

# Draft Minutes

## T11.3 FC-BB-5 ad hoc work group regular meeting

### 8 October 2008 - 9:00 AM to 4:30 PM EDT

### Providence RI

The FC-BB-5 ad hoc work group of the Fibre Channel Protocol (T11.3) Task Group held a regular meeting at Providence RI on 8 October 2008, hosted by EMC, especially Wazyne Adams and David Black. Attendance was 40 people from 23 organizations and is tabulated at the end of this document.

Minutes were taken by Bob Nixon (Emulex) (bob.nixon@emulex.com). Please report any corrections by email to the T11.3 reflector at T11\_3@mail.T11.org.

## 1 Opening remarks

### 1.1 Introductions

Claudio DeSanti (Cisco) opened the regular meeting Wednesday, 8 October 2008 at 9:07 AM EDT. He thanked our host organization, EMC, especially Wazyne Adams and David Black, and led a round of introductions.

## 2 Meeting Policy

### 2.1 Attendance and Membership

Claudio DeSanti (Cisco) explained that attendance is recorded electronically at [www.t11.org/att](http://www.t11.org/att), 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).

Claudio DeSanti (Cisco) 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, T11 encourages organizations that are regularly represented at T11 work group activities to become members of T11.

### 2.2 Patents

Claudio DeSanti (Cisco) 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](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.

### 2.3 Antitrust

Claudio DeSanti (Cisco) 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>

### 3 Administrivia

#### 3.1 Approval of Agenda

An agenda for the FC-BB-5 ad hoc work group regular meeting 8 October 2008 has been posted as T11/08-610v0.

Discussion of "Method of Publishing" an FCoE MIB was requested by Bob Snively (Brocade).

Discussion of "Concerns about FCoE MIB" (T11/08-570v0) was requested by Bob Snively (Brocade).

***Landon Noll (Cisco) moved and Dave Peterson (Brocade) seconded to accept T11/08-610v0 with the changes noted above as the agenda for this regular meeting. Approved unanimously.***

#### 3.2 Review of Minutes

Minutes for the FC-BB-5 ad hoc work group regular meeting 7 August 2008 have been posted as T11/08-508v0.

Minutes for the FC-BB-5 ad hoc work group interim meeting 25 September 2008 have been posted as T11/08-548v0.

In T11/08-t was requested to correct "Service" to Server" in the elaboration of "SPMA".

***Dave Peterson (Brocade) moved and Bob Nixon (Emulex) seconded to accept T11/08-508v0 as the minutes of the FC-BB-5 ad hoc work group meeting on 7 August 2008 and to accept T11/08-548v0 with the changes noted above as the minutes of the FC-BB-5 ad hoc work group meeting on 25 September 2008. Approved unanimously.***

**ACTION Bob Nixon (Emulex) to publish T11/08-548v1 reflecting T11/08-548v0 and the agreements at the FC-BB-5 ad hoc work group regular meeting 8 October 2008.**

### 4 Review of Old Action Items

080508-1/A5 Dave Peterson to propose an introductory advisory that data structures in this standard are displayed in Fibre Channel (i.e., "big-endian") format, while specifications originating in the Ethernet community may display data structures in Ethernet (i.e., "little-endian") format.  
(Completed)

080604-4 FC-BB-5 editor to incorporate the protocol described in T11/08-263v1 into FC-BB-5.  
(Completed)

