SDK 6.5.25

Release Notes

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Section 1: About This Document

This document contains the release notes for DNX devices affected by the Broadcom network switching Software Development Kit (SDK) release 6.5.25.

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

Only new features are described in this document. For a comprehensive review of the DNX SDK features and issues, refer to earlier release notes for SDK 6.5.x.

For the full resolved list (Both Bugs and Improvement), please reference the file SDK-6.5.25-Resolved-Issues-Improvements.xlsx in the RELDOCS directory in the release package.

Section 2: Devices supported in this release

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

Devices in “Preview DNX Switch Devices” are provided to allow early integration of the customer's application with the SDK APIs that support that device. This software has not been fully tested on the physical target device and is not expected to fully function.

Section 2.1: Supported DNX Switch Devices

Family	***Devices***	***Description***
BCM8828X		Q2U - GA quality
BCM8880X/BCM8882X		J2C - GA quality
BCM8848X		Q2A - GA quality
BCM8869X		J2 - GA quality
BCM8879X		Ramon - GA quality
BCM8868X		J+ - GA quality
BCM8837X/BCM8867X		JR - GA quality
BCM8866X		ARAD+ - GA quality
BCM8827X		QUX - GA quality
BCM8847X		QAX - GA quality
BCM8885X		J2c+ - GA quality
BCM8829X		Q2n - GA quality

Section 2.2: Preview DNX Switch Devices

Family	***Devices***	***Description***
BCM8883X		J2X - Pre quality

Section 3: Information per Device

This release is an incremental version for DPP, DNX, DNXF, DFE family devices.
The subsequent sections describe the increment in available features compared to 6.5.24, backward-compatible notes, major bug-fixes and known issues.

In this SDK release, we introduce J2X for the first time in a PRE quality. In addition, Q2n is GA-quality release and J2c+ A2 GA release.

It is very important to carefully go over the release-notes prior to adapting a new release.

The following sections describe the features validated for this release, known issues and bring-up guidelines.

Section 3.1: DNX-Family

This section includes the following family devices:

- **BCM8869X-Family (Jericho2)**
- **BCM8880X/BCM8882X-Family (Jericho2C)**
- **BCM8848X-Family (Qumran2A)**
- **BCM8828X-Family (Qumran2U)**
- **BCM8885X-Family (Jericho2C+)**
- **BCM8829X-Family (Qumran2N)**
- **BCM8883X-Family (Jericho2X)**

Section 3.1.1: Reference Documentation

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

Section 3.1.1.1: SW/Arch documentation

The following documents are available through Broadcom's Customer Support Portal at https://portal.broadcom.com/group/support/docsafe:

Document	Description
88690-DG1XX	BCM88690 Traffic Management Architecture
88690-DG2XX	BCM88690 Packet Processing Architecture Specification
88480-DG1XX	BCM88480 Traffic Management Architecture
88480-DG2XX	BCM88480 Packet Processing Architecture Specification
88800-DG1XX	BCM88800 Traffic Management Architecture
88800-DG2XX	BCM88800 Packet Processing Architecture Specification
88500-DG1XX	BCM88850 Traffic Management Architecture
88830-DG1XX	BCM88830 Traffic Management Architecture
88690-PG1XX	Packet Processing Programmable Guide (also for BCM88830, BCM88850, BCM88800, BCM88480)

88690-PG2XX	Traffic Manager Programmable guide (also for BCM88830, BCM88850, BCM88800, BCM88480)
88690-88800-88480-ER1XX	Device Errata
DNX28-DNX16-AN1XX	Traffic Manager Software Compatibility Guide (also for BCM88830, BCM88850, BCMBCM88800, BCM88480)
88670-88690-AN2XX	Packet Processing Software Backward Compatibility with the BCM88670 and BCM88680 (also for BCM8800, BCM88480)
DBG16S-AN1XX	SerDes Configuration and Debugging Guide for StrataDNX™ 16-nm Devices
88690-ER1XX	Device Errata for Jericho2
88800-ER1XX	Device Errata for Jericho2C
88480-ER1XX	Device Errata for Qumran2A
DNX SW Errata Tool	https://ydc-ae-server.broadcom.com/

