IEEE P802.11  
Wireless LANs

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| 802.11 TGaq Meeting Minutes – September 2013 (Nanjing) | | | | |
| Date: 2013-09-16 | | | | |
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Abstract

This document comprises the Minutes for the IEEE 802.11 Task Group aq (TGaq) meeting (4 sessions – Tuesday (AM2 and PM1), and Thursday (AM2 and PM2) held in September 2013 in Nanjing, China.

Chair: Stephen McCann (BlackBerry)   
Vice Chair: Yunsong Yang (Huawei Technologies)

Secretary: Dapeng Liu (CMCC)

Technical Editor: Dan Gal (Alcatel-Lucent)

**Tuesday, September 17th, 2013, 10:30 to 12:30 (AM2)**

**Call to order and agenda**

Meeting called to order on Tuesday, September 17th, 2013 by TGaq Chair, Stephen McCann, at 10:30 am.

The chair reviewed and updated the working version of the agenda (doc 13/1020r1) which was an updated version of the agenda on the server. He organized the order of presentations for the four sessions in this week.

Cheol (11-13-1030r1) – Tuesday PM1

Ping (11-13-0796r1) – Tuesday PM1

Mike (11-13-0788r1) – Thursday AM2

Dapeng (11-13-1091) – Tuesday AM2

Jing (11-13-1179) – Tuesday AM2

Dan (11-13-0299r3) – Tuesday AM2

The agenda (doc 13/1020r1) was approved by unanimous consent.

The chair reviewed the IEEE patent policy and call for Potentially Essential Patents. No such claims were made.

The chair reviewed the meeting guidelines for IEEE WG meetings. He also reminded participants to record their attendance.

**Secretary Position**

* The Chair reviewed the situation and asked if there is any nomination for Secretary position. There was none. The call for nomination of Secretary position remains open. Interested candidates can inform the Chair.
* Yunsong Yang (Vice Chair) volunteered to take the meeting minutes for this week.
* Dan Gal (Editor) is not here this week. He has updated the terminology document and we will review it shortly.

**Approval of previous meeting minutes**

July 2013 Plenary minutes

Minutes from July 2013 meeting of the TGaq (doc 13/0929r0) were approved by unanimous consent.

**Re-present closing report from July meeting**

The Chair presented the status of the group’s activities as covered in the July Plenary meeting closing report (doc 13/0917r0).

There were no comments or discussion.

**Documentation Recap**

**Terminology Document**

**11-13-0299r2**

Dan is not here this week.

E-mail message from Dan: “edited the suggested definitions for Service Discovery and UPnP. Please review and edit as you see fit before posting on the Mentor website.”

The group reviewed the latest copy of 11-13-0299 on-line:

Charles(??) (Qualcomm): Are we following the WFA Service Discovery MTG activities?

Stephen: we started from scratch. Lee Armstrong commented that we should start from IEEE Dictionary.

Charles: Should we use the term of device or STA in the document?

Stephen: we can change device to STA globally.

Additional editorial changes were made to 0299r3 include:

* Changed Wi-Fi to WLAN (due to trademark issue)
* Deleted reference of [Wikipedia] and [UPnP Forum website]

The Terminology document was updated to 0299r3 version and the group will continue to work on it.

**Use Case Document**

**11-13-0125r6**

Reviewed in Geneva. No further update this time.

**Framework Document**

**11-13-0300r0**

The Chair briefly reviewed this document. There were no comments or updates at this time.

**Presentations**

**11-13-1091r0 Protocol Architecture of 802.11aq**

Dapeng Liu from CMCC presented this document.

Slide 3: scenarios

Slides 4&5: architecture. Option one uses an extended ANQP. Option two defines a new service query protocol.

Slide 6: extend Beacon to indicate the service types that the WLAN can support

Slide 7: Define new Service Discovery Protocol (similar to ANQP). The AP translates the query to ULP (e.g. Bonjour) and queries the WLAN.

Questions and discussions:

Cheol (ETRI): on slide 6, are all the service types indicated in the Beacon?

Dapeng: It is mostly for indicating the capability in the Beacon.

Stephen (BlackBerry): ANQP has an ANQP server. If we reuse ANQP, we have to support all existing ANQP function plus the service discovery function. Do we want to do that?

Cheol: Yes.

Mike: ANQP is for point-to-point, may not be appropriate for our purpose.

**11-13-1179r0 PAD for Soft AP**

Jing from HTC presented this document.

Slide 3. Described the characteristics and examples of soft AP.

Slide 4: Described the characteristics of non-tethering soft AP.

