

# Software Development Kit Release Notes SDK 6.3.2

September 6, 2013

***Broadcom***  
***Network Switching***

## **Section 1: About This Document**

These are the Release Notes for the Broadcom Network Switching Software Development Kit Release 6.3.2.

This document provides a general description of the release and its new features. It also describes the chips supported by the release, BCM/BCMx API additions or changes, resolved issues, and any relevant open issues.

## 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*

<i>Document</i>	<i>Description</i>
56XX-PG632-R	BCM and BCMX API Reference Guide. This manual describes the theory of operations of the API and all existing BCM and BCMX 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-PG816-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: Release Media**

The Software Development Kit is released as a gzipped tar file on the Broadcom Customer Support Portal, <http://support.broadcom.com>. The Network Switching Software Platform Guide, also available on the Customer Support Portal, provides documentation on the various components, the source directory layout, how to build the release for various platforms, and how to customize and port the software to new platforms.

## **Section 4: Support**

Questions, feedback, and/or suggestions should be sent to your Broadcom FAE.

## Section 5: Firmware Compatibility Matrix

The following table shows compatibility between different versions of SDK and Firmware releases.

## BCM56440 FIRMWARE COMPATIBILITY MATRIX

Table 2:

<i>SDK</i>	<i>Firmware 2.0</i>	<i>Firmware 2.1</i>	<i>Firmware 2.2</i>	<i>Firmware 3.0.0</i>	<i>Firmware 3.0.1</i>	<i>Firmware 3.1.0</i>	<i>Firmware 3.2.0</i>	<i>Firmware 3.2.1</i>
SDK-6.2.0	Yes	No	No	No	No	No	No	No
SDK-6.2.1	No	No	Yes	No	No	No	No	No
SDK-6.2.3	No	No	Yes	Yes	Yes	Yes	No	No
SDK-6.2.4	No	No	Yes	Yes	Yes	Yes	No	No
SDK-6.2.5	No	No	Yes	Yes	Yes	Yes	No	No
SDK-6.2.6	No	No	Yes	Yes	Yes	Yes	No	No
SDK-6.2.7	No	No	Yes	Yes	Yes	Yes	No	No
SDK-6.2.8	No	No	Yes	Yes	Yes	Yes	No	No
SDK-6.2.9	No	No	Yes	Yes	Yes	Yes	No	No
SDK-6.3.0	No	No	No	Yes	Yes	No	Yes	No
SDK-6.3.1	No	No	No	No	No	No	Yes	Yes
SDK-6.3.2	No	No	No	No	No	No	Yes	Yes

## BCM56640 FIRMWARE COMPATIBILITY MATRIX

*Table 3:*

<i>SDK</i>	<i>Firmware 3.0.0</i>	<i>Firmware 3.0.1</i>	<i>Firmware 3.1.0</i>	<i>Firmware 3.2.0</i>	<i>Firmware 3.2.1</i>
SDK-6.2.3	No	No	No	No	No
SDK-6.2.4	No	No	No	No	No
SDK-6.2.5	Yes	Yes	Yes	No	No
SDK-6.2.6	No	No	Yes	No	No
SDK-6.2.7	No	No	Yes	No	No
SDK-6.2.8	No	No	Yes	No	No
SDK-6.2.9	No	No	Yes	No	No
SDK-6.3.0	Yes	Yes	No	No	No
SDK-6.3.1	No	No	No	Yes	Yes
SDK-6.3.2	No	No	No	Yes	Yes



## BCM88650 FIRMWARE COMPATIBILITY MATRIX

*Table 4:*

<i>SDK</i>	<i>Firmware 3.0.0</i>	<i>Firmware 3.0.1</i>	<i>Firmware 3.1.0</i>	<i>Firmware 3.2.0</i>	<i>Firmware 3.2.1</i>
SDK-6.2.3	Yes	Yes	No	No	No
SDK-6.2.4	Yes	Yes	No	No	No
SDK-6.2.5	Yes	Yes	No	No	No
SDK-6.2.6	No	No	Yes	No	No
SDK-6.2.7	No	No	Yes	No	No
SDK-6.2.8	No	No	Yes	No	No
SDK-6.2.9	No	No	Yes	No	No
SDK-6.3.0	Yes	Yes	No	Yes	No
SDK-6.3.1	No	No	No	Yes	Yes
SDK-6.3.2	No	No	No	Yes	Yes

## BCM56850 FIRMWARE COMPATIBILITY MATRIX

*Table 5:*

<i>SDK</i>	<i>Firmware 3.1.0</i>	<i>Firmware 3.2.0</i>	<i>Firmware 3.2.1</i>
SDK-6.2.6	Yes	No	No
SDK-6.2.7	Yes	No	No
SDK-6.2.8	No	Yes	No
SDK-6.2.9	No	Yes	No
SDK-6.3.0	No	Yes	No
SDK-6.3.1	No	Yes	Yes
SDK-6.3.2	No	Yes	Yes

## BCM88030 FIRMWARE COMPATIBILITY MATRIX

*Table 6:*

<i>SDK</i>	<i>Firmware 3.2.0</i>	<i>Firmware 3.2.1</i>
SDK-6.2.8	Yes	No
SDK-6.2.9	Yes	No
SDK-6.3.1	Yes	Yes
SDK-6.3.2	Yes	Yes

## BMACSEC SDK COMPATIBILITY MATRIX

*Table 7:*

<i>Switch SDK Release</i>	<i>BMACSEC SDK Release</i>
5.10.2	3.1
5.10.3	3.2
6.0.1	3.3
5.10.4	3.4
6.0.2	3.4
6.2.0	3.5
5.11.0	3.6
6.2.1	3.7
6.2.2	3.8
6.2.3	3.8
5.11.1	3.9
6.2.4	3.9
6.2.5	3.10
6.2.6	3.11
6.2.7	3.12
6.2.8	3.13
6.2.9	3.14
6.3.0	4.0
6.3.1	4.1
6.3.2	4.2

## **Section 6: New in this Release**

This section describes feature and device support that is introduced in this release.

# SUMMARY OF NEW FEATURES

## TRIDENT2 (BCM56850)

- Soft Error Recovery coverage has been enhanced resulting in better FIT Enhancements to handle SER errors during WB. Starting in 6.3.2 SDK handles Soft Errors even when it has started the Warmboot sequence providing very good coverage for SER events. Added SER support for ALPM tables L3 overlay tables are also have Soft Error recovery now. Coverage for second pipeline
- LAG failover support has been added.

## ARAD

- Trill Adjacency lookup moved from LLR(TCAM) to FLP allowing additional lookups on the TCAM for Non-TILL flows
- 1+1 protection for VPLS on ARAD
- ARM Diagnostics: Supports ARM based diagnostic capability which will be driven by the uKernel Sbusdma Schan access DMA test Pkt DMA test These would be part of the diagnostic APP which would be started similar to other apps today.
- Support for MPLS Entropy & ELI implementation
- Add support to enable/disable rx/tx of fabric links. New APIs have been added and documented in the API guide
- ELK: diagnostic for master-key and master-result fields. Allows decoding the master-key and master-result for customer that want to use their own device instead of the KBP
- Allows configuration for drop & continue (2 pass) of Mac-in-Mac frames like Trill and Overlay IP (NVGRE, VXLAN)
- Enhancements to VLAN port create: Separation between Ingress and Egress functionality Allow several Ingress match criteria for one Ingress AC (not using VLAN compression) Support for Transparent LAN Service (TLS)
- Support to terminate 01-00-5E-90-00-00 for MPLS-TP implementation per RFC
- Support for Virtual MAC for PON networks. The system replaces source MAC addresses of users with VMAC addresses , which is a network-wide unique MAC address generated by the system according to certain rules. One can think that VMAC ensures network-wide uniqueness of MAC addresses and protects the carrier network from MAC spoofing. It can improve network security Added support to switch packets in and out of the same interface for PON applications.

## HELIX4

- Support for Stacking has been added allowing customers to grow the port count using multiple devices.
- Soft error recovery infrastructure has been added. This is a work in progress. Coverage for the TCAMS is not available yet.

## KATANA2

- Legacy Features in Katana are available as GA. Legacy feature include (not limited to) L2, L3, VLAN, STP, Trunk, Legacy MMU, QoS, Metering, Flex Stats, IPMC etc.
- Features preview like Channelization over Ethernet, LinkPHY, Legacy Metering, Protection (linear, ring) switching, OAM including UpMEP, VFI and service based scheduling have been hardened further.
- Support for multiple MPLS split horizon groups has been added

## ARAD+



- SDK support for Arad+ counter engine improvements
- Arad could only support limiting number of MAC addresses on per VLAN. Arad+ supports this on per VLAN-PORT (In-LIF) combination. SDK support for this HW functionality is now available. Not all In-LIFs can support this capability.
- Support to identify the Logical Link ID to the PON MAC by adding additional information (like a 3rd tag) to the frame.
- Local to Global Copy Unique Data (CUD) translations.
- Enhanced Scheduler Compensation: A mechanism exists per VOQ (Unicast / Fabric-MC) to compensate this size difference: the header size compensation. However, differences can exist for different packets in the same queue (different system-headers, CRC checksums).
- The scheduler compensation feature is more accurate by enabling setting on packet size difference per packet via Field Processor action.
- Enhanced QoS : "Free dynamic MAX queue size": the Tail drop Max-Queue-size is set according to the free resources. E.g., a Queue will start to drop if its tail drop size is over the free resource size. This dynamic configuration is more adaptive to many scenarios, e.g. when other queues start to increase their size, the free resource decreases and queues with large size start to drop. This mechanism is better than a static Queue size threshold.
- Ability to add Traffic-Class in the statistics report from Arad+ to FPGA
- Ability to configure links as .repeater links. The repeater mode is pretty basic. It sets statically the destination link according to the source link, without looking inside the switched cell.

### CALADAN-3

- Out of Band Flow Control supported over Interlaken
- Support for fast path learning of MAC addresses with tools interface support.
- OAM Continuity Check Messages for Up and Down MEPS are supported
- MDE Model supports multiple RCE searches in a program.
- Supports multiple filter sets in a single group
- Port LED status is now correctly reflected for Linkup, Speed, and Duplex COL etc.
- Unified Mode now supported for accessing TAPS memory
- Breakpoints in Caladan3 now support break ability during the step function
- Caladan3 Taps access support improvements.
- Port usage shows per port capacity and number of segments being used
- The MDE model supports TMU Common Database support

### HURRICANE-2

- EEE support has been added
- Timesync feature needed by 802.11as for Hurricane-2 (56150) platform has been added

### TRIUMPH-3

- SER enhancements Support for SER on L2 MAC limit OAM table RMEP / MA\_STATE SER correction handling

### PHY-84794

- Support for Mode 2 & 4

### WARMBOOT: SUPPORTED SOFTWARE UPGRADES.

Following software upgrades are supported in this release.

*Table 8: Supported Software upgrades*

<i>Software upgrade</i>	<i>Supported</i>
6.3.2 to 6.3.2	Yes
6.3.1 to 6.3.2	Yes
6.2.9 to 6.3.2	Yes



### THINGS TO NOTE

This section lists items that require special attention.

#### BCM<sub>X</sub> API DEPRECATION

BCM<sub>X</sub> APIs have not been enhanced or supported for newer devices since SDK-5.10.2. Legacy BCM<sub>X</sub> APIs, supported in SDK-5.10.2 will be deprecated starting with SDK-6.3.5 release. Customers are encouraged to transition from BCM<sub>X</sub> APIs to their equivalent BCM APIs.

Please contact Broadcom application support for any help in the transition.

#### WARMBOOT: KNOWN ISSUES

Customers can upgrade from SDK-6.2.9 to SDK-6.3.2 except when Flexible Statistics are used in conjunction with VFP. Customers need to patch the fix for SDK-43743 in order to upgrade to SDK-6.3.2 only when using Flexible Statistics with VFP rules.

Please contact your Broadcom FAE for any help.

#### BCM8483X PHY FIRMWARE

Status of F/W version 1.66 released with SDK is preview. Check [support.broadcom.com](http://support.broadcom.com) for latest available validated firmware for the BCM8483X family devices. Consult F/W release notes for known issues.

#### BCM8484X PHY FIRMWARE

Status of F/W version 1.06 released with SDK is preview. Check [support.broadcom.com](http://support.broadcom.com) for latest available validated firmware for the BCM8484X family devices. Consult F/W release notes for known issues.

#### SPN\_PHY\_PORT\_PRIMARY\_AND\_OFFSET

Setting of the config property `spn_PHY_PORT_PRIMARY_AND_OFFSET` is absolutely required for the following PHYs. BCM54880E BCM54680E BCM54682E BCM54685E BCM54640E BCM542XX

#### BCM56850 HANDLING OF MODULE\_64PORTS

Setting `module_64ports=1` config variable indicates that one module ID covers 64 ports. Please, note that while on the earlier devices this effectively meant choosing a single-modid mode for the device due to the fact that the total number of ports was less than 64, on devices that have more than 64 ports, such as BCM56850 (what about 56840?) it means choosing dual-modid mode instead. Please, always use `bcm_stk_modid_count()` to get the actual number of modids required by a given device. Also, note that the API `bcm_port_gport_get()` is the only correct way to translate the physical port number into a `MODPORT_GPORT` and it works correctly regardless of the number of modids assigned to the device

#### OCCASIONAL STACK ATTACH FAILURES

There may be occasional stack attach failures due to the stack master attaching a slave device before slave programming is complete. Use the `stk.soc` config variable `stktopomasterdelay` to increase the length of time the stack master will wait before attaching a slave.



### UNBALANCED MUTEX WARNING

A potential issue with unbalanced mutexes has been uncovered in previous releases of SDK and special code has been added to automatically detect that condition. While we believe that we've identified all these issues in our regression testing, there is a slight probability that you can see the following message on the console:

WARNING: Mutex "mutex\_name" has not been unlocked before being destroyed.

Current owner is "thread\_name" .

Should you see such a warning, please, copy it verbatim and contact Broadcom Support.

### BCM PORT CONTROLS

A set of BCM port controls `bcm_port_control_t` have changed their enumeration values between SDK-6.3.0 and SDK-6.3.1.

The implication is that RPC between systems running SDK-6.3.0 on one and SDK-6.3.1 on another will not work properly for BCM port controls.

## NEW DEVICES AND SYSTEMS

For any given SDK release, support for certain devices may be provided in Preview or Supported status. Devices in preview status are provided to allow early integration of the customer's application with the SDK APIs that support that device. This software has not been tested on the physical target device and should not be expected to fully function.

Devices in "Supported" status 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.

**Table 9: Supported Switch Devices**

<b>Family</b>	<b>Devices</b>	<b>Description</b>
BCM56150	BCM56152 A0	24-port GbE plus 2-port GbE and 2-port 1GbE/13GbE uplinks Managed Switch, integrated CPU and 16 copper PHYs
BCM56150	BCM56150 A0	24x1GE + 4x1 GE/10G with PHY, 24x1GE + 2x1G/10G + 2x13G with PHY
BCM56150	BCM56151 A0	24x1GbE + 4x1G/10G without PHY
BCM56150	BCM53394 A0	10-port GbE Multilayer Embedded Switch with 4-port 10 GbE uplinks, integrated CPU (without PHY)
BCM56150	BCM53342 A0	8-port GbE Multilayer WebSmart Switch with Integrated CPU and Copper PHYs
BCM56150	BCM53343 A0	16-port GbE Multilayer WebSmart Switch with Integrated CPU and Copper PHYs
BCM56150	BCM53344 A0	24x1GE + 4x1GE with PHY, 24x1GE + 2x1GE + 2x13G with PHY
BCM56230	BCM56230 B1	12-Port GbE Multilayer Switch
BCM56231 B1	6-Port GbE Multilayer Switch	
BCM56340	BCM56040 A0	1xF.QSGMII + 3xF.HG[42] + 1GE
BCM56340	BCM56042	12x2.5GE/1GE + 12x2.5GE/1GE + 1GE
BCM56340	BCM56344	10xF.QSGMII + 3xFlex[4x10] + 1GE
BCM56640	BCM56045 B0	3xF.40GE + 3xF.HG[42] + 1GE
BCM56640	BCM56046 B0	3xF.40GE + 2xF.HG[42] + 1GE
BCM56340	BCM56340 A0	12xF.QSGMII + Flex[4x10] + 2xHG[21] + 1GE, 12xF.QSGMII + 4xSGMII + 2xXFI + 2xHGd[21] + 1GE
BCM56340	BCM56342 A0	7xF.QSGMII + Flex[4x10] + 2xHG[21] + 1GE
BCM56450	BCM56450 A0	24-port GbE Multilayer Switch with 4-port 10 GbE uplinks, stacking, integrated CPU and Traffic Manager
BCM56450	BCM56455	2 x 20GE (G.INT) + 2 x HG13
BCM56450	BCM56456	1 x XAUI + 8 x GE
BCM56544	BCM56544 B0	10xF.XAUI + 4xHG[21] + 1GE, 10xF.XAUI + 4xXFI, 10xF.XAUI + 2xHG[42], 4xXAUI + 12xXFI + 1GE Multilayer Ethernet Switch
BCM56545	BCM56545 B0	48xGE + 2xHG[42] + 2xHG[21] + 1GE, 48xGE + 4xXFI + 2xHG[42] + 1GE, 48xGE + 8xXFI + 1GE, 24xGE + 4xXAUI + 2xXFI + 2xHG[12] + 1GE Multilayer Ethernet Switch
BCM56340	BCM56547 A0	10xF.QSGMII + 3xF.HG[42] + 1GE, 12xF.QSGMII + 2xF.HG[42] + 1GE, 12xF.QSGMII + F.HG[42] + 2xHG[42] + 1GE
BCM56850	BCM56830 A1	960Gbps Ethernet Switch
BCM56850	BCM56750PA2	1.28Tbps I/O, 960Gbps Core Ethernet Switch Fabric
BCM56850	BCM56750PA1	1.28Tbps I/O, 960Gbps Core Ethernet Switch Fabric
BCM56850	BCM56751P A1	1.28Tbps I/O, 960Gbps Core Ethernet Switch Fabric
BCM56850	BCM56830 A1	960Gbps Ethernet Switch
BCM56850	BCM56830 A2	960Gbps Ethernet Switch
BCM56851	BCM56751 A2	1.28Tbps I/O, 960Gbps Core Ethernet Switch Fabric
BCM53022	BCM58622 A0	5-Port Gigabit Ethernet Managed Switch integrated with dual core ARM Cortex-A9 processor and macsec cores



**Table 9: Supported Switch Devices**

Family	Devices	Description
BCM88650	BCM88650 B1	200 GBps DNX Traffic Manager and Packet Processor
BCM88030	BCM88030 A0	Scalable Switching 100Gbps Full-Duplex Programmable Packet Processor
88660	88660 A0	DNX 200G Flexible Packet Processor with Integrated Traffic Management
BCM56340	BCM56041	Ranger device, meant for embedded connectivity supports 1Ge (port 49), 2 X GE (iPROC), Flex 4x10G, 3 X 4 X 10G
BCM53347	BCM53347	

**Table 10: Preview Switch Devices**

Family	Devices	Description
BCM56150	BCM53347 A0	24-port GbE Multilayer WebSmart Switch with 4-port 10 GbE uplinks, integrated CPU (without PHY)
BCM56150	BCM53393 A0	14-port GbE Multilayer Embedded Switch with integrated CPU (without PHY)
BCM56850	BCM56852 A2	100x10G, 960Gbps Multilayer Switch

**Table 11: PHYs**

Device	Driver Family	Description
BCM54290_A0	54280	Octal 1000/100/10BASE-T Gigabit Ethernet Transceiver (1588 feature is Preview)
BCM54292_A0	54280	Octal 1000/100/10BASE-T Gigabit Ethernet Transceiver (1588 feature is Preview)
BCM54294_A0	54280	Octal 1000/100/10BASE-T Gigabit Ethernet Transceiver (1588 feature is Preview)
BCM84793_A0	84793	100GbE/OTN 4x25/28G VSR28 to 10x10/11G CAUI Gearbox PHY. Firmware version 0xD407 (Preview - Mode-1 and Mode-3)
BCM84780	BCM84780	10Gbe Quad SFI-XFI PHY with IEEE 1588 (1588 feature is Preview)
BCM84784	BCM84784	Dual 40Gbe/Octal 10Gbe QSFP+XLPI-to-XLAUI PHY (1588 feature is Preview)

**Table 12: Preview PHYS**

Device	Driver Family	Description
BCM84758	BCM84758	10Gbe Octal SFI-XFI PHY with IEEE 1588
BCM82348	BCM82348	The 82348 is the 28 nm version of the 82348 (LGA 62.6) which is low-power, low-latency PHY integrating retimer and equalizer functions supporting 40-Gigabit Ethernet (GbE) and 10GbE applications This device is in preview status- (reference board has been brought-up and some traffic is passing)

**Table 13: Reference Designs**

Name	Support Status	Description
BCM988030K_02	Carrier Ethernet 48-port GE Reference Design with BCM88030 (Caladan3) device	
BCM988030KC_02	Carrier Ethernet 100G Reference Design with BCM88030 (Caladan3) device	
BCM956340K		
BCM956450K		

*Table 13: Reference Designs*

<i>Name</i>	<i>Support Status</i>	<i>Description</i>
BCM956150K		
BCM956151K		
BCM953344R		

## SUMMARY OF BCM AND BCMX API CHANGES

This section summarizes BCM and BCMX API changes in this release. Complete documentation is available in the Network Switching Software Programmer's Guide [\*\*56XX-PG632-R]. (See section 2 earlier in this document for availability).

Unless otherwise mentioned, any newly defined or changed BCM API will have equivalent changes in the BCMX APIs.

### BIDIRECTIONAL FORWARDING DETECTION

New BFD event types have been added.

*Table 14: BFD Event Types*

<i>Event type</i>	<i>Description</i>
bcmBFDEventEndpointTimeout	A timeout has been detected on an endpoint.
bcmBFDEventEndpointTimein	A timein has been detected on an endpoint.
bcmBFDEventEndpointTimeoutEarly	An almost timeout has been detected on an endpoint. This event enables the user to move traffic from the Primary paths to the Protection paths before official LOC.
bcmBFDEventEndpointFlagsChange	A flags change has been detected.

Following BFD event types have been removed.

### CLASS OF SERVICE CONFIGURATION

New CosQ delay tolerance level flags have been added.

New CosQ control type has been added.

*Table 15: CoSQ Control Type Values*

<i>Value</i>	<i>Description</i>	<i>Arg value</i>
bcmCosqControlBandwidthBu rstMaxEmptyQueue	Sets the maximum amount of credits that an empty queue can get.	
bcmCosqControlBandwidthBu rstMaxFlowControlledQueue	Sets the maximum amount of credits for a flow controlled queue. <ul style="list-style-type: none"> <li>bcmCosqSchedEmptyTxQueue : Empty status from Tx Queue.</li> <li>bcmCosqSchedEmptyTxqShaper : Empty status form TxQ shaper.</li> </ul>	
bcmCosqControlMulticastPr iorityIngressScheduling	Multicast packets traffic class mapping	high-low strict priority.
bcmCosqControlEgressUCQue ueSharedLimitBytes	Egress UC Shared Queue limit setting.	number of bytes
bcmCosqControlEgressUCQue ueMinLimitBytes	Egress UC Min Queue limits setting.	number of bytes
bcmCosqControlEgressUCSha redDynamicEnable	Enable Dynamic threshold limit for Egress UC Queue	value: 1 Enable, 0: Disable.
bcmCosqControlEgressUCQue ueLimitEnable	Enable Discards based on configured threshold for Egress UC Queue.	value: 1 Enable, 0: Disable.
bcmCosqControlEgressMCQue ueSharedLimitBytes	Egress MC Shared Queue limit setting.	number of bytes

**Table 15: CoSQ Control Type Values**

<b>Value</b>	<b>Description</b>	<b>Arg value</b>
bcmCosqControlEgressMCQueueMinLimitBytes	Egress MC Min Queue limit setting.	number of bytes
bcmCosqControlEgressMCSharedDynamicEnable	Enable Dynamic threshold limit for Egress MC Queue	value: 1 Enable, 0: Disable.
bcmCosqControlEgressMCQueueLimitEnable	Enable Discards based on configured threshold for Egress MC Queue.	value: 1 Enable, 0: Disable.
bcmCosqControlIngressPortPGSharedLimitBytes	Ingress Port PG Shared limit setting.	number of bytes
bcmCosqControlIngressPortPGMinLimitBytes	Ingress Port PG Min limit setting.	number of bytes
bcmCosqControlIngressPortPGSharedDynamicEnable	Enable Dynamic threshold limit for Ingress Port PG.	value: 1 Enable, 0: Disable.
bcmCosqControlIngressPortPoolMaxLimitBytes	Ingress Port SP Max limit setting.	number of bytes
bcmCosqControlIngressPortPoolMinLimitBytes	Ingress Port SP Min limit setting.	number of bytes

New CosQ Gport statistic types have been added.

**Table 16: gport Statistics**

<b>Name</b>	<b>Description</b>
bcmCosqGportNotGreenAcceptedPkts	Not Green/DPI-3, accepted packet count.
bcmCosqGportNotGreenAcceptedBytes	Not Green/DPI-3, accepted byte count.
bcmCosqGportNotGreenDroppedPkts	Not Green/DPI-3 dropped pkts.
bcmCosqGportNotGreenDroppedBytes	Not Green/DPI-3 dropped bytes.

New CosQ Gport flags have been added.

**Table 17: BCM CoSQ gport flags**

<b>Flags</b>
BCM_COSQ_GPORT_SCHEDULER_CLASS_WFQ_MODE_INDEPENDENT_PROPORTIONAL

Description for the following fields of the bcm\_cosq\_delay\_tolerance\_t have been updated.

**Table 18: BCM COSQ DELAY TOLERANCE Configuration**

<b>Parameter / Description</b>
credit_request_hungry_off_to_slow_thresh - When (QsizeCrBal) > off_to_slow_thresh, and CRS==OFF, CRS may be changed to SLOW. Resolution in bytes. Range: (-114688) - (114688).
credit_request_hungry_off_to_normal_thresh - When (QsizeCrBal) > off_to_normal_thresh, and CRS==OFF, CRS may be changed to NORM. Resolution in bytes. Range: (-114688) - (114688).
credit_request_hungry_slow_to_normal_thresh - When (QsizeCrBal) > slow_to_normal_thresh, and CRS==SLOW, CRS may be changed to NORM. Resolution in bytes. Range: (-114688) - (114688).

**Table 18: BCM COSQ DELAY TOLERANCE Configuration**

Parameter / Description
credit_request_hungry_normal_to_slow_thresh - When (QsizeCrBal) < normal_to_slow_th, and CRS==NORM, CRS may be changed to SLOW. Resolution in bytes. Range: (-114688) - (114688).
credit_request_satisfied_backoff_enter_thresh - When the Credit Balance is bigger than the threshold, the device sends OFF message to the scheduler. This is to prevent credit accumulation from a certain threshold. Resolution in bytes. Range: 0 - 122880.
credit_request_satisfied_backoff_exit_thresh - Hysteresis value for to the Backoff Enter. Resolution in bytes. Range: 0 - 122880.
credit_request_satisfied_backlog_enter_thresh - When the Credit Balance is bigger Backlog Enter threshold bytes than the queue size, the device sends OFF message to the scheduler. This threshold acts as Slow/Norm to off threshold. Resolution in bytes. Range: 0 - 122880.
credit_request_satisfied_backlog_exit_thresh - Hysteresis value for to the Backlog Enter. Resolution in bytes. Range: 0 - 122880.
credit_request_satisfied_empty_queue_thresh - When Qsize==0 and CrBal >= satisfied_empty_q_th, the CRS is changed to OFF. This threshold is a specific case of PETRA_ITM_CR_REQUEST_CR_BALANCE_TH. backlog_enter_th threshold. Resolution in bytes. Range: 0 - 122880.
credit_request_satisfied_empty_queue_max_balance_thresh - Max Empty Queue Credit Balance in bytes. This value is the maximum credits an empty queue can accumulate. Resolution in bytes. Range: 0 - 122880.

New Field has been added to bcm\_cosq\_delay\_tolerance\_t structure.

**Table 19: BCM COSQ DELAY TOLERANCE Configuration**

Parameter / Description
flags - Flags. The only current supported flag is BCM_COSQ_DELAY_TOLERANCE_REMOTE_CREDIT_VALUE, which specifies for 88660 that the credit value used is not that of the local device; but the other supported credit value used by remote devices.

New CosQ statistic types have been added.

**Table 20: bcm\_cosq\_stat\_t**

Name	Description
bcmCosqStatIeee8021CnCpTransmittedCnms	QCN CNM Transmit packet count.

New Field has been added to bcm\_cosq\_gport\_discard\_t structure.

**Table 21: BCM CoSQ GPORT Discard Configuration**

Parameter	Description
refresh_time	Actual average refresh time

New Field has been added to bcm\_cosq\_gport\_size\_t structure.



**Table 22: size configuration**

Parameter	Description
size_alpha_max	for specific devices only: queue size will not exceed (free size) * 2^size_alpha_max

New CosQ Egress Multicast Service Pool Enums have been added.

**Table 23: multicast service pools id's**

bcmCosqEgressMulticastServicePool0	Service pool 0 identifier
bcmCosqEgressMulticastServicePool1	Service pool 1 identifier

## FABRIC

New Fabric Control types have been added.

**Table 24: Fabric Type Values**

Value	Description	Arg Value
bcmFabricRCIIncrementValue	RCI bucket increased by this value when a RCI indication is received.	
bcmFabricGciLeakyBucketEnable	Enable/Disable GCI leaky bucket mechanism.	
bcmFabricGciBackoffEnable	Enable/Disable GCI random-backoff mechanism.	
bcmFabricControlCellsEnable	Enable/Disable fabric control cells	
bcmFabricWatchdogQueueEnable	Queue Watchdog Functionality Enable/Disable setting	<ul style="list-style-type: none"> <li>BCM_FABRIC_WATCHDOG_QUEUE_ENABLE_COMMON_STATUS_MESSAGE - credit watchdog will be enabled in the common message time mode.</li> </ul>

**Table 25: bcm\_fabric\_link\_threshold\_type\_t**

enum	Description
bcmFabricLinkGciLeakyBucket1Congestion	When leaky bucket 1 exceeds the congestion threshold, the corresponding queue is considered congested.
bcmFabricLinkGciLeakyBucket2Congestion	When leaky bucket 2 exceeds the congestion threshold, the corresponding queue is considered congested.
bcmFabricLinkGciLeakyBucket3Congestion	When leaky bucket 3 exceeds the congestion threshold, the corresponding queue is considered congested.
bcmFabricLinkGciLeakyBucket4Congestion	When leaky bucket 4 exceeds the congestion threshold, the corresponding queue is considered congested.
bcmFabricLinkGciLeakyBucket1Full	GCI leaky bucket 1 highest value.
bcmFabricLinkGciLeakyBucket2Full	GCI leaky bucket 2 highest value.
bcmFabricLinkGciLeakyBucket3Full	GCI leaky bucket 3 highest value.
bcmFabricLinkGciLeakyBucket4Full	GCI leaky bucket 4 highest value.



New Fabric TDM editing flag has been added.

*Table 26: TDM editing Flags*

<i>Flag</i>	<i>Description</i>
BCM_FABRIC_TDM_EDITING_NON_SYMMETRIC_CRC	asymmetric CRC, add/remove CRC based on BCM_FABRIC_TDM_EDITING_INGRESS/EGRESS flags

## FCMAP

Support added for configuring tx fill word

```
typedef enum bcm_fcmap_8g_fw_on_active_e {  
    BCM_FCMAP_8G_FW_ON_ACTIVE_ARBFF = 0,  
    BCM_FCMAP_8G_FW_ON_ACTIVE_IDLE = 1  
} bcm_fcmap_8g_fw_on_active_t;
```

## FIBER CHANNEL OVER ETHERNET

### FIBER CHANNEL OVER ETHERNET APIS

New APIs have been added.

---

#### bcm\_fcoe\_intf\_config\_t\_init

Initialize bcm\_fcoe\_intf\_config\_t structure.

#### Syntax

```
#include <bcm/fcoe.h>  
void bcm_fcoe_intf_config_t_init(bcm_fcoe_intf_config_t *intf);
```

#### Parameters

intf (OUT) Interface configuration information

#### Description

Initialize bcm\_fcoe\_intf\_config\_t structure to default values. This function should be used to initialize the structure prior to filling it out and passing it to any BCM API function.

#### Returns

Nothing

---

#### bcm\_fcoe\_vsan\_vft\_t\_init

Initialize bcm\_fcoe\_vsan\_vft\_t structure.

### Syntax

```
#include <bcm/fcoe.h>
void bcm_fcoe_vsan_vft_t_init(bcm_fcoe_vsan_vft_t *vsan_vft);
```

### Parameters

vsan\_vft (OUT) VSAN VFT information

### Description

Initialize `bcm_fcoe_vsan_vft_t` structure to default values. This function should be used to initialize the structure prior to filling it out and passing it to any BCM API function.

### Returns

Nothing

---

## **bcm\_fcoe\_vsan\_translate\_key\_config\_t\_init**

Initialize `bcm_fcoe_vsan_translate_key_config_t` structure.

### Syntax

```
#include <bcm/fcoe.h>
void
bcm_fcoe_vsan_translate_key_config_t_init(bcm_fcoe_vsan_translate_key_config_t
*key_config);
```

### Parameters

key\_config (OUT) VSAN translate key configuration information

### Description

Initialize `bcm_fcoe_vsan_translate_key_config_t` structure to default values. This function should be used to initialize the structure prior to filling it out and passing it to any BCM API function.

### Returns

Nothing

---

## **bcm\_fcoe\_vsan\_action\_set\_t\_init**

Initialize `bcm_fcoe_vsan_action_set_t` structure.

### Syntax

```
#include <bcm/fcoe.h>
void bcm_fcoe_vsan_action_set_t_init(bcm_fcoe_vsan_action_set_t
*action_set);
```

## Parameters

`action_set` (OUT) VSAN action set information

## Description

Initialize `bcm_fcoe_vsan_action_set_t` structure to default values. This function should be used to initialize the structure prior to filling it out and passing it to any BCM API function.

## Returns

Nothing

## FIELD PROCESSOR

New fields have been added to the `bcm_field_data_qualifier_t` structure.

```
/* DATA qualifier object, used for creation of custom data qualifiers. */
typedef struct bcm_field_data_qualifier_s {
    ...
    bcm_field_stage_t stage; /* Data qualifier stage (e.g. when
based on predefined qualifiers) */
} bcm_field_data_qualifier_t;
```

New packet application type identifier have been added.

**Table 27: Field Application Type**

Type	Purpose
<code>bcmFieldAppTypeVplsGreIp</code>	VPLS tunnel over GREoIP tunnel
<code>bcmFieldAppTypeFglTrillMcast</code>	Fine-grained labeling Trill Multicast forwarding

New Field Actions have been added.

**Table 28: Field Actions**

Action	Description	param0	param1
<code>bcmFieldActionHashSelect0</code>	Select hash buckets for hash field 0.	hash bucket selection bitmap	n/a
<code>bcmFieldActionHashSelect1</code>	select hash buckets for hash field 1.	hash bucket selection bitmap	n/a
<code>bcmFieldActionTrunkResilientHashCancel</code>	Cancels the resilient hash on Trunk.	n/a	n/a
<code>bcmFieldActionHgTrunkResilientHashCancel</code>	Cancels the resilient hash on HiGig Trunk.	n/a	n/a
<code>bcmFieldActionEcmpResilientHashCancel</code>	Cancels the resilient hash on Ecmp.	n/a	n/a

New Field Control type has been added.



**Table 29: Field Control Values**

<i>Name</i>	<i>Purpose</i>
bcmFieldControlRedirectNextHopExcludeSrcPort	Enables removal of system ingress port from port-bitmap for packets that have been Redirected to a Next-hop index by the IFP

New Field Group config flags have been added.

**Table 30: Group config flags**

<i>Group config flag</i>	<i>Purpose</i>
BCM_FIELD_GROUP_CREATE_SPARSE_ENTRY_PRIORITIES	If set, the TCAM shuffle algorithm assumes only sparse priorities assigned to the Field group entries

New fields have been added to the `bcm_field_group_config_t` structure.

```

/*
 * Group configuration structure. Used to create a field group with
 * specific attributes.
 */
typedef struct bcm_field_group_config_s {
    ...
    bcm_field_presel_set_t preselset; /* Group preselector set */
} bcm_field_group_config_t;

```

New Field data offset base was added to `bcm_field_data_offset_base_t`.

```

typedef enum bcm_field_data_offset_base_e {
    ...
    bcmFieldDataOffsetBaseTrillPayload, /* Offset provided from the
beginning of Trill Payload */
} bcm_field_data_offset_base_t;

```

## IP MULTICAST

New IPMC Iflags have been added.

**Table 31: IPMC Flags**

<i>Name</i>	<i>Purpose</i>
BCM_IPMC_RPF_FAIL_DROP	Drop RPF failed IPMC packets
BCM_IPMC_RPF_FAIL_TOCPU	Copy RPF failed IPMC packets to CPU

## LAYER 2 ADDRESS MANAGEMENT

New fields have been added to the `bcm_l2_addr_t` structure.

```

typedef struct bcm_l2_addr_s {

```



```

    ...
    int encap_id; /* out logical interface*/
} bcm_l2_addr_t;

```

New L2 Traverse flags have been added.

**Table 32: L2 Replace Flags**

Flags	Description
BCM_L2_TRAVERSE_IGNORE_SRC_HIT	Match L2 entries ignoring source MAC address hit indication
BCM_L2_TRAVERSE_MATCH_NATIVE	Match L2 entries with given local address indication

New fields have been added to the `bcm_l2_gport_forward_info_t` structure.

```

typedef struct bcm_l2_gport_forward_info_s {
    ...
    int encap_id;
} bcm_l2_gport_forward_info_t;

```

## LAYER 2 ADDRESS MANAGEMENT APIS

### **bcm\_l2\_gport\_forward\_info\_get**

Get the forwarding information for the given gport.

#### **Syntax**

```

#include <bcm/l2.h>
int bcm_l2_gport_forward_info_get(int unit,int gport_id,
                                   bcm_l2_gport_forward_info_t *forward_info);

extern void bcm_l2_gport_forward_info_t_init(
    bcm_l2_gport_forward_info_t *forward_info);

typedef struct bcm_l2_gport_forward_info_s {
    int phy_gport;
    int encap_id;
} bcm_l2_gport_forward_info_t;

```

#### **Parameters**

<code>unit</code>	(IN) BCM device number
<code>gport_id</code>	(IN) The required gport
<code>forward_info</code>	(OUT) The struct to be filled

#### **Description**

L2 gport is pair of system-gport and `encap_id`. This API will fill `bcm_l2_gport_forward_info_t` struct with the gport's `phy_gport` and `encap_id`. You can init the struct using `bcm_l2_gport_forward_info_t_init`.



## Returns

BCM\_E\_XXX

## LAYER 3 MANAGEMENT

New L3 Multicast Flags have been added.

*Table 33: BCM Layer3 Egress Multicast Flags*

<i>Name</i>	<i>Purpose</i>
BCM_L3_MULTICAST_L2_DEST_PRESERVE	Disable MAC-DA replacement for L2 multicast.
BCM_L3_MULTICAST_L2_SRC_PRESERVE	Disable MAC-SA replacement for L2 multicast.
BCM_L3_MULTICAST_L2_VLAN_PRESERVE	Disable VLAN replacement for L2 multicast.
BCM_L3_MULTICAST_TTL_PRESERVE	Disable TTL decrement for L3 multicast.
BCM_L3_MULTICAST_DEST_PRESERVE	Disable MAC-DA replacement for L3 multicast.
BCM_L3_MULTICAST_SRC_PRESERVE	Disable MAC-SA replacement for L3 multicast.
BCM_L3_MULTICAST_VLAN_PRESERVE	Disable VLAN replacement for L3 multicast.
BCM_L3_MULTICAST_L3_DROP	Drop L3 multicast.
BCM_L3_MULTICAST_L2_DROP	Drop L2 multicast.

New fields have been added to the `bcm_l2_gport_forward_info_t` structure.

```

/*
 * L3 Egress Structure
 * Description of an L3 forwarding destination.
 */
typedef struct bcm_l3_egress_s {
    ...
    uint32 multicast_flags; /* BCM_L3_MULTICAST_XXX flags */
} bcm_l3_egress_t;

```

New L3 Tunnel flag has been added.

*Table 34: L3 Tunneling Types*

<i>Name</i>	<i>Purpose</i>
BCM_TUNNEL_TERM_UDP_CHECKSUM_ENABLE	Drop pkts with non-zero UDP checksum.

New Fields have been added to `bcm_tunnel_terminator_s` structure.

```

typedef struct bcm_tunnel_terminator_s {
    ...
    uint32 multicast_flags; /* VXLAN Multicast trigger flags */
    ...
} bcm_tunnel_terminator_t;

```

## MAC-IN-MAC MANAGEMENT

New fields have been added to the `bcm_mim_port_t` structure.

```
typedef struct bcm_mim_port_s {
    ...
    bcm_switch_network_group_t network_group_id; /* Switch split horizon
network group ID this MiM port belongs to */
} bcm_mim_port_t;
```

## MIRRORING

New Mirror destination flags have been added.

New fields have been added to the `bcm_mirror_destination_t` structure.

```
struct bcm_mirror_destination_s {
    ...
    uint8 int_pri; /* Internal Priority */
} bcm_mirror_destination_t;
```

## MPLS MANAGEMENT

New fields have been added to the `bcm_mpls_port_t` structure.

```
typedef struct bcm_mpls_port_s {
    ...
    bcm_switch_network_group_t network_group_id; /* Switch split horizon
network group ID this MPLS port belongs to */
} bcm_mpls_port_t;
```

## MULTICAST CONFIGURATION

New Multicast controls have been added.

*Table 35: Multicast Type Values*

<i>cw bcmMulticastRemapGroup</i>	<i>Remap Multicast group</i>	<i>Multicast group</i>
<code>bcmMulticastControlCount</code>	Number of enumeration constants	Not to be used

## NETWORK INTERFACE VIRTUALIZATION MANAGEMENT

New NIV port flags have been added

New fields have been added to the `bcm_niv_port_t` structure.

```
typedef struct bcm_niv_port_s {
    ...
    uint16 match_service_tpid; /* Ingress SD-tag TPID. */
}
```





```
uint32 if_class; /* Interface class ID. */
} bcm_niv_port_t;
```

New structure for NIV egress objects has been introduced.

```
typedef struct bcm_niv_egress_s {
    uint32 flags; /* BCM_NIV_EGRESS_xxx */
    bcm_gport_t port; /* Physical port / trunk */
    uint16 virtual_interface_id; /* Virtual Interface Identifier */
    bcm_vlan_t match_vlan; /* Optional outer VLAN ID to match */
    bcm_if_t egress_if; /* Egress object ID */
    uint16 service_tpid; /* Egress SD-tag TPID */
    bcm_vlan_t service_vlan; /* Egress SD-tag VLAN ID */
    uint8 service_pri; /* Egress SD-tag default Priority */
    uint8 service_cfi; /* Egress SD-tag default CFI */
    int service_qos_map_id; /* Egress SD-tag Priority and CFI mapping
                             profile ID */
} bcm_niv_egress_t;
```

New NIV egress object flags have been added.

**Table 36: NIV egress object flags**

Name	Purpose
BCM_NIV_EGRESS_MULTICAST	Create a multicast NIV egress object
BCM_NIV_EGRESS_SERVICE_VLAN_ADD	Add SD-tag
BCM_NIV_EGRESS_SERVICE_VLAN_DELETE	Delete SD-tag
BCM_NIV_EGRESS_SERVICE_VLAN_REPLACE	Replace SD-tag VLAN ID
BCM_NIV_EGRESS_SERVICE_PRI_REPLACE	Replace SD-tag Priority
BCM_NIV_EGRESS_SERVICE_TPID_REPLACE	Replace SD-tag TPID

## bcm\_niv\_egress\_t\_init

Initialize the NIV egress object structure.

### Syntax

```
#include <bcm/niv.h>
void bcm_niv_egress_t_init(bcm_niv_egress_t *niv_egress);
```

### Parameters

niv\_egress (IN/OUT) Pointer to the struct to be initialized

### Description

Initialize the NIV egress object structure.

### Returns

None.

## NIV EGRESS APIS

New NIV Egress APIs have been added.

---

### bcm\_niv\_egress\_add

Create a NIV egress object and add it to a NIV port.

#### Syntax

```
#include <bcm/niv.h>
int bcm_niv_egress_add(int unit, bcm_gport_t niv_port, bcm_niv_egress_t
*niv_egress);
```

#### Parameters

unit	(IN) BCM device number
niv_port	(IN) NIV GPORT ID
niv_egress	(IN/OUT) NIV egress object, the egress_if field is an output.

#### Description

Create a NIV egress object and add it to a NIV port. The NIV egress object's ID is returned in the `niv_egress` structure's `egress_if` field.

### Returns

```
BCM_E_XXX          ----- end bcm_niv_egress_add api -----
```

---

### bcm\_niv\_egress\_delete

Delete a NIV egress object from a NIV port and destroy it.

#### Syntax

```
#include <bcm/niv.h>
int bcm_niv_egress_delete(int unit, bcm_gport_t niv_port,
bcm_niv_egress_t *niv_egress);
```

### Parameters

<code>unit</code>	(IN) BCM device number
<code>niv_port</code>	(IN) NIV GPORT ID
<code>niv_egress</code>	(IN) NIV egress object

### Description

Delete a NIV egress object from a NIV port. The NIV egress object is then destroyed. The NIV egress object is identified by the `niv_egress` structure's `port`, `virtual_interface_id`, and optional `match_vlan` fields, not by the `egress_if` field.

### Returns

```
BCM_E_XXX                ----- end bcm_niv_egress_delete api -----
```

---

## **bcm\_niv\_egress\_delete\_all**

Delete all NIV egress objects associated with a NIV port.

### Syntax

```
#include <bcm/niv.h>
int bcm_niv_egress_delete_all(int unit, bcm_gport_t niv_port);
```

### Parameters

<code>unit</code>	(IN) BCM device number
<code>niv_port</code>	(IN) NIV GPORT ID

### Description

Delete all NIV egress objects associated with a NIV port. These NIV egress objects are then destroyed.

### Returns

```
BCM_E_XXX                ----- end bcm_niv_egress_delete_all api -----
```

---

## **bcm\_niv\_egress\_set**

Create a set of NIV egress objects and add them to a NIV port.

### Syntax

```
#include <bcm/niv.h>
int bcm_niv_egress_set(int unit, bcm_gport_t niv_port, int array_size,
                      bcm_niv_egress_t *niv_egress_array);
```

### Parameters

unit	(IN) BCM device number
niv_port	(IN) NIV GPORT ID
array_size	(IN) Number of NIV egress objects in niv_egress_array
niv_egress_array	(IN/OUT) Array of NIV egress objects

### Description

Delete existing NIV egress objects associated with the NIV port. Then, create a set of new NIV egress objects and add them to the NIV port. In the `niv_egress_array`, the ID of each NIV egress object is returned in the `egress_if` field.

### Returns

```
BCM_E_XXX          ----- end bcm_niv_egress_set api -----
```

---

### bcm\_niv\_egress\_get

Get NIV egress objects associated with a NIV port.

### Syntax

```
#include <bcm/niv.h>
int bcm_niv_egress_get(int unit, bcm_gport_t niv_port, int array_size,
                      bcm_niv_egress_t *niv_egress_array, int *count);
```

### Parameters

unit	(IN) BCM device number
niv_port	(IN) NIV GPORT ID
array_size	(IN) Number of NIV egress objects allocated in niv_egress_array
niv_egress_array	(OUT) Array of NIV egress objects
count	(OUT) Number of NIV egress objects returned

### Description

Retrieve NIV egress objects associated with a NIV port. If `array_size = 0` and `niv_egress_array = NULL`, the number of NIV egress objects associated with the NIV port is returned in the parameter `count`.

### Returns

```
BCM_E_XXX          ----- end bcm_niv_egress_get api -----
```

## POLICER CONFIGURATION

New Policer flags have been added.

**Table 37: Policer Flags**

<i>Name</i>	<i>Purpose</i>
BCM_POLICER_REPLACE_SHARED	Replace the profile rather than the configuration.

New fields have been added to the `bcm_policer_config_t` structure.

```
typedef struct bcm_policer_config_s {
    ...
    uint32 entropy_id.          /* If set, indicate the configuration group
the policer belongs to */
} bcm_policer_config_t;
```

## PORT CONFIGURATION

New PORT ability support have been added.

New Port class type have been added.

**Table 38: bcm\_port\_class\_t**

<i>bcmPortClassForwardIngress</i>	<i>Class for ingress forwarding</i>
bcmPortClassForwardEgress	Class for egress forwarding

New Port controls have been added

**Table 39: bcm\_port\_control\_t**

<i>bcmPortControlMcastGroupRemap</i>	<i>Enable IPMC group index remapping</i>
bcmPortControlLocalSwitching	to enable Local route switching on a port.
bcmPortControlFecErrorDetectEnable	Enables marking of failed error correction on the cells
bcmPortControlLowLatencyLLFCEnable	Enables an improvement in latency on the expense of bandwidth
bcmPortControlErspanEnable	Enable/Disable ERSPAN mirroring
bcmPortControlPFCXOffTime	Priority Flow Control XOff timer value (valid values: 0-0xffff, unit: 512 bit-times).

New Port PHY power control flags have been added.

**Table 40: Power Control Values**

<i>Flag</i>	<i>Meaning</i>
BCM_PORT_PHY_CONTROL_POWER_AUTO_FULL	Enable auto power down mode with high power setting
BCM_PORT_PHY_CONTROL_POWER_AUTO_LOW	Enable auto power down mode with low power setting

New Port PHY control flags have been added.

**Table 41: bcm\_port\_phy\_control\_t**

<b>BCM_PORT_PHY_CONTROL_PARALLEL_DETECTION_10G</b>	<b>Enable/Disable 10G Parallel detect (1-enable/0-disable)</b>
BCM_PORT_PHY_CONTROL_HG2_BCM_CODEC_ENA_BLE	Enable/Disable hg2 codec (1-enable/0-disable)

New Port PHY timesync capability flags have been added.

New Port PHY Timesync flags have been added.

**Table 42: Port Phy timesync flags**

<b>BCM_PORT_PHY_TIMESYNC_CAPTURE_TIMESTAMP_TX_SYNC</b>	<b>Capture timestamp of Tx Sync packets</b>
BCM_PORT_PHY_TIMESYNC_CAPTURE_TIMESTAMP_P_TX_DELAY_REQ	Capture timestamp of Tx Delay Request packets
BCM_PORT_PHY_TIMESYNC_CAPTURE_TIMESTAMP_P_TX_PDELAY_REQ	Capture timestamp of Tx PDelay Request packets
BCM_PORT_PHY_TIMESYNC_CAPTURE_TIMESTAMP_P_TX_PDELAY_RESP	Capture timestamp of Tx PDelay Response packets
BCM_PORT_PHY_TIMESYNC_CAPTURE_TIMESTAMP_P_RX_SYNC	Capture timestamp of Rx Sync packets
BCM_PORT_PHY_TIMESYNC_CAPTURE_TIMESTAMP_P_RX_DELAY_REQ	Capture timestamp of Rx Delay Request packets
BCM_PORT_PHY_TIMESYNC_CAPTURE_TIMESTAMP_P_RX_PDELAY_REQ	Capture timestamp of Rx PDelay Request packets
BCM_PORT_PHY_TIMESYNC_CAPTURE_TIMESTAMP_P_RX_PDELAY_RESP	Capture timestamp of Rx PDelay Response packets

New Port PHY Timesync interrupt flags have been added.

**Table 43: Port Phy timesync interrupt flags**

<b>BCM_PORT_PHY_TIMESYNC_TIMESTAMP_INTERRUPT_0</b>	<b>Packet timestamp interrupt from port 0 of the PHY chip</b>
BCM_PORT_PHY_TIMESYNC_TIMESTAMP_INTERRUPT_1	Packet timestamp interrupt from port 1 of the PHY chip
BCM_PORT_PHY_TIMESYNC_TIMESTAMP_INTERRUPT_2	Packet timestamp interrupt from port 2 of the PHY chip
BCM_PORT_PHY_TIMESYNC_TIMESTAMP_INTERRUPT_3	Packet timestamp interrupt from port 3 of the PHY chip
BCM_PORT_PHY_TIMESYNC_TIMESTAMP_INTERRUPT_4	Packet timestamp interrupt from port 4 of the PHY chip
BCM_PORT_PHY_TIMESYNC_TIMESTAMP_INTERRUPT_5	Packet timestamp interrupt from port 5 of the PHY chip
BCM_PORT_PHY_TIMESYNC_TIMESTAMP_INTERRUPT_6	Packet timestamp interrupt from port 6 of the PHY chip
BCM_PORT_PHY_TIMESYNC_TIMESTAMP_INTERRUPT_7	Packet timestamp interrupt from port 7 of the PHY chip



New Field have been added to `bcm_port_phy_timesync_config_t` structure.

**Table 44: `bcm_port_phy_timesync_config_t` `bcmx_port_phy_timesync_config_t`**

Field	BCM Type	BCMx Type	Description
capabilities	uint32	uint32	Flags BCM_PORT_PHY_TIMESYNC_CAP_*

## PROXY SERVICES

New structure for Proxy serve has been introduced.

```
typedef struct bcm_proxy_server_s {
    uint32 flags; /* BCM_PROXY_SERVER_XXX. */
    bcm_gport_t server_gport; /* Proxy GPORT identifier. */
    bcm_proxy_mode_t mode; /* Selected proxy server operational mode. */
} bcm_proxy_server_t;
```

New Proxy Server flags have been introduced.

**Table 45: BCM Proxy Server Flags**

Name	Purpose
BCM_PROXY_SERVER_MASK_PORT	Do not require the server destination port to match
BCM_PROXY_SERVER_KEEP_PRIORITY	Retain the original packet priority as provided via the Higi2 header
BCM_PROXY_SERVER_KEEP_VID	Retain the original packet VID as provided via the Higi2 header

## PROXY SERVER APIS

New Proxy Server APIs have been added.

### `bcm_proxy_server_t_init`

Initializes a `bcm_proxy_server_t` structure.

#### Syntax

```
#include <bcm/proxy.h>
void bcm_proxy_server_t_init(bcm_proxy_server_t *proxy_server);
```

#### Parameters

`proxy_server` (IN/OUT) Pointer to proxy server structure to initialize

#### Description

Initializes a proxy server information structure to default values. This function should be used to initialize any proxy server information structure prior to filling it out and passing it to an API function. This ensures that subsequent API releases may add new structure members to the `bcm_proxy_server_t` structure, and `bcm_proxy_server_t_init` will initialize the new members to correct default values.

