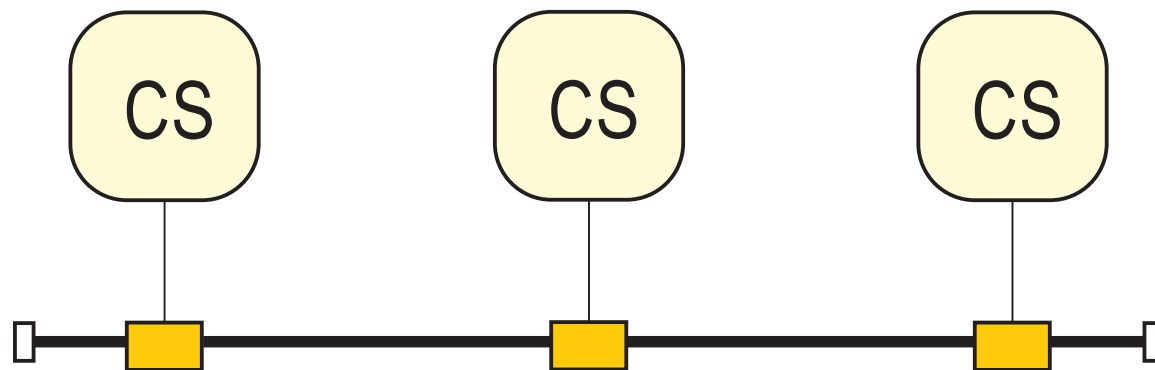

Lokální síť (01)

Jan Janeček

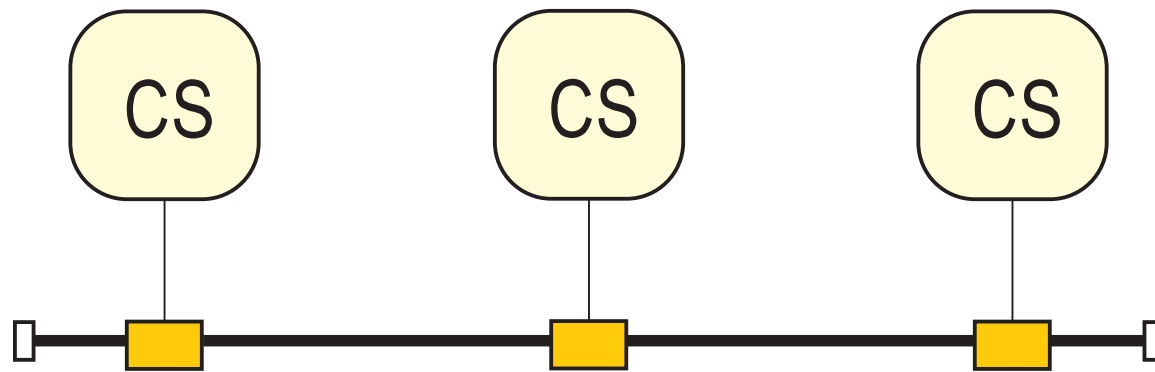
katedra počítačů

České vysoké učení technické v Praze

Sběrníková topologie

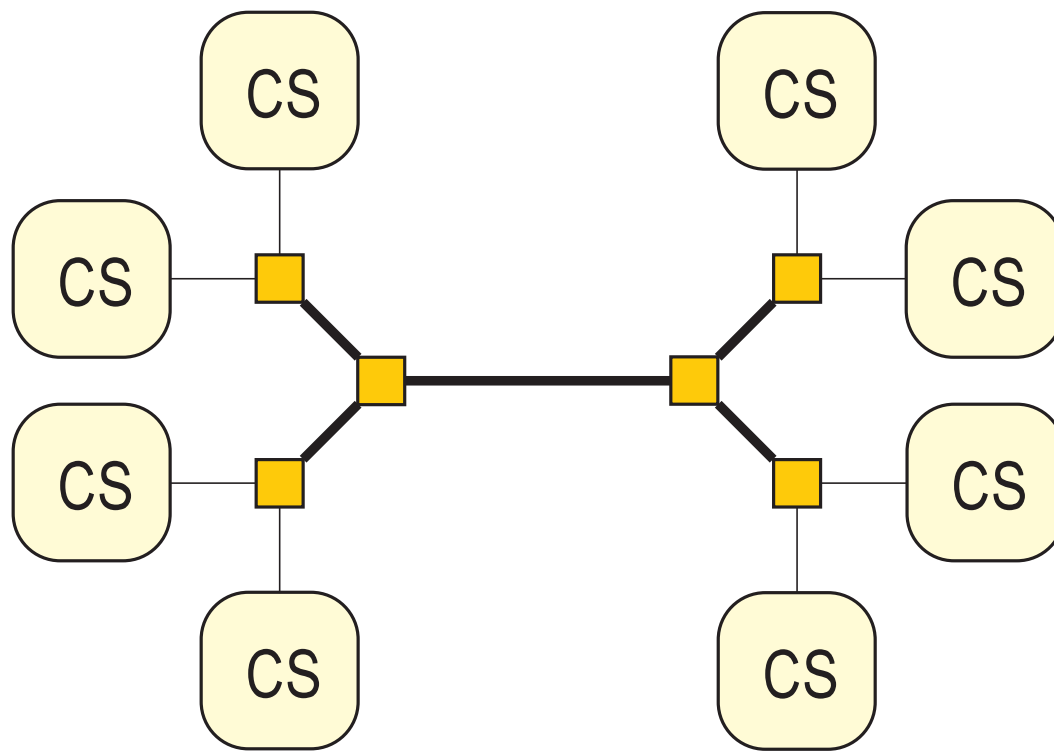


Sběrníková topologie

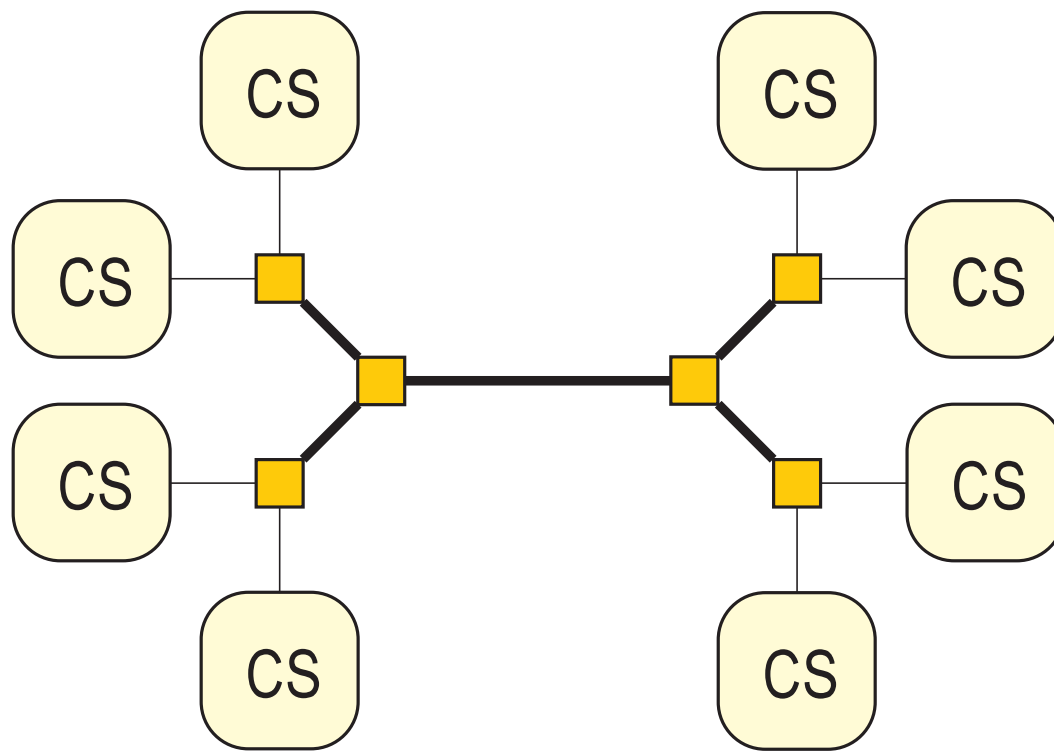


- pasivní médium
- snadná výstavba sítě
- odolné proti výpadkům stanic
- citlivé na poruchy média

Hvězdicová topologie

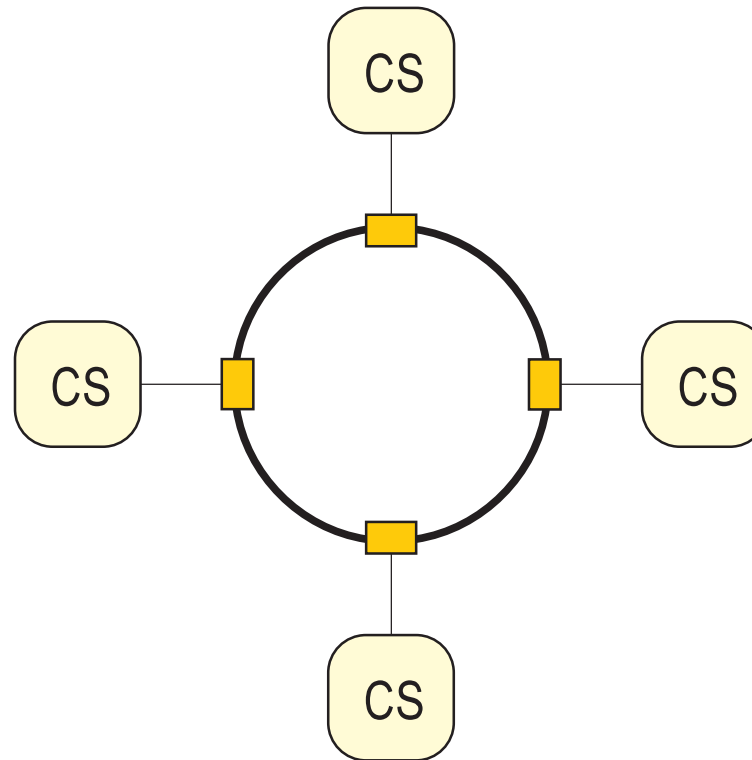


Hvězdicová topologie

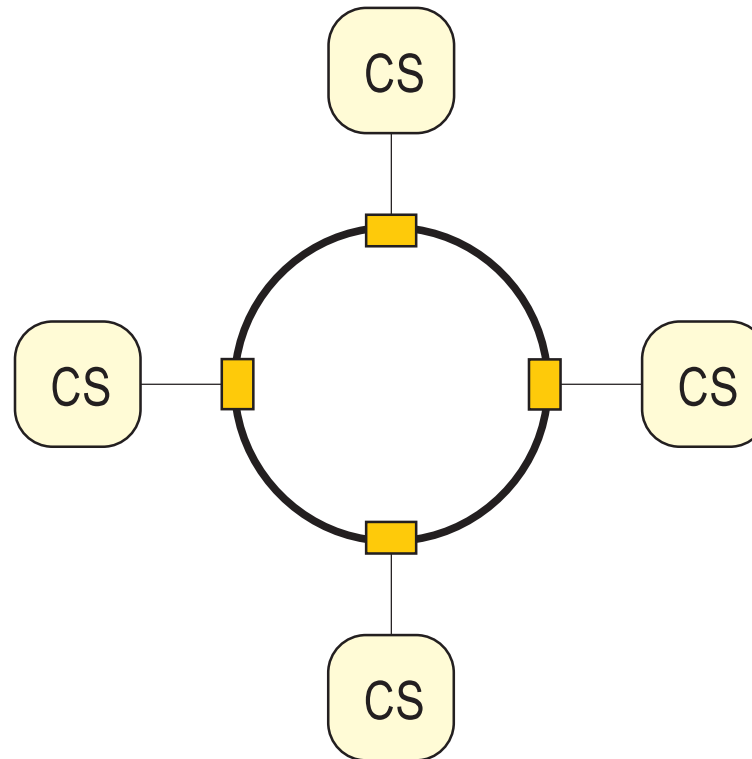


- dvoubodové spoje
- odolnost proti výpadkům stanic a linek
- citlivost na poruchy opakovačů / přepínačů

