

Wireless Technology Update

Customer Case Application



Wednesday, October 24, 2007

INTRODUCTION

*Customer Case Study: KPMG
Eric Peter, KPMG IT Manager*



Wednesday, October 24, 2007

KPMG Luxembourg Overview

- 3 Buildings – in total 200 Antennas
- 750 users

Business Challenge

- Mobility
- Voice capable
- Guest control

Solution Provided

- Centralized Management Solution: Cisco Unified Wireless System
- Security: Encryption, LWAPP tunneling...
- Solution fully redundant



AGENDA

→ The Goal of WiFi in the Enterprise

1) Concepts of a Centralized Solution

- Before / Today
- Dynamic Control

2) Voice over Wireless (WVoIP)

- Dynamic Transmit Power Control
- Coverage Issues
- Security and Optimization

3) Specific Case of Guest Access

- On-Demand Access
- The Anchor Model

4) Connectivity Security

- Security Method Summary
- MFP and IDS Shunning

5) Air Protection

- Rogue Detection
- Containment
- Localization

→ Case Study

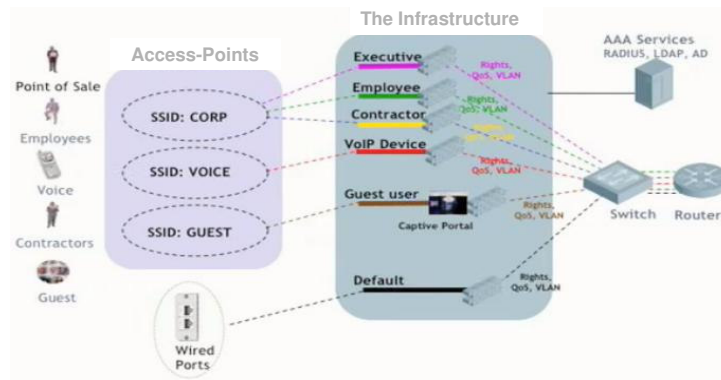
- KPMG
- Customer References



The Goal of WiFi in the Enterprise

→ Access anywhere and anytime = MOBILITY

→ Providing a secured wireless connection to the corporate network's services, and a controlled connection for guests!



