# Wireless device configuration

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# Agenda

- Types of hardware
- General rules and tips
- Interfaces of a wireless device
- Step-by-step guide

# Types of hardware

- **Wireless devices come with many different names and functionalities**
- **Most devices you find today are more than just access points – they can be routers, bridges, clients, repeaters. Many include an ethernet switch.**
- **Wireless devices can also be self built from standard computer boards (e.g. ITX boards, Soekris, ALIX, etc)**
- **Replacing the original software of a device (the “firmware”) can change the functionality – we call this “flashing”**

# General rules and tips

# What you need

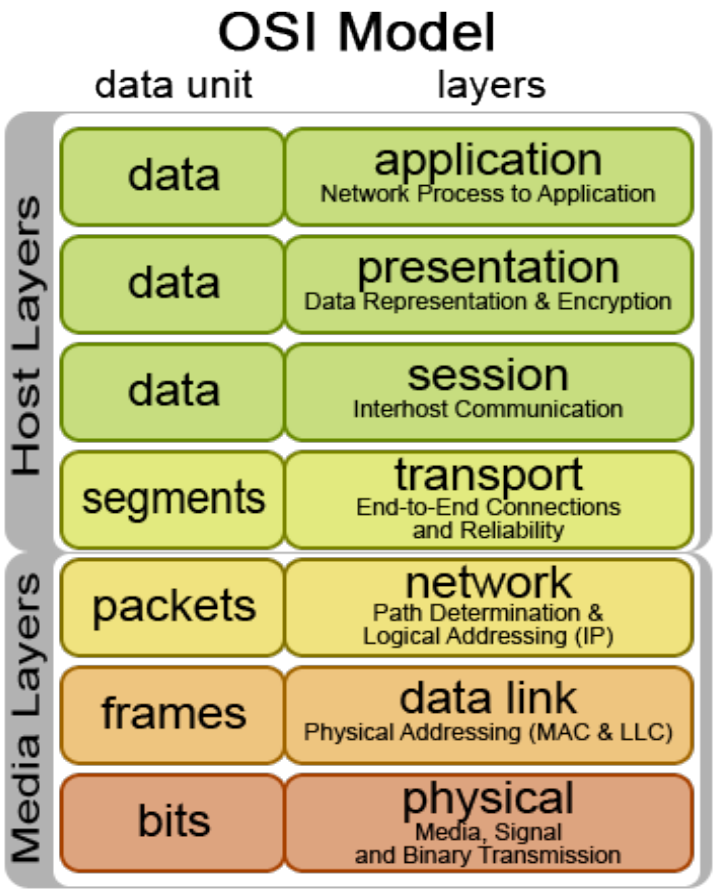
- a PC / laptop with wireless and ethernet interfaces
- standard TCP/IP software tools (ping, route, etc)
- maybe vendor specific software
- wireless signal/survey software
- paper and pen!

# Before you start

- Get to know the device and its default settings. **Read the manual. Make sure you have all information on paper, not online**
- Consider the physical installation: placement, power supply, antennas, weather, temperature, humidity ... and all other factors that are not software related.
  This includes: people around you!
  Make a **complete site survey**!
- Make sure you have **stable power supply** – especially when flashing. Power failure during flashing might kill your device. Consider UPS or battery.

