IEEE 802.17 RPR Working Group Meeting Minutes

Interim Session, September 10-13, 2001
Double Tree Hotel, San Jose, CA

Reporter: B.J. Lee and Mannix O'Connor

Note: Attendance list is attached as an Appendix.
Note: All the presentations are available on the RPRWG Web:
http://www.ieee802.org/17/documents/presentations/sep2001/sep_2001_presentations.htm

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September 10, Monday

9:00am: Seating, Everyone
9:00am: Welcome Slide, Mike Takefman
- Mike introduced administrative rules and procedures, including the goals of the meeting and future meeting plans.

9:30am: Agenda Scrub, Mike Takefman

> **Motion: 2001-09-01 (9:30am)**
>
> To approve the agenda as distributed via the Web.
> **Approved without Objections.**

9:30am: 802.17 Network Update and Distribution of Documents
9:35am: Introductions, Everyone

9:45am: **IETF IPoRPR Update, Albert Herrera, Lantern Communications**

9:50am: **Presentation – Ethernet Transport over RPR, Vish Ramamurti, SBC**

- Presented RPR benefits for statistical multiplexing at the access networks. Ethernet over MPLS is also described.

Q: Why Ethernet over MPLS on top of IP over MPLS? Is there a standard?
A: Martini draft. We see complexity with IP, thus a need for Ethernet over MPLS.
Q: Exite@Home has 4 million end points, and Layer 2 service will not be a scalable solution.
A: Currently SBC sees business customers with less number of end points.

10:20am: Break

10:30am: **Presentation – MAN/WAN Interconnection Options for SBC, Vish Ramamurti**

Q: Why ATM management cost was high in ATM VP ring? Doesn't MPLS have similar problem?
A: Yes, but MPLS has other benefits that offset the cost of setting up ATM VPs.

Q: For GbE, ESCON and Fiber Channel traffic, have you looked at Virtual Concatenation that is now being standardized?
A: SGS 21C does address some of the issues, but does not work for multiple gigabit Ethernet circuits. We like RPR for the access ring.
Q: If the traffic pattern is static, then you don't need ATM VP Ring or RPR.
A: No, we don't see RPR being used in the Core network where the usage is static.

11:00am: **Presentation – Draft Overview, John Hawkins**

- Gave a brief overview on the recent development of a joint draft proposal with meeting information.

11:03am: **Presentation – RPR 802.1D/Q Bridging Compliance Report, Marc Holness, Nortel Networks**

- Demonstrated that 802.17 is compliant to 802.1D/Q bridging requirements

Q: How does the node know the number of nodes?
A: Topology Discovery protocol determines that.
Q: Isn't flooding bridged packets inefficient?
A: The objective here is to show compliance to 802.1D and Q.
Q: Does the node contain only ringlet local or other address? Are the SA and DA addresses local or not?
A: They are the SA and DA as defined by 802.1D.
Q: When you have a failure on the ring, you have to change the TTL to insure no one gets two copies. Are there two types of protection, i.e., one for steering and one for wrapping when unicast packets are sent?
A: This is probably an unrelated issue.

11:25am: **Presentation – Encapsulation Bridging and 802.17, Robert Castellano, Jedai Broadband Networks**

- Showed that the encapsulation bridging allows bridging functions to be performed outside the 802.17 MAC entity.

Q: Do you feel that there is a scaling issue, if there is not double encapsulation bridging?
A: There may be, and we should look at it.
Comment: The SA and DA should be addresses on the local ring.
Q: Encapsulation bridging has not been specified in 802. Therefore compatibility cannot be assured and we should investigate. Is it done in the MAC or as part of the relay function? Claiming conformance to 802.1D or Q cannot be made.

A: I agree with you that there needs to be a protocol defined in the bridging group. We need similar definitions in an annex and passed to 802.1, but it is not inconsistent with 802.1.
Comment: We need to insure that we meet real world needs. Although the encapsulation bridging is a scalable solution, RPR also needs to interoperate with Ethernet bridges/switches.

11:47am: **Presentation – Encapsulation, Bob Sultan, Fujitsu**

- Provided a brief overview on the draft proposal by Ajay

12:00pm: Lunch Break

1:10pm: **Presentation – RPR MAC Reference Model, Adisak Mekkittikul et al.**

- Presented an overview of a RPR MAC reference model proposal

Q: Are the Link BW monitor entity and Media Access Rate Policing Entity Residing within the MAC definition?
A: That is one of the services inside the MAC.
Q: In your prior presentations your, RCF message format had ringlet ID and each segment, and now you are only talking about node.
A: The RCF is a frame that passes on the ring and the MAC unwraps the packet for each client. The MAC will send each value one at a time to the MAC client.
Q: Do you have one or more MAC clients?
A: That depends on implementation.
Q: Are we standardizing the MAC client here?
A: By no means. We need to supply a sufficient service interface that conforms to the MAC.
Q: If there is a single queue, then you don’t need these messages.
A: Then the MAC can ignore the message.
Q: The 802.3 control frame carries too much baggage. The control frame has to be sunk and regenerated at each node.
A: In terms of sending the control request up, it is not related to the bandwidth management that we need to do.

