# SDK 6.5.21

## 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 6.5.21.

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-6.5.21-Resolved-Issues-Improvements.xlsx in the RELDOCS directory in the release package.

# Section 2: New Devices added to 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 | J2C - GA quality |
| BCM8848X | Q2A - GA quality |
| BCM8869X | J2 - GA quality |
| BCM8879X | Ramon - GA quality |
| BCM8868X | J+ - GA quality |
| BCM8837X/BCM8867X | JR - GA quality |
| BCM8827X | QUX - GA quality |
| BCM8847X | QAX - GA quality |

# Section 3: Information per Device

This release is an increment version for DPP, DNX, DNXF, DFE family devices.
The subsequent sections describe the increment in available features compared to 6.5.20, backward-compatible notes, major bug-fixes and known issues.

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)**

### Section 3.1.1: Important Notes

Before integrating the new release, review this section thoroughly.

| JIRA | Module | Description | Affected Devices |
|---|---|---|---|
| - | KBP | KBPSDK aligned to this release is 1.5.14.<br>Reminder: KBPSDK is required only when working with OP/OP2. | 88690_A0, 88690_B1, 88800_A0, 88480_A0, 88480_B0 |

## Section 3.1.1.1: Backward Compatible Important Notes

SW Compatibility Guidelines 6.5.20 to 6.5.21 (and 6.5.21-EA5 to 6.5.21)

**Please go over the list carefully.**

Note: This document is written with the assumption that upgrade is done from 6.5.20/6.5.21-EA5 to 6.5.21. In case upgrade is done from older releases, users must first go over previous release notes.

| JIRA | Module | Description | Affected Devices | From which SDK version backward compatible breakage is relevant 6.5.20 or 6.5.21-EA5 or both (i.e. 6.5.20 and 6.5.21-EA5) |
|---|---|---|---|---|
| SDK-194887 | PMF | State table entry add/get/delete is now by core, and only supported for a specific core(no BCM_CORE_ALL).<br>State table entries now use entry handle, incorporation the key and core. | 88480_A0, 88480_B0, 88690_A0, 88690_B1, 88800_A0 | 6.5.20 |
| SDK-200574 | Tunnel | As the API bcm_tunnel_initiator_create can be either L2VPN (with VSI, no Vxlan LIF) and L3VPN (with VRF), there are new limitations about it. It is not allowed to replace an L3VPN object with to be an L2VPN and vice versa. | 88480_A0, 88480_B0, 88690_A0, 88690_B1, 88800_A0 | 6.5.20 |
| SDK-203005 | DYN-Port | dnx_algo_port_interface_rate_get was available in previous versions via the CINT command. Now the new API replaces it. | 88480_A0, 88480_B0, 88800_A0 | 6.5.20 |
| SDK-218909 | OAM-MPLS-PM | In previous releases APIs may have allowed more than one packet per endpoint per 1.667ms of the combination BFD/LM/DM, however in such cases OAMP would fail to inject traffic. | 88480_B0, 88690_B1, 88800_A0 | 6.5.20 |
| SDK-219660 | Port | new fields added to bcm_port_mapping_info_t: in_tm_port, out_tm_port and pp_dsp.<br>When bcm_port_mapping_info_t is used for bcm_port_add, these fields are mutual exclusive with tm_port field: either tm_port can be specified or the three new fields. bcm_port_mapping_info_t_init should be used to initialize this struct (as before).<br>When bcm_port_mapping_info_t is returned by bcm_port_get(), the three new fields are always returned. tm_port is returned only if the | 88480_A0, 88480_B0, 88690_A0, 88690_B1, 88800_A0 | 6.5.20, 6.5.21-EA5 |

