Infrastrutture di rete

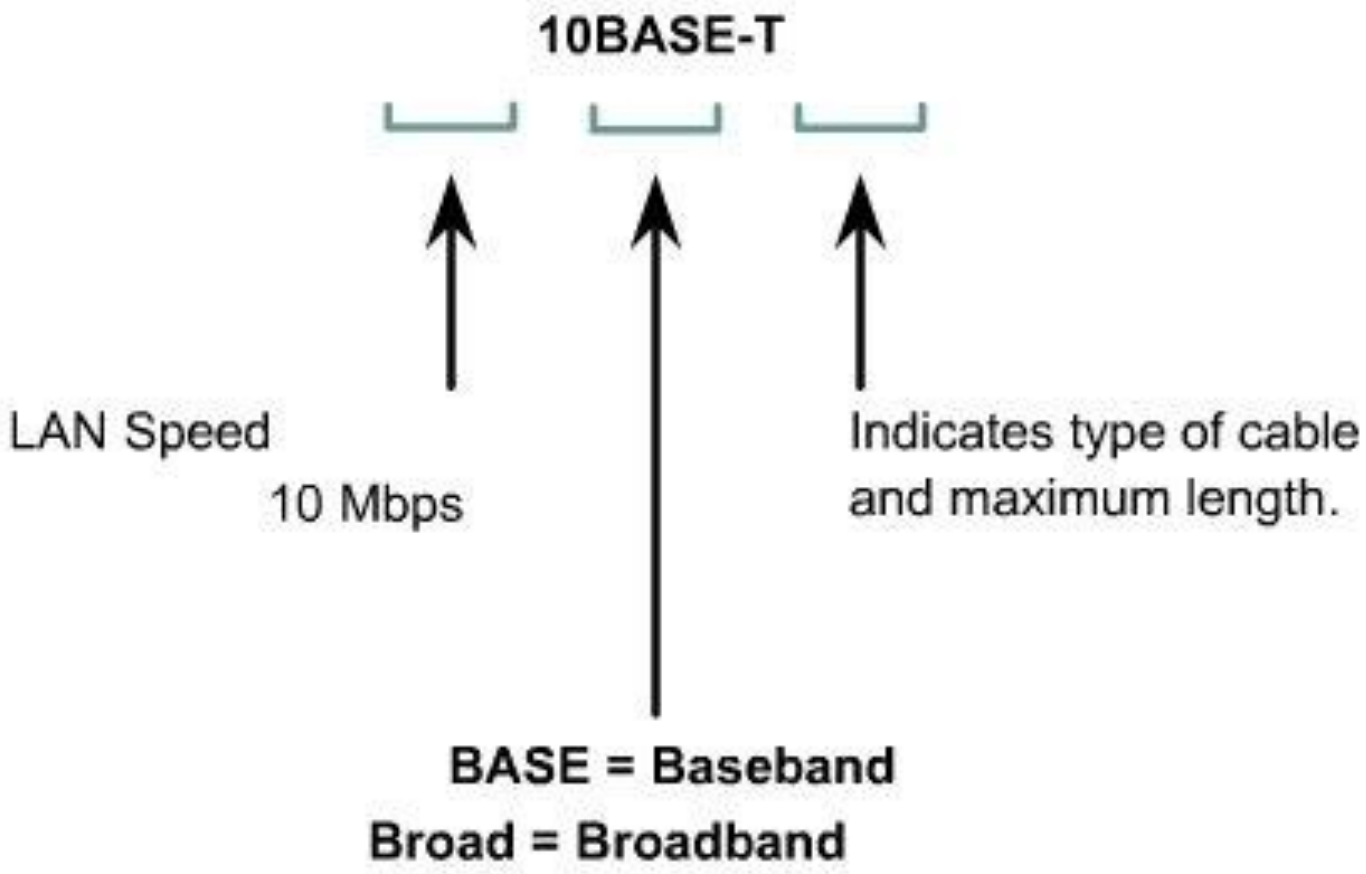
Infrastrutture in rame

Infrastrutture in fibre ottiche

Infrastrutture wireless

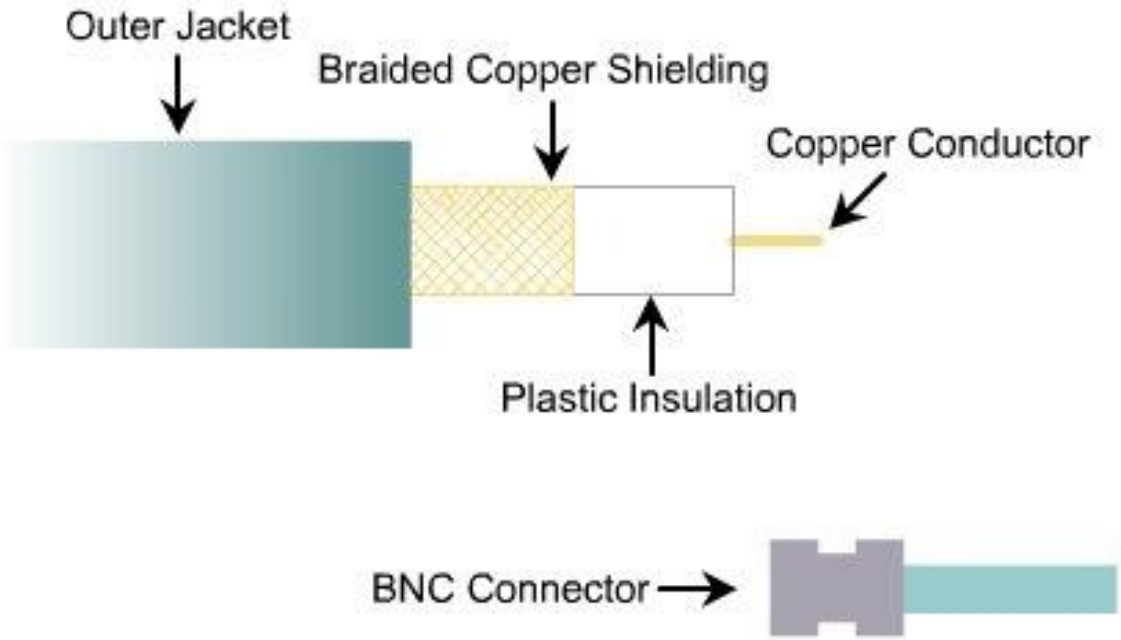
Infrastrutture in rame

Specifiche dei cablaggi



Tipi di cavi

Cavi coassiali



Velocità: 10 – 100 Mbps

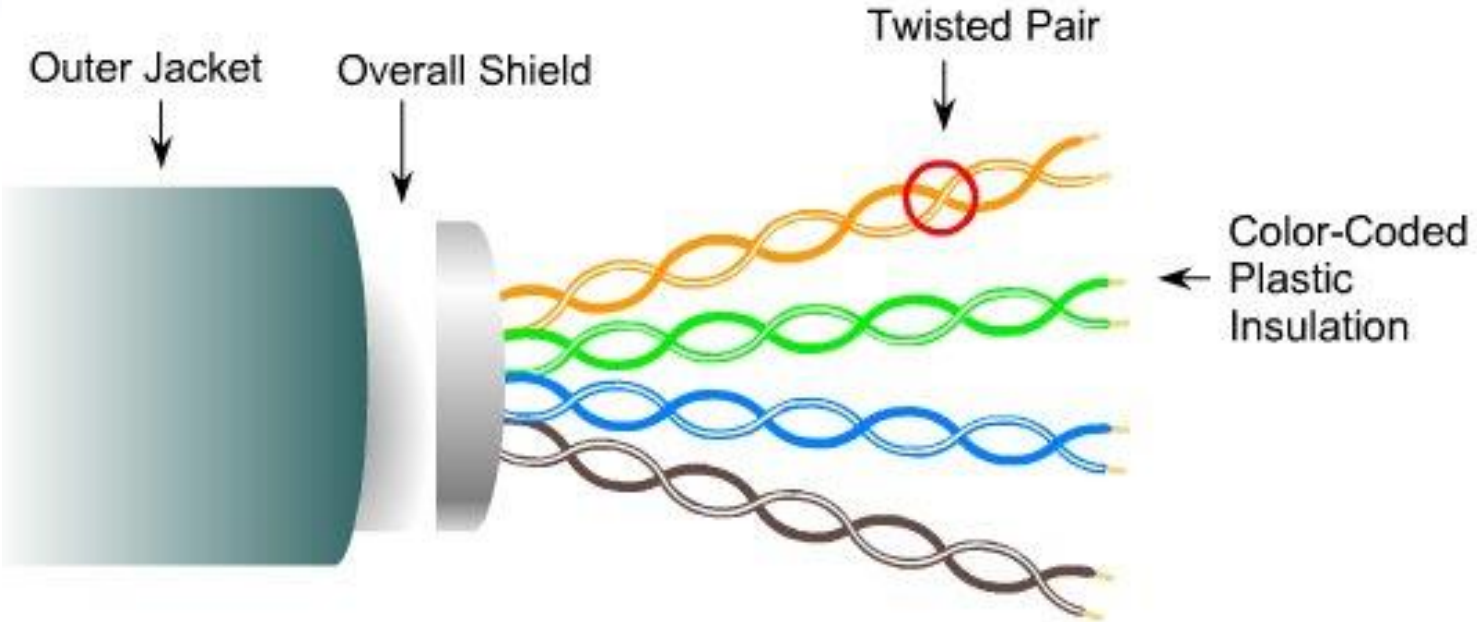
