Fail
56960_B1	XE_128X25	144	0.00%
56860_A1	HG_32X42	108	0.00%
56860_A1	XE_32X40	99	0.00%
56860_A1	HG_8x100_343	36	0.00%
56860_A1	CE_8X100_343_IEEE	72	0.00%
56860_A1	HG_104x10	36	0.00%
56860_A1	XE_104x10	90	0.00%
56860_A1	CE_8x100_442	72	0.00%
56260_A0	GE_VIPER_12x2P5	36	0.00%
56260_A0	EAGLE_XE_4x10	36	0.00%
56260_A0	GE_VIPER_24x1	39	0.00%
56260_A0	XE_VIPER_6x10	36	0.00%
56260_A0	EAGLE_GE_4x1	12	0.00%
56560_A0	XE_TSCE_X1	484	0.83%
56560_A0	XE_18x40	255	6.67%
56560_A0	XE_TSCF_X2	552	8.70%
56560_A0	XE_TSCE_X10	210	10.48%
56560_A0	XE_TSCF_X4	253	3.95%
56560_A0	XE_72X10	216	0.00%
56560_A0	XE_TSCE_X2	113	17.70%
56560_A0	XE_16X25	510	5.29%
56765_A0	XE_18X40	61	6.56%
56765_A0	XE_72X10	61	6.56%
56765_A0	HG_18X42	108	0.00%
56765_A0	XE_TSCE_X1	167	8.38%
56765_A0	XE_16X25	245	8.16%

Table 59: Loopback Suite

Switch Device	Port Macro	Total Tests	% Fail
56960_B1	HG_64XD53	33	0.00%
56960_B1	HG_32X106	22	0.00%
56960_B1	HG_128X27	22	0.00%
56960_B1	XE_32X100	22	0.00%
56960_B1	XE_64XD50	33	0.00%
56960_B1	XE_128X25	22	0.00%
56860_A1	HG_32X42	22	0.00%
56860_A1	XE_32X40	22	0.00%
56860_A1	HG_8x100_343	11	0.00%
56860_A1	CE_8X100_343_IEEE	11	0.00%
56860_A1	HG_104x10	11	0.00%
56860_A1	XE_104x10	22	0.00%
56860_A1	CE_8x100_442	11	0.00%
56260_A0	GE_VIPER_12x2P5	28	0.00%
56260_A0	EAGLE_XE_4x10	22	0.00%
56260_A0	GE_VIPER_24x1	30	0.00%

Table 59: Loopback Suite

Switch Device	Port Macro	Total Tests	% Fail
56260_A0	XE_VIPER_6x10	10	0.00%
56260_A0	EAGLE_GE_4x1	10	0.00%
56560_A0	XE_TSCE_X1	45	0.00%
56560_A0	XE_18x40	20	0.00%
56560_A0	XE_TSCF_X2	45	0.00%
56560_A0	XE_TSCE_X10	20	60.00%
56560_A0	XE_TSCF_X4	25	0.00%
56560_A0	XE_72X10	10	0.00%
56560_A0	XE_TSCE_X2	15	0.00%
56560_A0	XE_16X25	35	2.86%
56765_A0	XE_18X40	11	0.00%
56765_A0	XE_72X10	11	0.00%
56765_A0	HG_18X42	22	0.00%
56765_A0	XE_TSCE_X1	55	0.00%
56765_A0	XE_16X25	20	0.00%

STATIC CODE QUALITY ANALYSIS

Starting with SDK 6.5.4, we have upgraded our static analysis code tool to a version with many new checkers and will be working down the backlog of issues. Below shows the current baseline and progress in recent 6.5.x releases:

Table 60:

Line of Business	New baseline as of 3/1/15	Open Issues SDK 6.5.4	Open Issues SDK 6.5.3	Open Issues SDK 6.5.2	Open Issues SDK 6.5.1	Open Issues SDK 6.5.0
DNX	120	107	104	61	75	125
XGS	90	37	86	16	27	23
SBX	40	(Note)	34	1	0	48
SerDes	35	23	34	12	45	45
Common	45	42	42	11	16	46
Total	330	209	300	101	164	301

(Note) As of SDK 6.5.4 we are no longer tracking SBX quality issues as part of our release process.

Section 8: Service Impacting Defects

A Service Impacting Defect (SID) is any defect (internal or external) that has high potential to severely disrupt network operations in a deployed system. This section lists the SIDs that have been identified since last release in Table 63: Resolved Service Impacting Defects .

Table 61: Resolved Service Impacting Defects

Number	Chips	Affected versions	Errata Synopsis	Details
SDK-64077	56850_A0 , 56850_A1 , 56850_A2	6.3.8, 6.3.9, 6.3.10 6.4.1, 6.4.2, 6.4.3	Insertion to shared hash table may fail to improper use of static local variable.	A local variable was wrongly declared as static in a recursive routine for hash reordering, which could potentially cause a failure during hash reodering on shared hash table insertion. The error codes could be BCM_E_NOT_FOUND, BCM_E_EXISTS or BCM_E_MEMORY .
SDK-75264	56850_A0 , 56850_A1 , 56850_A2	6.4.0, Releases earlier than 6.3.8	The insert of shared hash table fails due to improper code added to hash reordering	Local data were wrongly declared as static variables in a recursive routine for hash reordering, and this could potentially cause a failure during the insert of shared hash table if hash reordering was enabled. The error codes could be BCM_E_NOT_FOUND, BCM_E_EXISTS and BCM_E_MEMORY .
SDK-85782	56850_A0 , 56850_A1 , 56850_A2 , 56960_A0	6.5.2, 6.5.1, 6.5.0, 6.4.8, 6.4.7, 6.4.6, 6.4.5, 6.4.4, 6.4.3, 6.4.2, 6.4.1, 6.4.0, 6.3.12, 6.3.11, 6.3.9, 6.3.8	The original design wrongly used 'static' variables without protection which made the function being not thread-safe.	Due to wrongly using of 'static' variable, UFT related entry insertion could potentially fail under a multiple concurrent threads access. This could dramatically reduce the utilization of UFT tables.
SDK-88816	56960_A0 , 56960_B0	6.5.2, 6.5.1, 6.5.0, 6.4.8, 6.4.7, 6.4.6, 6.4.5, 6.4.4, 6.4.3, 6.4.2, 6.4.1, 6.4.0, 6.3.12, 6.3.11, 6.3.9, 6.3.8	The original design wrongly used 'static' variables without protection which made the function being not thread-safe.	Due to wrongly using of 'static' variable, UFT related entry insertion could potentially fail under a multiple concurrent threads access. This could dramatically reduce the utilization of UFT tables.
SDK-97101	56340_A0 , 56640_A0	6.5.3	The IPG of GE ports are wrongly programmed with the value of HG ports (8 bytes) due to improper code added to SDK 6.5.3	This could potentially cause an under-run in the pipeline and potentially a hang as the FIFOs in the port block and MAC underflow. Additionally, external PHYs are unable to cope with this and will corrupt packets. Per the IEEE standard, the average IPG between any two Ethernet packets should be 12 bytes.

Table 61: Resolved Service Impacting Defects

Number	Chips	Affected versions	Errata Synopsis	Details
SDK-98113	56850_A0, 56850_A1, 56850_A2	6.5.3	The insert of shared hash table fails in a multi-unit environment due to improper code added to depth-first hash reordering	Local data were wrongly declared as static variables in a recursive routine for new depth-first hash reordering. The local data could be overwritten in a multi-unit environment, and this could potentially cause a failure during the insert of shared hash table if new depth-first hash reordering was enabled.

Section 9: Resolved Issues for 6.5.4

The following issues are resolved in version 6.5.4 of the SDK.

Table 62:

Number	CSP	Chips	Release Notes For 6.5.4
PHY-2144	1005789	84848_A0	Redundant code sequence for jumbo frame support removed for chips Gecko, KOI, Mako and Orca.
PHY-2239	1015699	AllChips	CL73 autonegotiation pause ability is added.
PHY-2254	1022811	56160_A0	In previous releases, 82780 was coded at 400kHz, but the SFP spec only supports 100kHz. In this release, the I2C speed has been hard coded to 100KHz.
PHY-2284	1026141	84756_A0 84756_C0	Added support for Preemphasis on System Side
PHY-2327	1035556	56854_A0 56854_A2	In previous releases, the PHY BCM82780 i2c read/write timeout is unreasonably long - up to over 32 seconds. In this release, we have reduced the delay.
PHY-2350		56860_A0 56860_A1	Multi byte read from module support was missing on BCM56960. In this release, the <code>bcm_port_phy_multi_get</code> API has been implemented for both BCM56860 and BCM56960.
PHY-2355	978970	AllChips	Link flapping was reported on BCM56334+BCM84728 and was due to additional speed notification. The additional notification has been prevented from occurring in this release.
SDK-64974	854596	88650_A0 88650_B0 88650_B1 88650ACP_A0 88660_A0	When both RCPU and CPU ports exist, init sequence fails. Fixed
SDK-69346		88650_B0 88650_B1 88660_A0	Enabled user-header soc property, MAC learn does not work. User-header implicitly has been added for DSP when <code>custom_feature_injection_with_user_header_enable</code> is enabled
SDK-71260		88670_A0	In earlier releases <code>bcmSwitchEventUnmaskAndClearDisable</code> and <code>bcmSwitchEventForceUnmask</code> were not supported. In this release, supported <code>bcmSwitchEventUnmaskAndClearDisable</code> and <code>bcmSwitchEventForceUnmask</code> .
SDK-71690	900711	56850_A0 56850_A1 56850_A2 56851_A0 56851_A1 56851_A2 56851P_A1 56851P_A2 56852_A0 56852_A1 56852_A2 56853_A0 56853_A1 56853_A2 56854_A0 56854_A2 56854_B0 56855_A0 56855_A2 56960_A0	In previous releases, Objects <code>bcmSwitchObjectL3RouteV4RoutesUsed</code> , <code>bcmSwitchObjectL3RouteV6Routes64bUsed</code> and <code>bcmSwitchObjectL3RouteV6Routes128bUsed</code> were unsupported in ALPM mode. They have been enhanced for ALPM.

Table 62:

Number	CSP	Chips	Release Notes For 6.5.4
SDK-76022		88670_A0	MIP level demultiplexer is now supported on Jericho devices. This changes the default behavior. Up until 6.5.4, CFM PDU in level X which traverses a LIF that a MIP is configured on in level Y, will not be trapped / dropped even if $X < Y$. This was not according to IEEE 802.1Q standard. From 6.5.4, such CFM PDUs (which will be trapped to CPU by default, both active / passive directions (ingress / egress). The trap will be <code>trap_oam_passive</code> instead of <code>trap_oam_level</code> .
SDK-76532	928574	88670_A0	Port issue, in case of using API <code>bcm_port_mdix_set</code> to configure external PHY in Jericho, the API does not work and returns an UNAVAIL error. In this release, add the support of this API.
SDK-81598		56260_A0 56260_B0 56261_A0 56261_B0 56262_A0 56262_B0 56263_A0 56263_B0 56265_A0 56265_B0 56266_A0 56266_B0 56267_A0 56267_B0 56268_A0 56268_B0 56460_A0 56460_B0 56461_A0 56461_B0 56462_A0 56462_B0 56463_A0 56463_B0 56465_A0 56465_B0 56466_A0 56466_B0 56467_A0 56467_B0 56468_A0 56468_B0	Queues associated to ports which are not linked up were kept enabled and as a result SOBMH (CPU generated) packets were kept in these queues and were never drained out. Fixed by setting the queue in disabled state to avoid any enqueueing of packets to those queues which are bound to linked down interfaces.
SDK-82276	962132	88660_A0 88670_A0	improvement: Add 2 flags to ignore color or disposition when setting the CRPS statistic configuration.
SDK-83341	967369	88660_A0 88670_A0 88670_B0	Extender: Added support for Multicast groups configuration. Example is available in <code>cint_port_extender_cb_12_mc.c</code>
SDK-83854	972387	88660_A0 88670_A0	Adding support of cascading N Field groups in N programs to a single Field Group.
SDK-84054	972956	88670_A0	In field, the <code>bcmFieldActionIncomingMplsPortSet</code> and <code>bcmFieldActionVrfSet</code> actions lengths were inaccurate for BCM88670/5 device. it is fixed.
SDK-84182		AllChips	Debuggability has been enhanced with the addition of <code>memwatch</code> and <code>regwatch</code> delta. When turned on, <code>memwatch</code> delta and <code>regwatch</code> delta allow the user to see the memories and tables accessed when an API call is made.
SDK-84274	972927	AllChips	In previous releases ,the LR&LR4 interface was not supported in TSCMOD driver. This feature has been supported in this release.
SDK-84290	974520	88670_A0	In Field diagnostics, display of Egress PMF actions is added when calling diag field res.