1:25pm: **Presentation – MAC Reference Model, Steven Wood, Cisco Systems**

- Presented an overview of yet another RPR MAC reference model proposal

Q: Is the Fairness algorithm part of the MAC client?
A: Just the basic algorithm runs on the MAC, and other fairness algorithms could be layered on top of what we are proposing.
Q: On slide 9, you show scheduling and queueing would be done in the MAC because you show buffers and rate shapers in your diagram.
A: Only basic queueing would be in the MAC. More complex shaping could be done at the ingress.
Q: Have you looked into buffer size and HOL blocking with this

buffering scheme?
A: We want to keep this buffer as small as possible, so HOL can be avoided by more complex queueing mechanisms at the ingress.
Q: If node 6 down the line is congested but node 3& 4 are not congested, how do your suggestion work in this case?
A: Later presentations will answer that question.
Q: If I want to build a Layer 2 network with your MAC, what are the implementations of a bridged RPR network?
A: I don't think these primitives preclude bridging. There may be more primitives required.
Q: On slide 9 you have a rate shaper in the MAC, but MAC needs to be dumb to function efficiently. It is dumb to make MAC smarter.
A: Thanks for the comment.

1:50pm: **Presentation – MAC Reference Model for Port Management, Pankaj Jha, Cypress Semiconductor**

- Presented an overview of yet another RPR MAC reference model proposal with flexible port configuration

Q: How does a single MAC handle multiple physical links at high speeds?
A: This proposal refers to a single logical MAC entity which binds multiple physical MACs.
Q: On slide 7, you show PHYs are split per direction. Some of the MACs we want to use are actually bi-directional, so we should draw the TX and RX on the same PHY.
A: OK.
Q: If you keep the Transmit Buffer simple, does this preclude scheduling on the Transit Buffer?
A: If the packet comes on the fiber and you need to send the add traffic, then the logic buffer should be able to act on the whole logic of the system. The MAC should take commands from the local logic and external logic and mix them in the core logic and make a determination. All this should be part of the MAC and it does perform core scheduling functions.

2:10pm: **Further Discussion on Reference Models, All**

- Discussion ensued to determine whether a separate BOF or Ad Hoc group should be formed to work on the reference model. Comment is also made that people may not want to have such separate groups at this stage. Decision is deferred.

2:25pm: **Presentation – Network Architecture and Ring Aggregation, Necdet**

Uzun, Cisco Systems

- Presented an architectural description of ring aggregation mechanism, and also pointed out that it is beyond the scope of 802.17 for now.

Q: Wouldn't it be easier to have different link speeds to accommodate different amount of traffic on different segments, especially at high link speeds?
Q: Is this ring aggregation a part of MAC? IEEE 802.3ad is part of the 802.3 MAC.
A: Yes, but the link aggregation is not.
Q: Are there individual fairness algorithms running on each ring?
A: Yes.
Q: Do you see a need to minimize the transit buffer in the transit path?
A: It is irrelevant in relation to ring aggregation. When you change traffic distribution you must engineer the network.
Q: In the case of dynamic traffic distribution across multiple rings, you have to insure the transit packet is not out of order.
A: We have a way to prevent the mis-ordering of packets that we can share with the group.

2:45pm: Coffee Break

3:00pm: **Presentation - RPR Cost Model, Steve Plote, Looking Glass**

- Presented a cost model comparing the RPR and Ethernet point-to-point solution, and listed a set of recommendations.

Q: When the traffic pattern becomes dynamic, does RPR provide a greater Value?
A: Yes. Since, however, we are a carrier of carriers with a single priority traffic, the aggregate traffic is observed to be rather smooth and predictable.
Q: RPR support voice and private line service and this is better than Ethernet.
A: We will have an overlay network for data until we can prove that the RPR can really restore in sub 50ms in all cases.
Q: Neither Ethernet nor RPR really fit your requirement as a carriers' Carrier?
A: I can do it with POS/GFP or these architectures. We feel that RPR or Ethernet switching provides the best solution for data only architectures. A good CAC and queueing method will give RPR an advantage. The value-add for RPR is multi-node rings where I don't have to home traffic back to the core router.

3:30pm: **Presentation – Performance Simulation of Nortel OPE-RPR Ring (III), Changcheng Huang, Carleton University**

- Presented simulation results on Nortel's RPR implementation of fairness mechanism.

Q: Do you recommend having two queues or more to get sufficient utilization out of the ring?
A: They are outside the MAC layer. For the client side, it is better to have per destination queues.
Q: If I can group the queues into two, then are you saying two queues are sufficient?
A: Only if we know where congestion is going to happen.
Q: With your EF traffic, are you assuming a constant stream hitting your Node? If you allow the rate to go down, the low priority will take the bandwidth and that will affect the EF traffic.
A: The packet size is still variable, and the simulation is bursty.
Q: You have an ingress queue, and what functionality does it perform?
A: This is not a queue, but just indicates the traffic going into or out of the ring.
Q: Where you have unequal priority distribution, did you also try to reverse the case in your simulation to determine the ring throughput?
A: We did the both, and they had the same result.
Q: Do you have a high priority timer?
A: No. There is only a single timer for overall traffic.