Costo: poco costoso

Grandezza connettori e apparati: media

Lunghezza massima dei cavi: 500 metri

Tipi di cavi

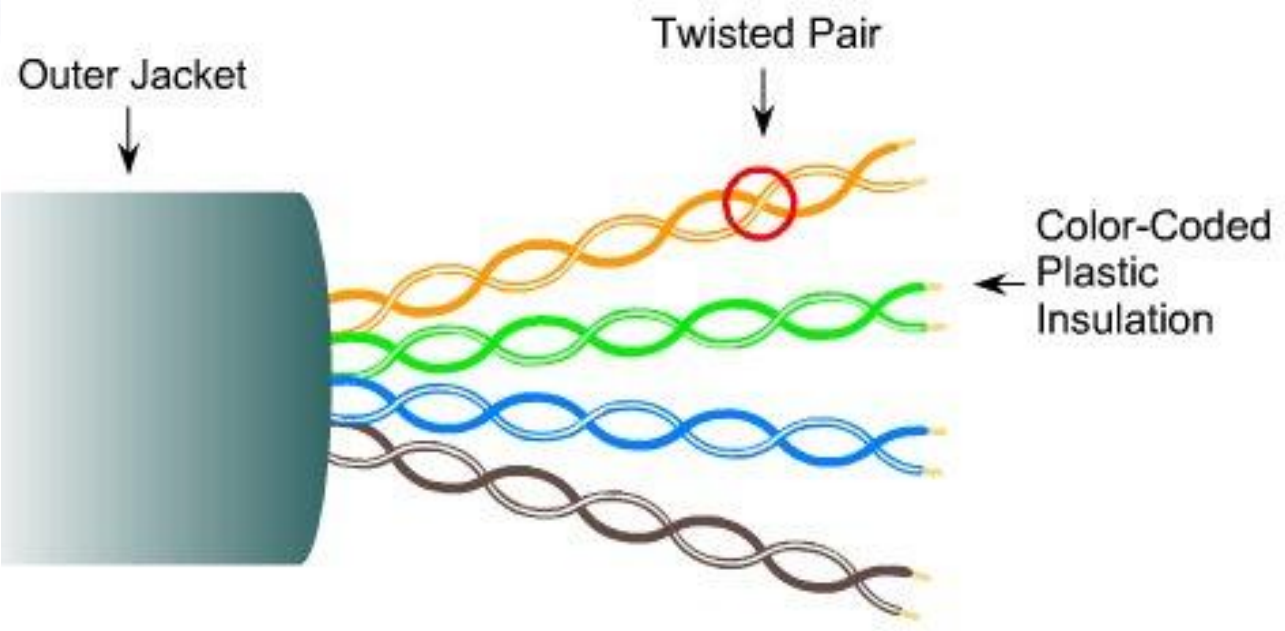
Cavi twisted-pair schermati



Velocità: 0 – 100 Mbps
Costo: moderatamente costoso
Grandezza connettori e apparati: da media a grande
Lunghezza massima dei cavi: 100 metri

