Draft Minutes

T11.3 FC-FS Working Group Meeting

December 05, 2000 - Austin, TX 9 AM - 5 PM

A joint ad hoc meeting of working groups FC-AL-3 and FC-FS of NCITS Technical Committee T11 Task Group T11.3 was held at Austin, Texas on December 5, 2000, in conjunction with the plenary meeting of the ANSI/NCITS T11 Technical Committee. Attendance at this meeting is tabulated at the end of this document.

1. Opening remarks and introductions: John Scheible

Facilitator John Scheible opened the meeting at 9:01 AM. He thanked our host company, Crossroads, for the facilities. He led a round of introductions.

2. Call for changes to minutes

2.1 FS report to T11.3 - 10/03/00 00-605v0 John Scheible

Accepted with no changes

2.2 FC-FS minutes - 10/03/00 00-625v0 Bob Nixon

Accepted with no changes.

3. Approval of agenda: 00-701v1 John Scheible

Accepted with no changes.

4. Review of old AL-3/FS action items: 00-701v0 John Scheible

4.1 AL-3 Action Items

4.1.1 Horst Truestedt will write a proposal to show how a second FL_Port or a new FL_Port will be detected so that an F/NL_Port can retire from its fabric functions.
CARRYOVER.

4.1.2 Upload Horst Truestedt proposal presented at the meeting (When an FL_Port detected, how does F/NL Port retire?) .
CARRYOVER.

4.1.3 Bill Martin to write an amendment to FC-AL-2 proposing ERRINIT behavior be deprecated.
(OPENED 10/00) CARRYOVER

4.2 FS Action Items

4.2.1 Mike Dorsett to provide clarifications to Class 6 behavior to Jim Nelson.
NEW (9/00) CARRYOVER

4.2.2 Bob Nixon to post and provide **00-597v1** to document the revised slow wait proposal.
(OPENED 10/00) CLOSED by 00-597v1

4.2.3 Gary Warden to post a more detailed discussion of fractional bandwidth for classes 2 and 3.
(OPENED 10/00) CLOSED by 00-679v0.

4.2.4 Bob Kembel to post an email to detail remaining issues with persistence of registrations.
(OPENED 10/00) CLOSED

5. Old AL-3/FS Business (none)

6. Scheduled New Business AL-3/FS

6.1 Update on FC-FS Jim Nelson

The next revision is awaiting potentially large changes to be presented today. Carryover work from prior meetings is estimated at only about two hours.

6.2 Speed Negotiation Proposal 00/544v8 Carl Zeitler

Carl presented the latest revision of the speed negotiation specification. He explained in overview the main areas of change since the previous FC-FS meeting.

It was moved and seconded to incorporate Speed Negotiation as specified in 00-544v8 into FC-FS. Accepted with no objections.

6.3 Class 4 fractional bandwidth 00-650v0 Gary Stephens

This document summarize the status (actually, the lack thereof) of class 4 implementation. The premise is that there is no implementation, therefore, there is no impact of making radical changes.

It then proposes that there are real problems (eg, streaming video) that need a fractional bandwidth approach to resolve. Classes 2 and 3 give no bandwidth guarantees. Class 1 occupies the whole bandwidth, so can not be predictably shared.

The proposal is that the switch “demands” frames by sending circuit-specific vc-readies, as opposed to current design, where the Nx-Port “pushes” any queued frames to absorb any available credits. Vc-readies don’t accumulate indefinitely, if you don’t use them, they reach an upper limit and additional ones are ignored. This assures that you can’t burst significantly in excess of your guarantee. This paces the insertion of the frames. The fabric is responsible for timely end-to-end flow.

Examples were given: A video server. An end-to-end copy capable device to a backup device. Direct video from an end-to-end copy capable storage device.

The next presentation purports to have corrected the presentation of Class 4. A class 4 implementation would resolve the above, if there were any Class 4 implementation.