4:00pm: **Presentation – Proposal for Layer Management, Constantinos Bassias et al.**

- Presented an architectural description of layer management and MIB proposal.

Q: Do we need to address GFP with this proposal? There is nothing on GFP or Service Access Points in the Study Group on T1X1. It carries 8B/10B encoded signals and does not support GFP.
A: We may or may not need to draft something for presentation to T1X1.

Comment: Draft for a liaison to T1X1.5 GFP SAP interface MIB needs to be made.

4:20pm: **Presentation – OAM in RPR, Italo Busi et al.**

- Presented a proposal for on-demand and in-service RPR reachability OAM mechanism.

Q: How does this mechanism work in a bridged environment?
A: No, it won't work. This is a control frame that is not bridged.
Q: How would it be different from an on-demand topology discovery request? In another words, why is this necessary?
A: Not sure at this point, but there may be useful use cases.
Q: Why do you need a checksum and an FCS?
A: In principle we suggest that it is important to insure the data is correct.

4:30pm: **Presentation – OAM in RPR, Leon Bruckman and Angela Tozzi Faber**

- Presented yet another proposal for RPR OAM mechanisms.

Q: Is all the OAM flow info on source-destination pairs and why?
A: Because the RPR itself transmits between stations not links. The L1 can indicate a link failure but L1 cannot tell you of higher layer errors.
Q: If you look at source/destination pairs, you should have it outside the MAC with some control messages. Your continuity check will only tell you what happens to a control packet, not what happens to a data packet.
A: If the source and destination of the packet are stations on the ring, then you have flows going between stations.
Q: On page 6, how does station number 5 know that station 1 initiated a continuity check?
A: Using the activation flow signal that is sent to station 5 from station 1. Network management can do this too.
Q: Don't think it would make more sense to send these packets as standard packets between stations.
A: If you are doing traffic management for high priority traffic, you know where you are sending them.

4:50pm: **Presentation – 802.3ah OAM Objectives, Denton Gentry, Dominet Systems**

- Presenter's Note: 802.3ah EFM task force has not met yet, and thus this presentation should not be considered as a final official version.

Q: Is there interests in QoS related monitoring, such as voice over Ethernet?
A: Not likely in 802.3.
Q: How is the alarms conveyed to the end users?
A: Although there is not definitive mechanisms being proposed, there is such objective.
Q: Is APS-like protection in EFM?
A: Probably yes, but I have not seen any presentations yet.

5:05pm: RPRWG Adjourns for the day.

September 11, Tuesday

9:00am: Seating, Everyone
9:05: Agenda Scrub, Mike Takefman
9:05: Minute of silence observed for the victims of NY World Trade Centre and Pentagon Hijacking Crashes

9:10am: **Presentation – RPR MAC Transit Path Design, Sanjay Agrawal et al.**

- Presented an overview description of a MAC transit path design proposal.

Q: Is there a single copy of bandwidth management control message for N ringlets?
A: There are multiple copies.
Q: Can you provide HOL avoidance with a single MTU buffer at the transit path?
A: Providing multiple buffers at the transit path would be too complex.
Q: What size should the Transit Buffer?
A: A signle MTU.
Q: On page 6, you have N ringlets; is there one fairness message or many and do you expect any issues with many messages?
A: We have not encountered any issues.
Q: Can you quantify the worst case jitter?
A: We will with our simulations.
Q: You are proposing a single control plane for all the ringlets, but is this a good idea?
A: There will likely be separate control planes for all the ringlets.
Q: Are the rules in chronological order on slide 9?
A: This is not necessarily a list of rules in execution order.
Q: How do you do error correction for TDM?
A: It is a sixteen bit header HEC, so error correction can be done.
Q: Does this mean you have no backpressure or thresholds to control Traffic?
A: There is backpressure, but we use congestion avoidance not congestion management.
Q: To strip a multicast frames do you propose to use source address or a TTL?
A: It can be done with either method.
Q: Do you propose the store and forward and cut-thru interoperating?
A: You can do both, and they should interoperate.

9:35am: **Presentation – Transit Path Design and Interoperability, Necdet Uzun, Cisco Systems**

- Presented simulation results on the interoperability performance of single and double transit buffer schemes.

Q: Which scheme is favourable to TDM emulation? Using simple analysis, it can be shown that double transit buffer scheme incurs lager delay jitter bound than with a single transit buffer scheme.
A: Double transit buffer scheme is better.

Q: If one or two transit buffers works equally well, why not just pick One?
A: Because people are divided and we cannot agree. Dual transit buffer is better for getting close to 100% utilization. Some people want 3 transit buffers.