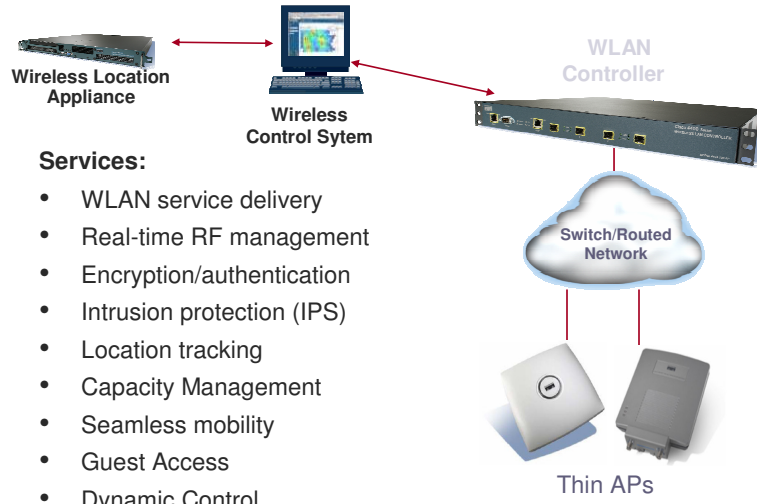
AGENDA: Part 1

Concepts of a Centralized Solution



A Single Unified WLAN System

Before with **Autonomous** Access-Points



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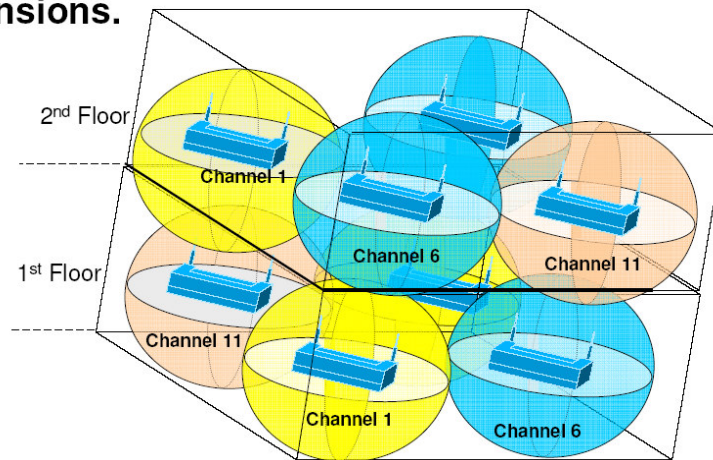
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Channel Assignment can only be DYNAMIC because ...

Channel layout should also be considered in 3-dimensions.



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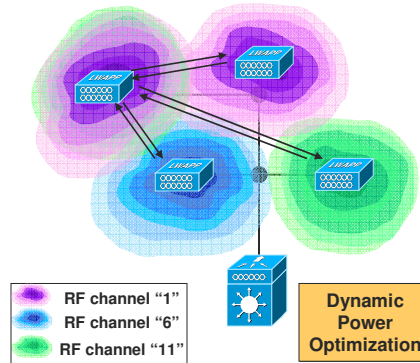


Radio Resource Management (Auto-RF) Real-Time RF Management

→ The RF domain is an ever changing environment

- Users are mobile
- Interference prone

→ The controller has a system level view of the RF domain and adjusts individual access points to optimize coverage and network availability



Benefits

- An optimized RF environment allows for superior application performance and higher network availability
- Complete RF management without specialized RF skills
- No RF recalibration required – decreased support costs

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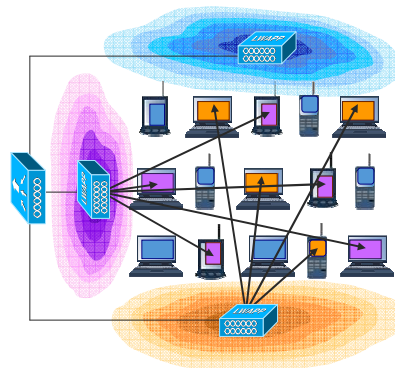
Client Roaming & Dynamic Load Balancing

→ Dynamic client load balancing

→ Solving performance & capacity problems in high density areas

- e.g. conference rooms, cafeteria...

→ Infrastructure and clients (via CCX) determine optimal load balancing



Benefits

- Preserves application and network performance
- Guarantees bandwidth and lower latency for network sensitive applications (e.g. voice over IP)
- Decreased support costs; increased user satisfaction

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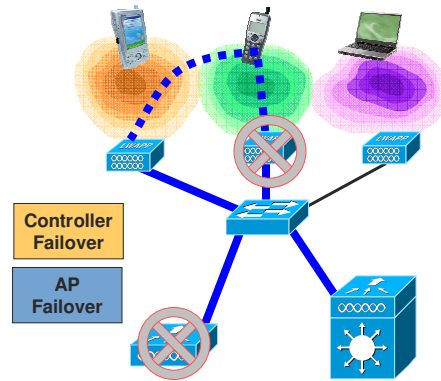
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Business-Class Reliability for Mission Critical Mobility

→ Maximized system availability

- Controller redundancy
- Access point failover

→ System level management automates failover to guarantee availability



Benefits

- No single point of failure
- Automated network failover decreases support and downtime costs
- Wireless network reliability on par with wired

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AGENDA: Part 2

VoW (Voice over Wireless)



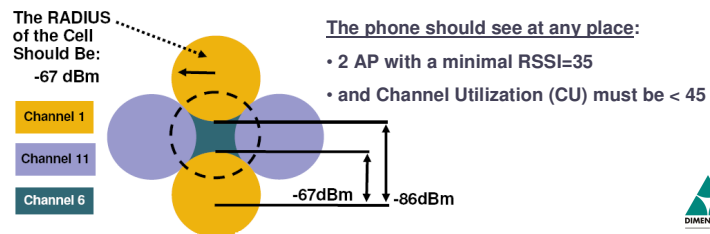
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DTPC helps for Voice !

