



WiMAX:

Het draadloze netwerk van de toekomst?

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Agenda



- Company Introduction
- Standards
- WiMAX and Wi-Fi: Competitive or Complementary?

- Wi-Fi Solution Product Introduction
- Broadband Wireless Product Introduction

- Wireless in reality

- Established in 1979 – recognized as global wireless networking leader
- Headquartered in Silicon Valley, global market presence
- The only 100% pure wireless LAN & WAN networking company
 - > Wi-Fi access
 - > Broadband Wireless access, evolving to WiMAX standard
- Seamless Mobility
 - > Data
 - > Voice
 - > Cellular



Business Focus



The Mobile Enterprise



Security & Surveillance



Last Mile Access



Public Hot Spots



Metropolitan Area Networks

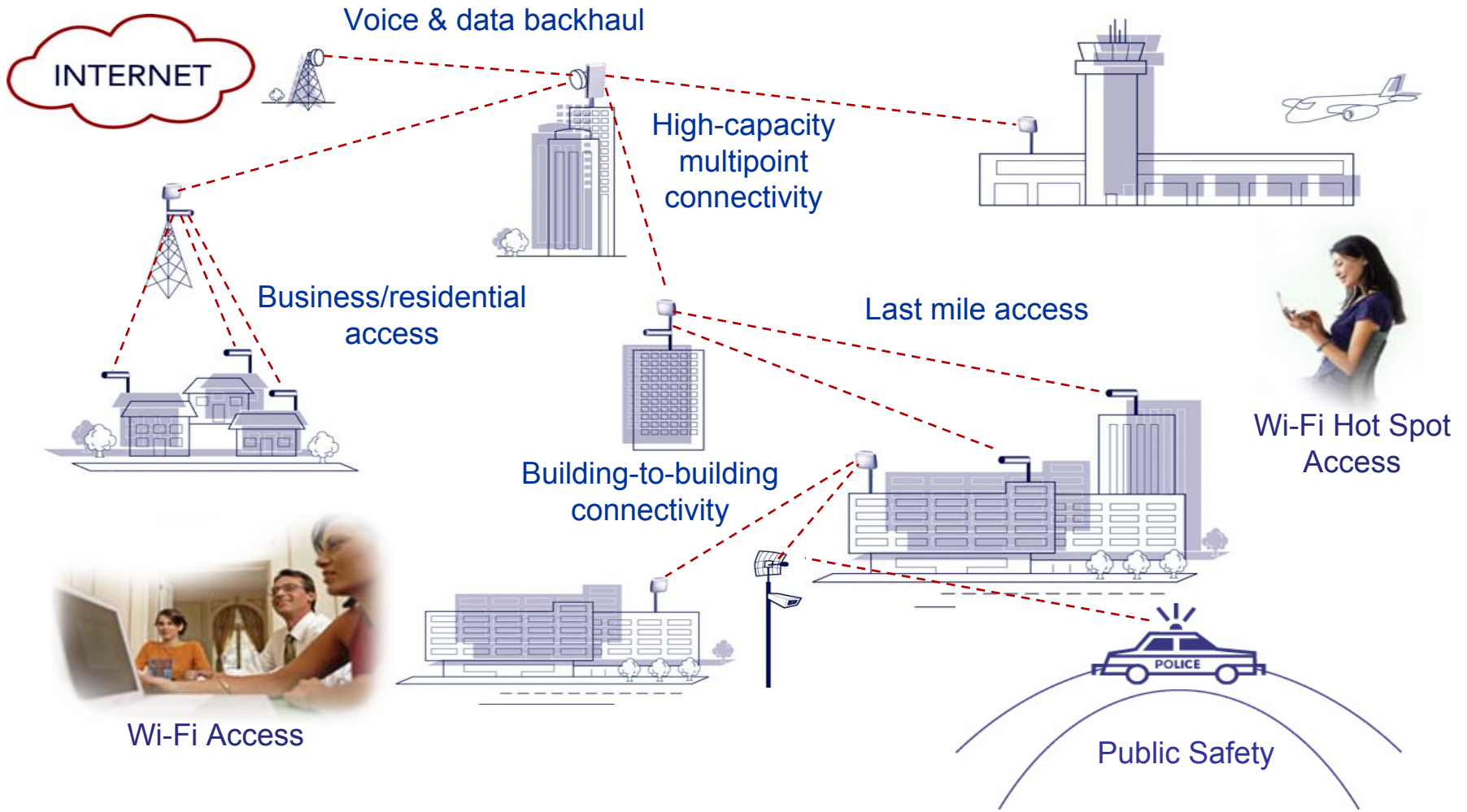


Voice & Data Backhaul

Complete Wi-Fi and broadband wireless solutions for enterprises and service providers

Take your network further

Wireless Connectivity



Take your network further



Standards

WiFi standards



- 802.11 b/g/a 11/54 Mbps on 2.4 GHz and 54 Mbps on 5GHz
- 802.11n 100-600 Mbps on ???
- WEP Wired Equivalent Protection
- 802.1x Standard on Access control
- 802.11i Standard on security
- WPA WiFi protected access
- WPA2 WiFi implementation of 802.11i
- 802.11d Automatic adjustment to country settings
- 802.11e Quality of Services
- WME/WMM WiFi media extension/WiFi Media Management
- 802.11f Hand off between AP's
- WDS Wireless Distribution System
- 802.3af Power over Ethernet

- **Wimax** **NOT A STANDARD!!!!**
- 802.16 10-66 GHz band
- 802.16a 2-11 GHz band
- 802.16d The standard for PtoMP stationary use
- 802.16e The standard for Nomadic use (est. ratification in 2005)
- 802.20 High Speed nomadic use
- MiMo Many in, Many out
- Mesh
- NLOS Non Line Of Sight
- LOS Line Of Sight
- CIR Certified Information Rate



ETSI Frequency Regulation Europe

2.4 – 2.4835 GHz band



- Rules by ETS 300-328
- Used by 802.11b, 802.11g or proprietary products
- Available Indoor and Outdoor
- Max EIRP : 100 mW (20 dBm)
- 13 Channels
 - > Only 3 non overlapping (Channel 1, 6 and 11)
- Approved in every Western Europe country
 - > Outdoor limitation in France
 - 100 mW for channel 1 to 7 (2.4 – 2.454 GHz)
 - 10 mW for channel 8 to 13 (2.454 – 2.4835 GHz)

- Proxim Orinoco AP 700, AP 4000
- Proxim Tsunami MP 2411, MP 2454r

5.15 – 5.25 GHz band



- Rules by ETS 301-893 and 301-489
- Used by 802.11a products
- Available Indoor only
- Max EIRP : 200 mW (23 dBm)
- Requires Transmit Power Control (TPC)
 - > If not, then max EIRP down to 100 mW (20 dBm)
- 4 Channels
- Approved in every Western Europe country

- Proxim Orinoco AP 700, AP 4000

5.25 – 5.35 GHz band



- Rules by ETS 301-893 and 301-489
- Used by 802.11a products
- Available Indoor only
- Max EIRP : 200 mW (23 dBm)
- Requires Transmit Power Control (TPC)
 - > If not, then max EIRP down to 100 mW (20 dBm)
- Requires Dynamic Frequency Selection (DFS)
- 4 Channels
- Approved in some Western Europe country
 - > UK, Germany, France, Spain and Netherlands