Section 3.1.1.2: In-Package Documents

Document	Description
$SDK/doc/sand/88690_UM_ShellCmd.html	BCM8869X BCM Shell commands user manual
$SDK/doc/sand/88690_UM_SoCProperties.html	BCM8869X BCM Soc Properties user manual
$SDK/doc/sand/88690_UM_Ctest.html	BCM8869X BCM Ctests user manual
$SDK/doc/sand/88480_UM_ShellCmd.html	BCM8848X BCM Shell commands user manual
$SDK/doc/sand/88480_UM_SoCProperties.html	BCM8848X BCM Soc Properties user manual
$SDK/doc/sand/88480_UM_Ctest.html	BCM8848X BCM Ctests user manual
$SDK/doc/sand/88800_UM_ShellCmd.html	BCM8880X BCM Shell commands user manual
$SDK/doc/sand/88800_UM_SoCProperties.html	BCM8880X BCM Soc Properties user manual
$SDK/doc/sand/88800_UM_Ctest.html	BCM8880X BCM Ctests user manual

$SDK/doc/sand/88850_UM_ShellCmd.html	BCM8885X BCM Shell commands user manual
$SDK/doc/sand/88850_UM_SoCProperties.html	BCM8885X BCM Soc Properties user manual
$SDK/doc/sand/88850_UM_Ctest.html	BCM8885X BCM Ctests user manual
$SDK/doc/sand/88830_UM_ShellCmd.html	BCM8883X BCM Shell commands user manual
$SDK/doc/sand/88830_UM_SoCProperties.html	BCM8883X BCM Soc Properties user manual
$SDK/doc/sand/88830_UM_Ctest.html	BCM8883X BCM Ctests user manual
$SDK/doc/sand/88790_UM_ShellCmd.html	BCM8879X BCM Shell commands user manual
$SDK/doc/sand/88790_UM_SoCProperties.html	BCM8879X BCM Soc Properties user manual

Section 3.1.2: Supported SKUs

The following SKU are supported:

Jericho2	Jericho2C	Qumran2A	Qumran2U	Jericho2c+	Qumran2N	Jericho2X
88690	88800	88480	88280	88850	88295	88830
88691	88802	88482	88284	88851		
88693	88803	88483	88287			
	88804	88485				
	88806	88487				
	88820					
	88821					
	88823					

Section 3.1.3: Important Notes

Before integrating the new release, review this section thoroughly.

Section 3.1.3.1: Backward Compatible Important Notes

SW Compatibility Guidelines to 6.5.24

Please go over the list carefully.

Note: This document is written with the assumption that upgrade is done from 6.5.24. In case upgrade is done from older releases, users must first go over previous release notes.

JIRA	Module	Release-note	Affected Devices
SDK-271089	COSQ	Following items are not supported and SDK will now return no support. The probabilistic latency drop mechanism is not supported. Unsupported cosq controls: 1. bcmCosqControlLatencyDropProbBaseThreshold 2. bcmCosqControlLatencyDropProbEnable. Coupled mode mechanism is not supported. Unsupported cosq controls: 1. bcmCosqControlLatencyEgressCoupledAqmMode 2. bcmCosqControlLatencyEgressAqmL4sEcnClassificationThresholdMax 3. bcmCosqControlLatencyEcnProbConvertCoeff 4. bcmCosqControlLatencyEcnProbConvertExponent The probabilistic latency ECN marking is not supported for ingress profiles. Unsupported cosq controls: 1. bcmCosqControlLatencyEcnProbEnable 2. bcmCosqControlLatencyDropProbBaseThreshold 3. bcmCosqControlLatencyEcnProbBaseThreshold	88480_B0, 88800_A0, 88850_A0

SDK-277520	CRPS	New validation term to API bcm_stat_counter_eviction_set is added. The new term verifies that the given eviction destination type the user wants to configure supports for the given database's counter format. Example crps_etpp_data_base_create_wrapper was also changed to avoid configuring Slim counters with CPU eviction destination. Example of failure in the new version (due to mismatch): -> src/bcm/dnx/stat/crps/crps_verify.c[1519]dnx_crps_mgmt_counter_eviction_parameters_destination_type_verify unit 0: Error 'Invalid parameter' indicated, Cannot use eviction destination...	

Section 3.1.4: SDK build & load

Compile and set config files :

setenv SDK `pwd`

Compile SLK CPU:
cd $SDK/systems/linux/user/slk_be/
make MAKE_LOCAL=$SDK/make/local/dnx/Make.custom.dnx_kbp_slk

Compile Intel-GTS CPU:
cd $SDK/systems/linux/user/x86-64-fc28/
make MAKE_LOCAL=$SDK/make/local/dnx/Make.custom.gts

Common config files:
ln -fs $SDK/rc/rc.soc
ln -fs $SDK/rc/dnx.soc
ln -fs $SDK/rc/config-jer2pemla.bcm
ln -fs $SDK/tools/sand/db
ln -fs $SDK/rc/dnx_sku
ln -fs $SDK/rc/dnx_dram
ln -sf $SDK/rc/cmicfw/linkscan_led_fw.bin
ln -sf $SDK/rc/cmicfw/custom_led.bin

