

POF@10G

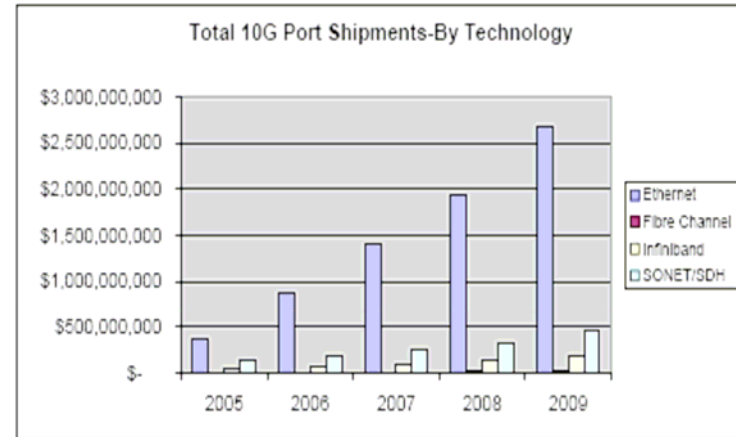


Market opportunity

- **10GBE used mostly for**
 - Routers
 - 1 GBE switch uplinks
 - High-end user server farms
 - Data centres

- **Data centres requirements**

- rapid growth
- high port volumes
- links not as long as for data offices / backbones
- fast deployment / flexibility in infrastructure is key
- networks must be supremely robust



Source: Communications Industry Researchers, Inc, 2005

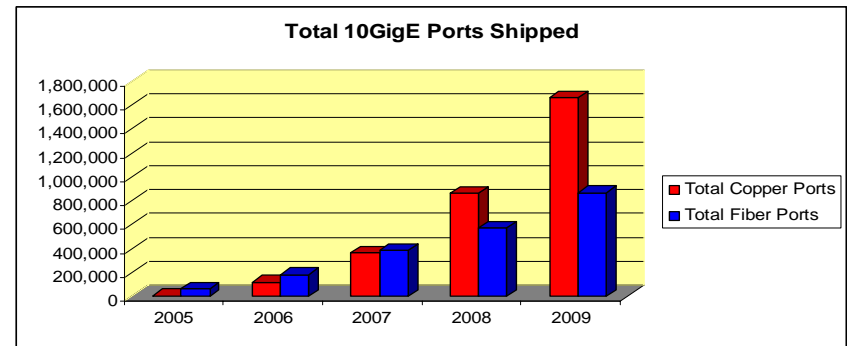
- **Quest for new solutions**

- ➔ 10GBase-T
- ➔ 10G over GI-POF

POF@10G - The new alternative

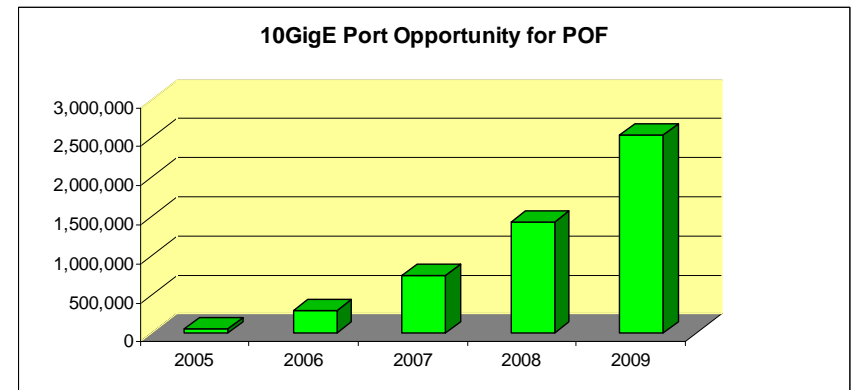
- **Old view is that copper (10GBASE-T) volumes will be greater than fibre volumes, because:**
 - Shorter distances
 - Copper perceived to be easier to install, and installers to have the necessary expertise
 - Copper expected to require lower cost cables and transceivers
- **But at 10Gbps the old assumptions do not apply:**
 - Current installed copper cabling is not sufficient . New UTP cabling is significantly challenged. Shielded copper cables needed.
 - Low costs anticipated, but due to technology difficulties these may not be available
 - 10GBASE-T transceiver power dissipation currently expected to be about 15W
- **GI-POF provides the new alternative**

