



**LONDON**  
**27/28 OCT**  
**2005**

*Knowledge and networking for people who  
design, build, and manage data centre facilities*

# **Working Group: Cabling Infrastructure**

**Mike Gilmore**

# Your host



**Mike Gilmore**  
Managing Director  
e-Ready Building

## Standards Activities



*Member*

JTC1 SC25 WG3: Generic Cabling



*Convenor*

JTC1 SC25 WG3 IPTG: Industrial Premises Cabling



*Convenor*

TC215 WG1: IT Cabling

TC215 WG1 PT Industrial Premises Cabling



*Secretary*

TC215 WG1 PT Data Centre Cabling



*Chairman*

TCT7: Telecommunications - Installation Requirements



*Chairman*

TCT7/-/1: Cabling infrastructure design, planning and commissioning

TCT7/-/3: Cabling: Infrastructure standards - UK implementation panel

**FIA**  
[www.fia-online.co.uk](http://www.fia-online.co.uk)

*Technical and Standards Director*  
Fibreoptic Industry Association

Mobile: +44 (0) 7860 110563

e-mail: [mike.gilmore@btinternet.com](mailto:mike.gilmore@btinternet.com)

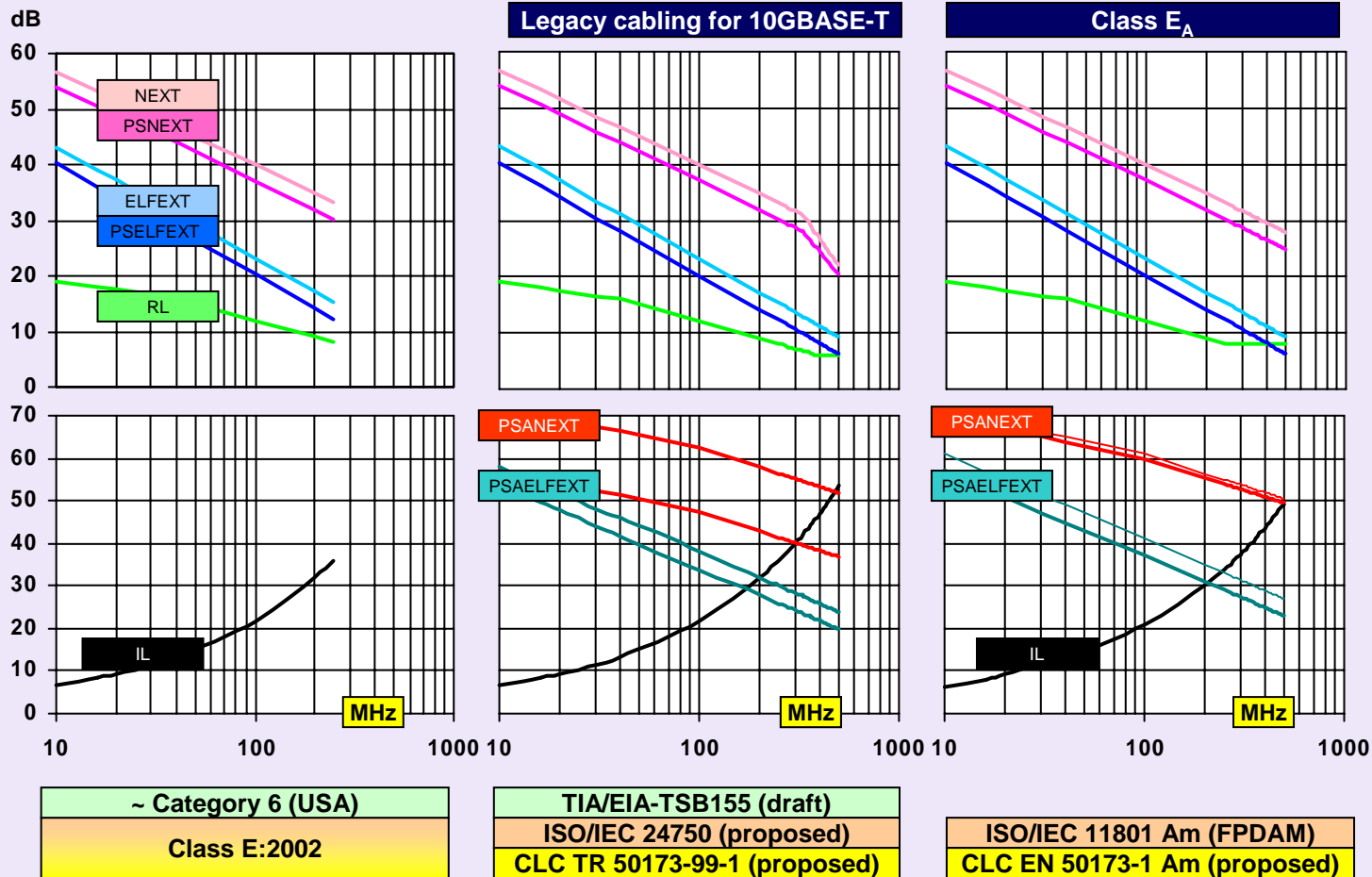
# Overview

- Data (telecommunications) cabling in data centres has been subject to vigorous standardisation activity in all three main areas:
  - ANSI/TIA/EIA-942 has been published in the USA;
  - EN 50173-5 is in the final stages of development in Europe;
  - a new work item has been agreed at international level (based on the European work).
- Work is progressing in all these areas to develop specifications to support 10GbE over copper cabling
  - though not specifically for data centres.
- EN 50173-5:
  - introduces new cabling structures
  - describes new implementation rules for optical fibre
    - revolutionises the way in which data centres are designed - enabling fixed and stable infrastructures to which fully equipped cabinets can be rapidly attached.

