IEEE P802.11
Wireless LANs

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Abstract

This document contains minutes of TGaa meeting minutes from the November 2009 Atlanta, Georgia Session.

**TG was called to order at 08:00 Hrs on 11/17/2009**

**Administrivia:**

**Attendance Announcement**

**Patent Policy -- no questions on the patent policy**

**Knowledge of Essential Patents or knowledge of owners of Essential Patents -- no knowledge of essential patents/essential patent holders**

**Feedback-jamming Multicast ARQ results with capture effect (1150/r1)**

This proposal is a refinement of the one presented in the Vancouver meeting

How would the STA that did not receive the frame know to generate the jamming NACK? There has to be some indication that there is a multicast frame to be sent

What if that frame is lost? Then this scheme does not work. But that frame is required to be sent in a more robust mode.

HLBP -- includes FEC coding for robustness. FEC could be done at the Application layer or the application could indicate to the MAC layer to generate appropriate FEC frames. This functionality may be required at the AP (AP does the multicasting). So, some indication has to be sent to the AP to start encoding using FEC.

If all the members received the frame intact, the parity packets need not be sent. One could still send the parity frames just for robustness.

How is the leader chosen? One that has the weakest average SNR.

How is jamming probability defined -- the probability that the sender does not receive the ACK.

The receivers are placed at a constant distance from the sender. Fixed STAs (no mobility considered)

We need additional mechanisms for leader selection, how frequently leader selection has to be done in otder to account for mobility (and changing channel conditions)

Slide-16 -- Is this depicting the same scenario as the NS-2 simulation -- Indoor environment. One SI Phase shift -- does not include multi-path effect.

NACK is a new notion in Wi-FI. Most likely it would be one bit different from the ACK frame.

**Straw Poll:** Is TGaa interested in further results on Leader based NACK jamming for more reliable video groupcast

Discussion -- this is an interesting idea, we should continue refining this.

5-0-5

**Topics to work on:**

1. Leader selection, leader selection under mobility
2. What is the breakpoint where current MRG schemes don't work and we need the Jamming MRG mechanism?

**Document 09/911r0 has comments from the internal review of draft 0.01. The editor is empowered to incorporate resolutions to all editorial comments.**

The TG went into recess at 09:10 Hrs till the next presenter joins the meeting.

TG Resumed at 09:25 Hrs

1183r0 and 1184r1

Declined comments #27 and #39.

TG members should review 9.2.7.3.7 -- Continuous Service Periods (STAs may relatively be losing control)

How is continuous service period negotiated -- the STAs can ask anything and the AP decides based on how the STA requests can be reconciled.

Is the CSP mandatory?

Does CSP mean no other traffic is allowed? No, traffic can be intermingled.

Brian will have two submissions -- one for all other comment resolutions and one with SP and CSP changes.

This(ese) submission(s) will be considered for adoption Wed PM1 session.

**TG in recess till Tuesday 11/18/2009 AM2**

**TG called to order at 10:30 Hrs ET**

Overlapping BSS (09/1136r0, 09/1137r0 and 09/1138r0)

Need to fix the document number in the header of all the presentations

**09/1137r0**

This proposal introduces EDCA Factor -- accounts for overheads in EDCA when multiple streams are involved.

How is medium time estimated when 802.11n is used? Covered later in the slide set.

AMPDU and medium time -- computed as follows :

AMPDU+SIFS+BAReq+SIFS+BARsp (immediate Block ACK)

EDCA Factor is a work in progress. The concept is useful to OBSS solution. However, the data in the table in Slide-11 will evolve.

**09/1136r0**

Derives from document 844r0 (deals with Mesh networks)

Paying attention to the loads from other overlapping BSSs does reduce the throughput in some of the BSSs (the ones in the edges). In addition, it may introduce additional delay to individual packets sent within each BSS (for the BSSs in the middle).

**09/1138r0**

The OBSS proposal

Avoid OBSS, if possible -- channel selection, channel width selection, etc.

Allocated Traffic Shared -- self + load of others the BSS overlaps

Slide-10 update the reference with 09/1137r0.

Slide-28 -- Using TSPECs to indicate "Permanent Load", "Potential Load" and "Actual Load"

Slide-29 -- this is not an issue. The rate at which Compressed Video bits arrive have no relation to the actual frame rate the uncompressed data is displayed at.

Slide-31 -- Use one octet field but use a different scaling (64usec units)

Slide-32 -- Agree that the EDCA Bandwidth Factor numbers look about right (concurs with another independent simulation exercise) -- Hang Liu (Thomson)

Would EDCA Factor depend on PHY Rate? Is this taken into account in the simulation? Some of the simulations do use different PHY rates but not a mix of 11n/11g or 11n/11a rates.

If the determination of the EDCA factor is not consistent, would the data be useful? Within a BSS an AP can do what it needs (use a different method to estimate medium time, for example) but how do you do it across APs, if each does it, its own way (EDCA Factors could be different in each BSS)?

