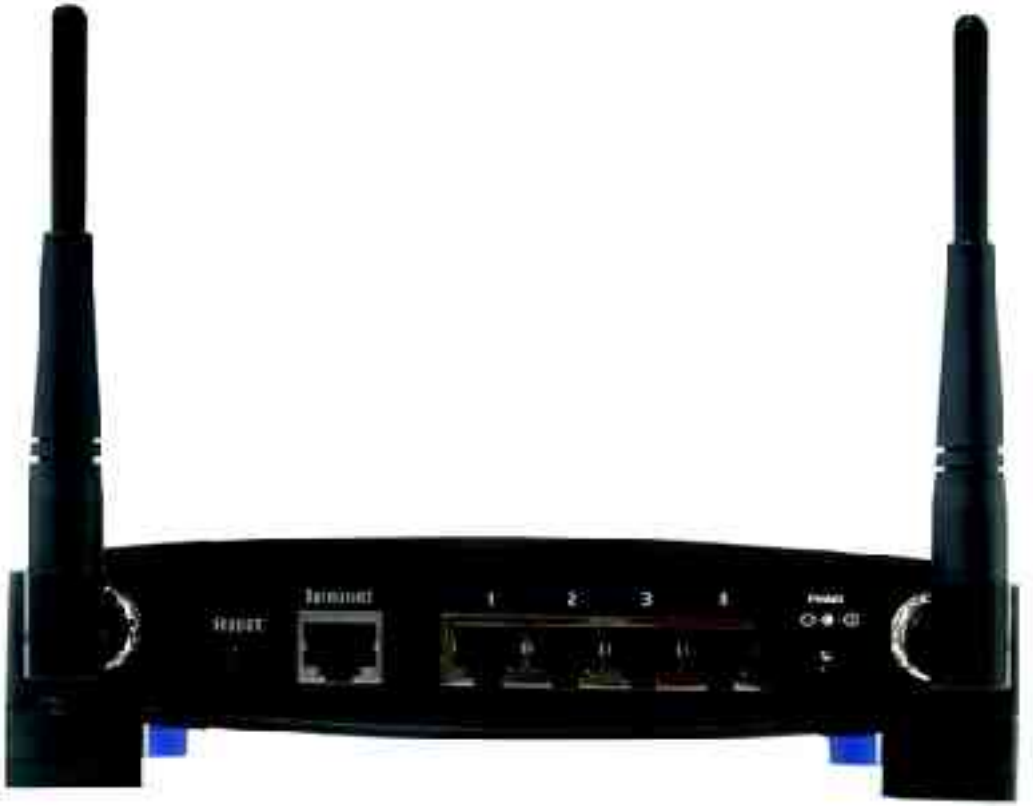
Access Point Configuration



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Note:

- This unit was originally written for the APC (The Association for Progressive Communications) project “Capacity building for wireless connectivity in Africa”, as part of the MMTK, amd modified for ICTP Triest, June 2005.
- Learn more on
  http://www.apc.org/wireless
  http://www.itrainonline.org/itrainonline/mmtk/index.shtml

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Agenda

- General tips for setting up wireless devices
- The interfaces of an Access Point
- Steps in configuring an Access Point
- Examples: Screenshots

General tips

- **You will need ....**
  - a PC/laptop with wireless and ethernet interfaces
  - standard TCP/IP software tools (ping, route, etc) and maybe vendor specific software
  - wireless signal/survey software
- Get to know the device and its default settings. **Read the manual.**
- **Consider the physical installation**: placement, power supply, antennas, temperature and humidity ... and all other factors that are not software related.
  (we focus on the software configuration in this unit!)

General tips

- **Plan the network (TCP/IP) before you start** - this includes knowing your ISPs or LAN settings, DNS, etc.
- **Look around you** before you start: look for other wireless networks ... avoid conflict **and cooperate!**
- **Consider naming** of networks / choice of SSIDs
- **Make security decisions** (WEP, MAC, ...)

General tips

- Make sure you have all documentation and material – so you will **be able to work even if you should disconnect yourself** during the process
- **Make a plan and a drawing** before you start.
- **Take notes (on paper!)** about every step, especially when changing IPs and network settings

The interfaces of an Access Point

- Typically you find:
- **the ethernet side: often called WAN / LAN** – 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 and do more than pure Access Points. Don't get confused!

