# IEEE 802.1 Minutes, November 1998

## Opening Working Group Plenary, Monday, November 9, 1998

Presentation to Alan Chambers for Remote Bridging – Bill Lidinsky

Review Agenda – Bill Lidinsky

Voters – Michael Wright

Approve Minutes – Michael Wright

Resolution: That the minutes from the July 802.1 Plenary and the August Interim meeting be approved.

Move: Michael Wright
Second: Tony Jeffree

YES: N - 1 NO: 0 ABSTAIN: 1

Status of Standards – Bill Lidinsky

.1D – 1998 This is .1p, it is being published in December.
.1Q – It is on the Standards Board Agenda. The recirculation ballot did not close until after the deadline. The one no vote has been converted to a yes vote.
802 Overview and Architecture – Will go out next week for a recirculation ballot.
PARS approved by the Standards Board
- .1s – Multiple Spanning Trees
- .1t – Maintenance for .1D
- .1u – Maintenance for .1Q. It is being held until the Standards Board approves .1Q.
- .1v – GPRP, it will up for approval at this Thursday's executive committee meeting.

VLAN Classification by Protocol and Port proposed PAR – It is ready to go to the executive committee meeting. We will need a motion to forward it to the executive committee.

Executive Committee Meeting Review – Bill Lidinsky

There is now a student fee, $100 meeting fee that can be used one time.
Bill offered a motion to have 802 do its own sponsor ballots.
The motion has been tabled pending discussions with the IEEE office. If the discussions do not go well Bill will ask for a vote else he will withdraw the motion.
CD ROM Distribution
Voting members will get a CDROM once a year. If you are not at the November meeting you will be able to pick up the CDROM at the next meeting.
802.3 and short fiber standard
Some folks wanted 802.3 to create a standard for short fiber, .3 chose not to do this. Therefore, the folks that wanted the standard went to TIA, an industry consortium. They accepted the standard and are in the process of publishing it.
Is ISO relevant?
This discussion in the .1 meeting was deferred?
QOS Report
Kaled Amer gave a report on the current status of the QOS study group.
PAN – Personal Area Networks
This is a new activity in .11.
Also, HomeRF and Bluetooth, two industry consortiums, are working on PAN standards.

802 Overview and Architecture Status – Alan Chambers

There are a few hours of work left to finish it. It will be completed this week so a recirculation ballot can start next week.

Nortel's Replacement Ethertype – Mick Seaman

This is to replace the Ethertype that was used in .1Q. Geoff Thompson, acting as Nortel's, a.k.a. Bay, representative has to do the paperwork to get the new Ethertype. This is no longer a .1 issue.

Six Non-Contiguous Ethertypes – Mick Seaman

These Ethertypes will be for local experimentation. They are for local use only. Mick has produced a guide line and principal document to describe their use. This is now a RAC issue, not a .1 issue.

Importance of ISO – Bill Lidinsky & Tony Jeffree

The following are the major points of the discussion occurred.

- $100 per meeting goes to the US input to JTC1
- This is really supporting our ability to get ISO to approve our standards.
- What are some very good reasons for having ISO standards?
- What are the disadvantages?
  - .1D approval was slowed down by 3 months
- Ask your marketing organizations if ISO is needed.
- Tony is soliciting input on the 802 reflector.

802 to Conduct its own Sponsor Ballots – Bill Lidinsky

The executive committee has tabled Bill's motion for now. Bill and Tony will meet with IEEE representatives this week to discuss how the system can be improved or fixed.

Projectors – Bill Lidinsky

Do we want to use them in .1? Do we need to have one available? It was mention that using the projectors for presentations would make it easier to get machine-readable copies of the presentation for posting to the ftp server.

802.1 Web Page – Bill Lidinsky

It needs new work items and news articles!

