802.21 WG update

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Peretz Feder
Alcatel-Lucent
67 Whippany Rd
Whippany, NJ 07981

Voice:
E-mail: pfeder@alcatel-lucent.com

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For review

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802.21 Status Update

- Base Specification draft D -14
  - Approved by RevCom and SASB. To be published by mid-January 2009
  - Final Results: 128/3/13, Ballot Pool 165.
- Security SG
  - PAR Approved by 802 EC. Forwarded to NesCom. Expect approval in Dec-08.
- Handovers with Broadcast Services SG
  - PAR submitted for consideration in Nov Closing EC meeting.
  - 802.16 provided comments (included in the backup section of this doc)
- Multi-Radio Power Management SG
  - PAR modified again this week. Planning submission for March-2009 EC meeting
- Emergency Services SG
  - PAR being discussed. Initial draft PAR available.
- Deployment Scenarios
  - Considering a Recommended Practice for describing Network Architectures and other scenarios and how 802.21 components can be integrated to help with deployment model and scenarios. Expect PAR submission to EC in March-2009
- IMT-Advanced
  - Planning a submission in 802.16's RIT proposal along with 802.11
- Future Interim location
  - 802.21 would be co-locating with 802.16 WG for all interims starting Jan-2010.

BACKUP
PAR Comments from 802.16 and 802.21 response
HO with Broadcast Services SG

802.16 Comments 1/10

General Comments

- *Please explain the user cases. We are stipulating two possible ones below:*
- *1) Downlink Only (DOB) to 802.x and 802.x to DOB HO's may be valid use cases and possibly can be addressed in IEEE, e.g user A is watching ESPN in DOB and enters a 802.x coverage while leaving DOB coverage. Is it for 802.21 to address it? Why?*
  - Yes. Currently 802.21 supports handovers between 802 and non-802 technologies (i.e. 3GPP and 3GPP2) as well, so 802.21b will amend the specification to support one more type of non-802 technology.
  - The DVB Project is starting a Work Item to look at how 802.21 can be used to enhance these handovers and are planning to have a direct liaison with 802.21 to inform about the status of this Work Item.

4

802.16 Comments 2/10

General Comments

- *Please explain the user cases. We are stipulating two possible ones below:*
- *2) A user can simultaneously be connected to both cellular and DOB technologies. The user can subscribe to a multicast stream on DOB and later on be directed to subscribe for the same stream on the cellular technology using multicast or unicast connectivity. This case is not a HO but rather a receiver selection user case possibly assisted by 802.21*
  - (Response in next slide)

5

802.16 Comments 3/10

- The baseline 802.21 defines handover as “The process by which a mobile node obtains facilities and preserves traffic flows upon occurrence of a link switch event. The mechanisms and protocol layers involved in the handover can vary with the type of the link switch event”
- This use case could be seen as the beginning of a make-before-break handover. If the DO (downlink only) interface is turned off after the user has subscribed to the cellular stream, then the handover is completed. In this case 802.21 Events and Commands can be used to perform such actions, and the 802.21 baseline already considers such type of handovers.
- Another use case is when a user from the cellular network wants to transfer to the DO technology and the service has not been started in the DO technology. In this case 802.21 can be used to notify the DO target network of the new user so that the service can be started in preparation for the handover. Such use cases are especially applicable where there is the need for an optimization of network resource utilization.

6

802.16 Comments 4/10

Comments to section 8.1

- *PAR language 8.1(a): "Considering the coverage problems of downlink-only broadcast technologies such as DVB in Europe, the cell-size problems of IEEE technologies and bandwidth problems of cellular broadcast technologies, this amendment will improve the user experience during handovers between IEEE 802.21 supported technologies and other DOB technologies such as DVB, DMB and MediaFLO"*
- *Comment 1: HO typically requires uplink communication and NDSF queries through pull and push. How will DOB/DVB subscriber be able to query such NDSF server?*

– DO technologies rely on a reverse channel of another technology for providing interactive services. Unidirectional link routing (UDLR) is a typical example of such cases.

– We foresee relying on the current radio technologies supporting 802.21 as well as on the L3 transport for supporting two-way MIH communications.

