

Minutes

T11.3 FC-FS-6 ad hoc work group regular meeting 05 February 2019 – 04:00PM – 06:00PM CST Fort Worth, TX, USA

The FC-FS-6 ad hoc work group of the Fibre Channel Protocol (T11.3) Task Group held a regular meeting at Fort Worth, Texas on 05 February 2020, hosted by DCS. Attendance was 14 people from 10 organizations and is tabulated at the end of this document.

Minutes were taken by Patty Driever (IBM) (pgd@us.ibm.com). Corrections may be requested either before the subsequent meeting by email to pgd@us.ibm.com or at the subsequent meeting in person.

1 Opening remarks & Introductions

Chairperson Dave Peterson (Broadcom) opened the regular meeting Wednesday, 05 February 2020 at 10:15 AM CST. He thanked our host organization, DCS, and led a round of introductions.

1.1 Attendance and Membership

The chair explained that attendance is recorded electronically at www.incits.org, and explained the procedure. Attendance at this meeting does not count toward attendance at the plenaries of T11 and its task groups (i.e., being here will not get you out or keep you out of membership jeopardy). The chair stated that all persons present are considered members of this meeting and may vote on questions, limited to one vote per company present. He advised that although T11 does not limit participation in the activities of its work groups to representatives of T11 member organizations, it requires nonmembers to identify themselves as such. Nonmembers that expect they may participate in the activities of T11 regularly were encouraged to become members.

1.2 Patents

The chair indicated that among the rules and policies under which this working group operates are the ANSI intellectual property policies as specified in pages 1-3 of http://www.incits.org/pat_slides.pdf. He displayed these pages without comment or explanation, and directed that questions about the policy should be referred to the questioner's legal counsel or the ANSI General Counsel.

1.3 Antitrust

The chair indicated that among the rules and policies under which this working group operates are the INCITS Antitrust Guidelines. Any member of the meeting is responsible for objecting if he believes discussion in the meeting violates those guidelines. As examples, there should never be discussion of the following topics at any INCITS or INCITS subgroup meeting:

- Any company's prices or pricing policies;
- Specific R&D, sales and marketing plans;
- Any company's confidential product, product development or production strategies;
- Whether certain suppliers or customers will be served;
- Prices paid to input sources; or
- Complaints about individual firms or other actions that might tend to hinder a competitor in any market.

If such discussion is not immediately terminated, it is the chairperson's responsibility to terminate the meeting. The INCITS Antitrust Guidelines are available at <http://www.incits.org/inatrust.htm>.

2 Approval of Agenda

An agenda for the FC-FS-6 ad hoc work group regular meeting 05 February 2020 has been posted as T11-2020-00005-v000.

Jason Rusch (Viavi) moved and Roger Hathorn (IBM) seconded to accept T11-2020-00005-v000 as the agenda for this regular meeting. Approved unanimously.

3 Review of Past Business

3.1 Review of Minutes

Minutes for the FC-FS-6 ad hoc work group regular meeting 03 December 2019 have been posted as T11/2019-00352-v001.

Howard Johnson (Broadcom) moved and Roger Hathorn (IBM) seconded to accept T11/2019-00352-v001 as the minutes of the FC-FS-6 ad hoc work group meeting on 03 December 2019. Approved unanimously.

3.2 Review of Old Action Items

Action Items Carried Forward:

- 1908-01 Editor to incorporate 2019-00071-v004 into FC-FS-6. **(COMPLETE)**
- 1910-01 Editor to remove Annex J and any references to it from the next draft version of FC-FS-6. **(CARRY)** – there may be an issue in that it is referenced in an Editor's note in 2019-00071-v004.
- 1910-02 Dave Peterson to work with Howard Johnson on best means to craft diagrams to ensure they can be incorporated by the editor using FrameMaker **(CARRY)**

New Action Items Identified Last Meeting:

- 1912-01 Editor to incorporate T11-2019-000215-v004 into FC-FS-6 **(COMPLETE)**

4 Old Business

4.1 *A Beautiful Day in the Neighborhood (2020-00011-v000 and 2020-00012-v000) Howard Johnson (Broadcom)*

Howard reviewed figure diagrams of when signals (warning and alarm) are sent (and not). An implementation decides how it figures out that such a threshold has been reached/exceeded. Is it instantaneous at the interval time? Or sometime during the interval? Or reached/exceeded on average for the interval? It's totally up to the

implementation. The text that accompanies the pictures needs to cover this flexibility of what signals may or may not be sent in the cases depicted, depending on implementation.

5.0 New Business

5.1 FC Link Aggregation (2020-00035-v000) Bharadwaj (Cisco)

Harsha said the objective is to standardize a way to do this link aggregation, as multiple vendors (switch vendors) do this function today in proprietary ways. Various use cases are to do load balancing, resiliency (avoiding host I/O stall on a link flap/bounce), and to provide greater bandwidth for handling large fabric overheads. Logical aggregation is preferred over physical aggregation, as it can be done with existing hardware, can aggregate links not in physical proximity to each other, and can group as many links as you want together. Interoperability of this solution provides means for delivering the benefits of link agg to both switch-to-target and switch-to-host connections. Each LAG gets it's own FCID. Some technical issues (such as how zoning works in this paradigm) need to be worked out.

There would be some compatibility checks to ensure the x number of links meet criteria to form together into a group. Beyond this Harsha presented a list of work items that would need to be pursued for this. We might start with defining a static agg group, and later move to dynamic. Basically Harsha showed 4 possible configurations we could support, but we'll likely start with Case 1 and go from there.

6 Unscheduled Business

7 Project Schedule

| Milestone | Expected Date |
|----------------------|---------------|
| Last technical input | TBD |
| T11 Letter Ballot | TBD |
| Forward to INCITS | TBD |

Once the physical layer work progresses, we will have a better sense of how to set realistic dates for this.

8 Review of Action Items

Action Items Carried Forward:

1910-01 Editor to remove Annex J and any references to it from the next draft version of FC-FS-6. **(CARRY)** – there may be an issue in that it is referenced in an Editor's note in 2019-00071-v004.

1910-02 Dave Peterson to work with Howard Johnson on best means to craft diagrams to ensure they can be incorporated by the editor using FrameMaker (**CARRY**)

New Action Items:

None

9 Meeting Schedule

9.1 Next Plenary Week

Request 3 hours for FC-FS-6 at the T11 plenary week in Deerfield Beach, Florida 06 April – 09 April 2020.

10 Adjournment

Howard Johnson (Broadcom) moved and Alan Rajapa (Dell) seconded to adjourn. Approved unanimously.

The regular meeting was adjourned at 11:27 AM CST on 05 February 2020.

11 Attendance

| Organization | Representative | T11.3 Member Company |
|-----------------------------|------------------|----------------------|
| BROADCOM LIMITED | David Baldwin | Y |
| BROADCOM LIMITED | David Peterson | Y |
| BROADCOM LIMITED | Howard Johnson | Y |
| CISCO SYSTEMS INC | Mike Blair | Y |
| CISCO SYSTEMS INC | Harsha Bharadwaj | Y |
| DELL INC | Alan Rajapa | Y |
| FUJITSU AMERICA INC | Mark Malcolm | Y |
| HEWLETT PACKARD ENTERPRISE | Barry Maskas | Y |
| IBM | Patty Driever | Y |
| IBM | Roger Hathorn | Y |
| MARVELL SEMICONDUCTOR | Craig W. Carlson | Y |
| NETAPP INC | Frederick Knight | Y |
| TELEDYNE LECROY CORPORATION | Henry Poelstra | N |
| VIAVI SOLUTIONS | Jason Rusch | Y |