Table 62:

Number	CSP	Chips	Release Notes For 6.5.4
SDK-84627	945696	88660_A0	<p>OAM: Support Up MEP loopback through the PRGE.</p> <ul style="list-style-type: none"> Customer will configure the Up loopback recycling port using the following soc properties (for example port 30) code_port_30=RCY.1 tm_port_header_type_in_30=INJECTED_2_PP tm_port_header_type_out_30=ETH oam_rcy_port_up=30 Customer should create an UP-MEP without any changes, according to the user manual <p>PRGE will then respond to LBMs with LBRs. Note that the solution takes two passes through the pipeline (once for the trapped LBM and twice for the injected LBR)</p>
SDK-84663	946339	88670_A0	<p>snmpBcmRxFecUncorrectable/snmprBcmRxFecCorrectable counters implemented for non-ILKN NIF ports.</p>
SDK-85316	979885	88650_B1 88660_A0 88670_A0	<p>There is no command can show all cached table names. The command "list cache-table" can show all cached table names now.</p>
SDK-85886	956977	88670_A0 88670_B0	<p>VxLAN: This is a new feature to support VxLAN BOO PHB to use the DSCP from the native header. To enable this feature, enable the following SOC property: custom_feature_ip_tunnel_preserve_dscp=1 bcmFieldQualifyIncommingPlfClass is supported to filter the packet based on InRIF profile class in ingress PMF.</p>
SDK-86192	987018	88670_A0	<p>Before previous version, after the Jericho startup, the HW will get a default autoneg mode, SW API don't configure it, because the function is not realized in phymod module. when we set the an mode, firstly we will update the an parameter, when enable the autoneg, set the parameter to register.</p>
SDK-86275	985895	88670_A0 88670_B0	<p>In this release, an API to extract eye values previously only available in the output of the 'phy diag' command has been added specifically for the 82764 PHY driver.</p>
SDK-86505	961561	56960_A0 56960_B0	<p>In previous release, the time used by eyescan was not correct while the sample time was configured to more than 25600. The issue has been fixed in the release.</p>
SDK-87158	969646	88950_a0	<p>A new field EGR_QOS_PROFILE_INDEX was added to table EGR_PORT to provide index for accessing EGR_PRI_CNG_MAP table on Trident2+. This enhancement, however, was not supported by API bcm_qos_port_map_set in previous releases. This has been fixed in this release.</p>
SDK-87795	995212	56860_A0 56860_A1	<p>In this release, support has been added inside the portmod to invoke external PHY driver cable_diag function.</p>
SDK-87825	994488	84858_A0	<p>1. NIF side - already implemented, soc property is not required. 2. Fabric Side - bcm_port_detach() API supports customer sequence . Sequence implemented for serdes_qrtt_active SOC property. 3. UM updated.</p>
SDK-88203	999004	88670_B0	

Table 62:

Number	CSP	Chips	Release Notes For 6.5.4
SDK-88707	999131	88670_B0	<p>ILKN using only part of a serdes quad- when using soc property <code>ilkn_lanes</code>, lane bitmap is taken as lanes on the chip, not on the front panel. this means that lanes from the split quad might be seen differently on the board. example 1: <code>ucode_port_1=ILKN0 ilkn_lanes_0=0x3c0</code> ILKN0 will now occupy lanes 4-7,10-11 on the chip, but on the front panel lanes 10,11 can relate to different phys, depending on the RX board swap of quad 2.(the split quad)</p> <p>example 2: <code>ucode_port_4=ILKN2 ilkn_lanes_2=0x3f</code> <code>phy_rx_lane_map_quad7=0x3012</code> on the chip you will see ILKN2 will occupy PHYs 24-29, but on the board you will see it on phys 24-27,29-30</p> <p>lets say we want to connect this 6-lane port to a peer device with the following swap on quad 7: <code>phy_rx_lane_map_quad7=0x0123</code> we will need the following lane bitmap to be able to get the same lanes on the board: <code>ucode_port_5=ILKN3 ilkn_lanes_3=0x6f</code> (here ILKN3 will occupy lanes 24-27,29-30 both on chip and on the board)</p>
SDK-88734	997697	88660_A0	Punt packets DP and TC are set to values that configured by <code>bcm_oam_control</code> set with <code>control_type</code> <code>bcmOamControlOampPuntPacketIntPri</code>
SDK-88873	1001095	88670_A0	change <code>_unit</code> variables to <code>unit</code> to avoid compilation issues
SDK-89011		56850_A0 56850_A1 56850_A2	In previous releases, the APIs <code>bcm_qos_map_xxx</code> used for tunnel DSCP rewrite and <code>bcm_port_dscp_unmap_set</code> used for port dscp rewrite could overwrite mutually. In this release, the issue has been fixed by managing the table <code>EGR_DSCP</code> correctly for the two sets APIs.
SDK-89077	1004221	AllChips	In a previous release, the 84793 PHY driver does not correctly calculate the lane if the PHY connects to lanes other than TSCe0~ TSCe2. In this release, this issue has been resolved.
SDK-89095	969810	88670_A0	In earlier releases, the tables <code>IQMT_PDM_X</code> were not cleared at init time. In this release, the tables <code>IQMT_PDM_X</code> have been cleared at init time.
SDK-89196	1004414	56960_A0 56960_B0	If the external PHY is in repeater mode, applies AN flag on internal PHY.
SDK-89287	1004317	56460_B0	<p>Problem: The PLL reset needs to be done after <code>LDO_CTRL</code> is modified for both A0 and B0 devices of Saber2 family.</p> <p>Solution: During soc initialization, when <code>LDO_CTRL</code> is modified, the PLL reset is also triggered.</p>
SDK-89624	1007597	56450_A0 56450_B0 56450_B1	For BCM5645x family of devices FCS error is observed on XE port under certain conditions if the port was mapped to external memory on the fly at run time. This issue has been fixed in this release.
SDK-89879	1008577	AllChips	<code>Ability_remote_get</code> returns error in case of link down and AN incomplete. Fiber chained PHY case returns remote ability for <code>ability_remote_get()</code> .
SDK-89970	1007614	88670_A0	MPLS PORT: Support for MPLS PORT FEC format C (EEI) added. To set this format flag <code>BCM_MPLS_PORT2_ENCAP_OPTIMIZED</code> is used.

Table 62:

Number	CSP	Chips	Release Notes For 6.5.4
SDK-90051	1007922	88660_A0	<p>The requirement is to set the InLIF in the OAM-TS header.</p> <p>Solution description below: • When the new SOC property (custom_feature_snooping_UPMIP_InLIF_info) is enabled the device will load the existing program (ARAD_EGR_PROG_EDITOR_PROG_OAM_EGRESS_SNOOP_WITH_OUTLIF_INFO) with new instructions instead of the existing instructions. • The new instructions will edit system header the same as existing program except for the below: 1. Set OAM-TS present bit on FTMH header in order to indicate there is an OAM header. ftmh.PPH-type = 2 2. Extract in-lif from Original PPH header. 3. Add in-lif info to 18 least significant bits of OAM-TS header(6B) in generated packet 4. Add OAM-TS.sub-type = 0 The following is feature call sequence:</p> <p>• The customer should configure new SOC property "custom_feature_snooped_UPMIP_InLIF_info = 1" • In addition to existing SOC property: num_oamp_ports = 1 and custom_feature_egress_snooping_advanced = 1</p>
SDK-90130		88670_A0	<p>In previous releases, the link status was not correct when the external PHY works on pcs repeater mode because the link status was gotten from external PHY if there is an external PHY in the port. This issue has been fixed in this release.</p>
SDK-90295		88670_A0	<p>Added support for Jericho and QAX devices when retrieving forward lookup information</p>
SDK-90354	1009046	56860_A0 56860_A1 56861_A0 56861_A1 56862_A1 56864_A1 56865_A1 56866_A1 56867_A0 56867_A1 56868_A1	<p>The problematic setup contains 2x10G ports connected using an external cable on a TD2+ with external PHY KOI. Problems reported in this JIRA were as follows. First, when the two ports link up, local ability shows speed 10MB, 1G, 10G but misses 100MB. Second, in the same scenario, remote ability shows only speed 10MB but misses other speeds. Third, the two ports cannot link up with 100MB speed. The first and third problems have been addressed in SDK-86368. The solution of the second problem is to update portmod_port_legacy_ability_remote_get() so that the complete remote ability information is returned.</p>
SDK-90517		88670_A0 88670_B0	<p>Add KNET support for Jericho.</p>
SDK-90604	1012296	88660_A0 88670_A0 88670_B0	<p>Support qualify on IRPP In-TTL (Resolved TTL) in ingress PMF is added.</p>
SDK-90810	1012356	88670_A0 88670_B0	<p>Issue is fixed, please add bcmFieldQualifyDstClassField as preselector to preselect according to System Value1, example:</p> <pre>bcm_field_presel_set_t psset; int presel_id=10; print bcm_field_presel_create_id(unit, presel_id); print bcm_field_qualify_Stage(unit, presel_id BCM_FIELD_QUALIFY_PRESEL, bcmFieldStageEgress); print bcm_field_qualify_DstClassField(unit, presel_id BCM_FIELD_QUALIFY_PRESEL, 0x3, 0xFF); BCM_FIELD_PRESEL_INIT(psset); BCM_FIELD_PRESEL_ADD(psset, presel_id);</pre>
SDK-90911	1004680	88670_A0	<p>In L3, enhanced fib_scale_prefix_length=4/8/12/16/20/24/28 now allows a specific route prefix to be stored in the LEM. This requires single DB KAPS setting and replaces the IPv4UC program without RPF. To add UC routes to the LEM use bcm_l3_host_add with BCM_L3_FLAGS2_SCALE_ROUTE, to add UC routes to the LPM use bcm_l3_route_add with BCM_L3_FLAGS2_SCALE_ROUTE.</p>

Table 62:

Number	CSP	Chips	Release Notes For 6.5.4
SDK-90921	1014003	56060_A0	The JIRA adds supports for the <code>int8_t</code> , <code>int16_t</code> , <code>int32_t</code> data type in <code>phymod</code> library.
SDK-90994	1004958	88670_A0	In the previous release, UP MEP packet header went out of Higig port was incorrect. In this release, this issue has been addressed by modifying egress program.
SDK-91078	1015424	56450_A0 56450_B0 56450_B1	The datatypes were included from <code><sys/types.h></code> through <code><stdlib.h></code> . To conform with C99 standard, the datatype declarations are included from <code><stdint.h></code>
SDK-91204	1014995	88670_B0	In previews release, access external phy will conflict, no lock at <code>phymod</code> layer. This release, adding lock at <code>phymod</code> layer for <code>xphy</code>
SDK-91233	1012352	88660_A0 88670_A0 88670_B0	Add a new QoS inheritance model to preserve DSCP from being remarked when routing into a tunnel. A new SOC property <code>logical_interface_routing_preserve_dscp</code> and two port controls are added: <code>bcmPortControlPreserveDscpIngress</code> <code>bcmPortControlPreserveDscpEgress</code> DSCP remark is preserved only when both ingress and egress decides to preserve it.
SDK-91371	1017540	88670_A0	In BCM886750 L3, the soc properties <code>enhanced_fib_scale_prefix_length_ipv6_long</code> and <code>enhanced_fib_scale_prefix_length_ipv6_short</code> are now supported. These soc properties allow storing two IPv6 prefix lengths in the LEM. See UM for additional documentation and <code>cint_ipv6_fap.c</code> for <code>cint</code> example.
SDK-91375	1015626	88670_A0 88670_B0	The API <code>bcm_field_stat_multi_get</code> didn't use the capabilities of the <code>counters.c</code> to get multiple statistics in one call. This cause miss match between the values returned on each statistics that belong to one counter set. Fix was made in the driver.
SDK-91385	1016558	56850_A0 56850_A1 56850_A2	In previous releases, the DMA memory space used for packet sending was not freed by "bcmTX" in time, which resulted in DV allocation failures in the next attempt of sending packets by other threads. Now the pending DMA memory space is freed in time.
SDK-91411	1016304	56260_A0 56260_B0	Issue: The queues mapped to disabled ports are in enable state after flex operation. This is caused by the race condition between linkscan and port enable function during linkup sequence of flex operation. Solution: The link up sequence of flex operation is modified to enable the linkscan first and then enable/disable port based on default config.
SDK-91416		88670_A0	OTMH can now support 18bit CUD/Outlif values.
SDK-91517	1018025	88670_A0 88670_B0	An ELI search was added using the <code>bcmSwitchHashELISearch</code> switch to include the EL label in the LAG and in the ECMP. Note that the ELI search available only if BOS search is enabled.
SDK-91520	977803	88660_A0 88670_A0 88670_B0	Added support for age status matching for <code>bcm_l2_replace()</code> In order to utilize feature when calling API: 1. Include the flag <code>BCM_L2_REPLACE_MATCH_AGE</code> 2. Set entry age accordingly

Table 62:

Number	CSP	Chips	Release Notes For 6.5.4
SDK-91566	1010250	88660_A0 88670_A0	An ability to add a mpls tunnel to a PWE entry with one <code>bcm_mpls_port_add()</code> call has been added. Use soc property <code>mpls_bind_pwe_with_mpls_one_call == 1</code> . Using this soc property removes the ability to create this kind of entry using the old scenario, that is creating a PWE, fetching it with <code>bcm_mpls_tunnel_initiator_get()</code> and replacing the entry with PWE + mpls tunnel via <code>bcm_mpls_tunnel_initiator_create()</code> .
SDK-91577	1012387	88470_A0	MPLS PORT: Allow multicast id as destination of FEC. Calling sequence: create a fec only mpls port, with <code>bcm_mpls_port_add()</code> , with remote flag set on encap, set <code>failover_mc_group</code> as the MC ID.
SDK-91587	1018351	AllChips	When displaying CINT uint8 type, it was printed as if it was a "signed char". This JIRA fixes the issue so when displaying CINT uint8 type it will be printed as "unsigned char", i.e. value is always positive.
SDK-91759	1019317	88670_B0	Broadsync property crash is fixed for Jericho_B0.
SDK-91763	992685	88650_A0	OAM: When using Arad classifier mode, when calling <code>bcm_oam_endpoint_action_set()</code> on a MIP and then <code>bcm_oam_endpoint_create()</code> , the behavior defined on the MIP with <code>bcm_oam_endpoint_action_set()</code> was be removed and restored to the default behavior. Note that due to HW restrictions only one type of action may be defined per all MIPs in the system.
SDK-91781	1017402	56440_A0 56440_A1 56440_B0	Updated the API Support matrix using Web interface
SDK-91788	1019277	56850_A0 56850_A1 56850_A2	In previous releases, prbs error counts could not be retrieved correctly for "phy prbs" command. Now this issue has been fixed.
SDK-91894	1019881	88670_A0	In earlier releases PPDB internal memory was not initialized. In this release, PPDB internal memory has been initialized.
SDK-91911	1002025	88660_A0	DMA: There were some inconsistent problems between memories and caches which executing DMA operation. It may cause that the date between SW tables and HW tables was different. This has been fixed in this release.
SDK-92086	1018861	88650_A0 88660_A0 88670_A0	When using more than 10 unique OAM groups, The transmitted CCMs of endpoints (belongs to the 10+ groups) had corrupted MAID (MEG ID) value. This bug is fixed.
SDK-92161	1015163	88670_A0	In previous releases, for SER interrupts requiring asic reset, the application driver just went do it. In this release, an option is given by using customer feature, supporting callback or do asic reset during SER handling.
SDK-92219	1020945	88670_A0 88670_B0	any attempt to access an invalid dram physical address will result now with an error message that such an attempt was made instead of wrapping around and other unexpected behaviours, for info regarding physical address encoding please consult user manual
SDK-92294	968786	84741_C0 84756_A0 84756_C0	if the <code>port_phy_addr</code> is specified in the config and the external phy is not connected, <code>port_phy_addr</code> config will not have any effect on port bring up.
SDK-92297	1011160	88670_A0 88670_B0 AllChips	Added support for counting profile for tunnel termination LIFs.
SDK-92302	1020986	56860_A0 56860_A1 56960_A0	In this release, portmod code has been modified to add per-lane TX and driver current config properties for BCM56960.
SDK-92328	996413	88670_A0 88670_B0	RMEP database shadowing was enabled while it is dynamic memory caused to read as <code>no_cache</code> and set false information on get functionality

