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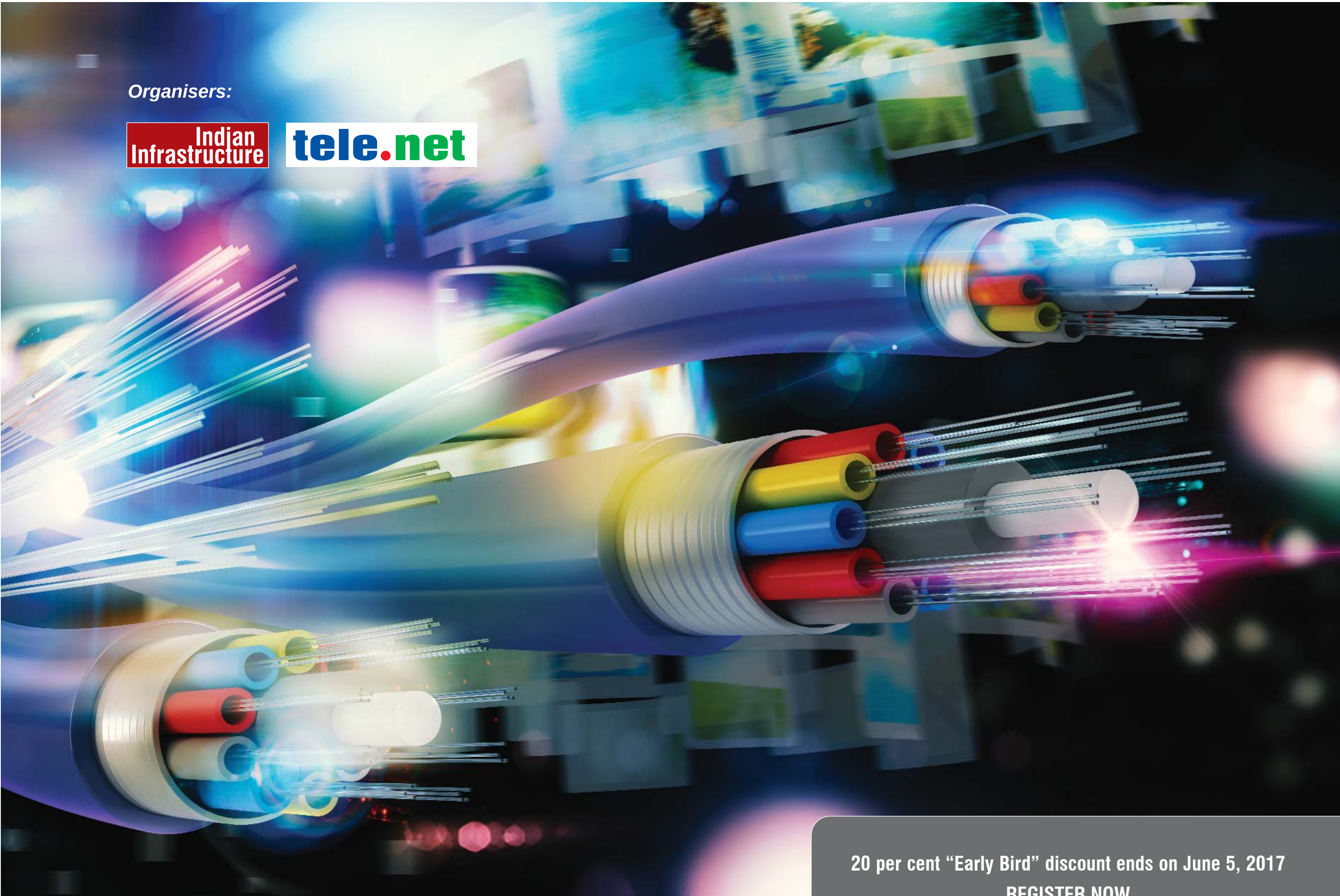

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### 6th Annual Conference on

