TELECOM FOR NON-ENGINEERS

Teracom's famous core training, covering all major topics in telecom, datacom and networking in a two-day format

Telecom for Non-Engineers is our core training in two days for private onsite courses.

Learn telecom and network fundamentals, fill gaps, demystify buzzwords, master jargon, get up to speed on current technologies and standard practices, and most importantly, understand how everything fits together.

- Get the gold standard in training: instructor-led, where you can interact and ask questions
- Your team will be up to a common speed, with a common vocabulary and reference books
- Significant cost savings are often achieved with discounted group pricing and no travel costs
- The course will be a strong team-building exercise. Discuss your environment during the course!

The content, its order, our analogies and explanations have been refined over the course of more than *twenty years…* and totally updated for 2014-2015.

Hundreds of people have rated this training "excellent" across the board on evaluations!

Visit teracomtraining.com/onsite_training.htm or call 1-877-412-2700 to get started today.

Course Objectives

- Establish a solid base in the fundamentals of telecom, datacom and networking.
- Fill in the gaps. Understand jargon and buzzwords.
- Understand mainstream technologies and solutions.
- Put a structure in place that project-specific knowledge can be built on in the future.
- Understand how it all fits together.
- Develop career-enhancing knowledge skills.

Prerequisites

None

Who should attend

- This course is for those needing to fill in the gaps, understand buzzwords, jargon and technologies like SIP, LTE, Ethernet, MPLS and TCP/IP, and more importantly, the ideas behind these technologies and understand how it all fits together.
- Ideal for non-engineering professionals in need of a solid knowledge base to be more effective in dealing with technology projects and technical personnel.

Tuition Fees

This course is offered as a private onsite course.
Call us at 1-877-412-2700 or click "get more info" at teracomtraining.com/onsite_training.htm for pricing.

Course Content

Day 1: Fundamentals of Telecommunications

- The PSTN, analog, loops and trunks, POTS
- PBX, Centrex, Hosted PBX, IP Centrex
- SIP, VoIP, soft switches, SIP trunking
- Digital: 64 kb/s voice, MP4 video, binary pulses
- Telecom industry, LECs, CLECs, POPs and IXCs
- The Cloud & how services are provided
- Wireless: Cellular, 3G, 4G LTE, WiFi, Satellite

Day 2: Networks and Services

- Convergence: treat everything like data
- The OSI Layers
- Ethernet LANs & MAC frames
- Routers & IP packets, IP addresses, DHCP, NAT
- Fiber basics, DWDM, Optical Ethernet, FTTP, PONs
- Last Mile DSL and cable modems
- Carrier packet networks, SLAs, Class of Service
- MPLS for CoS, VPNs, integration and aggregation
- Internet and ISPs, Internet VoIP, Internet VPNs
- Practical solutions and project methodology

Demystify Buzzwords And Jargon

One of the biggest challenges in telecommunications is all of the acronyms, abbreviations, jargon and buzzwords.

The list goes on and on: POTS, PSTN, loops, trunks, VoIP, SIP trunking, Hosted PBX, DSL, DS1, T1, PRI, ILEC, CLEC, POP, MAN, TDMA, CDMA, WiFi, LAN, WAN, Ethernet, MAC address, MAC frame, IP packet, TCP/IP, OSI, Layer 2, Layer 3, VLAN, TDM, DWDM, FTTN, FTTH, FTTP, DHCP, NAT, MPLS, VPN, SLA, ISP, DNS …

Plus, there is a second-order problem: even if you were to figure out all of the current jargon and buzzwords, it's certain that new ones will be invented next month!

It can be very frustrating sitting in meetings with these terms flying around and not understanding most of them… particularly when someone asks your opinion.

So the question is: how to get on top of all the jargon and buzzwords, knowing that there is going to be constant change?

Our answer: understand the fundamentals. Take the cover off the box and understand how it works. Once we do this, we discover that there are only a few main ideas in telecom technology, with incremental improvement in each area.