- Proxim Orinoco AP 700, AP 4000

5.47 – 5.725 GHz band



- Rules by ETS 301-893 and 301-489
- Used by 802.11a or proprietary products
- Available Outdoor only
- Max EIRP : 1 W (30 dBm)
- Requires Transmit Power Control (TPC)
- Requires Dynamic Frequency Selection (DFS)
- 11 Channels
- Approved in almost every Western Europe country
 - > Except France (under investigation by ART)
 - > Limited to mobile client in the UK
(fixed link need to use 5.725 – 5.850 GHz band)
- Proxim Tsunami MP 5054, MP 5054r

5.725 – 5.850 GHz band



- Rules by UK regulation
- Used by 802.11a or proprietary products
- Available Outdoor only
- Max EIRP : 2 W (33 dBm)
- Requires Transmit Power Control (TPC)
- Requires Dynamic Frequency Selection (DFS)
- 5 Channels
- Approved in the UK only for fixed link
 - > European Union investigating expanding UK experiment to all Europe, up to 4 watt

- Proxim Tsunami MP 5054, MP 5054r (UK model)

5.725 – 5.850 GHz band

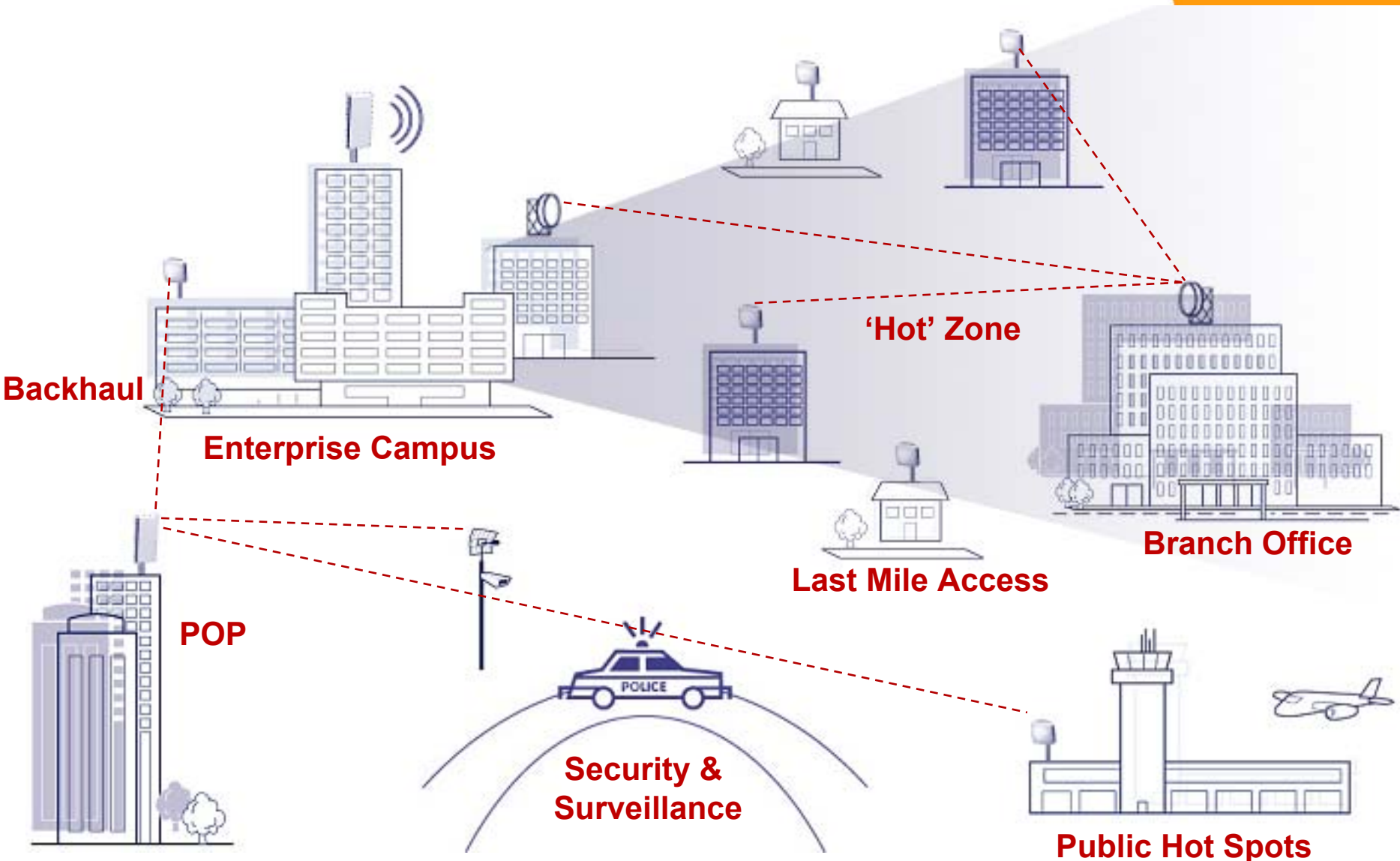


- Rules by ETS 300-440 (Short Range Device)
 - Used by proprietary point to point products
 - Available Outdoor only
 - Max EIRP : 25 mW (14 dBm)
 - Approved in every Western Europe country
-
- Proxim Tsunami GX 32 (low power), GX 90 (low power)

WiMAX and Wi-Fi: Competitive or Complementary?



WiMAX 802.16d Applications



Take your network further

Dispelling WiMAX Myths



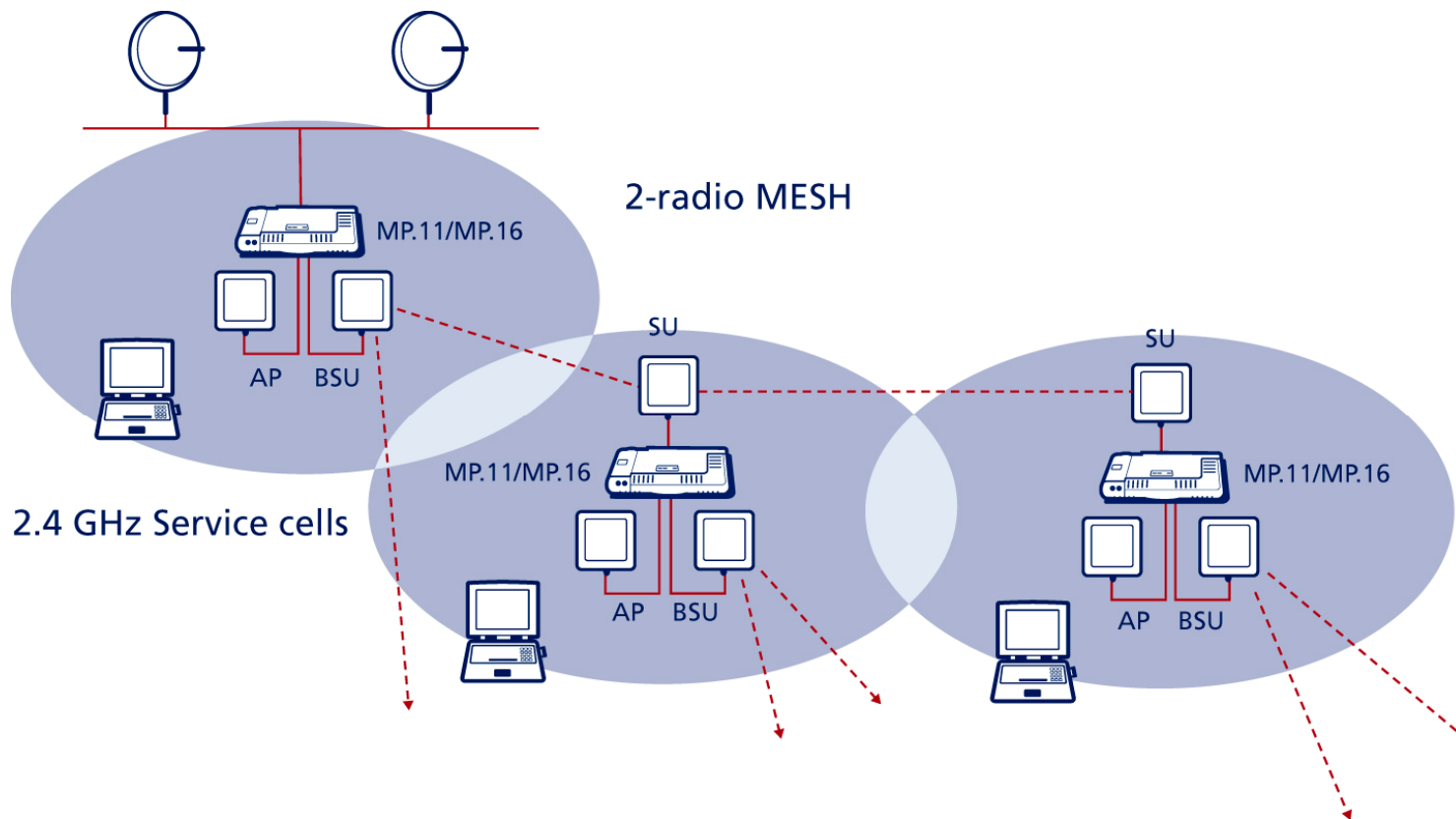
- WiMAX will replace Wi-Fi
 - > Different standards for different applications
 - > Wi-Fi – short range, high bandwidth mobility
 - > WiMAX – long range, outdoor fixed and mobile applications