### Returns

Nothing

---

### bcm\_proxy\_server\_port\_set

Configure per-ingress port proxy server behavior.

### Syntax

```
#include <bcm/proxy.h>
int bcm_proxy_server_port_set(int unit, bcm_gport_t local_ingress_port,
                             bcm_proxy_server_t *proxy_server, int enable);
```

### Parameters

unit	(IN) Unit number.
local_ingress_port	(IN) Incoming Higig stack port
proxy_server	(IN) Proxy server configuration
enable	(IN) Enable proxy server on selected Higig stack port

### Description

This API enables various kinds of lookups on XGS3 devices on behalf of remote legacy or XGS3 devices on a per-ingress port basis. The local ingress port is expected to be a Higig stack port. The `server_gport` in the `proxy_server` structure is the target `BCM_GPORT_PROXY` (modid,port) destination which indicates that hybrid proxy lookup is required.

If the `enable` parameter is `TRUE`, `proxy_server` mode must be one of the valid selections of `BCM_PROXY_MODE_HIGIG` or `BCM_PROXY_MODE_HYBRID`. If the `enable` parameter is `FALSE`, the `proxy_server` mode is ignored.

### Returns

BCM\_E\_XXX

---

### bcm\_proxy\_server\_port\_get

Retrieve per-ingress port proxy server configuration

### Syntax

```
#include <bcm/proxy.h>
int bcm_proxy_server_port_get(int unit, bcm_gport_t local_ingress_port,
                             bcm_proxy_server_t *proxy_server, int *enable);
```



## Parameters

unit (IN) Unit number.  
 local\_ingress\_port( Incoming Higig stack port  
 IN)  
 proxy\_server (OUT) Proxy server configuration  
 enable (OUT) Enable proxy server on selected Higig stack port

## Description

This API retrieves the current proxy server configuration on a given Higig stack port, if any.

## Returns

BCM\_E\_XXX

## HIGIG PROXY

Proxy Customer Unicast and Multicast traffic may ingress on BCM56850 device and may need to be forwarded to Higig Proxy device. Using `bcm_proxy_egress_create/delete/get` APIs, customer may create Proxy-nexthop to redirect the packets to Higig Proxy device.

- The `flags` field may take on values which are the logical OR of one or more of the following flags.

**Table 46: BCM Layer3 Ingress Interface Flags**

Name	Purpose
BCM_PROXY_WITH_ID	ID is provided
BCM_PROXY_REPLACE	Replace existing entry
BCM_PROXY_L3_FORCE	HG L3 Override
BCM_PROXY_LEARN_DISABLE	HG Learn Override to set Do not Learn bit
BCM_PROXY_RSVD_VLAN_ADD	HG Packet with System Reserved Vlan
BCM_PROXY_PACKET_MODIFY	Permit packet modification on Stack port
BCM_PROXY_PACKET_DROP	Drop HG Proxy packet

```
typedef struct bcm_proxy_egress_s {
    uint32      flags;      /* Proxy flags */
    bcm_gport_t gport;      /* Proxy Gport */
} bcm_proxy_egress_t;
```

- `bcm_proxy_egress_t` contains information used when setting or retrieving information on higig proxy forwarding paths. It is important always to initialize an Proxy egress structure using the `bcm_proxy_egress_t_init` (page 42) function prior to passing it to an API. The `gport` parameter contains the Module-ID and Port-ID of the Proxy device.
- The following defines user-supplied callback functions for proxy egress object traversal API.

```
typedef int (*bcm_proxy_egress_traverse_cb)(int unit, bcm_if_t
proxy_if_if,
                                             bcm_proxy_egress_t *info,
                                             void *user_data);
```



## HIGIG PROXY APIS

---

### bcm\_proxy\_egress\_t\_init

Initialize a bcm\_proxy\_egress\_t structure.

#### Syntax

```
#include <bcm/l3.h>
void bcm_proxy_egress_t_init(bcm_proxy_egress_t *proxy_egress);
```

#### Parameters

egr (OUT) Egress object entry information

#### Description

Initializes proxy egress object structure to default values.

#### Returns

Nothing

---

### bcm\_proxy\_egress\_create

Create Proxy Egress forwarding object.

#### Syntax

```
#include <bcm/l3.h>
int bcm_proxy_egress_create(int unit, uint32 flags, bcm_proxy_egress_t
*proxy_egress,
                        bcm_if_t *proxy_if_id);
```

#### Parameters

unit	(IN) BCM device number.
flags	(IN) BCM_PROXY_REPLACE: replace existing. BCM_PROXY_WITH_ID: ID argument is given.
proxy_egr	(IN/OUT) Egress forwarding destination.
proxy_if_id	(IN/OUT) L3 interface ID pointing to Proxy Egress object. This is an IN argument if either BCM_PROXY_REPLACE or BCM_PROXY_WITH_ID are given in flags.

#### Description

Create Proxy Egress forwarding path object.

### Returns

BCM\_E\_XXX

---

### bcm\_proxy\_egress\_destroy

Destroy Proxy Egress forwarding object.

### Syntax

```
#include <bcm/l3.h>
int bcm_proxy_egress_destroy(int unit, bcm_if_t proxy_if_id);
```

### Parameters

unit	(IN) BCM device number.
intf	(IN) L3 interface ID pointing to Proxy Egress object.

### Description

Destroy Proxy Egress forwarding path.

### Returns

BCM\_E\_XXX

---

### bcm\_proxy\_egress\_get

Get Proxy Egress forwarding object.

### Syntax

```
#include <bcm/l3.h>
int bcm_proxy_egress_get(int unit, bcm_if_t proxy_if_id, bcm_proxy_egress_t
*proxy_egress);
```

### Parameters

unit	(IN) BCM device number.
proxy_if_id	(IN) L3 interface ID pointing to Proxy Egress object.
proxy_egress	(OUT) Proxy Egress forwarding path properties.

### Description

Get Proxy Egress forwarding path properties.

### Returns

BCM\_E\_XXX

---

### bcm\_proxy\_egress\_traverse

Traverse through proxy egress object table and run callback at each valid entry.

### Syntax

```
#include <bcm/l3.h>
int bcm_proxy_egress_traverse(int unit,
                             bcm_proxy_egress_traverse_cb trav_fn, void *user_data);
```

### Parameters

unit	(IN) BCM device number
trav_fn	(IN) Callback function
user_data	(IN) User data to be passed to callback function

### Description

Traverse through Proxy egress table and runs the user callback function at each valid entry, passing back the information for that Proxy egress object entry.

### Returns

BCM\_E\_XXX

## QUALITY OF SERVICE

### QUALITY OF SERVICE APIS

New Quality of Service APIs have been added.

---

### bcm\_qos\_port\_map\_type\_get

Retrieves the configured QoS mapping matching a type for the given GPORT.

### Syntax

```
#include <bcm/qos.h>
int
    bcm_qos_port_map_type_get(
        int unit,
        bcm_gport_t port,
        uint32 flags,
```

```
int *map_id);
```

## Parameters

unit	(IN) Unit number.
port	(IN) GPORT identifier
flags	(IN) Flags to specify the type
map_id	(OUT) Ingress QoS map ID

## Description

Given some profile type, the configured QoS mapping for that GPORT matching the type will be returned. Useful when given gport has more than one QOS profile that can be associated to.

## Returns

BCM\_E\_XXX

## PACKET RX/TX

New RX control flags have been added.

New RX trap code has been added.

*Table 47: Rx Trap Codes.*

Trap Code	Description
bcmRxTrapMimMyBmacMulticastContinue	Terminated BMAC header indicates Multicast. Continue on both BMAC header and CMAC header

## NEW PACKET RX APIS

---

### bcm\_rx\_reasons\_t\_init

Initialize a BCM RX reasons structure.

### Syntax

```
#include <bcm/pkt.h>
void bcm_rx_reasons_t_init(bcm_rx_reasons_t *reasons);
```

### Parameters

reasons	- (INOUT) Pointer to the structure to be initialized.
---------	---

### Description

Initializes a BCM RX reasons structure to default values. This function should be used to initialize any BCM RX reasons structure prior to filling it out and passing it to an API function. This ensures that the structure is initialized to correct default values if subsequent API releases add new members to the structure.

## Returns

None.

## MULTI-DEVICE STACK CONTROL

*Table 48: bcm\_stk\_modid\_config\_t*

<i>flags</i>	<i>bitwised uint32 flags</i>
modid	int identifier

## STACKING APIS

New Stacking APIs have been added.

### **bcm\_stk\_modid\_config\_set** **bcm\_stk\_modid\_config\_get**

Sets/Gets the module id.

### Syntax

```
#include <bcm/stack.h>
int
bcm_stk_modid_config_set(
    int unit,
    bcm_stk_modid_config_t *modid);

bcm_stk_modid_config_get(
    int unit,
    bcm_stk_modid_config_t *modid);
```

### Parameters

unit	(IN) Unit number.
modid	(for "_set", IN) Module identifier
modid	(for "_get", INOUT) Module identifier

### Description

Sets/Gets the module id of the local device.

### Returns

BCM\_E\_XXX

## STATISTICS

New Ingress and Egress Statistics Accounting objects have been added.

```
/* Ingress and Egress Statistics Accounting Objects */
```

```
typedef enum bcm_stat_object_e {
    ...
    bcmStatObjectIngNiv = 30,          /* Ingress Niv Object */
    bcmStatObjectEgrNiv = 31          /* Egress Niv Object */
} bcm_stat_object_t;
```

New fcoe management stats have been added.

```
typedef enum bcm_stat_val_e {

    /*** RFC 1213 ***/

    snmpFcmPortClass3RxFrames,          /* RFC 4044 */
    snmpFcmPortClass3TxFrames,          /* RFC 4044 */
    snmpFcmPortClass3Discards,          /* RFC 4044 */
    snmpFcmPortClass2RxFrames,          /* RFC 4044 */
    snmpFcmPortClass2TxFrames,          /* RFC 4044 */
    snmpFcmPortClass2Discards,          /* RFC 4044 */
    snmpFcmPortInvalidCRCs,             /* RFC 4044 */
    snmpFcmPortDelimiterErrors,         /* RFC 4044 */
    snmpValCount
} bcm_stat_val_t;
```

## SWITCH CONTROL

New Switch Controls have been added.

*Table 49: Switch Type Values*

Value	Description	Arg Value
bcmSwitchMplsPWControlWordToCpu	Enable MPLS packets with PWACH control word, to be copied to CPU	TRUE/FALSE
bcmSwitchHashUseL2GreTunnelGreKey0	Use GRE Key in Hash A buckets. 1 is enable 0 (default) is disable.	0-1
bcmSwitchHashUseL2GreTunnelGreKey1	Use GRE Key in Hash B buckets. 1 is enable 0 (default) is disable.	0-1
bcmSwitchHashL2GrePayloadSelect0	Use inner L2 or L3 for L2Gre hashing, Hash A (defaults to 0 - inner L2).	0-1
bcmSwitchHashL2GrePayloadSelect1	Use inner L2 or L3 for L2Gre hashing, Hash B (defaults to 0 - inner L2).	0-1
bcmSwitchHashL2GreNetworkPortPayloadDisable0	Disable using the l2gre payload for hashing, for L2Gre pkts on ntwrk ports (default 1 - disable).	0-1
bcmSwitchHashL2GreNetworkPortPayloadDisable1	Disable using the l2gre payload for hashing, for L2Gre pkts on ntwrk ports (default 1 - disable).	0-1
bcmSwitchSystemReservedVlan	Configure the System Reserved VLAN	VLAN ID 0-0xffff to enable, BCM_VLAN_INVALID to disable.
bcmSwitchProxySrcKnockout	If set, remove the source port during a proxy lookup operation of a packet which originated on this device's module id	TRUE/FALSE



**Table 49: Switch Type Values**

<i>Value</i>	<i>Description</i>	<i>Arg Value</i>
bcmSwitchNetworkGroupDepth	Number of split horizon network groups supported by the device. Only the Get API is valid.	0 to maximum number of split horizon network groups
bcmSwitchUnknownSubportPktTagToCpu	Send packet to CPU on following error conditions a. missing subport tag in packet b. unknown subport tag in packet (lookup miss).	TRUE/FALSE
bcmSwitchL3RoutedLearn	Enable L2 learning for routed packets.	Supported Module types <ul style="list-style-type: none"> <li>• BCM_SWITCH_CONTROL_L3_LEARN_NONE - Disable L2 learning for all routed packets.</li> <li>• BCM_SWITCH_CONTROL_L3_LEARN_IPV4_UC - Enable L2 learning for IPv4 Unicast packets.</li> <li>• BCM_SWITCH_CONTROL_L3_LEARN_IPV4_MC - Enable L2 learning for IPv4 Multicast packets.</li> <li>• BCM_SWITCH_CONTROL_L3_LEARN_IPV6_UC - Enable L2 learning for IPv6 Unicast packets.</li> <li>• BCM_SWITCH_CONTROL_L3_LEARN_IPV6_MC - Enable L2 learning for IPv6 Multicast packets.</li> <li>• BCM_SWITCH_CONTROL_L3_LEARN_MPLS - Enable L2 learning for MPLS packets.</li> <li>• BCM_SWITCH_CONTROL_L3_LEARN_ALL - Enable L2 learning for all routed packets.</li> </ul>

New Switch Critical Events have been added.

**Table 50: Switch Critical Events**

<i>Event</i>	<i>Description</i>
BCM_SWITCH_EVENT_MODID_CHANGE	The MODID was changed
BCM_SWITCH_EVENT_DOS_ATTACK	DOS attack was detected
BCM_SWITCH_EVENT_EPON_ALARM	Alarm was generated from EPON chips

## SWITCH NETWORK GROUP CONFIG APIS

New Switch Network Group Config APIs have been added.

### bcm\_switch\_network\_group\_config\_t\_init

Initialize a bcm\_switch\_network\_group\_config\_t structure.



### Syntax

```
#include <bcm/switch.h>
void
bcm_switch_network_group_config_t_init(bcm_switch_network_group_config_t
*config);
```

### Parameters

config (IN/OUT) Switch split horizon network group config parameters

### Description

Initializes a switch split horizon network group config parameters to default values.

### Returns

BCM\_E\_XXX

---

## bcm\_switch\_network\_group\_config\_get

Gets the split horizon network group configuration for a given pair of source and destination network group.

### Syntax

```
#include <bcm/switch.h>
int
bcm_switch_network_group_config_get(
    int unit,
    bcm_switch_network_group_t source_network_group_id,
    bcm_switch_network_group_config_t *config);
```

### Parameters

unit (IN) Unit number.

source\_network\_grou (IN) source split horizon network group id.

p\_id

config (OUT) split horizon network group configuration.

### Description

This API is used to get the status of split horizon network group configurations like ingress pruning, egress pruning and ingress IPMC group remap for a given pair of source and destination split horizon network group. BCM5645x family of devices support 8 split horizon group. Split horizon group id 0 is reserved. Always initialize a switch split horizon group configuration information structure using the `bcm_switch_network_group_config_t_init` ([page 48](#)) function prior to passing it to an API, because future API releases may add more structure members.

```
typedef int bcm_switch_network_group_t;

typedef struct bcm_switch_network_group_config_s {
    bcm_switch_network_group_t dest_network_group_id; /* Split horizon
destination network group ID */
    uint32 config_flags; /* BCM_SWITCH_NETWORK_GROUP_XXX
```

```

flags for split horizon group configuration. */
    } bcm_switch_network_group_config_t;

```

The following `config_flags` are available

**Table 51: Split horizon network group config flags**

Flag	Description
BCM_SWITCH_NETWORK_GROUP_MCAST_GROUP_REMAP_ENABLE	Enable/Disable IPMC group remap
BCM_SWITCH_NETWORK_GROUP_INGRESS_PRUNE_ENABLE	Enable/Disable ingress pruning
BCM_SWITCH_NETWORK_GROUP_EGRESS_PRUNE_ENABLE	Enable/Disable egress pruning

**Returns**

BCM\_E\_XXX

**bcm\_switch\_network\_group\_config\_set**

Configures the split horizon network group configuration for a given pair of source and destination network group.

**Syntax**

```

#include <bcm/switch.h>
int
bcm_switch_network_group_config_set(
    int unit,
    bcm_switch_network_group_t source_network_group_id,
    bcm_switch_network_group_config_t config);

```

**Parameters**

unit

(IN) Unit number.

source\_network\_grou

(IN) source split horizon network group id.

p\_id

config

(IN) split horizon network group configuration.

**Description**

This API is used for enabling/disabling split horizon network group configurations like ingress pruning, egress pruning and ingress IPMC group remap for a given pair of source and destination split horizon network group. BCM5645x family of devices support 8 split horizon group. Split horizon group id 0 is reserved.

**Returns**

BCM\_E\_XXX

### SWITCH USER BUFFER

#### SWITCH USER BUFFER APIS

New Switch User Buffer APIs have been added.

---

##### **bcm\_switch\_user\_buffer\_write**

Writes data to the user buffer

##### **Syntax**

```
#include <bcm/switch.h>
int
bcm_switch_user_buffer_write(
    int unit,
    uint32 flags,
    bcm_switch_user_buffer_type_t buff_type,
    uint8 *buf,
    int offset,
    int nbytes);
```

##### **Parameters**

unit	(IN) Unit number
flags	(IN) Flags for writing to user buffer
buff_type	(IN) The type of the user buffer
buf	(IN) Data buffer to be written to user buffer
offset	(IN) The offset in the user dram buffer
nbytes	(IN) Number of bytes to be written

##### **Description**

This API is used for writing data to the user buffers

##### **Returns**

BCM\_E\_XXX

---

##### **bcm\_switch\_user\_buffer\_read**

Reads data from the user buffer

##### **Syntax**

```
#include <bcm/switch.h>
int
bcm_switch_user_buffer_read(
    int unit,
    uint32 flags,
    bcm_switch_user_buffer_type_t buff_type,
    uint8 *buf,
```

```
int offset,
int nbytes);
```

## Parameters

unit	(IN) Unit number
flags	(IN) Flags for reading from user buffer
buff_type	(IN) The type of the user buffer
buf	(OUT) Data buffer to store data read from user buffer
offset	(IN) The offset in the user dram buffer
nbytes	(IN) Number of bytes to be read

## Description

This API is used for reading data from the user buffers

## Returns

BCM\_E\_XXX

## BCM AND BCMX FUNDAMENTALS

New GPORT Macros have been added.

*Table 52: Macros for Analyzing/Constructing GPORTs*

<b>BCM_GPORT_TYPE_FORWARD_PORT</b>	<b>Gport for fec destinations</b>
BCM_ENCAP_REMOTE_SET(_encap_id)	Sets an encap id with encap remote subtype
BCM_ENCAP_REMOTE_GET(_encap_id)	Gets the encap id from encap remote subtype
BCM_ENCAP_ID_SET(_encap_id, _id)	Sets id with encap id type
BCM_ENCAP_ID_GET(_encap_id)	Gets id from the encap id
BCM_GPORT_FORWARD_PORT_SET(g, id)	Sets forward forward port type and value
BCM_GPORT_FORWARD_PORT_GET(g)	Gets port id from a forward gport

## VLAN MANAGEMENT

New VLAN Control Flag has been added.

New Field has been added to bcm\_vlan\_control\_vlan\_t structure.

```
typedef struct {
    ...
    int                l3_if_class; /* L3 IIF class id */
} bcm_vlan_control_vlan_t;
```

## VIRTUAL SWITCHING INSTANCES

New VSWITCH CROSS CONNECT flag has been added.



New Fields have been added to `bcm_vswitch_cross_connect_t` structure.

```
typedef struct bcm_vswitch_cross_connect_s {  
    ...  
    int encap1;           /* First gport encap id. */  
    int encap2;           /* Second gport encap id. */  
    uint32 flags;         /* BCM_VSWITCH_CROSS_CONNECT_XXX flags. */  
} bcm_vswitch_cross_connect_t;
```

## VXLAN MANAGEMENT

### VXLAN DATA TYPES

- `bcm_vxlan_tunnel_terminator_update` API provides a trigger mechanism to update multicast BUD state per VXLAN Tunnel terminator.

*Table 53: VXLAN Tunnel terminator Multicast flags*

<i>name</i>	<i>heading Purpose</i>
BCM_VXLAN_MULTICAST_TUNNEL_STATE_BUD_ENABLE	Enable BUD Multicast state
BCM_VXLAN_MULTICAST_TUNNEL_STATE_BUD_DISABLE	Disable BUD Multicast state

### VXLAN APIS

---

#### **bcm\_vxlan\_tunnel\_terminator\_update** **bcmx\_vxlan\_tunnel\_terminator\_update**

Update VXLAN Tunnel terminator.

#### Syntax

```
#include <bcm/vxlan.h>  
int bcm_vxlan_tunnel_terminator_update(int unit, bcm_tunnel_terminator_t  
*info);  
  
#include <bcmx/vxlan.h>  
int bcmx_vxlan_tunnel_terminator_update(int unit, bcmx_tunnel_terminator_t  
*info)
```

#### Parameters

<code>unit</code>	(IN) BCM device number
<code>info</code>	(IN) Tunnel Terminator Info

#### Description

Update VXLAN Tunnel terminator.

### Returns

BCM\_E\_XXX

## Section 7: Resolved Issues for 6.3.2

The following issues are resolved in version 6.3.2 of the SDK.

*Table 54:*

<i>Number</i>	<i>CSP #</i>	<i>Chips</i>	<i>Release Notes For 6.3.2</i>
SDK-33418	406892	All	Document change - Hardware link scan - port+1 requirement does NOT apply to XGS3 and later devices
SDK-34257		56846_A0 56840_A0	Add API to read and Clear CNM counters
SDK-38821		56640_A0 56548_A0 56546_A0 56545_A0 56544_A0 56542_A0 56541_A0 56540_A0 56641_A0 56642_A0 56643_A0 56644_A0 56645_A0 56648_A0	DVP and CLASSID Qualifiers support added for EFP_KEY4_DVP_SELECTOR as secondary selector for EFP_KEY4 .
SDK-39012		All	Sample application code in \$SDK/src/appl now uses soc_cm_debug exclusively for debug messages in order to allow customer applications to control all debug output through the configuration manager (CM) interface.
SDK-40877		88650_A0 88650_B0 88650_B1	Initial-VID: VLAN ISEM classification introduce 2 types of VLAN: Compressed-VID and Initial-VID.  Compressed-VID is introduced according to VLAN range compression procedure. Initial-VID is introduced according to Initial-VID procedure.  By default: ISEM classify untagged and priority tag packets to Initial-VID, otherwise according to Compressed-VID.  In order to eliminate the use of Compressed-VID per port, use a new soc property: vlan_translation_initial_vlan_enable.<port>=0  Also in case user will not use Compressed-VID globally then the number of VTT programs will be reduced. This can be done by vlan_translation_initial_vlan_enable=0 (i.e. global and not per port).  See an example of use in : cint_vlan_port_initial_vid.c
SDK-40883		88650_A0	EEDB soc properties: soc property egress_encap_bank_phase_<bank id> = access phase provides the ability to decide on init time the phase of each egress bank database. Note: Synchronize EEDB banks (AC, PWE) do not support static phasing.
SDK-40887		88650_A0	MPLS_PORT: Introduce global settings of Control Word value in case PWE encapsulation include CW. Global settings are done by Switch control bcmSwitchMplsPWControlWord
SDK-41687	560595	56440_A0	Implemented new switch controls: bcmSwitchSynchronousPortClockSourceBkupDivCtrl bcmSwitchSynchronousPortClockSourceDivCtrl



**Table 54:**

<b>Number</b>	<b>CSP #</b>	<b>Chips</b>	<b>Release Notes For 6.3.2</b>
SDK-41927		56640_A0	56640_A0 : Added support for updating L2 mac limits for L2 SER correction
SDK-42160		56450_A0	The SER feature is supported on Katana2 platform.
SDK-42544		88650_A0 88650_B0 88650_B1 88660_A0	Support a new feature - Asymmetric LIFs for VLAN ports. <code>bcm_vlan_port_create</code> used with <code>BCM_VLAN_PORT_CREATE_INGRESS_ONLY/BCM_VLAN_PORT_CREATE_EGRESS_ONLY</code> will produce single sided LIFs with a dedicated VLAN-Port gport encoding.
SDK-42657	574320	88650_A0	MPLS: 1+1 protection support added for PWES. See an example : <code>cint_vswitch_cross_connect_p2p.c</code>
SDK-42912	578283	56840_A0 56850_A0	Add a new enum for port control of PFCXOffTime.
SDK-43334	584814	56640_A0 56542_A0 56540_A0 56640_A1 56640_B0	No need to config <code>CMIC_MISC_CONTROL</code> register when port link from down to up.
SDK-43693		88650_A0 88640_A0	CL independent per flow proportional mode support: option to config CL from independent per flow type weight's as higher weight higher priority by set the flag <code>BCM_COSQ_GPORT_SCHEDULER_CLASS_WFQ_MODE_INDEPENDENT_PROPORTIONAL</code> in the <code>gport_add</code> . Note: The definition of the CL independent per flow mode is global for All the CLs and when proportional mode defined inverse mode cannot be used and the opposite
SDK-43892	593937	All	Correct the port link status display when it is in link-up / link-fail / link-remote-fault.
SDK-43923	585261	56850_A0	These counters are MMU related counters, so they can't be cleared with live traffic. For these peak counters, they are used to record the highest value reached.
SDK-44060	595562	56840_A0 56640_A0 56640_A1 56640_B0	Both IPv4 and IPv6 packets can be terminated when tunnel type is <code>bcmTunnelTypeIpAnyIn4</code> or <code>bcmTunnelTypeIpAnyIn6</code> .
SDK-44188	591442	56846_A0 56845_B0 56845_A2 56844_A0 56842_A0 56840_A0 56843_B0 56841_A3 56846_A1 56841_B0	Correct the index of <code>SOURCE_TRUNK_MAPm</code> when configure MIM in TD/TD+.
SDK-44313	602140	All	Explicitly configure GE ports on <code>XGXS_1-lane</code> serdes, without an external phy to be <code>INDEPENDENT_LANE</code> .
SDK-44477		56640_A0 56640_A1 56640_B0	Added SER support for OAM - RMEP and MA_STATE tables.
SDK-44966	612411	56440_A0	Module Id was not getting programmed correctly in LMEP and L3 tables (DGLP, SGLP fields), same has been corrected.
SDK-45024		88650_A0 88650_B0 88650_B1	Added SOC property to support MPLS-TP My-mac termination: <code>mpls_tp_mymac_reserved_address</code> . Note: MPLS-TP my-mac termination address & Trill do not co-exist on the same device.
SDK-45477		88650_A0 88650_B0	To do the RPF check from LLR to FLP.



**Table 54:**

<b>Number</b>	<b>CSP #</b>	<b>Chips</b>	<b>Release Notes For 6.3.2</b>
SDK-45665		88660_A0	<p>L3 RPF: In the past the unicast RPF mode (loose or strict) could only be configured globally for all RIFs together. This was done using a switch control to set the global unicast RPF mode.</p> <p>With this enhancement, it is possible to configure the unicast RPF mode for each RIF, by specifying the unicast RPF mode to <code>bcm_l3_ingress_create</code>.</p> <p>To operate in this mode the SOC property <code>bcm886xx_l3_ingress_urpf_enable</code> must be set to 1.</p>
SDK-45717	619170	All	Add a compilation macro <code>SCHAN_OPTIMIZATION_1</code> to support the performance improvement of <code>schan_op</code> .
SDK-45750		88650_A0 88650_B0 88650_B1	<p>Support API to associate BFMCO-2 GFMC with flow control indication:</p> <pre>bcm_cosq_gport_flow_control_set( unit, fmq_port, 0, flow_control_mask);</pre> <p><code>fmq_port</code> is a gport handle to BFMCO-2 and GFMC. <code>flow_control_mask</code> is a 4 bits bitmap, where <code>flow_control_mask[i]</code> means that the FMQ class is sensitive to FC i.</p>
SDK-45926		88660_A0	Added support for fair adaptive tail drop in 88660. Added support for two credit sizes in 88660. Added support for selecting the Traffic Class source in the statistics report, in 88660.
SDK-46033		88650_A0 88650_B0 88650_B1	<p>Modify the algorithm for deleting Egress MC groups (<code>bcm_multicast_egress_delete</code>), so that the delete will always succeed. Egress multicast groups are configured in a way that optimizes the HW resources allocation, and allows hit-less updates. Before the modification, the delete sequence could result in exhausting all MC table entries in the HW, and fail due to out-of-resources error. This behavior is now changed. Upon egress replication deletions that would fail due to a full multicast table, the replications are instead just marked as disabled. These causes the deletions to never fail, but at the cost of less efficient egress multicast groups when such deletions are performed and the multicast table is full. Note that unless deleting only one egress replication, it is recommended (and more efficient) to use <code>bcm_multicast_egress_set</code> and not <code>bcm_multicast_egress_delete</code>.</p>
SDK-46090	617790	56440_A0	Fixed LAG <code>FAILOVER_CONFIG</code> programming for MXQPORTs
SDK-46210	623614	All	fix the interrupts assertion. interrupts function could go in to endless loop because of variable that was not initialized properly.
SDK-46328		88650_B0	When traversing the Large Exact Match table (e.g. in MACT with <code>bcm_l2_traverse</code> ), some entries were missed in specific scenarios when these entries were in the first lines. This bug is fixed.
SDK-46414	629572	88750_A0 88750_B0	Wrong initialization on interrupt DB caused wrong handling of <code>DcHUnExpCellP</code> and <code>DcHUnExpCells</code> interrupts. This has been fixed.
SDK-46416	619344	56850_A0 56850_A1	Added code to allow <code>BCM_COSQ_DISCARD_DEVICE</code> with gport as -1

**Table 54:**

<b>Number</b>	<b>CSP #</b>	<b>Chips</b>	<b>Release Notes For 6.3.2</b>
SDK-46645		88650_A0 88650_B0 88650_B1	TRILL unicast route add: A route consists of a LEM and a SEM entry. If SEM entry add succeeded, but LEM entry add failed, SEM entry was not removed.
SDK-46656	628944	88030_A0	Already fixed.
SDK-46785	634877	56850_A1	The final per lane AMP control is fixed and released in 6.2.7 or 6.3.2.
SDK-46792	635525	56640_A0 56640_B0	Ensure to maintain the correct reference counters for IGMP_MLD_PKT_CONTROL and PROTOCOL_PKT_CONTROL entries when used by applications such as Vlan and MPLS VPLS modules
SDK-46864	634919	56845_B0 56843_B0 56841_B0	Fixed an issue that ports with remote fault will have its forward state represented by EPC_LINK_BMAP incorrectly enabled when processing an unrelated port's linkdown event.
SDK-46900		88030_A0	Caladan 3 g3p1 S-OAM CCM microcode and soc layer.
SDK-47014	640047	56850_A0	SPID, QLIMIT_ENABLE and Q_COLOUR_ENABLE_CELLf are independent of groupid, so moving out of the if loop, so that SPID, QLIMIT_ENABLE and Q_COLOUR_ENABLE_CELLf fields gets programmed properly.
SDK-47067	636477	88030_A0	In case customer need to use unified mode, they need to configure "instance" and "divide_ratio" in g3p1_tmu_cfg.lrp. Set "instance" to 2, it means to use unified mode for this table. The range of "divide_ratio" is [0,10]. It means how many entries allocated in taps0. If set to 0, it means no entry in taps0. If set to 10, it means all of entries exist in taps0 and no entry in taps1.
SDK-47080		56640_B0	Issues in ESM Serdes PRBS test
SDK-47152	642576	88030_A0	Fields crossing 32bit boundaries are now supported and will generate ucode register references for the two 32bit registers that the field will fall in to.
SDK-47198	641750	88650_A0	VLAN: In case user set specific VLAN-Port to be dropped by API bcm_port_discard_set, discard settings being overwrite by mistake in egress VLAN translate APIs or when replacing existing VLAN-Port information in bcm_vlan_port_create.
SDK-47205	637114	56440_A0	Resolved the bcm_port_timesync_config_get() issue on KATANA
SDK-47232	643531	56640_A0 56641_A0 56648_A0	Fixed an issue that bcm_vlan_translate_action_add() API overwrites existing vlan translation entry created by other applications such as MPLS.
SDK-47241	644482	56850_A0 56855_A0 56854_B0 56854_A0 56850_A1 56851P_A1 56851_A1 56850_A2 56851_A2 56851P_A2 56854_A2 56853_A2 56852_A2 56855_A2	fix egress port cos metering accuracy issue(packet-mode)
SDK-47250	643637	56440_A0 56450_A0 56440_B0	Excluded CES and CI blocks in soc dump and some test operations in Enduro2.
SDK-47320	642011	88650_A0 88650_B0 88650_B1	TPID management: Fix ingress VLAN translation with only single inner TPID value.

Table 54:

Number	CSP #	Chips	Release Notes For 6.3.2
SDK-47326		88750_A0 88750_B0	"tr 50"/"tr 51"/"tr 52"/"tr 71" - Memory Fill/Verify test caused failures when running with a read only or write only memories. A warning was added when trying to run "tr 50" with read only or write only memories.
SDK-47342	641978	88650_A0 88650_B0 88650_B1	Advanced VLAN edit mode was introduced under the new SOC property <code>bcm886xx_vlan_translate_mode</code> , with new dedicated BCM APIs. The new mode is aimed to enable user enhanced utilization and flexibility of the HW VLAN edit capabilities. In the Advanced mode, a user can configure any port configured TPID for every VLAN edit action. For CINT usage examples please refer to <code>cint_vlan_translation_new_mode.c</code>
SDK-47406	632213	56640_A0 56850_A0	Timestamp can be added correctly to IEEE 1588 packet after modification.
SDK-47441	629284	88650_A0	MPLS + DoubleLookupEnable: Added new improvement to be able to have on L2 LIF DoubleLookup port ( <code>bcmVlanPortDoubleLookupEnable</code> ) also MPLS termination in case packet is tagged/untagged. To have it enabled use soc property: <code>bcm886xx_mpls_termination_database_mode=1/3</code> (1 - used in case MPLS termination is unindex up to 2 MPLS termination, 3 - used in case MPLS termination is indexed up to 3 MPLS termination).
SDK-47460		88660_A0	IP Tunnels: In BCM88660 we introduce the ability to counter/meter IP tunnel packets. In-LIF is now being updated for IP tunnel termination packets. See an example in: <code>src/examples/dpp/cint_field_dir_ext_counter_inlif.c</code>
SDK-47476		88650_A0 88650_B0	XGS MAC extender: We introduce a new method for mappings between ARAD and XGS ports. New mapping must be defined by user in new APIs: <code>bcm_stk_modport_remote_map_set/get</code> when ARAD device is connected to XGS for MAC extender. New method provides more flexible port settings between ARAD and XGS and support also trunk ports. See example of settings in: <code>cint_xgs_mac_extender_mappings.c</code> . For Negev application example see: <code>appl_dpp_stk_diag_init</code> function in <code>src/appl/diag/dcmn/init.c</code> file
SDK-47500	649907	56850_A0	<code>bcm_l2_station_add()</code> API now supports <code>gport</code> type of <code>src_port</code> and <code>src_port_mask</code> parameters
SDK-47666		88650_A0 88650_B0 88660_A0	Interrupt were enabled in SOC layer before Interrupt application Initialization. Interrupt application clear asserted interrupts. Interrupt handler constantly handled Interrupts that were asserted after SOC init and before Interrupt application since they were never cleared. The same state can occur on Deinit/Detach sequence. This state was fixed by enable interrupts only after Interrupt application initialization.
SDK-47680		88650_A0 88650_B0 88650_B1	"diag egq" command is now under cosq, meaning diagnostics for egq will now be displayed using "diag cosq egq"

**Table 54:**

<b>Number</b>	<b>CSP #</b>	<b>Chips</b>	<b>Release Notes For 6.3.2</b>
SDK-47699	661949	88650_A0	When ILKN OOB interface is in constant error stage (e.g. disconnected) the interface will be flow controlled. Thus disabling NIF port (using <code>bcm_port_enable_set</code> API) results in an error, because queues can't get empty.  It was fix such that an error in an ILKN OOB will not raise flow control indication.
SDK-47721	652422	56851_A2 56851_A1 56852_A2 56853_A2 56851P_A1 56851P_A2 56854_A2 56855_A2 56850_A2 All 56850_A0 56855_A0 56854_B0 56854_A0 56850_A1	Code modified for programming DSCP_TABLE and PORT_TABLE for proper functioning of DSCP mapping for TD2 device.
SDK-47723 SDK-50275	652431	56850_A0 56854_A0 56850_A1 56850_A2	ETAG_PCP or ETAG_DE marking is done based on incoming OTAG/IVID/default (port) values .... This configuration is done in PORT_TAB table based on field - ETAG_PCP DE SOURCE. When ETAG_PCP DE SOURCE is set to value "2" ETAG_PCP/ETAG_DE are picked up from PORT_TAB for the port.
SDK-47738	650174	All 56850_A0	Reverted the code changes, so that parser behaves properly
SDK-47764		88650_A0 88650ACP_A0 88650_B0 88650_B1 88660_A0	ILKN traffic is always segmented into bursts and transmitted as non-interleaved bursts. Removed the SoC property "ilkn_is_burst_interleaving" for arad.
SDK-47787	653154	88650_A0	Background: When OAMP packets are injected, they are forwarded with forward strength 7.  Bug: This strength is hard coded and cannot be configured. Should be taken from default_trap_strength soc property.
SDK-47811	654131	88650_A0 88650_B0 88650_B1	In Counter processor module, when counting per VOQ, the <code>bcm_cosq_gport_statistic_multi_get</code> API is supported to get VOQ statistics after one call. An optimization is done to update the SW counters only before reading the first counter for a best performance. The gport param is unused and the <code>lgl_gport</code> is the desired voq's gport.
SDK-47815	644109	88650_A0	VLAN: We are introducing a cint example that illustrates different usages of <code>bcm_vlan_gport_add()</code> . For more information, please see <code>srcexamplesdppcint_vlan_gport_add.c</code>
SDK-47816	653943	88030_A0	There was an issue in queue setup for 3x40G TDM which caused some ports to not function as expected. This has been resolved.
SDK-47862	654758	56342_A0 56344_A0	Support is already available in TOT

Table 54:

Number	CSP #	Chips	Release Notes For 6.3.2
SDK-47894		88650_A0 88650_B0 88650_B1	ERSPAN: a new ERSPAN calling sequence implemented for ARAD A0,B0 & B1 (see <code>src/examples/dpp/cint_mirror_erspan.c</code> for details). Changes were done to support Inbound mirroring + Routing. The new sequence also includes setting the outgoing mirror destination port as ERSPAN via a new bcm port control <code>bcmPortControlErspanEnable</code> .  Notes: 1. Old sequence is not supported in ARAD A0,B0 & B1. 2. Each outgoing mirror destination port can be used for ERSPAN or SPAN (but not both). 3. Known issue: ERSPAN with XGS MAC extender is not working for ARAD+.
SDK-47928	657449	84757_C0 84744_A0	FCMAP port config get API fixed to return correct <code>mapper_len</code> (Also fixed error handling code to do unlock of <code>bfcmap_lock</code> )
SDK-47962	661178	56851_A0 56852_A1 56852_A0 56853_A1 56853_A0 56850_A0 56855_A0 56854_B0 56854_A0 56850_A1 56851P_A1 56851_A1 56850_A2 56851_A2 56851P_A2 56854_A2 56853_A2 56852_A2 56855_A2	fix wrong meter flag used in <code>_bcm_td2_cosq_bucket_set</code> .

Table 54:

Number	CSP #	Chips	Release Notes For 6.3.2
SDK-47990		88650_A0 88650_B0 88650_B1	<p>BCM88650 fabric multicast queue eligibility can be regulated by leaky buckets, random-backoff and slow-start mechanisms: for details, refer to section Fabric Multicast Queue Eligibility in the 88650-AG2XX document. Added support for these mechanisms to the driver.</p> <p>To enable/disable GCI leaky bucket mechanism call: <code>bcm_fabric_control_set(unit, bcmFabricGciLeakyBucketEnable, enable)</code> Default: enabled. To configure leaky bucket congestion threshold call: <code>bcm_fabric_link_thresholds_set(unit, -1, array_count, array_types, array_values)</code> The API received a list of thresholds (array_types) and values to configure (array_values). Relevant threshold types are: <code>bcmFabricLinkGciLeakyBucket1Congestion</code>, <code>bcmFabricLinkGciLeakyBucket2Congestion</code>, <code>bcmFabricLinkGciLeakyBucket3Congestion</code>, <code>bcmFabricLinkGciLeakyBucket4Congestion</code> Threshold range: [0, 0xff] Default: 0x4 To configure leaky bucket full threshold (the highest value of the leaky bucket) call: <code>bcm_fabric_link_thresholds_set(unit, -1, array_count, array_types, array_values)</code> The API received a list of thresholds (array_types) and values to configure (array_values). Relevant threshold types are: <code>bcmFabricLinkGciLeakyBucket1Full</code>, <code>bcmFabricLinkGciLeakyBucket2Full</code>, <code>bcmFabricLinkGciLeakyBucket3Full</code>, <code>bcmFabricLinkGciLeakyBucket4Full</code> Threshold range: [0, 0xff] Default: 0x80</p> <p>To enable/disable GCI random backoff mechanism call: <code>bcm_fabric_control_set(unit, bcmFabricGciBackoffEnable, enable)</code> Default: disabled.</p>
SDK-47998	660572	88030_A0	Tolltip is visible until mouse pointer has left field region.
SDK-48003		88650_A0	<p>VLAN:</p> <p><code>_bcm_dpp_vlan_info_vlan_exist_set/get</code> is the API to the <code>vlan_info</code> SW DB. The API function was not used correctly in all relevant places and the SW DB might have used inconsistent data. The VLAN SW DB was integrated into <code>alloc_mgr</code> so that it should not be handled separately.</p>
SDK-48005	660612	88030_A0	Instead of customization, now user can create separate view for each register "page" (GPR, TPR, etc.), and locate those views at any position on screen. ShowView dialog (main menu) requests a "type" of register view to be created/activated.
SDK-48058		88650_B0 88650_B1	<p>PON VMAC: We introduce a new capability in PON application called VMAC (Virtual MAC). In the upstream traffic, OLT Receives the source MAC (from now on called Original MAC or oMAC) and replaces it with an LLID derived MAC address (from now on called Translated MAC or vMAC). In the downstream traffic, OLT receives the Translated MAC and replaces it with the Original MAC. See more information in : <code>src/examples/dpp/pon/cint_pon_vmac.c</code></p>

Table 54:

Number	CSP #	Chips	Release Notes For 6.3.2
SDK-48085	649507	88650_A0 88650_B0 88650_B1	The following diagnostic shell commands changed to print to both console and log file (if available). The previous implementation output was printed just over the console. - "diag cosq non_empty_queues" - "diag cosq print_flow_and_up" - "diag cosq voq"
SDK-48093	662986	All	The port control bcmPortControlEEEStatisticsClear now returns the correct return value.
SDK-48098	653246	56850_A0	Updated the BCM_PORT_PHY_CONTROL_TX_LANE_SQUELCH handler in tscmod to turn off the Analog Tx. With out this change, when the port is in loopback mode, it's link partner(LP) would not go down automatically as the LP continues to receive some garbage signal from local ports's analog Tx.  This fix would quiesce the link and the link partner would go down automatically.
SDK-48108		56150_A0	Configured LED Processor scan delay values for Hurricane-2.
SDK-48131	651142	88650_B1	Fixed definitions of EEDB tables.
SDK-48144	661311	88650_B1	Field Processor: Data qualifiers configuration was only relevant for Ingress PMF lookup. Stage parameter was added to bcm_field_data_qualifier_t struct, in order to allow the user to configure the lookup stage for the data qualifier. Supported values for the stage parameters are: bcmFieldStageIngress, bcmFieldStageEgress and bcmFieldStageExternal. Ingress and external stages can be used for predefined and header data qualifiers. Egress stage can be used for predefined data qualifiers only (header DQ not supported). Backwards compatibility is supported. If the stage is not indicated, the default stage is ingress.
SDK-48157	653203	88650_B0 88650_B1 88660_A0	Issue #1: Separated configuration of add_crc in bcm_fabric_tdm_editing_set api for Egress and Ingress. Previously it configured both ingress and egress at the same time.  Issue #2: TDM cells coming from PB to ARAD have VCS128 format. Modified ARAD B0/B1/+ default configuration to account for discard information in VCS128 cells.
SDK-48162	614371	88650_B1	L2Gre cint example: fix and enhance documentation.
SDK-48183	664095	All 56440_A0 56440_A1 56440_B0	When probe port was configured and GPORT_UMAC_CONTROL register was set for the entire block to which the port belongs, the entire block of ports were reset losing the pre-configuration. Now, it resets only the corresponding probe port.
SDK-48184	664509	56640_A0 56850_A0 56450_A0 56340_A0 56640_B0	The code which generated the DFA states was disabled. Having zero states was causing the crash (zero states should never happen).

**Table 54:**

<b>Number</b>	<b>CSP #</b>	<b>Chips</b>	<b>Release Notes For 6.3.2</b>
SDK-48228	665377	88650_A0 88650_B0 88650_B1	<p>Added additional RCI (Routing Congestion-Indication) support. No change in default configuration.</p> <p>RCI is a mechanism used to indicate the level of congestion in the fabric. This indication is used by the end to end schedule to throttle the credit rate accordingly.</p> <p>*. Configure RCI increment value - the value that will be added to RCI bucket whenever a cell carrying RCI indication arrives.</p> <pre>bcm_port_control_set(unit, bcmFabricRCIIncrementValue, value);</pre> <p>Threshold range: [0, 0x7f]</p> <p>* Generating RCI Flow Control Local RCI.(This mechanism changed to be enabled by default) 1. Enable/Disable generating Local RCI by calling:</p> <pre>bcm_fabric_control_set( unit, bcmFabricRCIControlSource, enable_source)</pre> <p>ARAD local RCI generation Enable/Disable per pipe is not supported. Therefore, the possible values for enable_source are as follow Values are as follows: NONE(0) BOTH (3). Local RCI generation is enabled by default. 2. Adjust local RCI threshold by calling:</p> <pre>bcm_fabric_link_thresholds_set(uni t, -1,array_count, array_types, array_values) :</pre> <p>The API receives list of thresholds (array_types) and values to configure (array_values) . Relevant threshold types: o bcmFabricLinkRciFC Threshold range: [0, 0x7f]</p>
SDK-48229	665380	88650_A0 88650_B0 88650_B1	<p>Added new thresholds to control the fabric rx interface delete-FIFO, at the device egress. Default configuration did not change (backward compatible). To configure Delete-FIFO thresholds, use the following SOC properties:</p> <ul style="list-style-type: none"> <li>- egress_fabric_drop_threshold_multicast_low Drop multicast best effort according to Delete-FIFO available resources (number of packet descriptors which can be added to Delete-FIFO).</li> <li>- egress_fabric_drop_threshold_multicast Drop multicast according to Delete-FIFO available resources (number of packet descriptors which can be added to Delete-FIFO).</li> <li>- egress_fabric_drop_threshold_all Drop all traffic according to Delete-FIFO available resources (number of packet descriptors which can be added to Delete-FIFO).</li> </ul>
SDK-48274	661389	88650_A0 88650_B0 88650_B1	Diagnostics: Fixed error tag information from diag command "diag pp parsing info".
SDK-48275	All		bcm_attach() of remote devices would fail if BCM_CONTROL_API_TRACKING was enabled.
SDK-48277	All		Added defensive checks to keep the get/set reg commands from firing asserts, when they are dumped from the diag shell, using invalid combinations of addresses/block numbers.



**Table 54:**

<b>Number</b>	<b>CSP #</b>	<b>Chips</b>	<b>Release Notes For 6.3.2</b>
SDK-48278		88650_A0 88650_B0 88650_B1	For certain configurations with both Petra B and Arad devices, the configuration of adding fabric CRC for TDM bypass packets needs to be different in ingress and in egress. We now allow configuring this way. When the new BCM_FABRIC_TDM_EDITING_NON_SYMMETRIC_CRC flag is used in the structure provided to the bcm_fabric_tdm_editing_set API, the CRC configuration is made only to ingress/egress based on the BCM_FABRIC_TDM_EDITING_INGRESS / BCM_FABRIC_TDM_EDITING_EGRESS flag that is used. bcm_fabric_tdm_editing_get will use the new flag to return the specific CRC configuration of the ingress/egress.
SDK-48281	652032	88650_A0	Added SOC property stat_if_report_multicast_single_copy that indicate if a report should be sent for every copy or one time per MC packet in the ingress.
SDK-48292	666051	88650_A0	L3 RPF: Change the soc RPF definition as the bcm RPF definition.
SDK-48296		88650_A0	When working with external TCAM, a master-key is sent from BCM886XX to KBP device with all the necessary fields for the forwarding and external ACL lookups. A diagnostic has been built to show the order of the fields in the master-key and master-result: BCM> kbp print master
SDK-48305 SDK-43330	665205	56850_A0 56850_A1 56850_A2	Fix Ypipe index error when operating MMU_QCN_ENABLE_1 memory(for Ypipe port).
SDK-48308	666639	88030_A0	BCM88030 - C3Debug application respects the task and predication of the original instruction.
SDK-48330	652729	88650_B1	Bug: A new mep is always added with a default profile, and after an existing mep profile was changed adding a new one should result in failure.  Fix: Add a default profile unless there already was a mep configured on same lif, then we will give it the same profile as to the existing mep.
SDK-48334	662397	56440_A0 56440_B0	Corrected retrieval of port and queue info in bcm_multicast_egress_subscriber_get.
SDK-48349	667677	88030_A0	Support added for configuring PPE rules using CSV type syntax. This enables the rules to be edited in a spreadsheet. Please see the release notes for how to use, examples and formats.
SDK-48350	667675	88030_A0	GoTo feature (combined with search and selection by colors) are now part of new version (for vars, consts, and labels)
SDK-48355	667475	88650_A0 88650_B0 88650_B1	When bcm_cosq_gport_sched_set() was called to change the fabric clos or fabric mesh scheduler weights the shaper settings are also changed even though bcm_cosq_gport_bandwidth_set() is not being called. The issue was fixed.
SDK-48357	663576	88650_A0	In Field Processor, at ingress stage (Ingress PMF HW block), the HW allows (per PMF-Program) the allocation of multiple keys in 2 cycles. When inserting a new Database, by default, the Driver was selecting the cycle with most number of available instructions. The cycle selection is optimized: if one of the cycle does not admit a 320 bit key, this cycle is tested first. This way, a 160b key will not consume the place of a 320b key.

Table 54:

Number	CSP #	Chips	Release Notes For 6.3.2
SDK-48365	667957	56634_A0 56640_B0	Wlan virtual port assignment is now independent of the other type virtual port assignment
SDK-48366		88660_A0	BCM88660 introduces PON 3 Tags manipulation which includes 2 Egress VLAN editing and Tunnel-ID tag addition. See an example in : <code>src/examples/dpp/pon/cint_pon_application.c</code>
SDK-48373	667548	88650_A0	Programmable editor SW state was not saved per unit, thus not supporting multiple unit with a different set of programs under the same SDK instance.
SDK-48398	665296	88030_A0	12x10G to 12x10G is not a supported swap case in the last patch. Please try 1x100G to 12x10G as described in the release doc
SDK-48399	665287	88030_A0	Fixed.
SDK-48401	667520	56850_A0 56850_A1 56850_A2	Fix to cleanup invalid action data structures.
SDK-48405	662234	56440_A0 56440_B0	The encoding of NH and INTF in <code>EXT_MC_QUEUE_LIST0</code> is corrected to forward packets correctly through subscriber queues.
SDK-48488		56150_A0	The phy542xx.c driver accepts the correct primary and offset values for the built-in QGPHYs in BCM56150.
SDK-48493	667641	All 88030_A0	fix the taps resource leak during delete for bcm88030 device
SDK-48500	664376	88650_B1 88660_A0	In Field Processor module, a SOC property is added to control the size of the Trap action: - <code>custom_feature_reduced_trap_action</code> - when set, the trap action encoding includes only trap code and trap strength (11 bits). The trap qualifier is not included in the trap action encoding and its value is not used by the user. When not set, the trap action encoding includes trap code, trap strength and trap qualifier (27 bits).
SDK-48516	666270	88650_B1	TPID settings: Added an error in case the number of different TPIDs is larger than device capabilities (4 in ARAD)
SDK-48518		88650_A0 88650_B0 88650_B1	SW perform soft reset without fabric as default action for interrupt "hard_reset" corrective action, and where fabric reset is needed SW perform soft reset with fabric
SDK-48522	667062	88650_A0 88640_A0	Fix for a possible contention issue in the resource manager init. Resource management actions may be called in parallel for different units, but init and detach of a specific unit must not be called concurrently with other functions for that same unit.
SDK-48524	667951	88030_A0	If the OCM memory allocation exceeds that which is available the assembler will quit with an error message and a table of the current allocations. Additionally if a port allocation exceeds that which is available to it the assembler will quit with an error message and a table of the current port allocations.
SDK-48530	670224	All	fixed the tx dma error during taps insert when ipv6 table is almost full for bcm88030
SDK-48547	668480	88030_A0	hread constraint added. Violating the constraint will produce the following error: Error! [51059] g3p1_ing_bridge.lrp->236:32->1.95 = constraint H-000-2 Header Load Latency (1)

**Table 54:**

<b>Number</b>	<b>CSP #</b>	<b>Chips</b>	<b>Release Notes For 6.3.2</b>
SDK-48558	621392	88650_A0 88650_B0	Initial-VID: Initial VID is now supported. In order to support a port to be Initial-VID for both tagged and untagged packets enable port use soc property <code>vlan_translation_initial_vlan_enable</code> . <code>bcmVlanLookupMACEnable</code> didn't work correctly before. Now the VLAN control enable Only MAC VLAN Assignment procedure. See an example of use in <code>src/examples/dpp/cint_vlan_port_initial_vid.c</code>
SDK-48572	669205	56640_A0 56850_A0 56855_A0 56854_B0 56854_A0 56850_A1 56851P_A1 56851_A1 56850_A2 56851_A2 56851P_A2 56854_A2 56853_A2 56852_A2 56855_A2	Added the support for forwarding type and forwarding field in egress mode for Trident 2
SDK-48573 SDK-50119	668627	All	Added little-endian host support.
SDK-48574	636126	88650_B1	VSWITCH: One directional cross connect is now supported using flag <code>BCM_VSWITCH_CROSS_CONNECT_DIRECTIONAL</code>
SDK-48578	662404	88650_A0	Vxlan: packet native to VLAN had corrupted encapsulation - IP and UDP length fields were incorrect - The I flag was set to 0, instead of 1.
SDK-48581		88650_A0	In Field Processor, a change in 6.3.0 implies that the <code>bcmFieldQualifyForwardingType</code> is mapped to 2 HW qualifiers to allow the support of <code>bcmFieldForwardingTypeMplsLabel1/2/3</code> . This option can be disabled by commenting the compilation flag <code>_BCM_DPP_FIELD_FORWARDING_TYPE_COMPOSED</code> .
SDK-48586		88650_A0 88650_B0 88650_B1	1. <code>cint_cnm</code> example was fixed. 2. When a CNM queue was configured (using <code>bcm_cosq_qcn_config_set</code> API), it could override the parameter for all queues. This issue is fixed.
SDK-48587		88650_A0	Field Processor: 2 SOC properties are added: 1. <code>custom_feature_fp_restricted_forwarding_type</code> - when set, this SOC property does not allow the <code>bcmFieldQualifyForwardingType</code> to be a composed qualifier. In this case, the values <code>bcmFieldForwardingTypeMplsLabel1/2/3</code> cannot be used. 2. <code>custom_feature_pmf_320b_key_opt_disable</code> - when set, the 320 bit key optimization is disabled during key allocation.
SDK-48612	670951	88650_A0 88650_B0 88650_B1	The Counter Processor module runs background threads to collect the highest counters into a SW database. If the Soc property <code>counter_engine_sampling_interval</code> is set to 0, the Counter Processor background thread will not run during the initialization sequence. This must be used only if: - either the user is not using the Counter processor - or all the Counter Processor formats ( <code>counter_engine_format_</code> ) are PACKETS or BYTES
SDK-48613	670936	88030_A0	RXAUI 10G port support for specific configurations (up to 6x10G) is now supported on Caladan3.



