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| **Freescale Semiconductor** | Document |
| LDPAA AIOP SERVICE LAYER | Number: AIOPSLRN |
| Release Notes for LDPAA AIOP Service Layer v0.7.0 | Doc. Rev. 0.1 Jun 30, 2015 |

**LDPAA AIOP SERVICE LAYER V0.7.0**

**Release Notes**

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1. Overview

This document describes the main updates included in the LDPAA AIOP Service Layer v0.7.0 as compared with v0.6.0.3

Applications should use the APIs in: aiopsl/src/include/

All other APIs are internal to the Service Layer and should not be called by applications.

The API may be changed in future releases.

This release can be retrieved from GIT:

GIT repository: ssh://gerrit/ldpaa/aiopsl/

GIT tag: **aiop\_release\_0.7.0**

Please see the aiopsl/docs/AIOPCoreLib\_ChangeLog.txt and aiopsl/docs/AIOP\_ARENA\_ChangeLog.txt files for a detailed list of changes.

Please subscribe to the AIOPSREL mailing list to receive future release notifications.

1. Compatibility List

This release is compatible with the following SW, HW, Tools:

|  |  |
| --- | --- |
| **SW/HW/Tool** | **Version** |
| LS2085A QDS/RDB | Rev1 |
| CW for DPAA | CW\_NetApps\_v2015.05 |
| Simulator | M134 |
| MC Firmware | 0.7.0 |
|  |  |

1. New Features

The following new features have been added since version v0.6.0.3:

* Network Interfaces
  + Dynamic DPNI configuration – assign/un-assign at runtime. (ENGR00344384, ENGR00341192)
  + TX Confirmation is automatically disabled if a DPNI is assigned to the AIOP (ENGR00353570)
  + Initial ordering scope configuration: NONE option (ENGR00351543)
  + Configure-able DPNI presentation. (ENGR00354821)
* Command Interface
  + Dynamic DPCI configuration - assign/un-assigned/enabled/disabled at run time. (ENGR00344385, ENGR00341192)
  + Configure-able DPCI presentation. (ENGR00357593)
* Event Manager
  + Applications can register for DPNI and DPCI events: addition/removal/link-change events. (ENGR00348753)
* Synchronization (RCU)
  + Callbacks can be scheduled to be invoked after all active tasks terminate. (ENGR00356743)
* Time Queries
  + De-coupled from 1588 protocol support. (ENGR00341193)
* Example App
  + AIOP app\_process\_packet() example - function attributes updated (ENGR00353296)

1. Changes

The following are changes from version v0.6.0.3 which are not backward compatible:

* DPNI’s are no longer enabled by the AIOP SL. AIOP APP must enable them after receiving a dpni ADDED event.
* DPCI’s are no longer enabled by the AIOP SL. AIOP APP must enable them after receiving a dpci ADDED event.
* The layout file has been updated.

Please see the aiopsl/docs/AIOPCoreLib\_ChangeLog.txt and aiopsl/docs/AIOP\_ARENA\_ChangeLog.txt files for a detailed list of changes.

The following are additional changes from version v0.6.0.3:

* Performance improvement for accelerators return.
  + The following blocks were improved: CDMA, FDMA and TMAN.
* IPsec
  + Performance optimization.

1. Quick Start with this Release

Please see the README.txt file at aiopsl\build\aiop\_ sim\apps\app\_process\_packet\src\ for running instructions.

1. Contact Information

* Mail List: **AIOPSREL**
* Bug Reporting [Clear Quest](http://cq.freescale.net/cqweb/) BINs: **LS-AIOP-LOW-LEVEL** and **LS-ARENA**

1. Bug Fixes

The following are bugs fixed in this release since version v0.6.0.3

* Console IO
  + pr\_xxx() message headers/contents are interleaved between cores (ENGR00349488)
* IPF
  + Fragmentation on Fragment – “More fragment” bit is not set for fragments which are not the last fragment (ENGR360390).
* Table
  + TLUMISS bit shall be set while NORSC error occur (ENGR00356171).
* IPsec
  + Incorrect SEC compressed format errors codes handling (ENGR355255).
  + DSCP SET in the outer IP header is not functional for IPv6 (ENGR358512).
  + Fatal errors from FDMA when RE-USE buffer mode used (ENGR357856).
  + Incorrect handling of PRC ASA Size in new buffer mode (ENGR353336).
* IPR
  + Extra fragment is returned on timeout instead of as malformed (ENGR358861).
  + Return status in case of L4 checksum error (ENGR00361566).
  + Remove extra relinquish (ENGR356636).

1. Workarounds for HW Bugs

The following SW workarounds have been added in this release.

* FDMA
  + Read ASA and PTA SRs – Expects as 64 bytes aligned workspace destination address due to a HW issue.
  + Replace ASA and PTA SRs – In REV1 Replace and represent option (SA=1) is not supported due to HW issue ERR008620.
* IPsec
  + Next Header setting through DPOVRD for tunnel mode encap. (due to SEC issue TKT258803)
  + Setting the FD[BPID] after SEC encrypt/decrypt (TKT265088, CAAM/SEC: The FD[BPID] is not updated after an AIOP operation)

1. Known Limitations/ Issues

## General Limitations

* The Event Manager and Dynamic DPNI/DPCI Configuration features have been unit-tested only. Integration tests involving GPP SW were not performed yet.
* The fsl\_os\_print() function is limited to strings smaller than 80 characters when called at runtime.
* Packets without L2 Ethernet header are not supported due to a hardware bug (TKT237150).
* The SEGMENT\_OFFSET field in the Presentation Context must be set to 0. This means that a frame must be presented from its first byte.
* The maximum key size allowed is 80 bytes for CTLU and 48 bytes for MFLU due to a hardware bug (TKT231187).
* Presentation size should not exceed 256 bytes due to a CTLU HW bug (TKT228731).