- WiMAX will enable broadband mobility outdoors this year
 - > Initial WiMAX 802.16d products deliver PORTABILITY, not mobility
 - > Not realistic for use in laptops, PDAs, cell phones, etc
 - Large WiMAX client form factors
 - Higher prices than Wi-Fi chipsets
 - Inefficient power management
 - > Portable applications – use on vehicles, transportation systems – will be possible
 - Demonstrated today with pre-WiMAX systems like Proxim Tsunami MP.11 family

Wi-Fi and WiMAX: Complimentary Technologie

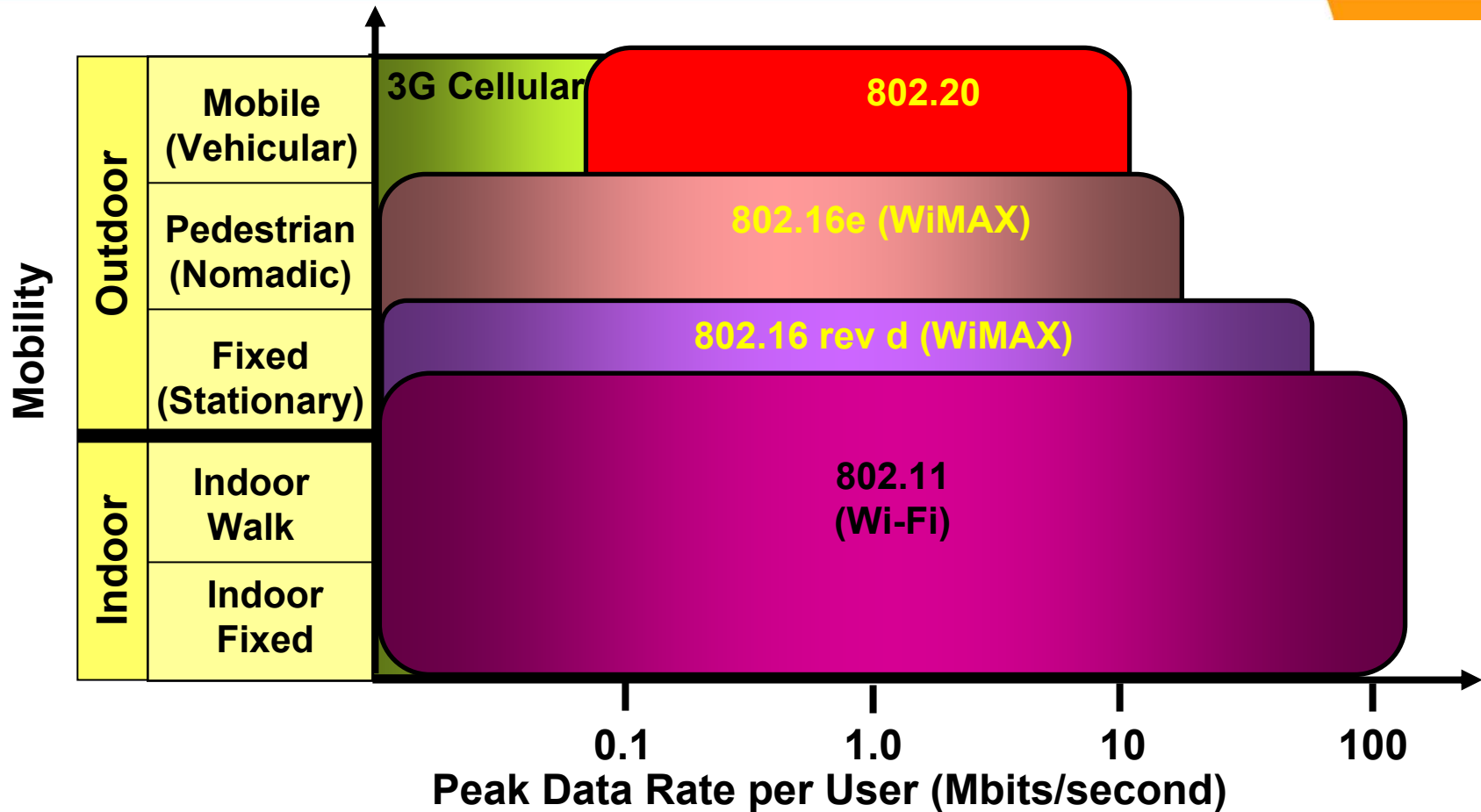


- Wi-Fi meshing extends reach of Wi-Fi cells from 100's of meters outdoors to 1000's of meters outdoors
- WiMAX provides needed backhaul