**Table 54:**

<b>Number</b>	<b>CSP #</b>	<b>Chips</b>	<b>Release Notes For 6.3.2</b>
SDK-48615		56524_A0 56524_B0	bcmPortControlLinkFaultLocalEnable and bcmPortControlLinkFaultRemoteEnable results in segmentation fault in <code>bcm_port_control_get()</code> for devices using bigmac, such as BCM56524.
SDK-48643		88650_A0	<code>inband_mem_handle()</code> would leak memory on error return.
SDK-48644		All	<code>_topo_info_t_create()</code> would leak memory on an error return
SDK-48649		56524_A0 56524_B0	<code>bcm_port_control_set()</code> does not set correct value for <code>bcmPortControlLinkFaultLocalEnable</code> and <code>bcmPortControlLinkFaultRemoteEnable</code> for devices using bigmac, such as BCM56524.
SDK-48650	671419	56224_B0 56224_A0	Fixed tunnel initiator warm boot recovery for XGS III chips
SDK-48653	670916	56640_A0 56644_A0	The issue is fixed in SDK so that user can create FP group with <code>bcmFieldQualifyIpProtocol</code> qualifier when using ESM and <code>ESM_IPv4</code> or <code>ESM_L2_IPv4</code> profile. With this fix, following IP protocol numbers (used in the Protocol field of the IPv4 header), can be used to qualify the packets using <code>IpProtocol</code> qualifier: TCP (6), UDP (17), ICMP (1), IGMP (2), IPv4 (4), IPv6 (41), MPLS (137)
SDK-48656	669385	All 56850_A0 56855_A0 56854_B0 56854_A0 56850_A1 56851P_A1 56851_A1 56850_A2 56851_A2 56851P_A2 56854_A2 56853_A2 56852_A2 56855_A2	fixed code to support sp schedule for cpu port.
SDK-48666	660786	88650_A0 88650_B0 88650_B1	VLAN-Port: Added a fix to support 32K AC-LIFs. On some cases specific LIF IDs returned Internal error when created.
SDK-48667	644027	88650_A0 88650_B0 88650_B1 88660_A0	G.8032 Ring Protection: It is now possible to associate Fast Flush LIFs to ERP blocking groups. The <code>ingress_failover_id</code> & <code>failover_port_id</code> fields can be modified by <code>bcm_vlan_port_create</code> in REPLACE mode, with the values of a <code>failover_id</code> that is dedicated to ERP grouping. A CINT example is provided in <code>cint_l2_fast_flush.c</code> .
SDK-48668	651858	88650_A0 88650_B0 88650_B1	Tail drop for ISQs per color was not supported. Added support for accepting ISQ gport types.  Now it is possible to use <code>BCM_COSQ_GPORT_ISQ_SET(gport, qid)</code> And then <code>bcm_cosq_gport_color_size_set(unit, gport, cosq, bcmColorBlack, BCM_COSQ_GPORT_SIZE_BYTES, &amp;q_size_ucast);</code> Instead a work around: Configuring the wanted ISQ qid, by using <code>BCM_GPORT_UNICAST_QUEUE_GROUP_SET(gport, qid);</code>
SDK-48669		88650_A0	Added a new compilation flag <code>BCM_CONTROL_API_TRACKING</code> With this flag is in use, <code>BCM_API</code> calls are not allowed when the device is detached

Table 54:

Number	CSP #	Chips	Release Notes For 6.3.2
SDK-48681	669901	56850_A0 56850_A1 56850_A2	1. Enabling ING_HASH_CONFIG_0 register 2. Fix existing bug on programming RTAG7_HASH_CONTROL 3. Adding valid bit to a flex_hash_entry before it is programmed into the tcam
SDK-48683		88650_A0	Release/Free/Destroy Semaphores/Mutexes which were allocated during init.
SDK-48684	670470	56640_A0 56640_A1 56640_B0	OAM endpoint traversal would skip the remaining endpoints if the callback routine modifies the endpoint. This has been corrected.
SDK-48693	670822	56450_A0	With wc40.c patch , RXAUI mode is working fine. Also with below config variables, RXAUI mode works fine with init all. port_init_autoneg_xe6=0 port_init_speed_xe6=10000
SDK-48694	664945	56850_A0	Fix confusion when configuring CPU's queue assignment after XE's.
SDK-48697		All	The Linux kernel module linux-kernel-bde now supports enabling/disabling the use of MSI interrupts on PCIe.
SDK-48700		88650_A0	IPv4 Multicast and IPv6 forwarding tables are located in the TCAM. The entry shuffle in the TCAM for these Databases was flawed for specific scenarios and is fixed.
SDK-48704	635324	88650_A0 88650_B1	Warmboot state was not recovered for unit different than zero
SDK-48714		All	Added Coverity killpath annotation to _sal_assert()
SDK-48715	671569	88650_A0	bcm_cosq_gport_threshold_set was setting the wrong parameter, causing the port FC threshold (port_fc_data_buffers) to not get configured. The issue is fixed.
SDK-48721	653118	56224_B0 56224_A0	UDF_ETHERTYPE_MATCH issue has been addressed.
SDK-48726	671075	88650_A0	Port LLP COS profile: Drop precedence profile should be 2 bits (0-3) and not 1.
SDK-48733		88650_A0	Added port controls, allowing to separately enable/disable fabric links in RX/TX directions: bcm_port_control_set(unit, port, bcmPortControlRxEnable, value = 0/1); bcm_port_control_set(unit, port, bcmPortControlTxEnable, value = 0/1);
SDK-48738		56340_A0	Added support for BCM56340 for flushing the MMU, clearing the backpressure and freezing the egress metering when the port is disabled.
SDK-48743		88650_A0	For BCM886xx devices, a gport may have more than one QoS profile. In this case, the bcm_qos_a_port_map_get has no way to know which one should be returned. In this enhancement a new API is introduced - bcm_qos_port_map_type_get that allows the user to get a QoS profile of a gport according to the QoS profile type (the same QOS type that is passed to bcm_qos_map_create) .

**Table 54:**

<b>Number</b>	<b>CSP #</b>	<b>Chips</b>	<b>Release Notes For 6.3.2</b>
SDK-48759		88650_A0 88660_A0	<p>Changes in the color resolution are done: 1. The egress Drop Precedence was equal to Drop-Precedence / 2 by mistake, taking only the values 0/1. It is equal to incoming Drop Precedence from now (when the DP-Meter command is set to modify the egress DP, e.g. by default)</p> <p>2. The policer 'yellow' was encoded as DP=2. It is DP=1 from now on.</p> <p>3. In BCM88660, a differentiation of RED from Ethernet policer and meter processor is implemented. Usually when a packet is assigned a red color by a meter, the user has no way of knowing how this decision was made. Red is always represented by DP=3.</p> <p>In this enhancement a new drop resolution mode is presented that allows the user to obtain more information about the drop source (i.e. the component that assigned the red color to the packet). If <code>policer_color_resolution_mode=1</code>, then this mode is active. In this mode, there are two types of red. Pre-Meter drop (DP=3): If the meter receives a red packet, then the output DP would be 3 (e.g. if an Ethernet policer dropped the packet). Meter drop (DP=2): If the meter assigns a red color to the packet, then the output DP would be 2.</p>
SDK-48775	671603	56850_A0 56850_A1 56850_A2	Resolve strict priority failed on TD2.
SDK-48792		All	Resolution of an issue where the diag command 'fp stat create' would intermittently crash.
SDK-48798	672473	56850_A0 56850_A1 56850_A2	Delete ingress nat entries no matter the following flags set or not in hardware table, when they are not set in argument <code>flagsinbcm_l3_nat_ingress_delete_all</code> : <code>BCM_L3_NAT_INGRESS_HIT</code> , <code>BCM_L3_NAT_INGRESS_MULTIPATH</code> , <code>BCM_L3_NAT_INGRESS_RPE</code> , <code>BCM_L3_NAT_INGRESS_DST_DISCARD</code> .
SDK-48817	654269	88650_A0 88650_B0 88650_B1	Counter processors are counting according to one of multiple sources, e.g. Ingress or Egress OAM. The following modifications have been done when counting with OAM source: - remove redundant code in the assignment of OAM counter processors
SDK-48825	668611	88650_A0	tr40 add type ID variable with default: <code>tpid=0x8100</code> , before the fix this value was hard coded to <code>0x9000</code>
SDK-48836		88650_A0 88650_B0 88650_B1	Allow using <code>bcm_cosq_pfc_config_set</code> API to configure FC for VSQ types: CT, CTTC, CTCC, STF.
SDK-48837		88650_A0 88650_B0 88650_B1	For Out Of Band FC, fix configuration of reception path to LLFC, using <code>bcm_cosq_fc_path_add</code> API.
SDK-48839	640074	88650_A0 88650_B0 88650_B1	In the Statistic-Interface configuration, the configuration of the egress Counter-Pointer format was done through the Counter Processor configurations. The user can configure from now on the Egress Counter <code>pointer</code> formats without configuring a Counter Engine to count at egress by using the following SoC properties: <code>counter_engine_source_stat0</code> <code>,counter_engine_source_stat1</code>
SDK-48844	671536	88650_A0 88650_B0 88650_B1	In ELK application, the KBP diagnostic "BCM>kbp print" displays also per Database: 1. the number of entries 2. an estimation of the remaining capacity (number of entries). This estimation is valid only when the Database has at least an entry.



Table 54:

Number	CSP #	Chips	Release Notes For 6.3.2
SDK-48854		88650_A0	TDM: API <code>bcm_fabric_editing_set</code> returns error by mistake when System port allocations is not symmetric (same port allocation on all devices). Fix included removed the constraint between Symmetric systems and API handle.
SDK-48857		88650_A0 88650_B0 88650_B1 88660_A0	<p>The credit watchdog configuration and the predefined credit request profiles, now work properly with warm boot.</p> <p>The burstiness of credit watchdog configurations using a small range of queues was improved.</p> <p>A new credit watchdog mode was added for 88660 only. It is called the Common Message Generation Period mode, and is the default mode for 88660. In this mode the Message Generation Period is common to the whole device, the same for all the queues in the credit watchdog range. The supported (common) message generation periods are 0 (disabled), 125us, 250us, 500us, 1ms, 2ms (default), 4ms. The lower periods require that the credit watchdog will not be configured for all of the queues. The precise rule on the number of queues configured for the credit watchdog is: <code>number_of_queues &lt; 120 * scan_time_in_us</code>. The supported range of the delete queue threshold is also 2ms-7.6s, and the default is 512ms.</p> <p>Changing back to this mode after changing to a different mode is done using:</p> <pre>bcm_fabric_control_set(unit, bcmFabricWatchdogQueueEnable, BCM_FABRIC_WATCHDOG_QUEUE_ENABLE_C OMMON_STATUS_MESSAGE);</pre> <p>In this mode the Common Message Generation Period can be set and retrieved using:</p> <pre>bcm_cosq_delay_tolerance_t dt; dt.credit_request_watchdog_status_ msg_gen = 125; /*period in us, or 0 for no messages */ bcm_cosq_delay_tolerance_level_set (unit, BCM_COSQ_DELAY_TOLERANCE_SET_COMMO N_STATUS_MSG, &amp;dt); /* set the period */ bcm_cosq_delay_tolerance_level_get (unit, BCM_COSQ_DELAY_TOLERANCE_SET_COMMO N_STATUS_MSG, &amp;dt); /* get the period */</pre>
SDK-48870	666202	88650_B1	After warmboot recovery, only 16K AC-LIFs were recovered. now all LIFs should recover.
SDK-48873	673082	All 56850_A0 56850_A1 56850_A2	Weight 0 can be configured for WRR or WERR scheduled nodes.. Configuration to support hybrid combination of scheduling, strict+WRR or strict+WERR is allowed.



**Table 54:**

<b>Number</b>	<b>CSP #</b>	<b>Chips</b>	<b>Release Notes For 6.3.2</b>
SDK-48887	670870	88650_A0 88650_B0 88650_B1	In Field Processor, the entry-ids are allocated according to the Database type: 1. The TCAM databases get the first entry-ids [0 ; x-1] 2. The Direct extraction have 16 possible entry-ids [x ; x+16] Due to the insertion of external TCAM database support, the following changes are done: 1. The external databases get a third range of entries [x; 2x] 2. When compiling the KBP code, $x = \text{SOC\_TMC\_TCAM\_NL\_88650\_MAX\_NOF\_ENTRIES} = 1 < x < 16$ . Otherwise, $x = 28K$ 3. The SW state increases tremendously when compiling with KBP code. Most of the SW state saves the FP entry attributes (1 KB per entry). Thus the SW state size is $1K * x$ . 4. To reduce the SW state, the user can reduce the maximal number of qualifiers (SOC_PPC_FP_NOF_QUALS_PER_DB_MAX set to 32) and actions (SOC_PPC_FP_NOF_ACTIONS_PER_DB_MAX set to 16) according to the maximal size in its scenarios. 5. For KBP users, the x can be changed to the maximum by defining $\text{SOC\_TMC\_TCAM\_NL\_88650\_MAX\_NOF\_ENTRIES} = 1 < x < 20$ .
SDK-48889	674382	88650_A0	bcm_port_force_forward_set() returned an error when called on a disabled port
SDK-48895	670658	88650_A0 88650_B0 88650_B1	In Field processor, the user can define data qualifiers. The number of data qualifiers is increased from 16 to 64.
SDK-48896		88650_A0 88650_B0 88650_B1	Add the option configure the WFQ weight of port schedule to 0 (both ETM and E2E ports). When weight 0 is set for a TCG it'll get SP.
SDK-48897	611729	88650_A0 88650_B0	Disabling NIF port (using bcm_port_enable_set API) results in an error whe port is extremely shaped and oversubscribed.  Workaround; Disable port shaping before disabling a port.  Resolved by disabling and enabling back the shapers inside the API.
SDK-48917		88650_A0 88650_B0 88650_B1	In bcm_vlan_port_create port.learn_ac is set for all non CEP ports, even if the port was previously set to no learning.
SDK-48918		88650_A0	Added support for HCFC protocol in oob port (fc_oob_type=3)
SDK-48930 SDK-49401		88650_A0 88650_B0 88650_B1	Advanced VLAN edit mode supports PCP/TPID modifications for tags with unchanged VID value.
SDK-48943	675017	56640_A0 56634_A0 56634_B0	56640_A0 56634_A0: Added support for handling SER events for IPFIX tables.



**Table 54:**

<b>Number</b>	<b>CSP #</b>	<b>Chips</b>	<b>Release Notes For 6.3.2</b>
SDK-48959		88650_A0	LIF & L2 FEC System resources: The BCM API has an allocation manager. When an object is created and <code>WITH_ID</code> flag is set, then user can provide the allocation of the object. In case of LIF and L2 FEC we introduce two modes of system resources: Global and Local. Global is the default mode where it assumes that LIF & L2 FEC are global resources. In case LIF is being allocated on one device, it is expected to run <code>WITH_ID</code> over all other devices with the same settings. In global mode, the system can support up to 64K LIFs and 16K L2 FECs (the same as one device). In case of Local mode, user has a full control of the allocation IDs. Thus, allowing use of LIF entries, and FEC entries in different devices with the same ID to store different objects. The allocation of objects IDs is done at the user application level. Local mode is available for <code>VLAN_PORT</code> and <code>MPLS_PORT</code> . To enable system resource soc property use: <code>bcm88xxx_system_resource_management</code> See CINT examples of local mode in: <code>src/examples/dpp/cint_system_vswitch.c</code> <code>src/examples/dpp/cint_system_vswitch_vpls.c</code>
SDK-48962		88660_A0	MPLS termination: In BCM88650 a MPLS tunnel is determined both by the label and the BOS bit. In BCM88660 introduces a new mode that allows the driver to ignore the BOS bit. The MPLS tunnel is determined by the label. If the SOC property <code>bcm886xx_mpls_termination_key_mode</code> is 1 then the BOS bit is ignored, and only the label is used as a key (for tunnel lookup).
SDK-48965		88650_A0	New improvement PON Local route switch: PON Local route switch introduce the ability of sending traffic from PON-LIF to other PON-LIF. 1. To enable feature set soc property: <code>local_switching_enable=1</code> ; 2. For Forwarding group rules set <code>bcmPortClassForwardIngress</code> and <code>bcmPortClassForwardEgress</code> in <code>bcm_port_class_get/set()</code> APIs. 3. To enable Local Route switch per LIF set <code>bcmPortControlLocalSwitching</code> in <code>bcm_port_control_get/set()</code> APIs. Full application and example can be read in <code>cint_pon_local_route.c</code>
SDK-48990		88650_A0	Allocating dual shaper egress scheduler element might fail. Fixed.
SDK-49002	675026	88650_A0 88650_B0 88650_B1	Setting and getting the assigned credit request profile of Ingress Shaping Queues (ISQs), using the <code>bcm_cosq_gport_sched_set</code> API, is now supported.
SDK-49003		88650_A0 88650_B0 88650_B1	VLAN translation new mode: All PP application examples cintns are compatible with the new vlan translation mode (soc property <code>bcm886xx_vlan_translate_mode=1</code> ). For specific examples of VLAN translation new mode see <code>src/examples/dpp/cint_vlan_translation_new_mode.c</code>
SDK-49010	676225	56850_A0 56850_A1 56850_A2	Trident2 weights can be calculated based on LLS/HSP based scheduling type associated to the port, in either case the maximum weight can be 127.



**Table 54:**

<b>Number</b>	<b>CSP #</b>	<b>Chips</b>	<b>Release Notes For 6.3.2</b>
SDK-49012	673165	88650_A0	88650 interrupts: EGQ ECC interrupt may be raised with no real reason for BufLink memory, in this case we changed the corrective action in the interrupts application to none.
SDK-49025	676726	88650_A0	Fix "diag count" - internal counters diagnostics command. Some counters names were not displayed correctly.
SDK-49031		88650_A0	TM/PP device mode: In case device mode is TM then no need to initialize port PP settings and QOS module.
SDK-49032		88650_A0	In Field Processor, the same BCM Action (bcmFieldActionSrcGportNew) was mapped to 2 HW actions: 1. Source-System-Port 2. In-LIF Thus, the action size is increased when adding the BCM action and it prevents these actions from being used for Direct Extraction (a 1x1 mapping between the BCM and HW action is mandatory). The BCM mapping has been changed: - bcmFieldActionSrcGportNew is mapped to Source-System-Port - bcmFieldActionIngressGportSet is mapped to In-LIF  The user MUST change its BCM action from bcmFieldActionSrcGportNew to bcmFieldActionIngressGportSet when the In-LIF is changed in Field processor.
SDK-49040		All	Improve KNET NAPI performance by increasing the number of packets processed per interrupt.
SDK-49056		88750_A0 88750_B0	88750: BCM command shell "diag queues" now shows different format: it shows [link number, max size]
SDK-49057	676332	88650_B0	Fix default MC TC mapping to service pools such that: 1. TC0-3 are mapped to SP0 2. TC4-7 are mapped to SP1 regardless of number of priorities mode.
SDK-49083	676830	88650_B1	VPLSoGRE: MPLS ttl0 trap invoked in case of running VPLSoGRE packet. Added a new FLP program in order to remove trap issue.
SDK-49090		88650_A0	Failover: API function bcm_failover_cleanup() did not clean the failover SW DB in alloc mngr. Added proper handling to failover SW DB.
SDK-49094	670228	56342_A0 56344_A0 56340_A0	APIs bcm_l2_age_timer_set/get() should now work for bcm56340 type switch devices.
SDK-49099	669195	88650_A0	new soc property provided: ilkn_retransmit_rx_reset_upon_watchdog_error_enable. previous setting was set to enabled. This new property is provided in order to avoid resetting when watchdog error occurs.
SDK-49100	664670	56850_A0 56850_A1 56850_A2	Set VOQ_COS_MAP.VOQ_COS_USE_MOD to enable DMVOQ feature in MMU.
SDK-49104		88660_A0	Add new values to bcm_cosq_gport_stats_t: bcmCosqGportNotGreenDroppedPkts bcmCosqGportNotGreenDroppedBytes bcmCosqGportNotGreenAcceptedPkts bcmCosqGportNotGreenAcceptedBytes  These modes are in use in the third entry in FULL_COLOR, GREEN_NOT_GREEN and in 88660 in SIMPLE_COLOR_DROP and SIMPLE_COLOR_FWD.

**Table 54:**

<b>Number</b>	<b>CSP #</b>	<b>Chips</b>	<b>Release Notes For 6.3.2</b>
SDK-49115		88650_B1	In VxLAN application, no default trap or snoop can be configured in case of no hit in VNI mapping and Source-IP lookups. A Field processor CINT is proposed to handle this case: <code>cint_field_vxlan_lookup_unfound.c</code>
SDK-49128		88650_A0 88650_B0 88650_B1	In Advanced VLAN edit mode, the number of Egress VLAN edit profiles changes from 8 to 16 as the HW permits. Hence, the number of supported Egress VLAN edit actions changed from 128 to 256.
SDK-49133		88650_A0	<code>diag cosq print_flow_and_up</code> didn't display accurate value of Credit rate , now it displays the accurate value
SDK-49150	678454	56640_A0 56850_A0 56640_A1 56640_B0 56850_A1 56850_A2	Initialized the LAG and HGTRUNK resolution on Triumph 3 and Trident 2 devices.
SDK-49151		88650_A0 88650_B0 88650_B1	Advanced VLAN editing: Added in CINT examples the support of advanced VLAN mode (soc property <code>bcm886xx_vlan_translate_mode=1</code> ) on PON application CINTs.
SDK-49152		88650_A0	VPLSoGRE: Update CINT of VPLSoGRE 2 pass solution to have a correct RIF when sending to recycle port. Before RIF caused on the second pass "sa equals da" trap. For more details about the solution see <code>cint_vswitch_vpls_gre.c</code> .
SDK-49153		88650_B0 88650_B1	Port field in Trill adjacency check was not enabled (feature was added in Arad-B0, but was not enabled by SDK).
SDK-49159	678514	88650_A0	In previous versions (pre 6.3.2) the vlan information (id, priority, cfi) was encoded inside the vlan field in <code>bcm_port_congestion_config_t</code> struct. The implementation changed such that the following fields in <code>bcm_port_congestion_config_t</code> represent the VLAN information: - vlan - cfi - pri  When 'vlan' is set to <code>BCM_VLAN_INVALID</code> , the vlan, cfi and pri won't be configured to the device.  The API is used to control the CNM PDU vlan tag. It's also optional to provide vlan edit command when working in PP mode. The API configures the vlan id, pri & cfi in the edit command fields, but it doesn't update the command field (default command is don't edit). Modifying VLAN edit command is currently not supported by API (can be done on register-level, please consult BCM AE team if relevant)

Table 54:

Number	CSP #	Chips	Release Notes For 6.3.2
SDK-49166		88650_A0	<p>Added new feature. Feature description: The BCM88650/BCM88660 device has the ability to save User-Data in the DRAM packet memory. The DRAM is partitioned into fixed-size buffers. These buffers are typically used for packet queuing. A sub-range of DRAM buffers can be allocated to store User-DATA. The number of DRAM buffers used for packet queuing is the minimum of Packet Descriptors Memory (PDM) maximum buffers descriptors capacity DRAM size divided by DRAM buffer size, where the DRAM size is total available DRAM size minus the number of buffers allocated for User-Data. The amount of User-Data DRAM buffers is defined by the user. The total number of DRAM buffers descriptors is 2M buffers. With 8 DRAM interfaces, each interface serving two DRAM devices of 2Gbit, the DRAM total size is 4GByte. For example, in a system with standard PDM configuration, with 8 DRAM interfaces, the maximal descriptors capacity for packet queuing is 1.5M buffer descriptors. When DRAM buffer size is set to 1KB, up to 1.5GB of DRAM memory can be used for packet queuing. The remaining 0.5M buffers can be allocated to user-data, without effecting the amount of memory available for data queuing. Notes: Access to DRAM User Data is available only after completing the device initialization. Performing DRAM calibration (Shmoo), Device Hard reset will corrupt the DRAM Use-Data.</p> <p>Driver Reference SoC Properties The SoC property <code>user_buffer_size_dram=&lt;User-Data MBytes&gt;</code> (Default: 0) Sets the User-Data size. BCM API To access User-Data buffer: <code>int bcm_switch_user_buffer_write( int unit, uint32 flags, bcm_switch_user_buffer_type_t buff_type, uint8 *buf, int offset, int nbytes); int bcm_switch_user_buffer_read( int unit, uint32 flags, bcm_switch_user_buffer_type_t buff_type, uint8 *buf, int offset, int nbytes);</code> flags - for logical to physical address translation use <code>BCM_SWITCH_USER_BUFFER_LOGICAL2PHY_TRANS</code> flag. Note: Due to HW errata in BCM88650-A0/BCM88650-B0, logical to physical address translation must be used if OCB enabled in the system.</p> <p><code>buff_type</code> - for DRAM User buffer type use <code>BcmSwitchUserBufferTypeDram</code>. *buf - In write access function contain Data buffer to be written to DRAM User buffer, in read function store the data read from DRAM User buffer. <code>offset</code> - The offset in the User DRAM buffer where. Start of dram User buffer resides in offset '0'. <code>nbytes</code> - Number of bytes to be written or read. WarmBoot DRAM User-Data can be used to save WarmBoot Database. By registering DRAM User Data access function to WarmBoot Callbacks, the WarmBoot Database will be saved to DRAM. Since part of WarmBoot sequence is done during SOC initialization, before BCM API calls are accessible, the corresponding SoC API can be used instead: <code>uint32 soc_arad_user_buffer_write( int unit, uint32 flags, uint8 *buf, int offset, int nbytes); uint32 soc_arad_dram_user_buffer_read( int unit, uint32 flags, uint8 *buf, int offset, int nbytes);</code> The functions parameters match those of the corresponding BCM API functions.</p>

**Table 54:**

<b>Number</b>	<b>CSP #</b>	<b>Chips</b>	<b>Release Notes For 6.3.2</b>
SDK-49181		88650_A0 88650_B0 88650_B1	VLAN translation new mode: IVE action ids 0-13 had incorrect FHEI size (3B). FHEI size (5B) is now set instead.
SDK-49190	672457	88650_A0 88650_B0 88650_B1	When traversing the Large Exact Match table (e.g. when traversing MACT or IP host tables), some entries were appearing twice in some scenarios. This bug is fixed.
SDK-49194	676557	All 56634_B0	fix <code>vlan_subnet_entry_delete</code> error when <code>VLAN_SUBNET</code> table is full
SDK-49195	675324	88650_B0 88650_B1	Interop between PB and ARAD in PP mode. In order to support this mode, ARAD should be configured to handle PB FTMH. If ARAD is working in PP mode and PB in the system is configured, Arad will be automatically configured to support PB FTMH headers. Relevant only for ARAD B0/B1 devices
SDK-49198	679516	88650_B0	Fixed bug in port speed set by auto-negotiation - <code>bcm_port_update</code> : in case of link up as a result of auto negotiation, set also the mac speed according to the auto negotiation. <code>bcm_port_speed_get</code> : read the speed from the serdes.
SDK-49200	677111	88650_A0 88650_B0 88650_B1	When using external TCAM for IPv6 Multicast forwarding lookup, the lookup key was in the Multicast table: {In-RIF, Destination-Multicast-Group[119:0]}. It is from now on: {In-RIF, Source-IPv6[127:0], Destination-Multicast-Group[119:0]}. The Source-IPv6 parameter is set during the entry addition via ' <code>s_ip6_addr</code> ' in <code>bcm_ipmc_addr_t</code> .
SDK-49203		56640_A0 56640_A1 56640_B0	CRC checking is enabled when device operates with a maximum of 16 lanes.
SDK-49212	679834	56850_A0	Completed support for internal priority override on mirror packets.
SDK-49221	679524	56850_A0	Corrected the initializing code, so that it doesn't throw false alarm
SDK-49222	680016	56334_B0 56334_A0	Disabled <code>sample_thresh16</code> feature for enduro as sflow threshold is changed from 16bit to 24bit in enduro.
SDK-49243	636292	88650_A0 88650_B0 88650_B1	In Field Processor, the following BCM qualifiers were not correctly implemented for IPv6 routed packets: - <code>bcmFieldQualifyIp6NextHeader</code> = <code>bcmFieldQualifyIpProtocol</code> - <code>bcmFieldQualifyIp6FlowLabel</code>
SDK-49258	675009	88650_A0	Fixed: allocation of two composite scheduling elements with two sequential <code>flow_ids</code> might fail.
SDK-49260	673477	56850_A0	Added code, so that forwarded vlan is configured irrespective of <code>ingress_map_mode</code> config variable
SDK-49261		56640_B0	N/A
SDK-49286 SDK-49309		88650_A0 88650_B0	Background: The OAMP has a configuration corresponds to the correct core clock. Bug: This value is fixed to 500Mhz clock. Solution: Clock is taken from <code>SYSTEM_REF_CORE_CLOCK</code> soc property.
SDK-49292		56850_A0 56850_A1 56850_A2	<code>bcmFieldQualifyVnTag</code> qualifier(F2-7) offsets are adjusted to correct values in VFP.
SDK-49293 SDK-49294		56640_A0 56640_B0	Issue fixed to make external L2 ACL work on TR3
SDK-49302	680992	88030_A0	Read API for coherent counter.
SDK-49305	677200	88650_A0	Congestion Notification: fix CNM packets generation in sampling mode. 1. Driver code fixes 2. Add missing functionality to cint example ( <code>src/examples/dpp/cint_cnm.c</code> )



**Table 54:**

<b>Number</b>	<b>CSP #</b>	<b>Chips</b>	<b>Release Notes For 6.3.2</b>
SDK-49307	678192	88650_A0 88650_B0 88650_B1	For IP forwarding databases located in TCAM, the traverse function was skipping entries. This is fixed.
SDK-49310	681349	56850_A0	Add code reading of yellow limit is for multicast queue
SDK-49312	680636	56850_A1	Corrected the code in routine <code>_soc_counter_trident2_non_dma_init</code> to fix the problem of memory being over-written.
SDK-49333	671402	All 56850_A0 56850_A1 56850_A2	Corrected SNAT HIT status.
SDK-49339	680069	88650_B1	Fixed: If recycle ports are defined (in config.bcm), and outbound mirroring of a port was set up and then deleted, then <code>bcm_cosq_gport_bandwidth_set()</code> would fail. This may also have happened with OAM/PMF/egress ACL and not just with mirroring.
SDK-49340	671446	88650_A0 88650_B0 88650_B1	VLAN: Set lif VSI assignment mode equals VLAN if vlan port criteria is <code>BCM_VLAN_PORT_MATCH_PORT</code> and vsi is -1.
SDK-49346	678063	All	Support Encapsulated HiGig packet in Both L2 and IP GRE mode.
SDK-49348		56852_A1 56852_A0 56850_A0 56852_A2	The release notes has been updated with Preview mode support for 56852.
SDK-49349	674832	56640_A0 56641_A0 56642_A0 56643_A0 56644_A0 56645_A0 56648_A0 56640_A1 56643_A1 56644_A1 56640_B0 56644_B0 56643_B0 56648_B0 56649_B0 56649_A0	Fixed the counters issue for oversize and runtime packets on TR3 platform
SDK-49350	681799	56640_A0 56340_A0	Fix for retrieving available and free counters on TR3 and Helix4
SDK-49360	668571	88650_A0	L2GRE: Use bounce back filter to perform split horizon. The filter is now configured at the init stage in the driver in case L2GRE/VXLAN is enabled. To activate the bounce back filter, use: <code>bcm_rx_trap_set</code> . See example in <code>cint_l2gre</code>
SDK-49366	682107	56450_A0	Enhanced init time port attributes (which were missing) for SubportPktTag and LinkPHY support
SDK-49389	678486	56340_A0	Support 25Mhz clock source in Helix4
SDK-49390	680811	56840_A0 56640_A0 56850_A0 56850_A1	EFP_TCAM entry KEY field width is increased in TD2 and TR3 as compared to TD/TR2. So, relevant changes are made in EFP recovery logic (warm boot) to support this change for TD2 and TR3 separately. Also, changes are made to recover SrcIp, DstIp qualifiers without Ip4 qualifier being part of the Group's QSET.
SDK-49396	680823	56850_A0 56850_A1 56850_A2	Call user defined callback in <code>bcm_l3_nat_ingress_age</code> .
SDK-49402		88650_A0 88650_B0 88650_B1	Cannot dump <code>EPNI_AC_FORMAT</code> for banks different than 0, this issue have been solved.
SDK-49403		88650_A0	If the IPv4 Unicast table is located in the external TCAM (KBP), the handling of the IPv4 Multicast BiDir processing was missing.
SDK-49408	681629	88650_A0	Unnecessary dynamic allocation that cause run time overhead replaced by using the system's stack.

**Table 54:**

<b>Number</b>	<b>CSP #</b>	<b>Chips</b>	<b>Release Notes For 6.3.2</b>
SDK-49411	679277	56640_A0 56620_B0 56850_A0 56640_A1 56640_B0 56850_A1 56850_A2	Removed incorrect check for invalid virtual port number - 1 in <code>bcm_mpls_port_add()</code> API. This potentially fixes an issue that the API cannot create more than 31 VPWS ports due to the result of compiler dependent negative value shift operation.
SDK-49423		56851_A0 56852_A1 56852_A0 56853_A1 56853_A0 56850_A0 56855_A0 56854_B0 56854_A0 56850_A1 56851P_A1 56851_A1 56850_A2 56851_A2 56851P_A2 56854_A2 56853_A2 56852_A2 56855_A2	Fixed incorrect register access in <code>bcm_rx_queue_channel_get()</code> to read rx queue vs. channel mapping.
SDK-49427	682375	All	Leave CPU COS queue DMA mappings unchanged if warm-booting.
SDK-49431	680820	56150_A0	Support new port configuration, $24*1G+2*1/10G(TSC0)+2*1/10G(TSC1)$ , of BCM56150, BCM56151 and BCM53346.
SDK-49435	681921	88650_A0 88650_B0 88650_B1	In Field Processor, the key-id allocation of the 2nd-lookup cascaded Field Group (i.e. with the qualifier <code>bcmFieldQualifyCascadedKeyValue</code> in its QSET) was always Key-A. This field group was superposing other Field groups already using the same Key-A by mistake. After the fix, an analysis is performed in the Driver to find the same Key-ID in all the PMF-Programs where this Field Group is present. The constraint of a unique Key-ID is specific to 2nd-lookup cascaded Field Groups: the Key-ID is written in the TCAM entry action when changing the cascaded value.
SDK-49436		88650_A0	Diagnostic "show counters full" BCM shell command wasn't functional for fabric links. Fixed.
SDK-49438		88650_A0	Calling <code>bcm_cosq_gport_bandwidth_set</code> with fabric <code>clos_fm_qport</code> and max rate 0, caused segmentation fault. Fixed.
SDK-49457	683576	56850_A0	Atmost eight contiguous child nodes can be configured with schedule mode strict priority.
SDK-49459	681835	All	fixed 'snmpIfOutDiscards always returns BCM_E_PARAM for MXQports'
SDK-49463	683475	56150_A0	To support the request on bcm953150's QSGMII/SerDes to work at SGMII/SerDes mode.
SDK-49466		88650_A0	XGS programs in the programmable editor should be loaded only if at least one XGS port exists.
SDK-49483	683903	All	Sounds like TD+ from CSP
SDK-49485	684014	All 56850_A0 56850_A1 56850_A2	fix issue: deleting NAT egress entries incorrectly.
SDK-49489	680869	56640_A0 56540_A0	Aligned Module Id offset in LMEP.DEST field.
SDK-49499	684229	56450_A0	Provided patch files (as attachment) for 6.3.1 branch from HEAD-TOT(6.3.2) branch
SDK-49511	683836	88030_A0	fixed TMU chain hash delete issue for non-64 bits chained hash on bcm88030



Table 54:

Number	CSP #	Chips	Release Notes For 6.3.2
SDK-49528	684297	56851_A0 56852_A1 56852_A0 56853_A1 56853_A0 56850_A0 56855_A0 56854_B0 56854_A0 56850_A1 56851P_A1 56851_A1 56850_A2 56851_A2 56851P_A2 56854_A2 56853_A2 56852_A2 56855_A2	Added 10 bit ClassID for TD2 and TR3 devices in L3_ENTRY_IPV4_UNICAST and L3_ENTRY_1 respectively.
SDK-49532	684507	All	Fix BAD_PTR check for 64-bit pointers.
SDK-49546		All	Binaries output in systems/linux target folders has been replaced with soft-links to binaries in build directory in order to save space.
SDK-49550	684265	56820_A0 56820_B0	Support BCM_IPMC_HIT_CLEAR in firebolt ipmc.
SDK-49557		88650_A0	In TCAM, two shuffle methods are used: 1. "Old method": Each database has different set of entries, gathered by priority. For each new insertion, at the most one entry per group will be shuffled by being written in the new location and remove from the previous location. The number of shuffles is limited by the number of priorities. This method is used for non-FP TCAM Databases and Direct table databases since their number of entry priorities is limited. 2. "New method": use the HW TCAM command allowing to move a whole block of entries (data, mask and action) in one command. This method is used for FP databases, since the number of entry priorities may be huge. The Driver allows to use the "old method" for Field groups when setting the BCM_FIELD_GROUP_CREATE_SPARSE_ENTRY_PRIORITIES flag at their creation. This method is recommended if the user knows that the number of priorities used for this Database will be low, since it is an upper limit on the number of shuffles for each new entry insertion. It is recommended to use this flag with the BCM_FIELD_GROUP_CREATE_INSERTION_ORDER_LOOSE flag
SDK-49560		88650_A0	In Policer module, Meter configurations (meter profiles) are by default managed by the driver in the background. This simplifies the interface for the user by allowing the specification of configuration for a meter, without having to manage separate configurations as well as meters.  New policer attributes (BCM_POLICER_REPLACE_SHARED and entropy_id) allows direct control over the meter configuration, called a meter profile. With this new API, changing the configuration of a meter profile can change the configurations of all meters that use this profile atomically.  More details can be found in the user manual and in the CINT example cint_policer_metering_example.c



**Table 54:**

<b>Number</b>	<b>CSP #</b>	<b>Chips</b>	<b>Release Notes For 6.3.2</b>
SDK-49563		88650_A0	ITMH and RX Trap collision: Due to an HW constraint, the parsing of the ITMH snoop fields requires an equal number of RX user-defined traps previously allocated to the number of snoop commands. Thus, at init, the HW order of the user-defined traps is changed: 1. The User-defined HW traps indexes are changed. It may have an influence on the user when parsing the FTMH trap code in CPU packets 2. The 16 last user-defined traps are allocated by default at init for the ITMH.Snoop field parsing.  If the user wants to increase the number of User-defined traps without using the whole Snoop field in ITMH, a control (bcmRxControlTmSnoopCount ) is given to indicate the number of User-Defined traps to reserve for the TM
SDK-49570	660874	88650_A0	Fixed SGMII 10Mbps mode
SDK-49572		88750_A0 88750_B0	Default thresholds values at the DCM block (drop thresholds, GCI thresholds and fullalmost full thresholds) were not configured correctly during initialization. Fixed. Note: default configuration change. Applied upon cold boot only.
SDK-49573		56850_A0 56854_A0 56850_A1 56850_A2	Fixed AT_vxlan_08 related to Higig Proxy forwarding on TD2 hardware
SDK-49598	680786	88640_A0	In BCM88640, in Field Processor, the definition of the L4 ports (UDP / TCP Source and Destination ports) were set according to an offset from the IP header as base-header. To support their extraction even when the IP header has options, their definition is set according to base-header=header-after-IP.
SDK-49600		88650_A0	Add clearing IDR memory to avoid ECC errors upon initialization. The fix is committed under SDK-49166.
SDK-49607	685078	56640_A0 56640_A1 56640_B0	With this fix in SDK, OVID is supported as a key in ESM_L2_IPV4_ACL profile on TR3.
SDK-49620	684645	56850_A0	Fixed addition of a member to an empty LAG, Higig trunk or ECMP group, when resilient hashing is enabled. This fix is applicable to BCM56850 device.
SDK-49621	672357	88650_A0 88650_B0 88650_B1 88660_A0	When trying to delete one of first 257 CL SE using bcm_cosq_gport_delete API error is returned. Fixed.
SDK-49628		88650_A0 88650ACP_A0 88650_B0 88650_B1	In advanced VLAN edit mode, The VID value of the outer most tag for added or replaced VIDs, is always set according to the configured new outer VID. Therefore, if the outer most tag after a VLAN editing operation, was created due to Add or Replace VID actions (bcm_petra_vlan_translate_action_id_set), the VID value will be according to the new_outer_vlan value (configured by bcm_vlan_port_translation_set). In the same way, the VID value for the next tag is derived from new_inner_vlan value in case it's a result of Add or Replace VID actions. This logic is irrespective to whether the tag was created/modified by bcm_petra_vlan_translate_action_id_set using the dt_outer or dt_inner fields.
SDK-49633	685543	All 56639_A0 56636_A0 56634_A0 56638_B0 56636_B0 56634_B0	bcm_init() should work now for BCM56636 with DEBUG_IFDEFS=FALSE in make file

**Table 54:**

<b>Number</b>	<b>CSP #</b>	<b>Chips</b>	<b>Release Notes For 6.3.2</b>
SDK-49647		56850_A0	EFP bcmFieldQualifyForwardingVlan/vrf/Vpn qualifier initialization has been fixed for Trident2 device.
SDK-49653	683688	56334_B0 56334_A0	Fixed policer delete internal function.
SDK-49654	686137	All	bcm_esw_vlan_gport_delete/_all delete UMC_IDXf/UUC_IDXf when it's in wlan.
SDK-49672	686076	56850_A0	Introduced new flags to Drop or Copy IPMC packets to CPU on RPF failure
SDK-49679		All	Fixed Warmboot link flap issue on "exit clean"
SDK-49680	685195	56840_A0	bcm_vlan_control_vlan_set() API should now work with protocol packet control feature on the BCM56840 device
SDK-49681	671511	56334_B0 56334_A0	Corrected remote endpoint replace procedure.
SDK-49685	675798	56850_A2	Resolving bcm_td2_l3_ent_parse() tries to access NULL pointer issue which lead to SDK crash when we use bcm_l3_host_add().
SDK-49695	681301	88030_A0	improve taps lookup performance on bcm88030
SDK-49705		88650_A0	Configuring max burst using the following API with E2E gport is no longer supported. bcm_cosq_control_set(unit, gport, 0, bcmCosqControlBandwidthBurstMax, value). The API was not functional, now considered deprecated for E2E gport and will return error if called.
SDK-49731	685391	88650_A0 88650_B0 88650_B1	Source routed cell debug feature - generating source routed cells was not functional - fixed.
SDK-49732		88650_A0	A mutex-destroy was missing in soc_dfe_attachdetach, causing a memory leak. Fixed.
SDK-49736	685097	88650_B1	OAM DA MAC address should be identified as multicast only if LSB on 1st byte is 0x1 (and not if first byte value is 0x1)
SDK-49739	679590	88650_B1	L2GRE: Added support for GRE Tunnel Keepalives (Next-Protocol == 0). In that case, packet is not terminated and expected to forward the packet to CPU according to the packets DIP.
SDK-49744	680968	88650_A0	Device Soft Reset is used as a corrective action for some device interrupts. Device soft reset should not be triggered during an active DMA transaction. To insure this, we now take DMA mutexes/semaphores before performing Device Soft Reset.
SDK-49749		88030_A0	fix taps route delete not working for certain routes on bcm88030 device
SDK-49751	681330	56340_A0 56640_A1 56640_B0 56643_B0 56540_B0	Disable parity on PORT_OR_TRUNK_MAC_COUNT and PORT_OR_TRUNK_MAC_LIMIT.
SDK-49760		56150_A0	1. Double Wide Mode is not supported for VFP on HR2, removed the Support. 2. Fixed the VFP_KEY_CONTROL update implementation, it was overwritten by 2nd Part of the VFP TCAM during TCAM parts iteration.
SDK-49768	675820	56850_A0	bcm_port_ifg_set() API should now be able to configure the interframe gap parameter for the port speeds greater than 10G on BCM56850 switches

**Table 54:**

<b>Number</b>	<b>CSP #</b>	<b>Chips</b>	<b>Release Notes For 6.3.2</b>
SDK-49779		88650_A0	In Field processor, when the user is using the VLAN-Editing advanced mode (the SOC property <code>bcm886xx_vlan_translate_mode</code> is set to 1), the <code>param0</code> of the <code>bcmFieldActionVlanActionSetNew</code> action is the explicit HW VLAN-Edit-Command. <code>param1</code> is unused.
SDK-49783		88650_A0	Counter was not stamped on OAM upmep LMM injected packets
SDK-49784	686895	88650_B0	In a system with both VSC128 and VSC256 FAPs. Cells sent by VSC128 FAP was dropped at the egress of VSC256 ARAD_B0 device. Fixed.
SDK-49786	648116	88030_A0	Burst size will remain 1000 bit for 1k, fixed minor bugs in burst size calculation on bcm88030
SDK-49800		88650_A0 88650_B0	0 is a valid value of sip. Add a fix to support to bind sip 0 under ip anti-spoofing mode.
SDK-49802	687697	88650_A0 88650_B0 88650_B1	For non-Field Processor TCAM databases (e.g. IP TCAM databases), the entry insertion in the TCAM is done according to the entry content. An hash list is built internally to allocate a unique entry-id to each new entry content. When adding an existing entry to a full TCAM, the TCAM insertion function is returning an error without removing the existing entry. However, the existing entry was removed from the hash list, generating a mismatch between the TCAM state and the hash list state.
SDK-49818		56640_A0	56640_A0 : Added locks during counter accumulation..
SDK-49856	688600	56640_A0 56640_A1	SOURCE_FIELD_MASK in MY_STATION_TCAM is programmed correctly
SDK-49859	687640	88030_A0	support RCE table access API on bcm88030
SDK-49874	686953	88030_A0	The LP, OI, FT resource leak for MPLS LSR is fixed.
SDK-49876		88660_A0	Diagnostics shell improvement: If <code>PQP_Discard</code> or <code>RQP_Discard</code> counters are non-zero, diag count diagnostics command will display the reasons for discarding packets
SDK-49879	686328	88030_A0	fixed taps update excessive error message on bcm88030
SDK-49880	688875	56850_A0	Add WRED Time Domain configuration.
SDK-49886	688548	56850_A0	The <code>L3_HG_HDR_SEL</code> field is always set to 1 for the virtual port routing feature
SDK-49906		All	Avoid potential divide-by-zero when reading KNET Linux proc file <code>/proc/bcm/knet/debug</code> .
SDK-49912	683210	54640E_B0	The duplex setting in the SGMII slave mode is now correctly reported for BCM54640(E)/BCM682(E)/BCM685(E) PHYs.
SDK-49914	689580	56850_A0	Fixed L3 ingress replace when both <code>BCM_L3_INGRESS_REPLACE</code> and <code>BCM_L3_INGRESS_WITH_ID</code> flags are set
SDK-49919	687667	88650_B1	Deleting VOQ connector using <code>bcm_cosq_gport_delete</code> wasn't saved in Warm Boot SW-DB. This could result in a WB error in some cases. The issue was fixed.
SDK-49921	688574	88650_A0 88650_B0 88650_B1	V-LAN fields in the <code>endpoint_info_t</code> struct must be consistent (either both the <code>tpid</code> and the <code>vlan</code> are 0 or neither one of them is zero) and the <code>tx_gport</code> must be a either invalid or a system port.
SDK-49939	688983	88650_A0	In TCAM, the database id of the Coupling LSR accessed at Termination block and Database 0 of ACL block (PMF) was identical. This is fixed.



Table 54:

Number	CSP #	Chips	Release Notes For 6.3.2
SDK-49952	689261	56150_A0	Prevent 10G MAC been unable for packet transmit always after port is disabled.
SDK-49960	689627	56850_A0	<p>bcm_l3_egress_create api supports the change operation in which the flags can also be modified.</p> <p>The flags can be unset by user application and thus has to be unset from the SDK/hw. the code to unset the flag was missing in sdk and therefore once set, the flags will always remain set.</p> <p>With this fix, SDK will always look into the incoming flags and set/unset the L3 flags.</p> <p>The user application has the onus to set/unset the flags according to its needs and always pass the flags which it wants to remain set. SDK does not maintain any local copy of flags.</p>
SDK-49963	688347	56440_B0	TOQ memory needs to be updated in B0 when redirection pointer is modified.
SDK-49986		88650_A0	In Field Processor, the entry value settings for the actions bcmFieldActionSrcGportNew & bcmFieldActionLearnSrcPortNew were incorrect.
SDK-49987	686341	88650_B1	moved warmboot modules definitions to a central location to protect scache handlers from collisions.
SDK-49998	687589	56850_A0	Added additional check to make sure the correct node is picked up in case of Y pipe ports.
SDK-50008	690020	56850_A1	In the function _bcm_tx_gport_resolve(), the virtual port get is complete
SDK-50010		88650_A0	MPLS termination: added the ability to change the location of MPLS termination databases. In BCM886XX, there are up to three MPLS databases that reside in 2 physical databases SEM-A and SEM-B. SOC property: bcm886xx_mpls_termination_database_mode
SDK-50027		88650_A0	In Field Processor, the action allocation for Ingress TCAM Field groups is done via HW FES machines. Due to HW constraints related to FES, the bcmFieldActionClassDestSet & bcmFieldActionClassSourceSet actions are limited to 31b in their action value when used for TCAM Field groups.
SDK-50050	691203	88650_A0 88650_B0 88650_B1	In the Counter processor module, the DMA access was not disabled during the counter processor detach, causing DMA transactions even after the device was detached.
SDK-50077		88650_A0 88650_B0 88650_B1 88660_A0	<p>To define VOQ as a "Push Queue" you need to call: bcm_cosq_gport_sched_set(unit, VOQ, cosq, BCM_COSQ_DELAY_TOLERANCE_15, 0)</p> <p>This stopped working in release 6.2.2.</p> <p>This was fixed to work again.</p> <p>Now bcm_cosq_delay_tolerance_level_set/get(unit, BCM_COSQ_DELAY_TOLERANCE_15, &amp;delay_tolerance); will return an error. This is since BCM_COSQ_DELAY_TOLERANCE_15 represents push queues and not a credit request profile which can be changed.</p>
SDK-50078	690440	All 88030_A0	The problem is packet goes to exception stream since an invalid value returned by v6sa table. The reason is there is no default route for on chip mode. So fix it with insert a default entry 0/0.

Table 54:

Number	CSP #	Chips	Release Notes For 6.3.2
SDK-50086	691136	56440_A0 56440_A1 56440_B0	fixed issue with non-zero modid for bcmFieldActionFabricQueue for BCM5644x devices
SDK-50100	692001	56450_A0	Allocated memory for all (including unused) port at init time so that when ports are created fresh with flex-io operations , NULL pointer situation will not arise.
SDK-50116		56850_A0	Added support for creating multicast L3 egress object on virtual ports. Please see the bcm_l3_egress_create API description for more details.
SDK-50120	681772	88650_B1	bcmVlanPortDoubleLookupEnable: In case port supports double lookup (Port x VLAN x VLAN and Port x VLAN), Untagged and priority tag packets were dropped. Added a new program selection and program to take care of untagged and priority tag packets
SDK-50123		88650_A0	In L2 module, the MACT entry insertion performance has been improved.
SDK-50135	662939	88650_A0	Trap strength remain with its default value of 4, and was not changed while using bcm_l2_cache APIs
SDK-50140		All	(1) soc properties now have whitespace stripped before being parsed, so " x = 7 " is equivalent to "x=7". (2) "make propgen" now creates a big list of all valid properties in property.h, and sal_config_refresh uses the list to determine if a given property is valid, and displays a warning when invalid ones are set (3) A new soc property can be set to suppress the warnings from item #2: suppress_unknown_prop_warnings=1 Code review #11759
SDK-50159	692837	56850_A0 56850_A1 56850_A2	Resolved SDK crash when "show pci" diag shell command is run without probing any device.
SDK-50177		88650_A0 88650_B0 88650_B1 88660_A0	diag EGQ graphic displayed TCG bandwidth 0 as unlimited. Fix to display 0.
SDK-50198	691823	88650_B1	IP packets with Priority tag packets: Fixed IPV4oE packet with priority tag (VLAN = 0) to classify according to initial-VID.
SDK-50221	693418	88650_A0	During the detach of the Counter Processor module (bcm_dpp_counter_detach), the background SW counter thread must be de-initialized only if it was initialized. This was not the case.
SDK-50257	689596	88030_A0	fix 8x10G+16x1G linerate issue on bcm88030
SDK-50287	692402	56150_A0 56450_A0 56340_A0	Added iProc support for VxWorks BDE in Keystone processor.
SDK-50294		88650_A0	In IP TCAM management, when all the IP route entries of a TCAM bank were removed from a TCAM bank, the bank was not freed for other purposes than IP. Now it can be used also for Ingress/Egress PMF or Termination (VTT).
SDK-50295		88650_A0	In Field processor, the parsing of the User-header is not good in Arad-A0 (88650_A0) . In case the user configures it (via field_class_id_size SOC properties), an error is returned.
SDK-50301		56845_B0 56845_A2 56840_A0 56640_A0 56644_A0 56850_A0 56843_B0 56841_A3 56841_B0 56850_A1	Trill Payload offset base is supported in UDF

Table 54:

Number	CSP #	Chips	Release Notes For 6.3.2
SDK-50417		88650_A0	While loading SerDes firmware using SoC property <code>load_firmware=2</code> (fast load), the initialization sequence might fail in a multistage environment (Few devices controlled by the same CPU). Fixed.
SDK-50424		88650_A0 88650_B0 88650_B1 88660_A0	VLAN: In case match criteria is <code>BCM_VLAN_PORT_MATCH_NONE</code> , <code>bcm_vlan_port_create</code> add an ESEM entry while it shouldn't. Bug fix was to eliminate the addition of ESEM entry. To add entries to ESEM in that case should be done using <code>bcm_port_match_add</code> .
SDK-50428		88750_A0	Fixed possible memory leak when <code>soc_dfe_init</code> fails.
SDK-50439	695545	88030_A0	Has been implemented already (see MDEStatementView in Multistream Editor Prespective)
SDK-50448		56640_A0	The API Guide is updated regarding warm boot support.
SDK-50461	696000	56450_A0	For BCM5645x device, added fix for port property configuration which was missing after flex IO swap from xaui to 4xGE
SDK-50480		88650_A0 88650_B1	Warmboot feature should now work for devices !=0 it didnt work due to hard coded 0 "prime_handle" field in sand data structures. changed the field to equal <code>device_id</code>
SDK-50503	696244	88650_A0	SMPFullLevel1, SMPFullLevel2 and FCTFIFOvf interrupts are not cleared correctly. this issue is solved.
SDK-50586	697601	88030_A0	Low 32register and high 32register has been swapped for LrpEditor tooltip.
SDK-50609		88650_A0 88650_B0 88650_B1	L2 PON: Flush database isn't set to be invalid after flushing action done by "l2 clear all". Issue caused traffic to drop after l2 clear all. Issue is now fixed.
SDK-50744	699029	88650_A0	OAM warmboot SW database allocated 67125248 entries instead of 16K
SDK-50870	694419	56640_A0 56850_A0 56640_A1 56640_B0	Unlock semaphore correctly in <code>bcm_tr2_vlan_gport_add()</code> .