Table 62:

Number	CSP	Chips	Release Notes For 6.5.4
SDK-92356	1020879	88660_A0	"g * debug" will cause bus error at the device unless "phy_1588_dpll_frequency_lock=1" SoC property is defined.Fixed.
SDK-92364	1017720	88670_A0 88670_B0	Configuration of VLAN mc ports with bcm_multicast_set fixed.
SDK-92409	1020886	88660_A0	CINT assignment from an shorter (in bits) unsigned variable to a wider (in bits) signed variable was wrong. The shorter variable was wrongly considered as signed. Example for the issue: cint> uint8 uai8=0xff; cint> int a; cint> a = uai8; cint> print a; int a = -1 (0xffffffff) This JIRA fixes the issue above so that 'a' value results as equal to '0xff'.
SDK-92486	1017308	88470_A0	a solution for 3-level protection based JER and QAX. 1. create mpls tunnel who will push LSP label and LDP label; a standard scenario will consume 2*4 EEDB entries for LSP+LDP. 2 .create PWE mpls port , who will push PWE label, there will be 4 FEC entries consumed for PWE protection group, 2 for primary PW and 2 for backup PW. 3. install PMF group and rule, who is respond for switching protection state of PWE.
SDK-92496		88670_A0	Changed the bit length to the default value. Now the bit length is retrieved via the signal length according to the unit type.
SDK-92500	884669	88660_A0 88670_A0	This commit breaks backward compatibility, till this commit the entry type (bridge/route) selected by the bcm_ipmc_add/remove/get was depended on the related IN-RIF IPMC state (enable/disable). This commit allow selecting the bcm_ipmc_add/remove/get entry type using the BCM_IPMC_L2 for bridge entry and route otherwise. To keep working in the previous way the custom_feature_ipmc_set_entry_type_by_rif SOC property should be set to 1.
SDK-92538	1021178	88950_a0	Added the faulty registers to the ignore list and it is working now.
SDK-92678		56260_A0	Support has been added to get Discarded bfd packet statistics from firmware.
SDK-92685		88670_A0	"diag cosq voq id=xx detailed=1" shows the right ocb eligibility status.
SDK-92692	1022670	56750_A0 56750_A1 56750_A2	In previous release, there was an unreasonable timeout error print in_soc_trident2_clear_all_memory function. Now in this version, this issue has been fixed.
SDK-92824	1023705	88670_A0 88670_B0	Tunnel: When bcm_tunnel_initiator_create() was called with type bcmTunnelTypeIpAnyIn4=3, the retrieve API bcm_tunnel_initiator_get() returned type bcmTunnelTypeIp4In4=1. In this release the returned value was fixed and bcm_tunnel_initiator_get returns tunnel type bcmTunnelTypeIpAnyIn4=3.
SDK-92840	1023704	56860_A0 56860_A1	This JIRA adds supports in portmod for bcm_port_phy_multi_get(), bcm_port_phy_get() and bcm_port_phy_set() .
SDK-92873	1016424	88660_A0 88670_A0	FEC: Redundant error messages were removed by initializing FEC table to drop destination.
SDK-92935		88670_A0 88670_B0	Removed the DPP devices from the supported devices of the TR53 test.
SDK-92959	1008253	88670_A0 88670_B0	IPT latency drop is not supported.
SDK-92982	1023826	88670_A0 88670_B0	API bcm_stat_counter_config_set didn't support engines 16,17. Add supoort to configure engines 16 and 17 via API (and not just soc property)

Table 62:

Number	CSP	Chips	Release Notes For 6.5.4
SDK-93046	1025596	88660_A0	OAM: Enable transmitting CCMs with full 48 byte MAID from the OAMP. Calling sequence: ----- • Set Soc property: custom_feature_maid48_enabled=1 • Define MAID as described in the 88670-PG1xx-RDS in section "Configuring the OAM application" with flag= BCM_OAM_GROUP_FLEXIBLE_MAID_48_BYTE and "name"=48 MAID bytes All endpoints set on the above group will have CCMs with the MAID as configured.
SDK-93092	1020814	88670_A0 88670_B0	Lower severity output to LOG_DEBUG
SDK-93095	1023648	88660_A0	In previous releases, cosq templates might run out in some API sequences, this has been resolved.
SDK-93164	1026286	88670_A0 88670_B0	In preview release, pm4x25_port_enable_get get serdes enable status for serdes, not support external phy. this release, will get right status for external/internal phy.
SDK-93168	1020735	88660_A0 88670_A0 88670_B0	VLAN: On VLAN destroy (bcm_vlan_destroy), the VLAN wasn't removed from its spanning tree group. After the fix, the VLAN is properly removed from the STG on VLAN destroy.
SDK-93198		88650_A0 88660_A0 88670_A0	wrong index was being used when setting port class in Egress-PMF. This is fixed.
SDK-93201	1026135	56260_A0 56260_B0 56440_A0 56440_A1 56440_B0	Support has been added to get all endpoint status from FW.
SDK-93217		88670_A0 88670_B0	Qualifier bcmFieldQualifyIpMulticastCompatible is now supported to qualify upon IP multicast compatible frames in ingress PMF.
SDK-93219	1025051	88650_B1 88660_A0	The table SCH_SHAPER_DESCRIPTOR_MEMORY_STATIC_SHDS was not protected in ARAD. When this table happens SER error, the error cannot be corrected. This table has been changed to cached.
SDK-93272		88670_A0	There were changes to the SOC properties that determine the sw_state size. I separated the stable_size property from the sw_state size, so now customer should define both properties (for FAPs). In general, stable SOC properties refer to the customer's application external storage implementation. stable_size – Used by the customer to tell our SDK the max capacity of their NV storage implementation. sw_state_max_size – this property determines the amount of memory that will be allocated by BCM SDK state management for storing the driver's internal state, this size may vary with system's configuration and should be calculated or (preferably) measured by the customer in advance. In case "sw_state_max_size" is not defined, the sw_state_size will be derived from "stable_size" and following warning will be printed to the screen: "sw_state_max_size SOC property is not defined, deriving size from stable_size."
SDK-93315	1026564	56260_A0 56260_B0	Added support for dynamically changing the Loss measurement counter related parameters by using the BCM_OAM_ENDPOINT2_UPDATE_COUNTER_ACTION flag in conjunction with BCM_OAM_ENDPOINT_REPLACE without impacting CCM.

Table 62:

Number	CSP	Chips	Release Notes For 6.5.4
SDK-93365	1027050	56440_A0 56440_B0 56450_A0 56450_B0 56450_B1	delete all types of replication available with multicast group id whether it is port based replication or subscriber based replication using "bcm_multicast_egress_delete_all"
SDK-93388	1010786	56450_A0 56450_B0 56450_B1	DFC need to be reset before flush. Fix is clearing DFC before flush.
SDK-93393	1027305	AllChips	In previous releases, it was wrong to configure one flexible port as SOC_TH_PORT_MODE_TRI_023 or SOC_TH_PORT_MODE_TRI_012 modes when SDK had configuration "oversubscribe_mode=1". Now, when SDK has "oversubscribe_mode=1", every flexible port can't configure as "tri-ports" mode in TH.
SDK-93400	1025370	56960_A0 56960_B0 56960_B1	In previous releases, number of lanes goes to zero in display after flexing back and forth. In current release, this issue has been fixed.
SDK-93468		88670_A0	The table OAMP_MEM_20000 was cached in BCM88670. The table OAMP_MEM_20000 has been changed to no cached.
SDK-93469		88670_A0	In earlier releases the severity of the table MRPS_MCDB_PRFSSEL was not right. In this release, the severity of this table has been corrected.
SDK-93476	1026183	AllChips	In previous release, when the current and the maximum speed of a port was 0, the API bcm_esw_port_speed_set() would return SOC_E_CONFIG. This issue has been fixed in this release.
SDK-93484	1025394	88660_A0 88670_A0 88670_B0	In earlier releases BFD feature (more than 16 sessions) and ERSPAN feature SOC propties cannot be enabled together. In this release, they can be enabled together.
SDK-93487		56960_A0	In the previous release, counter number of color based FP flex counter was read from the dummy counter group, which caused incorrect counter index computation. In this release, the issue has been addressed by fetching counter number from FP specified counter group.
SDK-93491	1017056	88660_A0 88670_A0 88670_B0	In the previous release, recycle port with PTCH2 could not enable per port, which was incorrect. In this release, this issue has been addressed by adding soc property.
SDK-93586	1026805	56460_A0 56460_B0	Problem: Subports was mapped to the external packet buffers incorrectly. Solution: Subports mapping to the external packet buffer is fixed.
SDK-93654	1027005	88660_A0 88670_A0	A call to bcm_l3_egress() with failover_id out of legal range caused the SDK to crash. After this release this call will return an error without crashing the SDK.
SDK-93685		88670_A0	IPS_DEQ_COMMAND_CREDIT_ADJUST was not set properly, so in case of full rate traffic drops may occur. Fixed
SDK-93689		88670_A0	Exact match tables has no SER action. The SER error will be always existed in exact match tables. ECC SER action is added to SER operation for Exact match tables.
SDK-93696		88660_A0 88670_A0	EVE Diagnostics: Information regarding the Out-LIF that was used for EVE command on the last packet, is displayed using "diag pp eve". The relevant fields are: VLAN-Edit profile and the modifier VLANs. When no valid AC Out-LIF can be deducted, a per device default AC is used. In this case, the diagnostics incorrectly displayed field values from a non-valid or non-AC Out-LIF, but after the fix per device default AC values are displayed.

Table 62:

Number	CSP	Chips	Release Notes For 6.5.4
SDK-93713	1022093	56460_A0 56460_B0	<p>Problem: When two endpoints have the same name are deleted, the deletion operation fails for the second endpoint as they were sharing the same <code>EGR_MP_GROUP</code> entry.</p> <p>Solution: Changed the lookup key for <code>EGR_MP_GROUP</code> so that each endpoint can have unique <code>EGR_MP_GROUP</code> entry. Changes require a cold-boot to take effect.</p>
SDK-93714	1028123	56860_A0 56860_A1 84328_A0 84328_B0	<p>In previous releases, initialization failure was seen with BCM56860 and BCM84328 PHY. In this release, code has been modified <code>pm4x10_port_phy_lane_access_get()</code> so that it does not look at the inactive ports with external PHYs when counting the <code>nof_phys</code>.</p>
SDK-93718	1028470	56260_A0 56260_B0	<p>Any additional VP is reserved when customer port is added first to VPWS. If network port was not added to VPWS and later the customer port is deleted. Reserved VP was not being marked as free. Fixed it by not reserving additional VP due customer port addition to VPWS. Instead it will be allocated during network port addition to VPWS. With this fix, customers might have only one VP reserved instead of 2, when only customer port is added.</p>
SDK-93739	1025763	88670_A0	<p>Setting the <code>custom_feature_l3_mc_use_tcam</code> to 2 will in addition of making the TCAM as the IPV4/6 MC table will also removes the use of the VRF field as a qualifier for IPV4 MC entries leaving {G, SIP, IN-RIF}. The VRF removal will reduce the IPV4 MC Key size below 80 bits which will increase the total number of TCAM entries (key above 80b takes 160 TCAM bits while an 80b and below key takes only 80 TCAM bits).</p>
SDK-93760	1027974	56860_A0 56860_A1	<p>In a topology where BCM56860 is linked to BCM56850 through BCM84328, the two switches cannot link up at 40G HG2. In this release, we have changed the default interface type of 40G HG2 ports to CR4.</p>
SDK-93761	1028342	56860_A0 56860_A1	<p>To add supports for BCM PORT PHY CONTROL RX SQUELCH in TSCE and TSCF serdes of TH, GH, and etc platforms.</p>
SDK-93789	1012774	88670_A0 88670_B0	<p>When working with ILKN and link is down and up during heavy streaming - ILKN might get stuck. This commit solves this issue.</p>
SDK-93820	1026267	56860_A0 56860_A1	<p>One or two link flap should be accepted because It is possible to receive delayed remote fault from link partner. But for the customer who wants to ignore delayed remote fault in the previous linkscan cycle, added software workaround to ignore the remote fault by adding the definition <code>BCM_LINK_SUPPRESS_REMOTE_FAULT</code> in <code>Make.local</code></p>
SDK-93836	1029007	88660_A0	<p>If the table is cached and happens ECC error, SER handler does not run ECC process. This is caused by calculating wrong cache flag. The cache flag has been corrected.</p>
SDK-93889	1023704	56860_A0 56860_A1	<p>The JIRA adds the support in phymod for <code>bcm_port_phy_multi_get()</code>. The phymod API is <code>phymod_phy_multi_get(const phymod_phy_access_t* phy, phymod_multi_data_t* multi_data)</code>.</p>
SDK-93927		88670_A0	<p>Disabling port with traffic flowing cause egress resouces not being released. Fixing by implementing new port enable/disable sequence to release resouces.</p>
SDK-93963		88670_A0 88670_B0	<p>working with <code>ilkn_tdm_dedicated_queuing</code> mode-on we could chose only between LKN0 and ILKN1 for JER and ILKN0-4 to QAX, now it's fixed to allow any ILKN IF.</p>

Table 62:

