

Fabric Extension Study Group Draft minutes 04-129v0  
February 3, 2004 1:00 PM – 6:00 PM  
Dana Point, CA

***Introductions***

Bob Nixon opened the meeting at 1:15 PM for John Scheible. The group began with introductions. John thanked the host for the facilities

The INCITS Patent and anti-trust policies were summarized for the group.

***Approval of minutes and Plenary Report***

The minutes of the December meeting (03-822v0) were approved as written.  
The December report to the T11.3 plenary (03-812v0) was approved as written

***Approval of Agenda***

The agenda was approved as modified (04-085v1).

***Review of Action items***

- None

***5.1 Trace route and ping 04-074v0/04-115v0 Scott Kipp***

This is a revision of the proposal that has been presented twice to this group. The presentation had more examples and error recovery. The text document was updated to include changes from the previous meeting.

Scott started by going through the examples in the presentation. There was discussion about the addressing in this proposal, and a request to enhance this to cover the addressing enhancements of the Fabric Expansion. This affects Source Port, Destination Poat, and the Path Information. The group moved on to look at the proposal independent of the specific details of the addressing structure. There was significant discussion about adding Exchange ID to the request because in some implementations this may affect the route that is taken. There are many other parameters that may impact the route, and this is only intended to find a route, not all or a specific route through the fabric. Scott continued with his proposal, with the recommendation that if there are enhancements/modifications desired that those desiring them should bring in proposals to complement this proposal.

There were questions raised about the error condition, and whether the error report should be required to follow the reverse path to the ingress switch. By following the reverse path, you may avoid potential broken paths that are in the routing table. One possibility is to send the response back switch to switch. You cannot send it back by the original path by using the routing table.

Trace Route participants are limited by zoning. There were questions about whether this limited the applicability of the function.

There was a suggestion that the CT Transaction ID could be used as the Token that is required for the Asynchronous operation.

Scott will look at adding additional hooks for the next meeting and bring this into FC-SW-4 and FC-GS-5

## ***5.2 Customer input 04-073v0 Bob Nixon***

Bob began by going through an email from Silvano with comments about this document. The first requested change was a modification to the definition to “VF”. It was suggested that the concept of Backbone be removed. Bob captured the changes that the group agreed to in 2.3.2.2 – 2.2.3.4 and other places throughout the document. There was considerable argument over the support of legacy devices with no firmware changes. The decision was to change this to “Presence of SW-3 compliant switches shall be supported in any VF, including between gateways.” The terminology in switch and device count was changed to “Fabrics shall support up to 239 domains and up to tens of thousands of N\_Port\_IDs. Gateways between VFs may consume domains in each fabric that they connect. All of 2.3.9 was removed as this was redundant with previous text and pictures. There was discussion about what the restriction on gateways are.

## ***5.3 Virtual Fabrics 04-015v1 Silvano Gai***

The slides are mostly the same as what he previously presented. He was asked to walk through in summary the slides that he had previously talked to and then discuss the changes. Silvano added a new identifier called F\_ID (Fabric Identifier) which would be a 12 bit unsigned integer with some reserved values. He changed the name of the “tagging header” to “Virtual Fabric Tagging (VFT) Header” and added Fabric Routing (FR) Header. There was a request that as we move forward with standardizing this that the functions of a port be associated with the port, but not associated with a unique port type. Silvano proposed the following components: Switch, Switching Function, Tagging logic(only applies to VFT header tag), and Gateway Function (this has no switching or tagging function). An issue that got significant discussion was whether a Gateway Function could include a Fabric Routing Function as well as a NAT Function.

## ***5.4 Possible Header Structures for Fabric Extension 04-095v0 Bob Snively***

Bob walked through the proposed headers and how to make them consistent. Bob’s desire is to be able to utilize similar addressing in environments that use both VFT and FR. His desire was to extend the fabric address space to 16 bits instead of the F\_ID space of 12 bits. There was general agreement on the proposed encapsulation tunnel FC-4 portion of the presentation. As to the correlation of VFT and FR, this issue is converging, but has not converged yet. Bob would like to have one hierarchy of name space, but there was not agreement to do this yet.