## Section 8: Unresolved Issues for 6.3.2

The following issues are unresolved in version 6.3.2 of the SDK.

*Table 55:*

<i>Number</i>	<i>CSP #</i>	<i>Chips</i>	<i>Release Notes</i>
SDK-30856		All	When mirror-to port resides on a different unit, the mirrored packet may not egress correctly.
SDK-32461		56846_A0 56845_B0 56845_A2 56844_A0 56842_A0 56840_A0	On BCM5684x devices one can observe inaccurate packet discard, when it is based on packet color (CNG bits).
SDK-32676	381244	All	The switch control bcmSwitchL2PortBlocking is not correctly preserved for Level 2 warmboot.
SDK-33686	389108	56634_A0	If a MiM virtual port has statistics enabled for it and if such MiM port is replaced using BCM API <code>bcm_mim_port_add()</code> along with flag <code>BCM_MIM_PORT_REPLACE</code> then the statistics of that MiM port might be lost.
SDK-35755	411572	56820_A0 56820_B0	Compared to older releases, L2 Notification thread (bcmL2X) requires more CPU bandwidth to run in polling mode ( <code>l2xmsg_mode=0</code> ), due to the requirement for more thorough entry comparisons.  The recommendation, however, is to run L2 notification thread using <code>L2MOD_FIFO DMA</code> mechanism, which is much more efficient and provides more functionality. To do that, please, set the configuration variable (property) <code>l2xmsg_mode</code> to 1.
SDK-37274		56640_A0 56440_A0 56850_A0	An API to attach flexible counters (stats), such as <code>bcm_port_stat_attach()</code> allows to attach multiple flexible counters to a port. For example, both Ingress and Egress counters can be attached that way. However, the API <code>bcm_port_stat_detach()</code> detaches all the flexible stats at once and there is no ability to detach stats selectively.  For the time being the only option is to use <code>bcm_port_stat_detach()</code> and then re-attach the stat that is still needed.
SDK-37821		56846_A0 56845_B0 56845_A2 56844_A0 56842_A0 56840_A0 56440_A0 56843_B0 56841_A3 56846_A1 56841_B0	<code>bcm_cosq_config_set()</code> had traditionally been used to set the system wide number of COSQs. This does not apply to devices with hierarchical schedulers. For these devices, the hierarchy constructed at device initialization time is dependent upon the number of COSQs defined in the system configuration at the time of initialization. Changing the queue count after the hierarchy has been constructed has no effect.
SDK-42027	566253	56640_A0	The implementation of low-level BSC access functions (e.g. <code>soc_i2c_stat</code> ) has not yet been updated to support BCM5664x devices. As a result, BSC related APIs might fail on these devices.
SDK-42259		56440_A0 56440_A1	Spurious error messages may be seen when executing Rx/TX tests TR90 and TR91 when the KNET modules is loaded.
SDK-42527		88650_A0	TR90 and TR91 are not supported for the Arad. This TR's Run a TX/RX reload test to check DMA speed.



Table 55:

Number	CSP #	Chips	Release Notes
SDK-43102	582201	56820_A0 56820_B0	On earlier XGS4 devices, such as BCM5662x and 5682x FP-based mirroring might conflict with port-based mirroring, when bcmFieldActionMirrorIngress uses a MODPORT as an argument as opposed to Mirror GPORT.  It is recommended to always use DirectedMirroring API mode and with that mode always rely on mirror destinations and corresponding Mirror GPORTs.
SDK-44138		56440_A0 56440_A1 56440_B0	snmpDot1dBasePortMtuExceededDiscards is currently computed as the sum of packets dropped on Rx and oversize packets successfully transmitted. This count does NOT include the count of packet dropped by the switch pipeline because they exceeded the configured max frame size. If the "oversize threshold" defined for the switch is not the same as the maximum allowable frame size, this count may be inaccurate.
SDK-44406		88650_A0	OAM 1588 Delay-measurement is not supported
SDK-44416		88640_A0	1. API is reading the wrong register from the device. 2. API is missing the parameter of ResetLoad, so this value cannot be configured.
SDK-44471	599747	56544_A0	BCM56544 XAUI ports support single lane GE operation via lane 0 (at boot time). The applicable config is bcm56544_4x10_12x10=1. However, current software has not supported this yet. Modifying the src/soc/esw/triumph3.c->port_speed_max_94 as following can support GE operation:  static const int port_speed_max_94[] = {-1, 1/* 10 */, -1, -1, -1, -1, -1, -1, -1, -1, -1, -1, -1, 1/* 10 */, -1, -1, -1, -1, -1, -1, -1, -1, -1, -1, 1/* 10 */, -1, -1, -1, -1, -1, -1, 1, -1, -1, -1, -1, -1, -1, -1, 1/* 10 */, -1, -1, -1, -1, -1, -1, 10, 10, 10, 10, -1, -1, -1, -1, -1, -1, -1, -1, -1, -1, 10, 10, 10, 10, 10, 10, 10, -1, -1, -1, -1, -1};  However, there should be more decent way to achieve this feature.
SDK-44506	593957	56842_A0	If an L3 interface entry is in the my station TCAM instead of the usual L2 table it will not be restored upon warmboot.
SDK-44726	607522	56846_A0 56845_B0 56843_B0 56841_B0	For unicast traffic, bcmCosqStatDroppedPackets stays 0 for known unicast traffic. This is a problem even if one does not configure any EUC ports.
SDK-45075		All	When an interrupt occurs on different blocks it'll be treated in the same counter in handle_interrupt_recurring_detect. For example LOS interrupt might occur on different FMAC blocks, and will be detected as recurring, although it's actually different interrupt.
SDK-45234		88650_A0 88650_B0 88650_B1	src/examples/dpp/cint_pkt_test example returns an error when executed
SDK-45366	611273	56440_A0	When the API bcm_cosq_port_bandwidth_set(...) is called on a particular port and COSq to enable egress rate limiting, sometimes the CLI command "show c" will show the incorrect dropping statistics on a irrelevant port.
SDK-45622		88650_A0	88650: Dynamic ports allows changing the interface type on alive machine: RXAUI interface is not supported.
SDK-45857	620172	88650_A0	ECMP for Trill UC is not supported
SDK-45965	623105	56446_B0 56440_A0 56445_A0 56440_A1 56445_A1 56444_A1 56449_B0 56445_B0 56440_B0 56447_B0 56443_B0 56441_B0	Due to an oversight, the fields new_inner_pkt_priority and new_inner_cfi, priority and new_outer_cfi from bcm_van_action_set_t are not programmed correctly for a default, port-based action.



Table 55:

Number	CSP #	Chips	Release Notes
SDK-46005	615704	56640_A0 56540_A0	When the local endpoint MEP ID is different from the remote endpoint MEP ID, the misconnectivity defect should/will be triggered and is indeed triggered. However, the behavior of both endpoint states toggling between Init, Up and Down states endlessly and repetitively does not seem compliant with the spec.
SDK-46556	621213	All 88650_A0 88650ACP_A0 88650_B0 88650_B1	bcm_l2_cache_delete() API does not delete general_trap entry configuration in HW
SDK-46641	633505	88650_A0 88650_B0	Simple bridge: When packet comes in with length = 0 (i.e. ethertype = 0) then packet is parsed incorrectly as Trill packet and not as Ethernet packet.
SDK-47045	640610	88650_A0	VLAN translation: When calling bcm_vlan_translate_egress_action_add with modify TPID action, get functionality (bcm_vlan_translate_egress_action_get) might return incorrect TPID information on some cases.
SDK-47366	642398	All	The implementation of SER (Soft Error Recovery mechanism) requires the SDK to perform periodical scanning of certain memories. The infrastructure for this scanning is provided by the optional MEM_SCAN feature (component) of the SDK.  Since SER is a mandatory component, that can't be compiled out, MEM_SCAN becomes a mandatory component too as long as you are using a device, supported by SER.
SDK-47432		88650_A0 88650_B0 88650_B1	VSWITCH: bcm_vswitch_destroy_all doesn't delete all instances
SDK-47574		88650_A0 88650_B0 88650_B1	bcm_vswitch_create after bcm_vswitch_detach results in exception
SDK-47596	648378	All	BCM_MIRROR_DEST_TUNNEL_WITH_SPAN_ID allows the customer to specify the SPAN_ID information that is going to be put into the ERSPAN mirroring packet.  When this flag is used on a device that does not support this feature, the API still returns success (BCM_E_NONE), but the mirrored packets are not going to have the ERSPAN header in them.
SDK-47662	650775	All	Provide the initial values for each of the N entries in a table.  The syntax of this feature is: XXX:init_queue_state { config { fields } qport=1-x, config { fields } qport=y-N }
SDK-47739	628786	56540_A0 56540_B0	For devices in the BCM56540 family, the CPU queues are allocated differently depending on the revision of the device (Ax vs. Bx). This force the developer to include revision specific code in the application.
SDK-47810		88650_A0 88650_B0	In the PPH (base); FW_HEADER_OFFSET is set to zero in LM and DM upmep packets; Should point to the start of the PDU rather than start of the Ethernet frame.
SDK-47905	654763	All	The structure bcm_pkt_t representing the packet metadata contains the src_trunk field, which is filled with the trunk ID in the case the packet ingresses on a port, that is a member of a trunk (LAG).  The width of the src_trunk field in bcm_pkt_t is 8 bits. However, a number of modern devices allow up to 1024 trunk IDs. If a packet is received on such a trunk and is passed to the CPU, the src_trunk field will contain only the lower 8 bits of the trunk ID.
SDK-47977	643322	56440_B0	For devices in the BCM56440 family, bandwidth limiting on a queue by queue basis is not correct. For some queues, maximum bandwidth will be less than specified even if port bandwidth is available.

Table 55:

Number	CSP #	Chips	Release Notes
SDK-48018	652215	56840_A0	When bandwidth mode flag is set to <code>BCM_COSQ_BW_PACKET_MODE</code> by <code>bcm_cosq_gport_bandwidth_set()</code> , it is not returned as expected by the corresponding call to <code>bcm_cosq_gport_bandwidth_get()</code> .
SDK-48070	654258	56854_B0 56854_A0 56854_A2	For BCM56850 (Trident2) devices, certain port configurations may cause the initialization to fail with a segmentation fault. The fault is preceded by error messages similar to the following: TDM: _____ ERROR: FAILURE TO WRITE 1G PORT at index yy already has xxx
SDK-48091	662661	56850_A0 56850_A1 56850_A2	For BCM56850 devices, when only a single GigE port is allocated to a TSC lane (the other 3 TSC lanes are not used), that port may be configured incorrectly resulting in port that appears functional but is not.
SDK-48100	631751	56142_A0 56143_A0 56144_A0 56146_A0	Setting <code>phy_sgmi_autoneg_mode=1</code> may prevent pause settings from working correctly.
SDK-48101	689094	56845_B0 56845_A2	The "phy diag prbs" command does not work correctly on BCM56850 device in 40G mode and should not be used.
SDK-48272	665127	56334_B0 56334_A0	If a port is configured for both ingress and egress using <code>bcm_mirror_port_set()</code> , a subsequent call to <code>bcm_mirror_port_get()</code> will report that the port is only configured for ingress.
SDK-48546		88650_A0	when compiling with Warm Boot support ( <code>BCM_WARM_BOOT_SUPPORT</code> flag), Warm Boot storage will be updated immediately when calling most BCM APIs (i.e 'auto sync' mode is forced).
SDK-48767		88650_A0	VLAN translation advanced mode: In <code>bcm_port_tpid_class_set</code> for untagged packets ( <code>tpid1=tpid2=BCM_PORT_TPID_CLASS_TPID_INVALID</code> ), tag format field must be '0'.
SDK-49047		88650_B0	when enabling 1588 for port A: <code>bcm_port_timesync_config_set(unit, A, config_1, ....)</code> ; 1588 packets received from any other port will be stamped/dropped/trapped according to the 1588 'config_1' configured for port A. then, when configuring port B with <code>config_2</code> : <code>bcm_port_timesync_config_set(unit, B, config_2, ....)</code> ; when 1588 packets received from port B will be stamped/dropped/trapped according to the configuration in 'config_2'. 1588 received from A or any other port will be stamped/dropped/trapped according to 'config_2'.
SDK-49793	687002	88650_B1	VLAN translation: <code>bcm_vlan_translate_action_create()</code> fails when using VLAN-Port gport that was created with <code>vlan_port.port = trunk ID</code> .
SDK-49913	688017	All	
SDK-49920	666273	88650_B1	Port TPID: <code>bcm_port_inner_tpid_get</code> returns <code>tpid=0</code> when inner and outer TPIDs are set to the same values.
SDK-50101	691768	88650_A0 88650_B0 88650_B1	Failover Ring-protection: <code>bcm_failover_get</code> does not work in case of using <code>BCM_FAILOVER_L2_LOOKUP</code> failover-ID.
SDK-50127	692117	88650_A0	STG: <code>bcm_stg_vlan_remove_all</code> returns <code>BCM_E_NOT_FOUND</code> when using <code>STG_id=64</code> (valid STG ID)
SDK-50184		88650_B0 88660_A0	Current MIP behavior is incorrect. Should be: The following Op-codes must be snooped at a MIP: - CCM - LBM - SFM - RFM The following must be trapped: - LTM

Table 55:

Number	CSP #	Chips	Release Notes
SDK-50223	687869	88650_A0	VLAN: Ethertype VLAN assignment does not handle the number of ethertype correctly. API <code>bcm_vlan_port_protocol_action_add</code> returns internal errors in case of more than 7 etherypes.
SDK-50385		88660_A0	MBIST does not yet work on Arad+. If run, it will report memory errors which are not real.
SDK-50431		88660_A0	ERSPAN with XGS MAC extender is not working for ARAD+.
SDK-50531		88650_A0 88650_B0 88650_B1 88660_A0	A <code>bcm_vlan_port_create</code> symmetric LIF, isn't validated for <code>LIF_ID</code> availability on both sides prior to the allocation. Instead, a validation is done prior to the allocation for each side at a time. This may result in a failure during the OutLIF validation, while the InLIF remains allocated despite the failure.
SDK-50595		88650_A0 88650_B0	ERSPAN mirroring does not work when outgoing mirror destination ("gport" member of "bcm_mirror_destination_t struct" parameter to <code>bcm_mirror_destination_create</code> API) is multicast. Relevant for ARAD A0,B0 & B1 (works fine for ARAD+)
SDK-50606	697917	88650_B1	Advanced VLAN editing port TPID settings: <code>bcm_port_tpid_class_get</code> does not return correctly flags parameter.
SDK-50698		88650_A0 88650_B0 88650_B1 88660_A0	<code>bcm_vlan_port_destroy</code> for an Ingress only AC LIF may destroy the Egress LIF as well in case the used memory LIF bank has synced LIFs (learned AC, PWE)
SDK-50792	691032	88650_A0	Tunnel: Destroy IP tunnel initiator ( <code>bcm_tunnel_initiator_clear</code> ) does not work correctly.
SDK-50821		88650_A0 88650_B0 88650_B1	VLAN Port: VLAN-port creation with remote LIF fails when match criteria is <code>MATCH_PORT</code> .
SDK-50828	686923	88650_B1	STG: <code>bcm_stg_vlan_add()</code> and <code>bcm_stg_stp_set()</code> do not return <code>BCM_E_NOT_FOUND</code> when passed in a spanning tree group that does not exist.

## Section 9: 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 follows:

*Table 56:*

<i>Test Categories</i>	<i>Description</i>
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.

### NOTE

The below data is not meant to be a precise indication of quality but instead serves as a guideline for improvements release-over-release. Additionally, although some cells show 0% failures, this does not necessarily mean the feature is supported in the device - tests are run to validate the appropriate SDK support even for unsupported features on older devices to ensure graceful handling of all API.

Finally, some devices have fewer columns listed if they were introduced recently.

## TOTAL TESTS

The below data represents the number of unique cases for each release.

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

*Table 57:*

<i>Suite</i>	<i>6.3.2</i>	<i>6.3.1</i>	<i>6.2.9</i>
Golden	154	154	154
bfd	16	16	16
bhh	15	15	15
cosq	289	289	289
dvapi	997	986	985
fcoe	19	0	0
field	704	704	704
higigproxy	123	0	0
l2	223	223	222
l3	212	211	211
mpls	81	81	80
ptp	115	115	1
stacking	49	49	49
stat	71	71	65
trill	40	40	36
trunk	139	139	139
tunnel	65	65	65
subport	12	12	12
vlan	199	187	186
vxlan	41	44	41
warmboot	1644	1016	1524
Total	5054	4264	4640



## TEST RESULTS

### ALL DEVICES

Table 58:

<i>Suite</i>	<i>6.3.2</i>	<i>6.3.1</i>	<i>6.2.9</i>
Golden	3.3%	3.6%	4.1%
bfd	0.1%	0.0%	0.0%
bhh	4.9%	5.1%	6.0%
cosq	2.4%	2.5%	3.2%
dvapi	3.0%	3.1%	3.2%
fcoe	0.6%		
field	1.9%	2.4%	2.2%
l2	2.8%	2.3%	2.0%
l3	2.4%	2.8%	3.2%
mpls	2.2%	2.3%	2.7%
ptp	0.0%	0.0%	0.0%
stacking	1.1%	0.9%	1.1%
stat	1.2%	1.0%	4.7%
trill	7.0%	7.9%	9.5%
trunk	1.2%	1.3%	1.3%
tunnel	0.1%	0.1%	0.1%
subport	31.0%	33.3%	34.9%
vlan	3.1%	3.0%	1.5%
vxlan	1.5%	3.5%	1.4%
warmboot	7.7%	7.0%	8.6%
Total	2.3%	2.5%	2.7%

### TRIDENT2

Table 59:

<i>Suite</i>	<i>6.3.2</i>	<i>6.3.1</i>	<i>6.2.9</i>
Golden	3.0%	4.0%	5.3%
bfd	0.0%	0.0%	0.0%
bhh	0.0%	0.0%	0.0%
cosq	1.4%	2.4%	3.8%
dvapi	2.7%	2.0%	2.4%
fcoe	10.5%		
field	0.9%	1.1%	1.0%
higigproxy	1.7%		
l2	0.8%	0.0%	0.5%
l3	0.5%	1.6%	0.5%
mpls	2.5%	2.5%	2.5%
ptp	0.0%	0.0%	0.0%
stacking	0.0%	0.0%	0.0%
stat	2.4%	1.4%	3.1%
trill	27.5%	28.0%	25.0%
trunk	1.7%	1.9%	1.2%



**Table 59:**

<i>Suite</i>	<b>6.3.2</b>	<b>6.3.1</b>	<b>6.2.9</b>
tunnel	0.0%	0.0%	0.0%
subport	37.5%	50.0%	50.0%
vlan	1.7%	2.2%	0.8%
vxlan	21.0%	47.3%	23.6%
warmboot	9.1%	9.1%	11.3%
Total	2.1%	2.4%	2.4%

## TRIUMPH3

**Table 60:**

<i>Suite</i>	<b>6.3.2</b>	<b>6.3.1</b>	<b>6.2.9</b>
Golden	4.0%	5.7%	8.6%
bfd	0.0%	0.0%	0.0%
bhh	0.0%	0.0%	0.0%
cosq	1.2%	1.9%	3.3%
dvapi	3.3%	3.8%	4.1%
fcoe	0.0%		
field	4.2%	4.2%	4.1%
higigproxy	2.7%		
l2	3.1%	2.7%	2.6%
l3	3.2%	4.4%	4.1%
mpls	1.5%	2.1%	1.3%
ptp	0.0%	0.0%	0.0%
stacking	5.2%	4.8%	4.8%
stat	4.6%	2.9%	17.8%
trill	19.8%	21.2%	25.8%
trunk	1.8%	2.1%	1.7%
tunnel	0.5%	0.4%	0.3%
subport	41.7%	41.7%	41.7%
vlan	4.6%	4.5%	2.2%
vxlan	0.0%	0.0%	0.0%
warmboot	4.0%	5.2%	9.9%
Total	3.3%	3.5%	4.0%

## HURRICANE2

**Table 61:**

<i>Suite</i>	<b>6.3.2</b>	<b>6.3.1</b>
Golden	5.1%	5.2%
bfd	0.0%	0.0%
bhh	0.0%	0.0%
cosq	0.7%	0.7%
dvapi	3.5%	3.7%
fcoe	0.0%	
field	1.8%	2.1%

*Table 61:*

<i>Suite</i>	<i>6.3.2</i>	<i>6.3.1</i>
higigproxy	0.0%	
l2	2.6%	1.6%
l3	1.1%	1.3%
mpls	1.2%	1.2%
ptp	0.0%	0.0%
stacking	0.0%	0.0%
stat	0.0%	0.0%
trill	0.0%	0.0%
trunk	1.3%	1.3%
tunnel	0.0%	0.0%
subport	0.0%	0.0%
vlan	2.0%	2.0%
vxlan	0.0%	0.0%
Total	1.8%	2.0%

## HELIX4

*Table 62:*

<i>Suite</i>	<i>6.3.2</i>	<i>6.3.1</i>
Golden	4.9%	5.2%
bfd	0.0%	0.0%
bhh	0.0%	0.0%
cosq	1.0%	1.7%
dvapi	2.4%	2.8%
fcoe	0.0%	
field	1.9%	2.0%
higigproxy	3.1%	
l2	4.2%	7.8%
l3	2.6%	5.5%
mpls	1.2%	1.2%
ptp	0.0%	0.0%
stacking	0.0%	0.0%
stat	1.0%	3.5%
trill	4.6%	5.5%
trunk	0.2%	1.9%
tunnel	0.0%	0.0%
subport	35.7%	41.7%
vlan	3.3%	3.7%
vxlan	0.0%	0.0%
Total	2.1%	2.8%

## KATANA2

*Table 63:*

<i>Suite</i>	<i>6.3.2</i>	<i>6.3.1</i>
Golden	5.8%	5.2%
bfd	0.0%	0.0%
bhh	0.0%	0.0%
cosq	3.5%	2.8%
dvapi	2.2%	1.9%
field	1.4%	1.7%
l2	6.1%	2.7%
l3	3.3%	2.4%
mpls	2.5%	2.5%
ptp	0.0%	0.0%
stacking	4.1%	0.0%
stat	0.0%	0.0%
trill	0.0%	0.0%
trunk	0.7%	0.0%
tunnel	0.0%	0.0%
subport	41.7%	41.7%
vlan	2.0%	2.7%
vxlan	0.0%	0.0%
Total	2.2%	1.8%

## **Section 10: Device and Platform Support**

The section describes all devices, platforms, and operating systems that are supported by this release.

## SWITCH DEVICES

*Table 64: Switch Devices*

<i>Family</i>	<i>Devices</i>	<i>Description</i>
BCM53010	BCM53010 A0	5-Port Gigabit Ethernet Managed Switch integrated with single core ARM Cortex-A9 processor
	BCM53010 A2	
	BCM53011 A0	5-Port Gigabit Ethernet Managed Switch integrated with dual cores ARM Cortex-A9 processor
	BCM53011 A2	
	BCM53012 A0	5-Port Gigabit Ethernet Managed Switch with one RGMII I/F integrated with dual cores ARM Cortex-A9 processor
	BCM53012 A2	
BCM53018	BCM53017 A0	2-Port Gigabit Ethernet Managed Switch with one RGMII I/F integrated with dual cores ARM Cortex-A9 processor
	BCM53018 A0	5-Port Gigabit Ethernet Managed Switch with one RGMII I/F integrated with dual cores ARM Cortex-A9 processor
	BCM53019 A0	5-Port Gigabit Ethernet Managed Switch integrated with dual cores ARM Cortex-A9 processor
BCM53020	BCM58622 A0	5-Port Gigabit Ethernet Managed Switch integrated with dual core ARM Cortex-A9 processor and macsec cores
BCM53101	BCM53101 A0	5-Port Fast Ethernet Managed Switch + 1 Fast Ethernet WAN port
	BCM53101 B0	
BCM53115	BCM53115 A0	5-Port GbE Managed Switch + 1 Gigabit WAN port with integrated serdes
	BCM53115 A1	
	BCM53115 B0	
	BCM53115 B1	
	BCM53115 C0	
BCM53118	BCM53118 A0	8-Port Gigabit Ethernet Switch
	BCM53118 B0	
	BCM53118 B1	
BCM53125	BCM53125 A0	5-Port Gigabit Ethernet Switch with 1 Gigabit WAN port and 8051 processor
	BCM53125 B0	
BCM53128	BCM53128 A0	8-Port Gigabit Ethernet Switch with embedded 8051 processor
	BCM53128 B0	
BCM53242	BCM53242 A0	Managed Switch with 24 FE Ports + 2 GbE Interface
	BCM53242 B0	
	BCM53242 B1	
	BCM53262 A0	Managed Switch with 24 FE Ports + 4 GbE Interface
	BCM53262 B0	
	BCM53262 B1	
BCM53280	BCM53282 A0	8-Port Fast Ethernet + 2-Port Gigabit Ethernet Multilayer Switch
	BCM53282 B0	
	BCM53282 B1	
	BCM53282 B2	



**Table 64: Switch Devices**

<b>Family</b>	<b>Devices</b>	<b>Description</b>
	BCM53283 A0	16-Port Fast Ethernet + 2-Port Gigabit Ethernet Multilayer Switch
	BCM53283 B0	
	BCM53283 B1	
	BCM53283 B2	
	BCM53284 A0	24-Port Fast Ethernet + 2-Port Gigabit Ethernet Multilayer Switch
	BCM53284 B0	
	BCM53284 B1	
	BCM53284 B2	
	BCM53286 A0	24-Port Fast Ethernet + 4-Port Gigabit Ethernet Multilayer Switch
	BCM53286 B0	
	BCM53286 B1	
	BCM53286 B2	
	BCM53288 A0	24-Port Fast Ethernet + 2-Port Gigabit Ethernet Multilayer Switch with one 2.5GbE Uplink Port
	BCM53288 B0	
	BCM53288 B1	
	BCM53288 B2	
BCM53300	BCM53300 A0	Managed 24-port L2 Switch
	BCM53300 A1	
	BCM53301 A0	Managed 16-port L2 Switch
	BCM53301 A1	
	BCM53302 A0	Managed 24-port L2 Switch
	BCM53302 A1	
BCM53310	BCM53312 A0	BCM53312 Integrated Multilayer Switch and CPU
	BCM53312 B0	
	BCM53313 A0	BCM53313 Integrated Multilayer Switch and CPU
	BCM53313 B0	
	BCM53314 A0	BCM53314 Integrated Multilayer Switch and CPU
	BCM53314 B0	
BCM53320	BCM53322 A0	BCM53322 Integrated Multilayer Switch and CPU
	BCM53323 A0	BCM53323 Integrated Multilayer Switch and CPU
	BCM53324 A0	BCM53324 Integrated Multilayer Switch and CPU
BCM53600	BCM53602 A0	8-Port Fast Ethernet + 3-Port Gigabit Ethernet Switch with one 1/2G-EPON ONU MAC/SerDes and embedded 600MHz MIPS32 74K processor
	BCM53603 A0	16-Port Fast Ethernet + 3-Port Gigabit Ethernet Switch with one 1/2G-EPON ONU MAC/SerDes and embedded 600MHz MIPS32 74K processor
	BCM53604 A0	24-Port Fast Ethernet + 3-Port Gigabit Ethernet Switch with one 1/2G-EPON ONU MAC/SerDes and embedded 600MHz MIPS32 74K processor
	BCM53606 A0	24-Port FE with S3MII interface + 3-Port Gigabit Ethernet Switch with one 1/2G-EPON ONU MAC/SerDes and embedded 600MHz MIPS32 74K processor
BCM89500	BCM89500 A0	4-Port Integrated Dedicated BRPHY + 3-Port Gigabit Ethernet Switch with embedded ARM processor
	BCM89500 B0	
BCM89500	BCM89501 A0	4-Port Integrated Dedicated BRPHY + 1-Port Integrated Dual-Mode BRPHY + 2-Port Gigabit Ethernet Switch with embedded ARM processor

**Table 64: Switch Devices**

<b>Family</b>	<b>Devices</b>	<b>Description</b>
	BCM89501 B0	
BCM89500	BCM89200 A0	1-Port Integrated Dedicated BRPHY + 1-Port Integrated Dual-Mode BRPHY + 2-Port Gigabit Ethernet Switch with embedded ARM processor
	BCM89200 B0	
BCM53710	BCM53714 A0	BCM56714 Integrated Multilayer Switch and CPU
	BCM53714 A1	
	BCM53714 A2	
	BCM53716 A0	BCM56716 Integrated Multilayer Switch and CPU
	BCM53716 A1	
	BCM53716 A2	
	BCM53718 A0	BCM56718 Integrated Multilayer Switch and CPU
	BCM53718 A1	
	BCM53718 A2	
BCM53720	BCM53724 A0	Managed 24-port L2 Switch with Integrated CPU
	BCM53724 B0	
	BCM53726 A0	Managed 24-port L2 Switch with Integrated CPU
	BCM53726 B0	
	BCM5675 A1	
	BCM5676 A0	4-Port, 96-Gbps Switch Fabric
	BCM5676 A1	
BCM56010	BCM56014 A0	24-Port Integrated Multilayer Switch and CPU
	BCM56014 A1	
	BCM56014 A2	
	BCM56018 A0	48-Port Integrated Multilayer Switch and CPU
	BCM56018 A1	
	BCM56018 A2	
	BCM56018 A1	48-Port Integrated Multilayer Switch and CPU
	BCM56024 A0	
	BCM56024 B0	
BCM56020	BCM56025 A0	24-Port Integrated L2 Switch and CPU
	BCM56025 B0	
	BCM56026 A0	24-Port Integrated L2 Switch and CPU
	BCM56026 B0	
BCM56100	BCM56100 A0	24-Port Fast Ethernet and 2-Port Gigabit Ethernet Multilayer Switch
	BCM56100 A1	
	BCM56101 A0	24-Port Fast Ethernet and 2-Port Gigabit Ethernet Multilayer Switch with One 10-Gigabit Ethernet/HiGig Port
	BCM56101 A1	
	BCM56102 A0	24-Port Fast Ethernet and 2-Port Gigabit Ethernet Multilayer Switch with Two 10-Gigabit Ethernet/HiGig Ports
	BCM56102 A1	
	BCM56105 A0	24-Port Fast Ethernet and 2-Port Gigabit Ethernet Layer 2 Switch





**Table 64: Switch Devices**

<b>Family</b>	<b>Devices</b>	<b>Description</b>
	BCM56105 A1	
	BCM56106 A0	24-Port Fast Ethernet and 2-Port Gigabit Ethernet Layer 2 Switch with One 10-Gigabit Ethernet/HiGig Port
	BCM56106 A1	
	BCM56107 A0	24-Port Fast Ethernet and 2-Port Gigabit Ethernet Layer 2 Switch with Two 10-Gigabit Ethernet/HiGig Ports
	BCM56107 A1	
BCM56110	BCM56110 A0	24-Port Fast Ethernet and 2-Port Gigabit Ethernet Multilayer Switch
	BCM56111 A0	24-Port Fast Ethernet and 2-Port Gigabit Ethernet Multilayer Switch with One 10-Gigabit Ethernet/HiGig Port
	BCM56112 A0	24-Port Fast Ethernet and 2-Port Gigabit Ethernet Multilayer Switch with Two 10-Gigabit Ethernet/HiGig Ports
	BCM56115 A0	24-Port Fast Ethernet and 2-Port Gigabit Ethernet Layer 2 Switch
	BCM56116 A0	24-Port Fast Ethernet and 2-Port Gigabit Ethernet Layer 2 Switch with One 10-Gigabit Ethernet/HiGig Port
	BCM56117 A0	24-Port Fast Ethernet and 2-Port Gigabit Ethernet Layer 2 Switch with Two 10-Gigabit Ethernet/HiGig Ports
BCM56130	BCM56132 A0	24-Port Fast Ethernet Multilayer Switch with Two 10-GbE/HiGig2 and Two 1G/2.5Gb Uplink Ports
	BCM56132 B0	
	BCM56132 B1	
	BCM56134 A0	24-Port Fast Ethernet Multilayer Switch with four 1G/2.5Gb Uplink Ports
	BCM56134 B0	
	BCM56134 B1	
BCM56140	BCM56140 A0	24-Port Gigabit Ethernet/6-Port SGMII GbE Multilayer switch with combination of two/four 1G/2.5/HiGig2 Uplink Ports
	BCM56142 A0	24-Port Gigabit Ethernet Multilayer switch with combination of two/four 1G/2.5/HiGig2 Uplink Ports
	BCM56143 A0	24-Port Gigabit Ethernet Multilayer switch with combination of two/four 1G/2.5/HiGig2 Uplink Ports
	BCM56144 A0	16-Port Gigabit Ethernet Multilayer switch with four 1G/2.5HG Uplink Ports
	BCM56146 A0	24-Port Fast-Ethernet Multilayer switch with four 2.5HG Uplink Ports
	BCM56147 A0	24-Port Fast-Ethernet Multilayer switch with combination of one/two/four 1G/2.5G/10/12/13HG Uplink Ports
BCM56210	BCM56212 A0	
	BCM56212 A1	
	BCM56212 A2	
	BCM56213 A0	
	BCM56213 A1	
	BCM56213 A2	
	BCM56214 A0	BCM56214 Integrated Multilayer Switch and CPU
	BCM56214 A1	
	BCM56214 A2	
	BCM56215 A0	
	BCM56215 A1	
	BCM56215 A2	
	BCM56216 A0	BCM56216 Integrated Multilayer Switch and CPU

**Table 64: Switch Devices**

<b>Family</b>	<b>Devices</b>	<b>Description</b>
	BCM56216 A1	
	BCM56216 A2	
	BCM56217 A0	
	BCM56217 A1	
	BCM56217 A2	
	BCM56218 A0	BCM56218 Integrated Multilayer Switch and CPU
	BCM56218 A1	
	BCM56218 A2	
	BCM56219 A0	BCM56219 Integrated Multilayer Switch and CPU
	BCM56219 A1	
	BCM56219 A2	
BCM56220	BCM56224 A0	24 GbE + 4 x 1 Gb/2.5 Gb, L3/L2+
	BCM56224 B0	24 GbE + 4 x 1 Gb/2.5 Gb, L3/L2+
	BCM56225 A0	24 GbE + 4 x 1 Gb/2.5 Gb, L2+
	BCM56225 B0	24 GbE + 4 x 1 Gb/2.5 Gb, L2+
	BCM56226 A0	16 GbE + 4 x 1 Gb/2.5 Gb, L3/L2+
	BCM56226 B0	16 GbE + 4 x 1 Gb/2.5 Gb, L3/L2+
	BCM56227 A0	16 GbE + 4 x 1 Gb/2.5 Gb, L2+
	BCM56227 B0	16 GbE + 4 x 1 Gb/2.5 Gb, L2+
	BCM56228 A0	8 GbE + 4 x 1 Gb/2.5 Gb, L3/L2+
	BCM56228 B0	8 GbE + 4 x 1 Gb/2.5 Gb, L3/L2+
	BCM56229 A0	8 GbE + 4 x 1 Gb/2.5 Gb, L2+
	BCM56229 B0	8 GbE + 4 x 1 Gb/2.5 Gb, L2+
BCM56230	BCM56230 B1	12-Port GbE Multilayer Switch
	BCM56231 B1	6-Port GbE Multilayer Switch
BCM56300	BCM56300 A0	24-Port Gigabit Ethernet Multilayer Switch
	BCM56300 A1	
	BCM56300 B0	
	BCM56300 B1	
	BCM56301 A0	Four 10-Gigabit Ethernet/HiGig+ Ports
	BCM56301 A1	
	BCM56301 B0	
	BCM56301 B1	
	BCM56302 A0	24-Port Gigabit Ethernet Multilayer Switch with Two 10-Gigabit Ethernet/HiGig+ Ports
	BCM56302 A1	
	BCM56302 B0	
	BCM56302 B1	
	BCM56303 A0	24-Port Gigabit Ethernet Multilayer Switch with Three 10 Gigabit Ethernet/HiGig+ Ports
	BCM56303 A1	
	BCM56303 B0	

**Table 64: Switch Devices**

<b>Family</b>	<b>Devices</b>	<b>Description</b>
	BCM56303 B1	
	BCM56304 A0	24-Port Gigabit Ethernet Multilayer Switch with Four 10-Gigabit Ethernet/HiGig+ Ports
	BCM56304 A1	
	BCM56304 B0	
	BCM56304 B1	
	BCM56305 A0	24-Port Gigabit Ethernet Multilayer Switch
	BCM56305 A1	
	BCM56305 B0	
	BCM56305 B1	
	BCM56306 A0	16 Port Gigabit Ethernet Switch
	BCM56306 A1	
	BCM56306 B0	
	BCM56306 B1	
	BCM56307 A0	24-Port GE L2 Switch with Two 10 GE/HiGig+ Ports
	BCM56307 A1	
	BCM56307 B0	
	BCM56307 B1	
	BCM56308 A0	24-Port GE L2 Switch with Three 10 GE/HiGig+ Ports
	BCM56308 A1	
	BCM56308 B0	
	BCM56308 B1	
	BCM56309 A0	24-Port GE L2 Switch with Four 10 GE/HiGig+ Ports
	BCM56309 A1	
	BCM56309 B0	
	BCM56309 B1	
BCM56310	BCM56310 A0	BCM56310 Series 24-Port GbE Multilayer Switch with Four 10-GbE/HiGig+ Uplink Ports
	BCM56311 A0	Four 10-Gigabit Ethernet/HiGig+ Ports
	BCM56312 A0	24-Port Gigabit Ethernet Multilayer Switch with Two 10-Gigabit Ethernet/HiGig+ Ports
	BCM56313 A0	24-Port Gigabit Ethernet Multilayer Switch with Three 10-Gigabit Ethernet/HiGig+ Ports
	BCM56314 A0	24-Port Gigabit Ethernet Multilayer Switch with Four 10-Gigabit Ethernet/HiGig+ Ports
	BCM56315 A0	BCM56310 Series 24-Port GbE Layer 2 Switch with Four 10-GbE/HiGig+ Uplink Ports
	BCM56316 A0	Four 10-Gigabit Ethernet/HiGig+ Ports
	BCM56317 A0	24-Port Gigabit Ethernet Layer 2 Switch with Two 10-Gigabit Ethernet/HiGig+ Ports
	BCM56318 A0	24-Port Gigabit Ethernet Layer 2 Switch with Three 10-Gigabit Ethernet/HiGig+ Ports
	BCM56319 A0	24-Port Gigabit Ethernet Layer 2 Switch with Four 10-Gigabit Ethernet/HiGig+ Ports
BCM56320	BCM56320 A0	24-Port GbE Multilayer Switch with Four 10-GbE/HiGig2 Uplink Ports
	BCM56320 B0	
	BCM56320 B1	

**Table 64: Switch Devices**

<b>Family</b>	<b>Devices</b>	<b>Description</b>
	BCM56321 A0	24-Port GbE Multilayer Switch with Four 10-GbE/HiGig2 Uplink Ports
	BCM56321 B0	
	BCM56321 B1	
BCM56330	BCM56331 A0	24-Port GbE Multilayer Switch with Four 2.5GbE Uplink Ports
	BCM56331 B0	
	BCM56331 B1	
	BCM56333 A0	16-Port GbE Multilayer Switch
	BCM56333 B0	
	BCM56333 B1	
	BCM56334 A0	24-Port GbE Multilayer Switch with Four 10-GbE/HiGig2 Uplink Ports
	BCM56334 B0	
	BCM56334 B1	
	BCM56338 A0	8-Port GbE Multilayer Switch with two 10-GbE/HiGig2 Uplink Ports
	BCM56338 B0	
	BCM56338 B1	
BCM56440	BCM56440 A0	24-Port GbE Multilayer Switch with Four 10-GbE/HiGig2 Uplink ports
	BCM56440 B0	
	BCM56441 A0	8-Port GbE Multilayer Switch with Two 10-GbE/HiGig2 Uplink ports
	BCM56441 B0	
	BCM56442 A0	16-Port GbE Multilayer Switch
	BCM56442 B0	
	BCM56443 A0	8-Port 2.5GbE Multilayer Switch with Two 10-GbE/HiGig2 Uplink ports
	BCM56443 B0	
	BCM56445 A0	24-Port GbE Multilayer Switch with Four 10-GbE/HiGig2 Uplink ports pin compatible with BCM56334
	BCM56445 B0	
	BCM56446 A0	8-Port GbE Multilayer Switch with Two 10-GbE/HiGig2 Uplink ports pin compatible with BCM56338
	BCM56447 A0	16-Port GbE Multilayer Switch pin compatible with BCM56333
	BCM56447 B0	
	BCM56448 A0	24-Port GbE Multilayer Switch with Four 1GbE/ One 2.5G Uplink ports
	BCM56448 B0	
BCM56500	BCM56500 A0	24-Port Gigabit Ethernet Multilayer Switch
	BCM56500 A1	
	BCM56500 B0	
	BCM56500 B1	
	BCM56500 B2	
	BCM56501 A0	Four 10-Gigabit Ethernet/HiGig+ Ports
	BCM56501 A1	
	BCM56501 B0	
	BCM56501 B1	
	BCM56501 B2	

**Table 64: Switch Devices**

<b>Family</b>	<b>Devices</b>	<b>Description</b>
	BCM56502 A0	24-Port GbE Multilayer Switch with Two 10-GbE/HiGig+ Ports
	BCM56502 A1	
	BCM56502 B0	
	BCM56502 B1	
	BCM56502 B2	
	BCM56503 A0	24-Port GbE Multilayer Switch with Three 10-GbE/HiGig+ Ports
	BCM56503 A1	
	BCM56503 B0	
	BCM56503 B1	
	BCM56503 B2	
	BCM56504 A0	24-Port GbE Multilayer Switch with Four 10-GbE/HiGig+ Ports
	BCM56504 A1	
	BCM56504 B0	
	BCM56504 B1	
	BCM56504 B2	
	BCM56505 A0	24-Port GbE Layer 2 Switch
	BCM56505 A1	
	BCM56505 B0	
	BCM56505 B1	
	BCM56505 B2	
	BCM56506 A0	Four 10-Gigabit Ethernet/HiGig+ Ports
	BCM56506 A1	
	BCM56506 B0	
	BCM56506 B1	
	BCM56506 B2	
	BCM56507 A0	24-Port GbE Layer 2 Switch with Two 10-GbE/HiGig+ Ports
	BCM56507 A1	
	BCM56507 B0	
	BCM56507 B1	
	BCM56507 B2	
	BCM56508 A0	24-Port GbE Layer 2 Switch with Three 10-GbE/HiGig+ Ports
	BCM56508 A1	
	BCM56508 B0	
	BCM56508 B1	
	BCM56508 B2	
	BCM56509 A0	24-Port GbE Layer 2 Switch with Four 10-GbE/HiGig+ Ports
	BCM56509 A1	
	BCM56509 B0	
	BCM56509 B1	
	BCM56509 B2	
BCM56510	BCM56510 A0	24-Port Gigabit Ethernet Multilayer Switch

**Table 64: Switch Devices**

<b>Family</b>	<b>Devices</b>	<b>Description</b>
	BCM56511 A0	Four-Port 10-GbE/HiGig+ Multilayer Switch
	BCM56512 A0	24-Port GbE Multilayer Switch With Two 10-GbE/HiGig+ Ports
	BCM56513 A0	24-Port GbE Multilayer Switch With Three 10-GbE/HiGig+ Ports
	BCM56514 A0	24-Port GbE Multilayer Switch With Four 10-GbE/HiGig+ Ports
BCM56520	BCM56520 A0	24-Port GbE Multilayer Switch
	BCM56520 B0	
	BCM56522 A0	24-Port GbE Multilayer Switch with Two 10-GbE/HiGig2 Uplink Ports
	BCM56522 B0	
	BCM56524 A0	24-Port GbE Multilayer Switch with Four 10-GbE/HiGig2 Uplink Ports
	BCM56524 B0	
	BCM56526 A0	28-Port GbE Multilayer Switch with Six 10-GbE/HiGig2 Uplink Ports
	BCM56526 B0	
	BCM56530	
	BCM56534 B0	24-Port GbE Multilayer Switch with Four 10-GbE/HiGig2 Uplink Ports
	BCM56538 B0	48-Port GbE Multilayer Switch with Four 10-GbE/HiGig2 Uplink Ports
BCM56540	BCM56540 A1	48xGE + 2xHG[42] + 2xHG[21] + 1GE, 48xGE + 4xXFI + 2xHG[42] + 1GE, 48xGE + 8xXFI + 1GE Multilayer Ethernet Switch
	BCM56540 B0	
BCM56540	BCM56541 A1	28xGE + 2xHG[42] + 2xHG[21] + 1GE, 28xGE + 4xXFI + 2xHG[42] + 1GE, 28xGE + 8xXFI + 1GE Multilayer Ethernet Switch
	BCM56541 B0	
BCM56540	BCM56542 A1	28xGE + 2xF.XAUI/2x10GE + 2xF.HG[42] + 2xF.HG[21] + 1GE, 28xGE + 8xGE/8x2.5GE + 2xHG[42] + 2xHG[21] + 1GE Multilayer Ethernet Switch
BCM56540	BCM56544 A1	10xF.XAUI + 4xHG[21] + 1GE, 10xF.XAUI + 4xXFI, 10xF.XAUI + 2xHG[42], 4xXAUI + 12xXFI + 1GE Multilayer Ethernet Switch
BCM56540	BCM56545 A1	48xGE + 2xHG[42] + 2xHG[21] + 1GE, 48xGE + 4xXFI + 2xHG[42] + 1GE, 48xGE + 8xXFI + 1GE Multilayer Ethernet Switch
BCM56540	BCM56546 A1	28xGE + 2xHG[42] + 2xHG[21] + 1GE, 28xGE + 4xXFI + 2xHG[42] + 1GE, 28xGE + 8xXFI + 1GE Multilayer Ethernet Switch
	BCM56546 B0	
BCM56580	BCM56580 A0	16 x 2.5 GbE + 4 x 10 GbE Ethernet Multilayer Switch
BCM56620	BCM56620 A0	
	BCM56620 A1	
	BCM56620 B0	
	BCM56620 B1	
	BCM56620 B2	
	BCM56624 A0	49 port 1-GbE Multilayer Ethernet Switch with 4 x 10-GbE/HiGig2 Uplink ports and External Table Expansion
	BCM56624 A1	
	BCM56624 B0	
	BCM56624 B1	
	BCM56624 B2	
BCM56626	BCM56626 A0	25 port 1-GbE Multilayer Ethernet Switch with 6 x 10-GbE/HiGig2 Uplink ports and External Table Expansion
	BCM56626 A1	
	BCM56626 B0	
	BCM56626 B1	

**Table 64: Switch Devices**

<b>Family</b>	<b>Devices</b>	<b>Description</b>
	BCM56626 B2	
	BCM56628 A0	8 port 10-GbE/HiGig2 Multilayer Ethernet Switch with External Table Expansion
	BCM56628 A1	
	BCM56628 B0	
	BCM56628 B1	
	BCM56628 B2	
	BCM56629 B0	25 port 1-GbE Multilayer Ethernet Switch with 8 x 10-GbE/HiGig2 Uplink ports and External Table Expansion
	BCM56629 B1	
	BCM56629 B2	
BCM56630	BCM56630 A0	24-Port GbE Multilayer Switch with Four 10-GbE/HiGig2 Uplink Ports
	BCM56630 B0	
	BCM56634 A0	48-Port GbE Multilayer Switch with Four 10-GbE/HiGig2 Uplink Ports
	BCM56634 B0	
	BCM56636 A0	24-Port GbE + 2-Port 10-GbE Multilayer Switch with Four 10-GbE/HiGig2 Uplink Ports
	BCM56636 B0	
	BCM56638 A0	4-Port 10-GbE Multilayer Switch with Four 10-GbE/HiGig2 Uplink Ports
	BCM56638 B0	
	BCM56639 A0	24-Port GbE + 4-Port 10-GbE Multilayer Switch with Four 10-GbE/HiGig2 Uplink Ports
	BCM56639 B0	
BCM56640	BCM56640 A1	1x100GE + 1xHG[127], 1x100GE + 4xHG[32], 1x100GE + 8xHGd[16], 3xF.HG[42] + 1xHG[127], 3xF.HG[42] + 4xHG[32], 3xF.HG[42] + 8xHGd[16], 3xF.HG[42] + 3xF.HG[42] Multilayer Ethernet Switch
	BCM56640 B0	
BCM56640	BCM56643 A1	48xGE + 4xXFI + 4xHG[42] + 1GE Multilayer Ethernet Switch
	BCM56643 B0	
BCM56640	BCM56644 A1	48xGE + 2xHG[25] + 2xHG[25] + 1GE Multilayer Ethernet Switch
	BCM56644 B0	
BCM56640	BCM56648 A1	48xGE + 2xHG[42] + 2xHG[21] + 1GE, 48xGE + 4xXFI + 2xHG[42] + 1GE, 48xGE + 8xXFI + 1GE Multilayer Ethernet Switch
	BCM56648 B0	
BCM56640	BCM56649 A1	28xGE + 2xHG[42] + 2xHG[21] + 1GE, 28xGE + 4xXFI + 2xHG[42] + 1GE, 28xGE + 8xXFI + 1GE Multilayer Ethernet Switch
	BCM56649 B0	
BCM56680	BCM56680 A0	25 port 1-GbE/2.5GbE Multilayer Ethernet Switch with 4 x 10-GbE/HiGig2 Uplink ports
	BCM56680 A1	
	BCM56680 B0	
	BCM56680 B1	
	BCM56684 A0	24 port 1-GbE/2.5GbE Multilayer Ethernet Switch with 4 x 10-GbE/HiGig2 Uplink ports
	BCM56684 A1	
	BCM56684 B0	
	BCM56684 B1	

**Table 64: Switch Devices**

<b>Family</b>	<b>Devices</b>	<b>Description</b>
BCM56685	BCM56685 A0	24-Port GbE Multilayer Switch with Four 10-GbE/HiGig2 Uplink Ports
	BCM56685 B0	
	BCM56689 A0	24-Port GbE Multilayer Switch with Four 10-GbE/HiGig2 Uplink Ports
	BCM56689 B0	
BCM56700	BCM56700 A0	16-Port, 192-Gbps Lossless Switch Fabric
	BCM56701 A0	12-Port, 144-Gbps Lossless Switch Fabric
BCM56720	BCM56720 A0	16 Port, 16-Gbps HiGig2 Switch Fabric
	BCM56721 A0	12 Port, 16-Gbps HiGig2 Switch Fabric
BCM56725	BCM56725 A0	8 Port, 20-Gbps + 4 Port, 16-Gbps HiGig2 Switch Fabric
BCM56740	BCM56743 A0	480 Gbps Switch fabric
	BCM56743 A1	
	BCM56743 A2	
	BCM56743 A3	
	BCM56743 A4	
	BCM56743 B0	
	BCM56743 B1	
	BCM56745 A0	640 Gbps Switch fabric
	BCM56745 A1	
	BCM56745 A2	
	BCM56745 A3	
	BCM56745 A4	
	BCM56745 B0	
	BCM56745 B1	
BCM56740_PLUS	BCM56744 A0	480 Gbps Switch fabric
	BCM56744 A1	
	BCM56746 A0	640 Gbps Switch fabric
	BCM56746 A1	
BCM56800	BCM56800 A0	20-Port 10-Gigabit Ethernet Multilayer Switch
	BCM56801 A0	10-Port 10-Gigabit Ethernet and 8-Port HiGig2/10GbE Multilayer Switch
	BCM56802 A0	16-Port 10-GbE/HiGig2 Multilayer Switch
	BCM56803 A0	12 Port 10GE/HiGig2 Multilayer Switch
BCM56820	BCM56820 A0	24 x 10-GbE + 4 x 1-GbE Multilayer Ethernet Switch
	BCM56820 B0	
	BCM56821 A0	12 x 10-GbE + 8 x HiGig2 + 4 x 1-GbE Multilayer Ethernet Switch
	BCM56821 B0	
	BCM56822 A0	12 x 10-GbE + 4 x 20-Gbps HiGig2 + 4 x 1-GbE Multilayer Ethernet Switch
	BCM56822 B0	
	BCM56823 A0	8 x 10-GbE + 4 x 20-Gbps HiGig2 + 4 x 1-GbE Multilayer Ethernet Switch
	BCM56823 B0	
	BCM56825 B0	16 x 10-GbE + 8 x 20-Gbps HiGig2 + 1 x 1-GbE Multilayer Ethernet Switch
BCM56740	BCM56743 A0	480 Gbps Switch fabric
	BCM56743 A1	





*Table 64: Switch Devices*

<i>Family</i>	<i>Devices</i>	<i>Description</i>
	BCM56743 A2	
	BCM56743 A3	
	BCM56743 A4	
	BCM56743 B0	
	BCM56743 B1	
	BCM56745 A0	640 Gbps Switch fabric
	BCM56745 A1	
	BCM56745 A2	
	BCM56745 A3	
	BCM56745 A4	
	BCM56745 B0	
	BCM56745 B1	
	BCM56744 A0	480 Gbps Switch fabric
	BCM56744 A1	
	BCM56746 A0	640 Gbps Switch fabric
	BCM56746 A1	
BCM56840	BCM56841 A0	320 Gbps Ethernet Multilayer Switch
	BCM56841 A1	
	BCM56841 A2	
	BCM56841 A3	
	BCM56841 A4	
	BCM56841 B0	
	BCM56841 B1	
	BCM56843 A0	480 Gbps Ethernet Multilayer Switch
	BCM56843 A1	
	BCM56843 A2	
	BCM56843 A3	
	BCM56843 A4	
	BCM56843 B0	
	BCM56843 B1	
	BCM56845 A0	640 Gbps Ethernet Multilayer Switch
	BCM56845 A1	
	BCM56845 A2	
	BCM56845 A3	
	BCM56845 A4	
	BCM56845 B0	
	BCM56845 B1	
BCM56840_PLUS	BCM56842 A0	320 Gbps Ethernet Multilayer Switch
	BCM56842 A1	
	BCM56844 A0	480 Gbps Ethernet Multilayer Switch
	BCM56844 A1	



**Table 64: Switch Devices**

<b>Family</b>	<b>Devices</b>	<b>Description</b>
	BCM56846 A0	640 Gbps Ethernet Multilayer Switch
	BCM56846 A1	
BCM56850	BCM56850 A1	1.28Tbps I/O, 1Tbps Core Ethernet Switch
	BCM56854 A1	
BCM88732	BCM88732 B2	Eight-Port 10 GbE or 2-Port 40 GbE MAC Aggregation Switch with 80 Gbps Uplink Capacity
BCM88020	BCM88020 A0	XGS Core (XCore/SBX) Fully Programmable Carrier Packet Processor with 24 GbE Ports, 2 10GbE Ports and 2 SPI Interfaces
	BCM88020 A1	
	BCM88020 A2	
BCM88025	BCM88025 A0	XGS Core (XCore/SBX) Fully Programmable Carrier Packet Processor with 24 GbE Ports, 2 10GbE Ports and 2 SPI Interfaces
BCM88030	BCM88030 A0	XGS Core (XCore/SBX) Scalable Switching 100 Gbps Fully Programmable Carrier Packet Processor
BCM88130	BCM88130 A0	XGS Core (XCore/SBX) 630 Gbps Bandwidth Manager and Switching Engine
	BCM88130 A1	
BME-3200	BME-3200 A0	XGS Core (XCore/SBX) Fabric Bandwidth Manager with 32 SCI control ports and up to 40 SFI data ports
	BME-3200 B0	
QE-2000	QE-2000 A1	XGS Core (XCore/SBX) Fabric Queueing Engine with 49 SPI 4.2 subports
	QE-2000 A2	
	QE-2000 A3	
	QE-2000 A4	
BCM88230	BCM88230 A0	XGS Core (XCore/SBX) Fabric Queueing Engine with Integrated Traffic Management with 4 HiGig2 ports, 50Gbps
	BCM88230 B0	
	BCM88235 A0	XGS Core (XCore/SBX) Fabric Queueing Engine with Integrated Traffic Management with 4 HiGig2 ports, 80Gbps
	BCM88235 B0	
	BCM88231 A0	XGS Core (XCore/SBX) Traffic Manager with 4 HiGig2 ports, 50Gbps
	BCM88231 B0	
	BCM88236 A0	XGS Core (XCore/SBX) Traffic Manager with 4 HiGig2 ports, 80Gbps
	BCM88236 B0	
BCM56930	BCM56931 A0	XGS pass-through and standalone Traffic Manager, 4 HiGig2 ports, 50Gbps
	BCM56931 B0	
	BCM56936 A0	XGS pass-through and standalone Traffic Manager, 4 HiGig2 ports, 80Gbps
	BCM56936 B0	
BCM88640	BCM88640 A0	DNX 100G Flexible Packet Processor with Integrated Traffic Management
	BCM88640 B0	
BCM88650	BCM88650 A0	DNX 200G Flexible Packet Processor with Integrated Traffic Management
	BCM88650 B0	
	BCM88650 B1	
BCM88660	BCM88660 A0	DNX 200G Flexible Packet Processor with Integrated Traffic Management
BCM88750	BCM88750 A0	DNX 1600 GBps Switch Fabric
	BCM88750 B0	

**Table 65: SER Supported Devices**

<b>Family</b>	<b>Devices</b>
Trident	56841, 56842, 56843, 56844, 56845, 56846, 56850
Triumph	56640, 56643, 56644, 56648, 56649, 56540, 56541, 56542, 56544, 56545
Katana	All SKUs
Enduro2	All SKUs

Warm boot Supported devices

Note: There is no warm boot support for External table expansion in BCM56620, BCM56630 and BCM56640 device family.