Number	CSP	Chips	Release Notes For 6.5.4
SDK-93968	1028558	56440_B0 56445_A0 56445_A1 56445_B0	When Access side mpls port is created, SDK sets egress object for egress parameters. As part of that <code>SD_TAG_DOT1_PRI_SELECT</code> is set by default. As of this change, SDK behavior is modified to not set this field by default and set only if user asks to set it.
SDK-93987	1027076	56840_A0	Couple trTCM mode for IFP is not supported on Trident series devices. Reverted the support.
SDK-94003	1021088	88670_A0	In Field, reading from wide data was done from inaccurate offset, as a result of wrong computation of lost bits in copy engine instruction. it is fixed.
SDK-94012	1029820	56640_B0	Race condition might occur if the <code>tx_pbmp</code> undergoes a change when iteration is on the <code>bcm_esw_tx</code> . As it is not a critical function maintaining the consistency of bitmap for sync in LOCK/UNLOCK of the port.
SDK-94023	1029770	88670_A0 88670_B0	Rx LOS application is not required on Jericho device so there should be added an error message that it's not supported.
SDK-94041		88470_A0 88670_A0	new soc property: <code>tdm_queuing_force_<port></code> new flag to <code>port_add</code> : <code>BCM_PORT_ADD_TDM_QUEUING_ON</code> work only with soc property: <code>ilkn_tdm_dedicated_queuing</code> ILKN port will be handled as a port with TDM queuing mode on and have as high priority as TDM port.
SDK-94051		88950_a0	The wide memory cannot be visited in the FE3200. There is visiting error when operating the wide memory . Wide memory's operation has been changed like other chips, such as Jeircho.
SDK-94052		88950_a0	When the table happens two bits error, there is no SER operation for this. The software cannot process it when SER action is hard reset handler. Hard reset action is added to SER correction.
SDK-94114	1029042	88670_A0	The 1st fec must be protected.
SDK-94115	1028719	56260_A0 56260_B0	Adding support for match criteria of <code>BCM_MPLS_PORT_MATCH_NONE</code> dugin <code>bcm_mpls_port_add</code> api. The support for this match criteria was very limited and because of that software state was not getting cleared while deleting the mpls port.
SDK-94122	1028677	56850_A0 56850_A1 56850_A2	In previous releases, the CLI command "mc show" might return incorrect encapid for VXLAN groups and <code>bcm_multicast_egress_delete</code> might throw <code>BCM_E_NOT_FOUND</code> after the warm boot. In this release, this has been addressed by recording the next hop indices maintained implicitly in SDK pointing to the L3 interfaces into the scache.
SDK-94156	1029705	56860_A0 56860_A1 56864_A1 84858_A0 84858_B0	KOI does not support 10M speed and thus setting 10M ability will return <code>SOC_E_PARAM</code>
SDK-94158		88750_A0 88950_a0	This table <code>RTP_SL SCT</code> is dynamic and ECC protected, but has a default configuration from the customer application. So in the FE3200, this table requires a special SER handler. The error cannot be processed when this table happens SER error. A new special handler is added to SER operation.
SDK-94160	1018433	88950_a0	FE3200 MBIST: mbist sequence is changed to reinit the driver after the test.
SDK-94164	1029755	56860_A0 56860_A1	In previous releases, the L0 node which had no children node was not visible for the first port in each pipe on TD2+. This has been fixed in this release.

Table 62:

Number	CSP	Chips	Release Notes For 6.5.4
SDK-94176	1030399	56850_A0 56850_A1 56850_A2 56860_A0 56860_A1	In previous releases, ALPM might not work in the scenario of multiple units. In this release, this has been fixed by passing the parameter 'unit' correctly to the function <code>_soc_alpm_raw_mem_read()</code> .
SDK-94211	1023560	56450_A0 56450_B0 56450_B1	Propagation of only final BHH event if two events - Timeout and State change occur together.
SDK-94240	1029747	56860_A0 56860_A1	To overcome the overflow of hardware counter, SDK defines two 32 bits length counters. One tracks hardware stats of previous counter collection while the other tracks hardware stats of current counter collection. There is one more 64 bits length software counter tracks the total stats. Overflow is determined by comparing previous and current stats and then calculate total stats accordingly. In previous releases, when calling SYNC version API such as <code>bcm_mpls_label_stat_counter_sync_get</code> to get stats of specified counter, the previous and current stats of all counters were swapped, which caused wrong update of 64 bits counters. In this release, the issue has been resolved by swapping previous and current stats of specified counter when calling SYNC version APIs.
SDK-94253		88670_B0	Improved bursts handling mechanism between IQM and FDT in Jericho B0.
SDK-94257		88670_A0	The first VSI profile (1, 2 and 3) are no longer configured during Jericho and above devices.
SDK-94258	1027506	88670_A0	BFD: Other applications may interfere with single hop/micro bfd field processor cint (<code>cint_field_bfd_ipv4_single_hop.c</code>)
SDK-94282	1027132	84756_A0 84756_C0	The old release, don't support "phy diag <port> prbs" command. This release, will support the command like "phy diag <port> prbs u=1 if=sys p=3", can specify phy unit number ,interface type and poly.
SDK-94286	1030012	88670_B0	In previous releases, port initialization was broken while external PHY address was invalid. This issue has been fixed in the release.
SDK-94318	1031141	88670_A0 88670_B0	In the previous release, when creating a mpls port with FEC as its learn data, either for primary port or for protected port, primary FEC ID is always be saved in sw DB. this FEC ID will be used to retrieve encaps id of this mpls port. In this release, correct FEC is saved for mpls port. For a primary mpls port, primary FEC is stored with it in SW db. For a protected mpls port, protected FEC is stored.
SDK-94331	1030153	88670_A0	MPLS PORT: Api <code>bcm_mpls_port_add</code> <code>BCM_MPLS_PORT2_LEARN_ENCAP</code> might fail on validity check when calling with replace flag
SDK-94344	1029966	88670_A0	The errors messages returned from the prbs status get functions modification to be more informative and with a higher verbose level.
SDK-94345	1028146	56060_A0 56150_A0 56160_A0	Fix the issue that the switch control for multiple registers with <code>bcmSwitchMeterAdjust</code> type can only be effective for the first listed register.
SDK-94374	1030408	56850_A0 56850_A1 56850_A2	In previous releases, the <code>MMU_PORT_CREDIT</code> was initiated as 12 for 1G ports, which was incorrect. In this release, this has been fixed by initializing <code>MMU_PORT_CREDIT</code> to 3 for 1G ports.
SDK-94392	1029882	56960_A0 56960_B0 56960_B1	In previous releases, it would fail if the CPU GPORT was used along with the cosq ranging from 0 to 47 to configure schedule discipline and weight. This has been addressed in this release by correctly computing schedule level for CPU GPORT.

Table 62:

Number	CSP	Chips	Release Notes For 6.5.4
SDK-94413	1030786	56960_A0 56960_B0 56960_B1	In previous releases, SDK did not set UC and Queue Number fields of DMA Tx DCB correctly in Knet module. Now this issue is fixed.
SDK-94486	1031548	56860_A0 56860_A1	When injecting a 1-bit error into MMU Counter memories, the counter thread periodically read the tables, thus continuous mmu parity error is reported. Generally the parity errors happens on these memories will be corrected by H/W when there is traffic running on the device. Now in this fix, a new switch control can be used to control enable/disable single bit error reporting for these memories.
SDK-94497	1031890	56860_A0 56860_A1	According to hardware, we do not support SER for this memory and so DLB_HGT_SER_CONTROL.DLB_HGT_FLOWSET_TIMESTAMP_PAGE_PARITY_EN must be set to 0 to disable hardware from reporting this memory error. For TD2+ we're going to exclude DLB_HGT_SER_CONTROL.DLB_HGT_FLOWSET_TIMESTAMP_PAGE_PARITY_EN from being enabled in _soc_trident2p_ser_enable_all(). That function is passed an array of what to enable, so we're going to exclude it from that array.
SDK-94503		88670_B0	sharing ILKN C between NIF and Fabric is now supported. i.e assigning ILKN4 to NIF and ILKN5 to Fabric or vice versa. each ILKN port cannot be shared. no change in soc properties configuration: use fabric_links_for_ilkn_nif_ilkn4=1 - assign ILKN4 to work over fabric serdes. ILKN5, if defined, will still work over NIF serdes.
SDK-94663	1031711	56960_A0 56960_B0 56960_B1	In the previous release, soc_td2_l2_bulk_age_stop was not called in soc_shutdown. In this release, soc_td2_l2_bulk_age_stop is called.
SDK-94665	1031691	88660_A0	VLAN-Port: LIFs that are created with the BCM_VLAN_PORT_MATCH_NONE criteria, may later be associated with a lookup bcm_port_match_add() and deassociated using bcm_port_match_delete(). Only lookups that were created using bcm_port_match_add() can be deassociated using bcm_port_match_delete(). The deassociation in this scenario failed and now it is fixed and a deassociation is performed as expected. In addition, the LIFs that are created with BCM_VLAN_PORT_MATCH_NONE criteria aren't associated with a VLAN and port anymore, even if those are supplied by the API.
SDK-94666	1032684	56460_A0 56460_B0	Interrupts cleared after PTP stack destroy and before warmboot
SDK-94701	1031826	88670_A0 88670_B0	TDM port is added twice, might cause memory override. Fixed
SDK-94705	1032180	56450_A0 56450_B0 56450_B1	Incorrect decrements of reference count for the 'tag_action_profile' resource has been fixed, Without this change, the references to the mentioned resource would inadvertently be deleted when 'bcm_port_match_add' APIs are executed for MPLS ports.

Table 62:

Number	CSP	Chips	Release Notes For 6.5.4
SDK-94707		88470_A0 88670_A0	<p>MPLS: Additional labels encapsulation is now supported through new apis: To enable the feature set soc property <code>mpls_egress_label_extended_encapsulation_mode</code> to 1. To add MPLS tunnel using LL entry: 1) <code>bcm_l3_egress_create</code> Add flag <code>BCM_L3_EGRESS_WIDE</code> to configure wide entry 2) <code>bcm_port_control_set</code> Set class <code>bcmPortControlMPLSEncapsulateAdditionalLabel</code> 3) Configure Labels C3 and D1 by calling <code>bcm_port_wide_data_set</code> Gport is the LL Flag <code>BCM_PORT_WIDE_DATA_EGRESS</code> Data is 20bit MPLS label</p> <p>To add MPLS tunnel using existing mpls tunnel: 1) <code>bcm_mpls_tunnel_initiator_set</code> Set flag <code>BCM_MPLS_EGRESS_LABEL_WIDE</code> to indicate wide entry 2) <code>bcm_port_control_set</code> Set class <code>bcmPortControlMPLSEncapsulateAdditionalLabel</code> 3) Configure Labels C3 and D1 by calling <code>bcm_port_wide_data_set</code> Gport is the mpls tunnel Flag <code>BCM_PORT_WIDE_DATA_EGRESS</code> Data is 20bit MPLS label</p> <p>For example see <code>cint</code> <code>cint_ip_route_tunnel_segment_routing.c</code></p>
SDK-94712		88670_A0	In previous releases, TPID templates might run out even after deleting all TPIDs added before. This has been resolved.
SDK-94722	1022377	88670_A0 88670_B0	In preview release, some external phy an=1, it shows line side is up, but system side is down. This release, will update system side speed when an=1, then system side will be up too
SDK-94725	1029310	56450_A0 56450_B0 56450_B1	Field module lock was inside Field internal data structures and clean up code called during "fp init" command used to free the lock variable as well. This would create problem for thread locks when multiple threads are running Field Code. To solve this, moved the Field Module lock to soc internal structures and hence there is no dependency for field internal structures free/alloc with the field module lock. This helps in synchronizing the field module api calls.
SDK-94755	1030974	56860_A0 56860_A1	In previous releases, the <code>soc_feature_shared_hash_ins</code> feature was enabled for BCM56860 family chips, which was incorrect. This issue has been fixed in this release.
SDK-94766	1033030	56460_A0 56460_B0	<p>Problem: Event message call back thread had be evoked before endpoint recover</p> <p>Solution: Event message call back thread create will done after endpoint recover in warm boot case. Event message call back thread had be evoked after complete hw init in normal case.</p>
SDK-94773	1033104	88660_A0	When the table happens two bits error, there is no SER operation for this. The software cannot process it when SER action is software reset. Software reset action is added to SER correction .
SDK-94781	1032582	56850_A0 56850_A1 56850_A2	In previous releases, the behavior of the API <code>bcm_cosq_control_set()</code> for type <code>bcmCosqControlBandwidthBurstMin</code> was incorrect. This has been fixed in this release by calling the correct driver for the given chip.
SDK-94810	1030361	56640_A0 56640_A1 56640_B0	Customer had a requirement to map an L2 queue(module+cos) under a parent node(L1), which represents the cos value. SDK code was changed to implement this request.

Table 62:

Number	CSP	Chips	Release Notes For 6.5.4
SDK-94819		88660_A0	With <code>custom_feature_preserving_dscp_enabled=1</code> , we have <code>custom PRGE</code> program to preserve the DSCP in the forwarding header. Current implementation requires egress pipe to remap <code>dscp/tos=0</code> for the IP header checksum to be correct. This change reverts it back to the old implementation (copy IP header from original packet with TTL--), and does not require the <code>dscp/tos</code> remap in egress pipe.
SDK-94839	1032805	56850_A0 56850_A1 56850_A2	In previous releases, when the duplex attribute was to be configured for a port via <code>bcm_port_duplex_set()</code> API, the port mode wasn't checked. This issue has been resolved in this release.
SDK-94858	1032988	56960_A0 56960_B0 56960_B1	In previous releases, warmboot failed on TH when IP options was attached to L3 interface. In this release, warmboot will succeed when IP options is attached to L3 interface
SDK-94885		88670_A0	In Field API, the size of qualifiers <code>bcmFieldQualifyL3SrcRouteValue</code> and <code>bcmFieldQualifyL3DestRouteValue</code> differs between devices, however is set to a size of specific device in SDK, when it should be retrieved according to the unit type. This is fixed.
SDK-94906	1015936	88670_A0 88670_B0	optimize <code>bcm_dpp_rx_packet_parse</code> process to improve rx performance.
SDK-94909		88670_A0	Removing dynamically ILKN port causes EGQ to stuck. Fixed
SDK-94938	1032483	56860_A0 56860_A1	In previous releases, locks (<code>PORT_TABm lock</code> and <code>VLAN_PROTOCOL_DATAm lock</code>) acquired by API <code>bcm_port_untagged_vlan_set()</code> and <code>bcm_vlan_port_default_action_set()</code> were in reverse orders and could cause dead lock when these two APIs were called in two threads. This has been addressed by using <code>PORT_TABm lock</code> instead of <code>VLAN_PROTOCOL_DATAm lock</code> in this release.
SDK-94940	1033551	88670_A0	HR bandwidth configuration will not be configured below port bandwidth configuration.
SDK-94942	1032651	56640_A0 56640_A1 56640_B0	SDK code for DMVOQ did not implement the merge functionality correctly. Due to this, congestion states across two ports belonging to same egress module did not merge. SDK code was changed to correct this issue by using different interface id for different buffers.
SDK-94953	1033359	56440_A0 56440_A1 56440_B0	api look into all the four chunks dedicated for particular types of counters instead of one.
SDK-94954	1029121	88670_A0 88670_B0	In previous releases, some cachable tables didn't initialize properly, led to SER recovery failed at the first time. In this release, this problem is fixed.
SDK-94956	1033663	88670_A0 88670_B0	Only creating operation will reset lif extension data now. Update operation will not update these field
SDK-94995	1033116	88650_B0 88660_A0	In Field API, when calling <code>bcm_field_group_status_get</code> for an empty direct extraction Field-Group error was returned. This is fixed.
SDK-95033	1032471	88650_A0 88660_A0 88670_A0	Fix a bug where Init could potentially crash during warm reboot on 64-bit systems.
SDK-95041	1034330	56850_A0 56850_A1 56850_A2	Added support of <code>bcm_cosq_control_set/get</code> for Trident2+
SDK-95042	1034068	88670_A0	In field, some action length were not adjusted to BCM88670/5 device. it is fixed.
SDK-95051	1031106	88670_A0	Enlarge the range of tunnel->dscp value from 0~63 to 0~255 when calling <code>bcm_tunnel_initiator_create</code> . tunnel->dscp is actually used by both dscp & ECN (which takes 8 bits).

