

7 TELEPHONY

7.1 Plesiochronous Digital Hierarchy (PDH) Transmission Rates

- E1 - 2.048Mbit/s (=32 x 64kbit/s)
- E2 - 8.448Mbit/s
- E3 - 34.368Mbit/s
- E4 - 139.264Mbit/s

7.2 Synchronous Digital Hierarchy (SDH) Transmission Rates

- STM 1 - 155.52Mbit/s
- STM 4 - 622.08Mbit/s
- STM 16 - 2488.32Mbit/s
- STM 64 - 9953.28Mbit/s

7.3 The SDH Multiplexing Structure

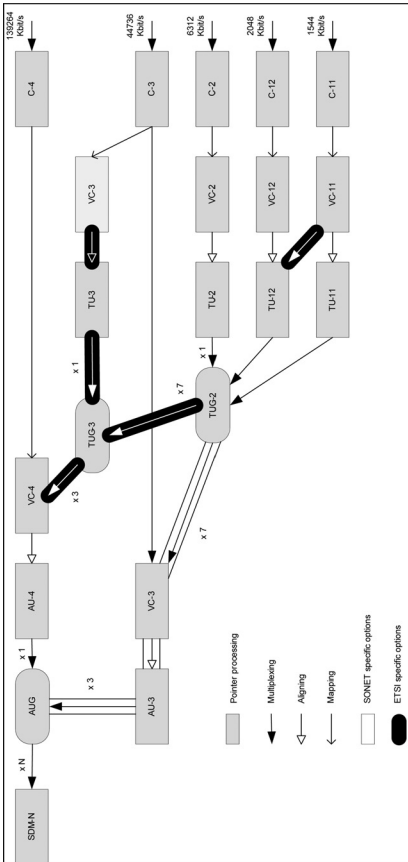


Figure 8 – SDH multiplexing structure

7.4 Technical Parameters of Digital Subscriber Line Standards

Table 21 – Technical parameters of DSL standards

DSL type	No of cable pairs	Telephone	Downstream frequency band kHz		Upstream frequency band kHz		Downstream data rate kbit/s	Upstream data rate kbit/s	Reach from Exchange to subscriber km	Comments
			From	To	From	To				
ISDN	2	No	0	40	0	40	160	160	4.5	Separate pair needed for Voice
HSDS	2 or 3	No	0	200 or 300	0	200 or 300	784 or 1,168	784 or 1,168	3.5	Separate pair needed for Voice
SHDSL	2	No	0	32 or 380	0	32 or 380	192 or 2,312	192 or 2,312	2.5 to 4.5	Separate pair needed for Voice
ADSL	1	Yes 0 to 4kHz	150	1,100	30	130	32 to 8,000	32 to 800	1 to 5	Data rate is dependent on distance from exchange to subscriber
ADSL2	1	Yes 0 to 4kHz	150	2,200	30	130	32 to 16,000	32 to 800	<3.0	Data rate is dependent on distance from exchange to subscriber
ADSL2+	1	Yes 0 to 4kHz	150	2,200	30	130	24,000	32 to 800	<3.0	Data rate is dependent on distance from exchange to subscriber
VDSL	1	Yes 0 to 4kHz	5,000	3,000	7,000	5,000	2,000 to 50,000	1,000 to 25,000	0.5 to 1.5	1. Data rate is dependent on distance from exchange to subscriber 2. Interleaved bands downstream and upstream