

## Learning Services

# Managing Industrial Networks for Manufacturing with Cisco Technologies (IMINS2) v1.0



### Overview

The Managing Industrial Networks for Manufacturing with Cisco Technologies (IMINS2) version 1.0 Cisco<sup>®</sup> Training on Demand course provides you with the foundational skills needed to manage networked industrial control systems. You learn how to configure, maintain, and troubleshoot industry standard network protocols, and how to deploy best practices used in security and wireless technologies for industrial networks.

In addition, you learn how to ensure network availability and reliability and Internet security, and to understand the multiple industrial network technologies that you need in today's connected plants and enterprises. Finally, you learn how to make full use of current infrastructures while developing a converged platform for flexibility to support future business outcomes.

### Duration

The IMINS2 Training on Demand course is a self-paced course based on the 5-day instructor-led version of the training. It consists of 30 sections of instructor video and text totaling more than 58 minutes of instruction, along with interactive activities, content review, and challenge questions.

### Target Audience

This course is intended for 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, and those preparing for the 200-601 IMINS2 exam.

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## Objective

After completing this course, you should be able to:

- Recognize the difference between enterprise and industrial networks
- Understand the functions of the OSI layers and TCP/IP model
- Troubleshoot common issues found in Layers 1, 2, and 3 of the OSI model
- Describe the functions and components of the Ethernet and IP protocols
- Configure Common Industrial Protocol (CIP) on Cisco and Stratix managed switches
- Troubleshoot common Ethernet and IP issues
- Describe the functions and components of the PROFINET protocol
- Configure the PROFINET protocol on Cisco Industrial Ethernet devices
- Troubleshoot common PROFINET issues
- Identify common network threats and resolutions
- Configure basic security components (access lists and authentication, authorization, and accounting [AAA] features)
- Configure a wireless network within an industrial environment

## Course Prerequisites

The knowledge and skills necessary before attending this course is:

- 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

## Course Outline

- Section 1: Contrasting Enterprise and Industrial Environments
- Section 2: Configuration Tools for Industrial Ethernet Switches
- Section 3: Exploring Layer 2 Considerations
- Section 4: Layer 2 Resiliency Using Spanning Tree Protocol
- Section 5: Layer 2 Resiliency Considerations

- Section 6: Layer 2 Multicast Control and QoS
- Section 7: Exploring Layer 3 Considerations
- Section 8: Troubleshooting Methodologies
- Section 9: Troubleshooting Layer 1
- Section 10: Troubleshooting Layer 2
- Section 11: Troubleshooting Layer 3
- Section 12: Exploring Ethernet/IP Communications
- Section 13: Exploring Hardware Capabilities
- Section 14: Exploring CIP Sync, CIP Motion, and CIP Safety
- Section 15: Exploring Embedded Switch Technology
- Section 16: Configuring Stratix Switches
- Section 17: Identifying Common Ethernet/IP Issues
- Section 18: Ethernet/IP Troubleshooting Methods and Tools
- Section 19: Describe PROFINET Functionality and Connection Method
- Section 20: Describing Basic PROFINET Devices
- Section 21: Understanding Ring Network Requirements
- Section 22: Enabling and Prioritizing PROFINET and Layer 2
- Section 23: Integrating Cisco Industrial Ethernet Switches
- Section 24: Configuring PROFINET Alarms
- Section 25: Identifying PROFINET Troubleshooting Methods
- Section 26: Exploring PROFINET Troubleshooting Tools
- Section 27: Overview of Defense-in-Depth Strategy
- Section 28: Controlling Access and Network Traffic
- Section 29: Understanding 802.11 Networks
- Section 30: Industrial WLAN Design Considerations

Labs: Not Applicable



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