Presentation of IP-DVB List Activities

DVB-GBS Meeting
Helsinki
13th May 2002

IPv4.... IPv6...

IPv6.... IPv4....

IPv4.... IPv6...
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IPv4.... IPv6...
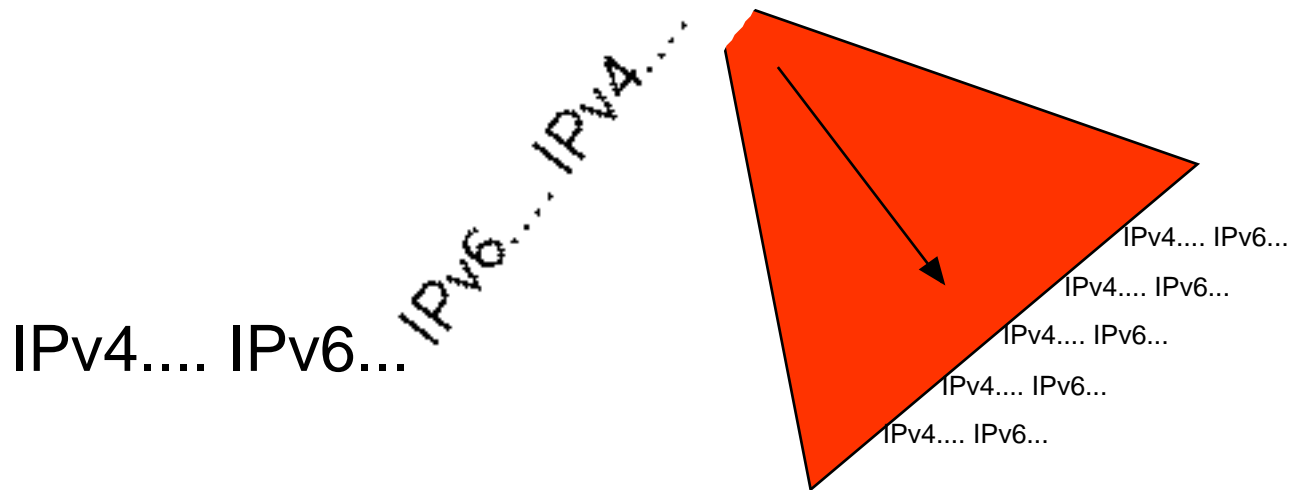
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INFORMATIONAL RFC
Requirements / Framework
Based on: draft-fair-ipdvb-req-01.txt

DRAFT STANDARD RFC(s)
Encapsulation
Based on: draft-unisal-ipdvb-enc-00.txt

Address Resolution / Signalling
Resolution; QoS Signalling; L2 triggers; Multi-homing
No draft yet issued.

Multicast Operation
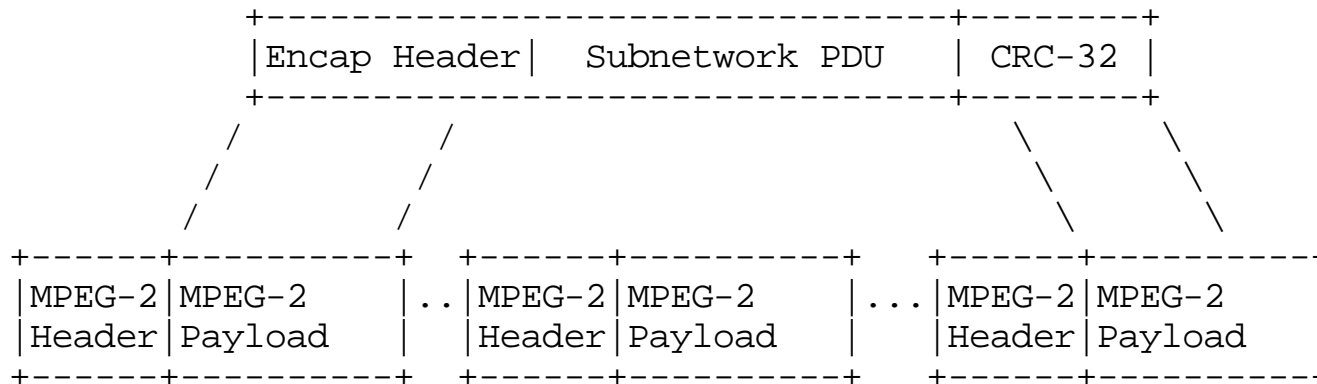L2 mapping; QoS Signalling; Multiple encapsulators
No draft yet issued.

```
+---------------------------------+--------+
|Encap Header|   Subnetwork PDU   | CRC-32 |
+---------------------------------+--------+
     /           /                    \       \
    /           /                      \       \
   /           /                        \       \
+------+---------+  +------+---------+   +------+---------+
|MPEG-2|MPEG-2   |..|MPEG-2|MPEG-2   |...|MPEG-2|MPEG-2   |
|Header|Payload  |  |Header|Payload  |   |Header|Payload  |
+------+---------+  +------+---------+   +------+---------+
```