| | | | | |
|---|---|---|---|---|
| | | values of the three are equal.<br>In order to be backward-compatible, when calling bcm_port_get() and then using API bcm_port_add(), it is expected to set in_tm_port, out_tm_port and pp_dsp fields to -1. | | |
| SDK-220133 | SRv6 | RCH Extended-encapsulation scenario was changed. As part of the change the RCH is now passed to egress-pipeline. Due to this, also the appl_ref soc property appl_enable_field_rch_remove was changed to appl_enable_field_rch_handle. | 88480_A0, 88480_B0, 88690_A0, 88690_B1 | 6.5.20 |
| SDK-220608 | IPMC | implement bcmSwitchL3IP6McastL2 that can be used to define the default forwarding type in case of IPv6 MC-disabled routing - v6MC or v6Bridge.<br>bcmSwitchL3McastL2 is now used to modify only the default IPv4 MC-disabled forwarding type - v4Mc or v4Bridge.<br>On previous versions bcmSwitchL3McastL2 was used to modify the default fwd type for both IPv4 and IPv6. | 88480_A0, 88480_B0, 88690_A0, 88690_B1, 88800_A0 | 6.5.20 |
| SDK-221725 | Field | Field Qualifier bcmFieldQualifyVlanFormat received as input BCM_FIELD_VLAN_FORMAT_XXX which was partial and could not provide the full capability of the qualifier. Instead, the actual input enum bcm_port_tag_struct_type_t bcmTagStructType* is now used (which aligns to port tpid class API). Such calls to Field qualifier must be changed. | 88480_A0, 88480_B0, 88690_A0, 88690_B1, 88800_A0 | 6.5.20, 6.5.21-EA5 |
| SDK-222587 | OAM SLM | The measurement_period field isn't supported. In the past calling bcm_oam_loss_add() with a non-zero measurement period was allowed however this field was ignored.<br>Note SLR measurements works in the following way: Measurements are recorded only after bcm_oam_loss_add() is called with the BCM_OAM_LOSS_UPDATE_NEXT_RECEIVED_SLR flag for the given endpoint. | 88480_A0, 88480_B0, 88690_B1, 88800_A0 | 6.5.20, 6.5.21-EA5 |
| SDK-222861 | TUNNEL | Update default UDP destination port for MPLS to be according to RFC-7510: 6635 and not 0x6635.<br>Note: Jericho1 family default didn't change and UDP destination port for MPLS is 0x6635. | 88480_A0, 88480_B0, 88690_A0, 88690_B1, 88800_A0 | 6.5.20 |
| SDK-222875 | VSI, Port-PP | In the previous release, for bridging cases, regular (known unicast) packets were affected by the default TRAP destination of unknown packets. In this release, it is not supported to set the default destination of unknown packets as TRAP for bridging cases. APIs: bcm_port_flood_group_set, bcm_vlan_control_vlan_set will now return error accordingly. | 88480_B0, 88690_B1, 88800_A0 | 6.5.20 |
| SDK-223928 | VLAN | Ingress VLAN membership per port was actually configured globally and | 88480_A0, | 6.5.20, |

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| | | not per port as it should be.<br>Reminder: Each incoming-port has attribute bcmPortClassVlanMember to receive its vlan-member interface which is used for VLAN-membership table.<br>Till now, the value was always 0 , meaning all incoming-ports add the same VLAN-membership table key regardless of configuration.<br>From this release, the VLAN-membership is now aligned as it should be per VLAN-member Interface which is configured by bcmPortClassVlanMember. | 88480_B0, 88690_A0, 88690_B1, 88800_A0 | 6.5.21-EA5 |
| SDK-224404 | VXLAN | In VXLAN application, VPN is resolved by lookup, it's not a Tunnel-teminator property. Therefore, updating VRF in the VXLAN In-Tunnel with bcm_l3_ingress_create API will return now an error. | 88480_A0, 88480_B0, 88690_A0, 88690_B1, 88800_A0 | 6.5.20 |
| SDK-224483 | SRv6 | Application reference updates:<br>1. Replaced the appl_papram soc property appl_param_psp_reduce_mode with two independent soc properties: appl_param_srv6_psps_enable, appl_param_srv6_reduce_enable<br>2. Reference application is updated to support PSP and USP in parallel. USP is always enabled, PSP can be set by a appl_param_srv6_psp_enable soc property | 88480_A0, 88480_B0, 88690_A0, 88690_B1, 88800_A0 | 6.5.20 |
| SDK-224546 | PROTECTION-FEC | It is not possible to allocate failover_id '0' for FEC anymore. It is reserved for disable. | 88480_A0, 88480_B0, 88690_A0, 88690_B1, 88800_A0 | 6.5.20 |
| SDK-224684 | IFA 2.0 | Load-balancing CRC's for packets which have IFA 2.0 header are not generated by Parser anymore but instead, it is done by PMF (due to resource decisions). CINT cint_ifa2.c updated to use iPMF to calculate LB-Keys.<br>SDK-224677 includes the Parser changes.<br>Note: It is required to disable for all flows the Next-protocol hash field for IPv4. Instead, it should be done in PMF Hashing for all flows (not just IFA 2.0). | 88480_A0, 88480_B0, 88690_A0, 88690_B1, 88800_A0 | 6.5.20 |
| SDK-224711 | OAM DM | In the previous release, DM timestamp is not correct on UP MEP. In this release, this issue has been addressed and user has to do the following SW changes.<br><br>Add two new soc-properties:<br>up_mep_tod_recycle_port_core_0=<recycle-port-0><br>up_mep_tod_recycle_port_core_1=<recycle-port-1> | 88690_B1 | 6.5.20, 6.5.21-EA5 |

