# VDSL and packet transport

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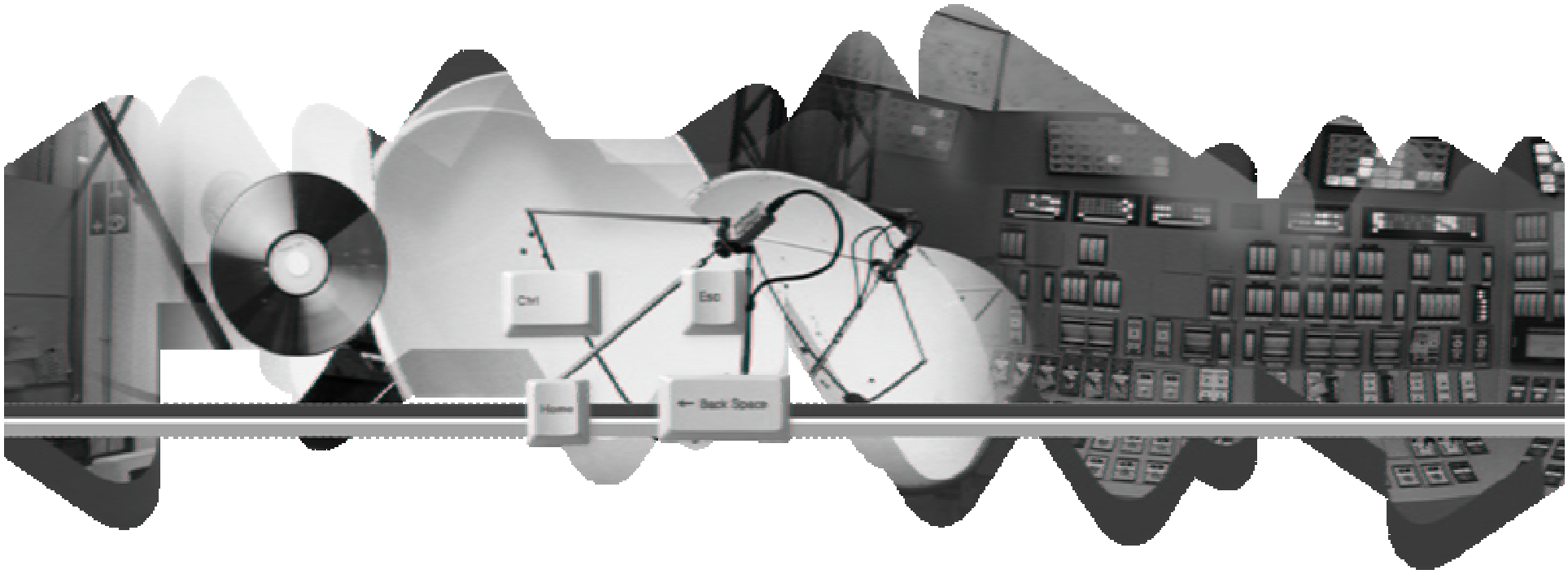


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# VDSL basics

- Uses spectrum up to 12 MHz (could be extended in the future)
- Targeted reaches: ≤ 1500m (4500 ft)
- Targeted bitrates (Mbps): 22/3, 6/6 + higher rate symmetrical services over “shorter” distances
- Dominant transport protocol = ATM
- Deployed from cabinet and central office

# VDSL Standardization

## Standardization in three bodies:

ETSI → TM (Transmission and Multiplexing) → TM6: Access Networks

T1 / T1 E1 → T1E1.4 (DSL Access)

ITU → SG15 → Q4 (DSL modems)

TM6: Access Networks, T1E1.4 (DSL Access), Q4 (DSL modems) → **VDSL**

# Status of VDSL Standardisation

- Standardisation in final phase
  - published document in ETSI
  - Letter ballot closed for ANSI - comment resolution in progress
  - Standardisation in ITU is still ongoing
- 2 major interest groups have made a proposal for a VDSL standard:

