### Project
IEEE 802.16 Broadband Wireless Access Working Group <http://ieee802.org/16>

### Title
Notification of Completion for EAP-based Authorization Procedure

### Data Submitted
2005-06-08

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### Re:
IEEE P802.16e/D8

### Abstract
The existing EAP-based authorization flow has two kinds of messages; PKMv2 EAP Start message and PKMv2 EAP Transfer message, in order to notify start of EAP-based authorization procedure and transfer EAP payload to each other node. This contribution provides a resolution for notifying completeness of EAP-based authorization procedure.

### Purpose
Adoption of proposed changes into P802.16e/D8

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Introduction

The PKMv2 supports the EAP-based authorization procedure.

0.1 IEEE P802.16e/D8 Status

The EAP-based authorization procedure constitutes two messages; PKMv2 EAP Start message and PKMv2 EAP Transfer message. An MS sends a PKMv2 EAP Start message to initiate device authorization and user authorization achieved from the upper EAP authentication layer such as EAP-TLS or EAP-TTLS. When an MS’s MAC or a BS’s MAC receives EAP-payload from an EAP method, an MS or a BS sends a PKMv2 EAP Transfer message for transmitting EAP-payload to one another.

0.2 Problems

There are several problems in the existing EAP-based authorization procedure.

The BS doesn't know the completion time of the EAP-based authorization procedure in case that EAP protocol doesn't yield AAA-key.

In addition, the BS doesn't know whether an MS receives the last PKMv2 EAP Transfer message (including AAA-key, such as "EAP Success" used in EAP-TLS) or not. Both the BS and an MS cannot share the AK derived from PMK simultaneously, when an MS doesn't receive the last PKMv2 EAP Transfer message. Even though an MS receives the last PKMv2 EAP Transfer message, there may be possibility of an MS’s MAC receiving the PKMv2 SA-TEK-Challenge message from the BS before getting the AAA-key from MS’s EAP method layer, because the BS can almost simultaneously send the last PKMv2 EAP Transfer message and PKMv2 SA-TEK-Challenge message. The existing EAP-based authorization procedure is shown in Fig 0.1.
Therefore, it is necessary that an MS notifies the completion of the EAP-based authorization procedure to the BS.

0.3 Solutions

We provide a new PKMv2 EAP Transfer Complete message to notify that an MS receives the last PKMv2 EAP Transfer message. An MS will send a PKMv2 EAP Transfer Complete message to the BS. As soon as the BS receives this message, the BS will send a PKMv2 SA-TEK-Challenge message to an MS.
Proposed Changes into IEEE P802.16e/D8

[Change the Table 26 in sub-clause 6.3.2.3.9:]

6.3.2.3.9 Privacy key management (PKM) message (PKM-REQ/PKM-RSP)

<table>
<thead>
<tr>
<th>Code</th>
<th>PKM message type</th>
<th>MAC Management message name</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>... All contexts to here will be maintained in this table.</td>
</tr>
<tr>
<td>29</td>
<td>EAP Start</td>
<td>PKM-REQ</td>
</tr>
<tr>
<td></td>
<td>PKMv2 EAP Transfer Complete-</td>
<td></td>
</tr>
<tr>
<td>30-255</td>
<td>reserved</td>
<td></td>
</tr>
</tbody>
</table>

[Insert the following sub-clause in 6.3.2.3.9:]

6.3.2.3.9.27 PKMv2 EAP Transfer-Complete message

An MS sends the PKMv2 EAP-Transfer-Complete message to the BS to report the completion of the EAP-based authorization procedure, as soon as the MS receives the last PKMv2 EAP-Transfer message or the last PKMv2 Authenticated EAP-Transfer message.

Code: 29

This message has no attribute.