ETHERNETS

LAN	ANNO	PARAMETRI TEMPORALI		SEGMENTO		TRASMIT	ENCODING	TOPOLOGIA FISICA
10BASE5	*Primi anni "80 Ethernet v.2*			*Mezzo*	*Thick Coaxial Cable (cavo giallo)*	*Only HD*	*MANCHESTER*	*BUS*
				Impedenza	*50Ω*			
				Velocità e.m. min.	*0.77c*			
				Connettori	*Tipo N*			
				Max. lunghezza	*500m*			
				Max N. stazioni	*100*			
				Min distanza tra stazioni	*2.5m*			
10BASE2	*1985 IEEE 802.3*	*Bit Time*	*100 nsec*	*Mezzo*	*Thin Coaxial Cable*	*Only HD*	*MANCHESTER*	*BUS*
		Slot Time	*512 Bit Time = 51.2μsec*	*Impedenza*	*50Ω*			
		Interframe Spacing	*96 bits*	*Velocità e.m. min.*	*0.65c*			
		Collision Attempt Limit	*16*	*Connettori*	*Tipo BNC + T*			
		Collision Backoff Limit	*10 (max. 52.43msec)*	*Max. lunghezza*	*185m*			
		Collision Jam Size	*32 bits*	*Max N. stazioni*	*30*			
		Max. Untagged Frame Size	*1518 octects*	*Min distanza tra stazioni*	*0.5m*			
		Min. Frame Size	*512 bits (64 octects)*					
10BASE-T	*1990 IEEE 802.3*			*Mezzo*	*UTP 3 / UTP 5 o 5e minimo due coppie*	*HD / FD*	*MANCHESTER*	*STAR / EXTENDED STAR*
				Impedenza	*100Ω*			
				Velocità e.m. min.	*0.585c UTP5 0.71c*			
				Connettori	*RJ-45 8pin TIA/EIA 568A e 568B*			
				Max. lunghezza	*3m+90m+6m=99m*			
				Max N. stazioni	*CONCENTRATORE HUB O SWITCH*			
				Max distanza tra switches	*100m*			
100BASE-T4		*PRATICAMENTE INUTILIZZATO (Prof. BALDI UNITO)*		*UTP3 UTILIZZA TUTTE E 4 LE COPPIE (1 per TX, 1per RX, 2 per TX o RX)*			*8B-6T 4 bit codificati con combinazioni di tre livelli di tensione*	
100BASE-TX	*1995 IEEE 802.3u*			*Mezzo*	*UTP 5e*	*HD/FD*	*4B/5B + MLT-3*	*STAR / EXTENDED STAR*
				Impedenza	*100Ω*			
				Velocità e.m. min.	*0.71c*			
				Connettori	*RJ-45 8pin TIA/EIA 568A e 568B*			
				Max. distanza stazione sw	*3m+90m+6m=99m*			
				Max. distanza tra sw e sw	*100m*			
				Min distanza tra stazioni	*CONCENTRATORE HUB O SWITCH*			
		Bit Time	*10 nsec*					
		Slot Time	*512 Bit Time = 5.12μsec*					
		Interframe Spacing	*96 bits*					
		Collision Attempt Limit	*16*					
		Collision Backoff Limit	*10 (max. 5.24msec)*					
		Collision Jam Size	*32 bits*					
		Max. Untagged Frame Size	*1518 octects*					
		Min. Frame Size	*512 bits (64 octects)*					
100BASE-FX	*IEEE 802.3u*			*Mezzo*	*Pair FO MM 50/125 o 62.5/125*	*FD*	*4B/5B + NRZI*	*STAR / EXTENDED STAR*
				Lunghezza d'onda	*1310nm (LED o Laser Diode)*			
				Velocità e.m. min.	*≈0.68c (ncore 1.48)*			
				Connettori	*SC o ST*			
				Max. distanza stazione sw	*412m*			
				Max. distanza tra sw e sw	*412m*			
1000BASE-T	*2000 IEEE 802.3ab*	*Bit Time*	*1 nsec*	*Mezzo*	*UTP 5e o superiori (ISO CLASS D) UTILIZZA TUTTE E 4 LE COPPIE*	*FD*	*4D-PAM5*	*STAR / EXTENDED STAR*
		Slot Time	*4096 Bit Time = 4.096μsec*	*Impedenza*	*100Ω*			
		Interframe Spacing	*96 bits*	*Velocità e.m. min.*	*0.71c*			
		Collision Attempt Limit	*16*	*Connettori*	*RJ-45 8pin TIA/EIA 568A e 568B*			
		Collision Backoff Limit	*10 (max. 4.19msec)*	*Max. distanza stazione sw*	*3m+90m+6m=99m*			
		Collision Jam Size	*32 bits*	*Max. distanza tra sw e sw*	*100m*			
		Max. Untagged Frame Size	*1518 octects*	*Min distanza tra stazioni*	*CONCENTRATORE HUB O SWITCH*			

<table>
<tr><th>LAN</th><th>ANNO</th><th colspan="2">PARAMETRI TEMPORALI</th><th colspan="2">SEGMENTO</th><th>TRASMIT</th><th>ENCODING</th><th>TOPOLOGIA FISICA</th></tr>
<tr><td rowspan="5">1000BASE-SX</td><td rowspan="5">IEEE 802.3z</td><td>Min. Frame Size</td><td>512 bits (64 octects) dei soliti campi + 3584bits (448 octects) di carrier extension = 4096 bits</td><td>Mezzo</td><td>Pair FO MM 50/125 o 62.5/125</td><td rowspan="5">FD</td><td rowspan="5">8B/10B + NRZ</td><td rowspan="5">STAR / EXTENDED STAR</td></tr>
