IEEE P802.11  
Wireless LANs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 802.11 TGaq Meeting Minutes – January 2014 (Los Angeles) | | | | |
| Date: 2014-01-23 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | Email |
| Filip Mestanov | Ericsson AB | Färögatan 6, 113 30, Stockholm Sweden | +46 725 298 161 | [filip.mestanov@ericsson.com](mailto:filip.mestanov@ericsson.com) |
|  |  |  |  |  |
|  |  |  |  |  |

Abstract

This document comprises the minutes for the IEEE 802.11 Task Group aq (TGaq) meeting held in January 2014 in Los Angeles, CA, USA. The group has been allocated 4 sessions during the week – Monday (PM1), Tuesday (PM2), Wednesday (PM2) and Thursday (AM2).

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

Secretary: Dapeng Liu (CMCC)

Technical Editor: Dan Gal (Alcatel-Lucent)

**Monday, January 20th, 2014, 13:30 to 15:30 (PM1)**

**Call to order**

Meeting called to order on Monday, January 20th, 2014 by TGaq Chair, Stephen McCann, at 13:30.

**Secretary Position**

Filip Mestanov (Ericsson) will be taking the minutes this week (the secretary Dapeng Liu is not present).

**Agenda**

The chair showed the week’s agenda (doc 11-14-0012r1), which was an updated version of the previously posted agenda (doc 11-14-0012r0).

The chair commented on the outstanding Design Issues discussed during the previous meetings:

* + PAM
  + Multicast/Broadcast, packet filtering
  + Public Action Frames
  + Signal flooding/Denial of Service attack

The chair would like the group to produce an initial draft document during this week by taking onto the currently existing straw document and trying to fill in the gaps in that document. By the end of the week, the chair would like to task people to provide normative text.

The chair asked for suggestions for additions to the agenda:

* Joseph Kwak (InterDigital) asked to have a presentation for the Wednesday session (he has not obtained a document number yet). The chair added this item to the agenda. The presentation is on “Transaction proxy server for ANDSF”.
* Jing-Rong Hsieh (HTC) asked to have a presentation during the Tuesday’s meeting. The presentation is on “SoftAP discovery”

The chair organized the order of the presentations for Monday in the following way:

* Mike (11-13-0788r3) – Monday PM1
* Ping (11-14-0066r0) – Monday PM1
* Ping (11-14-0067r0) – Monday PM1

The agenda (doc 11-14-0012r1) was uploaded to the server. The agenda was approved by unanimous consent.

**IEEE patent policy**

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

**IEEE meeting guidelines and meeting etiquette**

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

**Approval of previous meeting minutes**

The chair requested the approval of the November 2013 plenary meeting minutes. The minutes from that meeting (doc 13/1490r0) were approved by unanimous consent.

**Re-present closing report from November 2013 meeting**

The chair presented the status of the group’s activities as covered in the November Plenary meeting closing report (doc 13/1428r1).

The protocol and service discovery architecture as well as the various frame formats were discussed. Some debate on essential requirements was held. The telecom on the 7th of January was cancelled (due to lack of discussion topics). There were no comments raised on the closing report.

**Documentation Re-cap**

Use cases (13/0125r6) was mentioned

Updated terminology document (13/0299r3)

Skeleton framework document (13/0300r1)

**Presentation by Mike Montemurro (Blackberry) on “Transaction protocol for TGaq” (11-13-0788r3)**

Mike Montemurro (Blackberry) presented the document. He also mentioned that this is an update to the presentation that has already been shown over the last meetings. The floor was opened for questions and comments.

Santosh Abraham (Qualcomm Inc.): The Service Transaction Proxy (Service TPX) would be one proxy?

Mike Montemurro (Blackberry): Logically we need one. But in theory one could have one Service TPX per protocol.

Andrew Myles (Cisco): Did you have upper-layer protocols (ULPs) in mind? Do we have some constraints on ULPs?

Mike Montemurro (Blackberry): There is a slide with a table regarding the ULPs. No constraints identified so far. But there need to be more investigation on how the ULP encapsulates in the Service TPX.

Andrew Myles (Cisco): The table is not in this document.

Mike Montemurro (Blackberry): The table is in another document. The service ID is there, the ULP type is also there.

Andrew Myles (Cisco): Could you give some examples of ULPs?

Mike Montemurro (Blackberry): Bonjour, Wi-Fi Direct, etc.

Santosh Pandey (Cisco Systems): It’s not a request-response protocol. There is also broadcast, right?