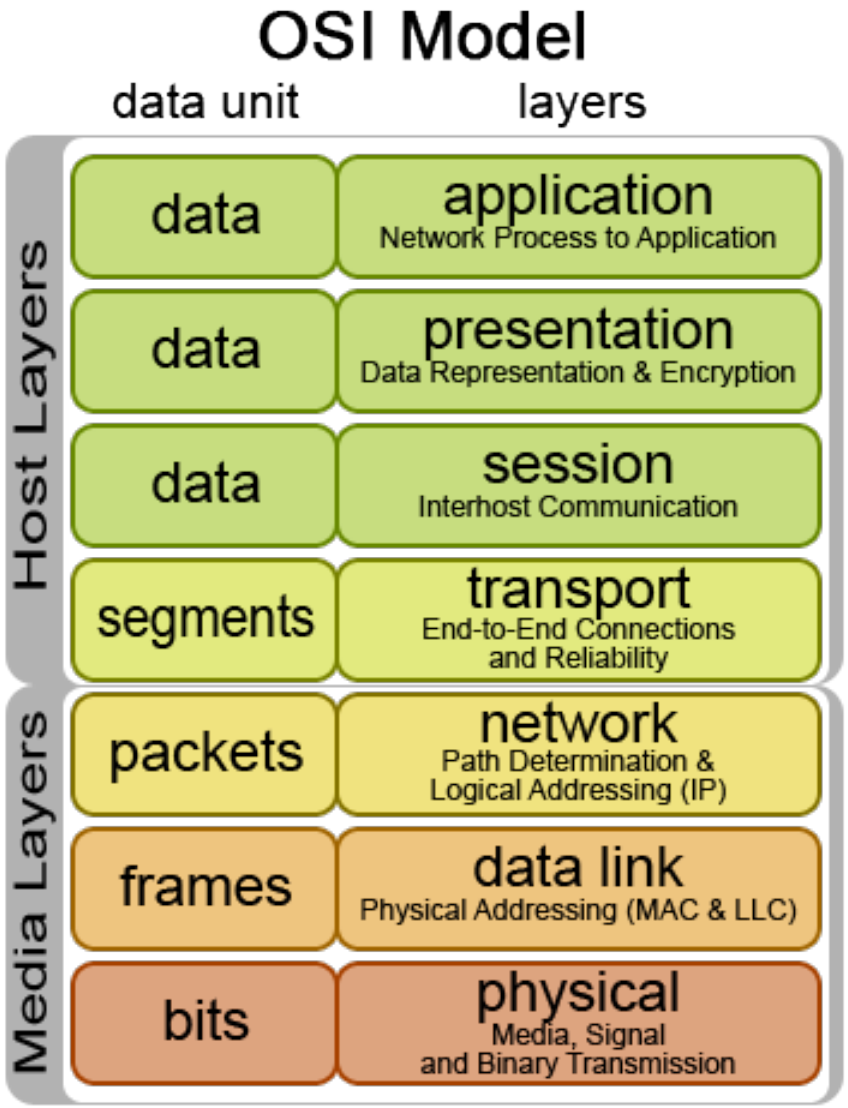
# Remember the 7 layers

- The 7 layer OSI model – always remember which layer you are on, in what you are doing.
- This will also be important in troubleshooting!



# Settings & their layers

- **Physical Layer**
  Channel, TX Power, Speed
- **Link Layer**
  Mode, SSID, MAC filter, Beacon interval, RTS/CTS, Fragmentation
- **IP Layer**
  IP settings
- **Application Layer**



# Interfaces of a wireless device

# Interfaces

- Typically you find:
- **the ethernet side**: often called WAN – typically to an ISP, an internet connection, or a LAN. A pure Access Point only has this one ethernet port.
- **the wireless side:** often called WLAN - to local network / wireless clients. Sometimes called the radio side.
- Often you find Wireless Routers/Gateways – they have additional ethernet ports on the local network side (LAN) and do more than pure Access Points. Don't confuse the interfaces!

# Interfaces of a wireless device

- let us look at some devices and identify interfaces.

# Step-by-step guide

# Web interfaces

- The interfaces look different from vendor to vendor, from model to model, and they change all the time – but they all contain the same basic elements.
- Try to remember those basic principles, not what they look like

# Get started

- **Make a plan** for all settings, and a drawing.
- **Take notes** (on paper!) about every step, especially when changing passwords, IP numbers and network settings