Kruhová topologie

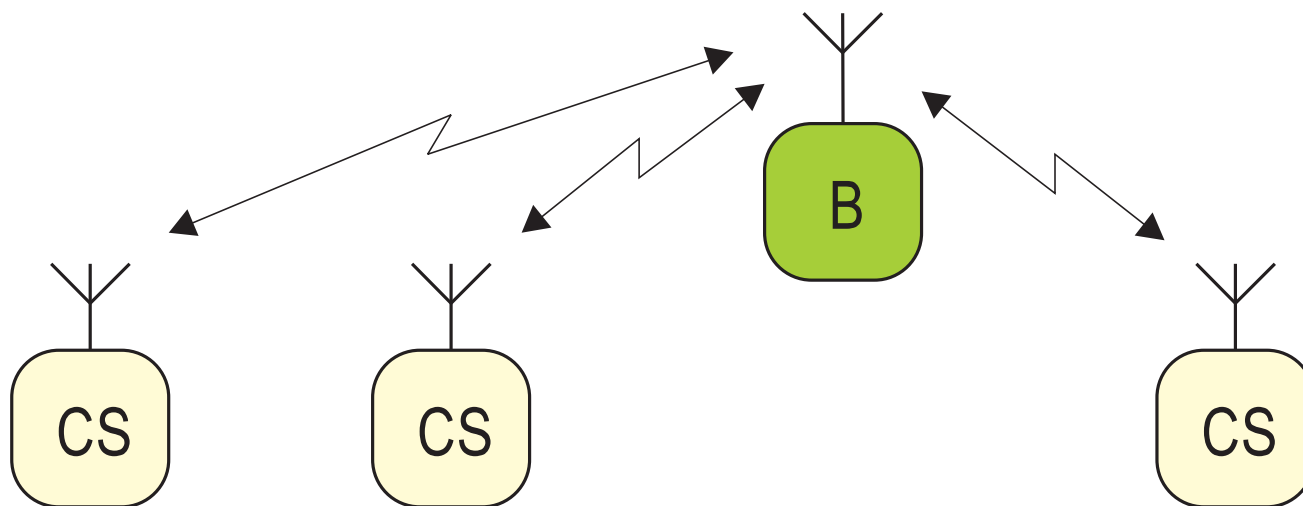


Kruhová topologie

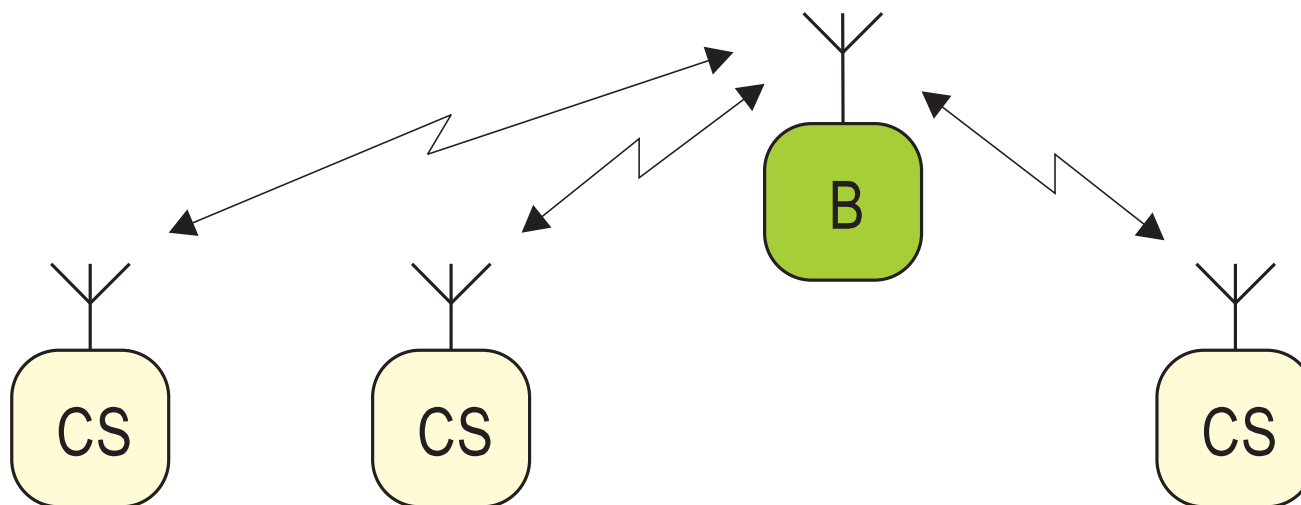


- dvoubodové jednosměrné spoje
- možnost kombinovat média
- citlivost na poruchy stanic a linek

