

Wi-Fi: The Next Big Thing?

ICC 2002 Panel Session
WLAN Technologies and Business Opportunities
May 1, 2002

Paul S. Henry
psh@research.att.com



The Next Big Thing

April 2002



The Challenge –
Can 802.11b evolve from ‘nice to have’ to ‘gotta have it’?

802.11b WLAN

Technology

- Security
- Battery Life
- ★ Zero Configuration
- ★ Quality of Service

Systems

- ★ Roaming
- ★ Network Mgmt

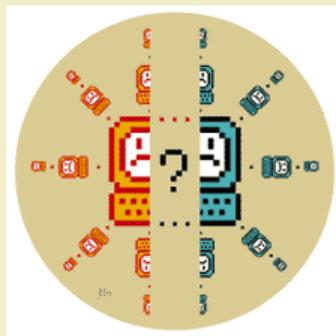
★ **Business Model**

- Specialized provider
- Aggregator
- LAN/WAN integrator
- RAS provider



Cannot Connect

Bob Lucky, January '02 *Spectrum*



A sure way to stop a meeting is to offer the participants network connectivity.

What I want is a “push-to-talk” button on the computer.



Configuring the Windows XP Zero-Configuration Wireless Client

These instructions must be followed explicitly.

Use the drivers that come with Win XP

Using even the drivers in the Fall 2001 Orinoco release could cause you to have to **reinstall Win XP!**

- The next step to getting on USC's wireless network is to configure Windows to connect using our settings.
- Click on the Start button and select Control Panel. Click on Network and Internet Connections and then on Network Connections. A new icon labeled *Wireless Network Connection* will appear. Right-click on this icon and select Properties.
- Click to highlight the Internet Protocol (TCP/IP) component and then click the Properties button.
- From the *Internet Protocol (TCP/IP) Properties* window, click on the Advanced button.
- Under the *DNS* tab, click on the Add button from the *DNS server addresses, in order of use*. Type in the numbers 128.125.253.183 then click on Add.
- Click on the Add button. Type in the numbers 128.125.253.166 then click on Add.
- Click on the Add button again. Type in the numbers 128.125.253.136 then click on Add.
- Select Append these DNS suffixes (in order).
- Click on the Add button, type in usc.edu then click on Add.
- Click on the Add button again, type in hsc.uscedu then click on Add.
- Under the *DNS suffix for this connection*, type in usc.edu
- Make sure that Register this connection's addresses in DNS and Use this connection's DNS suffix in DNS registration are both checked
- Below the section labeled *Preferred Networks* is an Add button. Click on it and a new window labeled *Wireless Network Properties* will pop up.
- In the Network Name (SSID) field, type USC in uppercase characters. Ensure that both Data Encryption (WEP enabled) and Network Authentication (Shared Mode) are checked.
- Uncheck the box that says The key is provided for me automatically. The field Network Key should contain the letters GOUSC in uppercase characters. Ensure that the Key format is ASCII characters and the Key length is 40 bits. Click on OK to close this window.
- Click on the Advanced button and verify that the Access Point (infrastructure) networks only option is selected. Click OK to continue. Click on OK again to exit the Wireless Network Connection Properties window.
- Continue on next page....



1. Zero Configuration

- **Host configuration for WLAN is a pain for everyone**
 - A nearly insuperable barrier for technophobes
- **Zero-configuration is a great convenience for the road warrior... and essential for broad-based public WLAN service**
- **Approaches**
 - **Browser-based sign-up (e.g. MobileStar)**
 - Authenticate over SSL
 - Vulnerable to highjacking
 - MAC and IP info exposed
 - **EAP-based (802.1x)**
 - 'Fully' secure
 - Requires pre-arranged account
- **Goal: Enable fully secure sign-up without pre-arranged account**



2. Wi-Fi in the Home: Quality of Service



- Expansion of 802.11b residential market requires support for 'real-time' data
 - Voice over IP
 - Streaming media
- Best-effort transport unsatisfactory
- Addressed by HomeRF
- 802.11e: Classes of service for managed QoS.
 - HomeRF++
 - Standard nearly finalized



3. Roaming

- **Customer Need: Support high-performance data communications for mobile workforce, whether on company premises, in the field or at home.**



Office



Factory



Business
Traveler



Commuter

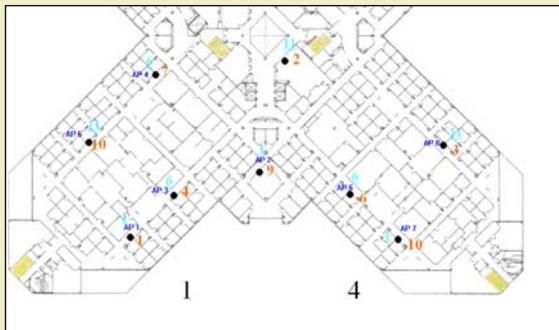


Residence

- **Approach: Integrated network built on standardized wireless technologies – Wireless LAN (Wi-Fi, 802.11) and cellular (GPRS, 3G)**
- **Challenge: Reproduce the desktop experience. Requires easy-to-use, dynamic internetworking**
 - Always-on mobility – Close-and-go; open-and-work
 - Hassle-free security
- **Multiple alternatives for technology and business model**



4. WLAN Management



Automated, wireless-specific management capability (Expert system?)

--Minimize wireless training for IT staff

- Radio coverage and interference management
 - Initial – access point location and frequency assignment
 - Occasional – office moves, adds, changes
 - Dynamic – special events
- Real-time fault diagnosis
 - User traffic spike
 - Faulty equipment
 - Microwave oven
 - Rogue access point



5. Broadband Wireless Access Service – Gold Mine or Money Pit?

- Project Angel
- Ricochet (Metricom)
- Teligent
- WinStar
- MobileStar
- Business models for WLAN service
 - VoiceStream – acquire public WLAN operator; integrate and cross-market cellular and WLAN
 - Boingo – partner with public WLAN operators; sell subscriptions to individuals
 - GRIC, iPASS – similar to Boingo; target corporate clients; global customer base
 - Joltage – allow ‘mom and pop’ WLAN sites to sell spare capacity to public



Wi-Fi Challenges

- **Zero-configuration**
 - Useful for road warrior
 - Essential for technophobe and 'walkup' customer
- **Quality of service**
 - Key enabler for all-purpose residential networking
- **Roaming**
 - Truly untethered computing
 - Multiple technology and business approaches
- **Network management**
 - Automated radio management
- **Business model**
 - No proven successful model yet



Thank you!