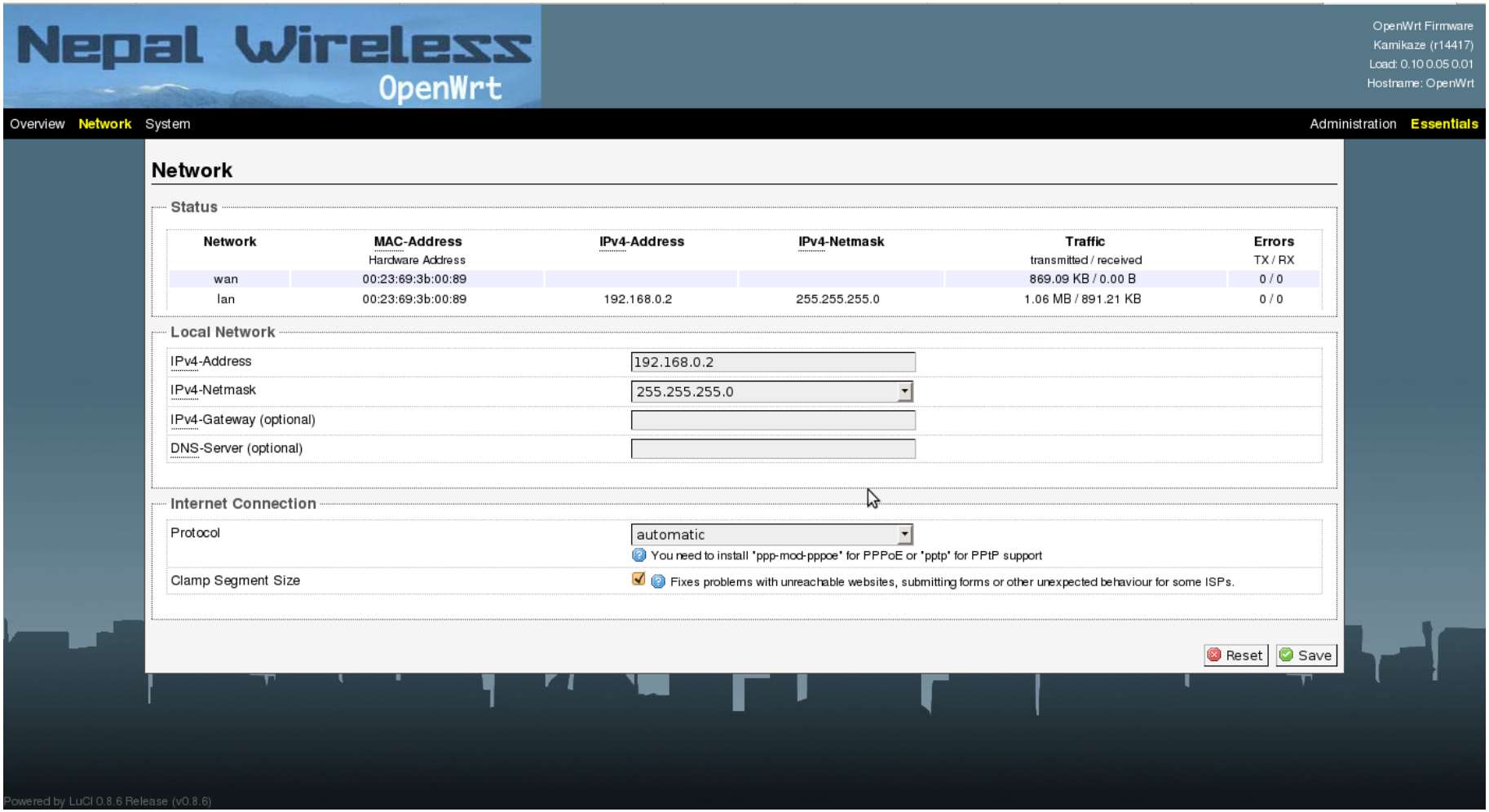
# Step-by-step, Part 1: Basics

- **Reset the device**, if you are uncertain whether it is in default state.
- **Connect** your computer to it - **wired** or wireless
- **First thing: change** the default Admin **password**. Do it!
- **Do it Now! :) Now!**
- If your device can be more than a pure Access Point, then **set the mode**: Access Point, Bridge, Client, Repeater, Gateway?