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Let's start!
Steps in configuring an Access Point

Steps in configuring an AP

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

Steps in configuring an AP

- **Do the IP settings** – IP Adr, Netmask, Gateway, DNS, ...

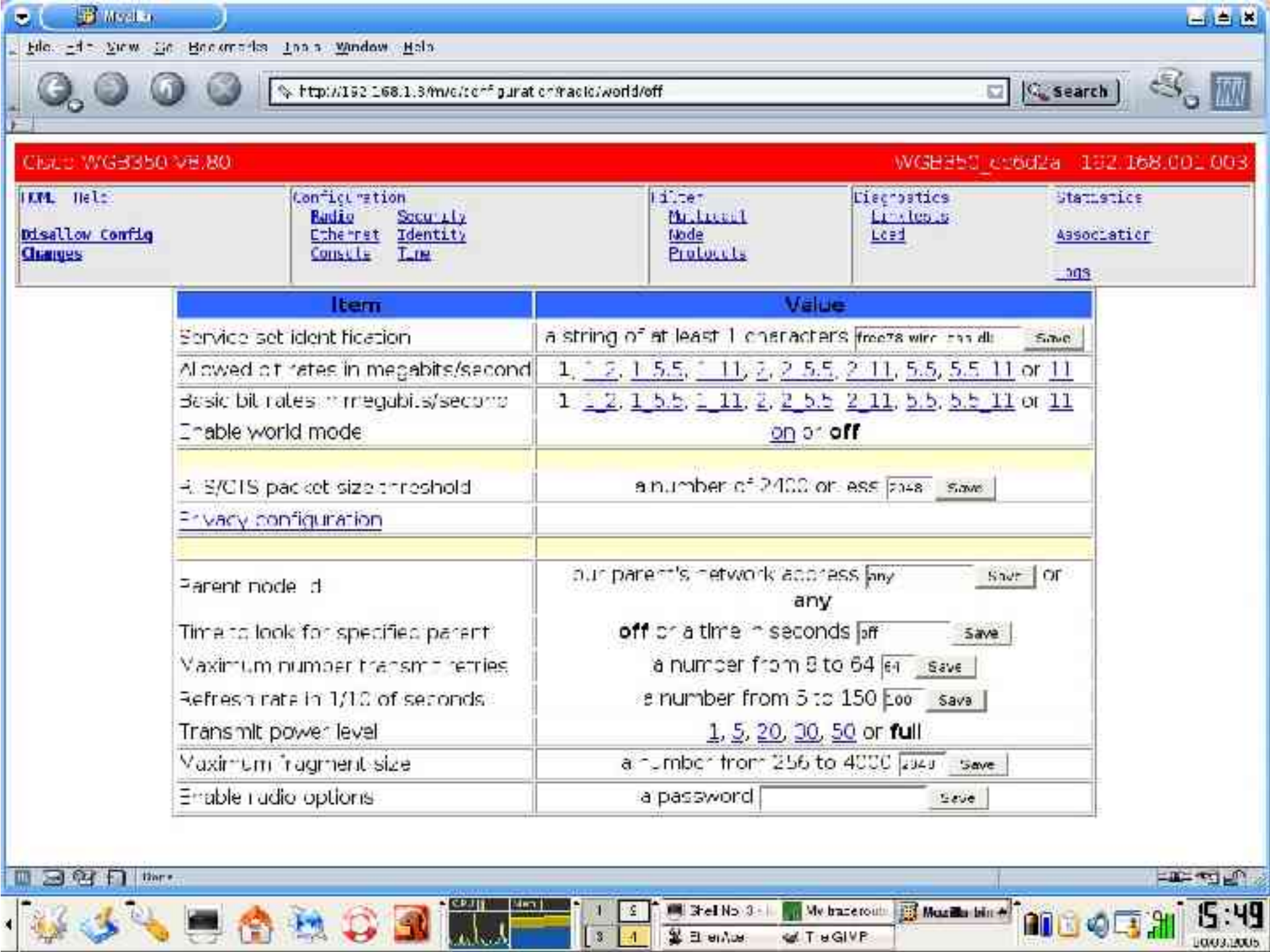
  - then adjust your computers settings, if needed
- **Set the Channels and SSID**

  - then adjust your computers settings, if needed
- **Make security related settings** WEP, MAC address control, VPN
- **There is more** – for example the advanced wireless settings - so go through all other settings, and at least try to understand what they do ...

