IEEE 802.3-EFM Study Group
Interim Meeting
January 8-9, 2001
Irvine, CA

Prepared by: Darrell Furlong

Administration:

Howard Frazier, Study Group Chairman, called the meeting called to order at 8:30AM Monday. Howard opened the meeting with a presentation of the agenda, now available at the IEEE web site http://grouper.ieee.org/groups/802/3/efm/public/jan01/index.html

Introductions followed with approximately 110 in attendance at the opening. Darrell Furlong was volunteered by the chair to be the recording secretary for the meeting. Howard reviewed all the administrative items such as the reflector and web locations, membership, voting rules, patent policy and attendance sign-in rules. See http://grouper.ieee.org/groups/802/3/efm/public/jan01/agenda_1_01_2001.pdf for the presentation.

During the patent policy review Geoffrey Thompson was asked who defines "reasonable"? Geoffrey indicated that "Both reasonable and non-discriminatory action are defined by court action."

The meeting covered two days with numerous presentations being made to address why the IEEE 802.3 should write a standard on Ethernet in the First Mile. Following the presentations on the second day numerous straw polls were conducted to measure the level of support for the various topics discussed during the meeting see, http://grouper.ieee.org/groups/802/3/efm/public/jan01/goals_1_01_2001.pdf

The two-day meeting adjourned at 6.45PM on Tuesday.

The next meeting will be at the Marriot Hotel, Hilton Head, SC March 12-15, 2001.

Presentations

1. Ethernet for Residential Access Applications (Pasi Vaananen, Nokia)
http://grouper.ieee.org/groups/802/3/efm/public/jan01/vaananen_1_01_2001.pdf

Discussion:

Question: Are you recommending 100Meg per home?" **Pasi**, "100Meg is enough bandwidth to support multiple video streams and is a standard data rate Ethernet."

Question: "Simplex Broadcast services, and bi-directional services need to be included as a service model?" **Pasi** "Believe that simplex does not provide enough capability to justify it.

Question: "With PON should we consider the CATV cable MAC?" **Pasi** "DOXIS is quite limiting for data rate."

Question: "Are you recommending 100Meg per subscriber per lambda?" **Pasi** "Would be very expensive!"

Comment: "The FDDI standard now has a 10KM specification that could be referenced in the standard."

2. **Ethernet in the First Mile (David Closs, ADC)**
http://grouper.ieee.org/groups/802/3/efm/public/jan01/closs_1_01_2001.pdf

Presentation notes,
http://grouper.ieee.org/groups/802/3/efm/public/jan01/closs_2_01_2001.pdf

Discussion:
Numerous questions were raised about what is being proposed for standardization effort. Questions regarding the data plane, control protocol, signaling methods, and functional specifications for the devices were raised. Many of the items discussed are outside the current 802.3 scope and current definitions.

Question: "Are you aware that many communities in Texas are requiring fiber to the home as part of the building permit process?" **David** "Yes fiber to the home is accelerating, but Fiber to the curb is further along and here today."

Question "Where would the fiber multiplexer be located?" **David** "On the pole as a line card."

3. **Ethernet Passive Optical Networks (Gerry Pesavento, AllOptic)**
http://grouper.ieee.org/groups/802/3/efm/public/jan01/pesavento_1_01_2001.pdf

Discussion:
Comment: "CLEC's using wireless, and symmetric to the home are required. Teaching is a killer application."

Question: "QoS bandwidth management is over-provisioning bandwidth any plan to support QoS protocols?" **Gerry** "Yes"

Question "What about life line POTS?" **Gerry** "There are solutions, like cell phones, NTT in Japan are using cordless phones and converting to them to Cell phones on network failure. Batteries can also be used for 8 hour services and are getting better for long life."

Question "The need for QoS Constant Bit Rate and low bit error rate, how does EPON support this?" **Gerry** "That is a conference in itself."

Question "Will Ethernet PON need to support fragmentation?" **Gerry** "Yes"

Question "WDM technology might be needed to upgrade the installation how does one do that?" **Gerry** "If WDM is initially deployed with 1510nm and not 1550nm the ONU's will need a blocking filter."

Question "Two fiber verse one fiber installation, what is the cost delta?" **Gerry** "Corning is very pro for single fiber installation, in NTT there is a strong concern about getting the TX and RX confused. Reducing the number of fibers saves money."

Question "How does this TDM architecture compare to Ethernet?" **Gerry** "It does not. The RPR committee is looking at this for example."

Question "Does the network growth slide refer to the residential bandwidth?" **Gerry** "The slide is showing general Internet growth."

Question "What type of ranging protocol are you suggesting?" **Gerry** "None"

Question "Why use the cell based TDMA as opposed to the frame based?" **Gerry** "98% of companies are using TDMA, polling could be used to poll the ONU's TDMA can synchronize the network. But there are other solutions that should be studied."

4. **Need for Ethernet Based PON Standard (Nicolas Nguyen, One Path Net)**
http://grouper.ieee.org/groups/802/3/efm/public/jan01/nguyen_1_01_2001.pdf

5. **Optical Architecture Options (Terry Cobb for John George, Lucent)**
http://grouper.ieee.org/groups/802/3/efm/public/jan01/george_1_01_2001.pdf

6. **Objective for "First Mile" Gigabit Optics (Jonathan Thatcher, WWP)**
http://grouper.ieee.org/groups/802/3/efm/public/jan01/thatcher_1_01_2001.pdf

Discussion:

Question "How much of this work should be done within Gigabit Ethernet verses EFM?" **Jonathan** "Yes, it could be done as a maintenance item, but this is a good place to do it."

Question "Single Fiber PMD, do you prefer 1300nm only?" **Jonathan** "Don't care what colors are chosen."

Question "Why is shared media not a good choice?" **Jonathan** "Save discussion for tomorrow."

7. **Optical Ethernet in the First Mile (David Kabal, Picolight)**
http://grouper.ieee.org/groups/802/3/efm/public/jan01/kabal_1_01_2001.pdf

Discussion:
Question "Do you believe that PON will require a new MAC layer like the transceivers?" **David** "No, PON should be buried under the PHY."

