

Software Development Kit Release Notes SDK 6.4.3

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Broadcom
Network Switching

Section 1: About This Document

These are the Release Notes for the Broadcom Network Switching Software Development Kit Release 6.4.3.

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

Section 2: Product Documentation

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

Table 1: Product Documentation

| Document | Description |
|-----------------|---|
| 56XX-PG643-R | BCM API Reference Guide. This manual describes the theory of operations of the API and all existing BCM APIs for this release. |
| 56XX-PG707-R | Stacking Software Guide This guide describes how to use the discovery and stacking applications provided in this release. |
| 56XX-PG818-R | Platform Guide This guide describes the SDK source and Makefile structure, abstraction and porting layers, device specific interactions, and the platform/operating system specific features of the SDK. If this is your first time working with the SDK, start with this document. |

Section 3: New in this Release

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

SUMMARY OF NEW FEATURES

EARLY ACCESS SUPPORT BCM56860 (TRIDENT 2 PLUS)

TRIDENT 2 PLUS

The BCM56860 family of switches is aimed specifically at the cloud DC market, ToR and spine. The switch offers up to 104 x 10GbE, up to 32 x 40 GbE or up to 8 x 100 GbE ports. The faster member of the family provides up to 1.28Tbps of Ethernet switching in oversub mode or 960G in line rate mode.

This release contains preview support for BCM56860 A0 device.

This release supports the following device SKUs in the following port configurations:

- BCM56860: up to 104 x 10GbE, up to 32 x 40 GbE or up to 8 x 100 GbE ports
- BCM56867: up to 104 x 10GbE, up to 32 x 40 GbE or up to 8 x 100 GbE ports

Support for legacy and enhanced features is available in this release as preview to enable customers to integrate SDK with their system application software. The available features are listed in Table 1. The verification of this release for Trident 2 Plus is performed with simulation and/or QuickTurn emulation. Customers are required to migrate to later SDK 6.4.X releases in patch or full package for fully verified functionality on silicon.

Table 2: Trident 2 Plus Feature Status

| Feature | Status | Note |
|---------------------|---------|------|
| Legacy | | |
| 100G Support | Preview | |
| Base Cosq/MMU | Preview | |
| DMVOQ | Preview | |
| Field Processor | Preview | |
| L2 | Preview | |
| L2 and IP Multicast | Preview | |
| L2GRE | Preview | |
| L3 | Preview | |
| Mac-in Mac and SPB | Preview | |
| MPLS | Preview | |
| Mirror | Preview | |
| Port Extender | Preview | |
| Rate | Preview | |
| Resilient Hash | Preview | |
| Switch Control | Preview | |
| Stack | Preview | |
| STAT | Preview | |
| STG | Preview | |
| Tunnel | Preview | |
| Trill | Preview | |
| VLAN | Preview | |

Table 2: Trident 2 Plus Feature Status

| Feature | Status | Note |
|---------|---------|------|
| VXLAN | Preview | |

TRIDENT 2 PLUS SAMPLE CONFIG.BCM FOR CONFIGURATION

For this release, BCMSIM testing was conducted with below optional parameter in config.bcm.

[illegible]

```
parity_correction=0
parity_enable=0
```

BCM56960 BETA RELEASE

BCM56960 family is industry's First High-Density 25/100 Gigabit Ethernet Switch for Cloud-Scale Networks. The switch offers 32 100GbE, 128 25GbE ports. This release contains enhanced Early Access bring up support for BCM56960 A0.

This release supports the following device configurations.

BCM56960 A0: 32x100G, 128x10G, 128x25G, 28x100G_4x106G, 32x40G, 64xd40G

STATUS OF SUPPORT:

Basic bring up of SDK on hardware is completed. Many features have achieved Beta status (Development and unit test on HW complete). SQA testing is starting and there is on-going test case enhancement to fill coverage gaps and address new features.

NEW FEATURES IN THIS RELEASE

SOFT ERROR RECOVERY

Soft Error Recovery (SER) support for Tomahawk is added in this release as preview. SER detection and correction is support for Ingress, Egress pipeline and MMU memories and TCAMs (with the exception of `IFP_TCAM`). Tr144 (SER diagnostic) test support is added for hash memories, Index memories and TCAMs. Overlay, MMU memories and registers are not supported in the release.

LED PROCESSOR

This release supports the LED processor to program LED interfaces for Tomahawk has been added. Sample LED microcode has been provided which was used to test all the LED processor functionality with multiple port configurations (128x10, 32x100 and 32x40).

ROBUST HASH

This release supports Robust Hash mode for VLAN translate, egress VLAN translate and MPLS tables. A config variable has been added to overwrite the default random seed which is used to configure the robust hash tables. Please refer API guide for additional information on configuring the config property.

CUT THROUGH

This release supports Cut Through feature. The feature supports cut-through forwarding between ports of different speeds and functions with flexport, oversubscription, speed change and switch latency bypass scenarios.

NIV ENHANCEMENTS

BCM56960 provides enhancements that support embedding NIV and Port Extender related encapsulation information as part of the extended view entry in `L3_ENTRY` table. NIV/Port Extender support in L3 extended view can be enabled/disabled via config property `embedded_nh_vp_support` in SDK. To enable the feature, configure `embedded_nh_vp_support` to 1, thereby enabling embedded nexthop (`l3_egress`) information in `bcm_l3_host_t` to be used for other types of GPORTs (e.g. `BCM_GPORT_NIV` as the destinations. The tradeoff is that on some of the devices the number of distinct destination MAC addresses or other parameters might be limited.

ALGORITHMIC LPM

This feature supports ALPM for longest prefix match in preview mode. The release support 4 bank mode, which uses all the UFT table when configured in ALPM mode. The configuration mechanism is similar to that of Trident2, using config property, `alpm_enable=1`.

VISIBILITY PACKET TRACE

This release supports internal device packet tracing feature to provide detailed information on how a specific packet is processed through the ingress pipeline. This feature allows the user to send a packet into the Ingress Packet Processing Pipeline that are then processed as if they were received on one of the front panel ports and log internal forwarding and packet processing states. Please refer to API for packet trace API documentation.

Note: For Trident, Trident2, and Triumph3, `bcm_switch_pkt_info_hash_get` API is used as a method to determine the egress port of various hashed operations such as ECMP and Trunking. For Tomahawk, Internal device packet tracing (Visibility) feature provides detailed hashing resolution information instead of `bcm_switch_pkt_info_hash_get` API.

IFP LEGACY SUPPORT

Support for IFP Legacy mode on BCM56960 has been added in preview status.

In this release, we are targeted to provide the legacy IFP behavior that is supported on Trident2 without any API sequence changes. There are some known limitations that will be addressed in future SDK releases as listed below.

- WarmBoot (Level1 and Level2) is not supported for IFP. Warmboot support is planned once the compression modes are also supported.
- Group auto expansion is not supported. This issue will be fixed in SDK 6.4.4.
- When the policers are configured in global mode, meter parameters will be set per pipe. This will cause rate limiting logic to apply to ports per pipe instead of globally. This issue is under review with the hardware design team.
- Since BCM56960 has narrower IFP TCAM when compared to 56850, for the same QSET groups will be created in Wider Modes if Compression Class APIs are not used for TH IFP.
- `bcmFieldQualifyInPorts` qualifier is currently not supported. Support will be added in Phase 2 when support for Per-Pipe Mode is added.
- Ingress Port based Group creation is not supported in Phase 1 for IFP stage. This configuration will be supported in SDK in Phase 2 using Field Pre-selection APIs.

SDK FEATURES INTRODUCED IN EARLIER RELEASES

Table 3: Tomahawk Feature Status

| Feature | Status | Note |
|--------------------------|---------|---------------------------------|
| Supported Legacy Feature | | |
| Alpm legacy | Preview | |
| Cosq | Beta | |
| Cut Through Mode | Preview | Integration testing in progress |
| ECMP-Load Balancing | Beta | Test development in progress |
| Port extender | Beta | |
| Failover | Beta | |
| FCOE | Beta | |
| Field Processor | Preview | VFP and EFP are supported. |



Table 3: Tomahawk Feature Status

| Feature | Status | Note |
|-------------------------|-------------------|----------------------------------|
| IFP Legacy Mode | Preview | No compression support |
| Flex stat | Preview | |
| Higig Proxy | Beta | |
| IPMC Legacy | Beta | |
| L2 | Beta | |
| L2GRE | Beta | |
| L3 | Beta | |
| Link | Beta | |
| MIM | Beta | |
| Mirror | Beta | |
| MPLS | Beta | |
| Multicast | Beta | |
| NAT | Beta | |
| NIV Legacy | Beta | |
| New NIV Features | Preview | |
| Packet Rx/Tx | Beta | |
| PIMDIR | Beta | |
| Port | Preview | See SerDes bringup details below |
| Proxy | Beta | |
| QoS | Beta | |
| Oversub | Preview | |
| Rate | Preview | |
| Rtag 7 - flex hashing | Not supported yet | |
| SER Correction | Preview | Continuing to debug on HW |
| Stack | Preview | |
| STAT | Beta | |
| STG | Beta | |
| Switch Controls | Beta | |
| Time | Beta | |
| TRILL | Beta | |
| Trunk | Preview | Lag failover is failing in debug |
| Tunnel | Beta | |
| VPLAG | Beta | |
| VLAN | Beta | |
| VXLAN | Beta | |
| wlan | Beta | |
| WRED | Preview | |
| New Features | | |
| Visibility Packet Trace | Preview | |
| Counter Ejection | Preview | Test development in progress |
| Features Not Supported | | |
| Virtual/Subport | Not supported yet | |

Table 3: Tomahawk Feature Status

| Feature | Status | Note |
|---|-------------------|-------------|
| Warmboot | Not supported yet | |
| IPMC Enhancements | Not supported yet | |
| VP Switch Routing | Not supported yet | |
| MPLS LSR | Not supported yet | |
| Latency Bypass | Not supported yet | |
| Hierarchical ECMP | Not supported yet | |
| Hash Spray | Not supported yet | |
| Hashing - Load Balancing | Not supported yet | |
| Sflow and general rate enhancements | Not supported yet | |
| Visibility - Aggregate and PFC Monitors | Not supported yet | |
| WRED Enhancements | | |
| DTCP | Not supported yet | |
| AVS | Not supported yet | |
| IFP Manual Compression | Not supported yet | |
| IFP Auto Compression | Not supported yet | |

STATE OF PHY MICROCODE:

The PHY microcode delivered in this release is only meant for bringup purposes. It is not guaranteed to withstand stress testing (such as overnight runs on every port). It is partially regressed to be reasonably stable for typical process and temperatures. Its adaptation may vary slightly between ports depending on channel variations. The following table identifies features supported in this release.

Table 4: SerDes Feature Status

| Feature | Status | Note |
|------------------|--|--------------------------|
| SerDes PM4x10 | Forced Speeds | |
| Eagle: UCODE | D10E-2 | |
| Falcon: UCODE | D109-1 | |
| 10G-XFI | Passed (Gloop and p2p) | Traffic is CPU generated |
| 10G-dual | Passed (Gloop and p2p) | Traffic is CPU generated |
| 10G-XAUI | Passed (Gloop) | Traffic is CPU generated |
| SGMII | Passed (Gloop and p2p) | Traffic is CPU generated |
| SerDes PM4x10 | Auto Negotiated Speeds | |
| 10G-KR (CL73) | Passed, P2P | Traffic is CPU generated |
| SerDes PM4x25 | Forced Speeds | |
| 10GBASE-XFI | Passed (Gloop, PRBS (port to port, Traffic(port to port))) | Traffic is CPU generated |
| 4x25 | Passed (Gloop, PRBS (port to port, Traffic(port to port))) | Traffic is CPU generated |
| 40G-MLD | Passed (Gloop, PRBS (port to port, Traffic(port to port))) | Traffic is CPU generated |
| D40G (Dual lane) | Passed (Gloop, PRBS (port to port, Traffic(port to port))) | Traffic is CPU generated |

Table 4: SerDes Feature Status

| Feature | Status | Note |
|---|--|--|
| 100G-MLD | Passed (Gloop, PRBS (port to port, Traffic(port to port))) | Traffic is CPU generated |
| Forced speed Link Training | Preliminary validation of 10G and 25G channels. | Not all channels available for testing. Link training convergence seen in short/medium copper traces and short cables. |
| Forced speed FEC | Preliminary validation for CL74/CL93 | 100G -> CL93. All other speeds beget CL74. Only software control verified. Manual error injection done to check for Error count stats |
| SerDes PM4x10 | Auto Negotiated Speeds | |
| CI73: 10G KR, 40G CR4/KR4, 100G,CR4/KR4 | P2P | Traffic is CPU generated |
| CI73BAM: 20G KR2/CR2, 40G KR2/CR2 and 50G CR2/KR2 | P2P | Traffic is CPU generated |
| Eyescan HighBER | Works | |
| Eyescan LowBER | Works | |
| HG 106G, 27Gx4, D53GX2 | Passed (Gloop, Traffic (port-to-port)) | Manual regressions only. Traffic is CPU generated. |
| Aneg Link Training | Preliminary validation of 10G and 25G channels. | Not all channels available for testing. Link training convergence seen in short/medium copper traces and short cables. |
| Aneg FEC | Preliminary validation for CL74/CL93. | 100G -> CL93. All other speeds beget CL74. Only software control verified. Manual error injection done to check for Error count stats. |

BCM53400 GENERAL ACCESS RELEASE

BCM534XX family (Greyhound/Elkhound/Bloodhound) with switch and embedded processor SOC chips offers industry-leading integration and performance in a small footprint. Up to 16x10GbE ports of the maximum bandwidth are supported with KX, KR, XAUI, RXAUI, SGMII and QSGMII modes, along with the supported external PHYs. This release has provided the General Access for the devices of BCM534XX family with feature completion and qualify assurance of switch SDK software for both external and internal host modes.

This release also contains Bring-Up support for the BCM534XX A0 devices list in Preview Switch Devices, which have been brought up in-house and are capable of reference for the system validation.

BCM56060 (RANGER2) GENERAL ACCESS RELEASE

BCM5606X family with switch and embedded processor SOC chips offers industry-leading integration and performance in a small footprint. Up to 16x10GbE ports of the maximum bandwidth are supported with KX, KR, XAUI, RXAUI, SGMII and QSGMII modes, along with the supported external PHYs. This release has provided the General Access for the devices of BCM5606X family with feature completion and qualify assurance of switch SDK software for both external and internal host modes.

This release also contains Bring-Up support for the BCM5606X A0 devices list in Preview Switch Devices, which have been brought up in-house and are capable of reference for the system validation.



BCM88950 (FE3200) BETA1 RELEASE

Broadcom BCM88950 is the fourth generation in the Dune product line of Fabric Element (FE) devices - following BCM88750 (FE1600). This release is the beta1 release (second post-silicon release).

The following BCM88950 features were validated compared to 6.4.3EA1:

- SerDes/PHY
 - Added support for rate 10.937Gbps
 - Linkscan
- Data Path
 - All preset traffic-to-pipe mappings:
 - Single pipe
 - Dual pipe: (UC, MC), (Packet, TDM)
 - Triple pipe: (UC, MC, TDM), (UC, low priority MC, high priority MC)
 - Manual pipe mapping -
Note: Note: manual assignment of fabric remote pipes to fabric local pipes is required if legacy devices support only a subset of the fabric pipes.
 - Inband packet path to CPU
 - Load balancing modes: normal, unreachable destination and balanced input
- Diagnostic package
 - Phy and link diagnostics
 - Added major improvement to `phy diag <port> dsc`
 - Fabric diagnostics:
Type `fabric usage` for diagnostic commands specification.

Fixed issues:

- Fixed wrong RX equalization for low SerDes rates: 6.250Gbps, 5.750Gbps.
- MDIO access:
Clause 45 is fixed; SoC property `port_phy_clause.BCM88950=22` should be removed.

BCM88670 (JERICHO) FAMILY PREVIEW RELEASE

The Broadcom BCM88670-Family product line is the sixth generation of the Dune product line devices. Together with the BCM88950 fabric element (FE) device, it is used to build a variety of network switch solutions, enabling switching platforms of up to 12,000 100G Ethernet ports.

The following features were implemented in this release on top of previous version:

- Fabric and mesh connectivity
- Recycling interface
- Flow-based forwarding
- Ingress queuing and scheduling
- Counter processor, backward-compatible modes
- Hierarchical FEC for MPLS LSR

BCM88660 (ARAD+)

- Channelized over Ethernet (CoE) where the channelization is being specified by a VLAN-tag (CoE-tag). Every channelized interface supports up to 64 channelized ports. Dynamic port support dynamic switching between CoE and regular mode. It allows to configure port extender mode at run time. `cint_port_extender_dynamic_switching.c` is a reference for CoE configurations.
- Support basic BFD over IPv6 application. Multiple single hop sessions can be built between two BFD endpoints. BFD over IPv6 packets are trapped to embedded ARM core via PMF rules. Checks for hop-limit, DIP and BFD version are done via PMF rules as well. `cint_bfd_ipv6.c` is a reference for BFD over IPv6 application.
- L3VPN application example demonstrates BCM886XX being PE-based L3VPN. See CINTs: `cint_l3vpn.c`, `cint_mvpn.c`

THINGS TO NOTE

This section lists items that require special attention.

MINIMUM VXLAN VPN ID FOR TRIDENT2 PLUS AND TOMAHAWK

VPN ID 0x7000 is allowed when calling `bcm_vxlan_vpn_create` with `BCM_VXLAN_PORT_WITH_ID` on BCM56850. It is not allowed for BCM56860 and BCM56960 due to VPN ID 0x7000 is reserved on those devices.

BCM56850 API DEPRECATION

BCM56850 APIs have not been enhanced or supported for newer devices since SDK-5.10.2. Legacy BCM56850 APIs, supported in SDK-5.10.2 will be deprecated starting with SDK-6.3.5 release. Customers are encouraged to transition from BCM56850 APIs to their equivalent BCM APIs. Please contact Broadcom application support for any help in the transition.

BCM8483X PHY FIRMWARE

Status of F/W version 1.67 released with SDK is preview. Check 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 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.

IP ROUTE LOOKUP

If a packet destination IP lookup falls in between 2 route prefixes having a common prefix part and differing lengths, then the lower route prefix, which is the correct match, may not always be returned correctly.

BCM FIELD QUALIFIER TUNNEL TYPE

The enumeration type `bcm_field_TunnelType_t` has changed its values between SDK-6.2.x, SDK-6.3.0 and SDK-6.3.1. The implication is that legacy field qualifier support for `bcm_field_qualify_TunnelType` in XGS devices running SDK-6.3.1 and later has been broken. Features such as RPC between systems running SDK-6.2.x or SDK-6.3.0 on one and SDK-6.3.1 (or later) on another will not work properly for the BCM field qualifier tunnel type. This issue is being addressed in SDK-6.3.5, SDK-6.4.0, and later releases.

WARMBOOT: VALIDATED WARMBOOT UPGRADES.

Following warmboot upgrades have been validated in this release.

Table 5: Validated Warmboot upgrades

| Software upgrade Supported | |
|-----------------------------------|-----|
| 6.4.2 to 6.4.3 | Yes |
| 6.3.10 to 6.4.3 | Yes |

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

- Trident2
- Trident+
- Triumph3
- Katana2
- Helix4
- Hurrican2
- Katana
- Raven

NEW SPINLOCK APIS

In the SDK release v6.3.8/SDK 6.4.1 a new lock mechanism -- spinlock was introduced to satisfy some requirements for protecting small critical sections more efficiently. The spinlock mechanism is applicable to the scenario in which the critical section to be protected only contains simple operations, such as inserting or removing nodes from a linked list, increasing or decreasing shared data. The data structure and interfaces of the spinlock are defined at SAL layer in SDK as follows,

```
typedef struct sal_spinlock_s {
    char spinlock_opaque_type;
} *sal_spinlock_t;
```

```
sal_spinlock_t sal_spinlock_create(char *desc);  
int sal_spinlock_destroy(sal_spinlock_t lock);  
int sal_spinlock_lock(sal_spinlock_t lock);  
int sal_spinlock_unlock(sal_spinlock_t lock);
```

These primitives have been implemented for vxWorks and Linux. The changes are available in `src/sal/core/linux/sync.c` for Linux kernel mode, `src/sal/core/unix/sync.c` for Linux user mode and `src/sal/core/vxworks/sync.c` for vxWorks. Customers who use different OSes will need to make similar implementation in their OS specific SAL layer source files. If additional information is needed, please refer to the field alert document "Spinlock Application Note" or contact your Field Support staff.

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 6: Supported Switch Devices

| Family | Devices | Description |
|---------------|----------------|--|
| BCM56640 | BCM56545K | Triumph 3 SKU - - 48-port GE switch + 4x10GE + 4xHG[42] / 40GE |
| BCM56640 | BCM56546K | Triumph 3 SKU - - 28-port GE switch + 4x10GE + 4xHG[42] / 40GE |
| BCM56450 | BCM56450 B1 | 24-port GbE Multilayer Switch with 4-port 10 GbE uplinks, stacking, integrated CPU and Traffic Manager |
| BCM53400 | BCM53405 A0 | 16-port 10GbE Multilayer Ethernet Switch |
| | BCM53406 A0 | 12-port 10GbE plus 8-port 2.5GbE and 4-port 5GbE/2.5GbE Multilayer Ethernet Switch |
| | BCM53415 A0 | 16-port 10GbE Multilayer Ethernet Switch with integrated CPU |
| | BCM53416 A0 | 12-port 10GbE plus 8-port 2.5GbE and 4-port 5GbE/2.5GbE Ethernet Switch with integrated CPU |
| BCM56060 | BCM56060 A0 | 16-port 10GbE Multilayer Ethernet Switch with integrated CPU |

Table 7: Preview Switch Devices

| Family | Devices | Description |
|---------------|----------------|---|
| BCM56340 | BCM56345 | Twister . Bringup - 12xF.QSGMII + Flex[4x10] + 1GE |
| BCM56340 | BCM56346 | Twister . Bringup - 7xF.QSGMII + Flex[4x10] + 1GE |
| BCM56240 | BCM56245 | Saber SKU - Bringup - 2x (10GbE/4x 1GbE/4x 2.5GbE) + 2x 10GbE/12GbE/13GbE, IEEE 1588 enable |
| BCM56240 | BCM56246 | Saber SKU - Bringup - 10x 1GbE/2.5GbE, IEEE 1588 enabled |
| BCM56640 | BCM56543 | Apollo2+ SKU . Bringup -100GE/3xF.HG[42] + F.HG[127] + 1GE 415MHz |
| BCM56456 | BCM56458 B0 | 8xGE + 2xF.XAUI |
| BCM56450 | BCM56452 B0 | 24xGE + 4xF.XAUI |
| BCM56450 | BCM56454 B0 | 8xGE + 2 x F.XAUI |
| BCM56960 | BCM56960 A0 | 32x100 GbE/64x40GbE/128x10 GbE Multilayer Switch |
| BCM53400 | BCM53402 A0 | 8 x 1G/2.5G/5G/10G |
| | BCM53412 A0 | 8 x 1G/2.5G/5G/10G |
| | BCM53454 A0 | 20 x 1G/2.5G + 4 x 1G/2.5G/5G/10G |
| | BCM53455 A0 | 20 x 1G/2.5G + 4 x 1G/2.5G/5G/10G with embedded ARM A9 processor |
| | BCM53456 A0 | 4 x QSGMII + 8 x 1G/2.5G + 4 x 1G/2.5G/5G/10G (option1) |
| | BCM53456 A0 | 4 x QSGMII + 8 x 1G/2.5G + 2 x 10G + 2 x HiGigDuo[13] (option2) |
| | BCM53456 A0 | 2 x QSGMII + 16 x 1G/2.5G + 4 x 1G/2.5G/5G/10G (option3) |
| | BCM53457 A0 | 4 x QSGMII + 8 x 1G/2.5G + 4 x 1G/2.5G/5G/10G with ARM A9 (option1) |
| | BCM53457 A0 | 4 x QSGMII + 8 x 1G/2.5G + 2 x 10G + 2 x HiGigDuo[13] with ARM A9 (option2) |
| | BCM53457 A0 | 2 x QSGMII + 16 x 1G/2.5G + 4 x 1G/2.5G/5G/10G with ARM A9 (option3) |
| | BCM53422 A0 | 8 x 1G + 2 x 1G/2.5G/5G/10G |



Table 7: Preview Switch Devices

| Family | Devices | Description |
|---------------|----------------|--|
| | BCM53424 A0 | 4 x QSGMII + 8 x 1G + 4 x 1G/2.5G/5G/10G (option1) |
| | BCM53424 A0 | 4 x QSGMII + 8 x 1G + 2 x 10G + 2 x HiGigDuo[13] (option2) |
| | BCM53424 A0 | 2 x QSGMII + 16x1G + 4 x 1G/2.5G/5G/10G (option3) |
| | BCM53426 A0 | 20 x 1G + 4 x 1G/2.5G/5G/10G |
| BCM56060 | BCM56062 A0 | 2 x QSGMII + 16 x 1G/2.5G + 4 x 1G/2.5G/5G/10G (option1) |
| | BCM56062 A0 | 2 x QSGMII + 8 x 1G/2.5G + 2 x XAUI + 4 x 1G/2.5G/5G/10G (option2) |
| | BCM56062 A0 | 2 x QSGMII + 16 x 1G/2.5G + 4 x 1G/2.5G/5G/10G (option3) |
| | BCM56063 A0 | 4 x QSGMII, 4 x 1G/2.5G/5G/10G (XFI) |
| | BCM56064 A0 | 4 x QSGMII, 8 x 1GbE, 4 x 10GbE (option1) |
| | BCM56064 A0 | 4 x QSGMII, 8 x 1GbE, 2 x 10GbE, 2 x HiGigDuo[13] (option2) |
| | BCM56065 A0 | 12 x 1G/2.5G/5G/10G + 12 x 1G/2.5G |

Table 8: Supported CPUs

| Device Family | Description |
|----------------------|---|
| BCM9XLP2_XMC_A1 | XMC with Broadcom XLP II 200 series multicore processor (MIPS64 Release-II ISA-compliant) with eight NXCPU. processing units, each operating at up to 2.0 GHz |

Table 9: PHYs

| Device | Driver Family | Description |
|---------------|----------------------|--|
| BCM82072 | 82072 | CAUI4-TO-KR4 NRZ BACKPLANE PHY/OCTAL 25G BACKPLANE RETIMER. |
| BCM82328_B0 | 82328 | Dual 40 GbE/Octal 10 GbE QSFP+ XLPPI-to-XLAUI PHY. Firmware version D |
| BCM82322_B0 | 82328 | 12port Gallardo28 supporting 12x10G, 3x40G, 1x100G. Firmware version D |
| BCM54210SE_B0 | 54210 | Single Copper/Fiber Gigabit Ethernet Transceiver. 1588 not yet supported |
| BCM54220SE_B0 | 54220 | Dual Copper/Fiber Gigabit Ethernet Transceiver. 1588 not yet supported |
| BCM54295SE_B0 | 54295 | Octal Copper/Quad Fiber Gigabit Ethernet Transceiver -1588 not yet supported |
| BCM54296SE_B0 | 54296 | Quad Copper/Fiber Gigabit Ethernet Transceiver - 1588 not yet supported |
| BCM82328F_B0 | 82328 | Dual 40GbE/Octal 10GbE QSFP+ XLPPI-to-XLAUI PHY |

Table 10: Preview PHYS

| Device | Driver Family | Description |
|---------------|----------------------|--|
| BCM84858_A0 | 84858 | Quad 10GBASE-T Transceiver. Firmware version 1.01.04 |
| BCM84858_B0 | 84858 | Quad 10GBASE-T Transceiver. Firmware version 00.02.02 (Preview) |
| BCM82381_A2 | 82381 | Dual 100GbE with CAUI4 to CAUI4 / Dual 40GbE XLPPI to XLAUI/ Octal 10GbE SFI to XFI port. Firmware version D00C. |

SUMMARY OF BCM CHANGES

This section summarizes BCM API changes in this release. Complete documentation is available in the Network Switching Software Programmer's Guide 56XX-PG643-R. (See section 2 earlier in this document for availability).

BIDIRECTIONAL FORWARDING DETECTION

The flag of BFD endpoint info define for resolving BFD session ID from your discriminator is renamed to `BCM_BFD_ENDPOINT_KEY_TYPE_USE_YOUR_DISC`, instead of MPLS label.

Table 11: BFD Endpoint Info Structure Flag Definitions

| Flag | Description |
|--|--|
| <code>BCM_BFD_ENDPOINT_KEY_TYPE_USE_YOUR_DISC</code> | Resolve BFD session from your discriminator (instead of MPLS label). |

The data types for BFD Statistics structure were extended from `uint32` to `uint64` have been reverted back to `uint32`.

```
typedef struct bcm_bfd_endpoint_stat_s {
    uint32 packets_in;
    uint32 packets_out;
    uint32 packets_drop;
    uint32 packets_auth_drop;
} bcm_bfd_endpoint_stat_t;
```

EXPLICIT CONGESTION NOTIFICATION (ECN)

New initialization routines regarding the ECN traffic map info and traffic action have been added.

bcm_ecn_traffic_map_info_t_init

Initialize an ECN traffic map information structure.

Syntax

```
#include <bcm/ecn.h>
void bcm_ecn_traffic_map_info_t_init(bcm_ecn_traffic_map_info_t *ecn_map);
```

Parameters

`ecn_map` (OUT) ECN traffic map information structure to initialize

Description

Initialize an ECN traffic map information structure. All fields are set to zeros.

Returns

Nothing.

bcm_ecn_traffic_action_config_t_init

Initialize an ECN traffic action configure structure.

Syntax

```
#include <bcm/ecn.h>
void bcm_ecn_traffic_action_config_t_init(bcm_ecn_traffic_action_config_t
*ecn_action);
```

Parameters

ecn_action (OUT) ECN traffic action configure structure to initialize

Description

Initialize an ECN traffic action configure structure. All fields are set to zeros.

Returns

Nothing.

FIELD PROCESSOR

Several new FP field types regarding OAM have been introduced with the corresponding defined values.

Table 12: New FP OAM Types (bcm_field_oam_type_t)

| Name | Purpose |
|-------------------------|--------------------|
| bcmFieldOamTypeEthernet | Oam Type Ethernet. |
| bcmFieldOamTypeMpls | Oam Type MPLS. |

Table 13: MplsOam Control Packet Types (bcm_field_MplsOam_Control_pktType_t)

| Name | Purpose |
|--|--|
| bcmFieldMplsOamControlPktTypeUnknown | Mpls Oam Control Packet Type UNKNOWN |
| bcmFieldMplsOamControlPktTypeVCCV1 | Mpls Oam Control Packet Type VCCV1 |
| bcmFieldMplsOamControlPktTypeVCCV2 | Mpls Oam Control Packet Type VCCV2 |
| bcmFieldMplsOamControlPktTypeVCCV3 | Mpls Oam Control Packet Type VCCV3 |
| bcmFieldMplsOamControlPktTypeVCCV4_GAL_ACH | Mpls Oam Control Packet Type VCCV4/GAL_ACH |

New qualifiers for the field APIs have been added in this release.

Table 14: New Field Qualifiers

| Qualifier | Purpose |
|------------------------------|--|
| bcmFieldQualifyOamInLifValid | Indicates if the LIF that has been found is an OAM LIF. This is a specific behavior to our devices and hard to expose. |

Table 14: New Field Qualifiers

| Qualifier | Purpose |
|-------------------------------------|--|
| bcmFieldQualifyOamInLifId | Indicates the last OAM LIF that has been found. This value is valid only if SOC_PPC_FP_QUAL_VTT_OAM_LIF_VALID is set. |
| bcmFieldQualifyOamUpMep | It indicates if the OAM packet is UP-MEP (sent to a destination in the network, as opposed to a specific port). This term belongs to the OAM jargon. |
| bcmFieldQualifyOamSubtype | In OAM the packet type is specified in the OAM header and mapped to a subtype in the hardware. This value indicates the hardware type that it is mapped to. |
| bcmFieldQualifyOamHeaderOffset | This field indicates the offset of the OAM header relative to the start of packet (as opposed to start of header-offset[0]). |
| bcmFieldQualifyOamStampOffset | This qualifier indicates the offset to the position, in the OAM header, where the ToD or counter value should be stamped, relative to the start of packet (as opposed to start of header-offset[0]). |
| bcmFieldQualifyOamMepId | Oam mep endpoint |
| bcmFieldQualifyOamMeterDisable | This qualifier is an attribute that is passed to the PMF and can also be configured by the user per MEP. |
| bcmFieldQualifyOamTsSystemHeader | The entire OAM-TS is passed to the egress PMF (48 bit) |
| bcmFieldQualifyDstMulticastGroups | Multicast Group IDs. |
| bcmFieldQualifyInterfaceInPorts | Qualify Interface In Ports |
| bcmFieldQualifyDestVirtualPortValid | Destination Virtual Port is valid |

New action for the field APIs has been added in this release.

Table 15: Field Actions

| Action | Description | param0 | param1 |
|-------------------|---|--------|--------|
| bcmFieldActionOam | It comprises several fields that are changed at the same time: OAM-Up-Mep, OAM-Sub-Type, OAM-offset, OAM-Stamp-Offset | n/a | n/ |

A new field hintid with `bcm_field_hintid_t` type, which is also `uint32`, is added into `bcm_field_group_config_t` data structure that is used to create a field group with specified qualifier set, priority, mode, ports, group size (small or large) and group ID. In addition, the new group config flag `BCM_FIELD_GROUP_CREATE_SINGLE` and hint type `bcm_field_hint_type_t` for a group are added in this release as well.

Table 16: Group config flags

| Group config flag | Purpose |
|-------------------------------|---|
| BCM_FIELD_GROUP_CREATE_SINGLE | If set, use single resource for field group |

```

/*
 * Group configuration structure. Used to create a field group with
 * specific attributes.
 */
typedef struct bcm_field_group_config_s {
    uint32 flags; /* Group create flags
BCM_FIELD_GROUP_CREATE_XXX. */

```

```

    ...
    bcm_field_hintid_t hintid;          /* Hints for Group Creation. */
} bcm_field_group_config_t;

/*
 * Field Hint Type
 *
 * Specify the hint type for a group.
 */
typedef enum bcm_field_hint_type_e {
    bcmFieldHintTypeCompression = 0,    /* Hint Type for Auto Compression */
    bcmFieldHintTypeExtraction = 1,     /* Hint Type for Qualifier
Extraction */
    bcmFieldHintTypeGroupAutoExpansion = 2, /* Hint Type for Group Auto
Expansion */
    bcmFieldHintTypeCount = 3           /* Always Last. Not a usable value. */
} bcm_field_hint_type_t;

```

Hints are used during group creation and group expansion.

Table 17: Field Hint type

| Hint Type | Purpose |
|------------------------------------|--|
| bcmFieldHintTypeCompression | Qualifier Compression Hints. |
| bcmFieldHintTypeExtraction | Qualifier Extraction Hints. |
| bcmFieldHintTypeGroupAutoExpansion | Group Auto Expansion Hints. Hint type GroupAutoExpansion is configured to provide control for selecting the physical slice during auto expansion of group. |
| bcmFieldHintTypeCount | Internal use only. |

The new data structure `bcm_field_hints_t` with the required flags has been added.

Table 18: Flags values to update the `bcm_field_hint_t` structure.

| Hints flag | Purpose |
|--------------------------------------|---------------------------------------|
| BCM_FIELD_HINT_EXACT_MATCH_ONLY | Exact Match Only. |
| BCM_FIELD_GROUP_AUTO_EXPANSION_SMALL | Prefer expanding using smaller slices |
| BCM_FIELD_GROUP_AUTO_EXPANSION_LARGE | Prefer expanding using larger slices |
| BCM_FIELD_GROUP_MAX_SIZE_HARD_LIMIT | Set Hard limit for max_group_size. |

```

/* Specify hints to be used during group creation. */
typedef struct bcm_field_hint_s {
    bcm_field_hint_type_t hint_type; /* Field hints of type
bcm_field_hint_type_t. */
    bcm_field_qualify_t qual;        /* Field qualifier bcmFieldQualifyXXX. */
    uint32 max_values;              /* To figure out the width of the
compression output. */

```

```
uint32 start_bit;          /* Builds the range in conjunction with
end_bit                    which will indicate that in the
                             full mask any bits
                             outside of that range are
                             guaranteed to be 0. */
uint32 end_bit;            /* End bit of a mask for the qualifier
in hint structure. */
uint32 flags;              /* Flags. */
uint32 max_group_size;     /* Max size of the group. */
} bcm_field_hint_t;
```

The data type of the third parameter for field qualify APIs, `bcm_field_qualify_DstMulticastGroup()` and `bcm_field_qualify_DstMulticastGroup_get()` has been changed from `bcm_gport_t` to `bcm_multicast_t` in this release.

Original:

```
/*
 * Get match criteria for bcmFieldQualifyDstMulticastGroup
 * qualifier from the field entry.
 */
extern int bcm_field_qualify_DstMulticastGroup_get(
    int unit,
    bcm_field_entry_t entry,
    bcm_gport_t *group);

/* bcm_field_qualify_DstMulticastGroup */
extern int bcm_field_qualify_DstMulticastGroup(
    int unit,
    bcm_field_entry_t entry,
    bcm_gport_t group);
```

Updated:

```
/*
 * Get match criteria for bcmFieldQualifyDstMulticastGroup
 * qualifier from the field entry.
 */
extern int bcm_field_qualify_DstMulticastGroup_get(
    int unit,
    bcm_field_entry_t entry,
    bcm_multicast_t *group);

/* bcm_field_qualify_DstMulticastGroup */
extern int bcm_field_qualify_DstMulticastGroup(
    int unit,
    bcm_field_entry_t entry,
    bcm_multicast_t group);
```

A new Fabric header type for `bcm_field_fabric_header_t` has been added.

Table 19: New Fabric Header

| Name | Purpose |
|---------------------------------|--|
| bcmFieldFabricHeaderEthernetDSP | Regular Ethernet, stacking FTMH with DSP Extension and PPH fabric header |

New Packet Application types that identify the type of application used for the packet processing as listed.

Table 20: New Field Application Type

| Type | Purpose |
|---------------------------------|---------------------|
| bcmFieldAppTypeBfdIpv4SingleHop | BFD ipv4 single hop |
| bcmFieldAppTypeBfdEcho | BFD Echo |

New Field APIs in this release have been added as following.

bcm_field_qualify_XXX

Add a qualification to a field entry

Syntax

```
#include <bcm/field.h>
int bcm_field_qualify_OamType(
    int unit,
    bcm_field_entry_t entry,
    bcm_field_oam_type_t oam_type);
int bcm_field_qualify_EthernetOamDstClassL2(
    int unit,
    bcm_field_entry_t entry,
    uint8 data,
    uint8 mask);
int bcm_field_qualify_EthernetOamTxPktUPMEP(
    int unit,
    bcm_field_entry_t entry,
    uint8 data,
    uint8 mask);
int bcm_field_qualify_EthernetOamSrcPortLmStatPoolId(
    int unit,
    bcm_field_entry_t entry,
    uint8 data,
    uint8 mask);
int bcm_field_qualify_EthernetOamVxlt1LmStatPoolId(
    int unit,
    bcm_field_entry_t entry,
    uint8 data,
    uint8 mask);
int bcm_field_qualify_EthernetOamVxlt2LmStatPoolId(
    int unit,
    bcm_field_entry_t entry,
    uint8 data,
```



```
uint8 mask);
int bcm_field_qualify_EthernetOamSourceVPLmStatPoolId(
    int unit,
    bcm_field_entry_t entry,
    uint8 data,
    uint8 mask);
int bcm_field_qualify_EthernetOamInterfaceClassPort(
    int unit,
    bcm_field_entry_t entry,
    uint8 data,
    uint8 mask);
int bcm_field_qualify_EthernetOamClassVxlt1(
    int unit,
    bcm_field_entry_t entry,
    uint8 data,
    uint8 mask);
int bcm_field_qualify_EthernetOamClassVxlt2(
    int unit,
    bcm_field_entry_t entry,
    uint8 data,
    uint8 mask);
extern int bcm_field_qualify_EthernetOamClassSourceVP(
    int unit,
    bcm_field_entry_t entry,
    uint8 data,
    uint8 mask);
int bcm_field_qualify_EthernetOamClassVFI(
    int unit,
    bcm_field_entry_t entry,
    uint8 data,
    uint8 mask);
int bcm_field_qualify_MplsOamGALLabelOnly(
    int unit,
    bcm_field_entry_t entry,
    uint8 data,
    uint8 mask);
int bcm_field_qualify_MplsOamMplsLmStatPoolId(
    int unit,
    bcm_field_entry_t entry,
    uint8 data,
    uint8 mask);
int bcm_field_qualify_MplsOamGALExposed(
    int unit,
    bcm_field_entry_t entry,
    uint8 data,
    uint8 mask);
int bcm_field_qualify_MplsOamControlPktType(
    int unit,
    bcm_field_entry_t entry,
    bcm_field_MplsOam_Control_pktType_t data,
    bcm_field_MplsOam_Control_pktType_t mask);
int bcm_field_qualify_MplsOamClassMpls(
    int unit,
```

```
    bcm_field_entry_t entry,
    uint16 data,
    uint16 mask);
int bcm_field_qualify_OamEgressClassVxlt(
    int unit,
    bcm_field_entry_t entry,
    uint16 data,
    uint16 mask);
int bcm_field_qualify_OamEgressClassPort(
    int unit,
    bcm_field_entry_t entry,
    uint16 data,
    uint16 mask);
extern int bcm_field_qualify_VxlanHeaderBits8_31(
    int unit,
    bcm_field_entry_t entry,
    uint32 data,
    uint32 mask);
int bcm_field_qualify_VxlanHeaderBits56_63(
    int unit,
    bcm_field_entry_t entry,
    uint8 data,
    uint8 mask);
int bcm_field_qualify_OamInLifIdValid(
    int unit,
    bcm_field_entry_t entry,
    uint8 data,
    uint8 mask);
int bcm_field_qualify_OamInLifId(
    int unit,
    bcm_field_entry_t entry,
    uint32 data,
    uint32 mask);
int bcm_field_qualify_OamUpMep(
    int unit,
    bcm_field_entry_t entry,
    uint8 data,
    uint8 mask);
extern int bcm_field_qualify_OamSubtype(
    int unit,
    bcm_field_entry_t entry,
    uint8 data,
    uint8 mask);
extern int bcm_field_qualify_OamHeaderOffset(
    int unit,
    bcm_field_entry_t entry,
    uint32 data,
    uint32 mask);
extern int bcm_field_qualify_OamStampOffset(
    int unit,
    bcm_field_entry_t entry,
    uint32 data,
    uint32 mask);
```

```
extern int bcm_field_qualify_OamMepId(
    int unit,
    bcm_field_entry_t entry,
    uint32 data,
    uint32 mask);
int bcm_field_qualify_OamMeterDisable(
    int unit,
    bcm_field_entry_t entry,
    uint8 data,
    uint8 mask);
int bcm_field_qualify_OamTsSystemHeader(
    int unit,
    bcm_field_entry_t entry,
    uint64 data,
    uint64 mask);
int bcm_field_qualify_EthernetOamHeaderBits0_31(
    int unit,
    bcm_field_entry_t entry,
    uint32 data,
    uint32 mask);
int bcm_field_qualify_EthernetOamHeaderBits32_63(
    int unit,
    bcm_field_entry_t entry,
    uint32 data,
    uint32 mask);
int bcm_field_qualify_MplsOamHeaderBits0_31(
    int unit,
    bcm_field_entry_t entry,
    uint32 data,
    uint32 mask);
int bcm_field_qualify_MplsOamHeaderBits32_63(
    int unit,
    bcm_field_entry_t entry,
    uint32 data,
    uint32 mask);
int bcm_field_qualify_MplsOamACH(
    int unit,
    bcm_field_entry_t entry,
    uint32 data,
    uint32 mask);
int bcm_field_qualify_OamHeaderBits0_31(
    int unit,
    bcm_field_entry_t entry,
    uint32 data,
    uint32 mask);
int bcm_field_qualify_OamHeaderBits32_63(
    int unit,
    bcm_field_entry_t entry,
    uint32 data,
    uint32 mask);
int bcm_field_qualify_DstMulticastGroups(
    int unit,
    bcm_field_entry_t entry,
```

```
bcm_multicast_t group,  
bcm_multicast_t mask);  
int bcm_field_qualify_InterfaceInPorts(  
    int unit,  
    bcm_field_entry_t entry,  
    bcm_pbmp_t data,  
    bcm_pbmp_t mask);  
int bcm_field_qualify_DestVirtualPortValid(  
    int unit,  
    bcm_field_entry_t entry,  
    uint8 data,  
    uint8 mask);
```

Parameters

| | |
|-------|--|
| unit | BCM device number |
| entry | Field entry ID |
| data | Data to match against |
| mask | Mask to choose which bits of data to match against |

Description

Adds a qualification to a filter entry. Each qualification added makes the entry more specific and match fewer possible packets.

Returns

bcm_field_qualify_XXX_get

Get a qualification match criteria from a field entry

Syntax

```
#include <bcm/field.h>  
int bcm_field_qualify_OamType_get(  
    int unit,  
    bcm_field_entry_t entry,  
    bcm_field_oam_type_t *oam_type);  
int bcm_field_qualify_EthernetOamDstClassL2_get(  
    int unit,  
    bcm_field_entry_t entry,  
    uint8 *data,
```

```
uint8 *mask);
int bcm_field_qualify_EthernetOamTxPktUPMEP_get(
    int unit,
    bcm_field_entry_t entry,
    uint8 *data,
    uint8 *mask);
int bcm_field_qualify_EthernetOamSrcPortLmStatPoolId_get(
    int unit,
    bcm_field_entry_t entry,
    uint8 *data,
    uint8 *mask);
int bcm_field_qualify_EthernetOamVxlt1LmStatPoolId_get(
    int unit,
    bcm_field_entry_t entry,
    uint8 *data,
    uint8 *mask);
int bcm_field_qualify_EthernetOamVxlt2LmStatPoolId_get(
    int unit,
    bcm_field_entry_t entry,
    uint8 *data,
    uint8 *mask);
int bcm_field_qualify_EthernetOamSourceVPLmStatPoolId_get(
    int unit,
    bcm_field_entry_t entry,
    uint8 *data,
    uint8 *mask);
int bcm_field_qualify_EthernetOamInterfaceClassPort_get(
    int unit,
    bcm_field_entry_t entry,
    uint8 *data,
    uint8 *mask);
int bcm_field_qualify_EthernetOamClassVxlt1_get(
    int unit,
    bcm_field_entry_t entry,
    uint8 *data,
    uint8 *mask);
int bcm_field_qualify_EthernetOamClassVxlt2_get(
    int unit,
    bcm_field_entry_t entry,
    uint8 *data,
    uint8 *mask);
int bcm_field_qualify_EthernetOamClassSourceVP_get(
    int unit,
    bcm_field_entry_t entry,
    uint8 *data,
    uint8 *mask);
int bcm_field_qualify_EthernetOamClassVFI_get(
    int unit,
    bcm_field_entry_t entry,
    uint8 *data,
    uint8 *mask);
int bcm_field_qualify_MplsOamGALLabelOnly_get(
    int unit,
```

```
bcm_field_entry_t entry,
uint8 *data,
uint8 *mask);
int bcm_field_qualify_MplsOamMplsLmStatPoolId_get(
int unit,
bcm_field_entry_t entry,
uint8 *data,
uint8 *mask);
int bcm_field_qualify_MplsOamGALEExposed_get(
int unit,
bcm_field_entry_t entry,
uint8 *data,
uint8 *mask);
int bcm_field_qualify_MplsOamControlPktType_get(
int unit,
bcm_field_entry_t entry,
bcm_field_MplsOam_Control_pktType_t *data,
bcm_field_MplsOam_Control_pktType_t *mask);
int bcm_field_qualify_MplsOamClassMpls_get(
int unit,
bcm_field_entry_t entry,
uint16 *data,
uint16 *mask);
int bcm_field_qualify_OamEgressClassVxlt_get(
int unit,
bcm_field_entry_t entry,
uint16 *data,
uint16 *mask);
int bcm_field_qualify_OamEgressClassPort_get(
int unit,
bcm_field_entry_t entry,
uint16 *data,
uint16 *mask);
int bcm_field_qualify_VxlanHeaderBits8_31_get(
int unit,
bcm_field_entry_t entry,
uint32 *data,
uint32 *mask);
int bcm_field_qualify_VxlanHeaderBits56_63_get(
int unit,
bcm_field_entry_t entry,
uint8 *data,
uint8 *mask);
int bcm_field_qualify_OamInLifIdValid_get(
int unit,
bcm_field_entry_t entry,
uint8 *data,
uint8 *mask);
int bcm_field_qualify_OamInLifId_get(
int unit,
bcm_field_entry_t entry,
uint32 *data,
uint32 *mask);
```

```
int bcm_field_qualify_OamUpMep_get(
    int unit,
    bcm_field_entry_t entry,
    uint8 *data,
    uint8 *mask);
int bcm_field_qualify_OamSubtype_get(
    int unit,
    bcm_field_entry_t entry,
    uint8 *data,
    uint8 *mask);
int bcm_field_qualify_OamHeaderOffset_get(
    int unit,
    bcm_field_entry_t entry,
    uint32 *data,
    uint32 *mask);
int bcm_field_qualify_OamStampOffset_get(
    int unit,
    bcm_field_entry_t entry,
    uint32 *data,
    uint32 *mask);
int bcm_field_qualify_OamMepId_get(
    int unit,
    bcm_field_entry_t entry,
    uint32 *data,
    uint32 *mask);
int bcm_field_qualify_OamMeterDisable_get(
    int unit,
    bcm_field_entry_t entry,
    uint8 *data,
    uint8 *mask);
int bcm_field_qualify_OamTsSystemHeader_get(
    int unit,
    bcm_field_entry_t entry,
    uint64 *data,
    uint64 *mask);
int bcm_field_qualify_EthernetOamHeaderBits0_31_get(
    int unit,
    bcm_field_entry_t entry,
    uint32 *data,
    uint32 *mask);
int bcm_field_qualify_EthernetOamHeaderBits32_63_get(
    int unit,
    bcm_field_entry_t entry,
    uint32 *data,
    uint32 *mask);
int bcm_field_qualify_MplsOamHeaderBits0_31_get(
    int unit,
    bcm_field_entry_t entry,
    uint32 *data,
    uint32 *mask);
int bcm_field_qualify_MplsOamHeaderBits32_63_get(
    int unit,
    bcm_field_entry_t entry,
```

```
uint32 *data,
uint32 *mask);
int bcm_field_qualify_MplsOamACH_get(
int unit,
bcm_field_entry_t entry,
uint32 *data,
uint32 *mask);
int bcm_field_qualify_OamHeaderBits0_31_get(
int unit,
bcm_field_entry_t entry,
uint32 *data,
uint32 *mask);
int bcm_field_qualify_OamHeaderBits32_63_get(
int unit,
bcm_field_entry_t entry,
uint32 *data,
uint32 *mask);
int bcm_field_qualify_DstMulticastGroups_get(
int unit,
bcm_field_entry_t entry,
bcm_multicast_t *group,
bcm_multicast_t *mask);
int bcm_field_qualify_InterfaceInPorts_get(
int unit,
bcm_field_entry_t entry,
bcm_pbmp_t *data,
bcm_pbmp_t *mask);
int bcm_field_qualify_DestVirtualPortValid_get(
int unit,
bcm_field_entry_t entry,
uint8 *data,
uint8 *mask);
```

Parameters

| | |
|-------|--|
| unit | BCM device number |
| entry | Field entry ID |
| data | Data to match against |
| mask | Mask to choose which bits of data to match against |

Description

Get a match criteria for a specific qualifier from a field entry.

bcm_field_hint_t_init

Initialize Field Group Hint structure.

Syntax

```
#include <bcm/field.h>
void bcm_field_hint_t_init(bcm_field_hint_t *hint);
```


Parameters

`hint` (OUT) Pointer to Field Group Hint structure to initialize.

Description

Initializes the Field Group Hint structure to default values. This function should be used to initialize any Field Group Hint 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_field_hint_t` structure, and `bcm_field_hint_t_init` will initialize the new members to correct default values.

Returns

None.

`bcm_field_hints_create`

Generate a hint id.

Syntax

```
#include <bcm/field.h>
int bcm_field_hints_create(int unit,
    bcm_field_hintid_t *hint_id);
```

Parameters

`*hint_id` (OUT) Pointer to hint id where the generated hint id will be stored.

Description

Generates a hint id to which the hints will be associated. Group config structure will have hint id as member.

Returns

`bcm_field_hints_add`

Associate a hint structure to the hint id.

Syntax

```
#include <bcm/field.h>
int bcm_field_hints_add(int unit,
    bcm_field_hintid_t hint_id,
    bcm_field_hint_t *hint);
```

Parameters

| | |
|----------------------|---|
| <code>unit</code> | (IN) BCM device number |
| <code>hint_id</code> | (IN) Hint id generated by <code>bcm_field_hints_create</code> . |
| <code>*hint</code> | (OUT) Pointer to the hint structure. |

Description

Associate a hint to the hint id.

Returns

`bcm_field_hints_get`

Get the complete hint structure from the hint id.

Syntax

```
#include <bcm/field.h>
int bcm_field_hints_get(int unit,
bcm_field_hintid_t hint_id,
bcm_field_hint_t *hint);
```

Parameters

| | |
|----------------------|---|
| <code>unit</code> | (IN) BCM device number |
| <code>hint_id</code> | (IN) Hint id generated by <code>bcm_field_hints_create</code> . |
| <code>*hint</code> | (INOUT) Pointer to the hint structure. |

Description

Get the complete hints structure associated to a hint id. Fill known values in hints structure and API will return the complete structure.

Example: `bcm_field_hint_t hint; hint.hint_type = bcmFieldHintTypeGroupAutoExpansion;`
`bcm_field_hints_get (unit, hintid, &hint);`

Returns

bcm_field_hints_delete

Remove a hint structure from the hint id.

Syntax

```
#include <bcm/field.h>
int bcm_field_hints_delete(int unit,
bcm_field_hintid_t hint_id,
bcm_field_hint_t *hint);
```

Parameters

| | |
|---------|---|
| unit | (IN) BCM device number |
| hint_id | (IN) Hint id generated by bcm_field_hints_create. |
| *hint | (IN) Pointer to the hint structure. |

Description

Remove a hint from the hint id.

Returns

bcm_field_hints_delete_all **bcm_field_hints_destroy**

Remove all hints from the hint id.

Syntax

```
#include <bcm/field.h>
int bcm_field_hints_delete_all(int unit,
bcm_field_hintid_t hint_id);
int bcm_field_hints_destroy(int unit,
bcm_field_hintid_t hint_id);
```

Parameters

unit (IN) BCM device number
hint_id (IN) Hint id generated by bcm_field_hints_create.

Description

Remove all the hints associated to a hint id. hint id can be reused.

Returns

bcm_field_group_oper_mode_set

Set operational mode of field group's in a particulat Filter Processor Stage.

Syntax

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

int bcm_field_group_oper_mode_set(int unit,
    bcm_field_qualify_t stage,
    bcm_field_group_oper_mode_t mode);
```

Parameters

unit BCM device number
stage Filter Processor Stage.
mode Group Operational Mode.

Description

bcm_field_group_oper_mode_set API is used to set the operational mode of field groups in a particular Filter Processor Stage.

Table 21: bcm_field_group_oper_mode_t:Group Operational Modes.

| Mode | Purpose |
|--------------------------------|---|
| bcmFieldGroupOperModeGlobal | Global Mode(Entries in group will be installd in all pipies). |
| bcmFieldGroupOperModePipeLocal | Pipe Local Mode. |



Returns

bcm_field_group_oper_mode_get

Get operational mode of field group's in a particular Filter Processor Stage.

Syntax

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

int bcm_field_group_oper_mode_get(int unit,
    bcm_field_qualify_t stage,
    bcm_field_group_oper_mode_t *mode);
```

Parameters

| | |
|-------|------------------------------|
| unit | BCM device number |
| stage | Filter Processor Stage. |
| mode | (OUT)Group Operational Mode. |

Description

bcm_field_group_oper_mode_get API is used to get the operational mode of field groups in a particular Filter Processor Stage.

Returns

INITIALIZATION

A new field regarding number of pipes is added in the bcm_info_t data structure.

Table 22: bcm_info_t Structure

| Member | Type | Description |
|----------|--------|--|
| vendor | uint32 | Device Vendor (often the PCI vendor) |
| device | uint32 | Device Type (often the PCI device) |
| revision | uint32 | Device Revision (often the PCI revision) |

Table 22: *bcm_info_t* Structure

| Member | Type | Description |
|---------------|-------------|-----------------------------|
| capability | uint32 | Device Capability Flags. |
| num_pipes | int | Number of pipes per device. |

New BCM attaching APIs for early TX/RX are added as following

bcm_attach_early_txrx

Attach only tx and rx modules to a device as a BCM unit.

Syntax

```
#include <bcm/init.h>
int
bcm_attach_early_txrx(int unit, char *type, char *subtype, int remunit);
```

Parameters

| | |
|---------|-------------------|
| unit | (IN) Unit number. |
| type | (IN) <UNDEF> |
| subtype | (IN) <UNDEF> |
| remunit | (IN) <UNDEF> |

Description

This API is primarily for warmboot. Since regular attach operation through `bcm_attach` during warmboot take a while to complete, there is a chance that protocols running in application layer time out. This can lead to disruption at system level. This API enables applications to start Tx and Rx as soon as possible, with some limitations. The limitations with initializing tx include, but are not limited to the following: a. Device doesnot check the link state in case of TX, and thus it might not free up the dma structures allocated to packet tx, if link is down. The limitations with initializing Rx include, but are not limited to the following: a. Trunk group gport might not be resolved, for packets received on trunk memeber ports After soc level initialization, this API can be called to initialize Tx and Rx modules. A regular `bcm_attach` must be followed for complete initialization of the device. Apart from Tx and Rx APIs, other API's shouldnot be used/called before `bcm_attach` completes.

Returns

bcm_detach_late_txrx

Detach all modules excluding tx and rx from BCM unit.

Syntax

```
#include <bcm/init.h>
int bcm_detach_late_txrx(int unit);
```

Parameters

unit (IN) Unit number.

Description

In cases when stopping Tx and Rx needs to be delayed, this API can be used to detach all other modules apart from tx and rx. Tx and Rx will continue to work, (with limitations similar to the ones mentioned for `bcm_attach_early_txrx` (page 38<Default ~' Font>) even after this API is invoked. After this API, customers are expected to shut down their Tx/Rx components, and invoke `bcm_detach`, to shutdown the system completely.

Returns

BCM_E_XXX

LAYER 2 ADDRESS MANAGEMENT

When creating a new L2 learn distribution (`bcm_l2_addr_distribute_t`), a new `BCM_L2_ADDR_DIST_REFRESH_EVENT` flag is added for age refresh event.

```
typedef struct bcm_l2_addr_distribute_s {
    uint32 flags; /* BCM_L2_ADDR_DIST_XXX flags. */
    bcm_vlan_t vid; /* VLAN or VPN identifier. */
} bcm_l2_addr_distribute_t;
```

Table 23: L2 Learning events flags

| Name | Purpose |
|--------------------------------|-------------------|
| BCM_L2_ADDR_DIST_REFRESH_EVENT | Age refresh event |



The new `station_flags` is added to both `bcm_l2_cache_addr_t` and `bcm_l2_addr_t` data structures with below flags.

```
typedef struct bcm_l2_addr_s {
    uint32 flags;                /* BCM_L2_XXX flags. */
    uint32 station_flags;        /* BCM_L2_STATION_XXX flags. */
    ...
} bcm_l2_addr_t;

typedef struct bcm_l2_cache_addr_s {
    uint32 flags;                /* BCM_L2_CACHE_XXX flags. */
    uint32 station_flags;        /* BCM_L2_STATION_XXX flags. */
    ...
} bcm_l2_cache_addr_t;
```

Table 24: BCM L2 Station Flags

| Name | Purpose |
|---------------------------|---|
| BCM_L2_STATION_IPV4_MCAST | Subject packets matching this entry to IPV4 mcast processing. |
| BCM_L2_STATION_IPV6_MCAST | Subject packets matching this entry to IPV6 mcast processing. |

L2GRE MANAGEMENT

A new flag `BCM_L2GRE_PORT_ENABLE_VLAN_CHECKS` has been added for MPLS Port Match Criteria.

Table 25: MPLS Port Match Criteria

| Name | Purpose |
|-----------------------------------|---|
| BCM_L2GRE_PORT_ENABLE_VLAN_CHECKS | Enable vlan check, only for access VP derived from VLAN_XLATE |

LAYER 3 MANAGEMENT

A new flag for L3 ingress interface has been introduced in this release.

Table 26: BCM Layer3 Ingress Interface Flags

| Name | Purpose |
|-------------------------------------|---|
| BCM_L3_INGRESS_UNKNOWN_IPMC_AS_L2MC | Enable L2MC processing of Unknown IPMC (IPMC miss) packets, instead of flooding to vlan |

A new flag for L3 module flags2 has been introduced in this release.

Table 27: BCM Layer3 Flags2

| Name | Purpose |
|-------------------------------|--|
| BCM_L3_FLAGS2_NIV_ENCAP_LOCAL | Add/Replace/Delete or do not modify VNTAG/ETAG, on packet egressing HiGig/Fabric port. |

A new field flags2 has been added in L3 Egress data structure that is used to set up additional flags.

```
/*
 * L3 Egress Structure.
 *
 * Description of an L3 forwarding destination.
 */
typedef struct bcm_l3_egress_s {
    ...
    uint32 flags2; /* See BCM_L3_FLAGS2_xxx flag definitions. */
    ...
} bcm_l3_egress_t;
```

A new field l3a_flags2 has been added in L3 Host data structure that is used to set up additional flags.

```
/*
 * L3 Host Structure.
 *
 * Contains information required for manipulating L3 host table entries.
 *
 * The BCM_L3_IP6 flag in l3a_flags must be set to specify whether the
 * IPv4 or IPv6 addresses are valid.
 */
typedef struct bcm_l3_host_s {
    ...
    uint32 l3a_flags2; /* See BCM_L3_FLAGS2_xxx flag definitions. */
    ...
} bcm_l3_host_t;
```

A new field l3a_flags2 has been added in L3 Route data structure that is used to set up additional flags.

```
/*
 * L3 Route Structure
 *
 * Contains information required for manipulating L3 route table entries.
 *
 * The BCM_L3_IP6 flag in l3a_flags must be set to specify whether the
 * IPv4 or IPv6 addresses are valid.
 */
typedef struct bcm_l3_route_s {
    ...
    uint32 l3a_flags2; /* See BCM_L3_FLAGS2_xxx flag definitions. */
    ...
} bcm_l3_route_t;
```

A new field has been added in bcm_tunnel_terminator_t data structure that contains information used to set up tunnel terminator parameters.

```
typedef struct bcm_tunnel_terminator_s {
    ...
    int tunnel_class; /* Tunnel class id. */
} bcm_tunnel_terminator_t;
```

New L3 ECMP APIs have been introduced in this release.

bcm_l3_ecmp_member_t_init

Initialize L3 Egress ECMP member structure.

Syntax

```
#include <bcm/l3.h>
void bcm_l3_ecmp_member_t_init(bcm_l3_ecmp_member_t *ecmp_member);
```

Parameters

ecmp_member (OUT) L3 Egress ECMP member structure

Description

Initializes a L3 Egress ECMP member structure to default values. `bcm_l3_ecmp_member_t` contains per ECMP member attributes.

```
typedef struct bcm_l3_ecmp_member_s {
    uint32 flags;                /* Member flag. */
    bcm_if_t egress_if;          /* L3 interface ID pointing to Egress
                                Forwarding Object. */
    bcm_failover_t failover_id;  /* Failover Object Identifier. */
    bcm_if_t failover_egress_if; /* Failover Egress L3 Interface ID. */
    int status;                  /* Member status. */
} bcm_l3_ecmp_member_t;
```

Returns

Nothing

bcm_l3_ecmp_create

Create an Egress ECMP forwarding object.

Syntax

```
#include <bcm/l3.h>
int bcm_l3_ecmp_create(int unit, uint32 options,
    bcm_l3_egress_ecmp_t *ecmp_info,
    int ecmp_member_count,
    bcm_l3_ecmp_member_t *ecmp_member_array);
```

Parameters

| | |
|-------------------|---|
| unit | (IN) BCM device number. |
| options | (IN) L3_ECMP_O_xxx flags. |
| ecmp_info | (IN/OUT) ECMP group info. |
| ecmp_member_count | (IN) Number of elements in ecmp_member_array. |
| ecmp_member_array | (IN) Member array of Egress forwarding objects. |

Description

Create an Egress ECMP forwarding object. The L3 interface ID pointing to the created Egress ECMP object is returned in ecmp_info->ecmp_intf.

Table 28: ECMP create options

| Name | Purpose |
|------------------------------|---|
| BCM_L3_ECMP_O_CREATE_WITH_ID | Create an Egress ECMP forwarding object with assigned Identifier. |
| BCM_L3_ECMP_O_REPLACE | Replace/Update existing Egress ECMP forwarding object. |

Returns

bcm_l3_ecmp_destroy

Destroy an Egress ECMP forwarding object.

Syntax

```

#include <bcm/l3.h>
int bcm_l3_ecmp_destroy(int unit, bcm_if_t ecmp_group_id);

```

Parameters

| | |
|---------------|-----------------------------|
| unit | (IN) BCM device number. |
| ecmp_group_id | (IN) ECMP group identifier. |

Description

Destroy the Egress ECMP forwarding object pointed to by ecmp_group_id. Only unused egress objects can be deleted. If forwarding path is used by routes/hosts objects, operation will return BCM_E_BUSY.



Returns

bcm_l3_ecmp_get

Get info about an Egress ECMP forwarding object.

Syntax

```
#include <bcm/l3.h>
int bcm_l3_ecmp_get(int unit, bcm_l3_egress_ecmp_t *ecmp_info,
    int ecmp_member_size, bcm_if_t *ecmp_member_array,
    int *ecmp_member_count);
```

Parameters

| | |
|-------------------|--|
| unit | (IN) BCM device number. |
| ecmp_info | (IN/OUT) ECMP group info. |
| ecmp_member_size | (IN) Size of allocated entries in ecmp_member_array. |
| ecmp_member_array | (OUT) Member array of Egress forwarding objects. |
| ecmp_member_count | (OUT) Number of entries of ecmp_member_count actually filled in. This will be a value less than or equal to the value passed in as ecmp_member_size unless ecmp_member_size is 0. If ecmp_member_size is 0 then ecmp_member_array is ignored and ecmp_member_count is filled in with the number of entries that would have been filled into ecmp_member_array if ecmp_member_size was arbitrarily large. |

Description

Get info about the Egress ECMP forwarding object pointed to by ecmp_info->ecmp_intf.

Returns

bcm_l3_ecmp_member_add

Add a member to an Egress ECMP forwarding object.

Syntax

```
#include <bcm/l3.h>
int bcm_l3_ecmp_member_add(int unit, bcm_if_t ecmp_group_id,
    bcm_l3_ecmp_member_t *ecmp_member);
```

Parameters

| | |
|----------------------------|--|
| <code>unit</code> | (IN) BCM device number. |
| <code>ecmp_group_id</code> | (IN) ECMP group ID. |
| <code>ecmp_member</code> | (IN) Pointer to Egress forwarding object member structure. |

Description

Add an Egress forwarding object to the Egress ECMP forwarding object pointed to by `ecmp_group_id`.

Returns

bcm_l3_ecmp_member_delete

Delete a member from an Egress ECMP forwarding object.

Syntax

```
#include <bcm/l3.h>
int bcm_l3_ecmp_member_delete(int unit, bcm_if_t ecmp_group_id,
bcm_l3_ecmp_member_t *ecmp_member);
```

Parameters

| | |
|----------------------------|--|
| <code>unit</code> | (IN) BCM device number. |
| <code>ecmp_group_id</code> | (IN) ECMP group ID. |
| <code>ecmp_member</code> | (IN) Pointer to Egress forwarding object member structure. |

Description

Delete a member from the Egress ECMP forwarding object pointed to by `ecmp_group_id`.

Returns

bcm_l3_ecmp_member_delete_all

Delete all members from an Egress ECMP forwarding object.

Syntax

```
#include <bcm/l3.h>
int bcm_l3_ecmp_member_delete_all(int unit, bcm_if_t ecmp_group_id);
```

Parameters

| | |
|----------------------------|-------------------------|
| <code>unit</code> | (IN) BCM device number. |
| <code>ecmp_group_id</code> | (IN) ECMP group ID. |

Description

Delete all members from the Egress ECMP forwarding object pointed to by `ecmp_group_id`.

Returns

bcm_l3_ecmp_find

Find an Egress ECMP forwarding object.

Syntax

```
#include <bcm/l3.h>
int bcm_l3_ecmp_find(int unit, int ecmp_member_count, bcm_l3_ecmp_member_t
*ecmp_member_array,
    bcm_l3_egress_ecmp_t *ecmp_info);
```

Parameters

| | |
|--------------------------------|---|
| <code>unit</code> | (IN) BCM device number. |
| <code>ecmp_member_count</code> | (IN) Number of member in <code>ecmp_member_array</code> . |
| <code>ecmp_member_array</code> | (IN) Member array of Egress forwarding objects. |
| <code>ecmp_info</code> | (OUT) ECMP group info. |

Description

Find an Egress ECMP forwarding object with the specified set of Egress forwarding objects.

Returns

bcm_l3_ecmp_traverse

Traverse through the valid Egress ECMP forwarding objects and run callback.

Syntax

```
#include <bcm/l3.h>
```

```
int bcm_l3_ecmp_traverse(int unit,
    bcm_l3_ecmp_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
                    typedef int (*bcm_l3_ecmp_traverse_cb)(int unit,
                    bcm_l3_egress_ecmp_t *ecmp_info,
                        int ecmp_member_count,
                        bcm_l3_ecmp_member_t *ecmp_member_array,
                        void *user_data);
```

Description

Goes through all the valid Egress ECMP forwarding objects and runs the user callback function, passing back the information for that Egress ECMP forwarding object (including its set of Egress forwarding objects).

Returns

MIRRORING

Two new flags for mirror destination have been added in this release.

Table 29: BCM Mirror Destination Flags

| Name | Description |
|-----------------------|--|
| BCM_MIRROR_DEST_FIELD | Specify that mirror destination owner is FP. |
| BCM_MIRROR_DEST_PORT | Specify that mirror destination owner is PORT. |

MPLS MANAGEMENT

New MPLS APIs have been introduced in this release with the required data structure.

bcm_mpls_range_action_add

Set range of labels per in lif.

Syntax

```
#include <bcm/mpls.h>
int
bcm_mpls_range_action_add(
    int                unit,
```



```

bcm_mpls_label_t      label_low,
bcm_mpls_label_t      label_high,
bcm_mpls_range_action_t *action);

```

Parameters

| | |
|------------|-------------------|
| unit | (IN) Unit number. |
| label_low | (IN) lower label |
| label_high | (IN) higher label |
| action | (IN) range action |

Description

This API allows allocation of one in-lif per given label range.

```

/* MPLS range action */
typedef struct bcm_mpls_range_action_s {
    uint32 flags; /* BCM_MPLS_RANGE_ACTION_XXX */
    bcm_mpls_label_t compressed_label; /* lowest label in the range */
} bcm_mpls_range_action_t;

```

Table 30: MPLS Range Actions

| Name | Purpose |
|----------------------------------|--|
| BCM_MPLS_RANGE_ACTION_COMPRESSED | Given label range will be represented by the lowest label. |

Returns

BCM_E_XXX

bcm_mpls_range_action_remove

Remove range of labels per in lif.

Syntax

```

#include <bcm/mpls.h>
int
bcm_mpls_range_action_remove(
    int          unit,
    bcm_mpls_label_t label_low,
    bcm_mpls_label_t label_high);

```


Parameters

| | |
|------------|-------------------|
| unit | (IN) Unit number. |
| label_low | (IN) lower label |
| label_high | (IN) higher label |

Description

This API allows removal of a given label range.

Returns

BCM_E_XXX

bcm_mpls_range_action_get

Get range of labels per in lif.

Syntax

```
#include <bcm/mpls.h>
int
bcm_mpls_range_action_get(
    int                unit,
    bcm_mpls_label_t   label_low,
    bcm_mpls_label_t   label_high,
    bcm_mpls_range_action_t *action);
```

Parameters

| | |
|------------|----------------------|
| unit | (IN) Unit number. |
| label_low | (IN) lower label |
| label_high | (IN) higher label |
| action | (INOUT) range action |

Description

This API gets the action associated to a given label range.

Returns

BCM_E_XXX

MULTICAST CONFIGURATION

The new Multicast Type (for `bcm_multicast_type`) with the operation macros has been introduced in this release.

Table 31: Multicast Type

| Multicast Types | Purpose |
|------------------------------|------------------------------|
| bcmMulticastTypeL2 | Multicast type L2 |
| bcmMulticastTypeL3 | Multicast type L3 |
| bcmMulticastTypeVpls | Multicast type VPLS |
| bcmMulticastTypeSubPort | Multicast type Sub Port |
| bcmMulticastTypeMim | Multicast type MIM |
| bcmMulticastTypeWlan | Multicast type Wlan |
| bcmMulticastTypeVlan | Multicast type Vlan |
| bcmMulticastTypeTrill | Multicast type TRILL |
| bcmMulticastTypeNiv | Multicast type NIV |
| bcmMulticastTypeEgressObject | Multicast type Egress Object |
| bcmMulticastTypeL2Gre | Multicast type L2 GRE |
| bcmMulticastTypeVxlan | Multicast type Vxlan |
| bcmMulticastTypePortsGroup | Multicast type Ports Group |
| bcmMulticastTypeExtender | Multicast type Extender |
| bcmMulticastTypeMac | Multicast type MAC |

Table 32: Multicast Related Macros

| MULTICAST Macros | Macro Description |
|---------------------------------|---|
| BCM_MULTICAST_IS_SET | Returns 1 if set, else 0 |
| BCM_MULTICAST_IS_L2 | Returns 1 if l2 multicast is set, else 0 |
| BCM_MULTICAST_IS_L3 | Returns 1 if l3 multicast is set, else 0 |
| BCM_MULTICAST_IS_VPLS | Returns 1 if vpls multicast is set, else 0 |
| BCM_MULTICAST_IS_SUBPORT | Returns 1 if subport multicast is set, else 0 |
| BCM_MULTICAST_IS_MIM | Returns 1 if mim multicast is set, else 0 |
| BCM_MULTICAST_IS_WLAN | Returns 1 if wlan multicast is set, else 0 |
| BCM_MULTICAST_IS_VLAN | Returns 1 if vlan multicast is set, else 0 |
| BCM_MULTICAST_IS_TRILL | Returns 1 if trill multicast is set, else 0 |
| BCM_MULTICAST_IS_NIV | Returns 1 if niv multicast is set, else 0 |
| BCM_MULTICAST_IS_EGRESS_OBJECT | Returns 1 if egress_object multicast is set, else 0 |
| BCM_MULTICAST_IS_L2GRE | Returns 1 if l2gre multicast is set, else 0 |
| BCM_MULTICAST_IS_VXLAN | Returns 1 if vxlan multicast is set, else 0 |
| BCM_MULTICAST_IS_PORTS_GROUP | Returns 1 if ports_group multicast is set, else 0 |
| BCM_MULTICAST_IS_EXTENDER | Returns 1 if extender multicast is set, else 0 |
| BCM_MULTICAST_L2_SET | Sets l2 multicast group id and value |
| BCM_MULTICAST_L3_SET | Sets l3 multicast group id and value |
| BCM_MULTICAST_VPLS_SET | Sets vpls multicast group id and value |
| BCM_MULTICAST_SUBPORT_SET | Sets sub_port multicast group id and value |
| BCM_MULTICAST_MIM_SET | Sets mim multicast group id and value |
| BCM_MULTICAST_WLAN_SET | Sets wlan multicast group id and value |
| BCM_MULTICAST_VLAN_SET | Sets vlan multicast group id and value |
| BCM_MULTICAST_TRILL_SET | Sets trill multicast group id and value |
| BCM_MULTICAST_NIV_SET | Sets niv multicast group id and value |
| BCM_MULTICAST_EGRESS_OBJECT_SET | Sets egress_object multicast group id and value |
| BCM_MULTICAST_L2GRE_SET | Sets l2gre multicast group id and value |
| BCM_MULTICAST_VXLAN_SET | Sets vxlan multicast group id and value |



Table 32: Multicast Related Macros

| MULTICAST Macros | Macro Description |
|---------------------------------|--|
| BCM_MULTICAST_PORTS_GROUP_SET | Sets <code>ports_group</code> multicast group id and value |
| BCM_MULTICAST_EXTENDER_SET | Sets extender multicast group id and value |
| BCM_MULTICAST_L2_GET | Gets l2 multicast index from multicast group |
| BCM_MULTICAST_L3_GET | Gets l3 multicast index from multicast group |
| BCM_MULTICAST_VPLS_GET | Gets vpls multicast index from multicast group |
| BCM_MULTICAST_SUBPORT_GET | Gets subport multicast index from multicast group |
| BCM_MULTICAST_MIM_GET | Gets mim multicast index from multicast group |
| BCM_MULTICAST_WLAN_GET | Gets wlan multicast index from multicast group |
| BCM_MULTICAST_VLAN_GET | Gets vlan multicast index from multicast group |
| BCM_MULTICAST_TRILL_GET | Gets trill multicast index from multicast group |
| BCM_MULTICAST_NIV_GET | Gets niv multicast index from multicast group |
| BCM_MULTICAST_EGRESS_OBJECT_GET | Gets <code>egress_object</code> multicast index from multicast group |
| BCM_MULTICAST_L2GRE_GET | Gets l2gre multicast index from multicast group |
| BCM_MULTICAST_VXLAN_GET | Gets vxlan multicast index from multicast group |
| BCM_MULTICAST_PORTS_GROUP_GET | Gets <code>ports_group</code> multicast index from multicast group |
| BCM_MULTICAST_EXTENDER_GET | Gets extender multicast index from multicast group |
| BCM_MULTICAST_L2 | Return l2 multicast group from multicast index |
| BCM_MULTICAST_L3 | Return l3 multicast group from multicast index |
| BCM_MULTICAST_VPLS | Return vpls multicast group from multicast index |
| BCM_MULTICAST_SUBPORT | Return subport multicast group from multicast index |
| BCM_MULTICAST_MIM | Return mim multicast group from multicast index |
| BCM_MULTICAST_WLAN | Return wlan multicast group from multicast index |
| BCM_MULTICAST_VLAN | Return vlan multicast group from multicast index |
| BCM_MULTICAST_TRILL | Return trill multicast group from multicast index |
| BCM_MULTICAST_NIV | Return niv multicast group from multicast index |
| BCM_MULTICAST_EGRESS_OBJECT | Return <code>egress_object</code> multicast group from multicast index |
| BCM_MULTICAST_L2GRE | Return l2gre multicast group from multicast index |
| BCM_MULTICAST_VXLAN | Return vxlan multicast group from multicast index |
| BCM_MULTICAST_PORTS_GROUP | Return <code>ports_group</code> multicast group from multicast index |
| BCM_MULTICAST_EXTENDER | Return extender multicast group from multicast index |
| BCM_MULTICAST_TYPE | Return Multicast Type for Multicast group |

OPERATIONS, ADMINISTRATION, AND MAINTENANCE

The new flag `BCM_OAM_ENDPOINT2_REDIRECT_TO_CPU` for `flag2` field in `bcm_oam_endpoint_info_t` has been added while several new OAM events are added as listed.

Table 33: OAM Event Types

| Event type | Description |
|---|---|
| <code>bcmOAMEventBHHCCMRdi</code> | RDI has been detected on received BHH CCM PDU |
| <code>bcmOAMEventBHHCCMUnknownMegLevel</code> | Unknown Meg Level has been detected on received BHH CCM PDU |
| <code>bcmOAMEventBHHCCMUnknownMegId</code> | Unknown Meg Id has been detected on received BHH CCM PDU |
| <code>bcmOAMEventBHHCCMUnknownMepId</code> | Unknown Mep Id has been detected on received BHH CCM PDU |

PACKET TRANSMIT AND RECEIVE

A new field `rx_path` has been added in the packet structure with the RX path definitions while the `_pkt_trace_profile_id` field is removed.

Table 34: *bcm_pkt_t* Structure Description

| Field | Type | Description |
|----------------------|---------------------|--------------------|
| <code>rx_path</code> | <code>uint32</code> | Rx path of packet. |

Table 35: *Rx path definitions*

| Define | Description |
|--------------------------------------|---------------------|
| <code>BCM_RX_PATH_SWITCHED</code> | Packet was switched |
| <code>BCM_RX_PATH_COPY_TO_CPU</code> | Packet was trapped |
| <code>BCM_RX_PATH_MIRRORED</code> | Packet was mirrored |

New flag `BCM_PKT_F2_RX_PORT` has been added for packet flags.

Table 36: *Packet flags2* Flags Descriptions

| Flag | Description |
|---------------------------------|---|
| <code>BCM_PKT_F2_RX_PORT</code> | This flag indicates that <code>bcm_pkt_s.rx_port</code> is used as a source port for the masquerade/visibility packet |

The new `bcm_rx_trap_type_get` API has been added to get the trap ID with the type .

bcm_rx_trap_type_get

Get trap id according to type.

Syntax

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

```
int bcm_petra_rx_trap_type_get(int unit, int flags, bcm_rx_trap_t type, int
*trap_id);
```

Parameters

| | |
|----------------------|--|
| <code>unit</code> | (IN) BCM device number |
| <code>flags</code> | (IN) See <code>BCM_RX_TRAP_XXX</code> |
| <code>type</code> | (IN) Type of trap see <code>bcm_rx_trap_t</code> |
| <code>trap_id</code> | (OUT) Trap id |

Description

Get trap id according to type.

Returns

PORT CONFIGURATION

A new port config type for `bcm_port_config_t` has been added for `bcm_port_config_get` and `bcm_port_config_t_init` APIs.

Table 37: `bcm_port_config_t`

| Field | BCM Type | Description |
|-----------------------|--|---|
| <code>per_pipe</code> | <code>bcm_pbmp_t[BCM_PIPES_MAX]</code> | Array of bitmaps or logical ports per pipe. The number of pipes per device can be obtained via <code>num_pipes</code> field of <code>bcm_info_t</code> Structure (page 37<Default Font>). |

A new port control type has been added for `bcm_port_control_get/set` APIs with the following tables defining the values for some type enumerations.

The new feature types is shown as below:

Table 38: `bcm_port_control_t`

| <code>bcmPortControlOamDefaultProfileEgress</code> | OAM default profile for Egress |
|--|--|
| <code>bcmPortControlPadToSize</code> | Min packet size in bytes, packets smaller than this value are padded with '0'. |
| <code>bcmPortControlVxlanVpnAssignmentCriteria</code> | VxLAN vpn assignment criteria. |
| <code>bcmPortControlVxlanTerminationMatchCriteria</code> | VxLAN termination match criteria. |
| <code>bcmPortControlVxlanGportAssignmentCriteria</code> | VxLAN virtual port assignment criteria. |

There are four VXLAN VPN assignment criteria listed in `bcm_port_vxlan_vpn_assignment_criteria_t` table. Changing these criteria after VPNs have been created will make the configuration invalid.

Table 39: `bcm_port_vxlan_vpn_assignment_criteria_t`

| Value | Description |
|--|-------------------------|
| <code>bcmPortVxlanVpnAssignOnVnid</code> | use VNID |
| <code>bcmPortVxlanVpnAssignOnVnidSrcIp</code> | use VNID and SIP |
| <code>bcmPortVxlanVpnAssignOnVnidOuterVlan</code> | use VNID and OVID |
| <code>bcmPortVxlanVpnAssignOnVnidOuterVlanSrcIp</code> | use VNID , OVID and SIP |

There are two VXLAN termination match criteria listed in `bcm_port_vxlan_termination_match_criteria_t` table. Changing these criteria after Tunnel Terminators have been created will make the configuration invalid.

Table 40: bcm_port_vxlan_termination_match_criteria_t

| Value | Description |
|--|------------------|
| bcmPortVxlanTerminationMatchDstIp | use DIP |
| bcmPortVxlanTerminationMatchOuterVlanDstIp | use OVID and DIP |

There are two VXLAN gport assignment criteria listed in bcm_port_vxlan_gport_assignment_criteria_t table. Changing these criteria after VXLAN GPORTs have been created will make the configuration invalid.

Table 41: bcm_port_vxlan_gport_assignment_criteria_t

| Value | Description |
|---|------------------|
| bcmPortVxlanGportAssignOnSrcIp | use SIP |
| bcmPortVxlanGportAssignOnOuterVlanSrcIp | use OVID and SIP |

New port PHY control types are added for bcm_port_phy_control_set and bcm_port_phy_control_get APIs.