Taking this course and understanding the fundamental ideas puts you back in control, with the confidence to contribute effectively. Even if you don't know the exact details of a product someone is discussing, you will still know what they are talking about.

Understand The Network Cloud

People like to draw a diagram of a network as a cloud with sticks poking into it, and refer to the network as "The Cloud". This might be useful for drawing diagrams, but if you are using, planning, ordering, managing, troubleshooting, developing software for or otherwise involved with telecom circuits and services, understanding what's inside is productivity- and career-enhancing knowledge.

In this course, you will learn how circuits and services are actually provided, giving you the knowledge to make meaningful comparisons and accurate decisions.

We'll explore every different aspect of The Cloud:

- The fundamental structure of the network: access, switching and transmission;
- The companies that physically implement the network: ILECs, CLECs, IXCs, wireless carriers and how and where they interconnect, and
- The components of a service: access circuit technology, network service type and billing plan;
- The equipment used: switches, routers, multiplexers, fiber and modems;
- How users share the network: channels, packets and Service Levels.

Knowledge is power! Get it with this course.

Understand Trends and Developments in Telecommunications

Major changes are taking place in the telecom world. Taking this course, you'll get up to speed on these important changes and future trends:

- All new phone systems are VoIP. SIP trunking services replace PBX / PRI trunks provided by LECs.
- In the future, the Internet and the telephone network will be the same thing. Basic telephone service will be "IP dial tone": the ability to send an IP packet to any other point on the network. There will be no such thing as "long distance".
- Optical Ethernet has replaced SONET for all new core fiber network projects, and is also routinely used for "last mile" connections, achieving a long-held goal in telecommunications: one technology for all parts of the network.
- MPLS has replaced ATM for traffic management on carrier networks, achieving another long-held goal: convergence and service integration… one network service, one access circuit, one bill for all telecom services.
- 4G LTE has achieved the goal of a worldwide standard for mobile wireless.
- "Data" on cellular plans means IP dial tone. It can be used for phone calls, video on demand, web surfing, real-time traffic on maps, and any other application. It can be replaced with WiFi, which is often free.
- Broadband carriers, formerly known as Cable TV companies, have evolved into telecom companies, gaining a majority share of residential Internet access in the US, and providing services to business using both cable modems and fiber.
- Telephone companies provide Cable TV service using Fiber to the Neighborhood and VDSL over loops in brownfields, and Fiber to the Premise in greenfields.

Gain Vendor-Independent Knowledge You Can Build On

The knowledge you gain taking this renowned training course is vendor-independent foundational knowledge in telecommunications, networks, IP, packets, fiber, wireless: fundamentals, technologies, standard practices, and how it all fits together.

You will be able to build on this proven knowledge base to quickly get up to speed for a particular project - then have the versatility to work on subsequent projects.

The cost of this training will be repaid in productivity gain many times over.

Based on Teracom's proven instructor-led training courses developed and refined over twenty years providing training for organizations including AT&T, Verizon, Bell Canada, Intel, Microsoft, Cisco, Qualcomm, the CIA, NSA, IRS, FAA, US Army, Navy, Marines and Air Force and hundreds of others, Teracom online courses are top-notch, top-quality and right up to date with the topics and knowledge you need.

Get started today to make this invaluable addition to your knowledge and skills!

Here's What Seminar Attendees Like You Are Saying

Hundreds of people like you have benefited from Teracom's core training. Many tell us this was their best course ever; filled gaps in their knowledge and tied everything together… knowledge they've been needing for years. Others on course their first week on the job remarked "what a wonderful way to get started in the business."