Examples: Screenshots

- We are showing **browser interfaces** only here –
  there are also proprietary setup utilities,
  but browser interfaces are standard and preferable.
- 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.

Examples: Screenshots Cisco

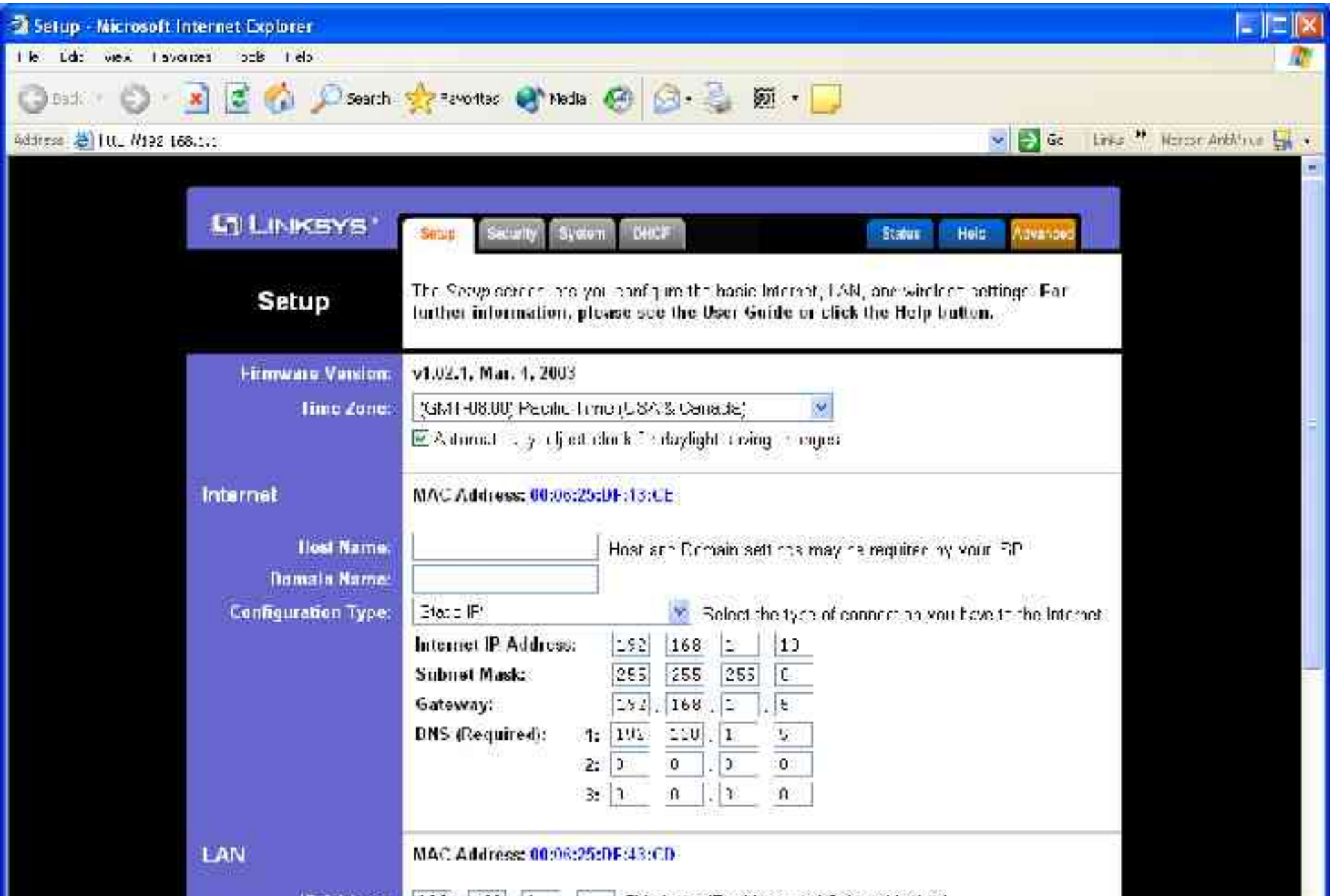

Mozilla
File Edit View Go Bookmarks Tools Window Help
http://192.168.1.3/m/c/configuration/radio/world/off
Search
Cisco WGB350 V8.80
WGB350_cc6d2a 192.168.001.003
HOME Help
Disallow Config
Changes
Configuration
Radio
Security
Ethernet
Identity
Console
Time
Filter
Multicast
Node
Protocols
Diagnostics
Linktests
Load
Statistics
Association
Logs
Item
Value
Service set identification
a string of at least 1 characters
Save
Allowed bit rates in megabits/second
1, 1_2, 1_5.5, 1_11, 2, 2_5.5, 2_11, 5.5, 5.5_11 or 11
Basic bit rates in megabits/second
1, 1_2, 1_5.5, 1_11, 2, 2_5.5, 2_11, 5.5, 5.5_11 or 11
Enable world mode
on or off
RTS/CTS packet size threshold
a number of 2400 or less
2048
Save
Privacy configuration
Parent node id
our parent's network address
any
Save
or any
Time to look for specified parent
off or a time in seconds
off
Save
Maximum number transmit retries
a number from 8 to 64
64
Save
Refresh rate in 1/10 of seconds
a number from 5 to 150
100
Save
Transmit power level
1, 5, 20, 30, 50 or full
Maximum fragment size
a number from 256 to 4000
2040
Save
Enable radio options
a password
Save
Done
15:49