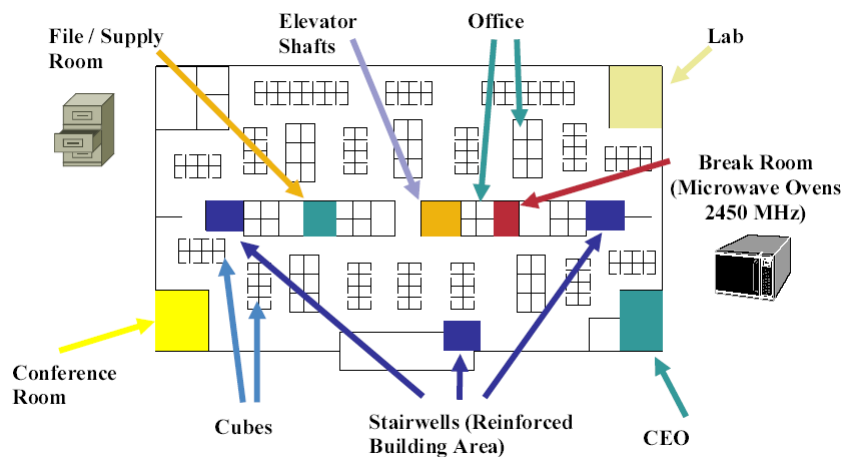
- Wireless phones supports 1,5,20,50,100 mW transmit power.
- If advertising a non-supported rate, the phone will roll up to next transmit power.
 - Prevents one-way audio
 - Otherwise RF traffic is only being heard in one direction !



- This is also why it is important to respect some coverage rules:



COVERAGE: Strategic Areas



Security and Optimization for Voice

→ Authentication

- WPA2
- WPA
- WPA-PSK
- CCKM
- EAP-FAST
- LEAP



→ Infrastructure

- Image Authentication
- Device Authentication
- Encrypted Files
- Signaling Authentication
- Signaling Encryption (TLS)
- Media Encryption (SRTP)

→ Encryption

- AES
- TKIP/MIC
- WEP (40/128 bits)

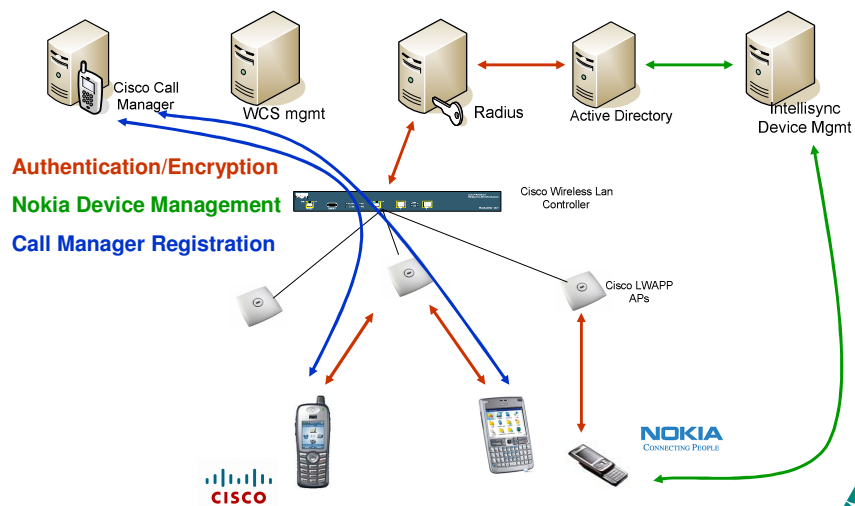


→ Mode Selection

- Auto-sensing, a preferred over b/g
- Auto-sensing, b/g preferred over a
- Fixed 802.11a
- Fixed 802.11b/g
- Received Signal Strength Indication (RSSI) – Default



