Course Name: Copper Qualification for Advanced Data Services

Course Overview:
As copper ages and continues to be the workhorse of telecommunications, proper copper qualification for the type of service being offered is essential. This course provides detailed testing requirements and parameters for advanced data services over copper. Using test equipment, interpreting results, and service qualification are topics included in the course.

Course Length: 2 days

Who should attend?

- Field Service Technicians
- Field Engineers
- Managers/ Field Supervisors
- Design Engineers
- Electricians
- Managers or Supervisors

You will learn:

- Data fundamentals
- Electrical characteristics of copper
- DC testing and AC testing and test equipment
- Faults and Impairments of copper
- Time Domain Reflectometer (TDR) and test equipment
- Service specific testing requirements and parameters
- Advanced data service, bandwidth, and throughput qualification

Prerequisites: None

Customizable Course: Yes

Course Content:

Overview of Copper Networks
- Service offerings
- Distance, resistance, and gauge
- Frequencies
- Modulation
- Equipment

Data Fundamentals
- OSI Model
- Physical layer impact on upper layer technologies
    - Packets
    - Internet Protocol (IP)
    - Applications
- Bandwidth vs. Throughput
- Retransmissions
- Packet loss
- Latency

Advanced Data Services
- ADSLx
- HDSLx
- T1
- VoIP
- Cellular backhaul
- SCADA
- IPTV
- Metro Ethernet

DC Testing Review
- Electrical characteristics
- DVOM
- Resistance measurements
- Voltage
- Current

AC Testing Review
- Capacitance
- Inductance
- Balance
- Noise
- Power influence
- Cable length
- Impediments

Faults
- Shorts
- Opens
- Grounds
- Length
- Gauge changes
- Splices
- High-resistive faults
- Water
- Noise
- Imbalance

Time Domain Reflectometer (TDR)
- Setting up test
- Velocity of propagation
- Interpreting test results
- Measuring distance to faults