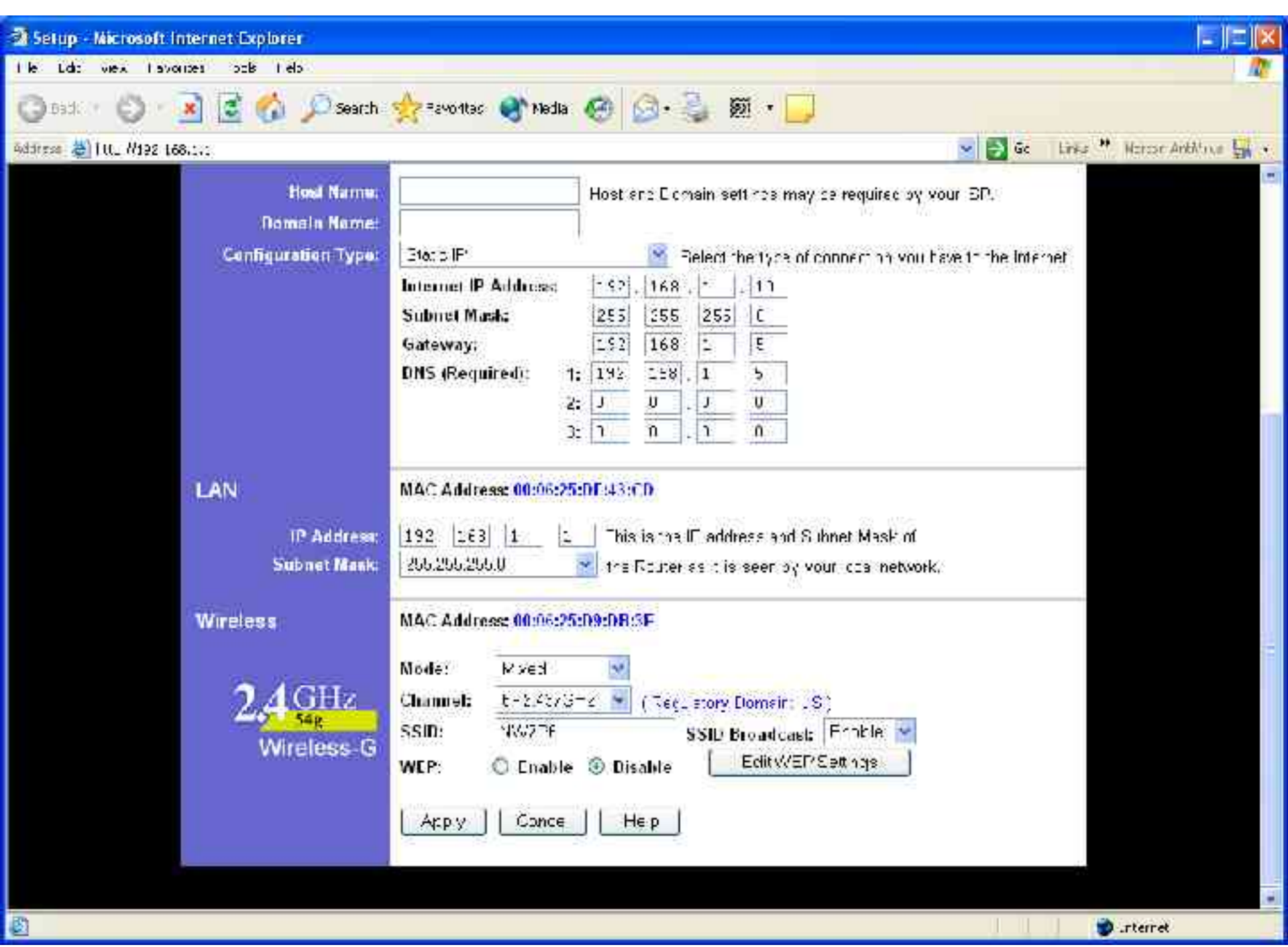
Examples: Screenshots Linksys

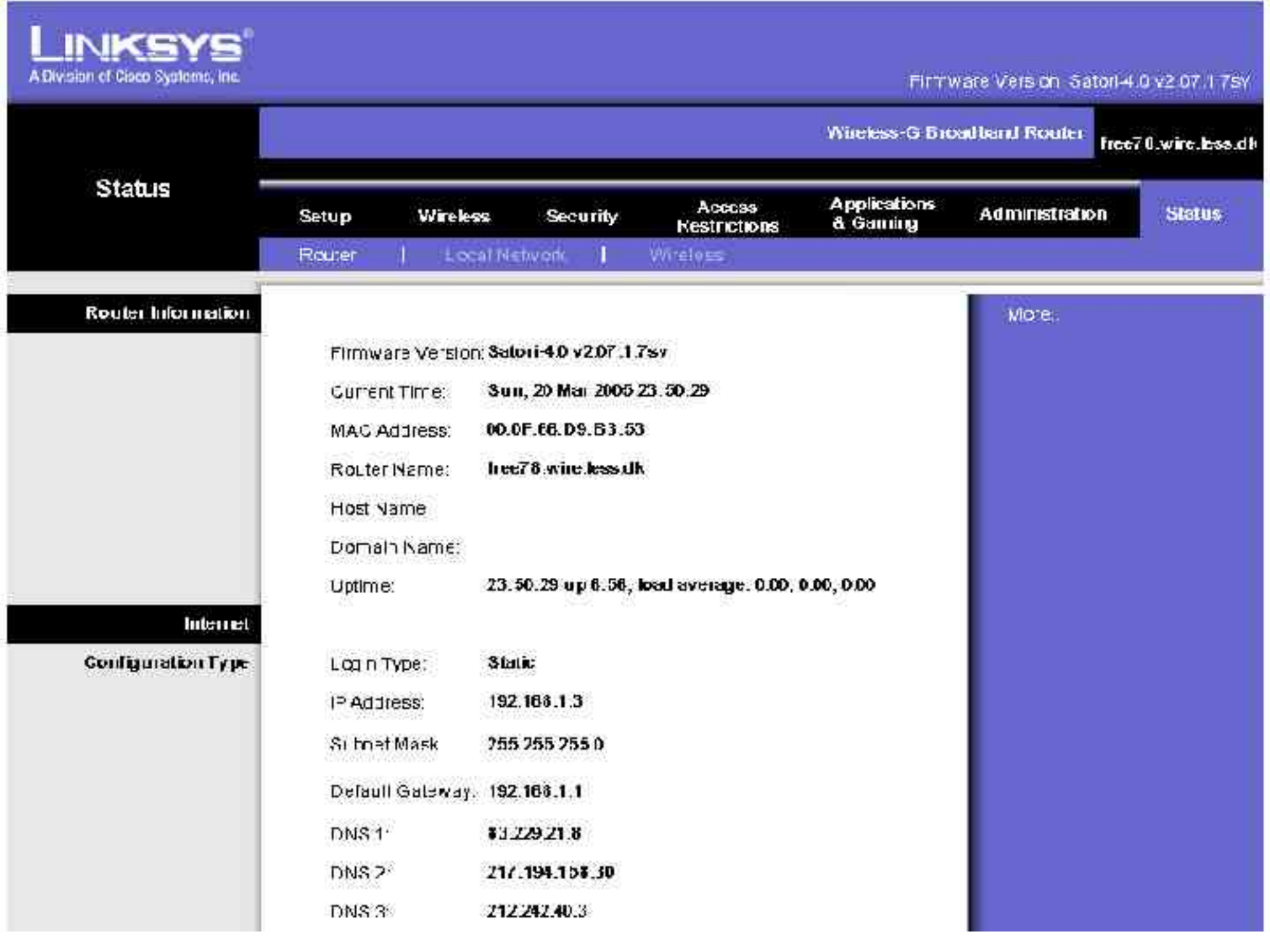
- If you look closely, you will notice that this is more than a pure access point ...

