IEEE 802.17

Plenary Meeting, Austin, TX - November 12 through 15, 2001

Secretary: Mannix O'Connor

Monday 11-12-01

1:00 Mike Takefman - Meeting Opens and Administration
Introduction to 802.17 Operations, Procedures and Principles

- Members Web site information
- Short History of 802.17
- Description of Membership in the Working Group
- Next Meeting to be held in January 14 thru 17th Location TBD
- Meeting Minutes from July and September were accepted by unanimous consent.
- Agenda Scrub for 11-12-01 – Agenda approved by unanimous consent
- Introductions
- Interim Financial Report
- Planning for next meeting
- Review new members status

2:20 Bob Love - Winning through the standards process
Recommendation to work together and promote trust during the standards process. Suggests we consider the markets that need to be addressed. Emphasize respect for the work each speaker has done. Our real competition is other technologies not each other. Focus on specialization or optimization and work to create an inclusive standard that is broadly applicable to the market.

At NGN a Birds of a Feather was held. A gentleman from Bell Canada is using RPR. The biggest thing he requires is the ability to implement new applications. This will allow him to increase his investment in RPR. We must create a standard that encompasses many services, SAN, Data, Voice, Video, etc….

Try to understand the applications that each presenter is working to support. Think about how you can work to incorporate proposals to address the markets and services the presenter is addressing. How can we support all the applications? The IEEE says one problem one solution. If we create a standard that allows options for A and B and they operate together on the ring this is flexible and will be important to the industry.

2:35 Break

3:00 Bob Love – Voting, Ballots and Comment Resolutions
Discussion of the voting and comment resolution process required of us going forward.
Everyone has the obligation to comment on drafts. The comment resolution group will work to clearly and crisply resolve comments in most cases. They may bring some issues to the whole working group. Everyone then has the obligation to review the resolution of their comments and approve or disapprove with specific additional comments stating their ongoing concern. Not commenting on the resolution of your comments will be construed as acceptance of the proposed solution.

3:40 Mike Takefman – Bridging - Why meet with 802.1 during our meeting this week?
We cannot stray outside our PAR or we risk the SEC vetoing our standard. Our current par does not allow us to change 802.1. We must start a new PAR under .17 to update the 802.1 clauses to meet the 802.17 requirements. There are two topics of discussion.
Bridging – We must insure compliance to 802.1D

- Single address
- Dual address
- Encapsulating Bridging

2) Customer Separation

We did approve an optional customer separation mechanism in the frame format. It is strictly speaking out of the scope of a MAC. 802.1Q defines VLANS and the EFM is thinking about this issue too because their customers also require it. 802.1 are not crazy about nested VLANs. We need to explain it clearly to them along with the customer requirements.

Q – How deep do we intend to make the nesting? We need at least one level for the service provider to use above those used by the enterprise
A – At least one additional level of nesting.
Q – What is the EMF position on this.
A – We don't know yet. Some members in the EMF are looking for this as well.
C – The .1 group can insure that the .17 MAC is compliant to .1D and .1Q. Encap bridging is an issue for the .17 group and not necessarily something for .1D yet. Over the next few days we will discuss what encap bridging is and how we can employ it. Do we want to use the encapsulation techniques of the encapsulating bridging itself?
Chair – Tony Jefferies said a while ago that he felt 802.1Q is encapsulation bridging. FDDI to Ethernet encap bridging was done in ANSI.
C – Whatever we decide as .17 is what we want to review so there are no surprises on final voting.
C – There is encapsulation, encapsulation bridging, transparent bridging and source route bridging. We can only do transparent and source route bridging in the .1 if we elect to bring a new bridging method to .1D it can become a giant issue for us because we are the new kids on the block.
C – We have a requirement to comply with .1 because of our 5 Criteria. We have a few issues with transparent bridging. MAN and WAN is a different problem than LAN problems because there are multiple customers on one shared media and there is a requirement to keep them separate.
C – If this issue is not in the 802 architecture then we still need to proceed. However, we should do it in a way that does not antagonize the 802.1.
C – If we want to do more than transparent bridging we can enhance it as a separate and distinct proposal.
C – We need to separate bridging and customer separation issues.
C – Encapsulation bridging exists already. So encap bridging is good as an informative annex.
C – Customer separation has to do with overlapping VLANs whether you are bridging or not. In the carrier network this is required. If we can extend that to the 802 architecture great, however it is not required. We have not specified how the field will be used but it is a multiplexing and demultiplexing field.
C – If we do any work on bridging that affects the MAC then it belongs here. If it is above the MAC then it belongs with the .1 group.

4:15 Bob Sultan – Terms and Definitions Ballot Update
Review of final terms and definitions that complete the ballot resolution process.

4:50 Mike Takefman – Plan for this Meeting
Discussion of the approach to reach consensus on various proposals. There is usually a bell curve distribution of opinions on the proposals. Other chairs have suggested.
- Vote on each proposal
- Vote on high-level abstractions of the various proposals and have the editor write to that concept.
- Vote on clauses in within proposals (decision points). These need to be self-consistent.
- Include everything in the standard. This may result in a bulky, inefficient.
We need to have significant convergence by the next meeting so we can have a draft document in January.

C – We need a framework for the document by the end of this meeting. We need one draft with multiple competing clauses or 2 competing proposals that can be carefully considered because they are in a similar format.
C – We need some matrix comparisons based on tasks or groups or areas of interest so the people who are pushing the standards get together to work out the issues.
Q – If we adopt a proposal as baseline text what does it mean?
Chair – The SEC does not care how we get to a draft as long as they get a ballot with greater than 75% approval with all no votes addressed. The actual process is up to us. The way most group's work is they make decision points and the editor writes some text and the working group works with that text. We have a lot of text but if it is the baseline it is not the standard but it helps the editor and the working group.

However, it would take 75% vote to remove it from the baseline.

Q – There is a political and a technical process. This can take a number of meetings. The engineering discussions must occur on efficiency and cost as well.

