IPDVB WG Meeting (IETF-64) - Vancouver
draft-cruickshank-ipdvb-sec-req-00.txt
ULE security requirements
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Status of 63rd IETF meeting

- Presented draft-cruickshank-ipdvb-sec-00.txt
- Comments
  - The draft should first concentrate on a security requirements draft and then work on a solutions draft based on the requirements draft.
  - Missing HMACs for authentication was pointed out.
  - Pros and Cons of ULE security with respect to IPSec or underlying link layer security should be analysed.
  - Analyse impact of modifying/insertion of SI tables and effects on security requirements in terms of threats — mailing list
- Written a new draft draft-cruickshank-ipdvb-req-00.txt, to take into the comments above and focus on requirements.
ULE Security

• A security analysis was provided in the I-D describing the ULE method [ULE] and the ipdvb architecture [ipdvb-arch].

• This draft extends that analysis
  – Derives the security requirements providing an overview of threat
  – ULE link security focuses on security between the Encapsulation Gateways (ULE source) and Receivers only.
ULE security requirements draft

- Threat Analysis
- Pros and Cons of IPSec and L2 security
- Pros and Cons of L2 security below ULE
- Motivation for ULE Security
- Security requirements for IP over MPEG2 networks
Security Requirements (1)

- Data confidentiality is the major requirement against passive threats (using encryption).
  - IPSec must be used in tunnel mode between ULE senders and receivers, which has more overheads.

- Optional protection of Layer 2 MAC/NPA address.
  - IPSec can not provide this service, however possible with L2 security.

- Layer L2 terminal authentication.
  - This will be part of the key management. It will be performed during the initial key exchange and authentication phase.

- For active threats ULE source authentication and data integrity are required
  - L2 data integrity/authentication is optional
  - Still important in environments in which several independent networks share a single transmission resource.
Security Requirements (2)

- End-to-end security (IPSec and TLS) and ULE link security should work in parallel without obstructing each other.
- Decoupling of ULE key management functions from ULE encryption.
- Compatibility with other networking functions: Other networking functions such as NAT/NAPT TCP acceleration can be used in a wireless DVB networks.
Goals of Link-Layer Security

• The protection of the complete ULE Protocol Data Unit (PDU) including IP addresses [RFC 3819].
• Ability to protect the identity of the Receiver within the MPEG-2 transmission network.
• Efficient protection of IP multicast over ULE links.
Topics to be addressed in next rev.

- Merits and demerits of IPSec, ULE and link layer security
- Authentication of the source (DVB Gateway)
- Vulnerabilities of the signalling
- Key Management Issues
- Working assumptions – in many systems physical security is assumed to be present when you buy into the package
### Option 1 - SNDU Format for Encryption Header (D=0)

<table>
<thead>
<tr>
<th>0</th>
<th>Length (2B)</th>
<th>Type – Secure ULE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Receiver Destination NPA Address (6B)</td>
<td>ULE SID (part1)</td>
</tr>
<tr>
<td></td>
<td>ULE SID (part2)</td>
<td>Encrypted Data Block</td>
</tr>
<tr>
<td></td>
<td>ULE CRC -32 (4B)</td>
<td></td>
</tr>
</tbody>
</table>

- Plan to get it included in the December 2005 version.