All the blocks for a Complete Solution



AGENDA: Part 3

The Specific Case of Guest Access



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Web Authentication Feature

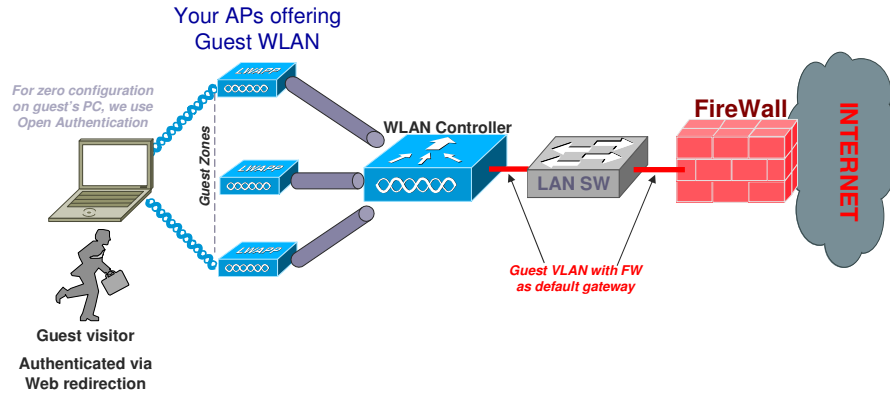
- Efficient control of “on-demand” access for guest services
- Soon (with WCS v4.2), will be also possible for wired access!

Example of a Customized Web Auth Login Window

Typical Successful Login Window



Guest Access Securisation 1/2: Routing to FW

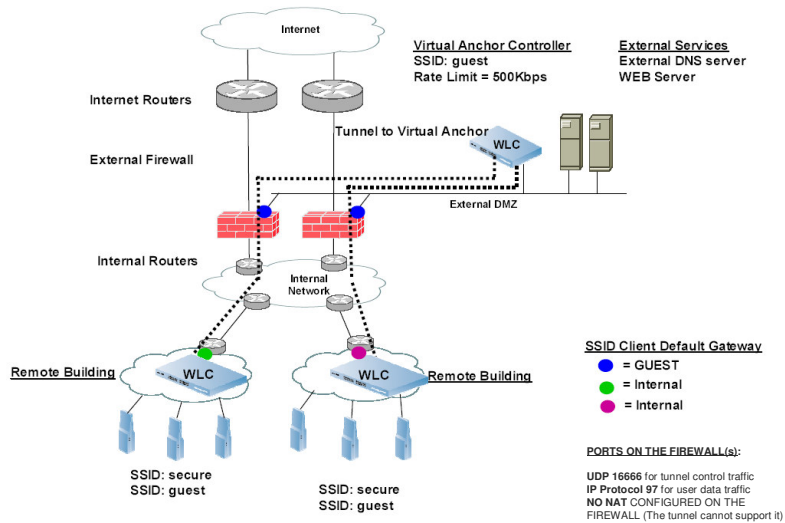


- Traffic is limited to a specific VLAN that can only discuss with the FireWall
- Traffic can be played on your internal network...
- Specific additional routing and switching configuration required !

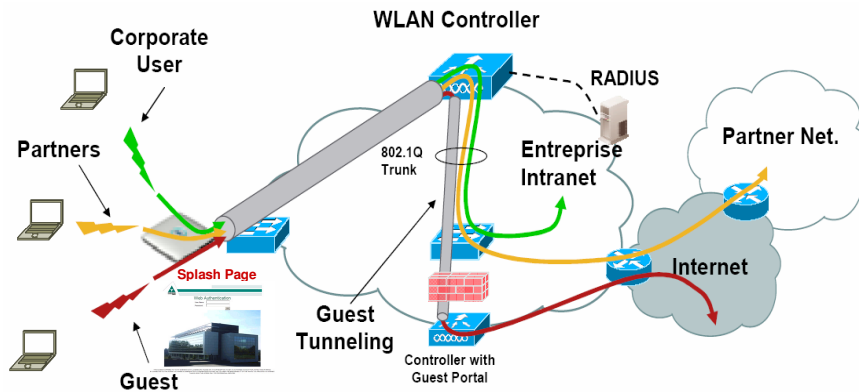


Guest Access Securisation 2/2: Anchor Model

→ Benefits of virtual anchor :



Summary Traffic Flow



- Basic Open access for Guest (No config required on PC!)
- Web authentication with “On-Demand” username/password creation for a limited period of time
- Tunneling of the Guest’s traffic directly to External Zones (like DMZ)
- Direct Routing to Internet WITHOUT USING YOUR LAN GATEWAYS !



