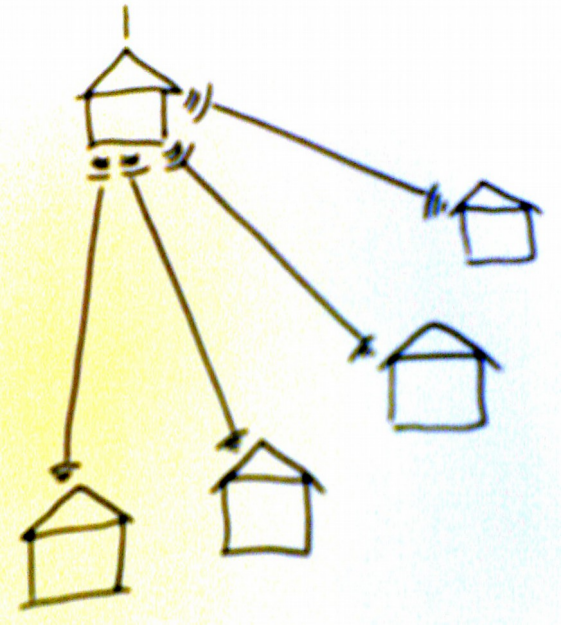
Wireless LAB 1
Access Point Configuration

Network Startup Resource Center
www.nsrc.org

Last edit: Sebastian Büttrich, Sept 2015

About LAB 1

- In this LAB 1, we will do **basic access point configuration**: we will set up a device to giver user access, or to allow remote locations to connect to it as clients
- In LABs following later, we will
  - Build point-to-point links
  - Add advanced security settings



Standalone vs. Controller

- You will find different types of wireless APs and therefore different ways to configure those:
  - Simple stand-alone APs for smaller networks or home use, or for point-to-point links – you typically configure those direct, with your laptop connected to the APs web GUI
    - Examples: Ubiquiti Nanostation, Rocket, Bullet
  - Managed APs , to be managed by a controller
    - Examples: Ubiquiti Unifi
- This LAB will focus on direct configuration – but you are welcome to also try controller setup

Rules for configuring devices

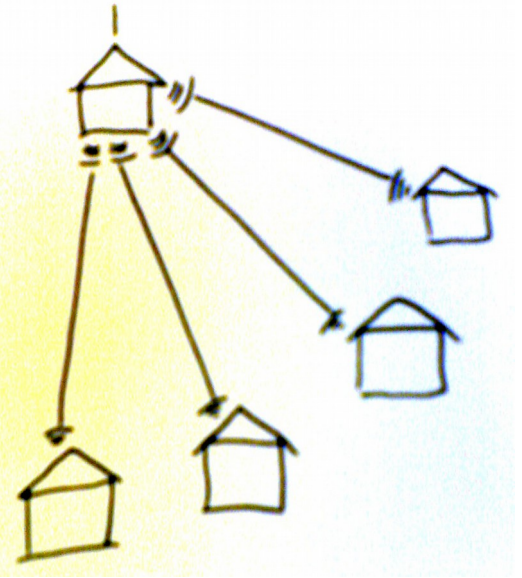
- Have the user manual/documentation at hand
- Document all settings of your device: make a device sheet (see appendix).
- When deploying, always make sure you have this device sheet available, offline or in print
- Always configure in the lab/office first, then deploy out there
- Do all setup work via a wired connection, if possible
- Make sure you have stable power. Use battery if necessary.

Planning

- Make a plan for your configuration before you start
- Suggestion for this LAB:

  Each group configures
  one independent Access Point

  to serve users or remote locations



Detailed plan

Before you start, decide on ...

- Mode: an AP? Client? Bridge? Router?

  .....

- IP settings: LAN side, wireless side

  .....

- SSIDs

  .....

- Frequencies/Channels

  .....

Step 1: Power

- Power up your device
- When using a PoE splitter/injector:
  - A PoE splitter/injector has two ethernet ports: one to power the device, one to connect to backbone or your laptop. **Always connect the powered side to the AP first!**

Source: Ubiquiti - http://ubnt.com

Step 2: Controls, LEDs and Interfaces

- Study all buttons, controls, LEDs and interfaces
- Make sure you understand what each of them is!
- Most important: ethernet interfaces, reset button!

Sources: Linksys – http://linksys.com / Ubiquiti - http://ubnt.com

Step 3: Reset the device

- If you are uncertain whether your device has been used/configured before: Reset it!
- If the device is new, you may skip this.

Source: Ubiquiti - http://ubnt.com

Step 4: Connect

- Connect your laptop to the appropriate ethernet interface. You might have to reconfigure your laptop's ethernet settings for that.
- Alternatively, you might connect to your device via a switch.
- In any case,
  you will need to know the devices default IP,
  or in case you give it a DHCP lease, you will need to know which IP number it received.
- In your browser, find the devices web admin interface.