Here's a sampling of comments from Teracom alumni:

"Feedback from my team was TERRIFIC. It gave our entire technical Call Center a common foundation, and you seem to have crafted that perfect balance between technical depth, real-world applications, and lively delivery. I couldn't be happier with the results. The things my team learned from this training were applied in real-world situations almost immediately."
- Rusty Walther, Vice President, Client Services, AboveNet Communications

"Excellent! I learned a lot - everyday terms, definitions, and acronyms. Seminar notebook very helpful. The instructor was the best I ever had – lots of knowledge and experience and stories were GREAT."
- Serena Laursen, Microsoft

"The selection of material - the order of its presentation - the way it was presented... incredibly effective at presenting concepts and ideas - uses great analogies and stays on topic."
- Susan Lennon, Nortel

"The seminar delivered exactly what was advertised, at a very high quality. Truth in advertising!" - Gary Lundberg, Copper Mountain Networks

Whether you work for an organization that produces telecom, datacom or networking products or services; or you buy these products and services - or just have to get up to speed on what all the rest of them are talking about when they say "SIP trunking", "Ethernet", "MAC frame", 4G, MPLS or VPN…

"Best course we have ever had onsite at 3Com"

"Perfect content; well organized, well paced, building block approach, resulted in a very nice cathedral" - Jim George, Qualcomm

"Course was excellent! One of the best I have taken. Extremely well organized and presented. Seminar workbook is outstanding - a very valuable reference" - Kieran Delaney, Maritime Life

"I liked most the use of analogies to explain complex concepts. It delivered exactly what the brochure promoted. Gave me a thorough understanding so I feel more confident."
- Judith Myers, Ameritech

"Excellent! Tied the individual pieces of knowledge together into a picture… was interactive and built up the knowledge layers properly." - Jim Geiss, Qwest

"Filled in a lot of gaps in my knowledge of networking... able to deliver the knowledge effectively and entertainingly. Excellent seminar"- Kirk Kroeker, IEEE Computer Society

"Great information that I will be able to use at work. Very easy to understand all the information especially the IP networking part. I wouldn't change a thing"
- Orlando Jasso, AboveNet Communications.

"Layman's terms with humor was very relaxing - helped me concentrate... understanding is now CLEAR ... the manual will be very helpful" - Linda Côté, Bell Canada

"Best instructor I have had on a course - excellent explainer in layman terms, not techie terms"
- Susan Coleman, Bell Sygma

"Best course materials ever; the full text descriptions are invaluable. Course filled in so many gaps for me. Bravo!" - Ross Brooks, Vertek

"Outstanding! The best I've encountered, and I've attended many seminars."
- Bob Gibbons, WMX Technologies

Six Reasons to Take This Course

Teracom's courses have been taught to wide acclaim across North America since 1992 and are designed for professionals needing to fill in the gaps, build a solid base of knowledge and understand how it all fits together.

1. Cut through the buzzwords, jargon and vendor hype to gain a structured understanding of telecommunications and networking, allowing you and your team to make meaningful comparisons and informed decisions… knowledge skills you can put to use today and in the future.
2. Get up to speed on the latest developments and trends. This course is totally up to date with SIP trunking, VoIP, 4G, Optical Ethernet, MPLS and more, providing far more benefit than outdated courses.
3. Get a solid base of vendor-independent knowledge of technologies, service providers, standard practices and mainstream solutions that you can build on.
4. Understand how it all fits together.
5. Learn more with instructor-led training, where you can interact and ask questions – the best kind of training you can get – and instructors consistently rated "excellent" on student evaluations.
6. Obtain course books with detailed text notes that will serve as a valuable reference for years.

Develop a structure for understanding technologies and solutions, allowing you to make informed choices and meaningful comparisons -- knowledge you can't get on the job, reading trade magazines or talking to vendors.

Free Bonuses! Online Courses & CTNS Certification

As a free bonus, you get the full set of Teracom's Online Courses. Not only are these an excellent way to take a second pass through various topics, the Online Courses include pictures of equipment and additional lessons beyond those in this course.

If you choose to write the optional exams, you can earn Telecommunications Certification Organization (TCO) Certified Telecommunications Network Specialist (CTNS) Certification, complete with Certificate suitable for framing and a personalized Letter of Reference for your résumé.

