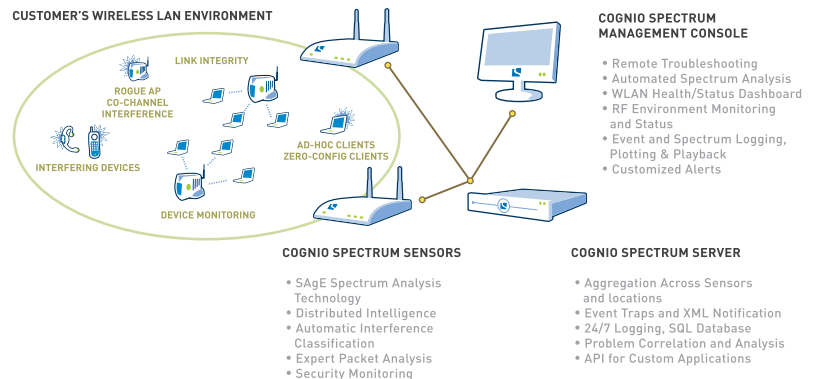# The Cognio Intelligent Spectrum Management™ System

How healthy is your wireless network?

Wireless networks provide unprecedented levels of flexibility for users. But the explosive growth of wireless networks has created a layer of vulnerability that can disrupt business operations and compromise security. Wireless LANs are often nebulous, constantly changing, difficult to manage, and susceptible to RF interference. They are vulnerable to security breaches and downtime caused by unauthorized or conflicting devices. As WiFi becomes increasingly business-critical, IT managers need tools to improve wireless network performance, security, and reliability.

The solution? Cognio's patented Intelligent Spectrum Management™ (ISM) System. Cognio makes the previously hidden world of RF communications and spectrum tangible and visible. It's like having night vision goggles that let you see, monitor, analyze, and manage all wireless devices and RF sources that influence your WiFi network's performance and security, even if those devices are unauthorized or transient.

THE COGNIO INTELLIGENT SPECTRUM MANAGEMENT™ SYSTEM

WLAN TROUBLESHOOTING   SYSTEM HEALTH MONITORING   PERFORMANCE TUNING   SECURITY

CUSTOMER'S WIRELESS LAN ENVIRONMENT

LINK INTEGRITY
ROGUE AP
CO-CHANNEL
INTERFERENCE
INTERFERING DEVICES
AD-HOC CLIENTS
ZERO-CONFIG CLIENTS
DEVICE MONITORING

COGNIO SPECTRUM MANAGEMENT CONSOLE
• Remote Troubleshooting
• Automated Spectrum Analysis
• WLAN Health/Status Dashboard
• RF Environment Monitoring and Status
• Event and Spectrum Logging, Plotting & Playback
• Customized Alerts

COGNIO SPECTRUM SENSORS
• SAgE Spectrum Analysis Technology
• Distributed Intelligence
• Automatic Interference Classification
• Expert Packet Analysis
• Security Monitoring

COGNIO SPECTRUM SERVER
• Aggregation Across Sensors and locations
• Event Traps and XML Notification
• 24/7 Logging, SQL Database
• Problem Correlation and Analysis
• API for Custom Applications

A Powerful WLAN Management Platform

The Cognio Intelligent Spectrum Management™ (ISM) system is a complete solution that can be quickly and easily deployed, providing a powerful set of tools to monitor and manage your WLAN. At the core of the system, Cognio Spectrum Sensors monitor and log all 2.4 and 5 GHz activity on a 24x7 basis. The Spectrum Sensors communicate with the Cognio Spectrum Server which aggregates and post-processes the RF the information coming from the individual Sensors, identifies and filters potential problem events, and generates alerts based on user-defined RF policies.

The Cognio Spectrum Console is an easy to understand Windows application that provides a complete current and historical view of RF link activity and AirQualityTM. The Console provides preemptive problem-solving capabilities, and rapid and in-depth problem diagnosis, thus enabling swift corrective action. Wireless device status, security, reliability, and throughput reporting are shown in an easy to understand graphical format. Interference events are reported in an event log by name, e.g. Bluetooth ACL/SCO, microwave oven, 2.4GHz cordless phone, etc. For network troubleshooting the console has a complete remote distributed spectrum analyzer for real-time or historical "play back" analysis.