A – Early voting can put one group in and one out and this can stalemate the standard because there has been no compromised prior to significant voting.

Q – There are several issues, some contentious and some not. However, many of the issues are interrelated. We need to identify those that are not contentious and resolve those. Then we can resolve the more contentious issues in the larger group.

C – Multimode operation caused OSI to fail and the Internet protocols have succeeded because they chose this path too often.

C – More technical debate in an informal setting would be helpful.

C – Written comments on each proposal should be included and maintained for the full working group review.

5:30 – Motion to Adjourn 1 – Bob Love 2 – Mannix O'Connor
Yes - 14
No – 15
Abstain – 27
Motion Fails

5:40 - Motion to adjourn until 7:30pm - 1 John Hawkins – 2 Bob Love
Yes 21
No 8
Motion Passes

Motion 2001-11-12-01   Time 19:58pm
That at this meeting, a single presentation be made to the group, on MAC comparisons. This presentation will be the last presentation on comparisons before voting on MAC related issues. This presentation shall be developed by representatives of each of the three proposals that have been submitted to the web site.

M - Bob Love, S - David James
Yes 20   No 22   Abstain 3
Motion Fails

20:10 Motion to Recess until 11-13-01
1 Raj Sharma, 2 Bob Love
Yes – 19
No – 20
Motion Fails

Motion 2001-11-12-02   Time 20:42pm
An ad-hoc to be formed to develop and outline for the IEEE 802.17 standard to be presented at this meeting.

M - Nader Vijeh, S - Adisak Mekkittikul
Yes – 36No – 1   Abstain – 6
Motion Passes

8:25 Vote to call the question 2001-11-12-01
M - Nader Vijeh, S - John Lemon
Yes – 24No - 16
Motion Fails

> **Motion 2001-11-12-03** 20:45pm
> Reserve time on the agenda where arguments in support of each proposal (not to exceed 15 minutes) are presented, followed by opportunities for Q & A by the group.

M – Bob Sultan, S – Bob Castellano
Yes 6 No 4 Abstain 35

> **Motion 2001-11-12-04** 21:26pm
> That the 802.17 Baseline Draft be based on the voting of the functional aspects of 802.17 as opposed to any one of the three proposed drafts as a whole. The WG would vote on the following proposed categories:
> Frame Format; Transit Path & Fairness; Topology Discovery; Protection; Physical Layer; OAM; and other categories as discovered. This does not preclude motions made on more specific aspects in these or other categories.

M – Bob Castellano, S – Bob Sultan
Yes: 3 No: 19 Abstain: 14
Motion Fails

> * Note – There was no motion 2001-11-12-05

Volunteers for IEEE 802.17 Outline/Table of Contents Ad Hoc Committee

Bob Castalleno	Jamie Markowitch
David James	Dongui Xie
Raj Sharma	Louis Rivera
Stein Gjessing	Siamack Ayandeh
Necdet Uzun	Pinar Uilmaz
Harry Peng	Italo Busi
Steve Wood	John Lemon
Jason Fan	Adisak Mekkittikul
Wei Chau	Mark Bordogna
Sanjay Agrawal	

10:00pm Motion to Recess – Raj Sharma
Unanimous

Tuesday 11-13-01
8:40 John Lemon – MAC Reference Model
A detailed description of the MAC and its' relationship to the required functions supporting MAC operation from the ZZ draft also known as Aladdin draft.
Q – MLM interface do you need to do something to do SNMP traps going the other directions.
A – Yes
Q – How are priorities are indicated through the MSAP.
A – This is in the draft.
Q – What about multiple ringlets
A – This does not preclude multiple ringlets
Q – Do you see topology and protection as being distinct and different.
A – Definitely
Q – Which parts of the reference model are affected by customer separation.

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A – Ringlet, Rate control and policing
Q – What else is exposed to the upper layer and how do we do that.
A - Ringlet selection and rate control.
Q – Ringlet requires topology information
A – Yes but you want to control the information that goes to the client. With that information you can do ringlet selection.

9:10 Dave Meyer – Frame Format
Frame format description from Gandalf draft.
Q – What does the control TTL do when you have the TTL field in another place already.
A – This is the hop-by-hop method of getting around the ring.
C – If you only have one address it is difficult to know how to strip the packet

9:17 Raj Sharma – Frame Format
A description of the Frame format and discussion of reasons behind the frame format from the ZZ or Aladdin draft proposal.

Straw Poll
How many support this approach - 59
How many feel this proposal requires some modification – 23

Q – What about unique identifiers for transparent bridging
A – I go back to other protocols support for bridging. In most of them there is nothing in the header to support transparent bridging. There is no specific field in the header.
Q – How many frame formats will be defined for RPR
A – Data and control frames
Q – Does the length need to be recalculated for GFP at every hop?
A – It may.
C – The PAR for .17 says we need to be compatible with .1 but it does not authorize us to create encapsulation bridging.
C – All 3 proposals are proposing a header.
Q – POS requires transparency for the payload and this must be forced into the MAC in your proposal.
A – This proposal does not imply that. The reason is we need to do rate adaptation is the transit path fairness requires that you account the bytes you get from the media. Therefore we have created a common format across all the cases. POS is the easiest. Ethernet is a tougher issue.
Q – POS will issue backpressure and we want to use the POS framers and your proposal excludes doing it from a reconciliation layer not in the MAC.
Q – Will test equipment be backward compatible with this?
A – Ethernet test equipment today will get CRC errors. If you account for that, you can still use an off the shelf Ethernet tester today. We have done it.
Chair – Several unnamed test equipment makers say that if we keep the PHY layer the same we will be OK.

9:42 – Sanjay Agrawal – MAC Datapaths
Description of the MAC datapaths and how they support the 802.17 objectives from the ZZ or Aladdin draft.
Q – Can we simulate this MAC with simple MAC clients.
A – Yes
Q – Between ring states do you have to listen to the pause message?
A – The pause mechanism does not allow you to shape the traffic.
Q – The spectrum goes from managing congestion to avoiding congestion but how much complexity do you want to trade for congestion avoidance.
A – Congestion avoidance may be a simpler state machine than congestion management.
Q – All you need is how many hops you can actually send each type of traffic

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A – There are multiple destination flows passing thru multiple links so there multiple constraints throughout the network. If you don't have the global information then you are unnecessarily using bandwidth.

