5 Days | Cisco CCNA Industrial Training Course

The Cisco Certified Network Associate Industrial (CCNA Industrial) Certification provides an entry level training program providing real-world skills with a comprehensive curriculum for engineers involved in manufacturing industries, process control and oil or gas industries where their tasks are convergence of IT and Industrial architectures.

The CCNA Industrial Training will provide the requisite knowledge, skills and capabilities to implement and troubleshoot industry led procedures on the technological architecture. With the help of classroom lectures and hands-on lab experiences, the participants will get a better understanding to operate the tools and methodologies in the real environment.

Course Details

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Course Outline

1.0 IP Networking

- 1.1 Describe the difference between enterprise environments and industrial environments

- 1.2 Describe the components for making the data flow highly available and predictable in an industrial environment (QoS, IP addressing, protocol, and hardware resiliency)

- 1.3 Interpret and diagnose problems that are related to QoS

- 1.4 Describe the differences between redundancy and resiliency requirements / approaches between the enterprise and the plant floor

- 1.5 Differentiate the capabilities of switch types

- 1.6 Describe the life cycle of a multicast group

- 1.7 Describe and configure the operation and use cases for NAT

- 1.8 Describe and configure the operation and use cases for static routing

- 1.9 Describe and configure VLAN trunking to a virtual switch

- 1.10 Describe and configure Layer 2 resiliency protocols (Spanning Tree, REP, Flex Links, and Ether channels)

- 1.11 Configure switch ports (macros, threshold alarms)

2.0 Common Industrial Protocol (CIP) Knowledge and Configuration

- 2.1 Explain the CIP connection establishment process

- 2.2 Explain producer/consumer models and implicit/explicit message models

- 2.3 Recognize communication abilities and capacities in different hardware/hardware generations (revisions)

- 2.4 Identify and describe the technologies that enable CIP Motion and CIP Safety

- 2.5 Identify the applicability, limitations, and components of a DLR implementation

- 2.6 Implement multicast features for CIP within a LAN

- 2.7 Optimize RPI on a CIP connection given a set of parameters

- 2.8 Enable and configure IEEE 1588 PTP at the system level

- 2.9 Configure the Stratix using the Add On Profile (AOP) in Studio 5000

3.0 ProfiNET Knowledge and Configuration

- 3.1 Describe the differences in ProfiNET support between Cisco catalyst and Cisco Industrial Ethernet (IE) switches

- 3.2 Describe the operation and purpose of ProfiSAFE

- 3.3 Describe the three basic ProfiNET devices and conformance classes

- 3.4 Describe the ProfiNET application classes and communication channels

- 3.5 Describe DCP and how it can be used for IP addressing of devices and configuration pushes

- 3.6 Describe ring network requirements for ProfiNET

- 3.7 Enable ProfiNET on the switch

- 3.8 Enable Layer 2 QoS to ensure ProfiNET is prioritized

- 3.9 Integrate the Cisco IE Switch in SIMATIC STEP 7 3.10 Configure and monitor ProfiNET alarm profiles on IE switches

4.0 Security

- 4.1 Describe the defense in-depth approach to securing the industrial zone

- 4.2 Identify how a security component (hardware/software) applies to a network device to meet the network security definition of defense in depth

- 4.3 Describe network device hardening

- 4.4 Describe the concept and mechanisms of implementing logical segmentation

- 4.5 Identify possible options to control traffic between zones (ACLs, firewalls, VLANs)

5.0 Wireless

- 5.1 Describe the differences between 802.11a/b/g/n/ac

- 5.2 Describe the components that you need to build multiple wireless networks on a single access point

- 5.3 Describe the difference between autonomous and controller-based access points and wireless workgroup bridges

- 5.4 Demonstrate a typical switch port configuration for autonomous and controller-based access points 5.5 Describe the limitations of using a workgroup bridge with a control communication

<u>**6.0 Troubleshooting**</u>

- 6.1 Troubleshoot advanced Layer 1 problems such as mechanical deterioration, electromagnetic noise issues, and infrastructure mismatches

- 6.2 Troubleshoot VLAN trunking

- 6.3 Troubleshoot an error disabled port

- 6.4 Troubleshoot basic spanning tree port state and root priority problems

- 6.5 Troubleshoot Layer 3 problems by inspecting route tables and NAT tables

- 6.6 Troubleshoot Layer 3 problems in a VRF-lite enabled environment

- 6.7 Demonstrate the ability to find the location of a device within a multi-switch network given an IP address

- 6.8 Identify methods for troubleshooting a communication problem in a CIP environment

- 6.9 Troubleshoot CIP using an Ethernet/IP browse tool, command line, and a web browser

- 6.10 Troubleshoot device communications performance

- 6.11 Identify the source of cable and device faults in a DLR

- 6.12 Identify methods for troubleshooting a communication problem in a ProfiNET environment

- 6.13 Troubleshoot ProfiNET using SIMATIC STEP 7 to view network topology, use the switch command line

Who Should Attend

The Cisco CCNA Industrial training course is ideal for those working with the profiles of:

- Plant Administrators,

- Control System Engineers And

- Traditional Network Engineers

Pre Requisite

The following candidates are ideal to opt for the CCNA Industrial course:

- (200-401) Managing Industrial Networks with Cisco Networking Technologies (IMINS) or

- CCENT or CCNA Routing and Switching, or

- Any valid CCIE certification and (200-601) Managing Industrial Networks for Manufacturing with Cisco Technologies (IMINS2)

Exams

IMINS2 Managing Industrial Networking for Manufacturing with Cisco Technologies (IMINS2) [200-601]

464, Udyog Vihar Phase
V,Gurgaon (Delhi
NCR)-122016,India   +91 8882 233 777   training@mercury.co.in   www.mercurysolutions.co

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