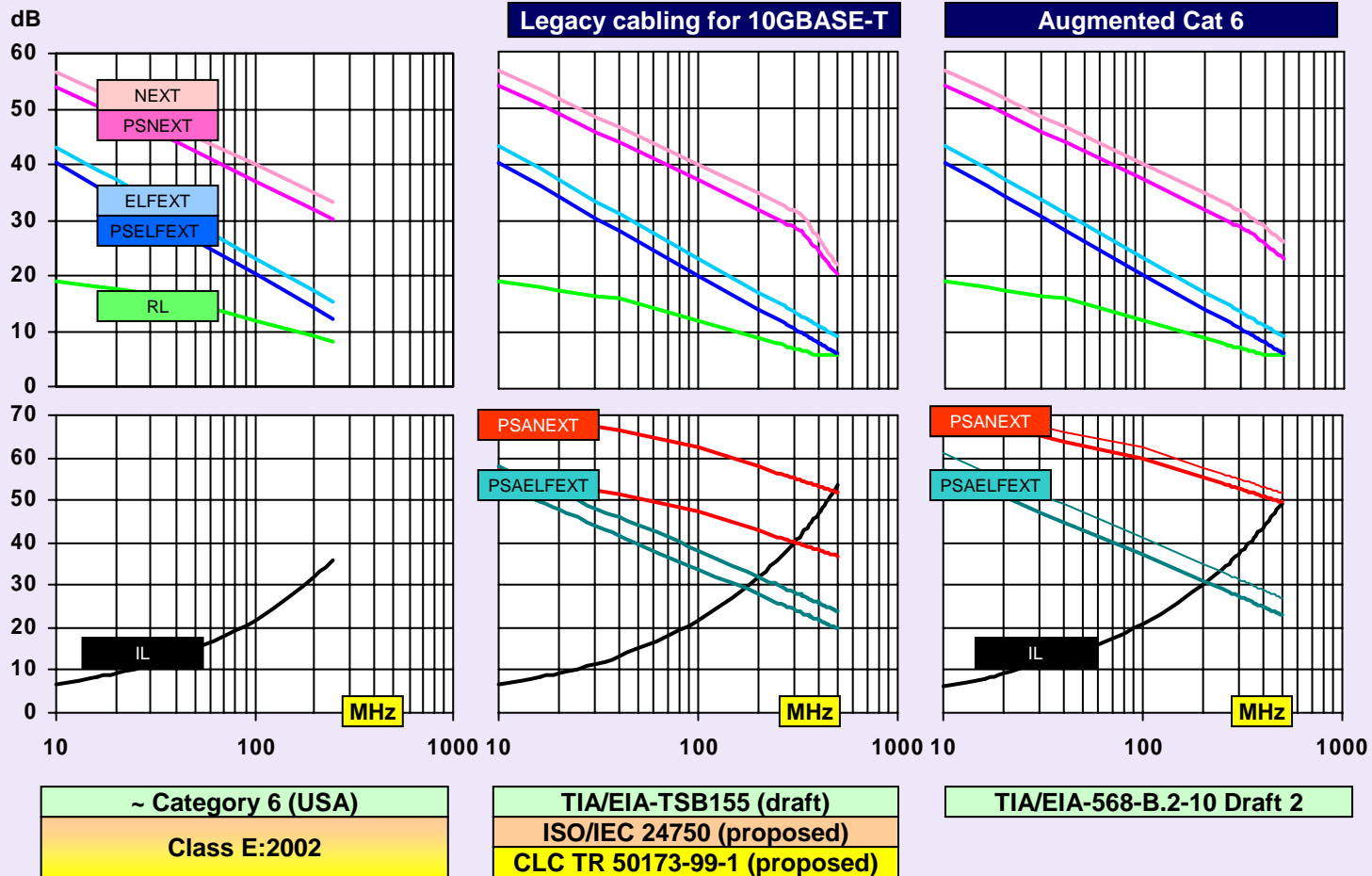
# Initial Questions

- what are the remaining technical hurdles for 10 GbE over copper?
- how far can optical fibre infrastructures be stretched using the correct rules?
- can cabling really be treated as a fixed infrastructure within a data centre?
- how will 10 GbE over copper influence data centre design?

