WIFUND (IMPLEMENTING CISCO WIRELESS NETWORK FUNDAMENTALS)

Objetivo

"Implementing Cisco Wireless Network Fundamentals" (WIFUND), é um curso para cinco dias (40 horas), com a finalidade em ajudar os alunos em se preparem para a certificação CCNA Wireless, que é uma certificação de nível associado, para a especialização Cisco em redes Sem Fio. Esse curso prepara o aluno para a instalação, posicionamento, planejamento, implementação e operação de redes WLAN Cisco. O objetivo do curso é proporcionar aos alunos através da apresentação conceituais, e na realização de atividades práticas prepará-los para ajudar a projetar, instalar, configurar, monitorar e realizar tarefas na solução de problemas básicos de uma solução Cisco WLAN em instalações SMB (Small Business) e Enterprise. Ao completar o curso, o aluno vai estar preparado para: • Entender os princípios básicos e características de RF (Rádio frequência) • Entender os métodos de segurança empregados para diferentes equipamentos clientes • Definir a arquitetura para soluções Cisco WLAN e a infraestrutura necessária requerida; • Implementar uma solução centralizada Wlan utilizando AireOs ou IOS-XE nas controladoras; • Implementar a solução denominada "Converged Wireless Network", utilizando IOS-XE em Switches e Controladoras; • Implementar uma solução pequena e remota utilizando as características denominadas "FlexConnect", "Autonomous" ou arquiteturas em nuvem (Cloud); • Proceder atividades básicas de manutenção e suporte; • Descrever os requerimentos para uma projeto de redes WLAN.

Público Alvo

Este curso é destinado aos profissionais que estão envolvidos na gestão técnica em soluções Cisco WLAN, que envolve as atividades de instalação, configuração, operação e solução de problemas. Esse público inclui: • Engenheiros de rede; • Administradores de rede; • Operadores de suporte.

Pré-Requisitos

Para um melhor aproveitamento desse curso é recomendado que o aluno possua os seguintes habilidades e conhecimentos prévios: • Certificação CCNA ou possuír conhecimentos equivalentes (curso ICND 1 e 2)

Carga Horária

40 horas (5 dias).

Conteúdo Programático

Course Introduction

Module 1: Wireless Fundamentals

Lesson 1: Explain Wireless Fundamentals

- Wireless Topologies
- Ad Hoc Networks
- Wi-Fi Direct
- Piconets
- Bluetooth
- iBeacon
- Near Field Communication
- ZigBee
- Infrastructure Mode
- Service Set Identifiers
- Workgroup Bridges
- Repeaters
- Outdoor Wireless Bridges
- Outdoor Mesh Networks
- Cordless Phones
- Other Non-802.11 Radio Interferers

Lesson 2: Describe RF Principles

- RF Spectrum
- Frequency
- Wavelength
- Amplitude
- Free Path Loss
- Absorption
- Reflection
- Multipath
- Scattering and Diffusion
- Refraction
- Line of Sight
- Fresnel Zone
- RSSI and SNR and SNIR

Lesson 3: Understand RF Mathematics

- Watts, Milliwatts, and Decibels
- Decibel Referenced to 1 Milliwatt
- Calculations Using the Rules of 3 and 10
- Decibel Referenced to Isotropic Antenna
- Effective Isotropic Radiated Power
- Discovery 1: Practice RF Math
- Answer Key: Practice RF Math

Lesson 4: Describe Antenna Characteristics

- RF Antenna Principles
- Common Antenna Types
- Omnidirectional Antennas

- Directional Antennas
- Antenna Connectors
- Attenuators and Amplifiers
- Lightning Arrestors
- Splitters
- Antennas and EIRP

Lesson 5: Describe the Basics of Spread Spectrum

- Spread Spectrum Transmission Technologies
- Frequency Spectrums
- Channel Width and Overlap
- Discovery 3: Explore the RF Spectrum

Lesson 6: Describe Wireless Media Access

- Wireless Frame Transmission
- Management Frames: Discovering the Network
- Control Frames: Improving the Network
- Data Frames – Using the Connection