Q – What are the handoff procedures when you strip the RPR header. When you insert into the MAC where do you add the header.

A – That is a frame format issue, can we talk off line.

Q – I feel you are trading a more complicated b/w algorithm with having one transit path and what about promiscuous mode.

A – There are bridging and testing functions you need to satisfy. For the complexity it doesn't matter how many transit buffers you have you still need the RCM sent to the MAC client.

10:30 David James – Compatible transit/no-transit class A traffic
A description of a method for interoperability of reactive and proactive node design.

Q – When you chose a proactive scheme you chose a different one than the one proposed. The one you chose has a huge memory penalty.

A – I couldn't read the documents from ZZ or Aladdin because they were not written as one document.

Q – Do you have backpressure working on the transit flow.

A – Backpressure goes upstream to inform the upstream node.

C – Between ABC traffic classes you have strict priority.

A – No not really, it is strict priority subject to rate limits.

Q – You move the rate shaper from the client to the MAC

A – Yes

Q – So this a bandwidth based class support.

A – Yes and C picks up what is left over.

11:10 Necdet Uzun – Bandwidth Management / Fairness
A presentation of the bandwidth algorithm from the Gandalf draft.

Q – On slide 4, fundamental to the proposal the high priority buffer gets priority when there is congestion. When the high priority gets delayed because of over subscription this will cause hi priority traffic to be delayed by low priority traffic.

A – Do you have any simulation to prove this?

Q – The conversion time of Flow Control can take 100ms does that value have any correlation to the ring size. If the buffer is not large enough does it affect input traffic.

A – We simulated rings up to 3000 with 1 Mb over subscription we never saw this. I challenge you to run a simulation to prove this case.

Q – You have added multiple choke points by adding an additional message type. What happens when you send Type 1 and Type 2 messages around the ring. It seems complex.

A – In the Type 1 messages the SA is the most congested node. The Type 1 message has SA and DA. You need these messages to implement a simple MAC

Q – Aladdin showed support for single or multiple cue clients. Overall I am glad to see that you are addressing HOQ issues. You show 100% throughput before and after VDQ. There are simulations that show the interaction of congestion domains will cause inefficient use of bandwidth for interdomain traffic.

A – You have policing for multiple choke points and you must have N choke points. We only police a single choke point.

C – In case of VDQ if you don't consider multiple choke points then you get HOL through multiple choke points.

C – As SRP works to overcome HOL we get multiple Fairness Domains, multiple Fairness Messages, multiple Priorities, multiple Transit Paths, MAC Hi Priority Low Priority buffers. This means you have multiple complexities and possibly unpredictable interactions between these multiple mechanisms.

C – You showed VOQ one is complex and one is simple. The issue is where the function resides in the MAC or outside. The function has to exist somewhere. You said end-to-end jitter is Nx MTU. The only way to do this is with reservation. Whenever you have low priority taking bandwidth from hi you should say what the probability of the jitter will affect the Hi priority traffic.

A – So you are saying the proposals are the same.

Q – No you have a large transit buffer that can introduce jitter.

A – It will not accumulate as fast as you think.

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C – We are proposing a VOQ scheme that assigns unused bandwidth to the other traffic. Complexity and cost are two different issues.
A – Complexity to me is how much time it takes to design it. Vendors can sell you memory quickly, it is available.
Q – The throughput that you suggest says throughput numbers are valid across the board. With bursty traffic you cannot have 100% by definition.
A – On a single hop you can have 100%.
Q – With 2N x MTU you can calculate the case that reaches the high threshold. There is a finite probability that this will happen.
A – Can you calculate this?
C – David James, since my name is on this presentation, I want to say I recommended against using simple and complex to compare these proposals because it is too subjective.

12:15pm Lunch

1:25pm Harry Peng and Adisak Mekkittikul – Bandwidth Management
Description of bandwidth management methods and service support for ZZ or Aladdin draft.
Q – Your algorithm can support multiple transit buffers?
A – It doesn't preclude the use of a second transit buffer or change the behavior of the transit buffer. Once you have buffers you have a decision from which buffer you dequeue. This is orthogonal to the flow control scheme.
Q – If a node is down you can still have a pass-thru mode that copies from input to output.
A –Yes but if it is brain dead it can still jabber and create problems.
Q – The spectrum of the debate is between congestion mgt that requires large buffers and a reactive scheme that has no buffers but requires an infinite control on the packet input. There is complexity in the system too. In control theory you get more instability with more control points, however, we all need to understand your algorithm before we can build systems around it. We need to study the metrics of each algorithm.
A – I agree with you basically. We are starting to see the fundamental issues.
Q – Three things we all agree on Fairness weighted, 3 classes and the maximum number of nodes should be less than 128. We need to keep the jitter to 1 x MTU. If loads change does it take a full circulation time to reconverge.
A – True for the Guaranteed class. The jitter will be in the transit buffer on the order of N x MTU.
Q- Do all 3 proposals have similar jitter for Guaranteed class if we carve out the bandwidth.
A – Yes
Q – The bucket level I is drained and it becomes greater than 0 you did not use your allocation.
A – No it means your committed rate cannot be claimed because you are using it. It attempts to use the total committed rate coming through my link and take it out of the equation and reallocate to those who need it.
Q – So this is only for Committed and Best Effort traffic.
A –Guaranteed cannot be used, Committed is a type of service that has 2 components one part acts like guaranteed and the other part behaves like best effort.
Q – How do you reclaim the bandwidth.
A – The leaky bucket goes empty until the next packet comes in. An example, say on average 50% of the time the bucket will be empty and 50% it will be not be empty. The rate and percentage are multiplied to infer that the source is only using 50% of their bandwidth.
Q – If I have TDM then I have 2 options 1) pay with jitter or 2) reserve the bandwidth then I must limit my TDM traffic if I don't want to be inefficient with bandwidth.
A – You are limited to the bandwidth of the whole ring. It is analogous to CBR traffic.