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| | | Calling bcm_oam_delay_add() without these soc properties will return an error.<br>This was not the case in previous releases, but in previous releases, DMM/Rs were injected with an incorrect timestamp.<br><br>Those two new recycle ports must be defined and the ports must be defined as Ingress: INJECTED_2_PP and Egress:ETH, one on each core:<br>Example:<br>ucode_port_<recycle-port-0>=RCY.1:core_0.<recycle-port-0><br>tm_port_header_type_in_<recycle-port-0>=INJECTED_2_PP<br>tm_port_header_type_out_<recycle-port-0>=ETH<br>ucode_port_<recycle-port-1>=RCY.1:core_1.<recycle-port-1><br>tm_port_header_type_in_<recycle-port-1>=INJECTED_2_PP<br>tm_port_header_type_out_<recycle-port-1>=ETH<br><br>For OAMP endpoints these are all the required configurations.<br><br>For packets injected through external HW/CPU, packets must be injected with the format PTCHoITMHoASEoPTCH.<br>1. Outer PTCH --> Same as Down MEP case.<br>2. ITMH --> Similar to the Down MEP case, except that the destination should be one of the recycle ports, depending on which core the Up MEP port resides on.<br>3. ASE --> Same as Down MEP-DMM/R case<br>4. Inner PTCH --> Same as the other Up MEP flows.<br><br>Note: offloaded MEPs, 1DM, Jumbo DM, flexible_da(DM) are not supported on this fix. | | |
| SDK-225341 | 1588 | bcmPortControl1588P2PDelay is now supported according to Trunk members (local-port) only and does not support Trunk-group (trunk-gport) anymore. API will return error when Trunk-gport is used. | 88480_A0, 88480_B0, 88690_A0, 88690_B1, 88800_A0 | 6.5.20 |
| SDK-225561 | IFA 2.0 | Initiator node I Flag ("In-band") on IFA header is changed to 1 (from 0) as DNX IFA 2.0 is performed in-band. | 88480_B0, 88690_B1, 88800_A0 | 6.5.20 |
| SDK-226710 | SRv6 | SRv6 header, the ROUTING_TYPE filed on SRH is now set to 4. This is done after the RFC is updated with that value. | 88480_B0, 88690_B1, 88800_A0 | 6.5.20 |

