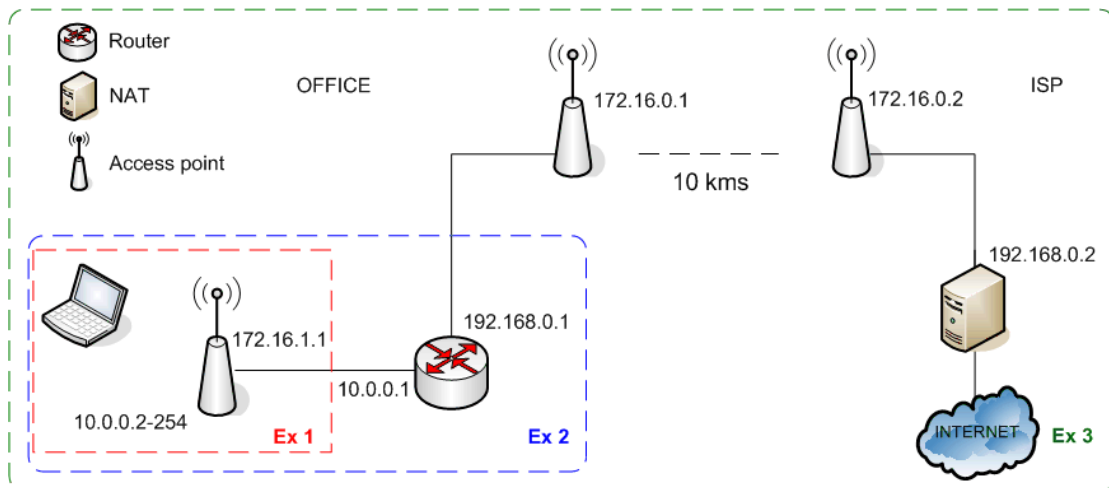


# ITRAINONLINE MMTK

## Exercises: Wireless Security

Developed by: Alberto Escudero Pascual IT+46



Let us consider the following scenario. A laptop is wirelessly connected to an office network (Ex1) by means of an access point. The laptop receives IP addresses from a DHCP server and router (Ex2.)

The whole office is connected to the internet by a dedicated PtP wireless link to an ISP. The wireless PtP link is composed of two access points that are acting as bridges.

The ISP border router is a NAT server (Ex3)

### Exercise 1: Data confidentiality and integrity

Consider the diagram (Ex1), where a laptop is connected via a wireless to the office network.

*Question 1: How can you guarantee data confidentiality and integrity?*

- Which functionality can you implement and how?
- Discuss all possible alternatives to ensure data confidentiality in the "first-hop" (between the laptop and the access point)

Now, consider the diagram (Ex3)

*Question 3: How can the ISP guarantee Data Confidentiality and Integrity in the PtP link?*

- Discuss the advantages and disadvantages of each solution.



## **Exercise 2: Authentication – access control**

Consider diagram (Ex2): the router is providing IP addresses to the wireless clients by means of DHCP.

*Question 1: How can you prevent that unauthorised users from obtaining an IP address from your network?*

*Question 2: How can you prevent unauthorised users from reaching the internet from your network?*

Consider diagram (Ex3): the ISP is providing connectivity to the office by means of a NAT server.

*Question 3: How can the ISP ensure that only your office is connected to their network?*

## **Exercise 3: Availability and prevention of DoS**

Consider the office diagram (Ex1, Ex2) and the ISP (Ex3)

*Question 1 : Describe what can go wrong in every communication “hop” in the whole picture. What can make the network unavailable?*

*Question 2 : Describe how to solve each of the security problems and who should be responsible of implementing them?*

*Question 3 : Think of one concrete scenario (hospital, school, telecenter etc) and describe the security requirements. Suggest security measures.*