7

802.16 Comments 5/10

- *PAR language 8.1(a): "Considering the coverage problems of downlink-only broadcast technologies such as DVB in Europe, the cell-size problems of IEEE technologies and bandwidth problems of cellular broadcast technologies, this amendment will improve the user experience during handovers between IEEE supported technologies and other DOB technologies such as DVB, DMB and MediaFLO"*
- *Comment 2: 802.21 is not a DOB technology, the use of the term "other" needs to be removed. Transition of PoA may be possible but not a transition of the terminal identity presence in the network.*

  - Agree: term "other" removed.
  - DVB is currently looking at knowing the presence in the network (e.g. number of listeners) by making use of the interactive channel. In this way, they could use 802.21 to perform load analysis. In order to determine if there are enough listeners of a specific service, DO technologies require the availability of the information regarding the presence of the terminals. If there are not enough listeners, DO network shifts the service to another technology where the services are provided either through unicast or multicast.

8

802.16 Comments 6/10

- *PAR language 8.1(a): "Considering the coverage problems of downlink-only broadcast technologies such as DVB in Europe, the cell-size problems of IEEE technologies and bandwidth problems of cellular broadcast technologies, this amendment will improve the user experience during handovers between IEEE 802.21 supported technologies and other DOB technologies such as DVB, DMB and MediaFLO"*
- *Comment 3: The most likely Objective of the PAR is to maintain the existing data packet flows while transitioning a user to a bi-directional technology. Broadcast is typically an application based procedure that makes particular content and provides it to an agreed port (socket). The method of connecting a source socket and transporting its bearer is not within the realm of an IEEE standard.*
  - 802.21 relies on upper layer protocols for transitioning a specific session from one technology to another (IP continuity, etc.). The role of 802.21 is to assist with link layer transition by defining link layer events, providing network information, etc. The scope of 802.21b would be to provide this link layer assistance for downlink-only technologies.

9

802.16 Comments 7/10

- *PAR language 8.1(a): "Considering the coverage problems of downlink-only broadcast technologies such as DVB in Europe, the cell-size problems of IEEE technologies and bandwidth problems of cellular broadcast technologies, this amendment will improve the user experience during handovers between IEEE 802.21 supported technologies and other DOB technologies such as DVB, DMB and MediaFLO"*
- *Comment 4: If the objective is to use another RAT to supply DOB technology the missing UL channel, the use of 802.21 may not be needed since the application can invoke a broadcast client to do so without any change to the MAC or MIH layers. Also, using 802.xx as a bi-directional interactive channel to support the required DOB signaling is not related to HO and should not be in scope of 802.21.*
  - The objective of 802.21b is not to provide the missing UL channel. 802.21 specifies handover related signaling only.
  - There are different cases where a HO initiation can take place. In case of a mobile initiated handover, it is true that a handover can be accomplished using a technology already supported by IEEE 802.21. However, even in this case, an interface to the downlink-only technology would be needed to provide the support for 802.21 services.

10

802.16 Comments 8/10

- *PAR language 8.1(b): ""Also broadcasters and content providers will be able to extend their services where DOB technologies may have coverage problems."*
- *Comment 1: Comment 1: How will a DOB provider be able to initiate a HO and extend its coverage? Say the target is loaded, how will the DOB learn about it?*
- *Proposing to delete 8.1(b) from the PAR.*

- In the most practical use cases, either the same service provider will own both the DO network and the IEEE network or the two service providers will have some kind of a roaming agreement to allow such types of handover. In both cases, 802.21 provides mechanisms to learn about the load status of the target network.
- Section 8.1(b) is important, as it mentions that a key market motivation for 802.21b is to extend coverage of DO network with IEEE 802 technologies.

11

802.16 Comments 9/10

- Comments to Distinct Identity section
- PAR language 8.1(a): “This amendment will facilitate handovers between DO technologies and IEEE 802.21 technologies.”
- *Comment 1: change (a) to: “facilitate handovers between DO technologies and another RAT that complies with IEEE 802.21 technologies”.*
  - Agree. Text changed accordingly

12

802.16 Comments 10/10

- *Comment 2: Inter-DOB handover cannot rely on any uplink signaling. One can certainly advertise the presence of a neighboring DO system to help the MS with the scanning process in preparation for the transition and perhaps also provide a QoS information for a packet flow mapping at the target DO. However, this type of messaging is typically done above the MAC layer.*

  - Although DVB has such information at the MAC layer, 802.21b PAR will not include handovers between DOBs. This text has been removed from the PAR.

13