Location	# APs	# STAs	Retries	Duty Cycle	C/I (dB)	AP Uptime	AP Strength	Rogues	Interferers
ISM Server - ACME Healthcare, WA	111	555	10%	90%	0	97%	100%	45	61
Hospital - Seattle	45	225	10%	90%	0	99%	82%	22	41
Floor 1	13	65	10%	90%	0	100%	100%	10	10
Emergency Room	4	20	10%	90%	0	99%	100%	2	2
Pre-natal Care	5	25	3%	4%	15	98%	100%	3	4
MRI, CT-SCAN, X-RAY	4	20	4%	5%	20	94%	100%	5	4
Floor 2	17	85	9%	10%	15	99%	90%	5	11
Floor 3	12	60	3%	2%	12	97%	100%	4	10
Floor 4	3	15	8%	9%	11	99%	100%	3	10
Corporate offices, Seattle	44	220	10%	9%	13	99%	100%	17	15
Hospital - Kirkland	22	110	9%	8%	12	94%	100%	6	5

TRACKS KEY SYSTEM HEALTH METRICS 24X7

The Cognio ISM System delivers direct ROI through expense savings, better network uptime, and more predictable bandwidth availability. Benefits include:

Eliminating "Walk Around and Wait" Troubleshooting

The Cognio ISM System eliminates the site-live surveying, operational testing, and troubleshooting required with current tools. Troubleshooting can be performed from the Network Operations Center, analyzing either the real-time spectrum and performance data, or spectrum and performance data logged at the time of the reported problem.

Faster Trouble Ticket Resolution

Current WLAN management systems can identify problems with packet flow, but are blind to the frequent network dropouts and bandwidth reduction caused by RF interference. The Cognio ISM System monitors both packet flow and RF site problems and automatically analyzes, evaluates and locates problem sources.

Smarter Analysis

Analysis of spectrum events affecting WLAN operation typically requires highly trained personnel familiar with radio theory and troubleshooting techniques. The Cognio ISM System automatically analyzes and consolidates information in a form that may be understood by existing IT personnel. This enables the CIO and IT managers to leverage personnel already in place without resorting to expensive outsourcing and RF experts.

Replaces Expensive "Expert" Equipment

Customers report needing to spend over 10% of the total WLAN installation budget on testing, measurement, and troubleshooting equipment. Spectrum analyzers and hand-held network monitors cost up to $35,000, and can only be used by expert personnel. The Cognio ISM System combines these capabilities in a single system that operates like standard IT management systems. Capabilities are accessible to all personnel.

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A rich set of intuitive visualization and alerting tools for managers of business-critical WLANs.

System Benefits

24/7 Remote Spectrum Monitoring

ISMS is an installed solution that monitors your wireless environment 24 hours a day, 7 days a week. Using patented spectral analysis and fingerprinting techniques, the system measures, analyzes, and aggregates all critical WLAN information and triggers alerts according to a set of user-defined notification procedures.

System Health Monitoring

The Cognio ISM System understands and combines 802.11 and RF physical layer health information in meaningful quick-glance "dashboard" view.

RF Physical Layer Visibility

Unlike other systems in the market today, which monitor only 802.11 packet flow, the ISM System monitors all activity in the RF spectrum, fully replacing a spectrum analyzer.
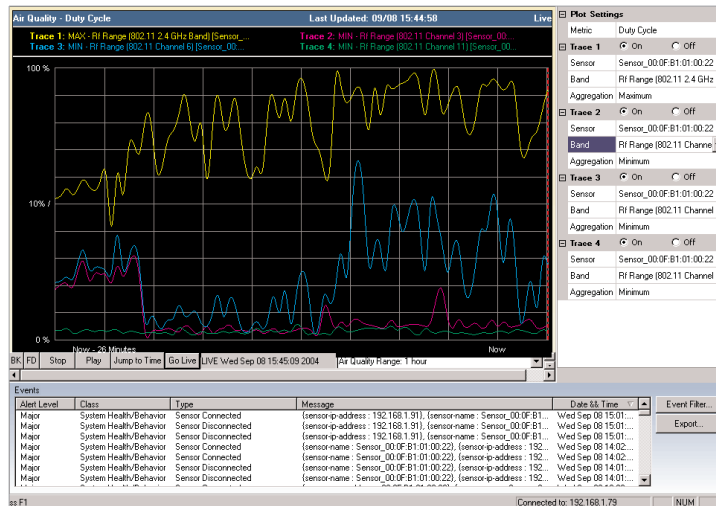
AIR QUALITY: SPECTRUM MANAGEMENT CONSOLE IN SPECTRUM VIEW

Air Quality Management

The ISM System brings breakthrough reliability and manageability to your WLAN by providing continuous monitoring and feedback of AirQuality the fundamental quality or congestion in the RF spectrum.

Real-time Device Detection and Device Identification

Cognio's ISM System continuously analyzes all RF activity, and instantly detects and identifies new devices, whether 802.11 or non802.11, client station of interferer, friend or foe.

Link Integrity Monitoring

IT managers can specify individual or groups of access points for continuous monitoring.

User-Defined RF Alerts

The ISM System includes a rich alerting facility that enables IT managers to set thresholds on key metrics, which trigger enabliing quick corrective action.

Updateable Classifiers

The Intelligent Spectrum Management System comes with a default set of 17 Classifiers, which are templates for fingerprinting common interferers. Cognio provides downloadable updates to the Classifier database.