2:15 Stein Gjessing – Flow Control Algorithms Revisited
A conceptual overview of how the various proposals are similar in their flow control design.
Q – If your services are bound by SLAs and you want to have no packet loss, then high priority schemes can be penalized. Some schemes can result in many round trip times delay.
A – Both proposals have the ability to guarantee traffic. I like the high priority buffer and I feel that the low priority buffer will not fill and will not affect the high priority buffer.

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Q – If you combine both schemes how do you see it operating that minimize.
A – Now that I know that both schemes are in the MAC I am not sure it is worth combining the schemes.
Q – If you make the buffer big enough that it never overflows then you can be opportunistic and guarantee Class A traffic.
A – Yes I agree.

2:40 Necdet Uzun – Single and Dual Transit Buffer Interactions
Discussion of the coexistence of dual and single transit buffers on the same ring.
Q – On bandwidth utilization showing 100% does that depend on how you set the weights
A – We set all the weights to 1
Q – How is this different from your original scheme
A – Everything is going to the hub and it has a 100% utilization.
Q – So this means that we can have a single transit or dual transit buffer. Are you saying each node knows how much high priority traffic it has to add or forward.
A – In addition to high priority traffic we put a little extra margin.
Q – What is the time constant of your low pass filter in terms of the modification of the rates you report.
A – I think it was 64 k every 100 milliseconds
Q – You say one and two transit buffers can be on the ring simultaneously. Why do you want to specify the number of transit paths in the standard.
A – I don't see why we need to limit the number of transit buffers on the ring.

3:00 Anoop Ghanwani - 802.17 MAC Compatibility with 802.1D
The objective of the proposal is to satisfy the compatibility of the 802.17 device as it relates to transparent bridging.
Q – Do you think this material is appropriate for this to be an informative annex for the standard. Do we need to discuss anything with 802.1D on Thursday.
A – It could be an informative annex. If we as a .17 group decide this is what we want to present to the .1 then we should present it.
Q – In the promiscuous mode it is only for MAC addresses no on the ring.
A – That is correct.
Q – What about interoperability of bridging we must define methods of interoperability.
A – Correct
C – Promiscuous mode is referenced for sniffers and other test equipment and it is not for bridging. Promiscuous refers to clients.
Q – With Spatial Reuse you are not guaranteed to see all the addresses on the ring and we need to note this.
A – Thanks

3:40 Mark Holness – Improving Bandwidth Efficiency When Bridging on RPR
A talk about a suite of issues related to efficiency when bridging on the ring.
C – The .17 does not have the charter to solve the problems with transparent bridging. We should not change the nature of the MAC to solve a problem with 802.1D. Should we solve this problem
A – Yes, is this a problem and do we need to solve it is a good question.
C – The implicit one looks like router. Another has a problem with broadcast storm when Spanning Tree state changes.
Q – What is the station ID that should be put on the packet as it is forwarded around the ring.
A – All solutions require a data base.
C – If there is a scheme to insure unique ID around the ring. Every time you add or delete a node on the ring it disrupts the performance of the ring and this is not acceptable on a carrier network. The MAC addresses are required during the discovery phase.

4:10 Bob Castellano – Bridging
A discussion of the implications of bridging on the RPR ring and a proposal for encapsulation bridging for 802.17.
Q – In July we had a presentation to eliminate CAM. Without CAM it is a big deal for the chip designers.
A – You still have to do something in the transit path.

Q – The largest MAC address gets O and then you make an ordered list from that, however, when you need to change you need to stop everything on the ring or go into a flood mode.

A – If you are new station on the ring you have to be quiet until you get your station ID.

Q – Does this proposal require changes to the MAC. Does it require all stations on the network to perform learning.

A – No, it depends on how the mapping table is done. Default is gratuitous flooding but having the fields in the frame enhances the behavior of the network. There is no 802.17 MAC yet so it doesn't require changes to the MAC.

Q – Some stations don't have to implement learning.

A – That is correct.

Q – If I am a router on the ring talking to an off ring node I would route all the time.

A – No the router would send packets to the ring in an explicit manner via its ID or MAC address. Flooding would occur when routers and bridges are on the ring.

4:52 Mark Holness – Encapsulating Bridging Support for 802.17
An informative discussion of Encapsulating bridging that is not specific to RPR.

C – I support this proposal for encapsulated PDUs in the network because it is complimentary to what we propose.

Q – If you are really encapsulating why is the CID not after the type field. Packet type and the CA are more appropriate in the header.

A – I will let the WG consider this option.

5:10 Discussion on Bridging and Meeting with 802.1D
We need to discuss customer separation requirements. Since we don't have a concrete proposal for how it would be used.

Straw Poll –
Is there agreement in the room to bring up customer ID to 802.1D?

C – 802.1q was developed for customer separation in LANs. We need a similar mechanism for RPR. So we need to discuss it with them.

C – It is in everyone's proposal but we don't have a presentation on how it would be used. We should not present to .1D until we have this presentation.

C – We need to discuss customer separation with 802.1D since it is a parameter passed to the upper layer since we have something in the frame that is not processed by the MAC.

A – We should as a group to determine how we are going to use it. We also need to know what the EMF is going to do with their customer ID.

C – We need to invite 802.1D prior to making any decision and we should have a chart with the full set of options in this chart to get their opinion on a spectrum of options that we have. We need the parameters we should consider as we make this decision.

C – This optional customer ID in the frame is not always the same as the VLAN tag so we need to discuss and agree on what we present before we go tot the 802.1D.

C – With bridging we need to deal with but the customer separation is very broad and we should get our chair to talk to the .1 chair along with the EFM chair.

C – We should talk about Type Ids with the .1 group as well. What freedom do we have when we are encapsulating payloads.