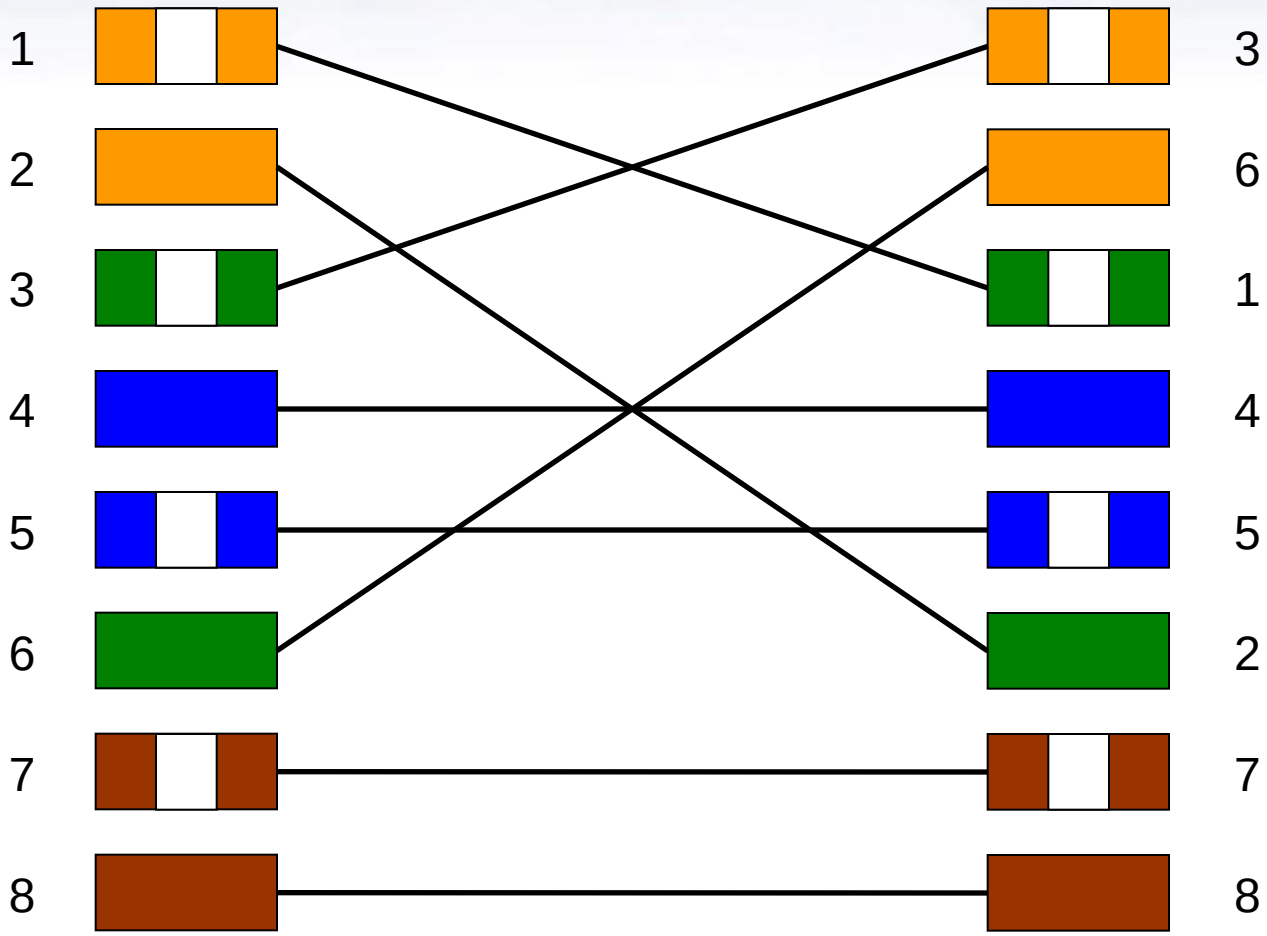
Tipi di cavi

Cavi twisted-pair non schermati



Velocità: 10 – 100 – 1000 Mbps
Costo: meno costoso
Grandezza connettori e apparati: piccolo
Lunghezza massima dei cavi: 100 metri

