

Certified PROFINET Network Engineering Course

Agenda

Day 1: Introduction and How to Design a Network

- Introduction
 - Agenda review
 - Company history
 - House keeping
 - General introduction to Industrial Ethernet
- Introduction to PROFINET
 - Overview of the protocol
 - What is PI
 - How it basically works
 - Conformance levels
- Ethernet Protocols
 - OSI 7-layer model
 - Addressing
 - ARP, RARP
 - LLDP
 - DHCP, DCP
 - TCP, UDP
 - SNMP
 - Lab: IP and Ping
- Hubs switches routers and firewalls
 - Terms
 - Hubs
 - Bridges
 - Switches
 - Routers
 - Firewalls
 - Lab: Switch
- Redundancy
 - Introduction
 - Media Redundancy
 - System Redundancy
- Network Design
 - Basic design rules
 - Topology structure
 - Update rate and reduction ratio
 - Response time
 - Network load
 - Retry Threshold
 - Line depth
 - Load calculations
 - Security
 - Lab: Design Verification

Day 2: Installation, Setting up an IO-Controller and IO-Device, IRT and Wireshark

- Installation best practices
 - Different physical layers
 - Wiring
 - Connectors
 - Grounding
 - Installation best practices
 - Lab: Wiring
- The Device Model, Profiles, PROFINET for Process Automation
 - Profiles
 - PROFINET for Process Automation
 - Device Model
 - Addressing
 - Lab: Using an IO-Supervisor to get I&M data
- Setting up an IO-Controller
 - General method
 - GSD File
 - PROFINET Device Names
 - Detail Setup
 - Lab: Setting up a PROFINET Network
- Wireshark and the Start-up Cycle
 - Introduction to Wireshark
 - How to connect Wireshark to the network
 - Example: PROFINET Start-up Cycle
 - Lab: Wireshark and the start-up cycle
- Isochronous Real-Time Communications
 - Introduction
 - Different types of Ethernet
 - RT_Class_3
 - Configuration of IRT

Day 3: PROFINET Theory, Diagnostics and Troubleshooting

- PROFINET Theory
 - Real Time classes
 - Application Relationships
 - Communication Relationships
 - Data Frames
 - PROFINET commands
 - Lab: Start-up cycle revisited
- Acyclic Communications
 - Introduction
 - Why use Acyclic
 - Data map
 - Commands
 - Lab: Acyclic communications

- Diagnostic Model
 - Diagnostic Model
 - Severity
 - Alarms
 - Statuses
 - Summary
 - Lab: Diagnostics
- Troubleshooting PROFINET
 - Types of errors
 - Tools
 - Lab: Troubleshooting

Day 4: Review period and Testing

- Open review period (Q&A)
- Written test
- Practical test