# IP over DVB

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# Agenda

- **Describe existing environment**
  - HW / SW
  - Standards
- **Standards: Similarities and differences for IP carriage over MPEG2 Transport Stream**
- **Summary**

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# Existing Environment – HW / SW

- **Head-end**
  - Data inserters from multiple vendors
- **Clients**
  - HW platforms
    - PC receiver cards (PCI / USB)
    - Set top boxes
  - SW platforms
    - PC DTV stack
    - ATVEF (SMPTE DDE-1)
    - Set top boxes
- **Head-ends & Clients interoperate today**

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# Existing Environment – Standard (1/3)

- **Head-end**
  - **SMPTE 325M and two Recommended Practices (RP) for opportunistic insertion of data in MPEG-2 Transport Streams**

# Existing Environment – Standard

## Transport

- **ETSI EN 301 192 "DVB Spec. for Data Broadcasting"**
- **ATSC "IP Multicast with Sessions over ATSC Data Broadcast"**
- **SCTE DVS 311 "IP Multicast for Digital MPEG Networks"**

- **MPEG-2**
  - **DSM-CC Amend. 1 "Additions to support Data Broadcasting"**
  - **DSM-CC Corrigendum 2**
- **ATSC Standard for robust data synchronization**

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# Existing Environment – Standard

- **ATSC IP Multicast with Sessions (T3-544)**
  - Specifies how to map an IP Network onto an MPEG-2 Transport Stream. Defines scope of an IP address
  - ATSC endorsed the MAC_address_list_descriptor designed to facilitate mapping of IP addresses on MPEG-2 Program Elements ("PIDs") from SCTE
  - Addresses uniqueness of sessionID and value of leak rates in SDP records
  - Defines:
    - MTU size
    - A delivery buffer model for IP
    - Rules for listing IP Multicast addresses in MAC_address_list_descriptor

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# Standards: Similarities and Differences (1/2)

- **IP Data transport derived from MPEG2 System**

  - **ATSC and ARIB are built on the MPEG-2 System encapsulation using DSMCC addressable section**

  - **DVB encapsulation (datagram section) is not quite MPEG-2 System compliant (1 bit difference)**

  - **SCTE recognizes both DVB and MPEG-2 encapsulations**

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# Standards: Similarities and Differences (2/2)

- DVB and ATSC have a common Multi Protocol Encapsulation (MPE) descriptor
  - Payload / address scrambling
  - MAC address
  - LLC_SNAP used & LLC Header (optional)

- MPE introduces DSMCC addr. section overhead
  - Need for a more efficient encapsulation for IP data

- ATSC has defined encapsulations (PES packet) for synchronous and synchronized delivery of IP
  - Signaled explicitly in ATSC
  - Non explicit in DVB

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# Summary

- **Opportunity to defined a more efficient IP encapsulation method than MPE, but**
  - **Must consider backward compatibility with MPE**

- **Proposed WG should focus on "IP over MPEG2 TS" with considerations for all transport formats (DVB, SCTE, ATSC, ARIB,…)**
  - **MPEG2 TS is the common denominator**
  - **Make use of MPEG SI signaling**