This Week's Agenda – Mick Seaman

Tuesday AM – High Availability Spanning Trees
Tuesday PM – 802.3ad
Wednesday AM – 802.3ad
Wednesday PM – 802.3ad
Thursday AM – Multiple Spanning Trees
Thursday PM – Closing Plenary

IETF Activities – Andrew Smith

Differentiated Services – Mapping IP to .1p
Bridge MIB – A new MIB for bridges is being developed. It includes .1p and .1Q. There maybe issues with the counters. Please check and comment. The URL for the MIB is http://www.ietf.org/internet-drafts/draft-ietf-bridge-bridgemib-04.txt

Adjourn – Bill Lidinsky

Resolution: Move the 802.1 Opening Plenary stands Adjourned.

Move: Michael Wright
Second: Tony Jeffree

YES: Unanimous NO: 0 ABSTAIN: 0

# Working Group Session, Tuesday AM, November 10, 1998

High Availability Spanning Trees – Mick Seaman

This presentation describes a method to allow reconfiguration without delay or auto-configuring links. The presentation is on the ftp server. Address: ftp://p8021.hep.net/go_wildcats/docs98/hasten7.pdf

Motivation

- High availability through network redundancy
- Redundant systems often less expensive than high availability system
- Very rapid failover
  - Converged systems need uptime to rival telephone network
  - Network should only lose a couple of packets during a failover
- High availability benefits Plug and Play (PnP)
  - Configuration is the enemy of high availability
- Simple network topologies are still very powerful

Spanning Tree Alternatives

- Faster timers
  - Difficult to get sub-second reconfiguration times in realistic networks
  - Not backwards or deployment compatible
- Redo Spanning Tree timer calculations
  - Not much to be gained

*Discussion of these points*

- Given current CPU power multiple spanning trees kill CPU
- How much CPU power to do spanning tree? Answer: Not a problem, the real problem is the processor latency. Current boundary is 250 milliseconds.

Why Layer2 Solution

- 50 millisecond or less outage
- Current hardware and software means local recovery
- Transparent to end station
- No time to rebind resources to paths
- Little time to coordinate substitution

Spanning Tree Algorithm Changes

- New rules for port state transition
  - Transition based on port role changes
    - Possible port roles are root port, designated, alternate, and backup
- No new protocol
  - The same BPDUs are sent at the same time for the same reason

Enhanced Port State Transitions

*Discussion of the port state transitions*

There was a discussion about the port state transitions. It was decided to hold the discussion until after this presentation.

Analysis

- The bridge is always connected to the main part of the tree through the root port.
- If root port blocks any other port can take over

- This is not a loop free under persistent malicious change but neither is the existing spanning tree.
- Coordinated changes in short time scale do not cause loops

Fault Tolerant Switch Networks

The next several slides were examples of the type of networks envisioned. These examples are in the paper on the ftp server.

Why didn't we think of this before?

- Spanning tree developed prior to campus structured wiring.
- Two port bridge does not show benefits
- Shared media complicates analysis and does not provide link failure indications

Deployment

- One at a time into an existing network is fine.
- Upgraded systems see immediate benefit

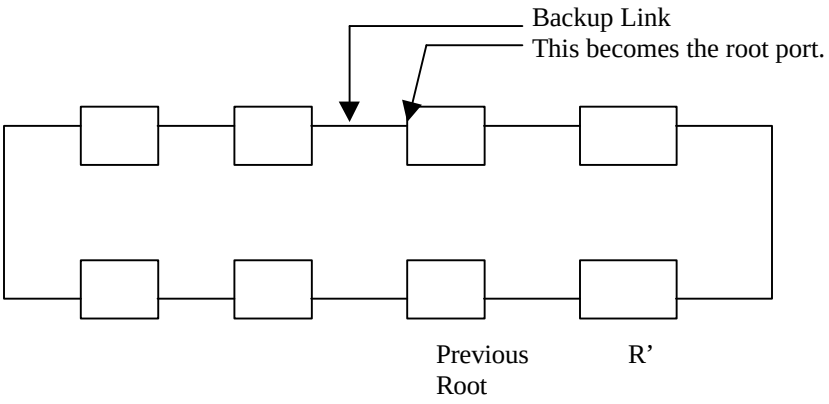
Potential Standardization

- High Availability Focus
  - Not miscellaneous changes
- Scope?
- Is additional work with the same focus desirable?
- Looking for feedback prior to proposing a PAR.

