

# Fibre Optics Access Networks

01 – 05 September 2014,  
Accra, Ghana



COMMONWEALTH  
TELECOMMUNICATIONS  
ORGANISATION

## Overview

Fibre optic access is generally referred as FTTx (where x stands for home, building, or curb) and is becoming very popular for triple-play services where voice, data and video all can go on a single fibre. Due to enormous bandwidth capacity of optical fibre, it has become medium of choice in long distance network replacing copper. Fibre to the access network is natural extension of technology where due to day by day increasing requirement of bandwidth, its only choice. This course covers fundamental and applications of FTTx technology.

Organised under



For more information  
about this course, or to  
register, contact us on:  
**Tel:** +44 (0) 208 600 3800  
**Fax:** +44 (0) 208 600 3819  
**Email:** [programmes@cto.int](mailto:programmes@cto.int)

## OBJECTIVES

- Understand the fundamentals of fibre optic technology and its application in access networks
- Understand the planning and implementation of Active Optical Networks
- Identify converged services, triple-play services and value added services using FTTx
- Understand fibre health and safety

## TARGET AUDIENCE

Technical staff of telecom operators, infrastructure providers, broadcasters and regulatory agencies involved in planning and rolling out fibre networks.

## EXPECTED OUTCOMES

At the end of the course participants will be able to plan and undertake the rolling out of fibre networks to deliver converged and value added services.

## OUTLINE

### Fundamentals of Fibre Optics

- Fibre types
- Principles
- Advantage and applications

### Access network Technologies

- Basics of Passive Optical Network (PON)
- Advances in PON
- Active Optical Network (AON)
- Advantages of Cost vs. Service of PON
- Comparison of AON & PON

### Fibre in the last Mile

- Fibre To The Kerb (FTTK)
- Fibre To The Cabinet (FTTC)
- Fibre To The Building (FTTB)
- Fibre To The Home (FTTH)
- Fibre to the Last Mile V/s Fibre to the First Mile

### Standards & Protocols for Access Network

- IEEE 803.3ah/ITU-T G.894.2
- ATM PON (APON), Broadband PON (BPON),
- Ethernet PON (EPON) & Gigabit PON (GPON), Gigabit Ethernet PON (GEPON)
- Ethernet in First Mile
- Comparison and Advantages of each System

### Network Topologies

- Tree, Bus structure
- Ring, Cascaded topologies
- Advantage and application of above topologies

### Carrier Class Redundancy

- Tree Topology Protection
- Ring Topology Protection

### Protection System Architecture

- Protection Switching Control,
- Automatic Interface Selection
- Alarms Reporting
- Gigabit-Ethernet Protection
- Passive Spanning Tree

### Link Budget, Reach & Split Ratio

- Wavelength Plans
- Optical Components Parameters
- Link Budget: Down streams & Upstream, Associated Distances & Split Ratio

## FACULTY

### Mr Hitesh Mehta

Mr Mehta holds an M.Tech degree in Applied Optics from IIT-Delhi, Senior Member of the Institute of Electrical and Electronics Engineers (SMIEEE) - USA & Fellow in Institution of Electronics and Telecommunication Engineers (IETE) - India.

He has more than 20 years of experience in the field of fibre optic communication & photonics. He started his career at Optel Telecommunication Limited, Bhopal, India, a pioneering fibre optics company, in the area of optical fibre cable and accessories production and later moved to R&D where he was responsible for the laser diode packaging project supported by Ministry of IT, India. The research & innovation culminated in filing two patents. Later he moved to TVS Interconnect, Bangalore, India as Product Manager and established Nortel Networks' component division, Virtual Photonics' and Lightwave Micro's photonics business. He visited leading international vendors to closely study technical and business aspects of photonics products and its commercial opportunities in the Indian context.

He founded Eagle Photonics in 2002 which is a unique Training & Services organisation in South Asia with an excellent reputation for Sales & Distribution of Fibre Optic Products. He has conducted several training programs in India and abroad including Botswana, Bangladesh and Maldives etc., on fibre optics & various Telecom Technologies. He is currently associated as the Chairman - IEEE Bangalore Section.

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Please fill in this application form and fax it back to +44 20 8600 3819 or return it to the CTO at the e-mail address below. Please use CAPITAL LETTERS.

## Personal details

Mr/Mrs/Ms/Other ..... First name ..... Last name .....

Job title .....

Organisation .....

Address .....

City ..... Postcode ..... Country .....

Tel ..... Mobile ..... Fax .....

Email .....

Authorising line manager's name .....

Authorising line manager's email .....