  it is a router/gateway!

  (try to find out why!)


Setup - Microsoft Internet Explorer
Search
Favorites
Media
LINKSYS
Setup
Security
System
DHCP
Status
Help
Advanced
Setup
Firmware Version:
v1.02.1, Mar. 1, 2003
Time Zone:
Internet
Host Name:
Domain Name:
Configuration Type:
Static IP
Internet IP Address:
Subnet Mask:
Gateway:
DNS (Required):
LAN


Setup - Microsoft Internet Explorer
Search
Favorites
Media
Host Name:
Domain Name:
Configuration Type:
Static IP
Internet IP Address:
Subnet Mask:
Gateway:
DNS (Required):
LAN
MAC Address:
IP Address:
Subnet Mask:
Wireless
MAC Address:
Mode:
Mixed
Channel:
SSID:
SSID Broadcast:
Enable
WEP:
Enable
Disable
Edit WEP Settings
Apply
Cancel
Help
2.4GHz
54g
Wireless-G
Internet

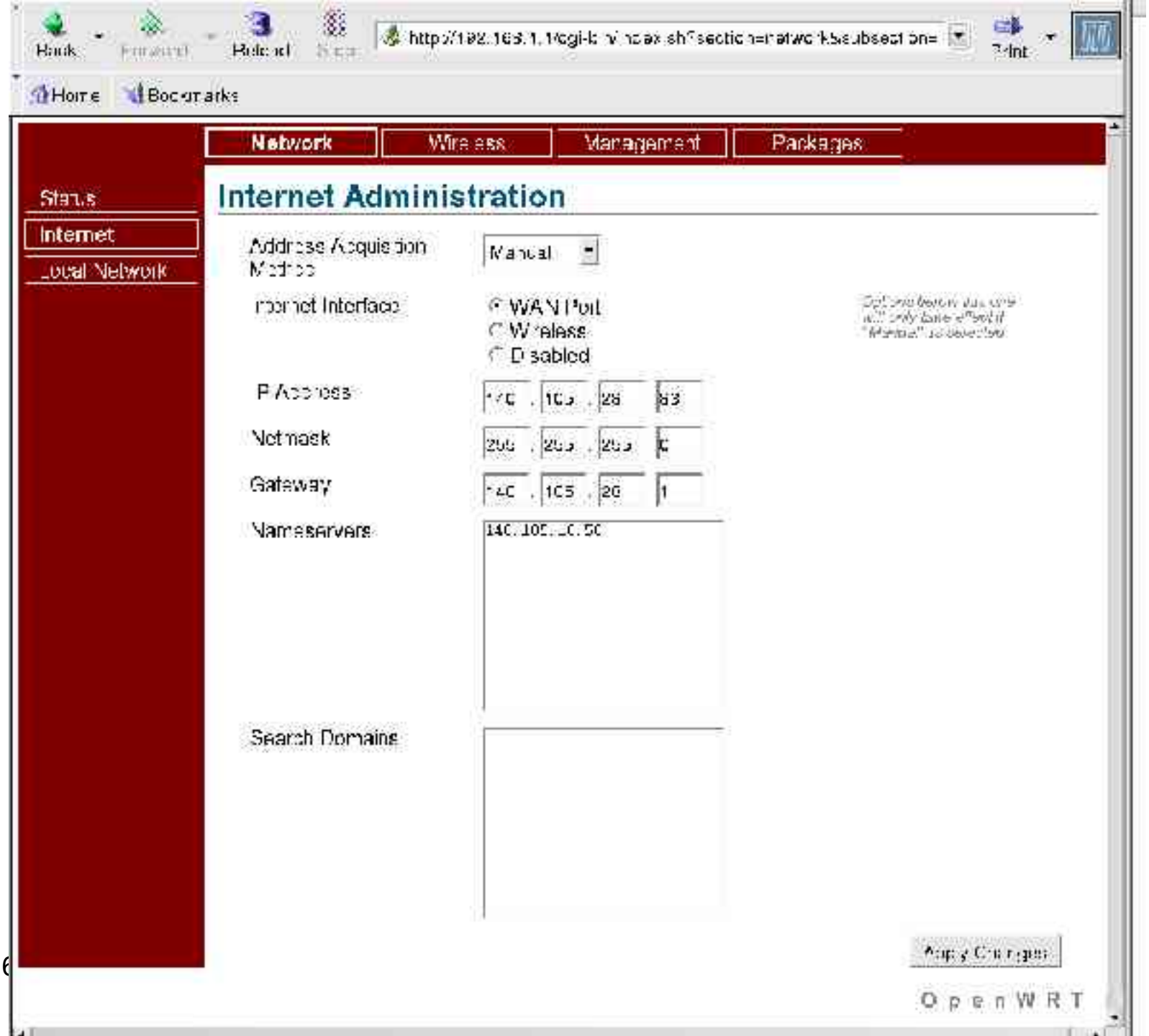

LINKSYS