- 080604-7 FC-BB-5 editor to add a sentence qualifying figure 28 to the effect that a lossless Ethernet bridging element, if present, may be connected to multiple lossless Ethernet MACs.  
(Completed)
- 080604-8 FC-BB-5 editor to add a requirement that the response to a FIP message use the same VLAN as the request.  
(Completed)
- 080604-11 FC-BB-5 editor to add text recommending the use of independent VLAN learning if separate VLANs are used to isolate Virtual Fabrics.  
(Completed)
- 080806-1 Bob Nixon to publish T11/08-250v3 reflecting T11/08-250v3 and the agreements at other work groups  
(Completed by posting of T11/08-250v3)
- 080806-2 FC-BB-5 editor to incorporate the FC-BB-5 changes proposed in T11/08-250v3 into FC-BB-5.  
(Completed)
- 080806-3 Joe Pelissier to revise T11/08-264v3 to reflect the agreements at the FC-BB-5 ad hoc work group regular meeting 6 August 2008.  
(Completed by posting of revised T11/08-264v3)
- 080806-4 Joe Pelissier to provide source for T11/08-264v3 to FC-BB-5 editor.  
(Completed by email)
- 080806-5 FC-BB-5 editor to incorporate T11/08-264v3 into FC-BB-5.  
(Completed)
- 080806-6 Roger Hathorn to define a mapping from Ethernet physical link statistics to at minimum some of the counters in the Link Status Block.  
(Carry)
- 080806-7 FC-BB-5 chair to schedule a full day meeting near Minneapolis MN on September 25.  
(Completed)
- 080925-1 Dave Peterson to provide the necessary specification text to assure the uniqueness of MAC addresses if multiple Virtual Fabrics share a single VLAN using Fabric Provided MAC Addresses.  
(Overtaken by events: in FC-BB-5 only a single Fabric TLV will be allowed for FPMA)
- 080925-2 Dave Peterson to publish T11/08-450v3 reflecting T11/08-450v2 and the agreements at the FC-BB-5 ad hoc work group interim meeting 25 September 2008.  
(Completed)
- 080925-3 FC-BB-5 editor to incorporate T11/08-450v3 into FC-BB-5.  
(Completed)

## **5 Old Business**

No old business was presented.

## 6 Scheduled Business

### 6.1 Status of dpANS FC-BB-5 T11/08-569v0 Peterson (Brocade)

A new draft has been posted that includes all proposals approved prior to this meeting.

### 6.2 FCoE VLAN Discovery T11/08-545v1 DeSanti (Cisco)

The presentation is repeated from the interim on September 25, 2008. It introduces an approach to automatically discover the VLANs, among potentially very many VLANs, that include one or more FCFs. This approach is based on a new FIP request that may be sent on any VLAN. FCFs would listen on all VLANs and reply with identification of all VLANs they support.

It was observed that there are configurations where existing methods of FCF discovery are sufficient. It was responded that there are also configurations for which existing means of FCF discovery are inefficient.

### 6.3 Using LLDP for VLAN Configuration T11/08-557v0 Ghanwani (Brocade)

The presentation offered another automated method of discovering the VLANs that include one or more FCFs. It is based on a new parameter in an IEEE LLDP (802.1AB) request.

It was observed that an LLDP approach relies on all edge switches being configured to “know” all FCoE-capable VLANs. This was understood, but it was countered that the work group has already recommended that edge switches be FCoE-aware for good security practice.

It was observed that the concept of the “edge switch” may be muddled by the existence of software edge switches (e.g., in hypervisors). This might affect the practicality of both this proposal and “good security practice”.

A straw poll was held on how to do VLAN discovery in FC-BB-5. The results were:

- option 1: by FIP only: 18
- option 2: by LLDP only: 4
- option 3: by neither FIP nor LLDP: 0
- option 4: by both FIP and LLDP: 7

The direction of the group will be to define only FIP-based VLAN discovery in FC-BB-5.

### 6.4 FIP VLAN Discovery T11/08-564v0 DeSanti (Cisco)

This proposal specifies text changes to FC-BB-5 to implement the FIP-based VLAN discovery method introduced in T11/08-545v1.

***Silvano Gai (Cisco) moved and Fred Knight (NetApp) seconded to incorporate T11/08-564v0 into FC-BB-5.***

In discussion, it was observed that the proposal has had a very short time for review. The two week rule was invoked.

***The motion was deferred.***

**ACTION FC-BB-5 Chair to reopen the motion from the FC-BB-5 ad hoc work group regular meeting 8 October 2008 “to incorporate T11/08-564v0 into FC-BB-5”.**

## 6.5 An Even Pithier FCoE Threat Model

T11/08-556v0

Black (EMC)

This presentation made a few refinements on a presentation (T11/08-53v0) given at the FC-BB-5 interim meeting 25 September 2008. It proposes a reasonable scope for the security methods that are necessary to specify in FC-BB-5. In overview, the goal is that an FCoE virtual link be no less secure than a native FC physical link.