Another approach is to embed the capability in classes 2 and 3. This proposal uses some of the values of the routing bits in the frame header to carry fractional bandwidth information. 3 R-field code points are needed. Note, Class 2 plus these code points is feature-equivalent to Class 4. Class 3 was added because it is very widely used in today's FC4 protocols. Still need the Quality of Service Facilitator and an ELS or two. Also need to add a port login flag for fractional support, and may need to use the Class 4 field in the port login as a class-independent fractional bandwidth field.

Class 4 can be retained or discarded.

Discussion:

Jim Coomes stated a preference for Class 4. He saw no likelihood of salvaging class 2/3 work, since hardware would have to turn. Given that, he would rather be able to advertise "I have a new class of service in this new hardware".

Mike O'Donnell asked what would be a practical limit on number of circuits per port. He said 254 (a one-byte circuit id) was impractically large for switches. Gary suggested 10 based on 10MB (MB is megabytes) per circuit for conventional video. 256 would be not nearly enough for audio, but there isn't much perception of need for unmultiplexed streamed audio. Bob Snively noted an MPEG channel is 3 MB so 30 circuits would fit. Another note, an HDTV channel needs 140MB, so a dedicated channel would be needed. Mike said it would introduce latency. Agreed. Bob said this would also be true of class 4. Also agreed.

Bob Kembel pointed out that guaranteed bandwidth on an unreliable channel (Class 3) was sort of an oxymoron. Bob Snively pointed out (later) that streaming video would be delighted with cheap (unacknowledged) fractional bandwidth...they can deal with occasional lost frames.

Gary Warden posed that QOS in Class 2/3 had a marketing advantage over a new Class 4. Others felt the opposite.

There was some discussion of whether there were any technical advantages or disadvantages versus Class 4. Risk to stable implementations of Classes 2 and 3 was claimed. Supporters claimed the risk was no different than introducing class 4.

Supporters admitted they were not enthusiastic to dispose of class 4, but thought this might be a quicker and maybe more marketable route to the feature.

ACTION: Gary Stephens will organize a study group to investigate the impact of fractional bandwidth in classes 2 and 3, particularly on the switches.

6.4 Class 4 changes 00-679v0 Gary Stephens

This document attempts to resolve the difficulties raised at the last meeting and prior with the presentation of class 4. He says this is only relevant if class 4 is retained.

It was moved and seconded to incorporate "Class 4 Changes" as specified in 00-679v0 into FS. Accepted with no objections.

6.5 Scan Remote Loop ELS 00-672v0 George Penokie

George presented an ELS proposal in behalf of FC-MI. The ELS is described as "prodding" a switch to poll membership of attached loops and generate the appropriate RSCNs. It is intended to support discovery of device removal prior to application failure.

There was some discussion of exactly which devices would be checked / reported (at least part of the issue was whether the current wording required reporting private device loss). A satisfactory wording change based on fabric login was devised.

It was moved and seconded to incorporate "Scan Remote Loop ELS" as specified in 00-672v0 and amended here into FC-FS. Accepted without objection.

ACTION: George Penokie to provide revised text for "Scan Remote Loop ELS" based on 00-672v0 in a format acceptable to the editor.

6.6 Set Bit Error Reporting Parms 00-684v0 Mike O'Donnell

Specification is 00-684v0, presentation is 00-685v0.

This ELS allows in-band management of the parameters that control port bit error rate information carried in RLIR.

A failing reply carries the responder's capabilities, to support a revised request.

The ELS can affect the destination port or all ports on a destination switch.

Minor changes in the names were requested and devised.

It was moved and seconded to incorporate the "Set Bit Error Reporting Parameters" ELS as specified in 00-684v0 and amended here into FC-FS. Accepted without objection.

ACTION: Mike ODonnell to provide revised text for "Set Bit Error Reporting Parameters" based on 00-684v0 in a format acceptable to the editor.

6.7 Report port speed capabilities 00-686v0 Mike O'Donnell

Specification is 00-686v0, presentation is 00-687v0.

This ELS allows in-band determination of the speed capability and operating speed of a remote port or a switch. For a port, it identifies the possible and current speeds of the port. For a switch, a list is returned representing each port.