Certification is concrete proof of your knowledge. The included Unlimited Plan option allows you to repeat exams as needed until you pass… which means guaranteed to pass if you're willing to learn!

More Free Bonuses! Final Exam & CTA Certification

The prestigious TCO Certified Telecommunications Analyst (CTA) Certification is also included as a free bonus.

The CTA Certification Exam is the "final exam" for Teracom's core training. This final is optional!

You can earn (CTNS) Certification, with Certificate suitable for framing and a personalized Letter of Reference detailing an impressive list of subjects you are certified in, and inviting the reader to contact Teracom for verification. You may list Teracom as a reference on your résumé.

Students also find the chapter-by-chapter exam useful to make sure they didn't miss any key points.

Your Course Materials: An Invaluable Reference

Every course comes complete with a high-quality course book that's been called the best on-the-job reference tool around. Written in plain English, this easy-to-use reference includes copies of all graphics PLUS extensive detailed text notes. Topics are organized in logical groups to give you easy reference after the seminar to the practical experience, theoretical background, and unbiased information on industry technologies, products and trends you'll need. With numerous chapters covering all major topics, you'll obtain an invaluable resource impossible to find anywhere else in one book.

Get a sneak preview of the course materials via the tutorials at www.teracomtraining.com.

Detailed Course Description

Day 1: Fundamentals of Telecommunications

The first part provides an understanding of the telephone network, traditional telephony, SIP and VoIP, digital communications, the telecom business and players, the Cloud and wireless. We'll demystify buzzwords and jargon, provide a clear structure for understanding the components of telecom networks including loops and trunks, switches, VoIP, SIP trunking, digital voice and video, ILECs and CLECs, the network "cloud", how services are actually provided, plus wireless: mobile networks, cellular to 4G, WiFi… and how it all fits together.

Objectives	***What you will learn***
• Understand telecom fundamentals: • Telephony and the telephone network • Voice over IP • Digital voice and video • The telecom business, ILECs and CLECs • The Cloud and how services are provided • Wireless telecom: cellular to 4G and WiFi. • Fill in the gaps in your knowledge. • Form a solid base on which to build.	• The structure and operation of the telephone network. • What analog means. The voiceband. Loops and trunks. • Plain Ordinary Telephone Service • Voice over IP (VoIP) concepts and components • Traditional PBX & Centrex vs. VoIP Soft switches • What digital means. How voice is digitized. MP4 video. • All about LECs, CLECs, IXCs and interconnections. • Wireless and cellular concepts, terminology, standards. • 3G CDMA, 4G LTE and WiFi

1. Fundamentals of Telephony

It all begins with the Public Switched Telephone Network and Plain Ordinary Telephone Service. We'll establish with a model for the PSTN, explaining analog circuits, loops, trunks, remotes, circuit switching and other telephony buzzwords and jargon. We'll understand how the network is organized into access, switching and transmission. We'll cover Centrex and traditional PBX, then understand Voice over IP (VoIP) concepts and components, soft switches and SIP trunking.

A. History of Telecommunications
B. The Public Switched Telephone Network (PSTN)
C. Analog Circuits
D. What is Sound?
E. The Voiceband
F. Plain Ordinary Telephone Service (POTS)
G. DTMF Address Signaling
H. Signaling System 7 (SS7)
I. Network Architecture: Access, Switching, Transmission
J. Telephone Switches
K. Traditional PBX and Centrex
L. VoIP
M. SIP, Soft Switches, Hosted PBX and IP Centrex
N. SIP Trunking

2. Digital

With the fundamentals in place, we'll cover digital. You will learn what is really meant by "digital", how voice is digitized to 64 kb/s, and MP4 digital video. We'll complete the story understanding how the resulting bits are communicated using binary pulses on copper and fiber.