Q: On slide 7, Xoff and Xon are used for the simulation. Do you propose the use of Xon and Xoff working well in single buffer designs?
A: Our simulation shows that Xon and Xoff work well in this scenario, but we do not propose it for the standard.
Q: Steve Wood said that a simple buffer should be used. One MTU seems simpler than what you propose. Can you explain why you need these buffers other than to support SRP?
A: We do not need it for legacy support, but rather to provide better service on TDM emulation services which we feel will work better with the two buffer design.
Q: Mindspeed has one megabyte of memory in the transit buffer of their newly announced chip.
A: Thank you for the information.

9:35am: **Presentation – Distributed Resource Reservation for RPR, Harmen R. van As, Vienna University of Technology**

- Presented a proposal with simulation results for the SLA-aware connection setup and resource reservation scheme based on the token passing.

Q: What happens if the tokens are lost under failure scenarios?
A: There would be no new connections set up.
Comment: Other signalling protocols such as CR-LDP or RSVP seem preferable to token-based schemes, since the token-based schemes incur complexity in managing the tokens.
Q: What is the purpose of having tokens in the first place?
A: If you want to make a reservation on the ring, then no one can steal your reservation if there is one token, therefore reducing the amount of resources that can be assigned simultaneously.
Q: Maintaining tokens is more complex. There are a lot of unpredictable error cases for example multiple tokens on the ring simultaneously is prone to error or node drop.
A: 802.5 has standardized the mechanisms that can be use for this purpose.
Q: What do you feel about a scheme with many tokens?
A: The more tokens, the more parallel messages but that increases the probability that not all connections will be completed.

10:15am: Break

10:40am: **Presentation – Flow Control, David James, Cypress**

- Presented an overview discussion on the flow control and bandwidth management issues

Q: Can you provide bounded delay guarantee for class B using a single fifoBE transit queue?
A: Yes, since there is backpressure signalling and finite buffer size. No, however, in the sense that the delay bound could be large.

11:00am: **Presentation – Weighted Fairness Algorithm and 3 Priority Support, Necdet Uzun et al.**

- Presented an overview description on weighted fairness and 3 priority mechanism supported by SRP.

Q: Does the MAC client interface need to support 3 priority information, which may not be compliant to 802 MAC architecture?
A: Yes.
Q: How do you know what weight to give to each node?
A: If the user is intelligent, they will know how to set this.
Q: On Slide 4, you mentioned on oscillations. Can you explain how it happens and what can we do and what are the effects of the oscillations?
A: If you don't have low pass filtered usage, you will have more backpressure than you require. Congestion is a threshold value of a buffer.
Q: How do you set up the low pass filtering parameter; is it a function of ring delay? Is it 10 times ring delay or some other value?
A: It is a mechanism to remove the high frequency components out of the average. We recommend 100ms value independent of the ring size.
Q: Is this in the MAC or the client?
A: MAC and MAC client.
Q: Then what is the MAC client interface?
A: There is a single client interface with no buffer.
Q: Is the priority in that control function, and it should be independent of what the client can do?
A: There needs to be some behavior assumed of the client. We tell client to stop sending low priority packets, and if they don't then we will drop their packets.
Q: It is not clear how 3 priorities are in the scope of the MAC. Can you elaborate on the conditional priority of the MAC?
A: Basically the node can be congested or not, and the node must be using its fair usage.
Q: How is the MAC dealing with the Medium priority traffic access, and what algorithm you are using and how is scheduling being done?
A: The client makes its own scheduling decision. Two scheduling decisions are made; one from the client side and one from the MAC side.

11:30am: **Presentation - Merits of Open Loop, Siamack Ayandeh, Onex Communications**

- Presented a discussion on pros and cons of open-loop and feedback control based schemes, and advocated that the open-loop scheme is preferable.

Q: On slide 11, your assumption is baseless. You suggest unbounded delay and no simulation have been done, but even your presentation says that this was given to you on 3/12/2001.
A: I have used my own definition of bounded delay. The term "unbounded"

is being defined as that of the high priority traffic performance being affected by the low priority traffic.
Q: IPT is not off the table. Have you looked at the policing and shaping functions?
A: You assume that, in the aggregate, the high priority queue change then low classes will claim bandwidth. However, it will be hard for the high priority to reclaim the bandwidth.

Q: Reclaiming high priority bandwidth is simple with a dual buffer scheme.
A: OK.

Comment: Most customer networks are not overbooked, so fairness mechanism can be considered merely as a safety net.

12:00am: Lunch Break

1:10pm: **Presentation – A Near Ideal Fairness Scheme and Support for the Real Time Services, Vasan Karighattam, Intel**

- Presented a proposal for near-ideal fairness scheme which is based on virtual clock tagging.

Q: How much high priority traffic do you expect on the ring?
A: Below 50% and above 20%.
Q: It seems that you need some synchronization of the internal tag for each node.
A: The slack value is sent not the actual value.
Q: It seems you need sorting in the transit buffer. Intuitively you need an infinite buffer in the client.
A: Any given node will have the increasing order of tags. If any packet comes later, its IO tag is later. In the client you must pause the source node with backpressure.
Q: If you backpressure, you will suffer from head of line blocking.
A: You only backpressure the low priority traffic.
Q: What do you mean you can achieve 100% utilization?
A: It can be done.