It was observed that FC-SP can not be referenced as grounds for placing data integrity and data privacy threats out of scope for FIP frames. MACSec may be a possible substitute.

## 6.6 FCoE Security Recommendations

T11/08-588v0

Pelissier (Cisco)

It was agreed that the text in 1.4 item 1) needs clarification. It was advised that the same sentence needs clarification in two other places also.

It was requested to clarify that 1.4 item 2) is an alternative to 1.4 item 1) only for internal bridge ports. It is not an alternative to application of 1.4 item 1) to edge ports.

It was agreed to eliminate the "not" from 1.4 item 2) II) ii).

It was agreed that 1.4 item 4 should require independent learning for any VLAN carrying a Virtual Fabric from any other VLAN (whether or not it carries a Virtual Fabric).

***Joe Pelissier (Cisco) moved and Bob Nixon (Emulex) seconded to incorporate T11/08-588v1, reflecting T11/08-588v0 and the agreements at the FC-BB-5 ad hoc work group regular meeting 8 October 2008, into FC-BB-5. The motion passed unanimously.***

**ACTION Joe Pelissier to publish T11/08-588v1, reflecting T11/08-588v0 and the agreements at the FC-BB-5 ad hoc work group regular meeting 8 October 2008.**

**ACTION Joe Pelissier to provide source for T11/08-588v1 to FC-BB-5 editor.**

**ACTION FC-BB-5 editor to incorporate T11/08-588v1 into FC-BB-5.**

## 6.7 Increasing FCoE robustness using ACLs

T11/08-264v4

Pelissier (Cisco)

This is a revision of a presentation reviewed several times before, having achieved near unanimous tolerance. It has been adjusted to reflect a few recent improvements in more generic protection models and a few recently discovered errors in the older proposals.

***Joe Pelissier (Cisco) moved and David Black (EMC) seconded to replace the existing equivalent annex in FC-BB-5 with T11/08-264v5, reflecting T11/08-264v4 and the agreements at the FC-BB-5 ad hoc work group regular meeting 8 October 2008. The motion passed unanimously.***

**ACTION Joe Pelissier to publish T11/08-264v5 reflecting T11/08-264v4 and the agreements at the FC-BB-5 ad hoc work group regular meeting 8 October 2008.**

**ACTION Joe Pelissier to provide source for T11/08-264v5 to FC-BB-5 editor.**

**ACTION FC-BB-5 editor to incorporate T11/08-264v5 into FC-BB-5 to replace the existing equivalent annex.**

## 6.8 FIP Errors

T11/08-578v0

DeSanti (Cisco)

The presentation proposes that certain FIP errors relating to encapsulated ELSs may leave abandoned state changes. Some of these errors may be reported in an encapsulated LS\_RJT.

It was agreed to eliminate the error case for Class of Service not supported.

The presenter took advice not captured here toward specifying another reportable error case in his final document. He invited additional suggestions for reportable error cases.

Concern was expressed that relying on the encapsulated protocol to report a FIP error was a violation of protocol layering, which may lead to specific issues. One such issue is that it is not available for reporting possible FIP errors that do not relate to an encapsulated ELS Request. In response, the proposer invited proposals for alternative approaches.

The approach was not moved for incorporation today. It will be brought for approval in the next FC-LS-2 work group meeting, then brought back to FC-BB-5.

### **6.9 SB-3 Concerns with FCoE**

**T11/08-590v0**

**Carlson (IBM)**

The following were identified as perceived issues for support of FICON by of FCoE, with some background provided for each:

Lack of credible Class 2 support in intermediate bridges (it was agreed that this issue does not arise if both channel and controller are directly connected to the same FCF): It was countered that the lossless behavior of intermediate switches obviates that issue. It was responded that there are cases that lossless behavior alone does not guarantee Class 2 equivalent service (e.g., failure of an intermediate link).

Link Incident Reporting: Mapping of Ethernet Link Incidents to FC Link Incident Reports is necessary. There is an open action item to resolve an issue that includes this one.

An understanding is needed that the QSA ELS needs to function as in native FC. The presenter was advised that this is expected to transparently work, with respect to the Fabric-aware portion of the infrastructure (i.e., FCFs and attached native FC Switches). It will not be able to control or report changes in the presence of Ethernet bridges not connected directly to FCFs or Enodes. One member compared this to swapping a five-meter cable for a 10-meter cable. It was not clear this was an acceptable analogy to the presenter.