*Discussion of Standardization Issues:*

- What is schedule?
- Need presentation to a wider audience.
- Draft a PAR at the next meeting.
- We have time to see if other work can be done under the same heading.
- Learning issues. How to solve?
- Since this is a drop in i.e. no changes to interoperations why does it need to be standardized?
  - The market will require it to show Plug and Play.
- There are some topologies that this does not help.
- This only helps if the network has lots of redundant links.
- Are we solving problems for majority of customers? This is a great optimization for minority of customers.
- You can get fault tolerance by building a structured network.
- Is this working or is it analysis?
  - It has been simulated.
- Solutions providing this are already being sold. What aspect of interoperability is gained by standardizing?
  - Marketing acceptance. There are many boxes doing this in many different ways.
  - Customer base can understand in better detail how it will work.
- This is marketing requirement not a technical requirement.
- If we are going to add this complexity to the standard we should target a something larger.
- There is a worry about "under the cover" implementations that cause interoperable issues to arise.

- An example of a topology that would not work with this change was presented.




The Previous Root port bridge fails, the new root is R'.

Other Availability Issues

- Goal is uninterrupted service
- Rapid Relearning
- Multicast Service
- When root changes move FDB entries from old root too new. We need some analysis of this to insure it will work.
- Issue of doing relearning on other bridges in the network.
- Possible solutions: Send "flush message" or some other way to release.
- There is much work here!

Restoring Multicast Service

- IGMP snooping: Can use GMRP to relearn or get the products doing IGMP snooping to cause the relearning.
- We need more research here.

Wrap-up

- Why is this a good idea?
  - Routers take a long time. If RSVP is involved a reconfiguration could be WAN wide.
- Is this something we should be doing?

*Discussion*

- Larger improvement could be offered. Our work should be handling interoperable issues.
- Recovery time of spanning tree is the biggest customer complaint.
- We could handle mobile elements that are moving through the network.

Technical Plenary – Bill Lidinsky

We need to have a technical plenary to discuss what the QoS/Flow-control study group has been and is planning to do. The agenda will be QOS.

Issues with Spanning Tree – Anil Rijsinghani

There are a couple of issues that have been brought to Anil's attention by Radia Perlman.

- Spanning tree hello messages
  - The limit of 8 bits for the port number is a problem.
  - Some vendors are using the priority bits to get more ports.
  - Since the hello message does not use priority the priority field can be used to increase the number of ports.
  - It must be done in a standard way.

*Discussion*

- Flexible boundaries are bad. The boundary should be fixed
- Standardized a fixed boundary.

- Reconfiguration Issue
  - A reconfiguration is delayed in propagating through the network.
  - Hellos are sent in response to receiving a hello. Only the root starts.
  - This causes hellos to be gated by the hold timer (1-second).
  - The maximal case with n bridges is n seconds for the hello to propagate the network.

*Discussion*

- Is this an implementation issue or is it caused by the spec?
- Solution: Hold time = .5 Hello time, this is what the current spec states.
- What should happen is that as a Hello is received it should be sent immediately sent on designated ports. It should not be held for Hold time.
  - A loop could occur with this suggestion.
- The requirement is Hold time = ε Hello Time
- Is there a problem with different bridges having different Hold times?
  - This needs further research.
- The default parameters allow this; however, typically use Hello and Hold timers of 1 second.
- There is a limit how far tweaking timers will fix the problem.
- Is there a problem with cost bits and link aggregation?
  - We need to take a look at this.

## Working Group Session, Tuesday PM, November 10, 1998

802.1 meet with 802.3ad during Tuesday PM. The minutes for this meeting are keep by 802.3ad.

