

# Embedded Linux Access Points

# Goals

- Reliability
- Management
- VPN support
- Local network services

# Hardware

- Soekris net4521 64MB 486-133 + vpn1201  
<http://www.soekris.com>
- NetGate/Senao 200mW 802.11b PC-Card (AP-capable), high-quality antennas, brackets, cables
- Compact Flash “drive”
- Power-over-Ethernet (PoE) injector

# Operating System Choices

- Linux Embedded Appliance Firewall  
<http://leaf.sf.net>
- Bering - floppy-based router
- wisp-dist - optimized for small wireless devices (8MB flash / 16MB RAM)
- OpenBSD  
<http://openbsd.org>  
<http://www.opensoekris.com>

# Network Configuration

- eth0: external interface  
DHCP client
- br0: bridge combining LAN/WiFi
- dhcpd using RFC1918 address space on br0;  
NATed through eth0

# Compatibility Notes

- Uses HostAP for base station support  
<http://hostap.epitest.fi/>
  - Requires a Prism 2.5 based card
  - Features will vary based on hardware/firmware
- pump vs. dhclient

# Software Configuration

- `syslog`: forward to central syslog host
- `snmp`: community / pw for read-only statistics
- `ssh`: enabled on all interfaces

# vtun Configuration

- Point-to-point link either over UDP or an SSH tunnel
- Routing
  - /32 direct route to VPN server
  - /24 route over tunnel for remaining subnet

# vtun Notes

- ppp is easier to manage but requires an additional package which is not in the base wisp-dist
- Static configurations avoid extra packages and extra processing overhead

# Management

- software updates over ssh
- read-only snmp
- fairly comprehensive network tool suite for diagnostics

# Optional Features

- Traffic Shaping
- Dynamic DNS service (a la Rendezvous)
- arpwatch + wake-on-LAN
- snort sensor

# Optional Features II

- squid + ad zapper (<http://adzapper.sf.net/>)
- SpamAssassin + POP3/IMAP proxy
- samba PDC
- nmbd WINS server / proxy