# OFC NETWORKS IN INDIA

## Opportunities, Challenges and Initiatives

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# OFC NETWORKS IN INDIA

## Mission

- The Indian telecom sector has entered the next phase of growth, characterised by the data revolution. The surging uptake of smartphones, rapid proliferation of 4G services and growing use of video-based applications are driving data consumption. This has created a compelling demand for optic fibre cable (OFC) network expansion, both for backhaul and access networks.
- The highest demand for OFC has been created by the Digital India programme through projects like BharatNet, a centre-state collaborative project in which the states are contributing free right of way (RoW) for establishing a nationwide optic fibre-based communications backbone.
- The first phase of the project was successfully completed in March 2017, providing 100,000 gram panchayats with broadband connectivity. The second phase will provide connectivity to 205,000 gram panchayats through an optimal mix of underground and aerial OFC networks by December 2018.
- On the private sector side, the demand for OFC is being led by telecom operators and tower companies, which are increasingly investing in rolling out OFC networks in order to support the growing data uptake. With the digitisation of cable TV, cable multiple system operators are also investing significantly in deploying fibre for providing video and internet services.
- A key emerging trend is operators resorting to the OFC network sharing/leasing model as it brings in cost efficiency while reducing infrastructure duplication. The recent wave of consolidation in the sector will further result in the merging of fibre assets of big industry conglomerates. This will, in turn, help them improve their data services.
- Meanwhile, fibre-to-the-last mile (FTTx) is gaining traction as the demand for high bandwidth and seamless data connectivity increases. Government programmes such as the Smart Cities Mission are further creating demand for FTTx.
- Besides telecom, other sectors that are contributing to OFC demand are power, railways, and oil and gas. Power Grid Corporation of India Limited, Bombay Gas Limited, Indian Railways and GAIL have their own set of connectivity requirements and are enhancing their OFC networks alongside their infrastructure (transmission lines, gas pipelines, etc.). These companies are leasing their surplus capacity to mobile network operators.
- On the supply side, OFC manufacturers are exploring innovations like flexible photonics, high capacity transport, multilayer networking and autonomous networks to help operators meet the rising capacity demand in a cost-effective manner.
- While the future outlook for the OFC segment is bright given the need for this technology in providing seamless 4G and 5G services, a number of operational and regulatory challenges exist, the biggest being the RoW challenge. The new RoW rules, which aim at simplifying the process of granting permissions through a single-window clearance system, are an encouraging move, but they fail to address specific issues pertaining to telecom tower companies. The delay in completing the OFC network for defence services is also a concern.
- **The mission of this conference is to examine the growth trends, market potential and new requirements across key customer segments; highlight key government and private sector initiatives; discuss the major issues/challenges; and showcase the latest innovations and most promising technologies.**

## Target Audience

- The conference is targeted at top and middle-level managers from:

- Telecom operators
- Telecom equipment manufacturers
- Civil contractors
- OFC manufacturers
- Rural development agencies
- Relevant railway organisations
- Telecom infrastructure providers
- Other solution/service providers
- Industry consultants
- Technology providers
- Relevant power sector organisations
- Financial institutions and other investors
- Relevant government agencies (telecom/IT)
- E-governance implementing agencies
- Etc.

