766.3-B-1 Comments

    Dear Document Rapporteur,

    The CESG poll to approve publication of CCSDS 766.3-B-1,

    Specification for RTP as Transport for Audio and Video over DTN (Blue

    Book, Issue 1) concluded with conditions. Please negotiate

    disposition of the conditions directly with the AD(s) who voted to

    approve with conditions and CC the Secretariat on all related correspondence.

    CESG E-Poll Identifier:  CESG-P-2022-10-006 Approval to publish CCSDS

    766.3-B-1, Specification for RTP as Transport for Audio and Video

    over DTN (Blue Book, Issue 1)

    Results of CESG poll beginning 28 October 2022 and ending 11 November 2022:

                     Abstain:  0 (0%)

    Approve Unconditionally:  2 (33.33%) (Merri, Cola)

    Approve with Conditions:  4 (66.67%) (Barkley, Shames, Aguilar Sanchez, Wilmot)

    Disapprove with Comment:  0 (0%)

    CONDITIONS/COMMENTS:

         Erik Barkley (Approve with Conditions):  A couple of  conditions:

    1)  Minor editorial comment, but I think somewhat important - section

    1.2, change "proposed" to "recommended" in "...This document provides

    an overview and proposed methods for transmission of video over DTN using RTP"

* Completed

    2) Figure 2-4, please correct "RTC 3550" to read "RFC 3550" --

    rationale, both RTP and RTCP are defined in RFC 3550.

* Corrected

         Peter Shames (Approve with Conditions):   While this document

    should be very useful for that class of missions that requires the

    support of video over RTP over BP, the document, as written, is

    rather casual in form and does not conform to the usual CCSDS norms

    for Utilization Profile or Adaptation Profile style of Blue

    Books.  It is certainly "Blue-ish" in nature, but needs to be edited

    and tightened up.  It reads rather more like an agency research paper

    than a CCSDS Blue Book.

* Edited!

    For examples of what I would have expected to see in terms of clear

    presentation of protocol stacks, PDU & end to end diagrams, etc

    please review IP Over CCSDS, 702.1-B-1.  Some of the text and

    figures, such as sec 2.5.3 and fig 2-10, mix protocol and

    implementation details.  This is not a CCSDS norm.

    I recommend that you look at the SCCS-ARD, CCSDS 901.1-M-1, which is,

    in fact, referenced in the test report, but not here, for some

    end-to-end and protocol stack examples.  You are, in essence,

    layering this on top of DTN, but these will give you some protocol

    stack and deployments examples to follow for clarity.  Also think

    about what support might be needed in relay nodes, ground stations,

    and other nodes along the way to support these high rate flows.

* Figure 2-10 was the only place where this seemed to be an issue. It was deleted as it was reviewed and s=considered inaccurate and not needed.

    There are a number of standards mentioned in Sec 3 that do not appear

    in the references (SDP, RTCP, SBS/PPS, H264, MPEG, MIME, and BPV7 (to

    pair with BPSec).  As noted by Wilmot, the ICS is rather abbreviated

    in nature compared to the details in the text itself.

* All references should be correct

    Finally, I believe that the provisioning of such video services, both

    in space nodes and in ground systems, deserves creation of the

    relevant entries in the SANA Service Site and Aperture and Roles

    registries.  See also recent discussions in the DTN WG about DTN registries.

         Ignacio Aguilar Sanchez (Approve with Conditions):  1. Simplify

    section 2 Overview. Move and expand, if need be, selected topics in

    an accompanying Green Book.

* This was edited with what Peter requested. The Green book differed significantly from the final blue book and would require a pretty complete rewrite. Section 2 serves as the necessary overview now.

    2. Introduce managed information as for instance done in Annex F of

    the Bundle Protocol BB.

* While I think I understand this, I didn’t see where it fits to put it in this document. We reference the Bundle Protocol blue book by name in 2.2 and 3.6.2.10.1 with the comment in 2.2 that it is assumed it will be an implementation compliant with the Bundle Protocol blue book standard. I don’t think it serves a useful purpose to repeat this here.

         Jonathan Wilmot (Approve with Conditions):  1) Some optional

    features do not have documented interoperability tests per CCSDS

    A02.1-Y-4 "in cases in which one or more options or features have not

    been demonstrated in at least two interoperable prototypes or

    implementations, the specification may advance to the CCSDS

    Recommended Standard level only if those options or features are removed;"

* The tests that were not done were considered to not be necessary for the blue book as this is covered under the Bundle Protocol Blue book. The items referenced as not tested had to be operational or interoperability would not work. The test scenario, due to Covid, precluded testing those specific items. As they are covered under another standard, that section of the blue book was removed, along with the items in the pics proforma in the blue book and yellow book.

    2)  Tests should include a range of delays, disruption durations, and

    out-of-order packets to simulate space use cases.  If the standard

    only applies to near earth scenarios,  then that should be stated.

* Changed 2 SUMMARY CONCLUSION/RECOMMENDATION to read:

The test plan and test reports documented herein substantiate that the organizations participating in the CCSDS Motion Imagery Working Group have successfully conducted prototype testing of motion imagery using RTP over Delay Tolerant Network as defined in CCSDS 766.3-R-2 document. During the testing, RTP managed motion imagery was successfully encapsulated in DTN bundles and transferred across terrestrial links. The RTP Link was perturbed by standard internet data transmission behavior. Limitations on testing due to Covid precluded inserting significant data disruptions, such as delays, signal drop-outs, or out-of-order packets. As such, this standard is applicable to Low Earth Orbit applications and should be extensible to other space scenarios as the test configurations conform to Bundle Protocol standards. This will be tested in the future.

Based on the diversity of agencies able to transfer motion imagery over a diverse environment, and the positive test results, the MIA group recommends CCSDS 766.3-R-2 document be promoted to a Blue Book CCSDS Recommended Standard.

    Total Respondents:  6

    All Areas responded to this question.

    SECRETARIAT INTERPRETATION OF RESULTS:  Approved with Conditions

    PROPOSED SECRETARIAT ACTION:            Generate CMC poll after

    conditions have been addressed

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From 2/17 email - Leigh noted that the MIA book said something about 'unlimited bundle size'.  All bundles have SOME finite size (in the primary block) -- the BPv7 draft for CCSDS just says that implementations only have to be able to handle up to 10MB per bundle.  Will that be an issue for MIA?

There are only 2 places in the standard that mention bundle size, 2.2 and 3.5.2. In 2.2, the last sentence reads:

Therefore this book makes the following assumptions about the underlying Bundle Protocol multicast mechanism, if it is in use:

1. arbitrary addressing—each multicast-based stream must be uniquely identifiable by a unique endpoint ID, similar to the (multicast group, port) tuple used for IP-based multicast;
2. arbitrary bundle sizes—the multicast mechanism must not impose arbitrary limits that are less than the maximum bundle size on the size of bundles.

And 3.5.2 reads:

If a bundle size limit is required, it shall be decided by the implementer.

These are the only two places in the RTP over DTN book where bundle sizes are mentioned. 2.2 is not saying unlimited. In the context, it would default back to the DTN standard. 3.5.2 does not specify or say unlimited.