Cavi straight-througt e crossover



Fibre ottiche

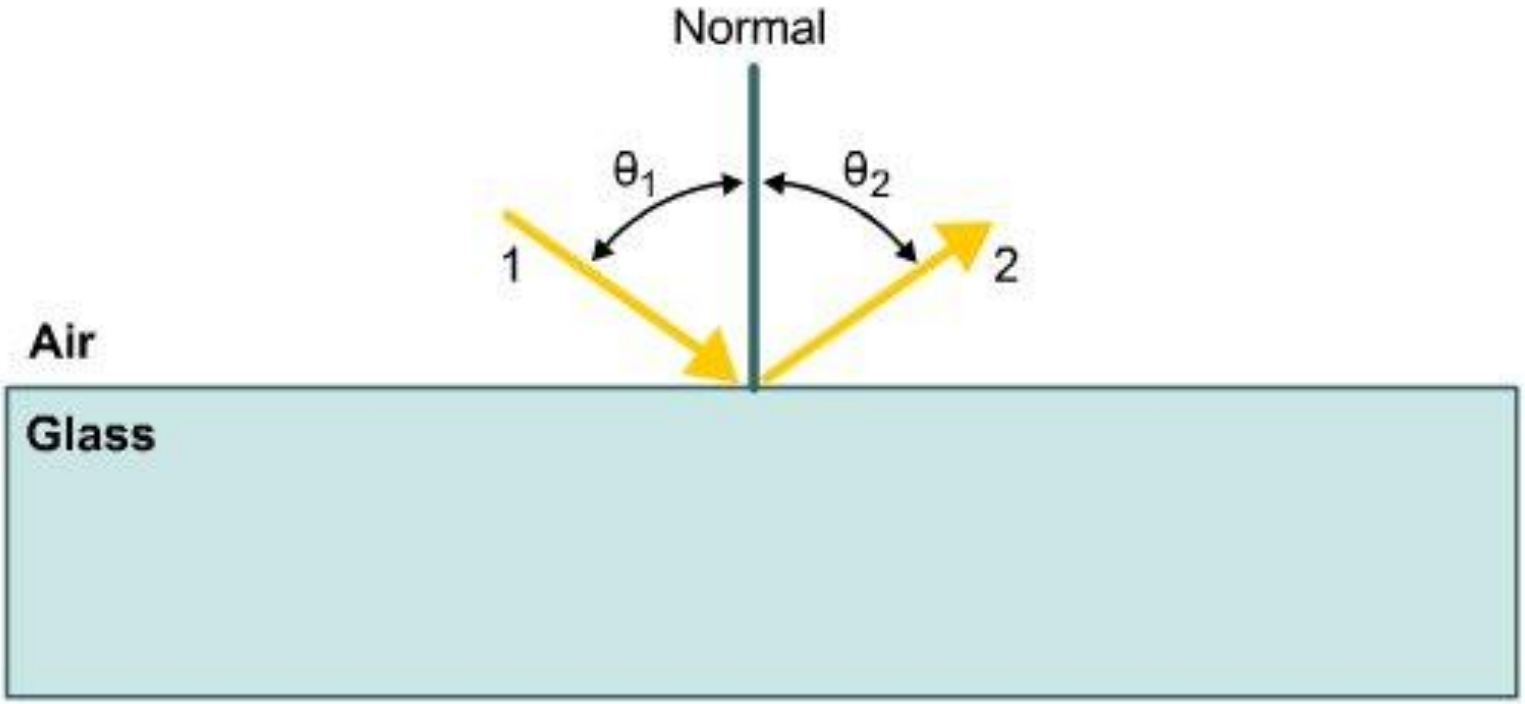
Principi di funzionamento

Riflessione

Rifrazione

Fibre ottiche

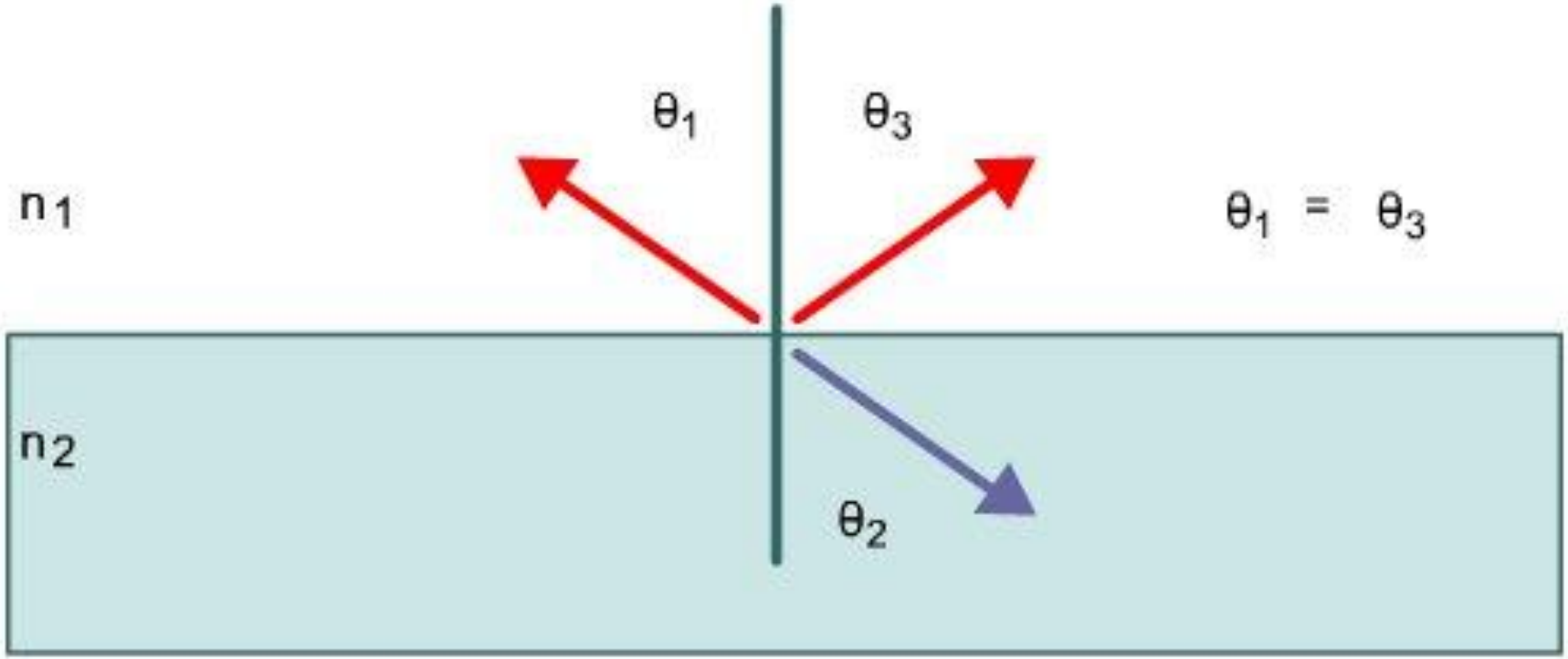
Riflessione



$$\Theta_1 = \Theta_2$$

Fibre ottiche

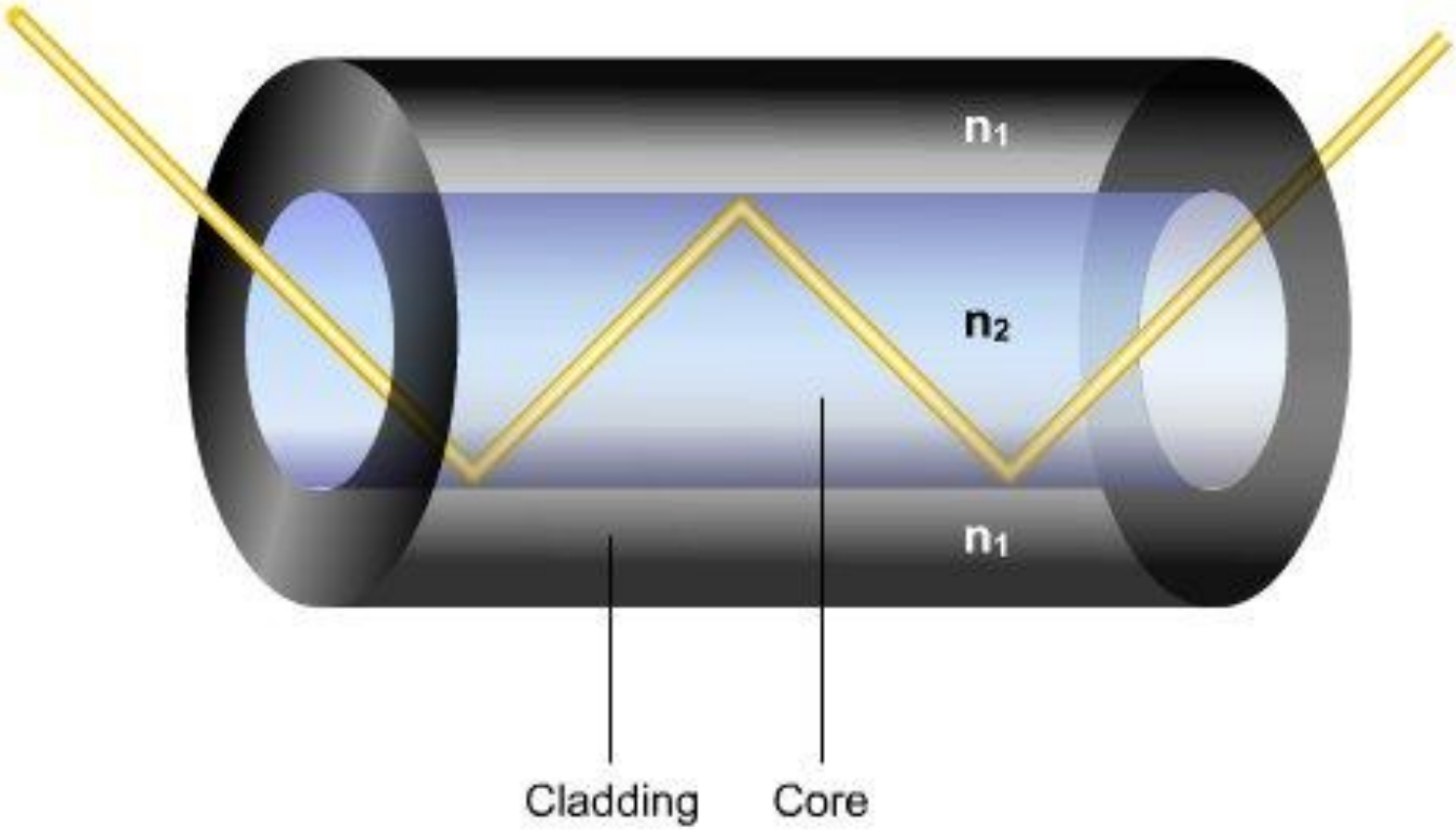
Rifrazione



$$n_1 \sin\theta_1 = n_2 \sin\theta_2$$

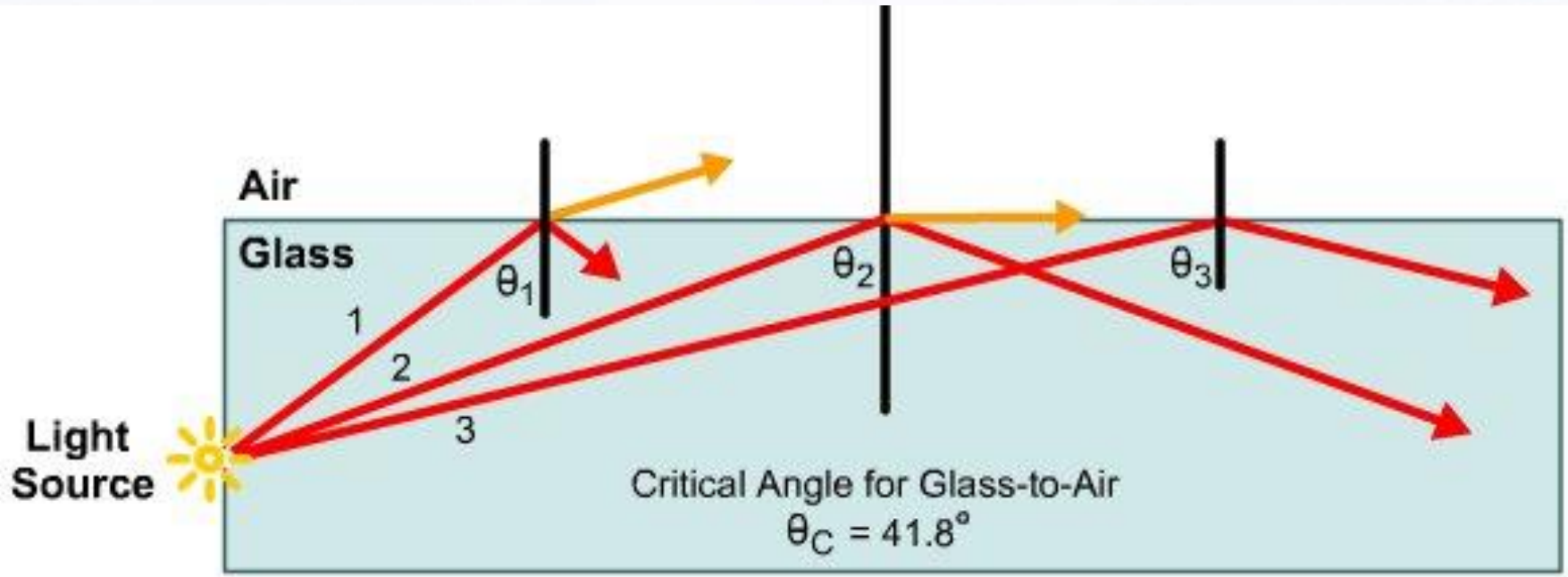
Fibre ottiche

Riflessione interna totale



Fibre ottiche