Straw Poll
Do you support the formation of an ad hoc to create a presentation on customer separation.
Yes - 42
No – 0
Abstain - 10

C – We should solicit their feedback on bridging before choosing an implementation.

C – We should verify our compliance method is indeed compliant.

C – We should only list options and possibilities when we meet with them.

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C – As a group we need to demonstrate that we don't break spanning tree and it is compatible with 802.1Q to show we don't break their architecture.

C – These proposals are outside the jurisdiction of 802.1

C – It is premature and we do not need to consider a presentation to 802.1 at this time.

Straw Poll

Do we want to discuss bridging with 802.1 at this meeting

Yes – 16 & 21

No – 8

Abstain – 8

Straw Poll

Do we want to form an ad hoc to create a presentation on bridging for discussion with the 802.1 during this meeting.

Yes – 44

No –

Abstain -

Motion 2001-11-14-06   **18:08pm**

Form an ad-hoc to prepare a presentation for the Working Group and have it approved by the Working Group for discussion with 802.1D on the following topics.

1) "Simple" Compliance with 802.1D
2) Spatial Re-use with 802.1D
3) Encapsulating Bridging with 802.1D
4) Assignment of type values
5) Customer Separation ID s

M - Bob Castellano, S - Spencer Dawkins

Yes – 45 No – 0   Abstain - 3

Motion Passes

Tuesday November 14, 2001

8:30am Agenda Scrub

8:38am Jim Kao – Topology Discovery

A requirements, description and conclusions of Topology Discovery from the Gandalf draft.

Q – What period do you recommend running this algorithm.

A – From the Round Trip Time of the ring up to 1 second.

C – Distributing attributes can be problematic

Q – Do you see that this can scale to more than a dual ringlet ring and how.

A – If we want to support 255 nodes we need a 2k PDU. We would send on all ringlets.

C – If you lose a topo packet you have a timer that expires and reinitiate the topology process until you receive a unerrored packet. It can be based on a trigger from topology discovery.

Q – What if I am supposed to support 63 nodes but I am put on a ring with 100 nodes.

A – You would signal via software of an error condition.

9:10am Jason Fan – Topology Discovery

A description of the Topology Discovery mechanisms used in the ZZ or Aladdin proposal.

C – There is no change in topology if there is a link failure on the Gandalf Draft

A – However, messages are sent on ringlet 1 and 2 on different directions in the case of a break and wrap condition, correct. Therefore one message disappears.

Q – You didn't talk about how complicated this method is for dual rings and the time is longer. Gandalf has a lot of field experience. There is a much easier way.

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A – Sending a broadcast is not complicated relative to hop by hop. We added extra robustness. The basis is a single broadcast and this is not complicated. Discovery of neighbors and broadcast is simple. Validation can be done in a number of ways. Aladdin has simulated this and ultimately the group can decide.
C – Anything that sends a broadcast relies on topology knowledge which is not know when there is start up mode. Cisco is not robust enough because of the TTL. I would like one method that is simple and provable.
A – In any case you have to assume that there is a ring and Gandalf assumes that you will get the message back.
C – For Gandalf if you set the Topology discovery you can have topology in 100ms
C – As a user of RPR, I need an asymmetrical ring topology discovery method because I have asymmetrical rings. The Aladdin better fits the asymmetrical ring and this fits my topology better.

9:30am Gal Mor – RPR Protection
A presentation of how to combine steer and wrap or SWIS mechanisms on the same ring.

10:20 John Lemon – Protection Switching
A description of the Protection mechanisms contained in the Aladdin proposal.
Q – If you use the topology image, the question is how quick is the topology image stabilized.
A – Those are independent. Even in an extreme case of 2.5 when adding a new node that node is not recognized yet. The state of a link does not affect topology. The topology is still a ring. We need to know the identity of the nodes and their relation to one another.
Q – What if a node disappears does the topology algorithm converge and does it have an impact on performance.
A – From those nodes point of view the topology has not changed, it is still a ring. Whether you can reach a node is a function of protection not topology.
C – You must use TTL to protect the broadcast message. We are overloading the TTL field to do this activity.
Q – For bridging you need a ring length when the ring is in tact. When the ring is broken the length is longer to reach the far nodes around the break. Can you recalculate the TTL in this scenario.
A – If you set TTL is set to the number of stations on the ring or 255. Then you know the distance to the station. You can get the information from the topology database.
Q – Flooding is done on both links and can result in identical frames on both links.
A – In the case of flooding you are flooding only on one link. You can intelligently set the TTL with the database.
Q – Does this require a CAM-like look up.
A – I don't believe it does.
C – Any proposal the working group considers will require simulations to for error conditions.

10:45 David James - Topology Discovery
A description of the Topology Discovery and CRC mechanisms from the DVJ proposal.
Q – Can you do this for 64 bit calculations for OC 192.
A – Yes
C – We have two methods for Topo Discovery, one is hop by hop and the other is broadcast. This is similar to a routing RIP distance vector. Broadcast is link state like OSPF or ISIS. Link state is most often use in carrier networks because it converges a lot quicker even though it has higher overhead.
A – You go around the ring once and I think this hop by hop will have a quicker convergence time.
C – We should choose something that functions efficiently during normal operation not during error conditions because that condition occurs infrequently.

11:07 – Henry Hsiaw – Spatial Reuse on Multi-Ring Networks
A proposal that addresses bridging across multiple rings.
Q – Do you propose to use the ring ID even if we have a single ring.
A – Yes just for consistency. The spirit is to address the efficiency.
Q – How will the tables be built.
A – the routing layer will build it every time you have a topology discovery process.

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Q – Do this imply learning.
A – This does not break spanning tree. I am not addressing learning.
Q – If I have an unknown address which ring interconnection can pick that up.
A – The newly added node will know that it has to go thru the interring node. It needs to broadcast to ring 1 and ring 2 establish the relationship.
Q – How does a station on ring 1 know to get to ring 3 and know what is on ring 3.
A – The topology discovery mechanism must inform the station.

11:20 – Rhett Brikovskis - RPR Physical Layer Proposal
C – This is a historical event, the convergence of the Aladdin and Gandalf drafts.