Point-to-Point configurations are not supported. This was considered to have been deferred to FC-BB-6.

The presenter was still concerned whether PAUSE was as robust as FC R\_RDY with BB\_Credit recovery.

The presenter was open to alternate solutions to the current native FC functions.

The presenter was also open to a careful specification of the expected limitations versus these issues.

### **6.10 Method of Publishing FCoE MIB**

**Snively (Brocade)**

### **6.11 Concerns about FCoE MIB**

**T11/08-570v0**

**Snively (Brocade)**

Deferred due to lack of time.

## 7 Unscheduled Business

## 8 Project Schedule

*Claudio DeSanti (Cisco) moved and Dave Peterson (Brocade) seconded to request T11.3 to request T11 to conduct a letter ballot on forwarding Revision 1.03 of FC-BB-5 (T11/08-569v1), Project 1871-D, to INCITS for further processing including public review. The motion passed with 11 Favoring, zero Opposing, one Abstaining.*

**ACTION** FC-BB-5 ad hoc work group chair to request T11 to conduct a letter ballot on forwarding Revision 1.03 of FC-BB-5 (T11/08-569v1), Project 1871-D, to INCITS for further processing including public review.

**ACTION** Dave Peterson to publish T11/08-569v1, reflecting T11/08-569v0 and the agreements at the FC-BB-5 ad hoc work group regular meeting 8 October 2008.

Milestone	Expected date
Last Technical Input	June 2008
T11 letter Ballot	October 2008
Forward to INCITS	TBD

## 9 Review of Action Items

- 080806-6 Roger Hathorn to define a mapping from Ethernet physical link statistics to at minimum some of the counters in the Link Status Block.  
(Carry)
- 081008-1 Bob Nixon (Emulex) to publish T11/08-548v1 reflecting T11/08-548v0 and the agreements at the FC-BB-5 ad hoc work group regular meeting 8 October 2008.
- 081008-2 FC-BB-5 Chair to reopen the motion from the FC-BB-5 ad hoc work group regular meeting 8 October 2008 "to incorporate T11/08-564v0 into FC-BB-5".
- 081008-3 Joe Pelissier to publish T11/08-588v1, reflecting T11/08-588v0 and the agreements at the FC-BB-5 ad hoc work group regular meeting 8 October 2008.
- 081008-4 Joe Pelissier to provide source for T11/08-588v1 to FC-BB-5 editor.
- 081008-5 FC-BB-5 editor to incorporate T11/08-588v1 into FC-BB-5.
- 081008-6 Joe Pelissier to publish T11/08-264v5 reflecting T11/08-264v4 and the agreements at the FC-BB-5 ad hoc work group regular meeting 8 October 2008.
- 081008-7 Joe Pelissier to provide source for T11/08-264v5 to FC-BB-5 editor.
- 081008-8 FC-BB-5 editor to incorporate T11/08-264v5 into FC-BB-5 to replace the existing equivalent annex.

- 081008-9 FC-BB-5 ad hoc work group chair to request T11 to conduct a letter ballot on forwarding Revision 1.03 of FC-BB-5 (T11/08-569v1), Project 1871-D, to INCITS for further processing including public review.
- 081008-10 Dave Peterson to publish T11/08-569v1, reflecting T11/08-569v0 and the agreements at the FC-BB-5 ad hoc work group regular meeting 8 October 2008.

## **10 Meeting Schedule**

### **10.1 Next Plenary Week**

Request 6 hours at the T11 plenary week hosted by Solution Technology in Cancun MX, 8-12 December 2008.

## **11 Adjournment**

***Bob Nixon (Emulex) moved and Lou Ricci (IBM) seconded to adjourn. Approved unanimously.***

The regular meeting was adjourned at 4:28 PM EDT on 8 October 2008.

