Certified Allied Telesis Professional (CAP) Wireless Routers – AT-CAP/WR

Duration: 2 day, Classroom based, Instructor led

Language: English

Certification Requirements:

- Attendees will be required to pass a written or hand-on exam at the completion of the course. The title of CAP/WR Certified Allied Telesis Professional (CAP) will be awarded to all attendees that receive a passing score on the exam.

Introduction:

- This course is aimed at providing in-depth knowledge to design, configure, deploy and troubleshoot a Wireless Routed Network made of Allied Telesis Wireless Routers. The goal of this 2-day course is to transfer knowledge to those partners, typically who sell installation and maintenance services to their customers and thus need to ensure they have enough skilled field and system engineers to do so.

Prerequisites:

- CAT or CAI/RS certification or entrance examination is required.
- Assessed knowledge of wireless technology is required

Intended Audience:

- Engineers who set up networks based on Allied Telesis Wireless Routers. The training is designed to provide to all participants the opportunity to make practical tests and to obtain the necessary knowledge to manage and troubleshoot ATI Wireless Routers.

Scheduling:

- To schedule a class or to get more information, please use our website: www.alliedtelesis.co.uk -> Service&Support -> Training
- or contact your regional training centers: Training.eu@alliedtelesis.com

Objectives:

- At the completion of the course attendees will be able to:
  - Design complex Wireless Routed and Meshed Networks with ATI AT-WR4500 Wireless Routers
  - Define and implement the correct configuration on AT-WR4500 Wireless Routers
  - Design and Configure bridged wireless networks with WDS, STP and RSTP
  - Design and Configure routed wireless networks using RIP and OSPF
  - Design and Configure Point to Point links
  - Design and configure Point to Multipoint Wireless Access Networks
  - Plan and implement firewalling rules
  - Plan and implement L2 and L3 QoS mechanisms and Policies
  - Plan and implement a full Hot Spot system.
  - Troubleshoot and fix a complex wireless network

Course Outline:

- **Introduction to AT-WR4500 series**
  - AT-WR456x High Performance Base Routers
  - AT-WR456x: Antenna Connectors
  - AT-WR4541 & 42 Wireless Routing CPE/Bridges
  - AT-WR454x Wall/Pole Mounting & Connectors
  - AT-WR4500 RouterOS v3 Major Features
  - AT-WR4500 Wireless Support
  - AT-WR4500 RouterOS: Licensing & Software Packages
  - AT-WR4500: RouterOS v3 Major Features & ATI supported packages
- **AT-WR4500 Installation and powering**
  - AT-WR454x Mechanical installation
  - AT-WR454x PoE Powering
  - AT-WR456x Mechanical Installation
  - AT-WR4500 Wireless specifications
  - AT-WR456x IEEE 802.3af Powering options
  - AT-WR4500 Models Naming Convention
- **AT-WR4500 First time configuration**
  - Accessing AT-WR4500 Routers via WinBox
  - Accessing AT-WR4500 Routers CLI via Telnet & SSH
  - Accessing AT-WR4500 Routers Web GUI
- **AT-WR4500 Command Line Interface (CLI)**
  - CLI: Syntax and levels
  - CLI: Print command and Lists
  - AT-WR4500 CLI: Commands
  - AT-WR4500 CLI: List example
  - AT-WR4500 CLI: Safe Mode
  - AT-WR4500 Scripting usage
- **AT-WR4500 WinBox**
  - Connecting Router
  - WinBox Buttons and Menus
  - WinBox Status Abbreviations
- **AT-WR4500 RouterOS Configuration Steps**
- **Wireless Interfaces Configuration**
  - Enable wireless interface
  - Selecting the right frequency band
  - ETSI Requirements
  - ETSI Parameters setting
  - Advanced Configuration Mode
  - ETSI parameters configuration
  - Manual TX Power Settings
  - Antenna selection
- **Point to Point Links for Connecting remote networks**
  - Planning a PtP link
  - Routed Point to Point Link
    - Wireless Interface configuration
    - 802.11 Terminology
    - The 802.11 bridging issue
    - Configure IP addresses
    - Add static routes