## Technical Plenary, Wednesday AM, November 11, 1998

Quality of Service (QOS) Executive Study Group – Khaled Amer

- The Executive Committee formed the study group in July 1998 till November 1998
- Initially there were 45 members now 111 and 40 companies (11/7/1998)
- Currently the group is discussing terminology, a proposed PAR, and 5 criteria

Overview of Technical Presentation – Khaled Amer

There will be five presentations this morning.
The presentations are:

Matching LAN to WAN Flow Control – Jim Mollenauer
MPEG and QOS – Don Pannel
Enhancements to 802.3x Flow Control – Ken Macleod
Flow Control Issues for Gigabit Ethernet – Metin Aydemin
Design Issues for Enhanced Flow Control – Ken Macleod

Summary of Concerns – Mick Seaman

- Current and completed work in IETF to handle QOS
  - ISSLL is doing a mapping to 802.1p
  - DiffServ folks have extensive experience with congestion control
- Completed 802.1p
  - Broad Industry support for 802.1p, which provides the tools for QOS
  - 802.1D Annex H is a guideline for use
- Behavior of bridges and the 802.3x specification
- Network application behavior

- Many applications have to be aware of Internet issues. There are many current applications that work today.

*Discussion:*

- The study group is looking at 802.3x.
- The study group's approach is to point out what has to be accomplished not how to accomplish it.
- Will the Executive Committee be requested to create a working group?
  - No, will ask for an extension as an Executive Study Group
- There is a lot of work for the study group to "get up to speed", why are you looking at a PAR?
- 802 must focus on the link. Application and the like need end to end solutions. End to end is not in 802's bailiwick.
  - We have to provide the primitives to allow applications to do this and we must provide an end to end solution.
- The focus of the study group is to broad; it must be better focused so it can identify a problem that can be solved by 802.
- There was concern expressed that the folks in the study group were not aware of the efforts in IETF and industry to deal with these problems. Also, it was stated that the 802 plenaries were not for doing lots of tutorials.
- There was a request for the study group to define QOS.
  - The definition is on the study group reflector.
- The mapping of ISSLL to 802.1p is not good enough. We need to improve the layer 2 tools.
- True QOS has to be at layer 3.
- There is adequate support for layer 3 in layer 2. No one in IETF has requested more from layer 2.
- This work should be moved to IETF.
- Why are we looking at link to link. It has been shown that link to link does not work.
- There was a suggestion to drop the QOS portion and focus on Flow Control only.
  - Explore enhancements to 802.3x.
- 802 should allow this work to continue so the work is done in a public way and open to everyone.

Resolution: Move to adjourn.
Move: Hal Keen
Second: Rosemary Slager

YES: Unanimous NO: 0 ABSTAIN: 0

## Working Group Session, Wednesday PM, November 11, 1998

802.1 meet with 802.3ad during Wednesday PM. The minutes for this meeting are keep by 802.3ad.

## Working Group Session, Thursday AM, November 12, 1998

Miscellaneous Issues – Bill Lidinsky

The PAR and documentation for Protocol and Port based VLANs is available.
The closing plenary will start at 1:00 PM
QOS & Flow Control: The Executive Committee is looking for a place for QOS and .1 looks good.

Multiple Spanning Trees – Alan Chambers

This is the initial proposal to modify .1Q to allow multiple spanning trees.

- Modify clause 8.4.1 so that it describes the model of multiple spanning trees.

- If there are fewer spanning trees than MFD an explanation of how to collapse them is needed.
- Need a good overview that describes the Multiple Spanning Tree model
- Current draft is one VID per spanning tree; this needs to be multiple VIDs per spanning tree.
- There needs to be a primary spanning tree.
  - Needed to allow connections across a network connecting a particular VLAN.
- If BPDU is not tagged what happens?
  - Later in text, this needs fixing.