Table 62:

Number	CSP	Chips	Release Notes For 6.5.4
SDK-95062	1034383	56860_A0 56860_A1	The code for port attach is updated to look for BCM_VLAN_NO_DEFAULT_ETHER flag in order to add the port bit to vlan bitmaps during flexing operation.
SDK-95072	1033669	56850_A0 56850_A1 56850_A2	In previous releases, if number of lanes of one flexible port was changed from "4" to "1" and maximum speed of the port was changed from "40G" to "10G", bcm_port_probe couldn't be executed successfully. Now, the issue is removed.
SDK-95086	1034595	53416_A0 56060_A0	Add the support of the SER inject support function for shell diagnostic on BCM53400 device.
SDK-95097	1034300	56060_A0	In the previous release, the inner VLAN tag from HiGig could not be parsed correctly since the inner tpid enable on the remote module was not configured properly via bcm_port_inner_tpid_set API. In this release, this API handles the modport gport type to configure the inner tpid enable properly according to the specified module port.
SDK-95113	1034151	56860_A0 56860_A1	One of the portmod Warmboot function for inactive port was not implemented yet. Missing this function implementation caused unexpected failure during warmboot.
SDK-95118		88470_A0	Added a condition to use the correct number of PVT monitor registers depending on device.
SDK-95135	1029881	88670_B0	KBP: KBP LUT initialization was not stable in previous release. This will cause switching devices cannot boot up correctly. In this release a retry mechanism has been added after KBP LUT initialization failure.
SDK-95140	1032512	56850_A0 56850_A1 56850_A2	In previous releases, when performing add mirror destination operation with BCM_MIRROR_DEST_REPLACE and BCM_MIRROR_DEST_TUNNELS flags, SDK would return BCM_E_NOT_FOUND. This issue has been fixed in this release.
SDK-95148	1018968	88670_A0	New feature - enable working with several CMCs for the CPU (1 or 2 or 3) and allocate dynamically the channels selected.
SDK-95159		88670_A0	iqm_ochprm thresholds were increased according to the following formula: $(4k * port_speed / 10G) * (max\ amount\ of\ ports\ possible\ with\ speed <X>)$ this result should provide a better reference value to allow traffic to pass undisturbed in all port speeds. value can be further changed per system according to customers demands.
SDK-95239	1035080	56620_B0	In Triumph device with high speed data streams (~10G) same MAC may get queued for learning more than once, due this FALSE station moves are getting recorded in L2_MOD_FIFO table. Added workaround to ignore the L2_MOD_FIFO entry processing by S/w if its a FALSE station move
SDK-95264	1030791	88670_A0	In the previous release, OTMH.CUD_ext was incorrect in PB compatible mode on Jericho. In this release, this issue has been addressed by improving program of OTMH.
SDK-95275	1033265	88670_A0	OAM: OAM endpoints may interfere with split horizon or other filters at the egress. Even after endpoints were removed this was observed.
SDK-95306	1033110	88670_A0 88670_B0	Add the option of vlan in the DSP's ethernet encapsulation. See an example in l2_cpu_learning_with_vlan under cint_l2_cpu_learning.c
SDK-95312	1035533	56960_A0 56960_B0 56960_B1	This JIRA add supports for BCM_PORT_PHY_CONTROL_UNRELIABLE_LOS for falcon and eagle in Tomahawk.
SDK-95317	1031022	88470_A0	ILKN KBP port over fabric links, can now work simultaneously with Eth on correspondent NIF serdes.
SDK-95324	1034705	53344_A0	The JIRA fixes 40nm QSGMII tx_drive and preemphasis values setting.

Table 62:

Number	CSP	Chips	Release Notes For 6.5.4
SDK-95345	1035270	56620_B0 56624_A0	Infinite retries are made when <code>soc_schan_op</code> fails. fixed by Adding a check to avoid infinite loop.
SDK-95407	1035490	AllChips	In previous releases, we didn't implement the remote phy loopback in bcm layer. In this release, this issue has been fixed.
SDK-95440	1035848	88660_A0	In the previous release, MAC limit per tunnel ID was enabled when set property <code>l2_learn_limit_mode</code> as 2 in PON application. In this release, this issue has been addressed by adding new BCM API <code>bcm_l2_learn_limit_enable()</code> to enable MAC limit per tunnel ID in PON application.
SDK-95446	1022436	56860_A0 56960_A0 56960_B0 56960_B1	In previous releases, the used count of routes might not be gotten correctly after the replacement of routes if ALPM mode was enable. In this release, this has been fixed by avoiding the increment for an existing route.
SDK-95507	1028356	88670_A0	BFD_SUPPORTED_FLAGS_BITFIELD soc property added: It should be set to "1" for each Flag that should be supported (up to 3). Supported values: 0x32, 0x38 BFD_MASK_FLAGS_BITFIELD soc property added: it should be set to "1" for each flag that should be masked. Supported values: 0x0, 0x8, 0x2 Note: Custom feature soc property of C flag mask removed.
SDK-95512	1034048	88670_A0 88670_B0	BFD UDH fixed: FWD offset in PPH header is updated correct.
SDK-95527	1034960	88670_A0 88670_B0	In previous releases ,the CL91 FEC was enabled by "BCM_PORT_PHY_CONTROL_FORWARD_ERROR_CORRECTION". CL91 FEC should be enabled by "BCM_PORT_PHY_CONTROL_FORWARD_ERROR_CORRECTION_CL91". This issue has been fixed in the release.
SDK-95531	1036557	56860_A0 56860_A1	<code>bcmi_esw_portctrl_encap_set_execute</code> is missing to release <code>mirror_lock</code> .
SDK-95540	1035799	56565_A0 56565_B0	In SDK 6.5.3 on BCM56565 the HG2_CODEC was not configured to the Falcon core when the link partner is WC40/WCMOD. This has been resolved in this release.
SDK-95544		56960_A0	In previous releases, hash algorithm 12 ~ 15 was not supported in the API <code>bcm_switch_pkt_info_hash_get</code> in BCM56960. This has been implemented in this release.
SDK-95610		56850_A2	In previous releases, if there were packet arrivals during the time that the SER correction code had disabled L2X parity check, when the L2X parity was re-enabled, then those packets might have been H/W learned with bad parity. So there were a lot of new SER interrupts. Now, before L2X parity check is disabled, SDK should freeze L2 H/W learning firstly.
SDK-95634	1034382	88670_B0	In PMF, in calculation of available resources for a key, the logic for picking a preferred cycle considered the wrong program, which caused inaccurate and non-deterministic behavior in some cases. This is fixed.
SDK-95647	1036234	88670_A0 88670_B0	IPG header compensation switch is invalid for <code>bcm_88670</code> . Please avoid using. *The IPG compensation is being considerate by default.* The switch has been fixed (for future releases), to return error while using it on <code>bcm_88670</code> .
SDK-95689	1036639	88670_A0	Fixed a bug in quad memory allocation when working with ILKN ELK. The ILKN ELK was mistakenly using the quad memory of other port.
SDK-95762	1037319	56850_A0 56850_A1 56850_A2	In previous releases, the <code>ingress_if</code> was not supported for the NIV port in the API <code>bcm_vlan_translate_action_add</code> . In this release, this has been addressed by programming the field <code>VIF__L3_IIF</code> in the table <code>VLAN_XLATE</code> for NIV ports in the API.

Table 62:

Number	CSP	Chips	Release Notes For 6.5.4
SDK-95773	1035518	56960_A0 56960_B0 56960_B1	Groups QSET update has been fixed to avoid qualifiers being overwritten. In previous releases, after "fp group set" some of the qualifiers occupied the same offset.
SDK-95787	1036657	88670_A0 88670_B0	The original memory and aliased memories have different flags. Now they have the same flags.
SDK-95800	1037301	56850_A0 56850_A1 56850_A2	IncomingMplsPortSet action recovered properly using WB Scache.
SDK-95872	1035449	88660_A0	LLC/SNAP headers are now parsed better for ACLs
SDK-95895	1027616	88375_B0 88470_A0 88660_A0 88670_B0	There is no command to show all SER action behaviors. Now the command "list ser-action" is added to show this.
SDK-95935		88670_A0	Add support for the <code>bcm_field_qualify_IpProtocolCommon</code> in the SLB pre-selector to support both L2 forwarding and IP forwarding pre-selectors. Now <code>bcm_field_qualify_ForwardingType</code> must be set before using the <code>bcm_field_qualify_IpProtocolCommon</code> in the SLB pre-selector.
SDK-95939	1035905	88670_B0	In field, when using the large direct lookup via KAPS, the action macro was not performed correctly, due to wrong encoding. This is fixed.
SDK-95967	1027363	88660_A0 88670_A0 88670_B0	MPLS: Assertion failure fixed in mpls tunnel creation on some environments.
SDK-95971		56960_A0	In previous releases, <code>bcm_l3_egress_ecmp_create</code> returned <code>BCM_E_RESOURCE</code> when <code>ecmp_max_paths</code> was set to a low value by API <code>bcm_l3_route_max_ecmp_set</code> . This has been addressed in this release.
SDK-95980	1032516	88670_A0	In previous release, when the padding enable, the counter of the runt packet with padding still incremented into <code>snmplfOutErrors</code> . In this release, when the padding enable and the length of packet after the padding is range from 64B to 96B, the counter of the runt packet with padding will be removed from <code>snmplfOutErrors</code> .
SDK-95981	1037333	88670_A0 88670_B0 AllChips	KBP: There was no re-transmission mechanism in KBP XPT layer in previous releases. Once transmission fails in XPT layer, it will return error to application layer. In this release, a re-transmission mechanism has been added into KBP XPT layer.
SDK-96016	1035524	88670_A0 88670_B0 AllChips	Configure the SOC property <code>dram_crc_del_buffer_max_reclaims</code> for all DRAM include the DDR3, DDR4 and GDDR5.
SDK-96017	1037778	88660_A0 88670_A0 88670_B0	BFDIPv6 didn't support to PUNT BFD packet to CPU or the control plane. This new feature is implemented that PUNT BFD packet with PTCH+ITMH+PPH+FHEI+BFD to CPU or the control plane, it's enabled by the <code>sampling_ratio</code> in bfd endpoint creation and the destination is created by <code>bcmRxTrapOampRmepStateChange</code> trap.
SDK-96070	1038666	56634_B0	Invalid actions(Logically removed from entry, but action information still present with entry with Dirty flag set) in an entry is considered while building policy data to be pushed to HW. Due to invalid data(-1) present in such invalid actions, causing assertion because of data will be greater than the H/W field size. This change set helps in avoiding invalid actions in entry while build policy data on entry install/reinstall.
SDK-96071	1038688	56450_A0 56450_B0 56450_B1	The destination discard bit was not getting set correctly for LPM entry when URPf was enabled. This has been fixed in this release.

Table 62:

Number	CSP	Chips	Release Notes For 6.5.4
SDK-96072	1002141	88670_A0 88670_B0	TDM traffic now supported for ILKN ports with TDM channel which is not master channel.
SDK-96084	1039228	56850_A0 56850_A1 56850_A2	In this release, for RxLOS SW WAR, customers could use BCM_PORT_PHY_CONTROL_SOFTWARE_RX_LOS_LINK_WAIT_TIMER_US and BCM_PORT_PHY_CONTROL_SOFTWARE_RX_LOS_RESTART_TIMER_US API to adjust the timer values.
SDK-96099	1030468	88202_A0	ARDON missing definitions added.
SDK-96106	1038860	88670_A0 88670_B0	The previous SDK enable the "write crc" twice that caused the parity error that hard reset the switch. It has been fixed that remove the "write crc" in soc_dpp_drc_combo28_init_tune_ddr().
SDK-96110	1036440	56860_A0 56860_A1	In TD2+, the indication of whether the MPLS payload is "L2" or "L3" was removed from the encodings since it was not accurately representing the payload type accurately for all MPLS terminated packets in previous devices, so we cannot differentiate between the L2 and L3 MPLS packets based on the tunnel decap encodings. Along with this, the order of the tunnel decap encodings present in the regfile is different from the SDK which follows the Trident2 encodings. So, we change the encodings in the SDK based on the encodings in the regfile for TD2+.
SDK-96152	1034731	56260_A0 56260_B0	Supporting Byte Swap feature in KNET on iProc Big-Endian mode
SDK-96163	1032381	56340_A0 56342_A0 56344_A0 56547_A0 56548_A0	Due to L3_DEFIP TCAM atomicity issue, there is a miss in the entry while updating a particular entry on live traffic. Fixed by keeping Reserve entries as duplicate entries for each l3_defip_split part.
SDK-96167	1030883	88670_A0 88670_B0	88675: Fixed errors in diagnostics "diag pp dblif" an "diag pp lif_show".
SDK-96180	1039749	88375_A0 88375_B0 88670_A0 88670_B0 88675_A0 88675_B0	ILKN 6/10 lanes over fabric support added
SDK-96192	1037078	88670_A0 88670_B0	Multicast traffic towards OLP ports is dropped at egress (EGQ). Fixed
SDK-96213	1030314	56860_A0 56860_A1	For TD2+, EGR_PORT's EH_EXT_HDR_ENABLE field can be set for CPU port (in addition to Higi2 ports) using control type bcmPortControlFabricQueue with bcm_port_control_set API. To read value of EH_EXT_HDR_ENABLE, bcm_port_control_get can be used.
SDK-96216	1030709	56460_A0 56460_B0	Added support of multiple serial ports for TOD on Saber2
SDK-96239	1033888	56836_A1 56860_A0	ucdbg (ukernel debug) feature for BCM56860_A0 is now supported. This has been implemented to enable ukernel debug log messages to be seen on debug console.
SDK-96265	1040044	AllChips	In previous releases, the new data in skb updated in customer's Tx callback routine was not synchronized to Tx DMA DCBs. That could cause KNET to send wrong data. This problem has been resolved in this release.
SDK-96270	1039987	56860_A0 56860_A1	This JIRA fixed the link-down issue for TD2+ with two ports connected using an external cable, one port with external PHY while the other with internal SERDES only, when issuing either one of the following two commands: (1) "BCM.0> port xe encap=higi2"; (2) "BCM.0> port hg encap=ieee".
SDK-96278	1037934	88670_A0	Return back to the DSP message parsing after it was replaced to the DMA events parsing by mistake. The parsing code is used only in debug rx mode