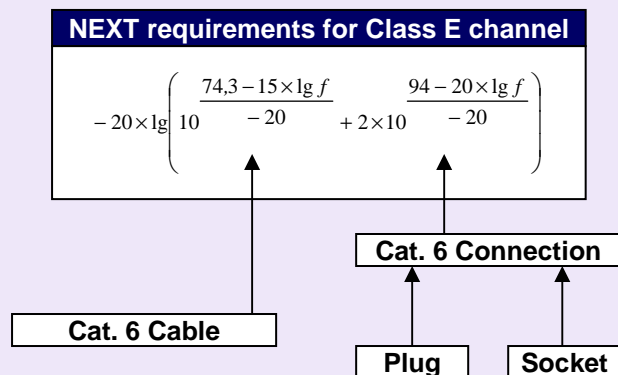
# The New Channel Specifications



# The New Channel Specifications



# De-Composition - The Challenge Ahead



**CHANNEL MODELS REQUIRED FOR NEW FREQUENCY RANGES**  
 Compatible with existing channels to current frequencies

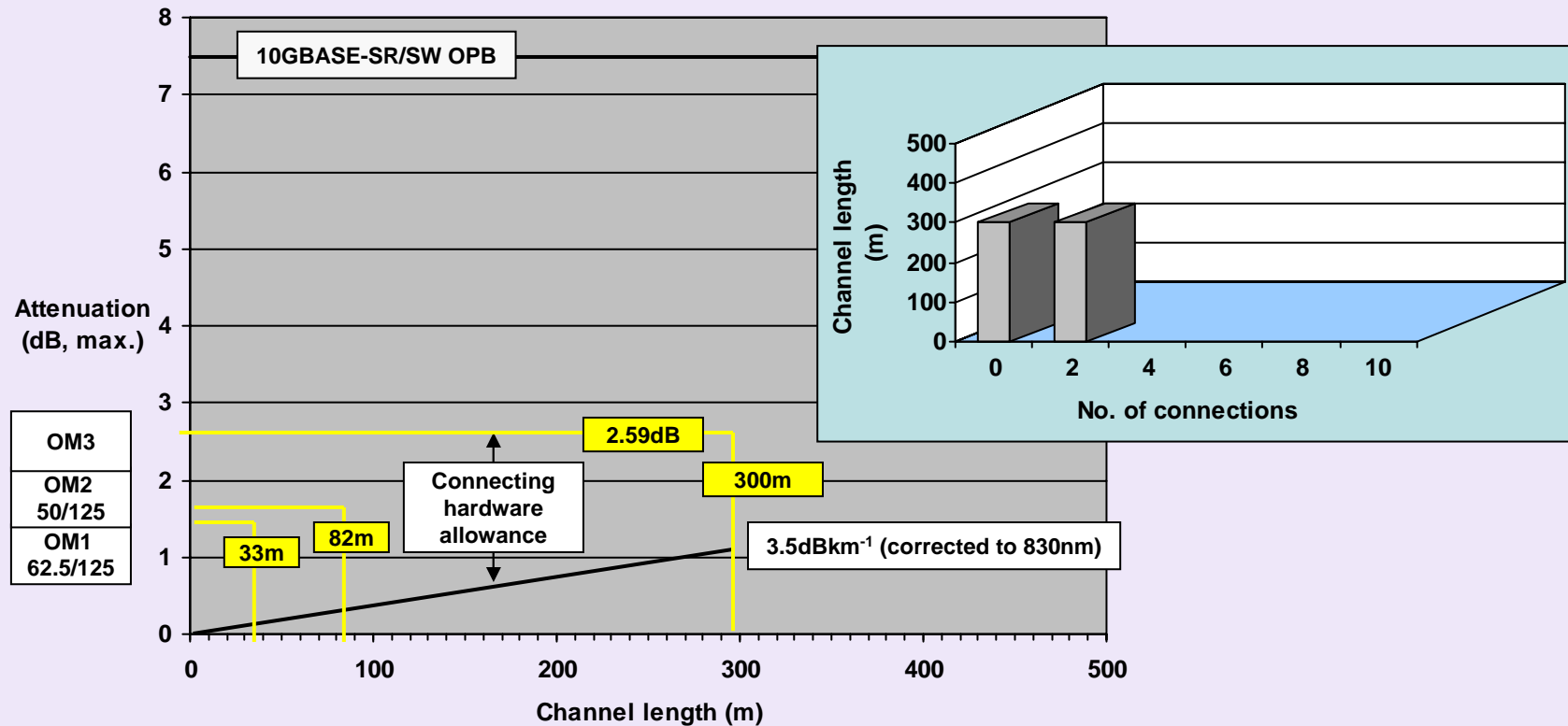
**BACKWARDS COMPATIBILITY**

From	To				
	Cat 5:2002	Cat 6:2002	Cat 6 <sub>A</sub>	Cat 7:2002	Cat 7 <sub>A</sub>
Cat 5:2002	Cat 5:2002	Cat 5:2002	Cat 5:2002	Cat 5:2002	Cat 5:2002
Cat 6:2002		Cat 6:2002	?????	Cat 6:2002	?????
Cat 6 <sub>A</sub>			Cat 6 <sub>A</sub>	?????	Cat 6 <sub>A</sub>
Cat 7:2002				Cat 7:2002	?????
Cat 7 <sub>A</sub>					Cat 7 <sub>A</sub>