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AGENDA: Part 4

Connectivity Security



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MFP: Management Frame Protection

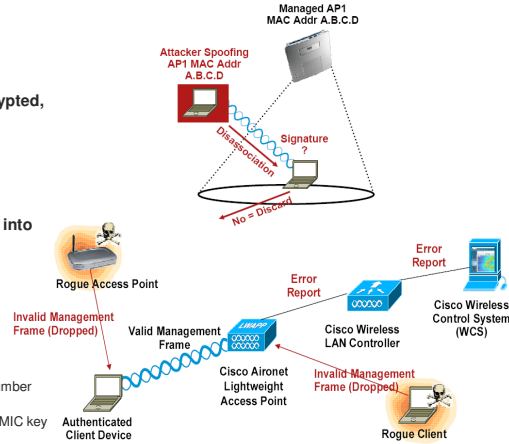
The only real protection against MiM attacks

→ Problem:

- there's no "physical security" for wireless and management frames are not authenticated, encrypted, or signed.

→ Solution:

- Insert a signature (Message Integrity Code/ MIC) into the management frames:
 - AP beacons
 - Probe requests/responses
 - Associations/re-associations
 - Disassociations
 - Authentications/de-authentications
 - Action management frames
- Specifics of MFP "MIC":
 - MFP Information Element adds timestamp, sequence number
 - MIC key to management frames
 - MFP employs HMAC-SHA1 hash algorithm to calculate MIC key

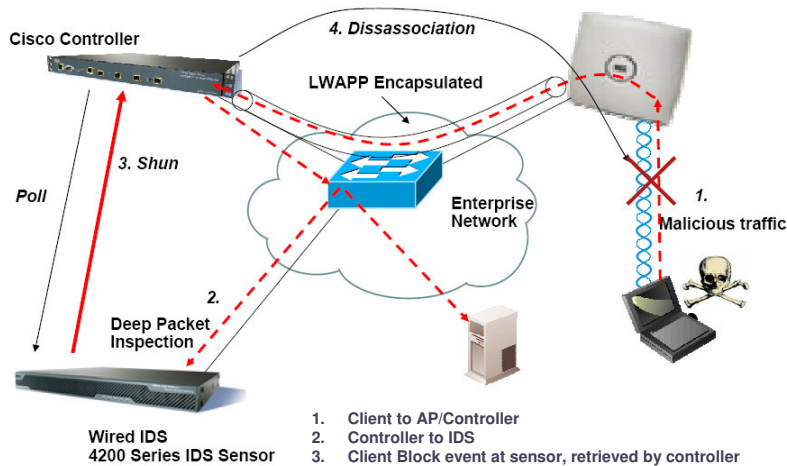


→ Initially it has been deployed as a proprietary security mechanism to validate infrastructure equipments

→ Today it is extended to client adapters via CCX version 5 !



IDS and Client "Shunning"



1. Client to AP/Controller
2. Controller to IDS
3. Client Block event at sensor, retrieved by controller



AGENDA:
Part 5

Air Protection



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BE PROTECTED AGAINST UNDESIRED WIFI ?

→ “NO WIFI IN MY HOUSE” Policy ??? Is it realistic ???

NO !

Simply because WiFi uses free licensing frequencies.

Your neighbor is allowed to send you waves !

→ SO THE BEST PROTECTION AGAINST WiFi IS...