Table 42: bcm_port_phy_control_t

| BCM_PORT_PHY_CONTROL_DFE | Set SerDes microcontroller DFE mode |
|--------------------------|---|
| BCM_PORT_PHY_DFE_AUTO | SerDes microcontroller FIRMWARE controls DFE adjustment |
| BCM_PORT_PHY_DFE_FREEZE | SerDes microcontroller DFE freeze to current values |

PROXY SERVICES

A new field flow_type in the type of bcm_proxy_second_pass_flow_type_t has been added in data structure bcm_proxy_server_t with the new bcm_proxy_mode_t type, BCM_PROXY_MODE_SECOND_PASS in this release that is in the enumeration of the various possible Proxy server modes. The corresponding flow types are also listed below.

```

/* Proxy server operational modes. */
typedef enum bcm_proxy_mode_s {
    ...
    BCM_PROXY_MODE_SECOND_PASS
} bcm_proxy_mode_t;

/* The second pass flow types */
typedef enum bcm_proxy_second_pass_flow_type_e {
    bcmProxySecondPassFlowTypeNone = 0,
    bcmProxySecondPassFlowTypeL2greTermination = 1,
    bcmProxySecondPassFlowTypeVxlanTermination = 2,
    bcmProxySecondPassFlowTypeMimTermination = 3,
    bcmProxySecondPassFlowTypeTrillInitiation = 4,
    bcmProxySecondPassFlowTypeTrillTermination = 5
} bcm_proxy_second_pass_flow_type_t;

/* Proxy server Config Structure. */

```

```
typedef struct bcm_proxy_server_s {  
    ...  
    bcm_proxy_second_pass_flow_type_t flow_type; /* Flow type identifier. */  
} bcm_proxy_server_t;
```

PRECISION TIME PROTOCOL

New BCM PTP Stack Get and Destroy APIs have been added as following.

bcm_ptp_stack_get

Gets information associated with a PTP stack instance

Syntax

```
#include <bcm/ptp.h>  
int  
bcm_ptp_stack_get(  
    int unit,  
    bcm_ptp_stack_id_t ptp_id,  
    bcm_ptp_stack_info_t *ptp_info);
```

Parameters

| | |
|----------|--|
| unit | (IN) Unit Number |
| ptp_id | (IN) Stack ID to get |
| ptp_info | (OUT) Pointer to an PTP Stack Info structure |

Description

Get a PTP stack instance

Returns

bcm_ptp_stack_get_all

Gets information associated with all PTP stack instances, and their number

Syntax

```
#include <bcm/ptp.h>  
int  
bcm_ptp_stack_get_all(  
    int unit,  
    int max_size,  
    bcm_ptp_stack_info_t *ptp_info,  
    int *no_of_stacks);
```

Parameters

| | |
|---------------------------|--|
| <code>unit</code> | (IN) Unit Number |
| <code>max_size</code> | (IN) Size of passed-in <code>ptp_info</code> array |
| <code>ptp_info</code> | (OUT) Pointer to an array of PTP Stack Info structures |
| <code>no_of_stacks</code> | (OUT) Total number of PTP stacks for the unit |

Description

Gets all PTP stack instances

Returns

bcm_ptp_stack_destroy

Destroys a PTP stack instance

Syntax

```
#include <bcm/ptp.h>
int
bcm_ptp_stack_destroy(
    int unit,
    bcm_ptp_stack_id_t ptp_id);
```

Parameters

| | |
|---------------------|--------------------------|
| <code>unit</code> | (IN) Unit Number |
| <code>ptp_id</code> | (IN) Stack ID to destroy |

Returns

STATISTICS

There are new defined statistics accounting objects in this release, listed as following. `bcmStatObjectIngFieldStageLookup` is defined to deprecate `bcmStatObjectIngPolicy` while `bcmStatObjectIngFieldStageExternal` is defined to deprecate `bcmStatObjectIngEXTPolicy`.

```
/* Ingress and Egress Statistics Accounting Objects */
typedef enum bcm_stat_object_e {
    ...
    bcmStatObjectIngPolicy = 6, /* Ingress Policy Object - will be
                                deprecated in a future release, use
```



```

        bcmStatObjectIngFieldStageLookup instead */
        bcmStatObjectIngFieldStageLookup = 6,      /* Ingress Vlan FP Object */
        ...
        bcmStatObjectIngEXTPolicy = 19,            /* Ingress external FP Object
- will be
        deprecated in a future release, use
        bcmStatObjectIngFieldStageExternal instead */
        bcmStatObjectIngFieldStageExternal = 19, /* Ingress external FP Object */
        ...
        bcmStatObjectIngFieldStageIngress = 34, /* Ingress FP Object */
    } bcm_stat_object_t;

```

SWITCH CONTROL

Below new Switch control types have been added in this release.

Table 43: Switch Type Values

| Value | Description | Arg Value |
|---------------------------------------|--|------------|
| bcmSwitchRemoteProtection Enable | Set the Protection Status bit in HiGig Header at Ingress device. | TRUE/FALSE |
| bcmSwitchMirrorExclusive | Enable mirror exclusive mode. Default value is false. This switch control sets mutual exclusive behavior between port and FP mirroring. Once set mirror slot container are not shared between port and FP. | TRUE/FALSE |
| bcmSwitchEcnDelayMeasurementThreshold | Set ecn delay measurement threshold. Default value is false. This switch control sets a threshold for ecn delay measurement. | TRUE/FALSE |
| bcmSwitchMacroFlowHashUseMSB | If enable, use MSB for Macroflow based hashing. Default is LSB. | TRUE/FALSE |
| bcmSwitchMplsDefaultTtlCopy | Default value that is used when sending a packet from AC to PWE and the push-profile is copy.br Range of values: 0x0 - 0xFF | |

Below Switch API has been added in this release.

bcm_switch_pkt_trace_info_get

Generate a visibility trace packet and then read the result of the packets ingress processing information

Syntax

```

#include <bcm/switch.h>
int bcm_switch_pkt_trace_info_get(int unit, uint32 options,
    int len, uint8* data,
    uint8 pkt_trace_src_port,
    bcm_switch_pkt_trace_info_t *pkt_trace_info_result)

```

Parameters

unit (IN) Unit number.

options (IN) FLAGS to select pre-configured `cpu_pkt_profile` register values

data (IN) Source packet buffer to copy from

len (IN) Number of bytes to copy from data

pkt_trace_src_port (IN) a local front panel port the visibility packet is injected

pkt_trace_info_result (INOUT) visibility packet process information in `bcm_pkt_trace_info_s` format

Description

Generate a visibility packet. Read visibility packet process data from `PTR_RESULTS_BUFFER_IVP`, `ISW1`, and `ISW2` then store the raw data into `bcm_pkt_trace_info_t*`. Last, convert the raw data into abstracted format and store into `bcm_pkt_trace_info_t*`. These profile options are used to set loopback headers `cpu_pkt_profile` field

```
typedef enum bcm_switch_pkt_trace_lookup_e {
    bcmSwitchPktTraceLookupInvalid = 0;
    bcmSwitchPktTraceLookupVlanTranslationHit,
    bcmSwitchPktTraceLookupForwardingVlanValid,
    bcmSwitchPktTraceLookupMystationHit,
    bcmSwitchPktTraceLookupL2SrcHit,
    bcmSwitchPktTraceLookupL2SrcStatic,
    bcmSwitchPktTraceLookupL2DstHit,
    bcmSwitchPktTraceLookupL2CacheHit,
    bcmSwitchPktTraceLookupL3SrcHostHit,
    bcmSwitchPktTraceLookupL3DestHostHit,
    bcmSwitchPktTraceLookupL3DestRouteHit,
    bcmSwitchPktTraceLookupL2SrcMiss,
    bcmSwitchPktTraceLookupDosAttack,
    bcmSwitchPktTraceLookupIpTunnelHit,
    bcmSwitchPktTraceLookupMplsLabel1Hit,
    bcmSwitchPktTraceLookupMplsLabel2Hit,
    bcmSwitchPktTraceLookupMplsTerminated,
    bcmSwitchPktTraceLookupMystationHit,
    bcmSwitchPktTraceLookupCount,
} bcm_switch_pkt_trace_lookup_t;

typedef struct bcm_switch_pkt_trace_lookup_result_s {
    SHR_BITDCL
    pkt_trace_status_bitmap[_SHR_BITDCLSIZE(bcmSwitchPktTraceLookupCount)];
} bcm_switch_pkt_trace_lookup_result_t;

typedef enum bcm_switch_pkt_trace_resolution_e {
    bcmSwitchPktTraceResolutionUnkown = 0,
    bcmSwitchPktTraceResolutionControlPkt = 1,
    bcmSwitchPktTraceResolutionOamPkt = 2,
    bcmSwitchPktTraceResolutionBfdPkt = 3,
    bcmSwitchPktTraceResolutionBpduPkt = 4,
    bcmSwitchPktTraceResolution1588Pkt = 6,
    bcmSwitchPktTraceResolutionKnownL2UcPkt = 7,
```

```

bcmSwitchPktTraceResolutionUnknownL2UcPkt = 8,
bcmSwitchPktTraceResolutionKnownL2McPkt = 9,
bcmSwitchPktTraceResolutionUnknownL2McPkt = 10,
bcmSwitchPktTraceResolutionL2BcPkt = 11,
bcmSwitchPktTraceResolutionKnownL3UcPkt = 12,
bcmSwitchPktTraceResolutionUnknownL3UcPkt = 13,
bcmSwitchPktTraceResolutionKnownIpmpcPkt = 14,
bcmSwitchPktTraceResolutionUnknownIpmpcPkt = 15,
bcmSwitchPktTraceResolutionKnownMplsL2Pkt = 16,
bcmSwitchPktTraceResolutionUnknownMplsPkt = 17,
bcmSwitchPktTraceResolutionKnownMplsL3Pkt = 18,
bcmSwitchPktTraceResolutionKnownMplsPkt = 19,
bcmSwitchPktTraceResolutionKnownMimPkt = 20,
bcmSwitchPktTraceResolutionUnknownMimPkt = 21,
bcmSwitchPktTraceResolutionKnownTrillPkt = 22,
bcmSwitchPktTraceResolutionUnknownTrillPkt = 23,
bcmSwitchPktTraceResolutionKnownNivPkt = 24,
bcmSwitchPktTraceResolutionUnknownNivPkt = 25,
bcmSwitchPktTraceResolutionKnownL2GrePkt = 26,
bcmSwitchPktTraceResolutionKnownVxlanPkt = 27,
bcmSwitchPktTraceResolutionCount = 28
}bcm_switch_pkt_trace_resolution_t;

```

Fields in `bcm_switch_pkt_trace_hashing_info_t` data structure have been updated and extended. Original fields only recorded raw result data of packet trace ipv/isw1/isw2 process.

```

typedef struct bcm_switch_pkt_trace_hashing_info_s {
    uint32 flags;
#define BCM_SWITCH_PKT_TRACE_ECMP_1 1
#define BCM_SWITCH_PKT_TRACE_ECMP_2 2
#define BCM_SWITCH_PKT_TRACE_TRUNK 4
#define BCM_SWITCH_PKT_TRACE_FABRIC_TRUNK 8

    bcm_if_t ecmp_1_group;
    bcm_if_t ecmp_1_egress;
    bcm_if_t ecmp_2_group;
    bcm_if_t ecmp_2_egress;
    bcm_gport_t trunk;
    bcm_gport_t trunk_member;
    bcm_gport_t fabric_trunk;
    bcm_gport_t fabric_trunk_member;
} bcm_switch_pkt_trace_hashing_info_t;

/* max bytes of pkt_trace_info.raw_data */
#define BCM_SWITCH_PKT_TRACE_RAW_DATA_MAX 112

typedef struct bcm_switch_pkt_trace_info_s {
    bcm_switch_pkt_trace_lookup_result_t pkt_trace_lookup_status;
    bcm_switch_pkt_trace_resolution_t pkt_trace_resolution;
    bcm_switch_pkt_trace_hashing_info_t pkt_trace_hash_info;
    bcm_stg_stp_t pkt_trace_stp_state;
    uint32 dest_pipe_num; /* ingress pipeline number of the Pkt trace packet
*/

```



```
uint32 raw_data_length; /* length in byte */
uint8 raw_data[BCM_SWITCH_PKT_TRACE_RAW_DATA_MAX];
} bcm_switch_pkt_trace_info_t;
```

Table 44: BCM Packet Trace Options

| Name | Purpose |
|-----------------------|---|
| BCM_PKT_TRACE_NO_IFP | if not set, the visibility packet is subject to IFP rules, meters, counters etc |
| BCM_PKT_TRACE_FORWARD | If set, honor pipeline forward decision, if not set, Drop at MMU |
| BCM_PKT_TRACE_LEARN | learn visibility packets source mac address |

Returns

BCM_E_XXX

TRILL TRILL MANAGEMENT

A new port flag BCM_TRILL_PORT_TERM_ETHERNET for trill API has been added in this release.

A new field virtual_name of bcm_trill_port_t has been added in this release.

```
typedef struct bcm_trill_port_s {
    ...
    bcm_trill_name_t virtual_name; /* virtual RBridge Nickname */
} bcm_trill_port_t;
```

VXLAN MANAGEMENT

A new field vlan of bcm_vxlan_vpn_config_t has been added in this release.

```
typedef struct bcm_vxlan_vpn_config_s {
    ...
    bcm_vlan_t vlan; /* Outer VLAN */
} bcm_vxlan_vpn_config_t;
```

Section 4: 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 45:

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

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 46:

| | <i>sdk-6.4.3</i> | <i>sdk-6.4.2</i> | <i>sdk-6.4.1</i> |
|---------------------|------------------|------------------|------------------|
| golden | 154 | 154 | 154 |
| warmboot | 318 | 294 | 288 |
| auth | 17 | 17 | 17 |
| bfd | 37 | 37 | 37 |
| bhh | 43 | 43 | 15 |
| chip | 9 | 9 | 9 |
| cint | 61 | 76 | 55 |
| coe | 543 | 510 | 510 |
| cosq | 371 | 310 | 306 |
| custom | 7 | 7 | 7 |
| ea | 108 | 108 | 108 |
| eav | 19 | 19 | 19 |
| extender | 33 | 12 | 12 |
| fabric | 7 | 7 | 7 |
| failover | 8 | 8 | 8 |
| fcoe | 37 | 37 | 37 |
| field | 821 | 760 | 734 |
| higigproxy | 129 | 129 | 129 |
| infra | 114 | 114 | 114 |
| ipfix | 17 | 17 | 17 |
| ipmc | 63 | 63 | 56 |
| l2 | 247 | 238 | 230 |
| l2gre | 13 | 13 | 13 |
| l3 | 276 | 262 | 241 |
| l3.alpm.combined | 67 | 67 | 63 |
| l3.alpm.combined.64 | 55 | 55 | 51 |
| l3.alpm.parallel | 67 | 67 | 63 |
| l3.alpm.parallel.64 | 55 | 55 | 51 |
| link | 26 | 26 | 26 |
| mim | 19 | 19 | 19 |
| mirror | 150 | 146 | 146 |
| misc | 16 | 16 | 16 |
| mpls | 130 | 128 | 128 |
| multicast | 17 | 17 | 17 |
| niv | 39 | 23 | 13 |
| oam | 187 | 187 | 133 |
| pkt | 44 | 44 | 44 |
| port | 262 | 262 | 261 |
| proxy | 23 | 23 | 23 |
| ptp | 115 | 115 | 115 |
| qos | 12 | 12 | 12 |
| rate | 21 | 21 | 21 |

Table 46:

| | sdk-6.4.3 | sdk-6.4.2 | sdk-6.4.1 |
|------------------|------------------|------------------|------------------|
| rtag7 | 2 | 32 | 24 |
| rx | 21 | 21 | 21 |
| ser | 53 | 52 | 52 |
| stack | 49 | 49 | 49 |
| stat | 203 | 203 | 203 |
| stg | 42 | 42 | 42 |
| switch | 189 | 189 | 130 |
| time | 16 | 16 | 16 |
| tlvMsg | 13 | 13 | 13 |
| trill | 40 | 40 | 40 |
| trunk | 170 | 177 | 173 |
| tunnel | 65 | 65 | 65 |
| subport | 30 | 30 | 33 |
| vlan | 207 | 207 | 207 |
| vxlان | 78 | 78 | 69 |
| wlan | 17 | 17 | 17 |
| Test Suite Total | 5952 | 5758 | 5479 |

TEST RESULTS

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

ALL DEVICES

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

Table 47:

| | sdk-6.4.3 | sdk-6.4.2 | sdk-6.4.1 |
|-------------------------|------------------|------------------|------------------|
| golden | 0.9 % | 1.1 % | 1.5 % |
| warmboot | 0.8 % | 1.2 % | 1.5 % |
| bcm.auth | 0.4 % | 0.4 % | 0.2 % |
| bcm.bfd | 0.0 % | 0.0 % | 0.9 % |
| bcm.bhh | 1.4 % | 1.6 % | 2.0 % |
| bcm.chip | 1.2 % | 1.5 % | 1.7 % |
| bcm.cint | 0.0 % | 1.3 % | 0.0 % |
| bcm.coe | 0.1 % | 0.1 % | 0.4 % |
| bcm.cosq | 0.7 % | 0.8 % | 1.9 % |
| bcm.custom | 0.0 % | 0.0 % | 0.0 % |
| bcm.ea | 0.0 % | 0.0 % | 0.0 % |
| bcm.eav | 0.0 % | 0.0 % | 0.0 % |
| bcm.extender | 0.2 % | 0.0 % | 0.0 % |
| bcm.fabric | 0.0 % | 0.0 % | 0.0 % |
| bcm.failover | 0.0 % | 0.0 % | 0.0 % |
| bcm.fcoe | 0.0 % | 0.2 % | 0.1 % |
| bcm.field | 0.9 % | 1.7 % | 1.6 % |
| bcm.higigproxy | 0.0 % | 0.5 % | 0.9 % |
| bcm.infra | 0.0 % | 0.1 % | 0.0 % |
| bcm.ipfix | 0.6 % | 0.5 % | 0.7 % |
| bcm.ipmc | 0.4 % | 0.4 % | 0.8 % |
| bcm.l2 | 0.5 % | 1.0 % | 1.5 % |
| bcm.l2gre | 0.0 % | 0.3 % | 0.0 % |
| bcm.l3 | 0.7 % | 1.0 % | 1.0 % |
| bcm.l3.alpm.combined | 0.8 % | 0.0 % | 0.0 % |
| bcm.l3.alpm.combined.64 | 0.0 % | 0.0 % | 0.0 % |
| bcm.l3.alpm.parallel | 0.0 % | 0.0 % | 0.0 % |
| bcm.l3.alpm.parallel.64 | 0.0 % | 0.0 % | 0.0 % |
| bcm.link | 0.0 % | 0.0 % | 0.1 % |
| bcm.mim | 0.0 % | 0.0 % | 0.1 % |
| bcm.mirror | 2.0 % | 2.2 % | 2.8 % |
| bcm.misc | 0.2 % | 0.7 % | 0.7 % |
| bcm.mpls | 0.4 % | 0.4 % | 0.6 % |
| bcm.multicast | 0.2 % | 0.4 % | 2.6 % |
| bcm.niv | 0.3 % | 0.3 % | 0.1 % |
| bcm.oam | 0.0 % | 0.0 % | 1.1 % |
| bcm.pkt | 0.0 % | 0.0 % | 0.0 % |
| bcm.port | 1.1 % | 1.4 % | 1.5 % |
| bcm.proxy | 0.4 % | 1.1 % | 0.7 % |
| bcm.ptp | 0.0 % | 0.0 % | 0.0 % |

Table 47:

| | sdk-6.4.3 | sdk-6.4.2 | sdk-6.4.1 |
|------------------|------------------|------------------|------------------|
| bcm.qos | 0.0 % | 0.0 % | 0.0 % |
| bcm.rate | 0.0 % | 0.0 % | 0.9 % |
| bcm.rtag7 | 0.1 % | 0.1 % | 0.0 % |
| bcm.rx | 0.2 % | 0.1 % | 0.9 % |
| bcm.ser | 0.3 % | 0.3 % | 0.8 % |
| bcm.stack | 0.1 % | 0.2 % | 0.2 % |
| bcm.stat | 0.6 % | 0.8 % | 1.0 % |
| bcm.stg | 0.2 % | 0.5 % | 0.3 % |
| bcm.switch | 0.4 % | 0.6 % | 1.0 % |
| bcm.time | 0.0 % | 0.0 % | 0.0 % |
| bcm.tlvMsg | 0.0 % | 0.0 % | 0.0 % |
| bcm.trill | 0.6 % | 0.9 % | 1.1 % |
| bcm.trunk | 0.3 % | 0.9 % | 2.0 % |
| bcm.tunnel | 0.0 % | 0.3 % | 0.0 % |
| bcm.subport | 0.4 % | 0.8 % | 1.7 % |
| bcm.vlan | 0.5 % | 0.6 % | 1.2 % |
| bcm.vxlan | 0.1 % | 0.0 % | 0.1 % |
| bcm.wlan | 0.8 % | 0.8 % | 1.8 % |
| Test Suite Total | 0.6 % | 0.8 % | 1.1 % |

TRIDENT2

Table 48:

| | sdk-6.4.3 | sdk-6.4.2 | sdk-6.4.1 |
|----------------|------------------|------------------|------------------|
| golden | 0.1 % | 0.1 % | 0.1 % |
| warmboot | 0.7 % | 1.5 % | 1.2 % |
| bcm.auth | 0.0 % | 0.0 % | 0.0 % |
| bcm.bfd | 0.0 % | 0.0 % | 0.0 % |
| bcm.chip | 0.0 % | 0.0 % | 0.0 % |
| bcm.cint | 0.0 % | 1.3 % | 0.0 % |
| bcm.coe | 0.0 % | 0.0 % | 0.0 % |
| bcm.cosq | 1.1 % | 0.3 % | 0.7 % |
| bcm.custom | 0.0 % | 0.0 % | 0.0 % |
| bcm.ea | 0.0 % | 0.0 % | 0.0 % |
| bcm.eav | 0.0 % | 0.0 % | 0.0 % |
| bcm.extender | 0.0 % | 0.0 % | 0.0 % |
| bcm.fabric | 0.0 % | 0.0 % | 0.0 % |
| bcm.failover | 0.0 % | 0.0 % | 0.0 % |
| bcm.fcoe | 0.0 % | 2.2 % | 2.7 % |
| bcm.field | 0.5 % | 0.6 % | 0.9 % |
| bcm.higigproxy | 0.0 % | 0.6 % | 0.6 % |
| bcm.infra | 0.4 % | 0.5 % | 0.0 % |
| bcm.ipfix | 0.0 % | 0.0 % | 0.0 % |
| bcm.ipmc | 0.0 % | 0.5 % | 3.1 % |
| bcm.l2 | 0.0 % | 0.1 % | 0.8 % |
| bcm.l2gre | 0.0 % | 0.9 % | 0.0 % |
| bcm.l3 | 0.6 % | 1.6 % | 0.6 % |

Table 48:

| | sdk-6.4.3 | sdk-6.4.2 | sdk-6.4.1 |
|-------------------------|------------------|------------------|------------------|
| bcm.l3.alpm.combined | 0.0 % | 0.0 % | 0.0 % |
| bcm.l3.alpm.combined.64 | 0.0 % | 0.0 % | 0.0 % |
| bcm.l3.alpm.parallel | 0.0 % | 0.0 % | 0.0 % |
| bcm.l3.alpm.parallel.64 | 0.0 % | 0.0 % | 0.0 % |
| bcm.link | 0.0 % | 0.0 % | 0.0 % |
| bcm.mim | 0.0 % | 0.0 % | 0.0 % |
| bcm.mirror | 0.0 % | 0.0 % | 0.0 % |
| bcm.misc | 0.0 % | 0.0 % | 0.0 % |
| bcm.mpls | 0.0 % | 0.0 % | 0.8 % |
| bcm.multicast | 0.0 % | 1.1 % | 0.0 % |
| bcm.niv | 0.0 % | 1.4 % | 0.0 % |
| bcm.oam | 0.0 % | 0.0 % | 0.8 % |
| bcm.pkt | 0.0 % | 0.0 % | 0.0 % |
| bcm.port | 0.3 % | 0.8 % | 1.3 % |
| bcm.proxy | 0.0 % | 1.1 % | 0.0 % |
| bcm.ptp | 0.0 % | 0.0 % | 0.0 % |
| bcm.qos | 0.0 % | 0.0 % | 0.0 % |
| bcm.rate | 0.0 % | 0.0 % | 0.0 % |
| bcm.rtag7 | 0.0 % | 0.0 % | 0.0 % |
| bcm.rx | 0.0 % | 0.0 % | 0.0 % |
| bcm.ser | 2.6 % | 2.4 % | 3.8 % |
| bcm.stack | 0.0 % | 0.5 % | 0.3 % |
| bcm.stat | 0.0 % | 1.0 % | 0.5 % |
| bcm.stg | 0.0 % | 0.0 % | 0.0 % |
| bcm.switch | 0.5 % | 0.7 % | 1.1 % |
| bcm.time | 0.0 % | 0.0 % | 0.0 % |
| bcm.tlvMsg | 0.0 % | 0.0 % | 0.0 % |
| bcm.trill | 0.0 % | 2.0 % | 0.0 % |
| bcm.trunk | 0.6 % | 0.9 % | 2.0 % |
| bcm.tunnel | 0.0 % | 0.0 % | 0.0 % |
| bcm.subport | 0.0 % | 0.0 % | 0.0 % |
| bcm.vlan | 0.0 % | 0.3 % | 0.0 % |
| bcm.vxlan | 0.2 % | 0.4 % | 0.0 % |
| bcm.wlan | 0.0 % | 0.0 % | 0.0 % |
| Test Suite Total | 0.4 % | 0.5 % | 0.7 % |

TRIUMPH3

Table 49:

| | sdk-6.4.3 | sdk-6.4.2 | sdk-6.4.1 |
|----------|------------------|------------------|------------------|
| golden | 0.5 % | 1.2 % | 0.2 % |
| warmboot | 0.2 % | 1.4 % | 1.4 % |
| bcm.auth | 0.0 % | 0.0 % | 0.0 % |
| bcm.bfd | 0.0 % | 0.0 % | 0.0 % |
| bcm.bhh | 1.1 % | 1.4 % | 2.2 % |
| bcm.chip | 0.0 % | 0.0 % | 0.0 % |
| bcm.cint | 0.0 % | 1.3 % | 0.0 % |

Table 49:

| | sdk-6.4.3 | sdk-6.4.2 | sdk-6.4.1 |
|------------------|------------------|------------------|------------------|
| bcm.coe | 0.0 % | 0.0 % | 0.0 % |
| bcm.cosq | 1.3 % | 0.3 % | 1.0 % |
| bcm.custom | 0.0 % | 0.0 % | 0.0 % |
| bcm.ea | 0.0 % | 0.0 % | 0.0 % |
| bcm.eav | 0.0 % | 0.0 % | 0.0 % |
| bcm.extender | 0.9 % | 0.0 % | 0.0 % |
| bcm.fabric | 0.0 % | 0.0 % | 0.0 % |
| bcm.failover | 0.0 % | 0.0 % | 0.0 % |
| bcm.fcoe | 0.0 % | 0.0 % | 0.0 % |
| bcm.field | 1.3 % | 1.4 % | 3.6 % |
| bcm.higigproxy | 0.0 % | 0.8 % | 0.8 % |
| bcm.infra | 0.0 % | 0.0 % | 0.0 % |
| bcm.ipfix | 0.0 % | 0.0 % | 0.0 % |
| bcm.ipmc | 0.0 % | 0.0 % | 0.0 % |
| bcm.l2 | 0.5 % | 1.8 % | 1.3 % |
| bcm.l2gre | 0.0 % | 0.0 % | 0.0 % |
| bcm.l3 | 0.7 % | 0.6 % | 0.4 % |
| bcm.link | 0.0 % | 0.0 % | 0.0 % |
| bcm.mim | 0.0 % | 0.0 % | 0.0 % |
| bcm.mirror | 0.0 % | 0.0 % | 0.0 % |
| bcm.misc | 0.0 % | 1.9 % | 2.3 % |
| bcm.mpls | 0.6 % | 0.7 % | 1.4 % |
| bcm.multicast | 0.0 % | 0.0 % | 5.9 % |
| bcm.niv | 1.3 % | 0.0 % | 0.0 % |
| bcm.oam | 0.0 % | 0.0 % | 0.8 % |
| bcm.pkt | 0.0 % | 0.0 % | 0.0 % |
| bcm.port | 2.0 % | 2.0 % | 2.4 % |
| bcm.proxy | 0.0 % | 0.0 % | 0.5 % |
| bcm.ptp | 0.0 % | 0.0 % | 0.0 % |
| bcm.qos | 0.0 % | 0.0 % | 0.0 % |
| bcm.rate | 0.0 % | 0.0 % | 3.3 % |
| bcm.rtag7 | 0.0 % | 0.0 % | 0.0 % |
| bcm.rx | 0.0 % | 0.9 % | 0.0 % |
| bcm.ser | 0.0 % | 0.0 % | 0.0 % |
| bcm.stack | 0.7 % | 0.8 % | 0.7 % |
| bcm.stat | 1.3 % | 1.1 % | 0.5 % |
| bcm.stg | 0.0 % | 0.0 % | 0.0 % |
| bcm.switch | 0.4 % | 0.4 % | 1.1 % |
| bcm.time | 0.0 % | 0.0 % | 0.0 % |
| bcm.tlvMsg | 0.0 % | 0.0 % | 0.0 % |
| bcm.trill | 0.0 % | 3.2 % | 3.1 % |
| bcm.trunk | 0.6 % | 0.6 % | 0.8 % |
| bcm.tunnel | 0.0 % | 0.0 % | 0.0 % |
| bcm.subport | 0.0 % | 0.0 % | 0.0 % |
| bcm.vlan | 0.0 % | 0.0 % | 0.0 % |
| bcm.vxlan | 0.0 % | 0.0 % | 0.0 % |
| bcm.wlan | 0.0 % | 0.0 % | 3.2 % |
| Test Suite Total | 0.6 % | 0.6 % | 1.5 % |

KATANA2

Table 50:

| | sdk-6.4.3 | sdk-6.4.2 | sdk-6.4.1 |
|----------------|-----------|-----------|-----------|
| golden | 0.0 % | 0.2 % | 1.1 % |
| warmboot | 1.0 % | 0.6 % | 1.4 % |
| bcm.auth | 0.0 % | 0.0 % | 0.0 % |
| bcm.bfd | 0.0 % | 0.0 % | 0.0 % |
| bcm.bhh | 0.0 % | 1.4 % | 5.4 % |
| bcm.chip | 0.0 % | 0.0 % | 0.0 % |
| bcm.cint | 0.0 % | 1.3 % | 0.0 % |
| bcm.coe | 0.9 % | 0.7 % | 1.7 % |
| bcm.cosq | 0.2 % | 0.3 % | 1.9 % |
| bcm.custom | 0.0 % | 0.0 % | 0.0 % |
| bcm.ea | 0.0 % | 0.0 % | 0.0 % |
| bcm.eav | 0.0 % | 0.0 % | 0.0 % |
| bcm.extender | 0.0 % | 0.0 % | 0.0 % |
| bcm.fabric | 0.0 % | 0.0 % | 0.0 % |
| bcm.failover | 0.0 % | 0.0 % | 0.0 % |
| bcm.fcoe | 0.0 % | 0.0 % | 0.0 % |
| bcm.field | 0.8 % | 0.3 % | 0.9 % |
| bcm.higigproxy | 0.0 % | 0.2 % | 0.4 % |
| bcm.infra | 0.0 % | 0.0 % | 0.0 % |
| bcm.ipfix | 0.0 % | 0.0 % | 0.0 % |
| bcm.ipmc | 0.0 % | 0.2 % | 0.0 % |
| bcm.l2 | 0.0 % | 0.4 % | 1.0 % |
| bcm.l2gre | 0.0 % | 0.0 % | 0.0 % |
| bcm.l3 | 0.8 % | 1.1 % | 1.5 % |
| bcm.link | 0.0 % | 0.0 % | 1.1 % |
| bcm.mim | 0.0 % | 0.0 % | 0.0 % |
| bcm.mirror | 0.0 % | 0.0 % | 0.0 % |
| bcm.misc | 0.0 % | 0.8 % | 0.0 % |
| bcm.mpls | 1.9 % | 1.8 % | 2.6 % |
| bcm.multicast | 0.0 % | 0.0 % | 0.0 % |
| bcm.niv | 0.0 % | 0.0 % | 0.0 % |
| bcm.oam | 0.0 % | 0.0 % | 0.0 % |
| bcm.pkt | 0.0 % | 0.0 % | 0.0 % |
| bcm.port | 2.4 % | 2.4 % | 2.8 % |
| bcm.proxy | 0.0 % | 0.0 % | 0.0 % |
| bcm.ptp | 0.0 % | 0.0 % | 0.0 % |
| bcm.qos | 0.0 % | 0.0 % | 0.0 % |
| bcm.rate | 0.0 % | 0.0 % | 0.0 % |
| bcm.rtag7 | 0.0 % | 0.0 % | 0.0 % |
| bcm.rx | 0.0 % | 0.0 % | 0.0 % |
| bcm.ser | 1.9 % | 1.9 % | 2.9 % |
| bcm.stack | 0.0 % | 0.0 % | 0.0 % |
| bcm.stat | 0.5 % | 0.5 % | 0.5 % |
| bcm.stg | 0.0 % | 0.0 % | 0.3 % |
| bcm.switch | 0.0 % | 0.0 % | 0.0 % |
| bcm.time | 0.0 % | 0.0 % | 0.0 % |

Table 50:

| | sdk-6.4.3 | sdk-6.4.2 | sdk-6.4.1 |
|------------------|-----------|-----------|-----------|
| bcm.tlvMsg | 0.0 % | 0.0 % | 0.0 % |
| bcm.trill | 0.0 % | 0.0 % | 0.0 % |
| bcm.trunk | 0.4 % | 0.4 % | 0.4 % |
| bcm.tunnel | 0.0 % | 0.0 % | 0.0 % |
| bcm.subport | 0.0 % | 1.0 % | 12.1 % |
| bcm.vlan | 0.0 % | 0.3 % | 0.0 % |
| bcm.vxlan | 0.0 % | 0.0 % | 0.0 % |
| bcm.wlan | 0.0 % | 0.0 % | 0.0 % |
| Test Suite Total | 0.6 % | 0.6 % | 1.6 % |

GREYHOUND

Table 51:

| | sdk-6.4.3 |
|----------------|-----------|
| golden | 0.0 % |
| warmboot | 0.0 % |
| bcm.auth | 0.0 % |
| bcm.chip | 0.0 % |
| bcm.cint | 0.0 % |
| bcm.coe | 0.0 % |
| bcm.cosq | 0.0 % |
| bcm.custom | 0.0 % |
| bcm.ea | 0.0 % |
| bcm.eav | 0.0 % |
| bcm.extender | 0.0 % |
| bcm.fabric | 0.0 % |
| bcm.failover | 0.0 % |
| bcm.fcoe | 0.0 % |
| bcm.field | 0.6 % |
| bcm.higigproxy | 0.0 % |
| bcm.infra | 0.0 % |
| bcm.ipfix | 0.0 % |
| bcm.ipmc | 0.0 % |
| bcm.l2 | 0.0 % |
| bcm.l2gre | 0.0 % |
| bcm.l3 | 0.0 % |
| bcm.link | 0.0 % |
| bcm.mim | 0.0 % |
| bcm.mirror | 0.0 % |
| bcm.misc | 0.0 % |
| bcm.mpls | 0.0 % |
| bcm.multicast | 0.0 % |
| bcm.niv | 0.0 % |
| bcm.oam | 0.0 % |
| bcm.pkt | 0.0 % |
| bcm.port | 0.7 % |
| bcm.proxy | 0.0 % |

Table 51:

| sdk-6.4.3 | |
|------------------|-------|
| bcm.ptp | 0.0 % |
| bcm.qos | 0.0 % |
| bcm.rate | 0.0 % |
| bcm.rtag7 | 0.0 % |
| bcm.rx | 0.0 % |
| bcm.ser | 0.0 % |
| bcm.stack | 0.0 % |
| bcm.stat | 0.0 % |
| bcm.stg | 0.0 % |
| bcm.switch | 0.0 % |
| bcm.time | 0.0 % |
| bcm.tlvMsg | 0.0 % |
| bcm.trill | 0.0 % |
| bcm.trunk | 0.0 % |
| bcm.tunnel | 0.0 % |
| bcm.subport | 0.0 % |
| bcm.vlan | 1.0 % |
| bcm.vxlan | 0.0 % |
| bcm.wlan | 0.0 % |
| Test Suite Total | 0.2 % |

TOMAHAWK

Table 52:

| sdk-6.4.3 | |
|----------------------|--------|
| golden | 2.9 % |
| bcm.auth | 11.8 % |
| bcm.chip | 0.0 % |
| bcm.cint | 0.0 % |
| bcm.coe | 0.0 % |
| bcm.cosq | 1.6 % |
| bcm.custom | 0.0 % |
| bcm.ea | 0.0 % |
| bcm.eav | 0.0 % |
| bcm.extender | 6.1 % |
| bcm.fabric | 0.0 % |
| bcm.failover | 0.0 % |
| bcm.fcoe | 0.0 % |
| bcm.field | 8.7 % |
| bcm.higigproxy | 0.0 % |
| bcm.infra | 0.0 % |
| bcm.ipfix | 0.0 % |
| bcm.ipmc | 1.6 % |
| bcm.l2 | 0.0 % |
| bcm.l2gre | 0.0 % |
| bcm.l3 | 0.0 % |
| bcm.l3.alpm.combined | 1.5 % |

Table 52:

| sdk-6.4.3 | |
|-------------------------|--------|
| bcm.l3.alpm.combined.64 | 0.0 % |
| bcm.l3.alpm.parallel | 0.0 % |
| bcm.l3.alpm.parallel.64 | 0.0 % |
| bcm.link | 0.0 % |
| bcm.mim | 0.0 % |
| bcm.mirror | 0.0 % |
| bcm.misc | 0.0 % |
| bcm.mpls | 0.0 % |
| bcm.multicast | 0.0 % |
| bcm.niv | 2.6 % |
| bcm.oam | 0.0 % |
| bcm.pkt | 0.0 % |
| bcm.port | 1.3 % |
| bcm.proxy | 17.4 % |
| bcm.ptp | 0.0 % |
| bcm.qos | 0.0 % |
| bcm.rate | 0.0 % |
| bcm.rtag7 | 3.1 % |
| bcm.rx | 4.8 % |
| bcm.ser | 7.5 % |
| bcm.stack | 0.0 % |
| bcm.stat | 2.0 % |
| bcm.stg | 0.0 % |
| bcm.switch | 1.6 % |
| bcm.time | 0.0 % |
| bcm.tlvMsg | 0.0 % |
| bcm.trill | 2.5 % |
| bcm.trunk | 2.3 % |
| bcm.tunnel | 0.0 % |
| bcm.subport | 0.0 % |
| bcm.vlan | 1.0 % |
| bcm.vxlan | 1.3 % |
| bcm.wlan | 0.0 % |
| Test Suite Total | 2.2 % |

TRIDENT2+ BCMSIM

Table 53:

| sdk-6.4.3 | |
|--------------|--------|
| golden | 3.1 % |
| bcm.auth | 0.0 % |
| bcm.chip | 33.3 % |
| bcm.cosq | 2.3 % |
| bcm.custom | 0.0 % |
| bcm.eav | 0.0 % |
| bcm.extender | 0.0 % |
| bcm.fabric | 0.0 % |

Table 53:

| sdk-6.4.3 | |
|------------------|--------|
| bcm.failover | 0.0 % |
| bcm.fcoe | 21.2 % |
| bcm.field | 6.9 % |
| bcm.higigproxy | 2.3 % |
| bcm.ipfix | 0.0 % |
| bcm.ipmc | 14.5 % |
| bcm.l2 | 5.6 % |
| bcm.l2gre | 0.0 % |
| bcm.l3 | 5.4 % |
| bcm.link | 0.0 % |
| bcm.mim | 0.0 % |
| bcm.mirror | 0.7 % |
| bcm.misc | 6.3 % |
| bcm.mpls | 1.8 % |
| bcm.multicast | 0.0 % |
| bcm.niv | 0.0 % |
| bcm.oam | 0.0 % |
| bcm.pkt | 0.0 % |
| bcm.port | 9.6 % |
| bcm.proxy | 0.0 % |
| bcm.ptp | 0.0 % |
| bcm.qos | 0.0 % |
| bcm.rate | 0.0 % |
| bcm.rtag7 | 0.0 % |
| bcm.rx | 0.0 % |
| bcm.ser | 0.0 % |
| bcm.stack | 0.0 % |
| bcm.stat | 1.7 % |
| bcm.stg | 0.0 % |
| bcm.switch | 2.6 % |
| bcm.time | 0.0 % |
| bcm.trill | 0.0 % |
| bcm.trunk | 0.0 % |
| bcm.tunnel | 1.5 % |
| bcm.subport | 58.3 % |
| bcm.vlan | 0.7 % |
| bcm.vxlan | 0.0 % |
| bcm.wlan | 5.9 % |
| Test Suite Total | 4.2 % |

STATIC CODE QUALITY ANALYSIS

Continued progress in whittling down static analysis defects per plan.

Table 54:

| | Initial Reported Issues | Reported Issues SDK 6.4.1 | Reported Issues SDK 6.4.2 | Reported Issues SDK 6.4.3 |
|-----|--------------------------------|----------------------------------|----------------------------------|----------------------------------|
| DNX | 664 | 131 | 67 | 11 |
| XGS | 271 | 123 | 54 | 21 |



Table 54:

| | <i>Initial Reported Issues</i> | <i>Reported Issues SDK 6.4.1</i> | <i>Reported Issues SDK 6.4.2</i> | <i>Reported Issues SDK 6.4.3</i> |
|--------|---------------------------------------|---|---|---|
| SBX | 600 | 0 | 0 | 45 |
| SerDes | 147 | 74 | 21 | 16 |
| Common | 2827 | 200 | 60 | 40 |
| Total | 4509 | 528 | 202 | 127 |

RESOLVED ISSUES FOR 6.4.3

The following issues are resolved in version 6.4.3 of the SDK.

Table 55:

| Number | CSP # | Chips | Release Notes For 6.4.3 |
|---------------|--------------|--|--|
| SDK-43749 | 589500 | 56440_A0 | BCM_BFD_ENDPOINT_KEY_TYPE_USE_YOUR_DISC flag is provided to specify session identifier type as your_discriminator. (Instead of MPLS label) |
| 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-48899 | 674806 | 56850_A0 56850_A1 56850_A2 | bcmFieldQualifyIcmpTypeCode support is added in EFP for Trident2 device. |
| SDK-48913 | | 88640_A0 88650_B0 88650_B1 | In Rx Trap module, updating the counter ID via BCM_RX_TRAP_UPDATE_COUNTER was not working. This is fixed. |
| SDK-48986 | | 88650_A0 88750_B0 | Add support for bcm_switch_temperature_monitor_get () API. The API returns an array of temperatures. |
| 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-49647 | | 56850_A0 | EFP bcmFieldQualifyForwardingVlan/vrf/Vpn qualifier initialization has been fixed for Trident2 device. |
| SDK-49929 | | 88650_A0 88650_B0 88650_B1 88660_A0 | Cosq: Inband flow-control triggered by RX PORT FIFO is supported. 1) Added following flag to bcm_petra_cosq_fc_path_add/get/delete API for configuring generation flow-control association: BCM_COSQ_FC_ETH_PORT 2) Added below two new flags for bcm_petra_cosq_gport_threshold <set/get> to set flow-control threshold of RX PORT FIFO BCM_COSQ_THRESHOLD_ETH_PORT_LLFC - configure LLFC threshold BCM_COSQ_THRESHOLD_ETH_PORT_PFC - configure PFC threshold For a calling sequence example, refer to cint_arad_fc_inbnd_config_example.c. |

Table 55:

| Number | CSP # | Chips | Release Notes For 6.4.3 |
|---------------|--------------|-------------------------------|---|
| SDK-50261 | | 88660_A0 | <p>Added 48 bit stamping support for ARAD+ 1588 TC (transparent clock), whereas the default stamping is 32 bit. 48 bit stamping is enabled by setting <code>bcm88660_1588_48b_stamping_enable</code> SOC property to 1.</p> <p>In systems that contain more than 1 device, in addition to using Broadsync synchronization, the application should make sure that "EPNI_IEEE_1588_TS_MSB_COUNTER" (the upper 16 bit TOD register, increased by 1 every ~4 seconds) register is synced between all devices.</p> |
| SDK-50689 | | 56640_A0 56640_A1 56640_B0 | <p>Index return for TCAM search cli was not correct while searching data in L2 tcam partition. Rectified this behavior for tcam search cli and corrected index returned for searched data in L2 tcam partition.</p> |
| SDK-50945 | | 56440_B0 | <p>Port downsizer workaround failed when SDK is compiled with <code>DBCM_PORT_DEFAULT_DISABLE</code> flag.</p> <p>This was because the phy loopback was not able to be set to perform downsizer check since ports are in disabled state.</p> <p>Fixed by enabling port before loopback and resetting back to original state after performing downsizer check.</p> |
| SDK-53320 | 730039 | 56850_A0 56850_A1 56850_A2 | <p>In earlier releases, when <code>alpm</code> is enabled, <code>num_ipv6_lpm_128b_entries</code> could only be set with 0, 1024, 2048, 3072 in combined mode, and its value could not be dynamically configured in both parallel and combine mode. Now, <code>num_ipv6_lpm_128b_entries</code> can be set with any value through 0 to 4096 in combine mode, and it can be dynamically configured via <code>bcmSwitchL3Max128BV6Entries</code> in both parallel and combine mode.</p> |
| SDK-54076 | | 56640_B0 | <p>Configuration of egress properties such as MTU, MAC address on a per L3 interface basis (on same VLAN) cannot be supported in conjunction with the functionality of strict URPF check and ICMP redirect in current architecture. A new configuration property, <code>"l3_intf_vlan_split_egress"</code> is introduced that allows the application to choose which of the functionality is active.</p> |
| SDK-55374 | 701952 | 56850_A2 | <p>The BCM API <code>get()</code> funtion for <code>BCM_PORT_PHY_CONTROL_CL72</code> is fixed in this release.</p> |
| SDK-55650 | 754938 | 88670_A0 | <p>MPLS PORT: Support use of two bits of orientation for PWE lifs.</p> |
| SDK-55955 | 791050 | 56850_A0 | <p>Issue :- Add Mask Support for <code>DstMplsGport</code>, <code>DstNivGport</code>, <code>SrcMulticastGroup</code>, <code>SrcMplsGport</code>, <code>SrcNivGport</code>, <code>DstMulticastGroup</code>.</p> <p>Fix:- Added SET/GET API for <code>DstMplsGport</code>, <code>DstNivGport</code>, <code>SrcMulticastGroup</code>, <code>SrcMplsGport</code>, <code>SrcNivGport</code>, <code>DstMulticastGroup</code></p> |

Table 55:

| Number | CSP # | Chips | Release Notes For 6.4.3 |
|-----------|-----------|--|---|
| SDK-55977 | | 56820_A0 | When both Port based mirroring and FP base mirroring is used, then mirror slot container is shared between port and FP leading to FP based MTP destination take precedence over Port mirroring . As a result of this if packet comes from mirrored port matching FP entry it will go to FP pointed MTP destination instead of Port MTP. To correct this behavior MirrorExclusive Switch Control is introduced, which once set will make mirror slot container between port and FP mutually exclusive. Mirror slot container can be shared with in Port Mirroring and FP mirroring but not across. Since Mirror Slot Containers are not shared , packet will go to both MTP as pointed by Port and FP destinations. By default this switch control is not set and has to be set explicitly to achieve exclusiveness between port and FP. This switch control introduces it's own limitation like if both slot container are allocated to Port mirroring then FP based mirroring cannot use third MTP destination as slot containers are not available , same will be true in vice versa case. Customer should be aware of this limitation and should use mirror slot container carefully in this mode. |
| SDK-55979 | | 56820_A0 | When both Port based mirroring and FP base mirroring is used, then mirror slot container is shared between port and FP leading to FP based MTP destination take precedence over Port mirroring . As a result of this if packet comes from mirrored port matching FP entry it will go to FP pointed MTP destination instead of Port MTP. To correct this behavior MirrorExclusive Switch Control is introduced, which once set will make mirror slot container between port and FP mutually exclusive. Mirror slot container can be shared with in Port Mirroring and FP mirroring but not across. Since Mirror Slot Containers are not shared , packet will go to both MTP as pointed by Port and FP destinations. By default this switch control is not set and has to be set explicitly to achieve exclusiveness between port and FP. This switch control introduces it's own limitation like if both slot container are allocated to Port mirroring then FP based mirroring cannot use third MTP destination as slot containers are not available , same will be true in vice versa case. Customer should be aware of this limitation and should use mirror slot container carefully in this mode. |
| SDK-56039 | SDK-64106 | 766039 56846_A0 56845_B0 56845_A2 56844_A0 56842_A0 56840_A0 56843_B0 56841_A3 56846_A1 56841_B0 | In previous release, customer found API <code>bcm_switch_control_port_set(unit, port, bcmSwitchPFCClass0Queue, 3)</code> could not work on TD+, but it worked on TD2. This inconsistent behavior made customer confused. A fix has been made now to make the API support legacy cosq mode. |
| SDK-56223 | 767450 | All | Added KNET software link state control via new proc file interface. Examples: <code>echo eth4=down > /proc/bcm/knet/link</code> <code>echo eth4=up > /proc/bcm/knet/link</code> |

Table 55:

| Number | CSP # | Chips | Release Notes For 6.4.3 |
|---------------|--------------|---|---|
| SDK-56279 | 759897 | 88650_B0 | In some traffic scenarios which includes few devices after device reboot the traffic full bandwidth was not restored. In order to solve this problem we improved our traffic disable procedure by disabling traffic from fabric MAC to FDR. |
| SDK-56382 | | 56643_A0 | Fixed the tx data array size to avoid the stack corruption in <code>_phy_wcmmod_speed-set</code> function |
| SDK-56754 | 771594 | 56334_B0 56850_A2 | This problem and fix are applicable to the case where L3 ingress mode (bcmSwitchL3IngressMode switch control) is not being used. When there are multiple L3 interfaces on a given VLAN, all of them will be using the same VRF binding. Hence while deleting one of the L3 interfaces, SDK will not clear the VRF associated with the VLAN. Even in the case of the last L3 interface being deleted, SDK does not clear the VRF binding and expects the application software to necessarily set the VRF binding for the L3 interfaces that may be created subsequently. |
| SDK-56769 | | 88650_A0 88670_A0 | ERP port is no longer treated in Egress Scheduler. |
| SDK-56932 | 777407 | 56850_A0 56850_A1 56850_A2 | Previously, it was found that after creating a multicast VXLAN logical port with a multicast egress object, if we call <code>bcm_l3_egress_traverse()</code> , the field port/trunk within the multicast egress object is zero. It is not proper. Now the VXLAN physical port/trunk index on which the multicast egress object is created can be retrieved by that field. |
| SDK-57033 | 766664 | 88660_A0 88670_A0 | CoE and dynamic port features have been added. CoE introduces a kind of channelized port, which is mapped via master port plus CoE tag. ARAD has up to 256 channelized ports. Every channelized interface supports up to 64 channelized ports. Dynamic port support dynamic switching between CoE and regular mode. It allows to configure port extender mode at run time . Please see <code>cint_port_extender_dynamic_switching.c</code> for more details. |
| SDK-57102 | 779185 | 56850_A0 56850_A1 56850_A2 | In earlier releases, If adding l3 host entry to HW failed, SDK should decrease the related reference count but this function did not work when it has a multipath flag. This has been resolved. |
| SDK-57475 | 782537 | 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 56851_A0 56852_A0 56852_A1 56853_A0 56853_A1 | In earlier releases, SDK only could configure the egress interface for each ECMP member. The related attributions like failover could not be installed. This has been resolved. |
| SDK-57700 | 787637 | All | In previous releases, customer found egress flex counters would run out quickly in some circumstances like (4K VLANs + 1 VFI). In this release an improvement has been deployed. The user can now use a new soc property to denote which egress objects can share or exclude flexible counter pool. |

Table 55:

| Number | CSP # | Chips | Release Notes For 6.4.3 |
|---------------------|--------------|--|---|
| SDK-57770 | | 56450_A0 56450_B0 | BHH packets are redirected to Host CPU instead of BTE if user specifies to use his own application running in host CPU to process BHH packets. |
| SDK-58060 | | All | Updated Linux kernel modules to work with Linux kernel 3.10 and newer. |
| SDK-58469 | | 88670_A0 | The Jericho ITMH is implemented. The implementation is done via Field Processor APIs: it allows the user to define another ITMH header if needed. However, OAMP and OLP are configured to use the predefined Jericho ITMH. |
| SDK-58552 | | 88650_A0 88650_B0 88650_B1 88660_A0 | Added API support for: <code>bcm_port_mdix_get()</code> <code>bcm_port_mdix_set()</code> <code>bcm_port_mdix_status_get()</code> The APIs will work for supported external phys. |
| SDK-58616 | 677402 | 56850_A0 56850_A1 56850_A2 | When ports state changes after a flexed configuration, the bit maps for counter thread did not change accordingly. In this release counter bitmaps will be automatically updated after "flexible" ports are flexibly configured. The user does not need to configure bitmaps or re-start counter thread by CLI commands. |
| SDK-58728 | | 88750_A0 | Procedures <code>bcm_fabric_bandwidth_profile_get()</code> / <code>bcm_fabric_bandwidth_profile_set()</code> now refer to 'max_kbps' element of 'profile_array' as implied from its name - Kilo bps (and not Mega bps) |
| SDK-58854 | 801789 | 56340_A0 | Warpcore 2 and 3 of BCM56342 devices previously could not support 1G speed. SDK code is now enhanced to support 1G speed on Warpcore index 2 and 3 of BCM56342 device. New device config is supported for BCM56342: <code>spn_BCM56340_4X10 :HX4_1G_130: 7xF.QSGMII + Flex[4x10] + 2xFlex[21G/1G] + 1GE</code> |
| SDK-58964 | 797918 | 56850_A0 56850_A1 | In earlier releases, when <code>alpm</code> is enabled, <code>num_ipv6_lpm_128b_entries</code> could only be set with 0, 1024, 2048, 3072 in combined mode. Now, <code>num_ipv6_lpm_128b_entries</code> can be set with any value through 0 to 4096 in combine mode. |
| SDK-59166 | 804804 | All | SyncE input clock recovery is supported using switch controls "bcmSwitchSynchronousPortClockSource" and "bcmSwitchSynchronousPortClockSourceBkup". SyncE output using Serdes and Master LCPLL is supported in firmware, however it is not supported in SDK since it needs dedicated CPU to drive the SyncE output at 4KHz loop. |
| SDK-59313 SDK-58997 | 803175 | 56640_A0 | Added support to clear XCON and Error CCM defects from software when all the RMEPs are deleted from that group due to a CCM Hardware engine limitation in Triumph3 |
| SDK-59760 | 809847 | 88670_A0 | In BCM APIs, the HW FEC Id space is managed by the user. Multiple HW constraints exist on how to handle this space: ECMP groups point only to consecutive FECs, some FECs are protected, etc. An example application is available from now on, describing how to handle the FEC IDs. |



Table 55:

| Number | CSP # | Chips | Release Notes For 6.4.3 |
|---------------|--------------|--|---|
| SDK-59842 | | 56634_A0 56634_B0 | When L3 ingress mode is set, added support in <code>bcm_mpls_tunnel_switch_get()</code> API to return <code>info->ingress_if</code> for BCM5644x and BCM5645x devices. |
| SDK-60108 | 812602 | 88650_A0 88650_B0 88650_B1 88660_A0 | Local RBridge doesn't have InLif. Relevant error message added. |
| SDK-60237 | 813536 | 56850_A0 56850_A1 56850_A2 | Issue :- Trident2 FP Hardware supports Vxlan Reserved Header Fields which was missing in SDK. Fix :- Added new Qualifier :- <code>bcm_field_qualify_VxlanHeaderBits8_31</code> <code>bcm_field_qualify_VxlanHeaderBits56_63</code> Added New Action list :- <code>bcmFieldActionVxlanHeaderBits8_31_Set</code> <code>bcmFieldActionVxlanHeaderBits56_63_Set</code> |
| SDK-60279 | | 84740_A0 84780_A0 | phy84740.c : Need to allow serdes link status check even in reverse mode (check added in <code>link_get</code> function) |
| SDK-60508 | 816530 | 56340_A0 56340M_A0 | During multi hash move operation, the destination bucket can have different sized entries than the incoming entry. In earlier releases, the SDK did not care if the incoming entry could fit into destination bucket. Due to this, it could corrupt the existing entry in some cases. The fix is to add an infrastructure to check if incoming entry can be added into the destination bucket. if not, keep looking for next destination bucket until you get a free space or you have reached to max try counter. |

Table 55:

| Number | CSP # | Chips | Release Notes For 6.4.3 |
|-----------|--------|---|---|
| SDK-60596 | | 88660_A0 | <p>OAM: Support transmission/reception of CCMs with TLV where Type=2 (port status TLV) or 4 (interface status TLV). The TLV on transmitted CCMs can be set with the API <code>bcm_oam_endpoint_create()</code>. When setting Type=port status is desired, the flag <code>BCM_OAM_ENDPOINT_PORT_STATE_UPDATE</code> should be set in the flags field and the field <code>port_state</code> should be set to one of the <code>BCM_OAM_PORT_TLV_*</code> defines. When setting Type=interface status is desired, the flag <code>BCM_OAM_ENDPOINT_INTERFACE_STATE_UPDATE</code> should be set in the flags field and the <code>interface_field</code> should be set to one of the <code>BCM_OAM_INTERFACE_TLV_*</code> defines.</p> <p>The OAMP may also monitor the port/interface status of received CCMs. This may be done via the <code>bcm_oam_endpoint_get()</code> API for the remote MEP entry. The value of the latest port status will be returned at the field <code>port_state</code> and the value of the latest interface status will be returned at the field <code>interface_status</code>. Likewise for each port/interface value an interrupt may be triggered upon reception of the first CCM with such a value. This can be achieved using the API <code>bcm_oam_event_register()</code>.</p> <p>Note that due to a limitation at the OAMP a program at the egress editor must be used for CCMs destined to the OAMP. The program selection is based on an egress PMF rule. An example of such a rule may be found in <code>cint_oam_field_tlv.c</code>. For a more detailed explanation consult the user manual.</p> |
| SDK-60609 | 818931 | 56224_A0 | <p>Problem: On 56224 devices, there would be false L2 DEL + ADD callbacks for entry at location x, if the adjacent entry at location x+1 is modified. Root cause: L2X thread which gives the callback, was using size of 16 bytes instead of device specific number of bytes for comparing. Fix: The change has been made to use device specific size instead of fixed size.</p> |
| SDK-60715 | 820099 | 56640_B0 | <p>In this release added a new config <code>phy_xaui_active_lane_map</code> to specify the 100G active lane.</p> |
| SDK-60907 | 819128 | All | <p>In L2 learning, <code>bcm_l2_addr_msg_distribute_get()</code> and <code>bcm_l2_addr_msg_distribute_set()</code> didn't support aging refresh, i.e. it wasn't possible to register for aging refresh events. Currently there is a new flag <code>BCM_L2_ADDR_DIST_REFRESH_EVENT</code> available for the above set and get functions. Setting this distribution flag will register the user to be notified on refresh events when aging counter is refreshed.</p> |
| SDK-60920 | 813693 | 88640_A0 88640_PCP 88650_A0 88650_B0 88650_B1 88650ACP_A0 88660_A0 88670_A0 | <p>The 'snmpBcmTransmittedPkts1519to2047Octets' counted only 1519-1522. Fixed to counter correct length.</p> |

Table 55:

| Number | CSP # | Chips | Release Notes For 6.4.3 |
|---------------|--------------|---|--|
| SDK-60945 | 818527 | 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 56851_A0 56852_A0 56852_A1 56853_A0 56853_A1 | A request was made to enable the SDK to report the reason why a packet was delivered CPU. In earlier releases there wasn't a mechanism to identify the receiving path of packet in current SDK. A new field "rx_path" was introduced in bcm_pkt_t to hold the receive path of packet. A new function dcb23_rx_switch_drop_get() was added for acquiring the "Switched Drop" bit in DCB after packet was received. Based on "Reason Code" and "Switched Drop" of DCB, the rx_path will be updated while rx parsing. |
| SDK-60987 | | 56850_A0 56850_A1 56850_A2 | In the previous release, the buffer peak value was not obtained correctly if BST is operated on PEAK mode. In this release, this issue has been addressed by correcting the internal API. |

Table 55:

| Number | CSP # | Chips | Release Notes For 6.4.3 |
|-----------|--------|---|--|
| SDK-61102 | 822950 | All | <p>ARAD supports 32 VLAN ranges per port at most. To add multiple outer VLAN ranges on the same port, <code>bcm_vlan_translate_action_range_add</code> should be called as follows:</p> <pre>bcm_vlan_action_set_t action; bcm_vlan_action_set_t_init(&action); action.ot_outer = bcmVlanActionCompressed; action.new_outer_vlan = 1; bcm_vlan_translate_action_range_add(0, 15, 1, 2, BCM_VLAN_INVALID, BCM_VLAN_INVALID, &action); action.ot_outer = bcmVlanActionCompressed; action.new_outer_vlan = 4; bcm_vlan_translate_action_range_add(0, 15, 4, 5, BCM_VLAN_INVALID, BCM_VLAN_INVALID, &action);</pre> <p>To add multiple inner VLAN ranges on the same port, <code>bcm_vlan_translate_action_range_add</code> should be called as follows:</p> <pre>bcm_vlan_action_set_t action; bcm_vlan_action_set_t_init(&action); action.it_inner = bcmVlanActionCompressed; action.new_inner_vlan = 1; bcm_vlan_translate_action_range_add(0, 15, BCM_VLAN_INVALID, BCM_VLAN_INVALID, 1, 2, &action); action.it_inner = bcmVlanActionCompressed; action.new_inner_vlan = 4; bcm_vlan_translate_action_range_add(0, 15, BCM_VLAN_INVALID, BCM_VLAN_INVALID, 4, 5, &action);</pre> <p>To add multiple outer and inner VLAN ranges on the same port at the same time, <code>bcm_vlan_translate_action_range_add</code> should be called as follows:</p> <pre>bcm_vlan_action_set_t action; bcm_vlan_action_set_t_init(&action); action.dt_outer = bcmVlanActionCompressed; action.dt_inner = bcmVlanActionCompressed; action.new_outer_vlan = 1; action.new_inner_vlan = 4; bcm_vlan_translate_action_range_add(0, 15, 1, 2, 4, 5, &action); action.dt_outer = bcmVlanActionCompressed; action.dt_inner = bcmVlanActionCompressed; action.new_outer_vlan = 6; action.new_inner_vlan = 8; bcm_vlan_translate_action_range_add(0, 15, 6, 7, 8, 9, &action);</pre> |
| SDK-61167 | 787136 | 56640_A0 56545_A0 56640_A1 56640_B0 56545_A1 56545_B0 | <p>On external PHY attached to the port, the PHY loopback has to be enabled for both internal and external PHY in order for IBOD to work.</p> |



Table 55:

| Number | CSP # | Chips | Release Notes For 6.4.3 |
|---------------|--------------|-------------------------------|---|
| SDK-61190 | 824318 | 56640_A0 56640_A1 56640_B0 | SDK was not clearing REMOTE_FAULT_STATUS and LOCAL_FAULT_STATUS fields of CMAC_CLEAR_RX_LSS_STATUS register upon healthy link up for 100Gbps CE ports. Enabled the processing of CMAC_CLEAR_RX_LSS_STATUS for CE (100G) ports as well. |
| SDK-61227 | 823907 | 56850_A0 56850_A1 56850_A2 | Description: Assert for wrong register width in SER handler makes SDK crash. Root cause: The root cause is using soc_reg32_get to read a 64b register(PGW_BOD_XLP0_ECC_STATUS) Solution: In this release the SDK has changed to use soc_reg_get to read the 64b register(PGW_BOD_XLP0_ECC_STATUS) . |
| SDK-61290 | 824389 | 56846_A0 56846_A1 | In earlier releases, RxSwLos state machine could not be recovered during warmboot and led to traffic drop issue, This has been resolved. |
| SDK-61346 | 825676 | 56450_B0 | In BCM56452, Software was not able to configure WC1 port as 20G Ethernet. This was because the DXAUI operating mode of the warpcore port was configured to support maximum of 10G. Handled this issue by re configuring the port to support maximum 20G Ethernet type traffic. |
| SDK-61400 | 825506 | All 56450_A0 56450_B0 | Adding MPLS entry with explicit queue mode was returning an error as it was always expecting a QOS map id. Fixed code to support both adding of MPLS entry with explicit queue or by specifying the base queue and a valid QOS map id. |
| SDK-61571 | 825912 | 88660_A0 88670_A0 | In L2 learning, there was a constraint that didn't allow setting up ingress distribution learning and distribute it to a LAG port. The constraint was removed. |
| SDK-61625 | 816742 | 88650_A0 88650_B0 88660_A0 | In Field Processor, when working with external tcam (KBP), API bcm_field_group_dump() returns incorrect values. This API was changed to support external TCAM correctly. In order to use this API with external TCAM, a new SOC property is introduced and should be set: custom_feature_unbound_uninstalled_external_tcam_entries_number=1. When set, the properties of the installed entries which reside on the external TCAM are kept in the SW state. This information is retrieved during the dump call. Note that the setting of this SOC property increases the memory allocation for Field Processor SW state. |
| SDK-61638 | 826721 | 88650_B1 88660_A0 | In L2 module, when working in centralized mode, the LIF-valid bit entry was not received correctly on learn events (i.e., when the CPU was inserting learned entries via BCM SDK) for FEC destined entries (for example, FEC learning for PW tunnel). The LIF-valid bit is now set correctly on the learn events and matches the payload of the device learned entry. |
| SDK-61735 | 825191 | 88660_A0 88670_A0 | The conversion of Gport to Lif-id in case of outlif was not supported. As a result, it wasn't possible to set correctly the new outlif id with the Ingress PMF action bcmFieldActionVportNew. This is fixed. |
| SDK-61754 | 825213 | 56643_A1 | Fixed a bug in hg42G speed set when cl72 is enabled. |

Table 55:

| Number | CSP # | Chips | Release Notes For 6.4.3 |
|---------------|--------------|--|--|
| SDK-61769 | 827751 | All | Ensure that KNET Tx buffers are flushed after optional Tx callbacks are done, otherwise we may transfer stale data, if system is not cache-coherent. |
| SDK-61833 | 817014 | 56720_A0 56743_A0 56745_A0 56746_A0 56750_A2 | In earlier releases, creation of virtual port multicast groups with ID did not work correctly on fabric-only devices. Added support to handle various ipmc group types for fabric only devices and added warmboot support for the array that is used to store the ipmc group types. |
| SDK-61925 | 826420 | 56846_A1 | In previous releases, if parity generation was disabled for TD+ and a specific field was cleared in the table MMU_CTR_UC_DROP_MEM, for example PKT_CNT, this may cause parity bit mismatch, then the table entry would be stuck on a value and not increase. In this release, this issue has been fixed by writing 0 to the whole entry when a specific field is going to be cleared. |
| SDK-61998 | | 56640_A0 56640_A1 56640_B0 | bcm_port_phy_set has a input parameter port, which can be a valid port number or a PHY MDIO address. Until 6.3.7, in bcm_port_phy_set API, the input parameter port is not checked for validity. In 6.3.8, port validity check is added and so, this API does not work when PHY MDIO address is passed via port parameter. This is again fixed in 6.3.10. Similar check is added to bcm_port_phy_get and bcm_port_phy_modify |
| SDK-62007 | 831748 | 56850_A0 56850_A1 56850_A2 | Replace global SPL lock with dedicated mutex or spinlock wherever possible to reduce contention for the SPL lock. |
| SDK-62010 | 788734 | 88660_A0 88670_A0 | Until now, the FTMH.DSP-Extension header was added to packets only in stacking systems, when the stacking-enable SOC property was set. However, e.g. for snooped and mirrored packets, users may want to add a DSP-Extension for the CPU to know what was the original packet's destination. This can be done from now on by setting ftmh_dsp_extension_add to '1'. |
| SDK-62023 | | 88650_B0 88660_A0 | Fixed a bug that caused unwanted bytes to be added to some packets in case user-header was used. |
| SDK-62031 | 831488 | 88650_B1 | In routed learn, SA look up was opportunistic and thus SA unknown traps were not raised. Now SA look up is guaranteed and SA unknown traps are raised. |
| SDK-62041 | 831895 | 56640_A0 56640_A1 56640_B0 | For any MPLS tunnel, in cases when failover is used, we usually create the failover port first, and pass its port_id as a parameter when creating the primary port. In previous releases, when we delete the failover port and add it again, the newly created failover port over writes the settings of the primary port. This is fixed as part of this JIRA. |

Table 55:

| Number | CSP # | Chips | Release Notes For 6.4.3 |
|---------------------|--------|----------------------------|--|
| SDK-62070 SDK-60189 | | 56340_A0 56850_A0 | <p>In earlier releases, customers were unable to use warmboot as a tool for ISSU because SDK takes a while to warmboot and CPU packet tx and rx could not be started in a timely manner from application. This would cause protocol timers to expire and misbehave.</p> <p>In order to not starve the protocol timers and to allow applications to send and receive packets early in the initialization sequence and even during warm booting, new support has been added through <code>bcm_attach_early_txrx()</code> and <code>bcm_detach_late_txrx()</code> APIs.</p> <p>API <code>bcm_detach_late_txrx()</code> can be used to delay de-initializing the BCM TX and RX components until all the other BCM components are de-initialized. Then customers TX and RX threads have to be shut down after which <code>bcm_detach()</code> must be called as usual to de-initialize BCM TX and RX components and other control structures for a safe shutdown.</p> <p>API <code>bcm_attach_early_txrx()</code> can be used to attach the BCM unit and initialize the BCM TX and RX components. Customers, from their application code, can then start transmitting and receiving packets to/from CPU. Regular <code>bcm_attach()</code> API must still be invoked to allow complete and safe re-initialization so BCM APIs can be used for configuring the system.</p> <p>However, the CPU packet TX and RX procedures are limited by its nature during the warmboot process. In the absence of the required control data, link status and other integrity checks may be exempted during <code>bcm_tx()</code> when warm booting. Similarly processing of some packet metadata elements and converting the same to standard BCM types may not happen during packet RX.</p> |
| SDK-62092 | 824440 | All | <p>In the earlier SDK, the <code>IESMIF_INTR</code> in <code>IP1_INTR_ENABLE</code> was enabled after SER had handled other errors which should be kept as disabled. When the status of <code>IESMIF_INTR</code> was set by accident, it made interrupt handler go to infinite loop by checking the status of <code>IESMIF_INTR</code>, and thus consumed CPU a lot. The issue has been fixed in this release.</p> |
| SDK-62097 | 831042 | 56340_A0 56450_A0 56640_A0 | <p>Code to set <code>CLASS_ID</code> field in MPLS view was not present. Have added the same for supported platforms (<code>bcm56340_a0 56450_a0 56450_b0 56450_b1 56640_a0 56960_a0</code>)</p> |
| SDK-62168 | | 88650_A0 88650_B0 88660_A0 | <p>Resolve static analysis warnings</p> |
| SDK-62221 | 833933 | 56450_B0 | <p>Problem: <code>bcm_l3_egress_create</code> was failing when we passed queues that is created using subport Fix: Now the validation is changed , so that validation is done with the actual port instead of <code>pp_port</code></p> |

Table 55:

| Number | CSP # | Chips | Release Notes For 6.4.3 |
|---------------|--------------|-------------------------------|---|
| SDK-62248 | 821582 | All | Fixed incorrect error handling in <code>sal_mutex_take</code> for Linux user mode (unix) SAL when <code>USE_POSIX_MUTEX_TIMEDLOCK</code> is enabled, |
| SDK-62256 | 795913 | 56640_A0 56640_A1 56640_B0 | Fixed the behavior on Triumph3 to allow deletion of FDBs even if VP is not present |
| SDK-62258 | 822988 | 56850_A2 | In earlier releases, In function, " <code>int soc_ser_log_load(int unit, void *location)</code> ", we inadvertently created a Mutex which needed to be destroyed but was not. This was uncovered by a customer static analysis tool. . This has been resolved. |
| SDK-62295 | 827961 | 56850_A0 56850_A1 56850_A2 | In earlier releases, <code>bcm_vlan_stp_set/get()</code> didn't support virtual port. This has been fixed in this release by getting virtual port number from parameter <port>, then setting STP state to corresponding register. However, the behavior is different compared to physical port. For physical port, port+STG is atomic; while port+vlan is atomic for virtual port. User must be careful to handle the difference. Virtual port must be added to the vlan before calling <code>bcm_vlan_stp_set/get()</code> . Same STP state must be explicitly set to all vlans that comprise a STG. |
| SDK-62338 | 835376 | 88650_B1 88660_A0 88670_A0 | Default In-LIF is used whenever the In-LIF lookup has no result. There was an inconsistency in the handling of this In-LIF in general and specifically the association of an In-LIF Profile by calling <code>bcm_port_class_set()</code> failed for the Default In-LIF. The Default In-LIF is now treated as any other Ingress only In-LIF including successful configuration of an In-LIF Profile. |
| SDK-62354 | 820140 | 88660_A0 88670_A0 | Maximum isem vt/tt programs number fixed to be 16(arad)/32(jericho). |
| SDK-62384 | 827518 | 56820_A0 56820_B0 | In earlier releases, 100M Fiber mode was not getting disabled for 1G port when enabling autonegotiation. In this release we now disable 100M Fiber mode before enabling autonegotiation. |
| SDK-62386 | 834601 | 56640_A0 56640_A1 56640_B0 | 1) The missing scheduler hierarchy occurs for nodes whose parent index is greater than 512. Due to an error in the code, when the node's parent index is greater than 512, we save the parent index in scache as 512 which, upon recovery, is treated as invalid index. This has been fixed by increasing the number of bits for parent index from 11 to 12. Since we can't modify the existing 11 bit parent id (no free space left in the first word), the 12th bit is saved in the next word. 2) Another issue seen was for multicast queues, the <code>hw_index</code> starts with an offset of 1024. However, during sync the maximum <code>hw_index</code> is considered as 1024 (0x400). This has been fixed by decrementing the <code>hw_index</code> by 1024 during sync for multicast queues. Upon recovery, increase the same by 1024. 3) The reason priority mapping was not being restored is that invalid <code>hw_cosq</code> is checked using 0xf instead of 0x8. This has been corrected by checking for invalid <code>hw_cosq</code> using 0x8 during recovery. |

Table 55:

| Number | CSP # | Chips | Release Notes For 6.4.3 |
|---------------------|--------------|--|---|
| SDK-62402 | | 56850_A0 56850_A1 56850_A2 | Coverity issues (memory leak) found by a customer using static analysis tools have been resolved. |
| SDK-62408 | | 88650_A0 88650_B0 88660_A0 | MPLS: Ability added to process (send and receive) MPLS traffic on certain port without an Ethernet header. For more details see PP User Manual. |
| SDK-62427 | | 88650_A0 88650_B0 88650_B1 88660_A0 | Apply HW recommendations for WC current. It is recommended for all customers using 6.3.x releases to integrate this fix. |
| SDK-62451 | | 56640_B0 | In Triumph3, <code>bcm_cosq_classifier_mapping_clear</code> was deleting the whole profile when called for a single port. After this fix the function clear only the port offsets. The complete profile will be deleted if its the last port in the profile |
| SDK-62454 | 835758 | 56846_A0 | Added missing protection of critical section in implementation of BCM APIs for traffic shaping on BCM5684x and BCM5685x device families. |
| SDK-62463 SDK-59096 | 835815 | 56450_A0 56450_B0 | In this release we have added SDK APIs to enable configuring Protection Status in Higig Header. "bcmSwitchRemoteProtectionEnable" can be used to Set "SET_PROT_STATUS" bit in EGR_HG_HDR_PROT_STATUS_TX_CONTROL register. While "bcmSwitchRemoteProtectionTrust" can be used to Set "USE_PROT_STATUS" bit is set in the ING_CONFIG_64 register. |
| SDK-62490 | | 88650_A0 | MPLS: <code>bcm_petra_mpls_port_get</code> fails for protected PWEs. |
| SDK-62501 | 834596 | 56850_A0 56850_A1 56850_A2 | In previous releases, customer found that when a 40G port was changed to 4x10G, it would cause cosq BW shaping functionality is broken. The issue was caused by two reasons. 1 SOC_INFO(unit) ->port_speed_max was not changed to 10G after changing flex port. 2 On TD2, port queue weights should be used to calculate the burst size. Now this issue has been fixed. |
| SDK-62512 | 835671 | 56830_A0 56830_A1 56830_A2 | In earlier releases, MY_MODID value was not set correctly in port entry of <code>cpu_hg_index</code> for BCM56831 when module-id was changed. This has been fixed in this release. |
| SDK-62524 | 834472 | 56640_A0 56640_A1 56640_B0 | In earlier releasedJs, MacDrain Timeout error was experienced in a flex port configuration. The <code>mac_drain</code> operation is was being done for ports in disabled state causing in stale packets in the MMU. For disabled ports the <code>mac_drain</code> operation is now skipped as it is not required. |
| SDK-62591 | 824848 | 56636_B0 | Schan timeout occurred while accessing un-initialized ESM through dump soc command. Corrected this behavior by skipping ESM registers if module is un-initialized in absence of external tcam config to avoid schan timeout error messages. |
| SDK-62612 | 837279 | 56340_A0 | Per customer request have added a new phy control option in existing <code>bcm_port_phy_control_set()</code> API which can freeze DFE values in serdes warpcore. New phy control option BCM_PORT_PHY_CONTROL_DFE is added in this fix. |

Table 55:

| Number | CSP # | Chips | Release Notes For 6.4.3 |
|---------------|--------------|-------------------------------|--|
| SDK-62625 | 835156 | 56640_B0 56643_A0 | When ACL 144 without L2 table was not configured, the keyoffset used for ACL was incorrect. Correct it to use ACL ONLY config when I2 table is not present |
| SDK-62632 | | 88650_A0 88660_A0 | OAM: To disable support for NTP in OAM DM messages, set SOC property: oam_dm_ntp_enable=0 |
| SDK-62639 | | 88650_A0 88650_B0 88660_A0 | Diagnostics for IPv4 MC when working with external TCAM (KBP) returned wrong values for VRF != 0. This is fixed. |
| SDK-62641 | 831284 | All | Fixed issue where PTP signaling deny messages from master could cause brief deadlock. |
| SDK-62642 | | 88670_A0 | Hierarchical FEC usage in Routing Over Vxlan. For more information see <code>cint_vxlan_roo.c</code> |
| SDK-62646 | | All | Fixed case where uninitialized memory could be used for a message to uKernel in a PTP fault case. |
| SDK-62652 | 835835 | 88660_A0 88670_A0 | In Ingress PMF, it is possible to configure a NOP action for <code>bcmFieldActionPolicerLevel0</code> by setting <code>param0=0</code> . The same ability is added for <code>bcmFieldActionPolicerLevel1</code> . |
| SDK-62661 | | 56960_A0 | Continuous DMA SOC property added to enable continuous DMA mode for Packet I/O. The underlying Continuous DMA function is not supported in this release |
| SDK-62736 | | 88660_A0 | In Ingress Field Processor stage, in BCM88650/88660 devices, up to eight 160b keys can be built. However, one key has a different (called interleaved) TCAM resolution than the 7 others. A special mode allows to use this special key as long as the entries are limited to a single TCAM bank. To use this mode, create the Field group with flag <code>BCM_FIELD_GROUP_CREATE_SINGLE</code> . |
| SDK-62752 | 836938 | All | During <code>bcm_ipmc_add</code> , the hit bit for that multicast entry was set by default in SDK. SDK was not servicing <code>BCM_L3_HIT_CLEAR</code> flag sent by user. Added code to not set hit bit if user sends <code>BCM_L3_HIT_CLEAR</code> flag. |
| SDK-62754 | 836778 | 88650_B1 88660_A0 | VLAN filtering is used to discard packets based on packet's tag format. When advanced VLAN translation is enabled, VLAN filtering is set via <code>bcm_port_tpid_class_set()</code> . But <code>bcm_port_tpid_class_set()</code> didn't support <code>BCM_PORT_TPID_CLASS_INGRESS_ONLY</code> and <code>BCM_PORT_TPID_CLASS_EGRESS_ONLY</code> . Ingress and egress VLAN filtering are set at the same time. Ingress and egress VLAN filtering are able to set separately by calling <code>bcm_port_tpid_class_set()</code> with flag <code>BCM_PORT_TPID_CLASS_INGRESS_ONLY</code> or <code>BCM_PORT_TPID_CLASS_EGRESS_ONLY</code> after the fix. |

Table 55:

| Number | CSP # | Chips | Release Notes For 6.4.3 |
|---------------|--------------|-------------------------------|---|
| SDK-62765 | 836249 | 56450_B1 56450_A0 56450_B0 | <p>In BCM5645x devices, DROP_PKT_R and DROP_BYTE_R counters were getting incremented even there was no actual drop.</p> <p>This was because, the software counter was reading the dequeue table incorrectly during the non dma flex counter sync operation.</p> <p>Fixed this issue by introducing a feature check to stop syncing flex counters when counter_toggled_read feature is not present.</p> |
| SDK-62774 | 837984 | 88650_B1 88660_A0 | <p>In FCoE, API function bcm_fcoe_zone_delete() was not supported. The API function is now implemented and supported.</p> |
| SDK-62799 | 827592 | 88650_A0 88660_A0 | <p>The soc property "customer_feature_always_map_result_dp_2_to_1" is used to map meter resolved DP to ingress DP and egress DP. It doesn't support mapping meter resolved DP to ingress DP only or egress DP only. Soc property "customer_feature_always_map_ingress_result_dp_2_to_1" has been added to map meter resolved DP to ingress DP only. Soc property "customer_feature_always_map_egress_result_dp_2_to_1" has been added to map meter resolved DP to egress DP only.</p> |
| SDK-62822 | | 88660_A0 | <p>Add MPLS tunnel gport information to SW database in order to support OAMoMPLS get functionality.</p> |
| SDK-62845 | | 56850_A0 | <p>In earlier releases, MTP port in IM_MTP_INDEX table could not be deleted after warm reboot for filter based mirroring. This has been fixed in this release.</p> |
| SDK-62854 | | 56850_A2 | <p>In earlier release, if there were configuration errors existed in non-RH mode, SDK could never predict or get the correct ECMP hash result in RH mode. This has been resolved.</p> |

Table 55:

| Number | CSP # | Chips | Release Notes For 6.4.3 |
|-----------|--------|--|---|
| SDK-62864 | | 88650_A0 88660_A0 | <p>In Ingress PMF, each program may build up to 7 keys out of the potential 8 keys, where one key (first key in first PMF cycle) is unused due to a unique search method that is not supported by the driver. The support is now added, with the limitation of using a single TCAM bank for that key. In order to allow the use of that key, user must indicate using a single bank database once configuring a new field group, by setting the flag <code>BCM_FIELD_GROUP_CREATE_SINGLE</code> when creating field group.</p> <p>For example:</p> <pre>uint32 fg_flags = BCM_FIELD_GROUP_CREATE_WITH_MODE BCM_FIELD_GROUP_CREATE_WITH_ASET BCM_FIELD_GROUP_CREATE_SINGLE ; bcm_field_entry_t ent; bcm_mac_t damac1; /* mask the DA qualifier*/ uint32 i; BCM_FIELD_QSET_INIT(qset); BCM_FIELD_QSET_ADD(qset, bcmFieldQualifyStageIngress); BCM_FIELD_QSET_ADD(qset, bcmFieldQualifyDstMac); BCM_FIELD_ASET_INIT(aset); BCM_FIELD_ASET_ADD(aset, bcmFieldActionCodeDestSet); BCM_FIELD_ASET_ADD(aset, bcmFieldActionCodeSourceSet); bcm_field_group_config_t_init(&udh_group); udh_group.group=10; udh_group.priority=2; udh_group.mode=bcmFieldGroupModeAuto; udh_group.flags= fg_flags; udh_group.aset=aset; udh_group.qset=qset; res = bcm_field_group_config_create(unit, &udh_group); if (res != BCM_E_NONE) { printf("Error Field, bcm_field_group_config_create "); return res; }</pre> |
| SDK-62925 | 836745 | 56634_A0 56634_B0 56636_A0 56638_A0 56639_A0 | <p>On 56634 devices with L2 tables on external memory, using cli command "l2 clear vlan" which internally calls the API <code>bcm_l2_addr_delete_by_vlan()</code> to delete MPLS VPN entries only, was not working. The entries were not being deleted. Though using the same command to clear vlan + mac based entries was working.</p> <p>The SDK uses software based deletion (clearing) of entries, which was not supported for the MPLS VPN entries.</p> <p>This has been addressed by using hardware based clearing of MPLS VPN based entries instead of using software based clearing..</p> |

Table 55:

| Number | CSP # | Chips | Release Notes For 6.4.3 |
|---------------------|--------------|---|---|
| SDK-62946 | 839616 | 56846_A0 | In previous releases, the possible value <code>_SOC_ACC_TYPE_PIPE_GROUP</code> of the 3rd parameter for the routine <code>soc_trident_populate_tcam_log()</code> was not considered and checked. This will cause SER actions for parity error in <code>FP_TCAM</code> table in TD+ X-pipe will not have log recording. In this release, the value <code>_SOC_ACC_TYPE_PIPE_GROUP</code> has been checked in the routine, and SER logging will work for <code>FP_TCAM</code> table in TD+ X-pipe. |
| SDK-62949 | | 88660_A0 | BFD default profile configuration result in allocation error. |
| SDK-62961 | | 56440_A0 56450_B0 56740_A0 | In the earlier release support for configuring the <code>EH_EXT_HDR_ENABLEf</code> in <code>EGR_PORT</code> was absent for KATANA2 and hence adding support for its configuration. |
| SDK-62979 | 803157 | 56640_A0 56640_A1 56640_B0 | The following switch controls are not supported on BCM56640. updated the API Support Matrix with the same information. <code>bcmSwitchTrunkHashSet1UnicastOffset</code> <code>bcmSwitchTrunkHashSet1NonUnicastOffset</code> <code>bcmSwitchFabricTrunkHashSet1UnicastOffset</code> <code>bcmSwitchFabricTrunkHashSet1NonUnicastOffset</code> <code>bcmSwitchLoadBalanceHashSet1UnicastOffset</code> <code>bcmSwitchLoadBalanceHashSet1NonUnicastOffset</code> <code>bcmSwitchECMPHashSet1Offset</code> |
| SDK-62995 SDK-58494 | | All | Moved iProc and PCI initialization code from O/S-specific BDE modules into new shared BDE library in <code>\$SDK/systems/bde/shared</code> . The new library is designed for easy incorporation into BDE-equivalent customer code. For more information, please see <code>\$SDK/doc/bde-library.txt</code> . |
| SDK-63001 | | 56850_A0 | Added documentation for Enumerations for <code>"bcm_udf_layer_t layer"</code> used to choose UDF base offset |
| SDK-63025 | 840239 | 56450_B1 56440_A0 56440_A1 56440_B0 56450_A0 56450_B0 56640_A0 56640_A1 56750_A0 56750_A1 56750_A2 56850_A0 56850_A1 56850_A2 | Problem Statement: Warmboot does not recover a TRUNK member configured with <code>BCM_TRUNK_MEMBER_EGRESS_DISABLE</code> . Resolution: The <code>rtag</code> is set to 0 if <code>BCM_TRUNK_MEMBER_EGRESS_DISABLE</code> is set. Warmboot reinitialization was returning without reading the trunk members if <code>rtag</code> is zero. The trunk is now recovered if the it has atleast one member port in it and even if <code>rtag</code> is zero. |