**Table 66: Switch Devices that support Warm boot**

<b>Family</b>	<b>Devices</b>	<b>Description</b>
BCM5675	BCM5675 A0	8-Port, 192-Gbps Switch Fabric
	BCM5675 A1	
	BCM5676 A0	4-Port, 96-Gbps Switch Fabric
	BCM5676 A1	
BCM56020	BCM56024 A0	24-Port Integrated Multilayer Switch and CPU
	BCM56024 B0	
	BCM56025 A0	24-Port Integrated L2 Switch and CPU
	BCM56025 B0	
	BCM56026 A0	24-Port Integrated L2 Switch and CPU
	BCM56026 B0	
BCM56130	BCM56132 A0	24-Port Fast Ethernet Multilayer Switch with Two 10-GbE/HiGig2 and Two 1G/2.5Gb Uplink Ports
	BCM56132 B0	
	BCM56132 B1	
	BCM56134 A0	24-Port Fast Ethernet Multilayer Switch with four 1G/2.5Gb Uplink Ports
	BCM56134 B0	
	BCM56134 B1	
BCM56142	BCM56142 A0	24-Port Fast Ethernet Multilayer Switch with four 1G/2.5Gb/Higig2/HG Lite Uplink Ports
BCM56150	BCM56150 A0	24-port GbE Managed Switch with 4-port 10 GbE uplinks, integrated CPU and 16 copper PHYs
BCM56150	BCM56151 A0	24-port GbE Managed Switch with 4-port 10 GbE uplinks, integrated CPU (without PHYs)
BCM56150	BCM56152 A0	24-port GbE plus 2-port GbE and 2-port 1GbE/13GbE uplinks Managed Switch, integrated CPU and 16 copper PHYs
BCM56150	BCM53342 A0	8-port GbE Multilayer WebSmart Switch with Integrated CPU and Copper PHYs
BCM56150	BCM53343 A0	16-port GbE plus 4-port GbE uplinks Multilayer WebSmart Switch with Integrated CPU and 16 Copper PHYs
BCM56150	BCM53344 A0	24-port GbE plus 2-port GbE and 2-port 1GbE/13GbE uplinks WebSmart Switch, integrated CPU and 16 copper PHYs
BCM56150	BCM53346 A0	24-port GbE Multilayer WebSmart Switch with 4-port 10 GbE uplinks, integrated CPU and 16 copper PHYs



**Table 66: Switch Devices that support Warm boot**

<b>Family</b>	<b>Devices</b>	<b>Description</b>
BCM56150	BCM53394 A0	10-port GbE Multilayer Embedded Switch with 4-port 10 GbE uplinks, integrated CPU (without PHY)
BCM56220	BCM56224 A0	24 GbE + 4 x 1 Gb/2.5 Gb, L3/L2+
	BCM56224 B0	24 GbE + 4 x 1 Gb/2.5 Gb, L3/L2+
	BCM56225 A0	24 GbE + 4 x 1 Gb/2.5 Gb, L2+
	BCM56225 B0	24 GbE + 4 x 1 Gb/2.5 Gb, L2+
	BCM56226 A0	16 GbE + 4 x 1 Gb/2.5 Gb, L3/L2+
	BCM56226 B0	16 GbE + 4 x 1 Gb/2.5 Gb, L3/L2+
	BCM56227 A0	16 GbE + 4 x 1 Gb/2.5 Gb, L2+
	BCM56227 B0	16 GbE + 4 x 1 Gb/2.5 Gb, L2+
	BCM56228 A0	8 GbE + 4 x 1 Gb/2.5 Gb, L3/L2+
	BCM56228 B0	8 GbE + 4 x 1 Gb/2.5 Gb, L3/L2+
	BCM56229 A0	8 GbE + 4 x 1 Gb/2.5 Gb, L2+
	BCM56229 B0	8 GbE + 4 x 1 Gb/2.5 Gb, L2+
	BCM56230 B1	12-Port GbE Multilayer Switch
	BCM56231 B1	6-Port GbE Multilayer Switch
	BCM56320 A0	24-Port GbE Multilayer Switch with Four 10-GbE/HiGig2 Uplink Ports
	BCM56320 B0	
BCM56320	BCM56320 B1	
	BCM56321 A0	24-Port GbE Multilayer Switch with Four 10-GbE/HiGig2 Uplink Ports
	BCM56321 B0	
	BCM56321 B1	
	BCM56331 A0	24-Port GbE Multilayer Switch with Four 2.5GbE Uplink Ports
BCM56330	BCM56331 B0	
	BCM56331 B1	
	BCM56333 A0	16-Port GbE Multilayer Switch
	BCM56333 B0	
	BCM56333 B1	
	BCM56334 A0	24-Port GbE Multilayer Switch with Four 10-GbE/HiGig2 Uplink Ports
	BCM56334 B0	
	BCM56334 B1	
	BCM56338 A0	8-Port GbE Multilayer Switch with two 10-GbE/HiGig2 Uplink Ports
	BCM56338 B0	
	BCM56338 B1	
BCM56240	BCM56240 A0	2-Port 10GbE (OR 8 *2.5GbE) Multilayer Switch with Two 10-GbE/HiGig2 Uplink ports
BCM56240	BCM56240 B0	2-Port 10GbE (OR 8 *2.5GbE) Multilayer Switch with Two 10-GbE/HiGig2 Uplink ports
	BCM56241 A0	6-Port GbE Multilayer Switch with Two 2.5GbE Uplink ports
	BCM56242 A0	8-Port 2.5GbE Multilayer Switch with Two 2.5GbE Uplink ports
	BCM56243 A0	4-Port 2.5GbE Multilayer Switch
BCM56440	BCM55441 A0	24-Port GbE Multilayer Switch with Four 10-GbE/HiGig2 Uplink ports
	BCM56440 A0	24-Port GbE Multilayer Switch with Four 10-GbE/HiGig2 Uplink ports
	BCM56440 B0	24-Port GbE Multilayer Switch with Four 10-GbE/HiGig2 Uplink ports
	BCM56441 A0	8-Port GbE Multilayer Switch with Two 10-GbE/HiGig2 Uplink ports



*Table 66: Switch Devices that support Warm boot*

<i>Family</i>	<i>Devices</i>	<i>Description</i>
	BCM56442 A0	16-Port GbE Multilayer Switch
	BCM56443 A0	8-Port 2.5GbE Multilayer Switch with Two 10-GbE/HiG2 Uplink ports
	BCM56445 A0	24-Port GbE Multilayer Switch with Four 10-GbE/HiG2 Uplink ports pin compatible with BCM56334
	BCM56446 A0	8-Port GbE Multilayer Switch with Two 10-GbE/HiG2 Uplink ports pin compatible with BCM56338
	BCM56447 A0	16-Port GbE Multilayer Switch pin compatible with BCM56333
	BCM56448 A0	24-Port GbE Multilayer Switch with Four 1GbE/ One 2.5G Uplink ports
BCM56500	BCM56500 A0	24-Port Gigabit Ethernet Multilayer Switch
	BCM56500 A1	
	BCM56500 B0	
	BCM56500 B1	
	BCM56500 B2	
	BCM56501 A0	Four 10-Gigabit Ethernet/HiGig+ Ports
	BCM56501 A1	
	BCM56501 B0	
	BCM56501 B1	
	BCM56501 B2	
	BCM56502 A0	24-Port GbE Multilayer Switch with Two 10-GbE/HiGig+ Ports
	BCM56502 A1	
	BCM56502 B0	
	BCM56502 B1	
	BCM56502 B2	
	BCM56503 A0	24-Port GbE Multilayer Switch with Three 10-GbE/HiGig+ Ports
	BCM56503 A1	
	BCM56503 B0	
	BCM56503 B1	
	BCM56503 B2	
	BCM56504 A0	24-Port GbE Multilayer Switch with Four 10-GbE/HiGig+ Ports
	BCM56504 A1	
	BCM56504 B0	
	BCM56504 B1	
	BCM56504 B2	
	BCM56505 A0	24-Port GbE Layer 2 Switch
	BCM56505 A1	
	BCM56505 B0	
	BCM56505 B1	
	BCM56505 B2	
	BCM56506 A0	Four 10-Gigabit Ethernet/HiGig+ Ports
	BCM56506 A1	
	BCM56506 B0	
	BCM56506 B1	



**Table 66: Switch Devices that support Warm boot**

<b>Family</b>	<b>Devices</b>	<b>Description</b>
	BCM56506 B2	
	BCM56507 A0	24-Port GbE Layer 2 Switch with Two 10-GbE/HiGig+ Ports
	BCM56507 A1	
	BCM56507 B0	
	BCM56507 B1	
	BCM56507 B2	
	BCM56508 A0	24-Port GbE Layer 2 Switch with Three 10-GbE/HiGig+ Ports
	BCM56508 A1	
	BCM56508 B0	
	BCM56508 B1	
	BCM56508 B2	
	BCM56509 A0	24-Port GbE Layer 2 Switch with Four 10-GbE/HiGig+ Ports
	BCM56509 A1	
	BCM56509 B0	
	BCM56509 B1	
	BCM56509 B2	
BCM56510	BCM56510 A0	24-Port Gigabit Ethernet Multilayer Switch
	BCM56511 A0	Four-Port 10-GbE/HiGig+ Multilayer Switch
	BCM56512 A0	24-Port GbE Multilayer Switch With Two 10-GbE/HiGig+ Ports
	BCM56513 A0	24-Port GbE Multilayer Switch With Three 10-GbE/HiGig+ Ports
	BCM56514 A0	24-Port GbE Multilayer Switch With Four 10-GbE/HiGig+ Ports
BCM56520	BCM56520 A0	24-Port GbE Multilayer Switch
	BCM56520 B0	
	BCM56522 A0	24-Port GbE Multilayer Switch with Two 10-GbE/HiGig2 Uplink Ports
	BCM56522 B0	
	BCM56524 A0	24-Port GbE Multilayer Switch with Four 10-GbE/HiGig2 Uplink Ports
	BCM56524 B0	
	BCM56526 A0	28-Port GbE Multilayer Switch with Six 10-GbE/HiGig2 Uplink Ports
	BCM56526 B0	
BCM56530	BCM56534 B0	24-Port GbE Multilayer Switch with Four 10-GbE/HiGig2 Uplink Ports
	BCM56538 B0	48-Port GbE Multilayer Switch with Four 10-GbE/HiGig2 Uplink Ports
BCM56620	BCM56620 A0	
	BCM56620 A1	
	BCM56620 B0	
	BCM56620 B1	
	BCM56624 A0	49 port 1-GbE Multilayer Ethernet Switch with 4 x 10-GbE/HiGig2 Uplink ports and External Table Expansion
	BCM56624 A1	
	BCM56624 B0	
	BCM56624 B1	
	BCM56624 B2	

**Table 66: Switch Devices that support Warm boot**

<b>Family</b>	<b>Devices</b>	<b>Description</b>
	BCM56626 A0	25 port 1-GbE Multilayer Ethernet Switch with 6 x 10-GbE/HiGig2 Uplink ports and External Table Expansion
	BCM56626 A1	
	BCM56626 B0	
	BCM56626 B1	
	BCM56626 B2	
	BCM56628 A0	8 port 10-GbE/HiGig2 Multilayer Ethernet Switch with External Table Expansion
	BCM56628 A1	
	BCM56628 B0	
	BCM56628 B1	
	BCM56628 B2	
	BCM56629 B0	25 port 1-GbE Multilayer Ethernet Switch with 8 x 10-GbE/HiGig2 Uplink ports and External Table Expansion
	BCM56629 B1	
BCM56630	BCM56630 A0	24-Port GbE Multilayer Switch with Four 10-GbE/HiGig2 Uplink Ports
	BCM56630 B0	
	BCM56634 A0	48-Port GbE Multilayer Switch with Four 10-GbE/HiGig2 Uplink Ports
	BCM56634 B0	
	BCM56636 A0	24-Port GbE + 2-Port 10-GbE Multilayer Switch with Four 10-GbE/HiGig2 Uplink Ports
	BCM56636 B0	
	BCM56638 A0	4-Port 10-GbE Multilayer Switch with Four 10-GbE/HiGig2 Uplink Ports
	BCM56638 B0	
	BCM56639 A0	24-Port GbE + 4-Port 10-GbE Multilayer Switch with Four 10-GbE/HiGig2 Uplink Ports
	BCM56639 B0	
BCM56540	BCM56540 A0	48xGE + 2xHG[42] + 2xHG[21] + 1GE, 48xGE + 4xXFI + 2xHG[42] + 1GE, 48xGE + 8xXFI + 1GE Multilayer Ethernet Switch (Preview)
	BCM56540 A1	
BCM56540	BCM56541 A0	28xGE + 2xHG[42] + 2xHG[21] + 1GE, 28xGE + 4xXFI + 2xHG[42] + 1GE, 28xGE + 8xXFI + 1GE Multilayer Ethernet Switch (Preview)
	BCM56541 A1	
BCM56540	BCM56542 A0	28xGE + 2xF.XAUI/2x10GE + 2xF.HG[42] + 2xF.HG[21] + 1GE, 28xGE + 8xGE/8x2.5GE + 2xHG[42] + 2xHG[21] + 1GE Multilayer Ethernet Switch (Preview)
	BCM56542 A1	
BCM56540	BCM56544 A0	10xF.XAUI + 4xHG[21] + 1GE, 10xF.XAUI + 4xXFI, 10xF.XAUI + 2xHG[42], 4xXAUI + 12xXFI + 1GE Multilayer Ethernet Switch (Preview)
	BCM56544 A1	
BCM56540	BCM56545 A0	48xGE + 2xHG[42] + 2xHG[21] + 1GE, 48xGE + 4xXFI + 2xHG[42] + 1GE, 48xGE + 8xXFI + 1GE Multilayer Ethernet Switch (Preview)
	BCM56545 A1	
BCM56540	BCM56546 A0	28xGE + 2xHG[42] + 2xHG[21] + 1GE, 28xGE + 4xXFI + 2xHG[42] + 1GE, 28xGE + 8xXFI + 1GE Multilayer Ethernet Switch (Preview)
BCM56640	BCM56640 A0	1x100GE + 1xHG[127], 1x100GE + 4xHG[32], 1x100GE + 8xHGd[16], 3xF.HG[42] + 1xHG[127], 3xF.HG[42] + 4xHG[32], 3xF.HG[42] + 8xHGd[16], 3xF.HG[42] + 3xF.HG[42] Multilayer Ethernet Switch (Preview)
	BCM56640 A1	

**Table 66: Switch Devices that support Warm boot**

<b>Family</b>	<b>Devices</b>	<b>Description</b>
BCM56640	BCM56643 A0	48xGE + 4xXFI + 4xHG[42] + 1GE Multilayer Ethernet Switch (Preview)
	BCM56643 A1	
BCM56640	BCM56644 A0	48xGE + 2xHG[25] + 2xHG[25] + 1GE Multilayer Ethernet Switch (Preview)
	BCM56644 A1	
BCM56640	BCM56648 A0	48xGE + 2xHG[42] + 2xHG[21] + 1GE, 48xGE + 4xXFI + 2xHG[42] + 1GE, 48xGE + 8xXFI + 1GE Multilayer Ethernet Switch (Preview)
	BCM56648 A1	
BCM56640	BCM56649 A0	28xGE + 2xHG[42] + 2xHG[21] + 1GE, 28xGE + 4xXFI + 2xHG[42] + 1GE, 28xGE + 8xXFI + 1GE Multilayer Ethernet Switch (Preview)
BCM56680	BCM56680 A0	25 port 1-GbE/2.5GbE Multilayer Ethernet Switch with 4 x 10-GbE/HiGig2 Uplink ports
	BCM56680 A1	
	BCM56680 B0	
	BCM56680 B1	
	BCM56684 A0	24 port 1-GbE/2.5GbE Multilayer Ethernet Switch with 4 x 10-GbE/HiGig2 Uplink ports
	BCM56684 A1	
	BCM56684 B0	
	BCM56684 B1	
BCM56685	BCM56685 A0	24-Port GbE Multilayer Switch with Four 10-GbE/HiGig2 Uplink Ports
	BCM56685 B0	
	BCM56689 A0	24-Port GbE Multilayer Switch with Four 10-GbE/HiGig2 Uplink Ports
	BCM56689 B0	
BCM56700	BCM56700 A0	16-Port, 192-Gbps Lossless Switch Fabric
	BCM56701 A0	12-Port, 144-Gbps Lossless Switch Fabric
BCM56720	BCM56720 A0	16 Port, 16-Gbps HiGig2 Switch Fabric
	BCM56721 A0	12 Port, 16-Gbps HiGig2 Switch Fabric
BCM56725	BCM56725 A0	8 Port, 20-Gbps + 4 Port, 16-Gbps HiGig2 Switch Fabric
BCM56800	BCM56800 A0	20-Port 10-Gigabit Ethernet Multilayer Switch
	BCM56801 A0	10-Port 10-Gigabit Ethernet and 8-Port HiGig2/10GbE Multilayer Switch
	BCM56802 A0	16-Port 10-GbE/HiGig2 Multilayer Switch
	BCM56803 A0	12 Port 10GE/HiGig2 Multilayer Switch
BCM56820	BCM56820 A0	24 x 10-GbE + 4 x 1-GbE Multilayer Ethernet Switch
	BCM56820 B0	
	BCM56821 A0	12 x 10-GbE + 8 x HiGig2 + 4 x 1-GbE Multilayer Ethernet Switch
	BCM56821 B0	
	BCM56822 A0	12 x 10-GbE + 4 x 20-Gbps HiGig2 + 4 x 1-GbE Multilayer Ethernet Switch
	BCM56822 B0	
	BCM56823 A0	8 x 10-GbE + 4 x 20-Gbps HiGig2 + 4 x 1-GbE Multilayer Ethernet Switch
	BCM56823 B0	
	BCM56825 B0	16 x 10-GbE + 8 x 20-Gbps HiGig2 + 1 x 1-GbE Multilayer Ethernet Switch
BCM56840	BCM56841 A0	320 Gbps Ethernet Multilayer Switch
	BCM56841 A1	
	BCM56841 A2	
	BCM56841 A3	



**Table 66: Switch Devices that support Warm boot**

<b>Family</b>	<b>Devices</b>	<b>Description</b>
	BCM56841 A4	
	BCM56841 B0	
	BCM56841 B1	
	BCM56843 A0	480 Gbps Ethernet Multilayer Switch
	BCM56843 A1	
	BCM56843 A2	
	BCM56843 A3	
	BCM56843 A4	
	BCM56843 B0	
	BCM56843 B1	
	BCM56845 A0	640 Gbps Ethernet Multilayer Switch
	BCM56845 A1	
	BCM56845 A2	
	BCM56845 A3	
	BCM56845 A4	
	BCM56845 B0	
	BCM56845 B1	
BCM56840_PLUS	BCM56842 A0	320 Gbps Ethernet Multilayer Switch
	BCM56842 A1	
	BCM56844 A0	480 Gbps Ethernet Multilayer Switch
	BCM56844 A1	
	BCM56846 A0	640 Gbps Ethernet Multilayer Switch
	BCM56846 A1	
BCM56850	BCM56850 A0	1.28Tbps I/O, 1Tbps Core Ethernet Switch
	BCM56854 A0	1.28Tbps I/O, 1Tbps Core Ethernet Switch
	BCM56850 A1	1.28Tbps I/O, 1Tbps Core Ethernet Switch
	BCM56854 A1	1.28Tbps I/O, 1Tbps Core Ethernet Switch
BCM88640	BCM88640 A0	80GBps DNX Traffic manager + Packet processor
	BCM88640 B0	
BCM88660	BCM88660 A0	200GBps DNX Traffic manager + Packet processor
	BCM88650 B0	
	BCM88650 B1	
BCM88660	BCM88660 A0	200GBps DNX Traffic manager + Packet processor
	BCM88750	BCM88750 A0
	BCM88750 B0	

**Table 67: Switch Device Codenames**

<b>Product Family</b>	<b>Architecture</b>	<b>Codename</b>
BCM5650	StrataXGS	-
BCM5665	StrataXGS	-
BCM5670	StrataXGS	-



**Table 67: Switch Device Codenames**

<b>Product Family</b>	<b>Architecture</b>	<b>Codename</b>
BCM5673	StrataXGS	-
BCM5674	StrataXGS II	-
BCM5675	StrataXGS II	-
BCM5690	StrataXGS	-
BCM5695	StrataXGS II	-
BCM53310	StrataXGS III	Hawkeye
BCM53710	StrataXGS III	Raptor
BCM53720	StrataXGS III	Raven
BCM56010	StrataXGS III	Raptor
BCM56020	StrataXGS III	Tropicana
BCM56100	StrataXGS III	Felix
BCM56110	StrataXGS III	Felix+
BCM56140	StrataXGS IV	Hurricane
BCM56150	StrataXGS IV	Hurricane2
BCM56210	StrataXGS III	Raptor
BCM56220	StrataXGS III	Raven
BCM56300	StrataXGS III	Helix
BCM56310	StrataXGS III	Helix+
BCM56320	StrataXGS IV	Helix3
BCM56340	StrataXGS V	Helix4
BCM56330	StrataXGS IV	Enduro
BCM56130	StrataXGS IV	Stardust
BCM56230	StrataXGS IV	Dagger
BCM56440	StrataXGS IV	Katana
BCM56445	StrataXGS IV	Enduro2
BCM56450	StrataXGS IV	Katana2
BCM56500	StrataXGS III	Firebolt
BCM56510	StrataXGS III	Firebolt2
BCM56520	StrataXGS IV	Apollo
BCM56530	StrataXGS IV	Firebolt3
BCM56540	StrataXGS IV	Apollo2
BCM56580	StrataXGS III	Goldwing
BCM56600	StrataXGS III	Easyrider
BCM56620	StrataXGS IV	Triumph
BCM56629	StrataXGS IV	Triumph
BCM56630	StrataXGS IV	Triumph2
BCM56640	StrataXGS IV	Triumph3
BCM56680	StrataXGS IV	Valkyrie
BCM56685	StrataXGS IV	Valkyrie2
BCM56700	StrataXGS III	Humv
BCM56720	StrataXGS IV	HUMV+
BCM56725	StrataXGS IV	Conqueror
BCM56740	StrataXGS IV	Titan
BCM56744	StrataXGS IV	Titan+
BCM56800	StrataXGS IV	Bradley
BCM56820	StrataXGS IV	Scorpion
BCM56825	StrataXGS IV	Sco320G
BCM56840	StrataXGS IV	Trident
BCM56840_PLUS	StrataXGS IV	Trident+
BCM56850	StrataXGS V	Trident2
BCM88732	StrataXGS IV	Shadow

*Table 67: Switch Device Codenames*

<i>Product Family</i>	<i>Architecture</i>	<i>Codename</i>
BCM88020	XGS Core	Caladan FE-2000
BCM88025	XGS Core	Caladan2
BCM88030	XGS Core	Caladan3
BCM88130	XGS Core	Polaris
BCM88230	XGS Core	Sirius
BCM88235	XGS Core	Sirius+
BCM88231	XGS Core	Sirius TM
BCM88236	XGS Core	Sirius+ TM
BCM56931	XGS Core	Sportster
BCM56936	XGS Core	Sportster+
BCM53010	ROBO	Northstar
BCM53018	ROBO	Costar
BCM53020	ROBO	Northstar+
BCM53101	ROBO	Lotus
BCM53115	ROBO	Vulcan
BCM53118	ROBO	Blackbird
BCM53125	ROBO	Starfighter
BCM53128	ROBO	Blackbird2
BCM53242	ROBO	Harrier
BCM53280	ROBO	Thunderbolt
BCM53600	ROBO	Voyager
BCM89500	ROBO	Polar
BCM88X4X	SAND	Petra-B
BCM88650	SAND	Arad
BCM88650	SAND	Arad+
BCM88750	SAND	FE1600

## PHYS

Table 68: PHYs

Device	Driver Family	Description
BCM5218	522x	10/100Base-TX/FX Octal-PHY(tm) Transceiver
BCM5220	522x	10/100BASE-TX/FX Mini-F(tm) Transceiver
BCM5221	522x	10/100BASE-TX/FX Mini-F(tm) Transceiver
BCM5226	522x	10/100 BASE- TX/FX Hex-PHY(tm) Transceiver
BCM5228	522x	10/100BASE-TX/FX Octal-F(tm) Transceiver
BCM5238	522x	10/100BASE-TX OCTAL-f(tm) Transceiver
BCM5248	522x	10/100BASE-TX Octal-F(tm) Transceiver
BCM52681E A1	54680	Octal 10/100 Ethernet Transceiver
BCM5401	5401	10/100/1000BASE-T Gigabit Copper Transceiver
BCM5402	5402	10/100/1000BASE-T Gigabit Copper Transceiver
BCM5404	5404	Quad-Port 10/100/1000BASE-T Gigabit Copper Transceiver
BCM5424	5424	Quad 10/100/1000BASE-T Gigabit Ethernet Transceiver
BCM5434	5424	Quad 10/100/1000BASE-T Gigabit Ethernet Transceiver
BCM5411	5411	10/100/1000BASE-T Gigabit Copper Transceiver
BCM5421	5421S	10/100/1000BASE-T Gigabit Copper Transceiver
BCM5421S	5421S	10/100/1000BASE-T Gigabit Copper Transceiver with SerDes
BCM5461	5464	10/100/1000BASE-T Gigabit Ethernet Transceiver
BCM5464	5464	Quad-Port 10/100/1000BASE-T Gigabit Copper Transceiver
BCM5464R	5464	Quad-Port 10/100/1000BASE-T Gigabit Copper Transceiver
BCM5464S	5464	Quad-Port Gigabit Copper Transceiver with Copper/Fiber Media Interface
BCM5464SR	5464	Quad-Port Gigabit Copper Transceiver with Copper/Fiber Media Interface
BCM5466	5464	Quad-Port 10/100/1000BASE-T Gigabit Copper Transceiver
BCM5466R	5464	Quad-Port 10/100/1000BASE-T Gigabit Copper Transceiver
BCM5466S	5464	Quad-Port Gigabit Copper Transceiver with Copper/Fiber Media Interface
BCM5466SR	5464	Quad-Port Gigabit Copper Transceiver with Copper/Fiber Media Interface
BCM5482	5482	Dual-Port 10/100/1000BASE-T Gigabit Ethernet Transceiver
BCM5488	5464	Octal 1000/100/10BASE-T Gigabit Ethernet Transceiver
BCM54240_C0	54280	Quad 1000/100/10BASE-T Gigabit Ethernet Transceiver
BCM54240_C1	54280	Quad 1000/100/10BASE-T Gigabit Ethernet Transceiver
BCM54280_A0	54280	Octal 1000/100/10BASE-T Gigabit Ethernet Transceiver
BCM54280_C0	54280	Octal 1000/100/10BASE-T Gigabit Ethernet Transceiver
BCM54280_C1	54280	Octal 1000/100/10BASE-T Gigabit Ethernet Transceiver
BCM54282_A0	54280	Octal 1000/100/10BASE-T Gigabit Ethernet Transceiver
BCM54282_C0	54280	Octal 1000/100/10BASE-T Gigabit Ethernet Transceiver
BCM54282_C1	54280	Octal 1000/100/10BASE-T Gigabit Ethernet Transceiver
BCM54285_C0	54280	Octal 1000/100/10BASE-T Gigabit Ethernet Transceiver
BCM54285_C1	54280	Octal 1000/100/10BASE-T Gigabit Ethernet Transceiver
BCM54290_A0	54280	Octal 1000/100/10BASE-T Gigabit Ethernet Transceiver (1588 feature is Preview)
BCM54292_A0	54280	Octal 1000/100/10BASE-T Gigabit Ethernet Transceiver (1588 feature is Preview)
BCM54294_A0	54280	Quad 1000/100/10BASE-T Gigabit Ethernet Transceiver (1588 feature is Preview)
BCM54340_B0	54380	Quad 1000/100/10BASE-T Gigabit Ethernet Transceiver (Needs additional software component)
BCM54340_C0	54380	Quad 1000/100/10BASE-T Gigabit Ethernet Transceiver (Needs additional software component)

**Table 68: PHYs**

<b>Device</b>	<b>Driver Family</b>	<b>Description</b>
BCM54340_C1	54380	Quad 1000/100/10BASE-T Gigabit Ethernet Transceiver (Needs additional software component)
BCM54380_B0	54380	Octal 1000/100/10BASE-T Gigabit Ethernet Transceiver (Needs additional software component)
BCM54380_C0	54380	Octal 1000/100/10BASE-T Gigabit Ethernet Transceiver (Needs additional software component)
BCM54380_C1	54380	Octal 1000/100/10BASE-T Gigabit Ethernet Transceiver (Needs additional software component)
BCM54382_B0	54380	Octal 1000/100/10BASE-T Gigabit Ethernet Transceiver (Needs additional software component)
BCM54382_C0	54380	Octal 1000/100/10BASE-T Gigabit Ethernet Transceiver (Needs additional software component)
BCM54382_C1	54380	Octal 1000/100/10BASE-T Gigabit Ethernet Transceiver (Needs additional software component)
BCM54385_B0	54380	Octal 1000/100/10BASE-T Gigabit Ethernet Transceiver (Needs additional software component)
BCM54385_C0	54380	Octal 1000/100/10BASE-T Gigabit Ethernet Transceiver (Needs additional software component)
BCM54385_C1	54380	Octal 1000/100/10BASE-T Gigabit Ethernet Transceiver (Needs additional software component)
BCM54616_A0	54616	Single-Chip 10/100/1000BASE-T Gigabit Ethernet Transceiver
BCM54640	54640	Quad-Port Gigabit Copper Transceiver with Copper/Fiber Media Interface
BCM54640E_A1	54640	Quad-Port Gigabit Copper Transceiver with Copper/Fiber Media Interface
BCM54640E_B0	54640	Quad-Port Gigabit Copper Transceiver with Copper/Fiber Media Interface
BCM54680_A0	54680	Octal-Port 10/100/1000BASE-T Gigabit Ethernet Transceiver
BCM54680E_A1	54680	Octal-Port 10/100/1000BASE-T Gigabit Ethernet Transceiver
BCM54680E_B0	54680	Octal-Port 10/100/1000BASE-T Gigabit Ethernet Transceiver
BCM54682E_A1	54682	Octal-Port 10/100/1000BASE-T Gigabit Ethernet Transceiver with 2 Copper/Fiber Media Interface
BCM54682E_B0	54682	Octal-Port 10/100/1000BASE-T Gigabit Ethernet Transceiver with 2 Copper/Fiber Media Interface
BCM54684_D0	54684	Octal-Port 10/100/1000BASE-T Gigabit Ethernet Transceiver
BCM54684E_B0	54682	10/100/1000 Octal (65nm) QSGMII-Copper/Fiber(2) with EEE
BCM54685	54682	Octal QSGMII to 10/100/1000BaseT or Fiber Ethernet Transceiver
BCM54685E_A1	54682	Octal-Port 10/100/1000BASE-T Gigabit Ethernet Transceiver with Copper/Fiber Media Interface
BCM54810_A0	54880	BroadR-Reach Single-Port 10/100/1000BASE-T Gigabit Ethernet Transceiver
BCM54880_A0	54880	Octal-Port 10/100/1000BASE-T Gigabit Ethernet Transceiver with BroadR-Reach support
BCM54880_B0	54880	Octal-Port 10/100/1000BASE-T Gigabit Ethernet Transceiver with BroadR-Reach support
BCM54880E_A1	54680	Octal-Port 10/100/1000BASE-T Gigabit Ethernet Transceiver
BCM54880E_B0	54680	Octal-Port 10/100/1000BASE-T Gigabit Ethernet Transceiver
BCM54881_B0	54880	Octal 10/100Base/Tx Ethernet BroadReach Transceiver
BCM54942_A0	84728	Quad-Channel 10GbE XAUI-to-XFI PHY. Firmware version 0124
BCM54980_B2	54980	Octal 1000/100/10BASE-T Gigabit Ethernet Transceiver
BCM54980_C0	54980	Octal 1000/100/10BASE-T Gigabit Ethernet Transceiver
BCM54980_C1	54980	Octal 1000/100/10BASE-T Gigabit Ethernet Transceiver
BCM8040_A2	8040	Eight-Channel Multirate 1-Gbps - 3.2-Gbps Retimer/Switch
BCM8073_A0	8072	Dual-Channel Serial 10-GbE BASE-KR to XAUI Transceiver. Firmware version d502.
BCM8074_A0	8072	Quad-Channel Serial 10-GbE BASE-KR to XAUI Transceiver. Firmware version 010C.
BCM8704	8703	Serial 10-Gigabit Ethernet/Fibre Channel Transceiver with XAUI Interface



**Table 68: PHYs**

<b>Device</b>	<b>Driver Family</b>	<b>Description</b>
BCM8705	8705	Serial 10-Gigabit Ethernet/Fibre Channel Transceiver with WIS Layer and XAUI Interface
BCM8725	8705	Dual Serial 10-Gigabit Ethernet/Fibre Channel Transceiver with WIS Layer and XAUI Interface
BCM8726_A0	8706	Dual Serial 10-Gigabit Ethernet/Fibre Channel Transceiver with XAUI Interface
BCM8726_B1	8706	Dual Serial 10-Gigabit Ethernet/Fibre Channel Transceiver with XAUI(TM) Interface. Firmware version 0x0127
BCM8727_B0	8706	Dual Serial 10-Gigabit Ethernet/Fibre Channel Transceiver with XAUI Interface. Firmware version 0406.
BCM8727_C0	8706	Dual Serial 10-Gigabit Ethernet/Fibre Channel Transceiver with XAUI Interface. Firmware version 050D.
BCM84727_A0	84728	Dual SFI to XAUI with 1588 (Firmware version 0x124. Preview)
BCM8728_A0	8706	Dual-Channel 10-GbE SFI-to-XAUI(TM) Transceiver with EDC. Firmware version 0511. (Preview)
BCM8742	8706	Quad-Channel 10-GbE SFI-to-XAUI(TM) Transceiver. Firmware version 0511.
BCM8747_A0	8706	Quad-Channel 10-GbE SFI-to-XAUI(TM) Transceiver with EDC. Firmware version 0511.
BCM8750_A0	8750	Dual-Channel 10 GbE SFI-to-XFI PHY with EDC
BCM8752_A0	8750	Dual-Channel 10 GbE SFI-to-XFI PHY with EDC
BCM8754_A0	8750	Quad-Channel 10 GbE SFI-to-XFI PHY with EDC. Firmware version 0411.
BCM8481_B0	8481	10GBASE-T Transceiver (Firmware version B0 02.10)
BCM8481_C0	8481	10GBASE-T Transceiver (Firmware version C0 02.13)
BCM82328_A0	82328	Dual 40 GbE/Octal 10 GbE QSFP+ XLPPI-to-XLAUI PHY. Firmware version D104 "(Preview)
BCM84328_A0	84328	Dual 40 GbE/Octal 10 GbE QSFP+ XLPPI-to-XLAUI PHY. Firmware version D023
BCM84328_B0	84328	Dual 40 GbE/Octal 10 GbE QSFP+ XLPPI-to-XLAUI PHY. Firmware version D023
BCM84334_B1	8481	Quad 10GBASE-T Transceiver. Firmware version 1.66 (Preview) (Needs additional software component)
BCM84336_B1	8481	Dual 10GBASE-T Transceiver. Firmware version 1.66 (Preview) (Needs additional software component)
BCM84793_A0	84793	100GbE/OTN 4x25/28G VSR28 to 10x10/11G CAUI Gearbox PHY. Firmware version 0xD009 (Preview - Mode-1 and Mode-3)
BCM84812_A0	8481	Dual 10GBASE-T Transceiver. Firmware version 2.13
BCM84821_A0	8481	10GBASE-T Transceiver. Firmware version 2.13 (Preview)
BCM84822_A0	8481	Dual 10GBASE-T Transceiver. Firmware version 3.02
BCM84823_A0	8481	Dual 10GBASE-T Transceiver. Firmware version 3.02
BCM84823_B0	8481	Dual 10GBASE-T Transceiver. Firmware version 4.02
BCM84823_B1	8481	Dual 10GBASE-T Transceiver. Firmware version 4.02
BCM84833_B1	8481	Dual 10GBASE-T Transceiver. Firmware version 1.66(Driver support for IEEE 1588 features are preview)
BCM84834_B1	8481	Quad 10GBASE-T Transceiver. Firmware version 1.66(Driver support for IEEE 1588 features are preview)
BCM84836_B1	8481	Dual 10GBASE-T Transceiver. Firmware version 1.66(Driver support for IEEE 1588 features are preview)
BCM84844_A0	8481	Quad 10GBASE-T Transceiver. Firmware version 1.06(Driver support is preview)
BCM84846_A0	8481	Dual 10GBASE-T Transceiver. Firmware version 1.06(Driver support is preview)
BCM84848_A0	8481	Quad 10GBASE-T Transceiver. Firmware version 1.06(Driver support is preview)
BCM84728 A0	84728	Dual-Channel 10 GbE SFI-to-XAUI LAN/WAN PHY with 1588. Firmware version 0124 (Driver support for IEEE 1588 features is preview)
BCM84729_A0	84729	Dual-Channel SFI to XAUI with Macsec, 1588 (Firmware version 0x124. Driver support for IEEE 1588 features are preview)
BCM84740 A0	84740	40 GbE PPI-to-XLAUI PHY with EDC. Firmware version D106.

**Table 68: PHYs**

<b>Device</b>	<b>Driver Family</b>	<b>Description</b>
BCM84747_A0	84728	Quad SFI to XAUI with 1588 (Firmware version 0x124. Preview)
BCM84748_A0	84728	Quad SFI to XAUI with WAN/1588 (Firmware version 0x124. Preview)
BCM84749_A0	84749	Quad SFI to XAUI with Macsec, 1588 (Firmware version 0x124. Driver support for IEEE 1588 features are preview)
BCM84752 A0	84740	Dual-Channel 10 GbE SFI-to-XFI PHY with EDC. Firmware version D105. (Preview)
BCM84753 A0	84740	Quad-Channel 10 GbE SFI-to-XFI PHY with EDC. Firmware version D105.
BCM84754 A0	84740	Quad-Channel 10 GbE SFI-to-XFI PHY with EDC. Firmware version D105.
BCM84756 A0	84756	Quad SGMII/XFI to SGMII/SFI Transceiver Firmware version D105. (Needs additional software component)
BCM84756 B0	84756	Quad SGMII/XFI to SGMII/SFI Transceiver Firmware version 0x0128(Needs additional software component)
BCM84759 A0	84756	Quad SGMII/XFI to SGMII/SFI Transceiver Firmware version D105.
BCM84759 C0	84756	Quad SGMII/XFI to SGMII/SFI Transceiver Firmware version 0x0128. (Preview)
BCM84780_A0	84740	Octal-Channel 10 GbE SFI-to-XFI PHY with 1588. Firmware version 0x127 (Preview)
BCM84784_A0	84740	Dual 40GbE/Octal 10GbE QSFP+ XLPPI-to-XLAUI PHY. Firmware version 0x125 (Preview)
BCM84764_A0	84728	Quad SFI to RXAUI with 1588 (Firmware version 0x124. Preview)
BCM84064 A0	84740	Quad 10G-KR-to-XFI or 40G-KR4-to-XLAUI Transceiver. Firmware version 0108.
BCM84074_A0	84728	Quad KR to XAUI (Firmware version 0x124. Preview)

## OPERATING SYSTEMS

The SDK provides the SAL and BDE abstraction implementations necessary for running the SDK on the following operating systems. See the Platform Guide (56XX-PG810-R) for instructions on porting the SDK to another platform.

*Table 69: Operating Systems*

<i>Operating System</i>
VxWorks 5.5
VxWorks 6.2
VxWorks 6.4
VxWorks 6.5
VxWorks 6.6
Linux 2.6.21 User Mode
Linux 2.6.21 Kernel Resident Mode
Linux 2.6.25 User Mode
Linux 2.6.25 Kernel Resident Mode
Linux 2.6.27 User Mode
Linux 2.6.27 Kernel Resident Mode
Linux 2.6.35 User Mode
Linux 2.6.35 Kernel Resident Mode
POSIX Compliant (SAL ONLY)



## CPU SUBSYSTEMS

*Table 70: CPU Subsystems*

<i>CPU Subsystem</i>	<i>Description</i>
BCM98245	CPCI 32-bit PPC with Motorola 8245 Processor
BCM98548XMC	XMC 32-bit PPC with Freescale 8548 Processor
BCM953003C	XMC 32-bit MIPS74Kc with BCM53003 Processor
BCM5300X	32-bit MIPS74Kc with BCM5300X Processor
BCM5301X	Integrated ARM Cortex-A9 CPU on BCM5301X Switch Devices
BCM5302X	Integrated ARM Cortex-A9 CPU on BCM5302X Switch Devices
BCM5621X	Integrated MIPS CPU on BCM5621X Switch Devices
BCM5622X	Integrated MIPS CPU on BCM5622X Switch Devices
BCM5331X	Integrated MIPS CPU on BCM5331X Switch Devices
BCM5360X	Integrated MIPS74Kc CPU on BCM5360X Switch Devices

## CPU AND OPERATING SYSTEM COMBINATIONS

The following CPU and Operating System combinations are supported by the SDK (in addition to the above):

*Table 71: CPU and Operating System Combinations*

<i>CPU Subsystem</i>	<i>Operating System</i>	<i>Description</i>
BCM98245	VxWorks 6.2	BSP Provided
BCM98245	Linux 2.6.21	Available through WindRiver Linux 2.0
BCM5621X	VxWorks 6.4	BSP Provided
BCM5621X	Linux 2.6.21	Available through WindRiver Linux 2.0 bcm_ntswics
BCM5331X	VxWorks 6.4	BSP Provided
BCM5331X	Linux 2.6.21	Available through WindRiver Linux 2.0 bcm_ntswics
BCM98548XMC	VxWorks 6.5	BSP Provided
BCM98548XMC	Linux 2.6.27	Available through WindRiver Linux 3.0. Note: Additional patches for issues WIND00172598 and WIND00161649 are required. Contact your WindRiver support personnel for these patches and other WindRiver information.
BCM5300X	VxWorks 6.6	BSP Provided
BCM5300X	Linux 2.6.21	Available through WindRiver Linux 2.0
BCM5300X	Linux 2.6.27	Available through WindRiver Linux 3.x
BCM5301X	Linux 2.6.35	Available through Broadcom Customer Support Portal
BCM5302X	Linux 2.6.35	Available through Broadcom Customer Support Portal
BCM5360X	VxWorks 6.6	BSP Provided
BCM5360X	Linux 2.6.21	Available through WindRiver Linux 2.0
BCM5360X	Linux 2.6.27	Available through WindRiver Linux 3.x
Generic X86	Linux 2.6.25/2.6.27	

## REFERENCE DESIGNS

The following Switch Reference Designs are available from Broadcom and are supported in the SDK.

*Table 72: Reference Designs*

<i>Platform</i>	<i>Description</i>
BCM953001R24M	24-port FE + 2-port GE 53242 SW Ref. Design with BCM53001 Processor
BCM953115R5GM	5-port GE + 1-port serdes 53115 Ref. Design
BCM953125RM	5-port GE 53125 Ref. Design
BCM953242R24M	24-port FE + 2-port GE 53242 SW Ref. Design
BCM953262R24M	24-port FE + 4-port GE 53262 SW Ref. Design
BCM953284R	24-port FE + 2-port GE 53284 SW Ref. Design
BCM953284MDU	24-port FE 53284 SW Ref. Design with TK3715 EPON ONU MAC/Serdes
BCM953286R	24-port FE + 4-port GE 53286 SW Ref. Design
BCM953300	24-port GE 53300 Switch Ref Design
BCM953302	48-port GE 53302 Switch Ref Design
BCM953314K	24-port GE - 53314 System Verification Kit
BCM953314R24GS	24-port GE - 53314 Switch Ref Design
BCM953604R	24-port FE + 1-port 1/2G EPON ONU MAC/SerDes Reference Design
BCM989501R	5-port BR + 1-port GE - 89501 Ref. Design
BCM989501RD	5-port BR + 1-port GE - 89501 Ref. Design
BCM956018K48T	48-port FE + 2-port GE + 2-port HGL(CAT 7) - 56018 SVK
BCM956024K24T	24-port FE + 4-port HGL(CAT 7) - 56024 SVK
BCM956102R48XS	48-port FE + 4 port GE 56102 SW Ref Design w/2-HiGig/10GE
BCM956112R48XS-02	48-port FE + 4 port GE 56112 SW Ref Design w/2-HiGig/10GE - PPC8245
BCM956132K	24-port FE 56132 SW SVK Design w/ two 10GE/HiGig2 and two 1G/2.5Gb Uplink Ports
BCM956214R26T	26-port GE (2 TX/SX) + 2-port HGL(CAT 7) - 56214 Reference Design
BCM956219K50T	50-port GE + 2-port HGL(CAT 7) - 56218 - PPC8245 SVK
BCM956218K50T	50-port GE + 2-port HGL(CAT 7) - 56218 System Verification Kit
BCM956224K24T	24-port GE + 4-port HGL(CAT 7) - 56224 SVK
BCM956224R24F	24-port GE + 4-port GE SFP - BCM56224 Reference board.
BCM956300R24	24-port GE 56300 Switch Ref Design
BCM956304R24XS	24-port GE (2 TX/SX) 56304 SW Ref Des w/2-HiGig + 2-10GE
BCM956314R24ST	24-port GE + 4 HiGig/2.5GE(CAT 7) 56314 Ref Design
BCM956314R24XST	24-port GE + 4 10GE/HiGig/2.5GE(CX4) - 56314 Ref Design
BCM956334K_02/BCM956334K_03	24xGE + 4x10G/13HG (iPass) with BCM56334 switch
BCM956500R24	24-port GE 56500 Switch Ref Design
BCM956504R24XS	24-port GE (2 TX/SX) 56504 SW Ref Des w/2-HiGig + 2-10GE
BCM956504R48XSP	48-port GE (12 w/POE) 56504 Switch Ref Design 4 - HiGig/10GE
BCM95650K24	24-port FE + 4 port GE Switch Development Kit
BCM95650R24	24-port FE + 4 port GE (TX or SFP) Reference Design
BCM956514R24XST	24-port GE + 4 10GE/HiGig/2.5GE(CX4) - 56514 Ref Design
BCM956514R48XSP	48-port GE (12 w/POE) 56514 Switch Ref Design 4 - HiGig/10GE
BCM956580K16TXS	16-port 2.5G SFP Fibre + 4 HiGig/10GE 56580 SDK
BCM956601K12D	12-port GE + 1-HiGig 56601 DDR SDRAM SDK
BCM956601K12N	12-port GE + 1-HiGig 56601 Netlogic TCAM SDK
BCM956602KXSN	1-HiGig + 1-10GE 56602 Netlogic TCAM SDK
BCM95665K48	48-port FE + 4 port GE TX/SX + 1HiGig Switch Development Kit
BCM956700K16S	16-port HiGig CX4 56700 SDK



**Table 72: Reference Designs**

<b>Platform</b>	<b>Description</b>
BCM95670K8	8-port 5670 GE Switch Development Kit
BCM95673K2S	2 x 5673 10-GE + HiGig Switch Development Kit
BCM95673R8	8-port 5673 10 GE XFP Switch Reference Design
BCM95673R8CX4	8-port 5673 10 GE CX4 Switch Reference Design
BCM95675K8	8-port 5675 GE Switch Development Kit
BCM95675K8U	8-port 5675 GE Switch Development Kit - PPC8245
BCM956800K20X	20-port 10 GE CX4 56800 SDK
BCM95690K24S	24-port 5690 GE Switch Development Kit w/2HiGig
BCM95690K24	24-port 5690 GE Switch Development Kit
BCM95690P24REF	24-port 5690 GE + 5671 w/2HiGig Ports Reference Design
BCM95690R24	24-port 5690 GE Ports Reference Design
BCM95690R24S	24-port 5690 GE + 5671 w/2HiGig Ports Reference Design
BCM95690R48S	48-port 5690 GE + 5670 w/4HiGig Ports Reference Design
BCM95690R48X2S	48-port 5690 GE + 5670 w/2-HiGig Ports + 2-10-GE Ports Ref. Design
BCM95691K12	12-port 5691 GE Switch Development Kit
BCM95695K24	24-port 5695 GE Switch Development Kit
BCM95695R24S	24-port 5695 GE + 5671 w/2HiGig Ports Reference Design
BCM95695R24X2S	24-port 5695 GE + 2-port 5675 HiGig + 2-port 5674 10GE CX4
BCM95695R48X2S	48-port 5695 GE + 5670 w/2-HiGig Ports + 2-10-GE Ports Ref. Design
BCM91125CFM16	BCM956010CS Dual 5675 Fabric + 1125H CPU
BCM91125CFM8	BCM956006CS Single 5675 Fabric + 1125H CPU
BCM956501LM	12-port 10GE CX4 56501/5675 Line Module
BCM956504LM	48-port GE 56504 Line Module
BCM956700CFM16	16-HiGig 56700 Fabric + BCM1125 CPU Module
BCM95674LM	6-port 10GE CX4 5674/5675 Line Module
BCM956802LM	12-port 10GE CX4 56802 Line Module
BCM95695LM	48-port GE 5695/5675 Line Module
BCM956802CFM8	BCM956006CS 56802 Fabric + 8 10GE + 1125H CPU
BCM956680K24TS_02/BCM956680K24TS_05	25 port 1-GbE/2.5GbE Multilayer Ethernet Switch with 4 x 10-GbE/HiGig2 Uplink ports SVK
BCM956624K49TS_02/ BCM956624K49TS_05	49 port 1-GbE Multilayer Ethernet Switch with 4 x 10-GbE/HiGig2 Uplink ports and External Table Expansion SVK
BCM956624R49S_02	49 port 1-GbE Multilayer Ethernet Switch with 4 x 10-GbE SFP+ Uplink ports BCM56624 reference board
BCM956634K49S_02	49xGE + 4 x XAUI/HG (iPass) with BCM56634 switch
BCM956636K25S_02	24x1GE + 2x12HG + 4x16HG (iPass) with BCM56636 switch
BCM956638K8XS_02	4x12HG + 4x16HG (iPass) with BCM56638 switch
BCM956639K25S_02	24x1GE + 8x10G (iPass) with BCM56639 switch
BCM956526K29S_02	28x1GE + 6x12HG (iPass) with BCM56526 switch
BCM956685K24TS_02	24 port 1-GbE/2.5GbE Multilayer Ethernet Switch with 4 x 10-GbE/HiGig2 Uplink ports SVK
BCM956820K24XG_02/BCM956820K24XG_05	24 x 10-GbE + 4 x 1-GbE Multilayer Ethernet Switch SVK
BCM956820R24XG_02	24 x 10-GbE + 4 x 1-GbE BCM56820 Multilayer Ethernet Switch Reference board with SFP+ interface.
BCM956825K24XG_02	16 x 10-GbE + 8 x 20-Gbps HG2 + 1 x 1-GbE Multilayer Ethernet Switch Reference board.
BCM956720K16S_02/BCM956720K16S_05	16-Port, 256-Gbps Switch Fabric + 4 x 1-GbE SVK
BCM956725K16S_02/BCM956725K16S_05	8-Port (20Gbps) + 4-port (16Gbps) Switch Fabric + 4 x 1-GbE SVK
BCM988020QSK24X2	Carrier Ethernet 24-port GE + 2-port 10GbE Reference Design (also known as Metrocore)
BCM988130FK24X2	Carrier Ethernet 24-port GE + 2-port 10GbE Reference Design (also known as Polaris Line card)

**Table 72: Reference Designs**

<b>Platform</b>	<b>Description</b>
BCM988025QSK24X2	Carrier Ethernet 24-port GE + 2-port 10GbE Reference Design (also known as C2 SVK)
BCM988130K_02	BCM88130 SVK with 96 fabric serdes connections (24 iPass ports)
BCM988235K_02	BCM88235 SVK with 4 HiGig2 ports (4 iPass), 2 flow control ports (2 iPass)
BCM953724R26WS	26-Port, 26-Gbps Integrated Multilayer Switch and CPU
BCM956628K8TS	8 port 10-GbE/HiGig2 Multilayer Ethernet Switch with External Table Expansion
BCM956620K24TS	24 port 1-GbE Multilayer Ethernet Switch with 4 x 10-GbE/HiGig2 Uplink ports
BCM956684K24TS	24 port 1-GbE/2.5GbE Multilayer Ethernet Switch with 4 x 10-GbE/HiGig2 Uplink ports
BCM956725K16S	8 Port, 20-Gbps + 4 Port, 16-Gbps HiGig2 Switch Fabric
BCM956626K8TS	25 port 1-GbE Multilayer Ethernet Switch with 6 x 10-GbE/HiGig2 Uplink ports and External Table Expansion
BCM956629K24S	25 port 1-GbE Multilayer Ethernet Switch with 8 x 10-GbE/HiGig2 Uplink ports and External Table Expansion
BCM956224R50T	50-port GE + 2-port HGL(CAT 7) - 2 X BCM56224
BCM956024R50T	48-port FE + 2-port GE + 2-port HGL(CAT 7) - 2 X BCM56024
BCM956524K24S_02	24xGE + 4 x XAUI/HG (iPass) with BCM56524 switch
BCM956521K_02	24-Port GbE Multilayer Switch with 10 GbE/HiGig2 Uplink Ports
BCM956740K_02	480/640 Gbps Switch fabric
BCM956743K_02	480/640 Gbps Switch fabric
BCM956840K_02	320/480/640 Gbps Ethernet Multilayer Switch
BCM956845K_02	320/480/640 Gbps Ethernet Multilayer Switch
BCM956846KQ	320/480/640 Gbps Ethernet Multilayer Switch
BCM98727MC	16 port iPass to SFP+ Media Converter
BCM956534K24TS	24xGE + 4 x XAUI/HG (iPass) with BCM56534 switch
BCM956538K49S	48-Port GbE Multilayer Switch with Four 10-GbE/HiGig2 Uplink Ports SVK
BCM956640K_02	BCM56640 SVK
BCM956643K_02	BCM56643 SVK
BCM956644K_02	BCM56644 SVK
BCM9NEGEV	Two BCM988640TMM line cards (3x10Gb SFP+ phys, 6x20Gb QSFPs) + FE600 switch fabric.
BCM9NEGEVII	BCM988750FEM fabric card
BCM956850K	1.2Gbps Ethernet Multilayer Switch

Note: The flash sizes of some old BCM53XX platforms are 4 MBytes only. As the code size of SDK increases, the 4 MB flash is not enough for this release. Replace the flash to 8 MB or above for those reference designs.

