

**Scott, Keith L.**

---

**From:** Scott, Keith L.  
**Sent:** Thursday, April 29, 2010 1:39 PM  
**To:** 'Nestor.Peccia@esa.int'  
**Cc:** chris.taylor@esa.int; dstanton@keltik.co.uk; Roger Thompson; Sam Cooper; Mario.Merri@esa.int  
**Subject:** RE: CESG Review of SIS-DTN Green Book

OK, I found two places where I think inserting MAL makes sense (below). Below are my proposed revisions, including NOTES on the DTN-BP binding. Except for one mention of AMS as an example application that could use DTN as a transport service, the below are the places that mention AMS.

Do the changes below address your concerns?

Best Regards,

--keith

**4.2.2.1.3 The system shall support a general class of applications, including at least file transfer and messaging.**

Rationale: The point of an internetwork is to support application layer communications.

NOTE – The currently envisioned applications include file transfer and messaging as might be implemented via the CFDP, AMS, and Message Abstraction Layer (MAL) protocols. The system may also need to support the transfer of TM/TC packets *over* the internetwork protocol (tunneling TM/TC over the internetwork protocol).

NOTE – The specification of PDUs for MAL transport over a given technology are contained in technology binding specifications. Such a technology binding for DTN-BP did not exist at the time of writing, but as DTN-BP is intended to be a general purpose networking protocol, no barrier to the specification of such a technology binding has been identified.

**4.2.2.2.2 The end-to-end infrastructure and protocols shall be capable of transferring, as SDUs, the PDUs of the following CCSDS protocols: CFDP, Space Packet Protocol (SPP), Encapsulation Packet Protocol (EP), Telemetry (TM), Telecommand (TC), Message Abstraction Layer (MAL), and Asynchronous Messaging System (AMS).**

Rationale: These types of SDUs could be used to construct higher-layer services. This presumes some sort of application endpoint to consume, e.g., raw Space Packets.

NOTE – The specification of PDUs for MAL transport over a given technology are contained in technology binding specifications. Such a technology binding for DTN-BP did not exist at the time of writing, but as DTN-BP is intended to be a general purpose networking protocol, no barrier to the specification of such a technology binding has been identified.

**4.2.2.2.3 The end-to-end infrastructure and protocols shall provide the services specified as required of the underlying layers of the CFDP, SPP, EP, Telemetry, Telecommand, MAL, and AMS protocols.**

Rationale: Because the space internetworking protocol may carry CFDP, Space Packets, or Encapsulation Packets, it must be able to provide the services required of those protocols. Since CFDP, SPP, and EP are all ‘applications’ from the point of view of the Bundle Protocol, a shim above the Bundle Protocol itself (similar to the UT layer in CFDP) may be used to support these or other higher-layer protocols.

---

**From:** Nestor.Peccia@esa.int [mailto:Nestor.Peccia@esa.int]  
**Sent:** Thursday, April 29, 2010 11:32 AM  
**To:** Scott, Keith L.  
**Cc:** chris.taylor@esa.int; dstanton@keltik.co.uk; Roger Thompson; Sam Cooper; Mario.Merri@esa.int  
**Subject:** CESG Review of SIS-DTN Green Book

Keith

I am busy at Space Ops. Therefore I asked for help from SM&C WG

and Roger's proposal is fine for us

ciao  
nestor

=====

I think Keith is correct that the MAL does not itself provide a PDU specification – that would be provided in a dedicated MAL to DTN-BP Technology Binding book.

I would rule out option 3) below.

I would suggest a combination of option 2) and 4) – that is: include the MAL where CFDP and AMS are referenced, but add a footnote to the effect that “It is noted that the specification of PDUs for MAL transport over a given technology are contained in technology binding specifications. Such a technology binding for DTN-BP did not exist at the time of writing, but as DTN-BP is intended to be a general purpose networking protocol, no barrier to the specification of such a technology binding has been identified.”