Minor changes had been requested when this was presented to MJS. Additional wording clarifications were requested here. Also, a value for "unknown" speed was requested.

It was moved and seconded to incorporate the "Report port speed capabilities" ELS as specified in 00-686v0 and amended in MJS and here into FC-FS. Accepted without objection.

ACTION: Mike O'Donnell to provide revised text for "Report port speed capabilities" based on 00-686v0 in a format acceptable to the editor.

6.8 Methods of Authentication 00-699v0 Roger Cummings

Roger spoke from his new position as chair of the security workgroup in SNIA. He introduced SNIA's perception of an immediate need for authentication services. GS-3 already defines a means for authentication. But it is not implemented yet, and it only protects the CT-based space. SNIA sees the need to authenticate ANY traffic for ANY FC4 in common.

Proposal: carry the same hash/SAID as CT, in an ELS associated with a sequence. Send a sequence with a tag indicating it is authenticated. Buffer the sequence until it is complete and the authentication ELS has been found. He asked us to think about it especially in terms of the possibility of hardware implementation.

An alternate approach of reviving the security header was suggested. Roger will review this as well. 36-40 words of header seemed sufficient to those discussing this approach.

7. Unscheduled new AL-3/FS business

7.1 AL-2 Starvation Problem 00-714v0 Jim Coomes

An AL-2 problem was discovered. The simplest scenario requires only two ports, and can come up any time the source port is fast and the destination port is lower priority and full. It deadlocks until LIP. A more generic problem in AL was treated by the ARB_PEND flag, but there is still a window. Proposed solution lets a port set ARB_PEND without having first sent its own ARB. No-one can remember why the dependency on sending its own ARB was specified.

It was moved and seconded that the solution to the AL-2 Starvation Problem as described in 00-714v0 be restated as an amendment to AL-2. Approved without objection.

ACTION: Bill Martin and Jim Coomes to prepare a proposed amendment to AL-2 to resolve the starvation problem as described in 00-714v0.

8. Discussion: What is the FS schedule?

John Scheible proposed that we recommend to T11.3 to forward to T11 for “further processing” in February. This would require a final document two weeks before the next meeting. There were no objections.

9. Review of FS action items (see minutes)

9.1 AL-3

9.1.1 Horst Truestedt will write a proposal to show how a second FL_Port or a new FL_Port will be detected so that an F/NL_Port can retire from its fabric functions.

CARRYOVER.

9.1.2 Upload Horst Truestedt proposal presented at the meeting (When an FL_Port detected, how does F/NL Port retire?) .

CARRYOVER.

9.1.3 Bill Martin to write an amendment to FC-AL-2 proposing ERRINIT behavior be deprecated.

(OPENED 10/00) CARRYOVER

9.2 FS

9.2.1 Mike Dorsett to provide clarifications to Class 6 behavior to Jim Nelson.
NEW (9/00) CARRYOVER

9.2.2 Gary Stephens will organize a study group to investigate the impact of fractional bandwidth in classes 2 and 3, particularly on the switches.
(OPENED 12/5/00)

9.2.3 George Penokie to provide revised text for "Scan Remote Loop ELS" based on 00-672v0 in a format acceptable to the editor.
(OPENED 12/5/00) CLOSED during meeting.

9.2.4 Mike ODonnell to provide revised text for "Set Bit Error Reporting Parameters" based on 00-684v0 in a format acceptable to the editor
(OPENED 12/5/00)

9.2.5 Mike O'Donnell to provide revised text for "Report port speed capabilities" based on 00-686v0 in a format acceptable to the editor
(OPENED 12/5/00)

9.2.6 Bill Martin and Jim Coomes to prepare a proposed amendment to FC-AL-2 to resolve the starvation problem as described in 00-714v0.
(OPENED 12/5/00)

9.3 Changes to the FC-FS specification approved at this meeting

9.3.1 Speed Negotiation as specified in 00-544v8.

9.3.2 Class 4 Changes as specified in 00-679v0.

9.3.3 "Scan Remote Loop ELS" as specified in 00-672v0 and amended at this meeting.