## 12 Status of Open Proposals

Document Title	Number	Disposition	Author
Increasing FCoE robustness using ACLs	T11/08-264	Close. Version approved was T11/08-264v5.	Pelissier (Cisco)
FCoE: MIB Module Proposal	T11/08-427	Close. Version incorporated was T11/08-427v0. Review comments were captured in T11/08-570.	Pelissier (Cisco)
FIP Keep Alive	T11/08-434	Close. Version presented was T11/08-434v0. Accepted as revised in T11/08-471v0.	Ghanwani (Brocade)
Multiple Fabric support via FIP	T11/08-450	Close. Most recent version presented was T11/08-450v0. FC-BB-5 will pursue approach in T11/08-564v0. May revisit in FC-BB-6.	Peterson (Brocade)
Followup on FIP Keepalive	T11/08-471	Close. Accepted T11/08-471v0 as a clarification of T11/08-434v0.	Ghanwani (Brocade)
A Pith-y FCoE Threat Model	T11/08-532	Close. Replaced by T11/08-556	Noll (Cisco) Black (EMC)
FKA Optimization	T11/08-544	Carry. No final action was taken or requested on presentation of T11/08-544v0	DeSanti (Cisco)
FCoE VLAN Discovery	T11/08-545	Close. Replaced by T11/08-564. Final presented version was T11/08-545v0.	DeSanti (Cisco)
Addressing the Threat Model	T11/08-547	Close. Version presented was T11/08-547v0. Replaced by T11/08-588.	Pelissier (Cisco)
An Even Pithier FCoE Threat Model	T11/08-556	Close. Version presented was T11/08-556v0. Accepted as a statement of technical direction.	Noll (Cisco) Black (EMC)
FIP VLAN Discovery	T11/08-564	Carry. Version presented was T11/08-564v0. Motion to accept was made 8 October 2008, deferred to a later meeting	DeSanti (Cisco)
dpANS FC-BB-5	T11/08-569	Carry for further development. Current version was T11/08-569v0.	Peterson (Brocade)

Document Title	Number	Disposition	Author
Concerns about FCoE MIB	T11/08-570	Close. To be pursued as letter ballot comments. Version posted was T11/08-570v0.	Crandall (Brocade)
FCoE Security Recommendations	T11/08-588	Close. Version accepted was T11/08-588v1.	Pelissier (Cisco)
SB-3 Concerns with FCoE	T11/08-590	Close. Consider the issues during letter ballot. Version posted was T11/08-590v0	Carlson (IBM)

### 13 Attendance

Organization	Representative
BROCADE	Anoop Ghanwani
BROCADE	David Peterson
BROCADE	John Hufferd
BROCADE	Robert Snively
CIENA CORPORATION	Martin Hunt
CISCO SYSTEMS	Joe Pelissier
CISCO SYSTEMS	Fabrizio Corno
CISCO SYSTEMS	Landon Noll
CISCO SYSTEMS	Silvano Gai
CISCO SYSTEMS	Claudio DeSanti
DELL	Gaurav Chawla
EMC	David Black
EMC	Erik Smith
EMC	Stuart Miniman
EMC	Mugdha Kulkarni
EMULEX	Bob Nixon
EMULEX	Tuan Nguyen
EMULEX	William R. Martin
ENDL TEXAS	Ralph Weber
FINISAR	Paul Gentieu
FUJITSU COMPUTER PRODUCTS OF AMERICA	Mike Fitzpatrick
HEWLETT-PACKARD	Michael Callander
HEWLETT-PACKARD	Barry Maskas
HEWLETT PACKARD	Sean Fitzpatrick
HITACHI GLOBAL STORAGE TECHNOLOGIES	Dan Colegrove
IBM	Louis Ricci
IBM	Roger Hathorn
INTEL	Luke Chang
LSI CORP.	John Lohmeyer
MICROSOFT CORPORATION	Robert Griswold
NETAPP	Frederick Knight
PANDUIT CORPORATION	Robert Elliot
QLOGIC CORP	Alan Spalding

<b>Organization</b>	<b>Representative</b>
QLOGIC CORP.	Craig W. Carlson
SOLUTION TECHNOLOGY	Robert Kembel
SUN MICROSYSTEMS	Matt Gaffney
SUN MICROSYSTEMS	Roger Dickerson
TRUE FOCUS, INC	Horst Truedstedt
UNIVERSITY OF NEW HAMPSHIRE INTEROPERABILITY LAB	Mikkel Hagen
VMWARE, INC.	Scott Davis