Real Time WLAN

2004

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Product Manager
WLAN

Why WLAN?

- The next frontier in voice and data communication.
- Commoditisation at the client end (e.g. Intel Centrino)
- The demand for always on and mobile computing.

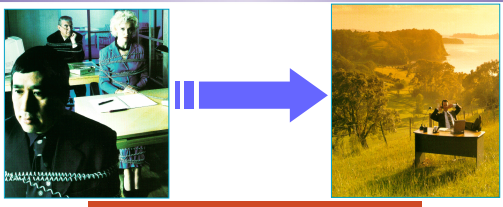
For the enterprise…

- ….Quick and easy access to corporate information.
- ….Improved productivity.
- ….Improved customer service.

Mobility is substantial and growing
- ***Currently, over 37% of workers are mobile***
- ***This will grow to more than 60% in next 3 years***

Source: NECUS Study 2003

Mobile Computing Utopia?



Tips for Making the Business Case for WLAN

Quantifying the benefits of wireless networking is a challenge. Here are the proof points that scored high and ultimately helped influence the senior business executives at Intel:

- Wireless workers maintain more frequent contact with customers and coworkers;
- Increased wireless connectivity enables faster decision-making;
- Employees with WLAN enjoy greater flexibility to work almost anywhere, anytime;
- Widening deployment of public WLANs provides employees with opportunities for additional flexibility and productivity;
- WLAN leverages the value you are already receiving from your investment in high-performance mobile PCs;
- New wireless standards incorporate security measures that are stronger than initial out-of-the-box solutions.

Source: Intel Corporation

Commercial Hot Spots

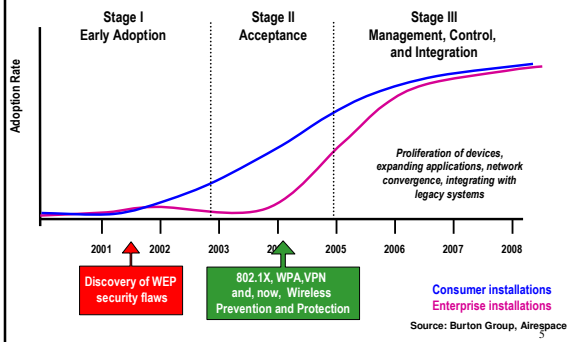
Telstra Wireless Hotspot

QLD	McDonald's Calamvale	678 Compton Road, SUNNYBANK HILLS
	McDonald's McWirthers II	McWirthers Building, Brunswick St Mall, FORTITUDE VALLEY
	McDonald's Wintergarden	Shop E 136, Wintergarden Centre, 171 - 209 Queens St Mall, BRISBANE
	Qantas Domestic Brisbane	Qantas Club Domestic lounge, Qantas Club Chairman's lounge
	Qantas Domestic Cairns	Qantas Club Domestic lounge
	Qantas Domestic Coolangatta	Qantas Club Domestic lounge
	Qantas Domestic Mackay	Qantas Club Domestic lounge
	Qantas Domestic Rockhampton	Qantas Club Domestic lounge
	Qantas Domestic Townsville	Qantas Club Domestic lounge
	Qantas International Brisbane	Qantas Club International lounge
	Qantas International Cairns	Qantas Club International lounge
	Rydges South Bank Brisbane	Lobby, Boulevard Level, Rooftop Terrace, Levels 10 & 11

http://www.telstra.com.au/wirelesshotspots/index.htm

- Commercial WLAN > Internet Access.
- Subscribe or Pays As You Go.
- Predominately used for VPN access to Corporate Office

WLAN Adoption Rate



Source: Burton Group, Airespace

Residential WLAN

Case Example: Alex Gatiragas

- Generally used for Broadband Internet Access
  - Deployed with combined WLAN / DSL Router.
- Roaming is not a requirement.
  - One AP will do.
- Load sharing is not an issue.
  - I can always bar the kid's PC's
- Static WEP with MAC Filtering is generally good enough security.
  - Need to remember to change the WEP key!
- Reliability would be great but not an absolute requirement
  - I can always reboot the DSL Router.

