Empowering the Telecom World

Telecom Industry is Calling You.....
Telecom Protocols are core to operations of any telecom enterprises which enable bearer and value added services by running mission critical applications. Recent surveys have significantly proved the need for the endowed software professionals in the field of protocol development and testing. The applications include designing OSS systems, Switching software and Mobile application development and developing Telecom Protocols.

This course is designed to equip the students with the programming skills and networking concepts with the hands on experience on real-time Telecom Protocol development, Telecom and Implementation.

Eligibility: People enrolling for Telecom Software Development should have B.E/M.E/M.Sc/MCA in CSE/EEE/ECE/IT.

Opportunities: The opportunities for TSD are in Telecom Software development, Telecom Software Testing, Implementation, Deployment, OSS, Telecom Billing etc.

Duration: 6 Months

The Course Syllabus

Technology

Communication Basics

Networking

SS7 Signaling and Architecture
- Telecommunication Systems, Signaling and Switching Technologies, SS7 Architecture, ISDN-Integrated Services Digital Network, ISDN BRI and PRI, Q.921 Signaling, Q.931 Standard, SS7-Messages, ISUP Signaling, SS7 Call Flows, ISUP Supplementary Messages, SS7 - Protocols

Session and Call Control Protocols

Session Initiation Protocol
- Introduction to SIP, SIP Architecture, SIP Message Fields, Registration, SIP Operation, RFC 3261-3265 Features, SIP Call Flows, Session Description Protocol, RTP and RTCP, SIP Protocol Stack

SIGTRAN
- Introduction to SIGTRAN, Soft Switch Architecture, Signaling Gateways, Media Gateways and Media Gateway Controller, Sigtran Protocols - SCTP, MTP- 3b, M3UA, M2UA, M2PA, IUA, SUA
Global System For Mobile Communications - GSM
GSM Architecture, IS-136 TDMA Technology, GSM Security, Network Element Identities and Numbers, GSM Channels, Mobility Management and Hand Offs, GSM Channel Coding and Vocoder, Radio Channel Operation, Abis and A Interface Design, BCCH System Information Types and Decoding, Frequency Scanning, TEMS Drive Test, GSM Protocol Architecture, GSM Signaling and Call Processing, GSM Hardware Architecture, BTS Installation, Migration to GPRS

General Packet Radio Services - GPRS

Enhanced Data Rates for GSM Evolution – EDGE
EDGE Network Architecture, EDGE Coding Schemes, Link Adaptation, Incremental Redundancy, GERAN, Radio Network Operation and Network Dimensioning, Implementation Constraints of EDGE

Code Division Multiple Access - CDMA

3G - Universal Mobile Telecommunications Services (UMTS)

Next - Generation Networks
Evolution for NGN, World Bodies for Telecom and Networking, HSDPA, HSUPA, 4G LTE, WiMAX

4G LTE – Long Term Evolution
Introduction to 3GPP Long Term Evolution, LTE Architecture, Compatibility with Non-3GPP Evolutions, LTE Physical Layer, OFDMA, SC-FDMA, MIMO, Physical Layer Modulation, Coding and Multiplexing, Channels, Call Processing, LTE Protocol Stack, LTE Rel. 9, Advanced Rel. of 10 & 11.

Telecom VAS and OSS/BSS
Introduction to VAS, VAS Products - SMS, CRBT, USSD, Prepaid Services, Location Based Services, Preferred Roaming, Telecommunications Landscape - Past, Present and Future, Introduction to OSS/BSS, TMN Model, TOM and eTOM, Next - Generation OSS

Telecom Testing
Telecom Protocols

SS7 Protocols
Signaling Connection Control Part (SCCP), ISDN User Part, Transaction Capabilities, Application Part (TCAP), Intelligent Network Application Part (INAP), OMAP