1:40pm: **Presentation - Cyclic-Reservation RPR MAC Protocol with Link-Fairness, Harmen R. van As, Vienna University of Technology**

- Presented a description of a fairness control mechanism.

2:00pm: **Presentation – Improving Fairness Performance, Gal Mor, Corrigent Systems**

- Presented simulation results of a fairness mechanism with and without VOQ (Virtual Output Queue), and also with different link speeds.

Q: Did you say that the medium priority participates in the fairness?

So if I have a Frame Relay like service with a committed rate and a burst portion, then I lose the portion of bandwidth used by the committed traffic?
A: The bandwidth is used by best effort traffic whenever the high priority traffic is not available.

2:25pm: **RPR Bandwidth Management, Harry Peng, Nortel Networks**

- Presented a description of a bandwidth management proposal for RPR.

Q: Any detailed information on the handling of multicast using VOQ?
A: It is a different set of problem.

Q: If you have a large ring or you have to collect credits, you can underutilize the ring.
A: If the ring is large, then you have larger response time around the ring.
Q: Are RCM being sent regardless of your network congestion status?
A: The RCM will be sent, but messages are aperiodic.
Q: Can you explain the credit table?
A: It describes the Rate Control Factor.
Q: VOQ works with unicast flows, but RPR offers multipoint advantages. Can you describe how this works for mulitcast packets.
A: Multicast is just like a special case of unicast from a bandwidth allocation perspective.

3:00pm: Break

3:20pm: **Traffic Management, Bob Sultan, Fujitsu**

- Presented an overview description of draft proposal for RPR traffic management.

Q: GR2 class traffic is shaped to CIR even when there is available excess link bandwidth?
A: Yes, and the reason is to bound the delay guarantee among GR2 traffic.
Q: Has this been simulated or is it based on an application?
A: No and no.

3:50pm: **Multi Choke Point Detection and Virtual Destination Queueing, Necdet Uzun, Cisco Systems**

- Presented a description of the draft proposal of SRP with VDQ (Virtual Destination Queue) with multipoint choke point usage information mechanism.

Q: Would you release your simulation model?
A: Yes.

Q: You have made several assertions that need simulation studies, e.g., few destination queues are enough. These are not proven in your presentation.
A: I say that you don't need N choke information all the time. All the nodes may not be congested.
Q: How can you assume that there are not more choke points to show what you are describing?
A: Some people showed SRP simulations that required this fix.
Q: We need to have simulation model that we can independently verify your assertions. Since you claim this is not significantly different from the original SRP.
A: You need to incorporate more than SRP. We plan to release a simulation model within a couple of weeks. We cannot provide VDQ.
Q: As long as you give us a mode to simulate the MAC, that is fair.
A: OK
Q: You mentioned that there was a weighted verses a static version of weighted fair queueing. How do traffic patterns affect that?
A: This is a full solution to the problem.
Q: How do you dynamically distribute the weights?
A: If you do not know how to assign the weights, then you can use equal weights.

Q: In this case you need 2 VDQs or you need to assign weights.
A: In most scenarios it works. Although it does not resolve HOL Problem, it does not really affect performance that much. Dynamically adjusting the weights requires a lot of work, but I can comment on static allocation.

4:20pm: **Dynamic Spatial Reuse avoiding HOL Blocking, Stein Gjessing, University of Oslo**

- Presented an overview description of a bandwidth management scheme to avoid HOL blocking. Simulation results are also presented.

Q: Can you comment on how this is similar to the proposal from Nortel and Lantern?
A: It is similar, but I did not know it was similar until I heard their presentations today. I designed this approach this summer.

5:10pm: **Performance Comparison of RPR MAC Protocols, Harmen R. van As, Vienna University of Technology**

- Presented a taxonomy of various fairness mechanism proposals with simulation results.

Q: When you presented the taxonomy of the mechanisms, you must consider if it is an explicit or implicit method and if it is reactive or proactive. Can you name some explicit signaling methods that have worked well for internet traffic?
A: It is difficult to answer. You have TCP flow control and hop by hop methods so I can not answer precisely.

Q: How much control traffic are you generating?
A: Not so much. We still have to determine the optimal cycle time and that will determine the exact overhead.

5:00pm: RPRWG adjourns for the day

September 12, Wednesday

9:00am: Seating, Everyone
9:05am: Agenda Scrub, Mike Takefman
- Agenda approved without objection

9:10am: **Presentation – 802.17 Proposed Frame Format, Steven Wood et al.**

- Presented a 802.17 frame format proposal

9:15am: **Presentation – Packet Formats, David James, Cypress**

- Presented yet another frame format proposal

Q: What is the justification for the vendor specific header vs the vendor specific op code or message type?
A: The value of an extended header is that it is optional so people can skip if they want.
Q: On page 4, what does the size field represent?
A: It indicates the size of the 64 byte field or payload that follows.
Q: Should we have more bits set aside for other features and future Features?
A: You can steal some from the VLAN identifier.