A Division of Cisco Systems, Inc.
Firmware Version: Satori-4.0 v2.07.17SV
Wireless-G Broadband Router
free78.wirelessdh
Status
Setup
Wireless
Security
Access Restrictions
Applications & Gaming
Administration
Status
Router | Local Network | Wireless
Router Information
More...
Firmware Version: Satori-4.0 v2.07.17sv
Current Time: Sun, 20 Mar 2005 23:50:29
MAC Address: 00:0F:66:D9:B3:53
Router Name: free78.wirelessdh
Host Name
Domain Name:
Uptime: 23:50:29 up 6:56, load average: 0.00, 0.00, 0.00
Internet
Configuration Type
Login Type: Static
IP Address: 192.168.1.3
Subnet Mask: 255.255.255.0
Default Gateway: 192.168.1.1
DNS 1: 83.229.21.8
DNS 2: 217.194.158.30
DNS 3: 212.242.40.3

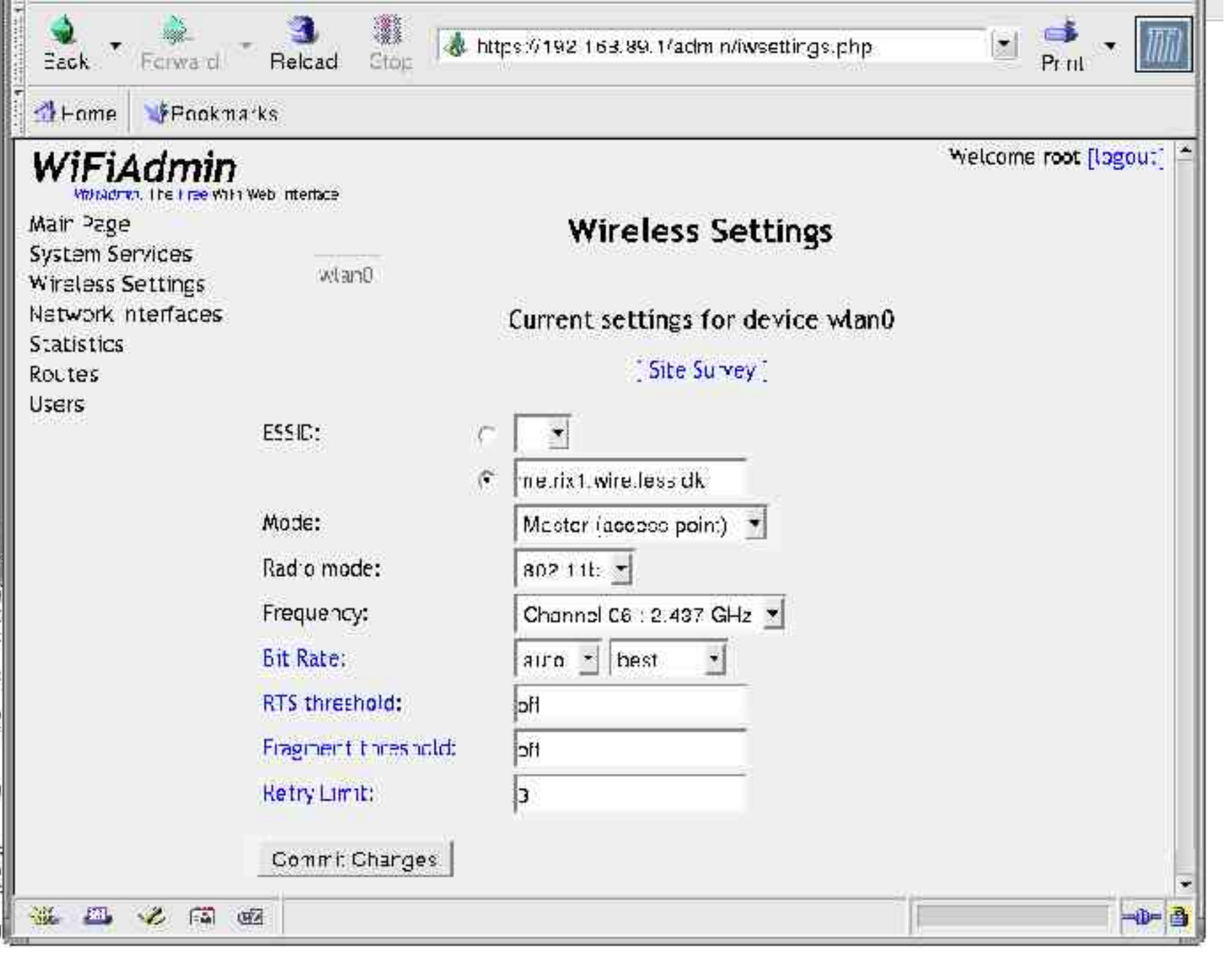
Examples: Screenshots
That last one was not really a Linksys ...