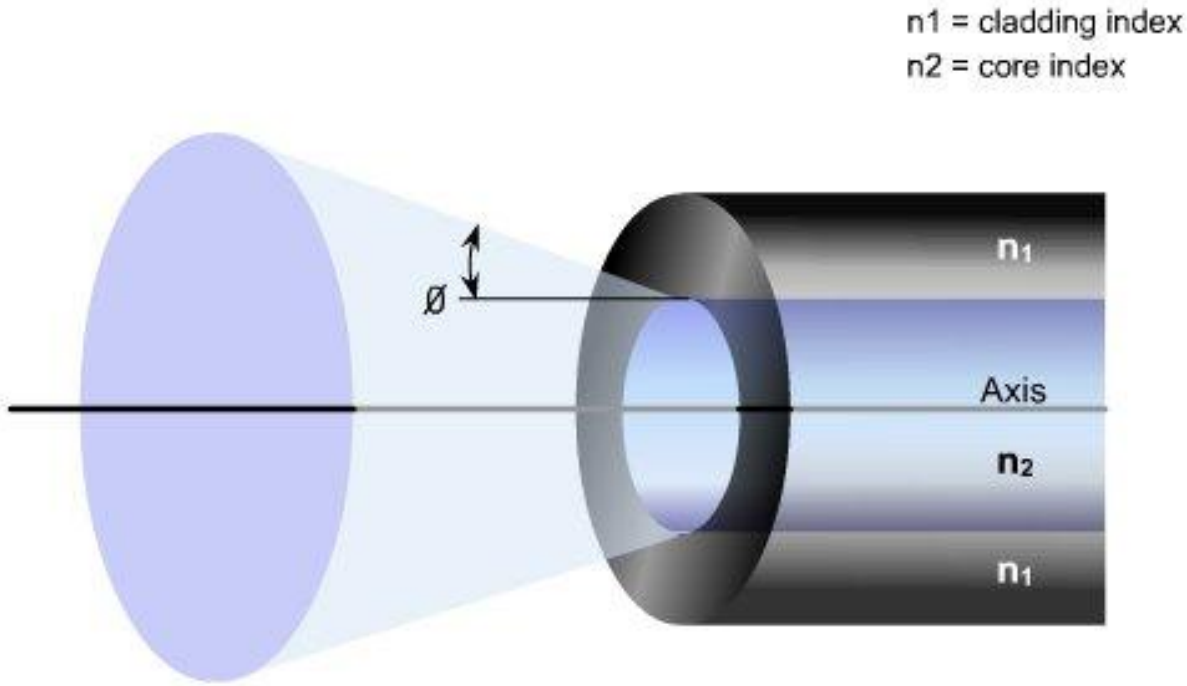
Riflessione interna totale



Ray 1: $\theta_1 < \theta_C$, so ray reflects and refracts
Ray 2: $\theta_2 = \theta_C$, so ray reflects and refracts
Ray 3: $\theta_3 > \theta_C$, so ray is totally internally reflected

Fibre ottiche

Riflessione interna totale

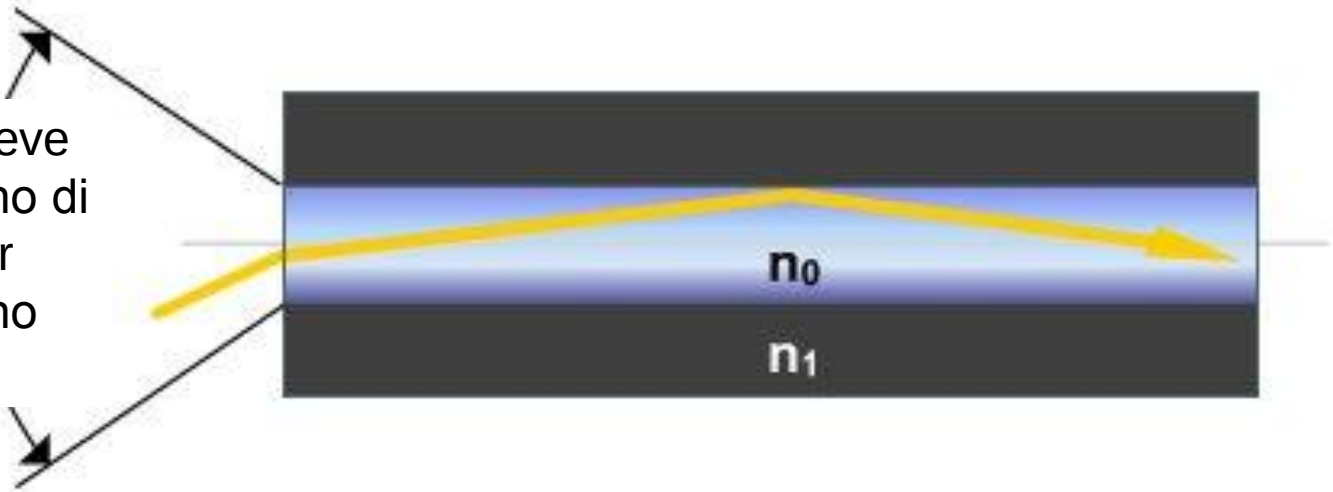


Numerical aperture (NA) measures the range of angles that will be totally internally reflected