8. **The Cost Effective Solution (Cees Van Der Stoep, Calynet)**
http://grouper.ieee.org/groups/802/3/efm/public/jan01/vanderstoep_1_01_2001.pdf

Discussion:
Question "What's the difference between BER and Packet Loss?" **Cees Van Der Stoep** "I'm not prepared to answer that question."

9. **Robust Ethernet in the First Mile (Patrick Stanley, Elastic Networks)**
http://grouper.ieee.org/groups/802/3/efm/public/jan01/stanley_1_01_2001.pdf

Discussion:
Question "You stated that very few urban buildings have fiber. Do you have any data supporting that statement?" **Patrick** "No, but I noticed early today that many homes have copper only. I can bring data at a later meeting."

Question "Do you have any provision to carry voice?" **Patrick** "This system can ride on the same lines as POTS."

Question "You mentioned a couple of time that the technology is rate adaptive based on distance. What is the speed verse distance trade off?" **Patrick** "10Meg@3,000ft, 6Meg@8,000 ft, 0.5Meg@21,000 ft."

Question "The TDM system is completely asynchronous to the data?" **Patrick** "Yes Cross talk coupling has been thoroughly tested."

Question "By making it half-duplex is NEXT an issue?" **Patrick** "Yes, if more that two stations are transmitting together."

10. **Spectrum Management (Jim Carlo, TI)**
http://grouper.ieee.org/groups/802/3/efm/public/jan01/carlo_1_01_2001.pdf

Discussion:
Question "Spectrum compatibility, what are the issues for creating an Ethernet based system?" **Jim** "Use one of the Phy's that is already available. Method A or B can also be used to evaluate a new system. The committee should comply with the existing spectral management system. The Purpose of the Spectral Management is to do no harm. To the other services, no interoperability is ensured."

Question "Cross talk compatibility with voice systems, what's the impact?" **Jim** "POTS is 0 to 4kHz which should have little impact. The ringer also does not impact ADSL services."

Question "Which is the best home networking system?" **Jim** "Home networking is not one of the systems shown in the standard. The SM classes are all below 1.14MHz."

Comment "Spectrum Management is a voluntary standard."

11. A Case for the Marriage of Ethernet and DSL (Marty Staszak, 3COM)
http://grouper.ieee.org/groups/802/3/efm/public/jan01/staszak_1_01_2001.pdf

Discussion:
Question "What will the business and enterprises desire? **Marty** "Business have a lot of options available to them."

Question "Any security issues related with DSL? **Marty** "DSL as a technology has no security component."

Question "Clarification, where do you put the DSAM? **Marty** "In the basement."

Question "Would you consider what might be the minimum required bandwidth? How does the standard prevent bandwidth variation between customers? For broad market potential the services need to be common." **Marty** "I am not prepared to venture a minimum number."

Question "A couple of time you mention 3km as the distance for the MTU. In a building 1km is big distance within a building. Should DSL be used beyond the MTU market? **Marty** "Yes, for cabinet installations."

12. Virtual Private Bridge Networks (David Melman, Galileo)
http://grouper.ieee.org/groups/802/3/efm/public/jan01/melman_1_01_2001.pdf

Discussion:
Question "What type of isolation does VLAN tagging provide? How is VLAN's different from Virtual Circuits. Another issue is mapping customer VLAN ID's and the Carrier's VLAN's what is the operational overload to maintain this type of system? **David** "No there are no overload conditions but, perhaps some dynamic protocols need to be developed."

Question "As the carriers use the same inter-machine trunking primarily mesh, what was the architecture of the physical layer?" **David** "Any topology can be used, assuming spanning tree is operating."

Question "Many of the items you discuss are within the domain of 803.1 as mentioned in the presentation. Do you see a specific work item that would go to 802.3." **David** "Yes, I agree that most of this work is under 802.1, but perhaps the target area is Ethernet and in that sense we brought it to 802.3."

Question "What is the purpose of using VLAN?" **David** "In the carrier network it must be easy to support VLAN tag. The end customer may not use VLAN's, The idea is to reduce the cost by not using MPLS!"

Question "Up until now the 802.1 has been enterprise focused. Another issue is also increasing the frame size to support a larger VLAN space." **David** "Yes, you are correct the carrier core equipment would require support for a larger frame size."

Question "Compare and contrast implementing this sort of functionality using MPLS verses VLAN. **David** "Believe the complexity of MPLS is much higher than using VLAN tags. Keeping it at the L2 level. MPLS can do load balancing. Extracting the MPLS header and VLAN tag are the same and see no reason to duplicate the MPLS functionality at L2."

13. Layer 2 Tag Extension – EFM Objective (John Wolcott, WWP)
http://grouper.ieee.org/groups/802/3/efm/public/jan01/wolcott_1_01_2001.pdf

Discussion:
Question "What is the scope of where the VLAN tags are consumed" **John** "Some topologies can be implemented from the user to the SP.

Question "What about end equipment, is it limited to only the network boundary?" **John** "It is possible to dynamically allocate the larger VLAN tag."

General Discussion on Monday following the day's presentations

Speaker? "Many of the presentations call out delivery video, even though the infrastructure exists. Is this fair to put this on the EFM. Do we need to support video over IP.

Paul Nikolich "I Believes the answer is no."

Speaker? "Video on demand maybe larger than the current broadcast TV today. Suppliers will fight hard to keep the existing systems verses letting the Telco's get it. Broadcast medium, alternatives are many."

Roy Bynum "In addition to interactive video and distance learning, HDTV transport requires more bandwidth than the existing system can support. As such Ethernet maybe an alternative solution. The FCC has some rulings and requirements in this space. You

must have enough subscribers to pay for the overhead, the technology must support multiple services. Video support is a must.

January 99 WCOM tested MPEG 15Meg Video over IP/Ethernet running D1 Video. The D1 video would die on a ATM when sync was lost but over Ethernet we would only lose 4-5 frames. For optical Ethernet if you blinked you missed it! In the 10Gig space traffic restoration media is extremely good and much more reliable."