Bezdrátové / rádiové sítě



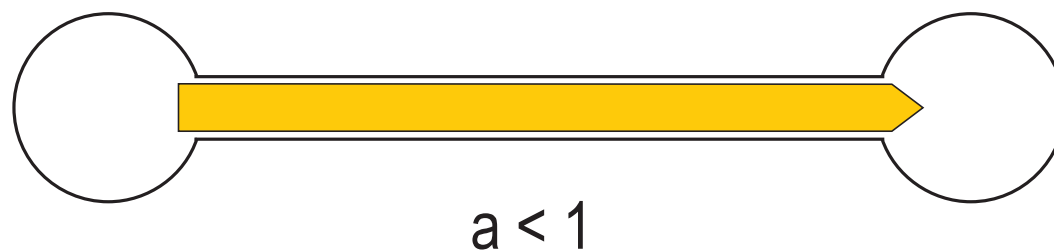
Bezdrátové / rádiové sítě



- sdílené médium
- velmi snadná výstavba
- citlivost na vnější rušení

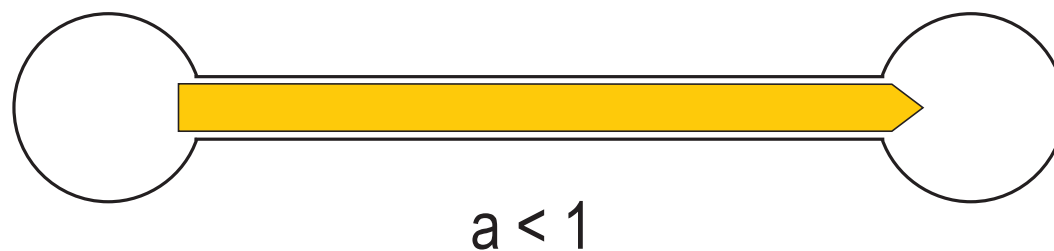
Lokalita

LAN

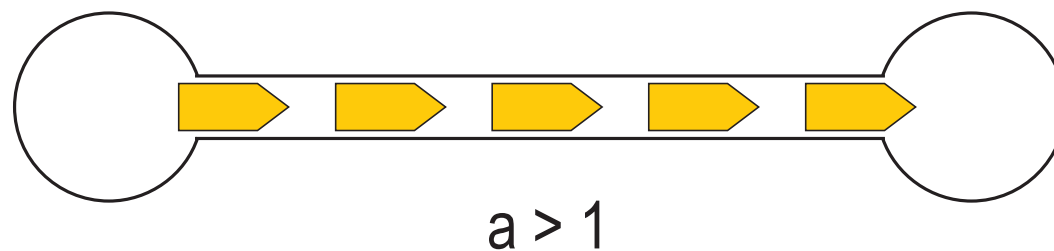


Lokalita

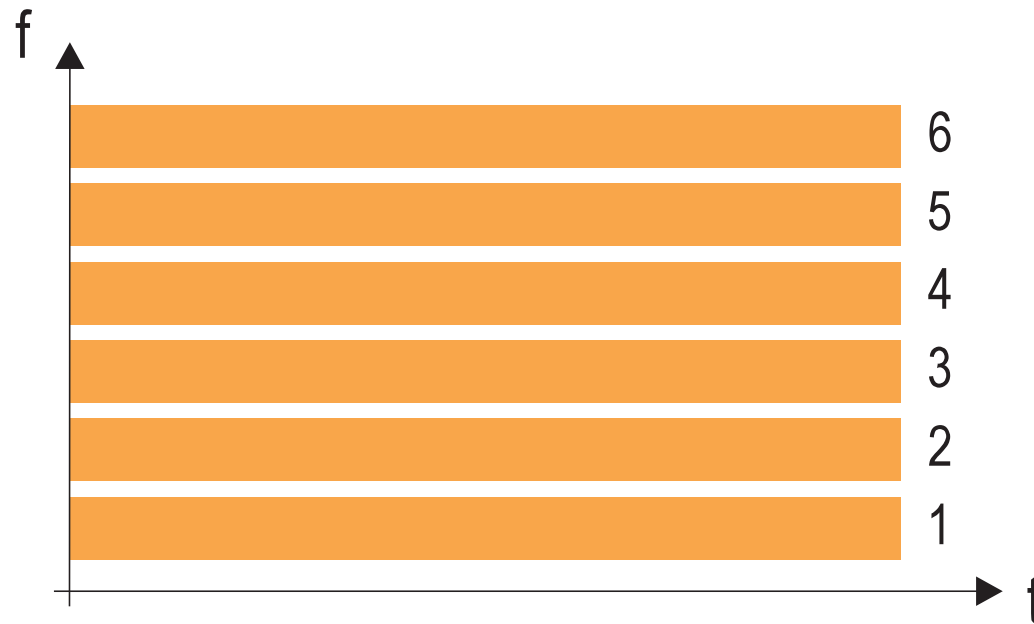
LAN



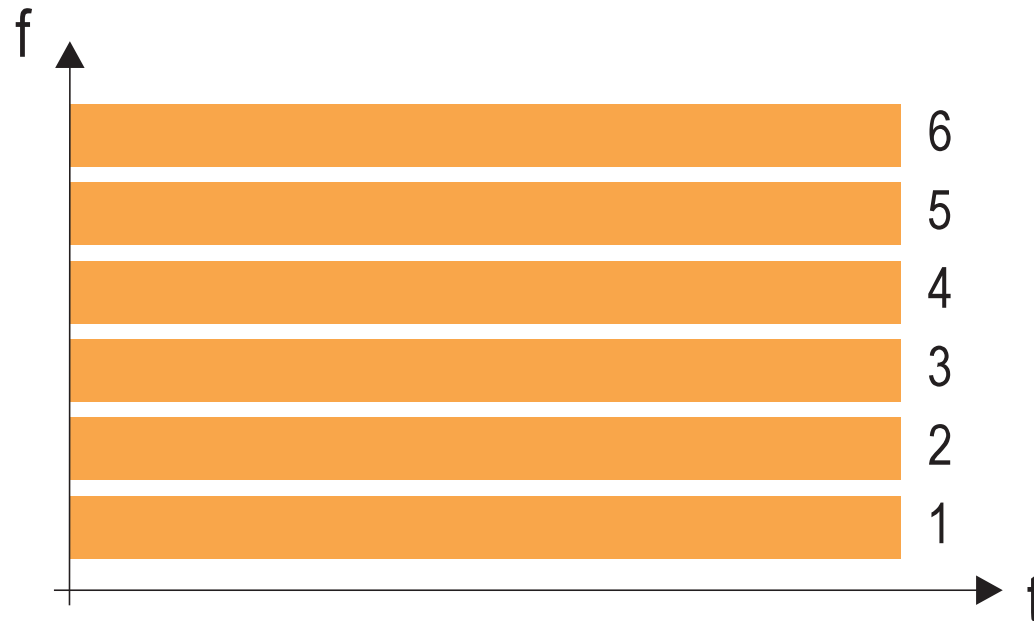
WAN



FDMA - frekvenční multiplex

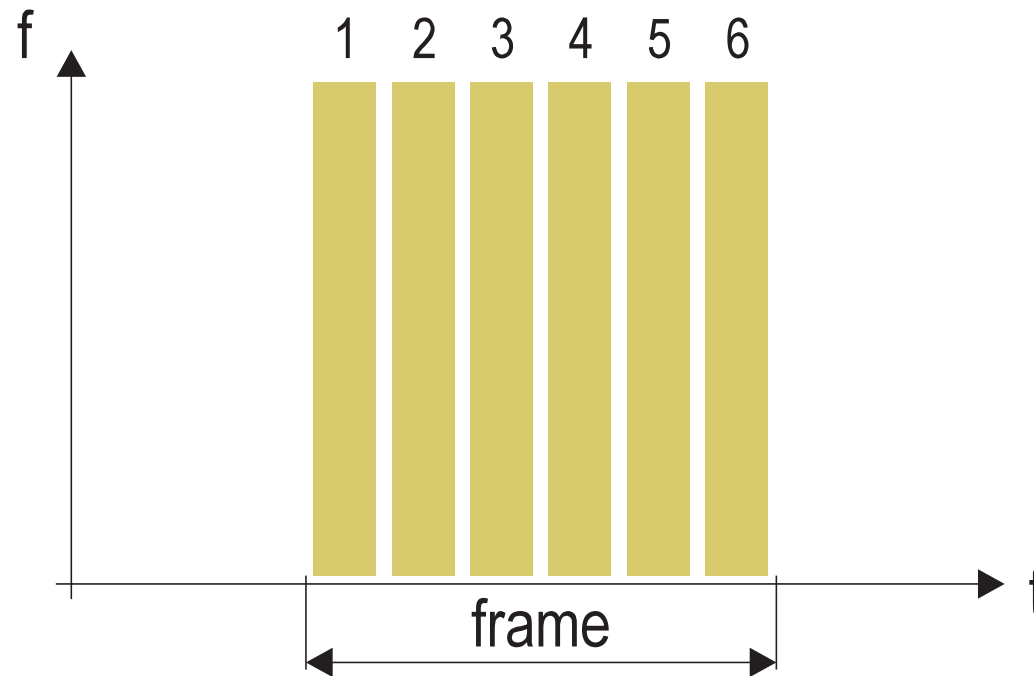


FDMA - frekvenční multiplex

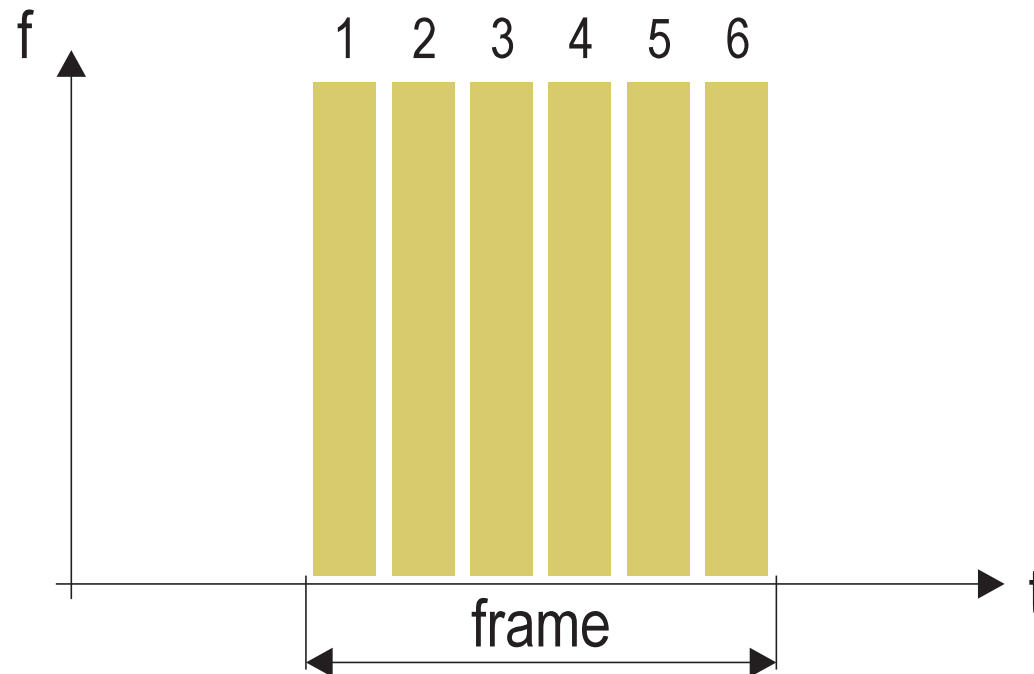


- kabelová televize - IEEE 802.14 HFC
- OFDM - IEEE 802.11a/g, 802.16

TDMA - časový multiplex



TDMA - časový multiplex



- pevný - telekomunikační sítě PDH, SDH, ATM
- adaptivní - MAC lokálních sítí

Kódování

0 1 1 0 0 1 1 1 0



bipolar NRZ



bipolar NRZI



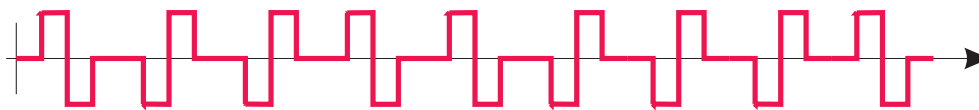
pseudoternary NRZ
AMI



phase-shift-keying (PSK)
Manchester



differential phase-shift-keying
differential Manchester



phase-shift-keying RZ

Kódování - 4B5B

0 1 1 0 0 1 1 1 0



bipolar NRZ



bipolar NRZI



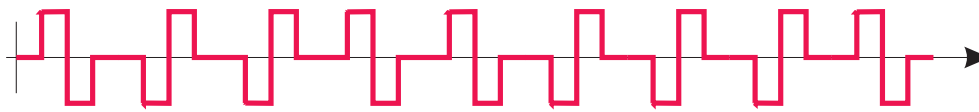
pseudoternary NRZ
AMI



phase-shift-keying (PSK)
Manchester

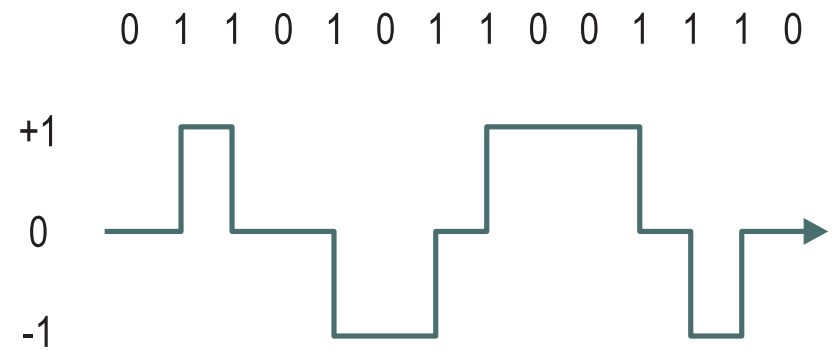
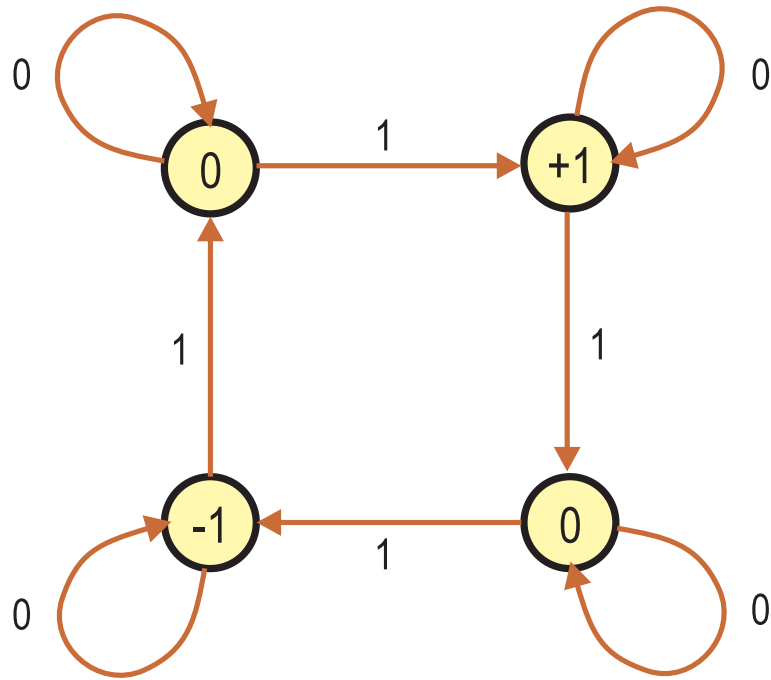