Old View



Source: Communications Industry Researchers, Inc, 2005

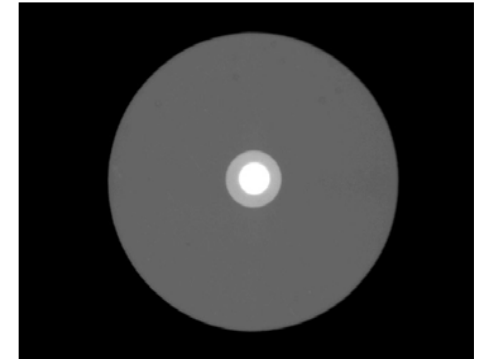
New View



New Multimode Plastic Optical Fiber

New Technology

- Very different from traditional automotive-type POF
- Graded-index structure, very similar to glass multimode fiber
- New material (perfluorinated polymer, similar to transparent version of Teflon)
- Suitable 10-gigabit networking

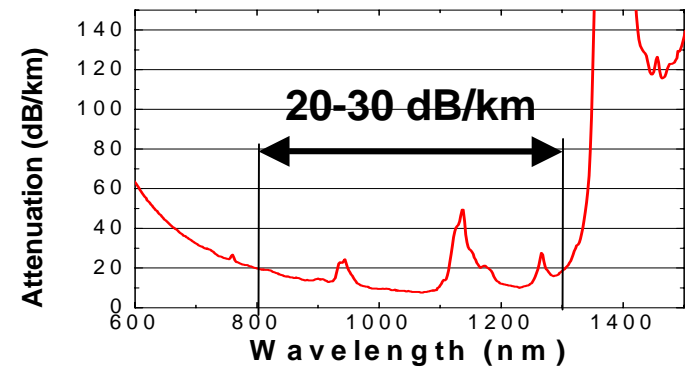


Recognized Advantages

- Low attenuation, usable to 100 meters
- Multi-wavelength (650, 850 & 1300 nm)
- Can use same optoelectronics as glass fiber
- High bandwidth (350-1000 MHz.km)

Non-proprietary Solution

- Standardised in IEC 60793-2-40
- Fibre Classes
 - A4g (120 mm core) for industrial applications
 - A4h (62.5 mm core) for data center and LAN applications
- Multiple sources available



POF@10G

Gigabit Plastic Optical Fiber Technology

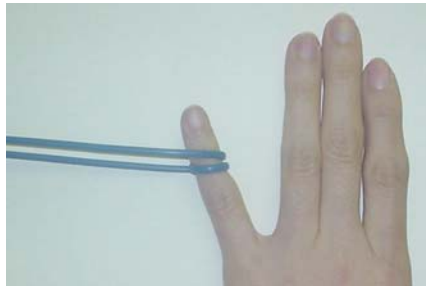
High-performance POF is as easy to field-terminate as Cat 5 copper cable

Connectors clip on instantly, no glues are needed

Fiber is terminated with a razor blade instead of a cleaver

30 second of polishing produces a low-loss connection

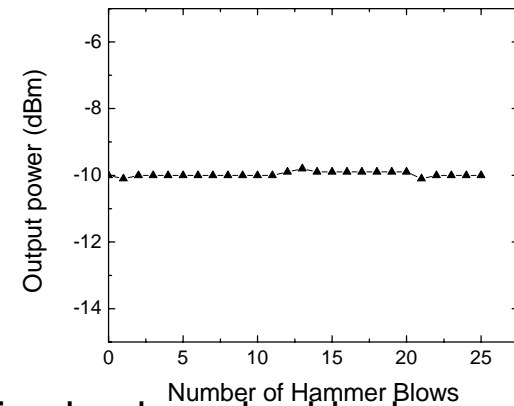
POF is by far the most flexible and durable 10-gigabit medium



reliable in tight bending
radii down to 5 mm



Highly resistant to crushing loads and cable damage



10G over copper vs. 10G over GI-POF

10Gbit on copper (10GBASE-T)