Bob Grow, "I agrees with Paul that from his house hold point of view, we need to provide sufficient bandwidth to support multiple video stream. But, anything we can do to add functionality, like video is a nice to have."

Speaker? "I believe we must support multi-broadcast video. As input requirements we need to supply voice/video/data the system should be designed to support all three. There is a chance that in the next 5 years broadcast video may no longer exists. FCC is saying that in 2006 NTCS broadcast will be shut down."

Speaker? "The IEEE 802.3 does not exist to support the success video. There will be packets, the application will succeeded no matter what, if we get packets, video will be working for free. The group should support video but only if it is already packetized, lets not mangle Ethernet to support video."

Speaker? "There are numerous video applications other than residential."

Speaker? "Where providing additional lamdas for bandwidth. At home I am still using modems. There are many applications that will require high bandwidth, numerous governments are making optical bandwidth commitments. Voice will be given away free. As I see it you need a bandwidth forecast to 2010 to provide the bandwidth require. Let go of the legacy."

Speaker? "Distance learning, is like video on demand 10 years ago. I believe video on demand will not do well."

Bruce Tolley "Where talking about the wrong question, we do not need to do anything special to support video over Ethernet."

Speaker? "Distance learning and interactive learning, will happen and is a killer application."

Speaker? "We risk getting into a swamp when we discuss new services. I would recommend staying focused on the existing Ethernet services, L3 and above are solving many of the problems that were discussed today."

Jake? "You never know what the demand is until you meet it. A couple of years ago when the PC demand has been met they dropped prices and raised the Y2K issue. The faith that there is a demand for infinite bandwidth may not be that far off until it is met."

Jonathan Thatcher "3-4Gig per person is the limit for a single person is the upper limit. I have not had a TV for 20 years because it does not give me what I want when I want it. We do not need a single solution for a single infrastructure. There are some companies that would like to focus to the individual. Targeting commercials to the individual verses broadcast commercials are being tested today in markets and can not be done with broadcast video applications."

Howard Frazier "I would like to go on to a new topic. A number of presentation talked about PONs, can we define a PON standard as part of 802.3. Does the Ethernet Standard want to specify the fame format on the wire, can it get away from the 802 structure.

The key question is how valuable is the Ethernet Standard. It is a very good system for delivering packetized services. The RPR committee is changing the MAC and Frame Format. Like PON they want to change the Frame Format and Protocol what does it have to do with Ethernet.

Ethernet PON or ATM PON the topology issues is a part of the discussion.

Roy Bynum, "One of the issue here is are we going to have point-to-point , verses other topologies. Everything is connection oriented, when we carrier it over the carrier it is a connection service. Ethernet is a shared media over fiber. Instead of a time domain it is a frame based shared optical environment. DLEC, BLEC may want fiber PONs verses point-to-point. We need to standardize a method that the service providers can use to deliver their services."

Jonathan Thatcher "In 10Gigabit Ethernet in the Phy a we allow a series of bits to be encoded to ship an Ethernet frame over a SONET infrastructure. That the sub-layer changes the bit stream has no effect on the Ethernet function. We can bridge it in the Phy to go from the Ethernet MAC to a PON. Ethernet PON is an oxymoron."

Howard Frazier "Ethernet has numerous changes with the 802.3 frame like in 97 with 802.3x and VLAN tagging and through it all we still called it Ethernet. However we have made changes to the MAC protocol and it is a very tricky issue that needs to be considered very carefully."

"If EPON is a oxymoron, then so is APON. We don't need to have a religious debate during the first study group meeting.

"There were a number of lengthy discussion in 10Gig that dropped FEC, and the only thing that was done was slow down the MAC. Ethernet will become what ever we believe will sell in a big way."

Tom Dineen "Fiber splitters can reduce cost in a big way, and this is valuable. To what extent can we provide a benefit."

Geoffrey Thompson "We should be looking at the technical merit of PON technology and we should be looking at the opportunities in the market place. It is also true that 802.3 has rules of structure which has been one MAC per working group. We need to differentiate between Ethernet and Ethernet transport. We should be looking at the merit of the technical proposal and looking at merit if each."

Tom Dineen "I Believe we already have two MAC's (Full and Half duplex). If we need to make a third MAC to support PONs then why not?

Geoffrey Thompson "I total disagree with you Tom."

Speaker? "Ethernet already supports shared media, buffered distributors which is a repeater, even though PONs have a different structure it can be implement using buffered distributors.

Pat Thaler "Is a PON a new MAC or not? There are lots of ways to implement a PON. I think that until we have a specific proposal to evaluate we will be unable to answer the question. Full duplex is not a new MAC because it turns off things in the MAC. I do not think this is fair to call it a new MAC. Balancing signal levels we may get a lot of benefit from PON. How implementable is a PON verses is it Ethernet or not is the issue."

Geoffrey Thompson "Since I'm the historian of the group we currently have a PON in the standard, which I was against. It is CSMA/CD and at the time it was not economically feasible given the number of gates required to implement 10BASE-FP. I Believe it is tied with 100BASE-T2 for the fewest ports built."

Bruce Tolley "Are we going to have a goal for the number of copper PMDs, for example more than 1 and less than 3?"

Howard Frazier "We do well when we limit the number of choices but also provide options. But I do not believe we need a fine grain of physical speeds because we should support the maximum speed a PHY can support."

Speaker? "Can we solicit the chair for a tutorial presentation on PONs at later meetings."

Mick Seaman "The real question is that PONs in the residential will require much less than 100Meg while our average business customer is over 100meg. We need to identify the market.

Tom Dineen "Higher Layer protocols can be used to provide micro-segmentation and lets write the standard to support the best media/PHY combinations."

Geoffrey Thompson "Data rates, the question is really not just speeds but a PHY that can adapt to the media by rate adaptation. Is this within the scope of the project? Should we have a rate adaptation objective?"

Howard Frazier "Are we ready to write a project proposal? If yes, what changes are required to the proposed text?"

