Network+ | 09.WANs Cheat Sheet

by Aelphi (Aelphi) via cheatography.com/179727/cs/37869/

Wired Connections Types

Dedicated Leased Lines	direct connection point to point
Circuit-Switched	using data through dial phone connection (ISDN)
Packet-Switched	idem but multiple users using the same line.
Connections	
Copper	UTP, STP : Dial-up, ISDN, E1, T1
	Coax : Cable modem
Fiber	
Electricity	Broadand over Power Lines (BPL)

Wireless Connections

Cellular	
3G	144Kbps-2Mbps | HSPA(+)
4G	100Mbps-1Gbps | LTE, LTE-A
	Low-band | 30-250Mbps (long range)
5G	Mid-band | 100-900Mbps (mid range)
	High-band | +Gbps (short range)
GSM technology	widely used - converts voice into data
CDMA technology	USA - encryption system
Microwave	
UHF, SHF, EHF	Ultra, Super, Extreme High Frequencies
	point-to-point connection, fast (1Gbps) but direct line of sight. max 40NM
	WiMAX, antenna on top of buildings
Satellite	over-the-world coverage
	slow, expensive, high latency
ex: starlink	low orbit -> latency down to 35ms
HF radios	for text only, <10Kbps

WAN Technologies

Dedicated Leased Lines	E1-E3 (Europe), T1-T4 : use CSU/DSU
Metro Ethernet	use ethernet protocols on fiber cabling
PPP	Point-to-Point
PAP	*Password Athentication Protocol* | password sent in clear!

WAN Technologies (cont)

CHAP	*Challenge-Handshake Athentication Protocol*
MS-CHAP	both sent hached credentials, security+
PPPoE	encapsulates PPP frames inside Ethernet frames
DSL	
ADSL | 5.5km	Dwn: 8Mbps, Up:1.5Mbps
SDSL | 3.3km	Dwn & Up : 1.17Mbps
VDSL | 1.3km	Dwn : 52Mbps, Up:12Mbps
Cable Modems	use HFC (Hybrid Fiber-Coax) TV infrastru-cture
protocol	DOCSIS
Satellite Modem	limited, expensive, wx sensitive, echo
POTS	analog connection, PSTN
ISDN	carry voice, video or data over B/D channels
Frame Relay (FR)	use virtual circuits (VC)
SONET	20-250km, til 10Gbits, FDDI (fiber)
ATM	cell-based of fixed 53bytes, use VC
MPLS	used by service providers on backbone
DMVPN	use VPN tunnel to secure WAN connections
Connection speed order	FR, T1, E1, T3, E3, ATM, SONET
mGRE	*multipoint generic routing encapsulation*

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