## Section 11: 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 73: EXTERNALLY LICENSED SOFTWARE COMPONENTS**

<b>Component</b>	<b>Origin</b>	<b>Location in source tree</b>	<b>License terms and conditions</b>
EDITLINE	/afs/athena.mit.edu/contrib/sipb/src/editline	src/sal/appl/editline	See (EDITLINE License terms and conditions) ( <a href="#">page 135</a> )
ED Editor	USENET comp.sources.misc Volume 9, Issue 36	src/appl/diag/edline.c	See (ED Editor License terms and conditions) ( <a href="#">page 137</a> )
CINT	<a href="http://www.gnu.org/software/bison/">http://www.gnu.org/software/bison/</a>	src/appl/cint/cint_parser.[ch]	See (CINT parser license terms and conditions) ( <a href="#">page 138</a> )
CES Driver	BATM Advanced Communications Ltd	src/soc/ces/nemo_driver/*. [ch], src/soc/ces/clsbuilder/*. [ch]	See (Circuit Emulation Service (CES) Driver terms and conditions) ( <a href="#">page 139</a> )
BIGDIGITS	David Ireland, copyright (c) 2001-11 by D.I. Management Services Pty Limited < <a href="http://www.di-mgt.com.au">www.di-mgt.com.au</a> >	src/soc/dpp/SAND/Utils/sand_u64.c	See (BIGDIGITS license terms and conditions) ( <a href="#">page 140</a> )
APIMODE	<a href="http://www.gnu.org/software/bison/">http://www.gnu.org/software/bison/</a>	src/appl/diag/api/api_grammar.tab.[ch]	See (APIMODE parser license terms and conditions) ( <a href="#">page 141</a> )
VxWorks	Wind River Systems, Inc.	systems/vxworks	See (Wind River Systems license terms and conditions) ( <a href="#">page 142</a> )

## EDITLINE LICENSE TERMS AND CONDITIONS

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
-----				
[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: 1.8 \$

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>

Copyright 1992,1993 Simmule Turner and Rich Salz. All rights reserved.

This software is not subject to any license of the American Telephone and Telegraph Company or of the Regents of the University of California.

Permission is granted to anyone to use this software for any purpose on any computer system, and to alter it and redistribute it freely, subject to the following restrictions:

1. The authors are not responsible for the consequences of use of this software, no matter how awful, even if they arise from flaws in it.
2. The origin of this software must not be misrepresented, either by explicit claim or by omission. Since few users ever read sources, credits must appear in the documentation.
3. Altered versions must be plainly marked as such, and must not be misrepresented as being the original software. Since few users ever read sources, credits must appear in the documentation.
4. This notice may not be removed or altered.



## ED EDITOR LICENSE TERMS AND CONDITIONS

ed - standard editor  
^^

Authors: Brian Beattie, Kees Bot, and others

Copyright 1987 Brian Beattie Rights Reserved.

Permission to copy or distribute granted under the following conditions:

- 1). No charge may be made other than reasonable charges for reproduction.
- 2). This notice must remain intact.
- 3). No further restrictions may be added.

- - - - -  
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

   Copyright (C) 1984, 1989, 1990, 2000, 2001, 2002, 2003, 2004, 2005, 2006
   Free Software Foundation, Inc.