Mike Montemurro (Blackberry): Yes, but it’s rather compact. This is just a start. We can have a bitmap mask (for example) and then decide which types of protocols will be included.

Santosh Pandey (Cisco Systems): Not envisioning putting the ULP details (e.g., Service Capabilities) in here right?

Mike Montemurro (Blackberry): The service types will be fixed. Then different bits in the bitmap mask would be set depending on the available service type. Then every ULP could fit in a particular service type category and hence a particular bit would be set for it.

Andrew Myles (Cisco): I do not understand the service bitmap mask.

Mike Montemurro (Blackberry): If a STA is looking for a particular service, the service type bit can tell the STA what kind of services are present at this AP. A particular service type (e.g., a printer) could be advertised via different protocols (e.g., Bonjour, etc.).

Mike Montemurro (Blackberry): The STA does not have the mapping, but it doesn’t have to have it either. The STA needs to know which ULPs on the AP match the ULPs on the STA. Then the STA can select the ULPs to use.

Cheol RYU (ETRI): We need a prior knowledge about the ULPs at the STA for this to operate properly, right?

Mike Montemurro (Blackberry): At the first level of information there is broadcast, but it’s very expensive to put all the details about the ULPs in the broadcast (and the STA might not really care about all the details of all ULPs). There is kind of hierarchical information provisioning to the STA – the beacon has a very coarse info, then the STA can request additional information during the pre-association state. Then after association, the STA can obtain even more information.

Santosh Abraham (Qualcomm Inc.): Why do we need a bitmap mask? What advantage does that give us?

Mike Montemurro (Blackberry): It doesn’t have to be a mask; we could do it in some other ways. We are looking into a service type here and a way to make it very compact (it’s a beacon frame after all). The granularity of the bitmap mask we can debate, of course.

Yunsong Yang (Huawei): Is it a regular IE or is it an ANQP element?

Mike Montemurro (Blackberry): It’s a regular IE in the beacon, but it looks similar to ANQP.

Joseph Kwak (InterDigital): I have two comments: 1) We need a much more descriptive name for this process. Transaction is very generic. We need to change it to something related to pre-association discovery. And 2) We have many options to implement this:

* Include it in the beacon
* Can we not put the same thing in the ANQP query directly? Then we don’t need to “pollute” the beacon? If we already have the ANQP server, why don’t we just put this capability in there?

Mike Montemurro (Blackberry): Regarding the naming – this term has been used over the last few months, but we could also change it. Regarding 2): the reason why this is in the beacon is that in order for the STA to perform these queries, the STA requires some sort of basic information (the ANQP process is rather cumbersome: the STA has to go on channel, send a request, wait for responses, etc.). The idea here is that when the STA makes the request, it already knows it is going to get the info it. The STA needs some basic info on what services are supported on the network and also which ULPs are supported.

Chair: It will be easy to create a new ANQP request.

Joseph Kwak (InterDigital): Perhaps we should be implementing this in more than one way.

Ping Fang (Huawei): How intelligent should the TPX be? Does the SP provision the TPX with UPL information or does the TPX gets info automatically?

Mike Montemurro (Blackberry): This is out of scope here. But there could be several ways:

* Manual provisioning
* Intelligently sniff of the services advertised on the network
* Etc.

The service type info will need to be stored in the TPX. The ULP information might not need to.

Ping Fang (Huawei): How do you map the service identifier onto the service type mask? Hash it? For the user, the STA needs to be intelligent enough to realize whether the supported service is actually indicated in the mask?

Mike Montemurro (Blackberry): This will not give the ULP entity in the STA all the info it needs (at least not before you associate). You will need to do that before you carry the actual discovery.

Ping Fang (Huawei): Can we put the service identifier directly in the bitmap mask? Then the STA does not need to take any decisions.

Mike Montemurro (Blackberry): The STA would construct an STP request (token ID, ULP ID, and payload – hash of the service info) and then go ahead and request a specific service.

Cheol RYU (ETRI): One byte service type mask? Does this represent the whole ULP list?

Mike Montemurro (Blackberry): It represents all service types.

Cheol RYU (ETRI): Is the ULP identifier Bonjour foe example or is it an exact service?

Mike Montemurro (Blackberry): It is a type of service – IP printer, etc.

Joseph Kwak (InterDigital): Question about slide 10. 1) The TPX could fetch info from anywhere over the internet, right?

Mike Montemurro (Blackberry): The way the TPX obtains the info is out-of-scope.