A. Analog and Digital: What Do We Really Mean?
B. Continuous Signals, Discrete Signals
C. Voice Digitization (Analog → Digital Conversion)
D. Voice Reconstruction (Digital → Analog Conversion)
E. Voice Digitization: 64kb/s G.711 Standard
F. Digital Video: H.264 / MPEG-4 Standard
G. Implementing Digital: Binary Pulses

3. The Telecommunications Industry, Competition and Interconnect

In this chapter, you will gain a solid understanding of the telecommunications business and how it is structured, including telephone companies, local and long-distance, and how these companies compete and interconnect. You will understand how each organization fits into the picture, including ILECs, IXCs, resellers, CLECs, collocations, regional rings, POPs and MANs.

A. US Domestic Telcos
B. AT&T and Verizon
C. Canadian Telephone Companies
D. PSTN Switching Center Hierarchy
E. 1984: LECs, IXCs and POPs - Last Mile: Switched Access from ILEC
F. Competitive Carrier - Last Mile: Dedicated Line from ILEC
G. Competitive Carrier - Last Mile CLEC: Collocation plus ILEC Dark Fiber
H. Competitive Carrier Network Model: Regional Rings, POPs and MANs

4. The Cloud

Next, we will demystify the Network Cloud. You will learn why people draw a picture of a cloud to represent a network, then most importantly, what is inside the cloud and understand what's really going on. You will learn about the three basic kinds of network services available, the equipment used to implement each, and how services are actually provided… highly useful knowledge when planning, ordering, troubleshooting, auditing, or otherwise dealing with carrier services.

A. Anatomy of a Service
B. Inside the Network Cloud
C. Network Equipment: How and Where Each is Used
D. Summary: How Services Are Provided

5. Wireless

We'll complete the first part of the course, and the first day, with wireless, concentrating on cellular. You will learn the components and basic principles of operation of mobile networks, tracing a call from end-to-end from mobile phone to landline. You'll understand the requirements for coverage, capacity and mobility, and why cellular radio systems are used. We'll cover voice over cellular, then the exploding area of "data" over cellular, which is actually Internet access. With the concepts in place, we'll sort out different cellular technologies and generations: without bogging down on details, you will learn the differences between 2G GSM/TDMA, 3G 1X, UMTS and HSPA CDMA, and 4G LTE with its OFDM. We'll conclude with WiFi, more properly called 802.11 wireless LANs, and satellite communications.

A. Wireless
B. Mobile Networks
C. Cellular
D. Second Generation: Digital Cellular
E. Digital Cellular: Voice
F. Digital Cellular: Data = Internet Access
G. Spectrum-Sharing Technologies: FDMA, TDMA, CDMA, OFDM
H. 3G: 1X, UMTS, HSPA (CDMA)
I. 4G LTE and OFDM
J. Dynamic Assignment of Subcarriers
K. Wireless LANs: WiFi & 802.11 Standards
L. Satellite

Day 2: Networks and Services

The second day begins with a discussion of how voice and video are treated like data to achieve convergence: one network and one service for everything. We'll put in place a solid base of the principles and technologies that were developed for communicating data, including circuit configurations, LANs and WANs, protocols, standards and the OSI layers and the essentials: packets and frames. After a chapter on IP packets and addresses, we'll cover fiber optics and transmission systems and fiber, DSL and cable for the last mile. The course is completed with carrier networks and how MPLS is used as a traffic management tool for both private services and for the Internet. We wrap up with a discussion of project methodology, a course summary and future trends.

Objectives	***What you will learn***
• Understand how convergence was achieved by treating telephone and television like data • Learn network fundamentals: fiber and DWDM, Ethernet LANs, IP packets and IP addresses • Differentiate between TDM channels vs. IP packets on fiber in the network core • Understand fiber, DSL and cable for the last mile • Learn how services are provided by carriers, Service Level Agreements and Class of Service • Get the big-picture view of MPLS and how it is used by carriers for traffic management. • Learn how the Internet and ISPs fit in. • Understand the present and future of telecom.	• What convergence is and how it was achieved. • Fundamentals of LANs and WANs • The OSI Layers • Ethernet, MAC addresses and frames • IP packets, IP addresses and routers • Ethernet switches, VLANs and Optical Ethernet. • Fiber optics and transmission systems. • Fiber, DSL and cable for the last mile. • Carrier networks and Service Level Agreements • How MPLS is used for traffic management • The Internet, ISPs, Internet telephony, Internet VPNs