Table 62:

Number	CSP	Chips	Release Notes For 6.5.4
SDK-96295	1039650	56340_A0 56850_A0	In previous release, TSCMOD and WC40 driver got interface type according to speed ID. But interface type CR has the same speed ID as interface type XFI. So driver can't distinguish between CR and XFI. Fixed it by getting both speed id and the interface type configured for getting the interface type.
SDK-96327	1040139	56960_A0 56960_B0 56960_B1	In previous releases, the interface type was incorrect while adding SOC property "serdes_if_type=14". This issue has been fixed in this release.
SDK-96334		88670_A0 88670_B0	In Eth policer and metering, when working in packet mode, the translation from pps (packet per second) to Kbps had very low accuracy in low rates, with min. limit of 125 pps. The implementation has changed in order to support min. limit of 43 pps, with better accuracy in pps->kbps translation. Please be aware for the updated rate limit for packets mode [43-65020]pps.
SDK-96345	1034341	56340_A0 56340M_A0	Added in the SwitchControl support for L2 Learn/Add/Delete event callback.
SDK-96355	1022871	56850_A0 56850_A1 56850_A2 56860_A0 56860_A1 56960_A0 56960_B0 56960_B1	In previous releases, the hash bucket/index on shared banks could not be displayed by the CLI command 'l2 hash'. In this release, this has been fixed by displaying hash bucket/index on shared banks in the CLI command.
SDK-96362	1039484	56340_A0	Implemented the SW workaround for Errata 1.41
SDK-96368		88660_A0 88670_A0	multicast_id_offset soc property fixed for core 1 ports.
SDK-96369	1040545	88670_A0 88670_B0	In previous release, creating L3 interface might fail with both link layer mtu and forwarding layer mtu even it should not. This has been fixed.
SDK-96372		88670_A0 88670_B0	In Jericho devices, a HW limitation for MTU filtering that existed in previous devices has been removed. The SW has limited the use of VSI profiles for advanced MTU mode, as part of a work around for this HW limitation. The SW limitation was not removed for Jericho devices, and thus caused failure to configure MTU property for VSI 1/2/3 in advanced MTU mode. This is fixed.
SDK-96454	1040135	56640_A0 56640_A1 56640_B0	In this release, a check as been added to check if UDF module is not null before UDF data qualifer is created. Upon successful initialization of the UDF module, the UDF data will be created.
SDK-96489	1040923	56860_A0 56860_A1	When defining port_speed_max_x/y, this overrides the device-wide setting port_speed_max. Thus when soc_td2p_port_resource_speed_max_get() is called, and port_speed_max_x and port_speed_max_y are defined, the higher of the two should be returned rather than port_speed_max.
SDK-96492	1037484	AllChips	In field diagnostics, when calling command diag field res 0, if the number of actions for a Field Group is equal to the maximum number of actions per Field Group, the diagnostic fails with error message for actions number out of range. This is now fixed.
SDK-96494	1040388	56860_A0 56860_A1	The maximum number of ports under each module is based on the maximum port ids in each module while using the diag command "egress show"
SDK-96507	1040085	56260_A0 56260_B0	Counter SBUS DMA can get completed even before _soc_counter_pending (which is used to indicate Counter SBUS DMA in progress) is incremented, resulting in temporary inconsistent state. As a fix, incremented the _soc_counter_pending just before calling the SBUS DMA.

Table 62:

Number	CSP	Chips	Release Notes For 6.5.4
SDK-96508		88660_A0 88670_A0	In Field API, in setting of qualifier values, some miss-configuration may occur due to missing break in switch-case. This is fixed.
SDK-96561	1038379	56860_A0 56860_A1	The JIRA added supports for CL37 and SGMII_AN running in portmod for connecting to LP which is either CL37 enabled or SGMII_AN enabled. The current WAR FSM restart count is 2, which means roughly no linkscan interval should be less than 50msec for this WAR to work.
SDK-96587		56260_A0 56260_B0 56261_A0 56261_B0 56262_A0 56262_B0 56263_A0 56263_B0 56265_A0 56265_B0 56266_A0 56266_B0 56267_A0 56267_B0 56268_A0 56268_B0 56460_A0 56460_B0 56461_A0 56461_B0 56462_A0 56462_B0 56463_A0 56463_B0 56465_A0 56465_B0 56466_A0 56466_B0 56467_A0 56467_B0 56468_A0 56468_B0	Fixed the bug to allow reception of extended length packets in 100FX mode
SDK-96602	1031312	88375_A0 88375_B0 88675_A0 88675_B0	bcm_cosq_port_mapping_set API configure only first core. The API was fixed to handle both cores.
SDK-96611	1039054	88670_A0	Extender: Added support for untagged E-TAG packets. A usage example can be found in cint_port_extender_cb_uc.c. Untagged packets are now supported with the following changes. 1. ISEM Lookup performed separately for tagged packets and for untagged packets using the initial VLAN. 2. BCM_EXTENDER_PORT_INITIAL_VLAN flag added: calling bcm_port_extender_add with the flag will add an entry with initial VLAN lookup. 3. BCM_PORT_MATCH_PORT_EXTENDED_PORT_VID_INITIAL_VLAN added to be called with bcm_port_match_add - will add an entry with initial VLAN lookup.
SDK-96636	1034228	88670_A0	statistic interface bug in case of DEDICATED mode: the rate for core1 wasn't configured properly. Fixed.
SDK-96641	1040650	56840_A0	Issue: When multiple qual id are attached to the same packet format, bcm_field_data_qualifier_packet_format_delete was clearing only the UDF offset values related to last qual id, due to this udf offset data related to other qual id's are not getting reset. Fix: Fixed bcm_field_data_qualifier_packet_format_delete to clear UDF offset values to all qual id. Just like stat id, Qual id is also a running running value. Even after performing fp init it will continue from the current count. If Qual id is need to a specific value, use BCM_FIELD_DATA_QUALIFIER_WITH_ID while creating qual id through bcm_field_data_qualifier_create.

Table 62:

Number	CSP	Chips	Release Notes For 6.5.4
SDK-96649	1041203	56850_A0 56850_A1 56850_A2	In the previous releases, the API <code>bcm_l3_host_conflict_get</code> might not return conflicting addresses correctly. In this release, it has been fixed by initializing the variable <code>l3cfg_ing_intf</code> to be INVALID in the function <code>_bcm_td2_ip_key_to_l3cfg()</code> .
SDK-96657	1041665	56260_A0 56260_B0	During BFD endpoint create when port match criteria is <code>BCM_MPLS_PORT_MATCH_LABEL_PORT</code> , use port and label as search key while adding and deleting entry from <code>MPLS_ENTRY</code> table.
SDK-96670	1041851	56850_A0 56850_A1 56850_A2	In previous version, some global variables in <code>flex_ctr_common.c</code> were not defined as arrays, it will cause <code>bcm_attach</code> issue when being used on multi-unit box. Now in this release, this version has been fixed.
SDK-96680	1039423	56450_B0 56450_B1 56455_B1	The link status of hlgig ports was incorrectly returned by linkscan thread during initialization. Due to this the port downsizer settings did not get applied. This has been fixed in this release.
SDK-96709	1041632	88375_A0 88375_B0	In the previous release, UP MEP packet header out of COE port was incorrect. In this release, this issue has been addressed by modifying egress program.
SDK-96719	1041778	56565_A0 56565_B0	During <code>speed_set</code> op, restore port's enable state based on what was read prior to setting speed. This is in line with legacy behaviour, which should be followed by Portmod devices also.
SDK-96760	1042216	88670_A0	Which action cause this issue: custom feature <code>enable_cdr_mechanism.BCM88675=1</code> will enable CDR monitor, soft reset ingress domain, will do DRC soft init causing PHY CDR over threshold, <code>DRCx_PhyCdrAboveTh</code> interrupt will be reported The issue detailed above introduces unnecessary <code>DRCx_PhyCdrAboveTh</code> interrupt, after fixing it, the interrupt at soft reset will disappear.
SDK-96771	1041700	56850_A0 56850_A1	In previous releases, there is a mismatch between API documentation and SDK implementation for API <code>bcm_cosq_stat_set</code> except for device BCM56620, i.e. the API documentation mentioned that "if the given cosq is -1, the value of the port's first CoS queue will be set to the given value; the value of the port's all other CoS queues will be set to zero." , while in SDK implementation, the value of the port's all other CoS queues will be kept as untouched except for device BCM56620, on which the value of the port's all other CoS queues will be set to zero. In this release, the API documentation has been modified to align with that of SDK implementation.
SDK-96807	1031811	88670_A0 88670_B0	In the previous release when deleting a outlif, if the EEDB it belong to return to empty, code will try to reset the mapping relationship between bank and its extension bank, but it always use 0 as the extension bank ID. This operation will led to extension bank 0 being reset whenever user try to delete a PW lif which has extension bank. In this release, when deleting a outlif, it will use the correct extension bank ID to do the corresponding process.
SDK-96835	1041236	88670_A0 88670_B0	DNX packet parsing: OAM-TS header 'data' field was printed incorrectly in case value was bigger than 32 bits. This JIRA fixes the issues by increasing by storing the 34 bits value 'data' value in a 64 bits buffer.
SDK-96840	1042036	88660_A0 88670_A0	In Field when creating statistic using the following APIs: - <code>bcm_petra_field_stat_create</code> - <code>bcm_petra_field_stat_create_id</code> - <code>bcm_petra_field_stat_destroy</code> with <code>WITH_ID</code> flag, configuration fails. it is now fixed.

Table 62:

Number	CSP	Chips	Release Notes For 6.5.4
SDK-96872	1041879	56850_A0 56850_A1 56850_A2	Previously, in ALPM mode, when route pivot insertion failed, there was a chance that hardware data was not synced to software hash state, which could eventually resulted into infinite loop if another route happened to produce the identical hash result later. This has been fixed via adding a proper rollback to hash insert and introducing a infinite loop break as well as error message to alert such issue.
SDK-96880	1040437	88670_A0 88670_B0	Calling <code>bcm_port_loopback_set(unit,port,BCM_PORT_LOOPBACK_PHY)</code> on a disabled port of Falcon interface also brings it enabled. The issue detailed above will affects a port's enabling status being changed unexpectedly. After the fix, ports status keeps no change during loopback setting.
SDK-96885	1040946	88675_A0 88675_B0	In previews release, parallel init may fail at <code>bcm_petra_rx_init()</code> , this release, support parallel init, by protect <code>bcm_rx_pool_setup</code> done and <code>bcm_rx_pool_setup</code> at a mutex lock on the critical section.
SDK-96886		88670_A0	MPLS: When SOC property <code>logical_port_routing_preserve_dscp</code> is enabled (not zero), there is a per LIF control to decide whether to preserve the DSCP fields when routing into a MPLS tunnel, this is done by dedicated uCode. The issue occurs when the packet has a OAM-TS header, in such case, the uCode can not edit the packets correctly. This change supports correct editing for packets with OAM-TS header.
SDK-96892	1042141	88670_A0 88670_B0	Fixed error in add port with <code>BCM_PORT_ADD_USE_PHY_PBMP</code> .
SDK-96895	1042614	56260_A0 56260_B0	Burst settings are not stored during queue flush. Fixed it with Burst settings being saved and restored during queue flush.
SDK-96929	1032205	88670_A0 88670_B0	MPLS: Only 4 termination profiles are supported by Hardware. Allocation of more than 4 profiles was resulting in assertion. This was fix to return an error.
SDK-96933	1043198	88670_A0 88670_B0	MPLS PORT: In case of replacing mpls port entry with same push profile properties as the existing the update will not free allocated memory.
SDK-96953	1041911	56850_A0 56850_A1 56850_A2	In previous releases, there was a race condition which could cause kernel crash while removing KNET module. The issue has been fixed in this release.
SDK-96957	1042474	AllChips	In previous releases, the trunk flag would not be shown after the call to the command "l3 defip show". In this release, this has been addressed by setting the flag <code>BCM_L3_TGID</code> to route information in <code>_bcm_xgs3_defip_set_route_info()</code> .
SDK-96960	1032198	56860_A0 56860_A1	Added support to enable/disable Dyn switchover in TD2+.
SDK-96969	1043399	56340_A0	HIGIG2 HDR MODE config property implemented for HX4/TR3 chipsets on CPU port
SDK-97005		88670_A0	LLFC: low-latency FEC is supported in both KR-FEC and RS-FEC. it can be configurated by calling <code>bcm_port_control_set</code> with flag <code>bcmPortControlLowLatencyLLFCEnable</code> . An invalid parm error returned if we configurate low-latency FEC in RS-FEC mode. low-latency FEC can be created and get in RS-FEC mode correctly after this fix.