Joseph Kwak (InterDigital): Correct. But in 802.11 we have to be very careful with implementing all this. The investments are enormous and we do not want to create a back-door that allows the pre-association state to fetch info that bypasses the network security. Also 2) If we don’t want to create the back-door, what does the AP do to screen the transaction messages? And what does the TPX do to screen those messages? There is IP communication between the STA and the Bonjour server, right?

Mike Montemurro (Blackberry): All the AP is doing is relaying info between itself and the STA. It’s not looking at the service information. It can potentially throttle the requests or the responses, just because that’s all the information it has. The STA might not need a local IP address – the STA will construct a hash of the service, send that to the service TPX and then the service TPX will do whatever it needs to fetch the service information depending on the ULP. There is not IP connectivity required; there is only a service descriptor required.

Joseph Kwak (InterDigital): On the diagrams it seems that we have an IP communication.

Andrew Myles (Cisco): Go back to slide 10. The diagram has an error. The AP needs to intercept the message from the STA and forward it to the service TPX.

Mike Montemurro (Blackberry): I will need to clean up the diagrams.

Andrew Myles (Cisco): The problem with hashing is that it’s generally a one-way function.

Mike Montemurro (Blackberry): We need to work on that. Maybe we leverage what Paul Lambert (Marvell) presented last year on creating hashes.

Ping Fang (Huawei): Why don’t we send the service identifier via the MAC layer messaging? Then it’s decided by the AP and the TPX whether to forward the query.

Mike Montemurro (Blackberry): We’re not trying to replace the ULPs. You could look at the payload of the ULP and just extract the service identifier from the message and then include it in the query.

Ping Fang (Huawei): How intelligent does this TPX need to be?

Mike Montemurro (Blackberry): Not that intelligent. Just need to encapsulate a service descriptor in an 802.11 frame.

Santosh Pandey (Cisco Systems): Once the STA knows that it can send a Bonjour request, it can just go ahead and send a Bonjour request. It doesn’t need to send a hash of it.

**Presentation on “Avoiding duplicated queries in 11aq” by Ping Fang (Huawei) and Jing-Rong Hsieh (HTC) (14/0066r0**)

HTC and ETRI have co-signed this contribution. Ping Fang (Huawei) presented the contribution.

Mike Montemurro (Blackberry): Not sure if Option 1 will work. Besides the SSID that are the same on each AP, there is other information that indicates that the APs are on the same network (HESSID). Thirdly, if there is 802.11r enabled, the mobility domain will provide the same information.

Paul Lambert (Marvell): I concur with the previous comment. Having devices being able to tell that they are on the same network might of out-of-scope here.

Ping Fang (Huawei): This kind of info could be useful for the STA, but not sure if it’s in scope here, indeed.

Yunsong Yang (Huawei): Service discovery is very interesting problem and in the future we might have providers that sell the same service to different SPs. In the future we can have APs in different ESS-es that connect to the same information providing server. How do we solve that?

Mike Montemurro (Blackberry): We have to see how likely this is. The services might not be exactly the same. We have to think that one through.

Santosh Abraham (Qualcomm Inc.): If we have a TPX, the TPX could pick one of the APs to provide the response.

**Straw Poll** – Asking for a show of hand of the two options (vote for one or the other). Everybody in the room can participate in the straw poll:

* **Option 1: allowing 11aq-STAs to broadcast GAS frames**
  + Need to study if there is any impact on legacy STAs’ behavior
  + Duplicated response could still be there
* **Option 2: 11aq APs indicates if they are connected to the same server/proxy**
* **Option 3: Neither**

Andrew Myles (Cisco): Why are you asking Option 1 OR Option 2? What if I don’t want to vote for either one?

Ping Fang (Huawei): I will add an Option 3 – Neither.

Result:

Option 1: 0

Option 2: 4

Option 3: 10

**Presentation on “Service Discovery for UPnP Printer ” by Ping Fang, Ji Chen (Huawei) (14/0067r0**)

Ping Fang (Huawei) presented the document. Floor was open for comments/discussion.

Joseph Kwak (InterDigital): In both examples, what is your view on who’s got the IP addresses? Is it the AP that has the IP address or is it the proxy that does the IP address swapping or does the STA get an IP address?

Ping Fang (Huawei): The current state of UPnP is that the device gets an IP address. You might need to use a dummy IP address (for the STA) so that the AP/proxy knows where the query comes from.

Mike Montemurro (Blackberry): In my opinion, the wrong way to go is to encapsulate IP over GAS for a number of reasons; number one being that there is no security. What one can do is stop the messaging at the first GAS transaction to protect additional information in the network. Beyond that the device will have to associate to the network in order to obtain more information.

