

## **FC-BB-5 Ad Hoc Group Meeting Report Austin, TX, 6<sup>th</sup> February 2008 (08-111v1)**

### **1. Introductions**

The FC-BB-5 Ad Hoc group met on 6<sup>th</sup> February, 2008 in Austin, TX. The meeting was facilitated by Claudio DeSanti (Cisco) and started at 9:06am.

Claudio reminded the meeting of the general T11 membership requirements.

Claudio reviewed the INCITS anti-trust and patent policy guidelines under which the group operates and reminded attendees that patents are discussed only in the T11.3 and T11 plenaries.

Attendance (electronic): 52 representatives from 24 companies as shown in Annex 1.

The agenda (08-047v0) was reviewed, amended and approved.

The deferred contributions from the December 2007 meeting: 07-692, 07-714 and 07-688 were all superseded and therefore not presented.

The minutes of the FC-BB-5 meeting held on 5-6<sup>th</sup> December, 2007 in Lake Mary, FL (07-768v0) were reviewed and approved. Graham Copley moved, Bob Snively seconded: approved.

Bob Snively (T11 chair) made an announcement concerning a new INCITS policy concerning the control of access to documents. This new policy is something of a surprise and creates three categories of membership and dependent privileges namely, Public, Friends of the Committee and Member Organizations. The initial position of the T11 leadership is to resist this proposal since our preference is to allow public access in order to encourage early review and thus mitigate against high numbers of comments arising unnecessarily during letter ballot process. David Black (EMC) indicated that such a policy would upset the working relationship with IETF.

### **2. Old Action Items**

There were no action items of a technical nature.

### **3. Scheduled Business**

#### **3.1 Common Addressing Structure**

Multi-company contribution **08-038v2** (Brocade et al) was presented by John Hufferd (Brocade), and proposes a common addressing structure to resolve the technical debate surrounding the two approaches discussed at length at the December 2007 meeting,

namely: FPMA (for fabric-provided MAC addresses, also known as ‘mapped MAC addresses’ and also known as ‘network-provided MAC addresses’) and SPMA (for ‘server-provided MAC addresses’). Given that both approaches have value in the industry and therefore both should be supported, the contribution proposes a new “FCoE Initialization Protocol (FIP)” which embraces the Discovery and Login phases. In order to guarantee independence between FCoE data plane frames and the FIP, a new Ethertype is required. This avoids the need for deep packet inspection and allows for easy routing of FIP packets to the control plane (of FCF or Ethernet switch). The contribution explains how the discovery (DISC) and login (LOGI) procedures function in relation to the data transfer phase. This proposal results in the decoupling of the FCoE frame format from that of the FIP frame format. Various aspects of the proposal were discussed and it was made clear that this is a high-level proposal to set direction going forward and that a reasonable level of confidence in the soundness of the approach has been achieved. The major technical issue of concern relates to the behaviour of ACLs and MAC address handling, however, these and other technical issues are to be treated as a work in progress.

The following three-statement **motion** was made:

- a) To accept that FC-BB-5 define both Fabric Provided and Server Provided MAC Addresses, without mandating support for either one of them, through the unified FCoE Initialization Protocol (FIP) described at high level in this document.
- b) To accept that the FIP protocol use a different Ethertype than FCoE frames.
- c) To accept that FCoE frames have the FCoE frame format specified in T11/07-479v0 regardless of the addressing scheme used

Moved: John Hufferd (Brocade)

Seconded: Silvano Gai (Nuova Systems)

Vote: 21/1/0 motion carried.

### **3.2 Address Assignment Mechanism**

Contribution **08-039v0** (Cisco, Nuova Systems and Brocade) presents information concerning the address assignment mechanism. It was noted that the name change (from network-provided to fabric-provided) was strictly semantics and entails no technical change. This contribution provided further details in support of the high-level proposal in 08-038v2, in particular, on the frame format and field descriptions. The contribution is to be treated as a work in progress.

Discussion points:

There was general discussion on the many technicalities relating to the exact detailed behaviour required which still have to be worked out. The following is not intended to be an exhaustive list of technical issues:

- o behaviour of FCFs and HBAs
- o uncertainty regarding SPMA since burned-in addressing is not actually a requirement.

- o concern regarding the mixing of control plane and data plane frames during Discovery and the need to ensure that the various cases are fully understood and that the FCF functionality is fully determined
- o concern, in a general sense, regarding the behaviour of the various network scenarios including multiple fabrics, for example, the case of an HBA supporting both addressing modes
- o impact of operational (e.g., provisioning) errors and solution robustness
- o examination of the capabilities in the various exchanges and functionalities supported for: FDISC/FLOGI LS\_ACC/LOGO, FIP Format and FIP Descriptors, Solicitation from ENode and Advertisement.
- o identification of protocol violations and error recovery/exchanges.
- o request/response messages must be refined.

It was understood that all these are for further analysis and resolution.

### **3.3 FCoE-aware Ethernet Switches**

Contribution **08-079** (Nuova Systems) explores the functional requirements for FCoE-aware Ethernet transit switches in the context of extending Ethernet switch functionality beyond classical IEEE 802.1 and 802.3. FIP snooping is an additional functional requirement to be defined and details of the mechanism are examined and examples given. The contribution makes a 'Call to action' for FC-BB-5 to take up considerations for Transit Ethernet Switches.