## Payment options

1) Select Delegate Rate (Please Refer to the list of CTO/PDT Partners provided overleaf)

	Standard Rate	Early Registration by: 01 August 2014
CTO Members	<input type="checkbox"/> £799	<input type="checkbox"/> £749
Others	<input type="checkbox"/> £1,199	<input type="checkbox"/> £1,149

2) Payment mode (choose one option only)

**Invoice**  
Invoice me at the above address (Discounts do not apply, payment must be received by us prior to event).

**Cheque**  
Cheque enclosed, payable to "CTO HQ"

**Bank transfer**  
Make payments to: Coutts & Co.  
440 Strand, London, WC2R 0QS, UK  
A/C Name: CTO; A/C Number 083675071  
Bank Sort Code :18-00-02  
SWIFT Code: COUT GB22  
IBAN Reference: GB72COUT18000208367507

Credit Card: Visa / Mastercard (delete as appropriate)

Card holder's name .....

Card holder's billing address (if different from above) .....

Card number

Valid from   /   Expiry date   /   3 digit security code on back of card

## Signature

Date ..... Name ..... Signature .....

## Additional information

To help us improve our services to you and your organisation, please tell us more about yourself and your organisation.

### Your role in the organisation

<input type="checkbox"/> Strategic / executive	<input type="checkbox"/> Business development	<input type="checkbox"/> Marketing and sales
<input type="checkbox"/> Planning	<input type="checkbox"/> Corporate affairs	<input type="checkbox"/> Public relations and corporate communications
<input type="checkbox"/> Control	<input type="checkbox"/> Customer service and care	<input type="checkbox"/> Regulatory and legal affairs
<input type="checkbox"/> Operational	<input type="checkbox"/> Engineering and technical management	<input type="checkbox"/> Telecoms network management
	<input type="checkbox"/> Financial, purchasing & investor relations	<input type="checkbox"/> Human resources
	<input type="checkbox"/> IT / IP management	<input type="checkbox"/> Other




### Your organisation type

<input type="checkbox"/> Government	<input type="checkbox"/> Fixed network / services	<input type="checkbox"/> Broadcasting
<input type="checkbox"/> Regulator	<input type="checkbox"/> Mobile / wireless network / services	<input type="checkbox"/> Value-added services
<input type="checkbox"/> Operator	<input type="checkbox"/> Satellite network / services	<input type="checkbox"/> Support
<input type="checkbox"/> Manufacturer	<input type="checkbox"/> Internet	<input type="checkbox"/> Other services
<input type="checkbox"/> Other		

## REGISTRATION DEADLINE

Prior to course start.

## 3 SIMPLE WAYS TO REGISTER

-  Fill in and fax this form back to +44 20 8600 3819
-  Call the programme team at +44 20 8600 3800
-  E-mail the programme team at programmes@cto.int, quoting the course title.

## NEED HELP?

Call us now on +44 20 8600 3800 or e-mail the programme team at programmes@cto.int

## Summary Terms and Conditions

The CTO will endeavour, as can be reasonably expected, to ensure that the course is delivered to meet delegates' expectations. Registration is subject to availability and payment received by the deadline where specified for each course. Dates may be subject to changes. Travel, accommodation, daily transportation to venue, subsistence and other costs are the sole responsibility of the delegate and are not included in the above fees. Applicants are responsible for their visa arrangements and other formalities wherever required. Course bookings may be cancelled at the discretion of the CTO or its partners. Applicants paying by bank transfer are responsible for bank charges and any other such costs and should ensure the exact amount in GBP Sterling is credited in the CTO bank account. Applicants requiring additional information prior to their booking should ensure they provide sufficient time before the booking deadline. Cancellation rules apply, as summarised below. For a full version of our Ethical Framework or our Terms and Conditions, please visit our website at [www.cto.int](http://www.cto.int).

## Cancellations / Refunds

For delegate cancellations/withdrawals, the following refund rules apply:

- 31 days or more prior to event: the full amount less a handling charge of 10% or a minimum of £55, whichever applies
- 30 days or less prior to event: no refund

For CTO cancellations/withdrawals, delegates are entitled to a 100% refund within 60 days of the withdrawal/cancellation. Refunds will be made by bank transfer only.

## Data Protection / Privacy

The CTO does not sell, rent or lease its customer information to third parties. We may, from time to time, contact you on behalf of a third party/partner about a particular offering that may be of interest to you. In those cases, your unique personally identifiable information (email, name, address, telephone number) is not transferred to the third party/partner. In addition, we may share your information with trusted partners to help us perform statistical analyses, send you by e-mail or postal mail, provide customer support, or arrange for deliveries or other such services. All such third parties are prohibited from using your personal information except to provide these services to the CTO and they are required to maintain the confidentiality of your information. For more information about our privacy policy, visit our website at

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