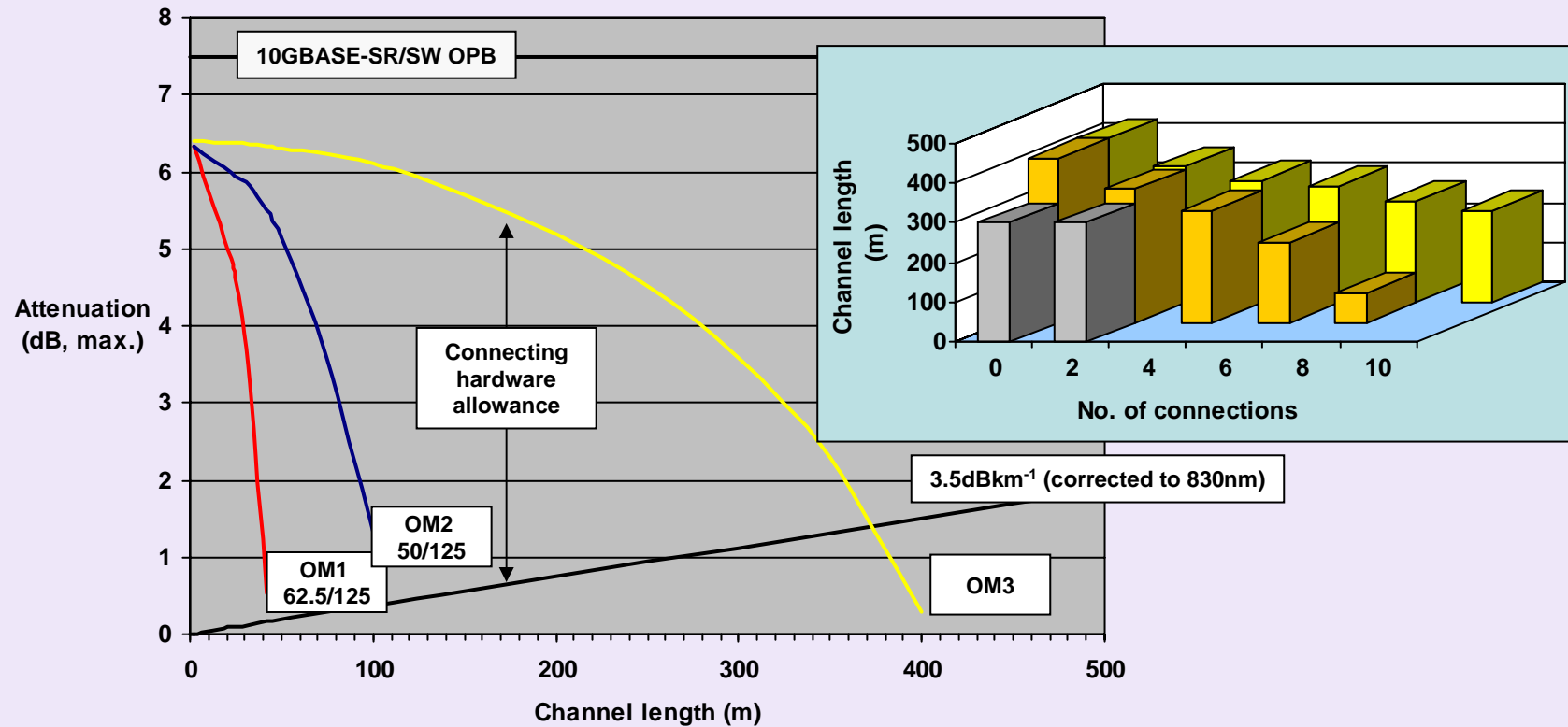
# 10GBASE-T and Data Centre Design

- Application
  - IEEE target: June 2006
- Cabling
  - Channel: June 2006
  - Components/Testable Links: ???
  - Key Issues
    - Specification and testability of alien noise sources
    - Cable diameters
    - Connector dimensions
    - Screening

# 10GBASE-SR - Misconception



# 10GBASE-SR - Reality



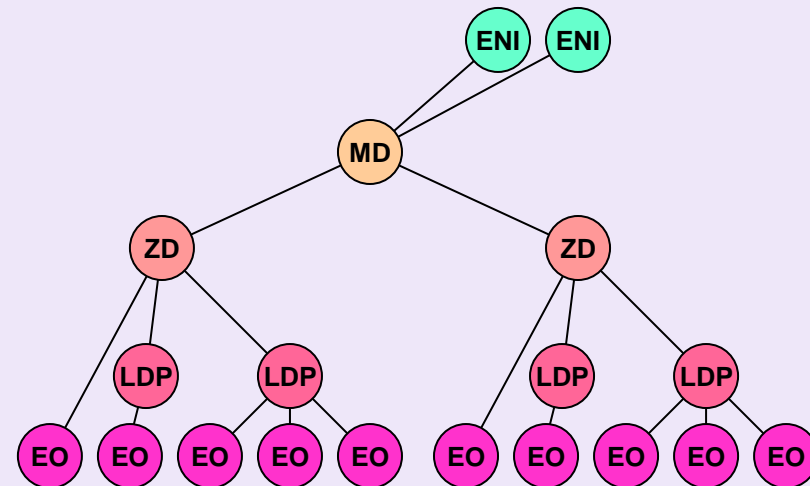
# EN 50173-5 Structure

- ENI** EXTERNAL NETWORK INTERFACE
- MD** MAIN DISTRIBUTOR
- ZD** ZONE DISTRIBUTOR
- LDP** LOCAL DISTRIBUTION POINT
- EO** EQUIPMENT OUTLET