12:15 - John Lemon - Presentation of Ad Hoc 8021.7 Draft Outline
Presentation of results from the Ad Hoc created to build a common draft outline.
C - At some point in time, we'll need to define
conformance to clauses, especially optional clauses.
Q - Is this using standard template.
A - Yes, we will vote on this tomorrow, after people have a chance to
look at it.
C - It would be a good idea to have the names of the people at the ad hoc on this document.
Q - What's the criteria for annex VS clause? PHYs in 802.3 are clauses, not annexes.
A - Complex minutia tends to go into annexes - they may be key to
implementing, but not to understanding. When the standard comes out, the only thing that matters is
whether the material is normative or informative.
C - Don't agree that PHY should be in an annex.
A - Thanks for the comment.

12:30 - Bob Castellano - Bridging ad hoc presentation for 802.1 joint meeting
A presentation of Bridging issues and concepts developed by the Ad Hoc group.
C - Don't need to talk about MTU sizes with 802.1 - 802.3owns it.
C - Ethernet MTU PHY limits shouldn't be a problem for new PHY implementations, but may be for older ones.
C - Type numbers are administered by IEEE RAC, which relies on IEEE WGs for expertise. David James is on the RAC, and says he expects RAC would say, if it's needed, but don't go crazy.
C - It's really premature to present customer IDs to 802.1 when we don't have a proposal in 802.17.
C - There were presentations back in May on customer IDs.
C: We're just asking 802.1 if they want to work on customer IDs, not present a complete proposal.
A - We just want to answer a scope question. We don't know whether we should be working on it at all.
C - It's better to decide within 802.17 before, in case we need to put pressure on 802.1.
C - It matters whether customer IDs and type fields are in headers or in payloads.
Q - What is EFM doing with customer ID? A: We'll find out from 802.1.
C - If customer ID affects bridging operation and forwarding, it will be in 802.1.
Q - What's our expectation for the meeting? Are we telling them everything that we've done.
A - We're really avoiding a turf war, on customer IDs and bridging, and avoid problems later.
Q - Did the ad hoc reach a consensus last night.
A - Yes.
Q - Wasn't the presentation supposed to be approved by the group before 802.1 sees it?
A - Yes.
Q - Can we review the presentation tonight.
The ad hoc group was comfortable with real-time review.
C -This material was presented before. Do people have a problem with it.

1:00pm – Italo Busi – OAM Proposal
A joint presentation on OAM from the Aladdin and Gandalf proposals

1:45 Wei Chau Wi – Layer Management
A description of Layer Management from the Aladdin proposal.

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C – It would be good to include a table of MIBs so it is easy to read and understand.
Q – How do you propose to run GFP on Frame Mode and Transparent Mode.
A – It has to be defined by the ITU and IEF. It is a process we must manage.

2:05 Khalid Amir – RPR Performance
Presentation deferred until 11-16-01 or next meeting.

2:27 Kanaiya Vasani – Overview of the Aladdin Draft
Highlights and service objectives of the draft proposed by the Aladdin group.
C – The term compromise is probably inaccurate. The best result may be convergence of the 3 proposals.
Focus on working together and compromise should be the last resort.
C – The group that is in the Aladdin is interested in Layer 2 services and others are interested in Packet
Pipes. Many carriers want to offer IP services on fiber and others over Layer 3. We shouldn't overlook the
Layer 3 services.
A – All of us do sell to the Packet Pipes market. There are Layer 3 services where you have to do Layer 2
as well, we should be inclusive in our standard.
C – SRP does apply in the metro delivering services to subscribers. You can take a clean sheet approach
and you can leverage existing technologies.
C – Once you change what is already out there then you cannot say that the new proposal works and there
are 13,000 ports out there.
Q – There have been a number of compromises made in the Gandalf draft but I have seen none in the
Aladdin.
A – Let's be clear that fixing problems and addressing wider markets is part of the standard process and
doing it unilaterally is not compromise but rather improving a draft.
C – We need to have a shift of philosophy. The drafts are contributions to the working group to address the
wider market. We have shown ways of doing that through the ad hoc. We need to get off the yours and
mine stance.
C – We should add the amount the configuration required to work at the basic and the best situation.
Q – Is it on the system itself or the MAC alone.
A – The MAC.

2:08 Steve Wood – Overview of the Gandalf draft
An overview of the MAC presented in the Gandalf draft including key objectives.
Q – How do you get rapidly to market if it is not backward compatible with SRP.
A – These modifications allow us to make changes that don't require major changes to silicon and therefore
we can get to market quicker.
C – That makes it hard to know how to work with you because we don't know what breaks your silicon.
Q – There is an incongruity between your presentation and Gandalf on protection.
A – We are supporting SWIS
Q – On Gandalf not the SRP chart, would it be fair to say that all of these were added to meet objectives
that the working group passed.
A – Yes
Q – Is there a way of getting a simulation model for the Gandalf proposal.
A – We will make it available.
C – Wrapping followed by steering is inferior to doing only wrapping or steering.
C – For 2000km ring the delay is 15ms of packet loss.
C – The Gandalf simulation model will be available several weeks before the next meeting.
C – The fairness messages go on the backward link. It would be possible for packets get lost in a wrap
condition because the buffers would fill.
A – We only show the order of data packets. The fairness messages are always served first.
C – To selectively steer a few flows still means you are still stuck with all the problems inherent in
wrapping.

3:40 David James – DVJ Overview
An overview of the DVJ proposal and discussion of it's various mechanisms.