The Enterprise Difference

- **Consistent performance under load**
  - Always on, reliable wireless experience.
- **Scalability**
  - Grow to Hundreds of AP's.
- **Reliability**
  - Switch/controller resiliency
  - AP resiliency
- **Security**
  - Protect sensitive corporate data
- **Support for real-time applications, such as voice**
  - Switched / Thin AP WLAN Architecture

Thin AP / WLAN Switches

WLAN Switches: The Brains Behind 802.11?

5. Do you think this will cut the costs of rolling out wireless LAN in an organization?

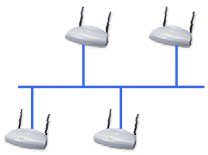
Yes, we'll be spending less on each individual access point and less time managing it.	75%
No, the switch itself is going to be thousands of dollars and the associated access points aren't going to be that much cheaper.	11%
Not sure	13%

6. Do you think that the wireless LAN switch will become an accepted part of the enterprise landscape?

Yep, it just makes sense to have one brain controlling a bunch of dumb radios.	78%
Nope, it goes against the quick'n'dirty nature of WLAN, rolling out a few access points fast, where people really need 'em.	8%
Er, not sure... Does Cisco do one yet?	13%

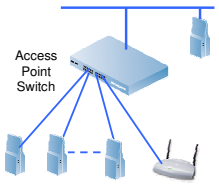
Survey extract from: www.unstrung.com

Thin Access Points?



Fat AP's
- Intelligence and Radio in one unit
- Duplication of intelligence as more AP's are deployed
- Little scope for true centralized management

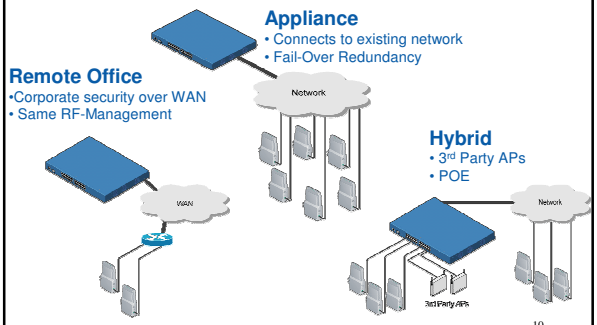
Thin AP's / WLAN Switch
- Intelligence centralized in switch(s)
- Thin Access Point is a Radio device
- True centralized management / security
- Seamless Roaming (inc across subnets)



Compatible with some existing Fat AP's

Thin AP Deployment

Remote Office, Appliance and Hybrid Mode



NEC's UNIVERGE WLAN

An NEC – Airespace Inc. OEM Partnership

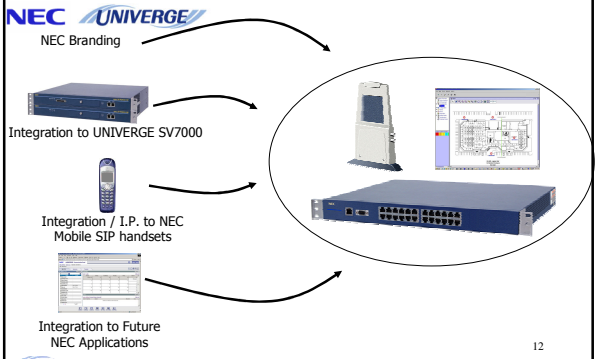
Simple. Seamless. Secure

Simple
- Easy deployment
- Dynamic control of air space
- Visibility into the RF

Secure
- Enterprise-hardened security
- Business critical applications

Seamless
- Anywhere mobility
- No brown-outs

Airespace and NEC



UNIVERGE WLAN Products

- 802.11b only or Tri mode (b,a,g) AP's
- Internal or external antenna's
- Plenum rated
- Kensington lockable
- 802.3af PoE or Local Power
- Monitor mode for rogue detection

