CCSDS Fall 2015 SLP WG Meeting Minutes
Darmstadium, Germany
Nov 9-10 2015 – Greg Kazz/Chairman

USLP White Book Discussion

The current goal of the SLP WG, is to create both a Unified Space Data Link
Protocol (USLP) Blue book and Green book. Towards these goals, an effort to
come to consensus on the PDU format, managed parameters, procedures,
interface to SDLS and COP-1 took place.

1. Victor Sank requested that Figure 4.1 USLP Transfer Frame Structural
   Components identify which fields are managed vs signaled. Authors will
   do so.
2. Guray Acar asked if the VC Sequence Counter Length could increment
   during a session i.e., contact time when data is transferred between
   vehicles. Answer: the protocol does not prohibit that from happening but
   from a practical point of view we don't envision any agency use cases at
   this time.
3. USLP authors mistakenly thought that the Emergency Hardware
   Command Format was described in this USLP draft version. However, it
   was only discussed internally within NASA. Therefore, the proposal for
   this HW command was sent to the WG immediately after this meeting and
   is still TBD. This emergency command format could be assigned to MAP
   ID 0 and/or VCID 0 (up for discussion). Currently hardware commands
   are 64 bits in length, and use BCH encoding in triple error detection
   mode. If USLP were to offer a service that is uncoded using a 16 bit CRC,
   and a fixed length of 64 bits, then this format could accommodate space
   for a 16 bit command. But if we adopt the same fixed length rule for VC
   0/MAPID 0 then even for a 64 bit code block, by dropping the transfer
   frame length and FECF, you get a 32 bit command space. In fact, all VC
   0/MAPID 0 requires is the first 32 bits of the USLP transfer frame header
   leaving 32 bits for space for the H/W command. Note that the Transfer
   Frame Data Zone (TFDZ) does not need a header. Therefore, the total
   TFDZ would contain the hardware command.
4. ESA concluded that it is essential that the order of TFVN, SCID, VCID, MAP
   ID be maintained in the new protocol to match the existing order of these
   fields in AOS, TM, and TC. The concern is that by placing the MAP ID
   before the VCID, the hierarchy of these fields would be disturbed and we
   would not be following the correct order of processing. Therefore the
   next TF header format will place MAP ID after the VCID field.
5. Gian Paolo Calzolari recommended that the Security Header and Trailer
   be placed with the TFDF as is done in TM, TC, and AOS. However upon
   further investigation, the WG has concluded that USLP does contain these

headers in the TFDF already and so we are conformant with the SDLS protocol in this respect.

6. Further work is needed with the SIS area concerning the need for the USLP tunneling function. Tunneling allows the TFDF of a frame to be tunneled across 1 or more hops. Tomaso de Cola pointed out that USLP is not clear as to exactly what data units can be tunneled.

7. The area director suggested we examine the protocol procedures at both the sending and receiving ends documented in TM, TC, and AOS. The idea here is to conduct an exercise to ensure all of the USLP procedures/functions on both sides and their associated interfaces are covered and are complete. Authors will take an action to see if these diagrams and associated text belong in the USLP Section 4 or not.

8. USLP makes the insert zone an optional field whose presence is signaled. CNES has concerns about changing the Insert Zone as it is currently defined in USLP in comparison to AOS. CNES stated that users may misuse the insert zone if it becomes a variable field and it's presence is based upon a signaled field, because it may allow a user to avoid the standard CCSDS solutions (Packets, etc) and define a user defined format instead of the standard PDU formats. It was pointed out, that the USLP proposal allows the insert zone to be utilized exactly like AOS today, by simply using the option in USLP to be included in every frame. However, it is much more flexible than what was envisioned for AOS.
   How is the Insert Zone defined to be used today:
   a. Isochronous data delivery: In a digital world isochronous delivery means deliver data at a rate to supply a constant stream of data.
   b. If the desired insert zone data rate is to be a constant rate then when the total data rate changes one would simply need to insert the same amount of insert zone data into fewer frames.
   c. There are scenarios when low latency data is needed and delivery of that data is best provided by an insert zone.
   d. There was a claim that the insert zone data must be injected into a telemetry frame just before frame release. It was asserted by Gilles Moury that this requirement comes from SDLS due to the required order of functionality between the COP and SDLS. Further explain of the rationale for this requirement from SDLS would be appreciated.

9. The Service Operations management Annex D will be removed from this book since it deals with the Session layer which is outside the purview of the data link layer.

10. SDLS Security Header and Trailer. Two options exist on adding these sections to the document. First and most simplest approach is to have two separate chapters like AOS, TM, TC addressing the format of the PDU with and without SDLS. The other approach would be to merge both of them into one section. This approach would generate over 30 conditional statements. However, it would be different from the newly approached SDLP documents and would be more work to ensure completeness. The

simpler approach would generate a new Section 5 (Frame PDU without security) and Section 6 (Frame PDU with security). Keeping to the same format would make it easier for ECSS to adopt the new USLP and for contractors as well. The simpler approach will be attempted first.
11. It was recommended by the Area Director to keep all Service primatives in Chapter 3, where the USLP services are defined instead of creating a separate Chapter.
12. Goal is to create a final USLP draft white book for the CCSDS Spring 2016 meeting with the intent after that meeting for the book to become RED-1.

Editorial Corrigendum to AOS, TM, TC

Gian Paolo presented a few editorial changes to the AOS, TM, TC SDLP books due to the inconsistent use of the terms "logical link" vs "protocol sublayer". He presented a way to make this term consistent across all of those books and this proposal was accepted by the WG. These changes are not urgent and will be collected by the CCSDS secretariat for publication at a later TBD date once more changes are collected. This presentation was provided to the CCSDS Secretariat, Tom Gannett.

Call for reconfirmation of COP-1 protocol (CCSDS 232.1-B-2)

Agencies are given the action to examine the impact if reconfirming the COP-1 for another 5 years and are asked to check with their agencies if any changes are required to the protocol. A poll will be conducted at Spring 2016 meeting for reconfirmation.
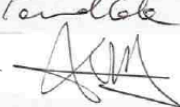
Next SLP WG Meeting
To be held at the Westin Hotel in Cleveland, OH USA during the week of April 4-8 (5 day meeting). Anticipate SLP WG meeting to take place on Monday April 4 all day and Tuesday AM.

Acknowledgment

Many thanks to ESA/ESOC for providing the meeting rooms and facilities at the Darmstadtium.

List of Attendees

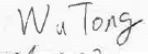| Acar | Guray | guray.acar@esa.int | ESA | |
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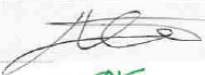
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Nov 10 - Tue - 08:45 - 12:30 : 5.04 - SLS - SLS - Space Link Protocols WG (15)

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