**_Previous Participants_**

*The participants at our previous conferences on* ***"OFC Networks in India"*** *included:* *AEGCL, 3G Telecom Infra, ACE Enterprises, Adani Ports and SEZ, Advisory @TVR, Aircel, Airtel, Aksh Optifibre, Alcatel-Lucent, Amaraja Batteries, Amphenol FCI India, Analysys Mason, Anritsu India, APAR Industries, Apollo Global Management, Apollo Techno Equipments, Ardom Telecom, Arkema, ATC Telecom Tower, AUMGlobe Impex, Bell Teleservices, Bharat Broadband Network, Bharti Infratel, Birla Ericsson Optical, Birla Furukawa, Bombay Gas, Broadband India Forum, BSNL, Cahors, Capital Partner LLC, C-DOT, CESC, Citicom Networks, Corning Technologies, CREDIT SUISSE Securities, CSPDCL, Cyient, Deepti Marketing Services, Delta Power Solutions India Pvt Ltd., Department of IT (Andhra Pradesh), Department of IT (Delhi), Department of IT (Government of Haryana), Department of IT (Govt. of Telangana), Dishnet Wireless (Aircel), DSM, DuPont, Dura-Line, E&Y, Electronic Industry Development Corporation Limited, Emerson Network Power, Ericsson, Ernst & Young LLP, Essential Energy, Ester Industries, Evonik, Execl Telesonic, EXFO, FCI OEN Connectors, Finisar Malaysia SDN BHD, Finolex Cables, FITEL LLC, Frost & Sullivan, Fujikura, GAIL, Hathway, Herkula, Himachal Futuristic Communications, Huawei, Huber+Suhner, ICICI, Idea Cellular, Ilsintech Trading, Indore Composite, Indore Gel, Indus Towers, INNO Instrument, ITCO Industries, ITI Limited, Jain Irrigation Systems, JDSU, Jiangsu Zhongtian Technology, KEC International, Kotkar Energy Dynamics, KPMG, L&T, Livingston, LS Cable, LYNX, MACOM Technology Solutions, Mahindra & Mahindra, Mahindra & Mahindra, Maillefer Extrusion, MAS Infratech, Milliken Chemical and Textile, Ministry of Communications & IT, Ministry of Defence, Money Advisiory Services, Mukand Systems & Networking, NetHawk Solutions, NIC, Nivox Technologies, OFS, Om Optel, Owens Corning, Paramount Wires & Cables, Photonic Networks, Polycab, POSOCO, Power Grid, Pranav Enterprise, Preston, Qualcomm, Radiall, Radius Infratel, Railtel, Raychem RPG, Reliance Industries Limited, Reliance Jio, Rites, Rosenberger, Rosewood Projects, RPG Cables, SBI, SBI Capital Markets, SEI Trading, Sify Technologies, Sigma-Byte Computer, Simco Materials, Sistema Shyam Teleservices, Sneham International, Spectra ISP, SPML Infra, Sterlite Technologies, Sudarshan Telecom, Supreme & Co, Svarn Infratel, Tarantula.net, Tata Communications, Tata Teleservices, TCA Infra, TE Connectivity, Tecnica Associates, Teijin Aramid, Tellabs, The Mining & Engineering Corporation, Tirumala Seven Hills, Touchtone, Tyco Electronics, UL, Uniflex Cables, Veekay Plast, Videocon Telecommunication, Vindhya Telelinks, Viom Networks, Virgo Consultants & Marketing, Vodafone India, WEBEL, WIN Broadband, YOFC, etc.*

# AGENDA/STRUCTURE

## KEY TRENDS AND OUTLOOK
- What are the key trends and developments in the OFC industry in India?
- What are the key growth drivers and challenges? What are the emerging business models?
- What is the future outlook?

## BHARATNET: LESSONS FROM PHASE I AND ROLL-OUT OF PHASE II
- What is the current status of BharatNet? What has been the implementation experience?
- What are the plans and outlook for Phase II? What progress has been made so far?
- How is the role of various stakeholders likely to change in Phase II vis-à-vis Phase I?

## INDUSTRY PERSPECTIVE: NEEDS AND REQUIREMENTS
- What is the demand for fibre and amplifiers in the existing networks?
- What are the key applications driving OFC demand? What are the expectations from OFC players?
- How is the ongoing industry consolidation likely to impact OFC demand?

## COST ECONOMICS
- What is the economics of OFC network deployment in the context of different optical technologies?
- What are the key cost components? What are the price trends of these components?
- How do these costs compare with alternatives?

## FTTX FOCUS: OFC IN THE LAST MILE
- What are the key market drivers for FTTx uptake?
- What are the most relevant OFC technology solutions and models for last mile connectivity in India?
- What is the cost implication? What are the key challenges?