differential phase-shift-keying
differential Manchester

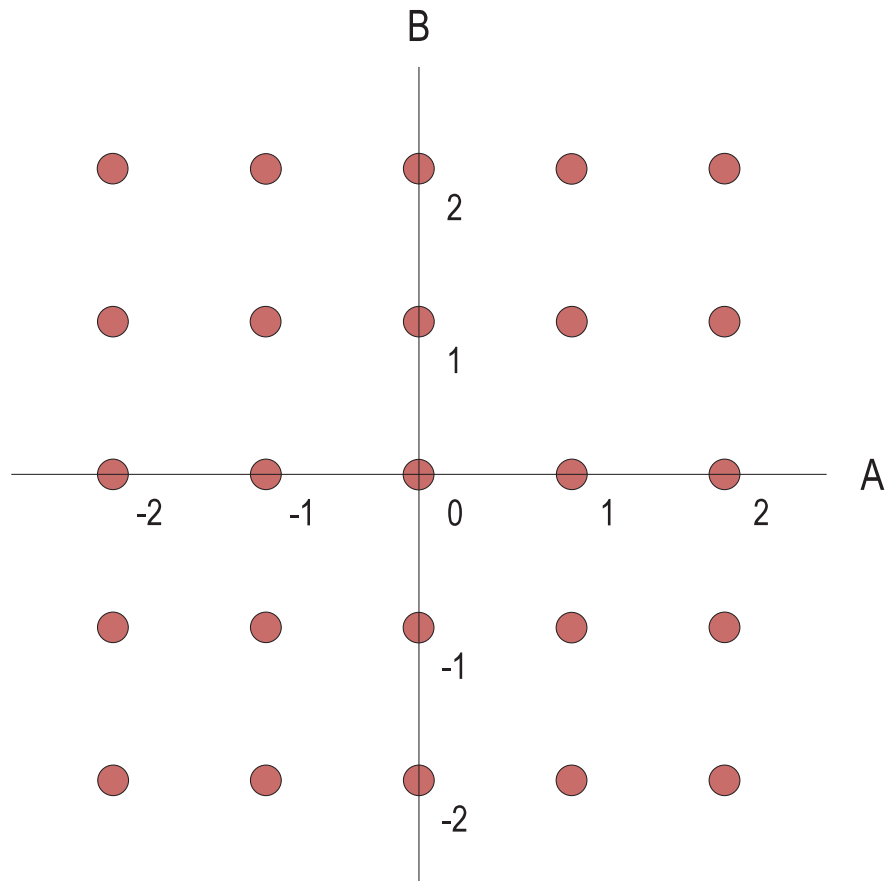


phase-shift-keying RZ

Kódování - MLT-3



Kódování - PAM-5



Metalická vedení

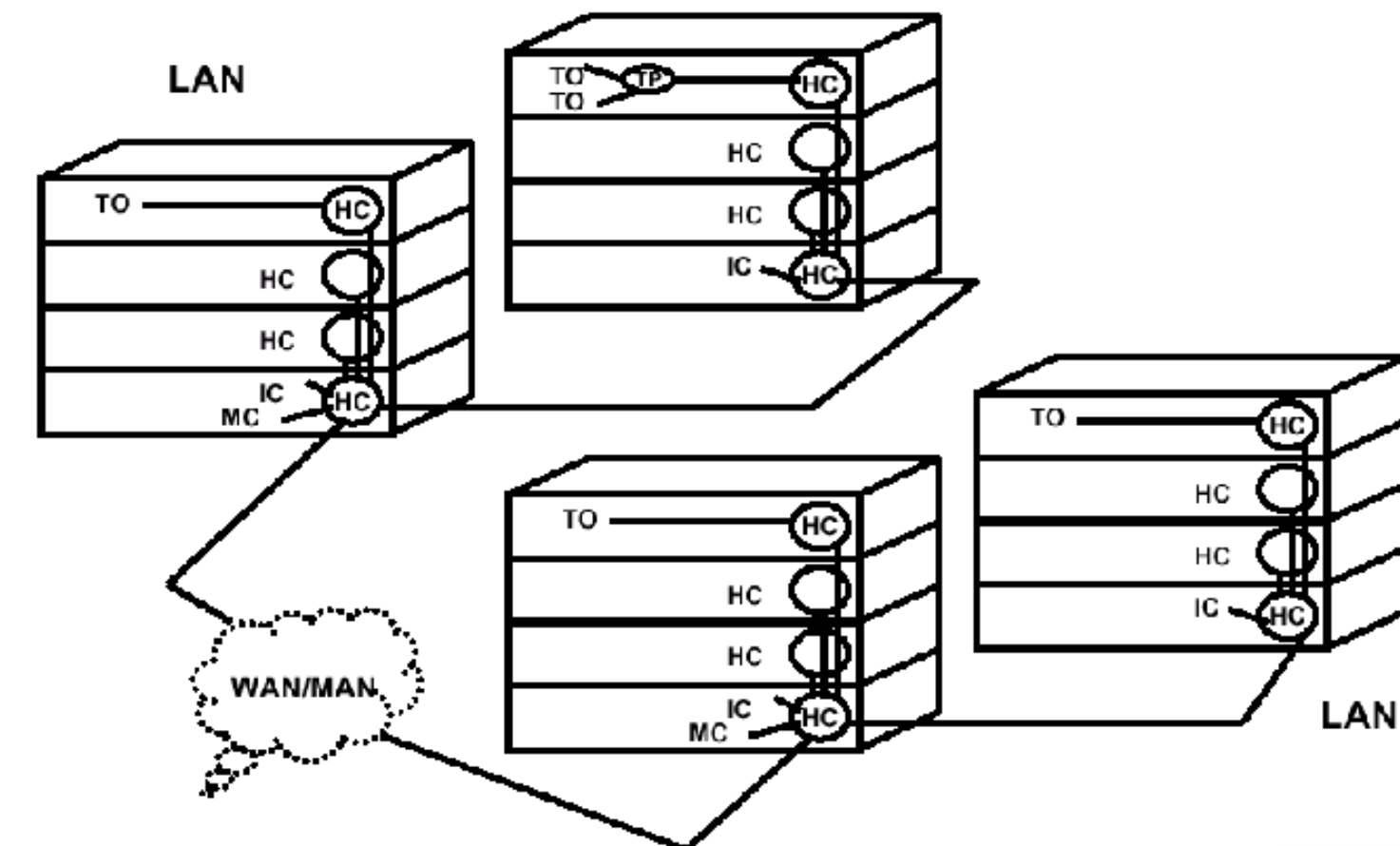
Twisted Pair

UTP - Unshielded Twisted Pair	4x2
FTP - Foiled Twisted Pair	(4x2)+F
Category 3 (Voice Grade) 16 MHz	
Category 5 (Data Grade) 100 MHz	
STP - Shielded Twisted Pair	2x(2+S)