GSM, GPRS & CDMA Protocols
CM-Connection Management, CC- Call control, SS- Supplementary Service, SMS-Short Message Service, MM- Mobility Management, RR- Radio Resource management, LAPDM, BSS Application Part (BSSAP), Mobile Application Part (MAP), Generic Routing Encapsulation (GRE), Subnetwork Dependence Convergence Protocol (SNDCP), Radio Link Control Protocol (RLC), Logical Link Control Protocol (LLC), GPRS Mobility Management (GMM), GPRS Session Management (GSM), GPRS Tunneling Protocol (GTP), Customised Applications for Mobile Services Extended Logic - CAMEL

UMTS & LTE Protocols
ATM & ATM Adaptation Layers, UMTS related Signaling protocols – Access Stratus (AS) and Non-Access Stratus (NAS) Protocols, RRC, RLC, MAC, FP, PDCP, BMC SSCOP, SCTP, NBAP, ALCAP, RANAP, RNSAP, AMR, MM, GMM, MTP3-b, M3UA, STC, SCTP, SCIP, TAF, CBS

Programming

Linux Basics
Introduction to Linux Operating System, Basic Commands, List Commands, File & Directory Commands, Standard I/O and PIPES, File Security, Vim Editor, Filter and Database Commands, Communication & Scheduling Commands

Linux Administration
Disk & File System Management, User & Group Management, Linux Installation & Package Management (rpm & yum), Configuration of the Servers (Telnet, SSH, FTP & TFTP, Web Server, DHCP, Remote Installation Server, NFS, SAMBA, Mail Server), Security Management

Structured Query Language
Introduction to DBMS & RDBMS, Rules for an RDBMS, Data Types, Structure Query Language Commands, Functions, Clause Operators, Constraints, Set Operators, Joins, Sub Queries, Working with Database Objects (Views, Sequences, Indexes, Synonyms, Clusters), Working with Oracle and My SQL RDBMS Applications

C Language
Fundamentals and Control Structures, Arrays and Strings, Structures and Unions, Functions, Storage Classes, Pointers, Files, Preprocessor Statements and Command Line Arguments, Enumerations, Bit-wise Operators

Data Structures
Stacks, Queues, Linked Lists - Linear, Doubly Linear, Circular, Trees, Different Sort and Search Methods

C++ Language

Advanced Linux Programming
Telecom Practicals

1) E1 Line Integration
2) Signalling Analysis for SS7, GSM and GPRS Networks
3) GPRS Signalling Analysis
4) IP Networking on Cisco Routers
5) GSM Radio Testing
6) MSC, TRAU and Soft Switch (3G)
7) Wireshark

Telecom Network Signaling Analysers

Get a hands on experience on Signaling Analysers on host of communication protocols including SS7, GSM, GPRS, VoIP, SIP, Networking, etc.

Wireless technology has been touted as the 'next big thing' in terms of connectivity.

An expansion of technological change and a rising wave of new forms of data are working a deep change in the Internets capabilities and uses. Mobile Networks are accelerating the transition of industry players to an IP based Next Generation Network.

Networking

Convergence Labs networking academy has a pool of resources in not just conventional networking but have expertise in Mobile networking and marching towards next-Generation networking practices. Get a host of networking experience with hands on live network routers.
Convergence Labs takes you through portfolio of mobile network integration including installation and testing of Radio networks on both GSM (2G) and UMTS (3G) Technologies.

At Convergence Labs you will experience the total operation of Mobile Networks of GSM and UMTS (3G) including Switching & Core Network Transmission and also Radio Network. You'll develop hands on experience on OMC-R functions including, Configuration Management, Network Supervision, Alarm management, Network Monitoring, Supervision of Counter Thresholds and Fault management and also Signaling Analysis of both Land Line and Mobile Networks.

You’ll also experience the Next-Generation Technologies like Soft Switch and Releases of Advanced Telecom Technologies of 3G and 4G that are to be released soon in the markets.

Global Telecom Manpower Consultants
www.telecomedge.com

Convergence Labs is official partner of Telecom Edge for the global Telecom placements. All freshers are assisted for placements through Convergence Labs internal HR division and all experienced professionals are assisted through Telecom Edge’s HR pool. With its core focus on Telecom expertise, Convergence Labs has positioned itself as rich source of Telecom Manpower Database both in India and World Wide.

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