Table 55:

| Number | CSP # | Chips | Release Notes For 6.4.3 |
|---------------|--------------|-----------------------------------|--|
| SDK-63060 | | 88650_A0 88660_A0 | <p>Exact match tables (similarly to other memories) may get corrupted due to the release of alpha particles. Entries in exact match tables are protected by a parity check.</p> <p>Soft error recovery (SER) was not supported for exact match tables. SER is now supported for entry corruption in all of the exact match tables. A new SOC property is supported: <code>exact_match_tables_shadow_enable</code> (set to '0' by default). When set, a shadow for all exact match tables is maintained in the SW. This property must be set in order to support the exact match SER functionality. Note that in some cases, when the corruption is in a MAC table entry, and may not be sourced to an entry which is kept in the SW shadow (i.e., a dynamic entry), the recovery time may be very long (dozens of seconds). In such case, we must align the shadow and HW static entries by comparing the shadow and HW databases and perform the following: 1. Add entries which reside in the shadow but missing from the HW database 2. Remove entries which reside in the HW database but are missing from the shadow</p> <p>Assumptions: - Only up to a single entry is corrupted at a given time - Corruption includes a single bit flip</p> |
| SDK-63087 | SDK-53093 | 838160 56240_B0 56242_A0 56242_B0 | <p>During warmboot Stat type was getting recovered incorrectly which caused entry deletion to fail . Corrected the same.</p> |
| SDK-63102 | 841356 | 56440_B0 | <p>To address the issue of RDI being reset for CPU generated OAM TX packets, OAM group zero is now reserved in B0 device</p> |
| SDK-63109 | 836449 | 56514_A0 | <p>When ClassTag is enabled, tag determination was not proper as HiGiG header was used. In case of ClassTag format, HiGiG header will not carry the tag info, so required info is obtained from DCB instead of HiGiG Header.</p> |
| SDK-63120 | 841723 | 88660_A0 | <p>Support basic BFDIPv6 application. Multiple single hop sessions can be built between two BFD endpoints. BFDIPv6 packets are trapped to embedded ARM core via PMF rules. Checks for hop-limit, DIP and BFD version are done via PMF rules as well. <code>cint_bfd_ipv6.c</code> is a reference for BFDIPv6 application.</p> |
| SDK-63130 | 841579 | 56850_A2 | <p>In earlier releases, <code>bcm_l3_host_delete_all</code> read entries from hw and was slow for large I3 table size. This has been improved by reading from DMA.</p> |
| SDK-63142 | | 88650_B1 88660_A0 | <p>ECN delay measurement adds a capability of signaling a congestion in the device on the ecn bits in ipv4 headers. The congestion is calculated by comparing the delay of the packet inside the device to a threshold configured by the user (in nano scale). Example can be found in <code>cint_field_ecn_dm.c</code></p> |

Table 55:

| Number | CSP # | Chips | Release Notes For 6.4.3 |
|---------------|--------------|---|--|
| SDK-63231 | 832200 | 56634_A0 56634_B0 56636_A0 56636_B0 56638_A0 56638_B0 56639_A0 | The issue was that the customer could not use BCM_L3_COPY_TO_CPU flag in bcm_l3_egress_create API along with CPU interface index for L3 interface, as there was a check for a valid VLAN programmed in the L3 interface. The fix is to skip the VLAN check for the special case of CPU interface index (maximum index of EGR_L3_INTF table). |
| SDK-63233 | | 56640_A0 56640_A1 56640_B0 56643_A0 56643_A1 56643_B0 | Fixed logic for OAM endpoints warmboot recovery on TR3, for endpoints configured on Trunk ports |
| SDK-63250 | | 56850_A0 56850_A1 56850_A2 56854_A0 56854_A2 56854_B0 | In earlier releases, after creating and deleting udf ids over 65535 times, allocated udf ids wrapped back and increased from 0. Validation check did not take effect in this case. This has been fixed in this release by fixing the id allocation function. |
| SDK-63262 | | 88670_A0 | Support new BFD types for Jericho: bcmBFDTunnelTypePweRouterAlert, bcmBFDTunnelTypePweGal. See bfd_pwe_example() in cint_bfd.c or user manual for details. |
| SDK-63264 | 842499 | 56450_A0 56450_B0 | In non pre-emptive kernels, thread trying to acquire spinlock would hog the CPU there by not allowing holding thread to release lock. Fix ensures that attempting thread yields (by using "select" call with non-zero timeout parameters each time) if it fails to acquire spinlock. |
| SDK-63265 | | 56850_A0 56850_A1 56850_A2 | Two possible ICMPTTypeCode combinations were missed in TD2 qualifier database, which caused group create to fail. Added the missing combinations. |
| SDK-63272 | | 88650_A0 | Added support for MAC prbs when the physical coding sublayer (PCS) is configured to 64_66 without FEC. |
| SDK-63284 | 838369 | 88650_A0 | OAM: By default when a down MEP traps a LBM from an unknown unicast address or from a multicast address the packet is trapped to the CPU with trap code user_defined_38. This behavior may be changed using the API bcm_oam_endpoint_action_set() with the bcm_oam_action_type_t set to bcmOAMActionMcFwd and the opcode set to 3 (LBM). |
| SDK-63301 | 842644 | 56850_A0 56850_A1 56850_A2 | In earlier releases, MMU_WRED_CONFIG_X_PIPE index of port based WRED was not right when WRED configured for all COS queues (cosq==1) with flag BCM_COSQ_DISCARD_PORT. This has been fixed in this release. |
| SDK-63317 | 842876 | 56450_A0 56450_B0 | When lanes split the EP to MMU credits setting is not managed properly, the TXLP_PORT_ENABLE is not set for the subports in the WC block. provided fix to set the TXLP_PORT_ENABLE once for every subport of the WC block additionally fix also includes the reset of EP-MMU credits when lanes are aggregated, EP to MMU Credits - TXLP_PORT_ENABLE - when reset for the WC ports , needs to be reset once per every WC subport instead of resetting for all the subports once. |



Table 55:

| Number | CSP # | Chips | Release Notes For 6.4.3 |
|---------------|--------------|-------------------------------|---|
| SDK-63344 | 843227 | 56450_B1 56450_A0 56450_B0 | In BCM5645x devices, Configuring lanes with external PHY was failing when external phy driver supported a speed lower the maximum supported internal port speed. This was caused because maximum speed supported by a port was always set to internal speed supported by the port. Fixed issue by setting max speed of port as the lowest of internal and external phy driver speeds. |
| SDK-63348 | 843289 | 84848_A0 | Added support for configuring fixed and variable latency for autogrEEEn for BCM84848 and BCM84334 drivers. |
| SDK-63350 | 837895 | 56547_A0 | The earlier SDK code didn't handle SER error event DLB_LAG_FLOWSET_TIMESTAMP_PAGE. This caused the SER error event of this memory being to be reported continuously. Code to clear the corrupted entry of DLB_LAG_FLOWSET_TIMESTAMP_PAGE has been added in the SER correction procedure to resolve this issue. |
| SDK-63363 | 838980 | All | Problem definition : For MPLS TP LSP, Microcontroller was generating BFD packet skipping outer MPLS tunnel label and putting GAL label directly. This was due to the missing validation on SDK while retrieving the MPLS tunnel label from I3 egress interface. Solutiuon : bcm_bfd_endpoint_create API returns error when failed to retrieve the MPLS tunnel label from L3 egress interface during encapsulation data creation. |
| SDK-63430 | | 88640_A0 88650_B0 88660_A0 | When receiving a source routed cell, copied payload data was incomplete Fixed. |
| SDK-63435 | | 56850_A0 56850_A1 56850_A2 | In earlier releases, BCM_VLAN_MPLS_DISABLE flag could not take effect on TD2 devices by calling bcm_vlan_control_vlan_set. This has been fixed in this release. |
| SDK-63437 | 843043 | 88650_A0 | Bug fixed - Creating a MPLS tunnel with NULL label(label=0) explicitly returned error. |
| SDK-63484 | 843304 | 56850_A0 56850_A1 56850_A2 | In earlier releases, bcm_xgs3_vlan_table_reload() should restore the value of prot_pkt_ctrl ref counts after warmboot, but this function did not work. This has been resolved. |
| SDK-63503 | | 88650_A0 | Reflector: benchmarking_methodology.c now runs in advanced VLAN editing mode. |
| SDK-63522 | 823790 | 56850_A0 56850_A1 56850_A2 | In earlier releases, ARL flag was cleared when doing multiple port operations simultaneously on Trident2. This has been resolved. |
| SDK-63523 | | 88660_A0 | bcmVlanPortDoubleLookupEnable is used for PON port to search "Tunnel ID x Outer VLAN x Inner VLAN" first and "Tunnel ID x Outer VLAN second". An error occurs when trying to set bcmVlanPortDoubleLookupEnable on channelized PON ports. The issue detailed above affected lookup configuration of PON channelized port. ARAD supports bcmVlanPortDoubleLookupEnable for each channelized PON port after the fix. |

Table 55:

| Number | CSP # | Chips | Release Notes For 6.4.3 |
|---------------|--------------|---|--|
| SDK-63547 | | 56450_B0 | <p>In BCM5645x devices, With the enhancement of Multiple split horizon groups, group id can be programmed for mim ports. However, this was missing for Access ports.</p> <p>Fixed this issue by enabling access ports to be programmed with network group id like peer and backbone ports.</p> |
| SDK-63551 | | 56845_A2 56850_A2 | <p>In earlier releases, TD didn't support setting MIN/SHARED Limit of UC/MC queues in <code>bcm_cosq_control_set()</code>, and TD2 failed to stop the traffic by setting MIN and SHARED limit of UC/MC queues to 0. This has been fixed in this release. Now both TD and TD2 can make port cosq stop traffic by setting MIN and SHARED limit of UC/MC queue to 0.</p> |
| SDK-63564 | | 88650_A0 88650_B0 88660_A0 | <p>Improvements for XLPORT Overrun/Underrun Workaround.</p> |
| SDK-63582 | | 56640_A0 56640_A1 56640_B0 | <p>Introduced faster look up of existing mpls entries to speed up API <code>bcm_mpls_port_add()</code>. Faster look up uses the hash table mechanism than linear search used today.</p> <p>During <code>bcm_mpls_port_add()</code>, SDK looked into all the label entries in h/w to check if there was already same existing entry present. This linear search was very slow and it slowed down <code>bcm_mpls_port_add()</code>.</p> <p>The solution iwas to add a hash mechanism to match for the existing entries. Hash will provide a faster look up. Using Hash mechanism has reduced the time taken by <code>bcm_mpls_port_add()</code> significantly (from 2300usecs to 600 usecs).</p> |
| SDK-63589 | | 88650_A0 88650_B0 88650_B1 88660_A0 88750_A0 88750_B0 | <p>Eyescan doesn't present output when external phy isn't presented. Fixed.</p> |
| SDK-63596 | | 56450_B1 56450_A0 56450_B0 | <p>In BCM5645x devices, <code>bcm_port_subsidiary_ports_get</code> function was not returning correct flex ports.</p> <p>This was because KT2 support was not provided for that function.</p> <p>Fixed this issue by provided support for the function <code>bcm_port_subsidiary_ports_get</code> and returning TRUE for controlling ports and FALSE for auxiliary/flex ports.</p> |
| SDK-63603 | 845921 | 56640_A0 56640_A1 56640_B0 | <p>With previous releases, there might be a false link up notification when hardware linkscan is enabled on a port, even when link is down. This is now fixed by check the status of both cmic registers and phy registers before enabling hardware linkscan.</p> |
| SDK-63608 | | 56640_A0 56640_A1 56640_B0 | <p>Problem: VFP stats for colors where not retrievable since the flex counter offset mode was getting wrongly programmed.</p> <p>Solution: Updated the correct flex counter mode to be passed while setting flex stat info and retrieve the correct mode after warmboot as well.</p> |

Table 55:

| Number | CSP # | Chips | Release Notes For 6.4.3 |
|---------------|--------------|--|--|
| SDK-63618 | | 56845_A2 56850_A2 | Issue :- L3 Reference Count is not updated when Egress Objects are added through FP. Fix :- Updated FP code to update L3 Reference Count for actions "L3Switch" and "RedirectEgressNextHop" |
| SDK-63653 | | 88650_A0 88650_B0 88650_B1 88660_A0 | [Minor] Add lane option to eyescan diagnostics description message. |
| SDK-63676 | | 88650_A0 88660_A0 | BFD: when calling <code>endpoint_create()</code> for endpoints of type IP one hop, TTL must be 1 and for endpoints of type MPLS IP TTL must be 255. |
| SDK-63677 | 734372 | 88650_A0 88650_B0 88660_A0 | MPLS: Added support for switch control <code>bcmSwitchMplsDefaultTtlCopy</code> , which enables set/get for the default TTL value in MPLS header in case of Uniform model. |
| SDK-63686 | 845847 | 56450_B1 56450_A0 56450_B0 | Problem Statement: <code>bcm_cosq_port_sched_set()</code> failing with <code>BCM_E_TIMEOUT</code> in high traffic situation Resolution: Added a work around so that the node get enough bandwidth so that queue flush doesn't gets timed out |
| SDK-63706 | 845222 | 88650_B0 88650_B1 88660_A0 | TDM bypass mode - MC group number enhanced to 64K. Before this fix only 16K multicast groups (1:16K-1) was allowed at TDM bypass mode. This fix enhances the number of multicast groups to 64K (1:64k-1) for TDM bypass mode. |
| SDK-63716 | 845844 | 56450_B1 56450_A0 56450_B0 | When build flag <code>BCM_PORT_DEFAULT_DISABLE</code> was used for 5645x family of devices, the ports resulting from flex-IO operation did not initialize in disabled state. With this fix for 5645x family of devices the flexed ports will be initialized in disabled state when build flag <code>BCM_PORT_DEFAULT_DISABLE</code> is used. |
| SDK-63720 | 846795 | 56850_A2 | Fixed the two issues below : 1) Inports qualifier not adding loopback ports to default entry 2) loopback secondary selector value added for tunnel and lookbacktype when not required |
| SDK-63727 | 846581 | 56640_A0 56640_A1 56640_B0 | Issue: Calling <code>bcm_cosq_gport_bandwidth_set()</code> with argument <code>cosq</code> value greater than 31 returns an error. Fix: The <code>numq</code> value is changed to 64 to support maximum cosq limit of 64 in <code>bcm_cosq_gport_bandwidth_set()</code> . |
| SDK-63729 | | All | DMA swapping settings for communication with embedded applications (uKernel) are now auto-detected rather than set based on compile-time SDK options. |
| SDK-63746 | 847053 | All | Enabled <code>XLMAC_MACSEC_CTRL.MACSEC_TX_CRC_CORRUPT_EN</code> to avoid the undesirable behaviors with which the downstream link partner still receives a packet with good FCS even though the packet is originally a bad one. |
| SDK-63756 | | 56640_A0 56640_B0 | <code>bcmSwitchModuleType</code> switch control information was lost after warmboot which led to mis-programming of <code>NONUCAST_TRUNK_BLOCK_MASK</code> in trunking. Initialized switch control to XGS3 by default to correct non unicast trunk member programming across modules to address this issue. |

Table 55:

| Number | CSP # | Chips | Release Notes For 6.4.3 |
|---------------|--------------|--|---|
| SDK-63760 | | 88650_A0 88660_A0 | OAM: The default destination for multicast DMM, LMM packets trapped by a MEP is the same as unicast DMM, LMM packets (such packets are legal according to Y,1731). |
| SDK-63774 | 845586 | 56340_A0 56340M_A0 56547_A0 56548_A0 56640_A0 56640_A1 56640_B0 | Implemented MTU programming on TR3/HX4 through <code>bcm_multicast_control_set/</code> <code>bcm_multicast_control_get</code> API. |
| SDK-63792 | | 56850_A1 56850_A2 | In earlier releases, <code>INITIAL_PROT_NHI_TABLE</code> entry could not be cleaned up after primary egress object replace. This issue has been fixed in this release. |
| SDK-63816 | 846855 | 56640_A0 56640_A1 56640_B0 | Even though the service queues were vconfigured as Strict Priority, the traffic pattern observed was Round Robin. This behavior was seen because the service queues did not have any limits set leading to queue starvation. The fix is to enable dynamic limit threshold which would limit buffer usage of the service queues and reducing probability of starvation. |
| SDK-63839 | 847494 | 88650_B0 88650_B1 88660_A0 88670_A0 | Composite HR allocation (region type is 2) fails due to wrong mapping. Fixed. |
| SDK-63842 | 846697 | 88030_A0 88030_B0 | Note. |
| SDK-63848 | 847213 | 56450_B1 56450_A0 56450_B0 | A crash was seen in <code>bcm_cosq_mapping_set</code> during warmboot, because the SDK was releasing a lock which was never acquired. The code has been corrected to first get the lock and only then free it. |
| SDK-63887 | 817872 | 88660_A0 | OAM: When creating accelerated Up Endpoints the restriction that the LSB of the <code>src_mac</code> address must match the local port has been lifted. |
| SDK-63918 | | 88660_A0 88670_A0 | For mirrored and snooped packets (sent to CPU), the user may want to retrieve the original destination. A new mode (not compatible with stacking systems) allows to stamp the destination of the original packet on the FTMH.DSP-Extension, by setting the <code>ftmh_dsp_extension_add</code> SOC property. |
| SDK-63921 | | 88660_A0 | In initialization we calculate a value to configure the register <code>IDR_OCCUPIED_DBUFF_THRESHOLD</code> field <code>MMC_DBUFF_OCC_TH</code> , but this configuration is never written to the register. The configuration is needed since if MMC buffers run out, UC buffers are used (if allowed by configuration). If this happens in the middle of the packet, packets are lost. Configurable threshold for buffer changes from MMC to UC when MMC occupied reaches threshold. |
| SDK-63961 | 844686 | 56150_A0 56340_A0 56340M_A0 | Fixed inconsistent enabled status of Message-signaled interrupts among SDK drivers. |
| SDK-63986 | 837121 | All | BFD: support accelerated BFD endpoints over LAG spanning over multiple device. For further details see user manual. |
| SDK-64009 | | 88650_A0 88650_B0 88650_B1 88660_A0 | Fixed static analysis items. (minor). |
| SDK-64016 | 843408 | 88660_A0 | <code>FORWARD_GROUP</code> object in <code>bcm_mpls_port_create</code> , <code>bcm_vlan_port_create</code> was always created without id, that is the user couldn't provide the ID of the resource (FEC). |

Table 55:

| Number | CSP # | Chips | Release Notes For 6.4.3 |
|---------------|--------------|-------------------|---|
| SDK-64017 | 840785 | 88660_A0 | VPLS: fixed bcm_mpls_port_delete failure when called with forwarding group object. |
| SDK-64047 | 849780 | 56450_A0 56450_B0 | Prevent occasional system crash caused by invalid access to an already freed semaphore. This could happen if the counter thread did not exit within the specified time and would typically happen if the counter thread runs at a very low priority. |
| SDK-64056 | | 56640_B0 | In previous releases, the memory index of ING_FLEX_CTR_COUNTER_TABLE [0 to 15] and EGR_FLEX_CTR_COUNTER_TABLE [0 - 7] was used as the entry index of these tables. The entry index was wrong because only the lower 12 bits of the memory index should be used as the entry index. This issue has been fixed in this release. |
| SDK-64137 | | 88650_A0 88660_A0 | In Field TCAM, the protection mechanism for parity errors is not enabled for Egress PMF. This is fixed. |
| SDK-64156 | | 56450_A0 | Problem definition On the ports supporting 8 priority groups (PG0-PG7) , SDK applies the PG limits to Priority group 0- PG0, This will cause incorrect loss less behavior as there is no PG min and headroom available in PG7 and SDK further configures the PG min on all unused PGs to a value of 1 on these ports. Solution : PG limits are set to PG7 for the ports supporting 8 priority groups(PG0-PG7) and removed the additional setting of PG MIN limit to 1 for all unused priority group for these ports. |
| SDK-64161 | | 88660_A0 | When deleting one of 4-size consecutive VOQ connectors group, the other group stop sending credits. The issue is fixed. Note hat cold boot is required to get this fix. As a workaround bcm_cosq_gport_connection_set can be called again on egress. |
| SDK-64202 | | 88660_A0 | MPLS PORT: bcm_mpls_port apis with flag BCM_MPLS_PORT_EGRESS_ONLY and BCM_MPLS_PORT_FORWARD_GROUP must be set with vpn parameter invalid. Error is generated if this parameter is valid. |
| SDK-64203 | | 88660_A0 | In L3, when SOC property bcm886xx_l3_ingress_urpf_enable was set, an assertion occurred in some cases due to incorrect usage of mapping from VSI to RIF. This is fixed now and VSI to RIF mapping is consistent. Note that this relevant only to ARAD-Plus device. |
| SDK-64212 | 849529 | 88030_A0 88030_B0 | Note. |
| SDK-64254 | 850838 | All | Improved bcm_cosq_gport_connection_set performance on MESH configuration. |
| SDK-64279 | 851155 | 88030_A0 88030_B0 | Note. |
| SDK-64280 | 839118 | 88650_A0 88670_A0 | Queue flow control accuracy improved by reducing burst size. Also there is an API to set burst size for a queue: bcm_cosq_control_set(...) gport should be of type PORT_TC |

Table 55:

| Number | CSP # | Chips | Release Notes For 6.4.3 |
|---------------|--------------|-------------------|---|
| SDK-64298 | | 88650_A0 | In FCoE, when calling API <code>bcm_fcoe_route_add()</code> with flag <code>BCM_FCOE_DOMAIN_ROUTE</code> and prefix length = 8 the API returns error <code>BCM_E_INTERNAL</code> . The return value has been changed to <code>BCM_E_PARAM</code> in this case. |
| SDK-64328 | 851983 | 5600_A0 56450_B0 | For the memory profile <code>egr_mpls_combo_map</code> , table count is 3. The memory tables are as follows, 1. <code>EGR_MPLS_PRI_MAPPING</code> 2. <code>EGR_MPLS_EXP_MAPPING_1</code> 3. <code>EGR_MPLS_EXP_MAPPING_2</code> We are passing the <code>entry_array</code> with its size as 2 to hold the entries for the above tables in function <code>soc_profile_mem_get</code> . Segmentation fault occurs when we access the third index in <code>entry_array</code> since table count is 3. When we increase the size of array to 3 in <code>_bcm_common_sw_dump</code> , "dump sw common" works fine. |
| SDK-64332 | | 88650_A0 88660_A0 | OAM: Support creating endpoints of type <code>bcmOAMEndpointTypeBHPw</code> . |
| SDK-64348 | 850276 | 88030_A0 88030_B0 | Note. |
| SDK-64389 | 852433 | 56450_A0 56450_B0 | Issue reported was that if an attach of a node to a parent node fails due to resource exhaustion, the successive call to delete the node also fails. This was because upon failure, the SDK was not resetting the cos bitmap and child cosq of the parent node. A check for invalid <code>hw_index</code> is also added to prevent improper hardware access. |
| SDK-64416 | 849492 | 88030_A0 88030_B0 | Note. |
| SDK-64476 | | 53406_A0 | SDK driver for BCM534xx implemented to configure/initialize frequency synthesizers and timestamps and enable PTP feature. |
| SDK-64515 | | 88660_A0 | In 1588, an increased resolution to the stamping is introduced (from 32b to 48b). The <code>bcm88660_1588_48b_stamping_enable</code> SOC property must be set. |
| SDK-64517 | 852696 | All | Fixed regression failure that caused statically assigned PTP slaves to be sent packets with an incorrect local address. |
| SDK-64524 | 809817 | 88750_B0 | In a multistage system resetting or isolating the FAP devices might cause drops over FE13. In order to apply the fix set the following soc property to 1 - <code>custom_feature_alrc_slow_link_down_fe13</code> |
| SDK-64537 | 852687 | 56547_A0 | Idle threshold is now configurable for Gecko |
| SDK-64559 | | 88660_A0 88670_A0 | Fixed a bug in 88660 causing dropped ingress multicast traffic in scenarios with a high load of ingress multicast traffic. In 6.4.3 This is fixed In 6.3.11 This is fixed if using either <code>maintenance_default_override=1</code> or <code>maintenance_default_override_63x_i_ngr_mc_fifo_thresh=1</code> |
| SDK-64577 | 852417 | All | OAM: creating more than 3 MIPs and then calling <code>bcm_oam_endpoint_action_set()</code> on each one fails due to lack of resources. |

Table 55:

| Number | CSP # | Chips | Release Notes For 6.4.3 |
|---------------|--------------|-------------------------------|---|
| SDK-64587 | | 88650_A0 88660_A0 | OAM: For the following OpCodes, multicast packets are supported by default: AIS TST LCK APS CSF SLM |
| SDK-64661 | 852995 | All | In earlier releases, there was dead lock between function <code>bcm_vlan_control_vlan_set</code> and <code>bcm_l3_egress_create</code> . The dead lock has been destroyed, so this JIRA is resolved. |
| SDK-64686 | | 53400_A0 | Added support for QOS mapping type BCM_QOS_MAP_L2_VLAN_ETAG for BCM53400 family. |
| SDK-64739 | | 88670_A0 | VLAN PORT: Support use of split horizon groups for AC lifs |
| SDK-64742 | 854717 | 88660_A0 All | OAM: classifier advanced mode 2 (soc property <code>oam_classifier_advanced_mode=2</code>) supports endpoint md-Level 0. Error message removed. |
| SDK-64763 | | 88650_A0 88650_B0 88660_A0 | OAM: when calling <code>bcm_oam_endpoint_create()</code> with a non accelerated Down endpoint of level 0, the id (returned as output) will be {1'b1,6'b0,16 bit LIF ID}. This fixes failure that is generated in case accelerated endpoint is added with same id. |
| SDK-64804 | | 88660_A0 | <code>bcm_vswitch_destroy_all</code> failed when mpls tunnel termination (<code>bcm_mpls_tunnel_switch_create</code> with action POP) entries exist. |
| SDK-64864 | | 88660_A0 | VPLS: fixed <code>bcm_mpls_port_delete</code> failure when called with forwarding group object. |
| SDK-64872 | | 88650_A0 | When a channelized port is removed and instead added single NIF ports, the serdes isn't initialized correctly, causing for wrong lane rate - Fixed. |

UNRESOLVED ISSUES FOR 6.4.3

The following issues are unresolved in version 6.4.3 of the SDK.

Table 56:

| Number | CSP # | Chips | Release Notes |
|-----------|--------|---|--|
| SDK-30856 | | 56840_A0 56845_B0 | When mirror-to port resides on a different unit, the mirrored packet may not egress correctly. |
| 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 (<code>bcmL2X</code>) 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</code> DMA 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-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-44416 | | 88640_A0 | 1. API is reading the wrong register from the device. 2. API is missing the parameter of <code>ResetLoad</code> , so this value cannot be configured. |
| SDK-45075 | | All | When an interrupt occurs on different blocks of the same type (e.g. multiple FMAC blocks), the count will be accumulated in the same counter. For example RX-LOS interrupt may occur on different FMAC blocks, and counted as same recurring event, although it is in fact a different interrupt. This may affect corrective action in case it is different for a recurring event, in the case if recurring-threshold for this event is crossed. |
| SDK-45366 | 611273 | 56440_A0 | When the API <code>bcm_cosq_port_bandwidth_set(...)</code> 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-46556 | 621213 | 88650_A0 88650_B0 88650_B1 | <code>bcm_l2_cache_delete()</code> API does not delete <code>general_trap</code> entry configuration in HW |
| 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 <code>MEM_SCAN</code> feature (component) of the SDK. Since SER is a mandatory component, that can't be compiled out, <code>MEM_SCAN</code> becomes a mandatory component too as long as you are using a device, supported by SER. |
| 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. |

Table 56:

| Number | CSP # | Chips | Release Notes |
|---------------|--------------|--|---|
| 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-49727 | | 88650_A0 88650_B0 88650_B1 | The Makefile used to build sdk-all-6.X.X-gto-data.tar.gz released in docSAFE does not include DNX, thus included compiled executable wont run for DNX devices. |
| SDK-51978 | | 88650_A0 | In a device with channalized CPU ports, where some of the CPU ports are Higig and some not, the WB wont preserve the Higig indication correctly. |
| SDK-52383 | | 88650_A0 88650_B0 | Cud extension for Arad is not supported |
| SDK-54219 | 744517 | 88650_B1 | In ARAD B1, VxLAN/L2GRE packet size of 236B-299B will be dropped by EPNI if the packet needs to be terminated. Workaround is introduced in FP CINT: cint_field_ingress_large_termination.c |
| SDK-54488 | | 88650_A0 | In Field Processor, when creating a cascaded field group, a failure might occur in key allocation in case the key ID is already determined. To be investigated. |
| SDK-54623 | | 88660_A0 | In Field Processor, when creating a field group, false error messages are printed when operation succeeds (return value indicates success). To be fixed. |
| SDK-56851 | 767727 | 88650_B1 88660_A0 | The guarantee hardware mechanism only guaranteed the resource (BDs). The number of BDs used is not smaller than the used buffers, but there are three buffer types and not each buffer type can be used for any packet. |
| SDK-57734 | 774189 | 88650_B1 | Field Processor: bcm_field_entry_dump shows more PPD actions after Warm-Boot then actually configured. |
| SDK-58195 | | 88750_A0 88650_A0 | The fabric interface is composed from quads (group of 4 links), setting a speed for a specific link in a quad might affect the all quad (the other 3 lanes will flap). |
| SDK-60227 | | 88650_A0 88650ACP_A0 88650_B0 88650_B1 88660_A0 | OutLIF counter doesn't work when counter engine != 0. |

Table 56:

| Number | CSP # | Chips | Release Notes |
|-----------|-------|-------|---|
| SDK-60570 | 88650 | A0 | <p>BCM user can chose to cache/shadow some tables in order to allow recovery from Parity/ECC-2bit errors, or as a means of improving driver runtime performance. Currently caching mechanism cannot deal with tables that have multiple access-formats. Each such a table represents a single memory in the HW, but is represented by multiple table-names in the SW reflecting the various formats in which the memory can be arranged. Current implementation allocates a separate shadowed space for each format. As a result, updates to the same entry using different formats are not captured properly. The list of affected tables: Block: EPNI Table name: Eedb Bank Available formats: EPNI_EEDB_BANK EPNI_DATA_FORMAT EPNI_MPLS_PUSH_FORMAT EPNI_MPLS_POP_FORMAT EPNI_MPLS_SWAP_FORMAT EPNI_IPV4_TUNNEL_FORMAT EPNI_OUT_RIF_FORMAT EPNI_TRILL_FORMAT EPNI_TRILL_FORMAT_B_0 EPNI_LINK_LAYER_OR_ARP_FORMAT EPNI_AC_FORMAT EPNI_AC_FORMAT_WITH_DATA</p> <p>Block: IHB Table name: FEC Entry Available formats: IHB_FEC_ENTRY IHB_FEC_ENTRY_GENERAL IHB_FEC_ENTRY_FORMAT_NULL IHB_FEC_ENTRY_FORMAT_A- IHB_FEC_ENTRY_FORMAT_C</p> <p>Block: IHP Table name: Lif Table Available formats: IHP_LIF_TABLE IHP_LIF_TABLE_AC_P2P_TO_AC IHP_LIF_TABLE_AC_P2P_TO_PWE IHP_LIF_TABLE_AC_P2P_TO_PBB IHP_LIF_TABLE_AC_MP IHP_LIF_TABLE_ISID_P2P IHP_LIF_TABLE_ISID_MP IHP_LIF_TABLE_IP_TT IHP_LIF_TABLE_TRILL IHP_LIF_TABLE_LABEL_PWE_P2P IHP_LIF_TABLE_LABEL_PWE_MP IHP_LIF_TABLE_LABEL_PROTOCOL_OR_LSP</p> <p>Block: IHP Table name: Large Em Format Available formats: IHP_MACT IHP_MACT_FORMAT_0_TYPE_0 IHP_MACT_FORMAT_0_TYPE_1 IHP_MACT_FORMAT_0_TYPE_2 IHP_MACT_FORMAT_1 IHP_MACT_FORMAT_2 IHP_MACT_FORMAT_3_TYPE_0 IHP_MACT_FORMAT_3_TYPE_1</p> <p>Block: IPS Table name: Qpm 1 Available formats: IPS_QPM_1 IPS_QPM_1_SYS_RED IPS_QPM_1_NO_SYS_RED</p> <p>Block: IPS Table name: Qpm 2 Available formats: IPS_QPM_2 IPS_QPM_2_SYS_RED IPS_QPM_2_NO_SYS_RED</p> <p>Block: IRR Table name: MCDB Available formats: IRR_MCDB IRR_MCDB_EGRESS_FORMAT_0- IRR_MCDB_EGRESS_FORMAT_7 IRR_MCDB_EGRESS_SPECIAL_FORMAT IRR_MCDB_EGRESS_TDM_FORMAT IRR_MCDB_EGRESS_TDM_FORMAT</p> <p>Block: OAMP Table name: Mep Db Available formats: OAMP_MEP_DB OAMP_MEP_DB_Y_1731_ON_MPLSTP OAMP_MEP_DB_Y_1731_ON_PWE OAMP_MEP_DB_BFD_ON_IPV4_ONE_HOP OAMP_MEP_DB_BFD_ON_IPV4_MULTI_HOP OAMP_MEP_DB_BFD_ON_MPLS OAMP_MEP_DB_BFD_ON_PWE OAMP_MEP_DB_RFC_6374_ON_MPLSTP OAMP_MEP_DB_LM_DB OAMP_MEP_DB_LM_STAT OAMP_MEP_DB_DM_STAT</p> |



Table 56:

| Number | CSP # | Chips | Release Notes |
|---------------|--------------|-------------------------------|--|
| SDK-63962 | | 88650_B1 | Full soft reset (ingress+egress) used at SDK as a corrective action for parity/ECC 2b error events. When parity/ECC error occurred for memory which not protected by cache mechanism, full soft reset for egress & ingress blocks performed. After reset, pause mechanism not configured properly and incorrect pause frames transmitted as result. This will happen only if pause mechanism enabled and traffic transmitted during the reset. |
| SDK-64289 | | 56850_A0 56850_A1 56850_A2 | The BCM56850 supports UDF in the VFP but requests for UDF rules may result in a "feature unavailable" error condition. |

DEVICE AND PLATFORM SUPPORT

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

SWITCH DEVICES

Table 57: Switch Devices

| Family | Devices | Description |
|---------------|----------------|--|
| BCM5389 | BCM5389 A0 | 8-Port GbE Switch with Integrated Serdes |
| | BCM5389 A1 | 8-Port GbE Switch with Integrated Serdes |
| BCM5396 | BCM5396 A0 | 16-Port GbE Switch with Integrated Serdes |
| 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 | BCM58522 A0 | 5-Port Gigabit Ethernet Managed Switch integrated with 2 PHYs, ARM Cortex-A9 processor and macsec cores |
| | BCM58525 A0 | 5-Port Gigabit Ethernet Managed Switch integrated with 2 PHYs, SGMII I/F, ARM Cortex-A9 processor and macsec cores |
| | BCM58622 A0 | 8-Port Gigabit Ethernet Managed Switch integrated with 5 PHYs, ARM Cortex-A9 processor and macsec cores |
| | BCM58623 A0 | 8-Port Gigabit Ethernet Managed Switch integrated with 5 PHYs, ARM Cortex-A9 processor and macsec cores |
| | BCM58625 A0 | 8-Port Gigabit Ethernet Managed Switch integrated with 5 PHYs, SGMII I/F, 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 | |



Table 57: Switch Devices

| Family | Devices | Description |
|---------------|----------------|---|
| 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 | |
| | 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 |

Table 57: Switch Devices

| Family | Devices | Description |
|---------------|----------------|---|
| | BCM53323 A0 | BCM53323 Integrated Multilayer Switch and CPU |
| | BCM53324 A0 | BCM53324 Integrated Multilayer Switch and CPU |
| BCM53400 | BCM53405 A0 | 16-port 10GbE Multilayer Ethernet Switch |
| | BCM53406 A0 | 12-port 10GbE plus 8-port 2.5GbE and 4-port 5GbE/2.5GbE Multilayer Ethernet Switch |
| | BCM53415 A0 | 16-port 10GbE Multilayer Ethernet Switch with integrated CPU |
| | BCM53416 A0 | 12-port 10GbE plus 8-port 2.5GbE and 4-port 5GbE/2.5GbE Ethernet Switch with integrated 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 |
| | 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 |

Table 57: Switch Devices

| Family | Devices | Description |
|---------------|----------------|--|
| | BCM56018 A1 | |
| | BCM56018 A2 | |
| | BCM56018 A1 | 48-Port Integrated Multilayer Switch and CPU |
| 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 | |
| BCM56060 | BCM56060 A0 | 16-port 10GbE Multilayer Ethernet Switch with integrated CPU |
| | BCM56063 A0 | 16-port 1GbE plus 4-port 10GbE (XFI) Multilayer Switch with integrated CPU |
| | BCM56064 A0 | 24-port GbE plus 4-port 10GbE Multilayer Managed Switch with HiGi Uplinks and integrated CPU |
| 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 |
| | 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 | |

Table 57: Switch Devices

| Family | Devices | Description |
|---------------|----------------|---|
| 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 |
| | BCM56148 A0 | 24-Port Fast-Ethernet Multilayer switch with combination of one/two/four 1G/2.5G/10/12/13HG Uplink Ports |
| BCM56150 | BCM56150 A0 | 24-port GbE Managed Switch with 4-port 10 GbE uplinks, integrated CPU and 16 copper PHYs |
| | BCM56151 A0 | 24-port GbE Managed Switch with 4-port 10 GbE uplinks, integrated CPU (without PHYs) |
| | BCM56152 A0 | 24-port GbE plus 2-port GbE and 2-port 1GbE/13GbE uplinks Managed Switch, integrated CPU and 16 copper PHYs |
| | BCM53342 A0 | 8-port GbE Multilayer WebSmart Switch with Integrated CPU and Copper PHYs |
| | BCM53343 A0 | 16-port GbE plus 4-port GbE uplinks Multilayer WebSmart Switch with Integrated CPU and 16 Copper PHYs |
| | BCM53344 A0 | 24-port GbE plus 2-port GbE and 2-port 1GbE/13GbE uplinks WebSmart Switch, integrated CPU and 16 copper PHYs |
| | BCM53346 A0 | 24-port GbE Multilayer WebSmart Switch with 4-port 10 GbE uplinks, integrated CPU and 16 copper PHYs |
| | BCM53347 A0 | 24-port GbE Multilayer WebSmart Switch with 6xQSGMII + 4x1/10G |
| | BCM53393 A0 | 14-port GbE Multilayer Embedded Switch with integrated CPU (without PHY) |
| | BCM53394 A0 | 10-port GbE Multilayer Embedded Switch with 4-port 10 GbE uplinks, integrated CPU (without PHY) |
| 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 |
| | BCM56216 A1 | |
| | BCM56216 A2 | |
| | BCM56217 A0 | |
| | BCM56217 A1 | |
| | BCM56217 A2 | |
| | BCM56218 A0 | BCM56218 Integrated Multilayer Switch and CPU |

Table 57: Switch Devices

| Family | Devices | Description |
|---------------|----------------|--|
| | 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 | |
| | 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 |

Table 57: Switch Devices

| Family | Devices | Description |
|---------------|----------------|--|
| | 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 | |
| | 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 | |

Table 57: Switch Devices

| Family | Devices | Description |
|---------------|----------------|--|
| | 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 | |
| BCM56340 | BCM56040 A0 | 1xF.QSGMII + 3xF.HG[42] + 1GE |
| | BCM56041 A0 | Ranger device, meant for embedded connectivity supports 1Ge (port 49), 2 X GE (iPROC), Flex 4x10G, 3 X 4 X 10G |
| | BCM56042 A0 | 12x2.5GE/1GE + 12x2.5GE/1GE + 1GE |
| | BCM56340 A0 | 12xF.QSGMII + Flex[4x10] + 2xHG[21] + 1GE, 12xF.QSGMII + 4xSGMII + 2xXFI + 2xHGd[21] + 1GE |
| | BCM56342 A0 | 7xF.QSGMII + Flex[4x10] + 2xHG[21] + 1GE |
| | BCM56344 A0 | 10xF.QSGMII + 3xFlex[4x10] + 1GE |
| BCM56340 | BCM56547 A0 | 10xF.QSGMII + 3xF.HG[42] + 1GE, 12xF.QSGMII + 2xF.HG[42] + 1GE, 12xF.QSGMII + F.HG[42] + 2xHG[42] + 1GE |
| BCM56340 | BCM56548 A0 | 7xF.QSGMII + 3xF.HG[42] + 1GE |
| BCM56440 | BCM56440 A0 | 24-Port GbE Multilayer Switch with Four 10-GbE/Hig2 Uplink ports |
| | BCM56440 B0 | |
| | BCM56441 A0 | 8-Port GbE Multilayer Switch with Two 10-GbE/Hig2 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/Hig2 Uplink ports |
| | BCM56443 B0 | |
| | BCM56445 A0 | 24-Port GbE Multilayer Switch with Four 10-GbE/Hig2 Uplink ports pin compatible with BCM56334 |
| | BCM56445 B0 | |
| | 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 |
| | BCM56447 B0 | |
| | BCM56448 A0 | 24-Port GbE Multilayer Switch with Four 1GbE/ One 2.5G Uplink ports |
| | BCM56448 B0 | |
| BCM56450 | BCM56248L B0 | 11xGE + 8x2.5G |
| BCM56450 | BCM56450 A0 | 24-port GbE Multilayer Switch with 4-port 10 GbE uplinks, stacking, integrated CPU and Traffic Manager |
| BCM56450 | BCM56450 B0 | Katana2 Access 1 x XAUI + 8 x GE without L3 routing and MPLS features |
| BCM56450 | BCM55450 B0 | KT2 Access-8 FX + 2 F-HG |
| BCM56450 | BCM56450 B1 | 24-port GbE Multilayer Switch with 4-port 10 GbE uplinks, stacking, integrated CPU and Traffic Manager |
| | BCM56455 A0 | 2 x 20GE (G.INT) + 2 x HG13 |

Table 57: Switch Devices

| Family | Devices | Description |
|---------------|----------------|--|
| | BCM56455 B0 | 2 x 20GE (G.INT) + 2 x HG13 |
| BCM56450 | BCM56456 A0 | 24x GE + 4x F.XAUI |
| BCM56450 | BCM56456 B0 | 24x GE + 4x F.XAUI |
| | BCM56456 B0 | 1 x XAUI + 8 x GE |
| BCM56456 | BCM56456 B0 | 9xFXAUI + 1 x XAUI + 1x2.5GbE |
| BCM56456 | BCM56458 B0 | 8xGE + 2xF.XAUI |
| 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 | |
| | BCM56506 B2 | |
| | BCM56507 A0 | 24-Port GbE Layer 2 Switch with Two 10-GbE/HiGig+ Ports |

Table 57: Switch Devices

| Family | Devices | Description |
|---------------|----------------|--|
| | 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 |
| BCM56540 | BCM56540 A1 | 48xGE + 2xHG[42] + 2xHG[21] + 1GE, 48xGE + 4xXFI + 2xHG[42] + 1GE, 48xGE + 8xXFI + 1GE Multilayer Ethernet Switch |
| | BCM56540 B0 | |
| | BCM56541 A1 | 28xGE + 2xHG[42] + 2xHG[21] + 1GE, 28xGE + 4xXFI + 2xHG[42] + 1GE, 28xGE + 8xXFI + 1GE Multilayer Ethernet Switch |
| | BCM56541 B0 | |
| | 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 |
| | BCM56544 A1 | 10xF.XAUI + 4xHG[21] + 1GE, 10xF.XAUI + 4xXFI, 10xF.XAUI + 2xHG[42], 4xXAUI + 12xXFI + 1GE Multilayer Ethernet Switch |
| | BCM56544 B0 | 10xF.XAUI + 4xHG[21] + 1GE, 10xF.XAUI + 4xXFI, 10xF.XAUI + 2xHG[42], 4xXAUI + 12xXFI + 1GE Multilayer Ethernet Switch |
| | BCM56545 A1 | 48xGE + 2xHG[42] + 2xHG[21] + 1GE, 48xGE + 4xXFI + 2xHG[42] + 1GE, 48xGE + 8xXFI + 1GE Multilayer Ethernet Switch |

Table 57: Switch Devices

| Family | Devices | Description |
|---------------|----------------|--|
| | 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 |
| | BCM56546 A1 | 28xGE + 2xHG[42] + 2xHG[21] + 1GE, 28xGE + 4xXFI + 2xHG[42] + 1GE, 28xGE + 8xXFI + 1GE Multilayer Ethernet Switch |
| | BCM56546 B0 | 28xGE + 2xHG[42] + 2xHG[21] + 1GE, 28xGE + 4xXFI + 2xHG[42] + 1GE, 28xGE + 8xXFI + 1GE Multilayer Ethernet Switch |
| 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 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 | |
| | 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 |

Table 57: Switch Devices

| Family | Devices | Description |
|---------------|----------------|---|
| | BCM56639 B0 | |
| BCM56640 | BCM56044 | Ranger+ SKU - 100G + 3xF.HG[42] + 1GE |
| BCM56640 | BCM56045 B0 | 3xF.40GE + 3xF.HG[42] + 1GE |
| | BCM56046 B0 | 3xF.40GE + 2xF.HG[42] + 1GE |
| | 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 | |
| | BCM56643 A1 | 48xGE + 4xXFI + 4xHG[42] + 1GE Multilayer Ethernet Switch |
| | BCM56643 B0 | |
| | BCM56644 A1 | 48xGE + 2xHG[25] + 2xHG[25] + 1GE Multilayer Ethernet Switch |
| | BCM56644 B0 | |
| | BCM56648 A1 | 48xGE + 2xHG[42] + 2xHG[21] + 1GE, 48xGE + 4xXFI + 2xHG[42] + 1GE, 48xGE + 8xXFI + 1GE Multilayer Ethernet Switch |
| | BCM56648 B0 | |
| | BCM56649 A1 | 28xGE + 2xHG[42] + 2xHG[21] + 1GE, 28xGE + 4xXFI + 2xHG[42] + 1GE, 28xGE + 8xXFI + 1GE Multilayer Ethernet Switch |
| | BCM56649 B0 | |
| BCM56640 | BCM56545K | Triumph 3 SKU - 48-port GE switch + 4x10GE + 4xHG[42] / 40GE |
| BCM56640 | BCM56546K | Triumph 3 SKU - 28-port GE switch + 4x10GE + 4xHG[42] / 40GE |
| 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 |
| BCM56740 | BCM56743 A0 | 480 Gbps Switch fabric |
| | BCM56743 A1 | |
| | BCM56743 A2 | |
| | BCM56743 A3 | |
| | BCM56743 A4 | |
| | BCM56743 B0 | |

Table 57: Switch Devices

| Family | Devices | Description |
|---------------|----------------|---|
| | 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 | |
| | 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 |

Table 57: Switch Devices

| Family | Devices | Description |
|---------------|----------------|--|
| | 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 | |
| | BCM56842 A0 | 320 Gbps Ethernet Multilayer Switch |
| BCM56840_PLUS | BCM56842 A1 | |
| | BCM56844 A0 | 480 Gbps Ethernet Multilayer Switch |
| | BCM56844 A1 | |
| | BCM56846 A0 | 640 Gbps Ethernet Multilayer Switch |
| | BCM56846 A1 | |
| BCM56846 | BCM56831 | Trident+ SKU - 24-port 10GE switch with 40GE support for embedded applications |
| BCM56846 | BCM56835C | Trident+ SKU - (64 x 10 GbE) + (4 x 1 GbE) |
| BCM56846 | BCM56847 | Trident+ SKU - (64 x 10 GbE) + (4 x 1 GbE) |
| BCM56846 | BCM56849 | Trident+ SKU - (56 x 1GbE/2.5GbE) + (8 x 10GbE) |
| BCM56850 | BCM56751P A1 | 1.28Tbps I/O, 960Gbps Core Ethernet Switch Fabric |
| BCM56850 | BCM56751P A2 | 1.28Tbps I/O, 960Gbps Core Ethernet Switch Fabric |
| BCM56850 | BCM56830 A1 | 960Gbps Ethernet Switch |
| BCM56850 | BCM56830 A2 | 960Gbps Ethernet Switch |
| BCM56850 | BCM56834 | Trident2 SKU - High density 10G and 40G switch for embedded applications |
| BCM56850 | BCM56838 | Trident2 SKU - 72/320G Devices with 1.25/3.125/6.25G Serdes and 4 SFIs |
| BCM56850 | BCM56850 A1 | 1.28Tbps I/O, 1Tbps Core Ethernet Switch |
| | BCM56852 A2 | 100x10G, 960Gbps Multilayer Switch |
| | BCM56854 A1 | |
| BCM56851 | BCM56751 A2 | 1.28Tbps I/O, 960Gbps Core Ethernet Switch Fabric |

Table 57: Switch Devices

| Family | Devices | Description |
|---------------|----------------|--|
| 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 Queuing Engine with 49 SPI 4.2 subports |
| | QE-2000 A2 | |
| | QE-2000 A3 | |
| | QE-2000 A4 | |
| BCM88230 | BCM88230 A0 | XGS Core (XCore/SBX) Fabric Queuing Engine with Integrated Traffic Management with 4 HiGig2 ports, 50Gbps |
| | BCM88230 B0 | |
| | BCM88235 A0 | XGS Core (XCore/SBX) Fabric Queuing 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 | 200 GBps DNX Traffic Manager and Packet Processor |
| BCM88660 | BCM88660 A0 | DNX 200G Flexible Packet Processor with Integrated Traffic Management |
| BCM88750 | BCM88750 A0 | DNX 1600 GBps Switch Fabric |
| | BCM88750 B0 | |

Table 58: SER Supported Devices

| Family | Devices |
|------------|--|
| Trident | 56841, 56842, 56843, 56844, 56845, 56846, 56850 |
| Triumph | 56640, 56643, 56644, 56648, 56649, 56540, 56541, 56542, 56544, 56545 |
| Katana | All SKUs |
| Katana2 | 56450, 56455, 56456 |
| Enduro2 | All SKUs |
| Hurricane2 | 56150, 56151, 53344, 53346, 53393, 53394 |
| Helix4 | 56340, 56040, 56344, 56042, 56342 |

Table 59: Switch Devices that support Warm boot

| Family | Devices | Description |
|----------|-------------|--|
| 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 |
| | BCM56151 A0 | 24-port GbE Managed Switch with 4-port 10 GbE uplinks, integrated CPU (without PHYs) |
| | BCM56152 A0 | 24-port GbE plus 2-port GbE and 2-port 1GbE/13GbE uplinks Managed Switch, integrated CPU and 16 copper PHYs |
| | BCM53342 A0 | 8-port GbE Multilayer WebSmart Switch with Integrated CPU and Copper PHYs |
| | BCM53343 A0 | 16-port GbE plus 4-port GbE uplinks Multilayer WebSmart Switch with Integrated CPU and 16 Copper PHYs |
| | BCM53344 A0 | 24-port GbE plus 2-port GbE and 2-port 1GbE/13GbE uplinks WebSmart Switch, integrated CPU and 16 copper PHYs |
| | BCM53346 A0 | 24-port GbE Multilayer WebSmart Switch with 4-port 10 GbE uplinks, integrated CPU and 16 copper PHYs |
| | BCM53393 A0 | 14-port GbE Multilayer Embedded Switch with integrated CPU (without PHY) |

Table 59: Switch Devices that support Warm boot

| Family | Devices | Description |
|---------------|----------------|---|
| | 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 |
| BCM56240 | BCM56240 A0 | 2-Port 10GbE (OR 8 *2.5GbE) Multilayer Switch with Two 10-GbE/Hig2 Uplink ports |
| BCM56240 | BCM56240 B0 | 2-Port 10GbE (OR 8 *2.5GbE) Multilayer Switch with Two 10-GbE/Hig2 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 |
| BCM56320 | BCM56320 A0 | 24-Port GbE Multilayer Switch with Four 10-GbE/HiGig2 Uplink Ports |
| | BCM56320 B0 | |
| | BCM56320 B1 | |
| | 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 | |
| BCM56340 | BCM56340 A0 | 12xF.QSGMII + Flex[4x10] + 2xHG[21] + 1GE, 12xF.QSGMII + 4xSGMII + 2xXFI + 2xHGd[21] + 1GE |
| | BCM56342 A0 | 7xF.QSGMII + Flex[4x10] + 2xHG[21] + 1GE |

Table 59: Switch Devices that support Warm boot

| Family | Devices | Description |
|---------------|----------------|--|
| | BCM56344 A0 | 10xF.QSGMII + 3xFlex[4x10] + 1GE |
| | BCM56040 A0 | 1xF.QSGMII + 3xF.HG[42] + 1GE |
| | BCM56041 A0 | Ranger device, meant for embedded connectivity supports 1Ge (port 49), 2 X GE (iPROC), Flex 4x10G, 3 X 4 X 10G |
| | BCM560547 A0 | 10xF.QSGMII + 3xF.HG[42] + 1GE, 12xF.QSGMII + 2xF.HG[42] + 1GE, 12xF.QSGMII + F.HG[42] + 2xHG[42] + 1GE |
| | BCM560548 A0 | 7xF.QSGMII + 3xF.HG[42] + 1GE |
| BCM56240 | BCM56240 A0 | 2-Port 10GbE (OR 8 *2.5GbE) Multilayer Switch with Two 10-GbE/Hig2 Uplink ports |
| BCM56240 | BCM56240 B0 | 2-Port 10GbE (OR 8 *2.5GbE) Multilayer Switch with Two 10-GbE/Hig2 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/Hig2 Uplink ports |
| | BCM56440 A0 | 24-Port GbE Multilayer Switch with Four 10-GbE/Hig2 Uplink ports |
| | BCM56440 B0 | 24-Port GbE Multilayer Switch with Four 10-GbE/Hig2 Uplink ports |
| | BCM56441 A0 | 8-Port GbE Multilayer Switch with Two 10-GbE/Hig2 Uplink ports |
| | 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 |
| BCM56450 | BCM56450 A0 | 24-port GbE Multilayer Switch with 4-port 10 GbE uplinks, stacking, integrated CPU and Traffic Manager |
| | BCM56455 A0 | 2 x 20GE (G.INT) + 2 x HG13 |
| | BCM56456 B0 | 1 x XAUI + 8 x GE |
| 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 | |

Table 59: Switch Devices that support Warm boot

| Family | Devices | Description |
|---------------|----------------|--|
| | 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 |
| | 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 |

Table 59: Switch Devices that support Warm boot

| Family | Devices | Description |
|---------------|----------------|---|
| | 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 | |
| | 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 | |

Table 59: Switch Devices that support Warm boot

| Family | Devices | Description |
|---------------|----------------|---|
| | 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 | |
| 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 |

Table 59: Switch Devices that support Warm boot

| Family | Devices | Description |
|---------------|----------------|---|
| | 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 | |
| | 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 59: Switch Devices that support Warm boot

| Family | Devices | Description |
|---------------|----------------|--|
| | 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 | |
| BCM88650 | BCM88650 A0 | 200GBps DNX Traffic manager + Packet processor |
| | BCM88650 B0 | |
| | BCM88650 B1 | |
| BCM88660 | BCM88660 A0 | 200GBps DNX Traffic manager + Packet processor |
| BCM88750 | BCM88750 A0 | 1600GBps DNX Switch fabric |
| | BCM88750 B0 | |

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

PHYS

Table 60: 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 |



Table 60: PHYs

| Device | Driver Family | Description |
|---------------|----------------------|--|
| 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 Bring-up) |
| BCM54292_A0 | 54280 | Octal 1000/100/10BASE-T Gigabit Ethernet Transceiver (1588 feature is Bring-up) |
| BCM54294_A0 | 54280 | Quad 1000/100/10BASE-T Gigabit Ethernet Transceiver (1588 feature is Bring-up) |
| 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) |
| 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 |

Table 60: PHYs

| Device | Driver Family | Description |
|---------------|----------------------|--|
| 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 |
| 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. Bring-up) |
| BCM8728_A0 | 8706 | Dual-Channel 10-GbE SFI-to-XAUI(TM) Transceiver with EDC. Firmware version 0511. (Bring-up) |
| 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) |
| BCM84164 | BCM84740 | Quad 10GBASE-KR-to-XFI or 40GBASE-KR4-to-XLAUI Transceiver Firmware version 0x128 |

Table 60: PHYs

| Device | Driver Family | Description |
|---------------|----------------------|--|
| BCM84168 | BCM84740 | Octal 10GBASE-KR-to-XFI or Dual 40GBASE-KR4-to-XLAUI Transceiver Firmware version 0x128 |
| BCM84318_A0 | 84740 | 10.3 Gbps Octal Port CDR/Retimer with EDC. Firmware version D007 |
| BCM82328_A0 | 82328 | Dual 40 GbE/Octal 10 GbE QSFP+ XLPPI-to-XLAUI PHY. Firmware version 9 "(Bring-up) |
| BCM82328_B0 | 82328 | Dual 40 GbE/Octal 10 GbE QSFP+ XLPPI-to-XLAUI PHY. Firmware version D "(Bring-up) |
| BCM84328_A0 | 84328 | Dual 40 GbE/Octal 10 GbE QSFP+ XLPPI-to-XLAUI PHY. Firmware version D026 |
| BCM84328_B0 | 84328 | Dual 40 GbE/Octal 10 GbE QSFP+ XLPPI-to-XLAUI PHY. Firmware version D026 |
| BCM84333_B1 | 8481 | Quad 10GBASE-T Transceiver. Firmware version 1.69 (Bring-up) (Needs additional software component) |
| BCM84334_B1 | 8481 | Quad 10GBASE-T Transceiver. Firmware version 1.69 (Bring-up) (Needs additional software component) |
| BCM84336_B1 | 8481 | Dual 10GBASE-T Transceiver. Firmware version 1.69 (Bring-up) (Needs additional software component) |
| BCM84793_A0 | 84793 | 100GbE/OTN 4x25/28G VSR28 to 10x10/11G CAUI Gearbox PHY. Firmware version 0xD009 (Bring-up - 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 (Bring-up) |
| 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 1.69(Driver support for IEEE 1588 features are Bring-up) |
| BCM84834_B1 | 8481 | Quad 10GBASE-T Transceiver. Firmware version 1.69(Driver support for IEEE 1588 features are Bring-up) |
| BCM84836_B1 | 8481 | Dual 10GBASE-T Transceiver. Firmware version 1.69(Driver support for IEEE 1588 features are Bring-up) |
| BCM84844_A0 | 8481 | Quad 10GBASE-T Transceiver. Firmware version 1.07.11(Driver support is Bring-up) |
| BCM84846_A0 | 8481 | Dual 10GBASE-T Transceiver. Firmware version 1.07.11(Driver support is Bring-up) |
| BCM84848_A0 | 8481 | Quad 10GBASE-T Transceiver. Firmware version 1.07.11(Driver support is Bring-up) |
| 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 Bring-up) |
| BCM84729_A0 | 84729 | Dual-Channel SFI to XAUI with Macsec, 1588 (Firmware version 0x124. Driver support for IEEE 1588 features are Bring-up) |
| BCM84740 A0 | 84740 | 40 GbE PPI-to-XLAUI PHY with EDC. Firmware version D106. |
| BCM84741 B0 | 84756 | 40GbE XLPPI-to-XLAUI/Quad 10G with IEEE MACsec/1588 Firmware version 0x0128 [Bring-up] |
| BCM84747_A0 | 84728 | Quad SFI to XAUI with 1588 (Firmware version 0x124. Bring-up) |
| BCM84748_A0 | 84728 | Quad SFI to XAUI with WAN/1588 (Firmware version 0x124. Bring-up) |
| BCM84749_A0 | 84749 | Quad SFI to XAUI with Macsec, 1588 (Firmware version 0x124. Driver support for IEEE 1588 features are Bring-up) |
| BCM84752 A0 | 84740 | Dual-Channel 10 GbE SFI-to-XFI PHY with EDC. Firmware version D105. (Bring-up) |
| 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) |

Table 60: PHYs

| Device | Driver Family | Description |
|---------------|----------------------|--|
| BCM84756 B0 | 84756 | Quad SGMII/XFI to SGMII/SFI Transceiver Firmware version 0x0128(Needs additional software component) |
| BCM84756 C0 | 84756 | Quad SGMII/XFI to SGMII/SFI Transceiver Firmware version 0x0128(Needs additional software component) [Bring-up] |
| BCM84758 | 84740 | 10GbE Quad SFI-XFI PHY with IEEE 1588 Firmware version 0x128 |
| 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. (Bring-up) |
| BCM84780_A0 | 84740 | Octal-Channel 10 GbE SFI-to-XFI PHY with 1588. Firmware version 0x128 (Bring-up) |
| BCM84784_A0 | 84740 | Dual 40GbE/Octal 10GbE QSFP+ XLPPI-to-XLAUI PHY. Firmware version 0x125 (Bring-up) |
| BCM84764_A0 | 84728 | Quad SFI to RXAUI with 1588 (Firmware version 0x124. Bring-up) |
| 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. Bring-up) |
| BCM82381_A2 | 82381 | Dual 100GbE with CAUI4 to CAUI4 / Dual 40GbE XLPPI to XLAUI/ Octal 10GbE SFI to XFI port. Firmware version D00C. (Preview) Driver supports 100G CR4, 40G SR4/LR4/CR4 and 10G SR/LR Functionality Supported: PHY Reset(Hard/soft), Link status, Speed and Interface configuration, port enable/disable, remote/digital loopback, Polarity inversion, PRBS, Eyescan, DSC, PLL sequencer restart, Phy dump, FEC and Rx PMD lock. Driver Limitation : 1. Chip reset issues reset to all the ports that shares same PHY-ID(MDIO ADDR). 2. Speed change is only supported through config.bcm. speed set through API is not consistent. |

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-PG818-R) for instructions on porting the SDK to another platform.

Table 61: Operating Systems

| Operating System |
|-----------------------------------|
| 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 62: CPU Subsystems

| CPU Subsystem | Description |
|----------------------|--|
| 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 |
| BCM9XLP316LXMC | XMC with Broadcom XLP 316 processor that includes up to sixteen NXCPUs(4 cores) |
| BCM958625XMC(CPU) | XMC with BCM58625 processor (1.2 GHz ARM Cortex-A9 dual-core processor NXCPUs(4 cores) each operating at up to 2.0 GHz |
| BCM9XLP208XMC | XMC with Broadcom XLP 208 processor that includes up to eight NXCPUs(2 cores) |

CPU AND OPERATING SYSTEM COMBINATIONS

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

Table 63: CPU and Operating System Combinations

| CPU Subsystem | Operating System | Description |
|----------------------|-------------------------|--|
| 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 |



Table 63: CPU and Operating System Combinations

| CPU Subsystem | Operating System | Description |
|----------------------|-------------------------|--|
| 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 | |

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.

SUPPORT

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

FIRMWARE COMPATIBILITY MATRIX

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

BCM56440 FIRMWARE COMPATIBILITY MATRIX

Table 64:

| SDK | Firmware 3.2.2 | Firmware 4.0.0 | Firmware 4.0.1 | Firmware 4.0.2 | Firmware 4.0.3 |
|-----------|----------------|----------------|----------------|----------------|----------------|
| SDK-6.4.0 | No | No | No | No | No |
| SDK-6.4.1 | No | No | No | Yes | Yes |
| SDK-6.4.2 | No | No | No | Yes | Yes |
| SDK-6.4.3 | No | No | No | No | Yes |

BCM56640 FIRMWARE COMPATIBILITY MATRIX

Table 65:

| SDK | Firmware 3.2.2 | Firmware 4.0.0 | Firmware 4.0.1 | Firmware 4.0.2 | Firmware 4.0.3 |
|-----------|----------------|----------------|----------------|----------------|----------------|
| SDK-6.4.0 | No | No | No | No | No |
| SDK-6.4.1 | No | No | No | Yes | Yes |
| SDK-6.4.2 | No | No | No | Yes | Yes |
| SDK-6.4.3 | No | No | No | No | Yes |

BCM88650 FIRMWARE COMPATIBILITY MATRIX

Table 66:

| SDK | Firmware 3.2.2 | Firmware 4.0.0 | Firmware 4.0.1 | Firmware 4.0.2 | Firmware 4.0.3 |
|-----------|----------------|----------------|----------------|----------------|----------------|
| SDK-6.4.0 | No | No | No | No | No |
| SDK-6.4.1 | No | No | No | Yes | Yes |
| SDK-6.4.2 | No | No | No | Yes | Yes |
| SDK-6.4.3 | No | No | No | No | Yes |

BCM56850 FIRMWARE COMPATIBILITY MATRIX

Table 67:

| SDK | Firmware 3.2.2 | Firmware 4.0.0 | Firmware 4.0.1 | Firmware 4.0.2 | Firmware 4.0.3 |
|-----------|----------------|----------------|----------------|----------------|----------------|
| SDK-6.4.0 | No | No | No | No | No |
| SDK-6.4.1 | No | No | No | Yes | Yes |



Table 67:

| SDK | Firmware 3.2.2 | Firmware 4.0.0 | Firmware 4.0.1 | Firmware 4.0.2 | Firmware 4.0.3 |
|-----------|----------------|----------------|----------------|----------------|----------------|
| SDK-6.4.2 | No | No | No | Yes | Yes |
| SDK-6.4.3 | No | No | No | No | Yes |

BCM88030 FIRMWARE COMPATIBILITY MATRIX

Table 68:

| SDK | Firmware 3.2.2 | Firmware 4.0.0 | Firmware 4.0.1 | Firmware 4.0.2 | Firmware 4.0.3 |
|-----------|----------------|----------------|----------------|----------------|----------------|
| SDK-6.4.0 | Yes | No | No | No | No |
| SDK-6.4.1 | No | No | No | No | No |
| SDK-6.4.2 | No | No | No | No | No |

BCM56450 FIRMWARE COMPATIBILITY MATRIX

Table 69:

| SDK | Firmware 3.2.2 | Firmware 4.0.0 | Firmware 4.0.1 | Firmware 4.0.2 | Firmware 4.0.3 |
|-----------|----------------|----------------|----------------|----------------|----------------|
| SDK-6.4.0 | No | No | No | No | No |
| SDK-6.4.1 | No | No | No | Yes | Yes |
| SDK-6.4.2 | No | No | No | Yes | Yes |
| SDK-6.4.3 | No | No | No | Yes | Yes |

BMACSEC SDK COMPATIBILITY MATRIX

Table 70:

| Switch SDK Release | BMACSEC SDK Release |
|--------------------|---------------------|
| 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 |



Table 70:

| <i>Switch SDK Release</i> | <i>BMACSEC SDK Release</i> |
|---------------------------|----------------------------|
| 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 |
| 6.3.3 | 4.3 |
| 6.3.4 | 4.4 |
| 6.4.0 | 4.5 |
| 6.3.5 | 4.6 |
| 6.3.6 | 4.7 |
| 6.3.7 | 4.8 |
| 6.4.1 | 4.8 |
| 6.3.8 | 4.9 |
| 6.3.9 | 4.10 |
| 6.4.2 | 4.10 |
| 6.4.3 | 4.11 |

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 71: EXTERNALLY LICENSED SOFTWARE COMPONENTS

| Component | Origin | Location in source tree | License terms and conditions |
|------------------|---|---|---|
| EDITLINE | /afs/athena.mit.edu/contrib/sipb/src/editline | src/sal/appl/editline | See (EDITLINE License terms and conditions) (page 142<Default ~1 Font>) |
| ED Editor | USENET comp.sources.misc Volume 9, Issue 36 | src/appl/diag/edline.c | See (ED Editor License terms and conditions) (page 144<Default ~1 Font>) |
| CINT | http://www.gnu.org/software/bison/ | src/appl/cint/cint_parser.[ch] | See (CINT parser license terms and conditions) (page 144<Default ~1 Font>) |
| 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) (page 145<Default ~1 Font>) |
| BIGDIGITS | David Ireland, copyright (c) 2001-11 by D.I. Management Services Pty Limited < www.di-mgt.com.au > | src/soc/dpp/SAND/Utils/sand_u64.c | See (BIGDIGITS license terms and conditions) (page 145<Default ~1 Font>) |
| APIMODE | http://www.gnu.org/software/bison/ | src/appl/diag/api/api_grammar.tab.[ch] | See (APIMODE parser license terms and conditions) (page 146<Default ~1 Font>) |
| VxWorks | Wind River Systems, Inc. | systems/vxworks | See (Wind River Systems license terms and conditions) (page 146<Default ~1 Font>) |

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: 1.7 \$

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

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

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

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

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

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

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

Enjoy,

Rich \$alz
<rsalz@osf.org>



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^^

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

Modification log:

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

CINT PARSE LICENSE TERMS AND CONDITIONS

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

Removed files:
None

Added files:



None

Changed functionality:

None

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

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

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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
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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 144<Default ↵ Font>](#)) for the Bison licence.

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RESOLVED ISSUES FOR 6.4.2

The following issues are resolved in version 6.4.2 of the SDK.

Table 72:

| Number | CSP # | Chips | Release Notes For 6.4.2 |
|---------------|--------------|--|--|
| SDK-31854 | | All | The set and get versions of <code>bcm_rx_redirect_reasons</code> have been updated to return the correct error codes for wrong unit or wrong mode. |
| SDK-44471 | 599747 | 56544_A0 | the lanes has to be single lane in boot up. The config property <code>portgroup_0=1</code> will configure the ports single lane. |
| SDK-45222 | 614537 | 56440_B0 | <code>mis_con_mep_id</code> and length fields are added in endpoint info structure |
| SDK-45223 | 614521 | 56440_B0 | <p>Problem: If user configured, source <code>mep_id</code> on both DUTs differently, than the BFD session was not able to be established properly intermittently. To debug this the user requested that the SW display/validate the Remote DUT <code>mep_id</code>, which was configured incorrectly.</p> <p>Solution: New fields are added in BFD endpoint info as <code>remote_mep_id</code> and <code>mis_con_mep_id</code> to achieve this. After enabling this feature, user needs to configure on both DUTs, <code>mep_id</code> and <code>remote_mep_id</code> and as well as length fields.</p> <p>If user mep configuration is incorrect, wrong mep id will be stored in <code>mis_con_mep_id</code>. From BCM shell, user has to invoke <code>bcm_bfd_endpoint_get()</code> API to display wrong mep id.</p> |
| SDK-45253 | | 56643_B0 | For flexible HG ports port mode register <code>xport</code> field should be set to 0 (Single mode). Setting it to zero removes the underflow issue. Fixed the same. |
| SDK-46712 | 634930 | 56840_A0 | MC Prio2Cos values have been corrected to reset properly |
| SDK-47231 | 643758 | 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 | In the previous release packet was not getting received while switching from IEEE mode to HIGIG mode. This was because the <code>STRICT_PREAMBLE</code> and <code>PROCESS_VARIABLE_PREAMBLE</code> in <code>XMAC_RX_CTRL</code> was not configured correctly for HG port. This issue has now been addressed by setting <code>STRICT_PREAMBLE=0</code> and <code>PROCESS_VARIABLE_PREAMBLE=0</code> in <code>XMAC_RX_CTRL</code> when port type is HG. |
| SDK-48892 | 652937 | 56850_A0 | Fixed HSP port attach for Y pipe based ports. |
| SDK-49048 | | 88650_A0 | Qpairs allocation of CPU ports is done from a specific qpairs range of 192-255. With this fix the qpairs allocation is done according to CPU channel. For each CPU port the following range of qpairs is allocated: <code>[192+channel, 192+channel+nof_priorities-1]</code> . |



Table 72:

| Number | CSP # | Chips | Release Notes For 6.4.2 |
|---------------------|--------------|-------------------------------|---|
| SDK-49169 | | 56850_A0 56850_A1 | fix code to display correctly ecmp info for host route. |
| 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-49630 | | 56850_A0 56850_A1 56850_A2 | The field actions contains the list of valid and invalid actions (Invalid actions are either removed actions or modified actions). Modified the code to scan the entire list instead of scanning till the first invalid action in the list. This allows the SDK to retain the valid actions when unwanted action is removed |
| SDK-49910 | | 56640_A0 56640_A1 56640_B0 | The issue is that the function <code>_bcm_tr3_cosq_node_get</code> expects a GPORT node to be passed. However, for the cpu node we don't pass a gport and this returns BCM_E_PORT. The fix is to get the sched index via <code>_bcm_tr3_cosq_index_resolve</code> in the alternate path. |
| SDK-50311 | 693316 | 56850_A0 56850_A1 56850_A2 | In earlier releases, the mask in flex hash entry could not be configured with existing API. This has been resolved. |
| SDK-51769 | 691762 | 56840_A0 | In earlier release, when HIGIG port speed was 40G and external phy was in reverse mode, the SOP, SOM and sequence alignment were not programmed correctly. This has been resolved. |
| SDK-52237 | 721240 | All | Support to handle concurrent RPC requests is added . New Configuration variable "rpc_server_thread_count" is added. This variable holds the number of RPC server threads created. |
| SDK-52679 | 726763 | 56450_A0 | Problem Statement: Previously we could not support movement for L0 node from one port to other port Solution: SDK provided a new API, <code>bcm_cosq_gport_reattach</code> which will allow user to move L0 node from one port to other |
| SDK-52710 | 729008 | 56224_B0 | On UNIMAC devices, calling <code>bcm_stat_init()</code> API was overwriting the maximum frame setting on port when configuration for Jumbo packet handling using <code>bcm_stat_jumbo</code> . This configuration will set the size used by counter collection to decide when to count over-sized packets. When call <code>bcm_stat_init()</code> the maximum frame size was being set to this jumbo size setting overwriting the existing max frame setting on a port. Removed this code for setting the max frame size during <code>bcm_stat_init</code> . The counter collection for over-sized packet has been fixed to take into account the oversize stats. |
| SDK-53222 SDK-52915 | 733469 | 56450_A0 | In Katana2 the capability to display the IIs tree of the coe port was missing and It has been added |

Table 72:

| Number | CSP # | Chips | Release Notes For 6.4.2 |
|---------------------|--------|-------------------------------|---|
| SDK-53223 | 733490 | 56450_A0 | Shaper configuration was not reset when the nodes in scheduler tree were deleted or detached in the tree. Added code to reset the shaper configuration when the nodes in scheduler tree are deleted or detached. |
| SDK-54341 SDK-57678 | | 56640_A0 56344_A0 | <p>When changing the parent of any L2 node from WDRR to SP, BCM_E_TIMEOUT is thrown, since dynamic change of SP<->WRR is not supported. The current way to resolve this is: Customer calls APIs to stop enqueue and drain the mmu queues before changing the scheduler mode.</p> <p>With this method, the customer is expected to call the following APIs to stop the enqueue and drain the mmu before detaching/attaching to a parent with different scheduler mode.</p> <pre>bcm_port_control_set(unit, port, bcmPortControlMmuTrafficEnable, 0); bcm_port_control_set(unit, port, bcmPortControlMmuDrain, 1); <Detach/attach/sched_set> bcm_port_control_set(unit, port, bcmPortControlMmuTrafficEnable, 1);</pre> |
| SDK-54758 | 750349 | 56450_A0 | <p>Problem statement: bcm_cos_mapping_set is not working for flex ports Fix description: Added code so that flex ports are also used during config_set and mapping_set profiles, as a result bcm_cos_mapping_set is working appropriately</p> |
| SDK-54796 | 751218 | 88650_A0 88650_B0 88650_B1 | <p>When allocating a combination of 1-priority and more than 1-priority ports that cover the entire q-pairs range (256 q-pairs), 1 -priority port can't be allocated on the last q-pair. The driver allocates the qpairs in ports order, so if last port is 1-priority port error will be returned.</p> <p>To avoid this issue user can allocate one of the ports which aren't 1-priority to use the last qpair(s).</p> <p>The soc property is: otm_base_q_pair_<port_id>=<base_q_pair></p> |
| SDK-54889 | 750468 | 88030_A0 | Default route disappeared is caused by the bucket merge was not supported by taps driver. After we improve the taps error handling and support to merge the bucket in that handling, this issue could be resolved. |
| SDK-54991 | 750024 | All | Added support for filter callbacks in the Linux KNET kernel driver. |
| SDK-55162 | | 88660_A0 88670_A0 | IP Routing-Over-Overlay (ROO) refers to a set of protocols/applications where the L2 forwarding to the Host/Next-Hop router is not accomplished by simple 802.1q bridging, but by L2-Overlay protocols (VXLAN, etc). BCM8866X supports ROO Host Unicast over VXLAN. See cint_vxlan_roo.c for cint example and Programmer's Reference Guide for more details. |

Table 72:

| Number | CSP # | Chips | Release Notes For 6.4.2 |
|---------------|--------------|--|--|
| SDK-55180 | | All | In non-interface map mode, <code>bcm_l3_intf_create()</code> and <code>bcm_vlan_control_vlan_set()</code> can overwrite vrf values set by each other. This is how these apis are designed to set up the parameters that they are overstepping each other. Added documentation to explain the behavior of APIs in case of VRF setting. |
| SDK-55184 | | 56850_A0 | Earlier SDK releases did not allow configuring MTU value for vxlan access ports. This release now supports setting/resetting MTU for vxlan access ports through <code>bcm_vxlan_port_add()</code> API. |
| SDK-55454 | 758146 | 88650_A0 | In Counter Processor, one of the Ingress-PP counting mode is VSI. A support for counting packets by ingress VSI is added. The relevant soc property is <code>counter_engine_source<counter ID>=INGRESS_VSI</code> . When set, the default Counter-ID value for Ethernet packets is VSI. This value may be overridden by Ingress PMF (Field Processor APIs with <code>bcmFiedlActionStat0/1</code> actions) or by Rx-traps. |
| SDK-55607 | 752009 | 56640_A0 56540_A0 56640_A1 56640_B0 56540_B0 | When OAM LM endpoint is deleted on Triumph3, feild group is also deleted if there are no more OAM LM endpoints present in that group. On deleting the field group, field group index was not set to invalid. This issue has been fixed. |
| SDK-55706 | 730810 | 56540_A0 56540_B0 | Issue :- "fp show" and "listmem fp_tcam" are reporting incorrect entry values for IFP in Apollo2 Fix :- Updated "fp show" command to return correct entry count for IFP in Apollo2. "ListMem fp_tcam" cannot be fixed as the command reads from driver. Modifying the driver values is leading to other issues. |
| SDK-55886 | 760333 | All | In previous releases, out-of-bounds access to an array of multicast group was allowed, which would result in crashing. This has been resolved by placing a proper check to ipmc id. |
| SDK-55929 | 759404 | 56620_B0 | In earlier SDK releases, the SDK did not properly decode the dest modid and dest port in the Triumph and Triumph2 class of devices. The issue is fixed by appropriately accounting for the addressable port and module id range on the device. |
| SDK-56001 | 761280 | All | <code>soc_feature_timesync_support</code> flag enables 1588/PTP protocol's transparent clock support. This JIRA enables PTP transparent clock support for Triumph 3. |

Table 72:

| Number | CSP # | Chips | Release Notes For 6.4.2 |
|---------------------|--------|--|--|
| SDK-56024 | | 56850_A0 | <p>There's a bit in the VLAN_XLATE table called VLAN_ACTION_VALID, It must be enabled to process</p> <p>XLATE_DISABLE_VLAN_CHECKS for VXLAN virtual ports, but disable it for VXLAN access ports to drop packets at ingress. They have conflict. To solve the problem, a new flag has been added that allows the customer to control the bit, The new flag is</p> <p>BCM_VXLAN_PORT_ENABLE_VLAN_CHECKS.</p> |
| SDK-56065 SDK-61361 | | 88670_A0 | <p>In BCM88660 and below, any FEC has both a destination and a forwarding information (e.g., Out-LIF). The destination cannot be another FEC. In BCM88670, the destination of a FEC can be another FEC (Hierarchical FEC).</p> <p>There is an hardware limitations on this feature - a pointing FEC may not be accessed in the same bank as the pointed FEC (In hardware the FECs have been divided into banks). Due to this limitation the FECs must be allocated in such a way that a pointing FEC and a pointed FEC will never be in the same bank.</p> <p>A CASCADED flag has been created for any API that allocates FECs</p> <p>(bcm_l3_egress_create, bcm_vlan_port_create, bcm_mpls_port_create) to indicate that a FEC will be pointed by another FEC. If the CASCADED flag is not specified, the FEC can be used as a regular FEC or a pointing FEC. For more details see the Packet Processing User Manual.</p> |
| SDK-56099 | 766312 | 56334_B0 56334_A0 | <p>Repaired EGR_VLAN table corruption during hash table entry balancing in Enduro devices.</p> |
| SDK-56203 | | 88650_A0 88650_B0 88650_B1 88660_A0 | <p>XLPORT Overrun/Underrun Workaround -----: The Arad driver implements a sequence to recognize and recover the port from XLPORT Overrun/Underrun issue (see BCM88650 errata sheet). To activate the sequence during device init use the following soc property:</p> <p>custom_feature_nif_recovery_enable=1 (default is disabled on 6.3.x, and enabled on 6.4.x).</p> <p>The sequence might perform several iterations when trying to recover the port. To limit number of iteration use the following SoC property:</p> <p>custom_feature_nif_recovery_iter (default is 3). Note that from lab experience the port is recover within single iteration.</p> <p>Limitations: 1. The SW WA works for XLP0 only. 2. The SW WA is called during init and isnt available for dynamic port.</p> |

Table 72:

| Number | CSP # | Chips | Release Notes For 6.4.2 |
|---------------|--------------|--|---|
| SDK-56317 | | 56846_A0 56846_A1 | In previous releases, created multipaths more than max capacity could corrupt existing ECMP groups and return wrong value -1 if ECMP group size of TD+ configured to 256 as TD device. In this release, it returns BCM_E_FULL (-6) if creating ECMP multipaths more than max capacity. |
| SDK-56424 | 767587 | 56850_A0 | Problem: Modified srtcm meter mode support was missing in Trident2 for Egress FieldProcessor Stage Solution: Added modified srtcm metering support in coldboot and warmboot for Egress Field Processor Stage in Trident2. This includes policer creation, attach and install the configs. It also includes recovery of the meter during warmboot. |
| SDK-56462 | 770876 | 56640_A0 56640_A1 56640_B0 | Added the software support for 100G Remote loopback |
| SDK-56589 | 771496 | 56450_B0 56455_A0 56456_A0 56846_A0 56845_B0 56845_A2 56844_A0 56842_A0 56840_A0 56640_A0 56440_A0 56641_A0 56642_A0 56643_A0 56644_A0 56645_A0 56648_A0 56843_B0 56841_A3 56445_A0 56440_A1 56445_A1 56444_A1 56450_A0 56846_A1 56841_B0 56640_A1 56643_A1 56644_A1 56640_B0 56644_B0 56643_B0 56648_B0 56649_B0 56649_A0 56449_B0 56445_B0 56440_B0 56447_B0 56443_B0 56441_B0 56446_B0 56448_B0 56442_B0 | Customer found the counter RDVLN did not work without configuring XMAC_RX_VLAN_TAG register. They also found there was no way to set this register in previous SDK release. Now an improvement has been implemented to set the register by bcm_port_tpid_set() & bcm_port_inner_tpid_set() APIs. |
| SDK-56619 | 771355 | 56846_A1 | Issue: In earlier releases, no fault message was sent in single fiber connection for issue in phy_wc40_software_rx_los(). Root Cause: The rx_los_state was never set to RESET. So LOCAL_FAULT_ENABLE was never set as the RESET case was never hit. Fix: Allow the rx_los_state to set to RESET and subsequently move into the RESET case to set rx_los_state to START_TIMER. |

Table 72:

| Number | CSP # | Chips | Release Notes For 6.4.2 |
|---------------|--------------|--|--|
| SDK-56776 | 772447 | 56440_A0 56440_B0 56450_A0 56450_B0 56850_A0 | <p>Issue: When DK_MEM flag is enabled, we would access L2X views array during L2 initialization.</p> <p>We would use KEY_TYPE as index in L2X views array. KEY_TYPE field is 3 bits wide in KT/KT2 and 4 bits wide in TD2. Hence it is set to 7 in KT/KT2 and 15 in TD2.</p> <p>For KT,KT2 and TD2, KEY_TYPE is greater than maximum index of L2X views array and it may result in segmentation fault while accessing this array with index greater than maximum index.</p> <p>Fix: In soc_mem_entry_dump_common, for KT/KT2/TD2, if key_type is greater than maximum index of L2X views array, then key_type value is set to the respective L2X view array maximum index value.</p> |
| SDK-56787 | 775384 | All | <p>In earlier releases, there is no way to use the API bcm_rate_bandwidth_set to set the rate to 0kbps speed. If the pass the speed as zero, the assumption was to disable metering. Now, to disable metering, kbits_sec parameter has to be passed as BCM_RATE_DISABLE and to set the rate to zero, kbits_sec parameter has to be passed as BCM_RATE_BLOCK</p> |
| SDK-56916 | 775184 | 56340_A0 | <p>Problem: Regex match was not being reported if the pattern occurs beyond 2048 bytes for any given session. The reason was that the AXP_SM_SIGNATURE_MATCH_CONTROL.MAX_BYTE_INSPECTED is always being set to the default value of 2048. Solution: Set the above field/register to the payload depth provided through bcm_regex_config_set API. This will be set in sync with the FT_CONFIG.MAX_BYTES field.</p> |
| SDK-57000 | 755118 | 56850_A0 56850_A1 56850_A2 | <p>Support has been added for VPLAG for VxLAN based VPs.</p> |
| SDK-57024 | | 88650_A0 | <p>Dynamic port provisioning feature added</p> |
| SDK-57146 | 779181 | 56850_A0 56850_A1 56850_A2 | <p>Description: MAP_TABLE is not correctly indexed in bcm_esw_switch_rcpu_encap_priority_map_set()</p> <p>Root cause: It's a typo.</p> <p>Solution: The software now corrects the typo.</p> |
| SDK-57171 | 780263 | 56850_A0 56850_A1 56850_A2 | <p>Originally, VLAN_XLATE entry was not cleared possibly when deleting a VP. It is fixed by setting modid or trunk_id to an invalid value (-1) in _bcm_td2_vxlan_match_add when creating a vxlan logical port on a physical port or a trunk.</p> |

Table 72:

| Number | CSP # | Chips | Release Notes For 6.4.2 |
|---------------|--------------|---|---|
| SDK-57197 | 776292 | 56620_B0 | Description: A parity entry in L3_DEFIP_DATA_ONLY can't be cleared by SDK-6.3.6 Root cause: In the earlier software, the table L3_DEFIP_DATA_ONLY is not cached, so the SER engine returns not available, and hence the corrupted entry would not be cleared. Solution: Current software has the SOC_MEM_FLAG_SER_CACHE_RESTORE set to L3_DEFIP_DATA_ONLY, once an SER error was detected on an entry of L3_DEFIP_DATA_ONLY, the ser correction engine will clear/restore the whole L3_DEFIP entry. |
| SDK-57205 | 779120 | 56846_A0 56845_B0 56845_A2 56844_A0 56842_A0 56840_A0 56843_B0 56841_A3 56846_A1 56841_B0 | In previous release, bcm_stat_get/clear() APIs could only handle software counters on CPU port although chip has hardware CPU counters. Now these APIs have been improved to support hardware CPU counters. This improvement only works on TD, TD2, TH chips now. |
| SDK-57207 | 777630 | 56640_A0 56640_A1 56640_B0 | Issue: Packets of size 64 to 75 bytes getting dropped for XE ports. Root Cause: The runt threshold value for XE ports was getting set as 76 instead of the correct value 64. Hence packets of size 64-75 bytes were getting dropped. Fix: For Triumph3 and Katana2, put explicit checks to ensure that runt threshold value is set to correct value, i.e. RUNT_THRESHOLD_XE = 64, RUNT_THRESHOLD_GE = 64 and RUNT_THRESHOLD_HG = 76. Also optimized the function mac_x_init for multiple READ and WRITE for XMAC_RX_CTRL and XMAC_TX_CTRL. Added a single write common for all devices instead of multiple instances as was present previously. |
| SDK-57250 | | 88660_A0 | PON ONU tunnel-ID allocation: So far PON application reserved last 512 tunnel-id entries of PON port 7 by ARAD. An error occurs when trying to set tunnel ID profile mapping. Fixed mapping to allow up to 2016 tunnels-IDs (0-2015) for all PON ports. TX behavior has been changed since this improvement. PTCHs(packet termination control header) of packets sent from CPU should always have SSP(source system port). |
| SDK-57306 | 781729 | 88650_A0 88670_A0 | Change dram_crc_del_buffer_max_reclamis description in Arad/Jericho UM TM. No code changes. |