9.3.4 "Set Bit Error Reporting Parameters" ELS as specified in 00-684v0 and amended at this meeting.

9.3.5 "Report port speed capabilities" ELS as specified in 00-686v0 and amended at this meeting.

9.4 Amendments to the FC-AL-2 specification approved at this meeting

9.4.1 Solution to the Starvation Problem as described in 00-714v0 .

10. Future meeting plans

No time will be requested at the January T10 plenary.

4 hours will be requested in the T11 February plenary, including 3 hours for the Fractional Bandwidth study group.

11. Adjournment (FS WG)

The meeting was adjourned at 12:25 PM.

T11 FC-FS Working Group Meeting Attendance - 12/05/00

Company Represented	Last Name	First Name	Email
Adaptec	Moore	Dennis	dmoore@ix.netcom.com
Amdahl Technology	Greiner	Mark	mark-greiner@amdahl.com
Boeing	Nast	Douglas	douglas.p.nast@boeing.com
Boeing	Wilson	Steven H.	Steven.h.wilson@boeing.com
Brocade	Snively	Robert	rsnively@brocade.com
CMD Technology	Turenne	Adrienne	turenne@cmd.com
Connectivity Solutions	Kembel	Robert W.	kembel@compuserve.com
Crossroads	Anderson	Dexter	danderson@crossroads.com
Crossroads Systems	Wanamaker	Neil	ntw@crossroads.com
DDC	Glass	Mike	glass@ddc-web.com
DDC	Hummel	Rich	hummel@ddc-web.com
DDC	Lurz	Walt	lurz@ilcddc.com
Emulex	Nixon	Bob	bob.nixon@emulex.com
FSI	Weber	Ralph	roweber@acm.org
Fujitsu	Fitzpatrick	Mike	mfitzpatrick@fcpa.fujitsu.com
Gadzoox	Martin	William R.	bmartin@gadzoox.com
General Dynamics	Pedersen	Robert K.	Robert.K.Pedersen@gd-is.com
IBM	Dugan	Robert	dugan@us.ibm.com
IBM	Penokie	George	gop@us.ibm.com
IBM	Scheible	John	jpscheible@aol.com
Infocon	Murphy	Thomas	thomas.murphy@infocon.con
Inrange Technology	Koellner	Greg	gregory.koeller@inrange.com
Interphase	Seto	Pak	pseto@iphase.com
JNI	Stuber	Craig	cstuber@jni.com
Lockheed Martin	Allison	Rick	rick.h.allison@lmco.com
LSI Logic	Lohmeyer	John	lohmeyer@t10.org
LSI Logic	Miquelon	Mark	mark.miquelon@lsil.com
LSI Logic	Ridgeway	Curtis A.	curtr@lsil.com
LSI Logic	Vijayaraghavan	Divya	Divyav@lsil.com
LSI Logic	Weber	David	david.weber@lsil.com
McData	Kipp	Scott	skipp@mcdata.com
McData	O'Donnell	Michael	modonnell@mcdata.com
Northrop Grumman	Nelson	James	nelsoja5@mail.northgrum.com
Qlogic	George	Bill	bill.george@qlogic.com
Seagate	Coomes	James	jim_coomes@seagate.com
Seagate	Suhler	Paul	Paul_A_Suhler@seagate.com
Solution Technology	Crawford	Robert	Robert@lanlab.net
SRB Consulting	Warden	Gary	gwarden@srbconsulting.com
Sun Microsystems	Moe	Ken	kenneth.moe@sun.com
Systran	Cunningham	James	jcunningham@systran.com
Troika Networks	Ybarrra	Danny	dybarra@troikanetworks.com
Veritas	Cummings	Roger	roger.commings@veritas.com
Vixel	Hirata	Ken	khirata@vixel.com
Vixel	Lewis	Dave	dlewis@vixel.com
Zeitler	Zeitler	Carl	carl.zeitler@prodigy.net