

# CORE ETHERNET TESTING WORKSHOP

## COMPANY DATA

Based in Brentwood, Tennessee, The Sage Group has successfully trained professionals for over twenty-five years by positioning itself at the forefront of technological innovation and sharing industry-specific expertise with eager learners from coast to coast. The Sage Group maintains a strategic alliance with Nashville State Community College that permits it to offer courses that may be applied toward an Associate Degree in General Technology. In addition, The Sage Group provides professional IT Mentoring Services to assist companies and government agencies working on IT projects, reducing their need to engage cost prohibitive external sources.

## OVERVIEW

Core Ethernet Testing provides participants with an opportunity to approach and analytically solve common and complex Ethernet network problems in the Core PBB (Provider Backbone Bridge). The course focuses on common network architecture for high speed data communications products (i.e. Carrier Ethernet, LTE backhaul), and common network interface hardware and switch equipment (Ciena). The course consists of a pretest, an overview of physical and logical network architecture, test procedures and interfaces, followed by a series of labs, each designed to address a progressively complex testing environment using a technician test set commonly used in the field.

## OBJECTIVES

At the conclusion of the course, participants will be able to:

- Explain network architecture and circuit design for data circuits in common carrier networks
- Explain network testing procedures, problem recognition, and perform analysis of physical layer, link layer, and data verification procedures
- Determine network configuration issues, causes of latency and resolution
- Explain the use and capabilities of the test set
- Demonstrate testing procedures on common network hardware and circuits

## DAY ONE

- Network Architecture / Circuit Architecture
  - Hardware and Point of Interface (POI) Connections
  - Point to Point and Multipoint Circuits
  - Physical Circuits and Virtual Circuits
- Defining Test Procedures
  - Hardware and Point of Interface (POI) Connections
  - Troubleshooting Processes
    - Physical Layer Verification
      - Electrical Connections
      - Fiber Connections
    - Link Layer Verification

- Data Payload Testing
  - Service Level Agreements
  - Latency Problems
  - Recognizing Network Configuration Issues

- Lab Zero - Test Set Familiarization
  - The Exterior - Buttons, Knobs and Holes for Cables
  - Accessories - Cables, Plugs
  - Status - Batteries, Options, Capabilities
  - Menus - Setting Up Interfaces for Testing
  - Testing Menus - Loopback, BERT, Y.1564, Port Status, Sync, Signal

## DAY TWO

- Lab One - Verifying Physical Layer Connectivity - Connecting the Test Set to Ports
- Lab Two - Connecting Test Set to Test Set (Back to Back BERT Testing)
- Lab Three - Back to Back Testing Through a Switch Network Using Ethernet MAC Addresses
- Lab Four - Back to Back Testing Through a Multi-switch Network Using TCP/IP Addresses
- Lab Five - Ciena Switch Configuration Parameters - Bert Testing to an Administrative Loopback on a Point to Point Circuit
- Lab Six - Performing a Y.1564 Performance Analysis Test with Multiple Ethernet EVC's on a Point to Point Circuit.
- Lab Seven - Performing a Y.1564 Performance Analysis Test with Multiple EVC's on a Multipoint Circuit - Two Endpoints.

## LABS

Labs are comprised of test sets and a lab base for testing. Technicians must bring their assigned test sets to class. The lab base is an interactive network consisting of Ciena access nodes, fiber optic and Cat6 cabling, and test points designed to simulate a customer demarcation point. Students assist in the construction of the lab and each lab completion is approved by the instructor before students can move forward.

## FORMAT

Core Ethernet Testing is a two-day, 16-hour instructor-led program that is presented in an interactive, learner-centered manner.

## BENEFITS

- Cost and Time Savings – Resolving trouble tickets quicker, and reducing the overall trouble ticket load, leads to less expense, resulting in a more profitable network and highly satisfied customers.
- Employee Confidence – Developing skills results in less frustration and leads to more technician confidence in themselves, their equipment, and the company.

THE SAGE GROUP

PHONE 877-697-2434  
FAX 877-697-2434  
WWW.THESAGEGRP.COM