Direct transmission over MPEG-2 TS, use of PUSI

IPv4 & IPv6 with support for Header Compression (ROHC)

Min MTU 1280 B [RFC 2460]; better   1500 B

Eliminate options and reduce per-packet processing

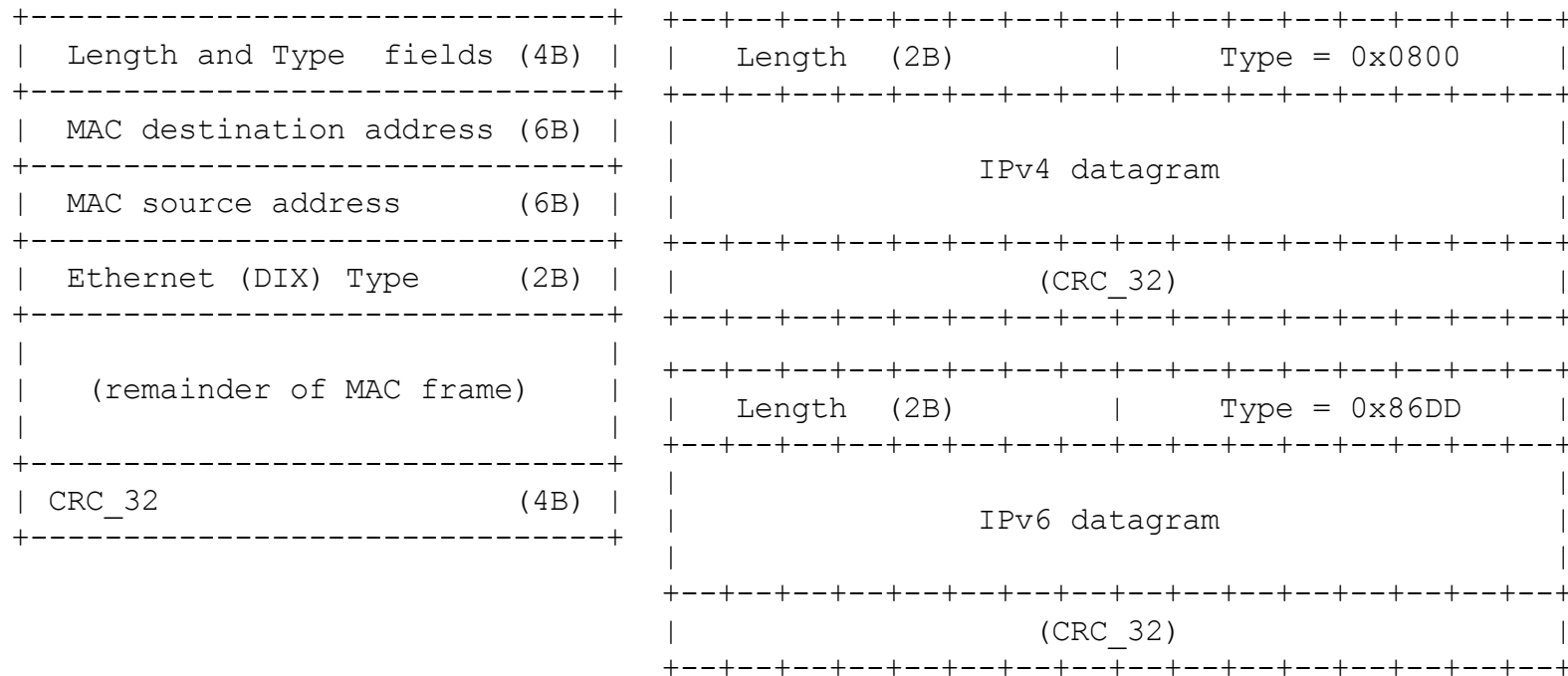Allow extensions (not options) for the future?

