SIEMENS

Industrial Networks Education
Switching & Routing in Industrial Networks with RUGGEDCOM

General Information

Course Code: IEN-RCMSWROU
Length: 5 Days

Audience

This course is for users who are involved with developing or sustaining networks in rugged environments – such as Electric Power, Transportation, Rail, and Defense markets, where RUGGEDCOM equipment is required. This includes, but is not limited to the following:

- Application Engineers
- Automation Engineers
- Communication Engineers
- Control Engineers
- Operations or IT Network Engineers
- Project Engineers
- Substation Engineers
- System Engineers

Prerequisites

- Basic knowledge of the topic "Ethernet".

- Familiar with network topologies, Media Access Control (MAC), Internet Protocol, data transport and associated technical vocabulary

- Familiar with the principles of switching operations, hubs and the OSI reference model.

- Recommended: Participants are encouraged to attend the Industrial Ethernet Fundamentals training course or pass a written examination.

Profile

This course is one of four Siemens Certified Professional for Industrial Networks (CPIN) certification courses offered under the program, which incorporate RUGGEDCOM products into the curriculum, ensuring students learn and test using products they use on a regular basis. The curriculum covers network solutions and how they connect to real-time systems in theory and in practice.

Throughout the course, students have ample time for practical exercises, diagnostics, and troubleshooting, as the course uses a hands-on model for realistic demonstrations. At the end of the course, students are equipped with the knowledge to plan, configure, operate and provide support for networks in their specific market.

Objectives

Upon completion of this course, the student will learn:

- Switching in Industrial Ethernet Networks
- Redundancy in a Switched Network (Spanning Tree Protocol)
- Network segmentation with Virtual Local Area Networks (VLAN)
- Increasing bandwidth availability (Link Aggregation)
- Integrating Serial Protocols
- Diagnostics and troubleshooting
- Practical exercises using the RUGGEDCOM ROS and RUGGEDCOM ROX product line

Topics

Switching

1. Industrial Ethernet Overview
2. Layer 2 – Data Link Layer
3. Training Set – Hardware Description
4. Commissioning (ROS Platform)
5. MAC Address Table
6. Ethernet Port Configuration
7. Redundancy in Switched Networks
8. Segmenting Switched Networks
9. Increasing Bandwidth Availability
10. Integrating Serial Protocols

Routing

1. Layer 3 – Network Layer
2. Commissioning (ROXII Platform)
3. LAN and IP Interfaces
4. WAN Interfaces
5. Internet Protocol Services
6. Routing Concepts
7. Dynamic Routing Concepts
8. OSPF
9. Virtual Router Redundancy Protocol