Take your network further

WiMAX and Wi-Fi



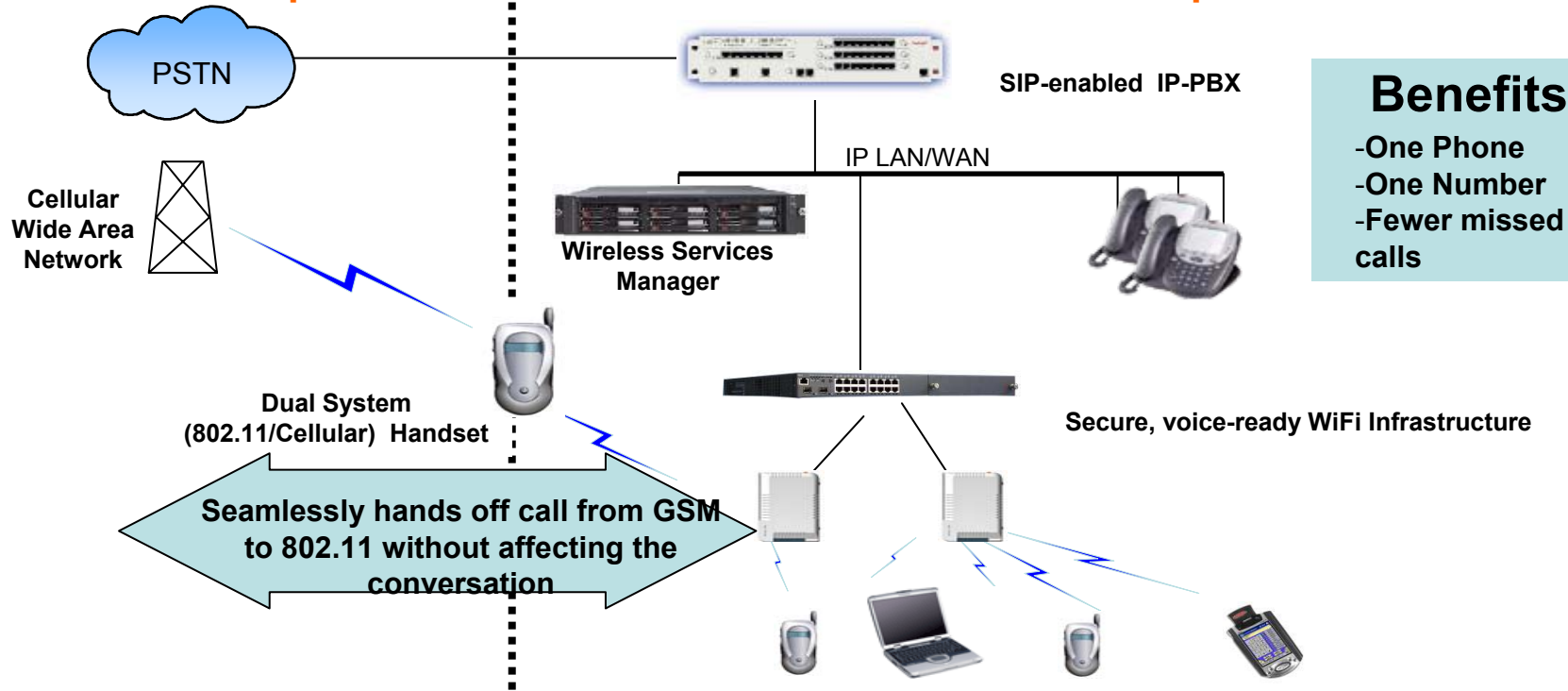
- Market is converging onto the 802 standards
- WiMAX extends the coverage of Wi-Fi
- 3G, EV-DO best suited to high mobility/low data rate applications

Wi-Fi/Cellular Convergence Partnership



Outside the Enterprise

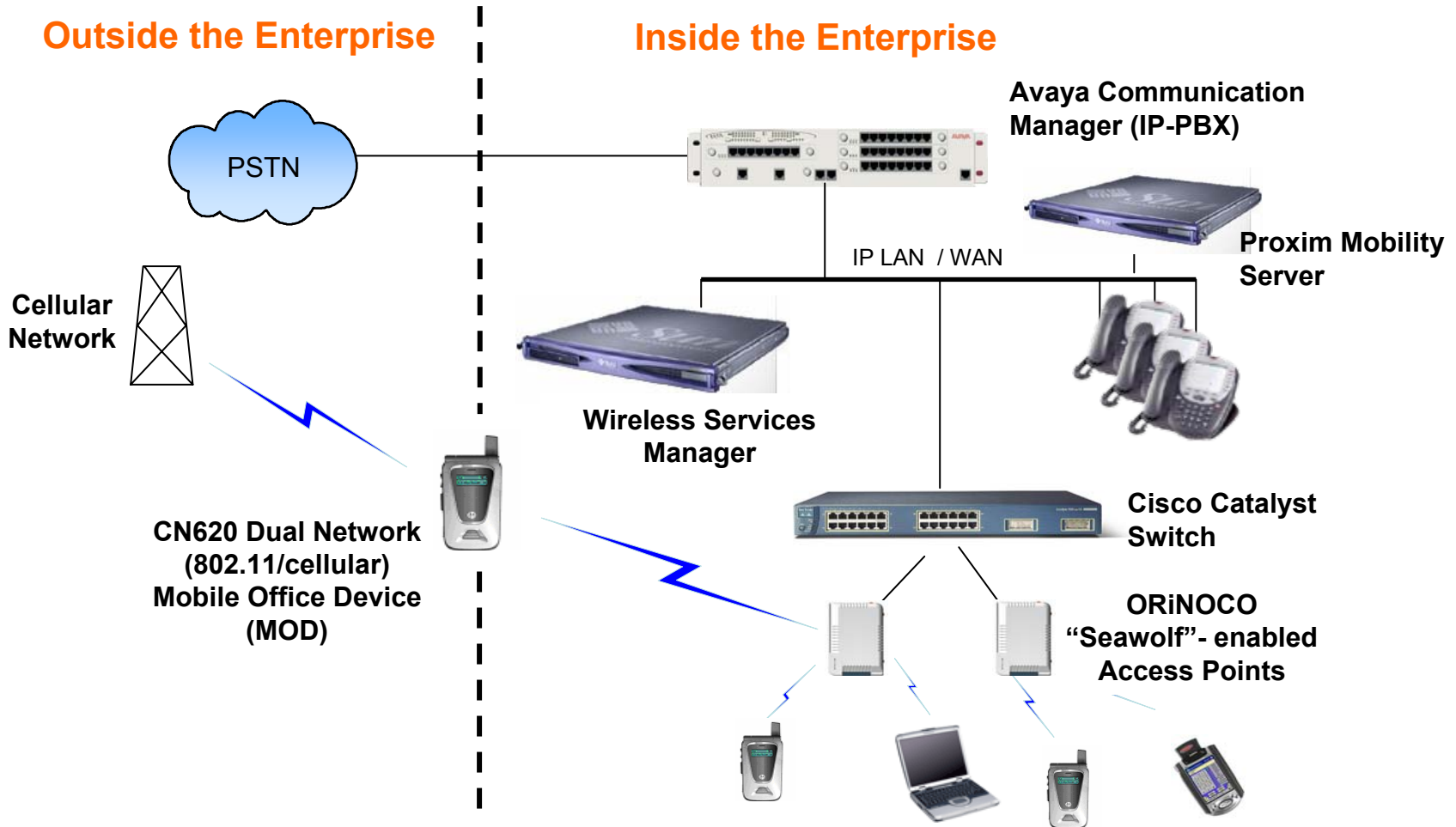
Inside the Enterprise



- ### Benefits
- One Phone
 - One Number
 - Fewer missed calls

Initial Seamless Mobility Solution uses 802.11a

Enterprise Seamless Mobility



- All benefits of Switch solution:
 - > General network overview
 - > Roaming across subnets, multi-VLAN support
 - > Centralised management using Wavelink Mobile Manager
 - Pluggable into HP Openview
 - Based on Standard SNMP, not proprietary
- Lower cost re-using existing infrastructure
 - > No need for several additional Switch, but 1 (one) Proxim Mobility Server
- Reduction of Network risks
 - > No risk of Single Point of Failure as with Wireless Switch solution
 - > No risk of bottleneck due to data channeled to Wireless Switch
- Additional Voice functionalities
 - > Cellular, Voice and Data convergence (SCCAN) with QOS