BCM8869X specific links:
ln -fs $SDK/rc/config-jr2.bcm config.bcm

ln -fs $SDK/rc/bcm88690_revB_board.bcm
ln -sf $SDK/rc/bcm88690_board.bcm
ln -sf $SDK/rc/bcm88690_legacy_interop_board.bcm

BCM8880X/BCM8882X specific links:
ln -fs $SDK/rc/config-j2c.bcm config.bcm
ln -sf $SDK/rc/bcm88800_board.bcm

BCM8848X/BCM8828X/BCM8829X specific links:
ln -fs $SDK/rc/config-q2a.bcm config.bcm
ln -fs $SDK/rc/bcm88480_board.bcm

BCM8829X specific links:
ln -fs $SDK/rc/config-q2a.bcm config.bcm
ln -fs $SDK/rc/bcm88290_board.bcm

BCM8885X specific links:
ln -fs $SDK/rc/config-j2p.bcm config.bcm
ln -fs $SDK/rc/bcm88850_board.bcm

BCM8883X specific links:
ln -fs $SDK/rc/config-j2x.bcm config.bcm
ln -fs $SDK/rc/bcm88830_board.bcm

BCM8879X specific links:
ln -fs $SDK/rc/dnxf.soc
ln -fs $SDK/rc/config-ramon.bcm config.bcm
ln -fs $SDK/rc/bcm88790_board.soc
ln -fs $SDK/rc/bcm88790_pizza_board.soc

Run :

./bcm.user

Section 3.1.5: IPSec and MACSEC support

For IPSec / MACSEC SW package details refer to '*section 4.1.2: MACSEC support*' in **SDK-6.5.25-RELNOTES.pdf**.

For IPSec and MACSec support, refer to the user manual at ***RELDOCS/DNX_IPSEC_and_MACSec_User_Manual.pdf*** inside the MACSec / IPSec SW package.

For the IPSec and MACSec add-on release notes, refer to '*section 6.1,* ***SDK 6.5.25 Release Notes****'*, of the IPSec and MACSec user manual, mentioned above.

Section 3.1.6: Validated features

The features listed below completed validation according to feature-level maturity.

Section 3.1.6.1: Access, Basic data path, Connectivity and Traffic Management Features Validated features

Feature	**Feature-Level**					**Comments**
	JR2	**J2C**	**Q2A/Q2U/Q2n**	**J2c+**	**J2X**	
MBIST	GA	GA	GA	GA	-	
Interrupts	GA	GA	GA	GA	PRE	
SER	GA	GA	GA	GA	-	
FlexE	NA	NA	GA	NA	-	J2X: FlexE not supported in this release
HBM/DRAM	GA	GA	GA	GA	PRE	
Ingress Cosq	GA	GA	GA	GA	PRE	
Egress Queuing	GA	GA	GA	GA	PRE	
Egress Credit Scheduler: Scheduling hierarchy and shaping	GA	GA	GA	GA	PRE	
Multicast	GA	GA	GA	GA	PRE	
Mirror: Port mirroring	GA	GA	GA	GA	PRE	

LAG	GA	GA	GA	GA	-	
Statistics and Counting: CRPS	GA	GA	GA	GA	-	
Statistics and Counting: Statistics Interface	GA	GA	GA	GA	-	
Meter	GA	GA	GA	GA	-	Ingress + Egress
Dynamic Port	GA	GA	GA	GA	PRE	
NIF (including ETH, ILKN, Autoneg, MIB Counters)	GA	GA	GA	GA	PRE	ILKN isn't supported in this release for J2X
NIF PRD (Priority Drop)	GA	GA	GA	GA	PRE	
SyncE	GA	GA	GA	GA	PRE	
LED	GA	GA	GA	GA	-	
Linkscan	GA	GA	GA	GA	PRE	
Fabric	GA	GA	N/A	GA	PRE	If cell destination is J2c+ A0 - Packet Cell Packing should be disabled using bcm_fabric_pcp_dest_mode_config_set() API.
Flow Control	GA	GA	GA	GA	-	
CPU PKT	GA	GA	GA	GA	PRE	
TDM	NA	GA	GA	NA	PRE	
RCPU	GA	GA	GA	GA	PRE	
TR tests	GA	GA	GA	GA	PRE	
ITemp	NA	GA	NA	NA	NA	