Meeting Adjoined for the Day:

Tuesday Opening

Meeting called to order at 8:40am by Howard Frazier

Adjustments to the agenda were done to add new speakers.

Howard announced that, 120 new people signed-in plus 147 previous attendees signed in on Monday. *Note: The attendance numbers also include the DTE Power Task Force.*

Presentation

14. Gig-E FTTH (Jon Moore, GCPUD)

http://grouper.ieee.org/groups/802/3/efm/public/jan01/moore_1_01_2001.pdf

Discussion:

Howard Frazier "Of the list from your closing slide which do you feel the SG can focus on?" **Jon** "Optical loopback"

Geoff Thompson "You have taken the lead in this market. Yesterday we heard a lot about shared access you seem to be pushing for dedicated. What the economics of dedicated verses shared?" **Jon** "Shared access we looked at long and hard. Can I guarantee my investors that we can get a return on investment in 15years. Dedicated seems to be the only solution. The investors are the people of southern CA. Payback will be over the lifetime of the system and applications will drive the need."

Tom Dineen "Who pays for this? Are you tax payer owned?" **Jon** "The consumers are funding the investment we are like a co-op. The startup capital is coming from the electric revenue. Cash flow independence will be 2005 and a positive return on investment will be 2012. "

Question "What type of services do you provide?" **Jon** "None we sell to video, telephone, and ISPs. Competition will help drive the market. Are their latency applications that work very well. The video systems are working very well. Installation of the first 1000 homes is on going."

Comment "I would like to congratulate you on your accomplishments. The finical model is very interesting. One of the things we hear from ISPs is their concern on management of the network, the whole of 802 maybe doing it self a disservice by punting on the whole issue. The 802 does not have a operations practices services model which may impede deployment of Ethernet. I am very much supportive of the request you have made."

John Thatcher "Were setting an attitude here that is preventing customers from coming forward, we should not harass them but encourage customers to bring their requirements. Saying that it is out of scope of the committee because of tradition is not correct. I thank Jon Moore for presenting the information here."

Question "I would like to understand more about the outside plant." **Jon** "We have L2 switching in the field. **Question** "What is the average loop length?" **Jon** "2,000 – 3,000 ft is the upper limit." **Question** "What is the maintenance of the outside plant cost? **Jon** "Cost 1.5% of the capital for operations. From an operations perspective I need lights that mean something. Sending someone out in the field with a power meter does not scale."

Roy Bynum "Are you using an outside demarcation?" **Jon** "Yes" **Roy** "Your not using proprietary optics? **Jon** "Correct" **Roy** "What about from the headend is that GE?" **Jon** "Today we are using SONET, the distances are to large for GE." **Roy** "In the future will you be looking at 10G for 80km distance?" **Jon** "Yes, possibly. Power meter out at the home is what is required for diagnostics. I have 40,000 customers and need to manage as much from the NOC as possible, need to add in low level diagnostics to avoid truck roles."

Question "Are you using 802.1Q bridges, VLANS, Switching, and Security. **Jon** "Yes L2 port based VLANS. We have eight 10/100 Ethernet ports at each location. Each port can be mapped to separate ISP's by a VLAN." **Question** "Is 4,096 VLANS sufficient?" **Jon** "Yes for our 40,000 customers. Yes, because the number of service providers is small. However we are a small market, which is why I do not want more that 2,000 customers on a single VLAN. We are not running Spanning Tree on our network. As for security if we have 12 people signed up on VLAN 1 the answer is yes, security maybe a issue. Consumer A being able to jam consumer B is not currently solved. We are using L2 because of the lower cost point relative to L3."

Geoff Thompson "We're delighted to see you here. I am very interested in your application, but you do not represent the typical market. But, how big is it?" **Jon** "Geography is everything we have 12,000 people per square mile. We are talking to other co-ops to share what were doing. We do support more than one VLAN per port. **Geoff** "Do you supply per-network connection." **Jon** "Yes, it's one of the more exciting areas, the work at home environment is the exciting area." **Geoff** "Are you selling it to the local exchange carriers what is the telephone service provider doing?" **Jon** "We have 5 LEC's no CLEC's and we are working cooperatively with them. There are other who are showing concern."

Question "What are you doing for CPE in the home?" **Jon** "The first 100ft are a political challenge. We are recommending Cat-5 in the home. This installation is a problem. Other inside house wiring is not adequate. Set top boxes getting a NIC is easy, IP phones are easy to get. The voice over IP not happening." **Question**" How many customers in the area?" **Jon** "The number is 40,000 homes in the county, customers are voluntary, we have no competition, typically our customers have no other alternative, were doing 30% market penetration sight unseen." **Question** "In a urban environment where churn exists, how do you hold onto customers?" **Jon** "We have an undeserved market and once they have true taste of high speed interactive it's hard to go back." **Comment** " Please come back at a latter meeting and show more detail on how your network works."

Question "If we think of data to the home as a utility, how does the cost of installation compare to other utility services?" **Jon** "In communications RBOC DSL cost of deployment is the same that I'm speeding per house, about $3,000 per home."

Howard Frazier "Do you have a WEB sight" **Jon** "Yes, http://WWW.GCPUD.ORG/ look for telecommunications under Z."

15. Free Speced Ethernet (Dr. Maha Achour, Optical Access)
http://grouper.ieee.org/groups/802/3/efm/public/jan01/achour_1_01_2001.pdf

Discussion:
Question "Over what distance can free optics travel?" **Maha** "OC-3: 4km; Gig Ethernet: 2km; 2.5Gig better wave lengths maybe 5km, WDM about 1km."

16. EPON TDMA via MAC Control (Howard Frazier, Dominet Systems)
http://grouper.ieee.org/groups/802/3/efm/public/jan01/frazier_1_01_2001.pdf

Discussion:
Roy Bynum "Your basically taking it for granted that PON required TDMA." **Howard** "No, this is one approach using TDMA." **Roy** "Could you support non-TDMA PON approach?" **Howard** "Yes."