Cheol RYU (ETRI): We need to find some abstractions so we do not have to cover every single protocol. I agree with Mike that the availability of the information is enough. The detailed information is not required at this moment, but should be retrieved after association.

Andrew Myles (Cisco): Interesting discussion. At one end of the spectrum, we can define an 802.11 protocol that is transparent to every ULP – downside is that it might be rather inefficient; plus you might open up a back-door for security threats. At the other end of the spectrum, we have the possibility to focus on a couple of known protocols and create a highly-optimized solution. Both approaches have some benefits and downsides; the discussion is interesting though.

Paul Lambert (Marvell): Following on what Andrew Myles (Cisco) is saying, it’s very hard to make a proxy to understand all those protocols, because the proxy will need to be familiar with the details of every possible ULP. The proxy should be rather simple. I’m for a hash-like models: there you won’t be able to tell the difference between the ULPs. I think we have to keep it simpler and remove the understanding of the background information in the TPX. It’s out of scope to fully define the details for every ULP.

Joseph Kwak (InterDigital): So for each protocol we will need to know where to cut off the exchange in order to improve security. But the other option is to have a rather generic exchange. Also, this becomes rather difficult if you consider operators like Boingo – if Boingo provides the discovery, which flavor of Boingo does one want to connect to?

Mike Montemurro (Blackberry): Could be that you use a hash of the printer or you might have a hash of more detailed information. Secondly, there is something called network access and discovery and there is something called service discovery. So if you’re looking at Boingo, you are looking at network discovery, not service discovery. The network discovery and service discovery do not necessarily need to be coupled together. It depends how you build the Connection Manager (in the device).

Andrew Myles (Cisco): A quick comment – we have a bunch of service discovery protocols that provide information in various ways. So at what point should we cut off the information? Should it be a policy decision? Maybe we cannot make this decision in this room. We can leave it as a policy decision of the TPX. If the proxy wants to cut off the messaging after the first exchange, that is fine. Or if the TPX wants to leave the whole messaging open, that’s also fine.

Ping Fang (Huawei): The TPX might also want to keep the STA in mind when enforcing the policy.

**Recess**

Meeting is recessed at 15:35 until PM2 on Tuesday, January 21st.

**End of recess**

The meeting resumed at 16:00 (PM2) on Tuesday, January 21st.

**Agenda**

An updated agenda (11/0012r2) was presented. The agenda was approved by unanimous consent.

**Presentation on “Service discovery for local services” by Jing-Rong Hsieh (HTC) (11/0124r0**)

Jing-Rong Hsieh (HTC) presented the contribution. The floor was open for questions and comments.

Chair: I have a question on the appendix slide. Could you give us some more details on what is happening in the background (in terms of flow of messages) on the right hand-side picture?

Jing-Rong Hsieh (HTC): The device connects to the camera using the pre-association discovery messages and then can exchange messages with it. The STA can show to the user options on which network provides what kind of service (e.g., Internet access, camera access, etc.).

Dan Gal (Alcatel-Lucent): It’s a two-stage process – the user initiates the app and the device connects to the camera?

Jing-Rong Hsieh (HTC): It can be also done in one step (the discovery is automatically carried and the user does not need to trigger the discovery explicitly).

Dan Gal (Alcatel-Lucent): It would be good to provide a message on the device, notifying that the service is available; then the user can make a choice whether to connect or not.

Cheol RYU (ETRI): The current state of the technology, the camera is a Soft-AP, right? Is it a special mode for the camera to run the Soft-AP?

Jing-Rong Hsieh (HTC): You have to trigger the camera to start running the Soft-AP (at least for some short time).

Cheol RYU (ETRI): The STA is associated to another AP initially. How can we detect the services on the camera in that case?

Jing-Rong Hsieh (HTC): This is a bit difficult. Currently, I don’t have enough information of how many messages should be exchanged between the STA and the camera.

Cheol RYU (ETRI): But if the camera goes into sleeping mode, the SoftAP will not send any beacons any more. So it will not be discoverable. We need a solution for that.

Chair: If you have a device that goes into a sleep mode, how do we perform the discovery? Does the group feel that we should look into solving the pre-association discovery for devices that go into sleep mode?

Dan Gal (Alcatel-Lucent): I think we should. Sleepy devices could for example wake up and transmit messages periodically.

Chair: What kind of messages should they send in that case?

Dan Gal (Alcatel-Lucent): Short messages; like “I’m here”.