6. "Data" Communications and Network Basics

We'll begin the second day understanding what "convergence" is and how it was achieved by treating telephone calls and television like data communications. Then, we'll get you up to speed on the concepts, jargon, buzzwords and technologies that were originally developed for datacom and now used for everything. You'll learn the basic ITU model for data circuits, then the OSI layers that organize the functions which must be done. The basics are rounded out with plain English explanations of Ethernet, MAC frames and MAC addresses, IP packets and IP addresses, and how they relate.

A. Convergence: Treat Everything Like Data
B. Data Circuit Model
C. LANs
D. Wide Area Networks
E. Protocols and Standards
F. OSI 7-Layer Model
G. Ethernet and 802 standards
H. Frames and MAC Addresses
I. Layer 2 Switches
J. Packets and IP Addresses
K. Packets vs. Frames

7. IP Networks, Routers and Addresses

This chapter is dedicated to IP. We begin with the simplest framework, a private network, to understand routing and bandwidth on demand. We'll introduce the term Customer Edge router and examine the functions performed by a router. Then we will cover IPv4 addressing: IPv4 address classes, static vs. dynamic addresses and DHCP, public and private addresses and NAT, and IPv6, how IPv6 addresses are allocated and assigned, and types of IPv6 addresses.

A. Simplest IP Network Example: Routers Connected with Dedicated Lines
B. Routers and Customer Edge (CE)
C. IPv4 Address Classes
D. DHCP, Static and Dynamic Addresses
E. Public and Private IPv4 Addresses
F. Network Address Translation
G. IPv6 Address Allocation and Address Types

8. Transmission Systems

We'll begin with the basics of fiber and wavelengths, then compare older channelized transmission systems like T1 and SONET to newer packet-based transmission systems based on IP and Optical Ethernet.

A. Fiber Optics and Fiber Cables
B. Wave-Division Multiplexing: CWDM and DWDM
C. Channelized Time Division Multiplexing (TDM)
D. DS0s and SONET Framing
E. Channelized Digital Hierarchy: Standard Legacy Transmission Speeds
F. Digital Carrier Systems: Legacy Transmission Technologies
G. Statistical Time Division Multiplexing
H. Overbooking and Bandwidth on Demand
I. IP Packets and Optical Ethernet

9. The Last Mile

To complete the transmission story, we'll explore how the "last mile" is connected: fiber to the premise, active and passive, and fiber to the neighborhood followed by DSL or cable modems on copper.

A. Fiber to the Premise: PONs and Active Ethernet
B. DSL
C. DSLAMs
D. Fiber to the Neighborhood (FTTN), DSL to the Premise
E. Broadband Carriers: FTTN & Broadband Coax to the Premise
F. DOCSIS and Cable Modem Standards

10. MPLS and Carrier Networks

IP packets will be used to carry everything, including phone calls and television. But IP in itself does not include any Quality of Service (QoS) mechanism, no way to prioritize or manage traffic. This is implemented with MPLS. In this chapter, you'll learn the basics of carrier packet networks, identifying Provider Edge (PE), Customer Edge (CE), access and core, and the important concept of a Service Level Agreement. Then without bogging down on details, you'll get a big-picture understanding of MPLS and how it is used to implement business customer services, differentiated services and Class of Service (CoS), service integration and traffic aggregation.

A. Carrier Packet Network Basics
B. Service Level Agreement
C. Provider Equipment at the Customer Premise
D. Virtual Circuit Technologies
E. MPLS
F. MPLS VPNs for Business Customers
G. MPLS and Diff-Serv to Support Classes of Service
H. MPLS for Service Integration
I. MPLS for Traffic Aggregation

11. The Internet

The Internet is a giant collection of interconnected IP networks called Autonomous Systems across which the public can communicate IP packets. In this chapter, we'll understand what an ISP is and how they connect to others via transit and peering, and conclude by understanding telephone calls over the Internet and secure VPNs over the Internet.

