SIEMENS

Advanced Switching and Routing in Industrial Networks with RUGGEDCOM (RC-ASWIROR)

Type

Instructor-led Learning

Duration and Continuing Education Units (CEU)

4.5 Days
0 CEUs

Target Group

- Engineer
- Operator
- Reliability
- Maintenance
- Programmer
- Sales
- Commissioning
- Other

Short Description

Reliable, performant and robust Industrial Ethernet infrastructures are the backbone of a modern industrial application. At the same time, it is required to connect different locations. The data communication for this is characterized by high availability under harsh conditions. Industrial Ethernet networks are up to these challenges.

Objectives

- Switching: In the Switching part of the course participants will gain the theoretical and practical knowledge required for real world implementation of high-available Industrial Layer 2 networks and the methods applied to operate and maintain such networks. You will also get familiar with seamless redundancy mechanisms, time synchronization methods and technologies.
- Routing: After completion of this section of the course participants will have theoretical and practical knowledge of routing protocols and concepts that help facilitate communications inside and between multiple network locations using Layer 3 networks as well as service provider backbones.
- The course includes ample time for practical exercises, diagnostics, and troubleshooting. At the end of the course, you are familiar with redundant network architectures based on the standard IEC 62439-3 (PRP/HSR) and will have the knowledge to plan, implement and provide support for Layer3 networks in an industrial or industry-related environment.

Content

- PRP Redundant Network Architecture
- High-Availability Seamless Redundancy Protocol (HSR)
- HSR / PRP node operation
- HSR to RSTP / PRP Coupling
- HSR to HSR Coupling (QuadBox)
- Importance of Time Synchronization
- IRIG-B Time Code Standard

- NTP and Simple Network Time Protocol
- IEEE 1588 Precision Time Protocol (PTP)
- OSPF Network Scalability and Multi-area Architecture
- OSPF Router Types
- Bridging L2 Networks using tunneling mechanisms
- Layer 2 Tunneling Protocol version 3 (L2TPv3)
- Multicast Routing
- Internet Group Management Protocol (IGMP)
- Dynamic Multicast Routing: Protocol Independent Multicast (PIM)
- Border Gateway Protocol (BGP)

Mandatory Prerequisites

Switching & Routing in Industrial Networks with RUGGEDCOM: RC-SWIROR

Note

With the training course “Advanced Switching and Routing in Industrial Networks with RUGGEDCOM” of the Industrial Networks Education – Certification Program, you will acquire the knowledge required to plan, implement, operate and maintain such networks.

Language

English