Lesson 7: Describe Wireless Governance

- IEEE Wireless Standards
- WiFi Alliance
- Regulatory Bodies
- European Telecommunication Standards Institute
- 802.11 Standards for Channels and Data Rates
- 802.11a Protocol
- 802.11n Protocol
- 802.11ac Protocol
- Common WiFi Benefits of 802.11n/ac
- 802.11b/g/n/ac Coexistence

Module 2: Security and Client Access

Lesson 1: Describe Wireless Security Components

- WiFi Security Issues
- Authentication and Encryption
- Key Management

Lesson 2: Explain 802.11 Security

- Authentication
- Encryption
- Additional Security Measures

Lesson 3: Explain 802.1X/EAP Framework

• IEEE 802.1x and Its Components

Lesson 4: Describe EAP Authentication

• Certificates and Digital Signatures
• PKI Terminology and Components
• PKI in the WLAN
• EAP-Transport Layer Security
• Protected Extensible Authentication Protocol
• EAP-FAST

Lesson 5: Describe WPA and WPA2 Security

• WPA Authentication Modes
• Discovery 5: Review Centralized Authentication
• Answer Key: Review Centralized Authentication

Lesson 6: Provide Guest Access

• Authentication Methods
• Local Web Authentication—LWA

Lesson 7: Native Operating Systems for WLAN Connectivity

• Windows 7 Configuration
• WLAN AutoConfig Service Scan Logic
• Windows 8.1 Configuration
• Mac OS X Configuration

Lesson 8: Configure Smart Handheld Clients

• Configure Apple iOS Handheld Devices
• Configure Google Android 4.4 Clients

Module 3: Define the Cisco Wireless Network Architecture

Lesson 1: Define Cisco Wireless Network Deployment Options

• Cisco Unified Access Architecture

Lesson 2: Define One Management

• Cisco Enterprise and Cloud Managed
Unified Access
• Cisco Prime Infrastructure
• Meraki Cloud Based Management

Lesson 3: Define One Policy

- Cisco ISE Personas
- ISE Licensing Model

Lesson 4: Define the Cisco One Network

- Wireless Controllers as a Function
- Appliance Based Wireless Controllers Products
- AireOS Controllers
- Meraki Cloud Managed Indoor Access Points
- Cisco Aironet Access Points

Lesson 5: Mobility Architecture Concepts

- Understanding the Cisco WLAN Architecture

Lesson 6: Optimize RF Conditions and Performance for Clients

- Radio Resource Management and RF Groups
- Cisco CleanAir
- Band Select
- Cisco ClientLink

Lesson 7: Describe Layer 2 Infrastructure Support

- Mapping SSIDs to VLANs
- Describe Link Aggregation for AireOS and IOS-XE WLCs

Lesson 8: Describe Protocols Used in Wired Infrastructure to Support Wireless

- Function of Dynamic Host Configuration Protocol
- Function of Domain Name Services
- Function of Network Time Protocol
- Function of Authentication Authorization and Accounting
- Function of Management Protocols
- Control and Provisioning of Access Points

Module 4: Implement Centralized Wireless Access

Lesson 1: Initialize a Centralized WLC

- Centralized WLC Deployment and Configuration—Centralized with AireOS WLC
- WLC Command Line Interface
- WLC AireOS CLI Setup Wizard
- WLC AireOS GUI Setup Wizard
- WLAN Express Setup (WES)
- WLC Advanced Menu Tabs

- Controller Ports, Interfaces, and Mapping
- Interfaces
- Prime Infrastructure 2.2 and the WLC

Lesson 2: Describe AP Initialization

- Explain the AP Discovery Process
- Explain Universal AP Priming
- AP Failover Process
- AP Failover Priority
- Explain High Availability
- AP Modes of Operation
- Discovery 6: Initialize a Centralized WLAN Deployment

Lesson 3: Explore Additional WLC Features

- Explain and Configure Client Link

Lesson 4: Implement IPv6 in a Cisco Wireless Environment

- IPv6 Addressing Overview
- IPv6 Bridge Mode
- IPv6 Client Mode
- IPv6 in Infrastructure Mode
- Other IPv6 Services on the WLC