<tr><td rowspan="4">Burst Limit</td><td rowspan="4">65536 bits=8192 ottetti=2 Slot Time) (una stazione può trasmettere più pacchetti in successione senza rilasciare il mezzo trasmissivo fino al burst-limit)</td><td>Lunghezza d'onda</td><td>Short-waveform
850nm (LED o LASER DIODE)</td></tr>
<tr><td>Velocità e.m. min.</td><td>≈0.68c
(ncore 1.48)</td></tr>
<tr><td>Connettori</td><td>SC</td></tr>
<tr><td>Max. distanza tra stazioni</td><td>50/125 500m (500MHz*km)
62.5/125 275m (200MHz*km)</td></tr>
<tr><td rowspan="5">1000BASE-LX</td><td rowspan="5">IEEE 802.3z</td><td rowspan="5" colspan="2"></td><td>Mezzo</td><td>Pair FO MM 50/125 o 62.5/125 o
SM 10/125</td><td rowspan="5">FD</td><td rowspan="5">8B/10B + NRZ</td><td rowspan="5">STAR / EXTENDED STAR</td></tr>
<tr><td>Lunghezza d'onda</td><td>Long-waveform
1310nm (LASER DIODE)</td></tr>
<tr><td>Velocità e.m. min.</td><td>≈0.68c
(ncore 1.48)</td></tr>
<tr><td>Connettori</td><td>SC</td></tr>
<tr><td>Max. distanza tra stazioni</td><td>50/125 550m (500MHz*km)
62.5/125 550m (500MHz*km)
5000m (Laser Diode + SM CORNING LEAF)
circa 500m MM</td></tr>
<tr><td>10GBASE.....</td><td>2002 IEEE 802.3ae</td><td colspan="2"><table>
<tr><td>Bit Time</td><td>0.1 nsec</td></tr>
<tr><td>Slot Time</td><td>Non applicable</td></tr>
<tr><td>Interframe Spacing</td><td>96 bits</td></tr>
<tr><td>Collision Attempt Limit</td><td>Non applicable</td></tr>
<tr><td>Collision Backoff Limit</td><td>Non applicable</td></tr>
<tr><td>Collision Jam Size</td><td>Non applicable</td></tr>
<tr><td>Max. Untagged Frame Size</td><td>1518 octects</td></tr>
<tr><td>Min. Frame Size</td><td>512 bits</td></tr>
<tr><td>Burst Limit</td><td>Non applicable</td></tr>
</table></td><td colspan="2">The 10GBASE-SR and 10GBASE-SW media types are designed for use over short wavelength (850 nm) multimode fiber (MMF). The design goal of these media types is from 2 meters to 300 meters of fiber distance, depending on the type and quality of the multimode fiber. Longer distances are possible depending on the qualities of the fiber optic cable used. The 10GBASE-SR media type is designed for use over dark fiber, meaning a fiber optic cable that is not in use and that is not connected to any other equipment. The 10GBASE-SW media type is designed to connect to SONET equipment, which is typically used to provide long distance data communications.
The 10GBASE-LR and 10GBASE-LW media types are designed for use over long wavelength (1310 nm) single-mode fiber (SMF). The design goal of these media types is from 2 meters to 10 kilometers (32,808 feet) of fiber distance, depending on cable type and quality (longer distances are possible). The 10GBASE-LR media type is designed for use over dark fiber, while the 10GBASE-LW media type is designed to connect to SONET equipment.
The 10GBASE-ER and 10GBASE-EW media types are designed for use over extra long wavelength (1550 nm) single-mode fiber (SMF). The design goal of these media types is from 2 meters up to 40 kilometers (131,233 feet), depending on cable type and quality (longer distances are possible). The 10GBASE-ER media types is designed for use over dark fiber, while the 10GBASE-EW media type is designed to connect to SONET equipment.
Finally, there is a 10GBASE-LX4 media type, which uses wave division multiplexing technology to send signals over four wavelengths of light carried over a single pair of fiber optic cables. The 10GBASE-LX4 system is designed to operate at 1310 nm over multi-mode or single-mode dark fiber. The design goal for this media system is from 2 meters up to 300 meters over multimode fiber or from 2 meters up to 10 kilometers over single-mode fiber, with longer distances possible depending on cable type and quality.</td><td>Only FD</td><td></td><td></td></tr>
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