Table 72:

| Number | CSP # | Chips | Release Notes For 6.4.2 |
|---------------|--------------|--|--|
| SDK-57324 | | 56640_A0 | <p>bcm_policer_group_create API creates a group of policers which are mapped based on the input offset derived from the packet. This mapping is fixed and is not flexible. New API bcm_policer_group_create_with_map provides the flexibility to offset derived from the packet and policer flexibly. This mapping can be given as input through the structure struct bcm_policer_map_t {int count; /* Number of entries in the map */uint8 *offset_map; /* Array of policer offsets corresponding to the offset derived from the packet */}</p> <p>Syntax of the new API : int bcm_policer_group_create_with_map(int unit, bcm_policer_group_mode_t mode, bcm_policer_t *policer_id, int *num_policers, bcm_policer_map_t *offset_map);</p> |
| SDK-57344 | 780748 | All 56548_A0 56546_A0 56545_A0 56544_A0 56542_A0 56541_A0 56540_A0 56545_A1 56540_B0 56541_B0 56546_B0 56544_B0 56547_A0 56545_B0 56542_B0 | Fixed KNET DMA locking issue which could cause duplicate packets to be sent from the bcm_tx() API. |
| SDK-57527 | | 56640_A0 56850_A0 | In case of TD2, CMIC free running clock was pointing to external clock even if no external clock is attached to unit. Fix is provided to address the issue so that internal reference clock is used if no external clock is present on reference pad. |
| SDK-57723 | 787163 | 56846_A0 56845_B0 56845_A2 56844_A0 56842_A0 56840_A0 56850_A0 56855_A0 56843_B0 56841_A3 56846_A1 56841_B0 56854_B0 56854_A0 56850_A1 56851P_A1 56851_A1 56850_A2 56851_A2 56851P_A2 56854_A2 56853_A2 56852_A2 56855_A2 56851_A0 56852_A0 56852_A1 56853_A0 56853_A1 | In the previous release, the validity of niv_src_vif was not checked when calling _bcm_trident_mirror_niv_tunnel_set. In this release, the niv_src_vif is masked with _BCM_TD_MIRROR_NIV_SRC_VIF_MASK when calling _bcm_trident_mirror_niv_tunnel_set |
| SDK-57777 | | 56440_B0 56450_B0 | new config variable mmu_num_subscriber_queues and a macro "BCM_GPORT_UCAST_SUBSCRIBER_QUEUE_GROUP_SYSQID_SET" are defined to form the desired hierarchy tree of subscriber queues on front panel ports. |

Table 72:

| Number | CSP # | Chips | Release Notes For 6.4.2 |
|---------------------|--------------|--|--|
| SDK-57823 | 789287 | 56450_A0 56450_B0 | Fixed the issue of access to non-existent fields in ECC error registers resulting in assertion during ECC interrupt handling by making sure that only the valid fields in the ECC error register are accessed. |
| SDK-57834 | 778524 | 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 | Added support for 64bit statistics counters for BFD endpoints. |
| SDK-57846 | 788171 | 56840_A0 56640_A0 56850_A0 56640_A1 56640_B0 56850_A1 56850_A2 | In earlier release DMA buffer used to download WC firmware was not freed upon detach or exit clean. This has been resolved. |
| SDK-57853 | | 88660_A0 | Trill warmboot. Sw state trill alloc link list size was not correctly calculated at warmboot trill restore, causing incorrect size after warmboot |
| SDK-57859 | 789891 | 56450_A0 56450_B0 | Problem : Old TDM-B was not having flex capability and was not matching to customer requirement i.e. 16x2.5G + 1G(WC0) + 10G(WC1) Fix : New TDM-B is provided to meet 16x2.5G +1G(WC0) + 10G(WC1). |
| SDK-57905 SDK-55025 | 790243 | 56548_A0 56547_A0 | Firescout had a few static modes that could be used to limit 128-v6 and v4 routes from the same shared space. This way of configuration was not flexible as the modes were limited. This improvement removes all the static modes and provides a mechanism which can help users to configure v6/v6 routes flexibly. User can setup limit at route level granularity with the new approach. When the limit is set for 128-V6 routes, then rest of the memory is given to v4/64-v6 routes. user can also configure whether to share 128-v6 routes space with v4 routes. |
| SDK-57983 | 789226 | 56850_A2 | DMA source mode was not set after warmboot. This is fixed |
| SDK-58048 | | 53125_A0 53018_A0 53125_B0 | Fixed segmentation fault encountered when SDK was operated with KNET on the Northstar and Starfighter devices of Robo family. |
| SDK-58055 | 788661 | 56450_A0 56450_B0 | Issue: Access to iproc unimac(ethernet) registers is failing. Rootcause: Access failed in iproc linux since request_mem_region in linux kernel returns NULL. request_mem_region would return NULL when the memory range for specific driver is occupied already. This is because the ethernet driver in iProc was already using the memory specified for unimac registers. Fix: After commenting out the request_mem_region in linux kernel, we can now read/write those registers. |
| SDK-58073 | 790115 | 56334_B0 56334_A0 | Port's enable status would no longer influence soc_phyctrl_loopback_set setting. |

Table 72:

| Number | CSP # | Chips | Release Notes For 6.4.2 |
|-----------|--------|---|---|
| SDK-58083 | | 88650_A0 88660_A0 | VLAN edit: bcm_vlan_translate_action_create () defines a VLAN edit action per LIF in a standard VLAN edit mode. The API can be provided with a physical port and inner/outer VLAN values. The API didn't fail call with VLAN out of range values (>4095). A validation was added. |
| SDK-58118 | 791236 | 56640_A0 56641_A0 56642_A0 56643_A0 56644_A0 56645_A0 56648_A0 56850_A0 56855_A0 56640_A1 56643_A1 56644_A1 56640_B0 56644_B0 56643_B0 56648_B0 56649_B0 56649_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 56851_A0 56852_A0 56852_A1 56853_A0 56853_A1 | In previous release, there was no support to configure RTAG7_MPLS_L2_PAYLOAD_L3_HASH_FI ELD_BMAP.MPLS_L2_PAYLOAD_L3_BITM AP_A/B, RTAG7_HASH_CONTROL.MPLS_PAYLOAD_ HASH_SELECT_A/B on Triumph3, RTAG7_HASH_CONTROL_2.MPLS_PAYLOA D_HASH_SELECT_A/B on Trident2. This has been resolved by providing and implementing bcmSwitchHashL3L2MPLSField0/1, bcmSwitchHashL2MPLSPayloadSelect0/1. |
| SDK-58163 | | 56850_A2 | In previous release, invoking bcm_trunk_set to a existing Trunk or HiGig Trunk would cause flow set table to be totally re-computed. This has been resolved in a manner that the flows assigned to staying members will now be kept without shuffling. |
| SDK-58247 | 787119 | 53018_A0 | Fixed incorrect use of tx channel index of IPROC platform in KNET driver on BCM5301x platforms. |
| SDK-58270 | 790312 | 56150_A0 | The entry status of dual hash search mechanism on Hurricane2 and Greyhound devices were incorrectly reported in the case of hash conflict. This has been fixed in this release. |
| SDK-58329 | 791806 | 56850_A0 56850_A1 56850_A2 | In the previous release, there are some static analysis issues found by customer in the ALPM module. Now those issues have been fixed. |
| SDK-58485 | 796744 | All 56846_A0 56845_B0 56845_A2 56844_A0 56842_A0 56840_A0 56850_A0 56855_A0 56843_B0 56841_A3 56846_A1 56841_B0 56854_B0 56854_A0 56850_A1 56851P_A1 56851_A1 56850_A2 56851_A2 56851P_A2 56854_A2 56853_A2 56852_A2 56855_A2 56851_A0 56852_A0 56852_A1 56853_A0 56853_A1 | In the previous release, the internal priority could not be mapped correctly from the field DSCP in the IP packets with the API bcm_qos_port_map_set on TRIDETNT2. In this release, this issue has been addressed by programming the field TRUST_DSCP_PTR in the table PORT_TAB. |

Table 72:

| Number | CSP # | Chips | Release Notes For 6.4.2 |
|---------------|--------------|--|---|
| SDK-58501 | 794058 | 56850_A0 56850_A1 56850_A2 | In the previous release, <code>bcm_fcoe_route_find</code> didn't support the return of a <code>l3_intf_id</code> . In this release, it supports the return of the <code>l3_intf_id</code> . |
| SDK-58525 | 794780 | 88650_A0 88650_B0 88650_B1 88660_A0 88670_A0 | The corrective action for interrupt <code>FCT_UNRCH_DEST_EVENT</code> doesn't work for unit#0 - Fixed. |
| SDK-58550 | 797110 | 88750_B0 | FE13 Isolation is intended for a planned removal of an FE card without affecting traffic. Executing the current isolation sequence on an FE13 while under traffic will cause traffic loss. The reason behind it is that the FE13 isolation sequence will cause the FE3 RTP table to be updated before the FE1 RTP table. Therefore traffic will still go into the fabric plane, but the FE3 will not be able to forward it, and will be forced to drop the traffic. Workaround: Isolate an entire FE plane, by masking the relevant links in the FDT across all the FAPs in the system. Then execute the isolation sequence on the FE13 card. This option will stop all data cells from running through the fabric, allowing a safe extraction of a single FE card. Fabric plane redundancy is required in this case. In order to stop/start sending traffic over a FAP link use the following API: <code>bcm_fabric_link_control_set(unit, link, bcmFabricLinkTxTrafficDisable, disable);</code> The isolate sequence should disable to links (across all the FAPs) that connected to the relevant fabric plane. |
| SDK-58641 | 799444 | 56640_A0 56640_B0 | Added support in SDK software to use NL 11K series 20M external TCAM with the new 56545K SKU. |
| SDK-58642 | 799204 | 56850_A2 | Issue :- Trident2 :Action <code>bcmFieldActionIngressGportSet</code> in VFP configures <code>FIELDS_ACTIONf</code> which is not required. Fix :- Added relevant checks to not configure <code>FIELDS_ACTIONf</code> for <code>bcmFieldActionIngressGportSet</code> in Trident2. |

Table 72:

| Number | CSP # | Chips | Release Notes For 6.4.2 |
|---------------------|--------------|---|--|
| SDK-58653 | | 56649_A0 56643_B0 56648_B0 56640_B0 56854_B0 56644_B0 56854_A0 56649_B0 56644_A1 56643_A1 56640_A1 56851_A0 56852_A0 56852_A1 56853_A0 56853_A1 56640_A0 56643_A0 56644_A0 56641_A0 56642_A0 56850_A0 56855_A0 56645_A0 56648_A0 56850_A1 56855_A2 56852_A2 56853_A2 56854_A2 56851P_A2 56851_A2 56850_A2 56851_A1 56851P_A1 | In previous release, there was no support to configure RTAG7_MPLS_L2_PAYLOAD_L3_HASH_FI ELD_BMAP.MPLS_L2_PAYLOAD_L3_BITM AP_A/B, RTAG7_HASH_CONTROL_2_64.MPLS_PAY LOAD_HASH_SELECT_A/B on KATANA2. This has been resolved by providing and implementing bcmSwitchHashL3L2MPLSField0/ 1, bcmSwitchHashL2MPLSPayloadSelect0/1. |
| SDK-58698 | 799433 | 56150_A0 53344_A0 | An unexpected timeout of draining packets happened when unplugging the cable from TSC ports of BCM53344 platform. This has been resolved with correct port disable sequence. |
| SDK-58699 | 795957 | 56640_B0 | Although flexible scaling feature was supported in TR3, due to a bug in TR3 feature list, flexible scaling feature for LPM was not enabled. Applications were not able to add 128b routes due to this. Enabled flexible scaling feature in TR3. |
| SDK-58725 | 799988 | 56450_A0 56450_B0 | In the previous releases when more than one MPLS port share the same egress queue and if one of the MPLS port sharing the queue was removed then ING_QUEUE_MAP was deleted as no reference counter was maintained on ING_QUEUE_MAP. From this release added support for maintenance of reference counter on ING_QUEUE_MAP entries. ING_QUEUE_MAP entry is deleted only when all MPLS ports sharing the egress queue entry are deleted. |
| SDK-58749 SDK-63028 | 800086 | 56450_A0 56450_B0 | 1G speed is advertised with XE port or <=10000 only and not on HIGIG port After flex-io operation on hg port, max-speed still remains as hi gig speed (>=13g) and port is not treated as normal ethernet (ge/xe port). Speed Capability decision was based on max-speed. Due to this max- hi-gig speed, changing speed to 1G port was not possible. Now ORed max-speed with IS_XE_PORT() and issue is resolved |
| SDK-58750 | 792732 | 88650_A0 88650_B0 88650_B1 88660_A0 | Trill Adjacency check: 1. encap_id (Link-layer-outlif) now support full range 2. Fix information of bcm_trill_port_get for Adj. database. |
| SDK-58848 SDK-58983 | 801222 | All | Fixed major lock release issues in SDK code. |

Table 72:

| Number | CSP # | Chips | Release Notes For 6.4.2 |
|----------------------------------|--------|--|--|
| SDK-58855 | 778638 | 56850_A1 | The test in this JIRA involved incomplete AN mode for a given port and that port was flex-ported to another port mode. Sometime HW requires a clean up to clear the incomplete AN mode (CRTSC_616) . This JIRA fix adds the fix to clean up the incomplete AN mode prior to flex port transition. |
| SDK-58856 | 795594 | All | The CLI command "dump pcic" has been made independent of the BDE functions and instead it would now use the cm_device_t function vectors |
| SDK-58886 | 802162 | All 56334_B0 56334_A0 56850_A0 56850_A1 56850_A2 | In earlier releases, internal resource (next_hop/vx_and_swap objects etc.) could not be deleted if customer invoked bcmx_trunk_destroy first and then bcmx_mpls_port_delete. This has been fixed in this release. |
| SDK-58890 | 781333 | 56440_A0 56440_A1 | For Katana (and Saber) the counter SOC_COUNTER_NON_DMA_COSQ_DROP_PKT is implemented with a flex counter which counts packets that are discarded by the MMU. By default, this counts packets that are discarded by the MMU for a variety of reasons. One of them is oversized packets. When the MMU flushes a packet because it is oversized, it increments this flex counter. This is not the desired behavior. The fix is to set the bit OP_CNT_CFG in THDO_DROP_CTR_CONFIG which would ensure that counters will only count packets that have been dropped due to output thresholding checks, i.e. those within op_drop_mask. |
| SDK-58895 | | 88650_B1 88660_A0 | This table is static table. Therefore shadowing this memory should be allowed. This table removed from dynamic table list. |
| SDK-58901 | 799623 | 88650_A0 88660_A0 | When L2 frame has an 802.3 format where the Ethertype is a Length field, the EXP/DSCP value does not match TC/DP to EXP/DSCP mapping table. This happens when packet is bridged and encapsulated by PWE or IP tunnels. The above functionality conflicts with ECN capabilities. In case ECN is not required in the system we introduce two new SOC properties to disable ECN functionality: mpls_ecn_mode value 0-disabled, ip_ecn_mode value 0-disabled. In case ECN is required in the system we suggest workaround in FP cint_field_ecn_cni_extract.c |
| SDK-58906 | | 88670_A0 | Jericho Global LIF: Support the Jericho LIF differentiation between a Global LIF and a Local LIF. |
| SDK-58913 | | 56850_A0 56850_A1 56850_A2 | In the previous release, the SVP multiple MTPs mirroring and DVP multiple MTPs mirroring were not supported. In this release, this issue has been addressed by adding code changes to support these two mirroring modes. |
| SDK-58919 SDK-58191 SDK-58894 | 799048 | All | BCM diag shell commands did not work for a system in which the total number of devices <= device ID (i.e. when they are 'holes' in unit IDs, for example - 2 units, IDs '0' & '2'). |



Table 72:

| Number | CSP # | Chips | Release Notes For 6.4.2 |
|---------------|--------------|-------------------------------|---|
| SDK-58920 | 802188 | 56450_B0 | Earlier MSI EP mapping was implemented within the BDE (that supported MSI interrupts). Customers who did not plan to use the Broadcom BDE then had to implement the MSI mapping in their BDE code. This issue has been fixed by adding the MSI EP mapping to SOC function 'soc_pci_ep_config'. |
| SDK-58958 | 802230 | All | Added check for XW ports used in helix4 while enabling Frame length check. |
| SDK-58969 | 797443 | 56850_A0 56850_A1 56850_A2 | In previous releases, the macro definition MAC_LSB_SHIFT was different for big endian and little endian system. Actually it should be same in both endian systems. This has been fixed in this release. |
| SDK-58981 | 798049 | 56850_A0 56850_A1 56850_A2 | In earlier releases SDK destination port was modified unexpectedly when aged through bcm_l2_replace. This has been resolved. |
| SDK-59047 | 802819 | 56450_B0 | In BCM 5645X chips after flex port operation the packets will not egress if the port uses external memory. Resolved by adding the missing port reinit for mmu after flex port operation. |
| SDK-59048 | 803885 | 56450_B0 | <p>Description: Unexpected Parity Error on LLS_ERROR register.</p> <p>The root cause of this issue is as following: When changing port loopback mode from LB=MAC or LB=PHY to LB=NONE, the operated port will link down after a while and in the time gap, traffic won't be stopped forwarding to the operated port until link down happens to it. Meanwhile, the mode changing sequences will modify the MMU associated to the operated port, this causes the MMU issue.</p> <p>Solution: When changing port loop back mode from LB=MAC or LB=PHY to LB=NONE, adding code to force the port to link down to prevent traffic being forwarded to the port which is being operated.</p> |
| SDK-59058 | 790799 | 56640_A0 56640_A1 56640_B0 | This is an improvement to clear initialize the external TCAM (NL11K) that can be used in conjunction with 56640 chips. The entire TCAM database is cleared using a fast initialization sequence in order to keep the time consumed to a minimum. |
| SDK-59066 | 793397 | 56850_A0 | In previous releases, the customer could experience a segment error when using stacking application sample code to configure symmetric HG stack links on TD2. This was caused by the SDK using an incorrect maximum number of fabric trunk groups. The issue has been fixed. |

Table 72:

| Number | CSP # | Chips | Release Notes For 6.4.2 |
|---------------|--------------|-------------------------------|--|
| SDK-59074 | 800863 | 56846_A0 | SER injection is accomplished by disabling parity, injecting error into hardware table, and then enabling parity again. In earlier SDK releases, <code>soc_trident_pipe_select()</code> which is used to set pipe-line on Trident was invoked after disabling parity. So the parity control register on Y-pipe was not configured and parity was not disabled on Y-pipe. In this release, <code>soc_trident_pipe_select()</code> has been placed before setting parity control register to disable parity. |
| SDK-59087 | 804148 | 56440_A0 56450_A0 56450_B0 | In the previous release the <code>STRICT_PREAMBLE</code> and <code>PROCESS_VARIABLE_PREAMBLE</code> was not configured for speed less than 2.5G. This issue has now been addressed by setting <code>STRICT_PREAMBLE=0</code> and <code>PROCESS_VARIABLE_PREAMBLE=1</code> in <code>XMAC_RX_CTRL</code> for speed less than and equal to 2.5G. |
| SDK-59101 | 790579 | All | Fixed Linux kernel link errors appeared when Makefile did not include DNX chips. |
| SDK-59154 | | 56850_A0 56850_A1 56850_A2 | In previous releases, in <code>bcm_l3_route_add</code> API if parameter flags and L3 interface object consistency were not checked for ECMP and could lead to wrong reference count update. In current release, parameter flags and L3 interface object consistency are checked for ECMP. |
| SDK-59155 | | 88670_A0 | Added SOC properties for configuring core symmetrically, asymmetrically, and number of active cores. |
| SDK-59178 | 803680 | 88750_B0 88650_B1 | This issue fixed at 6.3.7 and 6.4.2 versions. The fix is solving a problem which produced at SDK-58398 (masking all interrupts by default). |
| SDK-59194 | 804732 | All | In the previous release, the left egress mirror could not work if one of the two egress mirrors was deleted when flexible mirroring destinations was enabled. In this release, this issue has been addressed by programming the register <code>MIRROR_SELECT</code> correctly when the egress mirror is deleted. |
| SDK-59198 | 800106 | 56846_A0 56840_A0 | In previous release, "PORT" parameter was not retrieved correctly for registers per warpcore in the routines <code>_soc_trident_parity_reg_set</code> and <code>_soc_trident_parity_reg_get</code> on Trident+ devices. This would cause system crash when parity error occurred in these registers. The operation that calculates and gets the correct PORT parameter for registers per warpcore has been added for these two routines. |
| SDK-59211 | | 88650_A0 88650_B0 88660_A0 | MPLS: when using <code>bcm_mpls_port_get</code> field <code>vccv_type</code> was not filled (only value supported is <code>bcmMplsPortControlChannelTtl</code>). This is fixed. |
| SDK-59219 | | 88670_A0 | Support 2nd myMAC function in Jericho for ROO improvements. |

Table 72:

| Number | CSP # | Chips | Release Notes For 6.4.2 |
|---------------|--------------|-------------------------------|---|
| SDK-59235 | | 56640_A0 56640_A1 56640_B0 | In previous releases, when trying to create an egress vlan entry on BCM5664X, for virtual ports, the API was giving an assertion, because it was trying to configure an invalid field in egress vlan xlate memory. This is fixed by correcting the field name. |
| SDK-59237 | | 56334_A0 56304_B1 56150_A0 | APIs required for supporting 1-step and 2-step timestamping for Hurricane2 devices has been added in this release. |
| SDK-59238 | | 56450_A0 | KT2 1588 Transparent timestamping support is added. |
| SDK-59250 | 770333 | 56640_A0 56640_B0 | In earlier releases PFC on 100G port was not working correctly. When configuring HSP port on TR3 there is a 1 bit shift seen in cos mapping. Priority 2 is mapped to cos0, etc. This is because UC COS0 is tied to L0.1 and so on. This was fixed to assign L0 nodes such that first L0 node is 4X-1. HSP port consumes only 2 index of FC_MAP_TBL since it looks like the mapping in Tr3 would be similar to TD2 for HSP case. Thus the hw_index is changed to 236+8 for ce port 1. |
| SDK-59252 | | 88650_B1 88660_A0 | In FCoE module, when updating NPV port control, using API <code>bcm_port_control_set(unit, src_port, bcmPortControlFcoeNetworkPort, VALUE)</code> behavior is changed to be consistent with other devices flow. Now, to set port to source routing, VALUE should be set to '0'. For port to destination routing, VALUE should be set to '1'. |
| SDK-59263 | | 56850_A0 56850_A1 56850_A2 | Any read operations from CPU could result in the HW aging or L2_BULK triggered HW aging mechanism sometimes incorrectly deleting entries from the L2_ENTRY table. The SW triggered HW aging through L2_BULK operations was introduced to fix this issue. In order to protect L2_BULK operation from all read operations from CPU, not only will the SW aging thread grab the mutex locks for all the memory read operations needed before the L2_BULK operations to trigger the HW aging, but also has the highest priority in all SAL threads to void preemption by other SDK threads. |
| SDK-59266 | 806043 | 56846_A1 | In previous releases the sizes of <code>l2_hitda_only</code> and <code>l2_hitsa_only</code> tables were 16K. The fix was to reduce <code>l2_hitda_only</code> and <code>l2_hitsa_only</code> tables to 8K, as each of them can contain the hit bits for 8 L2_entry and total L2_entry is 64K. |

Table 72:

| Number | CSP # | Chips | Release Notes For 6.4.2 |
|-----------|--------|-------------------------------|--|
| SDK-59271 | | 88650_A0 88660_A0 | add support for Trill Transparent Service. Enabled by soc property <code>trill_transparent_service</code> . Trill transparent service allows to carry up to one customer vlan in a trill FGL network This carried customer vlan should be ignored by Trill campus. Consequently: at transit Trill, for Trill Transparent Service in pruning mode, pruning won't involve the carried customer vlan. at egress Trill, for Trill Transparent Service, identify the local vsi won't involve the carried customer vlan. For more informations see <code>cint_trill_tts.c</code> |
| SDK-59286 | 804564 | 56629_B0 56624_A0 | BCM_COLOR_INNER_CFI color setting for "bcm_port_tpid_add" API is not valid for TRX devices. TRX only allows OUTER_CFI to CNG mapping. But the API was not returning error. This has been fixed and will now reject BCM_COLOR_INNER_CFI color setting for "bcm_port_tpid_add" and return BCM_E_UNAVAIL. |
| SDK-59290 | 804355 | 56640_A0 56640_A1 56640_B0 | IPv6 Packets were not hitting the external FP rule that matches SMAC and VRF for <code>_FP_EXT_ACL_L2_IPV6</code> mode. The issue is fixed by changing the offsets of qualifiers during external field qualifier initialization and by programming the correct offsets in LTR (Logical Table Registers) . |
| SDK-59307 | 804642 | All 56450_A0 56450_B0 | In the previous release the tr 140 test did not have an erring pattern print when BIST fails. The erring pattern print has been added now to locate the exact memory location it fails and the pattern used only when BIST fails. |
| SDK-59327 | | 56340_A0 | <code>bcm_regex_match_check()</code> was not taking account of chaining overhead while calculating regex DFA size, This issue has been fixed. |
| SDK-59337 | | 88750_A0 | <code>serdes_qrtt_active</code> soc property has 2 bugs: - it is unable to use it without <code>.<unit number></code> - it has a bug if the quad number isn't divisible by 4 <code>serdes_qrtt_active</code> soc property is fully supported, and can be used without <code>.<unit></code> and with any valid quad number |
| SDK-59352 | | 56540_A0 56540_B0 | On FB4 and TR3, the field name <code>SUPPRESS_VXLT</code> in <code>FP_POLICY_TABLE</code> was changed to <code>HI_PRI_SUPPRESS_VXLT</code> . And hence the SDK crashed due to accessing the invalid field during entry install. Fixed the issue by validating the field before accessing. |
| SDK-59358 | 805970 | 88650_A0 88660_A0 | Fix to Arad ingress reset sequence |

Table 72:

| Number | CSP # | Chips | Release Notes For 6.4.2 |
|---------------------|--------------|-------------------------------|---|
| SDK-59371 | | 56640_A0 56340_A0 56850_A2 | <p>Problem: No qualifier to match on class value assigned based on SourceGport in Egress Stage of FieldProcessor.</p> <p>Solution: A new qualifier (IngressInterfaceClassVPort) is implemented for matching Source GPort based class value in keys defined for bcmstageEgress. This can be used to match a value assigned to a packet using <code>bcm_port_class_set</code> based on ingress Gport / source Gport in Egress Stage of Field Processor.</p> |
| SDK-59383 | 806046 | 56850_A0 | <p>In previous releases, <code>soc_mem_generic_insert</code> is running infinitely doing ser correction and <code>soc_schan_op</code> for the table <code>L3_ENTRY_IPV4_UNICAST</code> if there is parity error in this table. For some reason if the correction does not succeed even though <code>soc_ser_sram_correction</code> returns <code>SOC_E_NONE</code>, then <code>soc_mem_generic_insert</code> does SER correction infinitely. A <code>schan</code> retry limit has been introduced. Once this limit has been reached, ser correction and table operation retry will be terminated and the infinite loop will be avoided.</p> |
| SDK-59405 | 806511 | 88030_B0 | Added code to support SGMII ports. |
| SDK-59408 SDK-43524 | 803517 | 56840_A0 | <p>WC40 port stopped egressing pkts after link down/up event because of errata 2.6 mentioned in BCM56840-ES107. SW work around is provided to reset CL82 state machine when port goes down.</p> |
| SDK-59414 | | 56440_A0 56440_B0 | <p>On BCM56440, the default TSPLL reference has been changed from an external 12.8MHz reference to the internal TSPLL source. Users with an external TSPLL reference should set the configuration SOC property <code>PTP_TS_PLL_FREF</code> to the value of the external reference frequency in Hz. For a 12.8MHz oscillator, <code>PTP_TS_PLL_FREF=12800000</code> should be used.</p> |
| SDK-59417 | | 56850_A0 56850_A1 56850_A2 | <p>In earlier release, when trying to clear the dest hit bit in L2 entry, L2 destination was unexpectedly replaced by <code>bcm_l2_replace()</code> API. This has been resolved.</p> |
| SDK-59419 | | 88660_A0 | IHB 1B & 2B ECC mask enabled for all memories at Arad+. |
| SDK-59424 | | 88670_A0 | <p>Routing over AC: Provided a CINT example for the application - <code>cint_route_over_ac.c</code>. The CINT should be used only by the Jericho device.</p> |

Table 72:

| Number | CSP # | Chips | Release Notes For 6.4.2 |
|-----------|--------|--|---|
| SDK-59425 | | 88650_A0 | In TCAM management, TCAM banks may be accessed by different block 'owners': Vlan Translation (VT), Tunnel Termination (TT), Forwarding, OAM, Ingress-PMF-1st-cycle, Ingress-PMF-2nd-cycle, Egress-PMF. A single owner can be configured per bank so that two blocks are not accessing the bank at the same clock. This limitation was not prevented in the current Drivers for specifying owners (e.g. when TCAM bank owner is VTT, then it can be accessed by VT and TT, same for Ingress-PMF Cycle-0 and Cycle-1). This is fixed. |
| SDK-59455 | 806478 | 56450_A0 56450_B0 | When L3 ingress mode is set, added support in <code>bcm_mpls_tunnel_switch_get()</code> API to return <code>info->ingress_if</code> for BCM5644x and BCM5645x devices. |
| SDK-59464 | 791410 | 88660_A0 | Cosq: Two flags are added as below: 1) <code>BCM_COSQ_FC_PORT_OVER_PFC</code> for Mapping PFC source to port target. 2) <code>BCM_COSQ_FC_INTF_COSQ_PFC</code> for Mapping PFC source to relevant priority in all ports on same interface. For a calling sequence example, refer to <code>cint_arad_pfc_reception_mapping.c</code> . |
| SDK-59476 | | 88660_A0 | The <code>avs read diagnostics</code> shell command was broken for Arad+ (worked properly for Arad). This command is used to retrieve recommended operating voltage as define upon manufacturing. |
| SDK-59495 | | 56340_A0 | Improvement was requested to add FLOW end reason code in App-IQ engine generated Flow Tracker end report. Provided the support for the same. |
| SDK-59527 | 806930 | 56450_A0 56450_B0 | Enabled <code>bcm_port_l3_mtu_set/get</code> APIs for BCM5645x and BCM5644x devices. |
| SDK-59529 | 807602 | 56450_A0 56450_B0 | Support has been added for CoE subport gport in <code>bcm_port_tgid_set/get</code> API for BCM5645x devices. |
| SDK-59548 | | 56640_A0 56450_A0 56640_A1 56640_B0 56450_B0 | In earlier releases there was no SDK support for inner VLAN tag modification. Now fixed to add the support for inner VLAN tag modification through the usage of <code>bcm_qos_map_XXX()</code> API and <code>BCM_QOS_MAP_L2_INNER_TAG</code> flag to create profiles in <code>EGR_MPLS_EXP_MAPPING_2</code> table. |
| SDK-59553 | | 88650_A0 88660_A0 | OAM: <code>bcm_oam_loss_get()</code> returned incorrect values because <code>loss_farend</code> and <code>loss_nearend</code> were miscalculated. |
| SDK-59568 | | All | In earlier releases, there was no way to use the API <code>bcm_rate_bandwidth_set</code> to set the rate to 0kbps speed. If the speed was set to zero, the assumption was to disable metering. Now, to disable metering, <code>kbits_sec</code> parameter has to be passed as <code>BCM_RATE_DISABLE</code> and to set the rate to zero, <code>kbits_sec</code> parameter has to be passed as <code>BCM_RATE_BLOCK</code> . |

Table 72:

| Number | CSP # | Chips | Release Notes For 6.4.2 |
|-----------|--------|--|---|
| SDK-59570 | | All | In earlier releases, there is no way to use the API <code>bcm_rate_bandwidth_set</code> to set the rate to 0kbps speed. If the pass the speed as zero, the assumption was to disable metering. Now, to disable metering, <code>kbits_sec</code> parameter has to be passed as <code>BCM_RATE_DISABLE</code> and to set the rate to zero, <code>kbits_sec</code> parameter has to be passed as <code>BCM_RATE_BLOCK</code> . |
| SDK-59573 | 806883 | 88030_B0 | handle TMU error interrupt to avoid hash collision errors during hash insert for bcm88030 |
| SDK-59590 | 798399 | 88650_B1 | Cosq: CFC_EN bit in CFC_ENABLERS register is used to enable device-level flow control. This bit should be set after all other CFC settings are done. Otherwise, some errors may occur. After the fix, the bit will be set after all other CFC settings are finished. |
| SDK-59617 | | 56450_B0 | Added support to use port class id upto 127 in <code>bcm_vlan_translate_egress_action_add()</code> API for BCM5645x devices. |
| SDK-59636 | | 88650_A0 88660_A0 88670_A0 | Add a new class, <code>bcmPortClassProgramEditorEgressPacketProcessing</code> , for the <code>bcm_port_class_get/set</code> API. Used to manage a programmable editor variable in the egress. |
| SDK-59669 | 808665 | 56450_A0 56450_B0 | In the previous releases the TTL of L3 route label cannot be read back via <code>bcm_l3_egress_get</code> . This has been fixed to read TTL value of L3 route label for requested entry from <code>EGR_MPLS_VC_AND_SWAP_LABEL_TABLE</code> table and return to the user via <code>bcm_l3_egress_get</code> . |
| SDK-59681 | | 88650_A0 88660_A0 88670_A0 | In order to prevent redundant printouts upon <code>bcm.user/pcid</code> initialization, following need to be added to soc file : <code>debug bcm link, attach warn</code> <code>debug soc ddr warn</code> <code>debug soc common err</code> <code>debug sys verinet warn</code> |
| SDK-59686 | | 88650_A0 88650_B0 88650_B1 88660_A0 88670_A0 | In Ingress Field Processor, using qualifiers <code>bcmFieldQualifyIp4/Ip6/Mpls</code> indicates that <code>bcmFieldQualifyInnerSrcMac</code> and <code>bcmFieldQualifyInnerDstMac</code> qualifiers should be taken from third sub-header instead of the second. In practice, when <code>bcmFieldQualifyIp4/Ip6/Mpls</code> are used, then all qualifiers are taken from wrong header, instead of only inner Source/Destination Mac. This is fixed. |
| SDK-59690 | 804106 | 56340_A0 | In this release added the phy control bcm shell comand support for qsgmii serdes of Helix4 |

Table 72:

| Number | CSP # | Chips | Release Notes For 6.4.2 |
|---------------|--------------|--|---|
| SDK-59700 | | 56850_A0 56850_A1 56850_A2 | <p>Description: SER failed to correct entry of <code>ING_FLEX_CTR_COUNTER_TABLE_[0 to 7]</code> once a SER error occurred on it.</p> <p>Root cause: The reported entry index is the offset of the reported entry to the first entry of <code>ING_FLEX_CTR_COUNTER_TABLE_0</code>, but it should be the offset of the reported entry to the first entry of <code>ING_FLEX_CTR_COUNTER_TABLE_X</code> which the entry belongs to.</p> <p>Solution: The software now calculates the index again once we discover the reported entry is one of <code>ING_FLEX_CTR_COUNTER_TABLE_[0 - 7]</code>, the algorithm is using lower 12 bits of the index as the new index.</p> |
| SDK-59705 | 805285 | All | <p>In L2 MAC table, when calling the API function <code>bcm_l2_addr_delete_by_trunk()</code>, the trunk ID was not masked properly when traversing the MACT, resulting in unintended deletion of entries. The masking of the trunk ID is now fixed.</p> |
| SDK-59710 | | 88650_B1 88660_A0 | <p>AC gport can be found via matching info. An error occurs when trying to get LIF gport via matching info for ingress only ACs. After the fix, VLAN gport can be found with <code>BCM_VLAN_PORT_CREATE_INGRESS_ONLY</code> flag.</p> |
| SDK-59761 | 808170 | 56450_A0 56455_A0 56450_B0 | <p>Port command was not working properly in SDK for the Port advertisement field. The port advert mode was not getting set when done via CLI command.</p> <p>Root cause of this issue was that the action mask that enables the port advert field was altered to default this is port ability instead of port mode.</p> <p>Handled this issue by modifying the action mask that enables port advert field to set it by default to port mode.</p> |
| SDK-59764 | | 88660_A0 | <p>BFD: properly set the BFD rate given the parameter <code>bfd_period</code> in <code>bcm_bfd_endpoint_create()</code>.</p> |
| SDK-59765 | | 88650_A0 88660_A0 | <p>BFD: When using a high Detection Time for accelerated endpoints in <code>bcm_bfd_endpoint_create()</code>, the calculation may be wrong. Calculation is done by taking <code>local_min_rx * remote_detect_mult</code>. This value may not exceed 2000000 in MS.</p> |
| SDK-59823 | 808861 | 56850_A0 84328_A0 56850_A1 84328_B0 56850_A2 | <p>It was reported that when there is an external PHY that doesn't support TX squelch, the squelching action would return "SOC_E_UNAVAIL", which would lead to the failures of some loopback related operations.</p> <p>The fixing was to use PHY notify event to squelch the TX on internal PHY instead of calling PHY control set to squelch the TX on external PHY when the external PHY is present.</p> |

Table 72:

| Number | CSP # | Chips | Release Notes For 6.4.2 |
|----------------------------------|--------------|-------------------------------|--|
| SDK-59833 | 804363 | 56850_A0 56850_A1 56850_A2 | In previous releases, the conflicting MAC addresses couldn't be retrieved correctly due to a typo in <code>bcm_tr_dual_l2_conflict_get</code> . The issue had been fixed. |
| SDK-59839 | | 88650_A0 88660_A0 | L3: The API <code>bcm_l3_ingress_get()</code> retrieve some RIF related info that can also be set through the related API <code>bcm_l3_ingress_create()</code> . One of the retrieved fields is the VRF of the RIF. The VRF field wasn't updated by <code>bcm_l3_ingress_get()</code> although it was set by <code>bcm_l3_ingress_create()</code> . <code>bcm_l3_ingress_get()</code> was modified to retrieve the VRF field. |
| SDK-59853 | | 88660_A0 | In ARAD+, when using external TCAM for forwarding, RPF and forwarding searches were always performed serially on a single database, using SIP and DIP respectively in search keys. A new SOC property is added to enable the user to perform forwarding and RPF searches on duplicated databases in parallel (as in ARAD): <code>custom_feature_ext_rpf_fwd_parallel</code> - when set, forwarding and RPF searches are performed in parallel. When the SOC property is set, in case of IPv4/6 + RPF forwarding query, external ACL databases IDs are changed to 2 and 3. The actions sizes for ACL databases are also changed accordingly: The action size for ACL database 0 is 64 bits. The action size for ACL database 1 is 16 bits. The action size for ACL database 2 is 32 bits. The action size for ACL database 3 is 24 bits. All of the changes above apply only to ARAD+ devices. |
| SDK-59854 | 809432 | 56340_A0 56547_A0 | <code>wcmmod_power_control()</code> was powering off global PLL block when one lane was disabled, which caused all 4 lanes to be powered down. Fixed to power down global PLL block when all 4 lanes are disabled. |
| SDK-59862 | 779893 | 88650_B1 88660_A0 | Stacking systems are transmitting between the different systems the whole packet, including the internal headers (FTMH + extensions, PPH + extensions, User-Headers if present). In case the user-headers are present in the system, the second stacking system was adding again user-headers to the packet. This is fixed. |
| SDK-59864 SDK-61165 SDK-61022 | | 88660_A0 | In metering, the meter configuration is optimized for the best rate accuracy. However the configuration was not optimized to have the highest bucket update rate. This created some issues when the traffic is composed of bursts and the bucket size is small. This fix changes the calculation of the values to configure to have the best possible bucket update rate, without having any impact on rate accuracy. |

Table 72:

| Number | CSP # | Chips | Release Notes For 6.4.2 |
|---------------|--------------|--|--|
| SDK-59866 | | 56450_A0 56450_B0 | <p>Problem: Access to <code>ING_PHYSICAL_PORT_TABLE</code> in traffic was causing corruption and behaviour was unpredictable.</p> <p>Fix: 1) Added KT2-B1 support</p> <p>2) Fix for <code>ING_PHYSICAL_PORT_TABLE</code> corruption happening in hw Read and write to <code>ING_PHYSICAL_PORT_TABLE</code> access is protected by writing 1 to 0</p> <p><code>INQ_Q_BEGINr:ING_PHYSICAL_PORT_S</code> <code>BUS_WITH_PKT_DISABLEf</code></p> |
| SDK-59898 | 701984 | 88650_A0 | <p>Disabling a port, using <code>bcm_port_enable_set()</code> fails since EGQ fail to drain. Fixed</p> |
| SDK-59917 | | 56640_A0 56640_A1 56640_B0 | <p><code>bcm_cosq_gport_scheduler_set()</code> API does not seem to take effect while setting the scheduler to WRR. Turns out, even though the API does set the register for enabling WRR initially, it gets overwritten later on. This has been rectified by changing code such that the register change is done towards the end of the API implementation.</p> |
| SDK-59934 | 811343 | 56850_A0 | <p>Root cause: Once a ser error occurred on a entry of memory of <code>L3_DEFIPm</code>, the correction handle will invoke routine <code>soc_generic_ser_process_error</code> to correct it. This routine is a common one for all chips. But each chip inputs a chip based specific event not a BCM event. The chip based specific event varies on each chip. But in the routine, it only deals a SER error, so we need raise a PARITY error detected event. The existing code really has the code to raise a event but with a wrong type since it used the <code>err_type</code> directly. As a result, the event reported in this case would be different.</p> <p>After invoking the SER correction routine, a <code>SOC_SWITCH_EVENT_DATA_ERROR_LOG</code> should be reported if there is a valid log ID available. But the existing code did nothing.</p> <p>Solution: Correct the wrong reported type to <code>SOC_SWITCH_EVENT_DATA_ERROR_PARI</code>TY and adding code to report <code>SOC_SWITCH_EVENT_DATA_ERROR_LOG</code> if a valid log ID is available after invoking the SER correction routine can resolve the issue.</p> |
| SDK-59955 | 808817 | 88650_A0 88650_B0 88650_B1 88660_A0 | <p>L2 MACT Flush: Added support for 2 fields flush in application-based-allocation mode using <code>bcm_l2_replace_match</code> api with valid <code>match_addr.dest</code> & <code>match_addr.encap_id</code> fields.</p> |
| SDK-59966 | | 56640_B0 56850_A2 | <p>Fixed an indexing issue in LPM algorithm that allocates space for the routes in <code>L3_DEFIP</code> TCAM. The issue was specific to the case of the TCAM being in paired mode and LPM scaling is enabled (config property <code>lpm_scaling_enable=1</code>).</p> |

Table 72:

| Number | CSP # | Chips | Release Notes For 6.4.2 |
|---------------|--------------|---|--|
| SDK-59974 | 809811 | 56440_A0 56440_A1 56450_A0 56440_B0 56455_A0 56450_B0 | In the previous release the priority given in <code>bcm_vlan_dtag_add</code> was not taken as the outer tag priority. ING_VLAN_TAG_ACTION_PROFILE table needed to program by setting <code>SIT_OPRI_ACTION</code> field to set the priority field. |
| SDK-60017 | 806360 | 88650_A0 88640_A0 88650_B0 88650_B1 | OAM: Reduce running time of <code>bcm_oam_endpoint_create()</code> and <code>bcm_oam_endpoint_action_set()</code> by 50%-60% |
| SDK-60025 | 786758 | 88650_A0 88650ACP_A0 88650_B0 88650_B1 88660_A0 | In Counter Processor, under Egress TM mode, the Counter Engine can differentiate between different Traffic Class, even if the port is set under one priority level. This was blocked in the Driver, and fixed now. |
| SDK-60029 | | 88650_A0 | Cell drops occurred on a system with single fabric pipe BCM88650 and dual fabric pipe BCM88750. Such a single fabric pipe BCM88650 should be configured as follow: 1. Set to single fabric pipe mode <code>is_dual_mode.BCM88650=0</code> 2. Adjust fabric cell format to dual pipe mode system <code>system_is_dual_mode_in_system.BCM88650=1</code> |
| SDK-60041 | 812854 | 56150_A0 | Fix the packet loss issue during EEE mode on GE port with UNIMAC. |
| SDK-60042 | | 88660_A0 | Added support in BFD Remote Server. To add BFD endpoint to the OAMP server the flag <code>BCM_BFD_ENDPOINT_HW_ACCELERATION_SET</code> should be used in <code>bcm_bfd_endpoint_create</code> api. For usage example see <code>cint_bfd.c</code> |
| SDK-60048 | 803308 | 56624_B0 56624_A0 56624_A1 56514_A0 56334_A0 | memscan support is added for TCAM error detection/correction on 56624, 56334 and 56514 chips. |
| SDK-60049 | | 88650_A0 88650_B0 88650_B1 88660_A0 | soc property length limitation cause segmentation fault at trill init. Change soc property max length to 128 characters and add test to prevent segmentation fault. |
| SDK-60056 | 812600 | 88650_B1 88660_A0 88670_A0 | In Field Processor, the support of cascaded ingress-egress lookup was possible only for packets without Learn-Extension header. If <code>custom_feature_cascaded</code> egress learning SOC property is enabled, a Learn-Extension header is added to all the Ethernet packets, and cascaded ingress-egress lookup is supported in this case. |

Table 72:

| Number | CSP # | Chips | Release Notes For 6.4.2 |
|-----------|--------|--------------------------------|---|
| SDK-60070 | 811441 | 56450_A0 56450_B0 | <p>Problem: Earlier interface mode retrieval method was based on PortType in legacy Xenia driver code (i.e. XE_TYPE ==> XGMII, GE ==> GMII etc). For WC core driver, interface mode was based on port speed. This was creating confusion</p> <p>Solution: Chaged interface mode retrieval method in Xenia driver. Now it will be based on port speed (i.e. 10G ==> XGMII, 1000/2500G == GMII , 100M == MII)</p> <p>This will make behaviour same for both xenia/unicore and warp-core driver and no confusion should appear now.</p> |
| SDK-60072 | 812645 | 88650_B1 | <p>An HW bug is present in EGQ block when terminating more than 64 Bytes (see errata document for more information). A work-around was proposed in <code>srcexamplesdppoint_field_ingress_large_termination.c</code>, where 14 Bytes were terminated at ingress if the Forwarding-Header was located more than 32 bytes away from start of packet. In certain conditions (e.g., in stacking systems with multiple VLAN tags), removing 14 Bytes was not sufficient. It has been fixed to 28 Bytes.</p> |
| SDK-60073 | 794596 | All 56850_A0 56850_A1 56850_A2 | <p>Add two flags for extender usage: BCM_EXTENDER_PORT_DROP and BCM_EXTENDER_PORT_ID_ASSIGN_DISABLE.</p> <p>When BCM_EXTENDER_PORT_DROP is set, packets egress to the indicated extender port are dropped.</p> <p>When BCM_EXTENDER_PORT_ID_ASSIGN_DISABLE is set, matched packets are not forwarded to the extender port.</p> |
| SDK-60085 | 810017 | 56640_A0 | <p>On Triumph_3, when parity error was induced by disabling CMIC_SER0_PROTECT_ADDR_RANGE_VALID and subsequently detected in SBUS DMA by Memscan, no action was being taken to recover from this error. This was because when memscan encounters DMA failure and falls back to individual memory read, data was being read from the cache and not from h/w and hence the parity error was not being caught.</p> <p>Corrected this to read from h/w which issues an Schan operation which then recovers from parity error.</p> |
| SDK-60094 | 810331 | 88660_A0 | <p>Routing Over VXLAN in ARAD+: When <code>bcm_l2_egress_create</code> is called with different SMAC, the encapsulation of outer SMAC is always as the first allocated SMAC.</p> |

Table 72:

| Number | CSP # | Chips | Release Notes For 6.4.2 |
|---------------|--------------|---|---|
| SDK-60099 | | 56850_A0 56850_A1 56850_A2 | Issue: bcm_field_qualify_IpType is setting right h/w encoding for bcmFieldIpTypeNonIp but bcm_field_qualify_IpType_get is failing due to wrong h/w encoding value derived in internal get function. Fix: modified internal get/set functions to match h/w encoding for bcmFieldIpTypeNonIp. |
| SDK-60102 | | 56450_A0 56440_A1 56450_B0 56440_A0 56455_A0 56440_B0 | In the previous release the priority given in bcm_vlan_dtag_add was not taken as the outer tag priority. ING_VLAN_TAG_ACTION_PROFILE table needed to program by setting SIT_OPRI_ACTION field to set the priority field. |
| SDK-60109 | | 56340_A0 | _bcm_tr3_flex_ctr_pool_unmap was not releasing all reserved flex counters by _bcm_tr3_flex_ctr_pool_map. Now fixed _bcm_tr3_flex_ctr_pool_unmap to release all reserved flex counters for Appiq. |
| SDK-60110 | | 88650_A0 88650_B0 88650_B1 | For ISSU, in warmboot-engine module, an option is given internally to skip a variable when retrieving the external storage in a newer version. This feature had issues discovered in its first usage in 6.3.8: the Driver is still trying to access these variables in some part of the code, which may lead to errors in the variable offset computation. This is fixed. |
| SDK-60131 | | 56334_B0 56334_A0 | Problem : When you create a child and parent policer in a slice, it takes up 2 complete meter pools and reserves them completely for all parent and child policers created in that slice. And those meter pools will not be shared by any policers from other slices. Because of this, we are prematurely exhausting policer resources. Requirement here is to use same METER POOL for policers created in different slices. Since Level0 policers of a slice(i.e. group) cannot be shared by other slices, we need to expand level-1 meter creation logic to use same meter pool for different slices. Solution: Adding new variable to bcm_policer_config_t structure to save the meter pool id. User can retrieve the meter pool_id and create a policer with give meter pool id so that the meters are created in the same pool. But the field entries related to meters in same pool need to be mutually exclusive. Added required doc changes for above implementation. |
| SDK-60144 | 808055 | 88650_A0 88660_A0 | added a lock in device reset so other threads won't access the device |
| SDK-60166 | 808650 | 56850_A0 56340_A0 56850_A1 56850_A2 | In previous releases it was reported that bcm_vlan_translate_egress_action_add etc. APIs would return BCM_E_PORT error when passed a VLAN port type gport as an input parameter. This issue has been fixed by adding the VLAN type gport as a condition during gport type check so that not to return BCM_E_PORT directly. |

Table 72:

| Number | CSP # | Chips | Release Notes For 6.4.2 |
|---------------|--------------|---|---|
| SDK-60168 | 813722 | 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 56851_A0 56852_A0 56852_A1 56853_A0 56853_A1 | In earlier releases, vlan port vp could not be destroyed when associated gport was a trunk and this trunk did not have members. This has been resolved. |
| SDK-60169 | | 56850_A0 56850_A1 56850_A2 | In the previous release, when two SVPs created on the same physical port were configured with two mirroring sessions pointing to different MTPs, the MTP of the first mirroring session would be overwritten by the second MTP, which was incorrect. In this release, this issue has been addressed by adding a new bookkeeping to ensure two MTP slots can be allocated in the case. |
| SDK-60170 | 813670 | All | When the external phy is in repeater mode, then HW linkscan for those ports should scan the internal serdes link status instead of external phy's. In order to achieve this, the repeater flag was set for BCM84756. Linkscan will only scan the internal serdes link status if the flag is true. |
| SDK-60179 | 810107 | 56540_A0 | 64bit index space was not initialized in case of rpf mode and 128b entries disabled mode. Due to this applications were not able to add routes in this particular configuration. The fix is to initialize the 64 bit index space to right values. |
| SDK-60194 | 813706 | 56850_A0 56850_A1 56850_A2 | In this release added support for BCM_PORT_PHY_CONTROL_RX_SIGNAL_DETECT APIs (get and set) to TSCMOD |
| SDK-60199 | 812394 | 56450_A0 56455_A0 | In prior releases both OPRI_CFI_SELF and IPRI_CFI_SELF fields in EGR_VLAN_XLATE table were set to "1" if the priority is set to "-1" while adding entry to EGR_VLAN_XLATE table though the action configured includes only for outer tag. This impacted LSP EXP bit remapping not to work. Now fixed to set IPRI_CFI_SELF action includes configuration for inner tag and OPRI_CFI_SELF if the action includes configuration for outer tag. |

Table 72:

| Number | CSP # | Chips | Release Notes For 6.4.2 |
|---------------------|--------|--|---|
| SDK-60222 SDK-60187 | | 88650_A0 88650_B0 88660_A0 | added memory array caching: Some memories have multiple instances within a single block in the device. Internally, the SDK organizes such tables into arrays, so that each instance of a table can be accessed using an instance-id. The caching mechanism did not support caching of memory-arrays. Customer impact: Normally, memories can be cached to DRAM as part of soft-error (SER) protection mechanism, or in order to improve driver runtime performance. For memory arrays, caching was not available. For parity-protected configuration memories, caching is used to recover from a soft-error. As a result of this addition, memory arrays can now also be protected by this mechanism. list of relevant memories: EPNI_EEDB_BANK EPNI_DATA_FORMAT EPNI_LFEM_FIELD_SELECT_MAP IDR_MCDA_PRFSSEL IDR_MCDB_PRFSSEL IHB_FEM_BIT_SELECT IHB_FEM_MAP_INDEX_TABLE IHB_FEC_ENTRY IHB_TCAM_ACTION IHP_PARSER_PROGRAM IHP_VLAN_PORT_MEMBERSHIP_TABLE IHP_LIF_TABLE note for 6.3 branch: the list of cached tables is not filled by the fix in this JIRA, and will be filled soon. |
| SDK-60225 | | 88650_A0 | Reference only: Parity memories are added to the reference shadow list in order to be cached by default. |
| SDK-60233 | 815117 | 56640_A0 56640_A1 56640_B0 | In earlier releases, the parity information structures for MMU_MTRO memories were incorrect. Hence the recovery logic fails to correct the error, and hence the error was being reported continuously. This is now fixed by correcting the parity structures. |
| SDK-60241 SDK-43891 | 814752 | 56640_B0 | Previously, when we have an hash bucket full, and If we try to add an double wide L2 entry, it fails even if we pass an replace flag. Now support has been added to dynamically replace narrow and wide entries with each other, by passing an replace flag. In such cases, and existing entry will be deleted (two entries may be deleted if the newer entry is a wide entry and existing entries are narrow). |
| SDK-60243 | 814299 | All | Diag Shell command was not able to qualify DstMultipath as parameter. Added case to handle DstMultipath when entered from diag shell. |
| SDK-60261 | 815126 | 88650_A0 88650_B0 88650_B1 88660_A0 | fixed bug: EGQ_DSP_PTR_MAP wasn't correctly updated when removing LAG ports that had the BCM_TRUNK_MEMBER_INGRESS_DISABLE flag. |

Table 72:

| Number | CSP # | Chips | Release Notes For 6.4.2 |
|---------------------|--------------|---|---|
| SDK-60262 | 815031 | 88650_B1 88660_A0 | In TCAM memory, there is no mechanism for identifying and fixing SER errors in the TCAM. A new mechanism is added which handles an error upon SER occurrence, identifies the location of the error and according to TCAM bank owner, reproduces the TCAM entry from software database and rewrites it to TCAM memory. |
| SDK-60267 | 815566 | 88650_A0 88660_A0 | In the Counter Processor module, during the background counter read from DMA (aka algorithmic read), the number of counters asked to be read could exceed the maximum size of the counter cache. This is fixed by adding a validation to the number of counters. This prevents the PCIE bus to crash. |
| SDK-60278 | 813007 | 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 56851_A0 56852_A0 56852_A1 56853_A0 56853_A1 | In previous releases, there was an issue for DLB HG trunks that traffic ingress from port located in Y-pipe would be getting dropped. The issue was fixed by configuring DLB_HGT_FLOWSET_Y table during DLB setting. |
| SDK-60280 | 815365 | 56450_A0 56450_B0 | In bcm_port_tpid_set API port resolution logic for vp ports created on coe subport was not implemented. Now implemented port resolution logic for vp ports created over coe subports The fix has been updated for bcm_port_tpid_get and bcm_port_tpid_add APIs as well. |
| SDK-60301 | 815641 | 56340_A0 | In previous releases when an warpcore block had both with both ieee and higig encapsulations, changing the encapsulation of xe port to higig caused all the other ports to change to 11G, which resulted in linkdown for all the ports. In such cases we needed to limit the maximum speed of xe ports to 10G which can be done by adding the config variable port_max_spd for that particular port . This issue has been resolved. |
| SDK-60302 | | 56845_A2 | PQ_XYZ registers were giving SCHAN read access time out errors with "dump soc" command. These registers aren't open anymore on TD/TD+. So they are all masked now in SDK . |
| SDK-60304 | | 88650_A0 | In mesh system, there was no gport type that addresses fap id 0. New gport type added: bcmCosqGportTypeGlobalFabricMeshDev0 |
| SDK-60307 SDK-60336 | 814621 | 56456_B0 56450_A0 56455_A0 56456_A0 56450_B0 | For BCM5645x devices, when config 10 (bcm5645x_config=10) was used, the existing TDM used was not fully flexible. So it caused issues while converting 10G port to 4x2.5GE port. The earlier TDM used for this config has been replaced with a fully flexible TDM to support conversion of 10G port to 4x2.5GE ports without any issue for BCM5645x devices using config 10. |

Table 72:

| Number | CSP # | Chips | Release Notes For 6.4.2 |
|---------------------|--------|--|---|
| SDK-60312 | 812350 | 88650_B1 88660_A0 88670_A0 | OAM: For remote endpoints, a call to <code>bcm_oam_endpoint_get()</code> returns the flag <code>BCM_OAM_ENDPOINT_FAULT_CCM_TIMEOUT</code> in the field <code>faults</code> in cases there is a CCM timeout. Likewise for local endpoints, each of the flags <code>"BCM_OAM_ENDPOINT2_RDI_FROM_RX_DISABLE"</code> and <code>"BCM_OAM_ENDPOINT2_RDI_FROM_LOCAL_DISABLE"</code> will be on as outputs of <code>bcm_oam_endpoint_get()</code> if and only if these flags were on when calling <code>bcm_oam_endpoint_create()</code> for the respective endpoint. |
| SDK-60315 | 814659 | 56640_A0 56640_A1 56640_B0 | Problem: <code>DstPort</code> qualifier used for qualifying cpu packets was getting qualified for transit multicast packets as well. Solution: Extended <code>DstGport</code> qualfier for all devices, where there is control to set the the type of packets that we want to qualify using <code>d_field/d_type</code> fields in <code>FP_TCAM</code> . |
| SDK-60321 | 806640 | 56456_B0 56450_A0 56455_A0 56456_A0 56450_B0 | Added switch control <code>bcmSwitchTimesyncEgressTimestampingMode</code> to choose between 32bit or 48bit timestamping mode for 1588 packets. Also new flag <code>BCM_PORT_TIMESYNC_TIMESTAMP_CFUPDATE_ALL</code> is added to specify that all 1588 packets will be egress timestamped to to the <code>flags</code> field of <code>bcm_port_timesync_config_t</code> struct. Default mode is to timestamp only ingress timestamp packets. |
| SDK-60336 SDK-60307 | 813964 | 56450_A0 56450_B0 | For BCM5645x devices, when config 10 (<code>bcm5645x_config=10</code>) was used, the existing TDM used was not fully flexible. So it caused issues while converting 10G port to 4x2.5GE port. The earlier TDM used for this config has been replaced with a fully flexible TDM to support conversion of 10G port to 4x2.5GE port without any issue for BCM5645x devices using config 10. |
| SDK-60337 | 816022 | 56456_B0 56450_A0 56456_A0 56450_B0 | 1588 protocol's host cpu based applications can use either one-step time-stamping or two-step timestamping mode. In case of,one step timestamping mode, PTP packets correction field is updated with packets transmits timestamp and in two step timestamping mode, PTP packet's egress time-stamp can be retrieved from MAC. This JIRA provides support for one-step and two-step timestamping for host CPU based PTP application through <code>bcm_tx()</code> API for Katana 2 chipset. |

Table 72:

| Number | CSP # | Chips | Release Notes For 6.4.2 |
|---------------|--------------|-------------------------------|--|
| SDK-60353 | 807644 | 56846_A0 56840_A0 56850_A0 | In previous release, bcm_port_dscp_map_mode_set/get(), bcm_vlan_priority_map_set/get(), bcm_port_dscp_map_mode_set/get() could only work for physical port. Now these APIs have been enhanced to support MPLS PORT on TD, TD+ & TD2. Please note that the GPORT DSCP & DOT1P profiles should be initialized first before being used in these APIs. |
| SDK-60356 | | 88650_A0 88660_A0 | QOS IPV4/MPLS: Added default 1:1 mapping from TC to TOS/EXP in the egress instead of just 0 |
| SDK-60358 | | 88670_A0 | OAM: Implementation OAMP-DM trigger mechanism. Refer to user manual for full documentation. |
| SDK-60368 | 814626 | 56850_A0 56850_A1 56850_A2 | When BCM_SWITCH_PKT_INFO_HASH_UDP_SOURCE_PORT flag is used, it is supposed to return the udp source port to be used in vxlan packet. So it should fit in 16 bits. Root cause: The underlying routine, compute_td2_rtag7_vxlan() computes the "raw" 20-bit value, which is never masked down to 16 bits for the UDP port option. Solution: bcm_switch_pkt_info_hash_get() is fixed to mask raw 20-bit entropy label value down to 16 bits and return the (64k) value properly. |
| SDK-60384 | | 88660_A0 | Decreasing E2E shaper of a non-active port causes packet drop of another active port within the same channelized interface - Fixed |
| SDK-60393 | | 88650_A0 88660_A0 | In Ingress Field Processor, when creating a Direct Table database, the first Direct table entry may be written to the wrong action table. Per TCAM bank, two action tables can be allocated to the Direct table Field group. This issue happens in case the second table (20b MSBs) is allocated, and no TCAM bank is yet allocated. This is fixed. |

Table 72:

| Number | CSP # | Chips | Release Notes For 6.4.2 |
|---------------|--------------|-------------------|--|
| SDK-60394 | | 88650_A0 | <p>Credit scheduler memories are added to the reference-application cache list. Memories can be cached to DRAM as part of soft-error (SER) protection mechanism, or in order to improve driver runtime performance. Upon initialization, caching mechanism usually uses Table DMA to synchronize the HW with the shadowed memory cache. Since the standard table DMA mechanism is not applicable to scheduler tables, initialization for these tables uses non-DMA access. An alternative mechanism is currently being analyzed, and might be available in the future, to improve performance when caching these memories. For parity-protected configuration memories, caching is used to recover from a soft-error. Due to this fix, the following credit scheduler memories added to the cache list and can be protected by this mechanism: a. list of relevant memories:</p> <p>SCH_CIR_SHAPERS_STATIC_TABEL__CS ST SCH_CL_SCHEDULERS_CONFIGURATION__SCC SCH_CL_SCHEDULERS_TYPE__SCT SCH_DEVICE_RATE_MEMORY__DRM SCH_DUAL_SHAPER_MEMORY__DSM SCH_FLOW_DESCRIPTOR_MEMORY_STATIC__FDMS SCH_FLOW_GROUP_MEMORY__FGM SCH_FLOW_SUB_FLOW__FSF SCH_FLOW_TO_FIP_MAPPING__FFM SCH_FLOW_TO_QUEUE_MAPPING__FQM SCH_HR_SCHEDULER_CONFIGURATION__SHC SCH_PIR_SHAPERS_STATIC_TABEL__PS ST SCH_PORT_SCHEDULER_WEIGHTS__PSW SCH_SCHEDULER_CREDIT_GENERATION__CALENDAR__CAL SCH_SCHEDULER_ENABLE_MEMORY__SEM</p> |
| SDK-60399 | | 56340_A0 | <p>Resetting of logical engine was not detaching logical to physical engine mapping, which caused wrong free size calculation. Fixed it by marking logical to physical engine mapping as NULL after reset.</p> |
| SDK-60408 | | 56450_A0 56450_B0 | <p>Problem: Two consecutive IDLE slots are required in TDM to meet TCAM atomicity. One typo remained in TDM-A2 where instead of IDLE slot value as 63, value remained as 62. It could cause (theoretically) concern for TCAM atomicity in RTL design Also value of AUX_ARB_CONTROL_2r:TCAM_ATOMIC_WRITE_ENABLEf was 0 i.s.o. 1</p> <p>Fix : Added one more check in tdm verification function for avoiding possibility of IDLE-SLOT=63 in middle of TDM. Also restricted Two consecutive IDLE slots to 63 i.s.o. 62 and 63</p> <p>Made AUX_ARB_CONTROL_2r:TCAM_ATOMIC_WRITE_ENABLEf value as 1 in KT2:misc() routine</p> |

Table 72:

| Number | CSP # | Chips | Release Notes For 6.4.2 |
|---------------|--------------|-------------------------------|--|
| SDK-60434 | 816207 | 56450_A0 | Deletion of port in range of 120-169 was failing for the multicast group. Fixed the code for the port in range of 120-169 to delete the IPMC_VLAN replication pointer specific to the port for the multicast group, hence the deletion of port from replication list successful. |
| SDK-60436 | 816417 | 88030_A0 88030_B0 | When allocate trie node, we need to confirm the valid field of bpm is between [0, skip_len+1] and mask out the higher bits which is invalid. |
| SDK-60439 | 814627 | 56456_B0 56450_A0 56456_A0 | Broadcom switch hardware can recover SyncE clocks GE/XE ports. This JIRA adds support to recover SyncE clocks from GE/XE ports for Katana 2 (56450 A0 and 56450 B0) chips. |
| SDK-60440 | 817398 | 88030_A0 88030_B0 | Changed the MACROs to ensure they are CALADAN3 specific checks and do not affect any other modules. |
| SDK-60446 | 815613 | 56850_A0 56850_A1 56850_A2 | In earlier releases, displaying port bitmaps in the Diag Shell caused a segmentation fault. This has been resolved. |
| SDK-60464 | 815760 | 88650_B1 | This memory is not accessible memory for CPU. The fix changes the print and provides correct information. |
| SDK-60470 | 817158 | 56850_A0 | In earlier releases, only (<=4k) L3 interfaces per port could be deleted from a multicast group by calling bcm_multicast_egress_delete. This has been fixed in this release. |
| SDK-60477 | 813482 | 56640_B0 | added the fix to allow tx transmit during linkdown |
| SDK-60482 | 817859 | 56850_A2 | In earlier releases, SDK did not support changing vlan port match condition from vlan port vp to vplag vp when vlan port was added to vplag. This has been resolved. |
| SDK-60485 | | 88670_A0 | Failover: Added a CINT example for 1+1 protection creation in the new Jericho decoupled mode. The sequence can be seen in cint_vswitch_cross_connect_p2p.c upon creation of access side PWE and VLAN ports. |
| SDK-60486 | 817588 | 88650_B1 88660_A0 | Reference code: BCM sdk enables some interrupts at the reference code for monitoring and corrective action performance. This fix adds some interrupt to this list in order to enable the monitoring and corrective action: ARAD_INT_EGQ_DBFECC_1BERRINT, // monitoring ARAD_INT_EGQ_DBFECC_2BERRINT, // monitoring ARAD_INT_EGQ_PARITYERRINT, // This interrupt indicates on parity error fault at EGQ parity protected memories. Enabling this interrupt makes parity error corrective action for these memories possible. |

Table 72:

| Number | CSP # | Chips | Release Notes For 6.4.2 |
|---------------|--------------|-------------------------------|---|
| SDK-60489 | | 88650_A0 88650_B0 88660_A0 | Trill MC: In 6.4.X we moved to a new Trill sequence for multicast case. Bug was found when adding MACT L2 entries with multicast group and trill port information. When multicast group is not just a number but also has indication of multicast type (for example when we take <code>multicast_id</code> as a result of <code>bcm_multicast_create</code>) then error is invoked. |
| SDK-60491 | 818025 | All | Egress True Mirroring destinations were not displayed in diag shell mirror show. Corrected this behavior and added flags to display true egress mirror destinations. |
| SDK-60494 | | All | Fixed BCM shell commands prefixed with unit ids indications such as '*' and '2-5:' for a system in which the total number of devices <= device ID [i.e. when they are 'holes' in unit IDs, for example - 2 units, IDs '0' & '2'] (these fixes were missed in SDK-58919). |
| SDK-60503 | 815053 | 56450_A0 | The frame length check was getting enabled always for non Higig ports on BCM5645x devices when doing a flexIO hot-swap operation. This has been fixed by disabling frame length check by default after a flexIO hot-swap operation. The frame length check can be enabled after flexIO hot-swap operation by setting config variable <code>mac_length_check_enable</code> . |
| SDK-60508 | 816530 | 56340_A0 56340M_A0 | During multi hash move operation, the destination bucket can have different sized entries than the incoming entry. In earlier releases, the SDK did not care if the incoming entry could fit into destination bucket. Due to this, it could corrupt the existing entry in some cases. The fix is to add an infrastructure to check if incoming entry can be added into the destination bucket. if not, keep looking for next destination bucket until you get a free space or you have reached to max try counter. |
| SDK-60515 | 793455 | All | Fixed OTN (bypass TDM) in 88650/60 connected by Mesh. |
| SDK-60527 | | 56846_A0 56850_A2 | Problem: After warmboot upgrade, udf field entry was not getting recovered properly. Solution: Added a missing condition while recovering qualifier set for field entries having UDF. |

Table 72:

| Number | CSP # | Chips | Release Notes For 6.4.2 |
|---------------|--------------|--|---|
| SDK-60536 | | 56455_A0 | <p>In BCM5645x devices, Parity errors were observed during SDK initialization.</p> <p>This was because of parity errors in Channel interfaces were not handled and were also checked for interfaces that were not used.</p> <p>Fixed this issue by merging changes made SDK-35808 from master to 6.3.9 branch via SDK-61032 to modify CI error mask to handle parity errors and also to enable parity checks for only those interfaces supported in device.</p> <p>Also when 156.25Mhz reference clock for LCPLL is enabled in the configuration, system crashes</p> <p>This is because 156.25MHz refclk in LCPLL non-bypass mode is not supported in Katana2</p> <p>Fixed this issue by removing 156.25Mhz refclk initialization during soc reset.</p> |
| SDK-60543 | 811382 | 88660_A0 | <p>Upon accessing link APIs when linkscan is active, the driver might deadlock from time to time on different links. This condition is fixed.</p> |
| SDK-60549 | | 56150_A0 56151_A0 | <p>BroadSync embedded application support added for BCM5615X</p> |
| SDK-60551 | | 56640_A1 | <p>In older releases, for 5664x devices, for Ports to come up as XE ports, the corresponding bits have to be set in the config property <code>pbmp_xport_xe</code>. Now, In addition to XE ports, all the 100G+ (CE) ports have to be added to this config property.</p> |
| SDK-60560 | 818014 | 88650_A0 88650_B0 88650_B1 88660_A0 | <p>L2 Flush: Added support for <code>encap_id</code> masking in <code>bcm_l2_replace_match</code> api.</p> |
| SDK-60576 | 818773 | 56450_A0 56450_B0 | <p>Problem Statement: Local port resolve is failing when port number is greater than 127 when trying to set the scheduling mode Resolution: Changed the code to use proper function to resolve local port resolve when the GPORT is of type <code>BCM_COSQ_GPORT_SUBSCRIBER</code></p> |
| SDK-60583 | 816905 | 56340_A0 56547_A0 | <p>Parity errors in <code>VLAN_XLATE</code> table detected on packet lookups are reported to <code>ser_fifo</code> as table <code>RAW_ENTRY_TABLE</code> with physical addresses. In previous releases, the index of parity error entry was not obtained correctly in software. In this release this bug has been fixed to enable memory decoding routine to work for <code>RAW_ENTRY_TABLE</code> in <code>Helix_4</code>.</p> |
| SDK-60590 | | 88650_A0 88650_B1 88660_A0 | <p>This JIRA fixes segmentation fault which occurred occasionally at <code>deinit/init</code> sequences. This happened because of improper implementation of interrupt <code>deinit</code> sequence. At this case interrupt asserted during SW interrupt resources deallocation. This fix makes sure that no interrupt will asserted during interrupt application <code>deinit</code>.</p> |
| SDK-60593 | 819011 | 84793_A0 | <p>Added per lane eye scan support. Modified <code>enzo</code> (<code>phy84793</code>) driver to return RX sequence done for the specified lane.</p> |

Table 72:

| Number | CSP # | Chips | Release Notes For 6.4.2 |
|-----------|--------|---|---|
| SDK-60595 | | 88650_A0 88660_A0 | <p>OAM: For calls to <code>bcm_oam_endpoint_create()</code> with the <code>opcode_flags</code> <code>CCM_OAM_OPCODE_CCM_IN_HW</code> set (accelerated endpoints) calling sequence has been changed: For Up-MEPs the field <code>tx_gport</code> must be set to <code>BCM_GPORT_INVALID</code>. The <code>gport</code> on which OAM PDUs will be transmitted will be determined through the pipeline, as dictated by the protocol for up-MEPs. For Down MEPs the <code>tx_gport</code> field must be set to a valid system port. For Ethernet OAM, two endpoints using the same least significant byte in the <code>src_mac_address</code> field must use the same <code>tx_gport</code>.</p> <p>BFD: Fixed a bug in <code>bcm_bfd_endpoint_create()</code> for accelerated endpoints (calls in which the flags <code>BCM_OAM_OPCODE_CCM_IN_HW</code> is set) causing BFD frames to be sent to an incorrect <code>gport</code> when multiple endpoints exist on different <code>gports</code>.</p> |
| SDK-60657 | 818481 | 88660_A0 88670_A0 | <p>OAM: Support OAMP server. For complete documentation consult the user manual, or for an example see <code>oamp_server_example()</code> in <code>cint_oam_acceleration_advanced_features.c</code>. Currently only CCM support is available. Note that down MEP CCM transmission may also be defined on LAG <code>gports</code>.</p> |
| SDK-60670 | | 56850_A0 56850_A1 56850_A2 | <p>Support has been removed for API to retrieve member port for DLB of HG Trunk.</p> |
| SDK-60672 | 816228 | 88650_A0 | <p>Info log should not flood the console with log message. Now change the log severity from verbose to debug and info to verbose can fix this issue.</p> |
| SDK-60692 | 819679 | 56640_A0 56540_A0 | <p>Problem : This is due to the issue that when we detach a counter from field entry, field module will reduce the <code>field_specific</code> reference count but it was not updating the stat module specific reference count . Due to this stat destroy was throwing error saying reference count is still not zero.</p> <p>Solution : Field entry detach routine of counter was updated to call relevant function to reduce stat related reference count.</p> |
| SDK-60710 | 794588 | 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 56851_A0 56852_A0 56852_A1 56853_A0 56853_A1 | <p>In the previous release, the API <code>BCM_PORT_EXTENDER_TYPE_NONE</code> was not implemented. In this release, this issue has been addressed by implementing the API.</p> |
| SDK-60711 | 817525 | All | <p>Handle LinkScan in case of port removal and insertion. Not relevant for most customers</p> |



Table 72:

| Number | CSP # | Chips | Release Notes For 6.4.2 |
|---------------------|--------|-------------------------------|---|
| SDK-60719 SDK-52048 | 818562 | 56640_A0 | Fixed following issues related to OAM warmboot recovery: - recovery tries to access an invalid field - memory pointer getting freed was not set to NULL. - CCM period was not being recovered properly - ma index re-allocation was being attempted while trying to recover endpoint on same vlan port but different level, which resulted in failure. - scache allocation was not correct during upgrade from older version. |
| SDK-60729 | 818782 | 88660_A0 88670_A0 | The bcmFieldQualifyVlanFormat is exposed at Egress Field Processor stage for both key and preselection. Its encoding is different, according to the internal Ethernet-Tag-Format (5 bits) signal. |
| SDK-60750 | | 88660_A0 | In L2 MAC table, aging period was not configurable per VSI. The number of meta-cycles of an entry not being observed before it is deleted were hard-coded. The number of aging meta-cycles before entry aging can now be configured per VSI, by using the API function <code>bcm_vlan_control_vlan_set()</code> and setting the field <code>aging_cycles</code> in the input structure <code>bcm_vlan_control_vlan_t</code> . Valid range for <code>aging_cycles</code> : 0-6, 0 is default. The user may configure up to 4 different aging cycle values for different VSI's. |
| SDK-60756 | 816538 | 56340_A0 | Loopback ports were not being to valid ports bitmap for <code>helix_4</code> in previous releases, and hence any operations on loopback ports were failing. This is now fixed by adding the loopback ports to valid ports bitmap. |
| SDK-60769 | 816767 | 56850_A0 56850_A1 56850_A2 | In the previous release, the TPID did not enable VLAN GPORT. In this release, this issue has been addressed by correcting the related APIs. |
| SDK-60784 | 818772 | 56334_A0 | In the previous SDK, the <code>oam cli</code> command could not accept <code>MiM gport</code> for port parameter when creating endpoints. This has been changed to allow to create endpoints on <code>MiM gport</code> . |
| SDK-60797 | 820536 | 56850_A0 56850_A1 56850_A2 | Fixed bug in interrupt handler for CMICm-based devices which would inadvertently enable hardware interrupts in polled-IRQ mode thus causing a system hang. |
| SDK-60843 | | 56450_A0 56340_A0 | Enabled internal termination on the gigabit serdes interface for HX4 & KT2 when system is operating in eHost mode. |
| SDK-60846 | 809695 | 56440_A0 56440_B0 | For BCM 5644x devices there was an issue with parity errors coming from <code>SVM_POLICY_TABLE</code> and <code>SVM_MACROFLOW_INDEX_TABLE</code> entry. This has been fixed. |
| SDK-60853 | 819575 | 56540_A0 56540_B0 | True Egress frames of size greater than 8K were not getting egressed. Reason for this was that MTU Size programmed in <code>PASSTHRU_NLF_MTU_CHECK</code> register was set to 8K leading to drop seen. This default MTU Size on loopback port has been increased to maximum value which is around 16K by default. This is done to be in sync with other MTU register which currently hold default value of 16K. |



Table 72:

| Number | CSP # | Chips | Release Notes For 6.4.2 |
|---------------|--------------|---|---|
| SDK-60860 | | 56844_A0 | Add support for SKU 56742 |
| SDK-60890 | | 56845_B0 56845_A2 56840_A0 56850_A0 56850_A1 56850_A2 | In previous release, bcm_qos_port_map_set() did not set TRUST_DSCP_V4/V6 on physical ports but set it on virtual port. The different behavior in the same API made customer confused, now this issue has been fixed. |
| SDK-60900 | 820836 | 88650_B1 88660_A0 | In Forwarding stage (FLP), the Mac-in-Mac and TRILL-Multicast FLP programs were allocated statically at init with the same program ID. This prevented to allow both applications to run simultaneously. The Mac-in-Mac FLP program is now allocated dynamically. |
| SDK-60905 | 821319 | 56450_A0 56450_B0 | In the previous release the validity check for the nodes in LLS tree was missing, this caused a segmentation error if any invalid node was getting accessed while flushing it. The check has been added in this release to avoid any segmentation error in attempt of accessing invalid nodes in the LLS tree. |
| SDK-60909 | | 88650_A0 | Minor coverity issues resolution involving the removal of unreachable code, and uninitialized variables. |
| SDK-60927 | 819752 | 88030_B0 | BCM_CALADAN3_SUPPORT was being used without SOC_IS_CALADAN3(unit) check thus affect ARAD or other images being built with the above #ifdefine. |
| SDK-60955 | | All | Configuration variables which are parsed before soc_attach() is called, no longer require that the unit number is appended. For example, polled_irq_mode=1 now works as expected, whereas before this change it had to be specified as polled_irq_mode.<unit>=1. |
| SDK-60956 | | 88650_A0 | Diag command "diag cosq" without any parameter crashes. The command fixed to return usage description. |
| SDK-60958 | | 88650_B1 88660_A0 | Corrective action for IPS QDESC parity error: A parity error in the IPS QDESC dynamic memory, corresponding to an unused VoQ, while credit watchdog range includes this unused VoQ, would cause a parity interrupt that is never fixed. Eventually the interrupt handler would detect interrupt storm and mask IPS parity interrupts. This fix recovers for a SER on unused VoQ by writing (zero-value) to the corrupted entry. Please note that for entries corresponding to active VoQ, SER condition is resolved once the ASIC updates the appropriate entry (no change from current behavior for active VoQs) |

Table 72:

| Number | CSP # | Chips | Release Notes For 6.4.2 |
|---------------|--------------|---|---|
| SDK-60964 | 820443 | 56640_A0 56340_A0 | In previous releases, when parity errors are detected in VLAN_XLATE_1 or VLAN_XLATE_2 tables in Triumph_3 or Helix_4, the table name was not resolved in SER correction routine. This would cause VLAN_XLATE_1 or VLAN_XLATE_2 tables not to be corrected correctly. In this release, this bug has been fixed. Table name will be returned correctly and table entry will be corrected once parity error is detected. |
| SDK-60971 | | 56845_B0 56845_A2 | In earlier release, the base_ptr field in ECMP group table was not configured correctly on TD+ during defragment. This has been resolved. |
| SDK-60988 | 821704 | 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 56851_A0 56852_A0 56852_A1 56853_A0 56853_A1 | In earlier releases, deleting a secondary L3 Interface unbinded the VRF from the primary one. This has been resolved. |
| SDK-61031 | 823863 | All | Host endian-ness was not correctly handled in SDK side as-well-as in Ukernel side. Due to that where byte swapping was not required (on Little Endian eHost) but was happening causing all reverse data, string messages. Ukernel Side fix: Corrected endianness issue and added some print messages for debugging purpose. Now Bytes will be swapped only when host side(ehost) endian-ness and own(ukernel) endian-ness differs. SDK Side fix: 1)Removed version string display in init phase as endian-ness of host side is not known in init-phase i.e. after system-info reply only, ukernel recognize and sends correct version-info string 2)Removed hack of reverse version-string on LE host 3)Now sends 0 for LE host and 1 for BE host as system info reply |
| SDK-61032 | 815490 | 56440_A0 56440_A1 56450_A0 56440_B0 56450_B0 | In Katana & Katana2 devices, DDR Phytune command was causing high CPU utilization and parity errors during SDK init. This was because of parity errors in Channel interfaces were not handled and were also checked for interfaces that were not used. Fixed this issue by modifying CI error mask to handle parity errors and also enabled parity checks for only those interfaces supported in device |

Table 72:

| Number | CSP # | Chips | Release Notes For 6.4.2 |
|---------------|--------------|---|--|
| SDK-61063 | | 56340_A0 | There was memory leak inside <code>bcm_regex_match_set()</code> API in earlier release which was causing all system memory to be consumed when <code>bcm_regex_match_set()</code> was called repeatedly for ApplQ regex signature configuration. Fixed this API to avoid memory leak by freeing allocated memory when not in use. |
| SDK-61073 | 813684 | 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 56851_A0 56852_A0 56852_A1 56853_A0 56853_A1 | In the previous release, BCM_L3_TRILL_ONLY/ BCM_L3_VXLAN_ONLY/ BCM_L3_L2GRE_ONLY were not saved. In this release, these flags are saved now. |
| SDK-61093 | | 88650_A0 88650_B0 88650_B1 88660_A0 | Fix <code>stat_if_pkt_size</code> documentation in config files. |
| SDK-61094 | 822899 | 56640_B0 | Description: EGR_VLAN_XLATE table can't be recovered when the flow continue hit the entry Root cause: When the flow hits a corrupted EGR_VLAN_XLATE entry continuously, the EGR_VLAN_XLATE SER ERROR interrupt should be raised and then SER handler would be invoked to correct it. Unfortunately, there is another SER ERROR interrupt being raised meanwhile which notified SOP CELL error and packet drop happened. Every corrupted EGR_VLAN_XLATE entry hit will trigger this interrupt until the EGR_VLAN_XLATE ser error has been corrected. So the interrupt handler may go into a dead loop of handling the continuously SOP CELL error and packet drop interrupt since there is no opportunity to correct the corrupted EGR_VLAN_XLATE entry. Solution: Current software has changed the code to ensure handling EGR_VLAN_XLATE entry correction before the SOP CELL error notification. |
| SDK-61096 | | 56340_A0 | In earlier releases, there was no memory limit on the allocation for regex expansion which causes memory corruption in other applications as well. Boundary has now been set for not more than 100MB. |
| SDK-61144 | | 56063 56064 56062 56060 53400_A0 53406_A0 53402_A0 | Apply the software workaround as suggested for 10G TSCPLL for the case that strap status of <code>lcpll1_refclk_sel</code> equals to 0 on Greyhound platforms. |
| SDK-61171 | 823889 | 56340_A0 | Issue :- <code>bcm_ipmc_add()</code> calling failure after SDK upgrade to 6.3.7 from 6.3.4. Fix :- Issue was due to Code changes that were added to verify if entry is not present and REPLACE flag is passed, the API should return BCM_E_NOT_FOUND. Reverted the code change. |



Table 72:

| Number | CSP # | Chips | Release Notes For 6.4.2 |
|---------------|--------------|--|---|
| SDK-61199 | 819962 | All 56850_A0 56850_A1 56850_A2 | Added support for transmitting ETAG packets out of the extender port without modifying the ETAG. |
| SDK-61244 | 824828 | 88660_A0 88670_A0 | In Field processor, when creating a new entry for direct extraction Database, the entry ID is taken from a range of Direct extraction pull, which comes after the TCAM ID pull. Thus, this range is offset by the number of TCAM entries (Internal and external). This maximum number of TCAM entries was defined incorrectly. It is fixed. |
| SDK-61251 | 814934 | 88660_A0 | If there are 2 task to call <code>bcm_l2_learn_limit_set()</code> , the limit number in ARM wasn't same with the number at SDK at sometimes. Now add a lock to fix the issue. |
| SDK-61261 | | 88660_A0 88670_A0 | BFD: Adding BFD echo support. For detailed information refer to the User Manual. |
| SDK-61267 | | 88650_B0 88660_A0 | In FCoE VSAN assignment, when mode was updated to "VSAN from VSI" before enabling the NPV mode the VSAN assignment is not updated correctly. This is fixed. |
| SDK-61270 | | 88650_B0 88650_B1 88660_A0 | In FCoE, VSAN mode update did not updated the NPV programs in the FLP. Now, it is updated when NPV is enabled. |
| SDK-61276 | | 88660_A0 | OAM: In the APIs <code>bcm_oam_loss/delay_add()</code> , Fixed a bug concerning the field <code>peer_da_mac address</code> . Under certain circumstances MSBs of the DA address of outgoing LMMs/DMMs wasnt properly set. |
| SDK-61281 | 811786 | 56456_B0 56640_A0 56450_A0 56640_A1 56640_B0 56455_A0 56456_A0 56450_B0 | Fix contains changes for <code>bcm_port_timesync_config_get()</code> API which has a minor variable initialization error causing breaking of API functionality. Also syntax for deleting timesync configuration using <code>bcm_port_timesync_config_set()</code> API is documented. |
| SDK-61282 | | All | Diagnostic shell now prints timestamp with PTP events. |
| SDK-61301 | 813742 | 88650_A0 88660_A0 | In LAG and ECMP, Load Balancing is not working according to native Ethernet for VxLAN packets. This is fixed. |
| SDK-61316 | | 88650_A0 88650_B0 88660_A0 | In FCoE application, key construction for LPM lookups in forwarding stage (FLP) when working with VSAN from VSI mode was built wrong. key construction fixed to be consistent with entries added to DB. |
| SDK-61317 | | 88650_A0 88650_B0 88660_A0 | OAM: When using <code>bcm_oam_action_set</code> , deletion and creation of new endpoint was failing after a few iterations. |