Source: Ubiquiti - http://ubnt.com

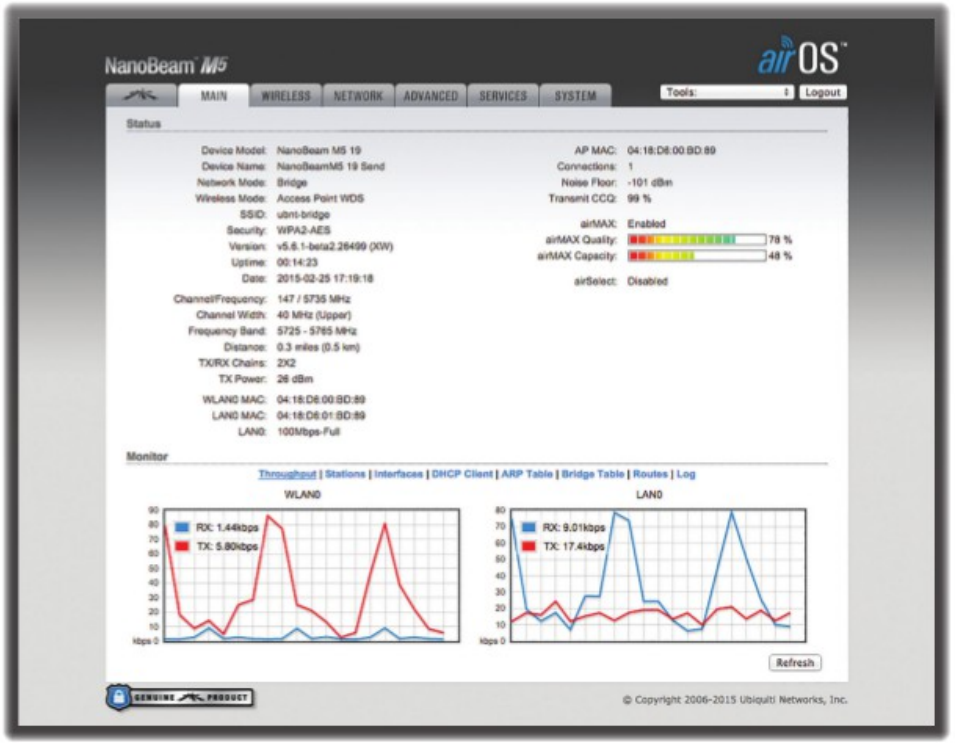
Step 5: Log on

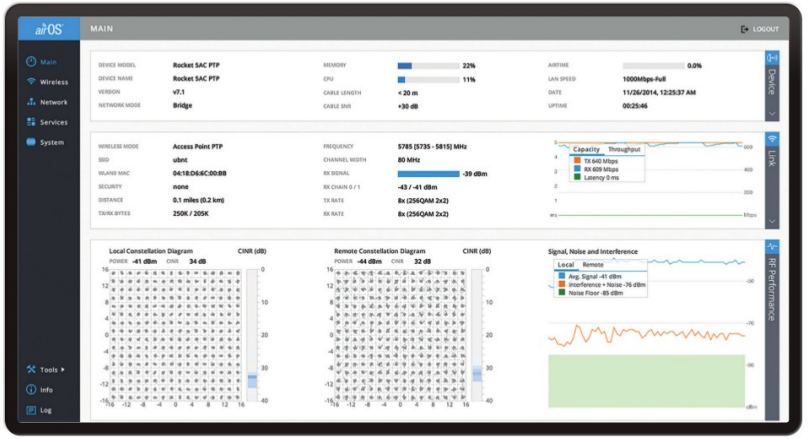
- Using the default username and password, log on to the web interface.

Source: Ubiquiti - http://ubnt.com

Step 6: Web interface

- Web interfaces change from vendor to vendor, version to version. Get familiar with the one you see!





Source: Ubiquiti - http://ubnt.com

Step 7: Password!

- The first thing to do:

  Change the admin password!

  Do it now!

  Serious!

Step 8: Mode

- Set the mode of your device:
  - Access Point?
  - Client?
  - Bridging? Routing?
  - Repeater?
- For this lab, choose “Access Point”.
- We will come back to this when we build point-to-point links, in other LABs.

Step 9: SSID

- SSID should be chosen to make sense to you and the users.
- For this lab, a good choice is:

  Group#

  AP_YourName

Source: Ubiquiti - http://ubnt.com

Step 10: Frequency/Channel

- Set channel based on the plan you made earlier.
- Avoid interference with others and with existing networks.

Source: Ubiquiti - http://ubnt.com

Step 11: Output (TX) power

- Study the available range.
- Discuss regulations – what are the limits?
  - In most places, 802.11b/g/a/n/ac limit is 20 dBm.
- For this lab, a moderate output power might be enough. Experiment with it!

Source: Ubiquiti - http://ubnt.com

Step 12: Security settings

- For this LAB, choose an appropriate security level, e.g.
  WPA2-PSK
  to set a non-personalized general key for your network.
- More advanced security settings include

  802.1x / EAP

  authentication.

Source: Ubiquiti - http://ubnt.com

Step 13: Save & Test

- Save your configuration
- Disconnect your laptops' wired connection to the AP, and try to log on to your new wireless network.

Appendix:
Device Configuration Sheet

This sheet should be printed out,

and be completed for each device that is being configured.

Device sheets should be kept available for later LABs and for deployment work.

Device Configuration Sheet

Device		**Wireless**	
Model & Version		IP address(es)	
Serial Number		SSID	
MAC addresses		TX Power	
Firmware		Channel / Frequency	
Mode (AP, Client, ..)			
		LAN / Wired	
Controller (if any)		IP address(es)	
		DNS	
		Gateway	
		VLAN	
Antenna(s)		**Contact (name, mail**	
Location		**Comments**	
Power			