Colin Savage "We are here to see how the SG would do the first or last mile billing. How do we get the services to the customers and deploy. Is this something were going to do here." **Howard** "The IEEE 802 has a span of area where it can control and influence. It has a relationship with other standard organizations and there is a set of things we can work on here." **Colin** "Could the group expand it scope to comprehend a world wide Ethernet Network, would this require a change in the thinking". **Geoffrey Thompson** "In the world of writing a standard there is too much work. The ISO 7 layer model helps to divide up the work for data communication standards. Within the scope of that, Ethernet in the bottom half of layer 2 and all of layer 1. Protocols are outside our scope we carrier them all. In the sprit of cooperation we work with wire/cable standards bodies and IEC committees for the connectors." **Colin** "What will enable this next segment to be viable?" **Geoffrey** "To the extent that we are moving outside our tradition environment we need to proceed with caution."

Pat Thaler. "If you do TDMA above the MAC you will have a lot of uncertainty, timing is loose up there. There is another possibility, without affecting the MAC make it part of the PHY like the WIS." **Howard** "I would agree with that."

Mick Seaman "Putting something between the MAC and PHY or in the PHY would be easier. Need to watch for how much state the machinery needs to hold. If the sprit here is of adding a state-less mechanism, that would be great. The shared

approach would have a distributed stated. Keep and eye out for the shared environment."

Coffee Break

Administration:

Following the break the following administrative items were voted on.

Survey Questions:

1) Next meeting March 12 Tuesday and Wednesday how many plan on attending the EFM portion? 120 People.

2) Given that DTE Power and 10 Gig are running concurrently, how many are planning on attending DTE? 1,

3) How many plan attending 10 Gig? 72 People.

4) How many are going to try to attend both EFM and 10Gig? 60 People.

5) How many plan on attending the May 21 interim meeting in St. Louis? 50

6) How many will be attending 10Gig on Wednesday, Thursday, and Friday? 65

7) How many will be attending a IEEE 802 plenary for the first time? 105

The Hyatt Hilton Head hotel is changing to a Marriot please wait until next week to make reservation after the name change occurs. The Phone number for the hotel is 843-785-1234, which works right now, and it is still a Hyatt today.

Presentations:

17. EFM – A Network/Service Provider's Prespective (David Thone, BT)
http://grouper.ieee.org/groups/802/3/efm/public/jan01/thorne_1_01_2001.pdf

Discussion:
Jim Carlo "What is FSAN?" **David** "FSAN 'Full Services Access Network', it was a Telco club. It was PON focused and it is by invitation only. It is in its 5 year of existence."

Mick Seaman "Deployment problem with DSL services, our experience is it is about a 11 hour install on average. Do you know how many DSL customers have been let down because it is a 3-4 truck role requirement?" **David** " We need solutions and you are right that the business model with multiple suppliers is

slowing it down. The CPE will be available in the retail market. You need to think about insatiability." **Mick** "If Ethernet is easy to install then we have a chance. One aspect of DSL deployment has been ATM in the back-haul. If Ethernet is in the back-haul then what's your opinion on ATM verses Ethernet in the back-haul." **David** "BT has an ATM backplane if you have low speed access then ATM is needed in the access, with Fiber it does not matter. You can throw bandwidth at the problem."

Dan Romascanu "Are their pieces missing in the standards process? If you have Ethernet over DSL you need to look at the DSL standards."

Question "Our GAP analysis and planned obsolesces, how long will DSL live?" **David** "These technologies will live a long time, we need to get more out of ADSL, this stuff will be around for a long time. **Question** "You have shown DSL hard to deploy?" **David** "It's getting better, but the technologies are not plug and play. Getting transport working is the hard part. "Have launched DSL as a bridge to get to a better bridge. The demand for bandwidth will not be met by DSL."

Question "Do you have statistics on the Bit Rate that the customer is getting?" **David** "The maximum DSL product range is 2Meg peak, traffic engineering has a big effect." **Question** "What are the technical detriments on bandwidth due to cross talk? **David** "My experience in Canada is that the maximum data rate was 120kbps, because were sharing same copper loop with others." **Comment** "BT has product at 2Meg and 1Meg."

Ed Eckert "DSL is hard. Deploying anything in the outside plant is hard. The T1E1 committee is looking at this. My tenure at T1E1 is that everything you said is dead on."

Question "If you could do FSAN again what would the committee need to do start. I can help get that started. What do we need to do to get Ethernet to the last mile?" **David** "Concentrate on how you would do Ethernet over a PON."

18. Considerations prior to a PAR, (Steve Jackson, Nortel)
http://grouper.ieee.org/groups/802/3/efm/public/jan01/jackson_1_01_2001.pdf

Discussion:
Question "Is IP Transmission protected? **Steven** "There will be multiple media to the end-user. If the failure is isolated to a medium then the other medium will take over. I Can not image any business model were this does not replace POTS. EFM is going to have to replace the existing services. It will have to be resilient." **Question** "Will their still be copper to the house?" **Steven** "Yes, there has to be interpretability between the services being delivered to the house. **Question** "Do you see this equipment indoor or outside?" **Steven** "Outside."

Bruce Tolley "We need to think about delivering multiple services, which is a different statement of specifying a services platform. It is not going to be part of the standard. We need to ensure that there are enough hints on the services required. Standardizing just 100Meg is not enough

Question "You would not run redundancy to the home, maybe to the pole or business?" **Steven** "Yes. Data traffic can easily be handled with spanning tree Interoperability is key. 100BASE-FX could use SONET for redundancy. The presentation is just a straw man. The power issue of remote power on life line will be important. If you're going to have a premises box you need to think about power."

Mick Seaman "In terms of systems provisioning their seams to be a of discussion around the home. How do you see this being built out in homing communities. We all know what a home is, it will fragment subscriber units." **Steven** "One size does not fit all, a modular approach will be required. The market can get cheery picked over. DSL has a bus station effect. The better the home the worse the bandwidth is, we are not the typical application."

Question "I have phone over cable service which is backed up with battery. What type of battery and what is it's expected life?"