# Step-by-step, Part 2: IP/network settings

- IP Address(es)
- Netmask
- Gateway
- DNS server
- DHCP server - maybe
- then adjust your computers settings, if needed

# Web interfaces / OpenWRT - Network

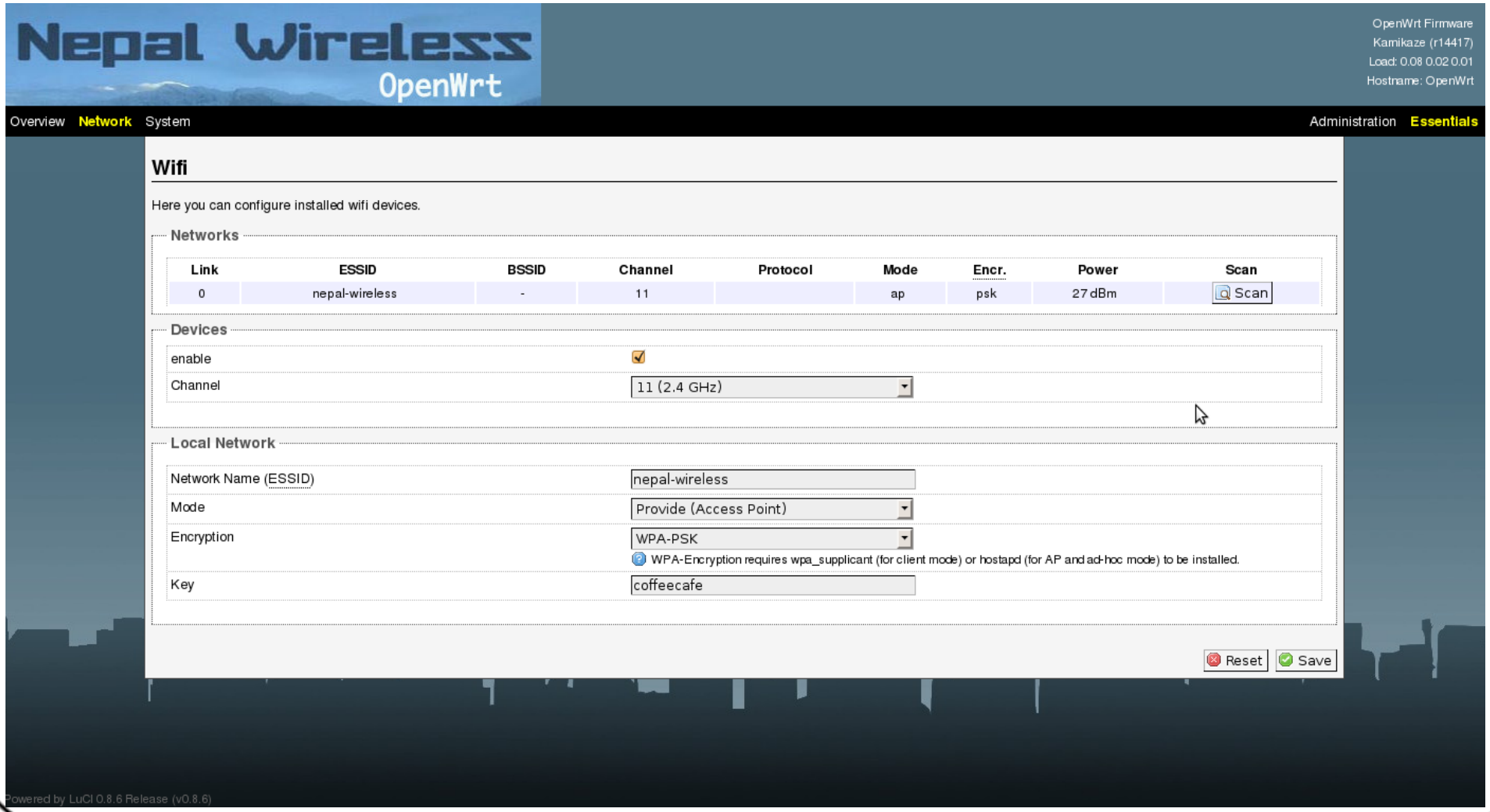


# Web interfaces / Ubiquiti - Network

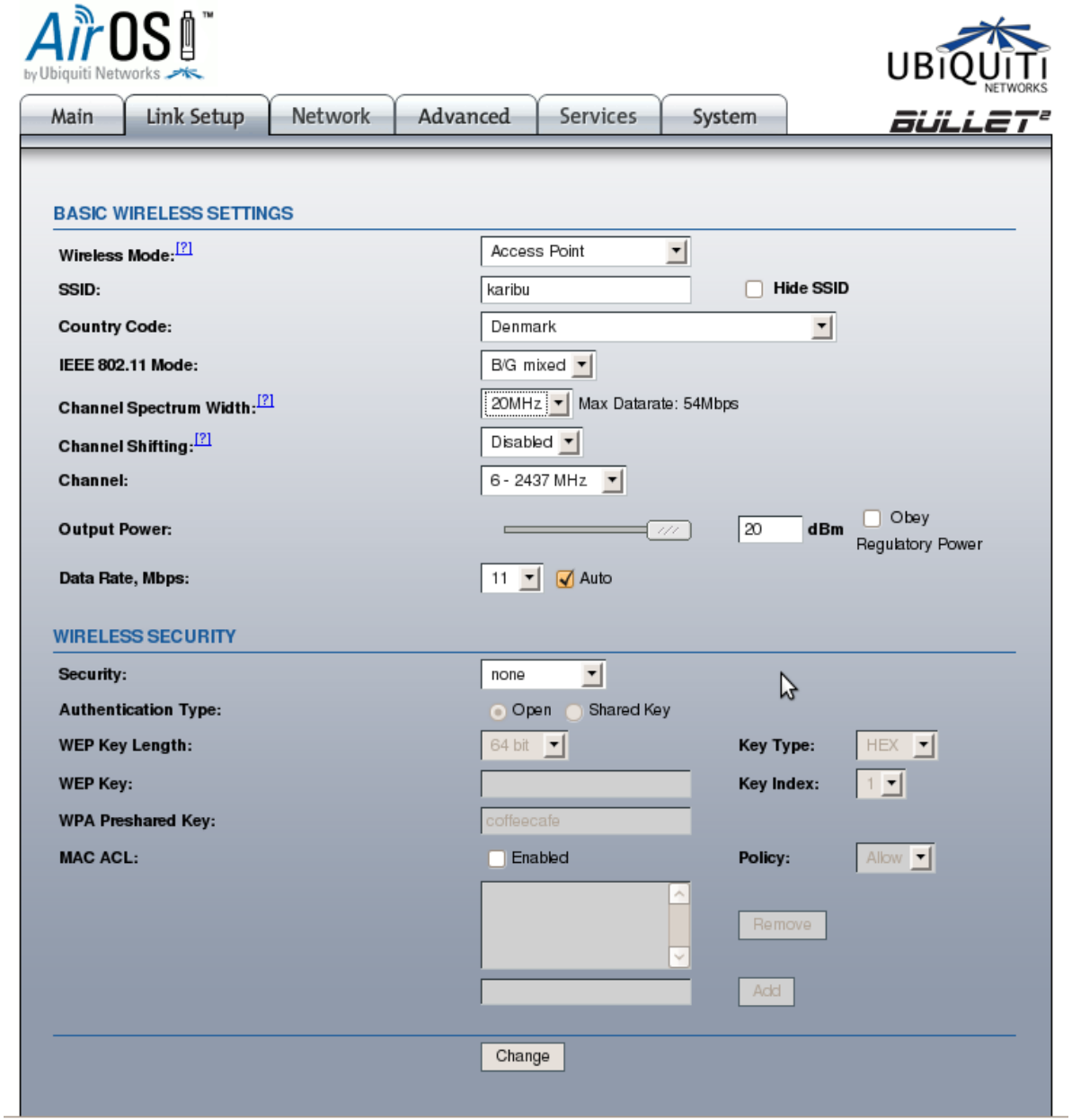
# Step-by-step, Part 3: wireless settings

- Channel
- SSID
- Wireless Mode (a/b/g)
- Output Power
- Data rate
- Security settings: WEP, WPA, etc

# Web interfaces / OpenWRT - Wireless



# Web interfaces / Ubiquiti - Wireless



# Step-by-step, Part 4: advanced settings

- There is more – for example the advanced wireless settings. So go through all other settings, and at least try to understand what they do – even if you do not use them.
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Sources: this presentation from
http://wirelessu.org/node/148