Slide 5: PAD (for soft AP) helps the STAs to choose the correct network to connect to.

Questions and discussions:

Cheol (ETRI): A soft AP tends to be sensitive to power consumption (so questioning the use case). Santosh (Cisco): Had a doubt about this use case.

Comment from Stephen: it is better to make clear a STA as an AP STA or non-AP STA.

Comment from Stephen: ANQP Neighbor Report element and 11ai Reduced Neighbor Report element all can help to find the neighbors.

Mike Lin (ITRI): Neighbor Report elements are important.

Betty (Huawei): I think this is a useful use case.

**Design Issues:**

* PAM
* Multicast/Broadcast, Packet filtering
* Public Action frame
* Signal flooding/ DoS attack

Santosh (Cisco): I would like to see more detailed break-out of these design issues.

For the benefit of the university students in the room, the Chair reviewed some features in 802.11u.

In 802.11u:

* Realms tell which network that the AP is connected to. There can be multiple Realms for an AP.
* Network: can be open or private.
* Venue may tell you where you are, so that your STA may lower the RF power, audio volume, etc..
* TGaq needs to add one more dimension of services.

**Recess**

The Chair recessed the meeting at 11:51 am. The Chair reminds that the Tuesday PM1 session will be in Room 201.

**Tuesday, September 17th, 2013, 13:30 to 15:30 (PM1)**

**Reconvene and agenda**

Meeting reconvened on Tuesday, September 17th, 2013 by Stephen McCann at 13:31 pm.

The Chair reminded participants to record their attendance.

The Chair reviewed the plans for this session: There are 2 presentations in this session as previously planned.

**Presentations**

**11-13-0796r1 Two Step Service Discovery**

Ping Fang from Huawei presented this document.

Slide 4&5: Recap of previous proposal of 2-step service discovery: step 1, generic AP/NW discovery plus service indication; step 2, detailed service query based on the service indication.

Slide 6: Service ID can be in the Probe. Service Bitmap can be in the Beacon.

Slide 7: Proposed Service Indication IE format.

Slide 8: 3 options for the content in the Service Indication IE:

option 1, indicating the service discovery protocol supported, one protocol per bit;

option 2, indicating services, one service per bit;

option 3, bloom filter type of bitmap for indicating services.

Slide 9: summary

Questions and discussions:

Santosh (Cisco): This is along the line that we have discussed. Suggest hybrid of options 1 and 3. Option 1 should not use bitmap but use value instead, e.g. value of 1 for protocol X, etc.. Not sure if we should use option3. But if we do need it, we should do option 1 first plus option 3 to hash the service name.

Paul (Marvell): Is the bitmap a bloom filter type of bitmap?

Ping: yes.

Paul: There are issues of ambiguity and scalability with the bitmap approach. Are you objecting the previous proposal from Marvell and Huawei?

Ping: No, this just provides another option to consider.

Paul: We don’t need the protocol type. UPnP is quite noisy.

Santosh: asked if the protocol type is indicated in the WFA WFDS?

Paul: No.

**11-13-1130r1 Design Options for Service Discovery Mode**

Cheol Ryu from ETRI presented this document.

Slide 3: Proposed a design option of having a common channel and synchronized broadcasting

Slide 4: PAM broadcast and multicast. 30~100 beacon interval per cycle.

Slide 5: synchronized access to a common channel (PAM window)

Slide 6&7: Concurrent mode. PAM on common channel. BSS on another operating channel.

Questions and discussions:

Santosh (Cisco): It is not a good idea to have an AP to stick to a channel to advertise service. Will disrupt services.

Cheol: what do you think of the synchronized aspect?

Santosh: It is difficult to synchronize multiple APs.

Prabodh (Nokia): On slide 7, on which channel is the GAS query carried out, the common channel or the operating channel?

Cheol: The operating channel.

Yonggang (ZTE): Is the common channel a PHY channel or a logical channel?

Cheol: It is a PHY channel.

Yonggang: can this common channel be used for other WLANs?

Cheol: Yes.

Stephen (BlackBerry): I agree with Santosh that it is hard to synchronize a wide area. In the concurrent mode scenario, does the STA have dual radio capability to listen to both channels at the same time?

Cheol: we may need dual radio.

Stephen: Then we will add complexity to the STA.

Stephen: 802.11 is an asynchronous system.

Straw Poll #1: Do you agree that a broadcasting/multicasting mechanism is a good design option in addition to GAS-based request/response mechanism?

Questions and discussions:

Question: what is the content of Broadcast/Multicast?

Response: service info.

