Wireless - Lab

We will start with the wired network that you have built over the last 4 days.
We will focus on wireless in its role on the edge of the network – not so much as core infrastructure.

In the wireless lab, we will try to complete the following:

Table of Contents

We assume that each group has this network configured:

10.X0.1.0/24 - Core Network
10.X0.64.0/24 - Access Subnet (VLAN 64)
10.X0.65.0/24 - Access Subnet (VLAN 65)
10.X0.128.0/24 - Access Subnet (VLAN 128)
10.X0.129.0/24 - Access Subnet (VLAN 129)
10.X0.254.0/24 - Router Loopback Subnet

10.254.X0.0/30 – Connection to ISP
10.255.0.X0/24 – Connection to IXP

with X = group number

Preparation

Each group has

1x Ubiquiti Nanostation

1x Picostation

1x Bullet (+ external PoE)

1x AirView Spectrum Analyzer

Warning :)

This is an ambitious program for just a few hours of lab time!
The guide only gives the most important hooks – we will have to do a lot of inbetween steps.
We will do this together, and you are encouraged to take many notes :)

1. Basic AP Configuration

- IP/network planning: Based on the network you have, make a decision where to put the AP and what mode to run it in.

  Keywords: access network, DHCP/NAT? Bridging/Routing?
- Make a site survey (Suggestion: AirView or Aps or Laptops with Kismet/Netstumbler) and communicate with the other groups about your coexistence in frequency space!
  We will have up to 15 wireless devices operating in the 2.4 Ghz band in total – so we better cooperate!
- With your decisions made, fill out one config sheet for each device!
- Choose which of the Ubiquiti models to use! Explain!
- When done with the config sheet, connect to your device and configure it.
- Test your AP using your laptops/WiFi phones.

2. Firmware / Flashing

- Take either Nanostation or Bullet and find the appropriate OpenWRT firmware for it (hint: http://downloads.openwrt.org/kamikaze/8.09.2/atheros/)
- In the AirOS firmware, find the “upgrade firmware” function.
- Upgrade firmware
- Some more help: http://write.less.dk/?p=55
- Using the help above, try to manually flash the device back to its original firmware, or alternatively, another firmware. Keyword: tftp.

3. Optional configurations

Option 3.1: Configure a client

- In OpenWRT, configure your second device to become a client to your own AP from step 1.

Option 3.2: Configure a mesh network

- In OpenWRT, find out how to add software (through web GUI or command line opkg)
- Note: your device needs to be on the internet for that – but you also need to be able to connect to it over ethernet.
- Add olsrd-luci and additional software as needed.

Option 3.3: Build a captive portal

Note: while we suggest using Coova as a low cost Captive Portal, support for Ubiquiti devices is not fully in place yet – it was aimed at Linksys WRT54GL in the beginning.

At this point in time (March 2010), you have 3 options:

3.3.1 build it into AirOS via SDK - see: http://coova.org/node/3685

since we dont have time, we use the binary: https://www.coova.net/Controllers/UbiquitiAirOS

3.3.2 flash OpenWRT onto the Ubiquiti, add Coova - see:

http://dev.coova.org/svn/coova-ap/packages/

http://sourceforge.net/apps/trac/hotcakes/wiki/yfi_setup_nas_PicoStation2

3.3.3 use open-mesh / ROBIN firmware - see: http://dev.open-mesh.comhttps://www.coova.net/Controllers/UbiquitiAirOS

For this lab, we recommend 3.3.1!

Appendix: Wireless Device Config Sheet

Device		
Model & Hardware Version		
Serial number		
MAC address(es)		
Firmware (type, version)		
Node type e.g. AP, Bridge, Client, Mesh node, ...		
Host Name		
WLAN - Wireless		
WLAN - IP address		
WLAN - netmask		
ESSID		
BSSID		
Channel/Frequency		
Other wireless settings		
WAN		
WAN IP		
WAN netmask		
WAN gateway		
DNS		
LAN IP settings (if any)		
Antenna(s)		
Location / Lat Long, GPS		
Device History		
Comments		
Contact		