Q: We should consider 32 vs 64 bit wide address spaces. However, in IP V6 there is a control that tells you if you have a vendor specific header.
A: The type field would tell you that.
Q: This makes a large overhead for the TCP ACKs and other small packets.
A: The average packet size is about 400 byte. Regular Ethernet is penny wise pound foolish because the header is efficient but other fields in Ethernet are not.

9:45am: **Presentation – RPR Frame Format, Raj Sharma et al.**

- Presented yet another frame format proposal

Q: How would you map that to POS?
A: An SPI-4 possibly uses the 7 byte flag and byte stuff the header for EFM, if required.
Q: Would all RPR compliant devices have to append the length field?
A: No. If there is no GFP, there is no length field required and it would be a software configuration.
Q: In the frame format, some PHY like 10GbE are dependent on min Inter-packet gap, so the picture should show that gap.
A: Clause 49 gives the option for the RS to introduce the IPG. Depending on whether you are using WAN or LAN PHY, you may squish or expand that field.
Q: A CRC 16 has potential for errors because of error multiplication.
A: This is just one suggestion for CRC we can investigate, if a single CRC scheme makes sense.

10:00am: **A Proposal To Use 10 Gigabit Ethernet PHYs for RPR, Rhett Brikovskis et al.**

- Presented a description of proposal to use 10G Ethernet PHYs for RPR.

Q: I recommend to exclude the direct mapping options.
A: I was trying to explain some of the subtle details.
Q: Do we need to implement RPR MACs in dual packages? If not, you may have a clocking problem between the different interfaces.
A: I don’t propose any specific implementations.
Q: Can you explain why you have mapping between different PHY types.
A: It allows, for example, the connection of 850nm short reach optic on one port with 1550nm long reach optic on the other port. This is an example of a likely configuration.

10:25am: Break

10:40am: **Presentation – Generic PHY Specification (SONET/SDH), Harry Peng et al.**

- Presented a proposal to use generic PSAP with RS for the support of GFP.

11:00am: **Presentation - SONET/SDH Virtual Concatenation for RPR, Italo Busi, Alcatal**

- Presented a description of SONET/SDH virtual concatenation use for RPR.

Q: This is a PHY layer issue, not the RPR?

A: Yes, but it should be mentioned in the specification that RPR supports SONET/SDH virtual concatenation.
Comment: All the RPR nodes should be able to support this feature.

11:20am: **Presentation - PHY Layer Support, Steven Wood, Cisco Systems**

- Presented a set of requirements for the support of SONET/SDH and Ethernet PHYs.

Q: Prepending the links should not be a requirement of the MAC. The MAC has access to this with a simple counter. GFP assumes a length field that is prepended to the frame.
A: The PHY could count these bytes. From a practical perspective it can be either in the MAC or PHY.
Q: Where do I put the SFI.
A: This function is done between the framer and SERDES.

11:30am: **Presentation – GFP Considerations for RPR, Angela Faber, Telcordia**

- Presented views on the use of GFP for RPR PHY.

Comment: The GFP is intentionally silent on the subject of discard of corrupted packets, but it leaves the way for vendor implementations. T1X1 received no proposals on frame format. In the ITU the GFP frame format is not specified. Therefore, RPRWG should send a liaison to T1X1.5 specifying a need for the null extension header type for the RPR payload.
Comment: Now is the critical time to move forward with T1X1.5 liaison regarding some of the RPR issues, since the GFP is now being sent out to ITU SG15 for separate review and determination by the end of October.

Q: Length field is 2 bytes, so you can go to 64kbyte frames. The version 4 draft says the jumbo frame is possible. Are you saying someone has implemented an 8 bit counter.
A: The implementation should support 1600 bytes and prior arrangements are required for more than this.

12:00am: Lunch Break

1:05pm: **Presentation – RPR over SONET/SDH Protection Interaction, Vittorio Mascolo, Alcatel.**

- Presented scenarios where RPR and SONET/SDH protection mechanisms may interact, and proposed requirement to support the hold-off timer.

Q: Instead of the hold-off timer approach, isn’t it better to provide a mechanism to choose between enabling and disabling the RPR protection mechanism?

1:20pm: **Presentation – Protection Initiation Criteria, Leon Bruckman, Corrigent Systems**

- Presented a list of protection initiation commands for RPR protection switching.

1:40pm: **Presentation – Wrapping and Steering Co-existence, Necdet Uzun, Cisco Systems**

- Presented a requirement that 802.1 should support both protection approaches, e.g., wrapping and steering.

Q: We should be able to come up with a single solution based on a solid technical ground, instead of providing two solutions to a single problem.
A: There are customers who wish to have wrapping in their network, and other customers prefers steering. Providing both solutions in a single ring makes more sense in accommodating both requirements.

2:00pm: **Presentation – RPR Topology Discovery Proposal, Jason Fan et al.**

- Presented an overview description of a RPR topology discovery proposal.