Question: how will legacy STAs react to a broadcast GAS frame?

Response: they should ignore it unless there is some weird implementation.

The TG proceeded with the SP. The Result: 0/0/14.

Straw Poll #2: Do you agree that the broadcasted/multicasted PAM in a public action frame is a good design option?

Question: what direction is this frame transmitted?

Response: it is from the AP to the client.

The TG proceeded with the SP. The Result: 1/0/13.

Straw Poll #3: Do you agree that the broadcasting/multicasting design option requires the synchronized access to a common channel?

The TG proceeded with the SP. The Result: 0/12/3.

Straw Poll #4: Do you think the concurrent service discovery mode could address a technical solution for the power consumption issue for service discovery?

Yonggang: Can single radio STA do this concurrent mode?

Cheol: Probably not.

Yunsong (Huawei): commented that the benefit of SP #4 is based on the assumption of synchronize access. But that assumption is not supported by the result of SP #3.

Yunsong: commented that the STA may save more power by staying on the associated AP link for sending the service query due to more optimal link adaptation on the associated link.

The TG proceeded with the SP. The Result: 0/7/8.

**Design Issues Discussion**

The Chair expanded the list of design issues into multiple slides, while the group discussed and added to the list:

* PAM
  + Santosh (Cisco): Is GAS considered as the frame for PAM?
  + Stephen (BlackBerry): The alternative is Probe Request/Response.
  + Stephen: There are two issues with the Probe: limited message size and loss of synchrony between request and response.
* Service Advertisement/Discovery
  + Hash
  + Support of higher layer SD protocol
  + What are the services
  + Nomenclature
* Packet filtering
  + Santosh: what is packet filtering?
  + Stephen: for counter DoS attack.
  + Santosh: this could be implementation specific.
  + The goal is to limit # of identical message received by the AP.
  + Prevention of DoS attack.
  + Reduction of Signal flooding on AP/network wide.
  + Security
* House keeping
  + Service Registration
  + Capability
  + Service proxy (in the AP)
  + Common Channel

Betty: I would like for the others to have an opportunity to review and add to this list.

Cheol: suggest that we add common channel to House Keeping slide.

Santosh: Suggest that we get this document ready before the next session.

The TG entered an ad-hoc mode so that the Chair could finish and upload the document. This document will become 11-13-1182r0.

The Chair uploaded document 11-13-1182r0 to the server, then the ad-hoc group is done with their work.

**Recess**

The chair recessed the meeting at 15:27 pm.

**Thursday, September 19th, 2013, 10:30 to 12:30 (AM2)**

**Reconvene and agenda**

Meeting reconvened on Thursday, September 19th, 2013 by Stephen McCann at 10:31 am.

Chair reminded participants to record their attendance.

The chair reviewed an update of the agenda (doc 11-13-1020r3) which covers the activities of the current session (Thursday AM2)

* The chair reviewed the plans for today
* The revised agenda (doc 11-13-1020r3) was approved by unanimous consent.

**Secretary Nomination**

* Nominee: Dapeng Liu (CMCC) – but may be available only during plenary meetings.
* Yunsong Yang (Vice Chair) agreed to step in to take the minutes whenever Dapeng is not available.
* The Chair recommended that the group approve this nomination.
* The Chair asked if there is any objection.
* There was none.
* So, Dapeng Liu becomes the TGaq Secretary.

**Presentation**

**11-13-0788r1 TGaq Transaction Protocol Update**  
Mike Montemurro from BlackBerry presented this document.

Slide 4: Use a new advertisement protocol ID “STP”; carried over the existing GAS frames; new bit in AP extended capability IE.

There was a suggestion to change the term of STP to service query protocol.

Slide 5: Highlighted the difference with ANQP.

Slide 6: described the architecture.

Slide 7: described the message flow.

Richard (SRA): what we do about security for PAD?

Mike (Blackberry): In the absence of some pre-arrange security mechanism, data integrity is all we can do. The (non-AP) STA can repeat the PAD message in a secured manner if a connection is made after PAD.

Richard: If there is a lack of security, someone can flood the proxy.

Stephen (BlackBerry): during the last session we have listed this issue (in the open issue document 11-13-1182r0).

Slide 8:

Yunsong (Huawei): Is the IP header, transport layer protocol header included in the encapsulated message?

Mike: No, we need to find a way to map the ULP to the encapsulated message.

Question: Who is receiving this transmission?

Mike: The APP in the OS sends the request down, and 802.11 MAC converts it to a frame.

Cheol: Slide 5 mentioned that STP can use broadcast. When to decide to use broadcast or not?

