

Hands-On

# CCNT BootCamp

(TeleCom - DataCom - CTI – LANs - Broadband - VoIP)



## Course Description

This Hands-On CCNT BootCamp is designed to include all six CCNT courses (Basic Telecommunications, Data Communications, Computer Telephone Integration (CTI), Local Area Networks (LANs), Broadband Technologies, Voice over IP (VoIP) Essentials) into a 8-day exam focused training that will give students a broad, knowledge-based introduction to core terms, concepts and skills in convergence technologies. To obtain this industry-valued credential, an individual must pass six competency tests in the following disciplines listed below

BTS Administers this Telecommunications Industry Association (TIA) Certified in Convergent Network Technologies (CCNT) Exam in-class!

## Students Will Learn

- The CCNT Certification Curriculum is based on these six courses
- 1. Basic Telecommunications explores analog and digital concepts, and introduces telecommunications fundamentals such as networks, business communications systems, signaling, Internet telephony and switching.
- 2. Basic Data Communications builds a student's knowledge of related software and hardware. This module introduces the technology of network architecture, packet switching, fiber optics, data communication channels and data communication devices.
- 3. Computer Telephone Integration (CTI) Essentials introduces the dynamics of connecting a computer to a telephone system for routing calls through switches. This program also teaches the technology of applications, architecture and system development.
- 4. Local Area Networks (LANs) develops critical understanding of the concepts and technology of LAN topologies, information transfer, transmission techniques, media

standards and network management.

- 5. Broadband Technologies discusses the need for transmitting multiple signal types simultaneously by way of divided channels, and then explores the technology of voice and data integration, frame relay, SONET, ATM/cell relay, SMDS, BISDN, DSL and VPN.
- 6. Voice over IP (VoIP) Essentials teaches the principles of transmitting voice calls and fax over the Internet, and explores VoIP networks, bandwidth compression, the Gateway, packet prioritization, RSVP, H.320 and H.323, and WAN engineering issues.

## Target Audience

The CCNT certificate program was developed for sales, installation and support personnel of telcos and other network service providers providing convergence services.

## Prerequisites

No prior networking experience is required. However, students should be familiar with the Microsoft Windows operating system and have basic computer skills prior to taking this course.

## Course Outline

### Basic Telecommunications

#### Module 1: Overview

- a) The Telecommunications Industry
- b) Terms and Technology
- c) Regulation and Public Policy
- d) Technical Platform

- e) The International Perspective

#### Module 2: Customer Premise Equipment (CPE)

- a) Station Sets
- b) Key Systems
- c) Private Branch Exchange (PBX)
- d) Centrex – Virtual PBX

#### Module 3: Services

- a) Introduction
- b) Service Basics
- c) Line and Trunk Features
- d) Dedicated Services
- e) Service Providers
- f) Specialized Services

#### Module 4: Analog Concepts

- a) The Network
- b) The Voice Signal
- c) Transmission Variables
- d) Multiplexing
- e) FDM

#### Module 5: Digital Concepts

- a) Digital Signals
- b) Advantages of Digital Technology
- c) Digital Transmission
- d) Pulse Code Modulation
- e) Digital Voice Transport
- f) Optical Standards
- g) Digital Loop Carriers

#### Module 6: Networks

- a) Telecommunications Networks
- b) Flexibility of Computer Technology
- c) Current Network Structure
- d) The Exchange/Central Office
- e) Cellular Networks
- f) Internet Telephony

#### Module 7: Transmission

- a) A Simple Transmission Network
- b) What Are the Transmission Media
- c) Two-Wire Analog Media
- d) Multicircuit Media and Systems

#### Module 8: Signaling

- a) Basic Types of Signaling
- b) Supervisory & Address Signaling
- c) Start-Dial Signals
- d) Incoming Call indication
- e) Call Progress Tone and
- f) Miscellaneous Signals
- g) Common Channel Signaling
- h) Signaling System 7 (SS7)
- i) Identifying the Signaling Interface

