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| **ANNEX 1**  **ITU CENTRE OF EXCELLENCE NETWORK FOR ASIA PACIFIC REGION**  **ADVANCE LEVEL TELECOM TRAINING CENTRE**  **Face-to-Face Training on**  **BROADBAND ACCESS NETWORK PLANNING**  **GHAZIABAD,UP-INDIA**  **5TH TO 9TH OCTOBER, 2015**  **TRAINING OUTLINE** |

**COURSE DESCRIPTION**

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| Title | BROADBAND ACCESS NETWORK PLANNING |
| Method of delivery | Face-to-face |
| Objectives | * To equip participants with an understanding of current and future wireline and wireless broadband technologies, network architecture and the associated planning and services using case studies and field visit. * To understand ITU-T standards pertaining to Broadband. |
| Dates | 5th-9th October, 2015 |
| Duration | 1 week |
| Registration deadline | 4th September, 2015 |
| Training fees | USD 450.00 + Service Tax ( 14%) = USD 513 per participant ( excluding lodging and boarding charges) |
| Course code | 15DL14265ASP-E |

**LEARNING OUTCOMES**

Upon completion of this training, participants will be able to:

* Understand various broadband wireline technologies ( viz XDSL, FTTH & radio access Technology) and wireless access technologies like GSM, WCDMA, HSPA/ HSPA+, WI-MAX and LTE etc. being used in ISP Network
* Understand the various broadband network elements like DSLAM, Switches, DNS, AAA, BNG, RPR, CPEs etc., their functions and interconnectivities.
* Understand standards & protocols involved in packet switched network viz. IEEE standard, OSI, TCP/IP etc.
* Understand the core network capacity planning aspect and selection of protocols based on customer provisioning.
* Design Broad Band Network for Fixed Network Topology on copper, fiber and wireless media.
* Understand ITU activities and QoS standards regarding broadband technology and service provisioning.
* Understand the role of Operation Support sub-System( OSS), BNG, billing, mediation server & business support sub-subsystem in a broadband network
* Perform technical, business and regulation analysis for existing and future wireless and wireline broadband services.

**TARGET POPULATION**

This training is targeted at managers, engineers and employees from regulators, government organisations, telecommunication companies and academia, who are interested in understanding, the design, implementation and operational modalities of Broadband Network.

**TUTORS/INSTRUCTORS**

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| **NAME OF TUTOR(S)/INSTRUCTOR(S)** | **CONTACT DETAILS** |
| 1. Mr.N.J. Rao,GM,Karnataka Circle,BSNL | njraonjrao@gmail.com,+91-944 -801 -0802 |
| 1. Mr.D.M Ezhil Buddhan,GM (NOC),BSNL | +91-9448010361 |
| 1. Mr.Paritosh Shah,Addl GM,BSNL | paritoshkshah@gmail.com,+91-986 -822 -4111 |
| 1. Mr.Anish,ZTE | anish.sharma@zte.com.cn,+91-880-090-0543 |
| 1. Mr.J.D Pal,UTStarcom | +91-725-958-0402 |
| 1. Mr.P.Muniraj, UTStarcom |
| 1. Mr. Sudeep Kumar, DDG , DoT | +91-901-313-3222 |
| 1. Mr.Navpreet Singh, IIT Kanpur |  |
| 1. Mr. R.P. Singh, DGM BSNL | Email: [rpsingh.its1@gmail.com](mailto:rpsingh.its1@gmail.com), Phone : +91 120 275 5158 |

**EVALUATION**

The assessment of the participants shall be based on following parameters: time spent on the training.

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| Evaluation Parameter | Weightage ( in %) |
| Exam | 60 |
| Attendance | 10 |
| Quiz, Group Activities others | 30 |

The minimum passing requirement is 60%.