## OFC IN BACKHAUL
- What is the current microwave-fibre mix in operator backhaul networks?
- What are the key benefits of deploying fibre in the backhaul?
- How is the technology mix likely to change going forward? What will be the key growth drivers?

## DECODING THE ROW POLICY
- What are the key highlights of the new RoW policy?
- To what extent can this policy address roll-out bottlenecks?
- What are the related challenges that remain to be addressed?

## OFC MANUFACTURING
- What is the current status of OFC manufacturing in India? What are the emerging technology and material trends?
- How has the OFC demand from the telecom sector changed post the 4G network deployments?
- What are the key challenges in procuring raw material? What is the future outlook?

## O&M: EMERGING SOLUTIONS AND BEST PRACTICES
- What are the O&M-related challenges for OFC projects?
- What are the available and emerging solutions? What are the cost implications?
- What are the best practices?

## CABLE TV/DTH OPPORTUNITY
- What is the current status of the cable TV/DTH segment in terms of OFC deployment?
- What are the segment's needs and requirements? What is the market opportunity?
- What are the key issues and challenges (regulatory, technical, financial, etc.)?

## CONSUMER PERSPECTIVE

### Defence
- What is the current size of the OFC network in the Indian defence sector?
- What is the status of OFC network development projects in the sector?
- What is the update on the NFS project? What are the key issues and challenges?

### Power
- What is the current status of the OFC network in the power sector?
- What is the OFC network development and expansion plan of the key players?
- What are the key issues and challenges?

### Oil and Gas
- What is the current status of the OFC network in the oil and gas industry?
- What is the OFC network development and expansion plan of the key players?
- What are the key issues and challenges?

### Railways
- What is the current status of the OFC network in the railways sector?
- What is the progress on the Wi-Fi initiative? What role is OFC playing in this project?
- What is RailTel's OFC expansion plan? What are the key issues and challenges?

## PRODUCT/TECHNOLOGY INNOVATION
- What are the key recent technology developments and advances?
- What are the most promising and relevant new technologies and products?
- What has been the experience in India so far?

## ROLE OF OFC IN SMART CITIES
- What are the OFC needs and requirements under the Smart Cities Mission?
- What is the progress and what level of investments is likely to be directed towards OFC?
- What are the key challenges in OFC deployments for such projects?

## METRO AND 5G TRANSPORT NETWORKS
- What role will OFC play in facilitating the shift to 5G networks?
- What technology upgradation will be required in existing OFC networks to support 5G?
- What are the potential issues and challenges? What has been the global experience?

## TRANSFORMING DATA CENTRES
- What is the current status of OFC deployment for data centres?
- What is the future outlook for next-generation optical technologies for data centres?
- What are the key issues and challenges? What is the technology outlook?

## LESSONS FROM GLOBAL PON DEPLOYMENT
- What has been the global experience in PON deployment in telecom networks?
- What is the share of OFC in access and backhaul networks?
- What are the key lessons for India?

## RADIO OVER FIBRE SYSTEMS
- What are the key advantages and limitations of radio over fibre systems?
- What is the experience in deploying these in global markets?
- How is it relevant in the Indian scenario? What are the likely challenges?

## SUBSEA CABLE SYSTEMS
- What is the status of upcoming subsea fibre projects involving connectivity to India?
- What is the cost economics? What is the use case and returns on these projects?
- What are the O&M-related challenges for these projects?

## Organisers

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| Two Delegate | 35,121 | 585 | 38,175 | 5,726 | 43,901 | 732 |
| Three Delegate | 48,921 | 815 | 53,175 | 7,976 | 61,151 | 1,019 |
| Four Delegate | 62,721 | 1,045 | 68,175 | 10,226 | 78,401 | 1,307 |

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- Registration will be confirmed on receipt of the payment.
- To register online, please log on to http://indiainfrastructure.com/conf.html

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