- **Bridged Point to Point link**
  - Bridge-StationWDS
  - Bridge-Station Pseudobridge
  - Add EoIP tunnel
  - Add Bridge Interface
  - Multi hop PtP
- **PtP Link: How to Maximize bandwidth**
- **Dual radio links**
  - Bonding two interfaces
  - PtP with bridge mode and static WDS
  - Configure IP addresses
  - Create a bonding interfaces
  - Configure Bridge interface
  - Full-duplex routing
  - Dual radio link separation
- **Special Radio Modes**
  - Turbo Mode
  - Transmitter unwanted emissions within the 5 GHz RLAN bands
  - Atheros compression
- **Verify the wireless link**
  - Check link status
  - Alignment procedure
  - Wireless Station status
  - Wireless AP Bridge status
  - Wireless Status from console
  - Remote device status
  - Client Connection Quality
  - Check connection quality
  - Run a bandwidth test
  - Wireless retransmissions
  - Tuning frame transmission
  - Enable wireless debug
  - Wireless Log Debug
  - AT-WR454x: Audio Alignment Mode
- **Securing the Network**
  - RouterOS Security
  - Access List & Connect List
  - Security Profiles (WEP,WPA,WPA2 802.1x,EAP,TKIP,AES,RADIUS)
  - AP side SSID Areas configuration
  - MAC radius authentication
- **Point to Multipoint links**
  - The Access Point Mode
  - Planning a PtM link
  - PtM application examples
    - WISP Point of Presence (POP)
    - Access Point for Intranet Access
  - Bridge with StationWDS
  - AP Bridge-StationWDS
  - Virtual AP
- **Strict QoS enforcement with TDMA Mode**
  - TDMA protocol key features
  - TDMA disadvantages
  - TDMA configuration

- Connection Tracking

- **Point to Multipoint provisioning**
  - Provisioning application examples
  - Static IP addresses Example
  - DHCP Example
    - DHCP server easy Setup
    - DHCP server manual configuration
    - DHCP server script
  - PPPoE Example
    - PPPoE Concentrator
    - PPP Profile
    - Users Database
    - Local users
    - Enable Radius
    - RouterOS Radius Dictionary
    - CPE configuration
    - Masquerade
    - Destination NAT

- **HotSpot Configuration**
  - Hotspot: the easy setup
  - Hotspot manual configuration
  - Hotspot users
  - Hotspot manual configuration
  - Hotspot DNS server
  - Hotspot dynamic firewall rules

- **User Manager: an entire HotSpot System in a Box**
  - Internal Radius
  - User Manager Setup
  - User Manager GUI Usage
  - Defining User's Profiles
  - Defining and Printing Access Tickets

- **Maintenance and Management tools**
  - Basic Settings
    - Configure device Identity
    - Change admin password
    - Add other users if needed
    - Stop and limit services
    - Set the clock
  - Firmware Upgrade
  - Monitor a WR4500 Network
    - Internal Graphing Tool
    - Ping
    - Traceroute
    - Bandwidth test
    - Torch
    - Netwatch
  - Wireless TOOLS
    - Scan
    - Snooper
    - Freq.Usage
    - Sniff
  - SNMP Protocol

- Disaster Recovery
  - Schedule a backup script

- **Meshed Networks & Routing**
  - MESH: Neighborhood Network
  - Layer2 vs. Layer3 protocols
  - Static and Dynamic WDS
  - WDS configuration and limitations
  - Rapid Spanning Tree Protocol example
  - RouterOS layer-2 MESH
  - Hybrid Wireless Mesh Protocol plus (HWMP+)
    - Reactive mode:
    - Proactive mode:

- **Dynamic Routing Protocols**
  - OSPF
    - OSPF router configuration
    - OSPF status
    - OSPF example script
  - RIP
    - RIP example

- **Packet Classification QoS & Firewall**
  - Packet Flow
  - Bandwidth management
  - Queuing Mechanisms
    - **PFIFO** - Packets First-In First-Out
    - **BFIFO** - Bytes First-In First-Out
    - **SFQ** - Stochastic Fairness Queuing
    - **RED** - Random Early Detect
    - **PCQ** - Per Connection Queue
    - **HTB** - Hierarchical Token Bucket
  - RouterOS Queues
  - Queues Sequence
  - Simple Queues Sequence
  - Simple/Tree Queue
  - Packet identification by MANGLE
  - Peer to Peer Protocols identification and limiting
  - Type Of Service
  - Wi-Fi Multimedia (WMM)
  - Firewall Filter Rules
  - Filter Sequence
  - Firewall Filter example