- Modify Clause 8.14 Addressing
  - Need separate group address and one that is not special so it can tunnel through legacy bridges.
- Add new clause 8.15 ID of Multiple Spanning Trees
- Modify Clause 11 VLAN Topology Management

*Discussion:*

- How does GVRP work with multiple spanning trees?
  - The spanning tree goes throughout the network but GVRP may prevent the VLAN from sending traffic to parts of the network. This allows the VLAN to dynamically expand into the network without having to create a spanning tree.
  - There was discussion about the current state of spanning trees and what would be desirable goals for multiple spanning trees
  - When a GVRP is received on a blocked port it will be pitched.
  - In a typical network we confine VLANs to specific ports of the network.
- Summary of what is being discussed:
  - How many spanning trees in system and you have to configure them?
  - Load balancing
  - Relationship of FDBs and VLANs
  - Where the spanning tree goes; A tree goes all over; we may not need the spanning tree all over. The issue is the time it takes to grow the spanning tree.
- There is lots of pre-configuring
  - Manual configuring the spanning tree is hard. Is there a protocol solution?
- Will need loop detection
- Will need a static list of VLANs
- Today you have to make sure the root is in the backbone so what we are adding today is not as big a requirement as it might seem.
- The big problem for the standard is getting a workable configuration and how to do configuration.
- We do not want to loose the dynamic capabilities of GVRP.
- May want to stop VLAN registration.
- Two or three spanning trees should solve most problems
- Want to use spanning tree in the core of the network but not at the edges. By making the spanning tree go everywhere a huge burden is placed on edge switches.

<u>Interaction of switches that do Multiple Spanning Tree and legacy switches – Norm Finn</u>

The network configuration is Multiple Spanning Tree backbone and some Single Spanning Tree regions with multiple VLANs and possibly multiple connections to the backbone. This paper handles how to keep this configuration working.

*Discussion of using .1Q tagging or creating a new BPDU for Multiple Spanning Tree:*

- There are several failure cases that cause loops. Best solution is to use tags.
- Pick on spanning tree to be regular and tunnel the other BPDUs.
- Use separate destination MAC then loops can be stopped
- Summary

- Two addresses that are treated as BPDUs
- Don't have to configure the switch to know here it is in the network
- Legacy switch will not get confused because the other VLAN BPDUs are seen as data.
- Read the paper!

What issues must be addressed for Multiple Spanning Trees – Norm Finn

- More contributions for protocol that creates mapping of VLANs to spanning tree
- More FIDs than spanning trees
- Tunneling of BPDUs
- How to configure the network
- Creating a new GxRP is probably useful.

## Closing Plenary, Thursday PM, November 12, 1998

New Secretariat Structure – Bill Lidinsky

Michael Wright is the recording secretary.
Rosemary Slager is the membership secretary.

Voters and voting members – Rosemary Slager and Hal Keen

802 Plenary Fees – Bill Lidinsky
Membership problem – Bill Lidinsky
Documents – Rosemary Slager
802 Overview and Architecture – Alan Chambers

Resolution: 802 Overview and Architecture D26 has been completed and is ready for 802.1 confirmation ballot. If the 802.1 confirmation ballot passes in accordance with the 802 Operating Rules, 802.1 requests that the 802 SEC conditionally approve forwarding this document to LMSC sponsor ballot.

Move: Chambers
Second: Michael Wright

YES: 18 NO: 0 ABSTAIN: 1

Remove special emailers – Bill Lidinsky

The .1q, .1p, and .1d emailers have been removed. 802oa will be retained during its confirmation ballot.

Ethertype Status Report – Mick Seaman

Nortel – Geoff Thompson is doing the paper work for Nortel.
The six non-contiguous Ethertypes – This is in the works by the RAC.
There are 10 – 20 Ethertypes being handed out per year. Many are requests for a simple data transfer protocol. Could we take the .1B carrier protocol to create a standard data transfer protocol for folks to use?

Can 802 conduct its own sponsor ballots – Bill Lidinsky

There is a tabled motion before the executive committee to allow 802 to run our own sponsor ballots. Bill and Tony met this week with the IEEE folks that set up the sponsor ballot to discuss the problems with the current system. Bill wants to withdraw the motion and test the IEEE office with the Overview and Architecture sponsor ballot.