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Q – Page 25 of your draft requests a preemption that requires segmentation and you have not mentioned that Segmentation and Reassembly is required.
A – If you are looking at 1 Gig with jumbo packets it is important.
Q – What physical layer supports preemption.
A – They all could. There are several small packets in one big packet so in a sense it is not preemption.
Q – You have class A and Class B and I don't see the difference between Class B1 and B2.
A – On B1 the bounded delay should be 125ms vs. B2 it would be on the order of 30ms

4:30pm Bob Castellano – Proposed 802.1 Discussion Presentation for 11-16-01
This presentation is the result of the ad hoc and is recommended as the presentation we make to the 802.17 on 11-16-01
C – PHY issues should be addressed to 802.3. We could ask about interoperability with 802.3. We may ask about how big an 802.17 packet should be from the 802.1 perspective.
C – We have to ask questions correctly on slide 26 note that the LAN can still act as a broadcast media.
C – Slide 20 the title should be changed.
A – OK
Q – On the hierarchical routing scheme it is not a learning scheme?
A – It is a hop-by-hop method.
Q – In the hierarchical mechanism how do I know which path a packet takes through a mesh of rings.
A – When you come into the ring the ring node is the one that has the database of all the addresses coming into the ring. That node keeps the node table and ring table.
Q – You are using the Gandalf frame format in this presentation and we don't want to give the impression to 802.1 that this is the 802.17 frame. The Aladdin proposal would be different.
A – It doesn't matter to the discussion and I will mention that this frame is for illustrative purposes only.
Q – Did you look at the issues related to .3 to .17 bridging.
A – We did this under the compatibility section.
Q – What is the question we are asking to .1.
A – On slide four we list the questions we are going to ask.
Q – I am not convinced that Hierarchical addressing will not work without a new protocol and therefore may confuse our discussion.
A – A ring identifier is passed through the network.

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Motion 2001-11-14-07                            17:15pm
To approve the presentation prepared by the Bridging Ad Hoc for presentation to
802.1 on 11/14/2001.
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M – David James, S – Jim Mollenauer
Yes – 51No – 6   Abstain - 3
Motion Passes

Motion to Recess until 11-16-01 at 8:30am

Thursday November 15, 2001
8:30 Begin Meeting
8:35am Agenda Scrub
8:40am ETSI (European Telecommunications Standards Institute) liaison letter review – Jim Molleneaur volunteered to draft the 802.17 response.

8:45 Kahlid Amer – Performance Committee History and Results
The committee has developed performance guidelines. They are posted in the performance committee .

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Motion 2001-11-15-08                            8:51am
To place the 802.17 Performance Committee into hibernation until needed.
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M - Bob Love, S - Khalid Amer
Yes 35   No 0   Abstain 6

8:55am Planning for January meeting in Florida
Chair – Our meeting planner is getting competing offers at hotels in Orlando. We should have a location selected soon.

9:00am Presentation of PowerPoint on Bridging approved by the Working Group for discussion during joint meeting between 802.1 and 802.17
Presentation and discussion of issues that may overlap between 802.17 and 802.1
Representing 802.1: Tony Jeffree, Neil Jarvis, Paul Congdon, Les Bell, Mick Seaman

Comments, Questions and Issues raised by the 802.1 Members
How does the mapping table work when the source address is different than those in your mapping table?

Filtering database is a layer 2 switching table. What if people want VLAN, and Customer ID in the table. It seems that it expands indefinitely and how do we bound the scope of it.

Considering Hierarchical and Ring ID based approached. That is like source routed bridging. How do we limit the scope of the Ring ID. Station ID is local at 256. For ring ID you don't know how large that will get. Can you have thousands or millions of Ring IDs.

There are 3 mechanisms TTL Encap and Spatial Reuse. They all tie to the MAC table and they are all equivalent. Learning limits who can look at it. This limits excess flooding. Floods can be nasty from the core to the end stations. I might suggest a TTL and direction so the packet doesn't go any further than it needs to go, possibly by preconfiguration, so your Customer ID can tell the other bridges that they can peek at the packet if they if they like.

Sometimes you need to look into a VLAN, MAC addresses sometimes the VLAN matters others not. The customer sets this and it is an adjustable parameter.

The bridge is sometimes told to flush its table. That behavior must play into your scheme.

Also things that you can learn need to be exported to the table in the bridge. So your MAC needs to write to the bridge and the bridge needs to erase at least some entries from the bridge.

In a given implementation I may want to export a portion of the bridge table to the MAC. This is better because if you put the whole table in the MAC you invite a long dialogue with 802.1 as we change things.

Station ID and TTL can become the same thing in some scenarios.

In as much as you have compiled a complete list of issues you have done a good job.

FDDI was encapsulating for a time. Source Routing was done in Token Ring. We had a saying, credible, enticing and nontrivial problems can successfully recur. You could be here for a long-long time, like 5 years. As you get into more detail it will get worse. A system with persistent and distributed state introduces radical trouble because the environment can change and your rules may not cover all cases and it can run out of control. I recommend you start with the most trivial case, transparent bridging from 802.17 to 802.3. Then you must define what customer scenarios you will support. You will likely find: Transparent bridge support on the extended bridge LAN – Simple and Limited Links across the 802.17 mean you can borrow from IETF. You should pick a service model based on something that exists, it will be easier.

The filtering database is in the MAC but the MAC Reference model says 1 MAC controls all the ringlets. This is confusing. What network scenarios does .17 support. Likely the metro. If you put something in the MAC it forces filtering in the MAC.

You have turned the ring into a broadcast media. Depends on the reliability of the TTL stripping. No bridge can transmit when during learning because the TTL
Understripping don't make it around
Overstripping make it around too often.
What are the problems this creates?
What timeframe do you consider reasonable.
There is a bad consequence of understrip that some stations are unreachable. You must invent and deploy a new protocol that guarantees reach ability even if there is no know topology.
With Overstripping you may need to send the same frame twice and this creates significant problems with trace back.
If the problem is persistent stuck states, this can create ongoing problems.
You should reduce the probability of duplicates to zero. On the other one you have plausible deniability.
As long as the TTL stripping is robust then you can add the Source Station ID to the………
The history with regard how bridging issues get started, the 802.17 group raises a PAR to change clause 6 to modify the 802.1 in a limited way.

