INFND

Understanding Cisco Industrial IoT Networking Foundation

40 horas | Industrial & IOT (Internet of Things) | Cisco

INTRODUÇÃO

The Understanding Cisco Industrial IoT Networking Foundation (INFND) v1.0 course gives you an overview of the protocols, applications, and network infrastructure you need to support and manage Industrial Internet of Things (IIoT) solutions. You will learn about IIoT industry verticals and how different protocols are used within them. The course also covers configuring and verifying the protocols on Cisco® IIoT networking devices.

This course will help you:

• Understand what IIoT is, IIoT market verticals, and the related standards;
• Understand the protocols, applications, and network infrastructure needed to support IIoT solutions;
• Identify Cisco IIoT networking devices and how they are different from other devices;
• Configure and verify IIoT networking devices to support IIoT solutions.

Technology areas:

• Internet of Things (IOT);
• IOT industrial;
• Routing and switching.

OBJETIVO DO CURSO

After taking this course, you should be able to:

• Define what IIoT is and identify IIoT architectures;

• Identify IIoT market verticals, and their motivations and requirements;

• Explore Cisco IIoT networking devices, how they are different from other devices, and use common administrative tools for managing them;

• Explore industrial communications protocols for control and automation, and how they have been adapted to run on top of a TCP/IP network infrastructure;

• Describe wireless protocols used in IIoT environments, including architectures and devices used;

• Understand the TCP/IP protocol stack and how it is used with other protocols in IIoT environments;

• Discuss network protocols for clock synchronization between network devices, and describe available tools for IIoT network administration;

• Discuss wireless technologies used in a core LAN, and their relevance to IIoT implementations;

• Explore field WAN technologies and how they are used in IIoT environments;

• Explore legacy protocols and explain the methods available to transport non-routable protocols over modern networks;

• Explain fundamental concepts of Quality of Service (QoS) related to IIoT network environments;

• Discuss Multiprotocol Label Switching (MPLS) operation, components, terminology, and features, and explore its use in IIoT environments;

• Explore Layer 2 and Layer 3 VPN technologies and describe the way they can be used on IIoT deployments;

• Describe Dense Wave Division Multiplexing (DWDM) technology and its use in IIoT environments;

• Explore Layer 1 and Layer 2 high availability technologies and redundancy mechanisms;

• Describe Layer 3 high availability and the need for Layer 3 redundancy in IIoT deployments.

PÚBLICO-ALVO

Control system engineers, Traditional network engineers IT and senior OT professionals currently responsible for network who are expanding their roles into IIoT initiatives.

PRÉ-REQUISITOS

The knowledge and skills that students are expected to have before attending this course are:

• CCNA® Routing and Switching (R&S) (or equivalent knowledge);

• Either the Control Systems Fundamentals for Industrial Networking (ICINS) course, the Managing Industrial Networks for Manufacturing with Cisco Technologies (IMINS2) course, or equivalent knowledge.

CONTEÚDO PROGRAMÁTICO

Course Introduction

Course Outline

Course Goals & Objevtives

Defining Industrial Internet of Things

Examining Common IIoT Verticals

Examining Cisco IIoT Networking Devices

Examining and Configuring Industrial Communication Protocols

Describing Wireless IIoT Protocols

Explaining and Configuring TCP/IP Protocols, Addressing, and Segmentation

Examining Network Services and Administration

Examining and Configuring Wireless Core LAN Technologies

Describing Field WAN Technologies

Examining and Configuring Transportation of Legacy Protocols

Describing, Configuring, and Verifying Quality of Service (QoS) for IIoT Protocols

Examining and Verifying MPLS and IIoT

Configuring and Explaining VPN Technology and IIoT

Describing DWDM

Configuring and Defining Layer 1 and Layer 2 High Availability Technologies

Defining and Configuring Layer 3 High Availability Technologies

Lab outline

Lab 1: Connect to the Cisco IIoT Devices

Lab 2: Use Industrial Protocols with Cisco Industrial Ethernet Switches

Lab 3: Configure an 802.11 Client

Lab 4: Configure an IPv6 Address

Lab 5: Configure Layer 2 Network Address Translation (NAT) and IP Addressing in an Example IoT Deployment

Lab 6: Configure and Verify Mapping of Address and Port Using Translation (MAP-T)

Lab 7: Implement VLANs

Lab 8: Configure IP Addressing, Layer 2 NAT, and Virtual LANs (VLANs)

Lab 9: Use Network Administration Applications

Lab 10: Configure Access Point and Wireless Network Using Wireless LAN Controller (WLC)

Lab 11: Configure Wireless Networking

Lab 12: Configure a WAN Interface on IR829B

Lab 13: Configure an Long- Term Evolution LTE Connection

Lab 14: Configure Raw Socket TCP Tunnel

Lab 15: Configure Distributed Network Protocol 3 (DNP3) to DNP3/IP Translation

Lab 16: Configure and Verify QoS for IIoT Networks

Lab 17: Configure and Verify MPLS for IIoT

Lab 18: Configure and Verify Virtual Private LAN Service (VPLS) VPNs

Lab 19: Configure and Verify Layer Two Tunneling Protocol v3 (L2TPv3) VPNs

Lab 20: Configure and Explain VPN Technology and IIoT

Lab 21: Configure Dynamic Multipoint VPNs (DMVPNs)

Lab 22: Configure FlexVPN

Lab 23: Verify Connectivity for IIoT Devices over MPLS VPN Backbone

Lab 24: Configure Layer 2 Redundancy

Lab 25: Configure Layer 3 Redundancy