**TRAINING SCHEDULE AND CONTENTS / AGENDA**

# *Agenda (for face-to-face trainings)*

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| **05/10/2015** | **Time** | **Topics/Activities** |
|  | 09:30-10:00 | Registration |
| *1000-1030* | ***Opening Session:***  *Welcome Address*   1. *ITU* 2. *BSNL, India* |
| 1030 - 1130 | **Broadband Technology Overview**  Overview of various Technology ( viz XDSL, FTTH & radio access Technology) being used in Access Network. |
| 1200-1300 | **Broadband Network Architecture**  To discuss about the various Broadband Network elements, their functions and interconnectivities |
| 1400-1530 | **Design of Packet Network**  To discuss about standards & Protocols involved in Packet switched Network viz IEEE standard, OSI, TCP/IP. |
| 1600-1700 | **ISP core Network Planning**  To explain the process to identify the core network capacity planning, selection of protocols based on customer provisioning |
| **06/10/2015** | **Time** | **Topics/Activities** |
|  | 0930-1100 | **Wire-line Broadband Network planning** To discuss about How to Plan Broad Band Network for Fixed Network Topology on Copper & fiber media. |
| 1130-1300 | **Broadband wireless Access Technologies.**  To discuss different Broadband wireless Access Technologies like GSM, WCDMA, HSPA/ HSPA+, WI-MAX and LTE etc. |
| 1400-15:30 | **Broadband wireless Access network Planning**  To discuss wireless Broadband Planning methodology, the Broadband Access Network components and their dimensioning. |
| 1600–1730 | **Broadband Network Components**  To discuss Broadband Network components like DNS, AAA, BNG, RPR etc, content filtering, billing . |
| **07/10/2015** | **Time** | **Topics/Activities** |
|  | 0930-1100 | **ITU Activities, Network Planning and Standards**  To discuss about the various ITU activities, network planning tools, and standards of ITU-T related to wire-line and wireless Broadband Access. |
| 1130-1300 | **QOS & Its Standards**  To give a detailed description of the ITU-T Recommendations on QoS standards, performance & issues in Broadband access to ensure satisfactory level of services. |
| 1400-15:30 | **Broadband Deployment Case Study**  The objective of case study is to :   * Identify gaps and learn from their journey to establish guidelines and best practices. * Describe the viewpoint on the current state for the evolution. * Provide recommendations to improve the journey by adapting the approach and best practices outlined above. |
| 1600–1730 | **OSS & BSS for Broadband.**  To discuss about the Role of Operation Support Sub-System( OSS), BNG, Billing, Mediation Server & Business Support Sub-subsystem in a Broadband Network |
| 08/10/2015 | **Time** | **Topics/Activities** |
|  | 0930-1100 | **Visit to Broadband Lab visit & MPLS Core Lab Visit.**  The objective of this lab visit is to make participants look into the actual equipments of Broadband Access & Core Networks. |
| 1130-1300 | **Field visit of Live Network**  The objective of this visit is to show participants the operational broadband network |
| 1400-15:30 | **Field Visit (continued)**  To describe the Broadband Access Network components and their Role access and core network. |
| 1600–1730 | **Broadband Network components ( Team Activity)**  To prepare describe the Broadband Access Network components and their Role access and core network. |
| 09/10/2015 | **Time** | **Topics/Activities** |
|  | 0930-1100 | **O& M Tool and Technology**  To discuss the procedures and practices being followed in maintaining Broadband Network and Service. Use of O&M Tool in managing and maintaining services. |
| 1130-1230 | **Access Network Planning**  To discuss various methods of Access Network Planning adopted by an ISP. |
| 1230-1300 | **Working Group Presentations**  To enhance the understanding of the methodology involved in developing roadmap for Broadband Access. |
| 1400-1530 | **Working Group Presentations**  To enhance the understanding of the methodology involved in developing roadmap for Broadband Access. |
| 1600-1700 | **Q and A session with panel**  To provide an opportunity to ask questions of panel members on any of the material presented over the course. |

Morning Coffee Break : 1100-1130

Lunch Break : 1300-1400

Afternoon Coffee break : 1530-1600

Components of the training:

The training will include Instructor-led presentations, case studies, group exercises, assignments and field visits of ISP facilities.

**TRAINING COORDINATION**

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| **Institute coordinator:**  **Name:** D. N Sahay,  Addl. GM ( EB), Room No. 717, Admin Building , ALTTC , Raj Nagar, Ghaziabad, UP INDIA -201002  **Email address:** dgmtm.alttc@gmail.com  **Phone No**: +91 120 272 8259  **Mob:** +91 941 273 9215 | **Training coordinator:**  Name: R.P. Singh  DGM ( BB), Room No. 720, Admin Building , ALTTC , Raj Nagar, Ghaziabad, UP INDIA -201002  Email address: rpsingh.its1@gmail.com  Phone No: +91 120 275 5158  Mob: +91 941 273 9217 | **ITU coordinator:**  Mr. Ashish Narayan,  Program Coordinator,  International Telecommunication Union  Regional Office for Asia & the Pacific,  5th Floor,Thailand Post Training Centre,111  Moo3 Chaengwattana Road,  Laksi Bankok 10210,Thailand  Tel: +66 257 500 55  FAX:+66 257 535 07  Email: ashish.narayan@itu.int |

**REGISTRATION AND PAYMENT**

Registration and payment should be made online at <http://academy.itu.int/>

1. A training fee of USD 513.00 per participant is applied for this training. Payment instructions can be found at the above mentioned link.

**ITU BANK ACCOUNT DETAILS FOR BANK TRANSFER**

# Name and Address of Bank: UBS SA, Case postale 2600, CH 1211 Geneva 2, Switzerland

**Beneficiary**: **Union Internationale des Télécommunications**

**Account number:** 240-C8108252.2 (USD)

**Swift:** UBSWCHZH80A

**IBAN** CH54 0024 0240 C810 8252 2

**Amount:**  USD 450 + Service TAX @14%. = USD 513.00

**Payment Reference**: **(15DL14265ASP-E,** P.40593.1.04, COEASP001**)**

1. Pick up and Drop arrangement from/to Airport to/from training centre shall cost USD 155.00
2. The Boarding and Lodging charges of the training centre are in addition to the above charges as applicable.
3. Rates for Lodging and Boarding at ALTTC,
   1. At training centre’s J.C. Bose Hostel:

US Dollars 50 per person per day (inclusive of all taxes)

* 1. Hotel Stay at Ghaziabad: The nearest hotel is Fortune Inn Grazia, 4-star Hotel. The charges of this hotel are as below.

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| NAME OF HOTEL | Per Day charges inclusive of tax  (Gym, Spa, Swimming complementary) | | |
| With Breakfast | Breakfast + Dinner | Breakfast + Lunch +Dinner |
| Fortune Inn Grazia  Plot No.1, Sector-23, Sanjay Nagar District Centre, Ghaziabad- 201 002  Phone :+91-120-3988442  Fax :+91-120-3971-170 | INR 3000.00 | INR 3600.00 | INR 4200.00 |

Note : Conversion rate 1USD= 63.5 INR ( approx.)

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