Table 62:

Number	CSP	Chips	Release Notes For 6.5.4
SDK-97017	1040641	56840_A0 56841_A3 56841_B0 56842_A0 56843_B0 56844_A0 56845_A2 56845_B0 56846_A0 56846_A1 56847_A1 56849_A1 56850_A0 56850_A1 56850_A2 56851_A0 56851_A1 56851_A2 56851P_A1 56851P_A2 56852_A0 56852_A1 56852_A2 56853_A0 56853_A1 56853_A2 56854_A0 56854_A2 56854_B0 56855_A0 56855_A2 56860_A0 56860_A1 56861_A0 56861_A1 56862_A1 56864_A1 56865_A1 56866_A1 56867_A0 56867_A1 56868_A1	In previous releases, packets might not be transmitted out of DLB Higig trunk. In this release, this has been addressed by programming the table DLB_HGT_GROUP_CONTROL for Y pipe.
SDK-97022	1043588	56850_A0 56850_A1 56850_A2	In previous releases, the unlock sequence in the function <code>_soc_td2_l2_bulk_age()</code> was incorrect, and that might lead to deadlock problem. This issue has been fixed in this release.
SDK-97071	1042385	88670_A0	When full multicast resource is exhausted, <code>ocb_only</code> traffic might be rejected due to wrong default value for Occupied-BDs thresholds (these thresholds aren't configurable by APIs). Thresholds were updated to valid values.
SDK-97109		56840_A0	In previous releases, PPD2 type Higig2 header from CPU port was ruined in higig switching mode. In this release, this has been fixed by adding a soc property <code>higig2_hdr_mode</code> to control CPU port to select higig switching mode.
SDK-97115	1015645	88660_A0 88670_A0	Which action cause this issue: following code in <code>soc_mem_cache_block_move</code> - /* Copy cache vmap entries from old location to new location. We are doing it in 2 copies since the blocks can overlap. */ - <code>sal_memcpy(tmp_cache_block, vmap + src_mem_array_vmap_offset + (src_index_start * entry_dw), block_size_byte); - sal_memcpy(vmap + dest_mem_array_vmap_offset + (dest_index_start * entry_dw), tmp_cache_block, block_size_byte);</code> What does issue look like: this code doesn't make sense, even though there are no actual bug report. What implication of this issue. And how it fixed in this release: Customer Huawei DC request to give an explain for this session of code. For the vmap movement, define function <code>soc_mem_bits_move</code> to move bit stream in vmap.
SDK-97211	1040576	56860_A0 56860_A1	SyncE Clock recovery phy port's configuration takes care of lane swap.
SDK-97274	1041013	56850_A0 56850_A1 56850_A2	In previous releases, if the switch control option L3RouteCache was set, the parity error in L3_DEFIP/ L3_DEFIP_PAIR_128 couldn't be corrected due to incorrect checking in <code>soc_ser_correction</code> . In this release, this issue has been fixed.
SDK-97294	1043641	88670_A0	OAM: If a MEP has both SLM and DM entries and the DM is deleted, the SLM turns into LM. Bug is fixed now.

Table 62:

Number	CSP	Chips	Release Notes For 6.5.4
SDK-97307	1043623	88660_A0 88670_A0	STIF issue fixed - consider also recycle ports when determine which ports will be reported over the statistic interface
SDK-97343	1044840	56044_B0	The issue is passing incrementing <code>queue_id</code> while doing bandwidth set leading to configuring wrong index MMU_MTRO_LO_MEM
SDK-97368	1042516	56260_A0 56450_A0 56460_A0 56460_B0	Reference count of <code>ING_VLAN_TAG_ACTION_PROFILE</code> from <code>VLAN_MAC</code> table was not being considered during warmboot. Same has been fixed.
SDK-97438	1042375	88670_A0	VPWS tagged mode: Double tagged processing was nonfunctional due to wrong key construction of double tagged program. Program selection is fixed as well.
SDK-97555	1045363	56850_A0 56850_A1 56850_A2	In previous releases, the command "LLS" might take up too much CPU time without releasing the CPU, which could lead to some unexpected consequences. This has been addressed by issuing yielding inside "LLS" command.
SDK-97560	1045237	56150_A0	Fix the compiling error caused by adding DEBUG_ASSERTS=FALSE CFGFLAGS +=- DSOC_NO_NAMES CFGFLAGS +=-DSOC_NO_ALIAS CFGFLAGS +=-DSOC_NO_DESC
SDK-97585	1045860	56450_A0 56450_B0 56450_B1	The memory reserved for parent node was not freed while deleting the node from a scheduler tree. In this release this has been fixed.
SDK-97597	1044807	88670_B0 88680_A0 AllChips	In L2CP configuration, the L2 cache entries were managed by a table with fixed size. This produced a wrong limitation to the number of L2 cache entries that can be created using <code>bcm_l2_cache_set</code> . This is fixed.
SDK-97648	1043665	56860_A0 56860_A1	In previous releases, the API <code>bcm_switch_pkt_info_hash_get</code> would return the incorrect values if the index of the <code>L3_ECMP</code> where the ECMP members resided was larger than 4k. This issue has been fixed in this release.
SDK-97658	1045927	56860_A0 56860_A1	In previous releases, the flag <code>BCM_VLAN_GPORT_ADD_EGRESS_L3_ONLY</code> would not be available for the control of egress vlan member on Trident2+ chip when the API <code>bcm_vlan_gport_add</code> was called. In this release, this has been fixed by enabling the previous flag on Trident2+ chip.
SDK-97674	1022162	88670_A0 88670_B0	In L3 IPv6 MC, BCM88670/BCM88470, the field <code>mc_ip6_mask</code> was added to the <code>bcm_ipmc_addr_t</code> struct which is passed to <code>bcm_ipmc_add/find/remove</code> . This field represents the IPv6 Destination mask for LPM searches.
SDK-97683		56860_A0 56860_A1	To add the support for BCM_PORT_PHY_CONTROL_RX_LANE_SQUELCH in TD2P/portmod.
SDK-97701	1040646	88670_A0	When creating a meter, the max EIR and max CIR values can be set to 0xFFFFFFFF (max U32 value) in order to specify 'unlimited' values. In that case, those values should not be convert from pps to kbps (64/125 factor) - in order to keep the 'unlimited' indication.
SDK-97702	1046309	56340_A0	Excluded Field module from <code>tcam_protect_write</code> property. Not allowing to reduce entry for Field module TCAMs during soc attach.

Table 62:

Number	CSP	Chips	Release Notes For 6.5.4
SDK-97748		56860_A0 56860_A1	In previous releases, "portmod_port_egress_queue_drain_get isn't implemented for driver typeint \$\$ = 0 (0x0)" error messages are displayed on console while running LLS script for system ports which include Active/Inactive ports. This has been fixed in this release.
SDK-97807	1046827	56860_A0 56860_A1	In previous releases, when the RIOT was enabled, the API bcm_l2_station_add invoked without BCM_L2_STATION_UNDERLAY might throw BCM_E_RESOURCE even if there were resources, which was incorrect. In this release, this issue has been addressed.
SDK-97813	1044031	88375_A0 88670_A0	OAM: Due to HW limitation, in case of on demand DM, endpoint id 3 lsb cannot be 0.
SDK-97816	1035681	56340_A0 56340M_A0 56850_A0 56850_A1 56850_A2	In previous releases, when customer called API bcm_l2_add_register after using bcm_switch_control_set to enable or disable recording some kinds of events, SDK did not enable or disable L2_MOD_FIFO correctly to record some kinds of events. Now this issue is resolved.
SDK-97820	1044006	88670_A0 88670_B0	OAM: A problem occurs when calling bcm_oam_loopback_add more than twice. The 2nd call will fail. Multiple OAM loopback sessions may be created and deleted correctly after the fix.
SDK-97856	1046068	88670_A0 88670_B0	In MPLS, if P2P tunnel was configured as "wide data entry", wide data wasn't taken affect. it is fixed.
SDK-97941	1047375	56460_A0 56460_B0	L3 Warm boot failed with Internal error upon setting config l3egressmode with field l2 actions(SrcMacNew/DstMacNew....). Fixed by L3 internal flag (BCM_L3_FIELD_ONLY) pushed into scache and recovered for soc_feature_nh_for_ifp_actions also.
SDK-97966	1047148	56860_A0 56860_A1	Fixed an issue where 127G could not turn on CL72 by making sure that DFE is on before CL72 is enabled.
SDK-97971	1045256	88660_A0	In L2CP configuration, when calling bcm_l2_cache_set followed by bcm_l2_cache_delete, without creation of Trap (with bcm_rx_trap_type_create and bcm_rx_trap_set), the Trap configuration of BcmRxTrapL2Cache was also deleted when it shouldn't have. This is fixed.
SDK-97978		88670_A0 88670_B0	MPLS: when logical_port_routing_preserve_dscp is enabled (not zero) and field_class_id_size_0/field_class_id_size_1 is set (not zero), some bytes in the IP payload will be removed if DSCP preserving is enabled on bot InLIF and OutLIF. This causes the IP payload to be a mess. This change fixes the IP payload corruption.

Table 62:

Number	CSP	Chips	Release Notes For 6.5.4
SDK-97979		88670_A0 88670_B0	<p>QOS: When routing into a tunnel, SOC property <code>logical_interface_routing_preserve_dscp</code> controls whether to preserve the DSCP field from being remarked in the forwarding header based on InLIF profile and OutLIF profile. This change extends the SOC property to support additional controls: bit 2: when enabled, DSCP preserving can be enabled on a per out port basis (use API <code>bcm_port_control_set</code> with <code>bcmPortControlTCPriority</code> to control it) bit 1: when enabled, DSCP preserving can be enabled on a per OutLIF basis (use API <code>bcm_port_control_set</code> with <code>bcmPortControlPreserveDscpEgress</code> to control it) bit 0: when enabled, DSCP preserving can be enabled on a per InLIF basis (use API <code>bcm_port_control_set</code> with <code>bcmPortControlPreserveDscpIngress</code> to control it)</p> <p>The following combinations/modes are supported: <code>logical_interface_routing_preserve_dscp=5</code>, DSCP preserve enable based on out port & InLIF profile <code>logical_interface_routing_preserve_dscp=4</code>, DSCP preserve enable based on out port only <code>logical_interface_routing_preserve_dscp=3/1</code>, DSCP preserve enable based on InLIF&OutLIF profile</p>
SDK-98016	1047841	56850_A0 56850_A1 56850_A2	<p>In previous releases, the reference count of ipmc index would not be rolled back if error happened in the API <code>bcm_ipmc_add</code>. In this release, this has been fixed by improving the code for rollback.</p>
SDK-98080	1047644	56340_A0	<p>MPLS entry is updated with <code>BCM_L3_REPLACE</code> flag, MPLS <code>VC_SWAP</code> entry is deleted without checking the current reference count. fixed by adding a check to compare the HW entry with new values. If comparison fails, check the reference count for the vc swap index and based on the reference count, either overwrite the entry or create a new entry.</p>
SDK-98105	1027378	88660_A0	<p>OAM fix: <code>bcm_oam_endpoint_create</code> / <code>bcm_oam_endpoint_destroy</code> APIs sometimes shows false error messages like: <code>src/shared/swstate/sw_state_res_tag_bitmap.c[1447]sw_state_res_tag_bitmap_check unit 0:invalid starting element 0</code> Note that these messages had no effect.</p>
SDK-98121	928456	88375_A0 88670_A0	<p>VT double vlan tag program doesn't reuse CEs for same key, A problem occurs when install VT double vlan tag program. For save the CEs resource, CEs will be reuse for same key. After this modification, the program can be installed successfully when <code>bcm.user</code> start.</p>
SDK-98177	1042004	88660_A0	<p>PON: When <code>custom_feature_pon_tunnel_id_alloc_mode = 0</code>, tm port and pp port mapping will be not valid for <code>bcm_port_pon_tunnel_map_set()</code>. A problem occurs when get pp port with PON upstream traffic. Invalid pp port will be gotten and PON channelized traffic behavior will be not expected. This change is to correct tm port and pp port mapping for <code>bcm_port_pon_tunnel_map_set()</code>, PON channelized traffic behavior will be expected when <code>custom_feature_pon_tunnel_id_alloc_mode = 0</code>.</p>

Table 62:

Number	CSP	Chips	Release Notes For 6.5.4
SDK-98194	1032160	88670_B0	OAM: Fix an issue with <code>bcm_oam_endpoint_action_set</code> on MIPs which prevents packets that should be trapped at the egress from being trapped. This occurs when multiple MIPs with different actions are defined.
SDK-98199	1046326	56850_A0 56850_A1 56850_A2	Counter BMP was not getting recovered properly after warmboot. The issue has been fixed in this release.
SDK-98218	1047931	56860_A0 56860_A1	Modified the <code>port_basic_init()</code> and <code>port_basic_detach()</code> with correct init and detach sequence, which gets called during the flex port operation.
SDK-98258	1043661	56640_A0 56640_A1 56640_B0	L2 packets are marked esm searchable even when ext l2 fwd config is not present. Due to this there is a performance impact as packet is going for external lookup. Fixed it by Marking L2 packets esm searchable only if ext l2 fwd config exists
SDK-98268	1048459	56860_A0 56860_A1	SDK-98268 was caused by 2 bugs in the SDK software implementation. First was a legacy issue where the L0 node reservation for HSP port was being cleared out by delete operation. Second was a flexport issue where flexport sequence was causing lls corruption of unrelated port. Both of these issues have been fixed with this JIRA.
SDK-98277		56850_A0	In previous releases, MiM tunneled traffic from BCB would not be forwarded to Mim peer ports. In this release, this issue has been addressed.
SDK-98291	1044344	88670_B0	ILKN port with mixed TDM and Data channels is now supported.
SDK-98314	1044355	88670_A0 88670_B0	return <code>BCM_E_FULL</code> instead of <code>BCM_E_INTERNAL</code> in case <code>KBP_OUT_OF_UDA</code> error code is caught in api <code>bcm_l3_route_add</code>
SDK-98332	1046838	56850_A0 56850_A1 56850_A2	In previous releases, the reference counter for the mirror slot didn't increase and decrease correctly when two FP entries share one <code>mirror_slot</code> . This issue has been fixed in this release.
SDK-98351	1049312	56860_A0 56860_A1	In previous releases, when an ingress interface was destroyed and recreated with both <code>BCM_L3_INGRESS_WITH_ID</code> and <code>BCM_L3_INGRESS_REPLACE</code> flags, the API <code>bcm_l3_ingress_create</code> would return <code>BCM_E_NOT_FOUND</code> , which was incorrect. This has been fixed in this release.
SDK-98389	1043813	56960_A0 56960_B0 56960_B1	Issue: Redirection is not getting programmed for ports > 128 in Tomahawk. Fix: Redirection pbmp is programmed based on <code>SOC_PBMP_WORD_MAX</code>
SDK-98624	1045576	88375_A0	CRPS issue, in case of <code>format=PACKETS_AND_PACKETS</code> and <code>OUT_LIF</code> counting counters are read from wrong offset. Fixed.
SDK-98683	1044608	56860_A0 56860_A1	In previous releases, the sbusdma operation was timeout in sramscan while doing l2 bulk operation. In this release, this issue has been fixed.
SDK-98775	1028281	AllChips	DNX: Fixed diagnostic "diag pp dblif" for ISID entries.
SDK-98800	1045665	56860_A0 56860_A1	Added code per attached fix to set the <code>MEM_FAIL_INT_CLEARr</code> for the error, which will clear the <code>MEM_FAIL_INT_STAT</code> bit.
SDK-98814	1050838	56260_A0 56260_B0	Added OAM mutex unlock before returning from error condition if it is taken.
SDK-98884		88660_A0 88670_A0	MPLS: when using <code>bcm_l3_egress_create</code> api to create mpls push command (with <code>mpls_action PUSH</code>), delete and replace wasn't handling push profile allocation correctly.