Section 3.1.6.2: Packet-Processing Validated feature

Feature	Feature-Level					Comments
	JR2	J2C	Q2A/Q2U/Q2n	J2c+	J2x	
RAW	GA	GA	GA	GA	PRE	
L2	GA	GA	GA	GA	PRE	
L3	GA	GA	GA	GA	PRE	
VSWITCH (L2VPN, Cross-Connect)	GA	GA	GA	GA	PRE	
LAG-PP	GA	GA	GA	GA	PRE	
MDB	GA	GA	GA	GA	PRE	
PPMC	GA	GA	GA	GA	PRE	
MPLS, L3VPN	GA	GA	GA	GA	PRE	
VPLS & VPWS	GA	GA	GA	GA	PRE	
PWE Tagged mode	GA	GA	GA	GA	PRE	
VLAN	GA	GA	GA	GA	PRE	
L2VPN & Cross-Connect	GA	GA	GA	GA	PRE	
Protection	GA	GA	GA	GA	PRE	
IPv4, IPv6 Tunnels & VXLAN/VXLAN-GPE	GA	GA	GA	GA	PRE	

Persistent hashing / Load-balancing	GA	GA	GA	GA	PRE	
EVPN	GA	GA	GA	GA	PRE	
QOS	GA	GA	GA	GA	PRE	
BFD IPv4, IPV6, MPLS	GA	GA	GA	GA	PRE	
OAM-Classifier, ETH-CFM only	GA	GA	GA	GA	PRE	
OAMP (CCM, LM, DM)	GA	GA	GA	GA	PRE	
OAM MPLS LM-DM	GA	GA	GA	GA	PRE	
ROO, RCH & Drop-and-continue	GA	GA	GA	GA	PRE	
Reflector	GA	GA	GA	GA	PRE	Note: IOP is not functional with Reflector.
TWAMP	GA	GA	GA	GA	PRE	
Stat-PP	GA	GA	GA	GA	PRE	
Instru-PP Visibility	GA	GA	GA	GA	PRE	
Instru-PP Sflow	GA	GA	GA	GA	PRE	
Instrumentation-IFA	GA	GA	GA	GA	PRE	
Instru-PP iOAM MPLS-FPM, MINT (B1 only)	GA	GA	GA	GA	PRE	

Diagnostics-PP	GA	GA	GA	GA	PRE	
External lookup - FWD	GA	GA	GA	GA	PRE	
Interop with JR1	GA	GA	N/A	GA	PRE	
SRv6	GA	GA	GA	GA	PRE	
COE	N/A	GA	GA	GA	PRE	
SAT	GA	GA	GA	GA	PRE	
MPLS RAW	N/A	Beta	Beta	Beta	PRE	Note: IOP and CoE are not functional with MPLS RAW.
SLLB	Beta	Beta	Beta	Beta	PRE	
GTP	Beta	Beta	Beta	Beta	PRE	
Elephant-Trap	Beta	Beta	Beta	Beta	PRE	
PPPoE & L2TP	GA	GA	GA	GA	PRE	
PON	GA	GA	GA	GA	PRE	

Section 3.1.6.3: ACL Validated features

Feature	**Feature-Level**					**Comments**
	JR2	**J2C**	**Q2A/Q2U/Q2n**	**J2c+**	**J2x**	
Traps Basic	GA	GA	GA	GA	PRE	
Traps User-Defined	GA	GA	GA	GA	PRE	
MTU Trap	GA	GA	GA	GA	PRE	
Basic Trap Diag (ingress and Last)	GA	GA	GA	GA	PRE	

Egress Traps - support new Traps	GA	GA	GA	GA	PRE	
Protocol Traps	GA	GA	GA	GA	PRE	
Programmable Traps	GA	GA	GA	GA	PRE	
LIF Traps	GA	GA	GA	GA	PRE	
Full Trap Diag	GA	GA	GA	GA	PRE	
System header generation	GA	GA	GA	GA	PRE	
Direct Extraction FGs	GA	GA	GA	GA	PRE	
TCAM FGs	GA	GA	GA	GA	PRE	
PMF Context Selection	GA	GA	GA	GA	PRE	
Direct TCAM FGs	GA	GA	GA	GA	PRE	
PMF Egress	GA	GA	GA	GA	PRE	
Basic PMF Diag (Resources and Last)	GA	GA	GA	GA	PRE	
ACL External Lookup (KBP)	GA	GA	GA	GA	PRE	
3 ingress PMF stages	GA	GA	GA	GA	PRE	
Range qualifiers (L4-Ops)	GA	GA	GA	GA	PRE	
iPMF1-iPMF2 cascading	GA	GA	GA	GA	PRE	
iPMF2-iPMF3 cascading	GA	GA	GA	GA	PRE	
Ingress-Egress cascading	GA	GA	GA	GA	PRE	
EXEM Lookup	GA	GA	GA	GA	PRE	
Hashing	GA	GA	GA	GA	PRE	
Compare	GA	GA	GA	GA	PRE	