VDSL ALLIANCE

**Promoting multi-carrier modulation**

VDSL COALITION

**Promoting single carrier modulation**

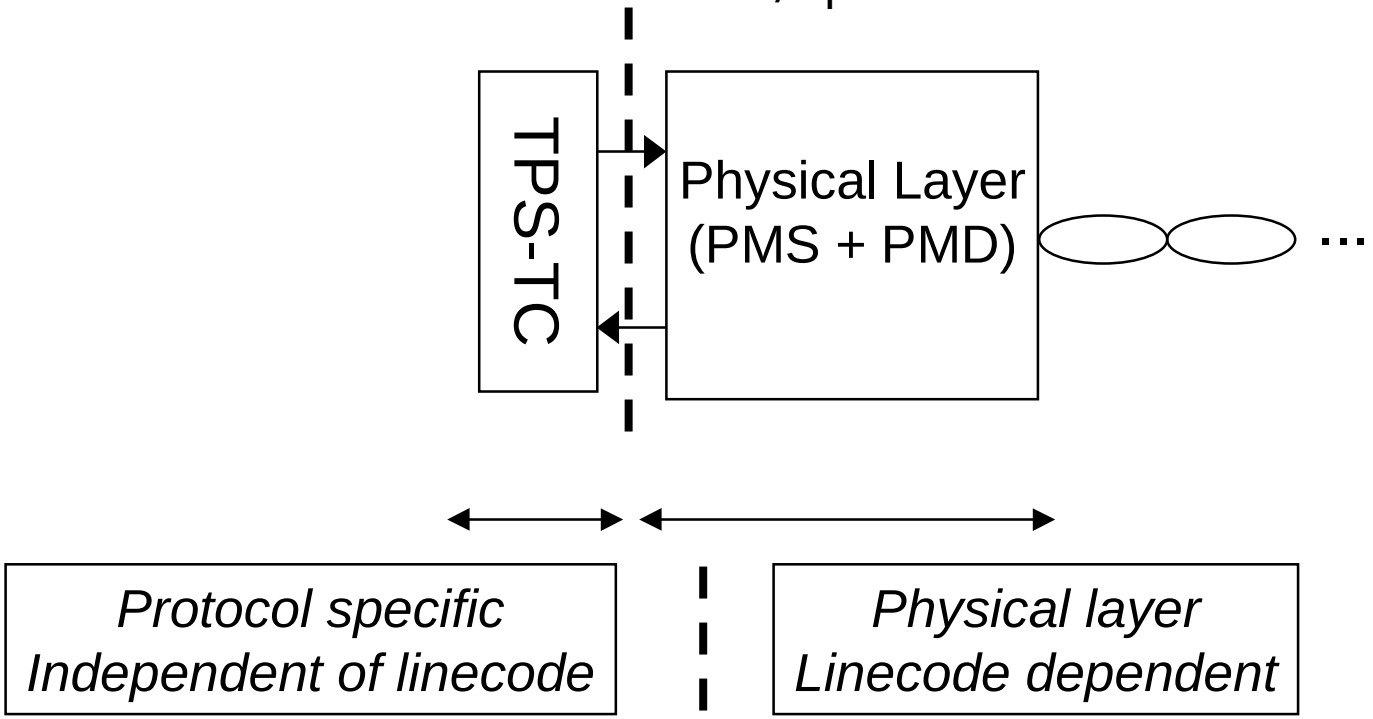
# The linecode issue

- Both single carrier and multi-carrier have large support
- Each is fully specified in ETSI and ANSI
- Both linecodes are not compatible with each other
- Decision on linecode might be taken after the scheduled two-year trial period in North-America

▼A new physical layer specification does not seem desirable
▼Building on existing standards is the preferred option

# VDSL protocols

- Mainly ATM (STM optional)
- Structure of VDSL modem/specification is “modular”:



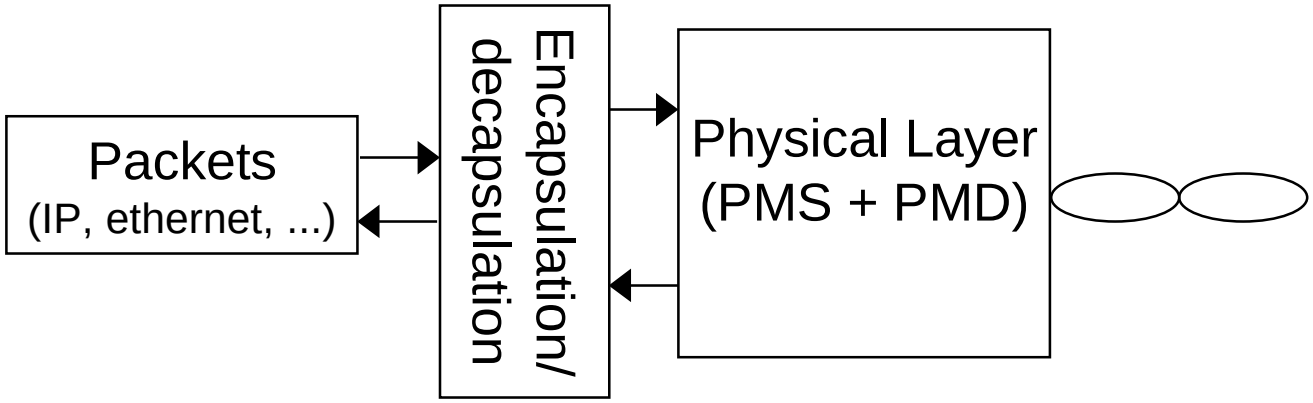
# VDSL protocols (2)

- New protocols can be “grafted” on the existing physical layer
- This guarantees a unified approach for both linecodes
- A new transport protocol is therefore limited to a new or extended specification of the TPS-TC layer

Limit possible Ethernet over VDSL to specification of TPS-layer

# Packet over VDSL

- VDSL used to be mainly ATM-based
- What is happening on packet over VDSL?
  - *Agreed* in principle by ITU
  - A *generic* method for packet transport will be specified
  - This includes IP, ethernet, ….
  - Encapsulation method is under study



# A warning ...

- A single solution is desirable
- ITU *will* specify packet over VDSL
  - Work of IEEE on Ethernet over VDSL and work of ITU on packet over VDSL should be coordinated
  - A mode of working should be established
    - IEEE liaisons to ITU?
    - Pointer to ITU?

# Conclusions

- Physical layer(s) of VDSL are well specified and can be taken “as is”
- New transport protocols can be formulated entirely as TPS-TC specifications
- Be aware however that ITU has initiated overlapping work for packet over VDSL
- Double solution of Ethernet over VDSL (ITU/IEEE) should be avoided