<table>
<thead>
<tr>
<th>Project</th>
<th>IEEE 802.20 Working Group on Mobile Broadband Wireless Access</th>
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<tbody>
<tr>
<td>Title</td>
<td>802.20 Message Format</td>
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<tr>
<td>Date Submitted</td>
<td>2003-03-07</td>
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<tr>
<td>Source(s)</td>
<td>Alan Chickinsky</td>
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<tr>
<td>Re:</td>
<td>MBWA Call for Contributions</td>
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<tr>
<td>Abstract</td>
<td>Proposal for message format</td>
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<td>Purpose</td>
<td>Propose a message format</td>
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802.20 Message Format

Alan Chickinsky
Northrop Grumman/TASC
March 10, 2003
Message Parts

• Header
  – Source and Destination Address
  – Options
  – Security Option Field

• Body
  – Message Text

• Trailer
  – Padding
Source and Destination Address

• Order is destination MAC address immediately followed by the source MAC address
Options

• The options section is composed of one or more optional fields
• The first byte is the option number
  – Option 0 is reserved to indicate end of list
  – Options 1 to 254 are reserved for this standard
  – Option 255 is used to indicate that the next byte contains a vendor specific option.
  – Vendor assignment is TBD
Options (continued)

- The most bit on in the option number indicates the next byte contains the field length of the option number.
- The most bit off in the option number indicates the next byte contains the option value.
- For option value 255, the next byte contains the length of the vendor specific data.
Field Values

- Field values are composed of one or more consecutive bytes.
- If the remaining value is less than 254, then one byte is used.
- If the value is greater than 254, then 255 is used and the next byte is added to the current byte to obtain the correct value.
Security Option Field

- Option number 1
- The contents of this field and use are defined in the security section of the specification
- By making this an option, an implementer can use the same protocol for secure and non-secure networks
- Size changes to block codes or initialization vectors do not require a specification change
- Indicates where the security block starts
Security Section

- In presentation IEEE C802.20-03/06 it was shown that block security can be enhanced if the first block is random
- This first block is defined as an Initialization Vector
- Setting the security option value as the Initialization Vector for the enhanced security need
  - Initialization Vector is a fixed number of random bits
- The randomness of the Initialization Vector is determined by the vendor
# Suggested Security Values

<table>
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<tr>
<th></th>
<th>127 bit Initialization Vector for AES</th>
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<tbody>
<tr>
<td>2</td>
<td>512 bit Initialization Vector for AES</td>
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Advantages

• If you do not want encryption, do not use option 1
• If you want security to start after 10 other options, make option 1 the eleventh entry
• To add an different encryption algorithm, we either add a new value to option 1 or create a new option number
Proposal #1

Motion-

The MAC layer message header contain in this order

– 48 bit destination field,
– 48 bit source field
– Option field(s)
Proposal #2

Motion-

Option fields contain in this order

– Option number
– Option value length
– Option value
Proposal #3

Motion-
Option values 0-127 are reserved for the standard
Options over 128 are assigned to vendors in groups of 10 upon request
Proposal #4

Motion-
Value for options are between 0 and 254 are one byte long

If any option byte is 255, then the following byte is added to current value to get actual value.
Proposal #5

Motion-
Option length between 0 and 254 are one byte long
If any length byte is 255, then the following byte is added to current value to get actual length.