- 12, 24 port or 36 AP appliance variants
- 802.3af PoE (12 and 24 port variants)
- Gigabit Uplinks
- Enhanced security module (VPN, IPsec)
- Centralised System management

UNIVERGE WLAN Products

NEC

- WLAN Telephony
- G.711, G.729a Compression
- SIP Call Control (inc. NEC's extended SIP)
- Presence and Instant Messaging
- QoS integration with WLAN switch
- 128 bit WEP and 802.1x / WPA

Spectralink OEM

- WLAN Telephony
- G.711, G.729a Compression
- DtermIP Call Control (Feature Rich)
- Enterprise and Industrial models
- Two Way Messaging
- SVP (Voice Prioritisation)
- 128 bit WEP

The UNIVERGE Difference

Designed for Voice / Real time Applications

- <50ms inter-subnet latency
- Priority queuing for voice traffic
- Multi-cast support
- Seamless mobility
  - "Follow-me-VPNs"
- Real-time monitoring of coverage areas

TESTING

First product verified for VoWLAN applications

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Intelligent RF

•The air space is constantly changing….

E.g., Bluetooth device

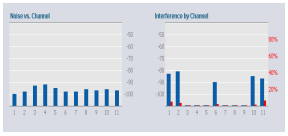
- **Signal strength**
- **Interference**
- **Signal:noise ratio**
- **Coverage Area**
- **Throughput**
- **Load**

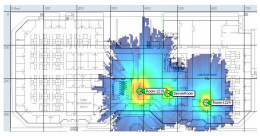
E.g., VoIP phone call

•An Intelligent WLAN system must adapt in real-time:

- **•Manage signal coverage**
- **•Real-time channel and power control**
- **•Accurate distance measurements**

•A site survey only captures one moment in time

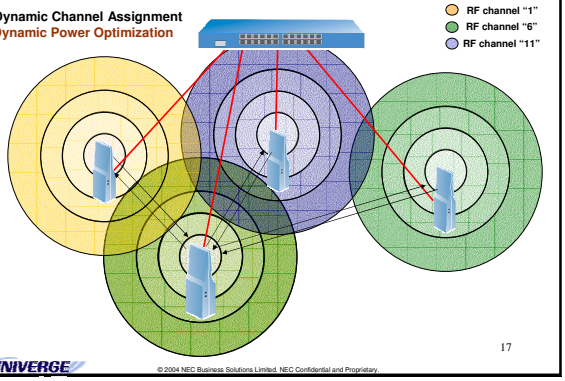




Real-Time RF Management

Dynamic Channel Assignment
Dynamic Power Optimization

- RF channel "1"
- RF channel "6"
- RF channel "11"



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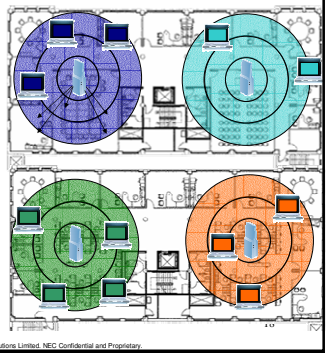
Dynamic Load Balancing

Solving Performance & Capacity problems in high density areas (e.g. conference rooms, cafeteria)…



Location Services

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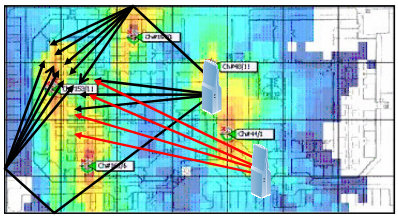
RF fingerprinting for 10 meter accuracy



RF Fingerprinting traces rays from every access point in the network
- Accounts for reflection
- Accounts for multipath to a destination