A. A Network To Survive Nuclear War
B. The Inter-Net Protocol
C. Internet Service Providers
D. Internet Telephony & VSPs
E. Internet VPNs

12. Wrapping Up

The final chapter brings all of the concepts together with a top-down review. You'll learn valuable insight into telecom project management and methodology, and review telecom, datacom and networking technologies, services and solutions. We'll conclude with a peek at the future of telecommunications, where the telephone network and Internet become the same thing.

A. Technology Deployment Steps
B. Requirements Analysis
C. High-Level Design
D. Review: Circuits and Services
E. Access and Transmission Technology Roundup
F. Private Network
G. Carrier IP Services
H. The Future

Our goal is to explain the underlying concepts, providing you with a practical understanding of telecom technologies and services, without bogging down on details.

We'll start at the beginning. Understand the fundamental ideas. Understand mainstream technologies that implement these ideas. Learn the acronyms, abbreviations and jargon. Get an unbiased big-picture view that will give you the knowledge to ask the right questions, make meaningful comparisons and informed decisions.

The course book includes full diagrams, extensive detailed text notes and extra reference material, impossible to find in one place anywhere else, and will be a valuable resource for years to come.

Plus, you get the CTNS online courses with unlimited repeats and CTNS certification included as a free bonus.

Your team will gain a solid base of structured knowledge that can be applied to immediate projects and can be built on in the future… an investment in productivity that will be repaid many times over.

Visit teracomtraining.com to get started today!

Bring This Course To Your Location

Since 1992, we have provided high-quality on-site training in telecommunications for non-engineering professionals at AT&T, Verizon, Bell Canada, TELUS, Qualcomm, 3Com, Cisco, Intel, Alcatel, Nortel, Teleglobe, the NSA, Defense Information Systems Agency, US Coast Guard, US Air Force, Office of Naval Intelligence, MindSpring, APEX Telecom, Equifax, Transamerica Insurance, The Hartford, American Broadband, Cap Gemini, ComSec Establishment, MicroCell Telecom, TDS Telecom, Kyocera, Winstar, Western Wireless, US Cellular, Ericsson/Hewlett-Packard, Entergy, Intelsat, RangeTel, Alltel, Vertek, DSCI, Cox Cable, Florida Power and Light, Frontier Communications, Western Iowa Telephone, Genuity, LG Electronics, Panasonic, SouthEast Telephone, State of Nebraska, State of Montana, Tektronix, Bermuda Telecom, UTS and the Universal Service Administrative Company... to name a few. Plus, we have a GSA contract with pre-approved government pricing.

Onsite training has special advantages:

- Your personnel will be up to a common speed with a solid knowledge base.
- We'll fill in the gaps and put in place productivity-enhancing structured understanding of telecom and networking fundamentals, wireless, TCP/IP, MPLS, VoIP... to meet your requirements..
- The seminar will be a strong team-building exercise.
- Significant reductions in training costs are often achieved.
- Each student receives a detailed workbook / textbook that will be a valuable reference for years to come.
- Pre- and post-training testing is available, including team results on a spreadsheet

We have built a solid reputation for delivering high-quality private team-training programs that are a resounding success. We'd like to do the same for you! Please contact us at 1-877-412-2700 for more information.