Table 72:

| Number | CSP # | Chips | Release Notes For 6.4.2 |
|---------------------|--------|--|---|
| SDK-61323 | | 88650_A0 | BFD: For BFD endpoints of type other than bcmBFD TunnelTypeUdp, bcmBFD TunnelTypeMpls, if the flag BCM_BFD_ENDPOINT_IN_HW is not set (endpoint is not accelerated to the OAMP) then the field local_discr is not used. Thus this field must be zero when bcm_bfd_endpoint_create() is called in such cases. Likewise in all cases where the field local_discr is required, upon calling bcm_bfd_endpoint_create() correctly verify that the MSBs are consistent with prior endpoints added (The MSBs act as a global value per device). For further detail consult the user manual. |
| SDK-61373 | | 88650_A0 | BFD: Enable configuration of different BFD types (IP/MPS/MPLS-TP) on same device. |
| SDK-61381 | 825267 | All | RX LOS application is used to detect, monitor, and manage RX loss of signal (LoS) indications from the BCM88650 and BCM88750 SerDes interfaces. Function rx_los_unit_detach used to detach unit from application and mask all the relevant to interrupts. Added a function (rx_los_sw_unit_detach) which allows to perform SW detach without any access to device (skip interrupts masking) |
| SDK-61406 SDK-61530 | | 56440_A0 | A scheduling change failed after warmboot if dynamic sched change algorithm was enabled. The missing warmboot data is now constructed and able to change sched mode after warmboot . |
| SDK-61442 | | 88650_A0 88650_B0 88650_B1 88660_A0 | Counter thread need to count for all ILKN channels when counting in per channel mode. Fixed. |
| SDK-61477 | 810833 | 88650_B1 88660_A0 | As part of SER interrupt handling, the SDK can attempt to write to the corrupted memory. This is not allowed for dynamic memories, i.e. memories that are maintained by the device and not by CPU configuration. The interrupt handling logic did not account for this limitation. For most memories, trying to override a dynamic memory is protected by HW and would fail with error message. Some dynamic memories are not protected, writing to these memories could result in unpredictable device state. The fix does allow caching of 2 static memories which listed at dynamic list by mistake: OAMP_RMEP_DB OLP_DSP_EVENT_ROUTE |
| SDK-61484 | | 56514_A0 | During fp re-installation removed action items from software were not getting deleted in hardware. Reason for this behavior was during re-install action items marked as invalid were not skipped . Added a check to skip invalid action items from re-installation. |
| SDK-61486 | 826612 | 88650_B1 88660_A0 | cint_vswitch_vpls_roo.c is fixed to configure correct Link Layer (instead of Dst MAC 0) |

Table 72:

| Number | CSP # | Chips | Release Notes For 6.4.2 |
|---------------|--------------|-------------------------------|---|
| SDK-61503 | | 88650_A0 | OAM: 88650_A0 does not support 1588 timestamp format. Validity check is added in <code>bcm_oam_endpoint_create()</code> . |
| SDK-61505 | 826710 | 56334_B0 56334_A0 | Add <code>bcm_switch_pkt_info_hash_get</code> API support for Enduro. |
| SDK-61507 | | 88660_A0 | BFD: For BFD over IP packets generated by the OAMP the UDP checksum should be set to 0 (none) as opposed to 0xffff. |
| SDK-61526 | | 88750_A0 88750_B0 | BCM88750 standalone compilation might fail due to linkage errors. Fixed. |
| SDK-61527 | | 88660_A0 | MPLS PORT: In case of ingress only configuration, learning was not configured properly. |
| SDK-61545 | 827380 | 56440_B0 56240_B0 | In the earlier release, the "vlan translate action add" was not working when "policer" was not specified. This was because the default value of Policer was being set to "None" which is not its default value. The issue has been fixed by setting the default value to 0 in the current release. |
| SDK-61613 | | 88660_A0 | OAM InLIF profile can now be mapped to 4 default OAM trap profile. Each such trap profile can define a default endpoint to trap OAMoEth packets arriving on an InLIF with the suitable profile. Call sequence: 1. <code>bcm_port_control_set</code> - to map an InLIF profile to a OAM-Trap-profile (In simple InLIF profile mode, this sets the InLIF profile bits) 2. <code>bcm_oam_endpoint_create</code> with: - id = BCM_OAM_ENDPOINT_DEFAULT_INGRESS 0/1/2/3 (depending on the OAM-Trap-profile chosen in the previous step) - level = packets with MDL<=level will be trapped by that endpoint A default Up-MEP can also be created using: 1. <code>bcm_oam_endpoint_create</code> with: - id = BCM_OAM_ENDPOINT_DEFAULT_EGRESS0 - level = packets with MDL<=level will be trapped by that endpoint - flags = BCM_OAM_ENDPOINT_UP_FACING for example sequence see <code>cint_oam.c</code> |
| SDK-61616 | | 88670_A0 | In BCM88670, QOS support for ROO application. Add support for PCP DEI profile in ROO application, using a new PCP DEI profile table. PCP DEI profile table: for a PCP DEI profile get the indication if the PCP DEI is mapped from DSCP or mapped from TC DP. |
| SDK-61619 | | 88650_A0 88660_A0 88650_B0 | For external Tcam (KBP) connection, use this soc property (<code>ext_ilkn_reverse</code>) to indicate the numbering mode of the lanes in KBP. default value for the system is 1 (reversed). |
| SDK-61635 | 828430 | 88030_A0 88030_B0 | Note. |
| SDK-61636 | 828428 | 88030_A0 54880_B0 | Fixed |
| SDK-61641 | 827595 | 56850_A0 56850_A1 56850_A2 | In earlier releases, port control <code>bcmPortControlSerdesReset</code> was effective only once, after a power-on-reset. That's because the code did not reset TSC, only took it out of reset. This has been fixed in this release by resetting TSC first then taking it out of reset. |

Table 72:

| Number | CSP # | Chips | Release Notes For 6.4.2 |
|---------------|--------------|-----------------------------------|---|
| SDK-61652 | 826180 | 56640_A0 56640_A1 56640_B0 | Problem Statement: The switch was hanging during exit clean with multiple VLAN_XLATE entries. Resolution: The hang was due to an uninitialized variable that was causing infinite loop. The variable is now initialized so that it picks appropriate value. |
| SDK-61659 | 828631 | 56450_A0 56450_B0 | In the earlier release, a memory corruption issue was seen due to lesser memory allocation which did not accommodate the PP ports. The issue has been fixed by increasing the allocation size to include the PP ports in the current release. |
| SDK-61663 | | 88650_A0 | OAM: For Y.1731 over MPLS, allow classification of DMMs/DMRs with the field Version on the CFM header set to 1 (this is the value defined by Y.1731). |
| SDK-61672 | | 88670_A0 | MPLS: In case OAM is not enabled on the device, Router Alert is not set as special label. It can be trapped using the lif table as a non-special label. |
| SDK-61727 | 796172 | All 56850_A0 56850_A1 56850_A2 | In the previous release, when updating the extender port id which had been added into a VPLAG, the field SOURCE_VP in the table VLAN_XLATE would be mistakenly modified from the VP of the VPLAG to the VP of the extender port id, which was incorrect. In this release, this issue has been addressed by updating the field SOURCE_VP in the table VLAN_XLATE with the VP of the VPLAG. |
| SDK-61813 | 825520 | 56440_A0 56440_B0 | In the earlier version, entry pointed by EGR_VLAN_CONTROL_1r and TPID reference count was not handled correctly. The fix correctly handles the problem and the issue is not seen. |
| SDK-61818 | 830940 | 56846_A0 56640_A0 56850_A0 | In the previous release, the API bcm_multicast_egress_set couldn't delete the given L3 INTF from a multicast group with a specific sequence. In this release, this issue has been addressed by correcting the internal function of comparing the software status and hardware resources. |
| SDK-61823 | | 88650_A0 | Upon SER event, the driver collects information identifying the affected table entry. This information was not sampled correctly for IQM Parity-protected tables, and for OLP ECC-protected tables. As a result, prior to this fix parity errors in any IQM table, as well as ECC errors in any OLP table, were not handled by the appropriate corrective-action. However, the SER event detection and reporting functioned properly. |
| SDK-61855 | 831077 | 56834_A2 | In previous releases, the L2_entry table size was fixed to 160K. The modification was to allow user to set the L2_entry table size to the capacity under 160K. |
| SDK-61869 | | 88660_A0 88670_A0 | When creating OAM default endpoint in the egress, use the ID defined as BCM_OAM_ENDPOINT_DEFAULT_EGRESS0 for BCM88660 BCM_OAM_ENDPOINT_DEFAULT_EGRESS0 /1/2/3 for BCM88670 and above. |



Table 72:

| Number | CSP # | Chips | Release Notes For 6.4.2 |
|---------------|--------------|-------------------------------|---|
| SDK-61883 | | 88660_A0 | OAM: New oam classifier mode is available. It enables adding up to 8 MEPs and up to 2 MIPs on each lif, in any direction (up/down), but reduces available amount of endpoints to 8K. To enable the new mode set soc property <code>oam_classifier_advanced_mode</code> to value 2. |
| SDK-61901 | | 88650_B1 | Added "init rx_los" to init commands usage. |
| SDK-61915 | | 88660_A0 | OAM: Incorrect mp-profile allocation at the OAM classifier may cause incorrect behavior of endpoints set on different directions of the same lif. |
| SDK-61934 | | 88660_A0 | OAM: Fixed bug causing <code>bcm_oam_loss_add/delete()</code> , <code>bcm_oam_delay_add/delete()</code> to misbehave. Error may be returned after any several calls to add APIs, each for different endpoints. |
| SDK-61938 | | 56640_A0 56640_A1 56640_B0 | Internal phy driver was not able to attach to few XTPORT block ports of triumph3 devices. A change made for a separate issue was blocking PLL reset for few block of the ports. This has been resolved |
| SDK-61949 | 830803 | 56850_A0 56850_A1 56850_A2 | Previously, due to sharing of the fundamental interrupter handler, <code>bcmINTR</code> would be woken up on each received <code>knet</code> interrupter even though there wasn't any one interrupter that needed to be processed by <code>bcmINTR</code> . This reduced the system performance. This has been resolved by identifying the interrupter's owner, the fundamental interrupter handler won't wake up <code>bcmINTR</code> thread if there isn't <code>bcmINTR</code> -related interrupter. |
| SDK-62000 | 815947 | All | Fixed usage of allocated-but-not-initialized memory by PTP module. |
| SDK-62002 | | All | Fixed enabling using the RPT link-integrity bitmap with <code>IreTdmMask</code> , only when calling <code>bcm_fabric_tdm_direct_routing_set()</code> , and not on init. In register <code>FDT_LINK_BITMAP_CONFIGURATIONr</code> field <code>IRE_TDM_MASK_MODEf</code> , The default mode is 2 - which means using RTP reachable bitmap. When calling <code>bcm_fabric_tdm_direct_routing_set()</code> The mode changes to 3 - which means using RTP link-integrity bitmap. |
| SDK-62018 | 826377 | 88650_B1 88660_A0 | A bug caused extra bytes to be added to RSPAN packets in case a user header was used. |
| SDK-62022 | | 88660_A0 | MPLS PORT: Push-Profile allocations are mismanaged in PWE ingress only mode. |

Table 72:

| Number | CSP # | Chips | Release Notes For 6.4.2 |
|---------------------|--------------|--|---|
| SDK-62025 SDK-59407 | 832310 | 56850_A0 56850_A1 56850_A2 | In earlier releases, when multiple trunk member ports were in failed state, deleting trunk member threw error. This has been fixed in this release by just skipping hardware configurations and returning ok, when multiple trunk member ports are in failed state. Fix a bug that when multiple trunk member ports are in failed state, deleting trunk member will throw error. |
| SDK-62032 | | 88650_A0 88660_A0 88670_A0 | In LAG and ECMP, Load Balancing is not working according to native IP for VxLAN packets. This is fixed. |
| SDK-62062 | 829166 | 88650_A0 88650_B0 88650_B1 88650ACP_A0 88660_A0 All | MPLS PORT: Flag BCM_MPLS_EGRESS_LABEL_TTL_DECREMENT is no longer mandatory for bcm_mpls_port_add api with action PHP. |
| SDK-62063 | | 88650_A0 88650_B0 88650_B1 88660_A0 | Port protocol based vlan classification. Configuration of vlan per port and trill/mpls ether_type, using the api bcm_vlan_port_protocol_action_add was causing a new user defined ether_type protocol, instead of being identified as trill or mpls ether_types. |
| SDK-62102 | 832410 | 53284_A0 | Fixed the issue on ROBO chips thin which vlan information was not restored to default STG when removing the vlan from other STG. |
| SDK-62106 | 832908 | 56450_A0 56450_B0 | In earlier releases INNER_TPID_ENABLE field in SYSTEM_CONFIG_TABLE was not configured during initialization for Katana2. This issue has been resolved now by setting INNER_TPID_ENABLE to 1 during port initialization. |
| SDK-62124 | | 88750_A0 88950_a0 | FE have limitations on its local modid values: BCM88750: 0-127 BCM88950: 0-143 But the limitations for FE13 local modid values are different, so FE13 the limitations have been changed to: BCM88750: 0-63 BCM88950: 0-71 |
| SDK-62126 | | 88650_B1 88660_A0 | In L3, when using internal LPM routing table, adding and updating routes may cause memory overruns: Fixed possible memory overrun in DMA buffers or in adjacent memory. The memory overrun was up to 240 bytes after the buffer for route adds. |
| SDK-62209 | 834157 | 88650_B1 88660_A0 | L3: L3 egress can be created by calling bcm_l3_egress_create. When creating L3 egress with voq_mapping_mode=DIRECT and egress.port (system-port) is bigger than 4K, API return ARAD_PP_FRWRD_FEC_DEST_VAL_OUT_OF_RANGE_ERR. L3 egress can be created correctly after the fix. |
| SDK-62222 | 826150 | All | In the previous release, the BCM SHELL command "mc show" showed some interfaces in the given group which they didn't belong to, which was incorrect. In this release, this issue has been addressed by correcting the internal function of comparing the software status and hardware resources. |



Table 72:

| Number | CSP # | Chips | Release Notes For 6.4.2 |
|---------------|--------------|---|---|
| SDK-62227 | | 88650_A0 | BFD: For incoming packets classified as BFD IP-multi-hop (according to the UDP dest-port), packet's destination IP address is compared to the endpoint's source IP address, which is configured in the field <code>src_ip_addr</code> in the API <code>bcm_bfd_endpoint_create()</code> . Up to 16 different source IP addresses are available per device. |
| SDK-62296 | | 56440_A0 56850_A0 | PTP subsystem now supports stack deletion, firmware reload, and restart. |
| SDK-62333 | | 88660_A0 | BFD: InLIF profile can now be mapped to 4 default OAM trap profile. Each such trap profile can define a default endpoint to trap BFD packets arriving on an InLIF with the suitable profile. Call sequence: 1. <code>bcm_port_control_set</code> -to map an InLIF profile to a OAM-Trap-profile (In simple InLIF profile mode, this sets the InLIF profile bits) 2. <code>bcm_bfd_endpoint_create</code> with: - id = <code>BCM_BFD_ENDPOINT_DEFAULT0/1/2/3</code> (depending on the OAM-Trap-profile chosen in the previous step) - <code>remote_gport</code> = port to trap to (defaults to the CPU port) for example sequence see <code>cint_bfd.c</code> |
| SDK-62336 | | 88660_A0 | OAM: When a MEP is configured on a LIF after a MIP is already configured on it, device might not handle MIP packets as expected. |
| SDK-62355 | | 88650_A0 88650_B0 88650_B1 88650ACP_A0 88660_A0 88670_A0 | MPLS PORT: Enable replacing <code>encap_id</code> in case PWE is protected |
| SDK-62364 | | 88650_A0 88660_A0 88670_A0 | Direct ingress queues to rate class mapping, and using an internal mechanism to handle the mapping is mutually exclusive. Blocked using direct ingress queues to rate class mapping after using the internally handled mechanism is blocked. relevant API: <code>bcm_cosq_profile_mapping_set(int unit, bcm_gport_t gport_to_map, bcm_cos_queue_t cosq, uint32 flags, bcm_switch_profile_mapping_t *profile_mapping);</code> MACROS: <code>BCM_GPORT_PROFILE_GET/SET,</code> <code>BCM_GPORT_IS_PROFILE;</code> |
| SDK-62367 | | 88650_A0 | OAM: Added "diag oam exact_match LIF=N" : display O-EM 1 entry by LIF |
| SDK-62379 | 833677 | All | Default threshold for traffic classes is changed with respect to number of service pools used, if only 1 SP is used, only SP 0 will be configured for all dp's, otherwise, dp's 0-3 will be configured for SP 0 and dp's 4-7 will be configured for SP 1 |
| SDK-62421 | | 88660_A0 | OAM: Inconsistent behavior might be seen on LIFs on which MIPs and MEPs were created and action set was used to modify destination. |
| SDK-62432 | | 88660_A0 | OAM: Calls to <code>bcm_oam_loss/delay_delete()</code> may interfere with the DA address of other available LMM/DMMs transmitted by the OAMP. |

Table 72:

| Number | CSP # | Chips | Release Notes For 6.4.2 |
|---------------|--------------|-------------------------------|--|
| SDK-62437 | 836260 | 88750_A0 | BCM88750 load failed when soc property <code>backplane_serdes_encoding</code> is not explicitly defined. Fixed. In such a case BCM88750 encoding will be set to "KR_FEC", |
| SDK-62492 | | 88660_A0 | OAM: when creating accelerated endpoints of type <code>bcmOAMEndpointTypeBHHMPLS</code> , the MEP DB entry may not be properly updated, causing subsequent calls to <code>bcm_oam_loss/delay_add()</code> to fail. |
| SDK-62533 | 835794 | 56450_B1 56450_A0 56450_B0 | Issue: Field <code>InPorts</code> Qualifier for max supported ports on KT2 device was failing to recover during level-1 Warmboot. Root Cause: During recovery, the group is constructed for all the ports in the device by retrieving from an internal macro which is updated by a port structure. However, during init time, the flex ports were not part of this macro due to which, the group pbmp and hardware configured pbmp value mismatches and returns an internal error. Fix: During recovery, the group is constructed for all the supported ports in the device by retrieving the flex ports explicitly. |
| SDK-62548 | | 88660_A0 | OAM: When a MIP is deleted, if no other MIP is defined on the same LIF, the remaining MEPs might not act as expected. |
| SDK-62550 | | 88650_A0 88650_B0 88660_A0 | For IPv4 MC, key construction is not performed correctly when using external TCAM (KBP). The in-RIF field is 12 bits, but for the KBP extra 4 bits are needed. A new instruction added to the key in order to use extra 4 zero bits. |
| SDK-62721 | | 88650_A0 88660_A0 | OAM: calls to <code>bcm_oam_endpoint_create</code> with the flags <code>BCM_OAM_ENDPOINT_REPLACE</code> and <code>BCM_OAM_ENDPOINT_REMOTE</code> may fail due to uninitialized values. |
| SDK-62817 | | 88650_A0 88660_A0 | OAM: Remove duplication, unused code from <code>cint_oam.c</code> |
| SDK-62820 | | 88660_A0 | OAM Classifier behavior is inconsistent after adding and removing endpoints on same lif. |
| SDK-63048 | | 88650_A0 | The name of <code>cint_oam_y1731.c</code> has been changed to <code>cint_oam_y1731.c</code> . This file provides examples of creating Y.1731 OAM endpoints over MPLS-TP, PWE. |
| SDK-63822 | 847793 | 88650_A0 88650_B0 88660_A0 | <code>bcm_cosq_gport_stat_get()</code> : Fix counter processor statistics gathering for egress queues when a queue bundle size is different from 8. Input parameter - <code>cosq</code> is now used as a traffic class parameter only, not as a queue bundle offset. |

RESOLVED ISSUES FOR 6.4.1

The following issues are resolved in version 6.4.1 of the SDK.

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|---|---|
| SDK-32461 | | 56846_A0 56845_B0 56845_A2 56844_A0 56842_A0 56840_A0 56746_A0 56745_A0 56744_A0 56743_A0 | <p>Problem: WRED thresholds were not taking effect because of hardware issue.</p> <p>Solution: Implemented workaround in software to get WRED memories into stable state.</p> <p>This workaround does below thinks to put WRED memories in stable state.</p> <ol style="list-style-type: none"> 1. Selects 4 Ethernet ports (one extended queue port from X,Y pipeline and one regular port from X, Y pipeline. 2. Configures all 4 ports in MAC loopback. 3. Disables CRC re-calculation on all 4 egress ports. 4. Enables CRC checks and configures <code>ING_PRI_CNG_MAP</code> table to mark incoming traffic with red color. 5. Add's I2 mac address in I2 table to switch the packets to all 4 ports. 6. Prepares 8 multi cell unicast SOBMH packets, configured DMA descriptor's and starts DMA engine. <p>These SOBMH packets will be loopbacked with bad CRC since we disabled CRC re-calculation on egress ports and switches to all 4 egress ports. Since these packets have CRC errors MMU will drop the packets after receiving EOP and stabilizes the WRED memories.</p> |
| SDK-34523 | | 56820_A0 56820_B0 | In previous SDK, customer found a crash on 56820 when the SDK was handling a MMU parity error. The root cause of this crash was the SDK visited an unavailable memory. Now this issue has been resolved. |
| SDK-36232 | 460304 | All 56850_A0 | In previous release, A L2 multicast with flag <code>BCM_MULTICAST_WITH_ID</code> and <code>Group_ID</code> was created by <code>bcm_multicast_create</code> , but the HW index in <code>Group_ID</code> was already occupied by other multicast group, than the existing entry could be overwrite and return <code>BCM_E_NONE</code> . In this release, it will return <code>BCM_E_EXISTS</code> and won't overwrite the existing entry. |
| SDK-38881 | | All | <code>bcm_port_priority_color_set</code> is modified to set color as none when color param to API is <code>bcmColorPreserve</code> . |
| SDK-41357 | 469082 | 56842_A0 | There is an issue with the h/w logic related to the parity generation and checking for the <code>PORT_CBL_TABLE</code> memory. In this release occasional spurious reports of a parity error in <code>PORT_CBL_TABLE</code> has been fixed. |
| SDK-42031 | | 88650_A0 | Error indication was added to prevent AC P2P to PWE or to Mac-In-Mac inner vlan editing (VID-2 in LIF table) which is not supported by HW. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|--|---|
| SDK-42289 | 565794 | 88650_A0 | Static forwarding (i.e. <code>bcm_port_force_forward_set</code> API) can be used both in TM and PP modes. Some fixes are done to enable it also in TM mode. |
| SDK-42527 | | 88650_A0 | SDK-42527: Support TR 90 and TR91 for the ARAD. |
| SDK-42957 | 580600 | 88025_A0 | Support for Down MEP on VPWS/VPLS attachment circuits is fixed. |
| SDK-42987 | 580192 | 56850_A0 | Legacy method to add route entries to LPM table may trigger re-shuffling logic which could lead to massive HW entry movement. In the worst case, the memory read operation times of LPM tables could be very high and eventually cause bad route convergence time. A request was received to reduce the totaled time costs for bulk route add operation. This was achieved by enabling soc memory cache for route add/delete operation to reduce memory read time costs. Can be turned on/off by switch control <code>bcmSwitchL3RouteCache</code> . Read HIT* bits could be wrong during caching time. |
| SDK-44506 | 593957 | 56842_A0 | Added a new soc property (<code>L3_DISABLE_ADD_TO_ARL</code>) to restrict applications to create L2 interface entry and L3 interface entry separately. SDK uses this property to recover the association between L2 entries and L3 entries during warmboot. Currently, during warmboot, SDK associates L3 entries with L2 entries assuming that they were created with <code>BCM_L3_ADD_TO_ARL</code> flag during <code>l3_intf_create</code> . Later, when L3 interface is deleted, SDK deletes the L2 entry also. |
| SDK-44591 | | 56840_A0 56640_A0 56640_A1 56640_B0 | Current implementation is not in-line with the issue. Function: <code>wcmmod_esm_serdes_control_get(int unit, int lane, soc_phy_control_t type, uint32 *value)</code> <code>case SOC_PHY_CONTROL_DUMP: rv = wcmmod_uc_status_dump (unit, port, NULL); break;</code> 'value' variable is not being used in this call. |
| SDK-44736 | | 56850_A1 | The 3-lane TSC configuration is now transcribed properly to TSC 31. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|-----------|--------|-------------------------------|---|
| SDK-44989 | | 88660_A0 | Supporting OAMP protection packets in 88660. To enable this feature, call <code>bcm_rx_trap_type_create()</code> with the flag <code>WITH_ID</code> , <code>trap_type</code> <code>bcmRxTrapOampProtection</code> and a trap id in the range 0x400 0x4ff, followed by <code>bcm_rx_trap_set()</code> with the trap id created in the above API, and a <code>bcm_rx_trap_config_t</code> with the field <code>dest_port</code> set to the destination of the protection packets. All other fields should remain blank (an example of this is found in <code>cint_oam.c</code>). Whenever an OAM event occurs, a protection packet of size 71 bytes will be sent to the destination selected above. The format of the Protection packet at the CPU will be FTMHoPPHoFHEI. The FHEI.CPU-TRAP-CODE field will be set to the LSB of the trap id selected in <code>bcm_rx_trap_type_create()</code> . The size of the protection packet will always be 71 bytes where the OAM events will be on the bottommost part of the packet. |
| SDK-45246 | | 56840_A0 | Implemented "bcmFieldActionL3ChangeMacDa" and "bcmFieldActionL3ChangeVlan" actions for TD2 device, TR3 and KATANAx devices. The actions expect the egress-object (l3 next hop index) which should be already created by L3 module and the ID should not be associated with any other modules. The actions are to replace the destination MAC and VLAN on the matched incoming packet with the MAC and VLAN associated with the given next hop index. |
| SDK-45535 | | 88650_B0 | OAM endpoint: It is now possible to create an OAM endpoint over LAG. This is done by adding the endpoint on the LAG port and separately configuring the mac address of the endpoint on each one of the LAG ports using <code>bcm_l2_station_add</code> . An example can be found in <code>cint_oam_over_endpoint.c</code> . In addition CINT includes a cleanup function, and an option to set VLAN-Ports lifs over lag without defining an OAM endpoint. |
| SDK-46635 | 625709 | 56640_A0 56640_A1 56640_B0 | Added a new SOC property "ext_tcam_request_response_latency" and a new "tcam latency" bcm shell command for TR3 with external TCAM. Customers can execute the bcm command to calculate the latency and then specify the SOC property using the latency value in config file. |
| SDK-46641 | 633505 | 88650_A0 88650_B0 | When running 802.3 llc packets, the ethertype field is used as length. There was a bug that if the length was set to 0, the packet would have been parsed as a trill packet. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|---|--|
| SDK-46757 | 636270 | 56643_A0 | Triumph_3 has a Unified Forwarding Table and hash selection for L2/L3/Vlan/Mpls tables has to be programmed differently. HASH_CONTROL register does not have a L3_HASH_SELECT field. The command "l3 l3table hash" is trying to access this non-existent field resulting in an assertion failure. Support for "l3 l3table hash" and "l3 l3table ip6hash" commands have been implemented. |
| SDK-46833 | | 56440_B0 | The fix for this issue checks the PLL's current divider setting in register 0x8050, and then use this as the forced value instead of always forcing the PLL to the same frequency for PRBS test. Additionally, the asymmetric mode for the 40nm B0 core has been disabled for the PRBS function to work. |
| SDK-47665 | 650917 | 56854_A2 56854_B0 56854_A0 | 1G configs should be supported in latest release. |
| SDK-47824 | 636400 | 56846_A0 56845_B0 56845_A2 56844_A0 56842_A0 | In previous releases, the updating on NONUCAST_TRUNK_BLOCK_MASK table took a fair amount of time to complete on Trident+ which has more NONUCAST_TRUNK_BLOCK_MASK table entries with the plain read API soc_read_mem(). In this release the performance has been improved by changing the update method such that it now uses a single DMA operation soc_read_mem_range() which gives a good amount of speedup to applicable trunk APIs. |
| SDK-47983 | 661534 | 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 | New cosq type bcmCosqControlEgressPortPoolYellowLimitBytes / bcmCosqControlEgressPortPoolRedLimitBytes have been added for configuring yellow/red limits. Added one service pool type bcmCosqServicePoolPortColorAware and bcm_cosq_service_pool_set/get APIs for per port per service pool color aware enable. |
| SDK-48016 | 661903 | 56840_A0 | In the previous release,static multicast L2 entries were getting flushed with bcm_l2_addr_delete_by_port() API.This has been resolved. |
| SDK-48101 | 689094 | 56845_B0 56845_A2 84740_A0 84784_A0 | Support for 40G repeater mode PRBS for the system side was missing for BCM84740. Support for the same is added and tested in this release. |
| SDK-48140 | | 88650_A0 | TRILL BEHAVIOR CHANGE. According to trill fgl rfc, at ingress trill fgl, native outer and inner tpids must have value 0x893b. So far in Trill application, native Ethernet tpids set outer tpid = 0x8100 and native inner tpid = 0x893b. New implementation is now aligned to trill fgl rfc. At ingress trill fgl, both native inner and outer tpids have value 0x893b. Settings are done using VLAN-editing and work for both normal vlan translation and Advanced modes. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------------|--------------|---|--|
| 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-48404 | 654018 | 56845_B0 | For BCM56845m phy_wc40_ability_remote_get was unable to get the correct ability when the link partner did not enable CL73. Corrected the ability to obtain remote ability when the link partner doesn't enable CL73 on TD+/WC40. |
| SDK-48577 | | 56640_A0 56643_A0 56340_A0 56640_A1 56643_A1 56640_B0 56643_B0 56540_B0 56045_B0 56040_A0 56547_A0 | Added cpu based UFT mem sweep to detect and fix parity errors. Fixed issues found with graceful lookup error handling. |
| SDK-48774 SDK-56539 | 672146 | 88650_A0 88650_B1 88660_A0 | IMPORTANT CHANGE (MIRROR SEQUENCE): RSPAN Mirroring: ingress and egress settings have been decoupled. Mirroring into RSPAN is now done in the following way: 1. Create L3 interface (this has not been changed). 2. Set a bcm_tunnel_initiator_t object with type=bcm_TunnelTypeRspan, vlan, tpid, pkt_pri configured as desired and call bcm_tunnel_initiator_create(). This allocates entries in the EEDB. 3. Set a bcm_mirror_destination_t with the flag BCM_MIRROR_DEST_TUNNEL_WITH_ENCAP_ID set and with the encaps_id field set to the tunnel_id returned from bcm_tunnel_initiator_create() using the macro BCM_GPORT_TUNNEL_ID_GET(). Getting information on the RSPAN tunnel may be done by setting a bcm_l3_intf_t object with the field l3a_tunnel_idx set to the tunnel_id returned from bcm_tunnel_initiator_create(), via the macro BCM_GPORT_TUNNEL_ID_GET(). Destroying the tunnel (freeing the EEDB entries) may be done with the API bcm_tunnel_initiator_clear(), with the l3a_tunnel_idx field set as in the get() API. Destroying the mirror not been changed. For an example see mirror_with_rspan_example() in cint_mirror_erspan.c |
| SDK-49047 | | 88650_B0 88650_B1 88660_A0 | 1588 packets were stamped while received/send from/to ports in which 1588 was disabled. This is fixed. ISSU perspective: The fix supports ISSU if all the ports supporting 1588 are disabled before ISSU, and enabled after ISSU. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|--|---|
| SDK-49202 | | 56640_A0 56640_A1 56640_B0 | SOC properties ext_tcam_tx_driver_current, ext_tcam_tx_postcursor_tap, ext_tcam_tx_main_tap have been added to describe driver current, postcursor tap and main tap for NL11K serdes TX direction parameters, and SOC property ext_tcam_rx_gain has been added to describe RX gain for Serdes RX direction parameter. |
| SDK-49205 | | 56640_A0 56640_A1 56640_B0 | Support for ESM interrupt was added in CMIC level interrupt handler. Once the ESM fatal errors are detected, the new-implemented "esm recovery" thread will be woken to restore ESM. |
| SDK-49249 | | 88650_A0 88650_B0 88650_B1 88660_A0 | DPOE application: Added an application example to show how to classify L2/L3/L4 header field and mapping frames to PON LIFs. More information is provided in cint_pon_dml_fec_app.c. |
| SDK-49543 | 663298 | 88650_A0 88650_B0 88660_A0 | Fixed ARAD ports Leds in Negev chassis (updated the Led microprocessor program to match recent changes in \$SDK software) |
| SDK-49694 | | 56640_B0 56850_A1 56850_A2 | Please use lpm_scaling_enable=1 in config to have the ability to add 64bv6 entries in paired tcam. When this config is enabled, V4,64B V6 entries can be added in the unreserved paired tcam. If lpm_ipv6_128b_reserved=0, then no tcam space is reserved for 128B V6 entries and complete paired TCAM can be used for 128BV6, V4, and 64B V6 entries. Please note that each entry of 64B V6 entry in the paired TCAM uses 2 indexes of L3_DEFIP view where as in unpaired TCAM ,it uses only 1 entry |
| SDK-50216 | 693383 | 56850_A0 | In previous release, per VLAN VP replication was automatically enabled when a Gport adds to the VLAN. In this release, support has been added to control VP replication by bcm_vlan_control_vlan_set. |
| SDK-50389 | 695476 | 2000_A1 | QE2000 fix when updating QOS parameters for a given multicast queue. The unicast queue configuration was incorrectly being updated when egress independent flow control is enabled. |
| SDK-50431 | | 88660_A0 | ERSPAN on XGS MAC extender system is now supported |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|--|--|
| SDK-50591 | | 88650_A0 88650_B0 88660_A0 | TRILL: For TRILL UC and MC egress RBridges, trill packets are classified to inLIFs whose IDs are always 0 by PORT VLAN Domain X Outer VLAN. A problem occurs when doing same interface filter. The inLIF ID and outLIF ID of trill packets of UC and MC egress RBridges are all 0. Packets are all dropped even in case it shouldn't be. A new program is added to classified trill packets into valid inLIF IDs. It's enabled by adding a soc property "custom_feature_trill_designated_vlan_inlif_<port>=<lif_id>". Once feature is enabled, soc properties should be enabled for all TRILL ports. |
| SDK-50755 | | 88650_A0 88650_B0 88650_B1 88660_A0 | Diag: "diag cosq qpair e2e ps=x" can be used to display e2e port scheduler model. Improvement in 1) adding new diagnose "diag cosq qpair e2e ps=x" 2) using "diag cosq qpair egq" instead of "diag cosq egq" |
| SDK-50760 | | 88650_A0 88650_B0 88650_B1 88660_A0 | Diag: "diag cosq print_flow_and_up" can be used to display scheduler model with given voq. Improvement in 1) adding port scheduler level between HR level and Port level 2) using "voq connector" in the diag command instead of "flow" |
| SDK-50899 | 634474 | 56845_B0 | Updated Documentation for WRED Flags |
| SDK-51038 | 683239 | 88640_A0 | Petra-B 88640 Ingress mirroring : Ingress mirror can't mirror the original packet for the Petra hardware limitation, the workaround for it is to configure the mirror port as RAW in config.bcm astm_port_header_type_2.BCM88640 = RAW. See cint_petra_mirror_tests.c for more information. |
| SDK-51292 | 708102 | 56640_A0 | The HG capable dynamic ports Indexing offset was not accounted for on the SC/QM queues which led to wrong indexing for the dynamic ports. This has been fixed in the offset. |
| SDK-51352 | 708790 | 56846_A0 56840_A0 56846_A1 | In previous versions, the routine _soc_trident_mem_parity_control() returned directly after configuring parity control for X-pipe and left Y-pipe parity control register un-configured for dual pipe IPIPE/EPIPE memories. In this version, _soc_trident_mem_parity_control() has been modified to configure both X-pipe and Y-pipe parity control. |
| SDK-51353 | | 56643_B0 | The new support for the below port configuration has been implemented. Device =56643 Frequency (MHz)= 450 Option = 4 GbE Port Group (XC[12:0]) = 36 x GbE+1 x GbE High Speed Port Gr 1 (WC[2:0])= 4 x XFI High Speed Port Gr 2 (WC[6:3])= 2 x HG[42] + x F.H [42]" AXP Port Guaranteed Bandwidth = 5G |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------------|--------------|---|--|
| SDK-51360 | 692893 | 56840_A0 | When any module in SDK uses new stat APIs, the running STAT version changes from LEGACY to NEW. Currently VLAN Field Processor implementation works only with old stat APIs for older devices where advanced flex counters are not available. Hence, required support is added in VLAN Field Processor implementation to use new stat APIs for older devices that switched to NEW stat version. |
| SDK-51380 | | 56440_A0 56440_A1 56440_B0 | Enabled proper debug prints when API <code>bcm_policer_group_create()</code> fails. |
| SDK-51392 SDK-51964 | 710405 | All | The BSL improvement has fixed this issue. |
| SDK-51464 | | 88650_A0 88750_B0 88660_A0 88750_A0 88650_B0 88650_B1 | <p>Source-routed data cells, generated by CPU, can be transmitted and received by Fabric Element (FE) and FAP devices (over fabric interface). These cells are routed according to the specific path information they carry, while disregarding the fabric reachability information. These messages are used mainly for debug and diagnostics purposes, but can be also used for CPU-to-CPU messaging.</p> <p>The previous SDK versions supported this features using SoC APIs. Instead, new BCM APIs created:</p> <pre>typedef struct bcm_fabric_route_s{ uint32 pipe_id; /* Origin fabric pipe */ uint32 number_of_hops; /* corresponds to the number of routing hops (number traversed links) */ int* hop_ids; /* traversed links */} bcm_fabric_route_t; int bcm_fabric_route_tx(int unit, uint32 flags, bcm_fabric_route_t * route, uint32 data_in_size, /* input payload size */ uint32 *data_in /* input payload buffer */); int bcm_fabric_route_rx(int unit, uint32 flags, uint32 data_out_max_size, /* maximal size of the payload buffer */ uint32 *data_out, / * output payload buffer */ uint32 *data_out_size /* actual output payload size */);</pre> |
| SDK-51494 | | 88650_B0 | Fix <code>cint_mpls_lsr.c</code> function <code>mpls_add_php_entry</code> . next protocol flag was overwritten by <code>BCM_MPLS_SWITCH_TTL_DECREMENT</code> flag. |
| SDK-51525 | 677768 | 88030_A0 | <p>There was a bug in the C3 model and the XML based test framework wherein any changes to the configuration files (files of the type <code>g3p1_<xyz>.cfg.lrp</code>) did not take effect until the second run of the tests. This is because the models read in the existing configuration files first and the assembler updated them later.</p> <p>As of this release of the MDE, this has been fixed.</p> |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|---|--|
| SDK-51570 | | 56850_A0 56850_A1 | In previous release, NIV VP class-id setting was not supported by <code>bcm_port_class_set/get</code> API. In this release, support was added for setting NIV VP class-id by <code>bcm_port_class_set/get</code> API. |
| SDK-51601 | 708490 | 88030_B0 88030_A0 | Egress filter issue |
| SDK-51617 | 710438 | 56450_A0 | Issue was happening due to incorrect buffer length calculation. Function <code>_soc_mem_array_sbusdma_write()</code> is modified to use <code>chunk_entries</code> to write buffer with correct length. |
| SDK-51625 | | 88650_A0 88650_B0 88650_B1 | For debug reasons, an HW register is used to store the SW version used at init, and during ISSU. |
| SDK-51648 | 713425 | 56340M_A0 56640_A0 56340_A0 56640_A1 56640_B0 | Added in the support for different freq. <code>QG_PLL</code> and <code>WC_PLL</code> for chipsets which have the H/W capability. |
| SDK-51658 | | 88650_A0 88650_B0 88650_B1 88660_A0 | Support the following APIs to replace properties without replacing Out-LIF discard indication: 1. <code>bcm_l3_egress_create</code> 2. <code>bcm_mirror_destination_tunnel_create</code> 3. <code>bcm_mpls_tunnel_initiator_create</code> 4. <code>bcm_tunnel_initiator_create</code> . |
| SDK-51707 | 715469 | All | Optimized the ipmc performance if change 32K ipmc group from one ipmc index to another. |
| SDK-51725 | | 56624_B0 | SER support has been added for the following memories as part of this fix: <code>MMU_WRED_CFG_CELL</code> <code>MMU_WRED_THD_0_CELL</code> <code>MMU_WRED_THD_1_CELL</code> <code>MMU_WRED_CFG_PACKET</code> <code>MMU_WRED_THD_0_PACKET</code> <code>MMU_WRED_THD_1_PACKET</code> <code>MMU_WRED_PORT_CFG_CELL</code> <code>MMU_WRED_PORT_THD_0_CELL</code> <code>MMU_WRED_PORT_THD_1_CELL</code> <code>MMU_WRED_PORT_CFG_PACKET</code> <code>MMU_WRED_PORT_THD_0_PACKET</code> <code>MMU_WRED_PORT_THD_1_PACKET</code> |
| SDK-51810 | | 88650_B1 88660_A0 | Fixed three errors related to <code>bcm_vlan_port_find</code> : 1. When calling the API on an unprotected port, the <code>failover_port_id</code> field will be 1 instead of 0. 2. Any information related to 1+1 protection (<code>ingress_failover_id</code> , <code>failover_port_id</code>) was not filled when calling the API. <code>ingress_failover_id</code> and <code>failover_port_id</code> will now be filled when calling the API. 3. Added missing validations to function parameters. |
| SDK-51828 | 716994 | 56440_A0 56850_A0 | Added new API <code>bcm_stat_flex_pool_info_multi_get</code> to retrieve the usage of flex counters in a pool |
| SDK-51906 | 699612 | 56450_A0 | Due to flex operation issue on Cfg#12 with TDM-A2, used TDM-A3. Also corrected total slots required for TDM-A3 and removed one warning wrong comment. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|--------------|--|
| SDK-51936 | | 56850_A2 | For cl36 PRBS bus width must be set to 80 bits instead of 66 bits. |
| SDK-51997 | | 88660_A0 | <p>In BCM88660, in Field Processor, a new feature for field comparison is added.</p> <p>In HW, the comparison is performed on Key D in the second cycle of the PMF. It compares the two halves of the key (80 LSB bits and 80 MSB bits) and writes the result to the 5 MSB bits of the key (bits 159:155). Each bit of the result indicates a match of 20 bits, such that the 4 LSB bits correspond to 20 bits of the key, and the 5th MSB bit indicates match of the full key (80 bits).</p> <p>HW limitation: In order to act upon match the field group in the MSB must be Direct Extraction, and the 32 bit key is taken from the MSB bits (159:128). Direct extraction can filter up to 4 bits, thus only the 4 LSB bits of the compare result are used (it covers the full key).</p> <p>In SW, the sequence to enable the new compare feature is as follows: 1. Add a field group (max 80 bits each) with <code>bcm_field_group_config_create()</code> and set <code>BCM_FIELD_GROUP_CREATE_IS_EQUAL</code> flag in group. This field group will use 80 LSB bits of the key. 2. Add another field group (mode = Direct Extraction) using <code>bcm_field_group_config_create()</code> and set <code>BCM_FIELD_GROUP_CREATE_IS_EQUAL</code> flag in group. This Field Group must also add the qualifier <code>bcmFieldQualifyIsEqualValue</code> to its QSET. This field group will use 80 MSB bits of the key. * <code>bcmFieldQualifyIsEqualValue</code> qualifier is not properly part of the key (no HW instructions are allocated for it). It indicates that this key is written with the compare result. * The max size of this Field Group is 80 bits (although it is a Direct Extraction Field group, limited to 32 bits in general). The comparison is performed on the entire 80 bits and the Direct Extraction key is taken from the 32 MSB bits. * Note: the 5 MSB bits are overridden by compare result.</p> <p>The compare can be used in parallel to <code>bcmFieldQualifyCascadedKeyValue</code> qualifier.</p> <p>A new cint is added for example: <code>cint_field_dir_ext_compare_result.c</code></p> |
| SDK-52072 | 716983 | 88660_A0 | <p>ERSPAN: Fixing a bug in <code>bcm_tunnel_initiator_clear()</code>. When a ERSPAN tunnel is created through <code>bcm_tunnel_initiator_create()</code>, two EEDB entries were allocated but in <code>bcm_tunnel_initiator_clear()</code> only one was freed.</p> |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------------|--------|--|---|
| SDK-52087 | 719039 | 56850_A0 | A customer reported an issue with EPMC Egress set performance. <code>egress_set</code> on 1000 IPMC index taking 20 seconds on 3 instances. That was happening because <code>bcm_XXX_ipmc_egress_intf_set</code> used the total interface number(max to 48K in some chips) to calculate the hash value for each port and cause the performance problem. In this release IPMC Egress set performance has been improved to take approximately half the time originally reported by reducing the total interface number to calculate and using accelerated method for MY_STATION_TCAM memory field access. |
| SDK-52242 | | 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 | HW works with a single granularity value for both CIR and EIR, once the granularity value is fixed(CIR), the maximum value for EIR becomes limited. Hence the issue. On high rates (EIR > CIR) the granularity value is fixed to EIR. |
| SDK-52246 | 720771 | 56450_A0 | The subtag packet can be multicasted/ broadcasted to multiple CoE subports at a time from CPU by using switch logic (<code>pkt->tx_pbmp</code> along with flag <code>pkt->flags=BCM_TX_ETHER</code>). For this the user needs to create L2MC entry or a VLAN with the destination CoE subports as members. The packet would go through the IP-EP pipeline where the packet may be dropped by IP or EP depending on configuration. The suggestion is to send SOBMH packets from CPU, one by one to the CoE subports instead of using <code>pkt->tx_pbmp</code> . |
| SDK-52287 | 713097 | 88030_A0 | Bit hash ID numbering now starts from 0. |
| SDK-52325 SDK-51797 | 721812 | All | There is requirement from customer to perform a loopback test on a port, while making sure it looked like totally "down" from the outside, i.e. the link is down, no traffic leakage, etc. The modification of this JIRA is to add the support of MAC loopback on disabled port. |
| SDK-52339 | 722376 | 56850_A0 56850_A1 56850_A2 | Two data error event flags were added. If a parity error is uncorrectable, the flag <code>SOC_SWITCH_EVENT_DATA_ERROR_UNCORRECTABLE</code> will be set when SDK reporting <code>SOC_SWITCH_EVENT_PARITY_ERROR</code> event to application. If a parity error is correctable, but the error correction fails, the flag <code>SOC_SWITCH_EVENT_DATA_ERROR_FAILEDTOCORRECT</code> will be set when SDK reporting <code>SOC_SWITCH_EVENT_PARITY_ERROR</code> event to application. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|-------------------------------|--|
| SDK-52355 | | 56850_A0 56850_A1 56850_A2 | Support has been added for retry in mem insert and delete for hash tables. Inline hash memory recovery was implemented for insert and delete operations. When an insert/delete operation encounters a parity error, the inline recovery routine will be invoked. The inline recovery routine will calculate different hash buckets in different hash memory banks based on the entry that will be inserted/deleted, then restore the each bucket in these banks. For new-added hash key types in Trident2 hash tables, support for these key types in hash entry comparing routine has also been added. |
| SDK-52385 | 721101 | 88030_B0 88030_A0 | Byte order changed in diags mem commands as requestd. |
| SDK-52386 | 722002 | 88030_A0 | Retry 10 times if error happen, many location for post_cmd/get_response pair. |
| SDK-52389 | 721614 | 56850_A0 | API has been added for populating egress etag qos mapping. |
| SDK-52412 | 678409 | 56340_A0 84756_A0 | <p>Issue: ----- When a 1G fiber SFP is installed into a BCM-84756 10G port with no fiber attached, the hardware linkscan declares the port link state as up.</p> <p>Rootcause: ----- Hardware link scan can only probe a single bit in a single external phy or internal SerDes based link register on a per port basis. For PHYs such as 84756 which needs to probe more than 1 bit on more than 1 register to conclude per port based link up/down status, these PHYs must support a "squelch" function. When the squelching function is enabled/ configured, the PHY will bring system side link status up when the line side link status is up and vice versa. Then the hardware link scan can probe the internal SerDes to conclude link status. The squelching function is not supported in 84756 driver (phy84756_fcmap.c) yet.</p> <p>Fix: ---- Implemented Squelch function in py84756_fcmap.c which is the root cause for the issue mentioned in this JIRA. Tested the squelch function implementation with 1G, 10G ports for the system side and the line side link as follows. i) Enabled system side squelch, could observe system side link goes down when Tx is disabled on the line side. ii) Enabled line side squelch, could observe line side link goes down when Tx is disabled on the system side. Squelch function is not invoked from the init function of PHY84756 fcmap driver. So user/customer needs to call squelch function explicitly using SOC_PHY_CONTROL_TX_LANE_SQUELCH whenever they wish to enable squelch on either line side Or system side.</p> |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|-------------------------------|--|
| SDK-52442 | 696223 | 56850_A2 | In previous releases, an issue was reported in the parallel vertical scan operation. When attempting a 1-D slice vertical scan, the results would not come out if <code>horizontal_min=0</code> and <code>horizontal_max=0</code> . In this release the TSC diagnostics interface has been modified to return the proper H right max and left max values. |
| SDK-52454 | | 88650_A0 88660_A0 | Basic bridging Egress multicast: We assume over VLAN APIs that egress multicast exist. Now no error is returned when egress multicast does not exist |
| SDK-52458 | | 88650_B0 88660_A0 | In L3 forwarding, when using external TCAM for forwarding tables, they were actually defined as ACL tables, resulting in a large software state and reduced efficiency in configuration. The forwarding tables in the external TCAM are now defined as LPM tables, reducing memory consumption and enhancing configuration periods. The API calling sequence remains identical. |
| SDK-52459 | | 88660_A0 | DEFAULT BEHAVIOR CHANGE (ARAD+ only). When using external TCAM for forwarding, RPF and forwarding searches were performed on duplicated databases. RPF and forwarding searches are now performed on a single database, using SIP and DIP respectively in search keys and resulting in increased (doubled) routing table capacity. Note that in case of IPv4/6 + RPF forwarding query, external ACL databases IDs are changed to 1 and 3. The actions sizes for ACL databases have also changed accordingly: The action size for ACL database 0 is 64 bits. The action size for ACL database 1 is 32 bits. The action size for ACL database 2 is 16 bits. The action size for ACL database 3 is 24 bits. All of the changes above apply only to ARAD+ devices. ARAD devices behavior remains unchanged. |
| SDK-52564 | | 56850_A1 | Fixed traffic drops observed with ingress-traffic after creation of L2GRE access port with match criteria as <code>MATCH_PORT_VLAN</code> . |
| SDK-52591 | 725728 | 56450_A0 | Added support to enhance the number of child nodes per scheduler node in BCM56450. The restriction of maximum of 64 child nodes has been removed in cosq APIs. |
| SDK-52636 | | 88030_A0 | Added support for 4x10G 20x1G 1xHG TDM with specific assignment of Warp Core to CLPORT & XTPORT |
| SDK-52650 | | 56960_A0 | Added new Port Prbs Polynomial type <code>BCM_PORT_PRBS_POLYNOMIAL_X58_X31_1</code> . |
| SDK-52734 | | 88650_A0 88650_B0 88660_A0 | Indication if the Warmboot is supported by the device added to avoid Warmboot errors in regression for a version where Warmboot mode is not compiled. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------------|--------------|---|---|
| SDK-52751 | 726121 | 56545_A0 56545_A1 56545_B0 | In the previous release <code>bcm_l2_cache_set()</code> did not allow setting priority > 7 on Firebolt4. In this release the API to add an entry <code>L2_USER_ENTRY</code> table now supports 4bits of PRIORITY on those devices where the priority field is 4 bits. |
| SDK-52789 | 728470 | 56450_A0 | In the previous release an assert was raised when running TR53 on KT2. TR 53(DDR Memory Fill/Verify)is not valid for KT2. This issue has now been addressed by changing the TR rule for TR53 to exclude KATANA2. Instead of TR53 customer shall use TR140 for KT2. |
| SDK-52805 | 728606 | 88750_A0 | FE1600: added a extra sleep after soft init and before un-isoalte |
| SDK-52837 | 729120 | 56840_A0 56640_A0 56440_A0 56450_A0 56850_A2 | Added new field <code>rx_decap_tunnel</code> to <code>bcm_pkt_t</code> structure. This field determines the type of outer tunnel decapsulation, if any, on the received packet. |
| SDK-52842 | | 56640_B0 | Added external field entry move support on TR3 to manage the field entry priorities appropriately. |
| SDK-52871 SDK-54669 | 729527 | 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 56851_A0 56852_A0 56852_A1 56853_A0 56853_A1 | An issue was reported with <code>MY_STATION_TCAM</code> not being correctly programmed for the trunk-based TRILL ports . To address this, trunk relevant fields in <code>MY_STATION_TCAM</code> are now correctly programmed for the termination of TRILL packets. |
| SDK-52892 | 622534 | 56846_A0 | In the previous release, <code>bcm_port_fault_get()</code> failed on 1G SFP. This has been resolved. |
| SDK-52896 | 716978 | 56840_A0 | Support calculating non-unicast trunk hash destination for TD/TD+/TR3/TD2. |
| SDK-52921 | 730103 | 88650_A0 88650_B0 88650_B1 | Add entries using <code>bcm_trill_multicast_entry_add</code> with <code>c_vlan=0</code> is now supported in the following Trill mode: Trill VL (<code>trill_mode=1</code>) Multicast prune mode does not include VSI (<code>trill_mc_prune_mode=0</code>) |
| SDK-52942 | 727724 | 56334_B0 56334_A0 | Bcm56334 10G ports has 2 different macs and both of them show counters increasing when receiving packets. In this release, a fix was introduced to address the issue where incorrect values were being retrieved. Fixed the issue to get 10G statistics only from 10G mac while speed set to 10G. And while speed set to 1G, only get statistics from 1G mac counter. |
| SDK-52965 | 730480 | 56634_A0 | In the previous release there was no support for <code>bcmCosqStatOutBytes</code> and <code>bcmCosqStatOutPackets</code> stats in <code>bcm_cosq_stat_set</code> and <code>bcm_cosq_stat_get</code> for Triumph.This issue has now been addressed by adding the support for Triumph. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|-------------------------------|---|
| SDK-53025 | 729729 | 88030_B0 | fix the issue of interlaken port disabled by linkscan thread on bcm88030 device |
| SDK-53028 | | 56340_A0 | Added code to find valid port block in the given list of port blocks. Previously used macro was checking only the first block in the list. The fix iterates through the entire set of valid port blocks to find the corresponding port block. |
| SDK-53044 | | 56850_A0 56850_A1 56850_A2 | When processing ser fifo, if the block is IPIPE block, we will only set mask upon the pipe, and take the lock of accessing sbs_control. And unlock it before returning in this function. |
| SDK-53046 | | 88650_A0 | In Rx thread, when parsing the packet header, the parsing was supported only for little endian. Now big endianness is also supported. |
| SDK-53059 | 730593 | 88650_A0 | VPLS: Add support in PWE2PWE. Example in cint_vswitch_cross_connect_p2p_multi_device.c: function "run" should be called with two PWE ports and type1=type2=2. |
| SDK-53067 | 730463 | All | "rtag" field removed from bcm_l2_addr. |
| SDK-53104 | 720590 | 56840_A0 56640_A0 56843_B0 | Added support for the API's bcm_cosq_stat_sync_get, bcm_cosq_stat_sync_get32 on Trident, Triumph Family, Valkyrie. Similar to bcm_cosq_stat_get(), value returned is software accumulated counter synced with the hardware counter. |
| SDK-53157 | 732567 | All | Updated API documentation that FP action DoNotCheckVlan cannot be set along with action IncomingMplsPortSet as DoNotCheckVlan is set by default whenever IncomingMplsPortSet action is set |
| SDK-53203 | 722629 | 88650_B0 88660_A0 88670_A0 | In 6.4.1 we introduce an optimized way to decapsulate overlay headers (L2GRE and VXLAN) for the case of multicast. So far 2-pass solution was introduced where on the second pass IPMC addresses added to the Tunnel termination database in order to terminate the IP header in the second pass. Using SOC property: DEFAULT_LOGICAL_INTERFACE_IP_TUNNEL_OVERLAY_MC user can set one global LIF ID for all IPMC termination on the second pass. see cint_l2gre.c for more details. |
| SDK-53248 | | 88650_A0 | We exhibit the various ipmc flows via two main functions in cint_ipmc_flows.c: ipmc_flows_rif_ipmc_enabled() and ipmc_flows_rif_ipmc_disabled(). |
| SDK-53253 | 731741 | 56334_B0 | In the previous release, SDK read back whole mpls label action table to reuse existing entries when invoking the function bcm_tr_mpls_get_vc_and_swap_table_index. In this release, SDK adds an option not to reuse entries to address performance concern. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------------|--------|----------|---|
| SDK-53264 SDK-63568 | 733415 | 88650_A0 | <p>Allow egress snooping for MIPs with out-LIF on system headers. By default, Arad does not provide any out-LIF information when snooping OAM packets at the egress. To allow this behavior set the soc property <code>custom_feature_egress_snooping_advanced</code> to 1. When MIP packets are snooped at the egress, the snooped copy will be prepended with an FTMH and a DSP extension. <code>FTMH.DSP_EXT_PRESENT</code> will be set to 1 and the DSP extension will include the out-LIF. The snoop command for egress snooping (up-MIP) will always be 2 and for ingress (down-MIP) always 1. Thus, when changing the snooping behavior by calling <code>bcm_rx_snoop_set()</code> with 2 or 1 in the <code>snoop_cmnd</code> field, the snooping will be updated for all MIPs in the system. Likewise when OAM frames will be snooped by a MIP at the egress, the snooped copy will always have <code>FTMH.MCID_OR_OUTLIF==2</code>. By default only multicast LTM packets are snooped to the CPU. The default behavior may be changed with <code>bcm_oam_action_set()</code>. Calling this function allows setting a new snoop destination or snooping other types of frames. The calling sequence is as following: 1. Configure a <code>bcm_rx_snoop_config_t</code> with the desired behavior (i.e. probability, size, dest_port, etc.) 2. Call <code>bcm_rx_snoop_set()</code> with the <code>bcm_rx_snoop_config_t</code> configured above and the <code>snoop_cmnd</code> field set to 1 (ingress). 3. Set a new trap with <code>bcm_rx_trap_create()</code> and <code>bcm_rx_trap_set()</code>. For the latter call, the <code>snoop_cmnd</code> field in the <code>bcm_rx_trap_config_t</code> struct should be set to 1 (ingress snoop command). 4. Call <code>bcm_oam_action_set()</code> with the desired configurations. The destination field in the <code>bcm_oam_endpoint_action</code> struct should be set to the trap code from step 3 using the macro <code>BCM_GPORT_TRAP_SET()</code>. The function <code>bcm_oam_action_set()</code> will update the egress snooping configurations to match those configured above for the ingress snooping. An example of this can be seen in the function <code>mip_egress_snooping_advanced()</code> in <code>examples/dpp/cint_oam.c</code>.</p> <p>Notes: 1. In this configuration only MIP snoop is allowed (snooping MEP packets is not supported). 2. Since there are 2 snoop commands used by all MIPs in the system (one each for the ingress and egress), changing the snoop behavior for one MIP will affect all other MIPs in the system. 2. When the packet gets snooped, the forwarded copy uses forwarding strength 3. If soc property <code>block_trap_strength_pmf_0/1</code> is set to lower strength then the packet will not get forwarded. 3. To get the described behavior JIRAs SDK-54865, SDK-54726 should be used as well.</p> |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|--------------------------------|---|
| SDK-53292 | | 88650_A0 88650_B0 | new soc property - <code>scheduler_fabric_links_adaptation_enable</code> when enabled, the scheduler will take current links' states into consideration when generating credits. (mostly useful in multi stage systems) |
| SDK-53293 | | 88650_A0 | When trying to use the System RED Cint to configure DP discard for multiple VOQs. An error occurs after configuring the first 64 VOQs. This error was due to alloc manager miss configuration. The fix is to Change alloc manager system, red max entities (<code>_DPP_AM_TEMPLATE_SYS_RED_DP_PR_MAX_ENTITIES</code>) from 64 to Multiple NOF Queues by 2. We are multiplying since we have 2 pointer per Queue. |
| SDK-53319 | 733446 | All 56850_A0 56850_A1 56850_A2 | Fixed <code>bcm_vxlan_vpn_create</code> , <code>bcm_l2gre_vpn_create</code> API to replace UUC/MC/BC IPMC index using <code>BCM_VXLAN_VPN_REPLACE</code> , <code>BCM_L2GRE_VPN_REPLACE</code> . |
| SDK-53323 | 734007 | 88030_A0 | Instead calculate total good packet using the register RUCA.. |
| SDK-53376 | | 56850_A0 56850_A1 56850_A2 | An issue was reported where I3 ip6route show was displaying NEGATIVE free entry values. In this release, the way to calculate the free number and the total number of IPv6 entries has been adjusted to address this issue and also to cover the number of IPv6/64 entries. It depends on <code>bcm_switch_object_count_get</code> to get the following objects: <code>bcmSwitchObjectL3RouteV6Routes64bMax</code> <code>bcmSwitchObjectL3RouteV6Routes128bMax</code> <code>defip_64_free</code> <code>defip_128_free</code> |
| SDK-53380 | | 88750_A0 88650_A0 | The previous issue is that deinit can only be exercised after successfully init, it is not acceptable in case a single CPU controls multiple devices, if one device fails in init, we have to reset the CPU which affect other devices. The current fix is that we support the partial deinit which will dealloc the resource that was allocated in previous init failure, then it can do the normal init which means one device init failure don't need to reset the CPU. |
| SDK-53405 | 721824 | 88650_A0 | Scheduling elements prints were added to the <code>gport</code> command. Additionally, "gport count" or "gport c" will print a summary of all gport types count. NOTE: <code>bcm_cosq_gport_traverse</code> was extended to include SEs of all types!!! |
| SDK-53433 | 731111 | All | In TDM bypass mode, in the FDT - the IRE TDM mask mode is configured by default for not reading from RTP link-integrity, but rather using the RTP reachable bitmap. When calling <code>bcm_fabric_tdm_direct_routing_set()</code> the usage of RTP link-integrity is enabled, without the ability to go back. So static link configuration will not be ignored, and the user can configure active links for TDM bypass mode. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|----------------------------------|--------------|---|---|
| SDK-53444 | 725754 | 56840_A0 | While rebooting the system an additional flap was seen on port during the BCM INIT. This has been resolved In phy init code, by disabling it first in case the attached phy is not an external phy and is not in warmboot procedure. |
| SDK-53451 | 735769 | 56640_A0 56640_A1 56640_B0 | On link up, the pause and MTU max values were not retrieved from config, resulting in all the config values becoming obsolete and default values being programmed. Fix is retrieval of the data from the config and override the default values so that the port values reflect the configured parameters. |
| SDK-53452 SDK-52881 SDK-48849 | 722247 | 56548_A0 56546_A0 56545_A0 56544_A0 56542_A0 56541_A0 56540_A0 56545_A1 56540_B0 56541_B0 56546_B0 56544_B0 56547_A0 56545_B0 56542_B0 | For Apollo2 device, the L3_DEFIP memory was partitioned into fixed size giving 2K indexes for v4/64V6 and 2K for 128V6. The change is to partition the L3_DEFIP table with the user defined values. User can give any number to change the max number of 128V6 entries and V4/64V6 entries. This user defined partition scheme is already supported for TR3/TD2. user needs to set these soc properties . ipv6_lpm_128b_enable=1 =====> This sets the new scheme active. num_ipv6_lpm_128b_entries = XXXX =====> Number of 128V6 routes Without this configuration, the SDK will set the table with default route tables. 128v6=2048 and v4/64V6=2048 |
| SDK-53482 | 88650 | A0 | Valgrind is a tool that reports cases where code uses uninitialized data. Currently when Valgrind is run and warmboot is done, some warnings are emitted for usage of uninitialized data. The source of these warnings are uninitialized data that are written to a file. In one case, there was a problem with 64 bit systems that would read bad data -- this was fixed. In the other cases, unused and uninitialized data was always written to the warmboot file. This data written to the warmboot file is now initialized without any implication on code logic. |
| SDK-53487 | 736250 | 56850_A0 56850_A1 56830_A1 56850_A2 56830_A0 56830_A2 | In the previous release, the restriction that the queues in strict priority mode must be in consecutive order on Trident2 family was not documented. In this release, this issue has been addressed by documenting the restriction. |
| SDK-53506 | 716783 | 56850_A0 56850_A1 56850_A2 | In the previous release, when the first strict priority member was a unicast queue, the function bcm_td2_sched_check_constraints() returned *ucmap=1 which was not correct. In this release, this issue has been addressed by setting *ucmap=0. |
| SDK-53507 | 736772 | 56850_A0 56850_A1 56850_A2 | This JIRA is a duplicate of SDK-53600. In which the API bcmPortControlMmuDrain is improved to check the empty state of each nodes and queues after the cells are drained. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|---|--|
| SDK-53508 | 736774 | 56850_A0 56850_A1 56850_A2 | In the previous version, in TD2, when the weights of queues were changed dynamically leaving the schedule mode unchanged, the traffic would be disrupted. In this release, the API <code>bcm_cosq_port_sched_set()</code> and <code>bcm_cosq_gport_sched_set()</code> have been improved to allow weights to be changed dynamically when the schedule mode is not changed. |
| SDK-53517 | | 56850_A0 56850_A1 56850_A2 | Added ability to support three ALPM profiles to provision different Pivot reservations. |
| SDK-53556 | 735811 | 56640_A0 56641_A0 56850_A0 56640_B0 56644_B0 56850_A1 56850_A2 | Index for COS_MAP_SEL table was being incorrectly set for CPU as ingress port (0). The higig packets ended up in a wrong queue due to wrong index for CMIC ports the index is retrieved from the soc layer and programmed. Corrected the index appropriately in TD2 and TR3 devices. |
| SDK-53561 | | 56846_A0 56850_A0 | TD+ L2_ENTRY table is shared between the two pipelines. Only X-pipe has SBUS access to the shared L2_ENTRY table. TD2 has independent L2_ENTRY_x and L2_ENTRY_y tables, but only access type 4 is supported in memory write operation for these two tables. The combination of L2_ENTRY table and access type 2 for Y-pipe has been added into skipped memory list. |
| SDK-53574 | 737396 | All | Fixed buffer overrun in fall-back implementation of <code>sal_strncpy</code> . Note that this implementation is not used in any of the primary system environments such as Linux and VxWorks. |
| SDK-53584 | | 56850_A0 | L2X table is read via DMA manner by default. If DMA fails, the table entries will be read via PIO manner again. If there is a parity error in L2X table, both DMA read and PIO read will trigger parity error reporting. The SER logging feature has been implemented to detect and filter the duplicate parity errors for the customer application. |
| SDK-53600 | 737427 | 56850_A2 | The API <code>bcmPortControlMmuDrain</code> has been improved to check the empty state of each node and queue after the cells are drained. |
| SDK-53602 | | 88650_A0 88650_B1 88660_A0 | TDM bypass traffic whose destination is the same FAP usually does not go through the fabric. Forcing of TDM bypass traffic to the fabric can be enabled/disabled using: <code>bcm_fabric_control_set(unit, bcmFabricForceTdmBypassTrafficToFabric, 1/0);</code> The current state can be retrieved using: <code>bcm_fabric_control_get(unit, bcmFabricForceTdmBypassTrafficToFabric, &enabled);</code> |
| SDK-53611 | 737404 | 56634_B0 | CPU can send ethernet packet and higig packet. For local switch disable feature, the register <code>ILOCAL_SW_DISABLE_DEFAULT_PBM_64</code> should be configured for CPU port when CPU is sending higig packet, but that is missed in SDK. This issue has been fixed. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|--|--|
| SDK-53628 | | 88660_A0 | Trill: Internal implementation was changed to remove my nickname duplication in SOC_PPC_MYMAC_TRILL_INFO. Fix does not change Trill multi-homing application |
| SDK-53630 | | 88650_A0 88650_B0 88650_B1 88660_A0 | Tunnel APIs replace: 1.Support bcm_tunnel_initiator_create to replace dip, vlan, dscp, ttl, sip and type of IPv4 tunnel with tunnel_id of tunnel or l3a_intf_id or l3a_tunnel_idx of intf. In case of IPv6 tunnel, dip6 sip6, ttl and type can be replaced. In case of ERSPAN tunnel on ARAD+, span_id and l3_intf_id can be replaced. 2.Support bcm_tunnel_terminator_create to replace tunnel_if, if_class and flags (BCM_TUNNEL_TERM_USE_OUTER_DSCP or BCM_TUNNEL_TERM_USE_OUTER_TTL) with tunnel_id. |
| SDK-53636 | 737820 | All | Added Level 2 warmboot recovery support for the following switch controls: bcmSwitchUseGport bcmSwitchL2PortBlocking bcmSwitchCallbackAbortOnError |
| SDK-53656 | 738788 | 88650_A0 | In Ingress Field Processor, validation of ISQ range in bcm_field_action_add() is incorrect, and as a result does not allow usage of the full range. This is fixed. |
| SDK-53657 | 737782 | 56846_A0 | When upgrading from sdk-6.2.5 to sdk-6.3.5 scache space for the differential state was not allocated for few modules. Fixed scache reallocation for RX, NIV, VXLAN modules during warm upgrades. |
| SDK-53661 | 737925 | 56850_A0 56850_A1 56850_A2 | TD2 TDM Oversubscription Issue, tx failure with mixed 10G/40G configuration was failing. This has been addressed by updates to the oversub group sorting algorithm. |
| SDK-53672 | 739010 | All | The validation logic which is valid for SQ/MC was preventing the creation of dynamic queues when the indexes were more than 8 (0 -15). Fixed the code to support dynamic queue indexing as well. The SQ/MC index validation is done for non dynamic ports only. |
| SDK-53673 | 738994 | 56850_A2 | Corrected the value of macro definition (BCM_IPMC_RANGE_IP6 and BCM_IPMC_RANGE_PIM_BIDIR). |
| SDK-53674 | 739094 | 56450_B0 56450_A0 | bcm_cosq_gport_attach API was not able to allocate non-contiguous queues to support more WRR queues/nodes. A new flag BCM_COSQ_GPORT_SCHEDULER_WFQ has been introduced to support this option. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|-----------|--------|-------------------------------|---|
| SDK-53684 | | 88660_A0 | DEFAULT BEHAVIOR CHANGE. In Field Processor, when using external TCAM, valid entry priorities values are now limited to the range of 0 to 4194303 (2^{22}). Additionally, when creating an ACL group in the external TCAM, the user may specify the max entries priorities they intend to use in this group by setting the <code>max_entry_priorities</code> parameter in <code>bcm_field_group_config_t</code> . Indicating the max entry priorities will result in improved control performance of the external TCAM driver. Note that if the <code>max_entry_priorities</code> parameter is set, the valid entry priorities values for the configured group are limited to the range of 0 to <code>max_entry_priorities</code> . Also note that <code>max_entry_priorities</code> parameter is only supported for external TCAM. |
| SDK-53732 | 732324 | 88650_A0 | In Field Processor, the user can qualify packets according to the trap-code (<code>bcmFieldQualifyRxTrapCode</code>). The <code>bcm_field_qualify_RxTrapCode</code> expects only a <code>bcm_rx_trap_t</code> parameter, indicating which trap. Thus, it does not support User-Defined traps (since no ID can be specified). Besides, for <code>bcmRxTrapL2Cache</code> Trap-code, two possible set of traps can be qualified: 1. By default, the programmable traps are qualified. Due to their HW value (not divisible by 4), only the 2 first programmable traps are qualified. 2. If the SOC property <code>custom_feature_trap_l2_cache_field_reserve_mc_hit</code> is set, then the 8 Reserve-Multicast traps are qualified instead |
| SDK-53741 | 738835 | 88650_A0 88650_B0 88660_A0 | In BCM886XX, the L2 traverse HW allows the definition of flexible rules to traverse and modify the MAC Table entries, including a flexible mask (both on entry key and payload). The <code>bcm_l2_match_masked_traverse</code> is implemented, and examples of L2 traverse can be found in <code>\$SDK/src/examples/dpp/cint_l2_traverse.c</code> . |
| SDK-53757 | 733995 | 88650_A0 88650_B0 88650_B1 | Clear ipv6 tunnel using <code>bcm_tunnel_initiator_clear()</code> is now supported. |
| SDK-53763 | | 88660_A0 | 1. Add support of enable/disable learn functionality in <code>bcm_port_learn_set</code> function for Trill port. 2. Add <code>cint</code> with learning disable for virtual RBridge that receive packet with ingress nickname equal to own virtual nickname. |
| SDK-53770 | | 88650_A0 88660_A0 | Advanced VLAN Edit: Added an example functions for QoS mapping configuration in <code>cint_advanced_vlan_translation_mode.c</code> : <code>qos_default_settings()</code> , <code>add_qos_mapping()</code> and <code>set_qos_mapping()</code> . |
| SDK-53776 | 739518 | 88030_B0 | Support 4Gbits DDR part, allow row sharing and provide a "TmuAllocDump" to show detailed DRAM usage for bcm88030 |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|---|---|
| SDK-53794 | | 88650_A0 88650_B0 88650_B1 | Replace functionality in L3: Added support to replace intf, mac_addr, vlan, port, qos_map_id and encap_id by bcm_l3_egress_create with BCM_L3_REPLACE flags. Added support to replace intf_array by bcm_l3_egress_ecmp_create with BCM_L3_REPLACE flags. |
| SDK-53800 | 739936 | All 56450_A0 | When bcm_mpls_port_add() was called with new label and BCM_MPLS_PORT_REPLACE flag, a new mpls entry was being added without deleting the old mpls entry with old label. This has been fixed. |
| SDK-53802 | 740202 | 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 56851_A0 56852_A0 56852_A1 56853_A0 56853_A1 | Updated TSC transcription algorithm to resolve incorrect TDM programming for partial TSC configuration |
| SDK-53810 | 739299 | All | <p>Background: ===== Whenever SDK performs MDIO write/read operation, the linkscan event has been stopped before the operation and restarted after the operation. The reason behind this, prior to CMICm, software has to stop the linkscan before any MDIO write/read operation as the MDIO controller in hardware doesn't handle parallel access between link and MDIO write/read.</p> <p>Problem: ===== When a port is set to disabled while configured at 100M speed, the link down interrupt from the CMICm is missed. The time between the linkscan event restarts and the interrupt generation from CMICm is not synchronized. It could be due to some race condition.</p> <p>Solution: ===== SDK should be able to perform MDIO write/read operation without stalling active linkscan operation now as it is handled in CMICm hardware (well controlled by HW MDIO controller). Hence, removed the bcm_linkscan_pause() and bcm_linkscan_continue() functions from all the miim read/write calls.</p> |
| SDK-53822 | | 56850_A1 56850_A2 56850_A0 | provided new objects to get the information about a) Max 128B V6, 64B V6, V4 entries for a given configuration b) used 128B V6, 64B V6, V4 entries c) Free 128B V6, 64B V6, V4 entries |
| SDK-53830 | | 88650_A0 88650_B0 | When calling bcm_port_match_add with an egress match, with a valid input but a remote port, the return value should be BCM_E_NONE without any configuration. Instead return value is BCM_E_NOT_FOUND. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|--|--|
| SDK-53875 | 737326 | 56850_A0 56850_A1 56850_A2 | There was no BCM API to control the L2 learning per VXLAN logical port before. Now <code>bcm_port_learn_get/set</code> can be re-used to get/set the L2 learning per VXLAN logical port. |
| SDK-53876 | 740022 | 56850_A0 | <p><code>bcmFieldQualifyMhOpcode</code> and <code>bcmFieldQualifySourceVirtualPortValid</code> qualifiers offsets are updated for Ingress Field Processor to match with regfile (56850).</p> <p>Problem : SDK was unable to use <code>bcmFieldQualifyMhOpcode</code> and <code>bcmFieldQualifySourceVirtualPortValid</code> qualifiers in the Key format - FPF3 in Ingress Field Processor.</p> <p>Solution : <code>bcmFieldQualifyMhOpcode</code> and <code>bcmFieldQualifySourceVirtualPortValid</code> qualifiers offsets are updated for Ingress Field Processor to match with regfile (56850).</p> <p>This is done in Initialization routine of Ingress Field Processor for the Key Format - FPF3 .</p> |
| SDK-53885 | 740483 | 56450_A0 | Fixed the issue where entry in <code>EGR_MPLS_VC_SWAP_LABEL_TABLE</code> is replaced when a different MPLS port uses the same VC label but having different properties. With this fix a new entry will be created in the above mentioned table instead of replacing the existing entry. |
| SDK-53890 | | 88650_A0 | Fix of building errors occurred when the Makefile includes KBP flags : <code>+ FEATURE_LIST := KBP + KBP_DEVICE := KBP_ALG</code> and missing WB flags: <code>- CFGFLAGS += - DBCM_WARM_BOOT_SUPPORT - CFGFLAGS += - DBCM_WARM_BOOT_SUPPORT_SW_DUMP - CFGFLAGS += - DBCM_EASY_RELOAD_WB_COMPAT_SUPPORT</code> |
| SDK-53894 | | 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 | Support added for software assisted virtual port L2 flush. In addition, there was an issue where the software copy of the L2 entries learnt on external ESM was out of sync with the hardware,. This is now handled by correctly extracting and updating external L2 entries into internal software copy. |
| SDK-53907 | 740307 | 88650_A0 | Fixed alloc manager failure in case PWE is created over LAG. The scenario that caused failure: 1. Tunnel application setup using <code>l3_egress_object</code> on a LAG port. 2. Create a PWE on the tunnel interface |
| SDK-53912 | 739785 | 56850_A0 56340_A0 | Added ability to support ETAG(Port Extender VLAN Tag) tunneled mirror. |
| SDK-53919 | 740350 | All | STG Id - 0 is reserved and used for internal purposes only and VLANs should not be added to this group. Updated the users guide with the above information. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|-------------------------------|--|
| SDK-53926 | 740455 | 88650_A0 | <p>In Metering HW, rate configuration is performed via a mantissa and exponent representation. An internal SW function is used to convert from a rate to the mantissa and exponent representation, and takes as input the maximal allowed exponent and mantissa.</p> <p>Due to a bug, in some cases this function could return an out-of-bounds value (bigger than the maximal mantissa), which causes an assertion failure when the value is written to the HW.</p> <p>This is now fixed.</p> |
| SDK-53934 | | 56850_A0 56850_A1 56850_A2 | <p>In previous releases, if we configured L3Depth larger than 0, it was not possible that single-wide or double-wide entries could be moved to other banks to free its original space for wider entries like double-wide or quad-wide entry. In this release, single-wide or double-wide entries can be moved to other banks to free its original space for wider entry, and the total utilization of L3 benefits from this.</p> |
| SDK-53935 | | 56850_A0 | <p>In earlier releases, <code>bcm_l2_matched_traverse</code> API call did not have a way to retrieve Static only entries. Code has been added to deal with the action for the STATIC only entry. When the action is for the STATIC only entry, we now set <code>STATIC_BIT</code> in both data and mask fields.</p> |
| SDK-53940 | | 56850_A2 | <p>There is one issue for eye scan extrapolation that yields 1e-0.0 BER. The reason is that the sample points used in the extrapolation are less than 2 and the eye scan function rejects its calculation. Also the sample points are not screened, but to include all nodes, to fit the extrapolation equations. This JIRA is to fix these issues by picking or creating the proper sample points for extrapolation.</p> <p>For the PRBS error count, the read back from the PRBS status register is 2X for some counting modes, but the calculation equation is expected to be 1X in eye scan, while 2X in the eye margin. This JIRA irons out the difference by changing the eye margin to expect 1X as well.</p> |
| SDK-53946 | | 88650_B1 88660_A0 | <p>Important note: in Fiber channel APIs, due to an API change, the user must replace <code>bcm_fcoe_zone_entry_t->vsan.vsan</code> by <code>bcm_fcoe_zone_entry_t->vsan_id</code>, e.g. in <code>bcm_fcoe_zone_add</code> API.</p> |
| SDK-53952 | 741900 | 56450_A0 | <p>Resource leakage issue in <code>EGR_MPLS_VC_AND_SWAP_LABEL_TABLE</code> caused by <code>bcm_mpls_port_add()</code> API is fixed.</p> |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|--|--|
| SDK-53955 | 740686 | 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 some configurations, ISM memory buckets greater than what is desired was being allocated. This has been addressed by correctly allocating just what is needed, by checking for boundary conditions. |
| SDK-53956 | | 88650_A0 88650_B0 88660_A0 | Egress compensation can be configured for egress ports using the API <code>bcm_cosq_control_set</code> (<code>bcmCosqControlPacketLengthAdjust</code>). When the compensation is configured for port with headertype <code>XGS_DiffServ</code> , <code>XGS_HQoSan</code> error will occur. Fixed. |
| SDK-53960 | | 88650_A0 | when running on little Endian CPU (gto is big Endian) some field BCM APIs may fail, for example following : create pre-selector egress PMF entry with qualifier <code>bcmFieldForwardingTypeIp4Ucast</code> . The fix was in the internal function <code>"shr_bitop_range_copy"</code> |
| SDK-53961 | | 88650_B0 | 5.75G support is added for ILKN mode |
| SDK-53963 | 741711 | 56850_A2 | Fixed VXLAN/L2GRE tunnel initiator's udp port update functionality. |
| SDK-53968 | 740158 | 56850_A0 | Fixed to validate VXLAN and L2GRE VPN during <code>port_delete</code> and <code>port_get</code> API. |
| SDK-53972 | | 88650_A0 | Petra-B-ARAD system: initialize values correctly for system-headers under Petra-B ARAD system |
| SDK-53992 | | 56640_A0 56850_A0 56640_A1 56640_B0 56850_A1 56850_A2 | When a new V6 prefix group is being created and if the start index falls in paired TCAM the following is being done. 1. Check if the previous prefix group has free entries in unpaired TCAM. If yes, set the start of the new prefix group to be that index. 2. if the previous group doesnt have any free entries in unpaired tcam, try to move entries up. if entries can be moved up, then set start as start - 1 of the next prefix group. |
| SDK-53993 | 742520 | 56450_A0 | The <code>bcm_port_match_add()</code> API was writing the data into wrong entry in <code>vlan_xlate</code> table because the search key did not include the field <code>source_type=1(sg1p)</code> . As a result it was not matching the existing entry. Modified <code>bcm_mpls_port_match_add()</code> API to include the <code>SOURCE_TYPE</code> field as part of key for adding entry in <code>VLAN_XLATE</code> table. |
| SDK-53994 | 741664 | 88650_B0 88650_B1 | L3: TTL scope entries were not freed when the RIF is deleted. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|--|--|
| SDK-53996 | 741161 | 56640_A0 | Fixed the problem of wrong tunnel index generation in SDK. The tunnel index was wrongly multiplied by 4 before being written into hardware. it made the tunnel index space to use only quarter entries in hardware. Rest of the tunnel indexes values were out of the limit to be written into hardware and resulted in error. Due to this reason, the capwap tunnels were able to scale only to quarter of full hardware space. |
| SDK-53998 | 737239 | 56800_A0 56334_A0 | In previous SDK, the statistics snmplfOutDiscards returned wrong value on some old devices. This snmp counter was mapped to MMU_CTR_MC_DROP_MEMm, but this memory was not existed in some old devices, so the counter should be mapped to some other memories. This issue has now been resolved. |
| SDK-54001 | | All | Show KNET protocol override option in CLI help. Added proper support for protocol override in bcm_knet_filter_get API. |
| SDK-54004 | | 56640_B0 | Added the support code for the new SKU BCM56044. |
| SDK-54009 | 739826 | 88650_A0 88650_B0 88650_B1 88660_A0 | In L2, during access of static entries (get or delete operations), the parsing of the MAC entry age field was incorrect, causing an internal function failure. The parsing error is fixed, including the removal of an unneeded HW access. |
| SDK-54014 | | 88660_A0 | In BCM88660, the user can select packets which tries to transplant a static MAC Table entry during learning. Specifically, when a statically inserted MACT entry is matched in the learning lookup, but the Source-Port is mismatched, the entry is not modified. If the user wants to match in Ingress Field Processor such packets, The fix includes: 1. Setting Out-LIF valid bit when inserting a static L2 entry with no OutLIF and no valid EEI. 2. Modifying the is-dynamic-entry indication to fix the transplant indication that arrives to the FP. 3. Running cint_field_drop_static_sa_transplant.c (new CINT example) to drop such packets |
| SDK-54015 | | 88650_A0 88650_B0 88650_B1 88660_A0 | In the policer module, when calling the bcm_policer_create and bcm_policer_set functions, the BCM_POLICER_REPLACE can be used to replace the configuration of a meter, or the template that the meter points to. A cint example has been added that shows how to use the BCM_POLICER_REPLACE flag to change the configuration of a meter. For details see the function metering_replace_example in cint_policer_metering_example.c. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|-------------------------------|--|
| SDK-54019 | | 88650_B1 88660_A0 | Provide a CINT example for followed improvement. In case of L2GRE and VXLAN bud node, MC packet received from overlay recycle port couldn't be decapsulated correctly at previous release. Now the issue was fixed based on new soc property <code>default_logical_interface_ip_tunnel_overlay_mc</code> . |
| SDK-54021 | | 88650_A0 88650_B0 | Bug was fixed in event handling of events with high RMEP indices for Arad A0/B0. |
| SDK-54031 | 743203 | 88650_A0 88650_B0 88660_A0 | Configuration of the Credit Discount of ISQs is now possible using: <code>bcm_cosq_control_set(unit, isq_gport, cosq, bcmCosqControlPacketLengthAdjust, header_size);</code> |
| SDK-54034 | 743244 | 56850_A0 56850_A1 56850_A2 | Added <code>bcmFieldQualifySrcNivGport, bcmFieldQualifyDstNivGport, bcmFieldQualifyDstGport</code> Qualifiers. In this JIRA, these new qualifiers are initialized only for TD2. Updated <code>bcmFieldQualifySrcGport</code> Qualifier in TD2 to support Niv source GPORT. |
| SDK-54035 | | 56850_A2 | This JIRA is to fix the port status (ps) command about the speed reporting problem for 11G forced speed modes for the TSC driver. |
| SDK-54037 | 739743 | All | On certain devices which do not support the blocking of <code>KNOWN_MCAST</code> type of traffic a fix has been added to no longer return error. This issue was originally reported on Raven |
| SDK-54038 | | 88650_A0 | In Field diagnostics (mode 3) entries validation is performed for all banks. This causes a segmentation fault because it should only be for banks that their owner is PMF, since the entry management for other owners is not performed by PMF. Fixed. |
| SDK-54042 | | 88650_B1 | In BCM L3 file, the macro <code>DPP_VRF_VALID(_vrf)</code> definition included a limitation that was not correct for Arad devices. This caused an error when trying to create a L3 interface with <code>VRF>255</code> . The macro definition is changed to support the Arad's limitation. |
| SDK-54053 | 743221 | 56640_A0 56640_B0 | On parity error in MMU counters the hardware was not clearing the entries. As a fix, when the parity error happens we now clear parity status and then clear the entry. |
| SDK-54055 | | 88650_A0 | Trill: <code>bcm_trill_multicast_entry_get</code> is now supported. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---|--------|--|---|
| SDK-54058 SDK-53881 SDK-53879 SDK-53878 SDK-53880 | | 88650_A0 | <p>The Drop-Precedence (DP) is a value that represents QoS internally. The DP is a 2 bit value that represents the colors green (0), yellow (1-2), and red (3).</p> <p>Today, when a packet was received in the device, and its DP was resolved to 2 (or yellow), the device would change it to 1 (also yellow) when sending the packet. This is a result of an attempt to always represent yellow as 1.</p> <p>However in some cases -- for instance when a packet is sent to the device and receives a DP of 2, and this DP should remain 2 -- this will cause problems for the user.</p> <p>This is now fixed by keeping the DP at the same value instead of changing it to 1.</p> |
| SDK-54063 | 743248 | 56643_A0 | <p>XMAC_OSTS_TIMESTAMP_ADJUST accounts for delays during the mac stage. This register was always being programmed to zero. Now, This register will be configured with proper value for non GE ports, and for GE ports this will be configured to zero. The value of this register doesnot matter for GMII/MII speeds</p> |
| SDK-54064 | 743921 | 88650_A0 88650_B0 88650_B1 | Resolved schan time out when setting pfc refresh timer. The error is caused by reading non-existent register. |
| SDK-54067 | | All | Converted MAID value to network byte order before writing to HW table in order to avoid CCM convergence issues arising due to host processor endianness. |
| SDK-54072 | 744057 | 56850_A0 | Updated bcmFieldQualifyDstNivGport,bcmFieldQualifyDs tGport Qualifiers to support Niv GPORT at EFP in TD2 |
| SDK-54075 | | 88650_A0 88650_B0 88650_B1 88660_A0 | VLAN-compression: Delete correctly global VLAN range, in case of no ports refer to it. |
| SDK-54083 | 735871 | 88650_A0 88650_B0 88650_B1 | bcm_l2_addr_add() returns error when trunk_tgid is used and more than 256. This issue was due to wrong define max value. We fixed the define value. |
| SDK-54087 | 743745 | 56850_A0 | In the previous release bcm_mirror_port_dest_add failed with -18 on NIV ports,This issue has been fixed. |
| SDK-54088 | | 56850_A0 | In earlier releases bcm_l3_init() should clear rh_ecmp_flowset but this function did not work. This has been resolved. |
| SDK-54092 | | 88650_A0 88660_A0 | During Driver initialization, all the meter were initialized to use Meter-profile 0. This was unnecessary and removed, since the HW table was already initialized to zero. |
| SDK-54093 | 743673 | 88650_A0 | Ingress packet size limit is set to (16KB-128bytes) if the DRAM buffer size is 512 bytes or higher, and set to 8KB if the DRAM buffer size is 256 bytes. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|--|---|
| SDK-54100 | | 88650_A0 | Different threads (Counter Processor, Rx LOS) were failing due to forbidden access to the device during Warm-boot procedure. In counter processor case exceptional access is allowed. For RX LOS initialization postponed till after the Warm Boot finished |
| SDK-54114 | | 88650_A0 | In Field Processor, the Diagnostics command "BCM> diag field res" displays information on databases and banks. The number of entries per bank and database displayed by the diagnostic was incorrect when the entry (bank 0, line 0) was occupied by this Database. Fixed. |
| SDK-54115 | 743990 | 88650_B1 | Template management: Resolved issue in a template allocation mechanism that caused on some cases a crash in bcm.user when resource fails to be allocated. This could happen when asking for more profiles than device capable for example: asking more LLVP profile in bcm_port_tpid_class_set. |
| SDK-54117 | | 88650_A0 | port_enable_set API changed: The API is no longer stop EGQ or disable NBI FIFOs. Instead it drops the traffic in the NIF. |
| SDK-54131 | 744562 | 88650_A0 88650_B0 88650_B1 88660_A0 | CINT: Adjust vswitch_p2p_init, qos_map_gport to suit the correct number of parameters when called from cint_qos_l2.c, qos_map_l2_run_with_untagged respectively. |
| SDK-54148 | | 88650_A0 88640_A0 | In BCM L3 file, some errors were returned with a generic "TODO err message" text. All error messages in l3.c file are now meaningful. |
| SDK-54154 | | 88650_A0 | In Field Processor, internal and external TCAM tables shared a limitation for the number of uninstalled entries. This limitation is now separated for internal and external TCAMs, in order to allow better control of limitations and memory allocations. |
| SDK-54162 | 744768 | All | Fixed VXLAN/L2GRE issue with bcm_vxlan_tunnel_initiator_destroy API associated with same-SIP, Multi-DIP scenario. |
| SDK-54168 | 738971 | 56850_A0 56850_A1 56850_A2 | In previous release, parity error occurred at second half memory of ING_L3_NEXT_HOP could not be corrected. This has been resolved by correcting the memory depth of ING_L3_NEXT_HOP in SER. |
| SDK-54171 | | 88650_A0 88660_A0 | Move trill deprecated tests from 88640 devices to a deprecated folder. |
| SDK-54174 | 744799 | 88650_A0 88640_A0 88650_B0 88650_B1 88660_A0 | VLAN: Remove an incorrect "entry not found" error when calling bcm_vlan_port_create(). |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|----------------------------|--|
| SDK-54183 | 745284 | 88650_A0 88660_A0 | VLAN: Calling bcm_vlan_port_create with the BCM_VLAN_PORT_CREATE_WITH_ID flag, prompts an API check whether the requested ID is available. There was a bug where this check for valid ID would always check if a FEC ID is free, even though the VLAN port might be a multicast ID or a LIF ID. This bug was fixed, and now every VLAN port created WITH_ID would check the appropriate resource is free. |
| SDK-54185 | | All | knetctrl filter show did not display the dest_proto field. Show overridden protocol type when showing knet filter information in bcm shell. This has been addressed. |
| SDK-54186 | 743815 | 56850_A0 56850_A1 56850_A2 | Added SDK Support of ETHERTYPE key in FPF1 Mode 6 in Trident2 Chipset. |
| SDK-54191 | | 88650_A0 88650_B0 88660_A0 | Changed replace logic in bcm_l3_intf_create. After change, when creating I3 intf for the first time, REPLACE flag should not be added. when creating existing I3 intf, REPLACE flag should be added. |
| SDK-54192 | 738575 | 88660_A0 | DSCP/EXP marking when bridging allows the user to change the DSCP value of the IP header or the EXP value of the MPLS header of a packet, even when the packet is only bridged. To perform DSCP/EXP marking during bridging, the device is configured to set DSCP and EXP according to the assigned TC, DP, QoS profile and InLIF profile of a packet (map). Due to a SW bug, when configuring a map with TC 4 .. 7, nothing would be configured. As a result packets that have TC 4..7 assigned to them and that DSCP/EXP should be performed on them will get invalid DSCP and EXP values. This fix resolves this issue. |
| SDK-54194 | 745534 | 56850_A0 | An SDK crash issue was reported when trying to call bcm_l2_addr_replace() with > 8K MAC address configured on various of vxlan tunnels. This was resolved by correcting the memory allocation. The system now allocates memory for l2 freezing according to the actual size of SOURCE_VPM instead of 8192. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------------|--------------|-------------------------------|--|
| SDK-54195 | | 88660_A0 | MPLS tunnel works in two modes: Uniform and Pipe. For Pipe mode, struct <code>bcm_mpls_egress_label_t</code> has two flags: <code>BCM_MPLS_EGRESS_LABEL_EXP_SET</code> , <code>BCM_MPLS_EGRESS_LABEL_EXP_COPY</code> , to distinguish between different MPLS pipe modes. In ARAD Pipe mode supports only <code>BCM_MPLS_EGRESS_LABEL_EXP_SET</code> flag. ARAD PLUS supports global configuration of these settings, which is set using switch control <code>bcm_switch_control_set(unit, bcmSwitchMplsPipeTunnelLabelExpSet, 1)</code> ; Default of the behavior is <code>EXP_COPY</code> . The flags should be set in consistency with the global configuration. If <code>BCM_MPLS_EGRESS_LABEL_EXP_SET</code> flag is set but <code>bcmSwitchMplsPipeTunnelLabelExpSet</code> switch control is not called, an error will be generated. The same with copy - If <code>BCM_MPLS_EGRESS_LABEL_EXP_COPY</code> flag is set but <code>bcmSwitchMplsPipeTunnelLabelExpSet</code> switch control is called, an error will be generated. See an example of use in: <code>cint_mpls_lsr.c</code> <code>mpls_pipe_mode_exp_set</code> function |
| SDK-54202 | 741184 | 56240_B0 | MMU_INTR_MASK bits for CI0, CI1 and CI2 remain reset (set to 1) based on available memory banks. If number of external banks available is 0 then all for all CI0,1,2 the mask will be set. If it is 1 then the mask will be set for CI1 and CI2. if it is 2 then mask will be set only for CI2 and if it is 3 then mask will not be set for any of CI0-CI2. |
| SDK-54203 | | 56440_A0 56440_B0 | Parity checks will now be turned off for non-existent external DDR memory banks. |
| SDK-54205 | 738767 | 56850_A0 56850_A1 56850_A2 | It was reported that small packets will be dropped if <code>ENQ_ASF_HS_OVERSUB_EN</code> hasn't been set for the 40G ports which are in oversubscription cut through mode. The issue has been resolved as below: Add 40G/30G ports with oversub to <code>ENQ_ASF_HS_OVERSUB_EN</code> during init. As no matter the ports are enabled CT or not, these ports can always be in <code>ENQ_ASF_HS_OVERSUB_EN</code> . |
| SDK-54209 SDK-61547 | 744936 | 56340_A0 56342_A0 | Issue :- Segmentation Fault was observed when more than 254 Flex Counters were created in VFP region in Helix4. Fix :- Maximum number of Flex counters per pool were wrongly assigned during init. Updated the code with correct values. |
| SDK-54211 | 682994 | 88650_A0 88650_B0 88660_A0 | A bug in <code>bcm_oam_action_set()</code> causing certain OAM frames to be erroneously prepended with an additional set of system headers in certain situations was fixed. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|--|--|
| SDK-54212 | 690179 | 88650_B0 | The following bug was fixed: OAM endpoints deletion is not releasing internal allocations in case of insertion of a MEP, calling <code>bcm_oam_endpoint_action_set</code> and then deleting the endpoint. After performing this sequence several times a failure will be returned. |
| SDK-54213 | 736267 | 88650_A0 88650_B0 88650_B1 88660_A0 | Add received oversized frame counter (ROVR) value to <code>snmplfInErrors</code> counter (<code>bcm_stat_get</code> API). |
| SDK-54215 | | 88650_A0 88660_A0 | Added documentation for a traffic example and additional documentation per function in <code>cint_qos.c</code> |
| SDK-54220 | 745537 | 88750_B0 | When the CL72 mode is enabled, snake test with external loopback failed on fe1600, fixed. |
| SDK-54230 | 741970 | 88650_B0 88660_A0 | 1588 Termination: Added support to following 1588 termination classification (in addition to already supported 1588oE, 1588oUDPoIPoE): 1. 1588oUDPoIPoIPoE 2. 1588oUDPoIPoMPLSoE 3. 1588oEoMPLSoE Packets will be identified as 1588 packets regardless the forwarding header: Switching (Ethernet forwarding) Routing (IPv4/ MPLS forwarding) or Tunnel (IP/MPLS) termination. |
| SDK-54233 | | 88650_A0 88650ACP_A0 88650_B0 88650_B1 | Change diag pp DB_LIF_lkup_info diagnostic to print lif information instead of the rif information it was displaying previously. |
| SDK-54235 | | 88650_A0 88660_A0 | Egress VLAN Edit: EVE Operations are processed per packet after an ESEM lookup that yields an Out-LIF with a value up to 64K. ESEM entries for Out-LIFs with value above 32K, produced an incorrect Out-LIF value that in turn processed an incorrect EVE action. The fix enables correct EVE behavior for Out-LIFs above 32K as well. |
| SDK-54236 | | 88650_B0 88660_A0 | In external Tcam, in the application file kbp.c, compilation warnings may appear due to a wrong return value variable type. The variable type is fixed. |
| SDK-54246 | 733382 | 88650_A0 | When calling <code>bcm_oam_init(0)</code> , <code>counter_engine_source_0</code> was used for <code>INGRESS_OAM</code> and <code>counter_engine_source_1</code> was used for <code>EGRESS_OAM</code> , regardless of the soc property configurations. After the fix, any one of the 4 <code>counter_engine_source_Ns</code> may be used for egress/ingress oam, however if OAM is used, at least on counter engine must be set to <code>EGRESS_OAM</code> and at least one must be set to <code>INGRESS_OAM</code> . |
| SDK-54253 | 746153 | All | Implemented <code>bcm_field_qualify_data_get</code> API for all devices supporting User Defined Function in Field module. This helps to display qualifier data fed into User Defined Function during Field entry creation. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|--|--|
| SDK-54262 | | 56850_A0 56850_A1 56850_A2 | Using the API <code>bcm_cosq_stat_sync_get()</code> to retrieve statistics resulted in incorrect values for counters that are wider than 32bits. The reason being only the initial 32bits were being retrieved. Now the width of the counter is fetched before retrieving the counter value. |
| SDK-54263 | 744368 | 88650_A0 88650ACP_A0 88650_B0 88650_B1 | When replacing PWE using <code>bcm_mpls_port_add_api</code> with a new push profile, the old push profile was not freed which might cause resources leak. This issue is fixed. Note that replacing push profile is supported only in case PWE is protected. |
| SDK-54264 | | 88650_B0 88660_A0 | Required changes in SDK in order to support KBP-SDK 1.1.1 for external TCAM. |
| SDK-54266 | | 88650_A0 88660_A0 | Fixed a bug in the bcm shell diagnostic function "diag pp cc". The vlan port information displayed in the diagnostic was missing some fields. These fields will now be displayed correctly. |
| SDK-54269 | 746371 | 88660_A0 | OAM: Incorrect CCM interval was previously used. |
| SDK-54271 | | 88650_A0 88660_A0 88670_A0 | VPLS: Up to now, calling <code>bcm_mpls_port_create</code> would always allocate both InLif and OutLif. Current enhancement allocates OutLif resource only in case it's required by HW. In other words, in case of PWE unprotected P2P, OutLif is not allocated and can be used for other applications. |
| SDK-54279 | 738771 | 56850_A0 56850_A1 56850_A2 | Some PHYs always set the bit <code>XLMAC_RX_LSS_STATUS.LOCAL_FAULT_STATUS</code> no matter the actual speed the port is running at. This leads to always displaying local faults with the CLI command "port xe", which would confuse the customers when the port is running at speeds less than 10G. Now the local faults will be displayed only if the bit <code>XLMAC_RX_LSS_CTRL.LOCAL_FAULT_DISABLE</code> is clear. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|--------------|--|
| SDK-54307 | | 56850_A0 | <p>This query contained two questions related to the setting for <code>num_ipv6_lpm_128b_entries</code> in ALPM mode.</p> <p>The first question was about setting <code>num_ipv6_lpm_128b_entries</code> to 3072 with URPF enabled. This question was answered by Zheng Wang, and it looks like we do not support this configuration.</p> <p>The second question was about confirming the table sizes for I3 routes when varying the settings <code>ipv6_lpm_128b_enable</code>, <code>l3_alpm_enable</code>, and URPF. It looks like the table was mostly right with a small modification in IPv6 64-bit mode (<code>ipv6_lpm_128b_enable=0</code>).</p> <p>2. Disable IPv6-128(config add <code>ipv6_lpm_128b_enable=0</code>)</p> <p>2-1 Combined mode(config add <code>l3_alpm_enable=2</code>) IPv4-32(non-URPF)/(URPF) IPv6-64(non-URPF)/(URPF) 128K/64K 85K/21K</p> <p>2-2 Parallel mode(config add <code>l3_alpm_enable=1</code>) IPv4-32(non-URPF)/(URPF) IPv6-64(non-URPF)/(URPF) 64K/16K 21K/5K</p> |
| SDK-54309 | | 88650_A0 | KBP compilation fix for not GTO processors |
| SDK-54314 | | 88660_A0 | Add diag counter graphical representation for - <code>EQO_RQP_DISCARD_SOP_COUNTER</code> |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|-----------|--------|-------------------|---|
| SDK-54322 | | 88650_A0 | <p>1. In Ingress parser, the support of a single IPv6 extension header parsing is added, where only Hop-by-Hop extension is supported. 2. In Ingress Parser, the custom macro allocation is now dynamic. There are four configurable macros (aka custom macros), that are programmed to identify a header. These custom macros are dynamically allocated according to the enabled features (enabled by soc properties). The following soc properties determine the custom macros in the parser: -</p> <ul style="list-style-type: none"> -bcm886xx_ipv6_ext_hdr_enable - new soc property that enables IPv6 header extension parsing, requires two custom macros. -bcm886xx_fcoe_switch_mode - enables FCoE, requires two custom macros. -custom_feature_udp_parse_disable - UDP custom macro is configured by default, however, if needed it can be disabled by this soc property. Note that if disabling UDP parsing, then VxLAN and 1588oUDP are affected. -trill_mode - enables Trill, requires one custom macro. -bcm886xx_vxlan_enable - enables VxLAN, requires one custom macro. <p>In the specific case of UDPoIPv4oEth, enabling or disabling VxLAN changes the value of parser object end-leaf, which is used in Trap in case there is an error in the Header size or in case of invalid packet format code. 3. In Ingress Field Group, a new qualifier bcmFieldQualifyExtensionHeaderType is introduced, which refers to the Next Header field in first IPv6 extension header after IPv6 header.</p> |
| SDK-54323 | | 88650_A0 | Due to inefficient internal implementation, the allocation manager was taking a lot of time during the warmboot recovery. The implementation was changed to reduce the number of function called during restoration and to accelerate the warm reboot. |
| SDK-54328 | 743038 | All | When configuring an OAM endpoint, L3_LOCK was not being released when an endpoint was in multiple maintenance domain levels. This was corrected. |
| SDK-54329 | 735713 | 88750_A0 88650_A0 | Due to miss-configuration some corrupted cells not dropped as expected. Fixed. |
| SDK-54343 | | 88650_A0 | 11.25G ILKN speed support is added |
| SDK-54344 | | 88650_A0 | Device bring up fail when more than 191 ports are defined. fixed. |
| SDK-54346 | 746652 | 56850_A0 56850_A1 | bcm_l3_cleanup was causing ASSERT error with L3 Egress Mode enabled, nh_index -1 could be used for bcm_xgs3_nh_del as array index and eventually could cause array bounds write and break the defensive area of allocated memory. Added nh_index parameter check to avoid invalid access. |
| SDK-54347 | 738808 | All | <p>bcmPortControlFabricSourceKnockout was not documented in BCM SDK manual.</p> <p>Added documentation for bcmPortControlFabricSourceKnockout.</p> |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|-------------------------------|--|
| SDK-54352 | 743979 | 56850_A0 56850_A1 56850_A2 | In previous SDK, the COS_MAP_SEL table on TD2 sometimes was constructed incorrectly by bcm_cosq_gport_mapping_set API. The root cause of this problem was that the SDK would use ing_port to generate a index of the COS_MAP_SEL table, but this index was overwritten incorrectly and caused the problem. This issue has been resolved. |
| SDK-54357 | | 56850_A2 | The TX squelch function will be persistent through phy enable (on) function, so mac_loopback with port disabled could be operable with the helps of the above functions. |
| SDK-54363 | | 88660_A0 | PON: Trap packets that are send to PON port 12Bytes were added by egress-editor. 12Bytes padding is now removed. |
| SDK-54369 | 747308 | 56850_A2 | Fixed VXLAN/L2GRE Tunnel Terminator State modification during multicast_port_create |
| SDK-54378 | | 88650_A0 | To debug more easily warmboot issues, a SW state dump is available via BCM>diag ssdump The SW state dump output to screen can now be disabled. |
| SDK-54385 | 747110 | 88650_B1 | In the HW implementation of the Exact Match (EM) tables, a defrag machine can be enabled for all the EM tables. This machine was enabled only for Large-EM, and it is now enabled by default for all the EM tables. |
| SDK-54395 | | 88650_A0 88660_A0 | Support binding 32 LIF cos profiles to InLIF in case of local switching enabled. |
| SDK-54398 | 746146 | 56854_B0 56850_A2 | In previous releases, when one interrupt was raised rather than CHIP Function's, only it would beprocessed and the CHIP Function's was lost. In this release they will be processed one by one through comparing all the irqState with irqMask. |
| SDK-54400 | 746935 | 56850_A0 | Fixed EGR_PORT_TO_NHI_MAPPING during multicast egress object destroy |
| SDK-54414 | 739326 | 56640_B0 | following phy diag command is created to be able to poke into core0,1,3 and MLD register for100G plus port. And the format is phy diag pbm reg core0(core1, core2, mld) aer reg_addr (for read) phy diag pbm reg core0(core1, core2, mld) aer reg_addr write_value (for write) |
| SDK-54420 | 746955 | All 56850_A0 | Only physical gport type supported in function bcm_l2_addr_delete_by_vlan_gport_multi for specific usage, added support for trunk gport type accordingly. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|-------------------|--|
| SDK-54423 | | 88650_A0 | <p>Vlan Translation: a new feature is added to support configurable VLAN translation for IP packets according to 5-tuples (DIP, SIP, IP-next protocol, TCP/UDP src port, TCP/UDP dst port). In SW, the sequence to enable the feature is as follows: 1. Set SOC property: <code>vlan_translation_match_ipv4</code>. 2. Set VT port profile via <code>bcm_vlan_control_port_set</code> API using <code>bcmVlanPortPreferIP4</code> attribute. 3. Create VSI and add ports to VSI (create InLif). 4. Create Field Group using <code>bcm_field_group_create()</code> set QSET with <code>bcmFieldQualifyStageIngressVlanTranslation</code> and all 5-tuples qualifiers. 5. Configure ASET with <code>bcmFieldActionIngressGportSet</code> action, and call <code>bcm_field_group_action_set()</code>. 6. Add entries to created field group.</p> <p>This feature cannot coexist with EVB support</p> <p>A new CINT is added for example: <code>cint_field_flexible_qinq_example.c</code></p> |
| SDK-54424 | | 56850_A0 | Added new shell module - cosq. currently supported sub modules are compensation get/set for ingress/egress |
| SDK-54426 | | 88650_A0 88660_A0 | BFD doesn't work properly on management system (one CPU that controls more than one device). |
| SDK-54429 | | All | Added new API <code>bcm_stat_clear_single()</code> to clear a single port stat |
| SDK-54435 | | 88660_A0 | Important note: SOC property <code>ipmc_vpn_lookup</code> was misused in code. Default value of soc property was set to 1 but the actual SW implementation is default value 0. Default value of <code>ipmc_vpn_lookup</code> changed from 1 to 0 to match SW implementation. |
| SDK-54436 | | 88660_A0 | Support to enable global IPMC function when <code>ipmc_vpn_lookup_enable=0</code> , and IPV4 compatible MC packets forwarding is according to <RIF,G,SIP> regardless the VRF value. |
| SDK-54438 | | 88650_A0 | <p>Added diag for header size difference on ingress and egress.</p> <p>usage: <code>cosq comp ing voq=<id></code> - show ingress compensation <code>cosq comp egr port=<id></code> - show egress compensation <code>cosq comp ing [voq=<id>] Compensation=<value></code> - set ingress compensation <code>cosq comp egr [port=<id>] Compensation=<value></code> - set egress compensation</p> <p>if only compensation value is give (without port or voq), then all ports/voqs are set with the given compensation value.</p> |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|----------------------------------|--------------|-------------------------------|--|
| SDK-54441 | | 88650_B0 88660_A0 | OAM ARAD+ RDI can not be set by user. It is updated automatically according to: 1. Scanner LOC discovery on RMEP with same index as the MEP. 2. Received packet information. The mode can be set in <code>bcm_oam_endpoint_create</code> using the following flags: <code>BCM_OAM_ENDPOINT2_RDI_FROM_RX_DISABLE</code> , <code>BCM_OAM_ENDPOINT2_RDI_FROM_LOC_DISABLE</code> |
| SDK-54442 SDK-54129 SDK-54128 | | 88650_A0 88660_A0 | The meter feature has two possible modes of operation - 32K or 64K. In 32K mode, each packet has up to 2 meters with an ID spanning from 0 to 32K-1. In 64K mode, each packet has just 1 meter, with an ID spanning from 0 to 64K-1. The default Meter-ID is 0: - In 64K mode, Meter-ID 0 is set as an invalid pointer. Thus, the meter processor does not perform metering on a packet if its Meter-ID has not been modified. - In 32K mode, Meter-ID 0 was not set as invalid. Since meter 0 is defined to allow the maximal rate, there was no issue with traffic loss. However, it was affecting the color (drop precedence) given to the packet at egress. E.g., if a packet was yellow or red, its color could change to green, ignoring the incoming color, even if a valid Meter-ID was not set to this packet. Meter-ID 0 is now invalid also in 32K mode. Thus, a packet with default Meter-ID will not have its color changed by metering. Additionally, for backward compatibility sake, a SOC property is available to configure the device to set meter pointer 0 as valid: set the SOC property <code>custom_feature_meter_pointer_0_enable</code> to 1. |
| SDK-54460 | | 56850_A0 | In earlier releases, Embedded NH's MAC and Port information was absent in I3 table traverse. This has been resolved. |
| SDK-54484 | 745674 | 56850_A0 56850_A1 56850_A2 | <code>BCM_L2_REPLACE_MATCH_UC</code> and <code>BCM_L2_REPLACE_MATCH_MC</code> are provided for specifying which type of MAC entries will be performed the delete operation. Using the <code>BCM_L2_REPLACE_DELETE</code> flag and <code>BCM_L2_REPLACE_MATCH_MC</code> or <code>BCM_L2_REPLACE_MATCH_UC</code> or both to delete all Unicast entries, Multicast entries or both respectively. Using the <code>BCM_L2_REPLACE_DELETE</code> without either <code>BCM_L2_REPLACE_MATCH_MC</code> nor <code>BCM_L2_REPLACE_MATCH_UC</code> is the same as both are set. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------------|--------------|----------------------------|--|
| SDK-54500 | | 88660_A0 | In FCoE module, the NPV switch support is added. To configure it: 1. Set the relevant ports to be N_Port by using the <code>bcm_port_control_set</code> API with type <code>bcmPortControlFcoeNetworkPort</code> . 2. Add new routes for source routing by setting in <code>bcm_fcoe_route_add</code> API the flags to <code>(BCM_FCOE_SOURCE_ROUTE BCM_FCOE_HOST_ROUTE)</code> . Refer to <code>cint_fcoe_route.c</code> (<code>fcoe_fcf_npv_example</code> function) for configuration example. When setting the NPV functionality, 2 new FLP programs are required. |
| SDK-54501 SDK-51080 | | 88650_A0 88660_A0 | The template management is an internal module managing the profiles according to their attributes. A diagnostic has been added to display: 1. The profile-ID range per template IDs 2. How many objects are pointing to each profile 3. The raw content of each profile |
| SDK-54505 | | 88650_B1 | OAM packets of all opcodes trapped to the CPU at the egress (up-MEPs) will include the OAM-ID on the FHEI. In 6.3, to attain this behavior the soc property <code>custom_feature_oam_upmep_oam_id_on_fhei</code> should be set to 1. |
| SDK-54509 | | 88650_A0 | In general, SW state must be handled per unit, since multiple device SDK can run on the same CPU. Multiple global SW states have been found not to be defined per unit. Fixed. |
| SDK-54511 | | 56850_A0 | Changed the error type to Parameter error (<code>BCM_E_PARAM</code>) from <code>BCM_E_UNAVAIL</code> for the invalid relative offset input parameter in <code>bcm_field_data_qualifier_ether_type_add()</code> API. |
| SDK-54515 | | 88660_A0 | DEFAULT BEHAVIOR CHANGE (ARAD+ only). Out AC: Out ACs can be created in pairs by calling <code>bcm_vlan_port_create</code> with a <code>BCM_VLAN_PORT_WITH_ID</code> flag and pairs of <code>vlan_port_id</code> . A problem occurs when creating a pair of Out ACs (15 MSBs) with the odd entry created first. When the even entry is created second, the odd entry gets corrupted. The issue detailed above affects the Out AC creation. Pairs of Out AC can be created correctly after the fix in any order. The fix include changing by default all empty EEDB entries to be with bit 34 set to 0. |
| SDK-54519 | | 56850_A0 56850_A1 56850_A2 | In the previous release, hash bits were not being calculated in <code>soc_td2_l2x_hash()</code> function. This has been fixed. |
| SDK-54529 | | 88650_A0 88650_B0 88660_A0 | OAM RDI clear event does not generate a callback |
| SDK-54533 SDK-57729 | | 56340_A0 56340M_A0 | Added separate Ingress Qualifier Init routine for Helix4 device with required offset changes as per Regfile |
| SDK-54536 | | 88030_A0 | It is not necessary to guard against oversubscribing the fabric |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------------|--------------|--|--|
| SDK-54544 | 748071 | 56840_A0 56440_A0 56850_A0 56450_A0 | We received a customer request to make an I2 entry not routable by resetting the flag BCM_L2_L3LOOKUP. In the previous release, some chips in the Trident family did not remove the entry from my_station_tcam table when the flag BCM_L2_L3LOOKUP was cleared. This has now been resolved. |
| SDK-54545 | 741393 | All 56850_A0 56850_A1 56850_A2 | There was a bug in the SDK when configuring the port using the following function in trident2 platform bcm_port_control_set(unit,port,bcmPortControlExtenderType,BCM_PORT_EXTENDER_TYPE_SWITCH) The SDK was setting the PORT.VT_KEY_TYPE_2 field correctly, but was not setting the PORT.VT_PORT_TYPE_SELECT field. However PORT.VT_PORT_TYPE_SELECT_2 field should be set. Fixed the port configuration in function 'bcm_port_control_set' |
| SDK-54551 SDK-50401 | 747647 | 56850_A0 | Support has been added for TD2 for bcm_port_subsidary_ports_get API. |
| SDK-54557 | 742238 | 88650_B1 | A priority list is a data structure that keeps a list sorted according to some priority. This data structure is used for TCAM management of the TCAM entries according to priority. Due to a SW bug, invalid memory is read and returned in a local function when trying to get the previous element of the first element, which can cause an invalid memory access. This fix resolves this issue, by returning the head in the aforementioned case. |
| SDK-54567 | 748978 | 88650_A0 88650_B0 88650_B1 | The bcm shell diagnostic command "diag pp dblif" support: - for vxlan: key: vni, data: vsi - for l2gre: key: vsid, data: vsi. |
| SDK-54571 | 749766 | 56643_A0 56644_A0 56643_A1 56644_A1 | Issue observed was P_START_SPRI was not programmed correctly and this was evident in CLI output of LLS command where the FC "first child" calculation does not match the index of first SP child. Fix provided - in port sched dynamic mode, the P_START_SPRI is correctly configured to the index of first SP child. |
| SDK-54573 | 745949 | 88650_A0 88650_B0 88660_A0 | bcm_port_tpid_class_get() should call the SOC_PPD_LL_PPARSE_INFO_clear before using the SOC_PPD_LL_PPARSE_INFO structure. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|-------------------------------|--|
| SDK-54585 | 742690 | All | During VPLS Virtual routing using Ingress Field Processor, REDIRECT TO DVP Action [bcmFieldActionRedirect] in Field module takes Virtual Port information from ING_DVP_2_TABLE for devices like Trident, Trident2, Triumph3. Currently we were configuring ING_DVP_TABLE only with next hop entries and support to configure ING_DVP_2_TABLE was missing. Hence added code to configure next hop entries in ING_DVP_2_TABLE during VP port add , through this JIRA. Also added code to delete next hop entries in ING_DVP_2_TABLE during VP port delete. |
| SDK-54589 | 749529 | 56850_A0 56850_A1 56850_A2 | Offset state was not being properly cleaned up when programming flex hash. In this release we have corrected the UDF_CONDITIONAL_CHECK_TABLE_RAMM configuration flow when destroy a flexible hash entry. |
| SDK-54604 | | 56450_A0 56440_B0 56450_B0 | In previous releases bcmCosqControlBandwidthBurstMax and bcmCosqControlBandwidthBurstMin could not update refresh rate based on burst and shaping rate. The implementation has been modified to calculate refresh rate and update shaper configuration. |
| SDK-54605 | 735909 | 56640_B0 | In single lane or dual lane mode, if the autoneg is enabled, firmware mode 0 should be used. However all the 4 lanes of that core firmware was to set to 0 instead of relevant lanes only. This has been fixed. |
| SDK-54606 | 651774 | 56850_A2 | The supports for per-lane PHY controls have been added in TSCMOD. |
| SDK-54610 | 750318 | All | The counter thread could end up in a continuous loop when sbusdma was busy/not initialized, In this release we have added timeout to break from this loop. |
| SDK-54615 | 748837 | 56224_B0 56224_A0 | Background: ===== bcm_vlan_translate_add(), delete, egress_add and egress_delete functions were not implemented to handle wildcard port parameter. Problem: ===== bcm_vlan_translate_add(), delete, egress_add and egress_delete functions were throwing error when wildcard port parameter was passed. Solution: ===== Added port specific check in bcm_vlan_translate_add(), delete, egress_add and egress_delete functions which allows user to perform vlan operations by passing wildcard port parameter. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------------|--------------|---|--|
| SDK-54617 | 777127 | 56640_A0 56634_A0 56640_A1 56640_B0 56634_B0 | In previous release, the schan response type for devices with ISM, e.g. Triumph3 and Helix4 is not properly checked. The following response types <code>SCHAN_GEN_RESP_L2_MOD_FIFO_FULL</code> , <code>SCHAN_GEN_RESP_MAC_LIMIT_THRESHOLD</code> and <code>SCHAN_GEN_RESP_MAC_LIMIT_DELETE</code> have been added in schan response type checking in the routine <code>soc_mem_generic_insert()</code> . |
| SDK-54619 | | 88650_B0 | Added diag "cosq flush" to flush all egress queues per port |
| SDK-54620 | | 88660_A0 | In L2 bridging, the number of MACT entries can be limited globally, per FID or LIF. During packet SA learning, events are sent to the OLP when the MACT entry number limit is exceeded. In BCM88660, a new functionality allows to disable sending these limit-reached messages, reducing the number of created events, by setting the <code>switch_control_bcmSwitchL2LearnLimitToCpu</code> to 0. In this case, in the HW, an interrupt is enabled to indicate that the limit was reached. |
| SDK-54621 | | 88650_B1 88660_A0 | For a packet performing a Traffic Management (TM) processing, the regular egress processing removes the system headers (i.e. FTMH and its extensions if exist, PPH and its extensions if exist, User-Header). An improvement allows to remove only the FTMH header and its extensions if exist. If the <code>custom_feature_otmh_keep_pph<port> SOC</code> property is set, then on this port all the headers starting from the PPH header are preserved. |
| SDK-54625 | | 88650_A0 | increased the table size for warmboot in <code>arad.soc</code> in order to have enough storage space when running with OAM application. |
| SDK-54635 SDK-37263 | | 56846_A1 | In the previous release, SDK only configured the mac driver of current mode when invoking the <code>mac_control_set()</code> function. In this release, we will do <code>mac_control_set()</code> in both XMAC and UniMAC MAC driver except for some special cases. This has been fixed. |
| SDK-54638 | 727800 | 56640_A0 56643_A0 56640_A1 56643_A1 56640_B0 56643_B0 | An issue was reported where external FP failed to qualify IPv6/TCP-IP packets with given L4SrcPort and L4DstPort. Corrected the offset of the qualifiers L4SrcPort, L4DstPort for external FP (<code>_FP_EXT_ACL_L2_IPV6_ACL</code>) during qualifiers init. |
| SDK-54640 | | 88650_A0 88650_B0 88650_B1 | For a TRILL Multicast entry, the get/delete APIs did not check both port and MC group match. It could cause deletion of an incorrect entry. This is fixed |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------------|--------------|-------------------------------|--|
| SDK-54641 | 746928 | 88650_A0 88650_B0 88650_B1 | STG: A "STG" diag cli command is added to operate or display STG info of device. The usages of "STG" command are listed as below. BCM.0> stg Usage (STG): Usages: stg create [<id>] - Create a STG; optionally specify ID stg destroy <id> - Destroy a STG stg show [<id>] - List STG(s) stg add <id> <vlan_id> [...] - Add VLAN(s) to a STG stg remove <id> <vlan_id> [...] - Remove VLAN(s) from a STG stg stp - Get span tree state, all ports/STGs stg stp <id> - Get span tree state of ports in STG stg stp <id> <pbmp> <state> - Set span tree state of ports in STG (disable/block/listen/learn/forward) stg default [<id>] - Show or set the default STG |
| SDK-54642 | 750484 | 88230_C0 | 1) Changed #if/#else/#endif comment at #endif to match #if, which was changed from BCM_FE2000_SUPPORT to BCM_SBX_SUPPORT. 2) Changed several internal functions beginning with string_to to static functions to make the more unique to the specific source file. |
| SDK-54646 | | 56340_A0 | SOC EGRESS METERING LOCK is not unlocked on exceptions which led to crash on event processing. Fixed in the exceptions to unlock the semaphore. |
| SDK-54661 | 750105 | 88230_C0 88230_B0 88230_A0 | Fixed Make procedure for 88230 devices |
| SDK-54669 SDK-52871 | 787225 | 56850_A0 | Previously, trunk based MY STATION TCAM was not programmed for VXLAN and TRILL. Now it is programmed as I3 egress object is created. |
| SDK-54672 | 749143 | All | Issue :- While doing warm boot(level 2) two times with intra slice double wide group, virtual map information in fp was not recovered properly after the first warm boot and this downgrades the recovery level from level 2 to level 1 during second warm boot. Fix :- While doing level 2 warm boot, after the warm boot succeeds, recreate the virtual map information based on the group information that was recovered. |
| SDK-54680 | | 88650_A0 88660_A0 | MPLS:bcm_mpls_port_add() supports BCM_MPLS_PORT_REPLACE flag to replace egress label only if the tunnel port id is protected. A problem occurs when calling bcm_mpls_port_add() with valid egress label but with BCM_MPLS_PORT_REPLACE. It doesn't return fail. bcm_mpls_port_add() returns BCM_E_UNAVAIL if the parameters include a valid egress label but with BCM_MPLS_PORT_REPLACE. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|---|---|
| SDK-54688 | | 56846_A0 56845_B0 56845_A2 56844_A0 56850_A0 56855_A0 56843_B0 56854_B0 56854_A0 56850_A1 | Issue :- A) Mirror resources(Entries configured in im_mtp_index/ em_mtp_index using MirrorIngress/MirrorEgress fp actions) are not cleaned while deleting FP entry in case FP installation FAIL case. B) Only 3 FP mirror actions are allowed even though there are 4 mirror indexes available in im_mtp_index/ ex_mtp_index. Fix :- ----- A) Added Support to clean up the Mirror Resources as well along with FP entry delete in case FP installation failure. B) It is a hardware limitation where only 3 FP mirror actions are allowed. |
| SDK-54689 | | 88660_A0 | Fix for 88660 egress multicast traffic getting stuck in high egress multicast bandwidth. |
| SDK-54692 | 747803 | 88650_A0 88650_B0 88660_A0 | OAM: Deleting a MEP with Long MEG ID fails with assertion. |
| SDK-54711 | | 88650_B0 88660_A0 | User-Header is a fabric header located between system-headers (FTMH, PPH) and start of packet (e.g., Ethernet). The user-header size is set via field_class_id_size SOC property. User-Headers-0/1 can have a total sizes of 0, 8b, 16b, 24b or 32b. The value of 24 bits was not enabled. This is fixed. |
| SDK-54715 | 722160 | 88660_A0 | In metering, color blind meters are used to do metering without referring to the color of the incoming packet. Currently when a meter is configured to be color blind, it will always drop incoming red packets by error, instead of ignoring the color. This fix corrects this behavior. |
| SDK-54722 | | 88650_A0 88660_A0 | In Field Processor, when creating or destroying TCAM entries, a time consuming debug code section was running. This code section has been removed, resulting in significant decrease of TCAM entries creation and destroying running time. |
| SDK-54725 | | All 56850_A0 | Support added in 'bcm_l2_addr_delete_by_vlan_gport_multi' API to flush L2 entries based on virtual ports, deletes based on virtual port trunks are also supported. |
| SDK-54726 | | 88650_A0 88660_A0 | The CCM and Loopback programs in the egress PRGE loaded LFEMs that were not used. |
| SDK-54731 | | 88650_A0 88660_A0 88670_A0 | The error message macros in the soc layer were renamed as following: _SOCDNX_SAND_IF_ERR_EXIT --> _SOCDNX_SAND_IF_ERR_EXIT _SOCDNX_EXIT_WITH_ERR --> _SOCDNX_EXIT_WITH_ERR In addition, a new macro was added: _SOCDNX_IF_ERR_EXIT_MSG |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|--|--|
| SDK-54748 | 749898 | 56450_B0 56440_A0 56450_A0 56440_B0 | bcm_port_rate_egress_set API allowed user to configure only the recommended minimum burst value irrespective of the passed burst argument. The API implementation has been modified to compute the shaping parameters based on shaping rate and burst value and configure the hardware tables accordingly. |
| SDK-54755 | | 88650_A0 88660_A0 88650_B0 88650_B1 | PON: SDK now supports also L3 subnet source-bind. For more information see <code>src/examples/dpp/pon/cint_pon_general_anti_spoofing.c</code> |
| SDK-54761 | 752348 | All | Fixed potential endless loop during PCIe Deemphasis settings, by limiting the range to search for PCIe Capabilities registers to valid range. |
| SDK-54763 | 751831 | 56450_A0 | Support has been added for following features for Katana2: 1. Advanced URPF lookup where 2 lookups, both DIP and SIP, are performed using single L3_DEFIP entry at line rate. 2. Capability to add IPv6 LPM entries with subnet mask greater than 64 bits. By default 1K entries are reserved for Ipv6 LPM entries with subnet mask > 64 bits. The default behaviour can be overridden by setting config variable <code>num_ipv6_lpm_128b_entries=0</code> |
| SDK-54775 | 750966 | 88650_A0 88650ACP_A0 88650_B0 88650_B1 88660_A0 | L2CP (Layer2 Control Protocol) traps were not updated correctly when calling multiple times <code>bcm_l2_cache_set</code> . |
| SDK-54776 | 751147 | 88660_A0 | The OAM and BFD applications are using TCAM HW to identify some OAM packets on transit tunnels, what causes them to be trapped. A SW bug was allowing using a prefix for this key, and multiple Databases were created (for specific forwarding-types). The fixes are: 1. when OAM is enabled, all the packets performs a look-up into this Database at the forwarding stage (i.e. for any forwarding type). 2. since the HW key length for this TCAM Database, there is no place for prefix and this Database is using exclusively now the TCAM banks 12 and 13. 3. the different Databases were unified to a single Database, since forwarding-type is part of the key. |
| SDK-54779 | 748470 | 56850_A0 56850_A1 56850_A2 | In the previous release, the feature of cosq warmboot in TRIDENT2 was not supported. In this release, this issue has been addressed by syncing the left members of <code>_bcm_td2_mmu_info[unit]</code> . |
| SDK-54792 | | 56640_B0 | On TR3, if <code>EGR_ING_PORTm</code> register is not configured, L3 traffic received on EHG port seen as source mac and destination mac zero on cpu port. Added configuration for <code>EGR_ING_PORT</code> . |
| SDK-54802 | 738723 | 88750_A0 | In polling mode, the hardware IRQ mask is always zero. This is TRUE for all devices. Implementation fixed to achieve this. |
| SDK-54810 | 752795 | 56450_A0 | Support added for BCM56450 (Katana2) to match 3 MPLS labels in UDF. |



Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------------|--------------|-------------------|---|
| SDK-54819 SDK-53920 | 752509 | 56450_A0 56440_B0 | During port shutdown traffic buffered in the queues for the port was not flushed. Implemented queue flush during port shutdown . Implemented the thresholds reset and replay for the flush activity to be completed during congestion scenarios. |
| SDK-54840 | 753240 | 88660_A0 | Broad Sync API: implemented ToD get function (<code>bcm_time_capture_get()</code>). |
| SDK-54845 | 753234 | 88650_A0 | fixed C++ compilation error: added missing <code>"#include <soc/dpp/SAND/Utils/sand_footer.h>"</code> at the end of <code>arad_debug.h</code> . |
| SDK-54846 | 752653 | 88650_A0 88660_A0 | Enabled setting the he Packet-TC to Queue-TC mapping for ISQs using <code>bcm_cosq_port_mapping_set()</code> . |
| SDK-54848 | | 88650_A0 88660_A0 | CINT: New example for IPv4 routing over 802.1q where the VSI/RIF is explicitly supplied by the user and not determined by the incoming VLAN value. This allows VSI routing interface that straddles several LANs. The example uses In-LIF (per In-Port x VLAN) and Out-LIF (per VSI x Out-Port) to achieve that. Reference: <code>cint_ip_route_explicit_rif.c</code> . In the CINT example a routing scheme with two different Routing Interfaces(RIF) that are based on <Port, VLAN> added. |
| SDK-54849 | | 88650_A0 | IMPORTANT: Injection of TM packet with user define header is not supported on systems which have OAM yet (SDK-57826). Background: user headers are optional internal system headers located after the FTMH and PPH headers (extensions included). The User header can be used for different purposes: - Cascaded ingress egress ACLs, to transmit data from Ingress FP to egress FP - Various work-arounds The user header size is configured via <code>field_class_id_size_X</code> SOC property. Issue: when injecting TM packets with additional headers after ITMH (e.g. PPH or OAM-TS) and if the user headers are used, the user must include the user headers in the packet after the additional headers and before the payload (e.g. before the Ethernet header). Set this mode via the SOC property <code>custom_feature_injection_with_user_header_enable</code> . In this mode, the user header is not added: injected TM packets must be injected with a User-Header with the same size as the configured user-header size (<code>field_class_id_size_X</code>). If the destination port of the TM packets are Ethernet port, the user also must set the <code>custom_feature_user_header_always_remove</code> SOC property. |
| SDK-54865 | | 88650_A0 88660_A0 | issues in snoop APIs: <code>bcm_rx_snoop_get()</code> now returns the same size and probability as the values entered by <code>bcm_rx_snoop_set()</code> . |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|---|---|
| SDK-54869 | | 88660_A0 | BFD non-accelerated mep is restored incorrectly after WB. |
| SDK-54870 | | 88660_A0 | In Field Processor range APIs, internal commands were added to skip Warm-boot on these APIs during Warm-boot validation. |
| SDK-54877 | | 88650_A0 88660_A0 | Diag improvement: IPv4 multicast routing table can be displayed from diagnostic shell Diag pp IPv4_MC. |
| SDK-54880 | | 88650_A0 88660_A0 | Diag improvement: The allocation manager section now displays general information regarding all pools. In addition, support was added to the detailed information options of the IVE/EVE pools. The "hw" option was renamed to "direct". |
| SDK-54903 | 751870 | 88660_A0 | OAM: in arad plus, packet below the lowest MEP level was not trapped with trap code <code>error_level</code> as it should be but was forwarded. |
| SDK-54906 | 749980 | 54240_C0 54280_A0 54282_A0 54285_C0 54290_A0 54292_A0 54295_A0 | WarmBoot support for BCM54240/5428x/5429x has been added. |
| SDK-54907 | | 88650_A0 88660_A0 | Warmboot: The TPID profile stores up to two expected TPIDs for each port. Each profile can be used by multiple ports and should be discarded when no port is using it. Performing Warmboot has doubled the correct number of ports that are attached to each Port Profile. Thus, preventing proper discard of the TPID Profile when no ports are attached to it and eventually causing an init error that may happen after 256 Warmboots. The WB for Port TPID profile now functions correctly. |
| SDK-54921 | | 88650_B1 | In Egress Field Processor, when configuring <code>bcmFieldActionStat</code> action, a validation is performed on the data field value. The validation is incorrect, and in case the value is out of range, it will not be identified. This is fixed. |
| SDK-54923 | 752947 | 88650_B0 88650_B1 | For stacking systems, the KeepAlive application allows the CPU to retrieve the stacking link topology by sending unicast packets from CPU to CPU. The implementation is performing a specific process in the second stacking device when the <code>FTMH.Stacking-Route-History.MSB</code> is set. However, this process should be done only for Unicast packets. This is fixed |
| SDK-54927 | 752923 | 56450_B0 56450_A0 | In previous releases <code>bcm_cosq_gport_delete</code> API could return <code>BCM_E_TIMEOUT</code> during congestion scenarios. This issue has been fixed in API implementation by adjusting bandwidth and flush the packets completely. |
| SDK-54931 | | 56854_B0 | If there was an error in the internal functions of the <code>ecmp</code> create routines. the software state was not cleared. Made changes to clean the s/w state in case there is some error in internal routines or h/w writes of <code>ecmp</code> creation. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|----------------------------|--|
| SDK-54937 | 752666 | 88650_A0 88660_A0 | gport shell command shows incorrect voq id (-1) for ingress shaping queues. Fixed. |
| SDK-54939 | | 88650_A0 | In L2 Control Protocol traps, the attributes of the programmable traps and of the Reserved-Multicast traps are saved in the <code>rx_virtual_traps</code> variable between the RX-trap API definition and the L2-cache setting. This variable was not restored correctly after warmboot because the struct was not saved to external storage. Fixed. ISSU: if upgrading from an earlier version, this data is not restored. |
| SDK-54945 | | 56340_A0 56344_A0 | Big Endian mode has been added to the SDK when using Helix4 with iProc and latest LDK release To build SDK in Big Endian mode, type "make ENDIAN_MODE=BE". |
| SDK-54947 | 752756 | 56440_A0 | SDK support for 1588 Transparent Clock is added as part of this JIRA. |
| SDK-54971 | | 88650_A0 | In Field Processor, the cascaded value width is set via <code>bcmFieldControlCascadedKeyWidth</code> . The <code>bcmFieldQualifyCascadedKeyValue</code> qualifier has a length equal to this value. However, the <code>bcmFieldActionCascadedKeyValueSet</code> action had always a constant length of 20 bits. This length is reduced to {4 + cascaded width}, where 4 bits are needed for HW encoding. This improvement can be disabled by setting <code>custom_feature_increased_cascaded_action</code> to 1. |
| SDK-54980 | 753002 | 88650_A0 88660_A0 | 6.3.4 introduced a new feature called IGMP and Compatible-MC after existing tunnel (VXLAN, L2GRE, VPLS) in ARAD+. See <code>cint_igmp_example.c</code> for application explanation and valid packet flows. In HW it required to enable Second-stage-parsing in order to make the feature work. Second-stage-parsing should be enabled only for MPLS TT programs. By mistake we enabled Second-stage-parsing to MPLS, IPV6 and Trill while the correct configuration should enable it to MPLS only. The issue cause Packet-format-code to be Ethernet instead of IPV6 (or Trill). |
| SDK-54982 | | 88650_B0 88650_B1 88660_A0 | At egress, a new feature allows to maintain the User Defined Headers (UDH) before the packet exits the device, by defining <code>UDH_ETH</code> property. As a result, UDH is stamped pre-pending the packet headers. Enable this port by configuring the following SOC properties: 1. Update the port header type SOC property definition to <code>UDH_ETH</code> for this port: <code>-tm_port_header_type_out_[port#]</code> . <code>BCM88650=UDH_ETH</code> 2. Update the User Header sizes according to the <code>field_class_id_size_X</code> SOC property - see its documentation for the acceptable values. |
| SDK-54984 | | 88650_A0 | Fix an error when setting egress port bandwidth (<code>bcm_cosq_gport_bandwidth_set</code> , using <code>GPORT_LOCAL</code>) to low rate relative to other ports. |



Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|-------------------------------|---|
| SDK-54992 | 753214 | 56840_A0 | Updated Tx packet padding logic in Linux KNET module to properly handle RCPU encapsulation. The previous code could cause Tx data corruption if the padding required reallocation of socket buffer. |
| SDK-55003 | | 88650_A0 | In Rx thread, more internal fields (from FTMH, PPH and their extension headers) are parsed into <code>bcm_pkt_t</code> . A complete description of the parsed fields will be added to the TM User Manual. The parsing is done for ports of type CPU and STACKING. |
| SDK-55007 | 752699 | 88650_A0 88650_B0 88650_B1 | Port: <code>ilkn_interface_status_oob_ignore</code> can be used to force ILKN interface status indication. If ILKN interface status indication is forced up after the ILKN OOB interface is enabled, a low number of error message will be sent from ILKN interface. After the fix, ILKN lane and interface status indication will be forced up before the ILKN OOB interface is enabled. |
| SDK-55023 | 734742 | 88650_A0 | A new corrective action added at this interrupt handler which checking if the interrupt is cleared every 10ms. The mechanism stops only if the interrupt clear or period of 500ms passed. moreover we are suggesting to use <code>force_unmask</code> option for this interrupt in order to force unmasking the interrupt at the end of interrupt handler. The following is driver reference for this action: <code>uint32* flags; int inter = /*interrupt number*/;</code> <pre>rc=soc_interrupt_flags_get(unit, inter,&flags);BCMDNX_IF_ERR_EXIT(rc); if (value == 0) { SHR_BITCLR(&flags, SOC_INTERRUPT_DB_FLAGS_FORCE_UNM ASK); } else { SHR_BITSET(&flags, SOC_INTERRUPT_DB_FLAGS_FORCE_UNM ASK); } rc=soc_interrupt_flags_set(unit, inter, flags);BCMDNX_IF_ERR_EXIT(rc);</pre> |
| SDK-55026 | | 88650_A0 | XGS MAC extender port support 1G extension capabilities when ARAD/ARAD+ is connected to XGS devices to extend 1G capabilities in chassis. Several Ethernet Inport properties weren't configured right for XGS MAC extender port for example: custom macros for Trill header parsing were not set. Fixed. |
| SDK-55036 | | 56850_A2 | <code>ENQ_ASF_HS_OVERSUB_EN</code> is enabled during init for all the ports in TD2 [SDK-54205] hence the <code>ASF_ENABLE_HS_PORT_EP_CREDIT_CHK</code> also should be set to 0 on init. |
| SDK-55038 | 754635 | All | Add support for customer-supplied call-backs in the Linux KNET kernel module. The call-backs allow another kernel module to modify packet data and meta data before an Rx packet is handed off from the KNET driver to the Linux network stack, or when a Tx packet is handed off from the Linux network stack to the KNET driver. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|-----------|--------|---|---|
| SDK-55067 | | 88750_A0 88650_A0 88750_B0 88650_B0 88650_B1 88660_A0 | Added a mechanism to control logging and console messages formats. Please look at file <code>src/appl/diag/bsldnx.c</code> , function <code>bsldnx_cons_init()</code> . |
| SDK-55071 | | 56850_A0 | Implemented new data formats (macros) to match on the incoming packets with or without VNTAG/CNTAG/ETAG/ICNM packets. For example: setting <code>BCM_FIELD_DATA_FORMAT_F_VNTAG</code> flag, an entry is created in UDF_TCAM to validate on the incoming packets tagged with VNTAG. Likewise, setting <code>BCM_FIELD_DATA_FORMAT_F_NO_VNTAG</code> flag, an entry is created in UDF_TCAM to validate on the incoming packets without VNTAG. |
| SDK-55081 | | 56640_A0 56540_A0 56640_A1 56640_B0 56540_B0 | Before the code change <code>bcm_tr2_cosq_gport_get</code> function is returning only <code>BCM_COSQ_GPORT_UCAST_QUEUE_GROUP</code> , now code is added so that it returns flags as per the type <code>BCM_COSQ_GPORT_VLAN_UCAST_QUEUE_GROUP</code> (for vlan gport) <code>BCM_COSQ_GPORT_DESTMOD_UCAST_QUEUE_GROUP</code> (for dmvoq gport) <code>BCM_COSQ_GPORT_MCAST_QUEUE_GROUP</code> (for multicast gport port) |
| SDK-55083 | 753905 | 56340_A0 56340M_A0 | ISM total calculation was simplified. Previously total was incremented initially and from then, every time when the number of entries were bumped up. Now the increment will be done only when we allocate the memory from a bank to a table. |
| SDK-55084 | 753827 | 88650_A0 88660_A0 | Trap PWE TTL=0/1 is now supported: 1) <code>bcmRxTrapMplsTtl0</code> , <code>bcmRxTrapMplsTtl1</code> traps are now supported. 2) To set trapping PWE packets with TTL<=1 use <code>bcm_mpls_port_t.vccv_type=bcmMplsPortControlChannelTtl</code> . Example can be found in <code>cint_vswitch_vpls.c</code> |
| SDK-55095 | | 88660_A0 | Trill Warmboot: Upon warmboot, Trill init called to HW access as it shouldn't be. |
| SDK-55101 | | 88650_B0 88660_A0 | Required changes in SDK in order to support KBP-SDK 1.2.1 and higher. The changes include configuration of newly used instructions and their transport layer implementation. |
| SDK-55102 | | 88650_A0 88650_B0 88660_A0 | During initialization, the SOC property configuring the OTMH Destination extension has an uninitialized value, instead of being disabled by default. Fixed. |
| SDK-55107 | | 88650_A0 | Trill warmboot: Upon warmboot, trill sw states were not restored. |
| SDK-55109 | | 88660_A0 | ROP transctions failed when using LE CPU. Fix ROP access endianness. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|---|--|
| SDK-55132 | 752736 | All 56850_A0 56850_A1 56850_A2 | Software state and Ref-counts were not maintained across warmboot. Therefore After warmboot, <code>soc_profile_mem_get</code> api would not be able to retrieve the <code>l3_iif_profile</code> entry as the software states/ref-count are reset and not recovered. Added support to recover the <code>l3_iif_profile</code> state during level-2 warmboot. The bitmap for valid L3_IIF entries are stored in scache. After warmboot, The <code>l3_iif</code> entries are read from scache and ref-counts are set for <code>L3_iif_profiles</code> indexes. |
| SDK-55143 | | 88650_B0 88660_A0 | Required changes in SDK in order to support KBP-SDK 1.2.1 for external TCAM are introduced. |
| SDK-55161 | | 88650_A0 88650_B0 88660_A0 | IMPORTANT - API SIGNATURE CHANGE: For better coherency, the Multicast-ID parameter was changed in the <code>bcm_l2_addr_t</code> structure: the <code>l2mc_index</code> variable was changed to <code>l2mc_group</code> . If used, the user must adapt its calling sequence accordingly. |
| SDK-55162 | | 88660_A0 88670_A0 | IP Routing-Over-Overlay (ROO) refers to a set of protocols/applications where the L2 forwarding to the Host/Next-Hop router is not accomplished by simple 802.1q bridging, but by L2-Overlay protocols (VXLAN, etc). BCM8866X supports ROO Host Unicast over VXLAN. See <code>cint_vxlan_roo.c</code> for cint example and Programmer's Reference Guide for more details. |
| SDK-55167 | 755011 | 56455_A0 56640_A0 56850_A0 56640_A1 56640_B0 56850_A1 56850_A2 | Problem: PacketRes enumerations getting remapped internally causing data ,mask mismatch during qualifier installation. Solution: Updated code to qualify packet Resolution in below 2 ways: 1) print <code>bcm_field_qualify_PacketRes(0,0, BCM_FIELD_PKT_RES_L3UNKNOWN, BCM_FIELD_PKT_RES_L3UNKNOWN);</code> 2) print <code>bcm_field_qualify_PacketRes(0,0, BCM_FIELD_PKT_RES_L3UNKNOWN, BCM_FIELD_EXACT_MATCH_MASK);</code> This is also documented as valid set of mask values |
| SDK-55175 | 749262 | 88660_A0 | Extracting a BCM88660 that is configured to VSC128 cell format mode, caused performance degradation in the system. Fixed. |
| SDK-55184 | | 56850_A0 | Earlier SDK releases did not allow configuring MTU value for vxlan access ports. This release now supports setting/resetting MTU for vxlan access ports through <code>bcm_vxlan_port_add()</code> API. |
| SDK-55205 | 751154 | 56850_A0 | ENABLE_1588MPLSF flag is used to enable/disable encapsulation and decapsulation for PTP packets over MPLS. Memory validation check is added to avoid crash while accessing memory for chips that donot have this flag. TD2 does not have this feature. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|---|---|
| SDK-55222 | | 88660_A0 88670_A0 | MPLS: When adding MPLS termination label using api <code>bcm_mpls_tunnel_switch_add</code> , action <code>BCM_MPLS_SWITCH_ACTION_POP</code> , next protocol after MPLS label will be calculated from next header first nibble and not from the Lif table. Flags <code>BCM_MPLS_SWITCH_NEXT_HEADER_L2</code> , <code>BCM_MPLS_SWITCH_NEXT_HEADER_IPV4</code> , <code>BCM_MPLS_SWITCH_NEXT_HEADER_IPV6</code> are not supported. |
| SDK-55225 | | 88650_A0 88650_B0 88650_B1 88660_A0 | BFD creation of accelerated endpoints with remote destination is fixed and now working without configuring any OAMP instances. Irrelevant validation checks were removed as well. Restrictions on <code>endpoint_id</code> and <code>local_discr</code> fields: 1. In case endpoint is accelerated to the OAMP, endpoint id should be equal to lowest 16 bits of <code>local_discr</code> . 2. In case endpoint is accelerated to the OAMP or endpoint type is <code>bcmBFD TunnelTypeUdp</code> , BFD <code>local_discr</code> msbs (bit number 16 and above) should be constant for all endpoints. 3. Non-accelerated endpoint cannot be created <code>WITH_ID</code> . Also fixed error in creating oam/bfd endpoint with id 4096. |
| SDK-55229 | | 88650_B0 88660_A0 | When using external TCAM, usage of the diagnostics command "kbp print" may have caused a segmentation fault. This happened due to inappropriate use of unallocated memory and is now fixed. |
| SDK-55243 | | All | Improved execution time of <code>bcm_l3_intf_create()</code> in XGS devices. In addition, removed deadlock with VLAN APIs such as <code>bcm_vlan_control_vlan_set()</code> . |
| SDK-55263 | 739431 | 56540_A0 56440_A0 56450_A0 | Fix for PTP operation using little-endian host. |
| SDK-55274 | 756256 | 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 56851_A0 56852_A0 56852_A1 56853_A0 56853_A1 | Problem: Src/Dst IP6 qualifier was sent to 32 bit EFP qualifier routine <code>[_field_eFP_qualify32]</code> for TD2 devices which was internally causing the mask to be reset to 0. [since offset width calculation is assuming width to be 32 but actual width is 128]. Since its a 32 bit routine, the last 32 bit part of mask was getting reset here. Solution: Added appropriate checks to make sure that only 32 bit IP address falls into the check and hence mask will not get reset. |
| SDK-55280 | 750005 | 56440_A0 | Support has been added for proper reload of <code>MAC_BLOCK</code> table during warmboot for BCM5644x devices. |
| SDK-55283 | 756559 | All | Removed StrataXGS restriction from <code>bcm_tx_array</code> documentation that all packets should have same values for Source module, Source port, PFM and Internal Priority as it does not exist now. |



Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|-------------------------------|--|
| SDK-55286 | 755758 | 56850_A0 56850_A1 56850_A2 | When L2X table parity error was detected and processed in Y-pipe context, the <code>acc_type</code> list for Y-pipe would be iterated to decode memory id via routine <code>soc_addr_to_mem_extended()</code> . The <code>acc_type</code> of L2X table is 4, not in the list for Y-pipe, and this would cause memory decode fail. So the <code>acc_type</code> 4 has been added into the list for Y-pipe to fix this issue. |
| SDK-55288 | | 88660_A0 | Trill Multi-homing connectivity. Define up to 3 virtual rbridges in system was not correctly supported and leads to memory leak. |
| SDK-55293 | 739558 | 88650_B1 | In L2 forwarding, when MAC learning mode was centralized, the aging time accuracy has been improved: the aging time is maximal whether the entry has been inserted by this device or not. A SOC property (<code>custom_feature_centralized_ownership</code>) allows the user to work in previous mode. |
| SDK-55296 | | 88660_A0 | OAM: When replacing entries in the in the O-EM 1/2 tables, instead of deleting the entries and then inserting, it is possible to replace the entries in one fell swoop. Previous configuration might have caused packet loss in the time between the deletion and creation of new entry. Likewise <code>oem1/2_entry_delete()</code> did not wait for the task to complete before returning. This bug was fixed as well. |
| SDK-55298 | | 88650_A0 88660_A0 | When using lag over a stacking system with <code>number_of_trunks=[512/256/128/64]</code> packets might be dropped. When a FAP resolves a LAG destination, it passes the packet to the next stacking FAP with the LAG id and part (8bit) of the lb-key. Since only a part of the lb-key passes, the next FAP may conclude a different destination for the packet. As a result, the packet can be sent back to a FAP that already passed this packet, resulting in dropping the packet. This fix makes the FAP pass the packet to the next stacking FAP with the Destination System Port (DSP) (instead of the lag id), so that next FAP(s) will forward the packet according to the DSP and will not need to recalculate the destination. No change in default behavior, the feature is disabled by default. In order to enable this fix on 6.3.7, the following SOC property configuration is needed: <code>custom_feature_stamp_uc_destination.BCM88650=1</code> |
| SDK-55299 | | 88660_A0 | OAM diagnostics: Lookups are displayed in parsed format (key and result, if found). The relevant command is <code>diag oam lu</code> and the output is for example: IHB OEMA last lookup: Key=0X2002, result=0X60000080 OEMA key: ingress: 0, OAM LIF: 0x1001 OEMA payload: MP profile: 0x3, MEP bitmap: 0x0, MIP bitmap: 0x80, counter index: 0x0 IHB OEMB last lookup: Key=0X1001e, result=0X0 OEMA key: ingress: 0, MDL: 7, OAM LIF: 0x1001, your disc: 0 Not found. |



Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------------|--------------|--|---|
| SDK-55305 | | 88660_A0 88670_A0 | The masks for Vlan gport id and MPLS gport id has been extended from 24 bits to 26 bits. |
| SDK-55317 SDK-55378 | | 56340_A0 | On Helix 4, Bank 0 in every stage is disabled in ISM. This is taken care of while allocating banks for ISM tables, but while configuring the hash_offset for each bank, the disabled bank was not taken into account. Now the number of disabled banks are calculated and is added to the bank number in each stage. |
| SDK-55323 | 755643 | 56850_A0 | For Trident_2, when station tcam entries were being recovered during warmboot, they were not being checked for validity. Even blank entries were being counted as valid entries and so, after recovery, the table showed up as full. So, when a new entry was added after warmboot, it returned no resources. This validity check is now added for Trident2 |
| SDK-55326 | 715274 | 88650_A0 88650_B0 88650_B1 88660_A0 | PON application: ARAD/ARAD+ Ingress parser used to take two global TPIDs to get the tag formats of packets for each port. With this improvement, ARAD/ARAD+ ingress parser can take an additional global TPID as inner TPID, besides the original two global TPIDs, to get the tag formats for each port. Currently only packets with single outer TPID, which is equal to additional TPID, can be parsed as single s-tag or single c-tag. Please see more information in cint_pon_additional_tpids.c |
| SDK-55329 | | 88650_A0 88650_B0 88650_B1 88660_A0 | APIs receiving a bcm_gport_t input argument as a destination, will now work properly when the gport type is MODPORT, and the given module port is not defined in the local device. |
| SDK-55332 | 753717 | 88650_A0 88650ACP_A0 88650_B0 88650_B1 88660_A0 | In Ingress Field Processor, the qualifiers bcmFieldQualifyInnerSrcMac and bcmFieldQualifyInnerDstMac can be taken from second or third header in stack (first or second after Ethernet header). In order to indicate which header to consider, one of the qualifiers bcmFieldQualifyIp4, bcmFieldQualifyIp6, bcmFieldQualifyMpls can be used in QSET. If one of these qualifiers exists, then the inner mac will be taken from the third header, otherwise from the second. |
| SDK-55335 | 708385 | 88650_B0 | fixed the prbs issue going out the analog part for 8b/10b encoding speed. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|--|---|
| SDK-55336 | | 88660_A0 88670_A0 | Implemented VRRP and multiple mymac termination for Jericho, and added several upgrades for ARADPLUS: 1. Removed the constraint of disabling VRRP when multiple mymac termination mode was used. In the past, when using multiple mymac termination, l3_vrrp_max_vid soc property had to be set to 0, and calling VRRP APIs would return error. Now setting l3_vrrp_max_vid to 0 would be ignored, and calling VRRP apis in this case will have no effect. 2. VSI 0 is now legal to use for both features. Calling one of the APIs with VSI 0 would configure all VSIs with the selected VRID / mac address in one call, instead of looping over all VSIs. It can be used for features like MPLS-TP multicast packets where 01-00-5E-90-00-00 should terminate Ethernet header. |
| SDK-55339 | | 88650_A0 | Slow start mechanism for FMQs (using bcmCosqGportTypeGlobalFmqGuaranteed control) is not functional. Fixed. |
| SDK-55344 | | 88650_A0 88650_B0 88650_B1 | BFD: fields that are only used by endpoints accelerated to the OAMP are configured only for relevant endpoints. Likewise in endpoint_destroy(). |
| SDK-55345 | | 88660_A0 | OAM: RDI indication on outgoing packets from the OAMP might be inconsistent. |
| SDK-55346 | | 88650_A0 88660_A0 88650_B0 | OAM: In Arad, all MEG levels 0-7 may be used. In Arad+, level 0 is unavailable by default, however this may be used if the classifier is used in Arad mode - if the soc property "oam_classifier_advanced_mode" is set to 0. |
| SDK-55347 | | 88650_B1 | OAM: For trapped DM packets (both up and down, NTP or 1588), the packet will be prepended with the 4 MSBs of the time (the 4 LSBs appear in the OAM-TS). In other words, the packet format will be FTMH+OAM-TS+PPH+4 time MSBs+packet. To use the old format where there is only the 34 bits in the TS unset soc property "custom_feature_oam_dm_tod_msb_add_enable=0" (1 by default). |
| SDK-55350 | | 88660_A0 | Adjusted cint_system_vswitch_vpls.c to fit PWE/LSP pipe mode. |
| SDK-55352 | 756202 | All | In the previous release there was a coding issue with the usage of sizeof operator. The object used to calculate the sizeof operation in a function was passed as a value instead of passing it by reference. Hence sizeof operator was returning a wrong value. This issue has now been addressed in this release. |
| SDK-55353 | 757018 | 88640_A0 | Bug in counter processor calculation of counter ids from counter set ids was fixed. |
| SDK-55359 | 756745 | 88650_A0 88650_B0 88650_B1 88660_A0 88670_A0 | Changed Init sequence prints. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|-----------------------------------|--|
| SDK-55360 | 757697 | All | In the previous release, on TD2, the double bit ECC error notifications from the EP following init cycles were seen on rare occasion. In this release, this issue has been addressed by initializing all of packet buffers to the value of zero. |
| SDK-55361 | 749578 | All 56850_A0 56850_A1 56850_A2 | There are three commands have been added. l3 nat_ingress show l3 nat_egress add l3 nat_egress show These commands enhancements to the BCM diag shell to both program and show NAT status. |
| SDK-55362 | 757471 | 88030_A0 | The code to set and check individual bit fields of the PPE variable is now automatically generated by the tools. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|-----------|--------|----------|---|
| SDK-55375 | 755943 | 56850_A0 | <p>Problem : Below qualifier was not getting recovered and actions were getting recovered as colour specific. Action Parameters were not getting recovered for CopyToCpu and EcnNew</p> <p>Qualifier: DstClassL3 Actions: CopyToCpu,,EcnNew,DropCancel,PrioIntNew,EgressMask,Drop,EgressPortsAdd,SwitchToCpu Cancel</p> <p>Solution: Actions mentioned in the list are expected to work this way since action internally sets colour specific actions. Hence after recovery we read from hardware or cache and display individual actions because we cannot confirm if actual action led to these or they were individually configured. Quoting the part in warmboot section in api document where information regarding the above mentioned actions and its behavior is mentioned. "There are some color-dependent actions that may get aliased during Warm boot recovery. For example, the SDK cannot distinguish whether the application added bcmFieldActionDrop or specifically added bcmFieldActionGpDrop, bcmFieldActionYpDrop and bcmFieldActionRpDrop. This is true for all recovery levels."</p> <p>For CopyToCpu, we are passing param0=1 and param1=0, param0=1 -> means that we are matching the rule_id param1=x -> x is the rule_id value that we are planning to match. This code will internally check if param0=1 . If so sets a field MATCHING_RULE as param1 in FP_POLICY_TABLE. Now while recovering we check if MATCHING_RULE !=0 and then recover param1 as rule_id and param0 as 1. Due to this logic, if param0=1 and param1=0, we set MATCHING_RULE as 0. When we recover we dont know if this is due to rule_id=0 or no rule_id configured, because default value for MATCHING_RULE = 0. [we dont have any hardware fields to save param0 to check if rule_id is to be matched or not] This rules out possibility of configuring param1 as 0 with param0=1 if warmboot recovery required. U can configure param1 as 1-127 with param0=1.</p> <p>Code for recovery of parameter of EcnNew Action and for recovery of DstClassL3 qualifier, has been done through this JIRA. EcnNew has a new Field for Triumph3 and Trident2 to keep the value [G_NEW_ECNf] which was missed to be recovered. DestClassL3 was not getting recovered due to double wide mode slice number being passed wrongly. These two problems are handled.</p> |
| SDK-55387 | 752326 | 88650_A0 | <p>Configuring a discrete WFQ weight for a CL (using bcmCosqControlDiscreteWeightLevel0..3 controls) with the same weight already assigned by another element failed. Fixed.</p> |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------------|--------------|---|--|
| SDK-55388 | 756617 | 88750_A0 88650_A0 88750_B0 | The port enable indication might be wrong after warm boot sequence. As a result RX LOS application will not get reliable state of the port and might try to reset the port. Fixed. |
| SDK-55392 | | 88650_A0 | In internal SOC functions related egress port header type setting, beautify the code by introducing #defines instead of hard numbers. |
| SDK-55396 | 757120 | 56850_A0 56850_A1 56850_A2 | For TD2 L3_ENTRY table, the case that parity error located in dedicated L3 banks was missed when UFT shared banks are used. Entry index checking for TD2 L3_ENTRY table when retrieving SRAM info via routine <code>_soc_trident2_mem_sram_info_get()</code> has been added for entry indexes in dedicated L3 banks. |
| SDK-55415 SDK-59514 | | 88650_A0 88650_B0 88650_B1 | "g *" command will display MAC regs only once for channelized ports. |
| SDK-55426 | | 88650_A0 88660_A0 | Setting OCB threshold for ingress queues is done with a voq handle. Use this macro to create the relevant gport handle: <code>BCM_GPORT_UNICAST_QUEUE_GROUP_SET</code> . If used to be the case where setting OCB threshold for ingress queues used a voq-connector handle; this is no longer a valid calling sequence. |
| SDK-55434 | | 88660_A0 | In Field processor, at ingress, the Compare operation performs a comparison between the two halves of key-D in second cycle. The comparison first performs a XOR between the two halves and then AND with a predefined mask. The XOR operation is not enabled and therefore the compare result is incorrect. This was fixed. |
| SDK-55443 | | 88650_A0 88650_B0 88650_B1 88660_A0 | PWE: <code>bcm_mpls_tunnel_initiator_create</code> api can be used to update PWE next tunnel used in encapsulation of multicast PWE packets (unicast packets won't be effected). This functionality is available only when PWE is not protected and MPLS tunnel is used by a FEC entry. Example can be found in <code>cint_vswitch_vpls.c</code> <code>switch_pwe_tunnel</code> function. |
| SDK-55456 | | 56850_A0 56850_A1 56830_A1 56850_A2 56830_A0 56830_A2 | In the previous release, flexible counter thread could occasionally report a huge counter statistic when the two hardware counters belonging to two ports which locate at different pipelines rolled over at the same time. In this release, this issue has been addressed by handling rollover for individual pipelines. |
| SDK-55460 | | 56850_A2 | The access type of <code>ING_NEXT_HOP</code> table is defined as 1 per regfile <code>bcm56850_a0</code> . This access type was missed in TD2 Y-pipe list in SER correction routine. The access type 1 has been added into TD2 Y-pipe list in SER correction routine to resolve this problem. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|-------------------------------|--|
| SDK-55464 | | 88650_A0 88650_B1 88660_A0 | diag nif shell command speed improvement, PHY rate is measured once for each interface, instead of measuring PHY rate for all interface channels. no modifications required in customer applications. |
| SDK-55470 | 758460 | 88650_A0 | An updating logic happens when creating VLAN port with BCM_VLAN_PORT_REPLACE and BCM_VLAN_PORT_WITH_ID. If a new key to be added is different from the existed old key, the updating logic removes the old key and adds the new key. An error occurred when the updating logic removed the old key of egress AC for CEP ports. The updating logic compared the new key with an uninitialized old key to check whether the new key is different with the old key. The issue detailed above affected Out AC replacing of CEP ports. The correct egress AC key can be removed after the fix. |
| SDK-55471 | | All | <p>=== FOR THE CUSTOMER USING SDK-6.3.X Customer needs to follow below instructions to create new build target.</p> <ol style="list-style-type: none"> 1. copy \$SDK/systems/user/gto-2_6 \$SDK/systems/user/custom-3_10 2. modify 2 lines in \$SDK/systems/user/custom-3_10/Makefile override kernel_version=3_10 platform=myboard-\$ (kernel_version) 3. copy \$SDK/make/Makefile.linux-gto-2_6 \$SDK/make/Makefile.linux-custom-3_10 and modify CROSS_COMPILE, TOOLCHAIN_BIN_DIR, KERNDIR appropriately. 4. copy \$SDK/make/Makefile.linux-kmodule-2_6 \$SDK/make/Makefile.linux-kmodule-3_10 5. Customer doesn't need to modify this file. 5. cd \$SDK/systems/linux/user/custom-3_10 && make <p>=== FOR THE CUSTOMER USING SDK-6.4.X Customer needs to follow below instructions to create new build target.</p> <ol style="list-style-type: none"> 1. copy \$SDK/systems/user/gto-2_6 \$SDK/systems/user/custom-3_10 2. modify 2 lines in \$SDK/systems/user/custom-3_10/Makefile override kernel_version=3_10 platform=myboard-\$ (kernel_version) 3. copy \$SDK/make/Makefile.linux-gto-2_6 \$SDK/make/Makefile.linux-custom-3_10 and modify CROSS_COMPILE, TOOLCHAIN_BIN_DIR, KERNDIR appropriately. 4. cd \$SDK/systems/linux/user/custom-3_10 && make |
| SDK-55479 | 739565 | 88030_B0 | Note. |
| SDK-55487 | | 88950_a0 88750_A0 | Added logging information during initialization. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|--|--|
| SDK-55495 | | 88650_A0 | BFD: bugs that hindered calling <code>bcm_bfd_endpoint_create()</code> with the flag <code>BCM_BFD_ENDPOINT_UPDATE</code> set for <code>type= bcmBFD TunnelTypeMplsTpCc</code> and <code>bcmBFD TunnelTypeMpls</code> were fixed. |
| SDK-55500 | 758887 | 88650_A0 88650ACP_A0 88650_B0 88650_B1 88660_A0 | In the <code>cint</code> <code>cint_policer_metering_example.c</code> , the function <code>header_compensation_example</code> used the wrong function to set header compensation. This is now fixed. |
| SDK-55501 | | 88650_A0 88660_A0 | In Field Processor, when creating a new Field Group, it is verified that the key can be allocated with the existing occupation of the program's instructions. However, the verification does not consider the used key bitmap which may indicate that all LSB/MSB keys are used. In which case, the algorithm should disregard the relevant (LSB/MSB) instructions. This is fixed. |
| SDK-55502 | 759144 | 56450_B0 56450_A0 | <code>soc_mem_config_set()</code> (is set to <code>sal_config_set()</code> in our local SDK environment with SAL implementation) may or may not be available with customer code. so <code>assert</code> is not considered good idea. If <code>soc_mem_config_set</code> not available and <code>auto_portgroup</code> and <code>auto_polarity_flip</code> is set true, SDK will suggest settings on screen so that end user can re-update <code>config.bcm</code> accordingly. Also made auto generated config variables unit specific (i.e. <code>portgroup_<num>.unit=<lanes></code>) happens with <code>auto_polarity_flip</code> and <code>auto_portgroup</code> config variables. This is relevant in multi unit setup. |
| SDK-55515 | 752139 | 56640_A0 56440_A0 56850_A0 56440_A1 56640_A1 56640_B0 56440_B0 56850_A1 56850_A2 | <code>bcm_port_learn_set</code> is used to control the learning behavior on a port. The learning behavior can be set/modified using this API. This API was not supporting vlan virtual ports previously. Now, support is added to modify learning behavior for vlan virtual ports. |
| SDK-55518 | 757054 | 56634_A0 56634_B0 | <code>START_BY_START</code> error interrupt was not being handled resulting in high CPU utilization. Added handler for this error, to clear the interrupt status register when set. |
| SDK-55524 | 759557 | 88660_A0 | <code>bcm_port_loopback_get</code> bug fix for ILKN port in 2 Caui+ ILKN mode (BCM 88660) |
| SDK-55528 | | 88650_A0 88660_A0 | OAM: <code>bcm_oam_endpoint_action_set</code> supports new actions: <code>bcmOAMActionUcFwdAsData</code> , <code>bcmOAMActionMcFwdAsData</code> to configure forwarding the packet instead of trapping/snooping. The destination when calling this api with the actions above should be <code>BCM_GPORT_INVALID</code> . This scenario is useful in case of MIP where we should forward the data as is without any special OAM action. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|--|--|
| SDK-55531 | | 56340_A0 | The variables to calculate the tokens are integers (4 bytes) but on multiplying two integer variables results in a much bigger number which cannot be accommodated in 4 bytes of allocated memory. This was impacting the vstorm control feature. Declared a temp variable of long integer (8 bytes) to store the resultant value to fix the issue. |
| SDK-55537 | | 88660_A0 | When doing metering on packets, it is possible to compensate for Ethernet inter-packet gap (IPG) and/or Ethernet preamble by setting the switch control bcmSwitchMeterAdjustInterframeGap to 20. This will add 20 bytes to the packet size for meter compensation calculation. Currently due to a software bug, this switch control is not set, and no compensation is performed. This is now fixed. |
| SDK-55540 | | 88650_A0 88650_B0 88650_B1 88660_A0 | An access to an HW table (EGQ-VSI-Profile memory) was performed with a uint32 variable, although the table width is 33 bits. It resulted in a memory corruption. This is fixed. |
| SDK-55542 | 755020 | 88650_A0 88650_B0 88650_B1 | Ring Port: G.8032 Ring-Port can be associated with multiple VLAN-Ports using <code>bcm_port_class_set()</code> . De-associating a VLAN-Port from a Ring-Port where the physical port is on remote device have sometimes left the de-associated VLAN-Port in a state where it can't be reused and failed when referred by VLAN-Port APIs. The issue was fixed, so that remote VLAN-Ports that are de-associated can always be reused. |
| SDK-55543 | 759990 | 88030_B0 | EML_144 supported added to tools: <code>INDEX_TYPE_144 LKUP_EML_144</code> Note that EML_144 can not be mixed with EML_176. |
| SDK-55559 | 760422 | 56643_A1 | The new support for the below port configuration has been implemented. Device =56643 Frequency (MHz)= 450 Option = 4 GbE Port Group (XC[12:0]) = 36 x GbE+1 x GbE High Speed Port Gr 1 (WC[2:0])= 4 x XFI High Speed Port Gr 2 (WC[6:3])= 2 x HG[42] + x F.H [42]" AXP Port Guaranteed Bandwidth = 5G |
| SDK-55560 | | 56640_A0 56641_A0 56642_A0 56643_A0 56644_A0 56645_A0 56648_A0 56340_A0 56344_A0 56342_A0 56342M_A0 56340M_A0 | add an workaround for TR3 and HX4 on both cases <code>AT_L2_Limit_019</code> and <code>AT_L2_Limit_042</code> |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|---|---|
| SDK-55567 | | 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 56851_A0 56852_A0 56852_A1 56853_A0 56853_A1 | Problem: bcm_field_qualify_data_get was not working for little endian hosts because of ordering of bytes during copy. Solution: If the host is little endian, updated code to swap the bytes in the expected ordering required for further processing. |
| SDK-55583 | | 56640_A0 56640_A1 56640_B0 | Currently, Policers in cascade mode are mapped based on dot1P priorities of the incoming packet. Two new policer group modes are added : bcmPolicerGroupModelIntPriCascade and bcmPolicerGroupModelIntPriCascadeWithCoupling which map the incoming packets to policers based on internal priority. Policers work in cascade mode where bandwidth flows from higher priority to lower priority. |
| SDK-55600 | 719068 | 56449_B0 56445_B0 56440_B0 56447_B0 56443_B0 56441_B0 56446_B0 56448_B0 56442_B0 | Fixed crash observed during Level 2 warmboot on BCM56440. |
| SDK-55604 | 760276 | 56224_B0 56224_A0 | Issue :- After warmboot, Recovered Entries were being shown as Disabled. Fix :- The Entries were actually recovered properly both in H/W and S/W But code changes to mark the entries are enabled was missing. Added the code change to mark the recovered entries as enabled. |
| SDK-55615 | 758680 | 88650_A0 88650ACP_A0 88650_B0 88650_B1 88660_A0 | Counter processor example cint, cint_voq_count.c, was updated. The bcmCosqGporYellowAcceptedPkts counter type replaced by bcmCosqGportNotGreenAcceptedPkts. This change reflects change in the counter processor counters in FULL_COLOR counting mode from version 6.3.2 |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|-------------------|--|
| SDK-55620 | 758957 | 56640_A0 56540_A0 | <p>Two issues fixed as a part of this JIRA:</p> <p>Issue 1: Linkscan SW mode becomes NONE after executing the ibod WAR. Fix: IBOD sync recovery function <code>_bcm_tr3_ibod_sync_recovery_port()</code> is invoked from different threads and as the function is not properly protected, there is difference in the linkscan states. Provided the synchronization using <code>IBOD_LOCK</code>.</p> <p>Issue 2: When <code>bcm_port_enable_set</code> is getting called even before the LS thread is updated its bitmap ,so when <code>bcm_port_enable_set</code> calls <code>_bcm_tr3_ibod_sync_recovery_port</code> it takes the snap shot of port mode ,which comes to "BCM_LINKSCAN_MODE_NONE" so later on at the end of the function when it update the port mode it removes it from LS ,that where we see some times port is not part of linkscan.</p> <p>Fix: During the ibod WAR execution, the links of the port are set to link UP forcefully by invoking the API <code>_bcm_esw_link_force()</code> API with flags <code>_BCM_LINK_STATUS_NO_CALLBACK</code>.</p> <p>The flags are introduced newly and if the flag is set, the link state change notification is ignored to the registered linkscan users in function <code>_bcm_esw_linkscan_update_port</code>.</p> |
| SDK-55621 | | 88650_B1 | <p>When replacing existing MTU value using <code>bcm_l3_intf_create</code> api, the MTU value might in some cases change to 0 instead of the requested value. This happens in case MTU value is unique for certain L3 Intf</p> |
| SDK-55630 | | 88660_A0 | <p>OAM: when calling <code>bcm_oam_loss_add()</code> with the flag <code>BCM_OAM_LOSS_SINGLE_ADDED</code> set, loss management will be based on LMM PDUs, otherwise on CCM PDUs.</p> |
| SDK-55631 | 758623 | 88650_B1 | <p>It is now possible to assign ports with a vlan translation port property, and create IP tunnel terminators that use <code>{SIP,DIP,Next_protocol,Port_property}</code> as key for tunnel termination. To activate this mode, use soc property: <code>bcm886xx_ip4_tunnel_termination_mode= 4 or 5</code> For an example, see <code>cint_ip_tunnel_term.c</code>, call <code>ipv4_tunnel_term_next_protocol_example</code> with <code>use_port_property=1</code>.</p> |
| SDK-55632 | | 88650_B1 | <p>In FLP program selection initialization, some program IDs may have been overridden due to static program ID allocation that followed dynamic program ID allocation. For example, there were conflicts between FCoE and MAC-in-MAC FLP programs. All dynamic allocation of program IDs is now after static allocation, so that no program ID override can be caused. Note that if ISSU is performed, the fix will not apply.</p> |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------------|--------------|-------------------------------|--|
| SDK-55639 | | 56850_A2 | In earlier releases, nexthop and ecmp reference count were not decreased when replacing vxlan port. This has been resolved. |
| SDK-55654 | 754909 | 56850_A0 56850_A1 56850_A2 | Fixed DMA abort sequence in KNET Linux kernel module. |
| SDK-55661 | 761066 | 56548_A0 56547_A0 | Support for F.HG[42] [SDK-46947] has been ported to the 6_3_branch. |
| SDK-55681 | | 56850_A2 | In the previous release, assertion happened when <code>bcm_cosq_port_mapping_set</code> was called in ETS mode. In this release, this issue has been addressed by configuring a correct field of <code>COS_MAPm</code> and modifying the queue mode of HG ports to the value of zero. |
| SDK-55683 | | 53394_A0 | Added SPI slave mode support of BCM56150 family. Only pure register access path is available in this mode without interrupt and DMA and the access speed is pretty slow in comparison to PCIe. |
| SDK-55691 | | 88650_B1 | In L3, when calling the API function <code>bcm_l3_host_add()</code> , a lock may have been taken but not released in some cases. The lock is always released now before exiting the function. |
| SDK-55710 | | 88650_A0 88650_B0 88660_A0 | OAM: Deleting a MEP with RX configurations only (gport field in <code>endpoint_create</code> api is <code>BCM_GPORT_INVALID</code>) was failing. |
| SDK-55712 SDK-55535 | | 88650_A0 88660_A0 | Add the option to Use Dram saved config Parameters, and in case there are no Parameters to Perform Shmoo on init. Set this option as Default. # 2 = Use Dram saved config Parameters, if no Parameters Perform Shmoo on init. Default option. # 1 = Perform Shmoo on init. # 0 = Use Dram saved config Parameters, if no Parameters do nothing. <code>ddr3_auto_tune.BCM88650=2</code> Also, as default Load DRAM tuning properties from local File (<code>/home/negev/bcm88650_dram_tune.soc</code>). <code>RcLoad</code> will not fail if file not found. |
| SDK-55713 | | 88650_B0 88650_B1 88660_A0 | Broad Sync API: implemented all missing <code>bcm_time_*</code> APIs. |
| SDK-55715 | | 88650_A0 | PWE: verification case of updating TPIDs per PWE using <code>bcm port tpid</code> APIs <code>bcm_port_tpid_add/delete</code> does not work correctly (API always update TPIDs regardless of gport type) |
| SDK-55719 | | 88650_A0 88650_B0 88660_A0 | OAM: <code>api_bcm_oam_endpoint_get</code> returns incorrect flags in field <code>flags2</code> . |
| SDK-55720 | | 88650_A0 88660_A0 | In Ingress Field Processor, when using TM programs per port profile (soc property <code>post_headers_size</code> is set), the program selection shuffle algorithm resets lines of Ethernet programs due to incorrect range calculation. This is fixed. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------------|--------------|-------------------------------|--|
| SDK-55722 | 761214 | 56450_A0 56450_B0 | <p>External DDR has 1024 columns but SDK was assuming it as fixed 2048. Due to this, calculated max bist address was crossing boundary and SDK was throwing assertion(crash) message. Issue is fixed by below two steps 1) Added safety check for max BIST Addr. With this, even if user passes wrong parameter for running DDR TR 140 test case, assertion (i.e. crash) will be avoided.</p> <p>2) Used config properties (ext_ram_columns and ext_ram_banks) to set NUM_COLUMNS and BANKS of external DDR memory. i.s.o. fixed 2048 and 8. Default will be 1024 and 8. Settings will be displayed on screen. With this, if required, user can change values based on connected DDR capability.</p> |
| SDK-55727 | | 88650_A0 88650_B0 88660_A0 | OAM: Mac-In-Mac OAM packet identification causes non-oam packets to be trapped to OAM engine. |
| SDK-55730 | | 56850_A0 56850_A1 56850_A2 | In the previous release, bcm_td_cosq_gport_detach intermittently returned BCM_E_RESOURCE incorrectly when the schedule nodes were not used up. In this release, this issue has been addressed by releasing the schedulers which are used by legacy setup once ETS mode is enabled. |
| SDK-55736 | | 88650_B1 | <p>In FCoE application, a new improvement allows the support for VSAN assignment from VFT or VSI (according to a device configuration) and supports a default VFT value per incoming port. The calling sequence is: 1. Set the default VSAN assignment between VFT (by default) or VSI via bcm_port_control_set(unit, port = -1, type=bcmPortControlFcoeFabricSel, value = bcmPortFcoeVsanSelectVft / bcmPortFcoeVsanSelectOuterVlan)</p> <p>2. If the mode is VFT, set the default VFT per port via bcm_port_control_set(unit, port, type = bcmPortControlFcoeFabricId, value);</p> <p>Note: FCoE application cannot co-exist with the usage of the Field Processor bcmFieldQualifyInterfaceClassProcessingPort qualifier at external stage (bcmFieldQualifyStageExternal) due to the usage of the same HW resource (the port key profile in forwarding stage).</p> |
| SDK-55740 SDK-56736 | 757357 | All | sand_err code mechanism shouldn't be used without initialization. If init sequence failed before initializing the error mechanism & deinit try to use it Segmentation error will occur. In order to solve this problem we are not using sand_error mechanism at deinit sequence. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------------|--------------|-------------------------------|--|
| SDK-55766 | | 56640_A0 | Currently, Policers in cascade mode are mapped based on dot1P priorities of the incoming packet. Two new policer group modes are added : bcmPolicerGroupModelIntPriCascade and bcmPolicerGroupModelIntPriCascadeWithCoupling which map the incoming packets to policers based on internal priority. Policers work in cascade mode where bandwidth flows from higher priority to lower priority. |
| SDK-55770 | 762574 | 56850_A0 | In previous releases, if multi-thread user accessed L3 memory with different view (i.e., L3_ENTRY_IPV4_UNICAST, L3_ENTRY_IPV4_MULTICAST), the physical memory could be corrupted because different view of same physical memory was using different LOCK, and the entry movement between banks could happen with invalid LOCK protection. In this release, different views of same physical memory are pointed to same LOCK, so the protection is effective. |
| SDK-55793 | 757103 | 88650_A0 88650_B0 88660_A0 | VPLS: Enabled modification of working Incoming-PWE configuration under traffic by first creating new instance (the traffic will be moved to the new instance), then deleting the old entries using bcm_mpls_port_delete(). Example can be found in cint_vswitch_vpls.c when make_before_break field is set to 1. |
| SDK-55803 SDK-55946 | | 88660_A0 | When using bcm_port_control_set with the control bcmPortControlEgressModifyDscp, an inlif profile is expected in the port argument. An issue was found when one of the ports 0-16 is disabled. In this case when using an inlif profile with the same number as a disabled port, the API will produce an error, even though the argument is valid. This is now fixed. |
| SDK-55818 | 761770 | 56334_B0 56334_A0 | In the previous release, SDK delete old next hop entry before new entry was installed when invoking the bcm_mpls_port_add API with BCM_MPLS_PORT_REPLACE flag asserted. In this release, this has been changed to delete old entry after new entry is installed. |
| SDK-55822 | | 88650_A0 | LUT ROP transctions was failing when using LE CPU. Fix LUT ROP access endianness Also improve KBP code by: Add NULL checks at XPT layer. Add ARAD_KBP_ROP_DEBUG_PRINTS define around prints to Improve access time. |
| SDK-55823 | | 88650_A0 88660_A0 | Function that related to Petra-B in Trill moved to trill.c/h files. Remove initializing of sw-states(mc_trill_route_info_db,mc_trill_root_src_db) from ARAD. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|---|--|
| SDK-55825 | | 88650_A0 88650_B0 | <p>IMPORTANT: In Rx parsing the <code>src_gport</code> and <code>dst_gport</code> interpretation and values were switched.</p> <p>Before, due to a bug, the <code>dst_gport</code> had the same interpretation as <code>src_gport</code>. From now on, the <code>src_gport</code> is the Source-Port where the packet enters the device and <code>dst_gport</code> is where the packet exits the device.</p> |
| SDK-55830 | 763499 | 88650_B0 88650_B1 88660_A0 | <p>Trill Ingress learning: For TRILL egress MC RBridge, it learns according to the native SA and VSI. The original instruction which is used to learn native SA is incorrect for ingress learning. It caused ARAD to learn a random SA. The correct SA can be learned after fixing the instruction of lookup native SA.</p> |
| SDK-55831 | 762481 | 56340_A0 56344_A0 56342_A0 56342M_A0 56340M_A0 | <p>Helix4/Triumph3 supports SW based aging and when age interval was modified, the new value did not take effect immediately. Code changes have been added to notify the SW Aging thread when age interval is updated, to take immediate effect.</p> |
| SDK-55840 | 761378 | 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 56851_A0 56852_A0 56852_A1 56853_A0 56853_A1 | <p>In earlier releases entries[] can be potentially used without initialization in <code>_bcm_td_cosq_wred_set</code>. This has been resolved.</p> |
| SDK-55850 | | 56846_A0 | <p>Support has been added for HG[11] and force cl72 on TD+.</p> |
| SDK-55857 | | 88650_A0 88650_B0 88650_B1 | <p>IMPORTANT: the interpretation (and value) of <code>pkt->pkt_len</code> has been changed.</p> <p>In Packet parsing, 2 fields in <code>bcm_pkt_t</code> are referring to the packet length: 1. The <code>tot_len</code> (total length) field is unchanged, and corresponds to the packet length as received 2. The <code>pkt_len</code> field is changed to correspond to the packet length without the internal headers (i.e. system header size as FTMH, PPH, etc.). The previous value of <code>pkt_len</code> was equal to <code>tot_len</code>.</p> |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|-------------------------------|---|
| SDK-55859 | 758730 | 56640_A0 | <p>Two issues are resolved as a part of this JIRA. Here is the description:</p> <p>Issue 1: When a port gets the link up notification and also a remote fault is detected on the port, the port remains down and the linkup_bitmap and fault_bitmap for the port are set. After this state if the port is removed from the SW linkscan mode (the fault_bitmap is cleared) and if a link up notification occurred after adding the port back to SW linkscan. The function returns without setting the link status (as linkup_bitmap is already set to up) and it causes the SW link status for the port in down status.</p> <p>Solution- While clearing the fault_bit map, also clear the link_bitmap. So that when the linkscan for the port is enabled, it updates the state in the next iteration as per the new link status.</p> <p>Issue 2: When bcm_port_enable_set is getting called even before the LS thread is updated its bitmap ,so when bcm_port_enable_set calls _bcm_tr3_ibod_sync_recovery_port it takes the snap shot of port mode ,which comes to "BCM_LINKSCAN_MODE_NONE" so later on at the end of the function when it update the port mode it removes it from LS ,that where we see some times port is not part of linkscan .</p> <p>Solution- For this particular scenario, while restore the linkscan mode after the ibod WAR, retrieve the current linkscan mode and comparing it with the mode it got set before ibod WAR (BCM_LINKSCAN_MODE_NONE) , if it is not same, the linkscan mode is not restored.</p> |
| SDK-55882 | | 88650_A0 | <p>In Warmboot module, some fixes are inserted to prevent some uncached wb_engine set/get timing issue (in ipmc module on 6.3 branch). Besides, the error mechanism in wb_engine is changed to raise assertions when uninitialized SW database is accessed.</p> |
| SDK-55885 | | 88650_B0 88650_B1 88660_A0 | <p>In case of User Defined Header, Egress Programmable Editor default program incorrectly removes some data bytes from the packet. the fix updates the additional_bytes_to_remove to 0. This way no additional bytes are removed beside the system and network headers.</p> |
| SDK-55889 | 762107 | 88650_B1 88660_A0 | <p>In Field Processor, when creating Direct Extraction field group, only one (1) qualifier is allowed to be used as filter qualifier per entry. When calling bcm_field_qualify_data() for an entry, and then calling bcm_field_qualify_xxx() the operation succeeds when an error should be produced. This is fixed.</p> |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|--|---|
| SDK-55902 | | 56640_A0 56641_A0 56642_A0 56643_A0 56644_A0 56645_A0 56648_A0 56340_A0 56640_A1 56643_A1 56640_B0 56644_B0 56643_B0 56648_B0 56649_B0 56649_A0 56344_A0 56342_A0 56342M_A0 56340M_A0 | Problem: When REGEX feature is enabled, compilation of SDK for linux kernel mode fails. This is because of inclusion of ctype.h file, which is not available directly. Solution: Removed the inclusion of ctype.h. Also re-define the logic in the function isprint() as a new function local to the file, since isprint() is dependent on ctype.h. Affected platforms: All platforms where REGEX is supported. |
| SDK-55903 | | 56640_A0 56641_A0 56642_A0 56643_A0 56644_A0 56645_A0 56648_A0 56340_A0 56640_A1 56643_A1 56640_B0 56644_B0 56643_B0 56648_B0 56649_B0 56649_A0 56344_A0 56342_A0 56342M_A0 56340M_A0 | Problem: When REGEX feature is enabled, the compilation of SDK in Linux Kernel mode fails because of variable declarations mixed up with code. Solution: Moved the variable declarations to the beginning of the function and removed some dead code to get the compilation working. Affected Platforms: All platforms where REGEX is supported. |
| SDK-55913 | 763695 | 88650_B1 88660_A0 | OAM may be initialized without setting any of the counter_engine_source_{0,1,2,3} soc properties to EGRESS/INGRESS_OAM. Notice that in this case LM functionality is not supported. |
| SDK-55915 | 764134 | 56850_A2 | In earlier releases, in ALPM mode, even if we disabled URPF, the bits URPF_LOOKUP_CAMx in register L3_DEFIP_KEY_SEL was still 1. Switching back and forth between urpf and non-urpf could result in URPF_CAM_LOOKUPx bits always set to 1. This has been addressed by making sure register settings are set correctly every time urpf switch control changes, and not just the first time. |
| SDK-55919 | 764630 | 56850_A0 56850_A1 56850_A2 | Previously, bcm_vxlan_port_add with BCM_VXLAN_PORT_REPLACE overwrote CML_FLAGS set by bcm_port_learn_set. It is fixed now. |
| SDK-55920 | 742940 | 88030_A0 | Fix EML304 and EML424 lookup for bcm88030 |
| SDK-55921 | 764681 | 56850_A0 | In earlier releases, nexthop and ecmp reference count were not decreased when replacing vxlan port. This has been resolved. |
| SDK-55935 | 763171 | 56850_A0 | In earlier releases, the disabled pbmp of flexible ports was not recovered during the warmboot. This has been resolved. |
| SDK-55942 | 764885 | 56850_A0 | Implemented following IFP missing actions on TD2. bcmFieldActionPortPriIntCosQNew bcmFieldActionRpPortPriIntCosQNew bcmFieldActionYpPortPriIntCosQNew bcmFieldActionGpPortPriIntCosQNew |
| SDK-55945 | | 88650_A0 88650_B0 88660_A0 | Allocation manager malfunction was fixed in OAM and L3 applications. The bug was in allocating new profile resources (oam endpoint new actions, ttl scope) instead of existing profile. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|-------------------------------|--|
| SDK-55956 | 764773 | 88660_A0 | <p>In trap module, the <code>bcm_l2_cache_set</code> API is used to configure Reserve-Multicast and Programmable traps. This API returns an index, which can be used to delete the trap with <code>bcm_l2_cache_delete</code>.</p> <p>Due to a SW bug, <code>bcm_l2_cache_delete</code> was allocating another trap instead of deleting the allocated one. This is fixed. Besides, <code>bcm_l2_cache_get</code> was returning incorrectly the EtherType (and its mask) parameters. This is fixed.</p> |
| SDK-55964 | 742713 | 88650_B0 88650_B1 88660_A0 | VLAN-Port Protection: Replace functionality of 1:1 protected VLAN Port to update <code>failover_id</code> is now available |
| SDK-55967 | 755351 | 88650_B0 88650_B1 88660_A0 | OAM/BFD: When calling <code>bcm_bfd_init()</code> after <code>bcm_oam_init()</code> , not all BFD functionalities were properly initialized. Analogously when calling <code>bcm_oam_init()</code> after <code>bcm_bfd_init()</code> . |
| SDK-55968 | 756702 | 88660_A0 | OAM: configuring correct counter pointer for accelerated loss management, as well as correctly stamping counters on CCM based LM. |
| SDK-55970 | | 56440_A0 | <p>The parity protection on TCAM tables is implemented via SER engine and a SRAM table that is utilized to store parity bits of TCAM entries. Only enabling SER engine for the new-added <code>L3_DEFIP</code> table but not clearing its corresponding SRAM portion will leave the parity bits of <code>L3_DEFIP</code> table in an uninitialized state with random values. if the table is dumped, SER engine will check entry parity bits of table entries, this will trigger many parity errors reported. Besides adding <code>L3_DEFIP</code> table into SER engine protection list, memory clear operation for <code>L3_DEFIP</code> has also been added to initialize the parity bits of <code>L3_DEFIP</code> table into correct values.</p> |
| SDK-55972 | 764939 | 56850_A0 56850_A1 56850_A2 | Code for Warmboot support of <code>MPLS_EXP_MAP</code> has been added. |
| SDK-55974 | | 88650_A0 88650_B0 88650_B1 | <p>When using external TCAM, the access ROP mechanism was substantially improved. The following new compilation flags are available:</p> <p><code>ARAD_KBP_ROP_OPTIMIZATION</code> - enable ROP performance optimization.</p> <p><code>ARAD_KBP_DISABLE_IHB_LOOKUP_REPLY_FOR_ROP_TRANSMIT</code> - enable ROP optimization without reading the IHB reply registers.</p> <p><code>ARAD_KBP_ROP_TIME_MEASUREMENTS</code>, <code>ARAD_PP_KBP_TIME_MEASUREMENTS</code> - enable time measurements.</p> |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|---|--|
| SDK-55997 | | 56640_A0 56544_A0 56542_A0 56541_A0 56540_A0 56524_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 56524_B0 56540_B0 56541_B0 56544_B0 56542_B0 | Enhancement:- There are 16 FP physical team slices with 512 entries per slice. There are 8 physical FP meter pools with 1024 entries per meter pool. Currently only 8 physical team slices are allowed to access the 8 FP meter pools. Requirement was to ensure the 16 physical team slices are allowed to access the 8 FP meter pools Support :- The 8 FP Physical meter pools are split into 16 logical meter pools so that the 16 FP team slices can attach to the 16 Logical FP meter pools. |
| SDK-55998 | | 56240_B0 | Support has been added for the new Saber SKUs BCM56245 and BCM56246 with support for 256k buffer entries/192MB buffering. |
| SDK-56009 | 765570 | 88650_A0 88650_B0 88650_B1 88660_A0 | In Rx Trap module, an error is fixed when calling <code>bcm_rx_trap_type_create(unit, 0, type, &trap_id)</code> with 'type' as one of the following : - <code>bcmRxTrapIpv4SipEqualDip</code> - <code>bcmRxTrapIpv4DipZero</code> - <code>bcmRxTrapIpv4SipIsMc</code> |
| SDK-56013 | 765696 | 56850_A2 | Fixed <code>tunnel_initiator_delete</code> followed by <code>tunnel_initiator_create</code> . In previous releases, this case could result in an abort of the SDK. |
| SDK-56015 | | 88650_A0 88650_B0 88660_A0 | OAM: MIPs default behavior was changed to the following: MIPs are transparent to all OAM packet types except for LTM unicast, LTM multicast and LBM unicast. If a MIP receives any other OAM packet with destination address == MIPs MAC address (configured in the <code>dest_mac_address</code> field in <code>bcm_oam_endpoint_create()</code>), the packet will be trapped to the CPU with trap code <code>oam-error-level</code> . If the destination address != MIPs MAC address then the packet will be forwarded (it was trapped to the CPU until now). |
| SDK-56017 | 765489 | 56840_A0 | Enhanced warmboot shutdown to detach and close KNET device when present. This allows the application to remove the KNET kernel module without exiting. |
| SDK-56022 | | 56850_A0 56850_A1 56850_A2 | In the previous release, <code>bcm_vxlan_port_delete</code> returned <code>BCM_E_NOT_FOUND</code> for default VPN associated NW port. The problem was caused by the flex-counter detachment on VFI table. Originally the detachment was implemented in the deletion of VxLAN logical port and thus the operation on VFI table was executed repeatedly when deleting many logical ports in the same VFI. In this release this issue has been fixed by moving the operation to the VPN destroy. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|--|--|
| SDK-56024 | | 56850_A0 | There's a bit in the VLAN_XLATE table called VLAN_ACTION_VALID, It must be enabled to process XLATE_DISABLE_VLAN_CHECKS for VXLAN virtual ports, but disable it for VXLAN access ports to drop packets at ingress. They have conflict. To solve the problem, a new flag has been added that allows the customer to control the bit, The new flag is BCM_VXLAN_PORT_ENABLE_VLAN_CHECKS. |
| SDK-56033 | 765288 | 56850_A0 | Problem: Multiple Mirror Ingress actions were not removed during bcm_field_action_remove_all because during the action remove routine, we removed first MirrorIngress action and then returned without further processing the remaining actions Solution: Updated code to loop through all the actions [in case of similar group of actions] to remove each one of them in action remove routine. |
| SDK-56038 | 766065 | 56850_A0 56850_A1 56850_A2 56455_A0 | During warmboot, the reference count for DSCP_TABLE has been updated to reflect the coldboot state. |
| SDK-56043 | | 88660_A0 | During warm-boot validation, multiple issues have been found: 1. The bcm_l2_init was considered as a separate API: when called, the L2 module was detached and re-attached. This is fixed since L2 is initialized during BCM init and cannot be considered as separate API 2. When the device is initialized in TM (Traffic Management) mode, some init code was accessing by mistake uninitialized SW DB. This is fixed. 3. In L2 module, the freeze state (e.g. set by the bcm_l2_addr_freeze API) was not restored correctly after Warm-boot. This is fixed |
| SDK-56045 | 766017 | 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 | Committed Information Rate (CIR) and Committed Burst Size (CBS) configured in ICAP policer were not recovered correctly during warm boot on TR3 device. The ICAP policer recovery logic is updated to fix this issue. |
| SDK-56047 | 761668 | 56850_A2 | The customer requested configuration of RTAG7_HASH_CONTROL_4.VXLAN_PAYLOAD_HASH_SELECT A/B to meet their hash requirement. For Trident2 and subsequent XGS devices, 2 switch controls bcmSwitchHashVxlanPayloadSelect0 and bcmSwitchHashVxlanPayloadSelect1 have been provided to support the requirement. |
| SDK-56053 | | 88650_B1 88660_A0 | IP Tunnel CINT: In a GRE termination example in cint_ip_tunnel_term.c, a tunnel configuration was changed to use the correct GRE enum type. |
| SDK-56058 | 766252 | 56850_A2 | Fixed specific sequence of (SIP, multi-DIP)-add followed by delete and then add of vxlan_tunnel_initiators. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|--|---|
| SDK-56068 | 765431 | 56640_A0 56640_A1 56640_B0 | In the previous release there was an issue reported where TR3 semlock was out of order when creating 2 OAM sessions with same vlan/port, different level. This issue of memory locks not being released in failure case in OAM code for OAM_OPCODE_CONTROL_PROFILEm and ING_SERVICE_PRI_MAPm has been fixed. |
| SDK-56069 | | 56340_A0 | while merging the ranges of TCP and UDP, on range not equal pointer index should increment. In this case no increment is done which leads to infinite loop on the same pointer. Fixed the indexing increment on no range match. |
| SDK-56071 | | 88650_B0 88650_B1 88660_A0 | OAM: For UP-MEPs, all OAM frames trapped to the FPGA/CPU will be prepended with one set of internal headers, specifically an FTMH, PPH and a FHEI, with the OAM-ID on the FHEI. Formerly some frames included two sets of internal headers. |
| SDK-56074 | 750523 | 56440_A0 56440_A1 56440_B0 | Issue: After setting spn_BCM5644X_CONFIG to 1 to split HG2 and HG3 into GE24 - GE31, the number of priority groups for these ports were not updated. Fix: After setting spn_BCM5644X_CONFIG to 1 to split HG2 and HG3 into GE24 - GE31, the number of priority groups for these ports are changed from 7 to 0, before configuring the priority group related registers/tables in BCM5644x devices. |
| SDK-56100 | 751146 | 56450_B0 56450_A0 | Support has been added for APIs bcm_port_timesync_config_set() and bcm_port_timesync_config_get() for BCM5645x devices. |
| SDK-56108 | 762032 | 88660_A0 | OAM: Enable creating accelerated MPLS OAM endpoint after Ethernet endpoint |
| SDK-56122 | 763713 | All | Added PORT_INIT check to all bcm_port_XXX functions to avoid their invocation before port subsystem is initialized. |
| SDK-56123 | 753886 | 56243_B0 56240_B0 56243_A0 56242_A0 56242_B0 | Enabled OAM endpoint addition and deletion multiple times without any error |
| SDK-56128 | | 56840_A0 56850_A2 | In earlier releases, mac_xl_egress_queue_drain() blindly adds the PORT back to EPC_LINK_BMAP regardless previous EPC_LINK_BMAP state. This has been resolved. |
| SDK-56140 | 766375 | 56640_A1 | Problem: When external TCAM table size is configured for IPv4 routes, IPv6 routes were not getting properly programmed/getting hit in the internal TCAM. Solution: Added support for this specific case of having all IPv4 routes on external TCAM and all IPv6 routes on internal TCAM. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|---|--|
| SDK-56142 | 765705 | 56850_A0 56850_A2 | In the previous release, customer reported that the rate is not accurate after changing rate from VERY HIGH PPS to low PPS. This issue had been solved by adding condicision while in <code>_bcm_trx_rate_meter_portmode_set()</code> , while adding dlf value, not need to refer to previous setting in register/memory. |
| SDK-56154 | | 56640_A0 56544_A0 56542_A0 56541_A0 56540_A0 56524_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 56524_B0 56540_B0 56541_B0 56544_B0 56542_B0 | Enhancement:- There are 16 FP physical tcam slices with 512 entries per slice. There are 8 physical FP meter pools with 1024 entries per meter pool. Currently only 8 physical tcam slices are allowed to access the 8 FP meter pools. Requirement was to ensure the 16 physical tcam slices are allowed to access the 8 FP meter pools Support :- The 8 FP Physical meter pools are split into 16 logical meter pools so that the 16 FP tcam slices can attach to the 16 Logical FP meter pools. |
| SDK-56160 | 766445 | 56850_A0 | In previous releases, L2 polling thread can process a MAC address insert/delete/move within a bucket, but it cannot process the scenario that a MAC address move from a bucket in a bank to another bucket in another bank. In this release, processing the scenario that a MAC address move from a bucket in a bank to another bucket in another bank has been added in L2 polling thread. |
| SDK-56189 | | 88650_B0 88660_A0 | Required changes in SDK in order to support KBP-SDK 1.2.3 and higher. The changes include configuration of a newly used instruction and its transport layer implementation. |
| SDK-56190 | 767623 | 56850_A0 56850_A1 56850_A2 | In previous release, <code>bcm_l3_route_add</code> API may returned <code>Not_Found</code> if with an IPv6 VRF_GLOBAL route entry in ALPM mode even if ALPM memory table had enough space. In this release, it can be added successfully. |
| SDK-56193 | | 88650_A0 88650_B0 88650_B1 88660_A0 | COSQ: CNM profile can be allocated by calling <code>bcm_cosq_qcn_config_set</code> . Fixed an error of CNM profile initialization. Corrected the number of entries be added to template init ID. |
| SDK-56194 | | 88650_A0 | In Warmboot module, asserts were recently inserted to avoid modifying an uninitialized SW database. These asserts are replaced by regular error mechanism. Thus, most set/get SW DB functions are modified to return also an error value. |
| SDK-56195 | | 56850_A0 56850_A1 56850_A2 | In the previous release, PORT table LOCK would not be released if gport validation failed when operating PORT table. In this release, PORT table LOCK will be successfully released if gport validation fails when operating PORT table. |
| SDK-56199 | | 88660_A0 | OAM: when calling <code>bcm_oam_loss_get()</code> the near/far fields returned were mixed up. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|--------------------|--------------|--|---|
| SDK-56203 | | 88650_A0 88650_B0 88650_B1 88660_A0 | <p>XLPORT Overrun/Underrun Workaround ----- -----: The Arad driver implements a sequence to recognize and recover the port from XLPORT Overrun/Underrun issue (see BCM88650 errata sheet). To activate the sequence during device init use the following soc property: <code>custom_feature_nif_recovery_enable=1</code> (default is disabled on 6.3.x, and enabled on 6.4.x).</p> <p>The sequence might perform several iterations when trying to recover the port. To limit number of iteration use the following SoC property: <code>custom_feature_nif_recovery_iter</code> (default is 3). Note that from lab experience the port is recover within single iteration.</p> <p>Limitations: 1. The SW WA works for XLP0 only. 2. The SW WA is called during init and isnt available for dynamic port.</p> |
| SDK-56215 | 754083 | All 56846_A0 56845_B0 56845_A2 56844_A0 56842_A0 56840_A0 56640_A0 56850_A0 56843_B0 56841_A3 56846_A1 56841_B0 56640_A1 56640_B0 56850_A1 56850_A2 | <p>In the previous release, <code>bcm_cosq_port_mapping_set</code> and <code>bcm_cosq_mapping_set</code> returned <code>BCM_E_RESOURCE</code> incorrectly when there was one unused profile of the <code>COS_MAP</code> table on Trident/Trident2/Triumph3. In this release, this issue has been addressed by setting the <code>MC_COS1f</code> and <code>UC_COS1f</code> of the <code>COS_MAP</code> table at the same time.</p> |
| SDK-56222 | 767209 | 56846_A0 | <p>During warm boot upgrade from SDK 6.2.9 to SDK 6.3.3, data qualifiers (UDFs) are not recovered in field module as there is a mismatch between field qualifier count (<code>bcmFieldQualifyCount</code>) in 6.2.9 and 6.3.3. The more field qualifiers are added in SDK 6.3.3.</p> <p>The issue is fixed in SDK 6.3.8 by storing <code>bcmFieldQualifyCount</code> in scache and by mapping the recovered field qualifier Id to the appropriate data qualifier.</p> |
| SDK-56225 | 767847 | 88650_A0 | <p>E2E scheduler port shaper is limited from below. Added fix such that in case requested rate is lower than allowed, the minimal rate will be set.</p> |
| SDK-56244 | 765693 | 56840_A0 56850_A2 | <p>The guideline for <code>bcm_cosq_gport_mapping_set</code> is improved in this release by specifying that it can be used on chips which support ETS(Enhanced Transmission Selection) feature regardless of that the ETS mode is enabled.</p> |
| SDK-56249 | | 88650_B0 | <p>Egress shaper for ILKN interfaces don't work properly, causing unexpected behavior(wrong rates). The shaping for ILKN interface is set using: <code>bcm_cosq_gport_handle_get(0,bcmCosqGportTypeLocalPort,gport_info);</code> Fixed!</p> |
| SDK-56253 SDK-1417 | 768344 | 84328_B0 | <p>Issue Reported: G40 Port Disable not working as expected Fix: Register sequence is modified to fix this issue.</p> |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|-------------------------------|---|
| SDK-56254 | 765972 | 88650_A0 88650_B0 88650_B1 | OAM: when creating a MIP and calling <code>bcm_oam_action_set()</code> for that MIP, the profile was handled incorrectly and might have caused packet drop. This issue was fixed and resources are properly managed and freed. |
| SDK-56272 | 767442 | 56340_A0 | In earlier releases, Helix 4 GS GE48 was using incorrect lane information in the PHY driver. The port affected using quad smgii was using lane 2 and not lane 0, This has been fixed. |
| SDK-56280 | | All | <p>BMW CPU platform was removed from SW and SQA nightly builds and tests 2 years ago. BMW is not built or validated on any recent SDK releases in either SDK-6.3.x or SDK-6.4.x train.</p> <p>The last SW release that supported BMW was SDK-6.2.0 on Aug 16, 2012. BMW binaries were removed starting with SDK-6.2.1 (Oct 22, 2012) onward.</p> <p>By the time of SDK-6.4.2 release, it will have been exactly 2 years since the platform was discontinued in official releases.</p> <p>The problem is that SDK Platform guide has not been updated in the longest time. Now that we are about to publish an updated version together with SDK-6.4.1 release, this JIRA will update the document to match what has been published on DocSAFE. Releases posted on DocSAFE did not include BMW binaries for 2 years now.</p> |
| SDK-56291 | 768458 | All | <p>The definitions of COUNTER ATOMIC BEGIN/END in COUNTER thread adopted <code>sal_splhi/sal_spl</code> as mutex lock to protect some small critical sections, which can cause a considerable performance loss due to its overhead and coverage scope. Replacing the old one with a new lock mechanism, the <code>sal_spinlock</code> primitives can be more efficient especially for protecting small critical sections somewhere like in COUNTER thread. <code>sal_spinlock</code> can be used in Linux user space, Linux kernel and vxworks, even in interrupt context. To be noted, it can't be used recursively.</p> |
| SDK-56295 | | 88650_A0 88650_B0 88660_A0 | BFD accelerated endpoint that is handled in remote gport - SW DB is not restored correctly after WB. |
| SDK-56306 | 769032 | 88030_A0 | note. |
| SDK-56317 | | 56846_A0 56846_A1 | In previous releases, created multipaths more than max capacity could corrupt existing ECMP groups and return wrong value -1 if ECMP group size of TD+ configured to 256 as TD device. In this release, it returns <code>BCM_E_FULL (-6)</code> if creating ECMP multipaths more than max capacity. |
| SDK-56340 | 755455 | 88650_A0 | Port enable sequence was fixed to support 1588 on 1G ports. |



Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------------|--------------|--|---|
| SDK-56350 | | 88650_A0 88650_B0 88650_B1 88660_A0 | <p>The "multiple packet dequeue" feature which is meant for usage in low latency credit request profiles can now be configured using the <code>bcm_cosq_delay_tolerance_level_set/get</code> APIs. The feature is activated for a credit request profile if the following new flag is used in the flags field of the structure: <code>BCM_COSQ_DELAY_TOLERANCE_IS_LOW_LATENCY</code>.</p> <p>In release 6.4.1 all the credit request profiles named <code>BCM_COSQ_DELAY_TOLERANCE_*_LOW_DELAY</code> will have this feature set. In 6.3.* releases the default profiles are not changed, though this can be done manually. Example of changing one predefined profile manually:</p> <pre>bcm_cosq_delay_tolerance_level_get(unit, BCM_COSQ_DELAY_TOLERANCE_200G_LOW_DELAY, &delay_tolerance); delay_tolerance.flags = BCM_COSQ_DELAY_TOLERANCE_IS_LOW_LATENCY; bcm_cosq_delay_tolerance_level_set(unit, BCM_COSQ_DELAY_TOLERANCE_200G_LOW_DELAY</pre> |
| SDK-56352 | | 88660_A0 | Fixed ECN (Explicit Congestion Notification) to work correctly in 88660 |
| SDK-56353 SDK-56332 | 768573 | 88650_A0 88650_B0 88660_A0 | <p>In Policer rate computation function, the exponent and mantissa configuration was fixed in case the required value is too small.</p> <p>When allocating a meter with a very low rate (for instance when using <code>bcm_policer_config_t.max_pkbits_sec = 128</code>), the driver produces an error, even though this is a valid rate. This is now fixed.</p> |
| SDK-56355 | 767767 | 88660_A0 | In L2 module, when working in centralized mode, the LIF-valid bit entry was not received correctly on learn events (i.e., when the CPU was inserting learnt entries via BCM SDK). The LIF-valid bit is now set correctly on the learn events and matches the payload of the device learned entry. |
| SDK-56379 | | All | Support has been added for resolving the modern GPORT types (TRILL, VXLAN, NIV, L2GRE, etc.) in the Diag Shell. |
| SDK-56387 | 769040 | 56450_B0 56450_A0 | Support has been added for IFP qualifier <code>bcmFieldQualifyRouterAlertLabelValid</code> for BCM5645x devices. |
| SDK-56409 | | All | PTP clocks can now be re-created in order to change the "immutable" clock parameters. The only restriction is that the number of clock ports on re-creation may not exceed the value used on the initial creation. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------------|--------------|-------------------------------|--|
| SDK-56410 | 769158 | 88650_A0 | TCDP mapping using <code>bcm_cosq_gport_egress_map_set</code> uses profiles of mapping, and associate each port to relevant profile. The API supported up to 4 different profiles, although HW support up to 8 profiles (when new profile is required but not available, the API return an error). The API was fixed to support 8 profiles as the HW. |
| SDK-56425 | 767797 | 88650_A0 88660_A0 | SER interrupts were not signaled to CPU and not counted, due to being masked by a set of override bits called monitor bits. This was fixed to allow proper logging and handling of SER interrupt events by the SDK. |
| SDK-56439 | | 88650_A0 88650_B0 88660_A0 | Ethernet OAM does not recover from Warm-boot. This is fixed. |
| SDK-56440 | | 88650_A0 88660_A0 | MPLS Tunnel initiator clear all API does not clean up MPLS WB information as well. |
| SDK-56441 | | 88650_A0 88660_A0 | During Warmboot in vswitch module, the VSI MSTP was always restored, even if it was cleared before the warmboot. This restoration is skipped upon Warmboot. |
| SDK-56446 | 759287 | 88650_A0 88660_A0 | Fix <code>low_vid_verify</code> value in <code>bcm_vswitch_port_delete</code> function (<code>arad_pp_frwrdr_trill.c</code>). |
| SDK-56447 | 763576 | 88650_A0 88660_A0 | When creating an ECMP group using <code>bcm_l3_egress_ecmp_create</code> , if the 'ecmp' parameter is NULL, a segmentation fault was occurring. This is now fixed - the software checks that the 'ecmp' parameter is not NULL. |
| SDK-56451 | | 88650_B0 88660_A0 | Required changes in SDK in order to support KBP-SDK 1.2.3 for external TCAM are introduced. |
| SDK-56452 | 760578 | 56450_B0 56450_A0 | When 1 + 1 protection switching is enabled/disabled (with label swapping on IPMC group), the <code>MPLS::LABEL_ACTION_SWAP</code> field of <code>EGR_L3_NEXT_HOP</code> table need to be set/cleared respectively to achieve the functionality. This support has now been added. |
| SDK-56455 SDK-56327 | 769233 | 56224_B0 56224_A0 | Issue :- IpType Qualifier was not recovered properly after warmboot. Fix :- Recovery of IpType Qualifier was not handled properly in BCM56624. Added Code to recover IpType qualifier after warmboot. |
| SDK-56464 | 765386 | 56640_A0 56640_A1 56640_B0 | Problem: When there is no signature configured, if there is traffic being sent to signature matching engine(SME) for deep packet inspection, the SME goes into a hung state. Even after configuring some signatures later on, it doesn't indicate any match though it receives matching traffic. Solution: Do not let any traffic to be forwarded to SME until at least one signature is configured successfully. Also, stop the traffic from being forwarded to SME while detaching the last active engine. This is achieved by modifying flow tracker configuration register field. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|--|---|
| SDK-56476 | | 88650_A0 88660_A0 | In Field Processor's diagnostics, in case field groups were created however no entry was inserted, an error is produced when calculating the number of entries from an empty bitmap. This is fixed. |
| SDK-56482 | 768774 | 56450_B0 56450_A0 | Added support for associating a MPLS label to a given protection switching group for BCM5645x devices. API <code>bcm_mpls_tunnel_switch_add()</code> can be used to achieve this by passing the protection switching group id in "failover_id" member of structure "bcm_mpls_tunnel_switch_t". |
| SDK-56492 | 769633 | 56850_A0 56850_A1 56850_A2 | The related EGR_PORT_TO_NHI_MAPPING was not cleaned when the last port was removed from the trunk where a VXLAN logical port is created. Now it is fixed by adding the specific implementation for VXLAN. |
| SDK-56495 | 768732 | 88650_A0 88650_B0 88650_B1 88660_A0 | In Field Processor, at Egress, the support of two new qualifiers is introduced: <code>bcmFieldQualifySid</code> (MAC-in-MAC I-SID) and <code>bcmFieldQualifyMplsForwardingLabelAction</code> . Both qualifiers are mapped internally to the EEI value. |
| SDK-56507 | | 56640_A0 56640_A1 56640_B0 | Previously <code>bcm_cosq_port_bandwidth_set()</code> failed on 56640 HSP ports. HSP ports handling for <code>bandwidth_set</code> API has now been added. |
| SDK-56514 | | 56850_A0 56854_B0 | In previous releases, SER correction for MMU CTR block was not implemented. In this release, MMU CTR block SER correction logic has been implemented. Once parity error is detected in tables in MMU CTR block, the corrupted table entry will be cleared. |
| SDK-56522 | | 56640_A0 56850_A0 | Issue here is SDK support is missing to recover EFP Secondary selectors during Warm Boot. So EFP qualifiers which need secondary selectors will fail to be recovered in Warm Boot. Now support has been added for recovering all EFP secondary selectors come from following different registers 1. <code>EFP_CLASSID_SELECTORr</code> - (HX4, KT2, TR3, TD2) 2. <code>EFP_KEY4_DVP_SELECTORr</code> - (HX4, KT2, TR3, TD2) 3. <code>EFP_KEY4_MDL_SELECTORr</code> - (HX4, KT2, TR3, TD2, GreyHound, Enduro) So this fix is applicable to HX4, KT2, TR3, TD2, GreyHound, Enduro |
| SDK-56533 | 769718 | 56850_A2 | Fixed multicast module to return error when deleting member from a MC group that was already destroyed. |
| SDK-56554 | 770975 | 56850_A0 56850_A1 56850_A2 | Support has been added for the ability to transmit even if port is down. |
| SDK-56572 | 771276 | 88660_A0 | When using external TCAM for forwarding, serial IP and RPF, then high rate lookups return sometimes wrong results. This is fixed: serial lookups in external TCAM are always returning reliable results at any supported rate. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------------|--------|---|---|
| SDK-56577 | | 88650_A0 88660_A0 | Removing sw database MC-ID -> nickname. Nickname can be extracted from <code>trill_port_id</code> database (<code>encap_id</code> field). |
| SDK-56578 | | 88650_A0 88660_A0 | New sequence for ECMP creation using forward-group port instead of trill-port-ecmp. |
| SDK-56580 | 772058 | 88650_B1 88660_A0 | QOS: Fixed the ability to set Inner-PCP to TC/DP table in <code>bcm_qos_map_add</code> . |
| SDK-56581 | | 88650_A0 | In Field Processor diagnostics, the actions offsets are incorrect when cascaded action is used. This is fixed. |
| SDK-56591 | 768899 | 56850_A0 56850_A1 56850_A2 | New API <code>bcm_l3_egress_stat_counter_sync_get()</code> added to retrieve l3 egress stats after updating the software copy of the counter value with the hardware counter value. |
| SDK-56594 SDK-57957 | 769099 | 56440_A0 56445_A0 56440_A1 56445_A1 56444_A1 56450_A0 56340_A0 56449_B0 56445_B0 56440_B0 56447_B0 56443_B0 56441_B0 56446_B0 56448_B0 56344_A0 56342_A0 56442_B0 56342M_A0 56340M_A0 56455_A0 56456_A0 56450_B0 | In earlier releases scheduler configuration with weight value 0 was incorrectly configured in WRR mode. This has been fixed in this release to configure scheduler configuration with weight value 0 to be in STRICT PRIORITY mode. |
| SDK-56597 | 772109 | 56850_A2 | <code>soc_alpm_insert</code> : Route Insertion Failed due to DEFIP AUX Operation timeout. On expiry of poll for ALPM hardware operations, <code>soc_timeout_check</code> requires that the status register needs to be read one more time to confirm operation has completed. This support has been added. |
| SDK-56607 | | 88650_B0 | Fix initial shaper to interface mapping. This fix has no functional impact. |
| SDK-56608 | 765207 | 56450_A0 56450_B0 | When the physical port associated with MPLS port is replaced by using <code>bcm_mpls_port_add()</code> API with flag <code>BCM_MPLS_PORT_REPLACE</code> , the properties associated with old physical port is not cleared. Appropriate check has been added to clear the properties associated with the old physical port for BCM5645X devices. |
| SDK-56610 | 772885 | 56450_A0 56450_B0 | <code>gport_attach</code> function can be called passing cosq value as 0,1,2.. so on. When coaq value was passed instead of -1, code was not handling it properly, So same <code>hw_index</code> was allocated again and again, Now checks are provided so that unique <code>hw_cosq</code> value is assigned for different values of cos |
| SDK-56611 | 772970 | 88650_A0 88650_B0 88660_A0 | After <code>Hard_Reset</code> was called, CPU port was stuck. Resolved in the hard reset code by resetting CMIC TXi credits. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|-------------------------------|--|
| SDK-56615 | 772971 | 56450_A0 56450_B0 | WRR scheduling under sub ports could not work due to missing weight configuration in L0 nodes. This configuration issue has been corrected to get the expected scheduling behavior. |
| SDK-56628 | | 88660_A0 | BFD: for BFD endpoints of type bcmBFD TunnelTypeMpls (BFD PDUs are encapsulated by UDP, IP, MPLS, Eth), IP TOS, TTL may be configurable through the fields <code>ip_tos</code> , <code>ip_ttl</code> . Note that the protocol dictates that the IP TTL be set to 1. |
| SDK-56629 | | 88650_A0 88650_B1 88660_A0 | When compiling with <code>INCLUDE_KBP</code> compilation flag, a large memory allocation for Field Processor software state was performed, related to external TCAM. This large memory allocation is now performed only if ELK usage is indicated via SOC properties. |
| SDK-56635 | | 88650_A0 88650_B0 88660_A0 | In some scenarios, trunk ports <code>lb_key_min</code> and <code>lb_key_max</code> values do not cover all <code>lb_key</code> range [0:255] which results in packet drop. This issue is fixed. |
| SDK-56636 | | 88650_A0 | At SOC layer, a new mechanism to improve the performance of entry insertion for Large-Exact-Match, Small-Exact-Match and TCAM databases has been implemented. By default, this mechanism is enabled. To disable this mechanism, unset the compilation flag <code>ARAD_FAST_REGISTERS_AND_FIELDS_ACCESS</code> . |
| SDK-56641 | | 56850_A2 | In earlier releases, VxLAN multicast was treated as non-Layer3 multicast. It caused VxLAN multicast group to still have members after being re-created. This has been resolved. |
| SDK-56644 | | 56440_B0 | EGR_L3_NEXT_HOP table has overlapping views, for ex: L3, MPLS, SD_TAG etc., and for a given entry in EGR_L3_NEXT_HOP table the fields corresponding to a particular view, decided by ENTRY_TYPE field, should only be modified. But some fields of L3 view (overlapping with MAC_DA_PROFILE_INDEX field of MPLS view) were always getting modified resulting in wrong EGR_MAC_DA_PROFILE entry getting overwritten when a given L3 egress object is updated using the flags <code>BCM_L3_REPLACE</code> <code>BCM_L3_WITH_ID</code> . Protection (i.e, check for appropriate ENTRY_TYPE value before modifying fields in L3 view) has been added to overcome the issue. |
| SDK-56646 | | 88650_A0 88660_A0 88670_A0 | Fixed a problem in <code>bcm_mpls_port_add</code> . The issue caused the driver to crash with a segmentation fault when the API is called with the REPLACE flag. |
| SDK-56647 | | 88650_A0 88650_B0 88660_A0 | In FCoE, when adding a route via <code>bcm_fcoe_route_add</code> API with flags <code>BCM_FCOE_LOCAL_ADDRESS</code> <code>BCM_FCOE_HOST_ROUTE</code> , the entry was not be added correctly to the forwarding database. This is fixed. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------------|--------------|--|---|
| SDK-56649 | 772044 | 88660_A0 | <p>In metering when the SOC property <code>policer_color_resolution_mode</code> is set to 1, the meter processor outputs the following DP values: green - 0 yellow - 1 meter processor red - 2 ethernet policer red - 3.</p> <p>Due to a software bug, when the meter processor gave a packet a color of yellow, the actual DP would be 2, instead of 1. This is now fixed.</p> |
| SDK-56657 SDK-54730 | | 88660_A0 | <p>Currently, unless specified by SOC property, ethernet policers drop all packets that arrive red to the device. Color blind ethernet policers allow to do rate policing even for packets that arrive red to the device.</p> <p>This fix introduces the ability to change ethernet policers to be color blind or color aware dynamically. To set color blind ethernet policing, both the ethernet policer and aggregate policer associated with a port and traffic class must be set to be color blind. To set an ethernet policer to be color blind, the <code>BCM_RATE_COLOR_BLIND</code> flag can be used when calling <code>bcm_rate_bandwidth_set</code>. To set an aggregate policer to be color blind, the <code>BCM_POLICER_COLOR_BLIND</code> flag can be used when calling <code>bcm_policer_set</code> with an aggregate policer.</p> |
| SDK-56688 | | 56340_A0 | <p>In the previous release the packet/byte fields were not working correctly in regex reports. The packet and Byte counter registry values are now retrieved and updated in the match reports.</p> |
| SDK-56691 | | 88650_A0 88650_B0 | <p>In Rx parsing, the <code>src_gport</code> and <code>dst_gport</code> meaning were unclear. It is fixed to: - <code>src_gport</code>: incoming port where the packet was introduced into Arad - <code>dst_gport</code>: outgoing port where the packet exits from Arad</p> |
| SDK-56693 | | 56340_A0 | <p>When only engine 0 is enable, the CSF table will not be updated no toggling on CSF valid signal. When other engine are enabled, the CSF table will be loaded when the valid signal of other engines toggle. Hence enabling starts from engine 1 and engine 0 will be enabled at last.</p> |
| SDK-56700 | 774184 | 88650_A0 88650_B0 88650_B1 88660_A0 88670_A0 | <p>When calling <code>bcm_mpls_port_add</code> with <code>pwe id > 32K</code>, error printouts are provided but the API returns <code>BCM_E_NONE</code>. This is fixed and error is returned.</p> |
| SDK-56701 | 773800 | All | <p>In earlier releases diag shell would intermittently crash in "I3 egress show" command. This has been resolved.</p> |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|--|---|
| SDK-56709 | 773764 | 56334_B0 56334_A0 | <p>Issue: ==== Remote trunk identifier bit has to be ignored while setting the srcTrunk mask.</p> <p>The MSB of the modId represents Remote trunk bit and hence it was calculated based on the width of the qualifier. However, the width of the qualifier varies for different devices. Due to this, for devices like Enduro, the bit was positioned wrongly and was ignoring trunk bit instead of the remote trunk bit.</p> <p>Fix: === Instead of using the width of qualifier, the bit position of the trunkBit minus 1 (<code>trunk_bit_pos - 1</code>) is used to calculate the remote trunk bit position and ignoring the bit by masking the bit to 0.</p> |
| SDK-56714 | 758491 | 56450_A0 56440_B0 | <p>Issue : ----- In katana and katana2 the <code>rqe_port_config</code> register was programmed with <code>cos_mode=1</code> when extended queueing was enabled but <code>cos_mode=1</code> is not valid for this register and this causes traffic to go through cos 0 always Fix ---- If extended queueing is enabled then we program <code>cos_mode</code> with value 0 in <code>RQE_PORT_CONFIG</code>.</p> |
| SDK-56720 | 769698 | 56224_B0 56224_A0 | <p>Output of "trunk show" command displays the port names correctly by resolving the gports for all XGS devices.</p> |
| SDK-56725 | | 56850_A0 56855_A0 56850_A2 | <p>In previous release, the functions <code>bcm_vxlan_stat_attach</code> and <code>bcm_vxlan_stat_counter_get</code> took high execution time, about 13000 usec per call, which couldn't meet customer expectations. In this release, the functions have been optimized, and they takes about 100 usec per call. The performance has been improved.</p> |
| SDK-56741 | 763657 | 56640_A0 56641_A0 56642_A0 56643_A0 56644_A0 56645_A0 56648_A0 56340_A0 56640_A1 56643_A1 56644_A1 56640_B0 56644_B0 56643_B0 56648_B0 56649_B0 56649_A0 56344_A0 56342_A0 56342M_A0 56340M_A0 | <p>In earlier releases, the validation on the PORT for ETS was incorrect on the return value which might lead to wrong COSQ mapping. Fixed the validation.</p> |
| SDK-56753 | | 56640_A0 56643_A0 56640_A1 56643_A1 56640_B0 56643_B0 | <p>Problem: Due to a hardware bug, the hardware team had recommended to disable bus parity protection for a bunch of memories which includes IESMIF. However, the SDK still has the bus parity enabled on IESMIF and this is causing spurious parity errors in the cases where ESM accesses are involved.</p> <p>Solution: Disable the bus parity protection for IESMIF by default, to workaround the hardware issue.</p> |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|---|---|
| SDK-56756 | 773877 | 56540_A0 56540_B0 | Previously, "l3 ip6route show" command was broken on Firebolt-4. This is due to that <code>soc_feature_l3_shared_defip_table</code> is not supported on Firebolt-4 and thus <code>bcm_switch_object_count_get</code> called in this command returns an error. It is fixed by adding the additional check on <code>soc_feature_l3_shared_defip_table</code> to avoid calling <code>bcm_switch_object_count_get</code> for Firebolt-4. |
| SDK-56761 | | 56540_A0 56340_A0 56540_B0 | In Apollo2 and Helix4 devices, during an OAM CCM timeout event, remote endpoint index passed from SDK to OAM event callback function was not correct, this issue has been addressed. |
| SDK-56763 | 772471 | 56850_A0 56850_A1 56850_A2 | In the previous release, the API <code>bcm_cosq_gport_bandwidth_set</code> would set the shaper on a wrong scheduler node. In this release, this issue has been addressed by setting the software resources which have been assigned to the HSP ports. |
| SDK-56765 | | 88660_A0 | Add driver support to new Arad SKU - 88363 |
| SDK-56770 | 774767 | 88650_B0 | Trill learning: In TRILL multicast, ingress learning, MACT learning is disabled at Egress Router-Bridge for TRILL multicast packets otherwise unrelated MACs (Link Layer SA) are learned. |
| SDK-56779 | 774862 | 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 56851_A0 56852_A0 56852_A1 56853_A0 56853_A1 | In earlier release, TD2 had 48 HIGIG trunks and SDK was not able to record/maintain the bitmap of higig trunk override id which was larger than 31. This issue has been fixed in this release. |
| SDK-56781 | 774909 | 56850_A0 56850_A1 56850_A2 | The root cause of this issue is that when l2 addresses are learnt on Y pipeline, the hit bits of the corresponding L2X table entries are not set. But <code>bcm_l2_matched_traverse</code> function will read all L2X table entries and check the hit bits, so the traverse function can't find the l2 address learnt on Y pipeline. Code has been added to update the hit bits of L2X entries when the L2 addresses are learnt on Y pipe line. |
| SDK-56786 | 773228 | All | Support has been added for displaying counter register's alias name which register's name larger than 13 characters |
| SDK-56789 | | 56340_A0 56547_A0 | For 802.1AS packet, RX and TX timestamps are now enabled for BCM56340 family of devices |
| SDK-56801 | 774468 | 56440_A0 56445_A0 56440_A1 56450_A0 56440_B0 56450_B0 | In earlier releases, Enabling of <code>tcam_protect_write</code> resulted in incorrect computation of the number of entries per slice on Katana. This issue has been fixed by correcting size of the FP TCAM value used for computing the size of each slice. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|--|--|
| SDK-56805 | | 88660_A0 | ARP downstream checking didn't use separately, now the fixes resolve this issue. |
| SDK-56821 | | 56820_B0 | In Scorpion, IP Packets with 0x9100 (other than default TPID 0x8100) outer tag are treated as untagged and non IP packets when these packets ingress on YPIPE and egress on XPIPE. This behavior is detected by the EFP when it is configured to match anything beyond the L2 header. The software work around is added in SDK to fix this issue by changing the access type of the per-port register EGR_SRC_PORT. |
| SDK-56840 | 772939 | 88650_A0 88650_B0 88650_B1 88660_A0 | In MAC-in-MAC, when using API <code>bcm_l2_addr_add()</code> , multicast group destination was not supported in BMACT Forwarding table. Multicast group destination is now supported and can be added to BMACT forwarding table. |
| SDK-56848 | 776418 | 82328_A0 | Added PHY BCM82322 support. This PHY supports 10G,20G and 40G modes |
| SDK-56850 | 776440 | 56450_A0 56450_B0 | Issue : Support for ECAP CopytoCpu is missing on KT2. Fix : Added Support for ECAP CopytoCPU in KT2 in SDK |
| SDK-56854 | | 88650_A0 88650_B0 88660_A0 | In FCoE zoning, when adding an entry, all entry actions were applicable (allow, deny, redirect), but the same action (allow) was always executed. A validation is introduced so that only the action allow is applicable. |
| SDK-56869 | | 56450_A0 56450_B0 56640_B0 56440_B0 | PTP master sends Announce messages to PTP slaves. PTP slaves compares announce messages received from several PTP master to decide which PTP master to choose to synchronize time. Following three new fields are added to PTP master information structure. ClockAccuracy: The clockAccuracy indicates the expected accuracy of a clock when it becomes grandmaster or in event it becomes grandmaster. Various granularities are possible. This specifies time is accurate to within 25 ns/100 ns/250 ns/1 ?s/2.5 ?s/10 ?s etc. OffsetScaledLogVariance: The offsetScaledLogVariance indicates inherent precision of a clock. This is the precision of the timestamps included in message issued by clock when it is not synchronizied to another clock using the protocol. The reference clock when not synchronized to another clock may be an atomic clock, a GPS receiver, a stable local oscillator, a suite of clocks synchronized via NTP, etc. These sources may contribute to the variance estimate. The value of offsetScaledLogVariance can also be a staic constant determined by manufacturer. StepsRemoved: The distance measured by the number of boundary clocks between the local clock and the foreign master is used when two Announce messages reflect the same foreign master. The distance is indicated in the stepsRemoved field of Announce messages. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------------|--------------|--|--|
| SDK-56876 | 776002 | 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 | The scheduler configuration with weights value 0 will be considered as STRICT_PRIORITY. Fixed the same behavior in SDK. |
| SDK-56878 | 776733 | 88650_B1 | The bcm_cosq_control_set/get(unit, 0, 0, bcmCosqControlAdmissionTestProfileA, bitmap) APIs did not work correctly if the bitmap bits for PFC or LLFC VSQ types were set. This was fixed. |
| SDK-56884 | | 88650_A0 88650_B0 | MIM: DEFAULT BEHAVIOR CHANGE . Encoding of returned handler station_id for MIM is now changed in I2 station APIs. bcm_l2_station_get() API failed in some cases when LSB for MyMac was considered to be global instead of per ingress port. This happened when the MIM global LSB bit in the created station_id was wrongfully set due to an overlap in the station_id encoding. This is fixed by changing the encoding of the station_id so that there is no overlap with the MIM LSB global indication bit. The MIM global LSB indication bit in station_id changed from bit 7 to bit 16. |
| SDK-56887 | | 88660_A0 | Default value of Chicken bit EGO_CFG_BUG_FIX_CHICKEN_BITS_REG_1_CFG_BUG_FIX_87_DISABLE was changed to disable (instead of enable) as it doesn't provide any new functionality. |
| SDK-56888 SDK-56945 | 742236 | 88650_A0 88650_B0 88650_B1 88660_A0 | Support reflector functionality in accordance with RFC-2544 (benchmarking methodology). This JIRA contains IP+MAC swap functionality (swap the SIP with the DIP, SA with DA) as well as a light MAC-only-swap functionality (swap the SA with the DA). For the former, the soc property RFC2544_reflector_mac_and_ip_swap_port should be set to the reflector port. All packets arriving at the ETPP with the Out-TM-port set to the reflector port will have their MAC addresses and IP addresses swapped, and the packet will be prepended with a PTCH with the SSP set to the original Out-PP-Port. The reflector port should be defined as a recycle port and the IP routing should be done at the second pass. The light MAC-only swap functionality can be used analogously with the soc property RFC2544_reflector_mac_swap_port For a more detailed account (For example setting an egress-PMF rule modifying the Out-TM-port), refer to cint_benchmarking_methodology.c |
| SDK-56903 | | 56850_A0 | Adding a flag BCM_NIV_VNTAG_L_BIT_FORCE_1 to choose if frames can be headed back towards the Interface Virtualizer that it originated from. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|---|--|
| SDK-56913 | 759274 | All | In earlier releases on overflow the DMA timeout/overflow stat was cleared only when the entries were available. On entry empty this was not getting cleared. Fixed in the changes when the entry is empty. |
| SDK-56917 | 777278 | 56340_A0 | SME match not reported for twitter and webex signatures due to hex representation of ASCII. Provided support in SDK API <code>bcm_regex_match_set()</code> to parse hex representation of ASCII Alphabets. |
| SDK-56925 | | 88650_A0 88650_B0 88650_B1 88660_A0 | PON: In previous release, DHCP IPv6 anti-spoofing wasn't working when soc property <code>l3_source_bind_mode</code> is IPV6, now fixed this issue. |
| SDK-56929 | | 56850_A0 56850_A1 56850_A2 | In earlier releases, next hop information was not initialized before using it. This has been resolved. |
| SDK-56931 | | 56850_A0 56850_A1 56850_A2 | In previous releases, the API <code>bcm_l3_egress_get</code> returned <code>BCM_E_INTERNAL</code> in vxlan case. A new case <code>bcmVpTypeVxlan</code> has been added to fix this issue. Now if the case is vxlan, the <code>egr->port</code> will be set to vxlan and the API will return <code>BCM_E_NONE</code> . |
| SDK-56954 | | 56850_A0 | In earlier releases, source trunk table was not being cleared up if a customer used an incorrect sequence. This has been resolved. |
| SDK-56956 | 774358 | 88650_A0 88650_B0 88660_A0 | In Field Processor, in Direct Extraction field groups, it is possible to set a bias value as part of the extraction field configuration. The procedure failed when the bias value is negative. This is fixed. |
| SDK-56960 | | 88650_A0 88650_ACP_A0 88650_B0 88650_B1 | QOS: Qos map id can be destroyed by calling <code>bcm_qos_map_destroy</code> . Improvement in entry deletion for <code>bcm_qos_map_destroy</code> by adding new SW DB to record each entry is occupy or not. |
| SDK-56961 | | 88660_A0 | BFD: When calling <code>bcm_bfd_endpoint_create()</code> with the flag <code>BCM_BFD_ENDPOINT_REPLACE</code> set and <code>type==bcmBFDTunnelTypeMplsTpCc</code> , static registers were mismanaged, causing such calls to fail. |
| SDK-56962 | 776131 | 88650_A0 88650_B0 88660_A0 | The OAM DM DOWN program at the egress editor has been fixed so that only appropriate packets will select this program. Previously this program was catching other packets as well which caused outgoing packet corruption. |
| SDK-56964 | | 56850_A1 56850_A2 56850_A0 | In earlier releases the related <code>EGR_PORT_TO_NHI_MAPPING</code> was not cleaned when the last port was removed from the trunk where a VXLAN logical port was created. This is fixed by adding the specific implementation for VXLAN. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|-------------------------------|--|
| SDK-56975 | 774350 | 56850_A0 56850_A1 56850_A2 | <p>Customers requested more granularity in <code>bcm_vxlan_vpn_create</code>. To enable this modifications were made to <code>BCM_VXLAN_VPN_WITH_VPNID</code> to meet this goal. Before this change, when customer created a vpn, <code>BCM_VXLAN_VPN_WITH_VPNID</code> was required, and both VFI and VNID were created. After this change, the behavior is as follows:</p> <p>When create a VXLAN VPN: If use <code>BCM_VXLAN_VPN_WITH_VPNID</code>, both VFI and VNID will be created. If not use flag <code>BCM_VXLAN_VPN_WITH_VPNID</code>, only VFI will be created.</p> <p>When updating an existing VXLAN VPN (<code>BCM_VXLAN_VPN_REPLACE</code> should be used. If use both <code>BCM_VXLAN_VPN_REPLACE</code> and <code>BCM_VXLAN_VPN_WITH_VPNID</code>, both VFI and VNID will be created. If only use <code>BCM_VXLAN_VPN_REPLACE</code>, the VNID will be removed.</p> |
| SDK-56980 | 777710 | 56240_B0 | <p>In previous releases, If the given port was configured with WRR scheduling and then warmboot was done the SW did not recover the correct scheduling algorithm back after the warmboot. The hardware continued to have correct value. This has been resolved.</p> |
| SDK-56988 | | 56850_A0 56850_A1 56850_A2 | <p>Customer wanted to use VLAN and VFI flex counter simultaneously. But in the previous release, SDK assigned VLAN and VFI counter in the same pool, and this would cause the VFI counter to not be updated when the packet hit two memories. Now the customer can use the SOC property <code>ing_share_flex_counter_pool=split(vlan,vfi)</code> to prevent VLAN and VFI from sharing the same pool.</p> |
| SDK-56991 | 778526 | 56850_A2 | <p>In earlier releases, when using <code>bcm_vxlan_port_add()</code> API with <code>BCM_VXLAN_PORT_REPLACE</code> flag, it will clear the flex counter configuration if this vxlan port has attached with flex counter. This has been resolved.</p> |
| SDK-56994 | | 56850_A0 56850_A1 56850_A2 | <p>It was found that network facing flex counters were not working for both <code>bcmStatGroupModeSvpType</code> and <code>bcmStatGroupModeSvpType</code> group modes. After investigation we located the RCA was the counter offsets were not set correctly in previous implementation.</p> <p>The issue was fixed by adjusting the counter offset for both <code>bcmStatGroupModeSvpType</code> and <code>bcmStatGroupModeDvpType</code> group modes.</p> |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|-------------------------------|--|
| SDK-56995 | 777713 | 56845_A2 56850_A0 56850_A1 | In the previous release, when using RPCs and calling <code>bcm_vxlan_stat_counter_get()</code> , the values in the <code>counter_indexes[]</code> parameter are not being properly propagated from the client to the server. This has been resolved. |
| SDK-56999 | 773690 | 56850_A0 56850_A1 56850_A2 | Added support for port extender failover. |
| SDK-57002 | 778714 | 56850_A2 | In earlier releases, SDK code was not able to resolve the ports for which id was larger than 64 in BITMAPf of <code>IFP_REDIRECTION_PROFILEm</code> table on TD2 after warmboot. This has been resolved. |
| SDK-57004 | | 56640_A0 56340_A0 | In previous release, the schan response type for devices with ISM, e.g. Triumph3 and Helix4 is not properly checked. The following response types <code>SCHAN_GEN_RESP_L2_MOD_FIFO_FULL</code> , <code>SCHAN_GEN_RESP_MAC_LIMIT_THRESHOLD</code> and <code>SCHAN_GEN_RESP_MAC_LIMIT_DELETE</code> have been added in schan response type checking in the routine <code>soc_mem_generic_insert()</code> . |
| SDK-57009 | | 56850_A0 56850_A1 56850_A2 | In previous releases, <code>bcm_vxlan_stat_detach</code> took high execution time because redundant memory operation was executed. In this release, we remove memory read operation and use <code>soc_mem_write</code> instead of <code>soc_mem_write_range</code> conditionally to save time, then the execution time can be reduced a lot. |
| SDK-57027 | | 56850_A0 56850_A1 56850_A2 | In earlier releases, Trunk useful information was cleared by VXLAN API. This has been resolved. |
| SDK-57032 | | 56850_A0 56850_A1 56850_A2 | In earlier releases, <code>bcm_vxlan_port_get()</code> could not get the <code>BCM_VXLAN_PORT_DROP</code> and <code>BCM_VXLAN_PORT_MULTICAST</code> flags correctly. This has been resolved. |
| SDK-57034 | 775986 | 56450_A0 56242_A0 | Issue : Packet based WRED profiles was not restored properly in katana/katana2 after warmboot in earlier releases .As part of fix during warmboot we scan packet based WRED table and update the software profile. |
| SDK-57038 | | 88650_B1 | Documentation only: <code>stat_if_pkt_size</code> description in config-sand.bcm example was misleading. The correct description can be found in user manual or in property.h. Description in config-sand.bcm fixed as well. |
| SDK-57054 | 778731 | 88650_B1 | add more detail prints and update the UM. Changing jira to improvement |
| SDK-57075 | | 88650_B0 | Arad initialization time significantly improved for channelized interface configuration. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|--|---|
| SDK-57077 | | 88650_A0 88650_B0 88650_B1 88660_A0 | IMPORTANT CHANGE FOR PWE P2P: OAM PWE P2P was not identified as OAM in the classifier because of wrong lif id (0 value instead of the real LIF-ID value). This is fixed by setting valid LIF-ID for PWE P2P. The change may cause same-interface to be invoked for PWE P2P case when In-LIF PWE P2P ID is equals Out-LIF ID. |
| SDK-57078 | | 88650_A0 88650_B0 88650_B1 88660_A0 | OAM: Supporting down MEPs in the format CFMoEthoMplsoEth in OAM classifier. In order to enable initialization of the OAM TCAM to identify CFMoEthoMplsoEth, set soc property <code>custom_feature_oam_downmep_pwe_classification</code> to 1. This feature supports CFM identification per-md level only. This feature does not support identification per opcode. All CFM packets will be associated with opcode=1 (CCM). Inner Ethernet frames with 0 or 1 VLAN tags preceding the CFM EtherType are supported. For a more detailed explanation (including examples), consult <code>cint_oam_cfm_o_eth_o_pwe_o_eth.c</code> |
| SDK-57080 | 766661 | 88650_B1 | TRILL and FCoE could not be supported simultaneously on the same device, due to an overlap in FLP (i.e. forwarding HW block) programs allocation. TRILL and FCoE can now be supported and coexist on the same device. |
| SDK-57082 | | 88650_A0 88660_A0 | Important Note: the default Drop Precedence (DP) mapping of a yellow packet with DP=2 has been changed. Usually the final DP (Drop Precedence) given by the meter (or the In-DP) is unchanged, and can be from 0-3. In the past the final DP was always changed from 2 to 1 when passed to ingress, meaning that the only available DP results were 0, 1 and 3 (at ingress). To support this old behavior the SOC property <code>policer_color_resolution_mode</code> is introduced. When <code>policer_color_resolution_mode=1</code> , if the final DP is 2, this DP is mapped to 1 instead (at ingress). |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|-------------------------------|---|
| SDK-57083 | 776583 | 88650_B0 88650_B1 88660_A0 | <p>IMPORTANT: for improved performance after <code>bcm_field_group_install</code> call, it is recommended to set <code>USING_TCAM_PRIO_LIST_INVERSE_SCAN</code> compilation flag.</p> <p>In Field processor entry insertion procedure, the user can: - after initialization, define all the entries and then insert them in one call (<code>bcm_field_group_install</code>) - on-the-fly, insert the entries dynamically one by one (<code>bcm_field_entry_install</code>)</p> <p>The advantage of the first case is the absence of TCAM shuffling, since the entries are sorted according to their priority before their insertion.</p> <p>In this case, the limiting factor in the entry performance was the entry insertion in the priority sorted list, an internal data structure detailing for each priority the acceptable TCAM location range. The scanning of this list was always performed from the first node to the last one, even if in the sorted case the inserted entry was the last one. This scanning has been changed to scan from the end, if the compilation flag <code>USING_TCAM_PRIO_LIST_INVERSE_SCAN</code> is set. We highly recommend to users to set this compilation flag for performance improvement.</p> |
| SDK-57085 | | 88650_A0 88660_A0 | <p>If <code>bcm_mpls_tunnel_initiator_create</code> is called with <code>WITH_ID</code> flag and an existing egress tunnel id, this is illegal configuration. We added a check to verify this won't happen.</p> |
| SDK-57100 | 778739 | 56850_A0 56850_A1 56850_A2 | <p>In Trident2, <code>IP_FRAG_INFO(2bit)</code> is defined in 5 field selectors (<code>F1_6</code>, <code>F1_15</code>, <code>F2_1</code>, <code>F3_3</code> and <code>IFP_PAIRING_FIXED</code>). But In SDK, <code>IP_FRAG_INFO</code> in these 5 different selectors are initialized with 2 different qualifiers as below which is wrong. Modify the SDK to make it consistent i.e use <code>bcmFieldQualifyIpFrag</code> qualifier at all places. <code>F1_6</code> - initialized for <code>bcmFieldQualifyIpInfo</code> <code>F1_15</code> - initialized for <code>bcmFieldQualifyIpFrag</code> <code>F2_1</code> - initialized for <code>bcmFieldQualifyIpFrag</code> <code>F3_3</code> - initialized for <code>bcmFieldQualifyIpInfo</code> <code>IFP_PAIRING_FIXED</code> - initialized for <code>bcmFieldQualifyIpFrag</code> Now <code>IP_CHECKSUM_OK</code> is 1 bit field and part of <code>FIXED</code> part of <code>IngressFieldProcessor</code> key. Currently SDK does not have support for this 1 bit field and <code>bcmFieldQualifyIpInfo</code> qualifier is used to initialize <code>IP_CHECKSUM_OK</code> bit.</p> |
| SDK-57102 | 779185 | 56850_A0 56850_A1 56850_A2 | <p>In earlier releases, If adding I3 host entry to HW failed, SDK should decrease the related reference count but this function did not work when it has a multipath flag. This has been resolved.</p> |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|--|--|
| SDK-57104 | 779184 | 56526_A0 56524_A0 56521_A0 56526_B0 56524_B0 | <p>For BCM_5652x devices, whenever a tpid other than the default tpid was created, reference count of default tpid was decremented once but was not incremented during deletion.</p> <p>During repeated creation and deletion , this reference count became negative resulting in error.</p> <p>This has been fixed by incrementing default tpid reference count upon deletion of tpid thus providing support for repeated creation and deletion of tpid on a port</p> |
| SDK-57105 | | 56850_A2 | <p>The customer requested configuration of RTAG7_HASH_CONTROL_4.VXLAN_PAYLOAD_HASH_SELECT_A/B to meet their hash requirement. For Trident2 and subsequent XGS devices, 2 switch controls bcmSwitchHashVxlanPayloadSelect0 and bcmSwitchHashVxlanPayloadSelect1 have been provided to support the requirement.</p> |
| SDK-57107 | | 56850_A2 | <p>The customer requested configuration of RTAG7_HASH_CONTROL_4.VXLAN_PAYLOAD_HASH_SELECT_A/B to meet their hash requirement. For Trident2 and subsequent XGS device, 2 switch controls bcmSwitchHashVxlanPayloadSelect0 and bcmSwitchHashVxlanPayloadSelect1 have been provided to support the requirement.</p> |
| SDK-57123 | | 56850_A0 56850_A1 56850_A2 | <p>Issue:- bcmSwitchL3Max128BV6Entries switch control setting caused assertion failed message due to array index overflow in array defip_tcam_log_index and defip_tcam_urpf_log_index of SOC_CONTROL. Fix:- Modified the soc_trident2_mem_config function to make sure l3_defip_index_remap won't exceed the physical size, and the arrays can be initialized after that.</p> |
| SDK-57132 | 757170 | 88650_B1 88660_A0 88670_A0 | <p>OAM: Packets trapped by the OAM classifier with an incorrect level by an up-MEP will include two sets of system headers. The inner set will include the DSP, SSP on the FTMH, as well as a PPH and FHEI, the outer set will include a FHEI with the CPU-Trap-Code field set to 0xa2 (bcmRxTrapOamLevel). Similarly for packets that arrive at an up-MEP from the passive side. In this case the CPU-Trap-Code on the outer FHEI will be 0xac (bcmRxTrapOamPassive) and the inner set of system headers will be as above. This behavior may be enabled by setting the soc property "custom_feature_oam_additional_FTMH_on_error_packets" to 1.</p> |
| SDK-57133 | 748626 | 88650_A0 88660_A0 | <p>When ilkn_tdm_dedicated_queuing feature is enabled, non-TDM ports can't reach wire speed. (blocked in ~60G). Fixed.</p> |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------------|--------------|--|---|
| SDK-57141 | 779921 | 56840_A0 56850_A2 | <p>Problem:</p> <p>lpbm mask setting was missing during field entry movement, which gets called when a higher priority field entry is installed.</p> <p>Solution:</p> <p>lpbm mask was set properly during field entry movement for Trident Series of devices.</p> |
| SDK-57164 | 763730 | 56440_A0 56450_B0 | <p>In the earlier release the tag information derivation was incorrect for PPD_TYPE=2, for PPD_TYPE=2 the tag information is present in packet itself and get derived through it, HG header contain tag information in case of PPD_TYPE=0 and 1 only where the outer tag get stripped out and added in the hg header, while the inner tag is still derived from the packet itself. This issue has been addressed and fixed in this release.</p> |
| SDK-57184 SDK-57276 | | 88660_A0 | <p>Bug found and fixed in BCM command diag prge_last causing "default null" program to be incorrectly printed.</p> |
| SDK-57187 | 776877 | 56440_A0 | <p>For Katana2, bcm_cosq_gport_bandwidth_set was not setting the l2 shaper properly. As part of the fix l2 shaper will be configured properly.</p> |
| SDK-57188 | 780510 | 56450_A0 56450_B0 | <p>bcm_mpls_port_add allocates two VPs in VPWS case, one for access and one for network port. But when bcm_mpls_port_add was invoked for second time to add network port to VPWS a new VP was being allocated instead of reusing the already allocated VP. Added fix to not allocate new VP if already allocated.</p> |
| SDK-57199 | | 88650_B1 | <p>IMPORTANT: DEFAULT BEHAVIOR CHANGE FCoE packets were dropped when FCoE switch was not enabled (bcm886xx_fcoe_switch_mode = 0). From now on, FCoE packets are treated as Ethernet packets when FCoE is disabled.</p> |
| SDK-57201 | 779706 | 88650_A0 88650_B0 88650_B1 88660_A0 | <p>STG: STG APIs create/destroy STGs and set/get spanning tree status of ports in STGs. Certain STG APIs (bcm_stg_create_id/bcm_stg_destroy/bcm_stg_stp_set/bcm_stg_stp_get/bcm_stg_detach) didn't release the mutex when existing with a non-zero value. The issue detailed above can cause deadlock when using certain STG APIs. Mutex can be correctly released after the fix.</p> |
| SDK-57204 | | 88650_A0 88650_B0 88660_A0 | <p>a fix to allow future ISSU capability for alloc manager</p> |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|-------------------------------|---|
| SDK-57207 | 777630 | 56640_A0 56640_A1 56640_B0 | Issue: Packets of size 64 to 75 bytes getting dropped for XE ports. Root Cause: The runt threshold value for XE ports was getting set as 76 instead of the correct value 64. Hence packets of size 64-75 bytes were getting dropped. Fix: For Triumph3 and Katana2, put explicit checks to ensure that runt threshold value is set to correct value, i.e. <code>RUNT_THRESHOLD_XE = 64</code> , <code>RUNT_THRESHOLD_GE = 64</code> and <code>RUNT_THRESHOLD_HG = 76</code> . Also optimized the function <code>mac_x_init</code> for multiple READ and WRITE for <code>XMAC_RX_CTRL</code> and <code>XMAC_TX_CTRL</code> . Added a single write common for all devices instead of multiple instances as was present previously. |
| SDK-57215 | | 88650_A0 88660_A0 88670_A0 | Trill multicast adjacency BCM API implemented with new APIs: <code>bcm_trill_multicast_adjacency_add/delete</code> <code>bcm_trill_multicast_adjacency_delete_all</code> <code>bcm_trill_multicast_adjacency_traverse</code> Example can be found in <code>cint_trill.c</code> file in function <code>mult_adjacency</code> . |
| SDK-57220 | 780270 | 56850_A0 56850_A1 56850_A2 | When programming <code>MPLS_ACTION_IF_BOS=0x5 (0x5 = L3_ECOMP)</code> for a given MPLS label, the next hop entry type was set to be 1 for sending out the regular L3 packet in the previous release. In this release, the next hop entry type is set to be 0. |
| SDK-57224 | 780313 | 56850_A0 56850_A1 56850_A2 | In earlier releases, <code>BCM_L2_REPLACE_DES_HIT_CLEAR</code> flag was not supported in XGS devices. This has been supported. This flag only can reset the HITDA field in <code>L2_ENTRY</code> table. |
| SDK-57230 | 758870 | 88660_A0 | VLAN: L2 FECs can be used either for protection or to group LIFs like in the case of the PON application, in which the flag <code>BCM_VLAN_PORT_FORWARD_GROUP</code> is applied at <code>bcm_vlan_port_create()</code> . Removal of a L2 FEC using <code>bcm_vlan_port_destroy()</code> for a protection FEC, is performed at once for both the working and the protecting FECs upon removal of the Working path. This logic was applied also in cases where the FEC wasn't used for protection as in the case of <code>FORWARD_GROUP</code> , but only the specified FEC was removed as only one FEC is used for this type of applications. This logic caused <code>FORWARD_GROUP</code> FECs with odd id number not to be deleted as if they represent a protecting path. This was fixed, so that the protection working/protecting state condition upon FEC removal is applied only for protection FECs. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|-------------------|---|
| SDK-57235 | | 56340_A0 | On every DMA interval the counter value are read from FT_EXPORT_FIFO table and the value is populated in the report. On every read the value gets reset leading to the cumulative values not getting retained in the END report when the flow expires. With this release read of the registries clear of counter values is avoided to retain the cumulative value for the END report. |
| SDK-57239 | 778949 | 88650_B0 | OAM: The following bugs have been fixed: When updating endpoints with <code>bcm_oam_endpoint_create()</code> with the <code>BCM_OAM_ENDPOINT_REPLACE</code> flag set, the SW DBs were incorrectly updated causing subsequent calls to <code>bcm_oam_endpoint_destory()</code> to fail. Similarly for BFD endpoints of type <code>bcmBFD TunnelTypeUdp</code> , multi-hop. |
| SDK-57245 | 781014 | 56450_A0 56450_B0 | <code>FLEX_CTR_BASE_COUNTER_IDX</code> and <code>FLEX_CTR_POOL_NUMBER</code> were not being restored during mpls entry replace operation. Added fix to restore the FLEX counter fields and update during replace operation. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|-----------|--------|-------------------|---|
| SDK-57258 | 779428 | 56450_A0 56450_B0 | <p>Release notes from all sub-task JIRAs</p> <p>=====</p> <p>===== A) SDK-57533 KT2 (Unicore and Warpcore) Several issues with configuration 12 (issue 1)</p> <p>=====</p> <p>===== Problem 1) Null get was returning value 0 which is valid phy master value (i.e. slave). Fix 1) Added dummy <code>get_master()</code> in <code>xgs16g1l</code> driver. Code is changed to return <code>MS_NONE</code> and that makes phy -master as <code>NONE</code></p> <p>Problem 2: Proper medium was being detected in WARM-BOOT scenario only Fix 2: Corrected Copper/Fiber Medium detection concern in WC driver(which was applicable in Warmboot case only) Removed surrounding warm-boot condition in init part and now correct medium is returned</p> <p>Problem 3) Speed 1G was not advertised when port comes up as HG port and later converted to XE port due to max-speed set to >10000 Fix 3) Corrected WC 1g speed issue by checking additional <code>XE_PORT</code> type along with current speed before advertising speed</p> <p>Problem 4: TR 19 issue was happening with medium fiber i.e. test case was forcefully setting speed to 1G Fix 4) Added WC driver name check before forcing speed to 1G and by-passed concern</p> <p>=====</p> <p>===== B) SDK-57534 KT2 (Unicore and Warpcore) Several issues with configuration 12 (issue 2)</p> <p>=====</p> <p>===== Problem 1) Problem was happening due to wrong use of portgroup config variable in init phase and auto portgroup creation in flex-io operation i.e. assumed RXAUI related port group setting while converting hg port to 2 lane XE ports.</p> <p>Fix 1) Removed auto portgroup creation decision in flex-io operation and now user needs to set portgroup prior to flex-io operation and SDK initialization accordingly. If User doesn't use <code>auto_portgroup</code> config variable and doesn't set portgroup config variable prior to flex-io operation, SDK will throw "Behavior not guaranteed" message</p> <p>=====</p> <p>===== C) SDK-57535 KT2 (Unicore and Warpcore) Several issues with configuration 12 (issue 3)</p> <p>=====</p> <p>=====</p> |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|---|---|
| SDK-57263 | 774859 | 88650_A0 88650_B0 88650_B1 88660_A0 | In some cases when using the diagnostic 'diag pp pktm', the meter pointer assigned to the packet would be displayed as invalid, even when the meter pointer assigned to the packet was valid. This is now fixed. |
| SDK-57270 | | 88650_A0 88650_B0 88660_A0 | Field Processor: Redirecting at egress according to a GPort of type System-Port was not supported. This is fixed. Reflector: The function <code>setup_port_for_reflector_program()</code> in <code>cint_benchmarking_methodology.c</code> has been changed so that the Egress FP rule modifies only the out-TM-port (by calling only the <code>bcmFieldActionRedirect</code> without <code>bcmFieldActionStat</code> actions). For a more detailed account, see <code>cint_benchmarking_methodology.c</code> |
| SDK-57272 | | 88650_A0 88650_B0 88660_A0 | Diag pp dblif used to return 0 for the <code>has_cw</code> (in case lif is pwe) with no relation to the real value of. Now, it is returned depending on the real value. |
| SDK-57277 | 780887 | 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 56851_A0 56852_A0 56852_A1 56853_A0 56853_A1 | Issue:- In parallel mode, if VRF=0, then hardware looks only in global bucket space for bucket match, so route with VRF=0 is not allowed to be inserted to ALPM table. But the examination code was not working for the first VRF=0 route insertion. Fix:- Adding VRF=0 is disallowed explicitly in parallel mode. Update the document for this restriction. |
| SDK-57283 | | 88650_A0 88650_B0 88660_A0 | There was a value mismatch between set and get by calling <code>bcm_switch_control_port_set/get</code> APIs, where <code>type=bcmSwitchHashIP4Field0</code> . This mismatch is fixed. |
| SDK-57289 | 779367 | 88650_B1 88660_A0 | When using external TCAM, control-plane writes to the external TCAM could sometimes fail when performed during line speed traffic. This issue is fixed by setting "CpuRecordPrio" field in register "TransmitCfgs" to '1' in the external TCAM application initialization. |
| SDK-57290 | 781195 | 88650_A0 88660_A0 | Fix <code>bcm_petra_trill_port_delete</code> functionality. Add calling of <code>_bcm_dpp_mc_to_trill_remove</code> function, that removes <code>sw db mc_id</code> to nickname. |
| SDK-57333 | 739837 | 56850_A0 56850_A1 56850_A2 | Issue:- In previous implementation for BST index resolution, if <code>cosq</code> value -1 was used as input, <code>cosq</code> 0~7 were used to retrieve the index. but by default the max <code>cosq</code> number is 3. So the insertion was triggered. Fix:- replace <code>cosq</code> 0~7 by 0 ~ <code>COS_MAX(unit) - 1</code> . |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|--|--|
| SDK-57341 | 780620 | 56649_A0 | When using "bcm_l2_learn_port_set" API to enable Class Based Learning for a trunk port, the function was returning error even though hardware programming was successful. This was because the API was trying to access another table which is not relevant for trunk ports and was using mod id value "-1" for this. The issue was resolved by adding an early return after programming the relevant Trunk table. |
| SDK-57343 | 782070 | 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 | Communication between aging thread and other l2_addr_delete APIs thread is synchronized by binary semaphore. Occasionally when the aging thread was stopped and restarted, there was a mismatch between semaphore give and take between aging thread and other API threads. This has been fixed. |
| SDK-57349 | 781836 | 88650_B1 88660_A0 | L3 VRRP: In some cases, if there was an error in the l3_vrrp APIs, the L3 mutex was not released. The error has been fixed, and the mutex will always be released. |
| SDK-57354 | | 56840_A0 | After clear operation through bcm_esw_l2_clear(), the data in structure bcm_l2_match_ctrl was sometimes released while the background thread L2MOD still needed to refer to the invalid data. This sometimes led to a crash of L2MOD. Currently the data in bcm_l2_match_ctrl won't be released in bcm_esw_l2_clear() in order to avoid this race condition. |
| SDK-57434 | | 56850_A0 56850_A1 56850_A2 | In previous releases, memory write operation to Ingress Pipeline tables during a ING_RESET_CONTROL Operation causes inadvertent writes to L3_TUNNEL, UDF_CAM and ING_FC_HEADER_TYPE Tables. In this release, a new flag SOC_F_MEM_CLEAR_HW_ACC indicating whether ING_HW_RESET_CONTROL is used to clear a table was added. ING_HW_RESET_CONTROL action will only happen during system initialization. In any other cases, table clear is done via table SLAM operations. |
| SDK-57437 | | 56850_A0 | api bcm_vxlan_port_delete is working. |
| SDK-57459 | 782198 | 88650_B0 88650_B1 88660_A0 | Fixing memory leak issue in TRILL. Destroy TRILL port didn't free allocated memory (Add BCM_FREE to bcm_dpp_mc_to_trill_remove function). |
| SDK-57462 | 757100 | 88650_A0 88650_B0 88650_B1 88660_A0 | Fixed l2 show diagnostic output for VPLS interface. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|---|---|
| SDK-57469 | 780971 | 88650_A0 88650_B0 88650_B1 88660_A0 | Add support for split-horizon for MPLS-Tunnel-initiator. This is useful when PWE label is built using EEI (label+push profile) and outlif that points to the EEDB is MPLS-Tunnel-initiator. In this case the PWE inherits it's orientation (HUB/ SPOKE) from the next tunnel. To set the orientation of MPLS tunnel use <code>bcm_port_class_set</code> with <code>class=bcmPortClassForwardEgress</code> and <code>port=mpls tunnel gport</code> . |
| SDK-57470 | | 88650_A0 88650_B0 88650_B1 88660_A0 | Reflector (RFC-2544): Ethernet Reflector program (Swaping MAC addresses) has been updated to support double tagged packets. IP program will only support single tagged packets. |
| SDK-57476 | | 56850_A0 56850_A1 56850_A2 | In earlier releases <code>bcm_stat_group_create</code> could get stuck in loop for egress SVP counters under scaled set-up. The issue was due to macro <code>FLEX_COUNTER_DEFAULT_EGR_DVP_ATTRIBUTE_1_TABLE_POOL_NUMBER</code> not being defined correctly for TD2, which led to endless loop when the egress flex counter pool were exhausted. It was defined to 5 for all the chips include TD2 but actually it should be less than 4 for TD2 as TD2 only has 4 egress flex counter pools. The fix was to define separate macro for TD2. |
| SDK-57487 | | 56850_A0 56850_A1 56850_A2 | Previously, 1-bit error reporting enabling logic and SER correction logic for all MMU tables that are CPU accessible on TD2 was not fully implemented. They have been implemented in this release. |
| SDK-57498 | 783084 | 56450_A0 56450_B0 | In <code>bcm_qos_map_create</code> API an untagged PHB variable was being used uninitialized and that resulted in an unexpected <code>ING_UNTAGGED_PHB</code> entry being created. This was fixed to prevent untagged PHB variable from creating an unexpected <code>ING_UNTAGGED_PHB</code> entry. |
| SDK-57500 | 783310 | 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 56851_A0 56852_A0 56852_A1 56853_A0 56853_A1 | In the previous release, the CPU port was not removed when the API <code>bcm_multicast_egress_delete_all</code> was called on Trident2. In this release, this issue has been addressed by removing the CPU port when the API <code>bcm_multicast_egress_delete_all</code> is called. |
| SDK-57503 | | 56340_A0 | Problem: <code>bcm_regex_policy_policer_attach</code> results in a crash because of internal compatibility check being done between level0 and level1 meters. Solution: Hierarchical meters are not supported on regex policies. Hence the compatibility check is disabled until we support hierarchical meters. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|---|---|
| SDK-57505 | 783296 | 88650_A0 | Fixed packet loss related to Reset CMIC interface in soft reset sequence. |
| SDK-57507 | 776846 | 88030_A0 88030_B0 | Modification to CORE_PORT_MODE & PHY_PORT_MODE must be made with MAC in reset. Not following this rule may leave MAC in a state that no packets can be received or all received packets are runts. Other than this symptom, the MAC doesn't report anything wrong. |
| SDK-57515 | 780895 | 88650_A0 88660_A0 | In L2 learning, traversing over the MACT to get all the inserted entries while learning, may result in an infinite loop in some rare cases. This is due to mis-handling of a rare state in an internal buffer. This is fixed. |
| SDK-57525 | 782992 | 56850_A0 56850_A1 56850_A2 | <p>Customer requested a mechanism to find out the entropy label used for a given vxlan flow.</p> <p>In order to provide the requested mechanism, bcm_switch_pkt_info_hash_get has been modified to return the entropy label used if the packet is for the vxlan.</p> <p>For packets encapsulated into VxLAN tunnels, Entropy label is generated using RTAG7 hash. By using bcm_switch_pkt_info_hash_get(), entropy label used for VxLan can be retrieved.</p> <p>Note that entropy label is piggy backed in dst_intf.</p> <p>Example) hash_info.flags = BCM_SWITCH_PKT_INFO_HASH_UDP_SOURCE_PORT print bcm_switch_pkt_info_hash_get(unit, &hash_info, &dst_gport, &dst_intf);</p> |
| SDK-57533 | | 56450_A0 5645_A0 56450_B0 56456_A0 56455_A0 | <p>Problem 1) Null get was returning value 0 which is valid phy master value (i.e. slave). Fix 1) Added dummy get_master() in xgxs16g1l driver. Code is changed to return MS_NONE and that makes phy -master as NONE</p> <p>Problem 2: Proper medium was being detected in WARM-BOOT scenario only Fix 2: Corrected Copper/Fiber Medium detection concern in WC driver(which was applicable in Warmboot case only) Removed surrounding warm-boot condition in init part and now correct medium is returned</p> <p>Problem 3) Speed 1G was not advertised when port comes up as HG port and later converted to XE port due to max-speed set to >10000 Fix 3) Corrected WC 1g speed issue by checking additional XE_PORT type along with current speed before advertising speed</p> <p>Problem 4: TR 19 issue was happening with medium fiber i.e. test case was forcefully setting speed to 1G Fix 4) Added WC driver name check before forcing speed to 1G and by-passed concern</p> |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|--|--|
| SDK-57534 | | 56450_A0 5645_A0 56450_B0 56456_A0 56455_A0 | <p>Problem 1) Problem was happening due to wrong use of portgroup config variable in init phase and auto portgroup creation in flex-io operation i.e. assumed RXAUI related port group setting while converting hg port to 2 lane XE ports.</p> <p>Fix 1) Removed auto portgroup creation decision in flex-io operation and now user needs to set portgroup prior to flex-io operation and SDK initialization accordingly. If User doesn't use auto_portgroup config variable and doesn't set portgroup config variable prior to flex-io operation, SDK will throw "Behavior not guaranteed" message</p> |
| SDK-57539 | 781348 | 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 | <p>Logical table Register settings of ACL_L2IP4_ONLY partition of external TCAM are not accommodating source mac and destination mac addresses in final key. In this JIRA, LTR settings of ACL_L2IP4_ONLY are modified to have source mac and destination mac at right offsets in final key.</p> |
| SDK-57543 | 781991 | 56846_A0 56845_B0 56845_A2 56844_A0 56842_A0 56840_A0 56850_A0 56855_A0 56843_B0 56841_A3 56846_A1 56841_B0 56854_B0 56854_A0 56850_A1 56851P_A1 56851_A1 56850_A2 56851_A2 56851P_A2 56854_A2 56853_A2 56852_A2 56855_A2 56851_A0 56852_A0 56852_A1 56853_A0 56853_A1 | <p>In the previous release, when L2_MOD_FIFO mode was used and station movements happened, only one "ADD" notification would be issued on TD+, which was not incorrect. In this release, this issue has been improved by notifying one ""DEL" notification and one "ADD" notification in this kind of situation.</p> |
| SDK-57548 | 783511 | 56850_A0 56850_A1 56850_A2 | <p>It was reported that all packets appear to be store and forward on the port when the INIT_VALUE was set to 0x3 during chip initialization for 1G mode.</p> <p>The issue was fixed by modifying the egress credit to 12 for all the speeds lower than 10Gbps.</p> |
| SDK-57550 | 777385 | 56450_A0 56450_B0 | <p>THDO_QCONFIG_CELL could not be configured for packet processing ports greater than 128. This issue has been fixed to support complete range of packet processing ports(sub ports).</p> |
| SDK-57556 | | 56850_A0 56850_A1 56850_A2 | <p>corrected the test script by add the flag BCM_IPMC_RPF_FAIL_TOCPU to set value of IPMC_EXPECTED_L3_IIF_MISMATCH_TO CPU to 1</p> |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|-------------------------------|---|
| SDK-57558 | | 56850_A0 56850_A1 56850_A2 | In previous releases, <code>bcm_vxlan_stat_detach</code> still took high execution time because of some unnecessary memory operation and extra overhead. In this release, we cut some unnecessary memory operations and redundant codes to save time, therefore execution time are reduced. |
| SDK-57571 | | 56540_A0 56540_B0 | On TR3 device, if the number of COSQs is changed from default value (4) to 8, after the warm boot recovery, the number of COSQs still shows as 4, since this information is not stored in the persistent storage (scache). The issue is fixed by storing this information in scache and retrieving it during warm boot level 2 recovery. |
| SDK-57582 | 782398 | 56624_A0 56224_A0 | When using autosync for warmboot, in case of remote link down event, the scache state was not being synced to the current state. So the link state might not be recovered properly during warmboot. This is fixed by marking the scache state as dirty when a remote linkdown event occurs, so that the state is synced later. Also, <code>link_mask2</code> is not being recovered properly after warmboot. Now, this will be stored in scache and will be recovered during warmboot. |
| SDK-57584 | | 88650_A0 88650_B0 88660_A0 | BFD: When calling <code>bfd_endpoint_create()</code> with <code>type==bcmBFD TunnelTypeMpls</code> an additional TCAM entry is needed. Due to limited resources only 128 TCAM entries may be used for OAM/BFD. This JIRA verifies that this amount has not been exceeded and that TCAM indexes used are in the range 0-127. |
| SDK-57600 | 780870 | 88650_A0 88660_A0 | Add push profile free when deleting PWE. Fixes resource push profile exhaustion when adding several MPLS tunnels and PWEs. |
| SDK-57625 | 786811 | 56340_A0 | <code>bcm_cosq_gport_attach</code> is returning failure for some ports (<code>RESOURCE_UNAVAIL</code>) due to unavailability of L0 nodes.scheduler list is not reset completely on mmu soc reinitialize. Fixed the scheduler list reset. |
| SDK-57627 | 787010 | 56450_A0 | Provided the API sequence on how to configure the burst rate |
| SDK-57630 | | 88660_A0 | OAM: fixed the <code>loss_farend/nearend</code> fields to return correct values (expressed in 100th of percent) in <code>bcm_oam_loss_get()</code> |
| SDK-57648 | | 88650_A0 | A new ISSU error detection mechanism is inserted to test if the variable layout in external storage has been changed between two versions without a proper ISSU handling. The code is under a new compilation flag <code>BCM_ISSU_SANITY</code> , in order to be used mainly internally for regression and debug and to be transparent to the user. If the compilation flag is used, both the old and the new versions must be compiled with that flag. NOTE that ISSU is not available if versions were compiled with different compilation flags. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|-------------------------------------|--|
| SDK-57650 | | 88650_A0 88660_A0 | Failover ID values '-1' & '-2' are reserved for FEC Protection as 'No Protection' and 'Facility Protection' respectively. Those reserved values failed with an internal error. Now those values, when used with the BCM_FAILOVER_WITH_ID flag, produce an error that states that the value is out of range. |
| SDK-57652 | 781357 | 88650_A0 88660_A0 | Ring Port: There was an error in bcm_vlan_port_find() where the returned failover_port_id was incorrect for a G.8032 Ring Port. The error has been fixed, and the failover_port_id is now returned correctly. |
| SDK-57663 | 783147 | All 56846_A0 56844_A0 56846_A1 | In earlier releases, field groups auto expansion was not recovered in Level 2 Warm Boot. In this release we now allocate an unused bit in scache layout of field module to store the groups auto expansion capability. |
| SDK-57669 | 770442 | 88650_A0 88650_B0 88650_B1 88660_A0 | Added validity check that returns an error when user configure cos profile that is > 16 for PWE P2P. |
| SDK-57689 | | 88650_A0 88660_A0 | 1. Reference only - added port tables to the reference list of SER-memories, which enables SER handling for these tables 2. Added dynamic memory indication for some memories. Refer to JIRA item SDK-56498 for details. |
| SDK-57691 | | 88650_A0 88650_B0 88650_B1 | bcm shell command "diag ssdump" was disabled. It's now enabled. |
| SDK-57707 | 787634 | 56640_A0 | For some MACs in L2 cache, BPDUs flag was not being set. This was causing ports to drop BPDUs when in STP blocked state. This issue was due to overwriting of flags for these MACs. Corrected the flags to CPU BPDUs. |
| SDK-57725 | 788276 | 88030_A0 88030_B0 | src/appl/diag/ledproc.c: Change the previous common code into C3 dedicated code, in order to not affect other modules. |
| SDK-57739 | | 56850_A0 56850_A1 56850_A2 | add a new case AT_L3MC_Rep_009 to verify the flag of BCM_IPMC_RPF_FAIL_DROP |
| SDK-57743 | | 56850_A0 56850_A1 56850_A2 | In previous release, five variables were calculated based on stat_counter_id, and three of them were used as subscript to access arrays without checking their legal ranges. Therefore, memory access violation happened. This problem has been resolved through adding proper check to those parameters to ensure the validity of their values. |
| SDK-57744 | 787141 | 88750_A0 88650_A0 | bcm_fabric_link_status_get retrieves several link status indications. some of these link indications are sticky and should be cleared. This indications changed to be cleared on read. Meaning that this API retrieves the status since the last call. |
| SDK-57745 | | 88650_A0 88660_A0 | In Field Processor, the validation of the action size was changed incorrectly, such that it verifies that the size is smaller the MAX size instead of smaller or equal to it. This is fixed. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|--|---|
| SDK-57749 | | 56340_A0 56640_A0 | BCM56640, BCM56340 support Software Aging. The L2 entries are aged out if HITSA and HITDA are both 0. New capability is added to age out entries based on ONLY HITSA and not consider the HITDA. This is done by setting the config property 'l2x_age_only_on_hitsa' to 1. |
| SDK-57751 | | 56340_A0 56640_A0 | BCM56640, BCM56340 support Software Aging. The L2 entries are aged out if HITSA and HITDA are both 0. New capability is added to age out entries based on ONLY HITSA and not consider the HITDA. This is done by setting the config property 'l2x_age_only_on_hitsa' to 1. |
| SDK-57769 | 784039 | 56334_B0 56334_A0 | In previous SDK releases, there are no SER correction support for several MMU blocks on Enduro, and thus once a parity error occurs in these blocks, it cannot be corrected and the error will be detected continuously. Fixed overview: The feature of SER correction for these MMU blocks on Enduro have been implemented. In addition, SER injection function has been added as well. |
| SDK-57774 | 781863 | 56850_A2 | In the previous release, when the deleted I3 interface which had been added into the multicast group was re-created with the same id, the I3 interface was not attached to the multicast group, which was incorrect. In this release, this issue has been addressed by ensuring that the next hop index will be allocated and de-allocated by multicast module when the I3 interface's encapsulation id is added into and deleted from the multicast group. |
| SDK-57775 | 788841 | 56150_A0 | Fixed possible race condition in SOC initialization routines. |
| SDK-57791 | 774941 | 88650_A0 | In Policer module, in some cases <code>bcm_policer_create</code> fails incorrectly when the mode is <code>bcmPolicerModeCoupledCascade</code> , due to an internal software usage of an uninitialized structure. This is now fixed. |
| SDK-57802 | 788015 | 88650_A0 88650_B0 88660_A0 | Fixed failure when deleting MPLS label in ILM table when using <code>bcm_mpls_tunnel_switch_delete</code> and SOC property <code>'mpls_termination_label_index_enable=1'</code> |
| SDK-57812 | | 88650_B0 88660_A0 | When using external TCAM for ACL and/or forwarding databases, its configuration was not restored after warmboot. A preliminary support is added to restore external TCAM configuration during warmboot. |
| SDK-57813 | | 88650_A0 88650_B0 88650_B1 88660_A0 88670_A0 | In previous version, <code>BCM_VLAN_PORT_WITH_ID</code> wasn't working in forward group.now support this function. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------------|--------------|-------------------------------|---|
| SDK-57821 SDK-58760 | | 88650_A0 88660_A0 88670_A0 | BFD: In <code>bcm_bfd_endpoint_create()</code> the field <code>remote_flags</code> was changed to monitor the <code>Flags</code> field on incoming BFD frames (as opposed to monitoring <code>Flags</code> in <code>bcm_bfd_endpoint_get()</code> as well as setting the <code>Flags</code> on outgoing packets). The field <code>local_flags</code> was added and is used to control the <code>Flags</code> on outgoing BFD frames and (this is consistent with fields such as <code>remote_state/local_state</code> , <code>remote_daig/local_daig</code> , etc.). |
| SDK-57828 SDK-56669 | | 88650_A0 88660_A0 | BFD: addition of the filed <code>loc_clear_threshold</code> for <code>bcm_bfd_endpoint_create()</code> . This determines the amount of BFD frames received by the OAMP before a loss of continuity is cleared and a <code>bcmBFDEventEndpointTimein</code> event is triggered. This may be set at 0,1,2,3. Default behavior remains unaffected. |
| SDK-57844 | | 56850_A0 | In earlier release, adding one more <code>IPV6_64B</code> entry to table already with full <code>IPV6_64B</code> entries and some free <code>IPV6_128B</code> entries would result in inconsistency in software tables. Then trying to insert another route with same prefix would cause the process to fall into an infinite loop. This issue has been resolved. |
| SDK-57853 | | 88660_A0 | Trill warmboot. Sw state trill alloc link list size was not correctly calculated at warmboot trill restore, causing incorrect size after warmboot |
| SDK-57863 | | 88650_A0 88660_A0 | BFD: Adding accelerated endpoint with <code>bcm_bfd_endpoint_create()</code> while in <code>local_discr</code> field any of the bits 13-15 is set, caused error. |
| SDK-57866 | | 88650_A0 | In Rx trap module, in the allocation of a programmable trap, the error validation was incorrect. Fixed. |
| SDK-57889 | 789898 | 56340_A0 | Aging thread runs independently , wait on semaphore for age time and wakes up & runs the bulk operation. L2 bulk operation stops and starts the aging thread. Here aging thread does not account for elapsed time it has already spent on semaphore. Lets say, aging thread already spent 25 sec and port delete operation is called at that time, aging thread stopped and restarted. Here MAC will be deleted at (25 + 30) sec = 45 sec. This is adjusted by keeping a log of elapsed time on semaphore during aging thread exit and readjusting it, during next time aging thread started. |
| SDK-57911 | 789281 | 88650_A0 | The previous is that pass the <code>NULL</code> pointer of <code>uc/mc/bc</code> for <code>_bcm_petra_vlan_flooding_per_lif_get()</code> caused the segment fault. The fix is that pass the <code>uc/mc/bc</code> for <code>_bcm_petra_vlan_flooding_per_lif_get()</code> and get the value by the <code>uc/mc/bc</code> . |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|--|---|
| SDK-57942 | | 88750_A0 88750_B0 | When using BCM88750 repeater, due to miss-configuration some corrupted cells might be dropped at the repeater ingress while it should be dropped at the destination device. Fixed. |
| SDK-57952 | | 56640_A0 | In TR3 device we were not able to delete last set of vlan service queues in the given port. We are now able to delete all the vlan service queues. |
| SDK-57958 | 782029 | 88650_A0 88650_B0 88650_B1 88660_A0 | MPLS bug fixed: when creating and deleting a tunnel label and PWE WITH_ID, if they are re-created and the lif ids swapped, the tunnel termination fails and the tunnel label is used for forwarding. Issue is due to uninitialized values (Destination and Destination valid) when setting MPLS tunnel termination in LIF table. |
| SDK-57961 | 777725 | 56640_B0 56850_A2 | V4 routes take half entry in shared defip tables. There can be some defip indexes containing V4 routes that does not have other half filled due to prefix restrictions. When SDK tries to recover number of indexes used for V4 prefixes in defip tables, it divides total number of routes by half but does not account about half entries. Due to this, SDK gives wrong number for total available 64/128 V6 route entries. This lead to overwriting of already existing routes in the defip tables. The fix is to count the number of half entries in defip tables and then use them during derivation of total free entries left in defip table for 64V6 and 128V6. This way SDK can return BCM_E_FULL error at table full and will not overwrite the existing entries |
| SDK-57962 | 747614 | 88650_A0 88650_B0 88650_B1 88660_A0 | In L2 MAC table, when using API <code>bcm_l2_addr_delete_by_vlan_port ()</code> to flush all the entries on a specific PWE, all the entries that are on the same MPLS-FEC as the specified PWE were flushed. This is fixed and now only entries that are on the specific PWE (PWE-label+MPLS-FEC) are flushed. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|--|---|
| SDK-57969 | 790396 | 56850_A0 56850_A1 56850_A2 | <p>In earlier releases, <code>bcm_ipmc_traverse</code> did not get IPMC v6 entries after level 2 warmboot. "ipmc ip6table show" shows nothing, but the HW table <code>L3_ENTRY_IPV6_MULTICAST</code> showed all installed entries.</p> <p>There were two root causes as follows: 1. The first <code>L3_IPMC</code> entry (index == 0) was reserved for default behavior for all chips except Katana and Katana2. In cold boot, we can find it was initialized in routine <code>bcm_esw_ipmc_init</code>. But routine <code>bcm_tr_ipmc_reinit</code> considered it as normal <code>L3_IPMC</code> entry. 2. Flag of <code>BCM_L3_IP6</code> was not set when recovering <code>L3_ENTRY_IPV6_MULTICAST</code> to l3 entry in warmboot. This caused the 'ipmc ip6table show' not work since low level driver considered it as IPV4 entries.</p> <p>The solutions are as follows: Routine <code>_bcm_tr_ipmc_reinit</code> has been changed to reserve first <code>L3_IPMC</code> entry for the default behavior for both Kanata and Katana2.</p> <p>Flag <code>BCM_L3_IP6</code> has been set in recovering <code>L3_ENTRY_IPV6_MULTICAST</code> to l3 entry in warmboot in this release.</p> |
| SDK-57975 | 790586 | 56450_B0 | <p>VLAN parameter check was being verified for both VPLS and MIM VPNs, though the VPN is of VPLS type. Fixed to validate VLAN only for the matching VPN type VPLS or MIM accordingly.</p> |
| SDK-57977 | 769739 | 88650_A0 88650_B0 88650_B1 88660_A0 | <p>In Ingress Field Processor, cascaded Field groups are using the <code>bcmFieldActionCascadedKeyValueSet</code> action to transmit an action value as part of the key value. This action is always performed in the HW. If unset, a zero value is expected to be transmitted.</p> <p>The entry TCAM action encoding was incorrect if:</p> <ol style="list-style-type: none"> 1. The Field group ASET was including <code>bcmFieldActionCascadedKeyValueSet</code> 2. No action value was explicitly set for <code>bcmFieldActionCascadedKeyValueSet</code> (even a zero value) <p>This is fixed.</p> |
| SDK-57984 | | 56640_A0 56640_A1 56640_B0 | <p>In earlier releases, after the successful warm boot recovery of VFP configuration with flex stat on TR3, if one of the field qualifiers is deleted, reinstalling of field entry failed with invalid parameter. The issue is now fixed by passing the right parameter (<code>offset_mode</code>) in the internal function while updating flex stat for the field entry.</p> |
| SDK-57994 | | 88650_A0 | <p>In L3 IP applications, the max VRF value is limited to 4095 in HW, but a segmentation fault was occurring when using a VRF larger than 255. This was due to a warmboot engine variable saving a VRF bitmap with an inappropriate size. Fixed. ISSU is handled transparently.</p> |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|--|---|
| SDK-57998 | | 56640_A0 56340_A0 | For BCM56640 and BCM56340, if config property <code>l2x_age_only_on_hitsa</code> is set, aging occurs only on HITSA, ignoring HITDA. In accordance with this the behavior of <code>BCM_L2_HIT</code> flag (<code>bcm_l2_addr_t</code> structure) is also changed, when this config variable is set. If the config variable is not set, <code>BCM_L2_HIT</code> flag is set for the entries passed to callbacks which have either HITSA or HITDA set. Also, in cases when an entry is being added, if this flag is set in the input <code>bcm_l2_addr_t</code> structure, both HITSA and HITDA will be set for the added entry. If the config variable is set, <code>BCM_L2_HIT</code> flag is set for those entries which have HITSA set. In case adding an entry, if this flag is set in the input <code>bcm_l2_addr_t</code> structure, only HITSA is set. To set HITDA, <code>BCM_L2_DES_HIT</code> flag has to set explicitly. Similar changes are reflected in <code>l2 show diag</code> shell command. |
| SDK-57999 | | 88650_A0 | In L2CP traps set via <code>bcm_l2_cache_set</code> , the handling of L2CP trap index of type Multicast and ports was incorrect. This is fixed. |
| SDK-58006 | | 88650_A0 88650_B0 88650_B1 88660_A0 | Cint: <code>cint_ip_tunnel.c</code> . ip tunnel was created in cint with incorrect ttl and dscp. Caused by SDK-55162. Consequently, checking ttl or dscp values in ip tunnels were failing when using <code>cint_ip_tunnel.c</code> . |
| SDK-58016 | | 56850_A2 | In the previous release, when configuring same Virtual Port (NIV Port) under multiple Mirroring sessions to get multiple copies, the function " <code>_bcm_xgs3_mtp_slot_port_indexes_get</code> " was called with the input port" parameter set to be physical gport. In this release, this function is called with the input port" parameter set to be physical unit port in this situation. |
| SDK-58023 | 736724 | 88650_A0 88650_B0 88650_B1 88660_A0 | Added support for Split-Horizon filter in AC P2P VSI service. Up until now AC P2P service set always as Spoke, now user can configure and decide to set it either as Spoke or Hub using <code>BCM_VLAN_PORT_NETWORK</code> flag. |
| SDK-58043 | 790661 | 56450_A0 56450_B0 | <code>mpls_port</code> add for VPLS configuration was using uninitialized pp port for given modid and portid. Fixed to convert given modid and portid to appropriate pp port before actual use. Another issue was that during subport trunk add for mpls VPLS port <code>source_trunk_map</code> table for the required entry is not configured appropriately due to incorrect modid and portid use internally. Fixed to convert pp port to appropriate modid and portid to update the required entry in <code>source_trunk_map</code> table. |
| SDK-58046 | | 56850_A2 | Customer found that a flex counter was automatically attached after calling <code>bcm_vxlan_port_add()</code> API. The root cause was the information of the L3 view was not cleared after changing the entry type. Now the issue has been fixed. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|-----------|--------|-------------------------------|---|
| SDK-58047 | | 56850_A0 | Problem Statement: DMVOQ functionality is not working Incorporated all the required change in SDK to make DMVOQ to work, for ex: Programming E2ECC_TX_PORTS_NUM, Programming of INTFI_CFG, Programming of CONGESTION_STATE_BYTES , implementation to support hlgig trunk ,Warmboot changes, Hw_index allocation is not proper, handled all the error cases ,Corrected the programming of FC_MAP_TBL, FC_ST_TBL, MMU_INTFI_OFFSET_MAP_TBL |
| SDK-58081 | 791991 | 56850_A0 56850_A1 56850_A2 | Customer found rate limit on broadcast traffic was affected by changing DLF rate limit on the same port on TD2. It was the expected behavior in the system but some special improvement could be implemented for TD2. Now an improvement has been added to reduce this impact. |
| SDK-58087 | 792172 | 56450_A0 56450_B0 | Subscriber delete was failing as the corresponding entry in REPL_LIST list was not removed when there are no EGR_L3_INTF/ EGR_L3_NEXT_HOP interfaces valid for replication of subscriber traffic and instead a new entry with NULL interfaces was added. The user is now able to delete the subscriber replication entries after correcting the behavior to remove the entry from the replication list when there are no replication interfaces. |
| SDK-58102 | | 88650_A0 88660_A0 | OAM: The following bug was fixed: Protection packets might not be sent until an event is registered. |
| SDK-58119 | 792999 | 56850_A2 | Issue :- Qualifying SrcVxlanGport in Lookup Stage returns Internal Error Fix :- During Stage Lookup Qualifiers init routine, assigning secondary Qualifier for SrcVxlanGport was missed out. Hence the issue. Added Secondary qualifiers for SrcVxlanGport |
| SDK-58132 | | 88650_A0 88660_A0 | In some cases in bcm88650_A0 , bcm88650_B0 and bcm88660_A0 (when the SOC property RATE_COLOR_BLIND is set to 0) the driver would crash when calling bcm_policer_destroy_all. This is due to a software bug where uninitialized memory is used. This issue is now fixed. |
| SDK-58135 | | 88650_A0 88650_B0 88660_A0 | PWE bug fixed: When deleting mpls port, push profiles of the PWE is deleted as well as all the push profiles of the MPLS tunnels that the PWE is pointing on. |
| SDK-58136 | 760903 | 88650_B1 | The original issue was that ARAD PCIe controller dropped the completion when accessing the null space CMIC descriptor address that caused the CMIC logic to wait for completion forever. The current fix is that we enable the ENABLE_PURGE IF USERIF TIMESOUT in which case CMIC HW will inject a fake completion after timer expires and injects a ECRC error so that DMA engines will come out gracefully. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|--|---|
| SDK-58138 | 791882 | 88650_A0 88650_B0 88650_B1 88660_A0 | PWE P2P: Model was always Uniform, no matter what user configuration is. This was fixed - both Uniform and Pipe models can be configured. |
| SDK-58140 | 792399 | 88650_B1 88660_A0 | Prevented false alarm memory ECC errors from happening when using the direct base queue to modport mapping mode, and not configuring queue mappings for queues that receive traffic or credits for a scheduler. |
| SDK-58144 | 792827 | 56224_B0 | Multicast init fails during warmboot in <code>bcm_esw_mcast_init()</code> on some flavors of RAVEN chipset which do not have native L3 support. Provided a runtime check in <code>bcm_esw_mcast_init()</code> to check whether L3 features are supported on chipset. |
| SDK-58173 | | 56440_B0 | Problem - IPMC replication of L3 Multicast traffic over L3 interfaces is not working. Two issues are observed 1. While adding the IPMC configuration <code>L3_IPMC_MMU_MC_REDIRECTION_PTR</code> is being modified which is not intended action in " <code>bcm_esw_ipmc_add</code> " Removed the code to reconfigure the <code>MMU_MC_REDIRECTION_PTR</code> " <code>tr_ipmc_write</code> " 2. when subscriber replication on <code>EGR_L3_INTF</code> , <code>EXT_MC_QUEUE_LIST0/</code> <code>EXT_MC_QUEUE_LIST1</code> field <code>L3_REPL_PTR0/1</code> is not programmed properly taking into account that <code>EGR_L3_INTF</code> index shall offset into (8k+ index) while configuring <code>L3_REPL_PTR</code> . It should have been programmed to be 8K+ <code>EGR_L3_INTF(index)</code> . IPMC replication of L3 Multicast traffic over L3 interfaces is working after programming the index correctly in <code>EXT_MC_QUEUE_LIST0/</code> <code>EXT_MC_QUEUE_LIST1</code> - field <code>L3_REPL_PTRx</code> for L3 interfaces. |
| SDK-58188 | 791948 | 88650_A0 88650_B0 88650_B1 88660_A0 | In L2 MAC table, when using API <code>bcm_l2_replace_match()</code> with flag <code>BCM_L2_REPLACE_PROTECTION_RING</code> , the user supplied port mask was not used. This is fixed and now port mask is taken into consideration correctly. |
| SDK-58194 | | 88650_A0 | Fix bug in print encapsulation name in case of SOP only encapsulation. No effect on customer application. |
| SDK-58198 | | 88650_A0 | Fixed - <code>bcm_port_loopback_set()</code> with <code>BCM_PORT_LOOPBACK_PHY_REMOTE</code> for Arad fabric links. Fixed. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|----------------------------|--|
| SDK-58208 | | 88650_A0 | <p>In external TCAM ACL, the actions are different between BCM88650 and BCM88660 due to the common IP database in BCM88660: - The first action (bcmFieldActionExternalValue0Set) can be used for forwarding (or ACL) in both devices, with size of 48 bits - The second action (bcmFieldActionExternalValue1Set) can be used for RPF (or ACL) in BCM88650, with size of 16 bits. In BCM88660, it can be used as ACL with size 32 bits. - The second action (bcmFieldActionExternalValue2Set) can be used for RPF (or ACL) in BCM88660, with size of 16 bits. In BCM88650, it can be used as ACL with size 32 bits. - The third action (bcmFieldActionExternalValue3Set) can be used as ACL with size 24 bits.</p> <p>The distinction between BCM88650 and BCM88660 devices was performed only according to the compilation flag (BCM_88660_A0) and not according to the unit type.</p> |
| SDK-58237 | | 56850_A2 | Added 10G XFI FEC support. |
| SDK-58243 | 790578 | 88650_A0 88640_A0 88670_A0 | FP: Fixed cases in which upper bits of the result were not initialized to Zeros while getting a Field. |
| SDK-58275 | | 88650_A0 88660_A0 | OAM: Following bug was fixed: When soc property "custom_feature_egress_snooping_advanced" is on and calling bcm_oam_endpoint_action_set() with the destination set as a trap, function may fail to properly update the classifier for up MEPs. |
| SDK-58315 | | 88650_A0 88660_A0 | Ring Protection: Added support for an optional sequence to perform Fast Flush. The sequence is comprised of encoding the Ring Port (FEC) as a gport of type FORWARD Port and calling bcm_l2_replace with BCM_L2_REPLACE_MATCH_DEST instead of BCM_L2_REPLACE_PROTECTION_RING. |
| SDK-58324 | | All | Fixed bug in KNET SKB allocation when using BCM API Rx buffers (use_rx_skb=0) on virtual KNET network interfaces which do not strip the VLAN tag. |
| SDK-58345 | | 56850_A0 56855_A0 56850_A2 | In the previous release, customer found the flex counters were not cleared after detaching. It was because on TD2, SDK only cleared X-pipe counters after detaching, but not Y-pipe counters. Now this issue has been fixed on TD2. |
| SDK-58358 | | 88650_A0 88660_A0 88670_A0 | <p>Jericho Protection: BCM API added for all Jericho Protection enhancements. Separate Protection tables are implemented. For Arad, the usage of bcm_failover_create() is modified and it's required to specify a failover type by setting one of the failover type flags: BCM_FAILOVER_FEC, BCM_FAILOVER_INGRESS & BCM_FAILOVER_L2_LOOKUP. The failover ID itself is now encoded with a failover type.</p> |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|--|--|
| SDK-58360 | | 88750_A0 88650_A0 | bcm_fabric_link_status_get retrieve the fabric link status. This specific link status should be cleared on read. However, the entire quad status was cleared . Fixed. |
| SDK-58364 | 794704 | 56850_A0 56850_A1 56850_A2 | In previous release, when customers changed one port encapsulation on TD2, the Rx Max Size was reset but Egress MTU is not. This was an omission and has been resolved. |
| SDK-58375 | 795815 | 88750_A0 88750_B0 | Fixed a bug in "diag queues" command, the command previously printed a wrong occupied link number. |
| SDK-58382 | | 56243_B0 56243_A0 56242_B0 | When one port is moved to PHY loopback on 56243_A0, it turns all 4 ports in loopback. Provided a protective check in 56243_A0 internal phy driver to use broadcast mode of PHY config only when lane 0 is disabled, else use single lane config mode. |
| SDK-58392 | | 88660_A0 | bcm_port_enable set bug fix: In case that 2 CAUI ports and ELK are configured, The CGE1 traffic was dropped when the ELK port was disabled. |
| SDK-58393 | 794812 | 56541_A0 56540_A0 56540_B0 56541_B0 | Wrong meter table size configuration in BCM5654X devices resulting in failure of bcm_policer_destroy, is fixed. |
| SDK-58395 | | All | 1588/PTP servo configuration takes bridge_time parameter in struct bcm_ptp_servo_config_s which normally configured in seconds. Comments are modified to reflect the same. |
| SDK-58398 | 793706 | 88750_A0 | SER interrupts were not signaled to CPU and not counted, due to being masked by a set of override bits called monitor bits. This was fixed to allow proper logging and handling of SER interrupt events by the SDK. |
| SDK-58407 | 769153 | 56640_A0 | On TR3 device ,for HSP ports the sdk was not programming HES_PORT_CONFIG register , hence the scheduling was not proper .As part of the fix we are programming it properly . |
| SDK-58409 | | 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 | Previously, the software control structure for IBOD was not stored in scache, and hence during warmboot, the state was lost, which caused the workaround (IBOD WAR) to run again on all the effected ports. Now, the related fields in the control structure are stored in scache and are recovered during warmboot. |
| SDK-58410 | | 88650_A0 88660_A0 | OAM: when calling bcm_oam_action_set(), a newly allocated trap code will be returned via the field rx_trap, when applicable. |
| SDK-58423 | 793902 | All 56850_A0 56850_A1 56850_A2 | In the previous release, the function rx_higig2_vpn_resolve didn't parse VNI field in HIGIG2 header when it was VxLan. In this release, support has been added to parse VNI field in HIGIG2 header when it is VxLan. |
| SDK-58425 | 796179 | 56440_B0 56450_B0 | For BCM5645x devices, support has been added for L3 packets, ingressing from trunk member ports, to be able to be trapped to CPU. |



Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|--|--|
| SDK-58428 | 796509 | 56450_B0 | Fixed the issue of CCM RX not working after deletion and re-creation of RMEP due to wrongful deletion of OAM lookup key as part of RMEP delete. |
| SDK-58445 | | 56640_A0 56640_A1 56640_B0 | Problem: When the cascaded TCAMs are present, and the lookups are configured to include L2, L3, and L2+ACL, the system will forward a few thousand packets and then hang when the ESM bandwidth is oversubscribed. This will manifest itself as an ETU response FIFO underrun. Solution: Number of lanes to the TCAM interface is different when there are multiple TCAMs present. Fixed the issue by setting the number of lanes based on the number of TCAMs present in the system. |
| SDK-58460 | | 88660_A0 | Routing Over VXLAN feature in BCM 88660 . At ingress node, UDP length calculation was incorrect when sending a packet from TOR to Overlay network. API require to configure per native router interface, the expected amount of native Ethernet VLAN tags to be built at the native Ethernet header. BCM calling sequence: when creating the native router interface: (bcm_l3_intf_create), fill the member: native_routing_vlan_tags from bcm_l3_intf_t with the expected amount of native Ethernet vlan tags to be built at the native Ethernet header. see cint_vxlan_roo.c for more information. See cint_vxlan_roo. |
| SDK-58461 | 794274 | 88650_A0 88650ACP_A0 88650_B0 88650_B1 88660_A0 | Problematic part is removed. there should be no limitation to 16 indices. |
| SDK-58462 | | 88650_A0 88650_B0 88660_A0 | Uninitialized variables were found in both PMF compare operation function and in LIF & RIF profile management function. This is fixed. |
| SDK-58463 | | 88650_A0 88650_B0 88660_A0 | In TCAM management, a sorted linked-list is used to handle the entry priority ranges: given a priority, the sorted list indicates the acceptable line range to insert a new TCAM entry. When looking to insert / get a node of this linked-list, the lookup function scans the list until it finds a node with lower priority and a node with higher priority. This lookup was not always correct. This is fixed. |
| SDK-58466 | | 88650_B0 88650_B1 88660_A0 | Required changes in SDK in order to have full support of external TCAM configuration restoration after warmboot. Note that this support requires the use KBP-SDK 1.2.5 and higher. |
| SDK-58472 | 793850 | 88650_B1 | Remove ECC 1bit and 2 bit monitoring from ILKN memories of lanes that are not in use. |
| SDK-58487 | | 88650_B0 88650_B1 88660_A0 88670_A0 | In Ingress Field Processor, for field groups of bcmFieldGroupModeDirectExtraction type, if an entry has a 1x1 mapping (action=extracted-field) then use action macro FES instead of FEM. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|--|---|
| SDK-58493 | | 88650_A0 | - Memory error protection: Enabling the ECC & Parity error mechanism sequence moved to the end of soc_init sequence. The reason is that this mechanism should be activated only when all memories are initiated, to avoid false alarms. - Shadowing (caching) mechanism: Memory shadows were not updated according to HW memory values after initialization sequence. Consequently, the cache was invalid until the appropriate entry was set explicitly following a driver call that translates to the corresponding table entry. Trying to use cache prior to writing the entry, e.g. as part of parity error-correction interrupt handler, would fail. The fix ensures that all the cache memories are updated with HW by default, as part of driver initialization. |
| SDK-58528 | 688507 | 88650_A0 88650_B0 88650_B1 88660_A0 | OAM: Bug in OAM classification exposed only when adding the build option <code>DEBUG_OPTIMIZE=TRUE</code> . This bug causes incorrect oam module initialization when running in optimized mode. |
| SDK-58553 | 796964 | 56744_A0 | In previous release, HG port with 25G speed config couldn't be added to config file. HG port with 25G speed config was enabled by modifying SDK to accept such configuration. |
| SDK-58565 | 797854 | 56850_A2 | In the previous release, in <code>bcm_tr2_vlan_gport_add</code> , the <code>ing_port_bitmap</code> was overwritten by IPMC groups member port bitmap when we updated the <code>ing_port_bitmap</code> in <code>VLAN_TAB</code> . In this release, the <code>ing_port_bitmap</code> is read out first and then ORed with IPMC groups member port bitmap. |
| SDK-58568 | | 88650_A0 88650_B0 88660_A0 | In IPv6 Multicast FLP program, a new SOC property (<code>custom_feature_ipv6_mc_forwarding_disable</code>) is implemented. When this SOC property is enabled, the IPv6 Multicast FLP program is initialized with default values, where no key (and no lookup) is defined. |
| SDK-58596 | | 56850_A2 | Redirect to NIV virtual port from Ingress Stage Field Processor support was missing in earlier releases. The support is now added. |
| SDK-58630 | 792060 | 56850_A0 56850_A1 56850_A2 | In previous releases, command " <code>!3 ip6route show</code> " would result in a cause when ALPM was enabled. This has been resolved by adding proper check to return feature unavailable instead of crashing when ALPM is enabled. |
| SDK-58649 | 792420 | 88660_A0 | On Arad+, when calling <code>bcm_trunk_set</code> where all members have <code>BCM_TRUNK_MEMBER_INGRESS_DISABLE</code> set, an assert occurs. This assertion was fixed. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|----------------------------|--|
| SDK-58651 | | 56850_A0 56850_A1 | Issue :- Hashing is not happening when FP RedirectEgressNextHop action is used to forward packets to ECMP group. Solution:- When the IFP wants to route an IP packet to an ECMP group, it must use the L3_SWITCH action. This will ensure that the correct ECMP hash selectors are applied to the packet. (bcmFieldActionL3Switch) Only when the IFP wants to "route" a non-IP packet to an ECMP group, it must use the "Redirect to ECMP Group" action. |
| SDK-58667 | | 56640_B0 | a new enum value is added to enable the rx_lox external pin for 100G application |
| SDK-58695 | 799873 | 56450_A0 | For BCM5645x devices, support has been added for L3 packets, ingressing from trunk member ports, to be able to be trapped to CPU. |
| SDK-58733 | | All | New build toolchain XLP SDK 3.0.2 effected on GTR and WRX based SVKs. |
| SDK-58752 | 783027 | All | OAM: Support handling of CCM packets in the OAMP for packet types with 2 Ethernet headers (i.e. Mac in Mac). This requires correctly setting PPH.FWD_HEADER_OFFSET to the start of the OAM header. |
| SDK-58769 | | 56450_A0 56450_B0 | Problem statement: DMVOQ is not working when fabric is in between and trunk ports are used in fabric Fix description: Incorporated the changes so that DMVOQ works properly, when fabric is connected inbetween the modules and trunk ports are used to connect the egress module |
| SDK-58784 | | 88650_A0 88650_B0 88650_B1 | Extend Warmboot engine capabilities to support easily the removal of variables in future ISSU scenarios. This is not affecting ISSU in older versions. |
| SDK-58787 | | 88750_B0 | BCM88750 support running memory bist test on device initialization (enabled by soc property "bist_enable"). A block reset was added after memory bist test in order to make sure that memory is re-initialized. |
| SDK-58791 | | 88650_A0 88660_A0 | BFD: For Arad B1 and bellow allow all types of BFD Flags on frames transmitted from the OAMP. When calling bcm_bfd_endpoint_create(), the local_flags field may be any value between 0 and 0x3f. |
| SDK-58821 | 672112 | 88750_A0 88750_B0 | "phy measure sfi" diagnostic command is used to measure fabric link rate. Using this command caused to the fabric link counters to stop. Fixed. |
| SDK-58863 | 797630 | 88650_A0 88660_A0 88670_A0 | arp extension feature: Backward compatibility for arp extension feature. BCM_88660_A0 can now work in BCM_88650 mode using custom soc property custom_feature_next_hop_mac_ext_arad_compatible. Using BCM_88650 mode implies learning extension header always appended when PP packet is sent to the fabric. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|--|---|
| SDK-58870 | 800874 | 56850_A0 56850_A1 56850_A2 | Provided the debug (FP+Verbose) prints to display the UDF chunks allocated during data qualifier create <code>bcm_field_data_qualifier_create()</code> and <code>bcm_field_data_qualifier_get()</code> API. It helps to understand the chunks used in the UDF offset during creation. |
| SDK-58893 | 798171 | 88030_B0 | add per channel counters for "show counter" CLI command on bcm88030 |
| SDK-58900 | | 88650_B1 88660_A0 88670_A0 | In Ingress Field Processor, in Direct Extraction field groups diagnostics, the source key selection for the action was read from wrong location. This is fixed. |
| SDK-58943 | | 88650_A0 88660_A0 | Allocation of MPLS push profile is now supported through <code>bcm_mpls_port_add</code> api. To allocate push profile, api should be called with <code>BCM_MPLS_PORT_WITH_ID</code> and <code>BCM_MPLS_PORT2_TUNNEL_PUSH_INFO</code> flags set. <code>mpls_port_id</code> is used to indicate the push profile. Function <code>system_aux_push_profile_to_push_profile_id</code> in <code>cint_system_vswitch_encoding.c</code> should be used to set the encoding of the id to be of type push profile. <code>egress_label</code> field and <code>BCM_MPLS_PORT_CONTROL_WORD</code> flag indicate the push profile properties. Example of usage can be found in <code>vswitch_vpls_allocate_push_profile</code> function in <code>cint_vswitch_vpls.c</code> . |
| SDK-58944 | | 88650_B0 88650_B1 88660_A0 88670_A0 | Documentation for <code>cint_field_presel_advanced_mode</code> added to readme file |
| SDK-58984 | 802028 | 56248L_A0 56248L_B0 56450_A0 56450_B0 | The TTL value of VC label was not retained when replacing l3 egress object using API <code>bcm_l3_egress_create()</code> with "flags = <code>BCM_L3_WITH_ID BCM_L3_REPLACE</code> ". The issue has been fixed for BCM5645x and BCM56248L devices. |
| SDK-59142 | 804236 | 56063 56064 56062 56060 53400_A0 53406_A0 53404_A0 53403_A0 53402_A0 53401_A0 | The RCPU support is aligned with the declared feature set in Make.local for Greyhound and Ranger2 devices in this release. In previous release, a warning message of "feature not available" was shown if RCPU was removed from feature set. |
| SDK-59202 | 763574 | 56854_A2 | In the 6.3.7 release, SDK initialization would occasionally fail on BCM56854 devices. This has been resolved. |
| SDK-59532 | | 88660_A0 | OAM: In Arad+, when defining a MEP on a LIF on which another passive MEP or MIP resides, the second MEP may change the first MEP's non accelerated profile, thus changing the behavior of the first MEP. |
| SDK-59540 | | 88660_A0 | OAM: When using OAM classification in Arad mode on Arad+, an incorrect number of non-accelerated MEP-profiles may be allocated which may cause inconsistent behavior. |

Table 73:

| Number | CSP # | Chips | Release Notes For 6.4.1 |
|---------------|--------------|-------------------------------|--|
| SDK-59785 | | 88650_B0 88660_A0 | Required changes in SDK in order to support KBP-SDK 1.3.0 for external TCAM are introduced. |
| SDK-59954 | | 88650_A0 88660_A0 88650_B0 | De-allocation of scheduling elements fixes: 1. Non-composite HR SE couldn't be deleted. 2. FQ SE might deallocate from the wrong range, when range odd_even=1. |

RESOLVED ISSUES FOR 6.4.0

The following issues are resolved in version 6.4.0 of the SDK.

Table 74:

| Number | CSP # | Chips | Release Notes For 6.4.0 |
|---------------|--------------|-------------------|---|
| SDK-46565 | 633504 | 56334_B0 | In PTP/1588 application for Keystone processor there was an issue where setting VLAN priority <"0" resulted in loss of communication between ToP and Host. In this release the VLAN priority mask has been corrected for Keystone. |
| SDK-47155 | 620527 | 56440_A0 | In previous release, is, the egress_tunnel_if was only returned if the flag BCM_MPLS_PORT_NETWORK was set - which was incorrect because it should be set as well if BCM_MPLS_PORT_EGRESS_TUNNEL is used. In this release the following has been updated: retrieving mpls_port->egress_tunnel_if no longer depends on network_port_flag. We now check the egr_l3_next_hop entry type, if it is MPLS type, then we now set the BCM_MPLS_PORT_EGRESS_TUNNEL flag and retrieve the egress_tunnel_if. |
| SDK-47170 | 641741 | 56440_A0 | During warmboot the SDK does not distinguish if the replication is on nexthop or L3 interface. This causes a warmboot failure when the replication is on nexthop. Fixed the warmboot logic to identify if the replication is on nexthop or L3 interface as per the configuration in HW replication table. |
| SDK-47774 | | 88650_A0 | In IP routing, the L3VPN-Default-Routing feature was not implemented: BCM_L3_INGRESS_GLOBAL_ROUTE had no effect upon calling. This is fixed: if the L3VPN-Default-Routing attribute is set, the IP routing lookups of the packet are <VRF, DIP> key and <0, DIP> if not found. No RPF check is performed. |
| SDK-47997 | 660499 | 88030_A0 | The individual tests can now be configured to retain their configuration parameters upon termination of that test. That parameters will then apply to all subsequent tests. The default behavior is to roll back all the configurations. However, if it is desired to make a particular parameter persistent, it should have the line <cleanup> 0 </cleanup> on it. |
| SDK-49699 | 677743 | 88030_A0 | New feature to support multiple cos levels and strict priority queue selection |
| SDK-49700 | 685812 | 88030_A0 | The API soc_sbx_caladan3_cop_policer_token_number_get() is used to read token number of a policer. |
| SDK-49806 | | 88650_A0 88650_B0 | In PON application, in IPv6 Source bind implementation, the code has been changed to be more generic. |

Table 74:

| Number | CSP # | Chips | Release Notes For 6.4.0 |
|---------------|--------------|--|--|
| SDK-49819 | | 88650_A0 | Calling soc_dpp_wb_engine_deinit on one unit zeroed internal structs that contain information for all units in the system. problem is now FIXED, deinit will zero only structs belong to the specified unit. |
| SDK-49861 | | 88650_A0 88650_B0 88650_B1 88660_A0 | When working in MESH mode, VoQ must be mapped to a legal VoQ connector. Therefore adding/deleting a VOQ when it is under traffic is forbidden (these operations map the VOQ to an invalid VOQ). A verification was added in MESH mode, such that when voq is unmapped (a.e. mapped to an invalid connector), an error will be thrown if traffic still arrives to the VoQ. Note that this fix doesn't provide full protection, and is intended to catch an invalid state where possible. It is the application responsibility to make sure that the VoQ currently being unmapped doesn't receive any traffic. |
| SDK-49932 | 689754 | 88650_A0 | In L3, in BCM886XX, the IPv6 host table is shared in TCAM with regular IPv6 forwarding table. However, bcm_l3_host_add API was supported for IPv6 but not bcm_l3_host_remove and bcm_l3_host_find. This is fixed. |
| SDK-50064 | 687256 | 56643_B0 | MCSPRI was programmed with offset of 1024. The bit length of register MCSPRI is sufficient for absolute index and no offset is required. Fixed in by writing the actual index in the registry with no offset. |
| SDK-50087 | 690469 | 88030_A0 | When immediate values are used for hstore they are checked for: <ul style="list-style-type: none"> • range (38 -256) • That the index plus the length does not exceed 256 |
| SDK-50144 | 692372 | 88750_A0 88650_A0 88750_B0 88650_B0 88650_B1 | In eyescan.h SOC function soc_port_phy_eyescan_res_print is no longer available for use. The print function has been moved to diagnostics shell, and is called from "phy diag eyescan" command. |
| SDK-50231 | 691831 | 88030_A0 | A bug in the prior releases of the MDE manifested itself in the following way: If a 64 bit register is accessed that would result in a latency violation (e.g. it was the target of a 'hread' instruction but was subsequently accessed before the header load latency) , it crashed the assembler instead of reporting the violation gracefully. This is now resolved. |
| SDK-50337 | 692830 | 88030_A0 | Packets arriving on the 1G ports were being redirected to incorrect queues due to incorrect PR ICC config mismatching. This has been fixed |
| SDK-50365 | 694983 | 88650_A0 88650_B0 | Making sure bcm is attached before trying to detach it. |
| SDK-50368 | | 88750_A0 88650_A0 88640_A0 | Unused SOC properties (e.g. policer_fairness_enable) defined in config-sand.bcm were removed from this file |

Table 74:

| Number | CSP # | Chips | Release Notes For 6.4.0 |
|---------------|--------------|-------------------|---|
| SDK-50437 | 695853 | 88030_A0 | There was a bug in the previous releases of the MDE that prevented correct parsing of variable length headers only for the first header (any variable length header that came afterwards has been parsing correctly all along; this is how IPv4 headers have been parsed for a long time). This bug has been fixed in the current release. |
| SDK-50440 | 695544 | 88030_A0 | A summary CSV sheet is generated showing switch, key and port usage. To use either option: -suo "file-name" --output_summary_csv "file-name" |
| SDK-50441 | 695303 | 88030_A0 | The ability to configure the ingress and egress queue parameters on a per queue basis is now supported by the MDE. In other words, it is possible to assign different parameters to each of the 64 ingress and 64 egress queues. |
| SDK-50442 | 695307 | 88030_A0 | In the earlier releases of the MDE, the PPE property table did not get cleaned of the previous values consistently after a test has been run. This has been fixed. |
| SDK-50477 | 696358 | 88030_A0 | Previous releases of the MDE had a bug with the following characteristics: If a masked 64 bit register (e.g of the form rr0[40:20]) was the destination of an 'hload' or 'hread' operation, the values read were put in starting at the lowest bits, i.e. the masking bits were ignored (SDK-50477). This has been fixed with this release. |
| SDK-50490 | 695720 | 88030_A0 | Sync attribute has been added to CMU counter config. Valid values are "true" or "false". |
| SDK-50519 | 696880 | 88030_A0 | Previous releases of the MDE had a bug where the TSR did not get updated for instructions in the egress task. This has been fixed. |
| SDK-50530 | | 88650_A0 88660_A0 | When setting FabricMC using Egress+Ingress MC, the OUTLIF in IRR_MCDB must be - '0' |
| SDK-50569 | 697394 | 88030_A0 | Previous releases of the MDE implicitly limited the length of header fields to 32 bits (MAC fields were broken to 6 byte-length fields). This is now resolved. |
| SDK-50570 | 697442 | 88030_A0 | Earlier releases of the MDE had a bug that prevented new direct-mapped tables to be added. This has been fixed in this release. |
| SDK-50571 | 697639 | 88030_A0 | If the ingress/egress queues in the packet header get mangled (e.g. due to a microcode bug) the model now reports this. |
| SDK-50675 | | 88650_B1 | 88550 and 88560 are Arad-SKU chips without Interlaken. During the Arad initialization, the 88550 & 88560 SKU were incorrectly considered TDM-only devices - fixed. |
| SDK-50718 | 699557 | 88030_A0 | Ports are initialized in the following order: 6,13,7,14,12,11,10,2,3,4,5,8,9,0,1 |

Table 74:

| Number | CSP # | Chips | Release Notes For 6.4.0 |
|---------------|--------------|--|--|
| SDK-50724 | 699541 | 88030_A0 | To have two tables share the same memory the user must create two tables of the same width and size using the same ports and with the second table using the base address of the first table. For example: <pre>sample8 { table_capacity =(32 * 100) /*# "g3p1"."ocm"."Sample LRP OCM Port 8 Table." "Sample LRP OCM Port 8 Table. Test table." */ index { test8i: 7 } entry { ocm_port (LRP_PORT_8, width=32) { pad:1 test8:31:0 } } } sample9 { table_capacity =(32 * 100) /*# "g3p1"."ocm"."Sample LRP OCM Port 9 Table." "Sample LRP OCM Port 9 Table. Test table." */ index { test9i: 7 } entry { ocm_port (LRP_PORT_8, width=32, mem_base=sample8::base) { pad:1 test9:31:0 } } }</pre> |
| SDK-50748 | 699893 | 88030_A0 | DM table results will be ordered correctly in the results registers. |
| SDK-50756 | | 88650_A0 88650_B0 88650_B1 88660_A0 | Added new diagnostics to display voq/vsq programmable counters: diag counter voq/vsq Queue=x (Interval=y) diag counter voq Basequeue=x (Interval=y) |
| SDK-50759 | | 88650_A0 88650_B0 88650_B1 88660_A0 | Added new diag "diag cosq voq id=<id> detail=1" to print given VOQ's attributes. |
| SDK-50779 | 696166 | 88650_A0 | New APIs were added to dynamically enable/disable counter collection by counter processor engines: bcm_switch_service_get bcm_switch_service_set for more details about these APIs see Arad PP user manual (886X0-PG3XX) |
| SDK-50812 | 700562 | 88030_A0 | The MDE now supports configuring the PPE variable in a similar manner as the property table entry. The configuration can be global or per-test. For example, to configure some fields in the ingress variable, enter the following within the ppe configuration (inside the scope of <ppe-m>... </ppe-m>: <ing_ppevar> <field-m> <name>mim_transit</name> <value>1</value> </field-m> <field-m> <name>lsp_gal</name> <value>1</value> </field-m> <field-m> <name>vrrp</name> <value>1</value> </field-m> </ing_ppevar> |
| SDK-50849 | | 88750_A0 88650_A0 88650_B0 88650_B1 88660_A0 | 1. MBIST (internal memories BIST) is fixed to work on 88660. MBIST can be enabled at startup using the bist_enable soc property. 2. Starting with the 6.3.2 release, enabling of the mbist output is done using: dbm socdnx +mem +VERBOSE +err -cnt Instead of the previous: dbm soc +mem +VERBOSE +nor +err Using the reporting line above, all the memory debugging information previously available (for 88650 and for 88750) is displayed as before. |
| SDK-50894 | 701166 | 88030_A0 | Release 144 of the MDE had an issue that the PPE header checker and LAG template must be specified, even if the application does not need it. Omitting these two optional parameters crashed the MDE. This has been fixed. |



Table 74:

| Number | CSP # | Chips | Release Notes For 6.4.0 |
|---------------------|--------|--|---|
| SDK-50963 | | 88650_A0 88650_B0 88660_A0 | When using User-Header (e.g. in cascaded Ingress-Egress ACL or in VMAC), the user-header should be removed before the packet exits the system. This was not the case for OTMH program and Mac-in-Mac. This has been corrected. |
| SDK-50972 | 701844 | 88650_A0 88650ACP_A0 88650_B0 88650_B1 | Table EGQ_FQP_NIF_PORT_MUX need to be tuned to avoid packet drops. Optimized internal table arrangement to prevent underrun and insure the desired ports rate. The fix is applied only on driver initialization. |
| SDK-51035 | | 88650_A0 88650_B0 88650_B1 | VLAN assignment according to port,protocol: VLAN assignment procedure is according to profile. Increased the number of port protocol entries per profile from 10 to 16 |
| SDK-51048 | 700857 | 56850_A0 56850_A1 56850_A2 | PFM_RULE_APPLY field in IGMP_MLD_PKT_CONTROL register cannot be controlled in previous release. Added support for controlling this bit by pkt protocol control approach. |
| SDK-51093 | 705776 | 88030_A0 | The condition (header access latency) was considered cleared after one cycle (i.e. next instruction) rather than two cycles. |
| SDK-51170 | | 88660_A0 | OAM: Support RDI generation method. Generation method is configured through the bcm_oam_endpoint_create api with the following flags2: BCM_OAM_ENDPOINT2_RDI_FROM_RX_DISABLE /* RDI bit on outgoing packets may be taken from RDI indication on received packets. */ BCM_OAM_ENDPOINT2_RDI_FROM_LOC_DISABLE /* RDI bit on outgoing packets may be taken from LOC indication of peer endpoint. */ |
| SDK-51184 | 705114 | 88030_A0 | The LUG is out of date with respect to the COP load latency, the correct value is 40. |
| SDK-51351 | 709776 | 88030_A0 | I can see the code the load latency is changed from 37 to 40 |
| SDK-51368 | 707551 | 56830_A1 56830_A0 56830_A2 | BCM56830 is considered as a switch instead of a fabric and attached with proper drivers. SDK implementation has been corrected based on this determination |
| SDK-51498 | 696152 | 88130_B0 | QE2000 to Sirius traffic issue was resolved with a fix to bcm_fabric_crossbar_connection_set () to set up both A and B plane connections to support plane crossover. |
| SDK-51528 | 711580 | All | Fixed the issue with packet drop counter when the packet is dropped by policer. |
| SDK-51541 SDK-50704 | | 88650_A0 | In order to detect and fix ECC2 and parity errors, one can use the BCM switch control bcmSwitchCacheTableUpdateAll. The procedure will go over all cached memories, read them from HW, and in case it detects an error, a matching interrupt will be initiated to be corrected by the appropriate corrective action. When caching memories, it is recommended to update all cached memories before initiating a WB/ISSU cycle. The cached memories are read from the HW during WB/ISSU. Updating all cached memories ensures that all potential errors are handled using the available shadow data. |

Table 74:

| Number | CSP # | Chips | Release Notes For 6.4.0 |
|---------------|--------------|--|---|
| SDK-51643 | | 56340_A0 | Fixed and tested on GTO/BCM56340A. BCM init and rc failures aren't happening anymore. |
| SDK-51689 | 713650 | 88650_B1 | In BCM8865X, a bug at egress HW was mishandling packets that being terminated to size of 192-255 Bytes. In BCM88660, this HW bug was fixed. Enabling this bugfix during the Driver init is inserted. |
| SDK-51821 | 716070 | 88030_A0 | Added check for invalid combination (Simple64 & Automatic mode): Error! [87509] null->0:0->0.1 = Counters group ertctr: Simple64 counters don't support automatic mode. |
| SDK-51827 | 716807 | 88030_A0 | Resolves ucode reload issue seen in 2_146 and TOT. |
| SDK-51881 | 702602 | 56640_B0 56850_A2 | Vlan Service queuing bugs addressed. 1. gport_attach/detach to take care of internally attaching the given number of Queues during add. 2. Queue alignment of Vlan queuing changed to 1(no alignment required). |
| SDK-52216 | 711504 | 56846_A0 56845_B0 56845_A2 56844_A0 56842_A0 56840_A0 56820_A0 56820_B0 56800_A0 56746_A0 56745_A0 56744_A0 56743_A0 56740_A0 56725_A0 56720_A0 56700_A0 56689_B0 56685_B0 56685_A0 | A request was made to add the ability to override "protocol" field in SKB before pushing packet into network stack. the following fields were added in the packet filter structure to support this request. : int dest_proto; /* If non-zero this value overrides the default protocol type when matching packet is passed to network stack. */ int mirror_proto; /* If non-zero this value overrides the default protocol type when matching packet is passed to network stack. */ add corresponding fields in packet filter structure to configure the desired protocol type. |
| SDK-52355 | | 56850_A0 56850_A1 56850_A2 | Support has been added for retry in mem insert and delete for hash tables. Inline hash memory recovery was implemented for insert and delete operations. When an insert/delete operation encounters a parity error, the inline recovery routine will be invoked. The inline recovery routine will calculate different hash buckets in different hash memory banks based on the entry that will be inserted/deleted, then restore the each bucket in these banks. For new-added hash key types in Trident2 hash tables, support for these key types in hash entry comparing routine has also been added. |
| SDK-52381 | 717920 | 56850_A0 | In earlier releases, L3 Conflict Get, bcm_td2_l3_conflict_get() was broken. This has been resolved. |
| SDK-52443 | 705504 | 88650_A0 | Case Summary: Traffic drops at ingress on a newly added LAG member, if it is the first member on the ARAD device after cross connection created. To avoid the problem, API support was added. Using the following function flags bcm_trunk_member_addbcm_trunk_member_delete and bcm_trunk_set the user can update only egress or ingress tables. The user can update only egress tables, configure relevant port parameter and then update ingress port, with this sequence there will be no traffic drop. |
| SDK-52448 | 723913 | 56450_A0 | HQOS support is added for UNI ports on Katana2 |
| SDK-52471 | 723924 | 88030_A0 | Order issue addressed in template generated code. |

Table 74:

| Number | CSP # | Chips | Release Notes For 6.4.0 |
|---------------|--------------|---|---|
| SDK-52514 | 725210 | 88030_A0 | Release 149 had a bug where the MDE crashed if a hash template was not configured for the ingress queue. This has been addressed in this release. |
| SDK-52521 | 724174 | 56850_A0 | In the previous release, in function <code>_soc_td2_alloc_sched()</code> , HQOS hierarchy was being assumed. If users did not use the same hierarchy as defined in <code>_td2_port_lls_config()</code> , issues would be seen. In this release, a LLS port doesn't clear other ports' hardware resource when <code>bcm_cosq_gport_add()</code> is called on Trident2 chips. |
| SDK-52722 | | 88650_A0 | <code>bcm_l3_ingress_create</code> now returns an error if the flag <code>BCM_L3_INGRESS_WITH_ID</code> is not enabled (instead of just ignore) |
| SDK-52758 | 727046 | 88030_A0 | BCM88030: fixed bug where MPLS label was over-writing the IP address RCE key field. |
| SDK-52767 | | 88750_A0 88650_A0 88750_B0 88650_B0 88650_B1 88660_A0 | "show features" diagnostics was added. |
| SDK-52895 | 729741 | All | RPC has been enabled for the HASH bank APIs. |
| SDK-52970 | 730058 | All | <code>L2_matched_traverse</code> used a loop to test availability of MOD FIFO, and if MOD FIFO became hung, the loop became endless and eventually caused MOD FIFO thread to become dead. Added a timeout to break out of the loop if MOD FIFO hangs. |
| SDK-53012 | 715940 | 88030_A0 | Fixed the wrong action type for mirror & drop in egress RCE action table. |
| SDK-53021 | 720668 | 56850_A0 | Updated the documentation related to <code>BCM_PORT_CONGESTION_CONFIG_DESTMOD_FLOW_CONTROL</code> |
| SDK-53070 | 688151 | 56850_A2 | Two command options are added for the eye margin functional calls. The syntax example is <code>phy diag xe0 veye lane=0xc time_upper_bound=16</code> The "lane" option specifies which lane in a given port is enabled for the eye measurement. If the lane is not specified, the default is 0 which means all the lanes are enabled for the eye measurement in a given port. 0xC means lane 2 and lane 3 of the port is enabled. Each binary bit of the value represents a lane. The "time_upper_bound" is to specify the total max time limit for a given eye measurement node. Its unit is second. The default is 256 seconds. Note that this option only accepts the value equal to or larger than 4 seconds. |
| SDK-53077 | 731557 | 88030_A0 | For IPv4, we now could use <code>max_capacity_limit/240</code> to estimate the number of tcam entries need to be used. For IPv6, use <code>max_capacity_limit/168</code> to estimate it. |

Table 74:

| Number | CSP # | Chips | Release Notes For 6.4.0 |
|---------------|--------------|--|--|
| SDK-53112 | 677748 | 88030_A0 | <p>As of the current release of the MDE, the TMU MAC table subkeys can be split into three (as opposed to two: VSI and MAC) fields ONLY for testing on the model as follows:</p> <p>An optional 1-bit field, called 'bmac' can be specified as part of the MAC subkey. This means that the MAC subkey can be optionally split into three fields (1 bit BMAC, 15 bit VSI and 48 bit MAC address) This is meant to used in simulating a PBB (Mac-in-Mac) header where the bmac field can be 1 to specify that the MAC address in the subkey is a bridging MAC or 0 to specify that it is a customer (inner) MAC. Since this field is optional, the default value is 0 which covers both the cases of a non-PBB header as well as the inner MAC of a PBB header.</p> <p>The UcTst.xml file that is provided with this release has placeholder examples of this new usage.</p> |
| SDK-53115 | 731716 | 56850_A0 56850_A1 56850_A2 | <p>For TCAM memories protected by SER engine, corrupt bitmaps have been added to track SER errors detected on them. SER correction logic will filter duplicated SER errors via this corrupt bitmap.</p> |
| SDK-53127 | 730044 | 56334_B0 56334_A0 | <p>In an earlier release switching double tagged frames between layer 2 logical ports on Enduro was inconsistent with TR3/TR2 behavior. This has been correction by synchronizing the behavior of double tagged frames switching on Enduro with TR2's behavior.</p> |
| SDK-53198 | 733029 | 56640_A0 56440_A0 56641_A0 56450_A0 | <p>The problem in existing code was - <code>bcm_l3_egress_get()</code> was not able get the <code>mpls_qos_map_id</code> i.e logical qos id (if object was created by <code>bcm_qos_map_create()</code>). In this release to solve this issue, a new routine <code>_egr_qos_hw_idx2id()</code> has been created. This converts the hardware index to logical qos id. This function is used in the <code>bcm_l3_egress_get</code> to retrieve the <code>mpls_qos_map_id</code>. This function can handle both the <code>qos_id</code> created by <code>bcm_qos_map_create()</code> and <code>bcm_mpls_exp_map_create()</code> .</p> |

Table 74:

| Number | CSP # | Chips | Release Notes For 6.4.0 |
|---------------|--------------|-------------------------------|--|
| SDK-53204 | 732754 | 88030_A0 | <p>Certain configuration parameters are required to set and configure the ILKN OOB flow control. The following illustrates how the required parameters are used and when to use them Some parameters are specific to Caladan3 chip.</p> <p>1) Enable Interlaken Flow control when there is an interlaken port</p> <ul style="list-style-type: none"> • <code>fc_oob_type_<ilx>=2</code> <p>2) Enable Interlaken flow control when there is no interlaken port</p> <ul style="list-style-type: none"> • <code>fc_type_il_line=1</code> • <code>fc_type_il_fabric=1</code> <p>3) Default Calendar length is 64, if not the following has to be set appropriately</p> <ul style="list-style-type: none"> • <code>fc_calendar_length_il_line=<len></code> • <code>fc_calendar_length_il_fabric=<len></code> <p>4) Debugging 1.Ignore the FC OOB status</p> <ul style="list-style-type: none"> • <code>ilkn_interface_status_oob_ignore=1</code> <p>2.Enable Loopback of FC data</p> <ul style="list-style-type: none"> • <code>fc_oob_loopback_<ilx> = 1</code> |
| SDK-53218 | 727679 | 88650_A0 88650_B0 88650_B1 | <p>Port TPIDs: When deleting TPID to default behavior with API <code>bcm_port_tpid_delete</code> or <code>bcm_port_tpid_delete_all</code> , TPID profile wasn't changed correctly.</p> |
| SDK-53311 | 733395 | 56850_A2 | <p>Operations in <code>soc_l2x_freeze/thaw()</code> for TD2 have been optimized by using <code>ING_MISC_CFG2_CML_NEW_OVERRIDE/CML_MOVE_OVERRIDE</code> to disable/enable the learning instead of modifying individual port/svp table entries.</p> |
| SDK-53346 | 731211 | 88650_A0 | <p>The member ID of Trunk port as it written to the <code>IHP_PTC_SYS_PORT_CONFIG</code> & <code>IHP_VIRTUAL_PORT_TABLE</code> was not the index in the IRR lag mapping table. We fixed lag member delete/add to keep this tables synced.</p> |
| SDK-53348 | 733779 | 88030_A0 | <p>In the previous release an issue was discovered with clearing Interlaken counters. This has been fixed. When using "clear counters", we now clear those counts for both hardware counters and the software variable, then we will reset those counts.</p> |

Table 74:

| Number | CSP # | Chips | Release Notes For 6.4.0 |
|---------------|--------------|---|--|
| SDK-53367 | 735381 | 88030_A0 | <p>SDK-53367 PTN6500 - line rate test cause "ped egress drop" issue. This is actually a COP access constraint that was not covered. The constraint is the 2nd rule of the following:</p> <p>1st rule: Independent of the targeted instance, COP accesses always have AT LEAST a 64 instruction resource shadow. (covered by 51017 R-000-10 COP Resource Shadow (load) and 51018 R-001-10 COP Load Latency)</p> <p>2nd rule: Per COP instance, the assembler maintains a counter (initialized to 0). The counter value must be <= 128 in order to access the associated COP instance without violating the constraint. The counter is maintained as follows: 1.) Starts at 0. 2.) Add 128 to the counter when the associated COP instance is accessed. 3.) For each instruction slot, if the counter is non-zero, and it has been at least 64 instructions since the associated COP instance has been accessed, subtract 2 from the counter. Note that this is not the same as the COP port resource shadow (see 1st rule) which is common to both COP instances.</p> <p>New resource constraint: R-002-10 New error number: 51064</p> <p>Example error message:</p> <p>Error! [51064] copTest.lrp3->90:5->1.76 => 223:5->1.199 = constraint R-002-10 COP per instance access constraint violation. shadow:1 Next safe instruction for COP instance 0 access is: 200</p> |
| SDK-53370 | 726683 | 88650_B1 | <p>When using FCoE example CINT, the FCoE header in the forwarded packet was omitted. The trap ID that is used for FCF workaround, which fixes the forwarding header offset was wrong and is now fixed.</p> |
| SDK-53385 | 721111 | 88650_A0 | <p>In RX snoop, the number of HW snoop commands is 16, where 0 is reserved for packets which are not snooped. Due to a SW bug, the number of available snoop commands was 15 and not 16. This is fixed.</p> <p>This fix was reverted in 6.3.5 because it breaks ISSU and can be taken from TOT as a patch.</p> |
| SDK-53414 | 734150 | 56850_A0 | <p>In the previous release we did not support HG13 on TD2. In this release support has been added for speed 13000M. Additionally in</p> <pre>soc_td2_port_asf_speed_set(), if speed = 0xe, speed 13000M duplex full will be selected.</pre> |
| SDK-53449 | 733944 | 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 56851_A0 56852_A0 56852_A1 56853_A0 56853_A1 | <p>In the previous release.</p> <p>bcmportControlDoNotCheckVlan was being overwritten by unrelated port API calls. This has been fixed.</p> |

Table 74:

| Number | CSP # | Chips | Release Notes For 6.4.0 |
|---------------|--------------|---|---|
| SDK-53453 | 675993 | 56846_A0 56845_B0 56840_A0 56640_A0 56440_A0 56850_A0 56855_A0 56843_B0 56340_A0 56640_B0 56440_B0 56850_A1 56850_A2 56344_A0 56342_A0 | Added support for MIM payload tpid select and MIM hash by using payload or tunnel header. |
| SDK-53488 | 736297 | 88650_A0 | ARAD does not support Type-4 VCCV (GAL over PWE). We propose a solution to trap GALoPWEoLSPoETH packets to CPU by using bcmRxTrapMplsUnexpectedNoBos trap. Field processor is used to change the MPLS InLif to PWE InLif, so the trapped packet contains PWE InLif in the PPH. NOTE: In ARAD soc property custom_feature_mpls_termination_check_bos_disable should be set. In ARAD+ no soc property is required. For usage example see cint_gal_o_pwe_o_mpls.c |
| SDK-53515 | 734789 | 5615_A0 | HR2: QSGMII running as SGMII mode was showing the wrong duplex attribute. In this release we have fixed the duplex get function for qsgmii serdes in sgmi mode |
| SDK-53558 | 716344 | 88030_A0 | The exception byte counter was not incremented when a packet is dropped due to drop tag (or) drop untag configuration. This is fixed. |
| SDK-53560 | 719326 | 88030_A0 | The pvv2e.hit bit handling is fixed. The soc_sbx_g3p1_utils_pvv2e_update() & soc_sbx_g3p1_utils_pvv2e_add() functions sets the hit bit by default. |
| SDK-53563 | 736727 | 56334_B0 56334_A0 | Fixed error return value of bcm_mpls_label_stat_get/get32 on Enduro |
| SDK-53612 | 728198 | 88650_B1 | When working in 2P or 1P mode, ISQ root shaper doesn't work correctly (traffic is not shaped regardless shaper configuration). |
| SDK-53613 | 735136 | 88650_A0 88650ACP_A0 88650_B0 88650_B1 | When setting WRED using bcm_cosq_gport_discard_set, and using min/max threshold values close to the limit of 256MB-1, an error was returned. This was fixed, and the range of the min/max WRED thresholds was extended up to 2GB. The actual value that can be specified is up to 2GB-1 due to the range of the int structure field that specifies it. |

Table 74:

| Number | CSP # | Chips | Release Notes For 6.4.0 |
|---------------|--------------|--|---|
| SDK-53639 | 737816 | All | <p>bcmFieldQualifyL3Ingress qualifier offsets are updated for Ingress Field Processor to match with regfile (56850).</p> <p>Problem : Previously the qualifier set was showing "Feature Unavailable" error during group create. This was due to missing initialization of L3Ingress qualifier.</p> <p>Solution: With this fix the group create will cause "No resources for operation" error for the qualifier set mentioned above. This is because after adding bcmFieldQualifyL3Ingress to the Groups QSET the KEY width is exceeding what TD2 IFP H/W can support.</p> <p>Customer has to remove either bcmFieldQualifyInterfaceClassL3 or bcmFieldQualifyIntPriority qualifier from the Groups QSET set to add bcmFieldQualifyL3Ingress to existing Group. OR Customer has to create a new Field Group with bcmFieldQualifyL3Ingress qualifier in it.</p> |
| SDK-53640 | | 56334_B0 56334_A0 | <p>In earlier releases a crash was introduced when initializing BCM56634 via changes added in soc_do_init. In this release we have added device checking for the new block of code introduced to change the PCIe SerDes deemphasis on certain devices (fix for SDK-50513).</p> |
| SDK-53650 | | 88650_A0 88650_B0 88650_B1 | <p>Fixed the crash in bcm_dpp_rx_packet_parse when called with BCM_ARAD_PARSE_PACKET_IN_INTERRUPT_CONTEXT.</p> <p>Registered are not accessed when working in interrupt context.</p> |
| SDK-53654 | | 88650_A0 88650_B0 88650_B1 88660_A0 | <p>Fixed "diag rates sch" shell command crash which is caused by reading non-existent register.</p> |
| SDK-53675 | | 88650_A0 88650_B0 88660_A0 | <p>BFD packets may now be trapped using pre-defined traps. When calling bcm_bfd_endpoint_create(), the remote_gport field may be set to a valid gport for trapping BFD frames to that gport, GPORT_INVALID for the default behavior or remote_gport may be set to a pre-configured trap code. For the latter, call bcm_rx_trap_type_create() to get a trap code, bcm_rx_trap_set() to set the trap code with a valid dest_port configured in bcm_rx_trap_config_t, BCM_RX_TRAP_UPDATE_DEST and BCM_RX_TRAP_TRAP flags set. Then set remote_gport to the said trap code before calling bcm_bfd_endpoint_create().</p> |
| SDK-53731 | 739297 | 88750_A0 88750_B0 | <p>"diag queues" command shell wasn't functional over dual pipe.</p> |
| SDK-53767 | | 88650_A0 | <p>cleaned HW access that were causing error prints during warm reboot (due to statistic threads that would perform HW access)</p> |

Table 74:

| Number | CSP # | Chips | Release Notes For 6.4.0 |
|---------------|--------------|-------------------------------|---|
| SDK-53824 | | 56450_A0 | In previous releases a crash could occur with subport configuration. This has been addressed by correcting the wrong assumption of COE subport configuration for calculating <code>op_nodes</code> for physical ports. Now it is purely based on number of <code>op_nodes</code> consumed by each physical port in sequence (CPU,LPBK,1..40) |
| SDK-53826 | | 88660_A0 | PON: <code>bcm_vlan_port_create</code> set incorrect configuration when having 3 tags manipulation under <code>bcm886xx_vlan_translate_mode=1</code> . |
| SDK-53837 | | 88650_B0 88650_B1 | Fix documentation of <code>cint_vswitch_cross_connect_p2p.c</code> to load all the cints in correct order. |
| SDK-53839 | | 88650_B0 88650_B1 | VPLS: Added <code>cint_cint_vswitch_vpls.c</code> support in index mpls mode that enables termination of up to 3 labels. Index mode is set using soc property <code>mpls_termination_label_index_enable</code> . |
| SDK-53867 | 740320 | 56850_A0 56850_A1 56850_A2 | One of the following solutions can be used to address the persistent link flap problem with CR4 + AutonegOn on ports: (a) Do NOT enable <code>RX_SERDES_LOS</code> and Fast linkscan property in the configuration. This means to disable the SOC property <code>rx_serdes_los</code> , or, EXCLUDE the port(s) from the SOC property <code>rx_fast_los_link_{port}</code> . (b) If the user wants to be able to remove/add ports into fast linkscan dynamically, user can now disable the fast linkscan port control "bcmPortControlRxFastLOS": <code>bcm_port_control_set/get(unit, port, bcmPortControlRxFastLOS, ...)</code> . |
| SDK-53891 | | 88650_A0 | Relevant only for TDM bypass mode: Warm boot would reset some of the TDM fabric direct routing configuration, and cause later configuration of it to be incorrect. |
| SDK-53946 | | 88650_B1 88660_A0 | Important note: in Fiber channel APIs, due to an API change, the user must replace <code>bcm_fcoe_zone_entry_t->vsan.vsan</code> by <code>bcm_fcoe_zone_entry_t->vsan_id</code> , e.g. in <code>bcm_fcoe_zone_add</code> API. |
| SDK-54096 | | 88650_A0 | The private header that includes the packet size was supported in previous version, but collide with other PP features that are supported by the egress editor. This fix resolves the issues when trying to enable multiple PP features while still maintaining the usage of the "size header" addition on top of the packet header. |
| SDK-54378 | | 88650_A0 | To debug more easily warmboot issues, a SW state dump is available via <code>BCM>diag ssdump</code> The SW state dump output to screen can now be disabled. |

Table 74:

| Number | CSP # | Chips | Release Notes For 6.4.0 |
|---------------|--------------|--------------|---|
| SDK-56158 | 756172 | 56440_A0 | <p>Problem description: When L2 MAC Table is full, customer was unable to create the BFD session due to MAC table full issue. Fix description: This issue is fixed by calling</p> <p><code>_bcm_l2_hash_dynamic_replace</code> function, if <code>soc_mem_insert</code> function returns <code>BCM_E_FULL</code>. and also code changes are done in <code>_bcm_l2_hash_dynamic_replace</code> function to support <code>BFD_KEY</code> for Katana device.</p> |