ORiNOCO AP-700 / 4000 Tri-Band 802.11a/b/g Access Points

The foundation of a total WiFi solution

- Proxim AP are Enterprise-class
- Proxim AP are based on international standards (IEEE)
 - > Cisco uses proprietary solutions – proprietary LEAP authentication, PoE not 802.3af compliant, Management platform is proprietary.
- Proxim AP have strong emphasis on security: WPA2, Secured Management Interface, Rogue AP detection
- Proxim AP work on full feature mode, or in Light AP mode in conjunction with Network Controller
 - > Project Seawolf enable Wireless Switching with standard Switch
- Proxim AP enable Voice over Wifi with handover to GSM –
 - > Project SCCAN with Motorola and Avaya

AP-4000

- Highest performance access point for large enterprise
- Pre-configured with tri-mode
- Perfect for future-proofing wireless networks

AP-700

- Moderate price point for small to medium enterprises
- User-selectable 802.11b, 802.11g or 802.11a operation
- Perfect entry-level unit

Clients

- PC-bus cards, PCI, USB and Ethernet convertor

ORiNOCO AP-4000



- Third generation Enterprise class Access Point
- Automatic, universal Wi-Fi client interoperability
 - > Standard 802.11b/g and 802.11a radios included
- Exceeding the key enterprise requirements for WLANs
 - > Security
 - > Performance
 - > Installation ease
 - > Upgradeability
 - > Reliability and manageability



ORiNOCO AP-4000

ORiNOCO AP-700



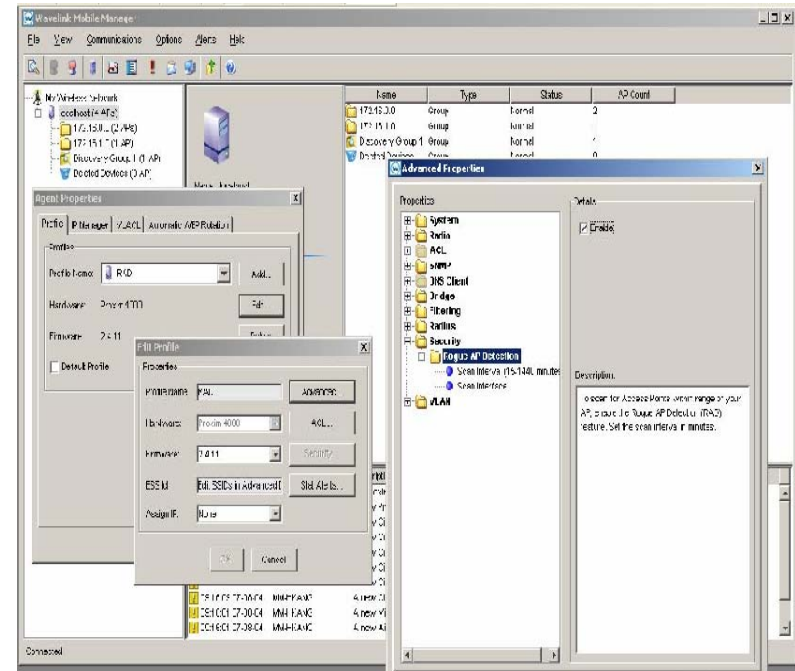
- Proven ORiNOCO performance for stable and reliable support of large numbers of simultaneous clients
- Industry's best wireless coverage with up to +20 dBm radio output power
- Powerful security, including IEEE 802.11i and proactive rogue AP detection
- Wide range of management options
- Centralized configuration and monitoring with Wavelink Mobile Manager
- Future-proofed for tomorrow's networks
 - > User selectable 802.11b, 802.11g or 802.11a operating mode



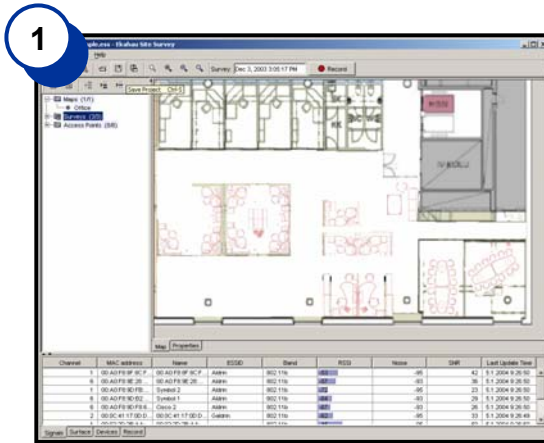
ORiNOCO AP-700

AP4000 Profile Management

- **Policy Enforcement Through Profiles**
 - Configuration
 - Security
- **Apply profiles to the whole network, or a sub-group**
- **Significantly Reduces Deployment time**
- **System Constantly Monitors the network for unauthorized changes**
 - Automatically corrects unauthorized changes without administrator intervention