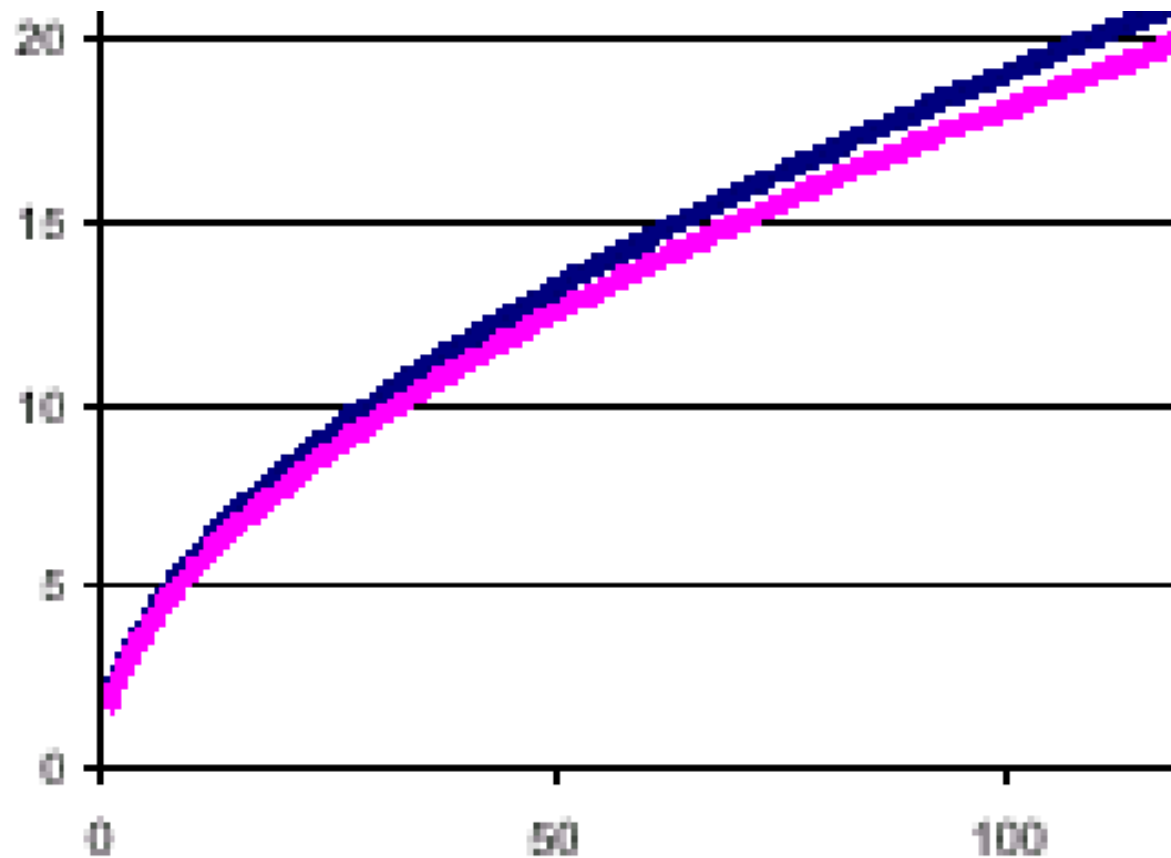
Coaxial Cable

Baseband	50, 93 Ω
Broadband	75 Ω

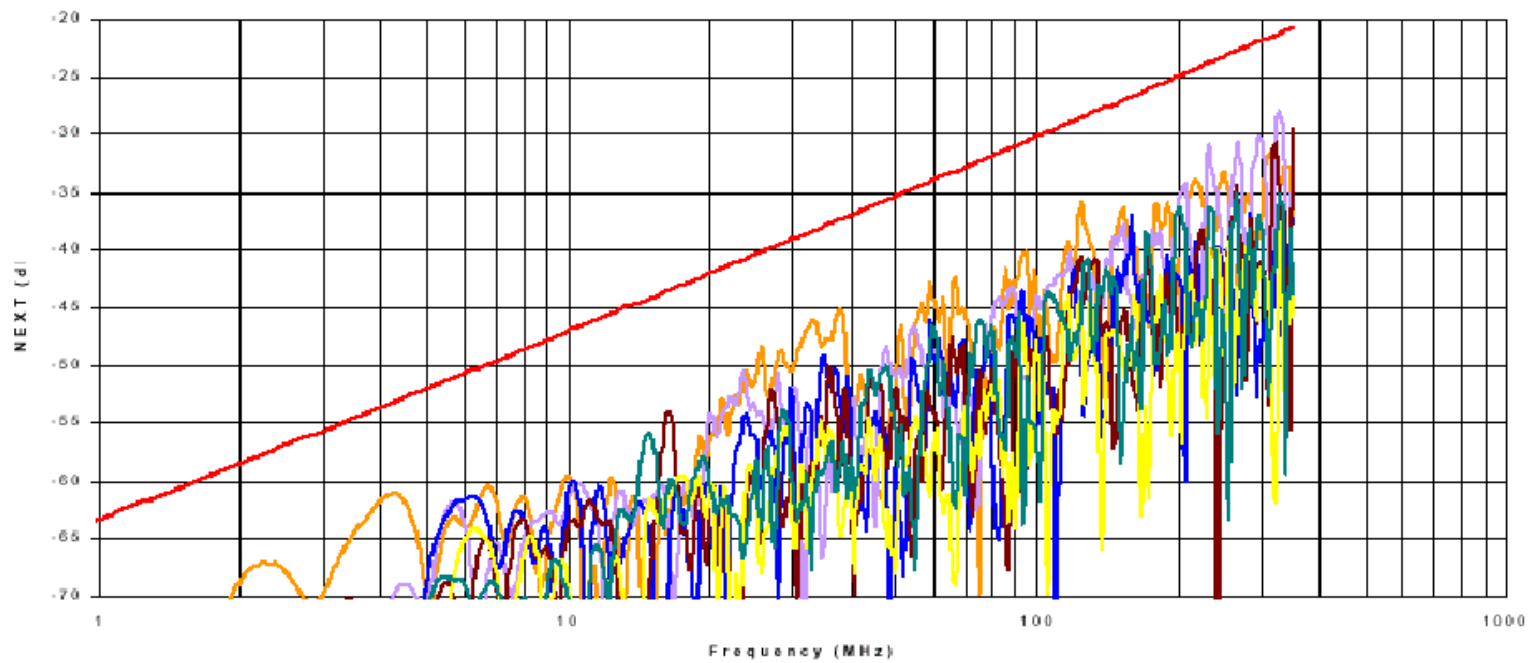
Strukturovaná kabeláť



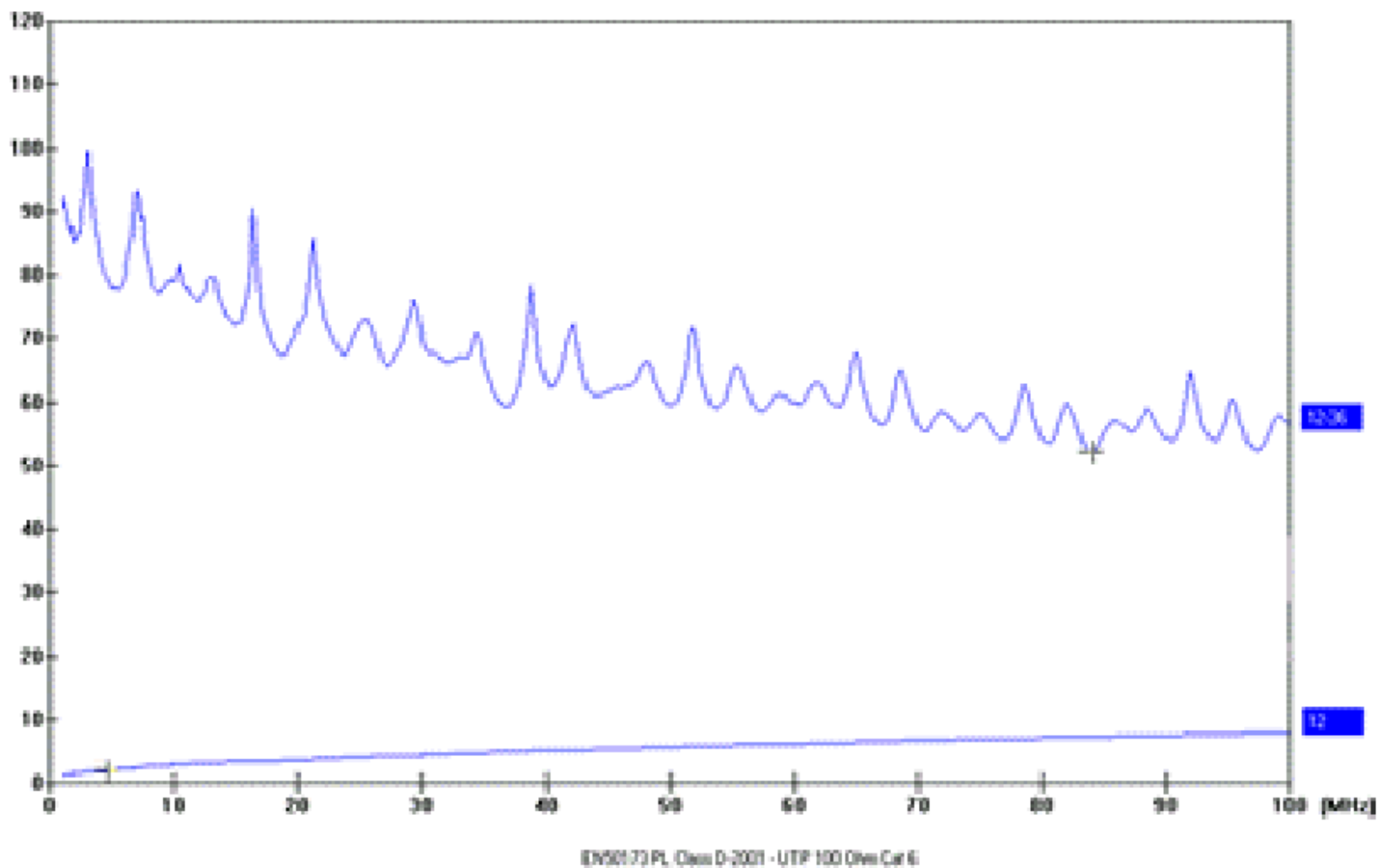
Útlum



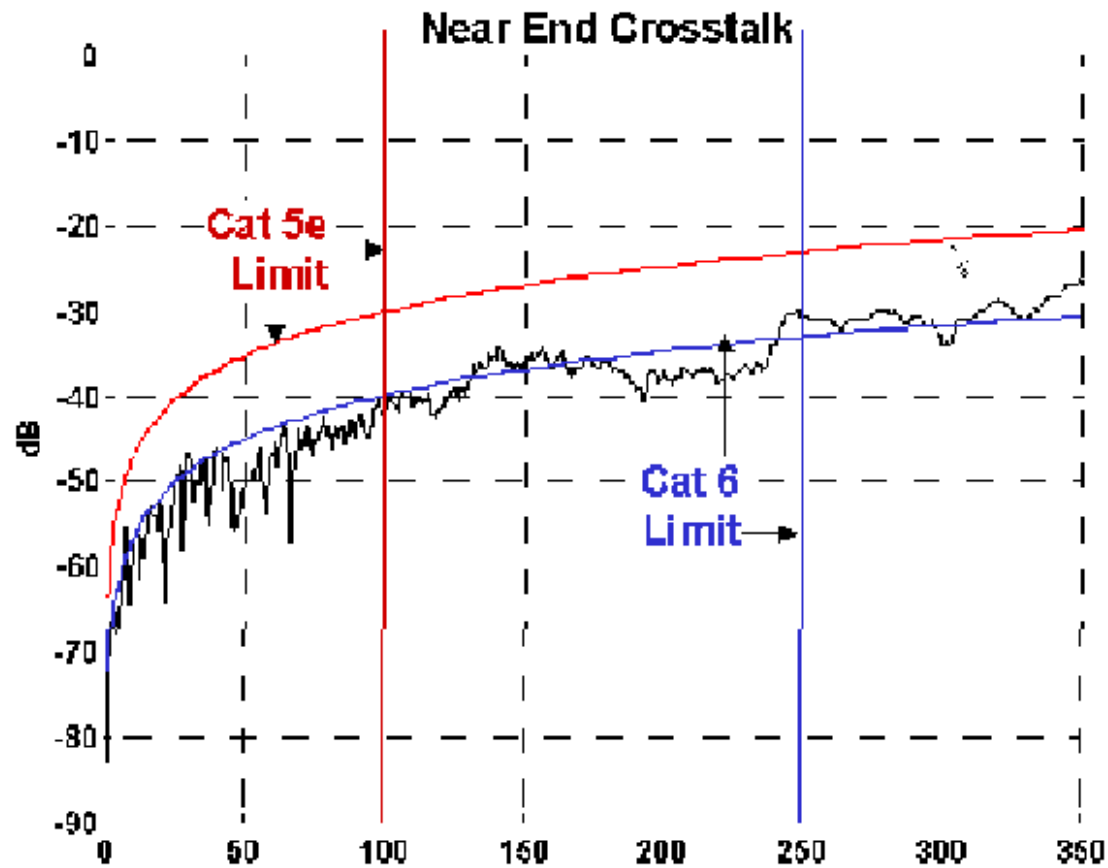
Přeslech - NEXT



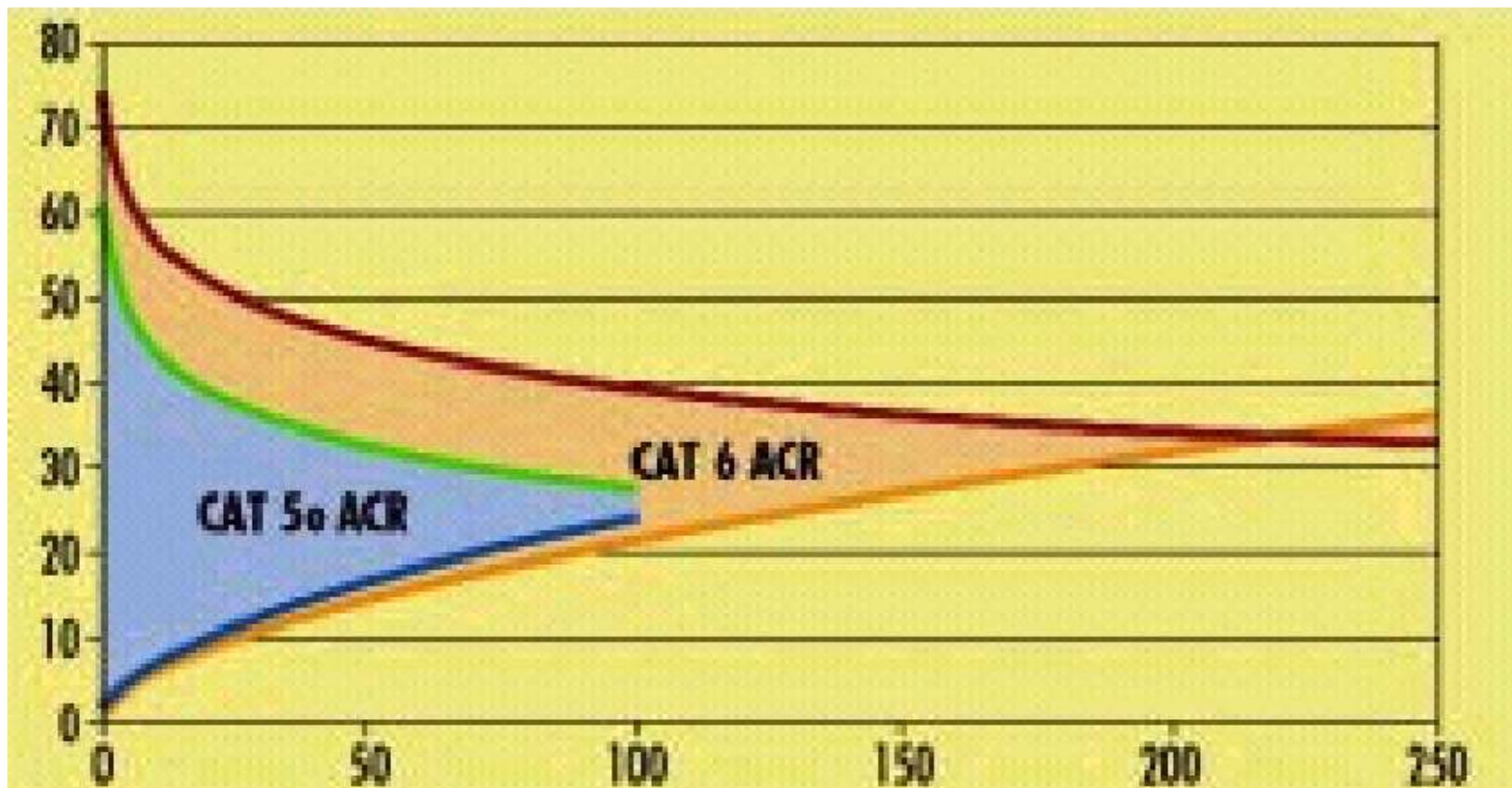
Kvalita - útlum / přeslech



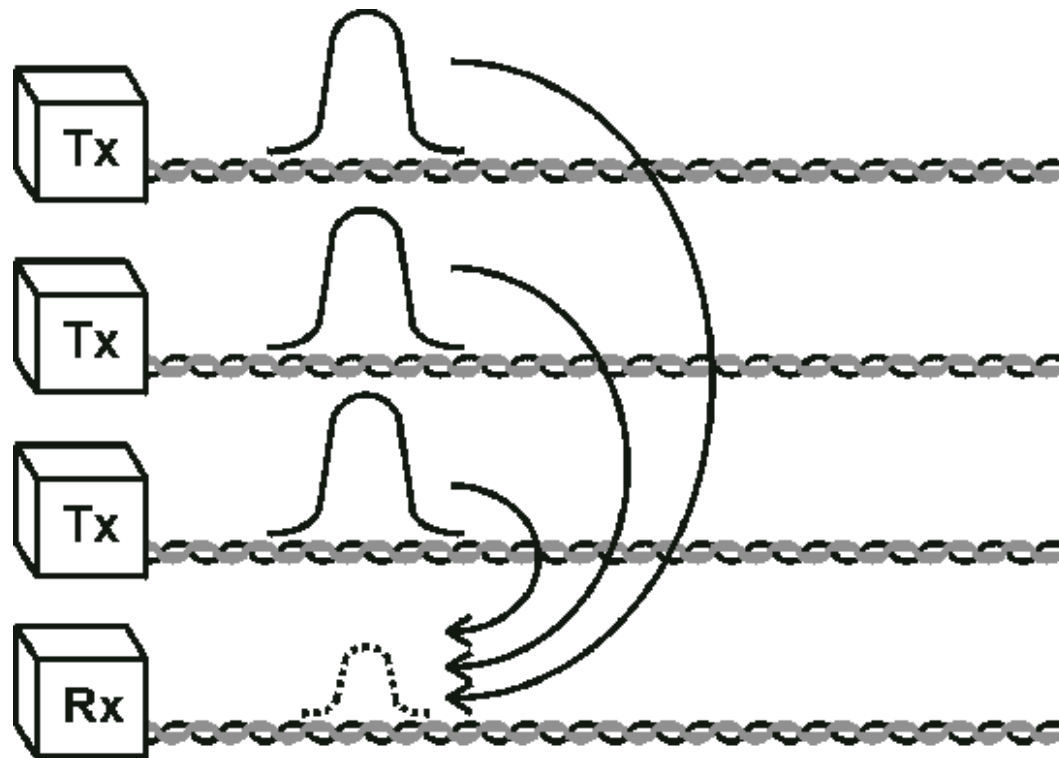
Cat.5 / Cat.6 - NEXT



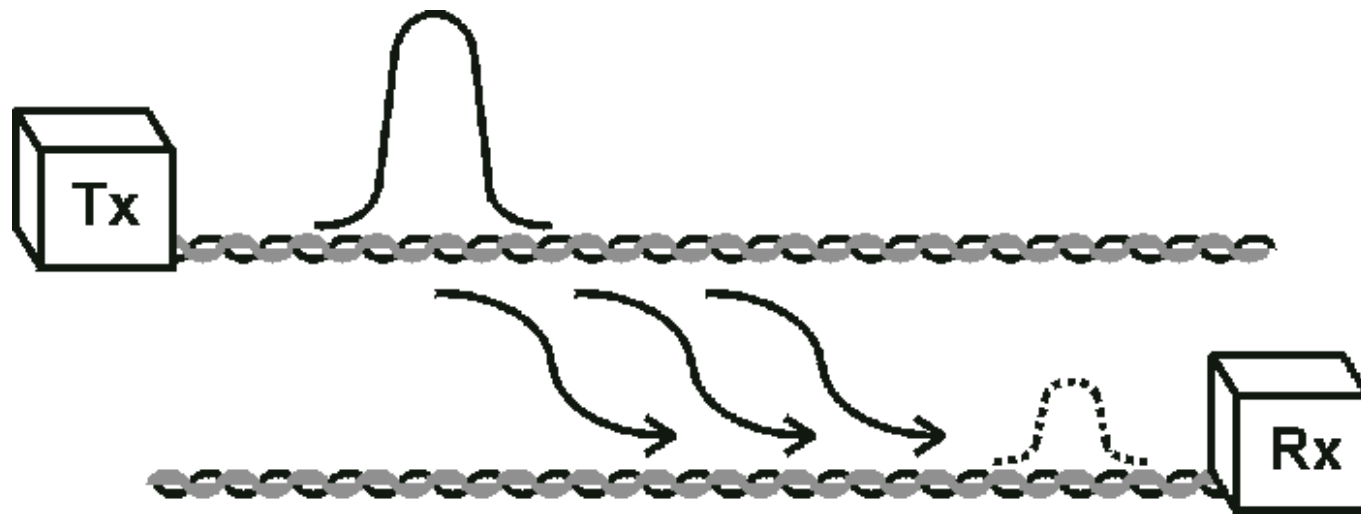
Cat.5 / Cat.6 - kvalita



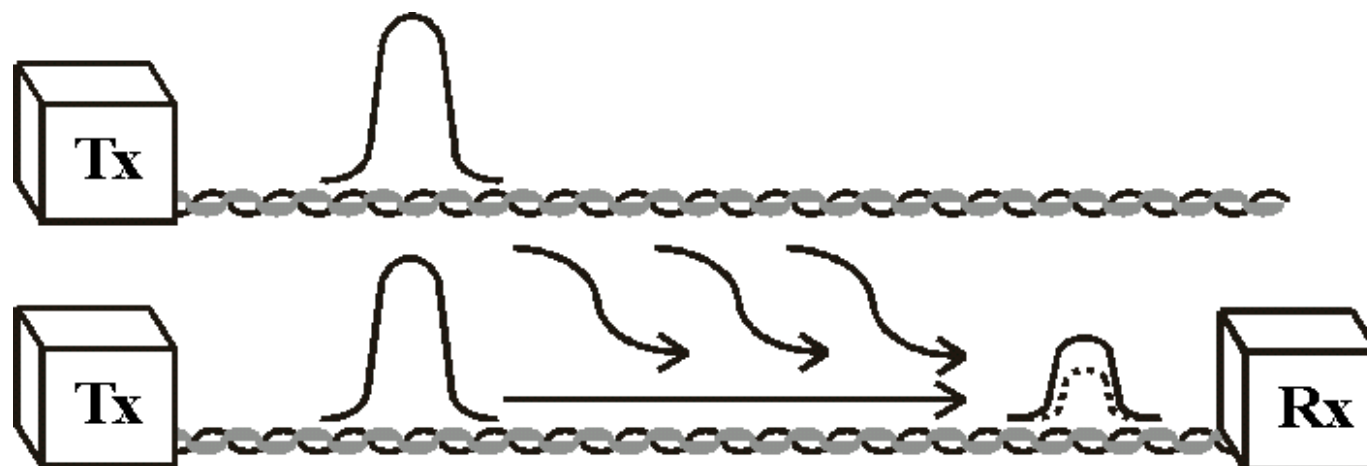
Cat.6 - PSNEXT