Mike Montemurro (Blackberry): We have a big enough problem to solve with the service discovery. We should focus on that and not expand the scope. The sleepy device issue can potentially be solved with existing 802.11 features.

Chair: Another point on the post-association discovery. If a STA is performing a post-association discovery, it will have an IP address so that this might be out of scope for this group. Does the group feel that we should be also addressing the post-association discovery?

Joseph Kwak (InterDigital): A general comment, I think these are important use-cases. If we have time in the time-limit of the project, it would be good to complete the picture by also addressing g the post-associated discovery use-cases. If we can do pre-association discovery, it will also work in a pre-association stage.

Dan Gal (Alcatel-Lucent): In post-association, aren’t we at the same state where normal discovery is? Once the STA has an IP address, it could perform normal discovery.

Joseph Kwak (InterDigital): It cannot discover devices that are not associated though.

Mike Montemurro (Blackberry): If you are associated, you usually have IP connectivity. If you are trying to discover something, while you are associated to another device, you will have two separate state machines – one for the post-association and one for pre-association cases.

Chair: Jing-Rong Hsieh (HTC), could you come back with some message flows for the next meeting?

**Comments from the editor**

Dan Gal (Alcatel-Lucent): Assuming we will soon be submitting draft text for TGaq, the lessons learned are from other TGs are:

* The whole draft will be in MS Word, so please do not submit in other formats (any MS Word version will do).
* All figures must be in MS Visio. The figure name must be formatted as “contribution number\_figure number”.

Chair: Can you give us the source of this info/requirements?

Dan Gal (Alcatel-Lucent): It’s from the 802.11 WG editors and style guide (and after handling numerous complains).

Chair: When do people have to do abide to these requirements?

Dan Gal (Alcatel-Lucent): From the beginning.

Chair: Once we approve the submission to be included in the draft, people can send you the documents in the requested format?

Dan Gal (Alcatel-Lucent): This will be a burden on the submitter. People might not be there when the submission is approved. Plus having different formats for the same contribution might be confusing.

Chair: But we should approve contributions before they are included in the draft. People should only send text and figures to the editor once they are approved by the TG for inclusion in the draft.

Joseph Kwak (InterDigital): Why don’t people submit the contributions directly in the requested format?

Daniel Borges (Apple): If you are closing yourself to certain application, people running different platforms might not be able to contribute.

Chair: Daniel, can you please check that with Adrian Stephens?

**Architecture discussion**

Chair wants to continue the discussion on the architecture. Should UPL encapsulation be opaque (the message can be interpreted by lower entities) or transparent (no interpretation by lower layer entities possible)? The whole discussion revolves around having the ULP service identifiers available to the lower layer entities. Have people given this topic some more though?

Cheol RYU (ETRI): I personally want it to be transparent. I want to be able to send a Bonjour query and UPnP query to a service discovery proxy without any interpretation in the middle. The service announcement cannot be transparent though; we need to use the service identifier (either a hash or a URL). So in some situations we might need the service identifier, but I think later in the process we need transparent messaging.

Chair: Some simple identifier needs to be broadcasted by the AP in a very coarse manner and later if the STA is interested, it can query the AP about more details. We can’t determine the threshold between a simple service identifier versus a long service identifier to be used in the broadcasting just yet.

Joseph Kwak (InterDigital): We should not enter into developing protocol-specific features and messaging. We should not advertise network services, but pre-association discovery capabilities.

Paul Lambert (Marvell): I disagree. Network discovery services will not work well, if we add congestion in the network. Plus, we should be enabling service discovery, this is the charter of the group.

Chair: We seem to have some common understanding. I think we are getting to the point when we need more detailed explanation. We need to consider how we turn the ideas into text and message diagrams. I want to encourage everybody to provide normative text for inclusion in the initial draft. The objective of this week will be to identify gaps so we can have a preliminary draft.

**Recess**

Meeting is recessed at 17:01 until PM2 on Wednesday, January 22nd.

**End of recess**

The meeting resumed at 16:00 (PM2) on Wednesday, January 22nd.

**Agenda**

An updated agenda (11/0012r3) was presented. The agenda was approved by unanimous consent.

**Presentation on “TGaq Service Transaction Protocol for ANDSF Discovery Service” by Joseph Kwak (InterDigital) (11/0158r0)**

Joseph Kwak (InterDigital) presented the document. The floor was open for comments/discussion.

Mike Montemurro (Blackberry): Slide 14 – This is a dual-mode device, right? Is it assumed that the device doesn’t have a cellular connection at that time?