Mike: TGaq should define rules of when to use broadcast or unicast.

Slide 9:

Cheol : on STA side, what need to be done?

Mike: we need some entity (a logical entity) to convert the request to a frame.

Mike: Unicast Push can be done after 802.11 authentication (not including 802.1X), or during association.

Question: Why? Is there any benefit to that?

Mike: I don’t see a lot of benefits.

Richard (SRA): An alternative to this is that I can set a service to my Home Agent. While I am on the road, I am interested in this service. When it is available, push it to me.

Mike: I am not entirely sure how to do push or how useful it is.

Mike: Push mode can be broadcasted.

Slide 11: ULP does not need to be standardized in TGaq. TGaq should focus on MAC.

Question: How does the STA address the proxy?

Mike: The STA sends a Public action (GAS) frame. The AP will convert GAS frame to something proxy can understand (but it is not Layer3/4).

Slide 13: described a possible IE format.

Jing (HTC): On slide 5, GAS frame must be unicast currently. How do we make it a broadcast frame?

Mike (BlackBerry): Original GAS had a broadcast mode, but there was no use case for it at that time. We can re-introduce it.

Mike Lin (ITRI): On slide 6, how does a service provider register with the proxy?

Mike Montemurro: yes, we need to figure that out.

Richard (SRA): To use the pre-coded hash, do you need a global dictionary or a directory.

Mike: We don’t need a global directory.

Cheol: In Bonjour and UPnP, services are announced using multicast. The proxy can use these announcements to register the service.

Mike: Yes, that can be done. We can describe it in the 802.11 Annex.

Betty: What is the usage of the signature field?

Mike: The signature allows you to make sure that the message you got has not been tempered with.

Richard: where does the STA get the credential information?

Mike: we need to pre-establish a credential.

Richard: it will involve a lot of PKIs. It may have impact on the architecture.

Mike: It can be VeriSign.

Cheol: On slide 9, what is Push mode?

Mike: Pushing information before association. Unicast Push requires some state at the STA. You can piggyback some information in 802.11 Authentication.

Richard: I have a use case where roadside STAs collect data from cars. Broadcast Push mode can be interesting too.

Richard: for unicast Push, how do you know the STA is listening?

Cheol: Common channel can be broadcast or pushed.

Carolyn (Ruckus): don’t think common channel helps.

**Review of 11-13-1182r0 Open Issue document**

The group reviewed the document.

Slide 2: GAS comeback, GAS fragmentation,

Slide 3: Richard (SRA) commented that we need more details on the hash (can do something about it).

Slide 4: Diameter has mechanism to reduce traffic to the network side.

**Review of 11-13-0300r0 Framework document**

The group reviewed the document. The Chair would like to fill this document with some notes to the following sections:

Section 1: Can add 0299r3 here [Dan].

The chair invited everyone to expand on terminology in their submission.

Section 2: SG document - use case(0125r6) – provide description

Section4: MLME text (primitives).

Section 5: 0788r1, 1130r1, 0796r1

Section 7: all submission which contains any behavior text

Added Annex for Service Proxy.

The Framework document is thus updated as 11-13-0300r1. The Chair encouraged the group to bring in text submission in November meeting.

**Timeline Update**

The group reviewed our current timeline and changes were made as highlighted:

* **Approval of PAR & 5C: November 2012**
* **Initial TG meeting: July 2013**
* **Initial Working Group Letter Ballot: July 2014**
* **Re-circulation Working Group Letter Ballot: November 2014**
* **Form Sponsor Ballot Pool: May 2015**
* **Mandatory Editorial Check: September 2015**
* **Initial Sponsor Ballot: November 2015**
* **Sponsor Ballot Recirculation: January 2016**
* **Final WG/EC Approval: May 2016**
* **RevCom/Standards Board Approval: May 2016**

There was no objection to the change.

**Teleconference Schedule**

One before November meeting, Tuesday 29th October 10am ET ??

There was no objection to plan one teleconference.

There was no objection to the proposed date and time.

So, there will be a TG teleconference on October 29th, 10am ET.

**Preparation for November meeting**

The chair will requires 4 slots with a room for 30 people.

Call for proposals / Presentations.

With the agreed teleconference schedule, the Chair updated the agenda document to 11-13-1020r4.

**AOB**

None.

The Chair reminded participants to record their attendance.

**Adjourn**

Since we finished all the agenda for the week. The chair asked there is any objection to adjoin for the week (and cancel the PM2 session this afternoon).

Hearing no objection, 802.11aq is adjourned for the week at 12:05 pm local time.