- **Transceiver signal processing:**
 - 10-level coded PAM signaling
 - High symbol rate and high level modulation imply more complex signal processing and cancellation of FEXT
 - Alien Crosstalk issues
 - **Transceiver power about 15W**
- **New cable requirements:**
 - Use of four pairs / 8 wires
 - **> 8-9 mm diameter cable**
 - New high frequency (500 MHz) performance needed
- **New connectors required**
 - New high frequency (500 MHz) performance needed
 - **Installer training required**

10Gbit on fiber

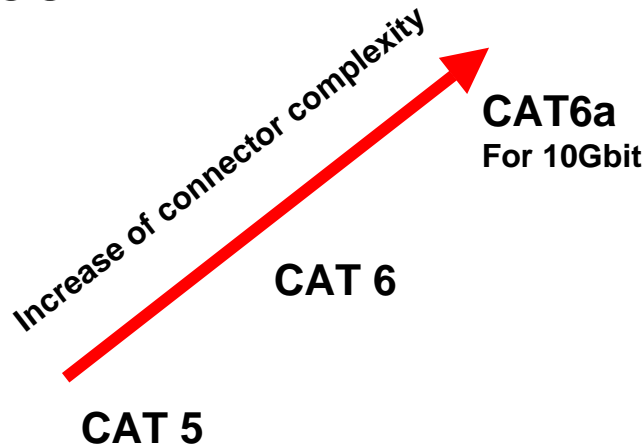
- **Signal processing**
 - Direct modulation
 - **Transceiver power < 1.5W**
- **GI-POF cable**
 - Use 1 pair / 2 fibres
 - **Small cable size (2.2mm x 4.5mm)**



- **Clip-on connectors for GI-POF**
 - Easy to use
 - **Very little installer training needed**

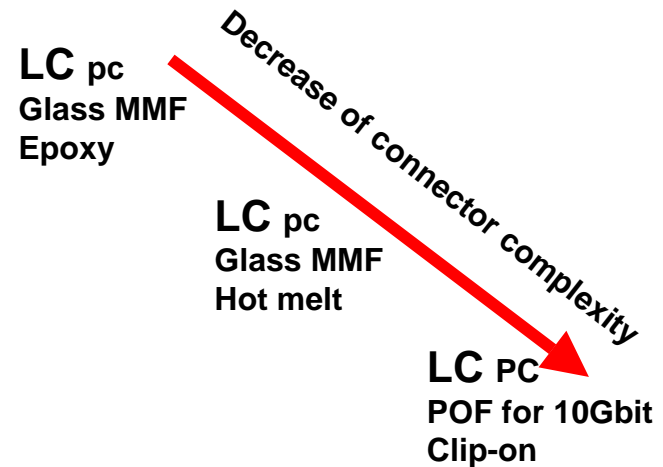
Comparison of connectors

COPPER



- RJ45 connector initially developed for 10Mbps
- First improvement for CAT6 needs compensations
- RJ45 CAT6a for 10Gbit application difficult to develop, produce and install