#### Module 9: Switching

- a) Introduction to Switching
- b) Analog, Digital, Time-Division and
- c) Space-Division Switches
- d) CO Digital Switches
- e) Optical Signal Switching

#### Module 10: Application Analysis

- a) Determination of Applications

- b) Determination of Quantities

## Basic Data Communications

### Module 1: Overview

- a) Data Networks
- b) Signals
- c) Transmission Basics
- d) Data Terminal Devices

### Module 2: Networks

- a) Overview of Computer Networks
- b) System Network Architecture
- c) TCP/IP

### Module 3: Transmission Principles

- a) Overview of Data Transmission
- b) DTE-to-DCE Interface Protocols
- c) DCE-to-DCE Protocols
- d) IEEE LAN Protocols
- e) Packet Technologies
- f) SONET

### Module 4: Communications Equipment

- a) Overview of Communications
- b) Equipment
- c) Analog Communications Devices
- d) Modulation
- e) Digital Communications Devices
- f) Line Coding
- g) Multiplexers

## Computer-Telephone Integration (CTI) Essentials

### Module 1: What is CTI?

- a) Computer-Telephone Integration (CTI)
- b) Interactive Voice Processing
- c) Fax Systems
- d) Simultaneous Voice-Data
- e) Videoconferencing

### Module 2: CTI Architecture

- a) Signal Processing Boards
- b) PBX and unPBX Systems
- c) Host-Based Systems
- d) Desktop Systems
- e) Client/Server Hardware
- f) Application Programming Interfaces (APIs)
- g) Standards

### Module 3: CTI Applications by Market

- a) Corporate and Government Distribution
- b) Retail Electronic Media
- c) Transportation

### Module 4: Developing CTI Systems

- a) Choosing a Method
- b) Development Choices
- c) Planning the Application
- d) Building the Application
- e) Buying CTI Tools

## Local Area Networks (LANs)

### Module 1: Overview

- a) Local Area Networks
- b) LAN Advantages
- c) LAN Elements
- d) LAN Users
- e) The LAN Market

#### Module 2: Topologies

- a) Bus Topologies
- b) Ring Topologies
- c) Tree Topologies
- d) Star Topologies
- e) Mesh Topology
- f) Wireless (Cell) Topology
- g) Hybrid Topologies

#### Module 3: Information Transfer

- a) Data Transport and Protocols
- b) Access Method Overview
- c) CSMA/CD (Ethernet)
- d) Token Ring/Token Bus Summary

#### Module 4: Transmission Techniques

- a) Analog and Digital Transmissions
- b) Baseband Transmission
- c) Broadband Transmission Hybrids
- d) Fiber Optic Transmission
- e) Wireless Transmission Comparison

#### Module 5: Transmission Media Overview

- a) Twisted Pair Cable
- b) Coaxial Cable
- c) Fiber Optic Cable
- d) Infrared

#### Module 6: Transmission Media--Continued

- a) Short-Range Wireless
- b) Microwave

- c) Satellite

#### Module 7: LAN Standards

- a) The Elements of a LAN Standard
- b) OSI Reference Model
- c) TCP/IP and SNA
- d) IEEE Committees
- e) IEEE 802.x Standards

#### Module 8: LAN Components

- a) Networking Components
- b) Servers
- c) Network Operating Systems (NOSs)
- d) Local Networking Components
- e) Internetworking Components

#### Module 9: Network Management

- a) Network Trends
- b) Network Management
- c) User Management
- d) Network Hardware and Software Management
- e) Functional Areas of Network Management
- f) Management Protocols
- g) Planning a Network

#### Module 10: Advanced LAN Technologies

- a) From LANs to WAN
- b) Basic WAN Technologies
- c) Advanced WAN Technologies
- d) Frame Relay
- e) SONET
- f) Cell Relay: ATM/SMDS/BISDN
- g) Virtual Private Networks (VPNs)

