Presentation Agenda

• Cisco Structured Wireless-Aware Network (SWAN) Overview
• CiscoWorks Wireless LAN Solution Engine (WLSE) Radio Management (RM)
• WLSE Network Management (NM)
• Summary
Barriers to WLAN Acceptance

- Security
- Deployment and management
- Total cost of ownership (TCO)

Cost of WLAN engineer = $63,800/yr.

To minimize OpEx costs, your WLAN system must be reliable, secure, and managed in a scalable fashion.

**Summary of Perceived Problem:**

*Lack of a market-proven WLAN system that minimizes TCO for deploying and operating a secure, reliable, high-performance WLAN of any size in any environment*
Ideal Solution: WLAN System that...

• Minimizes costs of **deploying** optimal number of access points (APs) in any environment

• Uses market-proven technology for low-cost, day-to-day **operations**
  From central point of control
  With minimal intervention

• Provides industry-leading, standards-based **security** for all client devices and applications

• Is **flexible** enough to grow as network needs evolve

• Is backed by **support** services of the most trusted name in the networking industry
Ideal Solution Realized:
Cisco Structured Wireless Aware Network

Cisco Structured Wireless Aware Network (SWAN) is a...

- Secure, integrated WLAN solution...
- of Cisco wireless-aware infrastructure products

Cisco SWAN...

- Minimizes WLAN TCO...
- through optimized deployment and management...
- of market-proven, multi-function APs

Central solution component is the CiscoWorks Wireless LAN Solution Engine (WLSE)
Cisco Structured Wireless-Aware Network (SWAN)
Solution Components

Growing Network Needs

FUTURE 2004
Cisco switches and routers with wireless-aware Cisco IOS® Software

Expanded security options
Greater RM* range

Cisco Aironet WLAN client adapters
Cisco Compatible (CCX) clients

AVAILABLE TODAY!
CiscoWorks WLSE 2.5
Cisco Aironet AP1100s and AP1200s
Wi-Fi client adapters
802.1X authentication server (like Cisco Secure ACS)
Cisco Wireless Security Suite

* RM = Radio Management
Cisco SWAN — Key Messages

• Differentiates Cisco from other WLAN vendors:
  – Uses Cisco Infrastructure and Cisco IOS Software to Integrate Wireless LAN Services into Your Wired Network
  – Simplifies WLAN Deployment, Management and Operations
  – Enhances Network Security through Active Detection of Rogue Access Points and Security Policy Monitoring
  – Is Scalable Allowing Large Local and Remote Deployment and Management
  – Automates and Simplifies WLAN Operations, Management and Security Monitoring via “Air”/RF Monitoring from Client Devices and Access Point
  – Provides Fast Secure Roaming for Latency-Sensitive Applications Without Losing Network Connectivity
Cisco Structured Wireless Aware Network

• **Components**
  - Cisco IOS Software 12.2(15)JA for access points
  - CiscoWorks Wireless LAN Solution Engine (WLSE) version 2.7
  - Cisco WLAN Client Adapter version
  - Cisco Compatible Client Adapters (CCX Version 2)

• **Radio management features to automate and simplify WLAN operations, management and security monitoring via the wireless medium**
  - Air/Radio Frequency (RF) scanning and monitoring
  - Rogue access point detection
  - Assisted Site Surveys
  - Interference detection

• **Network management features to simplify device deployment and network operations, and maintain security**
  - Security configuration policy monitoring
  - Fault & performance monitoring
  - Robust WLAN configuration management
  - Inventory and Performance reports
  - WLAN client association reports
  - Zero Configuration AP
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Cisco SWAN — Conceptual Overview

WLAN Manager: CiscoWorks Wireless LAN Solution Engine

Intelligent Cisco Access Points

Cisco IOS-based Intelligent Wireless Domain Services (WDS)

802.1x Authentication Server (CiscoSecure ACS)

Cisco Wireless Security Suite

Cisco and Cisco Compatible WLAN Clients
1. AP Configured to run WDS (Backup WDS AP can be defined)
2. Non-WDS APs configured to register with WDS (username/password)
3. Non-WDS APs registered (Cisco LEAP authenticated) by WDS
4. CiscoWorks WLSE (Wireless Network Manager, or WNM) registers (Cisco LEAP authenticates) with WDS
5. Communications proceeds using Wireless LAN Context Control Protocol (WLCCP)
1. Clients and APs send their RM data to the WDS AP.
2. WDS AP uses RM-Aggregation to condense and digest the RM into a set of small messages and sends it to the WLSE.