Joseph Kwak (InterDigital): No, the device might have two connections at the same time. There are a lot of cases when the device would connect to the ANDSF over WLAN (instead of cellular).

Yunsong Yang (Huawei): Does the UE need to authenticate to the AAA (HSS)?

Joseph Kwak (InterDigital): Nope, it’s a different authentication. I haven’t had the time to research that further.

Yunsong Yang (Huawei): You need to authenticate to the 3GPP network. Furthermore, in this case after authenticating to the 3GPP network you are still in a pre-associated state in the WLAN network. Why don’t you just associate to the AP so you don’t have to carry two authentications?

Joseph Kwak (InterDigital): It would be good for the UE to know that it can access the ANDSF before connecting to the AP.

Yunsong Yang (Huawei): Maybe we need to do more studying before we say this is the right way to do go.

Andrew Myles (Cisco): Why don’t you use Hotspot 2.0 for network selection? Why do you have to use ANDSF?

Joseph Kwak (InterDigital): The HS 2.0 Management Object (MO) is separate from the ANDSF MO.

Andrew Myles (Cisco): Why don’t we use just a regular HS 2.0 technology to choose a network to connect to?

Joseph Kwak (InterDigital): HS 2.0 may or may not know which network to select (since the mobile operator might have different policies and there could be discrepancies between the HS 2.0 and ANDSF policies).

Andrew Myles (Cisco): I think the valuable part in this is defining a generic protocol framework.

Filip Mestanov (Ericsson): Why do this pre-association state when the ANDSF will surely be reachable post-association? The UE could use the 3GPP Cellular Information (a list of PLMNs, obtainable by means of ANQP) to get information on which mobile operators are reachable via this AP.

Joseph Kwak (InterDigital): If we connect to a network and then fetch the ANDSF policies, the UE might need to re-select the network afterwards (according to the updated ANDSF policies).

Jing-Rong Hsieh (HTC): Could you please give some more information on ANDSF, what kind of service is the STA getting?

Joseph Kwak (InterDigital): It’s not a service; it is information on network selection (policies).

**Presentation on “Transaction Protocol” by Mike (11/0788r4)**

Mike Montemurro (Blackberry) presented the document. Some more details have been provided (based on the discussions held during the week). The floor was open for questions and comments.

Yunsong Yang (Huawei): Slide 10 – The ID field should be one octet, right?

Mike Montemurro (Blackberry): Correct, I have to fix that.

Santosh Abraham (Qualcomm Inc.): So classes of services are available via the beacon, right?

Mike Montemurro (Blackberry): Yes.

Santosh Abraham (Qualcomm Inc.): Slide 12 – this is a Public Action frame, right? And in this frame the STA asks for a particular service or could it ask for several services at the same time?

Mike Montemurro (Blackberry): If the Query Request is 0 for example, we can treat that as a wildcard. There are many ways we can do that.

Joseph Kwak (InterDigital): I have some questions on the Request and the Response. I am all for saving resources, so if we can use hashing, that’s great. But I am not sure how we can use that in the general sense. If we have many possible descriptor fields for a printer and the descriptor is hashed, there is no idea for the sender to know if the receiver can decode the hash correctly. How would this work if the receiver cannot decode the hash (e.g., for long strings)?

Mike Montemurro (Blackberry): We have to draw the line somewhere and keep this relatively simple. Since there is no state associated to the STA in the network, we cannot give the STA tons of information. The service descriptor would suffice for the hash (without any attributes). Optionally, you could request the attributes at a later point. But this is just a start.

Yunsong Yang (Huawei): The protocol IDs (slide 10) – why are they are not used in any of the request/response messages?

Mike Montemurro (Blackberry): It could be that we need it in the request and/or the response. I’m fine with that.

Cheol RYU (ETRI): You suggest that the service type is the only hashed value? But attributes also specify some services, right? Can we not include the ULP in the hash value?

Mike Montemurro (Blackberry): We can think about that, sure.

Cheol RYU (ETRI): In your presentation, I couldn’t find any tunneling mechanism.

Mike Montemurro (Blackberry): This is not by any means complete. If we want to add more features, I’m open for that.

Andrew Myles (Cisco): So the attributes of the service are provided at a later point?

Mike Montemurro (Blackberry): Possibly. The STA could just say “I want everything Bonjour” and the TPX can provide that.

Andrew Myles (Cisco): I think your presentation is on the opposite end of the spectrum from the previous presentation. Your presentation is rather optimized and addresses the general case, while the previous presentation was rather specific for a particular protocol (the ANDSF exchange).