Q: If the source node fails, what happens?
A: The TTL will kill the packet.
Q: Under what traffic class will theses control packets been sent?
A: They will normally be sent as the highest priority traffic.
Q: Are there any patents on your Auto topology approach?
A: No
Q: Triggers, timeouts and many other issues are of concern, so we need a way to make comments to the document.
A: We will make these arrangements.
Q: While you are between unstable and stable, what state is the ring in?
A: While the topology is being discovered, all decision making or protection events are based on the current known topology not the one that is being learned.
Q: Are topology discovery messages equivalent to protection messages?
A: The topology is independent of protection events. The messaging is independent.
Q: Can you comment on why you need sync your topology with your Neighbor?
A: For robustness. It avoids corrupted topology databases between nodes.

2:35pm: **Proposal for RPR Protection Algorithm, John Lemon et al.**

- Presented a proposal for RPR protection algorithm.

3:10pm: Break

3:45pm: **Straw Poll was taken to Identify individuals that would like to participate in the following Ad Hoc groups (by Nader Vijeh):**

1. Topology Discovery and Protection
2. MAC Reference Model, BW management (Fairness), MAC Frame format
3. layer management
4. PHY Reconciliation Sub-layers

After discussions on the pros and cons of such Ad Hoc group approach in speeding up the RPR standardization process, names of the volunteer participants were listed on a sign-up sheet. THE LIST INCLUDING EMAIL ADDRESSES IS AVAILABLE ON THE MEMBERS SECTION OF THE 802.17 WEB SITE.

Q: What would be the likely outcome of this straw poll?
A: Formation of the formal Ad Hoc should wait until November meeting, but would like to have a consensus and list of volunteer participants in each group at this meeting.
Q: How would you handle the meeting schedule so that one can participate in more than one area?
A: It needs to be further thought out.
Comment: Break the PHY group into two, i.e., Ethernet and SONET, since they are quite different.
Comment: Ad Hoc groups should be supposed to come up with detailed technical information (rather than a single proposal) so that the working group can make decision.

4:05pm: **Planning for the January Interim Meeting**

- Two places are listed both for the week of Jan 14, as shown below in order of preference.
    - Hyatt Tampa
    - Hyatt Tamaya (New Mexico)

4:25pm: **Mike made remarks on the attendance and administrative, financial, and networking issues**

- Total attendance for the current meeting is 142 (71 at $200, and 71 at $200)
- Better pre-registration will help estimate the need and planning.

5:15pm: **Straw Poll was proposed for the following items (by Necdet Uzun). This straw poll was withdrawn later.**

- (1-a) Existence of 1 transit buffer nodes and 2 transit buffer nodes on the same ring is a good thing.
    - This requires a unique congestion control and fairness algorithm with unique messaging and control parameters

- (1-b) Volunteers to merge OPNET models of both nodes, simulate and present to working group

Comment: Why should we take a straw poll on a certain particular presentation or proposal?

5:30pm: **Various meeting announcements were made:**

- GFP Ad Hoc will be convened to refine the liaison response letter to T1X1.5 at 5:30pm.
- Meeting will be held to discuss a joint proposal #2 at San Carlo
- Performance Committee will be held in Sierra
- Meeting will be held to discuss a joint proposal #1 (by Nader Vijeh et al.) outside Sierra

5:30pm: RPRWG adjourned for the day.

September 13, Thursday

9:00am: Seating, Everyone
9:05am: Agenda Scrub, Mike Takefman
- Agenda approved without objection.

9:25am: **T1X1.5 liaison response letter review, George Young**

- T1X1.5 liaison was initiated in March 2001
- States that 802.17 is considering GFP as an optional PHY Layer for RPR. The T1X1 will be standardized by the ITU and will be G.XXX. 802.17 can request payload type identifiers assuming a “Frame-MappedGFP”.
- Straw poll was taken to ask the participants at this interim meeting whether we should support the liaison letter from 802.17 to T1X1.5 so that we can submit it to their next meeting. The final response letter, t1x1_response_02.doc, is available on the web.
    - Voting Members - Yes 42 / No 0
    - Non Voting Members - Yes 12 / No 0

10: 25am: Break

10:40am: **Performance Committee Overview, Khaled Amer, Amernet**

- Activities this week included:
    - Terms and Definitions related to performance
    - Discussions of framework document for phase II simulation studies

Comment: Definition of “local” and “global” fairness is necessary, and should not be removed from the Terms and Definitions. Written

suggestions will be posted in the reflector.

11:00am: **Review of RPRWG Balloting Process, Bob Love, Lan Connect Consultants**

- Bob went through the process of balloting and handling of comments.

    - o Ballots are gathered into a data base, and reviewed by a comment resolution group including editors. The comment resolution group submits the proposed responses to the working group for final approval.
    - o Comments should be accompanied with suggested remedy or proposed resolution.
    - o Responses to all comments by the ballot resolution group should be entered in the data base in "proposal mode", for review by the working group, before the ballot comment resolution is finalized.

