

IMINS2 (MANAGING INDUSTRIAL NETWORKS FOR MANUFACTURING WITH CISCO TECHNOLOGIES) 1.3

Objetivo

This course is a lab-based course which helps students with the foundational skills needed for the management and administration of networked industrial control systems. It helps plant administrators, control system engineers and traditional network engineers understand networking technologies that are needed in today's connected plants and enterprises. This course also helps prepare for the Cisco Industrial Networking Specialist Certification exam (200-401) and earn the Cisco Industrial Networking Specialist certification. This course is job-role specific and enables you to achieve competency and skills to configure, maintain, and troubleshoot industrial network systems while helping to ensure network availability, reliability, and Internet security throughout your company. Upon completion of this course, you will be able to:

- Understand the functions of the OSI layers and TCP/IP model
- Recognize the difference between enterprise and industrial networks
- Troubleshoot the common issues that are found in Layers 1, 2, and 3 of the OSI model
- Describe the functions and components of EtherNet/IP protocol
- Configure and troubleshoot EtherNet/IP on Cisco and Stratix switches
- Describe the functions and components of the PROFINET protocol
- Configure and troubleshoot PROFINET protocol on Cisco Industrial Ethernet devices
- Identify common network threats and resolutions, and configure basic security components (access lists and AAA features)
- Configure a wireless network within an industrial environment

Público Alvo

Plant administrators, control system engineers and traditional network engineers in the manufacturing, process control, and oil and gas industries, who will be involved with the convergence of IT and Industrial networks

Pré-Requisitos

It is recommended that a learner has the following knowledge and skills before attending this course:

- Describe network fundamentals and build simple LANs
- Establish Internet connectivity
- Manage network device security
- Expand small- to medium-sized networks with WAN connectivity
- Describe IP basics
- Identify Cisco industrial networking solutions
- Describe Cisco Industrial Ethernet switches, Rockwell Automation Stratix switches, and Cisco Connected Grid switches and routers
- Interpret design and drawings
- Recognize zone topologies
- Install and deploy industrial network components
- Perform basic maintenance tasks on the network
- Troubleshoot network and control issues

Carga Horária

40 horas (5 dias).

Conteúdo Programático

Module 1: Industrial Networking Concepts and Components

- Contrasting Enterprise and Industrial Environments
- Configuration Tools for Industrial Ethernet Switches
- Exploring Layer 2 Considerations
- Layer 2 Resiliency Using Spanning-tree Protocol
- Layer 2 Resiliency Considerations
- Layer 2 Multicast Control and QoS
- Exploring Layer 3 Considerations

Module 2: General Troubleshooting Issues

- Troubleshooting Methodologies
- Troubleshooting Layer 1
- Troubleshooting Layer 2 Issues
- Troubleshooting Layer 3 Issues

Module 3: EtherNet/IP

- Exploring Ethernet/IP Communications
- Exploring Hardware Capabilities
- Exploring CIP Sync, CIP Motion, and CIP Safety
- Exploring Embedded Switch Technology
- Configuring Stratix Switches

Module 4: Troubleshooting EtherNet/IP

- Identifying Common EtherNet/IP Issues
- EtherNet/IP Troubleshooting Methods and Tools

Module 5: PROFINET

- Describe PROFINET Functionality and Connection Method
- Describing Basic PROFINET Devices

Module 6: Configuring PROFINET

- Enabling and Prioritizing PROFINET at L2
- Integrating Cisco Industrial Ethernet Switches

Module 7: Troubleshooting PROFINET

- Identifying PROFINET Troubleshooting Methods
- Exploring PROFINET Troubleshooting Tools

Module 8: Exploring Security Concerns

- Overview Of Defense-in-Depth Strategy
- Controlling Access and Network Traffic

Module 9: 802.11 Industrial Ethernet Wireless Networking

- Understanding 802.11 Networks
- Industrial WLAN Design Considerations

Labs

- Connecting to the remote LAB environment
- Configuring 802.1q Trunks
- Configuring and Applying Custom Smartports Macros
- Configuring and Applying EtherChannel
- Configuring Resilient Ethernet Protocol
- Configuring Resilient Ethernet Protocol Features
- Configuring & Verifying Storm Control
- Verify IP IGMP Snooping
- Configure QoS settings
- Using IOS Troubleshooting Tools
- Troubleshooting Layer 2 Endpoint Device Connectivity
- Troubleshooting Layer 2 Inter-Switch Connectivity
- Troubleshooting Broken REP Segment
- Troubleshooting Layer 3
- Perform a Packet Capture
- Troubleshoot Network Issues
- Configure CIP on Industrial Switches
- Troubleshooting EtherNet/IP Communication Issues
- Configuring PROFINET Support
- Troubleshoot PROFINET Communication Issues
- Configure Port Security Mechanisms
- Configure AAA Authentication using Cisco ISE and 802.1x