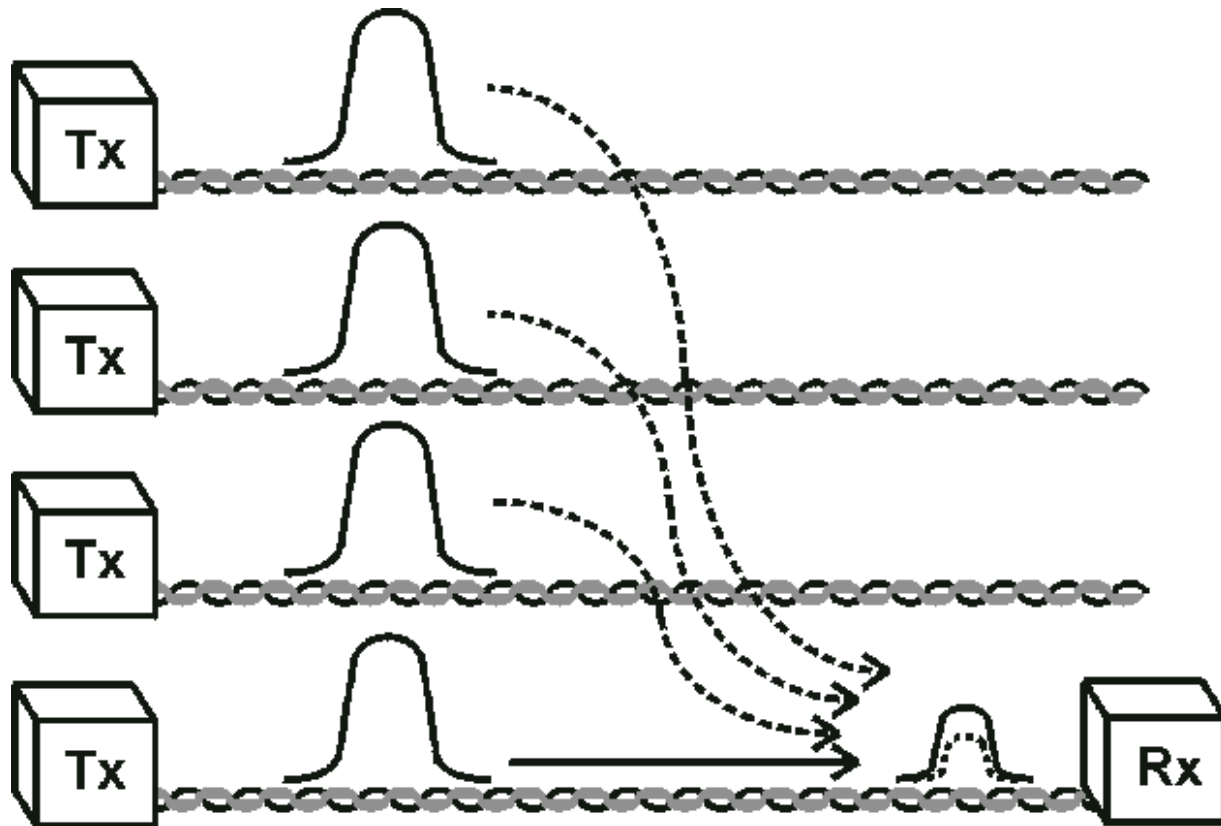
Cat.6 - FEXT



Cat.6 - ELFEXT



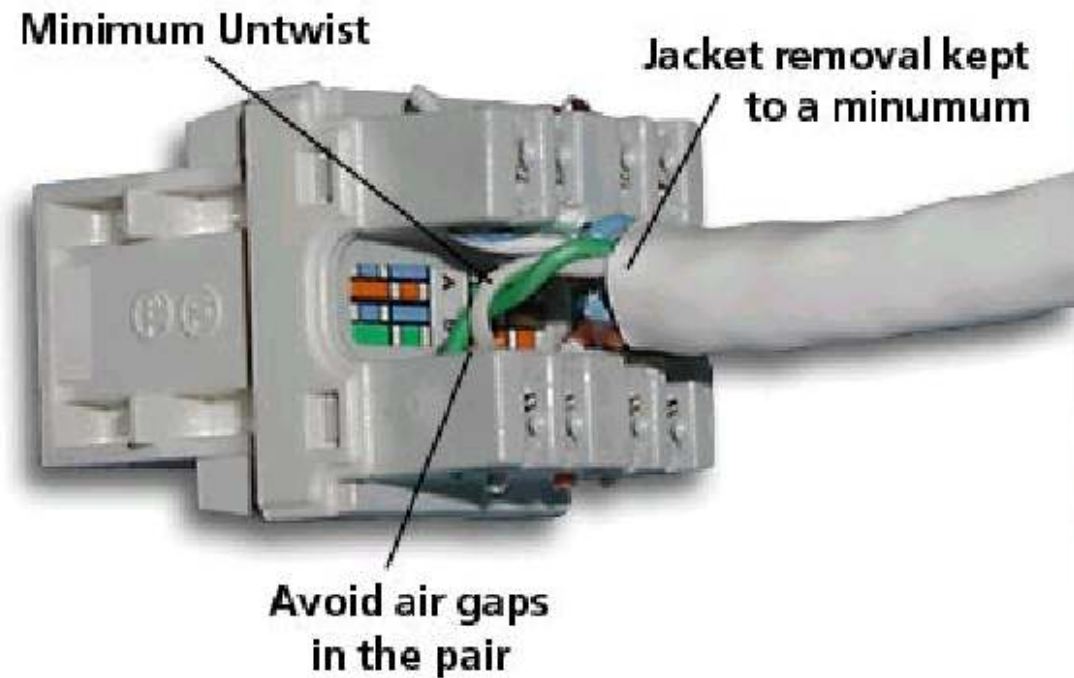
Cat.6 - PSELFEXT



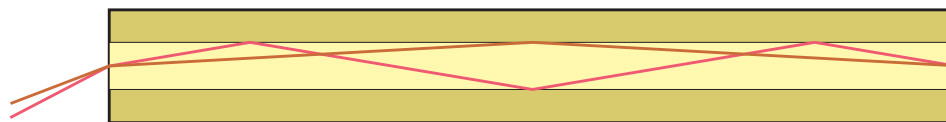
Cat.7 - kabeľy



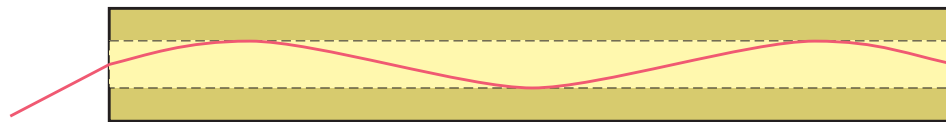
Pravidla metalické kabeláře



Optická vlákna



Multimode

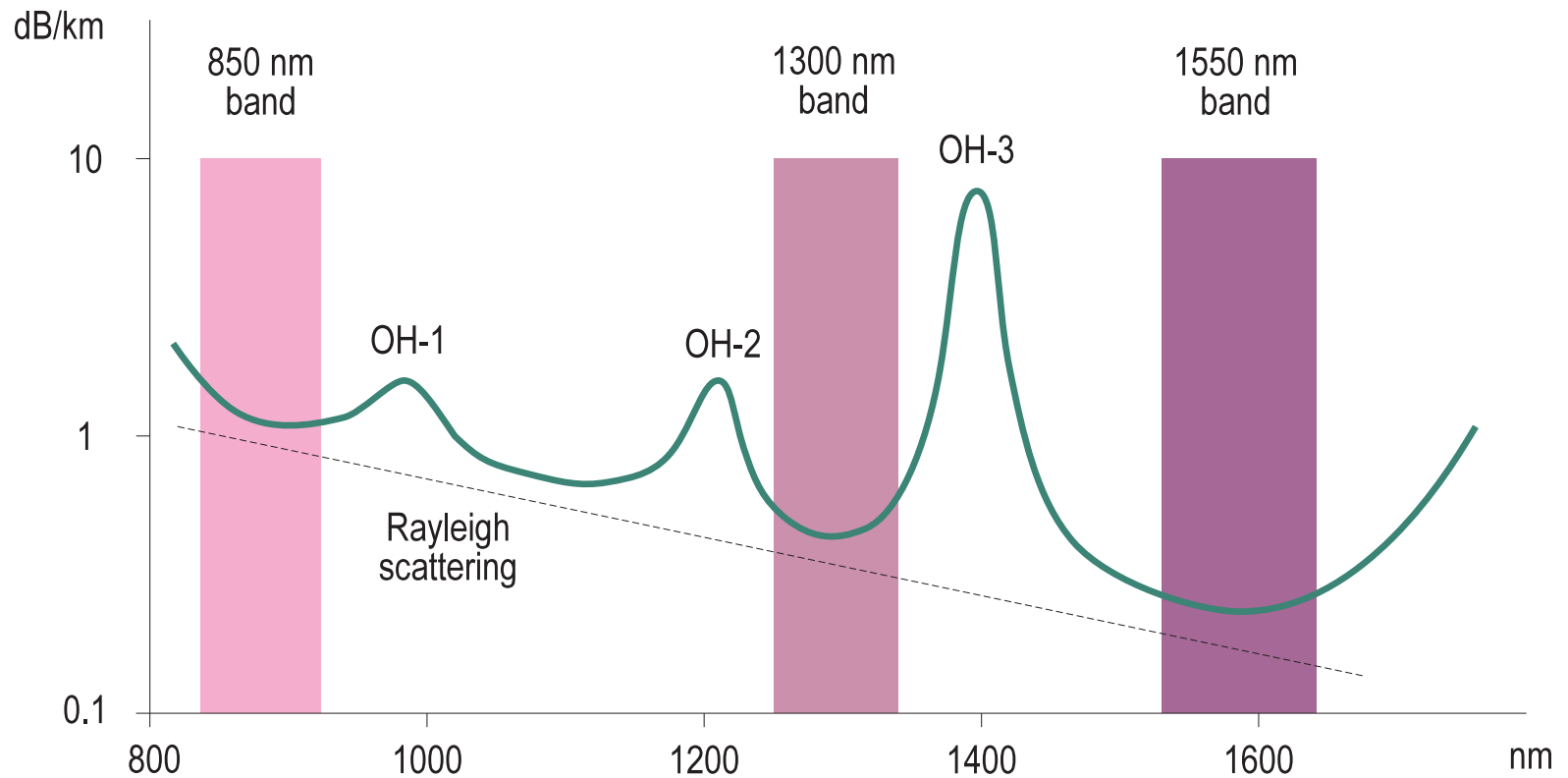


Multimode
grade index



Monomode

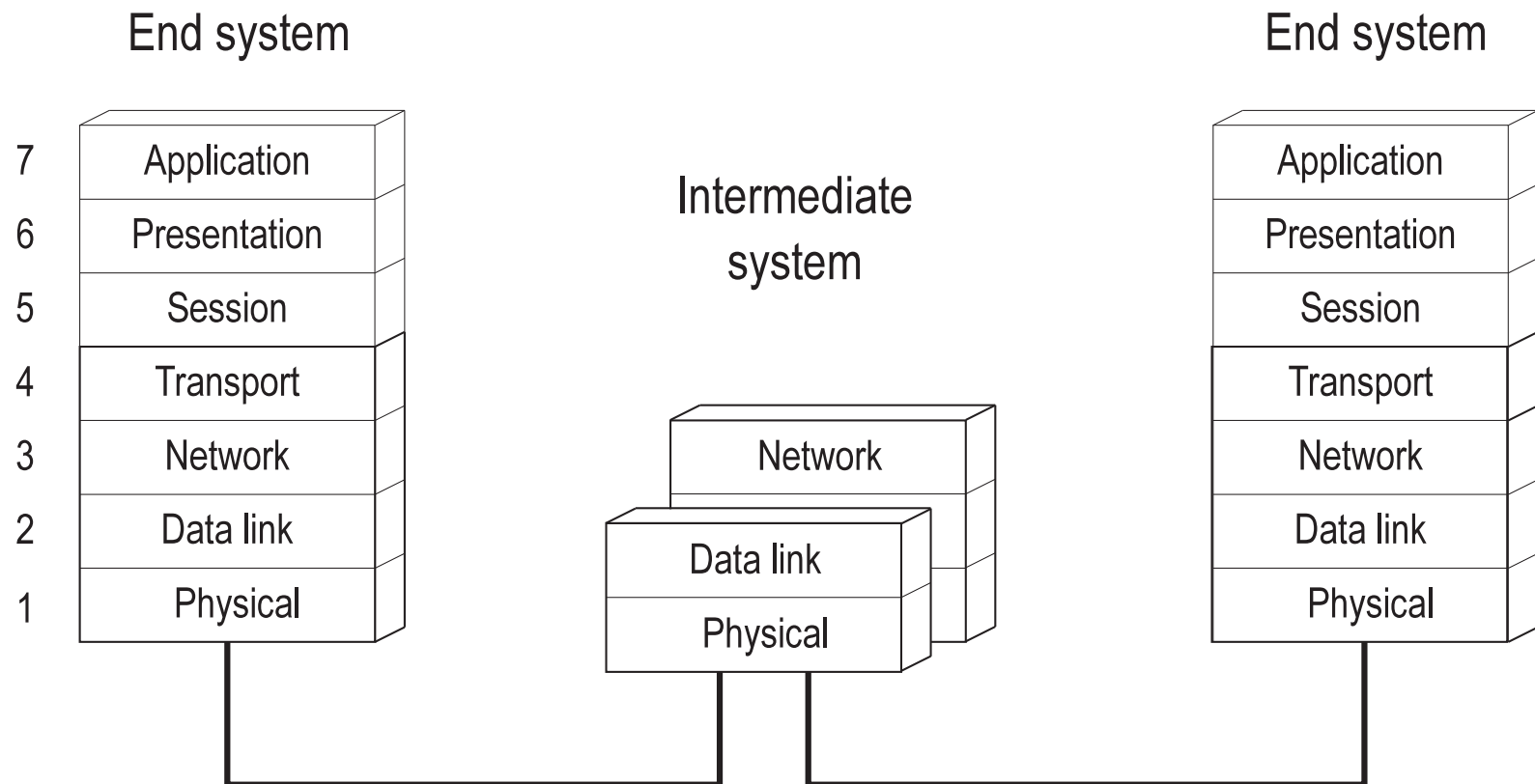
Optická vlákna - útlum



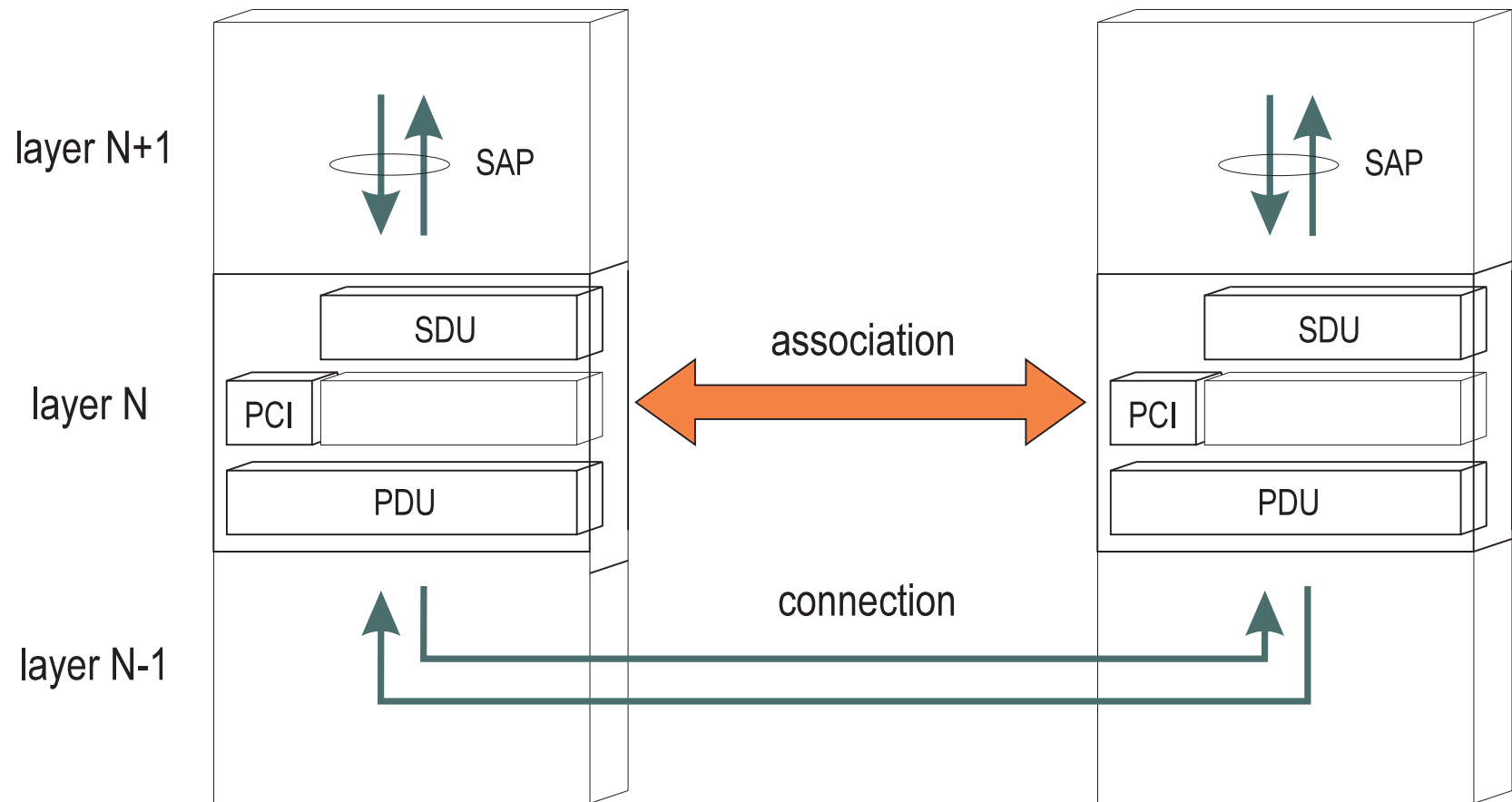
Optická vlákna - parametry