QLoad information may be conservative and potentially hurt the performance we could achieve now. We need to choose between (a) it works great sometimes versus (b) it will work always.

Should we introduce mechanisms for policing (how medium is shared).

**TG in recess till Wednesday 11/18/2009 PM1**

**TG called to order at 13:30 Hrs ET 11/18/2009**

**OBSS Discussion (Continued)**

Added the following to 1138r0 (to make r1)

* Sharing of the medium in the OBSS -- proportional sharing and on-demand sharing.
* What is the incentive to be a good neighbor

Summarized documents 09/1136, 09/1137 and 09/1138.

Is there a mechanism to shut off all STAs within the BSS? None at this time.

If we are to choose a single sharing mechanism, does it simplify anything in the proposal? -- may save a few bits in the frame and a whole lot of issues with respect to writing the text Annex.

Proportional sharing -- could reduce the available bandwidth based on potential load. It trades off throughput to the need for performing all the time.

We could do a blend of proportional and On Demand scheme.

**Walk through the text document 1139/r0.**

No specific questions on 1139/r0.

**Motion-5:**

Move to approve the normative text in document 09/1139r1 and empower the TGaa Technical Editor to include it in the next TGaa Draft.

Moved: Graham Smith

Seconded: David Hunter

Discussion -- Brian Hart spoke against motion since he believes that a set of comments that he has on 1139r0 needs to be addressed before the text gets adopted.

**Vote: 4/4/12**

**Motion Fails.**

Brian Hart has annotated 1139/r1 with comments. These need to be addressed in the OBSS proposal Brian Hart will send the annotated 1139/r1 to Graham Smith.

**Intra-AC prioritization (09/1251):**

What are the Use Cases for Intra-AC prioritization?

How about a application level retry progressively lower quality

Do we need L2 mechanisms for this?

Tweaking the EDCA parameters -- would it really prioritize one stream over another?

**OBSS Issue and simulation scenario in TGac (09/1157r1)**

TGac OBSS is required to address all traffic classes not just Video/Voice

Slide 12: the performance appears to be about 5dB better -- less conservative 11n model

Slide-28: 11ac should inherit and develop what is in 11aa. However, on OBSS there should be a close co-ordination to ensure that 11aa mechanisms do not hurt potential 11ac mechanisms

Slide-23 look at 09/931r0.

Channel Selection with TPC can dramatically reduce OBSS issues.

Slide-6 how is the propagation loss between floors compared to across apartments in the same floor (loss is more between floors). Data on actual loss is not available at this time.

Slide-7 two APs in a small apartment -- is that common? The APs may not be in use all the time.

The mechanisms proposed in 1157r1 are very similar to the proposals discussed in TGaa. Since TGaa has constrained itself to MAC layer amendments, Beam Forming technique proposed in 1157r1 has not been part of the OBSS solution in TGaa.

**Resolution to non-contentious comments from the internal review of D0.01 assigned to Brian Hart (09/1215r0)**

**Motion-6:**

Move to approve the normative text in document 09/1215r0 that addresses internal review comments CIDs 1,2,4,13,16,18,21,27,30,39 and empower the TGaa Technical Editor to include it in the next TGaa Draft.

Moved: Brian Hart

Seconded: Hang Liu

**Vote: 10/0/9**

**Motion Passes**

Brian Hart highlighted the notion of "Continuous Service Period" in document 09/1184r1. Brian will prepare a normative text submission on this feature and a slide set summarizing the feature.