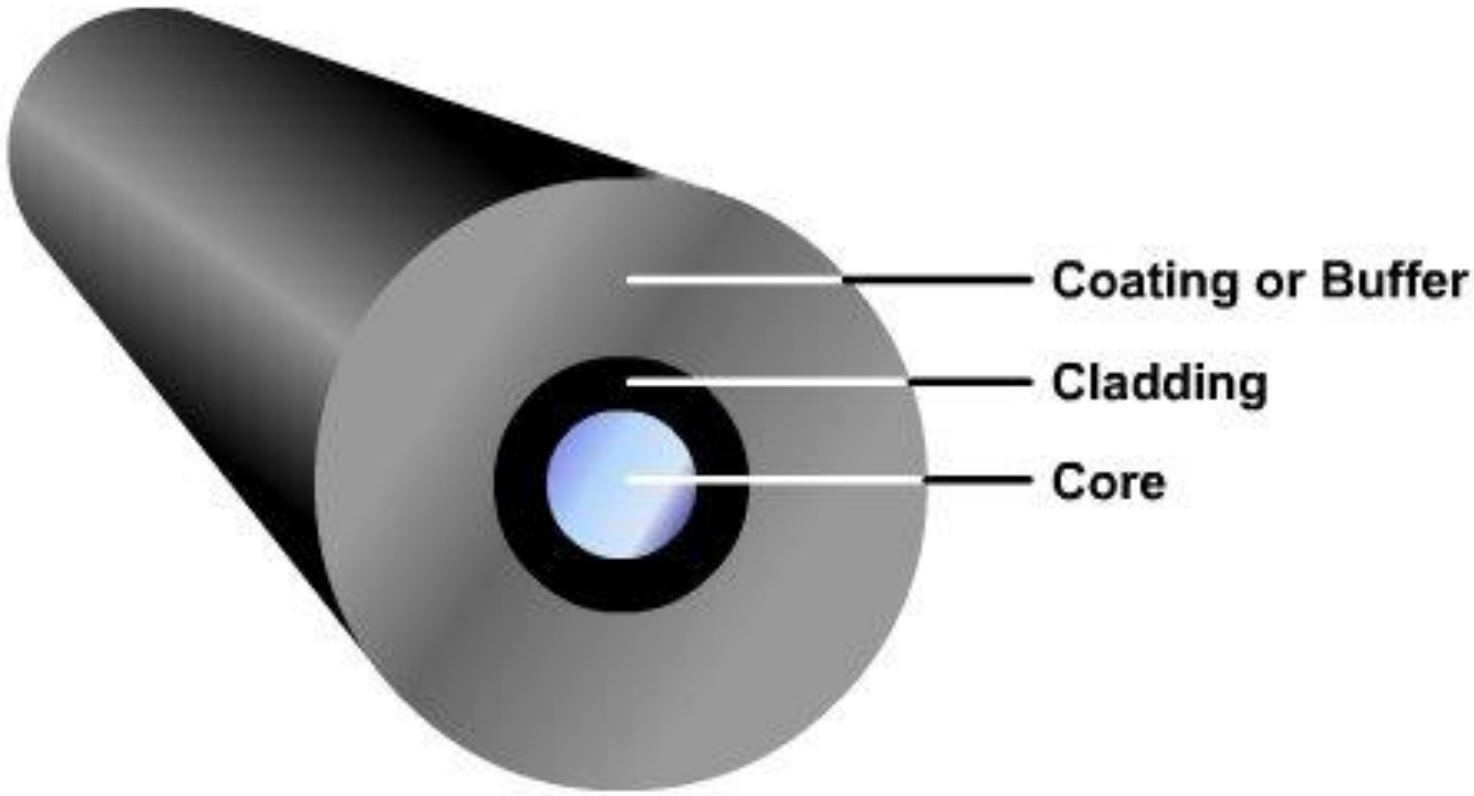
Fibre ottiche

Riflessione interna totale

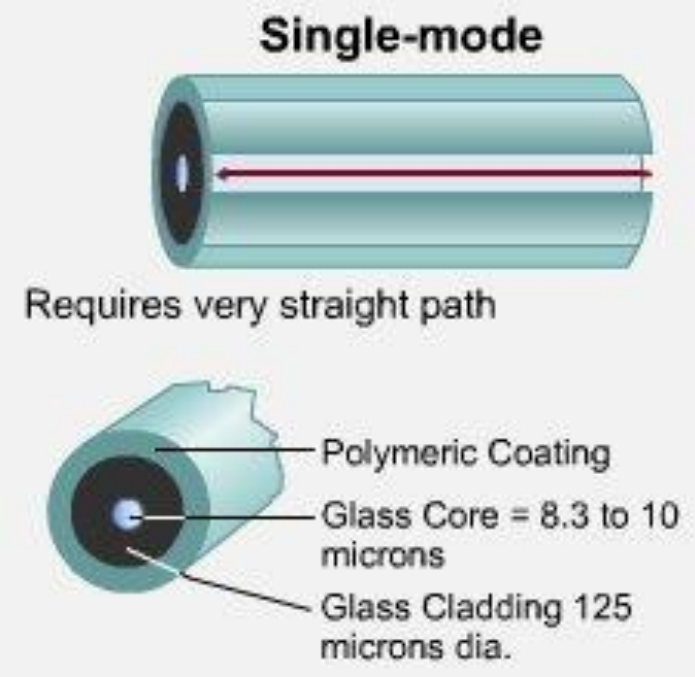
Il raggio di luce deve rimanere all'interno di questo angolo per rimanere all'interno della fibra ottica

