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<th><strong>Project</strong></th>
<th>IEEE 802.16 Broadband Wireless Access Working Group <a href="http://ieee802.org/16">http://ieee802.org/16</a></th>
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<td><strong>Title</strong></td>
<td>AES Key Wrap for TEK Exchange</td>
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<td><strong>Date Submitted</strong></td>
<td>2004-6-21</td>
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| **Re:**      | IEEE 802.16e Security Adhoc                                         |
| **Abstract** | Use of AES Key Wrap algorithm for TEK exchange                       |
| **Purpose**  | To enable secure and FIPS approvable TEK key exchange.               |
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AES Key Wrap for TEK Exchange

David Johnston

The AES key wrap algorithm is a NIST algorithm suitable for the encryption of keys for transportation.

This proposal describes how it may be used to encrypt a TEK.

Editor Instructions:
[Insert section 7.5.2.4]

7.5.2.4 Encryption of TEK-128 with AES Key Wrap

This method of encrypting the TEK-128 shall be used for SAs with the TEK encryption algorithm identifier in the cryptographic suite equal to 0x04.

The BS encrypts the value fields of the TEK-128 in the Key Reply messages it sends to client SS. This field is encrypted using the AES Key Wrap Algorithm.

cipher: C = Ek[P]
plaintext: P = Dk[C]

P = Plaintext 128-bit TEK
C = Ciphertext 128-bit TEK
I = Integrity Check Value
k = the 128-bit KEK
Ek[ ] = AES Key Wrap encryption with key k
Dk[ ] = AES Key Wrap decryption with key k

The AES key wrap encryption algorithm accepts both a ciphertext and an integrity check value. The decryption algorithm returns a plaintext key and the integrity check value. The default integrity check value in the NIST AES Key Wrap algorithm shall be used.

[Insert section reference]