## Known problems

* CmdIF:
  + An ECC OSM exception can result if certain FDMA SRs are called during AIOP CmdIF callbacks. Exception will be printed by MC. (ENGR00361539)   
    As a workaround, the following functions should not be called from within callbacks of commands or async callbacks:
    - fdma\_replace\_default\_segment\_data (with SA bit != FDMA\_REPLACE\_SA\_CLOSE\_BIT)
    - fdma\_present\_default\_frame\_segment
    - fdma\_modify\_default\_segment\_data (fdma\_modify\_default\_segment\_full\_data() should be called instead)
    - fdma\_delete\_default\_segment\_data (with SA bit != FDMA\_REPLACE\_SA\_CLOSE\_BIT)
    - fdma\_present\_default\_frame\_default\_segment
    - fdma\_present\_frame\_segment
    - fdma\_extend\_default\_segment\_presentation
* TMAN:
  + Errata ERR009310 workaround is not supported. Timer deletion can cause coherency issues in the TMAN data structures.
  + Errata ERR009305 workaround is not supported. If a bus error occurred in TMI delete it will not be handled correctly.
  + Errata ERR009228. Graceful delete (TMAN\_TIMER\_DELETE\_MODE\_WAIT\_EXP) is not supported.
  + Errata ERR009101. Max number of timers in TMI is (2^22)-1
* GRO:
  + TMAN errata ERR009310 (timer context corruption) workaround is not implemented in GRO.
* Table:
  + TKT265901 – Table/CTLU does not report KSE (key size error) when Unsupported key sizes are used.
* IPR:
  + L4 checksum checker fails when a fragment has padding (ENGR00361559).
* IPsec:
  + Only basic testing was done on LS2 silicon, which does not cover the full features nor algorithms.
  + Scatter-Gather frame buffers are not supported, due to FDMA ERR009482

### Supported IPsec Encryption Algorithms

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Encryption Algorithm**  **​** | **On Silicon** | | **On Simulator** | |
| **​Tunnel Mode** | **​Transport Mode** | **​Tunnel Mode** | **​Transport Mode** |
| ​DES | ​Yes | ​​Yes | ​Yes | ​​Yes |
| ​3DES | ​Yes | ​​Yes | ​Yes | ​​Yes |
| ​NULL | ​Yes | ​​Yes | ​Yes | ​​Yes |
| ​AES-CBC | ​Yes | ​Yes | ​Yes | ​Yes |
| ​AES-CTR | ​​Yes | ​​Yes | ​​Yes | ​​Yes |
| ​AES-CCM-8 | ​​Yes | ​​Yes | ​​Yes | ​​Yes |
| ​​AES-CCM-12 | ​​Yes | ​​Yes | ​​Yes | ​​Yes |
| ​​AES-CCM-16 | ​​Yes | ​​Yes | ​​Yes | ​​Yes |
| ​​AES-GCM-8 | ​​Yes | ​​Yes | ​​Yes | ​​Yes |
| ​​AES-GCM-12 | ​​Yes | ​​Yes | ​​Yes | ​​Yes |
| ​​AES-GCM-16 | ​​Yes | ​​Yes | ​​Yes | ​​Yes |
| ​AES-NULL-WITH-GMAC | ​​Yes | Yes | ​​Yes | NO |

### Supported IPsec Authentication Algorithms

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Authentication Algorithm**  ​ | **On Silicon** | | **On Simulator** | |
| ​**Tunnel Mode** | **Transport Mode**​ | ​**Tunnel Mode** | **Transport Mode**​ |
| ​NULL | ​Yes | Yes​ | ​Yes | Yes​ |
| ​HMAC\_MD5\_96 | ​Yes | ​Yes | ​Yes | ​Yes |
| ​HMAC\_SHA1\_96 | ​Yes | ​Yes | ​Yes | ​Yes |
| ​AES\_XCBC\_MAC\_96 | ​Yes | ​Yes | ​Yes | ​Yes |
| ​HMAC\_MD5\_128 | ​Yes | ​Yes | ​Yes | ​Yes |
| ​HMAC\_SHA1\_160 | ​Yes | ​Yes | ​Yes | ​Yes |
| ​AES-CMAC-96 | ​Yes | Yes​ | ​Yes | Yes​ |
| ​HMAC\_SHA2\_256\_128 | ​Yes | ​Yes | ​Yes | ​Yes |
| ​HMAC\_SHA2\_384\_192 | ​Yes | ​Yes | ​Yes | ​Yes |
| ​HMAC\_SHA2\_512\_256 | ​Yes | ​Yes | ​Yes | ​Yes |

## Tools known issues

The below are known simulator and other tools issues which cause limitations in the Service Layer.

* Parser
  + ENGR00360443: gtp\_parsing\_error frame
* IPF
  + ENGR00360360: final bit in SGE didn't set
* IPsec
  + CAAM/SEC: The simulator goes into an infinite loop (ENGR00361059)
  + CAAM/SEC: The AES-NULL-WITH-GMAC algorithm is not supported in transport mode (ENGR00361214)
  + CAAM/SEC: For AES-NULL-WITH-GMAC algorithm, the kilobytes counter is not consistent with board (ENGR00361340)
  + CAAM/SEC: The simulator get the wrong outer header length causes the decapsulation failed (ENGR00361341)
  + CAAM/SEC: The income ICV does not match the computed value (ENGR00361068)
  + CAAM/SEC: The simulator shows ccm size error and goes into an infinite loop (ENGR00361231)
  + CAAM/SEC: The simulator goes into an infinite loop when enable the buffer reuse mode (ENGR00360053)

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