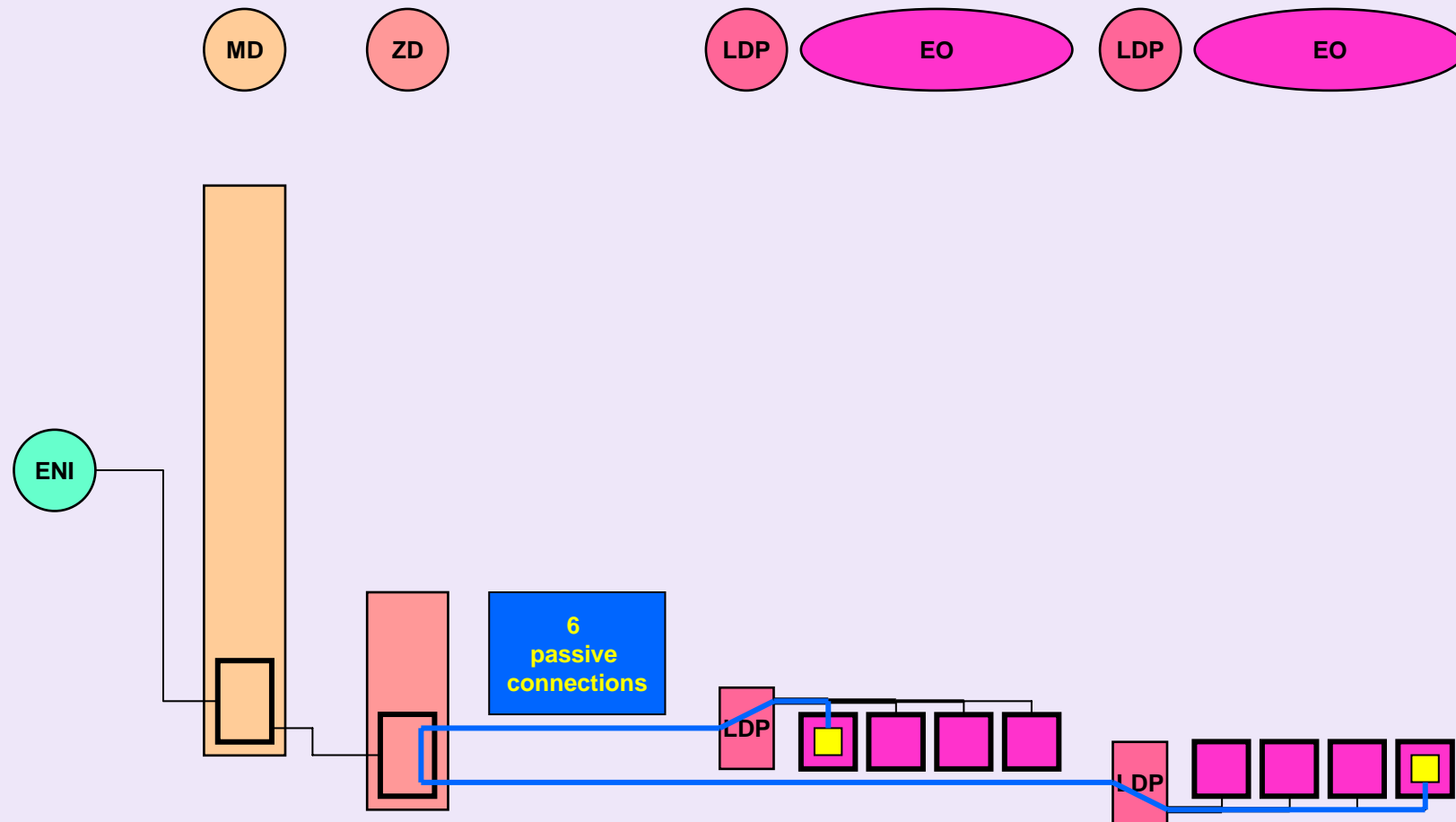
Network access cabling subsystem

Main distribution cabling subsystem