   This program is free software: you can redistribute it and/or modify
   it under the terms of the GNU General Public License as published by
   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,
   but WITHOUT ANY WARRANTY; without even the implied warranty of
   MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
   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.  */
```

## **CIRCUIT EMULATION SERVICE (CES) DRIVER TERMS AND CONDITIONS**

The Circuit Emulation Services (CES) driver code provided herewith is provided by BATM Advanced Communications Ltd (BATM) and is subject to licensing agreement between BATM and Broadcom Corporation.

### BIGDIGITS LICENSE TERMS AND CONDITIONS

Contains BIGDIGITS multiple-precision arithmetic code originally written by David Ireland, copyright (c) 2001-11 by D.I. Management Services Pty Limited <www.di-mgt.com.au>, and is used with permission.

David Ireland and DI Management Services Pty Limited make no representations concerning either the merchantability of this software or the suitability of this software for any particular purpose. It is provided "as is" without express or implied warranty of any kind. Our liability will be limited exclusively to the refund of the money you paid us for the software, namely nothing. By using the software you expressly agree to such a waiver. If you do not agree to the terms, do not use the software.

### APIMODE PARSER LICENSE TERMS AND CONDITIONS

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 138](#)) for the Bison licence.

## **WIND RIVER SYSTEMS LICENSE TERMS AND CONDITIONS**

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

## Section 12: Resolved Issues for 6.3.1

The following issues are resolved in version 6.3.1 of the SDK.

*Table 74:*

<i>Number</i>	<i>CSP #</i>	<i>Chips</i>	<i>Release Notes For 6.3.1</i>
SDK-20665		All	Fix 'bcm_field_qualify_InnerIp6HopLimit' and 'bcm_field_qualify_InnerIp6NextHeader_get' API support for XGS devices.
SDK-30093		All	Update modular debug print interface to support management by external application. Previously the modular debug print interface could only be controlled via the Broadcom CLI.
SDK-34767	434653	56548_A0 56546_A0 56545_A0 56544_A0 56542_A0 56541_A0 56540_A0 56526_A0 56524_A0 56521_A0 56545_A1 56526_B0 56524_B0 56540_B0 56541_B0 56546_B0	Fixed auto addition of InPort/InPorts qualifier in group's QSET during warm start.
SDK-35130	441537	56639_A0 56638_A0 56636_A0 56634_A0	Modified field processor entry reinstall to update only the policy table without modifying the TCAM table
SDK-36480		88650_A0 88640_A0	Added support for System Red in BCM SDK. For more details please reference System RED section in UM.
SDK-38173		56840_A0	TERR in snmpIfOutErrors counter
SDK-39043	513610	All	AllChips: Preserve DROP and COPYTOCPU CML flags during L2 freeze.
SDK-39202 SDK-42621		56640_A0 56540_A0	Fixed bcmFieldActionCopyToCpu action support for Triumph3 Stage Egress.
SDK-39512		88650_A0	88650: bcm_port_local_ability_get - should return bitmap in the field of full_duplex instead of the maximum speed
SDK-39576		56846_A0	Set/Get value mismatch for port control bcmPortControlPrbsRxEnable
SDK-39784		56840_A0 56640_A0 56440_A0	Added support for flag BCM_L2_REPLACE_AGE to perform selective aging on L2 entries using L2_BULK_CONTROL
SDK-40510		88650_A0	Dump NBI tables through diag shell was fixed
SDK-41648	555907	88650_A0	MACT learning management: 1. Provided BCM API to handle the MACT events directly by Host CPU without the intervention of OLP. please refer to cint_l2_cpu_learning.c for example to use. 2. In order to enable Host CPU learning use bcm_l2_addr_msg_distribute_set. Parsing DSP packets examples can be seen in rx_nonintr_callback().
SDK-41680	560553	All	gcc warnings resolved



**Table 74:**

<b>Number</b>	<b>CSP #</b>	<b>Chips</b>	<b>Release Notes For 6.3.1</b>
SDK-41788	558335	56440_A0	Added support for micro meter creation with different policer group modes.
SDK-41793	554763	88650_A0	<p>MACT traverse: add new API to traverse MACT entries match given rule with masking. new API added <code>bcm_l2_replace_match</code>.</p> <p>Example of usage:  <code>SDKsrcexamplesdppcint_mact_bulk_operations.c</code>:  <code>mact_bulk_rule_mask_vlan_example</code></p>
SDK-42140	566499	56840_A0	<p>Made below actions as color independent actions</p> <p><code>bcmFieldActionColorIndependent</code>  <code>bcmFieldActionL3ChangeVlan</code>  <code>bcmFieldActionL3ChangeVlanCancel</code>  <code>bcmFieldActionL3ChangeMacDa</code>  <code>bcmFieldActionSrcMacNew</code>  <code>bcmFieldActionDstMacNew</code>  <code>bcmFieldActionL3ChangeMacDaCancel</code>  <code>bcmFieldActionL3Switch</code>  <code>bcmFieldActionL3SwitchCancel</code>  <code>bcmFieldActionAddClassTag</code>  <code>bcmFieldActionOuterVlanNew</code>  <code>bcmFieldActionRedirectVlan</code>  <code>bcmFieldActionRedirectMcast</code>  <code>bcmFieldActionRedirectIpmc</code>  <code>bcmFieldActionEgressPortsAdd</code>  <code>bcmFieldActionEgressMask</code>  <code>bcmFieldActionRedirectCancel</code>  <code>bcmFieldActionRedirect</code>  <code>bcmFieldActionRedirectTrunk</code>  <code>bcmFieldActionRedirectEgrNextHop</code>  <code>bcmFieldActionVnTagNew</code>  <code>bcmFieldActionVnTagDelete</code>  <code>bcmFieldActionRedirectPbmp</code>  <code>bcmFieldActionOffloadRedirect</code>  <code>bcmFieldActionRedirectBcastPbmp</code>  <code>bcmFieldActionFabricQueue</code>  <code>bcmFieldActionMirrorEgress</code></p>
SDK-42313	569643	88650_A0 88650_B1	<p>The mirroring probability of a mirror destination is set using the two new fields of the <code>bcm_mirror_destination_t</code> structure listed below. They are passed to <code>bcm_mirror_destination_create()</code> when creating the destination. <code>uint32 sample_rate_dividend</code>; /* The probability of mirroring a packet is: <code>sample_rate_dividend &gt;= sample_rate_divisor ? 1 : sample_rate_dividend / sample_rate_divisor</code> */ <code>uint32 sample_rate_divisor</code>; /* For Arad we recommend a divisor of 0x10000 which matches the resolution that the hardware can provide */</p>
SDK-42318	569513	All	<p>Incorrect <code>otmh_extensions.en.outlif_ext_en</code> was used when not using FTMH extension with mesh. The incorrect extension used was <code>PETRA_PORTS_FTMH_EXT_OUTLIF_IF_M C</code>. This is now changed to <code>PETRA_PORTS_FTMH_EXT_OUTLIF_NEVE R</code>.</p>





**Table 74:**

<b>Number</b>	<b>CSP #</b>	<b>Chips</b>	<b>Release Notes For 6.3.1</b>
SDK-42377	483568	56840_A0	Add the support to enable/disable the event of L2_OVERFLOW and the dealing process for L2_OVERFLOW event, which will call the related callback routines.
SDK-42895	579601	56640_A0 56541_A0	Using BCM_OAM_GROUP_REPLACE flag was causing creation of a new OAM group, this has been fixed and BCM_OAM_GROUP_REPLACE now updates the existing group instead of creating a new one.
SDK-42962	581130	56440_A0	bcm_field_qualify_data_get API is now supported for Katana and Katana2 devices.
SDK-43000	568920	88030_A0	Support software linkscan
SDK-43051	581274	All	Removed duplicate comments in release notes.
SDK-43078	572351	88650_A0	Enable Mirroring to other TM domain port in stacking system.
SDK-43094		88650_A0	Fixed incorrect configuration when working ILKN+XMAC under same MLDCLP. Note: ILKN reserve 8 lanes also when it uses less than 8 lanes. So only upper XMAC can be used for bob-ILKN ports.
SDK-43210 SDK-43201	583727	56850_A0	Change code to allow XLMAC to support 20G front panel port.
SDK-43230	584608	88750_A0	88750: BCM88750 endianness configuration has been changed to be identical to BCM88650 endianness configuration. Wrong configuration of the endianness can cause access failures at the initialization sequence/ access tests. BCM88750 will not support soc property 'system_set_dma_low_endianness'. Instead endianness configuration will be done using soc_cm_device_init (unit, and dev_vectors). PCI specific endianness: dev_vectors.big_endian_pio - Must be set to 1 if CPU register read/write operations are big endian, or 0 otherwise. dev_vectors.big_endian_other - Must be set to 1 if non-packet DMA operations are big endian, or 0 otherwise. Broadcom application reference configure endian parameters (dev_vectors.big_endian_pio and dev_vectors.big_endian) according to compilations flags: SYS_BE_PIO and SYS_BE_OTHER.
SDK-43330 SDK-48305	584507	56850_A0	release version is 6.3.1
SDK-43342	586043	56744_A0	BCM diag shell command "cos show" should now work on BCM56840 type switch devices
SDK-43361		NA	1. Increased the size of the (_BCM_CLI_STAT_ARR_SIZE) macro to print all stat enumerations. 2. Made changes in diag shell parser code to print strings correctly.
SDK-43389	580332	All	Add support for remote loopback for xgxl6g1l driver
SDK-43459		88650_A0	state of bcmSwitchControlAutoSync is no longer lost, user doesnt need to re-configure it any more.
SDK-43485	583737	88650_A0	88650: Unidirectional traffic loss in mesh configuration. The driver fixed to reconfigure MESH_TOPOLOGY block according to system properties. All the fabric links must configured to the same encoding and speed. The registers are reconfigured automatically in case of changing the speed or the encoding.



Table 74:

Number	CSP #	Chips	Release Notes For 6.3.1
SDK-43523	588139	56643_A0 56643_A1	Added support for OAM Y.1731 Loss and Delay Measurement.
SDK-43535		88650_A0	Diagnostics: All diag pp commands can be retrieved by entering "diag pp ?" in BCM shell.
SDK-43667		88750_B0 88650_B0 88650_B1	Add new SOC API and UI to get the device AVS ( = Adjustable Voltage Scaling) .
SDK-43760		56840_A0 56850_A0	Fixed trill port resolution for Empty ECMP group
SDK-43883		88650_A0 88650_B0 88650_B1	Added support for EVB application. Please see more information in the CINT example <code>src/examples/dpp/cint_evb_example.c</code>
SDK-44018	566118	88640_A0	Flooding traffic transmitted out from one port of LAG members. This port is selected from the FTMH. A new soc property <code>system_ftmh_load_balancing_ext_mode.BCM88640</code> is added to support this feature.
SDK-44053	584161	56640_A0 56850_A0 56640_B0 56440_B0	Made changes in <code>bcm_rx_redirect_reasons_set</code> function to configure all entries of <code>CMIC_PKT_REASON_{0/1}_TYPE[0:15]</code> register with valid reason codes.
SDK-44081		88650_A0 88650_B0 88650_B1	Added <code>soc_ppd_frwrdd_trill_multicast_source_get</code> . The BCM implementation needs API changes.
SDK-44122		88650_A0 88650_B0 88650_B1	All vlan/mppls/mim_port APIs that support the REPLACE flag follow the defined guidelines: Usage of the WITH_ID flag without the REPLACE flag allowed only for non-existent ports. Usage of the WITH_ID with the REPLACE flag allowed only for existing ports of the required type. Usage of the REPLACE flag without the WITH_ID flag isn't allowed. A REPLACE operation will be allowed only for parameters that dont participate in the appropriate table key, and for parameters that dont allocate resources.  Other replace APIs will follow those guidelines whenever it's possible.
SDK-44125	598954	88650_A0	Added support for probability of mirror destinations. The probability is specified using two new fields of <code>bcm_mirror_destination_t: uint32 sample_rate_dividend; /* The probability of mirroring a packet is: sample_rate_dividend &gt;= sample_rate_divisor ? 1: sample_rate_dividend / sample_rate_divisor */uint32 sample_rate_divisor;</code>  The recommended value of <code>sample_rate_divisor</code> is 0x10000 to match the hardware resolution.

**Table 74:**

<b>Number</b>	<b>CSP #</b>	<b>Chips</b>	<b>Release Notes For 6.3.1</b>
SDK-44186	599876	56640_A0 56640_A1 56640_B0	Added support for following qualifiers for Triumph3 External Stage bcmFieldQualifySrcClassL2 bcmFieldQualifySrcClassL3 bcmFieldQualifySrcClassField bcmFieldQualifyDstClassL2 bcmFieldQualifyDstClassL3 bcmFieldQualifyDstClassField bcmFieldQualifyInterfaceClassPort bcmFieldQualifyInterfaceClassL3 bcmFieldQualifyInterfaceClassL2
SDK-44200	599325	56850_A1 56850_A0	Fix code to prevent disabling CPU port through pbmp_valid.
SDK-44202		56440_A0 56445_A0 56440_A1 56445_A1 56444_A1 56449_B0 56445_B0 56440_B0 56447_B0 56443_B0 56441_B0 56446_B0 56448_B0	Added Higig-Lite support for Katana.
SDK-44277		All	Fixed using uninitialized values during SOC INIT of the Out Fabric Port rates channelized arbiters.
SDK-44291	601612	56440_A0	Included the code for GRRPKT and GRRBYT
SDK-44410	600714	56840_A0	Fixed the validation of the classification tag value.
SDK-44418		88750_A0 88650_A0 88640_A0	fixed the compilation error, the code now compiles successfully when compiling with BCM_WARM_BOOT_SUPPORT and without BCM_WARM_BOOT_SUPPORT_SW_DUMP.
SDK-44466		56340_A0	Stacking support for BCM956340K added.
SDK-44476		56840_A0 56850_A0 56841_B0 56850_A1	Soft-Error Recovery support added for TCAM tables on BCM5684x and BCM5685x devices.
SDK-44485		88650_A0 56640_B0	Disable cl73 bam while cl73 is enabled
SDK-44552		88650_A0	The field code which is part of the configuration necessary to operate in the mode of 32K I-SIDs for Mac-in-Mac was moved to a cint (cint_field_mim_32k_isids.c). Customers using this mode must run the cint before making any MiM configurations.
SDK-44564 SDK-45299	605416	56850_A1	TD2. Added flexibility in SP node configuration and corrected bugs during Node attach, affecting existing SP children of the current Node's siblings.
SDK-44582		NA	N/A
SDK-44602		88650_A0	Added support for Warmboot for Mac-In-Mac
SDK-44605	608221	88650_A0	Fixed setting dtm_flow_mapping_mode_region configuration, So there is no need to configure at least one region of type 2.
SDK-44616	608210	88650_A0 88640_A0 88650_B0	VLAN: Fixed a bug where bcm_vlan_translate_action_traverse did not traverse over the actual correct vlan_translate actions.
SDK-44674		88750_A0 88650_A0 88640_A0	Replaces all 'static' declaration on functions with 'STATIC' in DNX code
SDK-44733		All	Improved portability to non-POSIX platforms that do not support File IO.

Table 74:

Number	CSP #	Chips	Release Notes For 6.3.1
SDK-44749		88650_A0	Fixed using uninitialized values in template manager during BCM INIT; uninitialized values in vsq rate cls: the field <code>wred_ignore_packet_size</code> in <code>exact_rate_class_info</code> , was not set.
SDK-44750		88650_A0	memory overrun at warmboot: writes & read immediately after allocated memory. Fixed offset for memory write in template manager warmboot.
SDK-44802 SDK-45614	608366	88650_A0	Support 2-pass solution for Trill-MC: New implementation used 1st pass in the ARAD to send copies to next-hop RBridges. If directly connected hosts are attached, a copy is snooped to recycle port, and packet is bridged during 2nd pass in the Arad. Example: See <code>cint_trill.c</code> , <code>trill_mc_transit_fecless_config</code> . Configured port 40 is recycling port is also required for this example.  Known issue: When there is no match in the MACT in the 2nd pass and the packet is flooded, copies that go back to the trill network are not filtered (bounce-back filter).
SDK-44822		All	Fix to remove unnecessary lock of stack in API <code>bcm_ptp_time_format_set()</code> .
SDK-44824		All	Added error check for the function.
SDK-44848		56450_A0	1. MMU settings corrected for 10G and CPU port. Following issues are fixed. a. 10G ports was being allocated the same amount of headroom as the 1G ports. b. CPU queues was always being bound to internal memory. 2. Corrected the default THDO_OPNCONFIG programming
SDK-44863	609656	56840_A0	The memory allocated is released and reallocated to prevent under-runs(if any).
SDK-44891		56634_A0 56440_A0	N/A
SDK-44911	610117	56850_A0	Added new actions "bcmFieldActionIngSampleEnable" and "bcmFieldActionEgrSampleEnable" to control Ingress and Egress SFLOW sampling in Ingress Field Processor.
SDK-44922		88650_A0	Compilation error when compiling ARAD for PCID
SDK-44982		88650_A0	Adding <code>bcm_oam_group_traverse</code> and <code>bcm_oam_endpoint_traverse</code> apis
SDK-44988 SDK-47952		88650_A0	OAM Warmboot support
SDK-44995	553755	88650_A0	Support MACT entries traverse/replace according to group-id Example <code>cint_mact_bulk_operations.c</code>

**Table 74:**

<b>Number</b>	<b>CSP #</b>	<b>Chips</b>	<b>Release Notes For 6.3.1</b>
SDK-45009	608116	All	Support the following Soft Reset modes: SOC_DPP_RESET_MODE_BLOCKS_AND_FA BRIC_SOFT_RESET 0x100 SOC_DPP_RESET_MODE_BLOCKS_AND_FA BRIC_SOFT_INGRESS_RESET 0x200 SOC_DPP_RESET_MODE_BLOCKS_AND_FA BRIC_SOFT_EGRESS_RESET 0x400 Change Arad traffic disable sequence, mainly Fabric traffic stop (instead of packet discarding, trap packets) to avoid Fabric Irrecoverable states.
SDK-45012		56224_B0 56224_A0 56018_A2 56018_A0 56018_A1 56014_A2 56014_A1	Memory Leak in _field_raven_stage_reinit() function for Raven is Fixed.
SDK-45019		88650_A0 88650_B0 88650_B1	MPLS: The WITH_ID and REPLACE functionalities are now supported for the following features with the following flags: bcm_mpls_tunnel_switch_create: Add flag BCM_MPLS_SWITCH_REPLACE Add flag BCM_MPLS_SWITCH_WITH_ID bcm_mpls_tunnel_initiator_create: Add flag BCM_MPLS_EGRESS_LABEL_REPLACE Add flag BCM_MPLS_EGRESS_LABEL_WITH_ID
SDK-45047		56840_A0 56640_B0 56850_A1	56840, 56640: Handle L2 BULK operation during SER.
SDK-45090	607085	88650_A0	Added support for creation of composite FQ and HR aggregates, as part of the end-to-end scheduler hierarchy. Creating composite aggregates is possible only in region type 2, To configure a region to type 2, use the following SOC property: dtm_flow_mapping_mode_region_<region_id>.BCM88650=2 Please be advised that there are dependencies between available resources of VOQ connectors and composite SEs in region type 2 - please refer to Arad user manual documentation for details.
SDK-45117		All	Changed an assert() in declaration parameter checking to an error return.
SDK-45138		56440_A0	Fixed LED Scan issue in Katana, when one or more GPORT blocks are disabled.
SDK-45143	556970	84064_A0	Properly handle HiGig packets while in reverse mode
SDK-45148		56725_A0 56720_A0	SOC Port Valid check is applied to avoid the segmentation fault as it exceeds the MAX limit and corrupts the stack. The issue is seen only in case of CONQUEROR.
SDK-45154 PHY-883	607244	54380_B0	Cable diag for BCM543xx/BCM532xx returns with error "operation failed" fixed
SDK-45163	509662	88750_A0	In "phy diag eyescan" shell command, add the option to set the eyescan counter parameter as a string.
SDK-45168	611724	88650_A0	Fixed API's bcm_port_enable_set failures to clear queues when disabling a port.
SDK-45194	612584	56334_B0	Add switch control 'bcmSwitchWredForAllPkts' to apply WRED per color profiles on all packets for Enduro.

**Table 74:**

<b>Number</b>	<b>CSP #</b>	<b>Chips</b>	<b>Release Notes For 6.3.1</b>
SDK-45215		88650_A0	API bcm_stat_get for ILKN port did not take into consideration interleaving, resulting in incorrect counter values - fixed.
SDK-45217		88650_A0	ARAD: Fixed the unexpected return value for external phy that doesn't support remote loopback.
SDK-45249	611829	88030_A0	Add "QueueInfo" command for C3
SDK-45263	615806	56850_A0 56850_A1	Add the support of L2 overflow for Trident2.
SDK-45265		88650_A0	VLAN translation: bcm_vlan_translate_egress_action_delete did not update correctly VLAN_PORT unmap action-id once action is deleted. This caused error on bcm_vlan_translate_egress_action_add right after delete on the same VLAN_PORT . The issue is now fixed.
SDK-45267	613345	88650_A0 88650_B0 88650_B1	Egress editor for ARAD-XGS MAC extender boards: Added new program combining xgs MAC extension and SPAN
SDK-45276		88650_A0	MACT: Support multiple match rules in one Hardware traverse  API: New switch control bcmSwitchTraverseMode with values according bcm_switch_table_update_mode_t enumeration.
SDK-45296	613481	88650_A0	In TCAM management, the user can define databases (Field groups in FP) and add entries but does not set explicitly the location of the resources. The TCAM management handles them. After allocating multiple entries and destroyed part of them, the user can compress the Database in FP via a new supported API: bcm_field_group_compress . Besides, during the attribution of a new bank, an optimization is implemented to balance the load of the Database between the adjacent banks.
SDK-45304	603917	88650_A0	IPv4: dumping IPv4 host table run into dead loop in some cases.
SDK-45307	616535	88650_B0 88650_B1	Fix Enable EGQ-Reassembly misconfiguration, that could potentially lead to MulticastTraffic being dropped between FRD and RQP
SDK-45335		56850_A0 56850_A1	Turn off Trill and NIV counter parity in TD2 A1 due to TD2-3465.
SDK-45352 SDK-44428		All	Changed the description of the Enum 'bcmFieldActionOuterTpidNew' to the right meaningful sentence in sdk/doc/grog/api/field.grg.
SDK-45358	616935	5389_A0	Fixed the issue that some enums of register/field/ memory were not properly wrapped with the INDEX() macro for Robo SDK.
SDK-45373	617575	56840_A0 56850_A0 56854_B0	support for Matching SRC mod/port for a trunk member is added
SDK-45387	617450	56640_B0	All the HIT fields are processed
SDK-45393	618025	56850_A0 56850_A1	Fixed BCM56850 default trust DSCP ptr value.
SDK-45394	570376	88650_A0 88650_B0 88650_B1	ARAD 88650 print_flow_and_up command used to fail during heavy traffic. problem solved with addition of FQP bubbling configuration.
SDK-45419		56046_B0 56045_B0	Added FP support (all stages) for Ranger+ (BCM56045/BCM56046) device

**Table 74:**

<b>Number</b>	<b>CSP #</b>	<b>Chips</b>	<b>Release Notes For 6.3.1</b>
SDK-45475		88650_A0	Background: IPv4 MC program may do RPF check as well as MC entry search. In that case the search is done in the IPv4 UC tables.  Limitation: When using ELK for IPv4 MC tables - then IPv4 UC tables should use ELK as well for the RPF check to succeed. Same happens when IPv4 MC doesn't use ELK. The driver forces the use of ELK for both tables or none (will produce an error if MC table uses ELK but UC table doesn't or the opposite).
SDK-45480		88650_B0 88650_B1	NVGRE MC: Added support for 2-pass solution for NVGRE MC. On first pass, multicast is according to IP header. One packet is snoop to recycle port (using FP APIs). On second pass, multicast is according to inner Ethernet header.
SDK-45484	608351	56440_A0 56440_B0	Enabled <code>bcm_mpls_port_add</code> to accept Next Hop egress port is of type Unicast Subscriber Queue.
SDK-45523		All 56850_A0 56850_A1	Fix PGW_MAC_RSV_MASK programming on BCM5685x.
SDK-45545	605346	56620_B0	Fixed incorrect new inner vlan assignment for <code>bcm_vlan_translate_action_add()</code> API on bcm56620 type switch devices
SDK-45547		56636_A0	<code>bcmFieldActionL3IngressSet</code> Action is added to set <code>L3_IIF</code> from vfp
SDK-45549		56636_A0	New Action <code>bcmFieldActionL3IngressSet</code> is added to set <code>L3_IIF</code> from VFP
SDK-45577	616395	88650_A0	The bug was ,when statistic interface defined as 4 lanes port and <code>stat_if_enable</code> flag is set, then the interface would not work well. It was fixed in the code that determines if the statistic interface is Rxau14, Rxau15 or else.
SDK-45598		88650_B0	MIM learning implementation was changed. Lookup done for Learning moved from LLR to FLP. Learning lookup includes In-Port, BVID and BSA and not only BVID,BSA as before. To support the learning sequence, FP rules were introduced. Please see the additional FP settings of MIM learning in <code>cint_mim_mp.c</code> , <code>cint_field_mim_learn_info_set.c</code>
SDK-45601	612031	56840_A0	Use vp-less MPLS port to support the software based failover for switch devices such as BCM56680
SDK-45604	617859	88030_A0	Added traverse routines for LPM Taps.
SDK-45606		All	<code>bcm_attach()</code> could segfault if called from multiple threads.
SDK-45607		All	<code>bcm_detach()</code> could crash while BCM calls are active in other threads. This has been fixed.
SDK-45609		All	<code>bcm_pkt_flags_init()</code> now track if BCM API calls are active.
SDK-45612		All	<code>bcm_esw_stk_init()</code> erroneously using <code>BCM_IS_LOCAL</code>
SDK-45618		88650_A0	Ingress-Egress Cascaded Field Processor is a useful ability to transmit data from ingress FP to Egress. This can be Egress FP or Egress Editor. This feature is based on configurable User-Headers that are added in the fabric between the system headers (FTMH, PPH) and the network headers. The register configuration to retrieve the location of these headers in the packet are different in Arad-A0, and thus this feature is not supported on Arad-A0





**Table 74:**

<b>Number</b>	<b>CSP #</b>	<b>Chips</b>	<b>Release Notes For 6.3.1</b>
SDK-45626		88650_A0 88650_B0 88650_B1	MAC-in-MAC: Function <code>bcm_mim_port_delete()</code> returns error value <code>E_PARAM</code> by mistake. Fix includes proper use of <code>soc_ppd_soc</code> in <code>bmac_key</code> construction, which is used to access the <code>bmac</code> and remove the entry.
SDK-45627		88650_A0	88650: RX LOS application - The default value stand for the time the application waiting between RX sequence restart and link up check should be bigger. The time required for link with autoneg is bigger.  Fix: Default value of "short sleep" changed to 500000 micro seconds
SDK-45634		88650_A0 88650_B0	PON: Added support to have the option of ingress learning mode when PON L3 Source-bind is enabled.
SDK-45638	619034	56640_A0 56640_A1	FP counter wrap if fixed
SDK-45640		88650_A0	In Petra-B compatibility mode, the packets have all a Petra-B FTMH packet format to enable smooth data path between Petra-B (88640) and Arad (88650) devices. However, both ITMH and OTMH headers are according to the device (in Petra-B mode in Petra-B devices, in Arad mode in Arad devices).
SDK-45642		56640_A0 56314_A0 56641_A0 56642_A0 56643_A0 56644_A0 56645_A0 56648_A0 56640_A1 56643_A1 56644_A1 56640_B0 56644_B0 56643_B0 56648_B0 56649_B0 56649_A0	Fix to configure meter settings in valid meter locations.
SDK-45648		88650_A0	<code>bcm_port_stat_get</code> get local port -gport as parameter
SDK-45654		56624_B0	srcTrunk Qualifier on HIGIG port is corrected.
SDK-45658		88650_A0	In stacking application, the "egress device" receives packets starting with their original FTMH (the one built in the first device). In Petra-B mode, the FTMH is a Petra-B FTMH. The Multicast-ID extracted was of 16b instead of only 14b Multicast-ID.
SDK-45660	618207	56648_B0	At the ingress stage (IFP) changed counter hardware allocation logic in the implementation of <code>bcm_field_entry_prio_set</code> API.
SDK-45661	611636	88650_A0 88650_B0 88650_B1	Double tagged frame with outer-tag being priority tag (VLAN = 0) should be forwarded according to Initial-VID and not the inner-vlan.



**Table 74:**

<b>Number</b>	<b>CSP #</b>	<b>Chips</b>	<b>Release Notes For 6.3.1</b>
SDK-45668		88650_A0 88660_A0 88650_B0 88650_B1	<p>VLAN-port: Introduce new settings to enable/disable Same-interface filter per Incoming-LIF. In case SOC property <code>bcm886xx_logical_interface_bridge_filter_enable</code> is set, then a property of the Incoming-LIF (1b from the In-Lif-Profile) is used to denote Same-interface-filter-Enable. Per Incoming-LIF user can disable same-interface-filter (using <code>bcmPortControlBridge</code>) and is qualified/ set with <code>bcmField*IngressVPortBridgeDisable</code>.</p> <p>In case same interface filter per Incoming-LIF is set then LIF-profile is encoded in only 3 bits instead of 4. The LSB bit is taken for the Same-interface-filter.</p> <p>In ARAD, user needs to have additional FP settings to enable same-interface per Incoming LIF functionality, see an example of settings in: <code>cint_field_learn_data_rebuild.c</code></p> <p>An example functionality that use Same-interface-filter is EVB (Reflective-Relay enable). For more information see <code>cint_evb_example.c</code></p>
SDK-45680	618979	All	Remove statistic interface from the list of NIFs in the linkscan test(TR60)
SDK-45682		56850_A0	Allow preemphais setting per lane based on <code>SOC_PHY_CONTROL_PREEMPHASIS_LANE[0-3]</code> or per port based on <code>SOC_PHY_CONTROL_PREEMPHASIS</code> through API.
SDK-45709		88650_A0	Shared pool assignment in case of number of priorities = 0 is fixed
SDK-45710	599083	88030_A0	<p>Check that configured epoch length does not exceed actual epoch length. This only applies if the user specifies the epoch length and epoch extension is not used.</p> <p>Example error message: Error! [51055] inject-&gt;2:0-&gt;1.0 = Actual epoch length 147 does not equal configured epoch length 100</p>
SDK-45718	618015	88030_A0	PSC functionality added to C3.
SDK-45730	619631	56440_A0 56440_A1	Added new configurations for Katana.
SDK-45745		88750_A0 88650_A0	Interrupt handler crashed if interrupt deinit is called more than one time, fixed by checking NULL pointers on freed resources. solved in SDK-45757 - deinit interrupt cause assertion on the second run.
SDK-45758		88640_A0	<p>When starting up the device in Mesh mode, the IPT thresholds were being configured incorrectly. Due to an incorrect sequence of actions the IPT thresholds were being configured before the fabric connectivity mode. Therefore when setting the IPT thresholds the driver assumed the mesh mode is disabled.</p> <p>This is now fixed, and the driver correctly identify the mesh mode and then set the IPT thresholds accordingly.</p>
SDK-45762	618633	88230_C0 88230_B0 88230_A0	Fix for Sirius device - changing the scheduling discipline ( <code>bcm_cosq_sched_set()</code> ) might fail when egress independent flow control is enabled. Provided fix to prevent this issue.
SDK-45777	612311	88030_A0	G3P1 microcode v.200 fixes qos and dscp qos table segmentation in <code>g3p1_ocm_cfg.lrp</code>



Table 74:

Number	CSP #	Chips	Release Notes For 6.3.1
SDK-45787		56850_A0 56850_A1	Action fields bcmFieldActionNewClassId, EgressClassSelect and HiGigClassSelect are supported in Ingress Stage for Trident2.
SDK-45796	607348	88650_A0	<p>Description: At egress Field Processor, the HW correlates the counting action (bcmFieldActionStat) with the redirection (bcmFieldActionRedirect). An improper SW implementation was forcing the user to set a stat-id related to the entry-id for simplicity. Since the number of stat-ids is limited, an error was occurring for high entry ids.</p> <p>Fix: The sequence of using both actions at egress (bcmFieldActionStat &amp; bcmFieldActionRedirect) is changed: - when an entry must redirect and count, the user must indicate in bcmFieldActionRedirect the destination port, and in bcmFieldActionStat the stat-id (in param0). From now on, the user sets also in param1 of bcmFieldActionStat the destination port again. The stat-id must be between 1024 and 3839 (Counter-ID value). Refer to <code>cint_field_egress_modify_tc_per_port.c</code> for example. - when an entry must only redirect, the user must call both actions (bcmFieldActionStat &amp; bcmFieldActionRedirect) similarly to the previous, with stat-id = 0 to indicate the Counter-ID is not to be changed. - An entry cannot only change the Counter-ID without redirecting due to an HW limitation</p> <p>Besides, the user cannot use <code>bcm_field_stat_create[_id]</code> and <code>bcm_field_entry_stat_attach</code> at egress.</p> <p>WA: None</p>
SDK-45800	618773	56850_A0 56855_A0 56854_B0 56854_A0 56850_A1	<code>bcm_port_phy_get/set/modify</code> API should now work with MDIO bus number greater than three.
SDK-45808	620297	88650_A0	TRILL: Delete MAC entries according to <code>dest_nick_name</code> in payload doesn't work
SDK-45829	621360	All	<code>_bcm_board_trunk_make()</code> could segfault under some conditions.
SDK-45834		All	WCMOD: Incorrect use of <code>soc_port_if_t</code> in interface set
SDK-45851	617348	56544_A0 56542_A0 56540_B0 56541_B0	Memory sanity scripts are included in the FILES.esw package.
SDK-45852	621548	88650_A0 88650_B0 88650_B1	88650: When using dynamic ports change. the initial speed port (after dynamic change) is taken from the soc property "port_init_speed". This might cause an error if this speed is not supported by this interface. Fixed - When using dynamic ports the interface speed will be the default speed.
SDK-45868		88650_A0	implemented Arad RCPU support. For implementation detail use Arad UM, cint example application <code>cint_cmhc_rcpu.c</code>
SDK-45872		88650_A0	Change of default behavior: Initialization will fail if dram is not tuned (previous behavior was to print a warning). If oen want to initialize without tuning, SOC property 'bist_enable_dram' should be set to 0 (default is 1), which will not run bist during init.



**Table 74:**

<b>Number</b>	<b>CSP #</b>	<b>Chips</b>	<b>Release Notes For 6.3.1</b>
SDK-45875	606387	88650_A0 88650_B0 88650_B1	88650: At unreachable-credit events, wrong queue number was reported as OFF to the SCH. FCT unreachable destination was then asserted. Now, the interrupt application will change the flows queue status to OFF, so credits to this queue will be stopped.
SDK-45879	612625	56850_A0 56850_A1	Added support for L3 multicast cut-through mode in BCM56850. Specifically, the L3_IPMC table's REPL_HEAD_BASE_PTR field is now configured by bcm_multicast_* APIs.
SDK-45885	618944	All 56640_A0 56640_A1 56640_B0	Clear counters when there no flex object references to flex counters.
SDK-45892	620498	56846_A0	Toggling 20G link causes adjacent 10G link to bounce on same warpcore
SDK-45893		56850_A0 56850_A1	HW PCB hang problem causing register access failure is fixed by SW WAR (SDK-46060).
SDK-45901	600961	88650_A0	Controlling flooding for unknown IPMC: "bcmSwitchL3McastL2" switch control should be used instead of "bcmSwitchIpmcCompatibleEnable".
SDK-45908		56854_A0 56850_A0 56855_A0	bcmFieldQualifyColor qualifier is now supported in Trident2 device Ingress Stage.
SDK-45915		All	New interrupt thread is no longer created when SDK re-initialized after detach if previous thread is still running.
SDK-45917		All	Support pluggable PHYs phy8481.c phy84740.c phy8706.c
SDK-45918	619564	56850_A1	Clear out the encoding Rx reason codes if it is not part of the input reasons.
SDK-45933	622328	56850_A1	Add SOC property low_power to indicate whether the unused shared UFT banks are disabled or not.
SDK-45941		88750_A0	88750: Added support for FE1600 soft reset and graceful shutdown.  Soft reset: - graceful shutdown - reset it without changing configuration - un-graceful shutdown API: soc_init(unit)  Graceful shut down: - isolate the device - reset the links API: bcm_fabric_control_set(unit, bcmFabricShutdown,is_shutdown)
SDK-45943		88650_A0 88650_B0	ARAD Field warm boot, following was not restored after : 1. preselectors. 2. tcam actions. 3. entry flags (less critical, has effect only when doing WB in the middle of field API sequence).
SDK-45946	621865	88640_A0	In BCM88640, the ITMH Source-System-Port extension did not support LAG ports in its parsing. This issue is fixed.
SDK-45953	623653	88650_A0	88650: Diagnostic commands: "phy measure" and "diag nif" does consider correctly lane swap. Fixed.
SDK-45954 SDK-44501	622527	All 56440_A0 56850_A0 56440_A1 56440_B0 56850_A1	Fixed host entry add with ipv6_lpm_128b_enable set to zero.
SDK-45957	611540	56636_A0 56636_B0	Moving of entries in the FP_GLOBAL_MASK_TCAM table is fixed.

**Table 74:**

<b>Number</b>	<b>CSP #</b>	<b>Chips</b>	<b>Release Notes For 6.3.1</b>
SDK-45968		88650_A0 88650_B0	compilation error when compiling for ARAD only with warm boot support: BCM_PTL_SPT=1 BCM_88650_A0=1 BCM_88650_B0=1 # BCM_88640_A0=1 (No definition) CFGFLAGS += -DBCM_WARM_BOOT_SUPPORT
SDK-45972	619045	56850_A0 56855_A0 56854_B0 56854_A0 56850_A1	Process channel 0 for I2 mod fifo in case of TD2.
SDK-45973		88750_A0 88650_A0 88750_B0 88650_B0	Interrupts data protection were added to prevent situation when the interrupts data accessed after interrupts deinit.
SDK-45988	618997	56850_A0 56850_A1	Fixed QOS port map setting with VXLAN port.
SDK-45995	620949	56440_A0 56450_A0	Added IPBM Overlay support for Katana and Katana2 in order to support fields like S_FIELD in second slice.
SDK-46012	620324	88030_A0	The issue has been resolved.
SDK-46014	629346	56850_A1	Added sw based L2 matched traverse support.
SDK-46020		88650_A0 88650_B0	Bug description: When enabling default OAM behavior, it uses the same profile as the non-default. Thus both default trap behavior and trapping through endpoint insertion can not be use in the dame time.
SDK-46021		88650_A0 88650_B0	LM and DM packets that are trapped to the CPU have OAM-TS header that contains the counter / timestamp information. Bug: In OAM-TS header bit 42 is indicating up-mep direction. was always 0.
SDK-46022		88650_A0	88650: SerDes might be un-functional if configuring it while HW linkscan is enabled. Fixed.
SDK-46031	623835	56820_A0 56820_B0	Deadlocks from I3 memory locks are resolved with I3 module locks for all I3 xgs routines.
SDK-46039	623076	All	Shell command "GlobalMeter Policer Set" help [misspelling] for <Committed> is corrected
SDK-46041		56640_A0 56640_A1 56640_B0	Updated doc about bcmSwitchFieldStageEgressToCpu switch control.
SDK-46043		56640_A0 56641_A0 56642_A0 56643_A0 56644_A0 56645_A0 56648_A0 56640_A1 56643_A1 56644_A1 56640_B0 56644_B0 56643_B0 56648_B0 56649_B0 56649_A0	New switch control has been added to enable egress copy-to-cpu action.
SDK-46044		56640_A0 56440_A0	Support for configuring policers for all group modes in 2 level service meters has been added by incorporating new API bcm_policer_envelop_group_create
SDK-46059	622251	88650_A0	Fixed the following: during soft reset sequence full multicast dbuff pointers autogen bit was not reasserted, breaking the Ingress MC replication logic.
SDK-46075		88750_A0 88650_A0 88750_B0 88650_B0 88650_B1	Fixed issue: 'phy measure' diag shell command returns wrong results, or no results at all for fabric ports.
SDK-46076	625611	88130_B0 88130_A1 88025_A0 88020_A0 9600_A0 3200_B0 2000_A1	Convert static function to macro to prevent compiler warning for certain compilers on xcore devices.

**Table 74:**

<b>Number</b>	<b>CSP #</b>	<b>Chips</b>	<b>Release Notes For 6.3.1</b>
SDK-46099		88650_A0 88650_B0	VLAN port create does not provide an ability to allocate local Ingress LIF. Until 6.3.0 SDK version, the allocation of Ingress was according to <code>vlan_port_t.vsi != 0</code> . Now, <code>vlan_port_t.vsi != 0</code> has the only meaning of identify if to allocate ISEM , ESEM entries. New flags introduce <code>BCM_VLAN_PORT_CREATE_INGRESS_ONLY</code> , <code>BCM_VLAN_PORT_CREATE_EGRESS_ONLY</code> to allocate local asymmetric LIF. Those flags are not implemented yet. Workaround provided to allocate local ingress LIF as previous behavior before 6.3.0 release.
SDK-46102		88650_A0 88650_B1	ARAD-XGS MAC extender: Added the support of having RSPAN in a system with XGS MAC extender application
SDK-46103		88650_B1	Support for ARP extender + XGS interop for 1G LC
SDK-46114	625123	56850_A1	Counters update properly for X and Y pipes for PG and WRED based counters.
SDK-46127	625111	88650_A0	Arad: Dynamic NIF change- After change port the eg calendar was not updated and as a result in transition that increased the bandwidth for single logical port (e.g: 4*10G to 1*40G) we got FCS. Fix: use <code>custom_feature_soc</code> property <code>dynamic_port</code> In this mode we update the eg calendar due to the new configuration.
SDK-46132		88650_A0	When enabling HW linkscan it'll report all links are down, instead of reporting actual link status, until first interrupt will occur. This issue is fixed.
SDK-46134	620221	88650_A0	<code>ipmc_enable</code> issue after warmboot was fixed.
SDK-46135		88750_A0 88650_A0	88650, 88750: <code>bcm_port_link_status_get</code> for fabric links returns true (link is up indication) if the port is disabled. Fixed.
SDK-46137		88650_A0	Disallow higig mode speed on non-higig port
SDK-46140		88650_A0 88650_B0 88650_B1	The module detach function is called for DNX devices in two separate cases: - during Warm-boot. Then no HW access must be done by definition (only the SW is reset). - during init / de-init. Then the init comprises also a SOC init, i.e. a device reset. Thus, any HW access at the de-init phase has no influence since the device is reset. In Field Processor, the HW was accessed during de-init (all the Field group entries were removed). This HW access is removed.
SDK-46142	575762	88640_A0	In BCM88640, in stacking application, the FTMH extension Stacking-Route-History indicates for each packet its TM-Domain history. It must be set to 0 at the first TM domain, and for each TM-Domain, the respective bit is set in this bitmap. Its value was not set to 0 but was depending on the packet content. This is fixed.
SDK-46143	624493	All	Fixed PHY partial compile failure

Table 74:

Number	CSP #	Chips	Release Notes For 6.3.1
SDK-46147		88650_B1	In Field Processor, the qualifier <code>bcmFieldQualifyHeaderFormat</code> was enumerating explicit L2 & L3 packet format codes. For example, <code>bcmFieldHeaderFormatIp4</code> selects Layer-4overIPv4overETH packets, but not IPv4overIPv4overETH packets. New Header-Formats are introduced all types of IPv4 or IPv6 or MPLS-1/2/3 packets: <code>bcmFieldHeaderFormatIp4AnyL2L3</code> , <code>bcmFieldHeaderFormatIp6AnyL2L3</code> , <code>bcmFieldHeaderFormatMplsLabel1AnyL2L3</code> , <code>bcmFieldHeaderFormatMplsLabel2AnyL2L3</code> , <code>bcmFieldHeaderFormatMplsLabel3AnyL2L3</code> For example, the user can match all the IPv4 packets with <code>bcmFieldHeaderFormatIp4AnyL2L3</code>
SDK-46169	621365	88650_A0	<code>bcm_mpls_tunnel_switch_get()</code> fails when the entry hit indication is set
SDK-46182	624961	88650_A0	QOS: Default mapping of Egress PCP mapping was changed in case of untagged packets. In case of untagged packets default egress VLAN editing adds a new VLAN tag, VLAN = VSI. The new mapping of PCP field will be according to TC. The default mapping is useful in order to maintain the incoming COS value. User can control the default mapping by creating Egress PCP-DEI QOS default profile handle: <code>bcm_qos_map_create</code> flags <code>BCM_QOS_MAP_L2_VLAN_PCP BCM_QOS_MAP_EGRESS BCM_QOS_MAP_WITH_ID</code> and profile = 0. Add QOS mappings of TC,DP to PCP by <code>bcm_qos_map_add</code> .
SDK-46191		84848_A0	Warpcore: 100M (SGMII) Transmit FIFO issue
SDK-46194		56850_A0 56850_A1	Fix <code>MMU_THDU_X/YPIPE_CONFIG_PORT</code> and <code>MMU_THDU_X/YPIPE_RESUME_PORT</code> index calculation for pool 1, 2, and 3. Fix <code>MMU_THDM_DB_PORTSP_CONFIG_0/1</code> and <code>MMU_THDM_MCQE_PORTSP_CONFIG_0/1</code> index calculation on BCM5685x.
SDK-46200	626518	53115_B0	BCM CLI command mode to ROBO mode is available in BCM CLI init process.
SDK-46202	623810	88650_A0 88650_B0	Trill Adjacent - Bug fix -The port in the key was not included correctly
SDK-46208		88650_B1	Added support for outbound mirror for XGS MAC extender ports (with HG header).
SDK-46216	624606	88230_C0 88230_B0 88230_A0	Set the default behavior for the Sirius ts scheduler hierarchy setup configured through <code>bcm_cosq_gport_sched_set()</code> to allow for a scheduling element parent with a single child to be set up in flat scheduling mode as the root relay to allow for additional children to be added at a later time. <code>ts_single_child_passthrough_disable</code> is by default set to 0. To force a parent to only be configured as the root relay if it has multiple children, clear this property.
SDK-46235	619508	88650_A0	MIM: Added the support for Split horizon in MIM application. In case packet comes from MIM port (PBB) and send back to MIM port then packet will be dropped. In order to disable Split horizon filter call <code>bcm_rx_trap_type_destroy</code> with <code>trap_type = bcmRxTrapEgSplitHorizonFilter</code> .



Table 74:

Number	CSP #	Chips	Release Notes For 6.3.1
SDK-46237		88650_A0 88650_B0 88650_B1	warmboot: dynamic variables get wrong error for being size=0 before being enabled. changed add_var to not return error on size=0 for dynamic vars
SDK-46263	627186	56334_B0 56334_A0	Added the code for outbound counters in stat_fe.c and stat_xe.c
SDK-46264		88650_B1	Background: Arad uses XGS as MAC extender In the ingress direction, XGS will set VID=1 in HIGIG header by default. In the egress direction, XGS only recognizes VID=1 in the HIGIG Header by default. Bug: SDK should be changed to set VID=1 in the egress direction so that there will be no need to change the XGS default configuration.
SDK-46268		88650_A0 88650_B0	OAM LM Bug: LM downmep packet trapping increases egress counters.
SDK-46273		88650_A0	Fixed: bcm_cosq_fc_path_add API returns error when configuring PFC/SAFC reception.
SDK-46277	628080	88650_A0 88650_B0 88650_B1	In Petra-B compatible mode, the parsing of the FTMH is different at egress because the FTMH is in Petra-B mode. The CUD was not parsed correctly at egress in Petra-B compatible mode. Therefore, the CUD extension value in OTMH was not correct.
SDK-46311	627975	All	"Wait for Linkup" after serdes loopback set, moved out of the port lock scope.
SDK-46313 SDK-44449	617061	All	IngressGportSet support is added for new GPORT types
SDK-46326		88750_A0 88650_A0	88650, 88750: RX LOS application - two connected ports which monitored by RX LOS application might have done many iterations of RX resetting on system initialize.
SDK-46330	627749	88650_A0 88650_B0 88650_B1	The the default value for STP per port is now set to Block instead of Forward, as required. Attachment of a port to an STP group will not block traffic.
SDK-46331	540502	88650_A0	Skip dynamic read only Tables during table access TR (50, 51, 52)
SDK-46342	609631	88650_A0 88650_B0 88650_B1	Fix Arad throughput below line rate when working with 4 DRAM devices
SDK-46378		88650_A0	MPLS: When calling bcm_mpls_tunnel_initiator_create there might be a use of memory outside of the allocated memory which could lead to undefined behavior. Fix implemented as part of another issue. It includes appropriate memory usage in shr_res_bitmap_alloc_align().
SDK-46380		88650_A0	When calling bcm_petra_tunnel_terminator_create there might be a use of uninitialized stack variables that could lead to undefined behavior. Fix implemented as part of another issue but basically includes initializing these stack variables.
SDK-46387		88650_A0	L2 remote CPU mode disables XGS programmable editor programs to avoid conflicting instructions



**Table 74:**

<b>Number</b>	<b>CSP #</b>	<b>Chips</b>	<b>Release Notes For 6.3.1</b>
SDK-46390	615798	88750_A0 88750_B0	Compiling with both BCM_WARM_BOOT_SUPPORT and BCM_EASY_RELOAD_SUPPORT was not allowed. In order to support both Easy Reload feature and Warm boot feature in the same SDK image (for different devices), use the following compilation flags: BCM_WARM_BOOT_SUPPORT, BCM_EASY_RELOAD_WB_COMPAT_SUPPORT.
SDK-46391	626558	88650_A0	TDM direct routing fixed (bcm_fabric_tdm_direct_routing_set) : Before: configuring cells to be routed through was ignored; routing was done through all cells.
SDK-46393	628573	All	Resolved as part of SDK-47244. add "_DUNE_GTO_BCM_CPU_" macro above all "cpu_i2c_write" operation in kbp.c.
SDK-46398	627557	All 56440_A0 56445_A0 56440_A1 56445_A1 56444_A1 56449_B0 56445_B0 56440_B0 56447_B0 56443_B0 56441_B0 56446_B0	Fixed Katana VFP source mod-port qualifiers.
SDK-46411		All	Applied proper validation checks for the return type of functions _field_group_free_unused_slices() and bcm_esw_field_group_compress and _field_stage_groups_compress().
SDK-46426		88650_A0 88650_B0	OAM: MIP is both upMEP and downMEP - should have no passive side. MIP packets should be handled from both ingress and egress.
SDK-46429		88650_A0	The NIF to EGQ Flow-Control mapping is wrong for 1P and 2P modes. When working with less than 8 priorities PFC indication will be incorrect, or won't appear at all. Mapping was fixed.
SDK-46461	627415	56850_A1	Change MMU port number and queue assignment for BCM5685x to meet VBS ports restriction.
SDK-46480	629751	88650_B1	In Field Processor, the allocation of preselectors & Field groups is dynamic. The SW Driver must handle the PMF-Program, TCAM databases and all their attributes internally.  At egress stage, the TCAM DB profile of existing Field groups were not kept when duplicating PMF-Programs. The bug is fixed.  WA: none
SDK-46481	629771	All	Reinstate DV integrity check in soc_dma_done_chain() for CMIC-based devices.
SDK-46482	631621	All	GPL versions of the Linux BDE kernel modules now compile again.
SDK-46500	627006	56840_A0	In this release we now handle MPLS type of egress object for bcm_l3_egress_stat_attach() API correctly.





**Table 74:**

<b>Number</b>	<b>CSP #</b>	<b>Chips</b>	<b>Release Notes For 6.3.1</b>
SDK-46501	631625	56850_A0 56850_A1	VXLAN Network ports may share the same egress object. In such a scenario, deletion of a specific VXLAN port should not affect the behavior of the egress object. Fixed the problem observed during such sharing scenarios for VXLAN functionality.
SDK-46503		56640_A0 56640_A1 56640_B0	ESM may not be bypassed if there is no esm configuration on a Tr3 device. This fix makes sure ESM is bypassed if there are no external tables configured on a tr3 device.
SDK-46507	497533	56846_A0 56840_A0 56846_A1	Disabled parity for FP_METER_TABLE on TD/TD+.
SDK-46511	631335	88030_A0	Fixed Caladan3 synchronous ethernet clock default value
SDK-46515	629523	All 56850_A1	New flag is added to disable TTL check on multicast packets
SDK-46517	619145	88650_A0 88650_B0 88650_B1	VLAN: creation AC-LIF without any transforms, using the <code>bcm_vlan_port_create()</code> API are supported now for both ingress and egress. Use flags <code>BCM_VLAN_PORT_OUTER_VLAN_PRESERVE</code> and <code>BCM_VLAN_PORT_INNER_VLAN_PRESERVE</code> .
SDK-46519		88650_A0 88650_B0	L3: Extend ARP table from 32K to 256K (32K x 16) by providing additional 4b from Host table. To enable the feature set SOC property: <code>bcm886xx_next_hop_mac_extension_enable</code> /* If set ARP table (next Hop MAC address) is extended. In BCM 88650 ARP table extend from 32K to 256K, in case soc property is set System headers for PP packets always contain 5Bytes Learn extension header. */
SDK-46523	631635	56640_B0	IPFIX enabled during init.
SDK-46531	631038	56224_B0 56224_A0	Fixed configuration issue of <code>IFP_PORT_FIELD_SEL</code> table.
SDK-46549	633259	56334_B0 56334_A0	Fix is already available in TOT.
SDK-46557		88030_A0	Add VRRP to IPv4
SDK-46564	631612	88750_A0 88650_A0 88750_B0 88650_B0 88650_B1	88750, 88650: Added new BCM API which retrieves the current link-partner information of a single link.  extern int <code>bcm_fabric_link_connectivity_status_single_get(int unit, bcm_port_t link_id, bcm_fabric_link_connectivity_t *link_partner_info);</code>
SDK-46573		88650_A0 88650_B0 88650_B1	Incorrect pointer assignment caused segmentation fault in ELK application initialization UI. This has been fixed.
SDK-46576	616031	88650_A0	Support ICMP packets trapping: APIs to use - <code>bcm_switch_control_port_set(0, port, bcmSwitchIcmpRedirectToCpu, enable);</code> //per port ICMP trap enable - <code>bcmRxTrapIcmpRedirect</code> : RX trap to globally control ICMP trapped packets.
SDK-46581	633727	88650_A0	<code>bcm_port_phy_control_get</code> - add support to get gport in order to enable get phy control information about the internal and external phy.



**Table 74:**

<b>Number</b>	<b>CSP #</b>	<b>Chips</b>	<b>Release Notes For 6.3.1</b>
SDK-46591	627700	56850_A0 56855_A0 56854_B0 56854_A0 56850_A1	Add the support of cut-through by adding a switch control property to api <code>bcm_switch_control_port_set</code> .
SDK-46599		88650_A0 88650_B0	When working in Petra-B mode ( <code>system_is_petra_b_in_system=1</code> ), the header formats are: - FTMH is in Petra-B mode - ITMH and OTMH are in Arad mode  A bug in the parsing of the ITMH in this mode is fixed. WA: none
SDK-46601		88650_A0 88650_B0 88660_A0	schan HW timeout is now proportionate (and smaller in time) than schan SW timeout
SDK-46602	632985	88650_A0 88650_B0 88650_B1	Direct mapping supported systems with more than 4K System Ports. The API <code>bcm_cosq_gport_add</code> return error for such ports in direct mode. Fixed.
SDK-46606		All	Fixed macro
SDK-46608		8750_A0 8752_A0 8754_A0	control phy bcm875x for low power mode while setting phy enabled or not to generate link status change interrupt
SDK-46610	632939	56850_A0	Fix <code>soc_mem_field_get</code> buffer overrun for L2_USER_ENTRY TCAM mask.
SDK-46611	632888	88650_A0	Arad: Use the soc property <code>bcm_stat_jumbo</code> to change the size of packets that counted as jumbo packets. The default value is 1518.
SDK-46618		88650_A0 88650_B0 88650_B1	VLAN translation: New BCM API VLAN actions were added in order to support Egress Vlan Editing usage of VSI as the source VID - <code>bcmVlanActionMappedAdd</code> & <code>bcmVlanActionMappedReplace</code> . Those actions values can be used the same way as <code>bcmVlanActionAdd</code> & <code>bcmVlanActionReplace</code> are used, but the VLAN value result that is used is the VSI instead of a newly supplied VLAN value as in the latter actions.
SDK-46619		88650_A0 88650_B0 88650_B1	New BCM API actions were added in order to support EVE usage of VSI as the source VID - <code>bcmVlanActionMappedAdd</code> & <code>bcmVlanActionMappedReplace</code> . Those actions values can be used the same way <code>bcmVlanActionAdd</code> & <code>bcmVlanActionReplace</code> are used respectively, but the VLAN value that is used is the VSI instead of a newly supplied VLAN value as in the latter actions.
SDK-46622		88660_A0	ARAD+: To set rx clock recovery lane use the SOC property <code>caui_rx_clock_recovery_lane</code> : <code>caui_rx_clock_recovery_lane_x(0/1)=0-3</code> (default value: 0)  In warm boot and dynamic port we read this soc property again.
SDK-46642	627589	88650_B1	When deleting an entry from TCAM ( <code>bcm_trill_multicast_source_delete</code> for example), an error wasn't returned if entry did not exist
SDK-46650	634058	88650_A0 88650_B0 88650_B1	Added support for setting the credit request profile (queue type) of Fabric Multicast Queues (FMQs). The <code>bcm_cosq_gport_sched_set</code> API can now be used with FMQ gport type as input.



**Table 74:**

<b>Number</b>	<b>CSP #</b>	<b>Chips</b>	<b>Release Notes For 6.3.1</b>
SDK-46651	627582	88650_B1	Background: Validation of TCAM entries is done while reading all entries per database. The loop which reads the entries used the wrong database ID range, which may have been invalid in some cases. Fix: Change of database ID to right range.
SDK-46653	634167	84756_A0 84756_C0	New sequence so link stays up when link partner disables auto negotiation
SDK-46678	620403	56440_A0	Fixed stack overflow issue while invoking bcm shell group create command in linux kernel mode.
SDK-46679		56634_B0	Data returned by bcm_custom_port_get() from a remote device could be corrupted.
SDK-46680	633317	All	Code now includes exclusion of Interlaken ports when generating port list at appropriate code points.
SDK-46683	633416	56850_A0 56855_A0 56854_B0 56854_A0 56850_A1	Interface CLASS_ID classifier for IFP is added for Trident2
SDK-46712	634930	56840_A0	MC Prio2Cos values have been corrected to reset properly
SDK-46718	628264	56850_A1	TD2 BST issues corrected.
SDK-46722	624598	56640_A0 56640_A1 56640_B0	Hardware does not support Ingress Port match capability in TR3 external FP stage. Removed InPort qualifier initialized in ACL_L2C database in SDK. Alternate method to qualify on Ingress Port is to match on the Port Class ID value using "bcmFieldQualifyInterfaceClassPort" qualifier in TR3 External Stage.
SDK-46732		88650_A0 88650_B0 88650_B1	When de-attach MPLS port using bcm_vswitch_port_delete, API returned error since PWE LIF settings weren't cleared correctly.
SDK-46742	636288	88030_A0	Integration of BCM shell and MDE GUI is implemented. MDEConnectionsView has been rewritten completely, and new view (MDE Execution Status view) was been created. Now, user can use Telnet sessions to interact with BCM from MDE GUI application. MDE GUI supports any number of telnet connections simultaneously, ne Telnet console per session. This is a prt of MDE GUI 2.138 release.
SDK-46769	636075	All	Change SW sequence after blocks init in order to avoid IQM Schan error.
SDK-46773		88650_A0	Support IPv4 MC BIDIR protocol and APIs. Remarks: - Cint example with all details at SDKsrcexamplesdppcint_ipmc_bidir.c -bcm_ipmc_range_add not implemented.

**Table 74:**

<b>Number</b>	<b>CSP #</b>	<b>Chips</b>	<b>Release Notes For 6.3.1</b>
SDK-46782		88650_A0 88650_B0 88650_B1	MIM: LIF-ID for ISID creation could not be controlled by the user. An option to control the allocated ISID LIF-ID was added. <code>bcm_if_t service_encap_id</code> member was added to <code>bcm_mim_port_t</code> and <code>bcm_mim_vpn_config_t</code> structs. This new member may be used to control the allocated LIF-ID with the use of the new supported flags <code>BCM_MIM_PORT_SERVICE_ENCAP_WITH_ID</code> and <code>BCM_MIM_VPN_SERVICE_ENCAP_WITH_ID</code> used in functions <code>bcm_mim_port_add()</code> and <code>bcm_mim_vpn_create()</code> respectively.
SDK-46791		88650_A0 88650_B0 88650_B1	88650: ARAD interlaken interface supports sending status messages through an out-of-band interface. In order to avoid sending this messages use the following soc property: "ilkn_interface_status_oob_ignore=1"
SDK-46795		88750_A0 88650_A0	88650, 88750: RX LOS application - <code>rx_los_unit_attach</code> is running over RX LOS semaphore. Using <code>rx_los_unit_attach</code> when all the ports are in stable state might cause RX LOS application to stuck. Fixed.
SDK-46800		88650_A0	At egress Field Processor, the user can preselect according to the Forwarding-Type. The following Forwarding-Types were failing: <code>bcmFieldForwardingTypeSnoop</code> , <code>bcmFieldForwardingTypeTrafficManagement</code> and <code>bcmFieldForwardingTypeFCoE</code> .  By default, a different space in preselection table is allocated for TM field groups and Ethernet-based Field groups at ingress stage. At egress, the fix is to have a single space for both types. The user can preselect on every supported Forwarding-Types.  The user needs after this fix to preselect on <code>Forwarding-Type=bcmFieldForwardingTypeAny</code> to get a preselection only on Ethernet packets (except FCoE packets). After this fix, a Database without preselection is applied both on TM (e.g. OLP learning messages) and Ethernet-based packets.
SDK-46801		88750_A0 88750_B0	compilation error for 88750 single chip compilation when compiling with WB flags: <code>BCM_PTL_SPT=1 BCM_88750_A0 = 1 CFGFLAGS += - DBCM_WARM_BOOT_SUPPORT CFGFLAGS += - DBCM_WARM_BOOT_SUPPORT_SW_DUMP</code>
SDK-46814	618010	88030_A0	fix interrupt handling to support large tmu hash capacity in caladan3 device

Table 74:

Number	CSP #	Chips	Release Notes For 6.3.1
SDK-46847	631611	All	<p>88650, 88750: RX LOS application - register a callback</p> <p>RX LOS application will notify when port is stable (i.e. the port status do not requires RX resetting)</p> <p>Therefore, the RX LOS application will use a callback mechanism. The callback will be called when a port move to a stable state or active stable state: *</p> <pre>rx_los_state_ideal_state * rx_los_state_no_signal * rx_los_state_no_signal_active</pre> <p>Registering a callback is supported per unit:</p> <pre>typedef void (*rx_los_callback_t) (int unit, bcm_port_t port, rx_los_state_t state); int rx_los_register(unit, rx_los_callback_t callback);</pre>
SDK-46856	627827	88650_A0 88650ACP_A0 88650_B0 88650_B1	<p>ARAD: Change number of ILKN lanes without disable the port is possible with <code>bcm_port_control_set(bcmPortControlLanes)</code>. This feature is supported for ILKN interface up to 12 lanes. It's impossible to increase the number of lanes above the init number of lanes. To see the actual number of lanes use the <code>bcm_port_control_get(bcmPortControlLanes)</code> function. Diagnostic will show the init num of lanes and will not update by the use of this feature.</p>
SDK-46858		88750_A0 88650_A0 88750_B0 88650_B0 88650_B1	<p>PHY speed which requires refclock of 125MHz might be not configured correctly in previous release. This has been fixed.</p>
SDK-46860	616502	88030_A0	<p>The following syntax is now supported on all but ELEN type <code>pkt_header</code> descriptions:</p> <pre>varlen_mod = true: varlen_units = 0: varlen_size = 48: varlen_posn = 12</pre>
SDK-46863	632416	88030_A0	<p>Wrapped TMU table creation with <code>SOC_IF_ERROR_RETURN</code> to catch exceptions.</p>
SDK-46865	636822	88030_A0	<p>You should use these cmds to dump RCE entries</p> <pre>BCM.0&gt; g3p1rceget Usage (G3P1RceGet): g3p1rceget all g3p1rceget {ifp efp} all g3p1rceget {ifp efp} &lt;groupId&gt; all g3p1rceget {ifp efp} &lt;groupId&gt; &lt;entryId&gt;</pre>
SDK-46878		88650_A0 88650_B0 88650_B1	<p>The <code>bcm_mpls_vpn_id_destroy_all</code> API removes all the configured VPNs for the unit, not just the MPLS ports as previously.</p>
SDK-46882	638847	56150_A0	<p>Fixed</p>
SDK-46889		88030_A0	<p>Support added for 3 label lookup. Now the labels are unique per interface per layer. - First label lookup uses port, label1, 0 (for label2) as index to labels table. - Second label lookup uses port, label1, label2 as index to labels table. - Third label lookup uses port, label1, label2 as index.</p> <p>Limitations: 1. The per layer unique label support assumes the LSP label is same on both ingress and egress direction. 2. The trunk update support needs to be added for per-interface per layer unique label feature.</p>

**Table 74:**

<b>Number</b>	<b>CSP #</b>	<b>Chips</b>	<b>Release Notes For 6.3.1</b>
SDK-46914		89500_A0 53010_A0 53017_A0 53022_A0 53011_A2	Fix the problem about the packets egress to NNI port are always untagged on BCM5301x, BCM5302x and BCM8950x devices.
SDK-46921		88650_A0	Issue: Packet incomes from VXLAN port and flooded over VSI gports was sent toward VXLAN network Fix: configure bounce back filter to discard such copies at egress.
SDK-46932		56820_B0	FP reinstall Assertion Fixed: The assertion happened because it was trying to install the invalid action of the entry. The check has been made to process only the valid actions.
SDK-46956		88650_A0 88650_B0	Bug description: In case <code>action_set</code> is used with <code>downmep</code> endpoint and then with <code>upmep</code> endpoint while destination is the same, <code>upmep</code> trapping will not work.
SDK-46957		All	Added support for KNET feature on iProc host.
SDK-46961	636587	88650_A0	VLAN: When port is enabled <code>bcmVlanPortDoubleLookupEnable</code> then by mistake untagged packets were not matched correctly.
SDK-46964		88650_A0	Several BCM APIs use uninitialized stack variables which may lead to undefined behavior. Fix includes initializing these stack variables in <code>_bcm_ppd_frwrdd_ip4_mc_route_fin</code> <code>_bcm_ppd_frwrdd_ip4_mc_route_fin()</code> , <code>arad_iqm_cnm_ds_tbl_set_unsafe()</code> , <code>arad_pp_eg_qos_params_remark_get_unsafe()</code>
SDK-46965	637707	All	Access the register with the correct function. Use the function which can access 64Bit register, instead of 32Bit.
SDK-46968		88650_A0	VLAN: When calling <code>bcm_vlan_port_protocol_action_add/delete</code> there might be a use of uninitialized stack variables that could lead to undefined behavior. Fix includes initializing of these stack variables in <code>_bcm_petra_vlan_port_protocol_entry_set()</code> .
SDK-46971		88650_A0	MPLS: When calling <code>bcm_mpls_port_add</code> there might be a use of uninitialized stack variables that could lead to undefined behavior.. Fix includes initializing of these stack variables in <code>_bcm_dpp_mpls_port_pwe_set()</code> .
SDK-46972		88650_A0	When calling some BCM API functions that approach the LIF table ( <code>bcm_petra_vxlan_port_add()</code> for example), there might be an internal use of uninitialized stack variables which could lead to undefined behavior. Fix includes initialization of these stack variables.
SDK-46976		88650_A0	When calling some BCM API functions that get entry information from the Egress encapsulation, there might be a memory copy command with source and destination overlapping. Fix includes removal of unnecessary memcopy from <code>arad_pp_eg_encap_data_entry_data_exact_info_get_unsafe()</code> .



Table 74:

Number	CSP #	Chips	Release Notes For 6.3.1
SDK-46979		88650_A0 88650_B0 88650_B1	VPN creation: Add ability to update exist VPN (created by <code>vswitch_create</code> ) for MiM usage without impact traffic
SDK-46982	639073	56850_A0 56855_A0 56854_B0 56854_A0 56850_A1	Fixed 'l3 replace' for ecmp for BCM5685x devices.
SDK-46983	637395	56850_A0 56850_A1	<code>bcm_l2_replace(MATCH_DEST)</code> can now be changed from <code>NIV_gport</code> to <code>trunk_gport</code> successfully.
SDK-46998	638019	88030_A0	Before this change, we were not able to change the speed on 10G port to 1G because of the consistency check that would block such and change. This has been fixed
SDK-47024	640408	All	Recovery of qualifierID's greater than 255 is now handled properly.
SDK-47033		88650_A0	88650 there is a HW bug in DRAM mmu indirect reading/writing under traffic. That is why deleted dram buffers seems to be changed under traffic. The problem solved when OCB is disabled.
SDK-47037		88650_A0 88650_B0 88650_B1	88650: If the packet is rejected at the egress (reassembly errors, filtered packets or due to congestion), the packet descriptor stored in the delete FIFO. ARAD egress did not allocate bandwidth to the delete fifo - required in order to delete the packet data.
SDK-47038		88650_A0 88650_B0 88650_B1	88650: Link-Level Flow Control (LLFC) This flow control is generated by the BCM88650 according to the fabric link receiver fifo occupancy. The fabric LLFC role is to adjust the incoming rate from the input link due to momentary congestion. To tune this mechanism, call <code>bcm_fabric_link_thresholds_set(unit, -1, array_count, array_types, array_values)</code> : While the array types includes the following type and array count his matching value: <code>bcmFabricLinkRxFifoLLFC</code> Threshold range: [0, 0xff]

**Table 74:**

<b>Number</b>	<b>CSP #</b>	<b>Chips</b>	<b>Release Notes For 6.3.1</b>
SDK-47039		88650_A0	<p>88650: BCM88650 fabric multicast queue eligibility can be regulated by random-backoff and slow-start mechanisms. Added tuning support using BCM APIs. To tune the GCI random-backoff mechanism use the following API:</p> <pre>bcm_fabric_link_thresholds_set(unit, -1, array_count, array_types, array_values)</pre> <p>While the array types includes the following types and array count their matching values: o bcmFabricLinkTxGciLvl1FC o bcmFabricLinkTxGciLvl2FC o bcmFabricLinkTxGciLvl3FC Threshold range: [0, 0x800-1]</p> <p>To enable the slow start mechanism: Obtain the appropriate gport handles for fabric MC contexts by calling: bcm_cosq_gport_handle_get(unit, gport_type, &amp;gport_info) with gport_type: bcmCosqGportTypeGlobalFabricClosFmqGuaranteed bcmCosqGportTypeGlobalFabricClosFmqBestEffort</p> <p>Enable the mechanism using the following API bcm_cosq_control_set(unit, gport, 0, bcmCosqControlFlowSlowRate, enable)</p> <p>To configure rate1 or rate2 of slow start mechanism: Configure a percentage value between 0 to 100 from the normal mode shaper using the following APIs bcm_cosq_control_set(unit, gport, 0, bcmCosqControlFlowSlowRate1, rate1_percent) bcm_cosq_control_set(unit, gport, 0, bcmCosqControlFlowSlowRate2, rate2_percent)</p>
SDK-47040		88650_A0 88650_B0 88650_B1	<p>Wrong default configuration of internal Flow Control mapping in the device ingress path (between IPT and IPS blocks). Wrong behavior: Flow control from some class stops only its own class, instead of its own and lower priority classes. This configuration could potentially cause sub-optimal performance of the ingress path. The issue was fixed.</p>
SDK-47078		88650_A0 88650_B0 88650_B1	<p>Fixed bcm_cosq_gport_sched_get, With flags bcmCosqGportTypeLocalPortTCG to return correct configuration. That is: Before disabling WFQs for TCG gport caused enabling it, and enabling WFQs for TCG gport caused disabling it.</p>
SDK-47081	638082	88650_A0	<p>Private VLAN is supported both for single port and trunk.</p>
SDK-47087	642080	88030_A0	<p>The Asm3 tool now supports "direction = both" for the OCM and TMU tables where the "direction" argument is supported. Using the "direction = both" argument will result in generation of both ing_* and egr_* LRP variables.</p>
SDK-47089	640570	88030_A0	<p>Fixed cmc corruption issue during interrupt mask handling on cmicm.</p>



**Table 74:**

<b>Number</b>	<b>CSP #</b>	<b>Chips</b>	<b>Release Notes For 6.3.1</b>
SDK-47090	636591	88650_A0 88650_B0 88650_B1	Advanced VLAN edit mode was introduced under the new SOC property <code>bcm886xx_vlan_translate_mode</code> , with new dedicated BCM APIs. The new mode is aimed to enable user enhanced utilization and flexibility of the HW VLAN edit capabilities. In the Advanced mode, all the entries in the HW VLAN edit action table are available for user configuration as well as freedom to associate an action with any combination of up to 16 user defined tag formats that are TPID based, and up to 8 user defined VLAN edit profiles. For CINT usage examples please refer to <code>cint_vlan_translation_new_mode.c</code>
SDK-47093		88650_A0 88650_B0	Mirror: Added support to set system mirror ID for Egress-Mirror ports using new API <code>bcm_mirror_port_info_set</code> . When egress mirroring is configured per egress port, it is sent through the recycling interface to a reassembly context in the ingress and is associated with the System-Source-Port carried in the FTMH. It is used by the receiving CPU to identify the packet as an egress-mirrored packet from a specific port. Thus, every port is associated with an Egress-Mirror-System-Source-Port, which is the Source-Port field in the FTMH of the egress mirrored packets from that port.
SDK-47102	642084	88030_A0	Because fatal key definition errors had been suppressed the key status records contained invalid indexes and should not have been used in subsequent key validation checks.
SDK-47104	640327	88030_A0	G3P1 PPE egress rules skipped cam 1 (and used cam 0 twice). Rule update to correct the cam usage convention.
SDK-47113	640154	88650_A0	Fixed statistic counters: <code>snmpBcmEtherStatsPkts4095to9216Octets</code> , <code>snmpBcmReceivedPkts9217to16383Octets</code> , <code>snmpBcmTransmittedPkts9217to16383Octets</code>
SDK-47158	635512	56850_A0	Fixed <code>bcm_trunk_set()</code> API failure issue with the HiGig trunk IDs on BCM56850 switch devices
SDK-47161	636799	88030_A0	Tools support has been added. Please see the sample <code>g3p1_rce_cfg.lrp</code> file for configuration format.
SDK-47174	634117	88650_A0	Relevant for Arad-A0 only. Fixed the workaround for the IQM hardware bug ( VoQ corrupt Errata).
SDK-47176	636654	88650_A0	MIM: VPN destroy does not work correctly, returns error by mistake. Fix includes proper use of <code>vlan_info</code> SW DB which was partially supported by the BCM MIM API.
SDK-47206		88650_A0 88650_B0	Overlay (VXLAN, NVGRE, Trill, MIM) Multicast: Added enhancement to support multicast Overlay application. Multicast requires 2pass solution. First pass is for multicast transit replications and second pass is for multicast access replications. PRGE program is introduced to provide the same Source-System-Port/In-PP-Port on the 2nd pass.

**Table 74:**

<b>Number</b>	<b>CSP #</b>	<b>Chips</b>	<b>Release Notes For 6.3.1</b>
SDK-47208	635229	88650_A0 88650_B0 88650_B1	Control packets (IGMP, etc.) over IP tunnels: Issue: In case control packets are send over IP tunnels then ARAD terminates IP tunnel even tough IP tunnels should not be terminated. Solution: Added the support for control packets over IP tunnels. This is done by defining a new VTT program selection to different between control packets and other packets (In case Packet format code is IPV4oE then it is control packets, otherwise it is tunnel for example EoIPoE, IPoIPoE...). In case of match in VTT program selection do not terminate IP tunnel.
SDK-47210		88750_A0	88750: Easy Reload - diagnostic: Controlling Easy Reload flags with BCM shell commands: " Usage (XXReload): Parameters on -- Put the chip in reload mode off -- Put the chip in the normal mode show -- Show the mode "
SDK-47219	635011	56440_A0	TCP control Qualifier offset for double wide mode has been fixed.
SDK-47220	643269	All 88750_A0 88750_B0	Only TR tests which are supported by BCM88750 can be run on it.
SDK-47224	643297	88030_A0	The incorrect port width was being used to calculate bit positions for OCM metadata table entry.
SDK-47226		56640_A0	Fixed OAM endpoint deletion failing after OAM group name modification.
SDK-47236		88650_A0 88650ACP_A0 88650_B0 88650_B1	PON: Fixed bcmVlanPortDoubleLookupEnable Port property. Once enabled, PON double lookup classification introduced. First lookup key is {PON-Port, Tunnel-ID, SVLAN, CVLAN}, Second lookup key is {PON-Port, Tunnel-ID, SVLAN}.
SDK-47237		88650_A0 88650_B0 88650_B1	Fixed: bcm_port_selective_get with BCM_PORT_ATTR_FRAME_MAX_MASK on ILKN ports fails. As a result: 1. bcm_port_selective_get with BCM_PORT_ATTR_ALL_MASK fails for ILKN ports. 2. bcm_petra_port_info_get fails for ILKN ports. 3. Enable linkscan for ILKN port fails. 4. PS command will fail when ILKN port is defined.
SDK-47248	608493	88030_A0	Fixed in 6.3.0 and TOT
SDK-47252	642876	All	Zeroed out private area at the end of phy_ctrl_t struct ( This private area of size=pc->size is maintained by the phy driver )
SDK-47253	568886	88030_A0 88025_A0	Removed invalid VID checks in bcm_l2_addr_delete_by_ APIs.
SDK-47261	642571	88030_A0	Not supported by hardware.
SDK-47262	645248	All	Fix bug in setting KNET interrupt disable mask for CMICE-based devices.
SDK-47263		88650_A0	VLAN: When calling bcm_vlan_port_add/get/remove and bcm_vlan_gport_get VLAN membership information might return wrong information when ports numbers are > 32. Fix included on clearing correctly ports array in arad_pp_llp_filter_ingress_vlan_membership_get_unsafe.