- Many vendors today use Open Source (GPL) firmware – this leads to truly open software for these models: people rewrite and modify and improve the firmware.
- For example, there are many alternative firmware projects for the Linksys WRT54G:
  OpenWRT, EWRT, Batbox, wifibox, Sveasoft, Pebble ...
- Accordingly, you will see many different browser interfaces with many different options
- Next, we will show two free software web interfaces:
  OpenWRT on a Linksys WRT54G
  WifiAdmin on a Metrix AP

Firmware alternatives for Linksys WRT54G(S)

- **2.a. openwrt:**
- http://openwrt.org/
- http://www.seattlewireless.net/index.cgi/OpenWrt
- 2.b. Sveasoft
- http://sveasoft.com
- **2.c. freifunk:**
- http://www.freifunk.net/wiki/FreifunkFirmwareEnglish
- 2.d. ewrt:
- http://www.portless.net/menu/ewrt/


Back
Forward
Reload
Stop
Print
Home
Bookmarks
Network
Wireless
Management
Packages
Status
Internet
Local Network
Internet Administration
Address Acquisition Method
Manual
Internet Interface
WAN Port
Wireless
Disabled
IP Address
Netmask
Gateway
Nameservers
Search Domains
Apply Changes
OpenWRT


Back
Forward
Reload
Stop
https://192.168.89.1/admin/iwsettings.php
Print
Home
Bookmarks
WiFiAdmin
WiFiAdmin, The Free WiFi Web Interface
Welcome root [logout]
Main Page
System Services
Wireless Settings
Network Interfaces
Statistics
Routes
Users
Wireless Settings
wlan0
Current settings for device wlan0
[Site Survey]
ESSID:
me.rix1.wireless.dk
Mode:
Master (access point)
Radio mode:
802.11b
Frequency:
Channel 06 : 2.437 GHz
Bit Rate:
auto
best
RTS threshold:
off
Fragment threshold:
off
Retry Limit:
3
Commit Changes

Conclusion

- Follow general guidelines for setting up wireless devices
- Remember general steps in setting up an Access Point or Wireless Router
- An understanding of the interfaces of an Access Point (and those of a wireless router)
- See that most of this is independent of the specific vendor or interface – the important part is to recognize the basic settings, even if they come under different names and in different colors
- We have seen examples of different colors and designs in the screenshots