**TG in recess till Thursday 11/19/2009 AM1**

 **Joint Meeting with 802.1AVB**

**The TG was called to order at 08:05 Hrs EST**

**Agenda/Notes**

* Administrivia
* Interworking with 802.1Qat (09/926r4)
	+ Traffic classes are called “SR Class A” and “SR Class B”
	+ Case 2 is just for completeness and unless the “Station Bridge” issues is resolved there is no intention to support that model (means that 802.11 STAs will not be intermediate nodes in the path from the Talker to the Listener till the “station bridge” issue is resolved)
	+ Need to add additional mandatory requirements to the 802.1Qat section
		- Shall co-locate 802.11 AP and MSRP DMN
		- MSRP shall generate equivalent 802.11 TSPECs and invoke the AP’s MLME
		- 802.11 STAs and AP supporting SRP shall encapsulate/de-encapsulate 802.1q priorities
	+ SR Traffic Class B streams allow a 50 msec delay budget end-to-end. There could be up to 2 802.11 hops in the path from Talker to Listener. The delay budget for the 802.11 hops is 20msecs each.
	+ Minimum PHY rate calculations
		- There is an 18 byte 802.11 overhead t o the 1500 byte SRP payload.
		- We need units “bits/sec” in many of the steps in the slide
		- Several of the overheads are aggregated into the 70% efficiency between the PHY and MAC.
	+ User Priority setting in the TS Info field
		- User Priority is not preserved across the 802.11 hop unless the 802.1q priority is encapsulated/de-encapsulated in SNAP header
		- SRP streams could be tagged with any User Priority, not necessarily 5. However, in order for 802.11 to handle the packet correctly it has to be a packet in the AC\_VI category.
		- We need make sure that all is fine in the data path (the MSRP DMN is not involved in the data path)
	+ Need to add information on encapsulation/de-encapsulation of 802.1q priorities in 802.11
	+ Need to add information on QoS Maintenance Reports
	+ An updated version of this document incorporating all the comments/edits discussed will be posted t o the 11 server and mailed to the 802,1AVB chair.
	+ Walkthrough of changes need t o be done to 802.11
		- Changes to clause 7.4.2.2
		- Changes to clause 9.9.3
		- Need to add MLME-QUERY.{Request|Confirm} (Clause 10)
		- Need to make changes to ADDTS MLME interface (Clause 10)
		- Changes to Clause 11.4.
		- These changes will be made and corresponding document presented to TGaa in the January session.
* Status Updates
	+ Status Update on TGaa
		- The goal is to have a complete TGaa (includes material corresponding to all PAR topics) by the end of the Jan 2010 session
		- Targetting having a Draft 1.0 by the start of the March 2010 session.
	+ Status Update on .1AVB
		- 802.1Qav is ratified
		- Planning one more recirculation for 802.1Qat
		- Planning two more recirculation for 802.1AS
		- Depending on the results of recirculations, a conditional approve to start the 802.1Qat and 802.1AS sponsor ballots.

**TG in recess till 13:30 Hrs EST**

**TG called to order at 13:35 Hrs EST**

**Agenda**

* Administrivia
* Update 09/926r5 with comments from the joint meeting
* Motions
	+ Teleconference Schedule
	+ Approval of minutes
* Timeline Review
* OBSS – describe changes made and motion
* Review closing report

**Overview of changes made to document 09/926r4 and review for correctness**

* + Brainstormed on several parts of the document and generated 09/926r5 as a result
	+ **We could add a reference to justify the assumption of 70% efficiency between the PHY and MAC layers**

**Motions**

**Motion-1**

Move to approve TGaa San Francisco Session Minutes (in document 09/0848r0).

Approved by unanimous consent

**Motion-2**

Move to approve July-November ‘09 Teleconference Minutes (document 09/1164r0)

Approved by unanimous consent

**Motion-3**

Move to approve the November 2009 ad hoc meeting minutes (document 09/1268r0)

Approved by unanimous consent

**Motion-4**

Move to approve the following Teleconference schedule for TGaa:

Bi-Weekly Monday 1100-1230 Hrs ET

Nov 30, Dec 14 and Jan 11

Approved by unanimous consent

**Motion-7**

Move to approve document 09/926r5 as the guiding document describing the work that needs to be done in 802.11aa and 802.1Qat

Moved: Alex Ashley

Seconded: Graham Smith

**Vote: 6-0-3**

**Motion passes**

The TG determined that there is no need to perform a timeline review – the near-term goals for the TG are (a) address all PAR topics and approve inclusion of corresponding material into the 802.11aa draft by the end of the January Session and (b) Complete internal reviews, incorporate resolutions to resulting comments and complete a P802.11aa Draft1.0 by the end of the March session.

**Discussions on changes to OBSS Proposal**

**Changes made include resolutions to comments received both in the meeting and in conversations with members:**

(\*) Removed TSPEC inactivity interval being set to 1

(\*) Access Fraction is now expressed as 3 octets -- integer and fractional parts representation removed

(\*) EDCA Bandwidth Factor is now part of the proposal

(\*) Two Sharing Schemes (on demand and proportional) are added to the Annex

(\*) Incentive for being a good neighbor described

(\*) Element names are not very expressive -- no change has been made to this

Graham walked through the changes in the text associated with the changes (above) to the proposal.

Questions --

Tuesday's discussion resulted in questions like "is there a uniform method of estimating Bandwidth Factor"? Since there are concerns of that kind there is hesitation to support the proposal.

EDCA Bandwidth factor exists. How it is computed is variable and that is why it is in the Annex. If there is a common method to do it, then we could have it in the normative portion of the specification.

Is all the proposal informative -- how the information gets shared is normative (Clause 11). The element description is in clause 7. How the data gets used is informative and is in an Annex.

**Motion-8**

Move to approve the normative and informative text in document 09/1139r3 and empower the TGaa Technical Editor to include it in the next TGaa Draft.

Moved: Graham Smith

Seconded: David Hunter

**Vote: 6-2-2**

**Motion Passes**

**TG adjourned on Thursday 11/19/2009 1531 HRs EST**

 The Closing document review/update was done in an an ad hoc setting after the TG adjourned.