

SpaceWire networking Protocol

Working Group Meeting 7

Inter-Agencies meeting

Ph. Armbruster TEC-ED

10:30 Inter-Agency meeting

- WG Steering Group composition
- SpW-SnP-RMAP, Draft E -> Draft F
 - SpW-SnP-RMAP, CRC computation
- PID
 - GOES-R Reliable Data Delivery Protocol, 417-R-RPT-0050
 - Legacy PID for GRDDP ?
 - GAP indirect read in RMAP ?
- SpW Connector(s) and cables (Lab, low speed), Alternate connector to 9-pin MDM ?
- Synchronization, time codes and interrupts
- Redundancy issues
- SpW Backplane
- SpaceFibre
- SpW PnP
- Comparison of Communication Architectures for Spacecraft Modular Avionics Systems
- Conferences, publications, industrial involvement
- Next undertakings, other protocols
- Next meeting (date, scope)

SpW Working Group Steering Committee Meeting 7 (SpW WG StC Mtg 7)

Steering committee

ESA (Chair)

Ph. Armbruster
M. Suess

JAXA/ISAS

T. Takahashi
M. Nomachi (UoO)

NASA

G. Rakow
(R. Schnurr)

S. Parkes (UoD) and Pr. Y. Shenin (UoStP) are also member of the SpW Steering Committee.

Part time participant: P. JAFFE (NRL)

New participating Agency: **ROSCOSMOS** (A.G. Sukhoroukov will be invited to attend next SpW WG meeting and will represent ROSCOMOS in the InterAgency meeting).

SpW WG Steering Committee: Coordinates/Approves PID allocations and supporting documents. Configuration management of in-preparation and published protocols.

Steering committee supported by: S. Parkes (UoD), acting as the SpW standard(s) Editor

SpW Working group contributors/participants: Agency engineering & projects representatives, Representatives from Industry, Experts

Cables and Connectors

- NASA/GORE to provide a Technical Note describing the JWST cable assembly, with rationale for deviating from the SpW standard (this includes a description of the test setup). If agreed by the SpW StC, this cable assembly could be mentioned as an alternative option to the 9-pin MDM connector.
 - Date: end October 2006
- The need for a “low budgets” (mass, \$, ...) flight cable is reiterated by Jaxa.

RMAP

- Proposal : “some GAP features (e.g. directed read) could be considered pending a description is provided to the WG”
 - option abandoned, because the same functions can be obtained using existing RMAP functionalities
- Use of zeroes in a source path address needs to be clarified. (action on S. Parkes, as a reply to the point raised by Y. Sheynin).

SpW Router design guideline

- Replies to path-addressed commands addressed to a router configuration port should be returned via the port from which the command has been received. (point raised by S. Parkes, introduced for network discovery reasons). Open issue.

RMAP, Draft E

CRC implementation

- CRC implementation compatibility issues as reported by ESA/A. Ferrer Florit were discussed during the InterAgency meeting

Note: This slide does not reflect all discussions during the meeting and subsequent ones triggered by ESA including variations in the final disposition (supported by a series of email exchanges). The final disposition is nevertheless summarized here below.

- The RMAP 8-bit CRC shall be computed following the SpW bit transmission order (e.g Least Significant Bit first).
- In order to avoid any other possible ambiguity, additional test vectors shall be added in the normative part of the standard. Action: UoD to prepare test vectors.
- Clarification : A Read reply or a write command with no data must contain a CRC (a note will be introduced in the standard).
- Figure 6-21 shall be amended in order to include a data length of 0

RMAP, Draft F

- S. Parkes will produce Draft F by the end of October 2006.

PID

- A Technical note describing the GOES-R Reliable Data Delivery Protocol (ref 417-R-RPT-0050) has been provided to the WG. (G. Rakow is the person of contact if questions/comments are raised).
 - On the basis that existing devices are making use of this protocol, the WG StC agreed to allocate a Legacy PID for this protocol (238)

Synchronization, time codes and interrupts

- Y. Sheynin will prepare a technical note detailing the Interrupt distribution service based on time codes (01). Baseline 32 interrupts and 32 interrupt-acknowledge.
- Y. Sheynin proposes to establish a clear differentiation between a SpW “node” and a SpW “Switch” in order to clarify the terminology. This could be introduced in the handbook.

SpaceFibre

Sub-working group Facilitator: M Sues

Need expressed by G.Rakow to have SpaceFibre ready as rapidly as possible (i.e. for CEV)

- S. Parkes confirmed that the SpaceFibre demonstrator will be finalized by the end of December 06.
- It was proposed by ESA to prepare a Memorandum of Understanding to formalize cooperation agreements between ESA and NASA on SpaceFibre.
- Requirements related to the usage of SpaceFibre on NASA missions to be provided by G. Rakow.
- Fiber Channel was mentioned but taking into account that worm hole routing is not supported and the lack of existing commercial solutions, this option is not attractive. This was confirmed by a review performed by NASA

Comparison of Communication Architectures for Spacecraft Modular Avionics Systems

- WG members to send comments to PhA, deadline end November.

SpW backplanes

Sub-working group Facilitator: S. Parkes

- Architectures to be studied first
- Recommended structures to build backplane to be defined
- SpaceFibre to be considered as well

SpW PnP

Sub-working group Facilitator: Rakow

- Requirements to be provided by NASA

CCSDS SOIS Services mapping

- Depending on CCSDS GB and RB availability

Redundancy issues

- G. Rakow to provide reliability assessment justifying the doubling of cables and transceivers

Next meetings

SpW-WG-Mtg-8 : 17th and 18th of January 2007 (TBC), at Estec

First International SpaceWire Conference : 17th, 18th and 19th of September 2007
Dundee (UK)