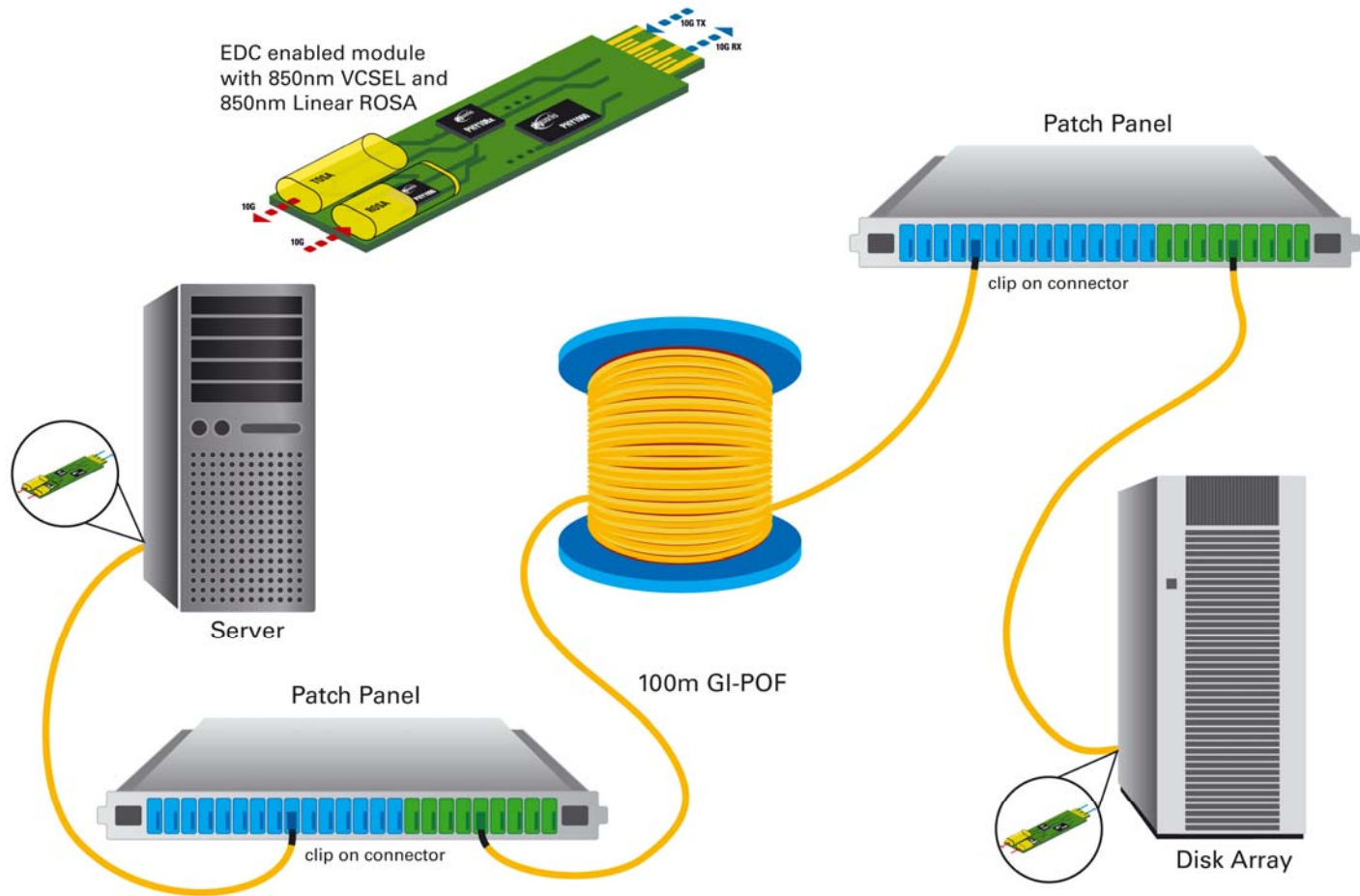
FIBER (LC connector example)



- LC connectors for multimode glass fiber (10Gbit application) requiring epoxy adhesive
- LC connectors for multimode glass fiber (10Gbit application) using hot-melt crimp technology
- LC connectors for 10Gbit POF uses new easy-to-use clip-on technology

POF@10G

10G over GI-POF - Today



Product Timeline

- **GI-POF and clip-on connectors available now for trials**
- **GI-POF and clip-on connector in full production mid-year (2006)**
- **10GBASE-SR transceivers available today**
 - Suitable for 10G over shorter GI-POF links
- **100m, 10G GI-POF transceivers available mid-year (2006)**
 - As 10GBASE-SR transceiver, with EDC enhanced receiver.
 - XFP modules with power dissipation less than 1.5W.
 - Component costs competitive with 10GBASE-T

POF@10G

We invite you to our demo

Booth 1226

Thank you

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