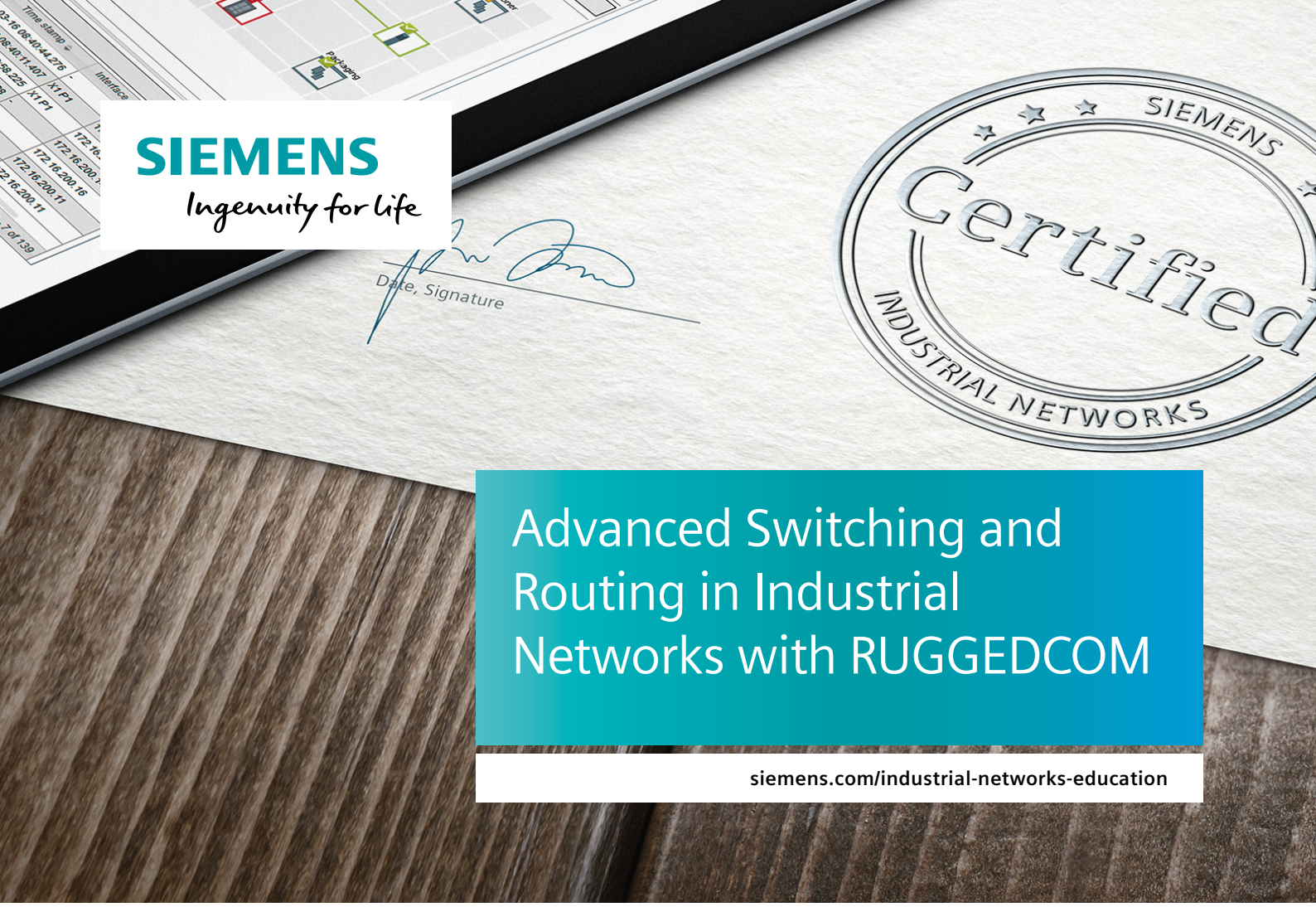

Advanced Switching and Routing in Industrial Networks with RUGGEDCOM

siemens.com/industrial-networks-education

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.

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.

Objective

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 which help facilitate communication 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 Layer 3 networks in an industrial or industry-related environment.

Content

Switching

- 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)

Routing

- 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)
- IPv6 and ICMPv6
- IPv6 Address Assignment and SLAAC

Target Group

Technical Sales Personnel

Industry: Commissioning Engineers, Project Engineers, Maintenance and Service Technicians

IT: Network Architects, Administrators, Service Personnel

Requirement

Participants shall have knowledge in accordance with the course “Switching and Routing in Industrial Networks with RUGGEDCOM”: participants must have the theoretical and practical knowledge to plan, implement, operate, and maintain industrial Layer 2 and Layer 3 networks. Participants are encouraged to attend the course “Switching and Routing in Industrial Networks with RUGGEDCOM” before this training course.

Duration

4 Days

Certification (Siemens CEIN-LEVEL)

This training prepares for the certification „Siemens Certified Expert for Industrial Networks – Switching and Routing“. A voluntary certification examination which consists of two sections will take place at the end of the training. As an option, the examination may be taken later.

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