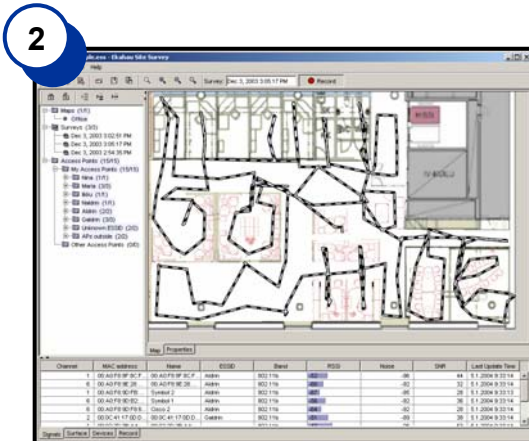
Site Survey Process



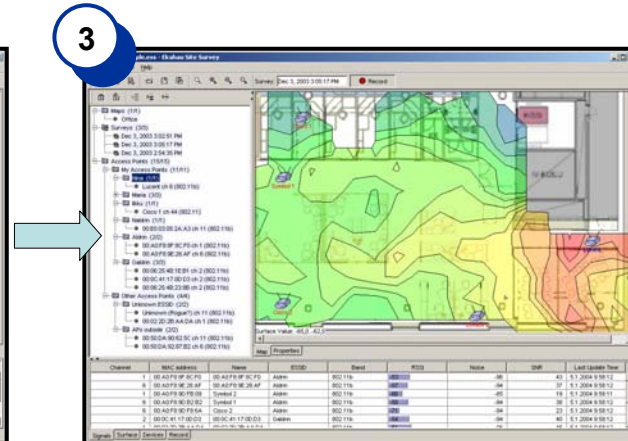
Import a Floor Plan



Optional: Create a Network Plan



Conduct Site Survey



Analyze, Optimize and Write Notes

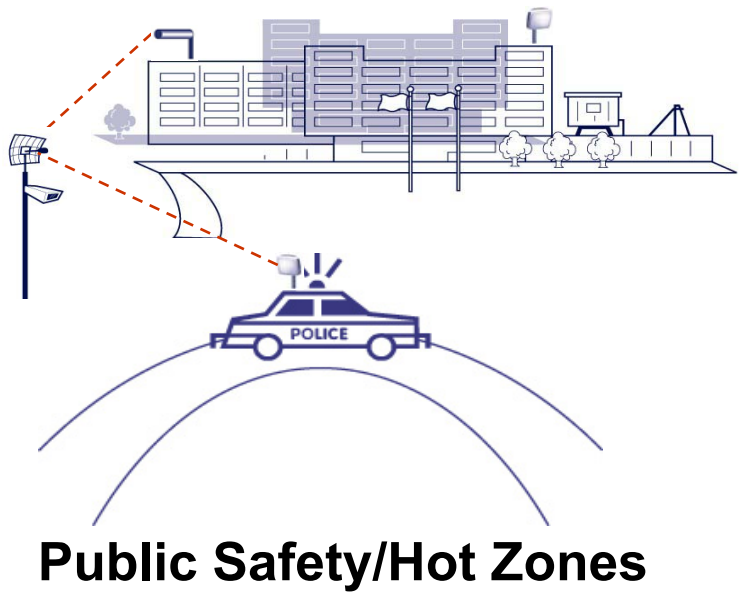
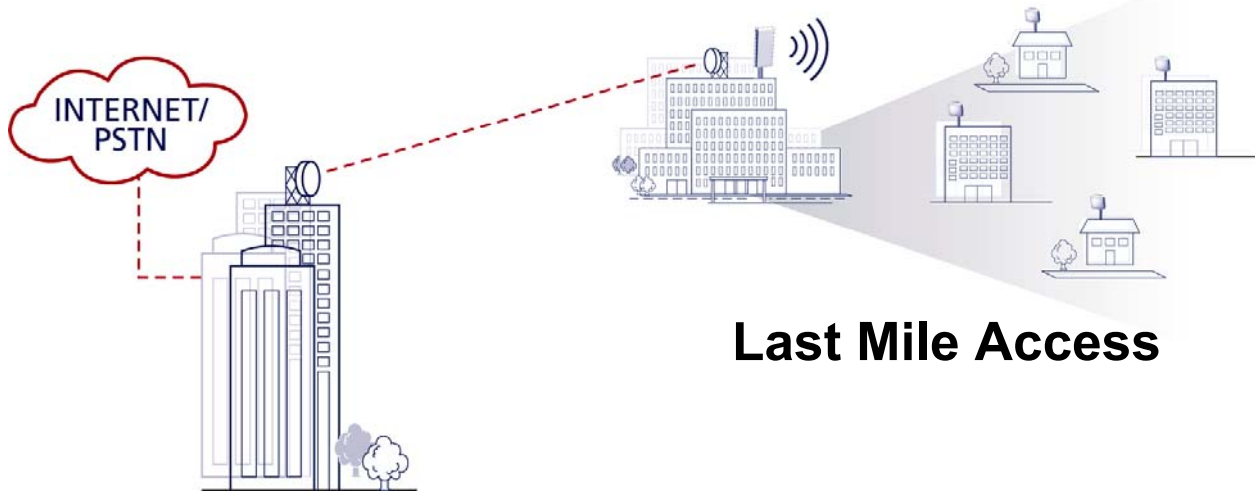


Generate and Print Report



Tsunami MP.11 Introduction

Tsunami Target Markets

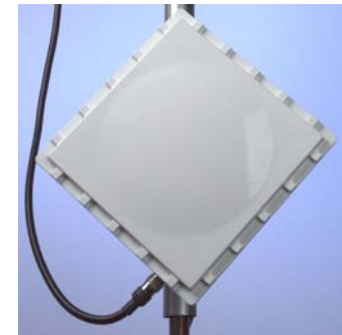


Take your network further

Tsunami MP.11 Family



- Cost-effective, high performance multipoint solution
 - > Model 2411: 11 Mbps; up to 3 non-overlapping channels
 - > Model 2454 Ruggedized: 36 Mbps; up to 3 non-overlapping channels
 - > Model 5054: 36 Mbps; up to 20 non-overlapping channels
 - > Model 5054 Ruggedized: 36 Mbps; up to 20 non-overlapping channels



Tsunami MP.11
Ruggedized

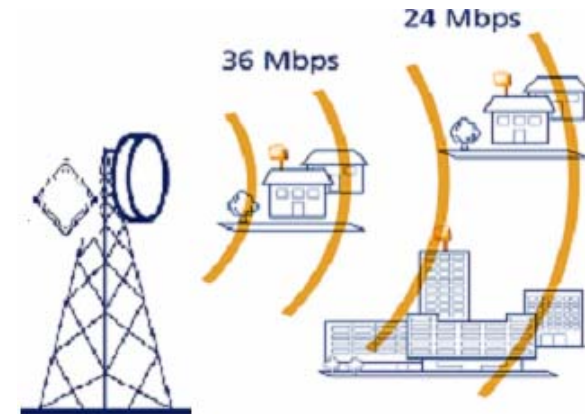
- Flexible deployment with indoor and outdoor models
 - > More choices to meet varying environment requirements, space constraints and expansion plans
 - > Transmit Power Control (Model 5054 only)
 - > Plenum rated (SU only); IEEE 802.3af Power over Ethernet



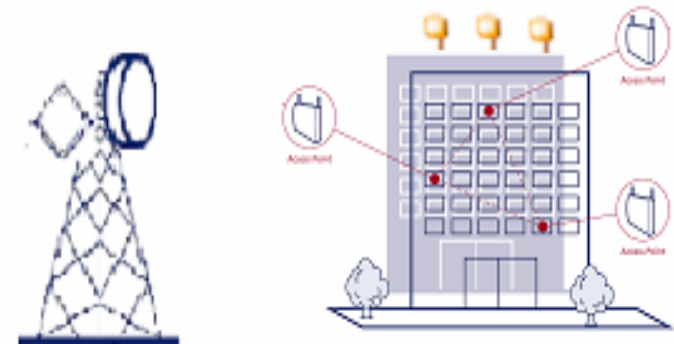
Tsunami MP.11

Possible WISP Services

- Managed private CPEs: Wireless DSL or leased lines
 - > Suitable for business and residential
 - > One MP.11 SU per customer
 - > Highly secure and guaranteed performance
 - > Unlimited number of client PCs with customers' APs or LAN switches