Lunch Break

19. Considerations for Project Scope (Steve Haddock, Extreme)
http://grouper.ieee.org/groups/802/3/efm/public/jan01/haddock_1_01_2001.pdf

Discussion:
Question "Do you consider bridging an Ethernet Service?" **Stephen** "Bridging is a 802.1 function and is not Ethernet. We have a tight relationship with 802.1."

Question "What about loopback?" **Stephen** "Anything that is PHY layer is fair game and within the scope, The Service Provider features like PNNI, label distribution, etc are stretching the scope."

Bruce Tolley "We are still in study group phase and I feel we should stretch the group with the new people and keep it open. It's too early to put up the filter." **Stephen** "Fair enough, I agree but we should give it a litmus test."

Question "We have heard two presentation that you can have a shared media to the home and another that said no. We know that CSMA/CD will not be efficient in a high-speed shared long distance medium. Should these people go to other committees?" **Stephen** "I believe you can make switched infrastructures cost effective. Can we do another shared media? No I believe every shared media technology has migrated to a point to point architecture." **Question** "What if you

can not do it with switches, do we need to move to a new committee?" **Stephen** "It depends on the access control and what changes it requires. Many of us have looked at these protocols. One protocol always comes up as the most efficient which is not CSMA/CD. Can is be done in this committee, Yes, but we need approvals all the way up through the IEEE Executive. If it's not Ethernet we should not call it Ethernet!"

Roy Bynum "There are several things to look at. The customer experience in this environment has never existed before. We have never run Ethernet over copper for hundreds of meters, as part of the standard. Service Providers find Ethernet very foreign. The legacy telco providers have no idea what is going on. The whole point that you use the customer experience on the first mile is stretching it." **Stephen** "Yes, but there are expectation about Ethernet in the first mile that people want." **Roy** "The definition of Ethernet is that it basically has the ability to keep the 802.3 MAC frame. The 802.3 frame is a common format and the economic factor. Native data that is specific to Ethernet MAC frame end-to-end. It never changes. So the whole concept of 802.3 in the first mile is the ability to have 802.3 MAC frames end-to-end eliminates the additional transport media." **Stephen** "Does it change the bridging model and the service model? Yes. The whole concept is radically different the test your applying may not apply. **Roy** "I disagree, I'm most concerned that we maintain those characteristics."

Mick Seaman "The 802.3 is a book, 'The Door Stop', people write standards not committees. What is you favorite 802.3 sub-standard that has the name but went no were." **Stephen** "I have a personal favorite it's CSMA/CD in gigabit Ethernet, the repeater standard that no built. Star LAN is another. Failures out number the successes slightly. My point is that simply naming something Ethernet does not ensure it's success. If the MAC needs to change then let's write a new doorstop. If it's really a new MAC then there is no reason to shoe horn it."

John Thatcher "Ethernet at work should be the same at home, use it the same way. It would be miss guided to think that it is different. The brand is important, Brand is extremely important." **Stephen** "It's equally difficult to change something under a brand."

Geoffrey Thompson " The Ethernet Brand name is extremely valuable. About six to seven years ago we did some work to find how meaningful the brand is which was critical. Ethernet and Ethernet transport are different and are not Ethernet. I really do welcome all the good ideas and not filter them at this time based on our thoughts of what Ethernet is. Capital intensive markets have historically started with shared media, telephones, railroads, and Ethernet, are examples. So I think were in the same space again. If we need shared media again then what are the cost models, the advantages of fiber, and the reuse of copper?"

20. Meta Thoughts (Jonathan Thatcher, WWP)
http://grouper.ieee.org/groups/802/3/efm/public/jan01/thatcher_2_01_2001.pdf

Discussion:

Marty Staszak "What's Plug and Play?" **Jonathan** "If you have a plant for say MMF or SMF you can install equipment together and it works. If sub-grade fiber works and 40km and more is engineered space and once validated any two pieces of equipment is plug and play."

Geoffrey Thompson "In the LAN fiber space we believe that the fiber people were smarter than the copper 'no auto-negotiation in fiber, for example."

21. Defining Scope and Objectives (Bruce Tolly, Cisco)

http://grouper.ieee.org/groups/802/3/efm/public/jan01/tolley_1_01_2001.pdf

22. T1E1 Status Report (Ed Eckert, Nortel)

http://grouper.ieee.org/groups/802/3/efm/public/jan01/eckert_1_01_2001.pdf

Free download of one standard is available at www.atis.org.

Discussion:

Howard Frazier "Is it you expectation that as the DSL standards come out of letter ballot with a rate specified?" **Ed** "No not in the standard, the reach and rate are governed by the spectral management."

Jonathan Thatcher "What's required?" **Ed** "None of the T1E1 documents are required by Regulations or the FCC. It's the local authorities that do." **Jonathan** "How do we first of all get the local, national and global regulations understood. Some place some where is their a book that lists all the requirement?" **Ed** "No, customers do this."

Jim Carlo "Procurement people refer to these documents to specify the requirements."

Ed "These documents are called out by NEBS for example. Again understand what these are. The electrical protection for example in UL 950 provides some definition in these areas."

Jonathan Thatcher "We have different class on a product some are outside and some are inside the scope of the requirements. There is no list of required documents. How do we know when we are complete. Plug and Play would like to avoid the local level issues."

Roy Bynum, "We have to adhere to a lot of national standard and local fire codes for equipment installation. Earthquake for example is one that LAN equipment rarely meet. It is hard to find DSL DSLAM that meets all the requirements. So,

wavers are generated. Implementations of the physical equipment are a separate matter, these items are implementation issues and not within the scope of the standard. Maybe an ad-hoc should be setup to evaluate what is pertinent for the implementation for the equipment. This might go to help the Service Provider procurement of the equipment. Do you think this would help in this case." **Ed** "Asking the question is appropriate. It might be very difficult to specify which T1E1 standard applies. You need to consider it when developing or deploying the equipment"

23. Goals & Objectives Summary (Howard Frazier, Dominet Systems)

http://grouper.ieee.org/groups/802/3/efm/public/jan01/goals_1_01_2001.pdf

Discussion:

Jonathan Thatcher "I'm interested in what recommendation means?" **Howard** "Two criteria, first we have PHY specification which is within the scope of 802.3. On the last two there is question that they fall within the scope of 802.3. So, in my presentation I made three proposals: 1000Meg single fiber, LX @ 10km LX, and 1550nm at greater than 40km."