	50/125	62.5/125	100/140	μm
NA	0.23	0.275	0.29	
Min. attenuation 850 nm	2.6	3.4	3.7	dB/km
1300 nm	0.48	0.63	0.67	dB/km
Bandwidth	1400	1000	500	MHz.km

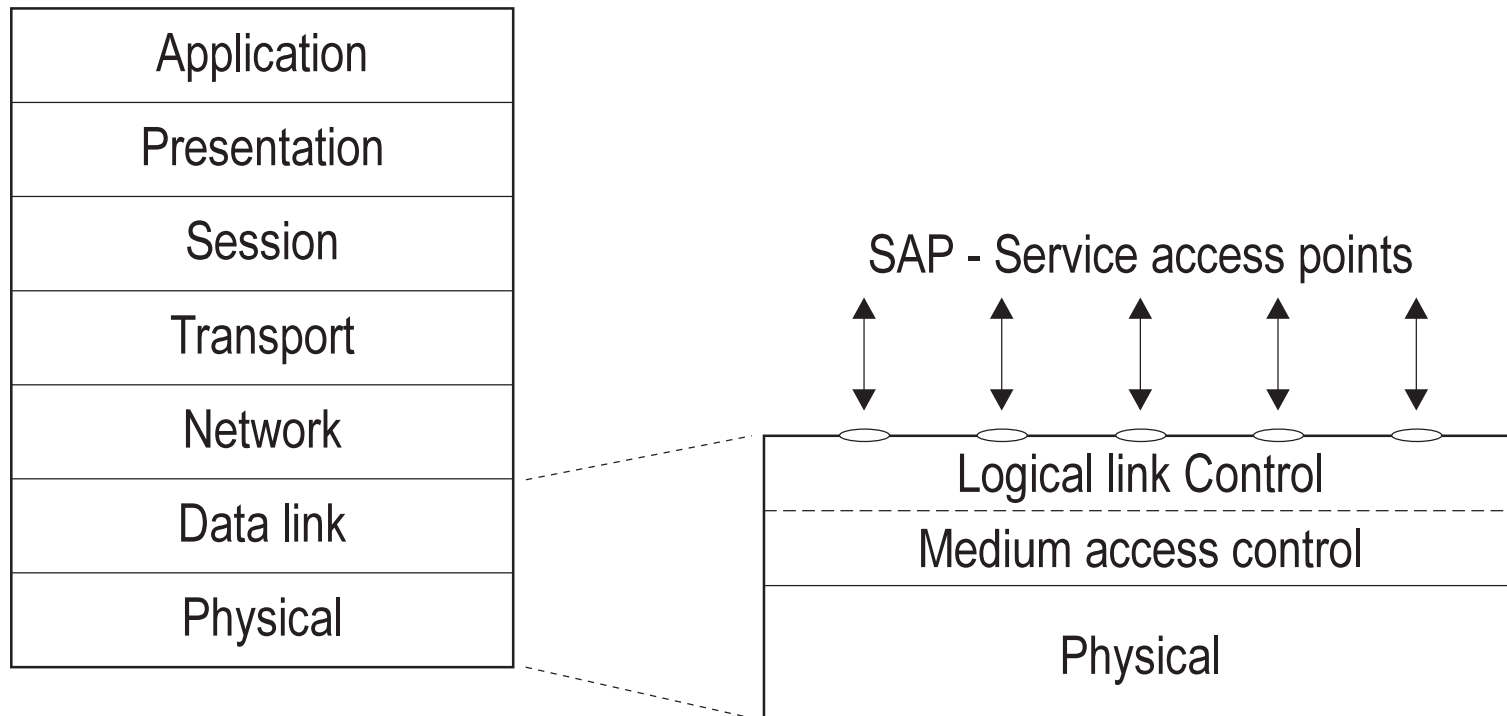
Architektura ISO OSI



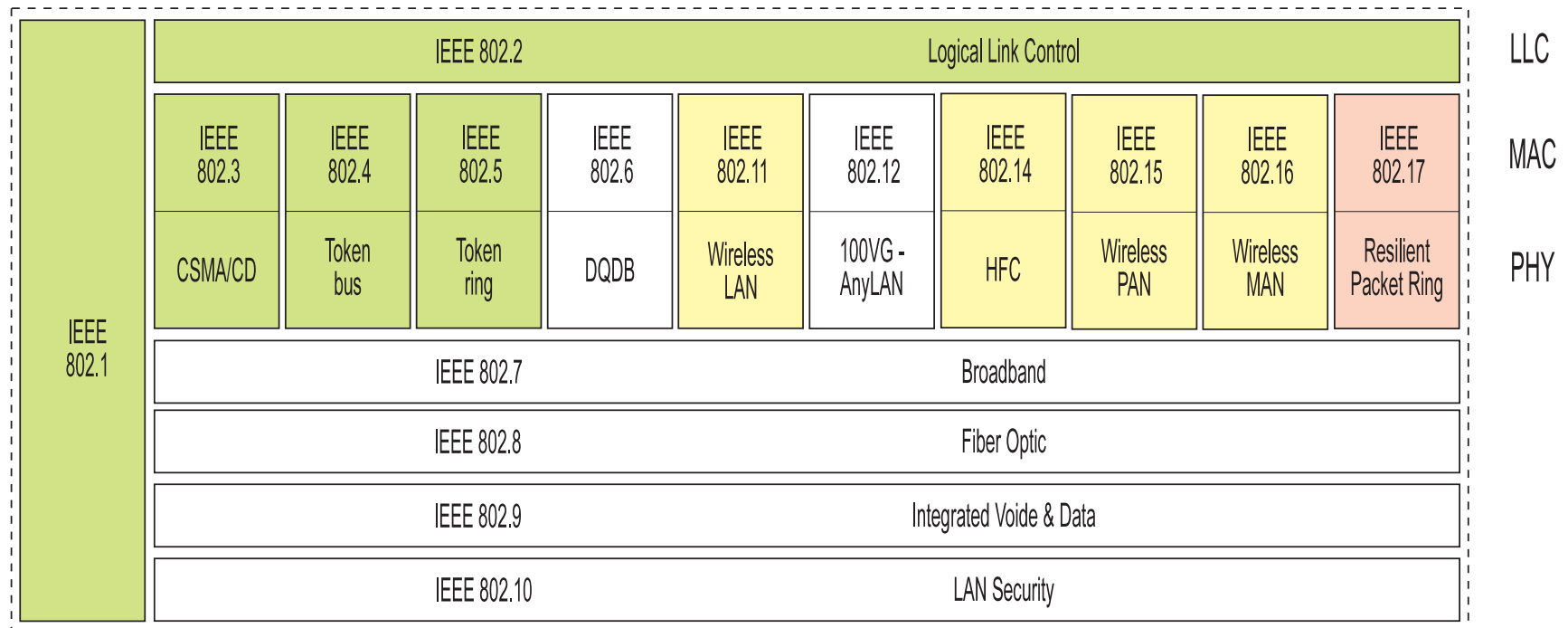
Vrstva ISO OSI



Architektura IEEE 802



Standardy IEEE 802



Vyřađí vrstvy

	IPX/SPX	NetBIOS	TCP/IP	VINES	AppleTalk
Application	Application Programs				
	Netware Core Protocol (NCP)	Server Message Block (SMB)	Remote Procedure Call (RPC/XDR)	Remote Procedure Call (NetRPC)	AppleTalk Filling Protocol (AFP)
	NetBIOS	NetBIOS			AppleTalk Session Protocol (ASP)
Transport	Sequenced Packet Exchange (SPX)	NetBIOS Extended User Interface (NetBEUI)	Transmission Control Protocol (TCP/UDP)	VINES Interprocess Communication Protocol (VIPC)	AppleTalk Transaction Protocol (ATP)
Network	Internetwork Packet Exchange (IPX)		Internet Protocol (IP)	VINES Internet Protocol (VIP)	Datagram Delivery Protocol (DDP)
Data Link	Software Driver Network Interface Card				
Physical	Transmission Media				