Mike Montemurro (Blackberry): Yes, those are two choices. You could have both of those at the same time – we can have it more flexible. The STA can choose to carry a generic request or one for a particular protocol.

Joseph Kwak (InterDigital): If we permit the STP protocol to have different kind of encapsulation (transparent or a hash code), or even something in between, I think we are doing something very flexible so then we do not need to decide where do we draw the line. I like this idea.

**Specification framework document**

Yunsong Yang (Huawei) and Dan Gal (Alcatel-Lucent) put this document (11/0300r1) together.

Chair: I suggest that Dan Gal (Alcatel-Lucent) takes this document and we as a group, hopefully in March, can start putting normative text in this document.

Joseph Kwak (InterDigital): Is this a framework document? I thought it was an actual amendment.

Mike Montemurro (Blackberry): I don’t know how much of framework documents we actually need.

Andrew Myles (Cisco): I am not sure if we have a consensus yet. I would like to see somebody summarizing some of the discussions from this week, before we get into the text writing.

Chair: I think Cheol RYU (ETRI) will have a presentation tomorrow on that. I don’t think that we need to have a specification framework document, as other groups have done before. I think there is not so much complexity here.

Andrew Myles (Cisco): I agree. But still we should try to build consensus before we start writing text.

Mike Montemurro (Blackberry): If the group wants, I can make a submission of the presentation that looks more like normative text.

Chair: Does anybody else feel that they can contribute with some normative text for the March meeting? I would like to encourage that as a chair so we can start putting the document together.

**Recess**

Meeting is recessed at 17:39 until AM2 on Thursday, January 23rd.

**End of recess**

The meeting resumed at 10:30 (AM2) on Thursday, January 23rd.

**Agenda**

An updated agenda (11/0012r4) was presented. The agenda was approved by unanimous consent.

**Presentation on “Possible Agreements for the Design” by Cheol RYU (ETRI) (11/0162r0)**

Cheol RYU (ETRI) presented the document. The floor was open for discussion.

Yunsong Yang (Huawei): Slide 5 – we have observed in the past that the STAs are selfish sometimes and do not tend to wait for announcements. Slide 7 – what is the dummy IP? Is it a local IP?

Cheol RYU (ETRI): Yes, it’s a local IP

Yunsong: Slide 9 – in this transparent tunneling case, do we still need a TPX? The AP can encapsulate the request in an IP packet and then forward it, right?

Cheol RYU (ETRI): We need to think very carefully about the TXP. We do not need to provide an exact address of the service server to the STA, but just enough information for the STA to decide whether to associate or not.

Yunsong Yang (Huawei): If the STA sends a Bonjour query for example, the AP can encapsulate that in an IP packet and just forward it in the network. Then we do not really need a TPX. Maybe Daniel Borges has some insights?

Daniel Borges (Apple): Yes, I agree.

Joseph Kwak (InterDigital): I think there is always a role for the proxy, even in the Bonjour case. What we are not doing is opening up the Internet connectivity to the STA in a pre-association state. The TPX is responsible for recognizing the ULP. Even though the TPX does not change anything in the UPL message content, the TPX has to decide whether to forward the message on the network or not. I believe that the TPX is necessary.

Daniel Borges (Apple): The TPX stores all the service info that is on the network. If the STA queries for additional info (that is not in the TPX cache), the TPX can either get that info and cache it, or can just establish a tunnel between the STA and the service server. But there could be more than one instance of the service server. How does that the TPX know to which server to establish the tunnel to? I think this is impractical and there are some security issues there.

Joseph Kwak (InterDigital): We are not going to specify TPX, but we have to make sure that the idea of using a TPX will work with Bonjour.

Daniel Borges (Apple): We need to take some examples so we get a better understanding of the problem. It would be good to have the TPX, so it can fetch information on all the instances of a service.

Jing-Rong Hsieh (HTC): Slide 6 – what is the frequency of the announcement? Also, is that a service digest?

Cheol RYU (ETRI): We have to come to a consensus on how often this information (the announcement) will be sent out. And you are right; we will need to have a digest.

Jing-Rong Hsieh (HTC): If there is no TPX, the AP will be encapsulating the digest and sending it out via a Public Action frame?

Cheol RYU (ETRI): There are a few options on how to design this.

Daniel Borges (Apple): A few comments. Slide 4 – we can also include a “Service update indicator” field here so that the STA knows whether the service info has changed since the last time the info was requested. Slide 5 – this Probe IE is a different than the Beacon IE? Can you carry more than one service ID in that frame? I’d rather send one frame with multiple IDs, than multiple frames with a single ID.