Patrick Stanley "Please add Ethernet over xDSL or Ethernet over copper."

Bruce Tolley, "Where are you going with this list, I'm not sure this list represents what we have talked about." **Howard** "The goal is to create a list and vote on them one-by-one." **Bruce** "I am hesitant about voting on this yet."

Pasi Vaananen "Please add the Ethernet over copper."

Steve Haddock "Please but back your original proposal for Ethernet over VDSL."

Next Speaker "Lets define the architecture verses the detail."

Tom Dineen "When we speak of Ethernet over VDSL are we talking about using the existing VDSL PHY or are we taking about a new VDSL standard."

Brian Murray, Massana "Changing it to Ethernet over Copper is to keep the door more open and less specific at this time." **Tom Dineen** "I Second that and let the SG further define the details."

Jonathan Thatcher "Make recommendation Ethernet over VDSL if we do not have enough information to make a decision then let's go get it. Without knowing the km, speed, and distance I don't know what it is."

New Speaker "We're getting into a situation where it is difficult to vote for things."

Howard Frazier reviewed the list to explain the differences.

New Speaker "Are we specifying symmetric or asymmetric." **Howard** "Both"

Roy Bynum "We need operational support features at the remote site. If were going to do Ethernet in the first mile we are going to need to add OAM&P features and it must contain this capability to manage the far end remote system. Please add the make recommendation to include OAM&P functionality."

New Speaker "EPON is very generic, I would like it to say: FSAN to include TDMA dual wavelengths. Please follow the FSAN standard. Add Study the FSAN approach for last mile Ethernet.

Marty Staysak 3COM, "I would really like to see Ethernet over VDSL as the sole copper solution." **Howard** "I would like to see the SG vote on these one by one."

Jeff Porter, Motorola "When we say Ethernet over copper is it over existing copper? **Howard** "Yes, over telephone copper. **Jeff** "If so you'll never fill in the x and Y."

Tom Mathey "Please combine the three lines to Ethernet over xDSL type technology."

Jonathan Thatcher "Are we going to have discussion on each of these before the vote." **Howard** "We're discussing these now." **Jonathan** "Please add environmental requirements this is very important for outside building requirements. If temperature is major input, then this could impact the distance."

New Speaker "We should not cut the conversation short for VDSL. I Strongly recommend VDSL."

Bruce Tolley "Clarification point on signal fiber. Is this going to be one proposal or one PHY. So what will happen with this goal. We're not excepting specific proposals at this time.

Maha Achour "Please add rate adaptation for Free Space Optical access."

Steve Haddock "I'm surprised we're not discussing these as they come up. Before voting on these without x and Y. We are looking for copper solution for inside plant and one for outside plant space. Ee should discuss that xDSL is required."

Steve Ader, Cisco "The order in which we vote is going to be important." **Howard** "No Chicago rules will work. **Steve** "I would like to propose a single PMD for all local loop pair."

Dan Romascanu "No one from the vendor side has mentioned OAM&P" **Howard** "No true!" **Dan** "OAM&P is on the application side. One thing the 802.17 group

did is get the IETF going on the application side in parallel. A similar approach should be done here."

Ed Eckert "I am surprised that we are growing the list were each item is a different set of leaders. How is this process going to focus the SG? The list is now to long."

Bhavesh Patel "What about the Ethernet over the air. Please add an objective for Ethernet over the air."

Mark Yu "Many of the items on the list are changes to existing items, Please generalizes a bullet to SM Single Strand fiber."

Howard "It's time to go through these one at time.

Administration:

For the following set of votes see the link below for a summary of the results.
http://grouper.ieee.org/groups/802/3/efm/public/jan01/goals_1_01_2001.pdf

Vote: "100Meg SMF PMD" Yes: 7, No: 31

Discussion:
Bruce Tolley "I support this one."

Hand vote taken, see above.

Vote "1000Meg on SM Single Fiber @ 10km" Yes: 72 No: 2

Discussion:
Steve Haddock "Any distance objective?"

Jonathan Thatcher "Yes 10km"

Hand vote taken, see above.

Vote "Single SMF" Yes: 8, No: 34

Discussion:
Jonathan Thatcher "This is to ambiguous."

Hand vote taken, see above.

Vote "1000Meg @ 10km (extended LX)" Yes 22, No :41

Discussion:

Howard Frazier "I'm against this as the industry is already delivery product in this space. The industry has done better that the standard.

Jonathan Thatcher "This is a no brainier and we should do it and put the ink to paper."

Stephen Haddock "Is this to replace the current LX or create a new PMD. This is not practical or a good idea."

Roy Bynum "If a PMD exceeds the specification is it compliant" **Howard** "To my knowledge components that meet 10km distance are compliant with 1000BASE-LX"

Hand vote taken, see above.

Vote 1000Meg at greater than 40km 1550nm Yes 25 No 47

Hand vote taken, see above.

Vote 1000Meg at greater than 40km 1310nm Yes 3 No 56

Hand vote taken, see above.

Vote 1000Meg at greater than 40km Yes 51 No 34

Discussion:
Stephen Haddock "I believe this should state 1550."

Roy Bynum "Attenuation at 1300 will not be inexpensive."

Jonathan Thatcher "Are there others that believe it must be 1550?"

John Kenny "At 1550nm DFB lasers are three times as expensive. To do this at 1310nm you can do 40km. At 1310 you're marginal and more so to harsh temperature environments."

Bruce Tolley "These have little to do with Ethernet in the first mile. Are we trying to fix 802.3z. It's not EFM activity."

Stephen Haddock 'The goal really is much more than 40km, 40km does not cut it.'