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| SDK-227255 | Hashing-Configured, L3 | The default nibble speculation (the nibble following the MPLS BOS label) setting will now have two default configuration options. One of them will be used only by IPvX nibbles (4/6) and the other will be used by the rest of the nibbles.<br>Both default nibble speculation options can speculate Ethernet or UNKNOWN header.<br>In previous version there was only one default nibble speculation option (BCM_SWITCH_DEFAULT_NIBBLE_INDEX).<br>In case user wants to achieve same functionality as before, it needs to call API twice with the two default options:<br>BCM_SWITCH_DEFAULT_NIBBLE_INDEX and<br>BCM_SWITCH_DEFAULT_IPVX_NIBBLE_INDEX. | 88480_A0, 88480_B0, 88690_A0, 88690_B1, 88800_A0 | 6.5.20 |
| SDK-227396 | TUNNEL-IPV4 | In case the packet structure is UnknownPDUoGREoIP protocol, Parser didn't recognize the header as GRE tunnel.<br>This is fixed. | 88480_A0, 88480_B0, 88690_A0, 88690_B1, 88800_A0 | 6.5.20 |
| SDK-228226 | CRPS | Counting bytes from ERPP (in the counter processor) will not compensate 2B internal CRC anymore. Meaning, from this release an additional 2 bytes will be counted by ERPP statistics.<br>In case the application counts Packet+Octets user can "compensate" the 2 bytes by itself, otherwise, inaccurate counting of 2 bytes will occur. | 88480_A0, 88480_B0, 88690_A0, 88690_B1, 88800_A0 | 6.5.20, 6.5.21-EA5 |
| SDK-229260 | SRv6 | When creating a micro-sid Tunnel, with the API bcm_tunnel_terminator_create and the flag BCM_TUNNEL_TERM_MICRO_SEGMENT_ID, it is only allowed to use the 48 MSBs of the DIP in TCAM - it means that the parameter dip6_mask, may start with up to 48 1's, and must end with 80 0's. In previous releases, other bits of DIP could have been used. | 88480_A0, 88480_B0, 88690_A0, 88690_B1, 88800_A0 | 6.5.20, 6.5.21-EA5 |
| SDK-230198 | KBP-ACL | From this release, bcm_switch_control_set() type=bcmSwitchFieldCache and type=bcmSwitchFieldCommit is no longer supported.<br>Instead, caching is now available per Field-Group and not global as it was.<br>The functionality is replaced by bcm_field_group_cache(), which allows caching to be performed per a specific field group. | 88480_A0, 88480_B0, 88690_A0, 88690_B1, 88800_A0 | 6.5.20, 6.5.21-EA5 |
| SDK-231762 | REFLECTOR | In the previous release, L2 internal reflector didn't support EVE action in the first pass. In this release, this issue has been fixed.<br>Important note: backward compatibility is broken.<br>1. RCY port is no longer needed as well as ePMF settings for the RCY port. Now it's replaced by the mapping between egress_fwd_port and recycle_mirror port.<br>2. ACE context value settings of ePMF are | 88480_B0, 88690_B1, 88800_A0 | 6.5.20, 6.5.21-EA5 |

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|---|---|---|---|---|
| | | bcmFieldAceContextReflectorL2Int for UC and bcmFieldAceContextReflectorL2IntMc for MC now, instead of previous bcmFieldAceContextReflectorL2Int, which is used for both L2 internal UC and MC reflector.<br>3. API bcm_switch_reflector_create() to create reflector outlif entry for L2 internal reflector based on non-RCY port(one-pass):<br>3.1 UC: reflector entry type is bcmSwitchReflectorL2UcInternalOnePass now, instead of previous bcmSwitchReflectorUc.<br>3.2 MC: reflector entry type is bcmSwitchReflectorL2McInternalOnePass now, instead of previous bcmSwitchReflectorL2McExternal. | | |
| SDK-233396 | RCH | For RCY ports with in_header_type RCH_0 or RCH_1, the API:<br>* bcm_port_control_set with type bcmPortControlRecycleApp<br>* bcm_port_control_set with type bcmPortControlOverlayRecycle and value 1<br>used to call another API internally, bcm_port_class_set with type bcmPortClassFieldIngressPMF3TrafficManagementPortCs.<br><br>This call is now removed from the API implementation, and should be called by the user from the application layer.<br>Note that the port_class value should be synced with:<br>* Extended-encapsulation ports: With the preselector bcmFieldQualifyPortClassTrafficManagement in the PMF applicaition reference appl_dnx_field_rch_extended_encap_init()<br>* Other RCH ports: With the preselector bcmFieldQualifyPortClassTrafficManagement in the PMF applicaition reference appl_dnx_field_rch_remove_init<br><br>See more information in application reference code. | 88480_A0, 88480_B0, 88690_A0, 88690_B1, 88800_A0 | 6.5.20, 6.5.21-EA5 |
| SDK-234227 | OAM | All trapped OAM packets will come now with an FTMH ASE extension (or OAM-TS in Jer1 system headers mode). This includes Up and Down MEP.<br>This may break backward compatibility in processing trapped OAM packets - in previous releases ASE was not always present.<br>This has no affect on accelerated endpoints. | 88480_A0, 88480_B0, 88690_B1, 88800_A0 | 6.5.20, 6.5.21-EA5 |