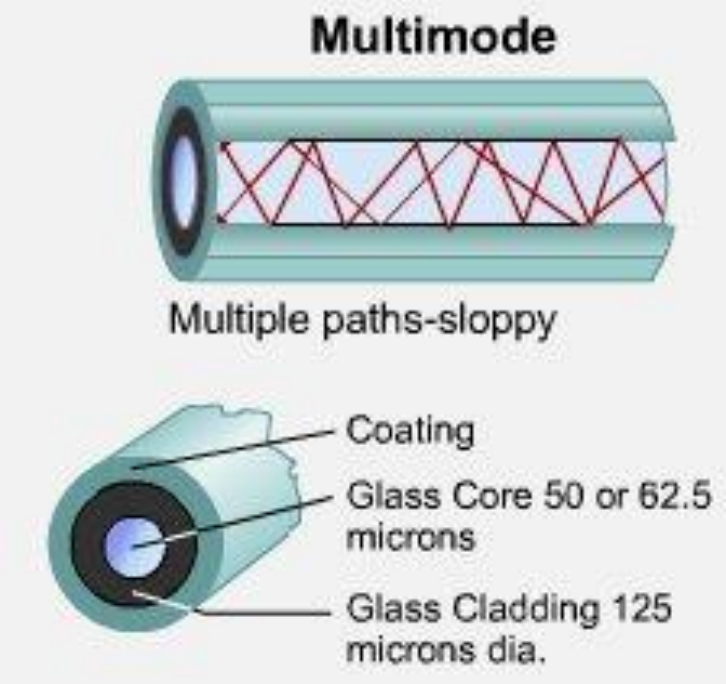


Fibre ottiche



Fibre ottiche



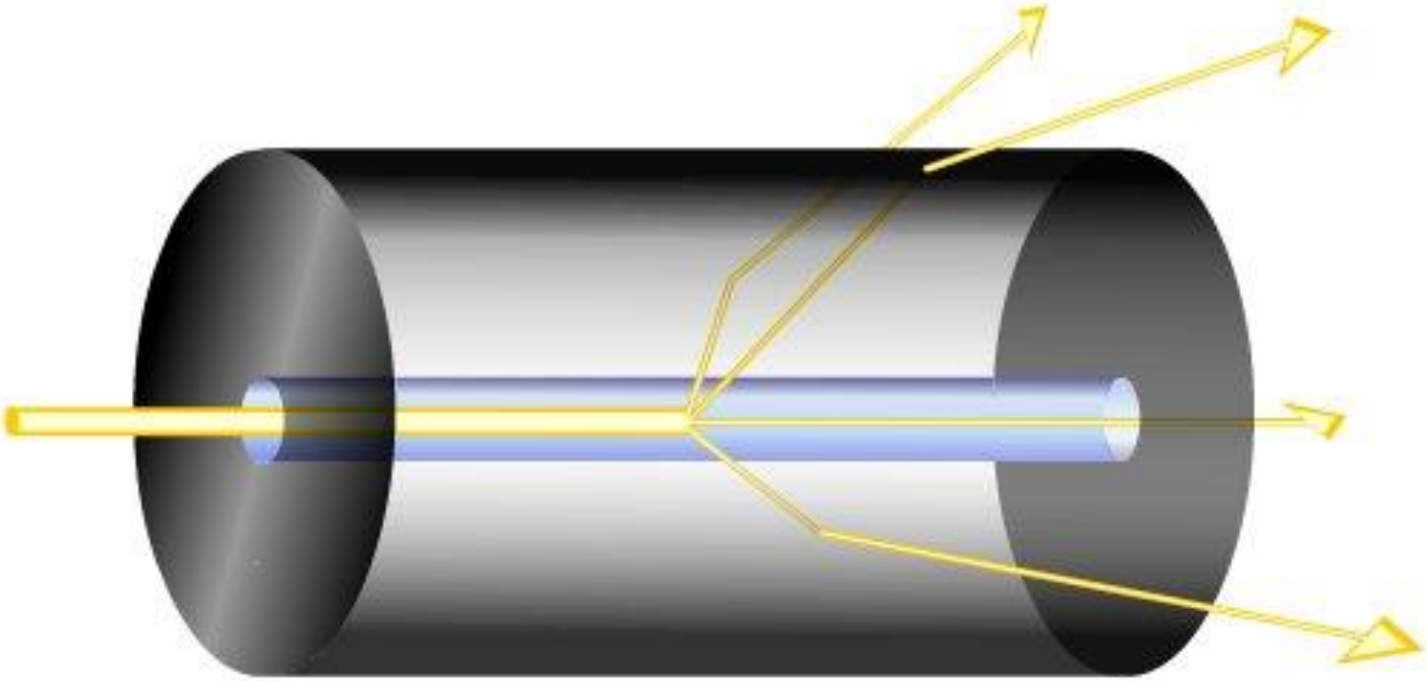


Piccolo Core
Bassa dispersione di segnale
Impiego in connessioni sino a 3 Km
Sorgente di segnale: Laser
Impiego: backbones

Core più grande
Dispersione più elevata
Impiego in connessioni sino a 2 Km
Sorgente di segnale: LED
Impiego: Lan