    - o At least 50% of eligible voters must cast their ballots for the balloting to be valid.
    - o Not casting the ballot two out of three occasions(or two in a row) may result in the loss of voting right.
    - o During re-circulation balloting, the only valid comments are those that are related to the changes made during ballot resolution, or to comments made during the previous ballot.
    - o Although the votes from the non-voting members are not counted, every effort will be made to seriously consider all comments submitted by non-voting members.

11:50am: **Review on the Terms and Definitions Balloting and Comment Resolution, Bob Sultan, Fujitsu**

11:55am: **Planning of November Plenary Meeting, Mike Takefman**

- Requests for presentation slots must be received by the chair no later than October 15th.
- Other details including the goals of the meeting will soon be posted on the web.

Comments: Encapsulation bridging issue needs to be raised to 802.1D Group.

12:05pm: End of September Plenary meeting.

Appendix: Attendance List (Total: 138)

#	(Attendees)	
1	Sanjay K.	Agrawal
2	Thomas	Alexander
3	Khaled	Amer
4	Anjelica	Amir
5	Grenville	Armitage
6	Siamack	Ayandeh
7	Gunes	Aybay
8	Kinshuk	Bardhan
9	Constantinos	Bassias
10	Mark	Bordogna
11	Thomas J.	Boures
12	Rhett	Brikovskis
13	Leon	Bruckman
14	Jean-Pierre	Burvenich
15	Italo	Busi
16	Robert	Castellano
17	James	Chan
18	Santosh	Charchachood
19	David	Chen
20	David	Cheon
21	Wenjing	Chu
22	John	Collins
23	John	Coulter
24	William	Dai
25	Spencer	Dawkins
26	Kevin	Dooley
27	Lewis	Eatherton

#	(Attendees)
28	Angela Tozzi Faber
29	Jason Fan
30	Jim Forster
31	Jingsong Fu
32	Chi-Ping Fu
33	Denton Gentry
34	Anoop Ghanwani
35	Stein Gjessing
36	Sridhar Gollapudi
37	Martin Green
38	Ibrahim Habib
39	Stephen Haddock
40	Fredrik Hanell
41	John Hawkins
42	Carl Hayssen
43	Albert Herrera
44	Mark Hoke
45	Brian Holden
46	Shawn Holiday
47	Marc Holness
48	Victor Hou
49	Henry Hsiaw
50	Warren Huang
51	Chang Huang
52	Wai-Chau Hui
53	Sue Hui
54	Jeanne De Jaegher
55	David James
56	Pankaj Jha
57	Bruce B Johnson
58	Mohan Kalkunte
59	Tatsuo Kanetake
60	Jim Kao
61	Harsh Kapoor
62	Vasan Karighattam
63	Han Kiliccote
64	Yongbum Kim
65	Rick Kong
66	Markku Korpi

#	(Attendees)	
67	Kumar	Kovvali
68	Paritosh	Kulkarni
69	YN	Kumar
70	Sateesh	Kumar
71	Peter	Lassen
72	Michael V.	Lau
73	Byoung-Joon(BJ)	Lee
74	Chuck	Lee
75	John	Lemon
76	Heng	Liao
77	Fengkun	Liu
78	Valentino	Liva
79	Robert D.	Love
80	Arman	Maghborleh
81	Vittorio	Mascolo
82	Tom	Mathey
83	Adisak	Mekkittikul
84	Sherri	Menefee
85	Dave	Meyer
86	Jim	Mollenauer
87	Gal	Mor
88	Ashwin R.	Moranganti
89	Mannix	O'Connor
90	Cel	Ololo
91	Fredrick	Olsson
92	Robin	Olsson
93	Fredrik	Orava
94	Dean	Painchaud
95	Jie	Pan
96	Chip	Paryzek
97	Krishna	Pattabhiraman
98	David	Pechner
99	Harry	Peng
100	Stevan	Plote
101	Vish	Ramamurti
102	Komal	Rathi
103	Marguerite	Rearden
104	Bill	Reysen
105	Dan	Romascanu

#	(Attendees)	
106	Luis	Rovira
107	Padma	Saxena
108	Nirmal	Saxena
109	Lauren	Schlicht
110	Armin	Schulz
111	Raj	Sharma
112	Surender	Sharma
113	Jerry	Shiad
114	Bob	Sultan
115	George	Suwala
116	Kazuo	Takagi
117	Michael	Takefman
118	Frederic	Thepot
119	Bor-Long	Twu
120	Necdet	Uzun
121	Harmen R.	Van As
122	Venkat	Vankayalupati
123	Kanaiya	Vasani
124	Nader	Vijeh
125	Bhupender	Virk
126	Thien	Vuong
127	Alan	Weizsbeergen
128	Michael	Wittmann
129	Peter	Wolff
130	Thomas	Woo
131	Steven	Wood
132	Donghui	Xie
133	Yiming	Yao
134	Mete	Yilmaz
135	Pinar	Yilmaz
136	Yasuhiko	Yotsuyanagi
	George	Young
137	David	Zelig
138	Igor	Zhovnirovsky

---------- End of Attendance List ----------