How to Choose Wireless Equipment

Training materials for wireless trainers
Commercial Versus DIY Solutions

find better title

standard VS NOT-STANDARD

evolution of price and performances
What you might need

Wireless equipment require wires, connectors and hardware for proper operation, besides suitable software

- Switch or computer connected to Ethernet
- Data Cable with RJ45 connectors
- PoE injector
- Wireless Router or Bridge
- RF cable with proper connectors
- Lightning Arrestor and Grounding System
- Antennas
- Power Conditioning Equipment
Component Interconnect

- Wireless to Ethernet bridge
- CATS carrying data and DC power
- POE Injector
- DC Transformer
- UPS
- Ethernet switch
- Hello Joe!
- 8 dBi Omni
- N Connectors
- LMR-400 feed line
- 24 dBi Parabolic dish
- Access Point
- Amplifier
- RP-TNC Connectors
- Pigtail adapter cable
- DC Transformer
- Lighting arrester
- UPS
- Ethernet switch
- to AC Power
- to AC Power
[10+ Kilometers]
Commercial Versus DIY Solutions

- Locally supplied components
  - Vendor reputation and goods quality (previous customers)
- Imported goods
  - Import duties and homologation requirements
  - Local Distributor
Commercial Versus DIY Solutions

- Equipment Warranty and Support
- Vendor lock-in
- Discontinued Product lines
- Ongoing License Costs Versus Open Source Software
- Standard Compliance Versus Proprietary
  
  Proprietary “extensions” of the standard
Wireless Friendly Operating Systems

- OpenWRT
- Tomato
- Freifunk
- B.A.T.M.A.N
- ROBIN
Proprietary Operating Systems

- MikroTik OS
  - Nstreme
  - Nstreme Dual
- Ubiquiti AirMAX
Accessories

- Data Cable
  For outdoor use, choose weather resistant UTP (foiled cable), STP or normal UTP protected by a metallic conduit.

- Pigtail with proper connectors.

- PoE injector

For longer cable runs use higher voltage supply.

- RF cable with proper connectors

LMR 400 with N Connectors

- Proper Lightning Arrestor for coaxial or twisted pair cable.
Wireless Bridges and Routers

∫ Integrated Radios
  Frequency, Output Power, Sensitivity

∫ Removable Radios
  MiniPCI
  PC Card
  Flash Card

∫ Integrated Antennas
  Polarization

∫ External Antennas
  Type of Connector, Gender, Polarity, Thread
Wireless gear we have tried successfully:

- Mikrotik RouterBoards
  - Frequency,
- Ubiquiti
  - PicoStation, NanoStation, PowerStation, Bullet
  - Radio Cards: SR,XR
- Senao EnGenius
  - Polarization
- External Antennas
  - Type of Connector, Gender, Polarity, Thread
Mikrotik

- Proprietary Linux based operation system can work in different platforms, allowing for long distance links and even FDD by using independent channels for each traffic direction
- Also offer different hardware platforms with the OS preinstalled
Antennas

- Omnidirectional
  - Gain, Type of Connector
- Sectorial
  - Gain, Beamwidth
  - Electrical or Mechanical Downtilt

- Directional Antennas
  - Gain, Polarization (dual?), Wind Load
- Antenna Integrated into housing
Wireless gear vendors

- [http://www.flytec-usa.com](http://www.flytec-usa.com) USA
- [http://www.wlanparts.com/](http://www.wlanparts.com/) USA
- [http://www.streakwave.com/](http://www.streakwave.com/) USA
- [http://www.poynting.co.za/](http://www.poynting.co.za/) South Africa
Thank you for your attention

For more details about the topics presented in this lecture, please see the book *Wireless Networking in the Developing World*, available as free download in many languages at:

http://wndw.net