SDK-47274	641649	56334_B0 56334_A0 56132_B0 56132_A0	Fix port configuration fail on HiGig Lite port.
SDK-47286		All	Ensure that Linux KNET module can be safely unloaded with active interrupts on SMP systems.



**Table 74:**

<b>Number</b>	<b>CSP #</b>	<b>Chips</b>	<b>Release Notes For 6.3.1</b>
SDK-47350		56850_A0	Do not allow to bypass oversubscribe buffer if more than one port is configured in an OBM on BCM5685x_A0 and A1.
SDK-47365	647769	56850_A1	TSCMOD changes its design to support interop with TD+.
SDK-47370	643041	56640_A0 56641_A0 56642_A0 56643_A0 56644_A0 56645_A0 56648_A0 56640_A1 56643_A1 56644_A1 56640_B0 56644_B0 56643_B0 56648_B0 56649_B0 56649_A0	Fix field names for L2_ENTRY_2 memory.
SDK-47373	622583	88650_A0	The initialization (to zero) of the two dynamic memories in the MMU IDF and FDF is inserted. The absence of initialization was causing 1b/2b ECC errors during the first read access.
SDK-47384		56640_A0 56640_A1 56640_B0	After this fix, the entries with counter attached to it, can move across slices.
SDK-47388	620800	88650_A0 88650_B0 88650_B1	IPv4 Multicast entries encoding in ELK was defected in the calculation of important bits. Fixed.
SDK-47394	644395	88650_A0	VLAN: Added the support of matching priority tagged frames with bcmVlanPortDoubleLookupEnable set on a port.
SDK-47420	587404	All	Fix Linux kernel oops caused by calling printk with SPL lock held.
SDK-47429	620063	56850_A1	Added the feature set to support 8 meter pools for 56850
SDK-47434	640577	56640_A0 56440_A0	Fix for proper computation of meter granularity when committed rate is zero is provided.
SDK-47436	648381	56334_B0 56334_A0	Reverted code changes done in SDK-44254, which broke F2.8 Enduro UDF support.
SDK-47439		88650_A0	In Field Processor, the Counter action may have 2 sizes at ingress: - 16 bits when using it for Counter Processor - 22 bits when using it for the Statistic Report in billing mode. The cint_field_dir_ext_counter_inlif.c CINT is updated to support both modes.
SDK-47442	649144	88650_A0	In Arad, the egress counter header compensation is done with the bcmSwitchCounterAdjust switch control and not bcmSwitchCounterEgressAdjust as written previously.
SDK-47450	649166	56440_A0 56440_B0	Modified bcm_cosq_gport_delete to accept non zero modid.
SDK-47460		88660_A0	IP Tunnels: In BCM88660 we introduce the ability to counter/meter IP tunnel packets. In-LIF is now being updated for IP tunnel termination packets. See an example in : src/examples/dpp/cint_field_dir_ext_counter_inlif.c
SDK-47461		56850_A1	Print out error message if ALPM is enabled but ALPM code is not compiled in.
SDK-47471	642164	56440_A0 56440_A1 56440_B0	subscriber add stores EGR_NEXT_HOP or L3_INTERFACE index, the subscriber delete call checks the encaps_id if valid for stored EGR_NEXT_HOP or L3_INTERFACE for subscriber entry.



**Table 74:**

<b>Number</b>	<b>CSP #</b>	<b>Chips</b>	<b>Release Notes For 6.3.1</b>
SDK-47480	649548	56640_A0 56644_B0 56643_B0	Fixed warmboot system crash issue when <code>bcm_port_stat_enable_set()</code> API is used with MPLS VPWS port on BCM56640 type of devices.
SDK-47481	649799	56644_B0	At the ingress stage (IFP), the issue related to the recovery of FP group information during warm boot level 2 is fixed.
SDK-47485	653227	88650_A0 88650_B0 88650_B1	When disabling a port using <code>bcm_port_enable_set</code> , the API blocks traffic from entering the relevant queues at the EGQ and then waits for these queues to become empty. In case of high rate traffic towards the disabled port, compared to the configured port shaper rate, the EGQ isn't cleared within timeout. Fixed by increasing the timeout.
SDK-47492	650009	All	N/A
SDK-47504	643596	56440_A0	For assignment of egress queue using action = <code>bcmFieldActionFabricQueue</code> in API <code>bcm_field_action_add( int unit, bcm_field_entry_t entry, bcm_field_action_t action, uint32 param0, uint32 param1)</code> use param0 to pass ucast queue group/subscriber queue group cosq gport and param1 to pass the BCM_FABRIC_QUEUE_XXX flags and QoS profile index (qos map id). If (param1 == BCM_FABRIC_QUEUE_CUSTOMER) then it will set EH_TAG_TYPE=1 If (param1 = BCM_FABRIC_QUEUE_DEST_OFFSET   profile_index) i.e., If(param1 & BCM_FABRIC_QUEUE_CUSTOMER) then it will set EH_TAG_TYPE=2
SDK-47509	649460	56850_A1	Fixed the Gport API's for HSP ports.
SDK-47510	648141	88030_A0	Implement additional parameter checking for Taps LPM driver on bcm88030
SDK-47511		88650_A0 88650_B0 88650_B1	Fixed issue where <code>bcm_cosq_fc_path_get</code> with direction-generation returns wrong result.
SDK-47523	648942	56850_A0 56850_A1	Fixed configuration of PORT_INITIAL_COPY_COUNT_WIDTH register on BCM56850.
SDK-47560		All	After this fix, the newly added port in the existing trunk inherits the INNER_VLAN_RANGE properties of the existing ports in the trunk.
SDK-47568	638934	88650_A0	88650: ARAD uses Soc property 'port_init_speed_sfi' in order to configure initial fabric links rate. Loading the chip without soc property <code>port_init_speed_sfi!=0</code> wasn't functional. Fixed (the fabric links rate will be max rate).
SDK-47573	648718	88650_A0 88650_B0 88650_B1	Remove ELK interface from the EGQ calendars

**Table 74:**

<b>Number</b>	<b>CSP #</b>	<b>Chips</b>	<b>Release Notes For 6.3.1</b>
SDK-47582	633655	56334_B0 56334_A0 56150_A0	Fix Enduro, Hurricane2 bcm_field_data_qualifier_create() ) and bcm_field_data_qualifier_packet_format_add() API support.
SDK-47593		88650_A0 88650_B0 88650_B1	When using Counter processor to count VOQs, all the types of gport mapped to VOQs in the HW should be supported in bcm_cosq_gport_stat_get(). The ingress shaping are now also supported.
SDK-47601	650723	All	Fixed reference count for ECMP table.
SDK-47624	650405	56850_A0	bcm_vxlan_stat_detach() API now detaches both ingress counter and egress counter.
SDK-47626	650791	88030_A0	Route autocaching supported for multiple units
SDK-47627	638988	88650_A0 88650_B0 88650_B1	VLAN translation (bcm886xx_vlan_translate_mode=1) : 1. Added an example of settings Ingress vlan editing (IVE) action with TPID transparent. Example demonstrates how to configure IVE so that the TPID is transparent and only vlan-id is replaced. See reference example in cint_vlan_translation_new_mode.c main function: ive_translation_main 2. Added an example of settings Egress vlan editing (EVE) action with TPID transparent. Example demonstrates how to configure EVE so that the TPID is transparent and only vlan-id is replaced. See reference example in cint_vlan_translation_new_mode.c main function: eve_translation_main
SDK-47630	649094	88650_A0 88650_B0	VLAN translation (bcm886xx_vlan_translate_mode=1) new mode examples: 1. Added an example of settings Ingress Port default Ingress vlan editing (IVE) action. Action invoked when no lookup found in L2 ISEM database. See reference example in cint_vlan_translation_new_mode.c main function: ive_main_port_default_run 2. Added an example of settings Egress Port default Egress vlan editing (EVE) action. Action invoked when no lookup found in L2 ESEM database. See reference example in cint_vlan_translation_new_mode.c main function: eve_default_translation_main
SDK-47639		88650_A0	MAC-in-MAC: It is not possible for the user to control LIF-IDs of default MIM-L2-LIFs which are allocated in MIM_INIT. New SOC properties, "logical_port_mim_in/out", are supported to allow the user to control the default MIM-L2-LIF-IDs.
SDK-47654	650672	56850_A1 56850_A2	Support added for DF configuration for IPV6 using BCM_TUNNEL_INIT_IPV6_SET_DF
SDK-47661	650813	88650_A0	MACT dump: in MACT dump entry 130 was showed twice.
SDK-47664		88650_A0 88650_B0	L2CP bcm traps added: For drop or peer actions, create a trap with bcm_rx_trap_t bcmRxTrapL2cpPeer or bcmRxTrapL2cpDrop for DROP



**Table 74:**

<b>Number</b>	<b>CSP #</b>	<b>Chips</b>	<b>Release Notes For 6.3.1</b>
SDK-47681		88750_A0 88650_A0	<p>88650, 88750: RX LOS App - Waiting for a stable port.</p> <p>RX LOS application API will return when the requested port is stable (i.e. the port status do not requires RX resetting)</p> <p>The API will returned when a port move to a stable state or active stable state: *</p> <pre>rx_los_state_ideal_state * rx_los_state_no_signal * rx_los_state_no_signal_active</pre> <pre>int rx_los_port_stable(int unit, bcm_port_t port,int timeout_usec, rx_los_state_t *state);</pre> <p>timeout_usec defines the max time the API will wait for the port RX LOS state to change to stable.</p> <p>state is the specific stable state (mentioned above), if the port is not monitored by RX LOS application the returned state value will be</p> <pre>rx_los_states_count.</pre>
SDK-47708	631536	88650_A0 88650_B0 88650_B1	<p>MAC-in-MAC: add option to create MIM gport with dummy protection, and later update the gport with actual protection. seugnce example:</p> <pre>examplesdppoint_mim_mp.c: mim_port_with_reserved_protection</pre>
SDK-47712	651282	56850_A0	<p>1. API bcm_ipmc_add() should have BCM_IPMC_POST_LOOKUP_RPF_CHECK flag set 2. API bcm_ipmc_add() is called with, bcm_ipmc_addr_t.l3a_intf =&lt; EXPECTED_L3_IIF&gt; 3. Default action for packets not matching EXPECTED_L3_IIF --&gt; 'packet drop and copy to CPU'.</p>
SDK-47719		56640_A1 56850_A1	Modid retrieval corrected.
SDK-47747 SDK-29527 SDK-30977	653228	All	Ensure QoS mapping takes effect when bcm_qos_port_vlan_map_set() is called
SDK-47761	653323	88650_A0	<p>MIM: Added the support of having on the same port MIM packets and Single-tag P2P services. In previous versions, when port is MIM (i.e. when calling bcm_port_control_set bcmPortControlMacInMac) all packets with no I-TPID were discarded. Now, in order to mimic this logic, call bcm_port_discard_set with BCM_PORT_DISCARD_TAG</p>
SDK-47766	651289	88650_A0	<p>MIM: TPID changes were not handled correctly. Validated TPID changes for MIM and EVE</p>
SDK-47776	653504	56640_B0 56643_B0	removed the constraint for the switch from 40G to 1G
SDK-47784		88650_A0 88650_B0 88650_B1	Fixed: Driver initialization fail with SOC property fc_oob_type=1 due to register size mismatch.
SDK-47792		56846_A0 56845_B0 56845_A2 56844_A0 56842_A0 56840_A0 56843_B0 56841_A3 56846_A1 56841_B0	Added support for MMU_IPMC_GROUP_TBLs / MMU_IPMC_VLAN_TBL mems SER correction.

**Table 74:**

<b>Number</b>	<b>CSP #</b>	<b>Chips</b>	<b>Release Notes For 6.3.1</b>
SDK-47796	653773	88750_A0 88650_A0 88750_B0 88650_B0 88650_B1	Eyescan: Error message was added when the sample time is bigger than time upper bound (default value: 256000).
SDK-47807	653522	56620_B0	Added conflicts for PrioPktAndIntNew when PrioIntNew is already added for stage ingress and stage external
SDK-47813	654097	88030_A0	fix assert in taps driver insert route error handling code for bcm88030 device
SDK-47817	654102	88030_A0	fix taps driver command pool leak issue for bcm88030 device
SDK-47832	654476	88650_B1	In Field Processor, the qualifiers bcmFieldQualifyOutPort and bcmFieldQualifyOutPorts can be used to preselect according to outgoing port(s). A bug was inserted where the internal configuration of these qualifiers for preselectors was failing. This bug is fixed.
SDK-47833		All	The Linux KNET uk-proxy support is now turned off (compiled out) by default. For best performance, the recommended user/kernel communication path for KNET is native IOCTL, which requires that an associated device file is created: mknod /dev/linux-bcm-knet c 122 0
SDK-47834	643585	All	Added the ability to have IP tunnels and VXLAN on the same device.
SDK-47837		All	VIRTUAL_PORT_ENF is been validated on all supported silicon
SDK-47843		All	Added information about new port control in document.
SDK-47856	653182	56850_A0 56850_A1 56850_A2	Functionality for IFP NAT action 'bcmFieldActionNatEgressOverride' is added. Warmboot support for the actions bcmFieldActionNatCancel, bcmFieldActionNat and bcmFieldActionNatEgressOverride are also added.
SDK-47896	650788	All	Fixed bcm_xgs3_tunnel_initiator_set() when a mix of IPV4 and IPV6 entries are added.
SDK-47902		88650_A0 88650ACP_A0 88650_B0	Advanced VLAN edit mode was introduced under the new SOC property bcm886xx_vlan_translate_mode, with new dedicated BCM APIs. The new mode is aimed to enable user enhanced utilization and flexibility of the HW VLAN edit capabilities. In the Advanced mode, all the entries in the HW VLAN edit action table are available for user configuration as well as freedom to associate an action with any combination of up to 16 user defined tag formats that are TPID based, and up to 8 user defined VLAN edit profiles. For CINT usage examples please refer to cint_vlan_translation_new_mode.c



Table 74:

Number	CSP #	Chips	Release Notes For 6.3.1
SDK-47903		88650_A0 88650_B0 88650_B1	Advanced VLAN edit mode was introduced under the new SOC property <code>bcm886xx_vlan_translate_mode</code> , with new dedicated BCM APIs. The new mode is aimed to enable user enhanced utilization and flexibility of the HW VLAN edit capabilities. In the Advanced mode, all the entries in the HW VLAN edit action table are available for user configuration as well as freedom to associate an action with any combination of up to 16 user defined tag formats that are TPID based, and up to 8 user defined VLAN edit profiles. For CINT usage examples please refer to <code>cint_vlan_translation_new_mode.c</code>
SDK-47913	660352	56640_A1 56850_A1	Updated with the correct sequence of init during Warm boot.
SDK-47923	644598	88030_A0	fix taps driver memory leak issue for bcm88030 device
SDK-47947	660194	All	Support of down-MEP/MIP trapping of CFM frames inside a MiM service. To enable MIM configure soc property <code>custom_feature_oam_mim = 1</code> .
SDK-47965		88650_A0	When dumping debug signals, all signals were shown as zeros
SDK-47966		88650_A0 88650_B0 88650_B1	VLAN: Fixed an error that happened when creating new vlan ports - their vsi was not saved in the software database. Therefore, when deleting them, their egress ac port vsi info was not cleared.  The vsi is now saved, and cleaned properly.
SDK-47971	652191	88650_A0 88650_B0 88650_B1	Fix incorrect interpretation of gport handles by <code>bcm_cosq_gport_sched_set()</code> , when used to configure ingress scheduler weights. When configuring ingress shaper weights, the matching between the GPORT types to actual field in the device was incorrect. Note: this change will cause a different behavior under existing application!!! The weight effected by each gport type changed.
SDK-47984	638594	56640_A0	Prevent Seg Fault(Div by 0) when calculating the default burst size.
SDK-47987		88650_A0	In Field Processor, the BCM TCAM entry IDs were spanning from 0 to 64K. The Direct Extraction entry Ids were over 64K. Due to the implementation of ACLs over external TCAM (KBP), the number of TCAM entry IDs is increased to 1M. The Direct Extraction entry Ids start over 1M. A modification in an application which is managing the entry id (when creating entries with specific IDs) may be needed.



Table 74:

Number	CSP #	Chips	Release Notes For 6.3.1
SDK-47994		88650_A0	<p>The Ethernet policer is a mechanism that filters Ethernet packets based on ports and Ethernet type. Ethernet policers allow a certain configured rate of packets to pass. There are two modes for the rate - bit mode (where the rate is specified in kbit/s) and packet mode (where the rate is specified in packets per second).</p> <p>Using the <code>bcm_rate_bandwidth_set</code> function, the rate can be set. This API usually treats the rate in kbit/s, but if the <code>BCM_RATE_PACKET_MODE</code> flag is specified, then the rate is in packets per second.</p> <p>Due to an internal bug, in packet mode, the configured rate used for a meter was actually double of the expected rate. This is fixed.</p> <p>To work around this problem without the fix, specify half the rate for the Ethernet policer to get the expected rate.</p>
SDK-47996	648261	88030_A0	The model now supports arbitrary user defined TMU tables.
SDK-47999	660575	88030_A0	Added counter support in the simulator.
SDK-48000	660580	88030_A0	If PPE and/or PED data debugging verbosity is enabled, the MDE now shows: PPE header dump PED in header dump PED out (reassembled) header dump.
SDK-48001	660600	88030_A0	Skipped instructions (both for software simulator and hardware environment) are marked by colour and special marker (in style which is similar to breakpoints markers). See also JIRAs 44235 and 40773.
SDK-48008	661383	56850_A0	Fix dynamic load balancing on BCM5685x.
SDK-48012	661373	54682E_A1 54685	Removed the extraneous reset after running cable diags in 65nm GPHY devices. Reset and restore the port settings if link was broken in 65nm GPHY devices while running cable diags.
SDK-48027		88650_B1	Programmable editor: On some cases stacking program was not consistent and resolved in corrupt functionality. This issue has been fixed.
SDK-48066	662330	56640_A0 56641_A0 56642_A0 56643_A0 56644_A0 56645_A0 56648_A0 56640_A1 56643_A1 56644_A1 56640_B0 56644_B0 56643_B0 56648_B0 56649_B0 56649_A0	<code>bcm_vlan_port_default_action_set</code> ( ) API should now set the user supplied inner vlan priority to the BCM56640 type switch devices
SDK-48069	661399	88650_B1	<p>Background: <code>bcm_oam_endpoint_action_set</code> api allows changing the trap destination of OAM packets.</p> <p>Bug: If <code>action_set</code> is called twice with the same destination, the trap code will be deleted and no more packets will be trapped to this destination.</p>

**Table 74:**

<b>Number</b>	<b>CSP #</b>	<b>Chips</b>	<b>Release Notes For 6.3.1</b>
SDK-48080		56640_A0 56641_A0 56642_A0 56643_A0 56644_A0 56645_A0 56648_A0 56640_A1 56643_A1 56644_A1 56640_B0 56644_B0 56643_B0 56648_B0 56649_B0 56649_A0	Fixed packet corruption issues by adjusting the dma buffer size.
SDK-48086	604702	All	Add lock to synchronize <code>interrupt_disconnect</code> with interrupt handler in Linux user mode.
SDK-48117	662857	88030_A0	To enable locking on the TMU for multithreaded applications add the following to <code>Make.local</code> : <code>CFGFLAGS += BCM_SOC_TMU_USE_LOCKS</code>
SDK-48122	662582	88030_A0	add 2133 DDR support for bcm88030 device
SDK-48123	662902	56440_A0	User can set the exp and ttl values in the MPLS outer label by setting the <code>egress_label.exp</code> and <code>egress_label.ttl</code> values in <code>bcm_bfd_endpoint_info_t</code> .
SDK-48127	401812	All	Assign POSIX thread names in Linux user mode if supported by the operating system.
SDK-48129	660820	56640_A1	Endpoint index was not getting populated correctly in OAM callbacks. Added mapping for Remote endpoint H/w index to logical index.
SDK-48145	663550	All	Add API details in document.
SDK-48147	663680	56850_A1	(SDK-46806) tracks support for Oversub Flex port.
SDK-48152	634262	88650_B1	MAC-in-MAC: Tunnel termination programs were loaded even if MIM was not supported in SOC properties. Fix includes loading of MIM related TT programs according to SOC property <code>bcm886xx_auxiliary_table_mode</code> value (indicated MIM support).
SDK-48155		88650_A0 88650_B0 88650_B1	Predefined credit resolution profiles were not configured properly, and this was fixed. Some of the user defined profiles that contain thresholds with absolute values above 28*1024, may also have been misconfigured. This bug was fixed. Some of the thresholds of the <code>BCM_COSQ_DELAY_TOLERANCE_200G_LOW_DELAY</code> profile were changed to be in the range that the hardware supports. These profiles changed to work with the correct credit resolution: <code>BCM_COSQ_DELAY_TOLERANCE_1G</code> : Delay tolerance adjusted for 1Gb ports <code>BCM_COSQ_DELAY_TOLERANCE_10G_LOW_DELAY</code> : Delay tolerance adjusted for low delay 10Gb ports <code>BCM_COSQ_DELAY_TOLERANCE_40G_LOW_DELAY</code> : Delay tolerance adjusted for low delay 40Gb ports <code>BCM_COSQ_DELAY_TOLERANCE_100G_SLOW_ENABLED</code> : Delay tolerance adjusted for slow enabled 100Gb ports <code>BCM_COSQ_DELAY_TOLERANCE_200G_SLOW_ENABLED</code> : Delay tolerance adjusted for slow enabled 200Gb ports
SDK-48180	663907	88030_A0	Support 1.1Ghz LRP clock for bcm88030 device

**Table 74:**

<b>Number</b>	<b>CSP #</b>	<b>Chips</b>	<b>Release Notes For 6.3.1</b>
SDK-48182	650104	All	All modes now default to setting <code>HDR_XLATE_T_ENABLE</code> to TRUE on BCM8823X devices
SDK-48185	630458	56840_A0	Fixed Trill stat clear issue
SDK-48197	663864	88030_A0	Removed <code>#ifdef</code> that was only including some code when compiled with QE2000 support.
SDK-48237		88650_A0	When changing learning mode from <code>BCM_L2_EGRESS_INDEPENDENT</code> to <code>BCM_L2_INGRESS_CENT</code> , driver had transitioned via an intermediate state that enabled learning incorrect MAC addresses.
SDK-48252	665219	All	Update GPL modules license to Broadcom dual GPL/Proprietary license.
SDK-48259	640482	88650_A0 88650_B0 88650_B1	VPLS: When packet is PWE terminated and next header is Ethernet. In case inner DA ethernet header is 00:00:07:xx:xx:xx then packet won't be terminated by mistake. Fix include changing MPLS ELI (Reserved label 7) program selection to be more restrictive
SDK-48261	654482	88650_A0 88650_B0 88650_B1	The longest prefix match has the highest priority for ip subnet VLAN assignment.
SDK-48262	665967	56150_A0	Implemented SMBUS Block Read / Write Functions.
SDK-48268	666152	56850_A0 56850_A1	Fix mirrored packets destined for remote MTP problem on BCM5685x
SDK-48286	665552	56850_A0	Added <code>iif_profile</code> update functionality in <code>_bcm_l3_iif_profile_add()</code> Before new <code>iif_profile</code> add, code <code>(_bcm_l3_iif_profile_entry_update())</code> will search for existing <code>iif_profile</code> and if <code>iif_profile</code> exist, entry will be updated otherwise new <code>iif_profile</code> entry will be added
SDK-48307		84848_A0	Enabled the <code>HW_FR_EMI_MODE</code> and <code>EMI_MODE</code> after running pair swaps at initialization in BCM8483X/BCM8484X.
SDK-48319		88650_A0	VPLS QOS: Provided a full example of VPLS QOS application. CINT set mapping between PCP <-> EXP. On the case of PWE termination, set EXP to PCP. On the case of PWE encapsulation, set PCP to EXP. Please find the example in: <code>src/examples/dpp/cint_qos_vpls.c</code>
SDK-48326	616118	88650_A0 88650_B0 88650_B1	MACT traverse: calling SOC diag API <code>soc_ppd_frwrdd_mact_traverse</code> returned incorrect number of matched entries.
SDK-48347		All	RPC client-only applications not calling <code>soc_cm_init()</code> would segfault in <code>bcm_attach()</code> with <code>BCM_CONTROL_API_TRACKING</code> enabled.
SDK-48393	665225	88650_A0	For the hardware flush is very-very fast, so the current code just poll the <code>REPLY_FIFO_ENTRY_COUNT</code> until it is full and then stop the flush and read the entry from the REPLY FIFO, but this code only will be run on <code>block_range-&gt;entries_to_act == 130</code> , so change the code to set the <code>entries_to_act = 130</code> .

**Table 74:**

<b>Number</b>	<b>CSP #</b>	<b>Chips</b>	<b>Release Notes For 6.3.1</b>
SDK-48395	664224	88650_A0 88650_B0 88650_B1	For the following types: bcmCosqGportTypeGlobalFmqRoot, bcmCosqGportTypeGlobalFmqGuaranteed and bcmCosqGportTypeGlobalFmqBestEffortAggregate, the bandwidth resolution (using bcm_cosq_gport_bandwidth_set API) was 8*credit_size. The API fixed and the resolution is now 1*credit_size.
SDK-48490		88650_A0	MPLS ELI: Introduced new soc property to enable / disable ELI VTT programs. In case user does not use ELI (Entropy Label Indicator) then he can disable the feature by setting SOC property: mpls_entropy_label_indicator_ena ble.
SDK-48532	669895	56850_A0	Mode Mask updated for IPV6 entries
SDK-48542		88650_A0	VLAN_PORT: When deleting remote VLAN_PORT and then creating it again an error might happen. Fixed issue by clearing correctly a remote VLAN_PORT when calling bcm_vlan_port_destroy.
SDK-48553	670263	56850_A0 56850_A1 56850_A2	Resolve L2 address notifications do not contain VPN ID in the VLAN field for addresses, learned on VXLAN ports
SDK-48556	651240	88650_A0	VLAN: Fixed a case where bcm_vlan_gport_get received port x VLAN that mapped to P2P service. In order to retrieve VLAN only information call bcm_vlan_gport_info_get with flags=0 and vlan. In order to retrieve VSI only information call bcm_vlan_gport_info_get with flags = BCM_VLAN_GPORT_ADD_SERVICE and vsi.
SDK-48557	669206	88650_B1	VLAN translation (bcm886xx_vlan_translate_mode=1) : New mode allows to set different VLAN editing for priority tagged packets using API bcm_port_tpid_class_set(). See reference example in cint_vlan_translation_new_mode.c
SDK-48641	669208	88650_A0	VLAN translation (bcm886xx_vlan_translate_mode=1) : Added a Cint example of configuration that sets different priority packets handling on different in- ports. Configuration is done in LLVP using the API bcm_port_tpid_class_set(). See reference example in cint_vlan_translation_new_mode.c main function: ive_priority_tags_main()
SDK-48714		All	Added Coverity killpath annotation to _sal_assert()
SDK-48791	673145	56846_A0 56640_A0 56850_A0	TR3/TD/TD2 - Packet based WRED counting is not supported. Only Byte based discard supported. Use of flag BCM_COSQ_DISCARD_BYTES is required for above devices
SDK-48892	652937	56850_A0	Fixed HSP port attach for Y pipe based ports.
SDK-49630		56850_A0 56850_A1 56850_A2	Fixed to retain the valid actions when unwanted action is removed

*Table 74:*

<i>Number</i>	<i>CSP #</i>	<i>Chips</i>	<i>Release Notes For 6.3.1</i>
SDK-49878	688698	88030_A0	Queue allocation can be driven from the config file. Queue parameters can also be set from the config file
SDK-50118	690082	56850_A1	BST thread exit code added.

## Section 13: Resolved Issues for 6.3.0

The following issues are resolved in version 6.3.0 of the SDK.

Table 75:

Number	CSP #	Chips	Release Notes For 6.3.0
SDK-25090		All	Updated <code>bcm_field_entry_remove()</code> API to check entry installed status before performing remove from hardware operation.
SDK-28441		All	Updated field group documentation for <code>bcm_field_group_create()</code> API, priority input parameter restrictions.
SDK-30761		88230_B0 88230_A0	FIC mode no longer generates bitmap entries for requeue ports.
SDK-32674		56334_B0	Fixed the reference count of VLAN range profiles when creating, updating, or deleting VLAN range translation on a trunk group.
SDK-32951		56634_A0 56624_B0	Fixed ESM hardware counter mode to software STAT type bitmap translation routines for Triumph and Triumph2 devices.
SDK-34493	424317	All	Resolved removing FP mirror actions mirrors unwanted packets to <code>modport(0,0)</code> , i.e CPU in case of single chip unit, for a short while issue.
SDK-36480		88650_A0 88640_A0	Added support for System Red in BCM SDK. For more details please reference System RED section in UM.
SDK-37680		All	The default value of the configuration property <code>trunk_extend</code> has been changed from 0 to 1, since the devices that do not support extended trunk mode are no longer supported in the SDK.
SDK-38133		All	When adding more than 256 FQ scheduling elements, the driver will start using already allocated FQs. Fixed by changing the order of execution so the <code>pool_base</code> and <code>pool_offset</code> will be calculated correctly. After this change, using more than 256 FQs will not use already allocated FQs.
SDK-38185		All	<code>bcm_field_data_packet_format_t_init()</code> API initializes input parameter structure in a backwards-compatible manner.
SDK-38826	442465	88025_A0	Added to 5.0.0-exa branch
SDK-38960		All	<code>topo_board_program()</code> was calling <code>_topo_stk_ports_update()</code> twice.
SDK-40250		88750_A0	Added new diagnostics: * Bcm shell cmd 'diag link clear' * Diagnostics for fifos thresholds
SDK-40304		56845_B0 56725_A0 56720_A0 56700_A0 56685_B0 56680_A1 56639_A0 56538_B0 56841_A3 56841_B0 56526_B0	Fixed <code>bcm_trunk_failover_get</code> API to return correct Higi trunk failover ports.

Table 75:

Number	CSP #	Chips	Release Notes For 6.3.0
SDK-40893		88650_A0 88640_A0	88650: Mac-in-Mac packets that arrive at egress with B-tag, are not recognized as tagged packets. Fixed the miss-configuration of Mac-in-Mac TPID profile, to allow Mac-in-Mac packets with B-tag, to be recognized as tagged packets in egress.
SDK-41286		88650_A0	The packet trap print has been adjusted to routing for ARAD. The VRF field was added and the fields in_ac & rif are assigned depending only when relevant.
SDK-41307		88650_A0	Add new SOC property for padding runt packets. The property is per port, it's available for NIF ports (except ILKN).  Property name: packet_padding_size Values range:0-127 Default:0 - means disable padding
SDK-41357	469082	All	6.2.2 release has SER correction implementation from HEAD already. The more recent fixes for mems implemented as regs and SER will be ported to the 6.2.x branch in the future.
SDK-41581		All	Removed unused STATIC routines from the ~bcm/field.c file: 1. _field_qual_stage_name() 2. _field_qual_IpType_name()
SDK-41865		88650_A0	Stop counter processor on TR 6. Note: the counter processor should be manually activated after running TR 6.
SDK-41870		88640_A0	In PetraB, when configuring the port header type to be TDM_RAW, the user must set the static destination of each source TM-Port. The encoding translation of this destination was not correct.
SDK-41989		88650_A0	L2GRE IP: IP tunnel termination can be done by one lookup of <SIP,DIP> or two separated lookups of <DIP>, <SIP> this can be control by soc-property bcm886xx_ip4_tunnel_termination_mode.
SDK-42018	563672	88640_A0	"phy info" command is not supported by Petra-B. Fix the current command to return failure in case of Petra-B.
SDK-42124		88650_A0	Background: RX packets parsing would fail if rx port_header_type_out is not CPU. Fix: Port is now checked for having CPU header type. Otherwise parsing is skipped.
SDK-42159		56440_A0 56440_A1	Add TCAM SER protection support for KT. Clear TCAM mems at init time.
SDK-42685		88650_A0	88650: traffic fails when changing port configuration dynamically from 100G to 10G.

**Table 75:**

<b>Number</b>	<b>CSP #</b>	<b>Chips</b>	<b>Release Notes For 6.3.0</b>
SDK-42777		88640_A0	Implement outbound mirror for Petra-B based on port or port-vlan. Note: outbound mirror in Petra-B allocate only one mirror profile per port. The Petra-B mirror can support two mirror modes. Use <code>bcm_mirror_mode_set/get</code> to set mirror mode. If the mode equals to 0, then device supports only Inbound mirroring using <code>bcm_mirror_port_set</code> API. else, device support both inbound and outbound mirroring using <code>bcm_mirror_destination_create</code> API. Default mode was changed and it is set to 1 ( <code>bcm_mirror_destination_create</code> ). Basic sequence to support mirror in Petra-B will be as below: 1. <code>bcm_mirror_destination_create</code> to create the inbound or outbound mirror profile. 2. <code>bcm_mirror_port_vlan_destination_add</code> or <code>bcm_mirror_port_destination_add</code> to attach the mirror profile to inbound mirror port or outbound mirror port. 3. <code>bcm_mirror_port_vlan_destination_destroy</code> or <code>bcm_mirror_port_destination_destroy</code> to dis-attach the mirror profile to inbound mirror port or outbound mirror port.
SDK-42855	575758	88640_A0	Minor fix, no functional change. Fixed tables database issue with <code>pcb_link_tbl</code> attributes being overwritten. Both <code>irr.rsq_fifo_tbl</code> and <code>pcb_link_tbl</code> databases are configured correctly. These tables are not accessed by the driver, and therefore the bug did not have any functional impact
SDK-42866		56340_A0	Using misc init from TR3 thereby enabling memscan.
SDK-42907		88750_A0	Added missing counters in DCM.
SDK-42933		88650_A0	A new TM application allows TM packets to go through two rounds (via recycle port), where the packet format consists in a double-ITMH-Tag. This application requires a specific microcode at egress editor, and is set per port at init via <code>tm_port_otmh_outlif_ext_mode_&lt;port-id&gt;=DOUBLE_TAG</code>
SDK-43023	577999	88650_A0	The IVE size in the FHEI for IVEC-IDs that are associated with IVE Profiles 0 & 1 was changed to 0 & 3B respectively (instead of 5B).
SDK-43024	581020	All	Add support for <code>bcm_port_queues_count_get</code> API on BCM5684x.
SDK-43139	575201	All	PetraB port names were changed to "prefix, local port num" (now port names are xe1, xe2 .. and not xe0, xe1..)
SDK-43175	580345	56640_A0 56641_A0 56642_A0 56643_A0 56644_A0 56645_A0 56648_A0 56640_A1 56643_A1 56644_A1 56640_B0 56644_B0 56643_B0 56648_B0 56649_B0 56649_A0	<code>bcm_mpls_port_stat_counter_get()</code> API instead of <code>bcm_mpls_label_stat_counter_get()</code> API should be used to retrieve counters associated with the MPLS gport.
SDK-43299	584719	56334_A0	Remove unnecessary checking when setting <code>bcm_rate_mcast_set()</code> .



**Table 75:**

<b>Number</b>	<b>CSP #</b>	<b>Chips</b>	<b>Release Notes For 6.3.0</b>
SDK-43300		88650_A0 88650_B0 88650_B1	88650: turn off WC4 in case not in use for power consumption efficiency (previously: was always on in case of ILKN0 with more than 12 lanes).
SDK-43354	567520	88650_A0	Fixed info get for COSQ VOQs that were created using TM_FLOW_ID flag.
SDK-43404		88650_A0	Added support for APIs: bcm_port_match_add/delete/set/replace in order to have multiple match criteria. Sequence is to create first vlan port by calling bcm_vlan_port_create then call bcm_port_match_* APIs with Ingress only or egress only flags and specify the additional match lookups required for the same Logical interface. Supported APIs: bcm_port_match_add/delete/replace/set. Limitation: User can't remove / replace the original match that was specified by bcm_vlan_port_create. In order to remove it call bcm_vlan_port_destroy. Note: Logical interface with multiple match criteria learn information should be disabled.
SDK-43500	587499	56440_A0 56445_A0 56440_A1 56445_A1 56444_A1 56445_B0 56440_B0	Resolving this JIRA as the customer case is resolved
SDK-43522	589162	88230_C0	Fixed bug in parity_enable support.
SDK-43572	583285	88650_A0	A new cosq control type bcmCosqControlMulticastPriorityIngressScheduling was added to map ITMH->TC to HP-MC and LP-MC. The new control will be called from bcm_cosq_control_set API. Where cosq is the traffic class to be mapped is the traffic class to be mapped, a and arg is the priority the traffic class is mapped to: BCM_COSQ_HIGH_PRIORITY or BCM_COSQ_LOW_PRIORITY. bcm_petra_cosq_control_set(int unit, bcm_gport_t port, bcm_cos_queue_t cosq, bcm_cosq_control_t type, int arg) Where: Port=0 Cosq=TC Type=bcmCosqControlMulticastPriorityIngressScheduling Arg=BCM_COSQ_HIGH_PRIORITY / BCM_COSQ_LOW_PRIORITY
SDK-43574		88650_A0 88650_B0 88650_B1	BCM diag commands: "diag pp Ing Vlan Edit info" and "diag pp PKT_associated_TM_info" where updated to Arad settings. For the latter command, new TM info fields were added: ETH_METER_PTR, INGRESS_SHAPING_DEST, ETH_ENCAPSULATION, ETH_DA_TYPE, ST_VSQ, LAG_LB_KEY & IGNORE_CP.

**Table 75:**

<b>Number</b>	<b>CSP #</b>	<b>Chips</b>	<b>Release Notes For 6.3.0</b>
SDK-43589	589004	88650_A0	Added support for multicast id offset, Please use SOC property <code>multicast_id_offset</code> as such: <code>multicast_id_offset_&lt;port-id&gt;.BCM88650=&lt;offset&gt;</code> For example <code>multicast_id_offset_2.BCM88650=10000</code> Or <code>multicast_id_offset_rcy.BCM88650=10000</code> Etc... So, if a multicast packet will be received through <code>&lt;port-id&gt;</code> its multicast-id will be changed to <code>&lt;offset+multicast-id&gt;</code> This fix is relevant for Arad only.
SDK-43599		All	gcc 4.7.2 compilation support.
SDK-43604		All	fix gcc 4.7.1 warnings(unused-but-set-variable).
SDK-43605		All	fix gcc 4.7.1 warnings(unused-but-set-variable).
SDK-43606		All	fix gcc 4.7.1 warnings(unused-but-set-variable).
SDK-43607		All	fix gcc 4.7.1 warnings(unused-but-set-variable).
SDK-43608		88650_A0	BFD API enhancements: 1) Flag in <code>endpoint_info</code> <code>BCM_BFD_ENDPOINT_IN_HW</code> , to indicate whether the endpoint is handled in HW or not. 2) Timeout events: <code>bcmBDFEventEndpointRemote</code> , <code>bcmBDFEventEndpointRemoteUp</code> flags. 3) <code>bcm_bfd_endpoint_t.remote_gport</code> field - remote destination of BFD packets.
SDK-43612		All	fix gcc 4.7.1 warnings(unused-but-set-variable).
SDK-43613		All	fix gcc 4.7.1 warnings(unused-but-set-variable).
SDK-43614		All	fix gcc 4.7.1 warnings(unused-but-set-variable).
SDK-43616		All	fix gcc 4.7.1 warnings(unused-but-set-variable).
SDK-43617		All	fix gcc 4.7.1 warnings(unused-but-set-variable).
SDK-43618		All	fix gcc 4.7.1 warnings(unused-but-set-variable).
SDK-43619	589674	88650_A0	88650: fixed "show patches" bcm shell command (was missing on 6.2.1-hotfix1)
SDK-43623 SDK-44728	586564	56850_A0	LED support is added for TD2. 'led init' in sdk will work as long as the physical - logical port mapping is sorted. random mapping between physical and logical port will require <code>CMIC_REMAP</code> registers to be programmed through a soc script.
SDK-43631	590287	88650_A0	88650: BCM Diagnostics Shell command "diag cosq non_empty_queues" doesn't work for FMQs, In case of non-empty FMQs with SOC property <code>voq_mapping_mode=DIRECT</code> , the diagnostics reports errors for FMQs, but still prints correct information for VoQs.
SDK-43706	591471	56850_A0 56855_A0 56854_B0 56854_A0 56850_A1	Fixed incorrect routing behavior due to flag bit overloading.
SDK-43713	589448	88650_A0	The OTMH formats were not correct in case of <code>IF_MC_OTMH-CUD-Extension</code> mode: in this case, the extension is from now on added only for Multicast packets, according to the latest CUD known on the egress pipe (similarly to the ALWAYS mode)
SDK-43716	591808	56440_A0	The stat value for GT16383 and GR 16383 can be read from API <code>bcm_stat_get</code>
SDK-43740	592383	88650_A0	DNX: Fixed help text for "dump" command



**Table 75:**

<b>Number</b>	<b>CSP #</b>	<b>Chips</b>	<b>Release Notes For 6.3.0</b>
SDK-43770		88650_A0	Added CGM Counters to BCM shell diagnostics diag counters graphical diag counters packet_flow
SDK-43807		88650_A0	BCM88650: "diag retransmit" command added. when called, presents relevant retransmit parameters for ILKN0 and ILKN1.
SDK-43837		88650_B0	Vxlan: in encapsulated packet IP protocol was set to GRE instead of UDP
SDK-43872		88650_A0	The BCM Meter Action (bcmFieldActionPolicerLevel*) was changing both Meter-Pointer0/1 and the DP-Meter-Command. A double HW action is impossible when using the TM & FP functionality. Besides, the DP-Meter-Command has a dedicated BCM action (bcmFieldActionUsePolicerResult), and the default value (0) is the value changing both at ingress and egress. Thus the DP-Meter-Command HW action is not needed and removed from the meter actions.
SDK-43883		88650_A0 88650_B0 88650_B1	Added support for EVB application. Please see more information in the CINT example src/examples/dpp/cint_evb_example.c
SDK-43921		88650_B0	In the Counter processor, in Arad-B0, different packet statistics can be set with 1 counter per Counter processor line (i.e. per Counter-ID): FWD, DROP, and ALL. In case the user sets one of them, but requires the counters of another (e.g., he sets DROP and requires the FWD counters), the Driver should fail instead of returning the counter of DROP.
SDK-43949		88650_A0	Support a new feature - Ring Protection Fast Flush. CINT example - cint_l2_fast_flush.c
SDK-43956	595868	All	WC B0: KR2(brcm) link does not resolve in SDK branches after SDK_6_2_0_EA2
SDK-43957		88650_A0 88650_B0	The egress does not terminate large headers correctly. Thus, a walk-around (WA) is built to terminate headers at ingress FP stage when the Forwarding-Header is too far (more than 32 Bytes). The WA removes up to the 14 Bytes after the Ethernet header location.
SDK-43977	595227	56850_A0	Fixed inaccuracy in shaper programming on TD2
SDK-43986		56640_A0 56640_A1 56640_B0	Added diag shell support for field action set. Supported options are Add/Delete/Clear/Show.
SDK-43992	581119	All	Fixed.
SDK-43993	583971	88030_A0	TPID getting/setting now supported
SDK-43994	560768	88030_A0	OCM table access methods will now work correctly for entries that are not 32bit aligned.
SDK-43996		56640_A0 56641_A0 56642_A0 56643_A0 56644_A0 56645_A0 56648_A0 56640_A1 56643_A1 56644_A1 56640_B0 56644_B0 56643_B0 56648_B0 56649_B0 56649_A0	In RCPU scenario, to redirect incoming packet from CMIC to a specific port in the same unit, we have to configure prepare DCB and that DCB information should be configured in CMIC_PKT_RMhX CMIC registers. On earlier chips, to redirect a packet (SOBMH) from CMIC to a specific port, configuring that port information in DCB would be sufficient, but on latest devices where we can configure cosq's flexibly, we have to specify the cosq number in DCB. Otherwise all redirected packets will go to 0th cosq.  This patch configures the cosq number of the egress port in dcb, so that CMIC will inject SOBMH packets to that cosq.
SDK-44001	571844	88650_A0	88650, 88750: Add show temp-PVT command to help message

**Table 75:**

<b>Number</b>	<b>CSP #</b>	<b>Chips</b>	<b>Release Notes For 6.3.0</b>
SDK-44004		56850_A0 56850_A1 56850_A2	Failover feature on front panel lag is now enabled.
SDK-44010	597002	All	fixed the bug in the port enable function for QSGMII core
SDK-44016		88650_A0 88650_B0 88650_B1	Outbound mirror functionality is now working correctly.
SDK-44021		88650_A0 88640_A0 88650_B0 88650_B1	VSQ discard set and color size set should not take into account VSQ Global - added type checking
SDK-44022		88650_A0 88650_B0 88650_B1	Set VSQs rate class default values for Tail Drop to be maximum as defined by hardware.
SDK-44027	594874	88650_A0	In case ARAD port is in XGS-MAC-EXT mode, PP port is derived according to FRC.Source-Port[7:0]. It is user responsible to configure system ports in ARAD to be as follows: [XGS.Modid][ARAD.LocalPort]. Example: In case ARAD local port 41 is faced to XGS Modid 1 then ARAD system port is 297.
SDK-44036		88650_A0	The ITMH Destination has different modes. The modes where the Destination Extensions are used, are setting the Destination incorrectly - mainly the Out-LIF mode and the Ingress Shaping mode.
SDK-44038	597121	88650_A0 88650_B0 88650_B1	<code>bcm_mpls_tunnel_switch_create()</code> with the <code>BCM_MPLS_SWITCH_ACTION_POP</code> action now returns the <code>tunnel_id</code> created.  In addition, it can be called with <code>tunnel_id != 0</code> and <code>flags = 0x02000000</code> (temporary, a flag <code>BCM_MPLS_SWITCH_REPLACE</code> will be added to API) to update existing switch.
SDK-44045		88650_A0	The Counter Processor uses the DMA FIFO mechanism to collect the counters from HW. In HW, the counters of the Counter Processors are buffered in a FIFO with approx. 60 entries. This FIFO is read repeatedly by the FIFO DMA and the results are saved in a buffer. The size of this buffer was 1K, and is increased now to its maximum, 16K. Besides, the timers are changed in BCM level (SW timers of CPU access to DMA FIFO buffer that can increase the CPU usage) to minimize the CPU usage from ~50 ms to ~0.5 sec. These timers are dynamic and their values are adapted according to the load of the DMA FIFO.
SDK-44047		88650_B0 88650_B1	Multicast Overlay: Added support for overlay IPMC Recycle port use: <code>bcmPortControlIPTerminationOverlayRecycle</code>
SDK-44070		All	Removed non-ASCII characters from register description.
SDK-44074		56850_A0	Code reorganized to handle mem clear issues in simulations.
SDK-44078		88650_A0 88650_B0 88650_B1	DNX: Packet that is trapped to CPU can be parsed either in non-interrupt context (default), or in interrupt-context (using compilation flag <code>BCM_ARAD_PARSE_PACKET_IN_INTERRUPT_CONTEXT</code> ) . In the second case the device is not accessed and fields <code>src_port</code> <code>src_mod</code> will be set to 0.
SDK-44086		88650_A0	In Counter Processor, one of the statistics was documented as: - FWD_COLOR: forward green, forward not green counters Actually, the HW supports the following mode, which replaces FWD_COLOR: - SIMPLE_COLOR: green, not green counters
SDK-44105		All	Removed -Wp per-processor option from Kernel flags as options are not passed.

**Table 75:**

<b>Number</b>	<b>CSP #</b>	<b>Chips</b>	<b>Release Notes For 6.3.0</b>
SDK-44118		88750_A0 88650_A0	API <code>bcm_stk_module_enable</code> has a parameter where it can disable/enable fabric connectivity. The API was implemented that traffic enable sequence was run, without referring to enable parameter. The issue is fixed.
SDK-44123	598867	88650_A0 88650_B0 88650_B1	TDM optimize : Maximum destination ports in FTMH for TDM traffic is fixed
SDK-44170	597142	56850_A1 56850_A0	Support for UDF qualifiers for VCAP/VFP stage.
SDK-44171		88650_A0	In Petra-compatible header mode, the program parsing packets arriving at ingress with an FTMH header (e.g. for stacking, or after recycling / outbound mirroring) was not implemented and is implemented now.
SDK-44180		88650_A0	In Field Processor, up to 32 simple action macros (called FESes) can be used per PMF-Program. In general, the user tries to allocate the first 16 actions to the 2nd FES group: FES 16-31. Once this FES group is full, the Driver tries to allocate in the 1st FES group: 0-15. In case there is no Direct Extraction Database, and there is a less important Database in the 2nd FES group, the Driver moves this FES to the 1st FES group and allocates the new FES at its place. A bug was not considering the FES-group-index correctly.
SDK-44191		All	TC 2 TC mapping for 8 priorities mode, did not map traffic classes 3-7 properly. TC 2 TC mapping 8 priorities mode did not consider global offset of flow2voq mapping, hence - when called the gport value should have been minus the offset, after the fix use the gport value should be the value retrieved by <code>BCM_COSQ_GPORT_UCAST_QUEUE_GROUP</code> as usual.
SDK-44194		88650_A0	The LAG ranges of each port are defined in the HW table <code>EGQ.PPCT</code> which is accessed according to the Queue-Pair. This table was accessed only according to the Base-Queue-Pair of each port, and not according to all the port Queue-Pairs. Fixed now <code>EGQ.PPCT</code> init for all Queue-Pairs.
SDK-44205	595775	88750_A0	<code>bcm_stk_modid_set</code> activated reachability messages for each link. This operation took 128 readwrite operations and 128 sleep(20ms). API performance improved: Reduced to one readwrite to register operation and one sleep for all 128 links.
SDK-44212		88650_A0	<code>bcm_port_force_forward_get</code> returned and error for multicast id as <code>GPORT</code>
SDK-44216		88650_B0	Register access optimization for ARAD (redundant verification was removed). Speeds up Negev initialization by 10%.
SDK-44228	597091	56334_B0	Fix erroneous counter status in <code>bcm_field_group_status_get</code> API.
SDK-44233		56840_A0 56634_A0 56440_A0 56850_A0 56640_B0	Start automatic TCAM memscan only if parity is enabled.
SDK-44238	598928	88650_A0	Fixed <code>bcm_cosq_port_mapping_set</code> for system ports, Please use <code>BCM_GPORT_SYSTEM_PORT_ID_GET</code> to get a handle to system ports
SDK-44239		88640_A0	hub/spoke orientation setting for out-AC using <code>ppd_eg_filter_split_horizon_out_ac_orientation_set</code> failed.

**Table 75:**

<b>Number</b>	<b>CSP #</b>	<b>Chips</b>	<b>Release Notes For 6.3.0</b>
SDK-44246		88650_A0	In Field Processor, data qualifiers allow the user to extrapolate bits either from the packet headers or from common qualifiers. In case of packet headers, the user can control the number of bits, and the location which is composed of the base-header and how many bits to jump. In 88650, the jump can be done in both directions (i.e. the offset can be positive or negative): inside the base-header or from the previous header. For example, extracting EtherType without considering the number of VLAN tags is done by taking the base-header as Header-after-Ethernet, and jumping 2 bytes backward. The implementation of the negative offset (BCM_FIELD_DATA_QUALIFIER_OFFSET_NEGATIVE flag) was not done
SDK-44270	599851	88650_A0	Statistics counter flag: all fabric counters thread priority flags were updated to High. This means that all fabric counters are accumulated by the counters thread. This change makes the property <code>soc_counter_control_level</code> not relevant for fabric ports.
SDK-44273	600308	56640_A0 56640_A1 56640_B0	Fix L2 mem locks w.r.t freeze and thaw.
SDK-44284		88650_A0	Fixed the usage of partially uninitialized buffers.
SDK-44299		56540_A0 56340_A0 56640_A1 56643_A1 56640_B0 56643_B0 56648_B0	Add per unit global variable instances for port and flex config.
SDK-44321		88650_A0	Both ingress & egress Field Processors can match on IpType, which corresponds to a parsed EtherType. For MPLS, at egress the parsing of <code>bcmFieldIpTypeMplsUnicast</code> was not correct. Besides, <code>bcmFieldIpTypeMplsMulticast</code> was added both at ingress and egress.
SDK-44324		88650_A0	In the Field Processor & ITMH (aka PMF-Extension-Headers) application, Field groups are preselected with particular preselectors, when Forwarding-Type = <code>bcmFieldForwardingTypeTrafficManagement</code> . The release of these preselectors was not correct. Thus, when using the same preselector-id for an Ethernet-based Field group, an internal error was appearing.
SDK-44325		88650_A0	In Field Processor, both: - Implement <code>bcmFieldQualifyTranslated*</code> qualifiers at ingress - and fix the parsing of <code>bcmFieldQualifyTranslated*</code> at egress
SDK-44336		88650_A0 88650_B0 88650_B1	Implemented BCM diag command "diag pp ENCAP" for 88650
SDK-44341		56850_A0	Resolved under SDK-44074 .
SDK-44344		88640_A0	Vlan editing: Change Egress vlan editing operation of NONE on tagged vlan from Ignore to Remove and Add again. This will let Transmit tag/untag and Outbound mirroring features to work.

**Table 75:**

<b>Number</b>	<b>CSP #</b>	<b>Chips</b>	<b>Release Notes For 6.3.0</b>
SDK-44348		88650_A0	Due to incorrect allocation of reserved packet descriptors during init, some EGQ resources were wasted. Wasting EGQ resources can limit the device max supported traffic rate. The reason for this wrong allocation was that the formula for Service Pools in the EGQ was counting the reserved resources per port twice, instead of counting per service pool only the ports that used it. The fix was to calculate the reserved packet descriptors per Service Pool by only counting the resources of the ports using the service pool.
SDK-44352		88650_A0 88650_B0	CrpsActCntsCnt counters were removed from "diag counters", due to the fact that these counters should not be read when counter mode is QSIZE and "diag" is general to all modes.
SDK-44357		88650_A0	In Field Processor, the user can assign a new trap with the action bcmFieldActionTrap. In previous implementation, this action sets the new {Trap-strength; Trap-Id} according to the assumed HW abilities. 2 options were given to the user when setting the action value with bcm_field_action_add: 1. param0 is a Trap GPORT, encoding the strength and the new trap-code. param1 is not used 2. param0 is the new trap-code, param1 is the trap strength. In practice, the HW assigns {Trap-qualifier, Trap-strength and Trap-Id}. Thus when setting the action value with bcm_field_action_add, the use must indicate: - param0 is a Trap GPORT, encoding the strength and the new trap-code - param1 is the trap qualifier The user must pay attention that this action size goes from 11 bits to 27 bits.
SDK-44359		88650_A0	Solved OAM event not being generated by the OAMP.
SDK-44363		88650_A0	The detach feature in Field Processor was not working properly in case that Direct Extraction Field groups with entries were installed to the HW. This is fixed.
SDK-44367	601121	88650_A0	learning setting Fixes: - Enable to configure distribution header (bcm_l2_learn_msgs_config_set) separately from enable message generation. - when learning managed by OLP (not CPU) then both learning and shadow FIFOs have dsp-generation configured
SDK-44379		88650_A0	OAM mirroring did no work if OAM init was called before calling outbound mirroring API. Now OAM allocates the highest mirror profiles for mirroring, so order does not matter.
SDK-44380		88650_A0 88650_B0 88650_B1	Release to customers trunk example cint_trunk.c
SDK-44395		88650_A0	In Field Processor, the SOC property field_class_id_size sets the User-Header size that can be located between the end of System-Headers (FTMH + PPH + their extensions) and the beginning of the Network headers (Ethernet and following header stack). This SOC property is used for example in the Cascaded-Ingress-Egress Field Processor application. The location of the beginning of the Network headers was not correct in 2 cases: - in the HW, because of an internal misconfiguration at egress - in the parsing of the trapped packets. Both cases are solved.
SDK-44396		88750_A0 88650_A0 88750_B0 88650_B0 88650_B1	88650, 88750: bcm_port_phy_control_get (BCM_PORT_PHY_CONTROL_PREEMPHASIS) returns lane 0 taps for all lanes.





**Table 75:**

<b>Number</b>	<b>CSP #</b>	<b>Chips</b>	<b>Release Notes For 6.3.0</b>
SDK-44399		56546_A0 56542_A0 56541_A0 56545_A1	Bringup and sanity fixes done.
SDK-44423		All	LDK-3.0.3 software for iProc is integrated into SDK
SDK-44425	600706	56850_A0 56850_A1	Fixed E2ECC message not being transmitted on TD2
SDK-44436		All	Created src/soc/common/ser.c file
SDK-44439		88650_A0	When closing MAC loopback on the NIF side, MAC loopback FIFOs are sometimes out of sync. This occasionally results in partial traffic loss. Fixed.
SDK-44444		88650_A0	Added a soc property "mim_num_vsis". Values are 4096 (default) or 32768. If it is set to 32768, then 32K different I-SIDs may be configured, but ingress VLAN editing is disabled for access facing (UNI) In-ACs.
SDK-44458		88650_A0	Background: The ITMH parsing is done through microcode. Some of the ITMH formats (Out-LIF, Ingress-Shaping, MC-Flow) are using the Destination extension. In the case of Ingress-Shaping, the microcode is supposed to indicate that the forwarding decision (i.e. the destination) is taken according to the ITMH-Destination-extension field.  Limitation: A bug was found on the microcode of the Ingress-Shaping parsing. This bug is fixed.  WA: None
SDK-44487		88650_B0 88650_B1	ECN using queue size in bytes to determine congestion is now supported in 88650 B0 and up. But (88650 B0/B1) due to a hardware erratum, only values of up to 0x7e00000 bytes (126MB) can be supported (the limitation is only when using bytes and not descriptors!) A value of 0x80000000 (2GB) can be used to disable the bytes limit after it is set. If the bytes limit is used in B0/B1, be sure to also configure tail drop of less than 128MB on the same queues.  If values above 126MB are needed in B0,B1 the same affect can be achieved using the ECN WRED configuration.
SDK-44489		88650_B0	Added support for Fine-grained Trill. See example in cint_trill.c.
SDK-44494		All	The CINT API wrapper for bcm_l2_addr_t_init() would fail to compile with the Wind River Diab Compiler dcc.
SDK-44510	606330	88650_A0	XGS Diffserv: Added support for new system port encoding where System port is being extracted according to [FRC.MODID 8 bits , 0, FRC.PORT 7 lsbs]. Default mode was taking [0,FRC.MODID 7 bits, FRC.PORT 8 bits].
SDK-44519		All	Updated license information for APIMODE, BIGDIGITS, CINT, ED Editor and VxWorks
SDK-44528		56640_A0	Fixed bcm_tr3_cosq_port_sched_set return BCM_E_PARAM if port gport is passed as argument.
SDK-44536	595066	56850_A0 56850_A1	In TD2, for Adv Flex Counter, set operation on stats should set both X and Y pipe.
SDK-44554		88650_A0	Add to tr 140 NoReset parameter, DRAM bist perform soft reset in the end of the test unless this parameter set to 1.



**Table 75:**

<b>Number</b>	<b>CSP #</b>	<b>Chips</b>	<b>Release Notes For 6.3.0</b>
SDK-44556		88650_A0 88650_B0 88650_B1	Command added to api: DIAG rates <OPTION> <parameters> OPTIONS: - EGQ - to calculate EGQ rate. Requires: port=<port_id> tc=<traffic_class> - PQP - to calculate PQP rate. Requires: port=<port_id> tc=<traffic_class> - EPEP- to calculate EPE port rate. Requires: port=<port_id> tc=<traffic_class> - EPEI- to calculate EPE interface rate. Requires: if=<interface_id> - EPNI- to calculate EPNI interface rate. Requires: scheme=<measure_scheme> [bw=<bw_id>] Schemes available: 0-measure total, 1-bw on interface, 2-bw on port, 3-bw on Q-pair, 4-bw on channel, 5-bw for mirror/not mirror
SDK-44581	607129	88650_A0	APIs bcm_port_frame_max_setget were fixed to configure fram_max on MAC. These APIs are supported for all NIF ports except ILKN.
SDK-44583		56820_A0 56725_A0 56680_A0 56624_B0 56624_A0	Added new reg files and ran code generation script.
SDK-44592		All	bcm_stk_port_set() now avoids updating hardware tables if the stack port membership has not changed.
SDK-44595		88650_A0 88650_B0 88650_B1	TDM Optimized mode, bcm_fabric_tdm_editing_set/get: Fixed getting user defined field from TDM editing in case of TDM optimized should always return 0. Please notice that this field can be configured only when using standard TDM mode.  Note: When getting the user define count field in TDM standard mode, the return value will always be the maximum number of bits allowed for user define field.
SDK-44598		88650_A0 88650ACP_A0 88650_B0 88650_B1	PON 3 tags manipulation is supported completely. Tunnel tag is processed in bcm_port_vlan_create. And other 2 VLAN tags are processed by PON egress VLAN translation.
SDK-44600		88650_A0 88650_B0 88650_B1	Fixed: When setting port_init_speed=-1 on the NIF side, default rate is set to a wrong value.
SDK-44617	608209	88650_A0	MAC based VLAN assignment: In order to enable the functionality user needs to set soc property sa_auth_enabled = 1.
SDK-44633		56840_A0 56640_B0 56540_B0	For SER related soc_switch_event callbacks, removed the newer enums defined for use in BCM5664x and BCM5685x devices. Add encoding in the second to last param of the event notifier for the new data formats.
SDK-44636		88650_A0 88650_B0 88650_B1	BCM_VLAN_PORT_MATCH_PORT_TUNNEL_VL AN_ETHERTYPE is now supported for AC creation on Tunnel_ID + SVLAN. BCM_VLAN_PORT_MATCH_PORT_TUNNEL_VL AN_STACKED_ETHERTYPE is now supported for AC create on Tunnel_ID + SVLAN + CVLAN.
SDK-44645		88650_A0	88650: Added warm boot support for dynamic ports change.
SDK-44646	606367	56850_A0	Fixed BUD/LEAF loopback port init/deinit issue.
SDK-44672	604494	56850_A0 56850_A1	bcm_cosq_gport_add can allocate more than NUM_COS UC queues for td2 and tr3.



**Table 75:**

<b>Number</b>	<b>CSP #</b>	<b>Chips</b>	<b>Release Notes For 6.3.0</b>
SDK-44688		88650_B0 88650_B1	88650: Added new SOC property to indicate which implementation of ECN for MPLS is used: <code>mpls_ecn_mode</code> . Valid values are 1 (1-bit mode), or 2 (2-bits mode).
SDK-44740	609484	56546_A0 56545_A0 56544_A0 56542_A0 56541_A0 56540_A0 56545_A1 56540_B0	Fixed LPM memory sizes for various configs/SKUs.
SDK-44748		88650_A0	Fixed access (reads) to non allocated memory during driver startup, which may have caused segmentation faults in some systems.
SDK-44766	610133	88650_A0 88650_B0 88650_B1	Port command was fixed to support also Fabric ports.
SDK-44800		88650_A0 88640_A0	QOS: Changed logic of <code>WITH_ID</code> flag in <code>bcm_qos_map_create</code> to handle correctly the value of <code>qos_id</code> .
SDK-44803		All	Fix function by Adding check to BCM state - init/deinit
SDK-44806		88650_A0 88650_B0 88650_B1	New option: <code>diag cosq voq</code> Displays all of the non empty VOQs and their current size in bytes. Two filtering option are enabled: <code>diag cosq voq most=x</code> - displays only the <x> most congested VOQs. <code>diag cosq voq id=x</code> - displays only VOQ <x>
SDK-44813		88750_A0	88750: Multi-thread support: Missing <code>bcm_lock</code> to <code>bcm_dfe_init</code> was added.
SDK-44839	607723	88650_A0 88650_B0 88650_B1	Background: When the port header type set to <code>STACKING</code> , its internal <code>LB_PROFILE</code> is set to <code>ONE</code> . Limitation: The port internal <code>LB_PROFILE</code> was not set to 0 when the header type was set to Ethernet for example, and not stacking. WA: None.
SDK-44857	606402	56540_A0 56540_B0	Corrected String length for <code>strncat</code> , such as not to over run buffer in corner cases.
SDK-44912	612131	88640_A0	Resolved: Internal indexing error could result in failure to enable control cells during initialization when using FEC.
SDK-44918	605584	88650_A0	Background: The ITMH parsing of the Mirror-Enable bit (aka <code>IN_MIRR_FLAG</code> ) should disable mirroring if the bit is unset. Limitation: If this bit is unset, the mirror profile should be 0. It was in practice dependent on packet's content. This is fixed WA: None
SDK-44926		88650_A0	In Field processor, a CINT called <code>cint_field_dir_ext_counter_inlif.c</code> has been added to illustrate how to attach a Counter-Pointer = In-LIF to the packet via Direct Extraction Field group.
SDK-44930	612050	88650_A0	MIM: Added support <code>WITH_ID</code> flag for <code>bcm_mim_port_add</code> API.
SDK-44947		All	Improve performance of API <code>bcm_tunnel_initiator_set()</code> when called before any next hop entries are set for a given interface (e.g. L3 egress objects).
SDK-44968	606209	88650_A0	In Stacking system, MC over stacking ports was not working due to bug in header programming, The issue was fixed.

Table 75:

Number	CSP #	Chips	Release Notes For 6.3.0
SDK-44969	609615	56850_A1	cleaned up detachment of node and free up index range when all the children are gone.
SDK-44984		88650_A0	OAM: When sending upmep LM RX packet in is trapped to the CPU but in addition the counter with the index of the stamped value is increased.
SDK-44991		88650_A0 88650_B0 88650_B1	When external phy is connected, TX parameters for lane 0 in a quad not always set correctly (depends on ext phy implementation). This issue was fixed.
SDK-45067 SDK-44051	613032	56850_A0	Fixed VXLAN functionality for match criterion = BCM_VXLAN_PORT_MATCH_PORT_VLAN
SDK-45132		All	New switch controls bcmSwitchDosAttackIcmpV4, bcmSwitchDosAttackIcmpV6 added to enable/disable ICMPV4 and ICMPV6 size check respectively
SDK-45148		56725_A0 56720_A0	SOC Port Valid check is applied to avoid the segmentation fault as it exceeds the MAX limit and corrupts the stack. The issue is seen only in case of CONQUEROR.
SDK-45151		88750_A0 88650_A0	88650, 88750: RX los application improvements - Updated application notes will be supplied.
SDK-45158		88650_A0 88650_B0 88650_B1	Setting port_init_speed <p>=-1 should disable port p. However this configuration influence other ports. This was fixed.
SDK-45179		88650_A0 88650_B0 88650_B1	Allow setting FW mode by SOC property for 10G ports. Use serdes_firmware_mode=0 (default) to reserve current behavior.
SDK-45239	612680	56640_A0 56640_A1 56640_B0	Adjusted default hash offset configs to take into account the scenario when all banks are used by a single memory type.
SDK-45249	611829	88030_A0	Add "QueueInfo" command for C3
SDK-45256	615804	56846_A1	Link flap on the port associated with lane0 if port associated with lane2 is disabled/enabled in KR2 mode
SDK-45261		All	Skip mem cache use in test mode in all memory ops. Enable test mode in tr tests like cpu benchmark tests tr 21 etc.
SDK-45289	576151	88640_A0	Background: In Field Processor module, Field groups (aka Databases) do not have necessarily pre-selectors. If not set, for the BCM88640 device, an implied pre-selector is selected according to the Field group qualifiers.  Issue: Databases without explicit pre-selectors were not selected because the implied pre-selector was not set correctly.  WA: None
SDK-45295	617162	88750_A0	88750: Software Reset should not isolate the chip. Fixed.
SDK-45331		88650_A0 88650_B0 88650_B1	Change (without any additional configuration) the division to 1/64 instead of 1/16. Add the ability to use "virtual stack" (will be limited to 4 TMD connection). User can define any set of stacking ports as virtual stack.
SDK-45339	617523	88650_A0	Add user parameters validation to bcm_cosq_threshold_set() API. The QDCT_TABLE PD thresholds are 15 bits wide but the values are restricted to 4k. The driver will now throw an error when trying to configure those thresholds with illegal values. When calling the API bcm_cosq_threshold_set() to set queue's PD threshold (either drop or flow control) the API will return an error if trying to set a value greater than 4k.



Table 75:

Number	CSP #	Chips	Release Notes For 6.3.0
SDK-45340		88650_A0	88650: ARAD supports changing port interfaces dynamically. The feature supports the following interfaces: XFI, XLAUI, CAUI. Support for the following interfaces added: ILKN, RXAUI, XAUI and SGMII.
SDK-45342		88650_A0	Egress same-interface filter was disabled on init, by mistake. Fixed the code to enable the same-interface filter. User can control per port enable/disable the filter by calling API <code>bcm_port_control_set</code> with <code>control_type = bcmPortControlBridge</code>
SDK-45353		88650_A0 88650_B0 88650_B1	Force all incoming traffic from given port to invalid destination in the IRE. The default configuration is not change, meaning no additional configuration needed for one which is not using this feature (Panini for example). In order to discard the traffic, the API should be called. Please refer to the following example: Driver init: 1. Call to <code>bcm_stk_my_modid_set()</code> to set the mod-id. 2. Disable all the TDM ports by calling the API. 3. Call to <code>bcm_stk_module_enable()</code> . Provisioning example 1. Configure the Ingress and Egress by calling to <code>bcm_fabric_tdm_editing_set()</code> 2. Enable the traffic by calling the <code>bcm_port_control_set()</code> De-provisioning sequence example 1. Disable incoming traffic by calling to <code>bcm_port_control_set()</code> Bug
SDK-45385	617412	56840_A0	Added Rx packet rate control for Linux KNET kernel module.
SDK-45475		88650_A0	Background: IPv4 MC program may do RPF check as well as MC entry search. In that case the search is done in the IPv4 UC tables.  Limitation: When using ELK for IPv4 MC tables - then IPv4 UC tables should use ELK as well for the RPF check to succeed. Same happens when IPv4 MC doesn't use ELK. The driver forces the use of ELK for both tables or none (will produce an error if MC table uses ELK but UC table doesn't or the opposite).

**Table 75:**

<b>Number</b>	<b>CSP #</b>	<b>Chips</b>	<b>Release Notes For 6.3.0</b>
SDK-45476		88650_A0	<p>Restrict APIs from committing changes during traffic.</p> <p>=== CAUTION === This change may affect existing applications. Some invalid scenarios, previously not verified by the driver, are now verified and will return an error indication if encountered. The APIs/attributes listed below must be called before enabling traffic, which is done by the <code>bcm_stk_module_enable()</code> API. Calling these APIs after <code>bcm_stk_module_enable()</code> is not permitted, and will result in driver error. The following APIs will return an error if called after traffic is enabled: - <code>bcm_cosq_gport_threshold_set()</code> + if threshold-&gt;type = <code>bcmCosqThresholdAvailablePacketDescriptors</code> + if threshold-&gt;type = <code>bcmCosqThresholdAvailableDataBuffers</code> - <code>bcm_cosq_gport_egress_multicast_config_set()</code> + Always, regardless of input parameters. - <code>bcm_cosq_gport_egress_map_set()</code> + Always, regardless of input parameters. -- An override option using a custom SOC property is available, to be used only if guided by Broadcom AE.</p> <p>Also, before enabling traffic the driver verifies the following: - Each egress queue can only use a single service pool. - The MAX reserved value is equal to the sum of the reserved PDs per queue per service pool - The MAX reserved value is less than the maximum PDs allowed per service pool (13k)</p>
SDK-45491	616124	All	<p>Jumps in time provided by <code>sal_time()</code> no longer cause discrepancies in signaling message times, given that the SAL has a monotonic <code>sal_time_usecs()</code> function.</p>
SDK-45521		56850_A0	<p>Following qualifiers are now supported in Trident2 Egress Stage with the JIRA fix <code>bcmFieldQualifySrcClassL3</code> <code>bcmFieldQualifySrcClassField</code> <code>bcmFieldQualifySrcClassL2</code> <code>bcmFieldQualifyDstClassL3</code> <code>bcmFieldQualifyDstClassField</code> <code>bcmFieldQualifyDstClassL2</code> <code>bcmFieldQualifyInterfaceClassL2</code> <code>bcmFieldQualifyInterfaceClassL3</code></p>
SDK-45576		88650_A0 88650_B0	<p>wrong warmboot data restore that can mainly effect following APIs after warmboot: <code>bcm_cosq_gport_threshold_set/get</code> <code>bcm_cosq_control_set/get</code></p>
SDK-45585		56840_A0 56845_B0 56841_B0	<p>Handle TD+ MMU SER correction for ES, THDI, MTRO regs.</p>
SDK-45613		88650_A0 88650_B1	<p>Fixed the FC init function to properly handle SAFC settings due to SOC Properties.</p>
SDK-45624		88650_A0	<p>Fixed an issue that when calling <code>bcm_vlan_translate_egress_action_set</code> to change <code>outer_tpid_action</code> and then <code>bcm_vlan_translate_egress_action_get</code>, the returned inner tpid was the new <code>outer_tpid</code>.</p>



**Table 75:**

<b>Number</b>	<b>CSP #</b>	<b>Chips</b>	<b>Release Notes For 6.3.0</b>
SDK-45643		53600_A0 53288_A0 53286_A0 53284_A0 53283_A0 53282_A0 53262_B1 53242_B1 53242_A0 53001_A0	Fix the issue that removing FE0 port from the bcm config pbmp_valid causes the initialization fail for FE+GE switches of ROBO FE family
SDK-45727	619823	56850_A1	56850: Fixed issue with group create on EFP with CpuQueue(bcmFieldQualifyCpuQueue) as qualifier.
SDK-45729		88650_A0 88650ACP_A0 88650_B0 88650_B1	For PON 2 tags manipulation, bcm_vlan_translate_egress_action_add of PON ports just needs to do the outer VLAN translation. It's not necessary to take care of tunnel_id anymore.
SDK-45768	587055	88650_A0 56640_A0 56640_B0	Always return SOC_E_FUNC_NOT_FOUND for function searchPCSFuncTable
SDK-45796	607348	88650_A0	<p>Description: At egress Field Processor, the HW correlates the counting action (bcmFieldActionStat) with the redirection (bcmFieldActionRedirect). An improper SW implementation was forcing the user to set a stat-id related to the entry-id for simplicity. Since the number of stat-ids is limited, an error was occurring for high entry ids.</p> <p>Fix: The sequence of using both actions at egress (bcmFieldActionStat &amp; bcmFieldActionRedirect) is changed: - when an entry must redirect and count, the user must indicate in bcmFieldActionRedirect the destination port, and in bcmFieldActionStat the stat-id (in param0). From now on, the user sets also in param1 of bcmFieldActionStat the destination port again. The stat-id must be between 1024 and 3839 (Counter-ID value). Refer to cint_field_egress_modify_tc_per_port.c for example. - when an entry must only redirect, the user must call both actions (bcmFieldActionStat &amp; bcmFieldActionRedirect) similarly to the previous, with stat-id = 0 to indicate the Counter-ID is not to be changed. - An entry cannot only change the Counter-ID without redirecting due to an HW limitation</p> <p>Besides, the user cannot use bcm_field_stat_create[id] and bcm_field_entry_stat_attach at egress.</p> <p>WA: None</p>
SDK-45798	620819	88650_B1	<p>Background: When calling entry install, a first attempt is performed to insert the entry and if it fails because there is no bank or bank is full, a new bank is allocated to the field group. The problem was that there was no validation that this bank has free entries. Then a second attempt is performed and if the allocated bank had no free entries the action fails.</p> <p>Fix: Add validation that bank is not full when allocating it.</p>
SDK-45807	616113	88650_B1	<p>Background: In Field processor configuration, PMF programs are HW entities not directly handled by the user. The PMF program is unique by its set of supported Databases. When removing a FP database, the Driver looks if another PMF program exists with the same set of Databases. If not, the resources taken by this database in this program are freed. If so, the whole PMF program is freed by copying a clean program to it. In case of an Egress database, the PMF program erase was not correct.</p> <p>Fix: Added a fix in the copy method of Egress programs.</p>



Table 75:

Number	CSP #	Chips	Release Notes For 6.3.0
SDK-45851	617348	56544_A0 56542_A0 56540_B0 56541_B0	Memory sanity scripts are included in the FILES.esw package.
SDK-45908		56854_A0 56850_A0 56855_A0	bcmFieldQualifyColor qualifier is now supported in Trident2 device Ingress Stage.
SDK-45943		88650_A0 88650_B0	ARAD Field warm boot, following was not restored after : 1. preselectors. 2. tcam actions. 3. entry flags (less critical, has effect only when doing WB in the middle of field API sequence).
SDK-45944	622458	88130_B0 88130_A1	bcm_crossbar_enable_set () fix for BM9600 - when BAG rate is 0, do not scale result to avoid divide by 0 issue.
SDK-45968		88650_A0 88650_B0	compilation error when compiling for ARAD only with warm boot support: BCM_PTL_SPT=1 BCM_88650_A0=1 BCM_88650_B0=1 # BCM_88640_A0=1 (No definition) CFGFLAGS += -DBCM_WARM_BOOT_SUPPORT
SDK-46651	627582	88650_B1	Background: Validation of TCAM entries is done while reading all entries per database. The loop which reads the entries used the wrong database ID range, which may have been invalid in some cases. Fix: Change of database ID to right range.
SDK-47645	649813	All 88650_A0 88650_B0 88650_B1	Added support for running ARAD dram tunning algorithm ('shmoo') on multiple devices in parallel
SDK-50501	696776	56850_A0	It is required to disable linkscan on the port to be converted by flex port, and re-enable linkscan afterward. This is defined in flex port section in port module of API reference manual.