WLAN Security

NEC

•60% of all wireless deployments are with default configurations
•85% of these installations do not use WEP
•Of the 15% using WEP, 50% use default WEP encryption key

Source : Airespace Inc 2003

- Anyone can eavesdrop on wireless communication
- WEP can be broken
- Anyone can launch Denial of Service attacks against the wireless network
- Anyone can impersonate an AP or a Station
- Anyone can inject or modify wireless packets
- "Anyone" could be sitting in your parking lot, or across the street or across town using a high-gain directional antenna

Basic WLAN Protection

NEC

- Place Access Points in a DMZ
  - Place Access Points on a dedicated VLAN
  - Block unauthorized internal and external access
- At a minimum, use 128 bit WEP (and change it frequently!)
  - Stops "accidental trespassing"
- VPN w/IPSec
  - WEP will not protect your data
  - Require clients to authenticate with the DMZ firewall/router

Basic WLAN Protection

NEC

- Use MAC Filters
  - This only slows the hacker
  - Stops accidental trespassing
- Turn Off "response to probes"
  - This will stop the network from being discovered with simple probes
  - The network will still be visible to protocol analyzers
- Deploy Intrusion Detection and Containment
  - Prevent Rogue AP and Client Attacks

The *new* 802.11i *Standard*

NEC

- IEEE developing 802.11 supplement "Specification for Robust Security" in Task Group i (802.11i)
- Improved security with deployed hardware
- Complete "robust" security: whole new model
- Estimated approval date: 2004/2005
- Wi-Fi Protected Access (WPA) provides an intermediate standard (Windows XP only)

UNIVERGE WL Security

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- Secure out of the box
- All control traffic is encrypted
- Lightweight APs: nothing to steal
- Secure templates for rapid security mapping

- Multiple layers of WLAN protection
  - RF: 802.11 interference, bleeding coverage areas
  - Network: rogue detection, location, containment; ad-hoc prevention
  - User: protection from dictionary, MiM, Asleap, and other attacks
  - Application: protect data from DoS and other attacks
- Security protocols/standards supported:
  - Web authentication, 802.1x, WEP, WPA with AES, IPsec, ….
- Protect authorized WLANs from unauthorized users and malicious behavior
  - E.g., rogue APs, address spoofing, bleeding coverage area

Rogue AP / Client Detection

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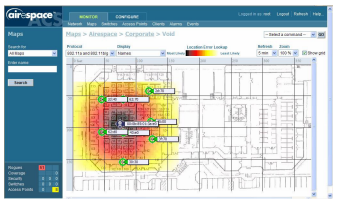

- Detect and contain unauthorised users.
  - Visitors, War Drivers, Curious 12 year olds!
- Detect and contain unauthorised AP's
  - Control the '…who needs the IT dept' users.
- Detect and take action on *new* Layer 1 802.11b DoS attacks.

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Typical Deployment

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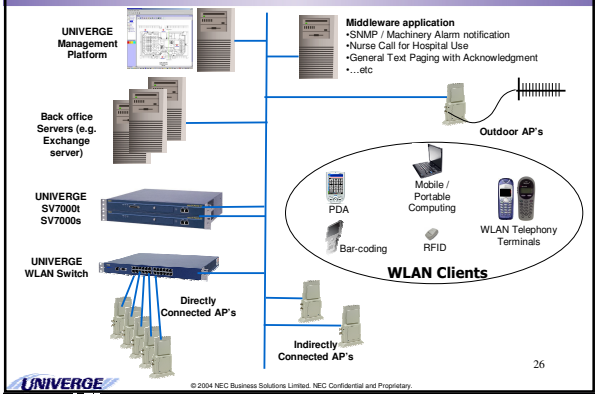

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Case Example

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Wireless Ward Trial
Monash Medical Centre

Speedy scans from CT to PC will help save lives

Data at doctors' fingertips

Wireless ward speeds up care

[redacted]

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Thank You!

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