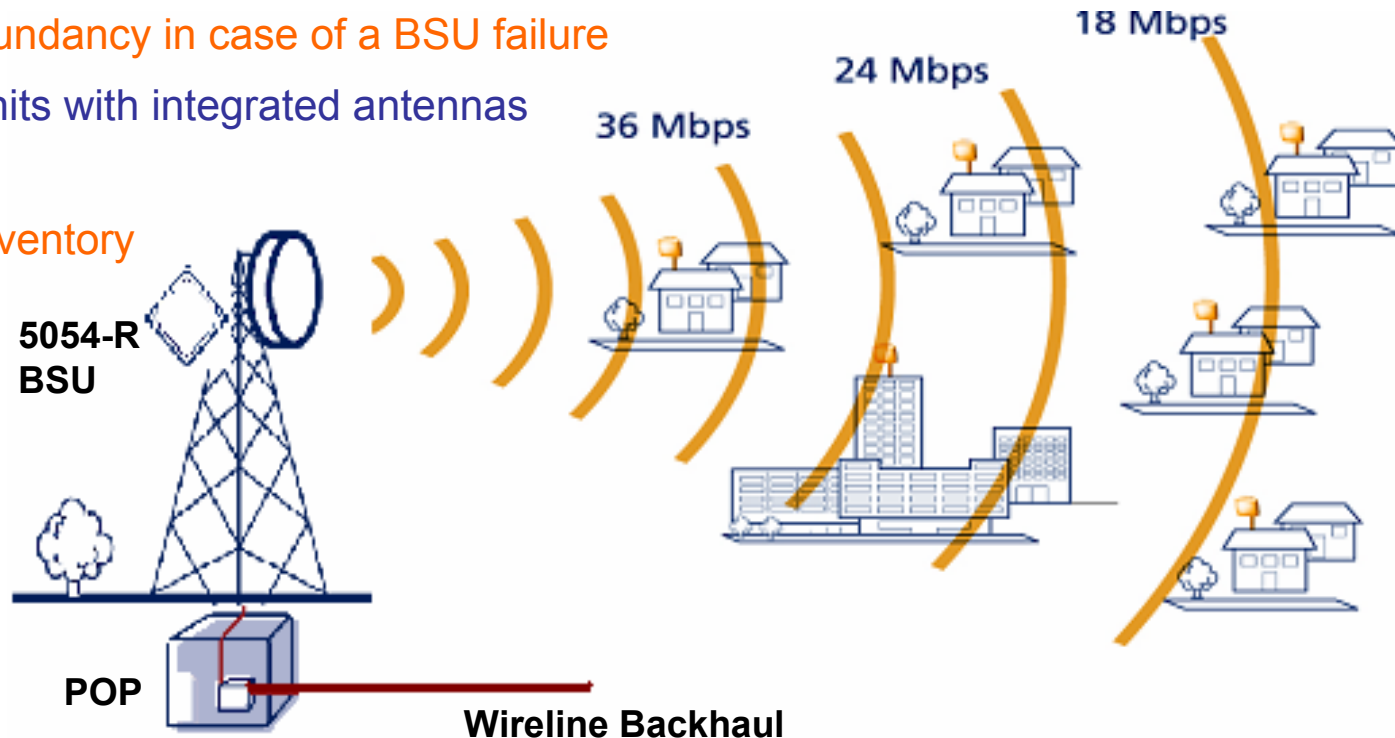


- Managed shared CPEs: Wi-Fi access
 - > Suitable for high-density apartments or community areas
 - > MP.11 for backhaul with one AP-700/ 4000 for edge access - shared by many customers
 - > Limited to one client per customer
 - > Cost-effective
 - > No technical expertise required



Example Deployment

- Last mile access application
 - > Serving 80% residential and 20% business customers
- Network Design
 - > 2 Base Station Units
 - Separate BSUs for residential and business customers
 - Provides redundancy in case of a BSU failure
 - > 66 Subscriber Units with integrated antennas
 - 60 in service
 - 6 as spare inventory



Wireless in reality

Case Studies



Microsoft TechEd, Netherlands

Temporary, secure and reliable infrastructure



- Challenge
 - > Providing 10,000 attendees, press, exhibitors at the Microsoft Conference with secure and mobile Internet and email access throughout a large and temporary structure
- Solution
 - > 100 ORiNOCO AP-4000
- Why Proxim?
 - > Ease of deployment and management
 - > Availability of VLAN for enhanced communication differentiation

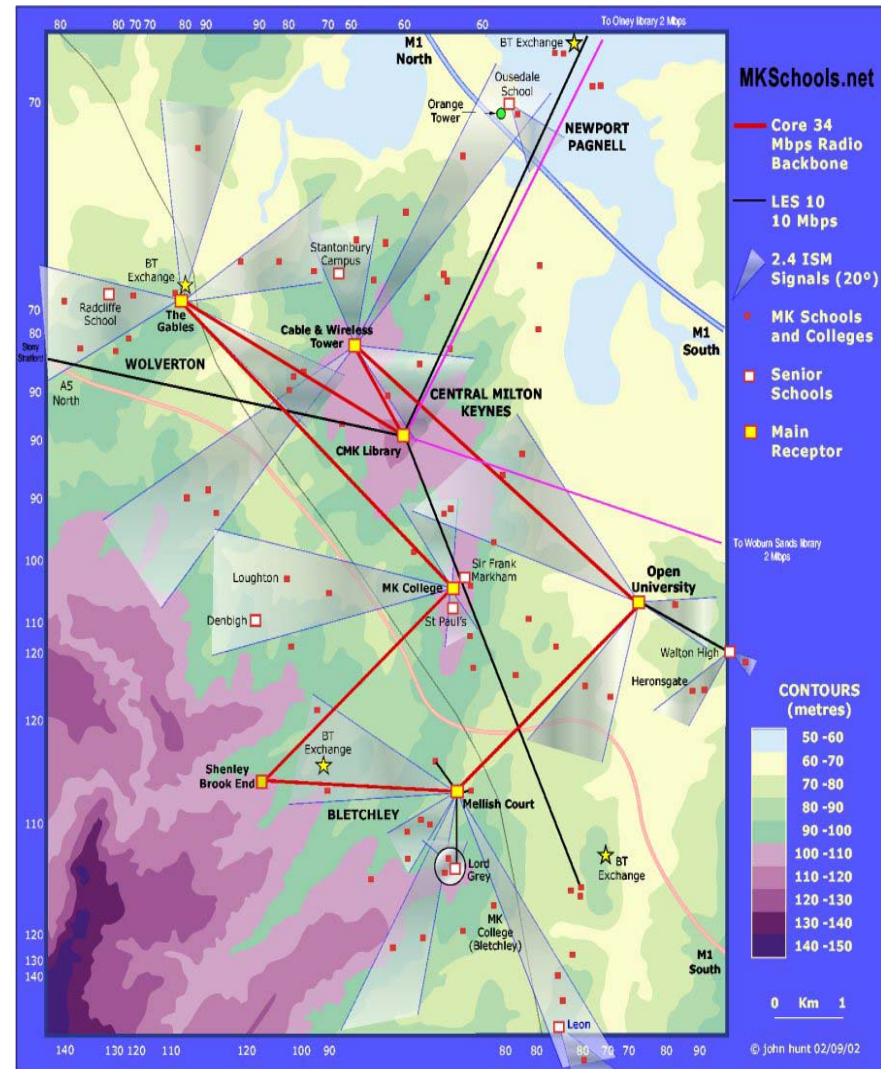


Challenge

- > Deliver fast broadband links between local Schools and Libraries and to the Internet.
- > Leased lines and fiber too expensive. DSL, distance restricted.

Solution

- > License-exempt Tsunami point-to-multipoint system delivers fast, inexpensive broadband access to the community
- > Combination of wired and wireless links provide high-speed Internet access to 112 primary and secondary schools, with approximately 60% of those being served by a wireless link.
- > Supported by OU, MKLEA, E2B and NGfL