RM = Radio Management
## Radio Management — Data Collection
### Methods to Characterize Coverage Area

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
<th>Purpose</th>
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<tbody>
<tr>
<td>AP Radio Scan</td>
<td>APs transmit beacons on the same channel and detect all neighboring APs</td>
<td>Characterizes potential Basic Service Set (BSS) coverage redundancy and overlap on downlink</td>
</tr>
<tr>
<td>Client Walkabout</td>
<td>Client walks desired coverage area and reports all detected APs</td>
<td>Characterizes potential BSS coverage redundancy and overlap on downlink</td>
</tr>
<tr>
<td>Radio Monitoring (During Operation)</td>
<td>Periodically gather RF statistics and identifies specific signal sources</td>
<td>Monitor RF environment, alert when new APs appear</td>
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</tbody>
</table>
Radio Management — Application Features

- CiscoWorks WLSE Tools:
  - Radio Location Manager
  - Managed Site Survey
    - AP Scan
    - Client Walkabout
    - Radio Parameter Generation
  - Radio Network Reports and Visualization
  - Rogue Access Point Detection
  - Non-802.11 Radio Interference Detection
Cisco SWAN — Radio Location Manager
Cisco SWAN Assisted Site Survey
Step 1: Select Access Points
Cisco SWAN Assisted Site Survey
Step 2: AP Radio Scan
Cisco SWAN Assisted Site Survey
Step 4: Radio Parameter Generation
Cisco SWAN Assisted Site Survey
Step 5: Radio Parameter Generation
Cisco SWAN Radio Network Reports and Visualization
Cisco SWAN
Rogue Access Point Detection
Cisco SWAN
Non-802.11 Radio Interference Detection
CiscoWorks WLSE 2.7
Self Healing Radio Network

Lost radio interface
Available 2nd Quarter 2004
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SWAN Network Management — Application Features

CiscoWorks WLSE Tools for WLAN Management:

- **Configuration Management**
  - Template-based configuration
  - Zero-touch deployment of new APs
  - Configuration archival
  - Firmware management

- **Fault Monitoring**
  - Profile-based monitoring
  - Security misconfiguration detection
  - Threshold-based alarming for WLAN
  - AAA server monitoring

- **Device Reporting**
  - Device inventory & configuration reports
  - Usage trending reports
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CiscoWorks Wireless LAN Solution Engine Version 2.5 Value-Add Feature Mapping

- **Time savings**
  - Assisted Site Survey
  - Automated Configuration Management
  - Usage trending for capacity planning
- **Performance and availability optimization**
  - RF coverage visualization
  - Interference detection
  - Coverage black-hole mitigation
  - Per site defined alerts for problem APs
  - Future: Self Healing
- **Enhanced WLAN Security**
  - Innovative Rogue AP Detection
  - Security misconfiguration detection
  - AAA server monitoring
- **Lowered Operational Cost**
  - Centralized appliance solution
  - Scalability, support for 2500 APs per appliance
  - Simple, secure, web-based interface
  - Support for legacy Cisco Aironet and IOS APs
# Cisco Structured Wireless-Aware Network Solution Benefits

<table>
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<tr>
<th>Deployment</th>
<th>Optimized deployment of high-performance access points (APs): assisted site survey, “live” RF* readings</th>
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<td>Management</td>
<td>Simplified, automated air/RF operation of 100’s-1000’s of central or remotely located APs (configurations, firmware, coverage, interference, etc.)</td>
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<tr>
<td>Security</td>
<td>Wi-Fi Protected Access for access control/authentication and data privacy, integrated WLAN IDS functionality, rogue AP detection and suppression</td>
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<td>Flexibility</td>
<td>Future switch/router enhancements for scalability, familiar interface, fast secure layer 3 roaming and integrated wired and wireless LAN services</td>
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<td>Support</td>
<td>Cisco warranties, support services and partnerships like Cisco Compatible Extensions program</td>
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</tbody>
</table>

* RF = radio frequency = data transmissions in the air
Questions?