Table 62:

Number	CSP	Chips	Release Notes For 6.5.4
SDK-98951	1050752	56860_A0 56860_A1	There are 8 banks for L3_IPMC table on 56860 chip, but SDK treat it as 4 banks as 56850 chip. The issue has been fixed in this release.
SDK-98993	1049121	88660_A0 88670_A0	Meter Processor - fixing initial excess bucket level. When setting meter to committed mode, the excess bucket is invalid and no yellow credits should be given at all. The issue of wrong initial bucket level cause undesirable leakage of yellow credits. The fix initialize the bucket level with invalid value, which block the yellow credits.
SDK-99056	1034448	88670_A0 88670_B0	When adding a host entry for ROO to LEM, only even native ARP are allowed (HW limitation). The API now returns an error in case the native ARP is odd.
SDK-99150		88670_A0 88670_B0	OAM:diagnostics "diag oam cl" returns wrong OAM1 key and payload when level argument equals: highest mep level configured + 1
SDK-99158	1051251	56860_A0 56860_A1	TD2+ 100G port uses 3 TSC cores. So TSC reset function is called 3 times. First call has valid logical port number(> 0) but rest of two calls have negative logical port number. SOC_BLOCK_TYPE_BLKID_PORT macro didn't assume negative port number which eventually caused out of memory access. valid port number check should be added before the macro is used.
SDK-99183		88750_A0	Setting CLAMC_SET to correct value for speed=0 when AN is enabled. Fixed CRC error when AN is enabled.
SDK-99262	1052534	56765_A0 56765_B0	In this release, code changes have been made for Maverick SKU 56765 to handle package level lane swaps/polarity flips internally in SDK
SDK-99538	1046068	88670_A0 88670_B0	In MPLS, if P2P tunnel was configured as "wide data entry", wide data wasn't taken affect. it is fixed.
SDK-99610	1042036	88660_A0 88670_A0	In Field when creating statistic using the following APIs: - bcm_petra_field_stat_create - bcm_petra_field_stat_create_id - bcm_petra_field_stat_destroy with WITH_ID flag, configuration fails. it is now fixed.
SDK-99637	1033551	88670_A0	HR bandwidth configuration will not be configured below port bandwidth configuration.

Section 10: Unresolved Issues for 6.5.4

The following open Urgent priority issues are unresolved in version 6.5.4 of the SDK.

Table 63:

Number	CSP	Chips	Errata For 6.5.4
SDK-96663	1039542	56450_A0	MPLS:DVP of backup next hop should be set as primary DVP, but not backup DVP
SDK-97426	945696	88670_A0	3-pass solution to throughput measurement for UP-MEP - Jericho and above
SDK-99700	1053833	AllChips	Errors are seen in sesto (82764) during warmboot
SDK-99798	1045231	88470_A0	88470: support OAMP inject OAM packet with FEC ID
SDK-100310	1056564	56224_A0 56224_B0	Raven connected via EB2 cannot support Rx Operations (DMA etc.)
SDK-100370	1057280	88675_A0 88675_B0	[6.5.4-EA] bcm_init failed due to bcm_petra_knet_init
SDK-100400	1052403	88660_A0	SDK6.4.8:bcm_l2_traverse issues - Multiple callbacks and ageing out of MACs while traversing

Section 11: Device and Platform Support

This section has been removed from the release notes. For the full list of Broadcom switch and PHY device support, please reference the file SDK-6.5.x-Device-Matrix.xlsx in the sdk-all-6.5.x/RELDPCS directory in the release package.

Section 12: Compatibility

BROADCOM TASK ENGINES (BTE) FIRMWARE COMPATIBILITY MATRIX

The following table shows new device compatibility between different versions of SDK and Firmware releases For detailed information regarding the SDK and Firmware compatibility by release, please refer to the latest Network Switching SDK Firmware release notes publication (56XX0_88XX0_FW-RNxxx-R).

Table 64: SDK Firmware Compatibility Matrix

	SDK-6.5.4	SDK-6.5.3	SDK-6.4.11	SDK-6.4.10	SDK-6.4.9
4.3.1	BCM56760 BCM56560 BCM56565				
4.3.0		BCM56760 BCM56560 BCM56565			
4.2.7			BCM56230 BCM56260 BCM56460 BCM56445 BCM56450	BCM56260 BCM56460 BCM56445 BCM56450	
4.2.6					BCM56260 BCM56450 BCM56640 BCM88370 BCM88650 BCM88670

BMACSEC SDK COMPATIBILITY MATRIX

Table 65: BMACSEC SDK Compatibility Matrix

<i>Switch SDK Release</i>	<i>BMACSEC SDK Release</i>
6.5.0	4.14
6.5.1	4.14
6.5.2	4.15
6.5.3	4.15
6.5.4	4.15

PHY FIRMWARE COMPATIBILITY MATRIX

The following table Table 68: PHY Firmware Compatibility Matrix identifies changes in PHY firmware for newer PHY devices.

Table 66: PHY Firmware Compatibility Matrix

PHY Core	6.5.1 Firmware Versions	6.5.2 Firmware Versions	6.5.3 Firmware Versions	6.5.4 Firmware Versions
BCM84861	00.00.10	00.00.10	00.00.10	01.00.00
BCM84864	00.00.10	00.00.10	00.00.10	01.00.00
BCM84868	00.00.10	00.00.10	00.00.10	01.00.00
BCM84858	01.02.06	01.02.10	01.03.02	01.03.02
BCM84856	01.02.06	01.02.10	01.02.10	01.03.02
BCM84744	0xD105(A0)/ 0x0128 (B0/C0)	0x0132 (B0/C0)	0x0132 (B0/C0)	0x0132 (B0/C0)
BCM84757	0xD105(A0)/ 0x0128 (B0/C0)	0x0132 (B0/C0)	0x0132 (B0/C0)	0x0132 (B0/C0)
BCM84328	R027	R027	R029	R029
BCM82322/28 B1	0xF	0xF	0xF	0xF
BCM82780	0x22	0x23	0x23	0x23
BCM82752	0x22	0x23	0x23	0x23
BCM82758	0x22	0x23	0x23	0x23
BCM82764	D00F	D011	D013	D017
BCM82790	D00F	D011	D013	D017
BCM82792	D00F	D011	D013	D017
BCM82796	D00F	D011	D013	D017
BCM82381	D011	D011	D013	D013
BCM82209	D011	D011	D013	D013
BCM82073	D011	D011	D013	D013
BCM82864	N/A	N/A	N/A	D00C
BCM82332	N/A	N/A	N/A	D006
Eagle	D10F_03	D10F_05	D10F_0D	D10F_0D
Falcon	D10A_06	D10A_07	D10B_0A	D10B_0C

SDK EXTERNALLY LICENSED SOFTWARE COMPONENTS

SDK contains a number of third-party externally licensed software components. This appendix contains information regarding these components, the license for each of these components, and where these components are used in SDK.

Table 67: EXTERNALLY LICENSED SOFTWARE COMPONENTS

Component	Origin	Location in source tree	License terms and conditions
EDITLINE	/afs/athena.mit.edu/contrib/sipb/src/editline	src/sal/appl/editline	See (EDITLINE License terms and conditions) (page 150)
ED Editor	USENET comp.sources.misc Volume 9, Issue 36	src/appl/diag/edline.c	See (ED Editor License terms and conditions) (page 152)
CINT	http://www.gnu.org/software/bison/	src/appl/cint/cint_parser.[ch]	See (CINT parser license terms and conditions) (page 152)
BIGDIGITS	David Ireland, copyright (c) 2001-11 by D.I. Management Services Pty Limited < www.di-mgt.com.au >	src/soc/dpp/SAND/Utils/sand_u64.c	See (BIGDIGITS license terms and conditions) (page 153)
APIMODE	http://www.gnu.org/software/bison/	src/appl/diag/api/api_grammar.tab.[ch]	See (APIMODE parser license terms and conditions) (page 154)
VxWorks	Wind River Systems, Inc.	systems/vxworks	See (Wind River Systems license terms and conditions) (page 154)

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This package was obtained from the following location, and was modified for purposes of inclusion into the SOC diagnostics shell.

Removed files:

MANIFEST Make.os9 Makefile os9.h sysos9.c testit.c unix.h

Added files:

sysvxworks.c Makefile

Changed functionality:

Merged unix.h into editline.h
M-P and M-N now behave like tcsh.
list_history(count) routine displays history
Commented out completion
Changed rl_complete and rl_list_possib into caller-settable
global functions
Don't ring bell on TAB if word is already complete

Index of /afs/athena.mit.edu/contrib/sipb/src/editline

[] Name Last modified Size Description

SDK 6.5.3 Release Notes

[DIR]	Parent Directory	11-May-99 03:40	-
[]	MANIFEST	07-Jul-97 11:20	1k
[]	Make.os9	07-Jul-97 11:20	1k
[]	Makefile	01-Sep-97 00:34	2k
[]	complete.c	07-Jul-97 11:20	4k
[]	editline.3	07-Jul-97 11:20	5k
[]	editline.c	07-Jul-97 11:20	25k
[]	editline.h	07-Jul-97 11:20	2k
[]	os9.h	07-Jul-97 11:20	1k
[]	sysos9.c	07-Jul-97 11:20	1k
[]	sysunix.c	07-Jul-97 11:20	3k
[]	testit.c	07-Jul-97 11:20	1k
[]	unix.h	07-Jul-97 11:20	1k

\$Revision: 1.7 \$

This is a line-editing library. It can be linked into almost any program to provide command-line editing and recall.

It is call-compatible with the FSF readline library, but it is a fraction of the size (and offers fewer features). It does not use standard I/O. It is distributed under a "C News-like" copyright.

Configuration is done in the Makefile. Type "make testit" to get a small slow shell for testing.

This contains some changes since the posting to comp.sources.misc:

- Bugfix for completion on absolute pathnames.
- Better handling of M-n versus showing raw 8bit chars.
- Better signal handling.
- Now supports termios/termio/sgttyb ioctl's.
- Add M-m command to toggle how 8bit data is displayed.

The following changes, made since the last public release, come from J.G. Vons <vons@cesar.crbcal.sinet.slb.com>:

- History-searching no longer redraws the line wrong
- Added ESC-ESC as synonym for ESC-?
- SIGQUIT (normally ^) now sends a signal, not indicating EOF.
- Fixed some typo's and unclear wording in the manpage.
- Fixed completion when all entries shared a common prefix.
- Fixed some meta-char line-redrawing bugs.

Enjoy,

Rich \$alz
<rsalz@osf.org>

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ed - standard editor
^^

Authors: Brian Beattie, Kees Bot, and others

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TurboC mods and cleanup 8/17/88 RAMontante.
Further information (posting headers, etc.) at end of file.

Modification log:

25Aug92 (W.Metzenthien) Changed malloc() call to calloc() in makebitmap()
to remove bugs under Linux. Changed a few '^' to the correct '~'.
General tidying. Recognize Linux via the __linux__ symbol.
Main change based upon suggestion by Wolfgang Thiel.
07Sep99 Changed large amounts of stuff to simplify --Curt McDowell

CINT PARSER LICENSE TERMS AND CONDITIONS

The C code for the CINT parser was generated by using GNU Bison parser generator from the file cint_grammar.y CINT is an optional diagnostic tool that can be included in your system by adding CINT to the FEATURE_LIST in SDK compilation flags.

Removed files:
None

Added files:
None

Changed functionality:
None

/* A Bison parser, made by GNU Bison 2.4.1. */

/* Skeleton implementation for Bison's Yacc-like parsers in C

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Free Software Foundation, Inc.

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the Free Software Foundation, either version 3 of the License, or
(at your option) any later version.

This program is distributed in the hope that it will be useful,
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GNU General Public License for more details.

You should have received a copy of the GNU General Public License
along with this program. If not, see <<http://www.gnu.org/licenses/>>. */

/* As a special exception, you may create a larger work that contains
part or all of the Bison parser skeleton and distribute that work
under terms of your choice, so long as that work isn't itself a
parser generator using the skeleton or a modified version thereof
as a parser skeleton. Alternatively, if you modify or redistribute
the parser skeleton itself, you may (at your option) remove this
special exception, which will cause the skeleton and the resulting
Bison output files to be licensed under the GNU General Public
License without this special exception.

This special exception was added by the Free Software Foundation in
version 2.2 of Bison. */

/* C LALR(1) parser skeleton written by Richard Stallman, by
simplifying the original so-called "semantic" parser. */

BIGDIGITS LICENSE TERMS AND CONDITIONS

Contains BIGDIGITS multiple-precision arithmetic code originally
written by David Ireland, copyright (c) 2001-11 by D.I. Management
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The C code for the APIMODE parser was generated by using GNU Bison parser generator from the file `api_grammar.y`. APIMODE is an optional diagnostics shell interface that can be included in your system by adding APIMDOE to the `FEATURE_LIST` in SDK compilation flags.

See (CINT parser license terms and conditions) ([page 152](#)) for the Bison licence.

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See `WRS_LICENSE.pdf` contained in each `systems/vxworks` subdirectory.