

# Course : Setting up a secure WiFi network

*Practical course - 4d - 28h00 - Ref. RSP*  
*Price : 2790 CHF E.T.*

This practical course will show you how to implement the main means of securing a WiFi network. You'll learn about the role of security and authentication equipment (certificates, Radius servers, etc.), and how to design and implement a security architecture.

## Teaching objectives

At the end of the training, the participant will be able to:

- ✓ Install and configure a WiFi access point
- ✓ Securing a WiFi network
- ✓ Implement a RADIUS server.

## Intended audience

This course is aimed at computer scientists and network engineers wishing to specialize in cellular networks.

## Prerequisites

Good knowledge of corporate networks. Experience in network administration desirable.

## Course schedule

### 1 Introduction to wireless networking

- Overview of wireless technologies.
- The "infrastructure" mode and the "Ad-hoc" mode.
- Frequency bands.
- Modulation, spread spectrum and antennas.

### Hands-on work

Install and configure a WiFi client. Capturing and analyzing network traffic. How to determine antenna types. Radiation.

### PARTICIPANTS

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### PREREQUISITES

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### TRAINER QUALIFICATIONS

The experts leading the training are specialists in the covered subjects. They have been approved by our instructional teams for both their professional knowledge and their teaching ability, for each course they teach. They have at least five to ten years of experience in their field and hold (or have held) decision-making positions in companies.

### ASSESSMENT TERMS

The trainer evaluates each participant's academic progress throughout the training using multiple choice, scenarios, hands-on work and more.

Participants also complete a placement test before and after the course to measure the skills they've developed.

## 2 802.11 physical and data link layers

- 802.11 architecture.
- Physical layer and underlay.
- CSMA/CA access method.
- Backoff's" algorithm.

### Hands-on work

Example of frequency band and access method selection.

## 3 Designing a company WiFi network

- Performance and architecture.
- Select access points.
- Equipment.

### Hands-on work

Set up an access point, connect clients.

## 4 Integrating the network into the company

- Plan radio frequencies.
- Radio coverage.
- The necessary cabling and connection to the wired network.
- Bridging and STP. VLAN integration.

### Hands-on work

Install and configure access points. Set up routers and gateways.

## 5 Securing a WiFi network

- Symmetric and asymmetric encryption algorithms.
- Hash functions.
- Authentication and certificates. Radius server.
- WiFi network security issues.
- WEP, TKIP, WPA and WPA2 protocols. Standards.
- 802.1x authentication. EAP...

### Hands-on work

Search for wireless networks, MAC filtering example. WEP and WPA protocol configuration and examples. Setting up a RADIUS server.

## 6 Administration and advanced techniques

- Centralized administration.
- Switch Wireless.
- How to protect yourself from pirate access points?
- VPN technology and wireless networking.
- Load balancing.

### Hands-on work

Install and configure a Wireless switch with access points.

## 7 Wireless network evolution

- New-generation standards.

### TEACHING AIDS AND TECHNICAL RESOURCES

- The main teaching aids and instructional methods used in the training are audiovisual aids, documentation and course material, hands-on application exercises and corrected exercises for practical training courses, case studies and coverage of real cases for training seminars.
- At the end of each course or seminar, ORSYS provides participants with a course evaluation questionnaire that is analysed by our instructional teams.
- A check-in sheet for each half-day of attendance is provided at the end of the training, along with a course completion certificate if the trainee attended the entire session.

### TERMS AND DEADLINES

Registration must be completed 24 hours before the start of the training.

### ACCESSIBILITY FOR PEOPLE WITH DISABILITIES

Do you need special accessibility accommodations? Contact Mrs. Fosse, Disability Manager, at psh-accueil@orsys.fr to review your request and its feasibility.