Relevance of ISO – Tony Jeffree

Jim Carlo has drafted a letter to 802, which request information about ISO relevance from 802 participants. This information will be available at the March meeting so we can start deciding

where we are going with this issue. We need feedback from marketing organizations if ISO is needed. This will go to the standards board meeting after March. There are other IEEE committees asking the same question about ISO.

QoS/Flow Control Study Group Discussion – Bill Lidinsky

- The consensus of the room is this effort should be stopped.
- A perspective of QOS and flow control was offered: Congestion control occurs at a point in the network; this is trying to protect the network. Flow Control is preventing the end point from getting swamped.
- Many feel the QoS/Flow-control study group should go away; some feel SG should continue in a limited fashion.

Resolution: the 802.1 WG believes that the QOS requirements for 802 bridged networks are adequately met by current standard solutions and products that implement them. The 802.1 WG recommends that the 802 Executive direct the "QOS/FC study group" to study only the applicability of enhancements to MAC – layer flow control and to amend their stated objectives and name accordingly.

Move: A. Smith
Second: Slager

YES: 19 NO: 0 ABSTAIN: 0

High Availability Spanning Tree – Mick Seaman

Feedback has been supportive. Mick will get some discussion going on the mailer and will have a draft PAR at the interim.

*Discussion:*

- What is the scope of the PAR?
- Will it allow other changes to spanning tree?
  - It will limit things in the objectives by saying the objective is redundancy.
- Discussion at the interim.
- PAR approved in July.
- We could circulate a draft and tutorial/discussion at the March meeting.
- There will need to be lots of works to make sure existing proprietary tweaks are accounted for.

Link Aggregation – Tony Jeffree

- There is sufficient agreement to start a draft.
- There will be an interim meeting in Southern Florida.
  - .3ad will meet Tuesday and Wednesday; .1 will meet Thursday and Friday morning.

Resolution: 802.1 resolves to hold an interim meeting co-located with the 802.3 interim meetings. Current planned dates:

| | |
|---|---|
| Jan. 18 | QOS |
| Jan. 19 | 802.3ad |
| Jan. 20 | 802.3ad |
| Jan. 21 | 802.1 |
| Jan 22 | 802.1 (till midday) |

Probable location: Southern Florida

Move: Jeffree
Second: Chambers

YES: 12 NO: 0 ABSTAIN: 4

GPRP – Tony Jeffree
Resolution: (Background: P802.1/GPRP was circulated some considerable time ago; the PAR for GPRP is up for agreement in the December Standards Board meeting. The draft needs some updating, in order to generate a D1 version; changes needed are to remove Editor's Notes, include 802.1Q support and delete the proposed section for the example C code – the latter seems unnecessary given the code already is in D and Q.)

802.1 instructs the Editor for GPRP to generate a first draft for working group ballot and to issue the ballot during December 1998.

Move: Jeffree
Second: Michael Wright

YES: 12 NO: 0 ABSTAIN: 4

Pre-Meeting – Bill Lidinsky
Resolution: 802.1 will hold a pre-meeting at the Austin Plenary.

Move: Keen
Second: Finn

YES: 12 NO: 1 ABSTAIN: 5

Multiple Spanning Trees – Alan Chambers
Getting the presentation and work together to create a draft.

802.1w VLAN Classification by Protocol and Port – Bill Lidinsky
Will submit to 802 Executive Committee for approval of the PAR
Will try and get it on the March 1999 NesCom agenda via the 802 executive ballot.

Resolution: Move the 802.1w PAR to the 802 executive committee.

Move: Smith
Second: Jeffree

YES: 17 NO: 0 ABSTAIN: 2

VLAN MIB – Bill Lidinsky
There is a draft RFC for the VLAN MIB. Its URL is:
http://www.ietf.org/internet-drafts/draft-ietf-bridge-bridgemib-04.txt

802.5 Link Aggregation – Mick Seaman
.5 is working on link aggregation. They should use the .3 work and incorporate it by reference.

Adjourn
Resolution: Move to adjourn.

Move: Michael Wright
Second: Sharem Hakimi

YES: Unanimous NO: 0 ABSTAIN: 0