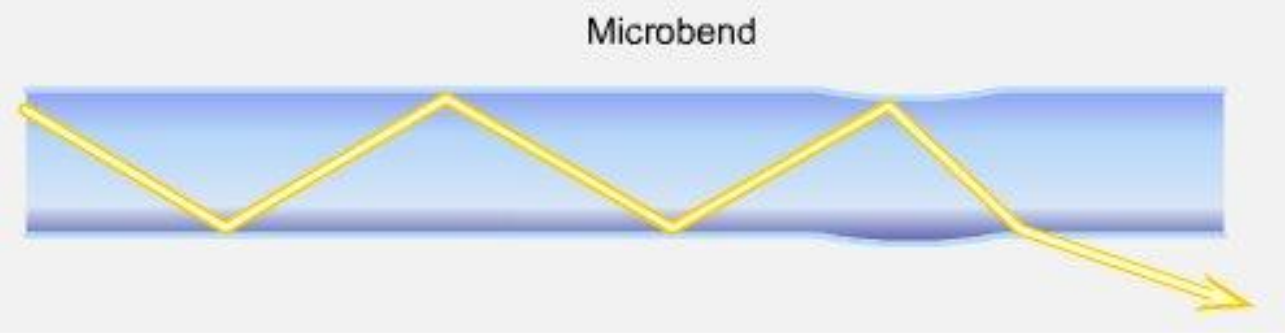
Problemi su Fibre Ottiche

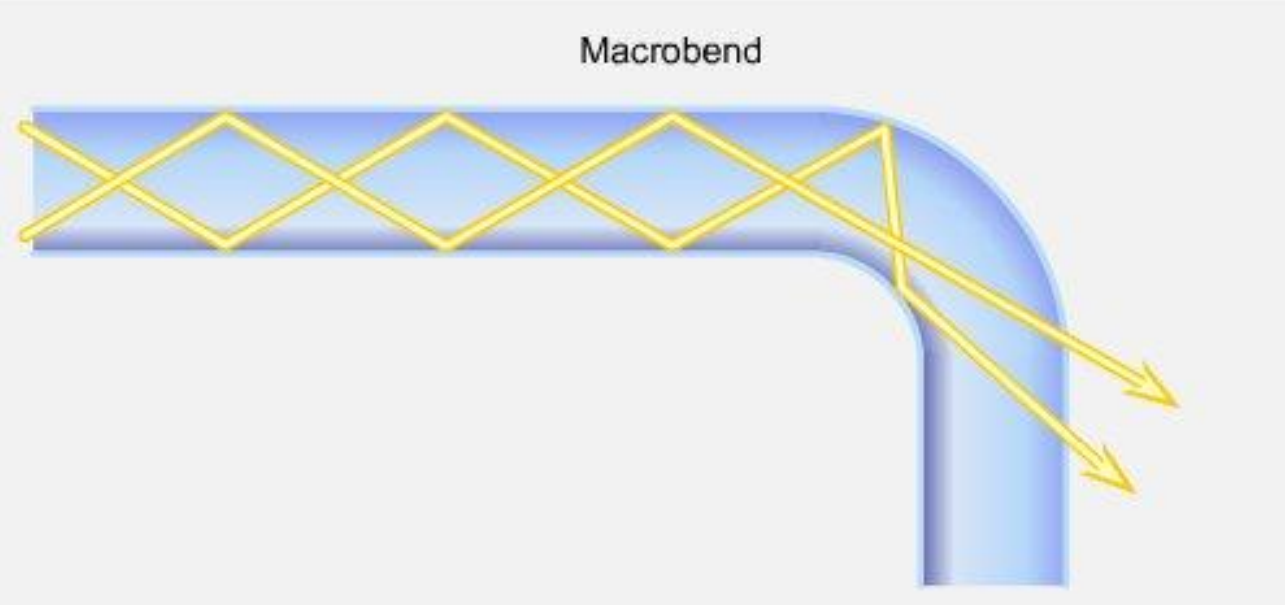
Scattering



Problemi su Fibre Ottiche

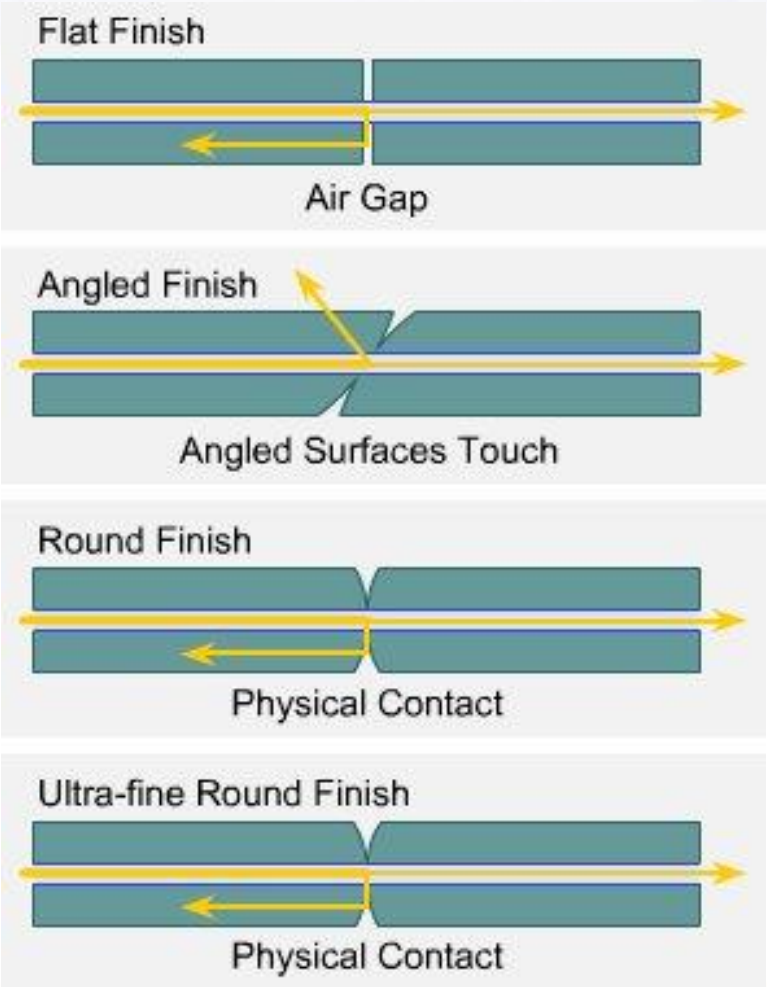
Bending





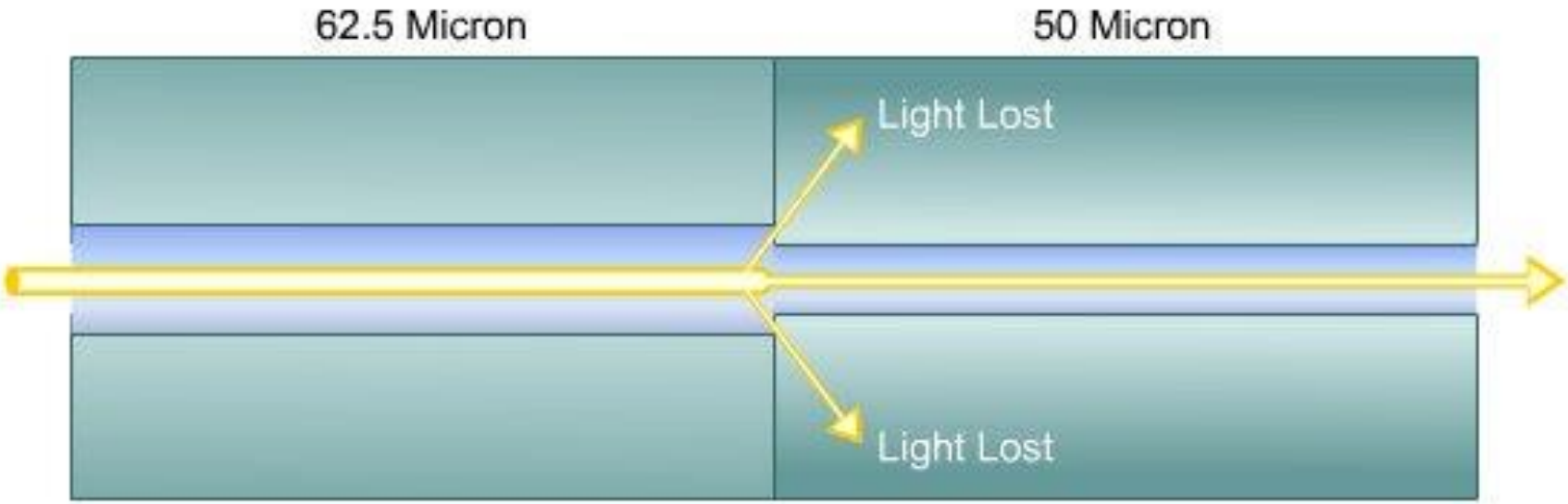
Problemi su Fibre Ottiche

Giunzioni



Problemi su Fibre Ottiche

Giunzioni



Wireless Lan Standard

Protocollo	Velocità	Altre caratteristiche
802.11	1 – 2 Mbps	Direct Sequence Spread Spectrum (DSSS)
802.11b	1 – 2 – 5,5 – 11 Mbps	Wi-Fi™ (2.4 GHZ)
802.11a	54 – 108 Mbps (in produz. 20 – 26 Mbps)	(5 GHZ) Non è compatibile con l'802.11b
802.11g	54 – 108 Mbps (in produz. 20 – 26 Mbps)	Compatibile sia con l'802.11a e l'802.11b

Wireless Lan

Metodi di autenticazione

SSID

WEP

Wireless - Sicurezza

EAP-MD5 Challenge

LEAP (Cisco)

Autenticazione dell'utente

Criptazione

Autenticazione dei dati