Port Grouping	GA	GA	GA	GA	PRE	
State table	GA	GA	GA	GA	PRE	
KBP support new opcodes (context)	GA	GA	GA	GA	PRE	
Full PMF Diag	GA	GA	GA	GA	PRE	
L4ops Extended	NA	NA	NA	GA	PRE	
TCAM - Entry add by location	GA	GA	GA	GA	PRE	

Section 3.1.6.4: High Availability Validated features

Feature	**Feature-Level**					**Comments**
	JR2	**J2C**	**Q2A/Q2U/Q2n**	**J2c+**	**J2X**	
WarmBoot	GA	GA	GA	GA	NA	

Section 3.1.7: New Features & Bug-fixes

See section 4.

Section 3.1.8: Errata

See Reference documents “DNX SW Errata Tool”.

Section 3.2: DNXF-Family (BCM88790-Family)

Section 3.2.1: Supported SKUs

The following SKUs are supported:

- 88790
- 88795
- 88797

Section 3.2.2: Important Notes

Before integrating the new release, review this section thoroughly.
None

Section 3.2.2.1: Backward Compatible Important Notes

SW Compatibility Guidelines 6.5.24 to 6.5.25

Please go over the list carefully.

Note: This document is written with the assumption that upgrade is done from 6.5.24 to 6.5.25. In case upgrade is done from older releases, users must first go over previous release notes.

None

Section 3.2.3: Validated Features

BCM88790 is GA level.

Section 3.2.4: Errata

See Reference documents “DNX SW Errata Tool”.

Section 3.2.5: Bug fixes & New features

See section 4.

Section 3.3: DPP-Family - BCM88670/680/470/270 Family GA Release

This release is for:

- BCM88670 (Jericho) family product lines.
- BCM88270 (QUX) family product line
- BCM88470 (QAX) family product line
- BCM88680 (Jericho+) family product line

The subsequent sections describe the increment in available features compared to 6.5.24, major bug-fixes and known issues. Before integrating the new release, review the “Backward compatible important notes” section.

Section 3.3.1: Important Notes

Before integrating the new release, review this section thoroughly.

None

Section 3.3.2: Backward Compatible Important Notes

SW Compatibility Guidelines 6.5.24 to 6.5.25

Note: This document is written with the assumption that upgrade is done from 6.5.24. In case upgrade is done from earlier releases to 6.5.24, it must first go over previous SDK release notes.

None

Section 3.3.3: Errata

See Reference documents “DNX SW Errata Tool”.

Section 3.3.4: New Features and Bug fixes

See section 4.

Section 3.4: DFE-Family - BCM88770 (FE3600) Release

The Broadcom BCM88770 (formerly named BCM88950) is the fourth generation in the DNX product line of Fabric Element (FE) devices.

This is a sustaining release.

Section 3.4.1: New Features & Bug fixes

See section 4.

Section 4: New Features & Bug fixes 6.5.25 for DNX/DNXF/DPP/DFE Families

For the list of bug-fixes and New-features, please reference the file SDK-6.5.25-Resolved-Issues-Improvements.xlsx in the RELDOCS directory in the release package.

Section 5: Compatibility

Section 5.1: SDK and PCIe FW Compatibility

Below table shows the firmware version compatible with the SDK release.

Switch SDK Release	*PCIe FW Release*	*Comments*
6.5.25	2.5.4	Without Q2N support
6.5.25	2.5.5	With Q2N support

Section 5.2: SDK and KBPSDK lib Compatibility

Below table shows the KBPSDK lib compatible with the SDK release.

Switch SDK Release	*KBPSDK lib*
6.5.25	1.5.16

Section 6: GNU tools versions

Broadcom uses GNU tools, specifically “gmake”, “gcc”, several Linux distributions and Linux kernel versions for SDK build and validation in-house. The following table summarizes the tools used in this release for DNX devices

GNU tools versions

CPU	*gmake*	*gcc*	*Operating System*	*Linux Kernel*
XLR	4.2.1	4.9.2	Fedora 21	3.14.0
GTS	4.2.1	8.1.0	Fedora 28	4.18.12
SLK	4.2.1	5.3.0	Poky 1.8.1	3.14.65
WRX	4.2.1	4.6.3	Debian 6.0.2	3.7.10
Cmodel	4.2.1	8.1.0	CentOS 7	3.10.0