Discussion points:

- o analysis of threat models and security requirements
- o analysis of network scenarios, e.g., direct pt-pt connection with or without a fabric
- o advanced topologies

Contributions are invited.

### **3.4 Discussion of rationale for FLOGI in FIP**

Contribution **08-083v0** (Nuova Systems) presented information on considerations for putting FDISC, FLOGI and LOGO in the FIP frames and the pros and cons of doing so, vs in FCoE.

### **3.5 FCoE: Unified ACL Theory**

Contribution **08-058** (Cisco and Brocade) proposes a unified ACL theory for FCoE with the intention that the security of FCoE be equivalent to that of FC today. It is undesirable to force a change in administration of ACLs. Four ACLs are examined in detail and a unified FCoE ACL shown. The contribution goes on to examine static and dynamic ACL creation and provides examples for SPMA and dynamic ACL population, and FPMA and static ACL population. Finally, a set of recommendations are proposed for describing ACLs in an informative Annex in FC-BB-5.

Discussion points:

- o impact of virtualization (hypervisor); correlation

### **3.6 FCoE: Checking Rules prevent Corruption**

Contribution **08-055** (Brocade) describes a set of Rules that should be included in robust installations and can be used to prevent the administrative errors described in T11/07-558v0, entitled “FCoE: Fabric Crosstalk”. Scenarios 1, 2 and 3 (as seen in T11/07-558v0) plus additional scenarios are probed to examine some additional effects of duplicate MAC addresses including: when the invalid LAN interconnect is created, what FCoE connections are allowed, etc. The contribution provides extensive further analysis (see backup slides) of fault scenarios. The intention is for the FC-BB-5 membership to independently pursue their own analyses and generate contributions as necessary.

Discussion centered on the issue of MAC addressing in a general sense, i.e., there is a need to do further analysis to identify potential scenarios where MAC address duplication can occur and prevention thereof. It was agreed that this issue is under study by all members of FC-BB-5.

### **4. Unscheduled Business**

None.

### **5. Action Items**

A1: Further general analysis of MAC address duplication scenarios and refinement of the prevention rules as laid out in 08-055: all.

A2: R. Snively to send out an email to the membership regarding duplicated MAC address for comment: all.

A3: R. Snively (for Brocade) and Claudio DeSanti (for Cisco) to verify ‘donation’ of two Ethertypes for, respectively, FIP and FCoE.

### **6. Work Plan**

Progress FCoE work. No LB in foreseeable future.

must progress on two fronts:

Work on MAC address issues.

Consolidation of what has been agreed so far.

Interim is not recommended.

Next meeting aim for 6 hours.

Target date: June 2008.

### **7. Next Meetings**

The next T11 meeting will be in New Orleans, LA, 16<sup>th</sup> & 17<sup>th</sup> April, 2008.

## 8. Adjournment

Meeting adjourned at 5:16pm.

### Annex 1

<b>Company</b>	<b>Attendee</b>
BLADE NETWORK TECHNOLOGIES	Tienwei (Tim) Chao
BROADCOM	Pat Thaler
BROADCOM	Uri Elzur
BROADCOM CORP.	Andrew Li
BROCADE	Anoop Ghanwani
BROCADE	David Peterson
BROCADE	Ezio Valdevit
BROCADE	John Hufferd
BROCADE	Robert Snively
BROCADE	Scott Kipp
BROCADE	Steven L. Wilson
CIENA CORPORATION	Martin Hunt
CISCO	Joe Pelissier
CISCO SYSTEMS	Bill Lulofs
CISCO SYSTEMS	Fabrizio Corno
CISCO SYSTEMS	Landon Noll
CISCO SYSTEMS, INC.	Chris Carter
CISCO SYSTEMS, INC.	Claudio DeSanti
EMC	David Black
EMC	Erik Smith
EMC	Stuart Miniman
EMULEX	Bob Nixon
EMULEX	Parag Bhide
EMULEX	William R. Martin
ENDL TEXAS	Ralph Weber
HEWLETT PACKARD	Don Fraser
HEWLETT PACKARD	Mike Krause
IBM	Renato Recio
IBM	Roger Hathorn
IBM	Scott Carlson
IBM CORP.	Steve Klein
INTEL CORPORATION	Gary Tsao
INTERNATIONAL BUSINESS MACHINES	Dan Eisenhower
LSI CORP.	John Lohmeyer
MELLANOX TECHNOLOGIES	Diego Crupnicoff
MICROSOFT CORPORATION	Robert Griswold
NETWORK APPLIANCE	Frederick Knight
NORTEL NETWORKS	Graham Copley

NUOVA SYSTEMS	Ed Bugnion
NUOVA SYSTEMS	Garry Lemasa
NUOVA SYSTEMS	Silvano Gai
NUOVA SYSTEMS, INC	James Rivers
PANDUIT CORPORATION	Robert Elliott
PMC-SIERRA	Brian L'Ecuyer
PMC-SIERRA	Niels Reimers
QLOGIC CORP	Alan Spalding
QLOGIC CORP.	Craig W. Carlson
SOLUTION TECHNOLOGY	Robert Kembel
SUN MICROSYSTEMS	Matt Gaffney
SUN MICROSYSTEMS	Michael Roy
TRUE FOCUS, INC	Horst Truustedt
VMWARE	Lawrence Lamers

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