Cheol RYU (ETRI): We can send out queries in a GAS request also. I’d like to keep the Probe small and move the rest to the GAS query.

Daniel Borges (Apple): Why don’t we just do ANQP? Why do we have to develop something “similar” to ANQP? I’d be reluctant to implement yet another GAS-like protocol. We should keep what is there and not invent yet another one. Maybe I can take a stab and provide some call-flow between the STA and the TPX.

Joseph Kwak (InterDigital): Slide 7 – there is a third option too. You could send a service ID (the hashed ID), but with it you could also send some more detailed identifiers. I just want to make sure that everybody understands that we do not have to choose between Option 1 and Option 2; this will depend on the scenarios.

Cheol RYU (ETRI): The Option 3 – I think we need to understand a little more about the behavior of the TPX. Maybe we need another option, but we need to think a bit more how to construct an efficient service ID.

Daniel Borges (Apple): Are we solving the infrastructure and peer-to-peer service discovery?

Chair: We are not excluding the peer-to-peer, but we have been intentionally vague about this so far. We think that if we solve the infrastructure service discover we will also solve the peer-to-peer service discovery.

Joseph Kwak (InterDigital): My opinion is that we are not restricting the work to exclude peer-to-peer. Everybody knows that the main focus is the infrastructure case. But unless we get to the point when somebody walks in with a good draft text, we will not spend more effort on it.

Su Khiong Yong (Marvell): We have to be really cautions, because multiple different options in the specification can create confusion on which option is more applicable to the infrastructure and which to the peer-to-peer case.

Santosh Pandey (Cisco Systems): I though we have excluded the peer-to-peer case. I’m surprised to see that this discussion is still open.

Chair: We had some discussion on that last year and we ran some straw polls. The conclusion was that we are not excluding peer-to-peer explicitly.

Chair: We have decided that the messages that we send here are not secure. So we have to keep that in mind when we design our solution.

Chair: I would like to ask Cheol RYU (ETRI) to go back to slide 3 and I would like to get some feedback from people on this. We have 5 different concepts here. Do people think that all those concepts are worth investigating further? I would like to run some straw polls on that.

**Straw polls** – does the group consider the following topics require further investigation?

Results (Yes/No/Abstain):

1. **Beacon** – 11/0/<No abstain option given>
2. **Probe** – 10/0/<No abstain option given>
3. **Announcements** – 4/3/3
4. **Query and Response** – 13/0/<No abstain option given>
5. **Service Discovery proxy** – 8/0/5

Chair: Seems like the Beacon, Probe and Query/Response are favored for investigation by the group.

Chair: I suggested Jing-Rong Hsieh (HTC) produces a more detailed called-flow for the UPnP case.

Chair: Joe, can you put some more details on the ANDSF? Can you put some prioritization on attributes?

Joseph Kwak (InterDigital): Yes, I can do that.

Chair: Daniel, can you do some call flow on Bonjour?

Daniel Borges (Apple): Yes, might even cover some other protocols.

Chair: I would encourage submissions on normative text for the March meeting. Definitely on the beacon, probe and query/response.

**Room allocation**

Chair: How many people are going to be in Beijing? I need to know this for room size.

About 7 people indicated they are certainly going to be present in Beijing.

Chair: I’ll ask for a room size of 25.

**Slot allocation**

Chair: Also on slots – do we need more; or less?

No discussion.

**Timeline update**

The chair presented the timeline-update as shown in slide 19 (11/0012r4). The chair asked for discussion.

Adrian Stephens (Intel): Many TGs have an internal review cycle before going to a WG Letter Ballot. But I don’t think this group has time to do that with the current timeline.

Chair: I would propose that we change the WG Letter Ballot from the July date to September, bearing that in mind.

Dan Gal (Alcatel-Lucent): I think November would be more realistic.

Daniel Borges (Apple): Yes, the World Cup is in June/July.

Chair: Any objections to move this date (Initial Working Group Letter Ballot) to November?

There were no objections and the WG Letter Ballot target date was changed to November, 2014.

**Teleconference schedule**

Chair: I suggest we have one teleconference between now and March. My preferred date is 25th of February, at 10:00 ET? Are there any objections?

There were no objections and the teleconference was scheduled for February, 25th at 10:00 ET.

**AOB**

None.

**Adjourn**

Meeting was adjourned at 11:40 on Thursday.