Oslo Airport, Norway

Professional Infrastructure and Hotspots



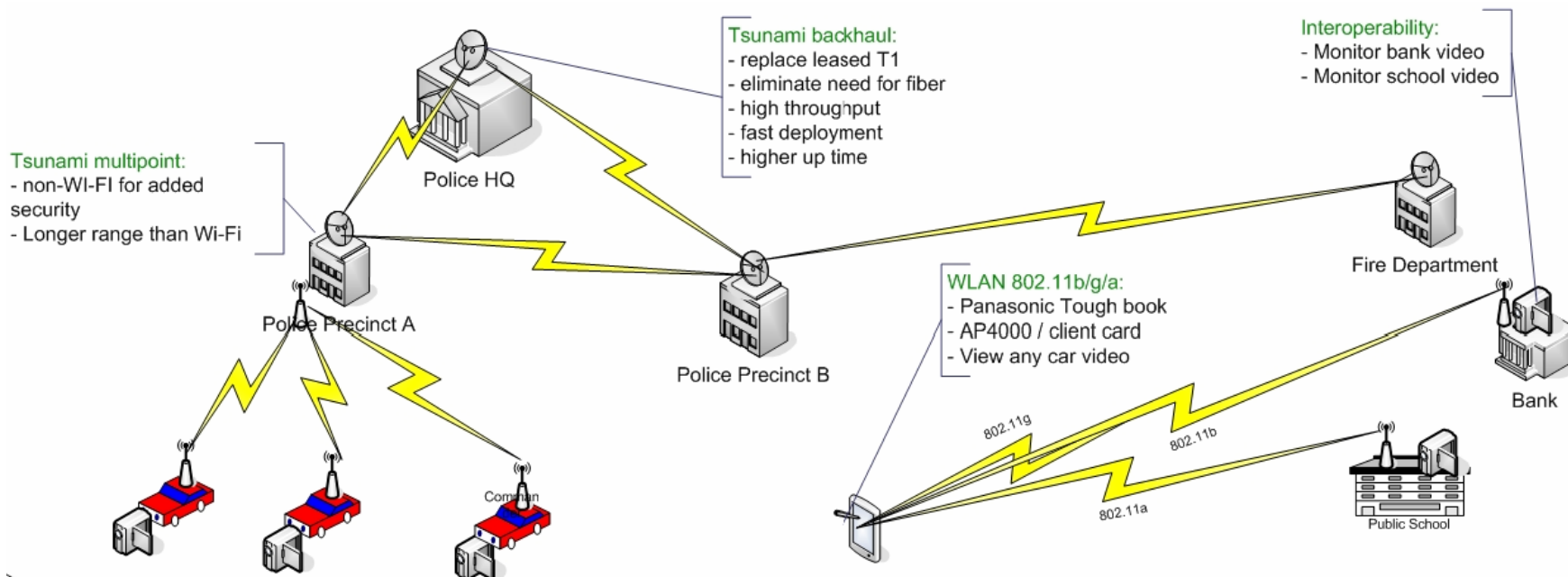
- Challenge
 - > Need for secure and mobile Internet, corporate networking and email access throughout the entire airport
 - > Coverage of public areas inside and outside the terminal, from baggage-handling areas and the airplane cockpit to the Radisson SAS Conference Centre East
- Solution
 - > IP-zone, a wireless Internet zone using 250+ ORiNOCO AP-2000 and Nomadix USG
- Why Proxim?
 - > No interference with airport communications particularly air traffic control
 - > Intelligent radio channel planning and secure VPN
 - > Partnership with Nomadix



IBM + Proxim: City of Detroit



- Converts in-car video from analog to digital
- Compress, store and upload from police car to precinct to HQ
- Unprecedented ability to download video to ruggedized tablets
- Integrates both broadband and Wi-Fi



Problem

- > To provide citywide wireless network coverage around the city of Grand Haven, Michigan
- > Services include broadband wireless access, VoIP and mobile video over Wi-Fi
- > Target customers include first emergency responders, businesses, residential and boating enthusiasts



Solution

- > Tsunami MP.11 Model 5054 serves as the wireless backhaul for ORiNOCO AP-4000s and AP-600s
- > Advanced WDS capability of ORiNOCO AP-4000 allows extension of Wi-Fi network using separate 5 GHz band, eliminating Ethernet connectivity for every AP
- > Successfully covers 70 square miles and up to 15 miles into the lake



Downtown Grand Haven situated on the Grand River and Lake Michigan

China's Guangdong Province Metropolitan Area Network



■ Challenge

- > To provide inexpensive Voice over IP and broadband access to enterprises across the Guangdong province
- > Requirements included fast deployment, quick return on investment, high level of security for the largest scale point-to-multipoint deployment in China.

■ Solution

- > Province-wide installation of 5.8 GHz Tsunami Point-to-Multipoint system that delivers broadband access for voice and data.
 - Superior Wireless Security
 - High Bandwidth and throughput
 - Good manageability with SNMP interface for seamless integration within wireless network
 - Carrier-class reliability
 - Not affected by weather



Take your network further

Dublin City Council SCATS Traffic Control & Video Surveillance



■ Problem

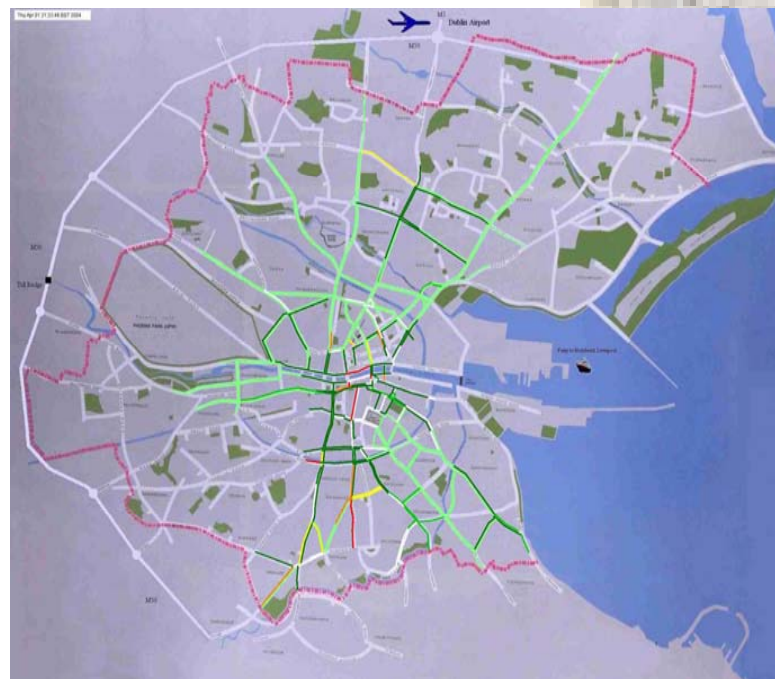
- > Increased real-time coverage
- > No budget increase
- > 180 Intersections, 1207 km of roads
- > 1000 Controllers (crossings & lights)

■ Solution

- > Replacing leased lines
- > reducing running costs

■ Why Proxim?

- > Reducing Costs and Increasing Coverage Using Wireless
- > Proven Technology
- > Flexible and Scalable Solutions
- > 5.4GHz or 5.8GHz
- > Low Deployment Cost



Take your network further

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- > Advanced Wireless Distribution System capability of ORiNOCO AP-4000 allows extension of Wi-Fi network using separate 5 GHz band, eliminating Ethernet connectivity for every AP
- > Successfully covers 70 square miles and up to 15 miles into the lake
- > America's First Wi-Fi Covered City



Downtown Grand Haven situated on the Grand River and Lake Michigan



Working with Proxim / Partner Program

Proxim Wireless Wizard Partner Program



Platinum Partner



- ▶ Premiere partner with the highest revenue commitments
- ▶ Highest number of Proxim trained technical engineers and sales volume
- ▶ Customer set is tightly aligned with Proxim's core markets
- ▶ Top 50 club per region

Gold Partner



- > Replaces International Wireless Wizard Partners
- > Replaces: North America Gold and Silver Partners

Wireless Partner



- > Replaces North America Registered Resellers
- > Wireless Partners – same International

Take your network further

- Information at www.proxim.com:
 - > Product information
 - > White papers
 - > Data Sheets

- Direct contact:
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Thank you!

www.proxim.com

my.proxim.com