DVD-Video Training Courses

Teracom's self-paced DVD-video courses: ideal for those who need to learn about telecom, datacom, networking, IP, wireless and VoIP outside of structured seminars. Our current library includes:

V1 **Fundamentals of Telecom 1**
The PSTN • Telephony • Telecom Equipment • The Telecom Industry

V2 **Fundamentals of Telecom 2**
Digital Voice • DS0-DS3 • TDM • T1 • T3 • ISDN • SONET • Fiber • DWDM

V3 **Fundamentals of Datacom and Networking**
WANs and LANs • MAC Frames, IP Packets • Network "Cloud"

V4 **Understanding Networking 1**
OSI Layers • Protocol Stacks • The FedEx Analogy • IP Addressing, DHCP, NAT • Bandwidth on Demand Services • Frame Relay • ATM • MPLS

V5 **Understanding Networking 2**
Internet • ISPs • Security • Viruses • Firewalls • Encryption • IPsec • VPNs

DVD6 **Wireless**
Radio Fundamentals • Spectrum • Mobility • Cellular Principles • Mobile Internet • TDMA, CDMA, OFDM • 2G GSM, 3G 1X, UMTS and HSPA, 4G LTE • Bluetooth, WiFi, security, WiMAX, satellite & more

V8 **Understanding Voice over IP 1**
Components • Standards • Architectures

V9 **Understanding Voice over IP 2**
Voice Packetization • Quality • Codecs, Jitter, Packet Loss • Diff-Serv • Network QoS with MPLS

V10 **Understanding Voice over IP 3**
SIP and IP Call Flow • Carrier Interconnect • Megaco

Each course comes with an approx. 2-hour full-color multimedia DVD combining an on-camera instructor, extensive graphics and point-by-point bullets, along with a comprehensive course book with copies of all graphics and detailed reference notes sure to be a valuable reference for years to come.

It's as close as you can get to private lessons from the Director of the Institute without actually being there. PLUS, each course comes with an online test and certification suitable for framing.

We are offering some very special pricing packages including our core training package (V1-V5) at US$879 for the set of five courses on DVD with detailed workbooks. Other packages including the full library and individual courses are also available. Compare this to $500 for *one* course on CD elsewhere and you'll agree that this is a very good deal. **Please visit teracomtraining.com for full details**.

Hundreds of organizations have purchased our video sets!

Order today to make this invaluable addition to your telecommunications training library.

Online Courses and Certifications

Get up to speed and build a solid base of knowledge in telecom, datacom, networking, IP, MPLS and wireless… with certification to prove it. Based on Teracom's proven instructor-led training courses developed and refined over twenty years providing training for organizations including AT&T, Verizon, Bell Canada, Intel, Microsoft, Cisco, Qualcomm, the CIA, NSA, IRS, FAA, US Army, Navy, Marines and Air Force and hundreds of others, Teracom online courses are top-notch, top-quality and right up to date with the topics and knowledge you need.

We've partnered with the Telecommunications Certification Organization for certifications. Register for a Certification Package, complete the courses and exams, and earn TCO Certification, with diploma, letter of reference and more. With the Unlimited Plan, you can repeat the courses and exams as many times as you like… which means guaranteed to pass if you're willing to learn.

Teracom online telecom training elearning courses are a full multimedia experience. The text spoken by the instructor is displayed on the right side of the screen while animated diagrams, pictures, bullets and video are displayed on the left. Each lesson in a course has several parts, followed by informal quiz questions to ensure key points are understood. Every course includes a full-color course completion certificate suitable for framing.

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About the Author

Eric Coll is an international expert in telecommunications, data communications and networking and has been actively involved in the industry since 1983. He holds Bachelor of Engineering and Master of Engineering (Electrical) degrees.

Mr. Coll has taught telecommunications technology training seminars to wide acclaim across North America since 1992, and has broad experience working as an engineer in the telecommunications industry. He has worked for Nortel's R&D labs as a design engineer on projects including digital voice and data communications research and digital telecom network equipment design, and on satellite radar systems, consulting on Wide Area Network design, and many other projects in capacities ranging from detailed design and implementation to systems engineering, project leader and consultant.

In addition to being founder and Director of Teracom Training Institute, Mr. Coll provides consulting to the telecommunications industry, specializing in telecommunications technology R&D and as a Subject Matter Expert in tax matters.

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