#### Broadband Technologies

## Module 1: Overview

- a) What is Broadband?
- b) Time-Division Multiplexing
- c) Packet-Switching
- d) Network Topologies
- e) Applications and Computing Power
- f) Categories and Requirements
- g) LAN/WAN
- h) IP and Convergence

## Module 2: SONET

- a) SONET Standards and Purpose
- b) SONET Rates
- c) SONET Transport Structure
- d) SONET Mapping SONET Network Elements
- e) SONET Switching SONET Ring Concepts
- f) SONET Operations
- g) BISDN
- h) Wave-Division Multiplexing

## Module 3: SS7

- a) Broadband Backbone Networks
- b) Signal System 7 Signal Points
- c) Signaling Links
- d) Signaling Units
- e) Protocol Stack
- f) SoftSwitches
- g) Media Gateway Components

## Module 4: Frame Relay

- a) Protocol and Speed
- b) Frame Relay and Voice Frame Relay Terminology
- c) Routers, Bridges, and Gateways

## Module 5: Cell Relay

- a) What is Cell Relay?
- b) Cell Relay and ATM

- c) Cell Relay and SMDS

#### Module 6: SMDS

- a) SMDS Overview
- b) SDMS and Voice
- c) Connection vs. Connectionless
- d) SMDS and Virtual LAN

#### Module 7: ATM

- a) ATM Protocols and Speeds
- b) ATM and Voice
- c) ATM Terminology

#### Module 8: DSL

- a) Local Broadband Access
- b) DSL History
- c) Classes of DSL Service
- d) DSL Access Multiplexer
- e) DSL and Voice
- f) What is ADSL?
- g) What is SDSL?

#### Module 9: Wireless Broadband

- a) Generations of Wireless
- b) LMDS Basics
- c) MMDS Basics

#### Module 10: VPN

- a) VPN Overview
- b) VPN versus Traditional WAN
- c) VPN Components
- d) VPN Security Threats
- e) VPN Applications

#### VoIP Essentials

## Module 1: Internet Telephony

- a) Overview
- b) Making an Internet Call
- c) VoIP and the Intranet

## Module 2: Gateways

- a) Gateway Functions
- b) Voice Compression and Decompression
- c) Fax Demodulation and Remodulation
- d) Gateway Interfacing

## Module 3: Bandwidth Consumption

- a) Overview
- b) Silence Suppression
- c) Trunk Duty Cycle
- d) Carrying Capacity

## Module 4: QoS Issues

- a) Overview
- b) Network Delay and Jitter
- c) Packet Handling
- d) Silence Suppression
- e) Echo Cancellation
- f) Connection QoS

## Module 5: PC Phones

- a) Using PCs as Phones
- b) PC Phone Applications

## Module 6: Standards

- a) VoIP Standards

## Notes

## Exam Info

During this intensive course we focus on Exam Preparation. Students will be tested on their acquired knowledge through a series of tests, reviews and question and answer sessions. This will provide answers to pressing questions for individual students. Students will be able to thoroughly review the material from each module to help them prepare for taking the actual CCNT certification exam upon completion of each individual module. This additional time will reinforce the materials covered and give students the confidence and practical skills to pass the CCNT exam overall, but also to apply this knowledge in the field as being Certified in Convergent Network Technologies.

In this Extensive Exam Prep & Testing format will provide 1-on-1 instructor-to-student time to cover materials in greater depth and provide case-studies that reinforce materials covered BTS will administer the CCNT Exams in class, every student will use a laptop/PC to log in and take their TIA CCNT Exam live in the classroom.

Note This is an accelerated training program and may require additional study/review time in addition to the training hours.

## Delivery Method

Instructor led with numerous exercises.

## Equipment Requirements

(This apply's to our hands-on courses only)

BTS always provides equipment to have a very successful Hands-On course. BTS also encourages all attendees to bring their own equipment to the course. This will provide attendees the opportunity to incorporate their own gear into the labs and gain valuable training using their specific equipment.

## Course Length

8 Days