WiFi



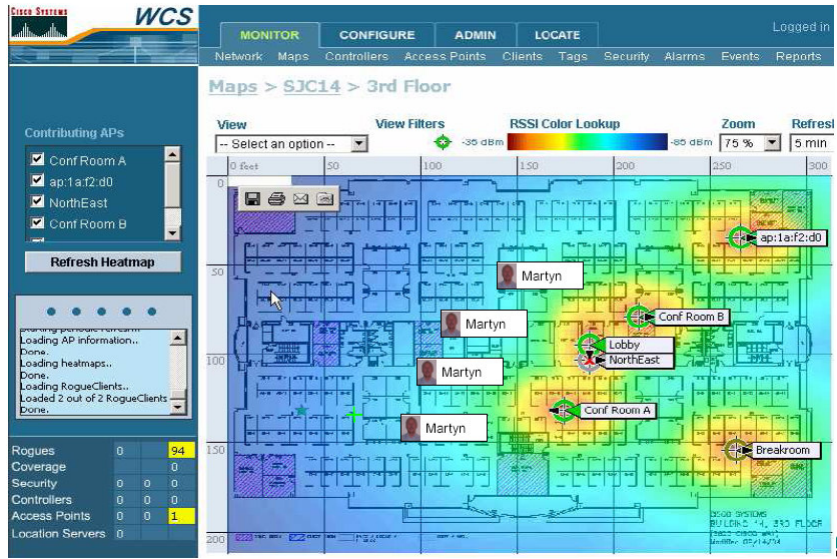
Rogue Access-Point Detection

The screenshot shows the WCS Alarms interface with a 'Rogue - 00:11:24:92:fc:a2' alert. A text box states: 'Alarms can be assigned for tracking.' Another text box lists the states: 'A Rogue's state can be: Unknown - Alert, Known - Internal, Unknown - External'. A third text box points to the 'Annotations' section: 'Annotation area to track resolution'. Below the map, a text box says: 'RF Fingerprinting places rogue on map to 10 meter resolution'. The map shows a floor plan with various access points and a color-coded signal strength overlay.

Real-Time Cartography Reporting

The screenshot displays the WCS Real-Time Cartography Reporting interface. The main view is a floor plan of 'Building 14 > Floor 4' with a color-coded RSI (Received Signal Strength Indicator) heatmap. A legend on the left shows 'Contributing APs' and 'Rogues'. A status bar at the bottom left shows: 'Rogues: 20 / 88%', 'Coverage: 55 / 0 / 110', 'Portals: 0 / 0 / 0', 'Access Points: 15 / 0 / 87', and 'Location Servers: 0'. A detailed view of a rogue is shown on the right: 'Tag 000c0cc2b0e443', 'Asset Name: Jesse Linderman', 'Asset Group: TMC', 'Asset Category: person', 'Type: Accesspoint', and 'Battery Life: Normal'. The interface includes navigation tools like 'View Filters', 'RSSI Color Lookup', 'Zoom', and 'Refresh'.

Tracking over Time



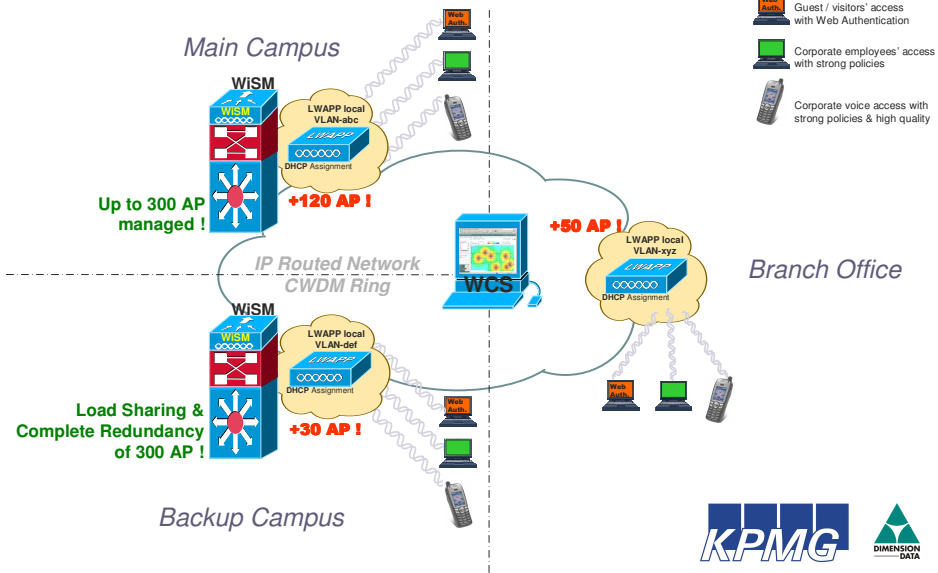
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Customer Case Study: KPMG



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Overview of KPMG Design



Practical References in Luxembourg



End, but ...

Questions ???



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