Lesson 5: Configure Client Access

- WLAN Open Authentication
- WLAN PSK Authentication
- WLAN EAP and RADIUS Authentication
- WLAN WebAuth Authentication

Lesson 6: Implement Roaming in the Centralized Architecture

- Intra-Controller or Inter-Controller Roaming
- Mobility Groups
- Layer 2 Dynamic Roaming in a Centralized AireOS Deployment
- Layer 3 Dynamic Roaming in a Centralized AireOS Deployment
- Roaming with Mobility Anchors

Module 5: Implement Converged Wireless Access

Lesson 1: Initialize a Converged WCM

- WLC/WCM CLI Initialization
- Catalyst 3850/3650 Switches GUI Setup and Configuration
- Web GUI Setup for Wired Network

- Wireless Web GUI
- Switch Ports, Interfaces, and Mapping
- Cisco Prime Infrastructure Management of WLCs/WCMs

Lesson 2: Describe AP Connectivity

- Access Point Connectivity
- Unsupported Features of Converged WCMs
- License Requirements of Converged WCMs

Lesson 3: Explore Additional Wireless Features

- Review and Configure Client Link
- Review and Configure Band Select
- Local Profiling and Local Policies

Lesson 4: Configure Client Access

- WLAN Open Authentication
- WLAN PSK Authentication
- Local-EAP Authentication
- WLAN Local-EAP Authentication
- Configuration of RADIUS Authentication
- WebAuth Authentication

Lesson 5: Implement Roaming in the Converged Architecture

- Converged Mobility—Overview
- Describe L2/L3 Roaming
- WebAuth Deployments
- Design and Scaling Best Practices
- Mobility Deployment Models—Centralized with AireOS WLC or IOS-XE WLC

Module 6: Implement Small and Remote Wireless Access

Lesson 1: Overview of the FlexConnect Architecture

- Overview of FlexConnect
- FlexConnect Groups
- FlexConnect Requirements
- Configure Client Access

Lesson 2: Overview of the Autonomous Architecture

- Autonomous AP Management Options
- Autonomous AP Initialization
- Autonomous AP Configuration

• Explore Additional Autonomous AP Features

Lesson 3: Overview of the Cloud Architecture

• Overview of the Cloud Products
• Infrastructure Requirements for Cloud APs
• Cloud AP Initialization
• Cloud AP Management
• RF/802.11 Access
• Client Access

Module 7: WLAN Maintenance and Troubleshooting

Lesson 1: Describe Wireless Maintenance

• Licensing Options
• Image Updates Methods
• Backup and Restore Process

Lesson 2: Explain Troubleshooting Tools

• Overview of Third-Party Tools
• Cisco Troubleshooting Tools

Lesson 3: Describe Troubleshooting Methodology

• Overview of Troubleshooting Techniques
• Overview of Best Practices
• Common Wireless Issues

Module 8: WLAN Design

Lesson 1: Predictive WLAN Design Process

• Predictive WLAN Design Process Overview

Lesson 2: WLAN Site Survey Process

• Off-Premise Predictive Site Surveys
• Initial Walk Through
• Pre Deployment Site Survey: Active Site Survey
• Post-Deployment Survey

Labs

• Lab 1: Configure Windows 7 Client Access
• Lab 2: Configuring the Wired Infrastructure
• Lab 3: Configuring the Centralized WLAN Deployment

- Lab 4: Configuring IPv6 Operation in a Centralized WLAN Deployment
- Lab 5: Configuring Security in a Centralized WLAN Deployment
- Lab 6: Deploying a Converged Access WLAN
- Lab 7: Configuring Security on a Converged WLAN Deployment
- Lab 8: Implement a FlexConnect WLAN Deployment
- Lab 9: Initialize an Autonomous WLAN Deployment
- Lab 10: Configure Security on an Autonomous AP WLAN Deployment
- Lab 11: Configure Security on a Cloud WLAN Deployment
- Lab 12: Perform Centralized Controller Maintenance
- Lab 13: Perform WiFi Scanning
- Lab 14: Perform a Predictive WLAN Design
- Lab 15: Perform Passive Site Survey Analysis