Draft SLS-SLP WG Minutes

Spring 2015 CCSDS Meeting – Caltech, Pasadena USA

1. SOIS seems to be starting up a wireless LAN Proximity Link activity. Before they have stated that this link is an “internal link”. But now they are claiming that the link is “external”. SLP needs to coordinate with SOIS to ensure the work is shared correctly between the two areas. Gian Paolo sent out the current agreement between SOIS and SLS areas for reference.
2. During the discussion on the reconfirmation of CCSDS 133.1-B-2 (Encapsulation Service), there we no additional changes proposed by the attending members. There was some confusion about the way forward about issuing a new version of this book. Mainly because, if there are no changes, should CCSDS issue a Version 3 book, or simply keep the existing book as is (version 2) and make a note that the book has been reconfirmed. This question will be raised to the Secretariat (Tom Gannett has already been notified). All Agencies have now been given an action to review this document to double check if any changes are pending. Final confirmation will be made at the Fall 2015 meeting. I have informed Keith Scott (SIS AD) to find out if SIS has any pending changes on this document.
3. SCID Assignments – The WG created a set of procedures for SANA to follow when new SCID assignments are made. The first recommendation is to recycle as many unused V1 (TM/TC) and V2(AOS) SCIDs as possible. This requires that each agency poll their SCID representative, so that he/she will work with the projects to relinquish no longer active SCIDs. The second recommendation is in the form of a procedure. The procedure will enable the same SCID to be assigned to more than one spacecraft based upon registering the frequency band of the spacecraft by mission phase. Furthermore to minimize the number of SCIDs assigned to constellations of spacecraft, the WG requires projects to utilize VCID as a multiplexer under a given SCID. The most limited case for this approach is the TM Space Data Link, in which only 8 VCIDs are available per SCID; Note that TC and AOS have 64 VCIDs defined (some of which are reserved by CCSDS). Finally, the WG recommended that SANA only assign SCIDs to the space link user i.e., no more test IDs will be assigned in the future. A splinter meeting with SANA will take place on Friday to brief SANA on these procedures. Furthermore, these WG procedures will be provided to CESG/CMC at this meeting for their approval and enforcement. See attachment 1: Response to CMC-A-2014-11-19
4. New Version of Space Data Link Protocols Green Book (CCSDS 130.0-G-2.1) The WG reviewed the formulation presented at the Fall 2014 meeting updating the FAQ section of this book. The update was required to make the book compatible with the emerging SDLS blue book. No additions were requested from the WG, therefore the SLP Chairman noted consensus in publishing the version 3 of this green book. A resolution to this effect will be written and supplied to the AD.
5. Unified Space Link Protocol (USLP). The version 1 USLP white book was discussed in detail. The details of this discussion follows at the end of this report.
6. Discussion of SLP WG co-chair. The advantages (having a back up chairman take the lead of the group in case the chairman is not available, etc) and the disadvantages (additional resources required to supply a co-chair, etc) were discussed by the group. No strong opinion was voiced by the WG in wanting to have such a co-chair at this time. Therefore, the WG consensus was not to have a co-chair.

USLP Discussion

Maximum USLP Frame Length.The WG explored the questions posed by Marjorie De Lange Long in her email. Question: Is the 64Kb transfer frame too big given the expected FERs? We noted that this size is 8 times larger than the DVBS-2 standard. IPv6 frames can be up to 64Kb. However, in the Encapsulation Service, we already have the precedence that the maximum size CCSDS Space Packet can be 64Kb long. The recommendation was made to address this issue in the USLP GB.

Issue with FECF Flag in TF header. A bit of a chicken and egg problem exists, if the transfer frame header contains this field. It is possible that this flag may be in error, since the FECF check has not yet been made, before the flag is evaluated to discover whether or not the CRC is present. Therefore, the WG consensus was to remove this 2-bit flag from the TF header. Therefore the FECF would remain a managed parameter and the actual field would be defined to be outside of the transfer frame (similar to the Proximity-1 specification). However, unlike Proximity-1, the presence of the FECF is optional for USLP.

Need for a TFVN. Answer was yes. It was also pointed out that the concept of Global Spacecraft ID (GSCID), which is the concatenation of TFVN plus Spacecraft ID is still useful for USLP. With the two bits freed up from the removal of the FECF flag from the header, spares are now made available for a larger SCID field.

No need for a separate By-Pass Flag nor Protocol vs User-data flags. USLP doesn’t contain either a By-Pass Flag (like TC) nor a PDU flag (Proximity-1). The rational for not including a By-Pass flag is that one could reserve a Virtual Channel for control commands. There is no PDU flag, since the defined split of VCs provide a built in set of two behaviors for the frame sequence counter. Some members expressed the desire to include a By-Pass flag in the TF header (CNES).

USLP does not allow for Bit Stream Service. USLP allows for Packet Service and byte streaming services. With the possible exception of NASA/MSFC, no other agency voiced a need for bit stream service in USLP.

Action: Lee Pitts (NASA/MSFC) will examine AOS BPDUs are still needed for their mission operations.

USLP needs to maintain modularity and compatibility with the evolution of the Channel Coding sub-layer.

Use of the Insert Zone (IZ). The IZ provides a TDM window. DLR has defined a need for the IZ for inserting real-time data independent of VC assignment. Also CNES uses the IZ for inserting range safety data for Arriane-5 as well as payload auxiliary data. Therefore, there seems to be a need to keep this field in the protocol.

USLP division of Virtual Channels into 2 subsets. The rationale for this decision was discussed. The main reason was to provide for the TC concept of the Multiplexer Access Point (MAP) which is both a sub-address of a VC and a method of segmentation for TC. So in effect, USLP provides up to 32 MAP channels and 32 VCIDs or 64 VCIDs. Therefore the question came up, will 32 MAPs be sufficient. CNES stated that the maximum usage of MAPS by CNES is 6 (TBC).

Action: Gilles Moury to confirm max. number of MAPs used by CNES.

Does Bundle Protocol require a protocol adapter to work with USLP? Or does a Convergence Layer Adapter (CLA) need to be written? This may only be a very thin layer or nothing at all.

Action: Greg Kazz will investigate whether or not a CLA is required with Scott Burleigh and the SIS area.

Interfaces between COP-1/P to USLP need to be examined. At the meeting, it was discovered that there are over 20 references in the TC protocol to the COP-1. Therefore, it makes sense for the WG to examine there references as a model to ensure that the interface between USLP and COP-1/P are defined. Without a clear linkage to the COP-1, then USLP could only be used for downlink applications. In addition, as a goal, WG would like to see COP-1/P added to interoperability testing, to demonstrate that USLP works with the COPs. Both MSFC and DLR answered that they were willing to add the COPs as a future testing goal. In addition, session control (like in Proximity-1) needs to be addressed by USLP either in the same or in an additional book (TBD). Indeed, the COP management service (all reports, directives between the TC protocol and the COP service needs to be examined).

USLP needs a type 2 CLCW for SDLS purposes. Suggestion was to add an extra bit to the OCF Flag in TF header, so that larger size OCF field could be accommodated for future SDLS beyond the current 32 bit field size defined in the current standard.

Next SLP WG Meeting

To be held at the Darmstadtium during the week of Nov. 9 – 13 (4 day meeting) in Darmstadt, Germany.

List of Attendees

To be filled in from Nick’s log