Jonathan Thatcher "I disagree with Bruce. Without this you need a new architecture to make Ethernet work in the first mile."

New Speaker "Use 1450nm to keep 1550nm free for DWDM."

Hand vote taken, see above.

Vote "Ethernet over CU at x Meg and y distance" Yes 54, No 31

Discussion:
New Speaker "You do not need Ethernet over copper to have Ethernet in the hotel room'

New Speaker "I would like to have this included."

New Speaker "We would all like Ethernet to our homes soon., Copper is the dominate media today."

Bruce Tolley "For a guy that has been pushing 1000BASE-T I'm not sure I support this."

Stephen Haddock "Does 1000BASE-T at .1km meet the objective?"

Hand vote taken, see above.

Vote Ethernet over VDSL at x Meg and Y Distance Yes 47 No 39

Hand vote taken, see above.

Vote "Make recommendation for EoVDSL' Yes 34 No 32

Hand vote taken, see above.

Vote 'Ethernet over xDSL Yes 33 No 36

Hand vote taken, see above.

Vote 'Ethernet over CU (for the MxU) yes 46 no 24

Discussion:
Hu, Cisco "Comment on the next three from a point of view of spectral compatibility I'll be voting no on the first two and yes on the third."

Mark Stayzak, 3COM "For in-building where do the spectral masks come from?"

Hu, Cisco "In a MxU you must have spectral compatibility. In a hotel it is not required."

Bruce Tolley "If all the copper ones go down in the dust we do not have much work."

Hand vote taken, see above.

Vote 'Ethernet Over Cu (for the OSP) Yes 61 No 21

Discussion:
New Speaker "We have got to have something in the outside plant!"

New Speaker "If we delay this we'll never have copper in the outside plant."

Roy Bynum "Copper will have a life span and it still should be adopted It will have a market. I would vote for Ethernet over Cu it is needed even if it's only needed for a few years in the US."

Howard Frazier "It is my belief that much of the interest in this group is that we would be standardizing Ethernet over copper for some distance and at some speed. Nothing is passing by 75%. We need an objective at least one to support Cu."

Shimon Muller "We need something over Cu I would strongly suggest people vote for this."

Hand vote taken, see above.

Vote "One PMD for all local loop copper pairs" Yes 50 No 27

Hand vote taken, see above.

Vote "Ethernet Over the Air" Yes 14 No 39

Hand vote taken, see above.

Vote "Make Recommendation on Environmental Requirements" Yes 71 No 1

Discussion:
New Speaker "Comment in FSAN includes a description of environment."

Roy Bynum "This is specific to the PMD itself."

Hand vote taken, see above.

Vote "Make recommendation on EPONs" Yes 88 No 3

Discussion:
Roy Bynum "Let me speak in favor of this. There does need to be further evaluation of this before we drop it."

New Speaker "I also support this and it's very general."

Tom Dineen "I also will speak in favor and further study make sense. This should be included as part of the SG activity."

Bruce Tolley "I also support this and this is what the SG should work on."

Nickels Win "As a PON this should be supported."

Stephen Haddock "Clarification, all comments support studying this. I support that but if we vote this up we will make a recommendation to an EPON group to work on this. What does make recommendation mean?"

Howard Frazier "Make recommendation means that we want to study it further. The recommendation could be a par."

Steve Haddock "Objectives are we will include this in the study group. There is an element of what we're going to do. This does not belong on the list."

New Speaker "EPON should be adopted."

Hand vote taken, see above.

Vote "Make Recommendation regarding VLAN Tag Extension" Yes 45 No 17

Discussion:
Stephen Haddock "I will vote against this based on the poor wording."

New Speaker "Put 802.1 into the objective."

Tom Dineen "If we did chose to change the tag we will need to change the frame size.

Howard Frazier "This fails, we do not have concerns. We know the areas of interest, but we need to keep working on them."

Hand vote taken, see above.

Vote "Make Recommendation on inclusion OAM&P Functionality" Yes 60 No 4

Discussion:
Roy Bynum "As we move into the Service Provider environment. We need this to keep the operational cost down. We need to include this into the standard but not to the length we did with 10Gig SONET".

Jonathan Thatcher "What's the difference between this one and the next?"

New Speaker "If you want it you'll vote for both."

Dan Romascanu "I vote for the second one. If you are not taking a top down approach you'll be missing requirements."
Hand vote taken, see above.

Vote "Solicit recommendations on OAM&P functionality" Yes 56 No 8

Hand vote taken, see above.

Vote 'Study FSAN approach for last mile Ethernet' Yes 16 No 40

Discussion:
New Speaker "I encourage everyone to study this but will vote against it."

New Speaker "I would agree with that statement. Everything we have voted for is included in FSAN."

New Speaker "Any discussion of architecture without active discussion with FSAN would be negligent, listen to your customers."

New Speaker "Change Study to initiate Liaison."

Howard Frazier "No"

Bruce Tolley "I support what was said earlier. We do this anyway and should vote against this. We should solve the point to multi point problem."

Howard Frazier "I would be very concerned that this group is adopting FSAN. The individual member should bone up on it. An objective like this could be misconstrued.'

Hand vote taken, see above.

Vote; 'Make recommendation on rate adaptation' Yes 16 No 42

Discussion:
Jonathan Thatcher "This goes against everything I believe in. Auto-negotiation does not work. This is the ultimate in creating confusion."

New Speaker "We have already implemented this which is the only solution we have to work."

Roy Bynum "Auto-negotiation on start up tends to not work in a multi-vendor installation. However I have seen solutions work in a dynamic environment and we should continue to look at it."

Tom Dineen "I think for this content I would like to keep the door open. Different types of copper may require this as will fiber at extreme distances. Real cheap dial up modems work!"

Bruce Tolley 'We're confused about auto-negotiation verse rate adaptation. More evaluation is needed."

Bob Grow "We need to trust the committee. We do not need to leave this on the list now. I am against it."

Hand vote taken, see above.

Meeting adjourned. At 6:45pm. On Tuesday.