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Length Indicator (in encapsulation header)

Next level Protocol Type (in encapsulation header)

Addressing (optional NPA/MAC address)

Integrity Check (CRC-32 ?)

```
+-------------------------------+    +--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+
|  Length and Type  fields (4B) |    |   Length  (2B)       |      Type = 0x0800     |
+-------------------------------+    +--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+
|  MAC destination address (6B) |    |                                              |
+-------------------------------+    |               IPv4 datagram                  |
|  MAC source address     (6B)  |    |                                              |
+-------------------------------+    +--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+
|  Ethernet (DIX) Type     (2B) |    |                 (CRC_32)                     |
+-------------------------------+    +--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+
|                               |
|   (remainder of MAC frame)    |    +--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+
|                               |    |   Length  (2B)       |      Type = 0x86DD     |
+-------------------------------+    +--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+
| CRC_32                   (4B) |    |                                              |
+-------------------------------+    |               IPv6 datagram                  |
                                     |                                              |
                                     +--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+
                                     |                 (CRC_32)                     |
                                     +--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+
```

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Filtering at

Encapsulation receiver (MPEG-TS level)
Encapsulation receiver (L2)
IP Receiver (L3)

L2 Address Filters

Network Point of Attachment = MAC
MPE MAC filters may be hardware / software

L3 IP Filters

IP subnetwork broadcast - big problem in flat LANs
IP forwarding
IP multicast (L2 address overlap;include, exclude lists;
IP multicast forwarding (RPF)

L2 address may be used in IPv6 Auto Configuration

Need to understand this in MPEG-2 context

IP-over-DVB Slides for DV-GBS meeting Helsinki, 13th May 2002

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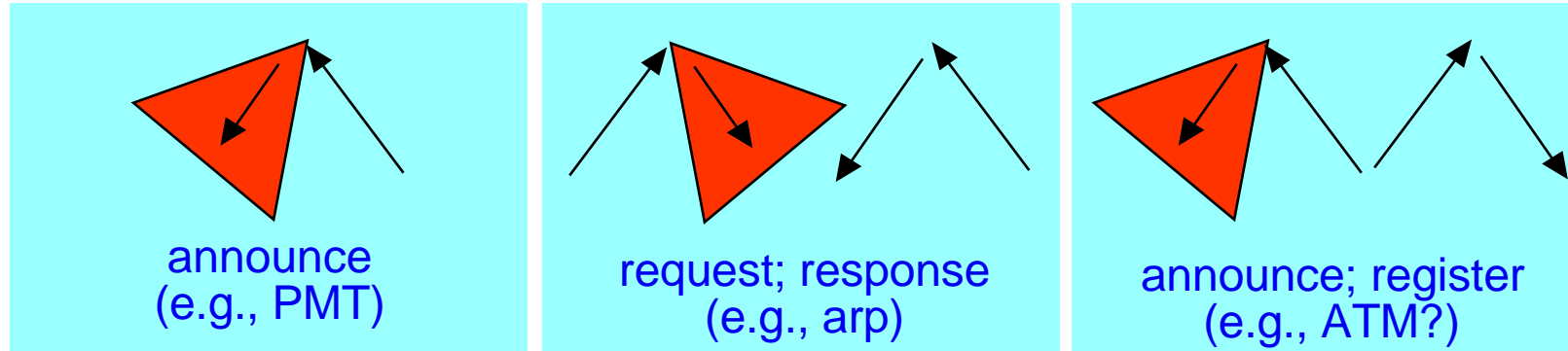| AFC	Adaption	SNDU
00	Reserved for future use	
01	No adaptation field	Only SNDU
10	Adaptation field only	Currently no SNDU
11	Adaptation field	Followed by SNDU

Allow future extensions (not options)

Does MPEG-2 let us use the AFC bits?

MPEG-2 rules?

Does the adaption field have to be 4B?

announce
(e.g., PMT)

request; response
(e.g., arp)

announce; register
(e.g., ATM?)

For each IP flow, receiver must know:
TS Mux
TS Logical Channel (PID)

May also need:
NPA (e.g., MAC)
L3 QoS requirements
L2 QOS capability announcement
Dynamic update by attached systems

Multiple encapsulators

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Points of debate:

How do we support multiple MPEG-2 Muxes?

Use of DVB Tables?

How much can be done at the IP / sub IP level?

How do you differentiate separate nets (ASs?)?

Multiple encapsulator issues / Multi-homing / Mobility
    e.g., IP address appears from multiple sources

Multicast issues?

L2/L3 QoS support

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To do:

Publish ID's

Request BoF status from IESG

Work on protocols

Publish RFCs

Implement protocols

Rest

Only possible if we bring together:

Internet engineers - IETF

Experts outside the IP area   - ETSI-BSM; DVB-GBS?

Equipment vendors and implementers