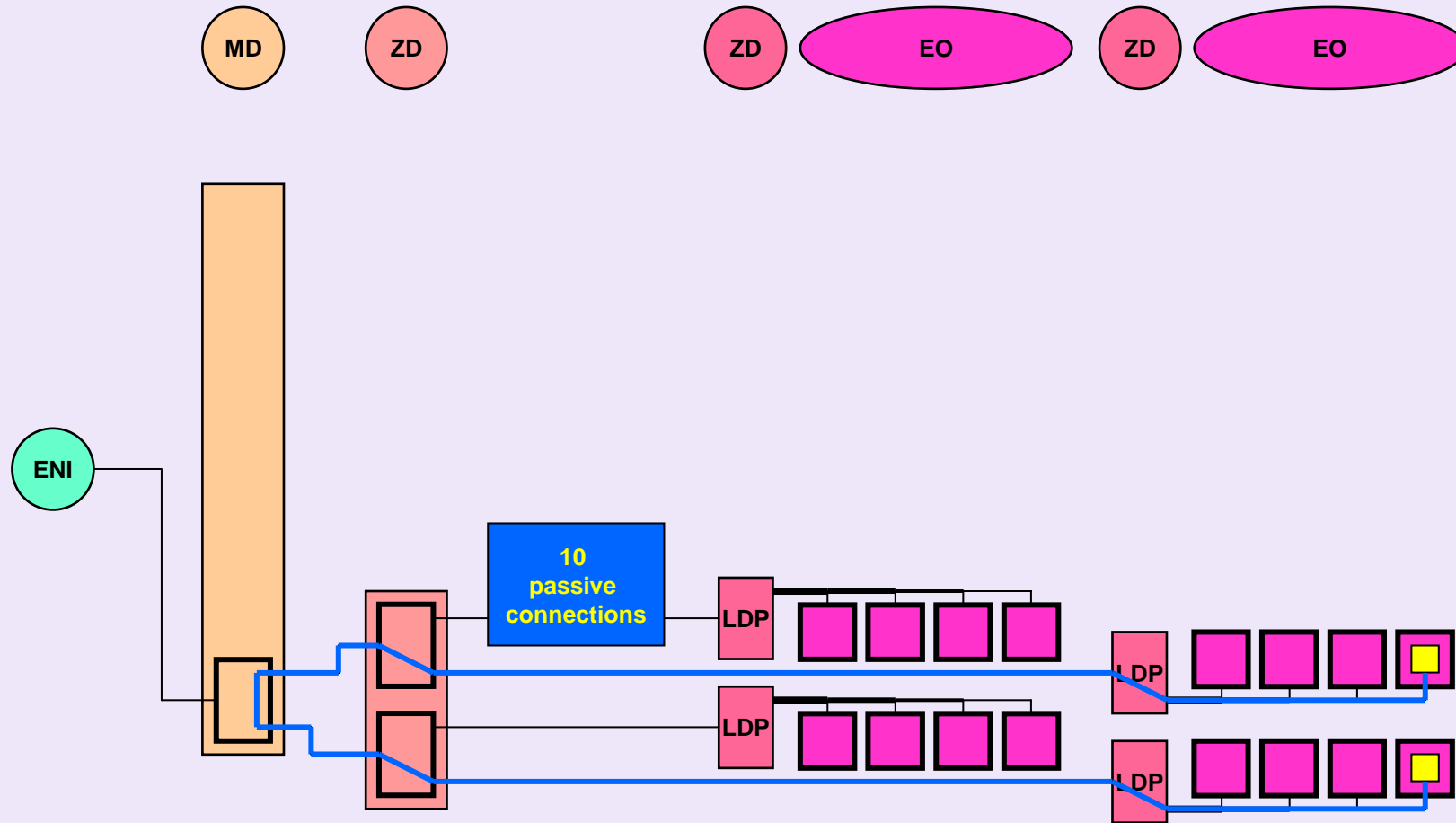
Zone distribution cabling subsystem



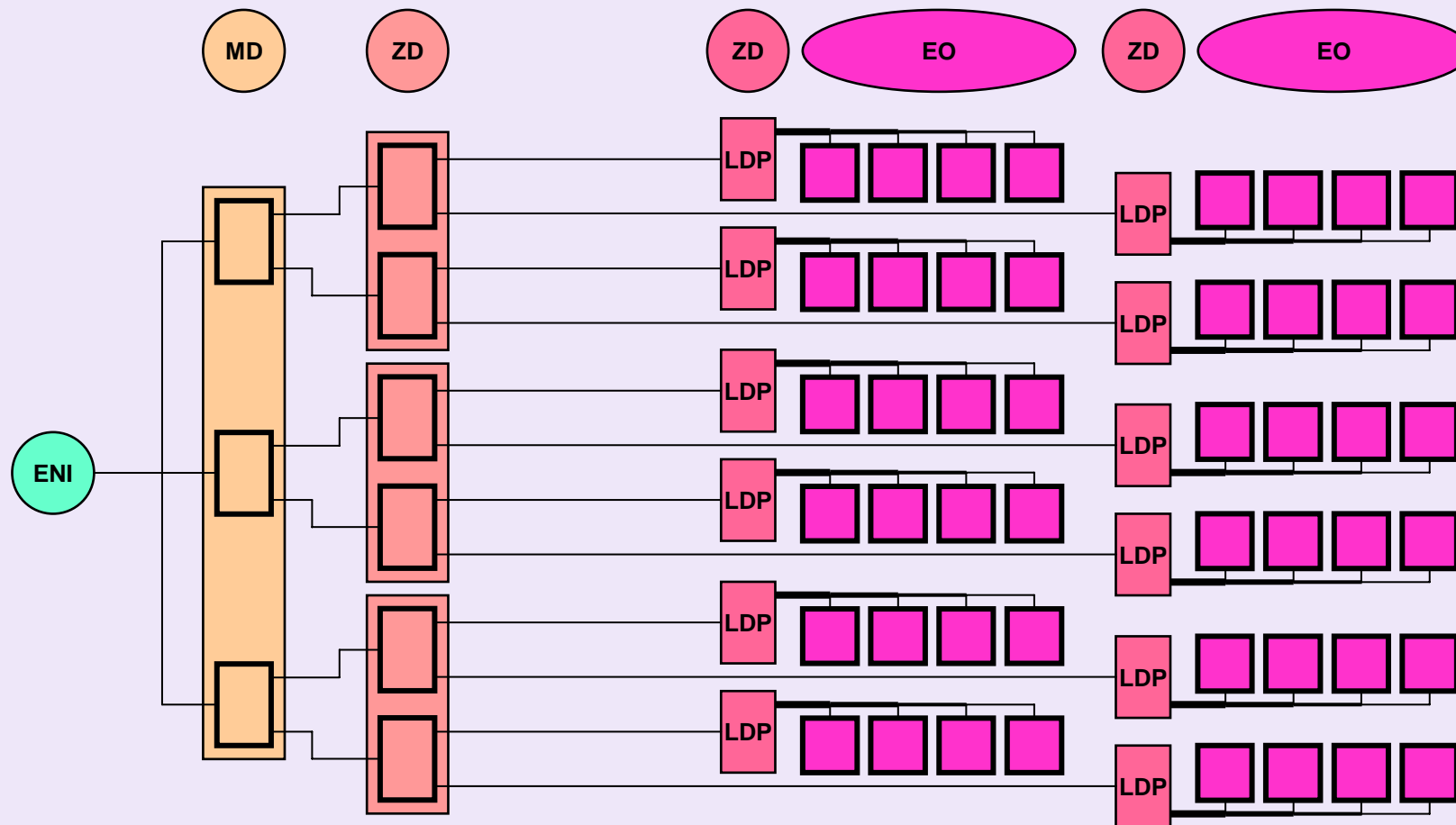
# Data Centre Evolution



# Data Centre Evolution



# Data Centre Evolution



# 10GBASE-T in the Data Centre?