# Section 3.1.2: SDK build & load

Compile and set config files :

setenv SDK `pwd`

Example of Intel GTS CPU compilation :
# Copy pre compiled mdb and kaps libraries into the relevant build folder.
# For Intel GTS CPU 64b build flavor, Following are the relevant 2 libraries and the
# relevant build folder (names in build folder must be libkaps.a & libmdb.a):
mkdir -p $SDK/build/unix-user/x86-64-fc28/
cp $SDK/libs/bin/dnx/GTS_64B_libkaps.a $SDK/build/unix-user/x86-64-fc28/libkaps.a
cp $SDK/libs/bin/dnx/GTS_64B_libmdb.a $SDK/build/unix-user/x86-64-fc28/libmdb.a
# Additional mdb and kaps libraries flavors can be found under $SDK/libs/bin/.

# Compile SDK
cd $SDK/systems/linux/user/x86-64-fc28/
make -j 5 MAKE_LOCAL=$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 specific links:
ln -fs $SDK/rc/config-q2a.bcm config.bcm

ln -fs $SDK/rc/bcm88480_board.bcm

Run :

./bcm.user

## Section 3.2: DNXF-Family (BCM88790-Family)

# Section 3.2.1: Important Notes

Before integrating the new release, review this section thoroughly.

| JIRA | Module | Description | Affected Devices |
|---|---|---|---|
| SDK-233019 | SerDes | When calling bcm_port_resource_set() or bcm_port_resource_multi_set() with link training enabled and force ER/NR => the force bit will now be ignored and deleted.<br>See UM for how to force NR/ER with link-training or autoneg. | 88790 |

## Section 3.2.1.1: Backward Compatible Important Notes

SW Compatibility Guidelines 6.5.20 to 6.5.21 (and 6.5.21-EA5 to 6.5.21)

**Please go over the list carefully.**

Note: This document is written with the assumption that upgrade is done from 6.5.20/6.5.21-EA5 to 6.5.21. In case upgrade is done from older releases, users must first go over previous release notes.

| JIRA | Module | Description | Affected Devices |
|---|---|---|---|
| SDK-160634 | Fabric | The sequence of enabling Ramon links, when working in Retimer mode, was upgraded.<br>As a result, Retimer link can't be peer of itself, meaning Retimer link can't work in external loopback connectivity. | 88790 |

## 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 6.5.20, 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.

| JIRA | Module | Description | Affected Devices |
|---|---|---|---|
| SDK-225596 | KBP | KBPSDK aligned to this release is 1.5.14.<br>From this release, similar to JR2 family, KBPSDK is required only when working with OP/OP2.<br><br>Note: From now for DPP devices there is no need to to use KBPSDK for KAPs. To compile without KBPSDK remove from FEATURE_LIST KBP. | 88670,<br>88270,<br>88470,<br>88680 |

## Section 3.3.2: Backward Compatible Important Notes

SW Compatibility Guidelines 6.5.20 to 6.5.21 (and 6.5.21-EA5 to 6.5.21)

Note: This document is written with the assumption that upgrade is done between 6.5.20/6.5.21-EA5 to 6.5.21. In case upgrade is done from earlier releases to 6.5.20, it must first go over previous SDK release notes.

| JIRA | Module | Description | Affected Devices | From which SDK version backward compatible breakage is relevant 6.5.20 or 6.5.21-EA5 or both (i.e. 6.5.20 and 6.5.21-EA5) |
|---|---|---|---|---|
| SDK-224348 | VLAN | In the previous release, if the incoming 802.1Q headers of packets were removed by ingress VLAN editing (IVE) and egress port was a tagged member of the VLAN, 802.1Q priority of the outgoing packets was lost and could not be mapped. In this release, this issue has been fixed.<br>Notes: This fix updates L2 QOS default mapping in SDK. In previous release, TC & DP are always default 0 for L2 packet, and new structured L2 packet PCP and DEI at egress are 0 too. From this release, Default TC 1:1 mapping from PCP and default DP 1:1 mapping from DEI at ingress, and reverse mapping happens at egress. | 88270_A0, 88470_A0, 88470_B0, 88670_B0, 88680_A0 | 6.5.20 |

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

None