## **5.5 Fabric Expansion Proposal 04-094v0 Joe Pelissier**

Joe went through the portions that we already had agreement on quickly. He presented that there is information necessary in addition to NAT or Fabric Routing. The first addition was adding a timestamp to facilitate the fabric being able to time R\_A\_TOV throughout. The timestamps would be added at ingress to gateway and checked at egress of gateway. The next addition is a gateway hop count for preventing loops in hierarchical routing. Third was an modification for gateways to discard Class 2 rejects due to difficulty in handling them, and a belief that they would be lost or not deliverable if kept. Fourth was a proposal to always put an encapsulation header on whenever there is a routing header. This would make all frames the same in terms of headers; thereby simplifying the Gateway function. This proposal was the first to get some resistance. One counter proposal was that an N\_Port may put the routing header and does not need to put the encapsulation header on the frame. Joe's proposal was to eliminate the possibility of a switch that does the hierarchical routing. Next was the proposal of copying all information other than the S\_ID and D\_ID in the FC header into the Encapsulation header, to avoid having to manage exchange and sequence context. There are three ELS ACCs that have embedded FCIDs that require translation; however, there is not a consistent location in the ELS ACC. The proposal for this was to use the process defined in iFCP, where the final Gateway in the path stores context on these ELSs and restore the real FCID for the returning ELS ACC. One caveat of this approach is that the ELS ACC must follow the same return path. The details of this process have to be worked out in the presence of multiple gateways in the path.

Joe proposed yet another routing header. The header has an encapsulation header in addition to a Fabric Routing header. In addition to the routing header Joe proposed a VFT header that can be used with or without the routing header. His proposal required that the Gateway must do NAT and routing.

### **Action Items**

Old Action Items

None

New Action Items

None

### **Next meetings**

The next meeting will be in April at Seaside, CA during the next T11 plenary week, and 6 hours are requested.

Meeting adjourned at 6:00 PM.

### **Project status:**

The project is still in the Study Group stage.

Attendance:

<b>Name</b>	<b>Company Represented</b>
Roy Elsbernd	AGILENT
Neil Wanamaker	AMCC
Claudio DeSanti	ANDIAMO SYSTEMS, INC.
William R. Martin	BROCADE COMMUNICATIONS
Edward McClanahan	BROCADE COMMUNICATIONS
Robert Snively	BROCADE COMMUNICATIONS
Steven L. Wilson	BROCADE COMMUNICATIONS
Chris Janz	CIENA
Keith McCloghrie	CISCO
Ramesh Sivakolundu	Cisco
Silvano Gai	CISCO SYSTEMS, INC.
Bret Ketchum	COMPUTER NETWORK TECHNOLOGY
David Peterson	COMPUTER NETWORK TECHNOLOGY
Robert W. Kembel	CONNECTIVITY SOLUTIONS
Dexter Anderson	Crossroads
Randall Brown	Dot Hill
Elizabeth G. Rodriguez	DOT HILL SYSTEMS CORP.
David Black	EMC
Ken Hirata	EMULEX
Bob Nixon	EMULEX
Ralph Weber	ENDL TEXAS
Vinod Bhat	HEWLETT PACKARD
Robert Dugan	IBM POUGHKEEPSIE
George Penokie	IBM TIVOLI SYSTEMS
Scott Kipp	MCDATA
Michael O'Donnell	MCDATA
Joe Pelisser	McData
Dick Reow	McData
Carl Zeitler	NEWISYS, INC.
Craig Carlson	QLOGIC CORP.
Matt Gaffney	STORAGETEK
Steve Sletten	SUN MICROSYSTEMS
Horst Truededt	TRUE FOCUS, INC
Wayne Gentry	UNISYS CORPORATION