There is the opportunity for multicast loops if the TTL gets stuck in a misconfigured state for a long period of time.
Do we expect that 802.3 is a peer of the 802.17 in the general case? Then you meet the compatibility criteria.
If we have customer separation or type fields should they be in an RPR specific header or in the payload with some specific type field?
We would prefer to see customer separation farther back in the packet. UTI or through MPLS tunnels form a set of spaces that can be used. If a metro is feeding a backbone there can be gateway-mapping issues.

802.1 does not have an opinion on packet size. As you probably know MTU discover is unreliable and Segmentation is absurd so you should stick to 1500 byte packets.

When you have a TX in the MAC client in you will need a Spanning Tree database in the client endstations. The control comes with the bridge table down into the MAC and you should watch this issue.

A transparent bridging case is the most immediate case with compatibility for .1. To use .17 as a metro network the packet go into a tunnel and that doesn't impact .1 at all.

10:35am Break

11:15am Review of ETSI response letter.

Motion 2001-11-5-9	**11:19am**

Motion 2001-11-5-9   **11:19am**
802.17 pre-authorizes the voting members of 802.17 to progress the work of 802.17 through voting on motions at our January, 2002 interim meeting, so long as at least 40 voting members are present. The outcomes of those motions will be binding on the 802.17 with the same authority as if they were motions passed by the voting members of 802.17 at a plenary meeting.

M – Bob Love, S – John Hawkins
Yes 52   No 3   Abstain 11
Motion Passes

Chair: There are currently 144 official voting members.

> **Motion 2001-11-15-10**   **11:26am**
> 802.17 Working Group approves the liaison letter as written by Jim Molenauer allowing for formatting changes. This letter shall be sent to the ETSI SPAN committee on behalf of the 802.17 Working Group.

N

Yes – 52   No – 0   Abstain - 3
Motion Passes

> **Motion 2001-11-15-11**   **13:17pm**
> The RPR header and data shall be individually protected by separate CRCs.

M - David James S - Frederik Davik
Yes – 49   No – 1   Abs - 8
Motion Passes

> **Motion 2001-11-15-12**   **13:20pm**
> The RPR MAC shall provide the client with sufficient information to support selection of packets based on the hop distance between the source and destination stations. As and example, this MAC-supplied information would allow the client to send a packet over 2 hops, while inhibiting sending of packets over 4 hops.

M - David James S - Fredrik Davik

Move to Table Motion 2001-11-15-12
Steve Wood, Jim Molleneaur
Yes – 35   No – 19   Abstain - 10
Motion Tabled

> **Motion 2001-11-15-13**   **13:30pm**
> The RPR MAC shall support the allocation of best-effort traffic using weighted fairness.

M - David James S - Fredrik Davik
Yes – 50   No – 3   Abstain - 5
Motion to call the question to call the question.
Yes – 39   No – 2   Abstain - 12

> **Motion 2001-11-15-14**   **1:47pm**
> The RPR MAC shall have idle management mechanisms that ensure no packet loss with the assumption that each MAC may have independent clocks. Furthermore, these clocks may deviate by a physical-layer dependent amount, possibly as large as plus or minus 100PPM.

M - David James S - Fredrik Davik
Withdrawn

> **Motion 2001-11-15-15**   **1:53pm**
> The RPR MAC shall support wrapping and steering. The client shall be able to label individual frames, so that the desired protection mechanism can be selected on a per-frame basis.

I

17

M - David James S - Fredrik Davik
Withdrawn

Motion 2001-11-15-16   **13:54pm**

The RPR MAC capabilities shall not be compromised by the desire to support more than 2 ringlets on each ring. Specifically:

If ringID identifiers are mandated in the header, these identifiers shall have a 1-bit size.

Stations that support only two ringlets shall not be complicated b y the desire to support N+1 ringlets.

M - David James S - Peter Wolf

Motion to Table
M - Raj Sharma S - Jim Mollenauer
Yes – 38   No – 16   Abstain – 6
Motion Tabled

Motion 2001-11-15-17   **14:16pm**

The RPR MAC shall support three classes of traffic, as follows:
  Class-A: Provisioned BW & low latency
(latency is not affected by ringlet circumference).
  Class-B: Provisioned BW & latency
(latency possibly affected by ringlet circumference).
  Class-B: Unprovisioned. Residual opportunistic BW.
Allocated based on weighted fairness.

M - David James   S - Fredrik Davik
Withdrawn

Motion 2001-11-15-18   **14:19pm**

The RPR MAC shall support two forms of class-A (guaranteed-bandwidth low-latency bandwidth) bandwidth management protocols, called proactive and reactive. The proactive protocol has no (significant) lower-class transit buffer requirement and relies on prenegotiated transmission rates. The reactive protocol relies on a larger transit buffer to hold lower-class traffic while sending dynamic flow-control information upstream.

M - David James S - Fredrik Davik
Withdrawn

Motion 2001-11-15-19   **14:22pm**

Motion to adopt the resolution of comments on Terms and Definitions that were completed by the Working Group.

M – Bob Sultan S – Spencer Dawkins

Motion 2001-11-15-20   **14:43pm**

Motion to make simulation models available for any proposal to be considered by the Working Group for draft by December 25, 2001.

M - Kanaiya Vasani S - Adisak Mekkittikul

Motion to Table until the January meeting.
M - David James S - Bob Castellano
Yes – 36   No – 15   Abstain – 5

Motion 2001-11-15-21   **15:23pm**
Motion to use the Draft Outline developed by the Ad Hoc this week as the outline for the draft.

M - John Lemon S - Steve Wood
Yes – 53   No – 0   Abstain – 0
Motion Passes

Motion to adopt the resolution of comments on T&D that were completed by the WG.
1 Bob Sultan, 2 Spencer Dawkins

Approximately 4:00pm the meeting recessed due to tornado warnings near the meeting location.

Approximately 4:30 the meeting reconvened for a short period. During this time Bob Sultan presented the proposed comment resolutions for the T&D. The group approved, by unanimous consent, that he recirculate the T&D with the proposed changes to resolve ballot comments.

Soon thereafter the meeting adjourned abruptly due to the danger posed by hailstones on the glass ceiling of the 17th floor meeting room.