CCSDS SLS-SLP WG Meeting Minutes

Draft Fall 2021 Virtual Meeting

Oct. 25, 2021

7 AM – 9 AM PDT

1. Attendees: Ignacio Aguilar-Sanchez (ESA), Greg Kazz (NASA), Matt Cosby (UKSA), Stehan Veit (DLR), Amanuel Geda (DLR), Victor Sank (NASA), Gilles Moury (CNES), Lee Pitts (NASA), Tim Pham (NASA), Ken Andrews (NASA)
2. Remain in synchronization with the C&S WG with respect to the specification of variable length frames within the TM Sync & Coding Specification, i.e., 131.0.

The SLP WG will generate pink sheets to 732.1 (USLP) to specify the optional use of variable length frames within the TM Sync & Coding Specification, i.e., 131.0.

Greg Kazz took the action to review 732.1 and examine the references to 131.0 throughout the document. Currently USLP is restricted to the use of fixed length transfer frames on the Space to Ground link. Greg pointed out that Section 2.4.1 “C&S sublayer services” as well as Table 5-1 Physical Channel Managed Parameters will be modified. Most likely, there will be other sections that require modification. Changes to 732.1 will be done in synchronization with changes to 131.0, so that they can be republished together.

Ken Andrews reported that during the C&S WG meetings held last week, that a) the RID to increase the USLP transfer frame size to 64K octets in the variable length case was accepted by the C&S WG. Also variable length frame slicing will apply to more than just the current LDPC codes and will also pertain to the SCCS and DVBS-2 books as well. The justification for this change will be identified and documented.

One of the current questions is into which document will the new variable length transfer frame slicing be documented. Options given were: 1. 131.0 and SCCC and DVBS-2(which CCSDS uses in Generic Streaming of Octets mode), 2. SLP WG blue book, 3) A new thin shim protocol blue book. Matt Cosby voiced a concern that UKSA members have stated before about CCSDS creating too many blue books and overcomplicating the interfaces. Ignacio Aguilar-Sanchez also wasn’t keen on creating yet another blue book for this specification. This is an open issue to be worked between the groups.

Another option was the use of GFP (Generic Frame Protocol) which the optical comm WG has adopted. Jon Hamkins (NASA/JPL) plans to present before the Spring 2022 meeting on how CCSDS might use GFP in this case as well.

Close coordination between C&S and SLP WGs will be necessary to complete the addition of variable length transfer frames to the Space to Ground link.

1. What is the path forward with the the *Overview of Space Comm Protocols (OSCP) Green Book* (130.0)?

Currently, the current revision of this document is on hold within the CCSDS Secretariat waiting on a PID from Mario Mora concerning the addition of MO-MAL to the document.

In order for it to move to publication, that PID requires resolution.

As a general observation, it has been difficult for the SLP WG to continue to maintain 130.0, due to the scope of the document i.e., all CCSDS protocols. As new protocols are added by CCSDS, the scope of this document continues to increase along with the required work to maintain it.

In addition, valid questions have been raised by SE Area director and by the SLP WG chair as follows:

* 1. [SLP WG Chair] The scope of this document is clearly outside the purview of both the SLP WG and the SLS area, since the scope is all CCSDS protocols. Both organizations can supply the space link information necessary to maintain 130.0, but there are many other parts of the document that are outside of its purview.
  2. [SE Area Director] has suggested that most of 130.0 is obviated by the SCCS-ARD, i.e., draft Space Comm Cross Support – Architecture Requirements Document – CCSDS 901.1 draft Magenta book. In general, this book provides 4 views from a System Engineering point of view.

During the discussion at this meeting, the SLP WG came to consensus that the 130.0 does provide a good overview to the user of all CCSDS protocols. In that sense, it is a useful document. However, it is really unclear to us if the document is actually being used by the CCSDS user community. No SLP WG member could identify users of that document. This is one example of the general problem CCSDS has in promoting CCSDS Green Books.

It was recommended by Ignacio Aguilar-Sanchez that this issue be raised with the CESG for resolution. Specifically: 1) Should CCSDS continue to maintain 130.0-G or not; 2) If it remains as a CCSDS publication, what WG and Area should maintain this document ?

Greg Kazz took the action of sending an email to the CESG Chair expressing this concern to him, so that it could be added to the Fall 2021 CESG agenda.

1. Victor Sank presented on the AOS Transfer Frame Header Error Control Field. Victor’s presentation along with a post meeting version of it are available on the SLP WG CWE at : <https://cwe.ccsds.org/sls/docs/Forms/AllItems.aspx?RootFolder=%2Fsls%2Fdocs%2FSLS%2DSLP%2FMeeting%20Materials%2F2021%2FFall%2FAOS%20TF%20Header%20Error%20Control%20Field&FolderCTID=0x012000439B56FF51847E41B5728F9730D7B55F&View=%7BAE8FB44C%2DE80A%2D42CF%2D8558%2DFB495ABB675F%7D>

The approach Victor recommended was to modify this specification because it lacked some required technical content such as how much virtual fill needs to be applied, the value of the virtual fill, and where to apply it i.e., at the beginning or end. Since ESA and DLR have missions that currently use this field, CCSDS cannot remove this text. Consensus was that the text needs to be improved and inform the user that over time this capability is planned to be made obsolete. Ken Andrews has the action within the C&S WG to provide the improved text to 732.0 (AOS Space Data Link Protocol), which he plans to share with the SLP WG.

Gilles Moury (CNES) supplied the historical rationale for this field: In the past, some ground stations could not Reed-Solomon decode the entire transfer frame using the R-S( 255,223) code at “high rate” i.e., at that time on the order of 300 to 600 Mbps. In order for these ground stations to route the data using the SCID and the VCID, this TF Header Error Control Field provided a reliable way to check those fields, so that the transfer frames could be reliably routed. For most networks today, this is no longer a technical issue. Victor Sank (NASA) will add a summary of this rationale in a NOTE to the updated pink sheet for this section.

1. Greg Kazz presented the current status of the SLS Area Common Terms Magenta Book. Currently, a list of SLS terms were provided to Greg by Tom Gannett in the CCSDS Secretariat. Greg reviewed these terms and made a recommendation as to which definitions reoccur most frequently vs those that are outliers. The SLP WG is to review these terms to see if consensus with the working group can be reached. The ultimate goal of this exercise is to provide SANA with an SLS Area agreed to list of common terms for the area. This task is low priority given all the other SLP WG tasks. It was also noted that it will take a considerable amount of time to scrub this list and obtain consensus within the area. In addition, it was unclear if a Magenta book is the right repository for this work. It seems that the SANA would be the correct repository for the actual definitions, since maintenance of a Magenta book would be difficult long term.
2. Greg Kazz also presented the current status of the “Packet Protocols” GB. It would include the concepts and rationale for both the Encapsulation Protocol and the Space Packet Protocol. An existing 130.3 draft SPP Green book is available as the starting off point for modification. This draft document contains text both from an implementer and from a user point of view. At a minimum, a new chapter needs to be added detailing the reasons why the user would choose between the Encap vs the Space Packet.
3. Next meetings – the Spring 2022 meetings are scheduled to be held in Huntsville, AL, USA from May 9 to 13, 2022, for 5 days of technical meetings. Please see <https://public.ccsds.org/meetings/default.aspx> for more details as they appear. However, due to the COVID-19 pandemic, that may change. Please stay tuned to the CCSDS website for updates.

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