XiRRUS®

XIRRUS
DELIVERS
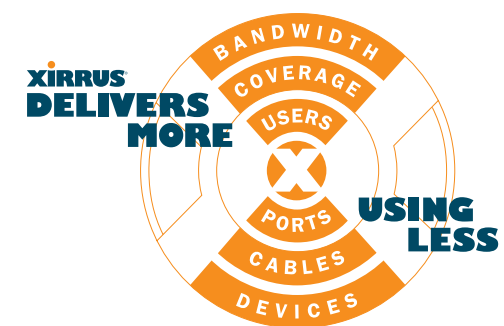**MORE**

BANDWIDTH
COVERAGE
USERS
PORTS
CABLES
DEVICES

USING
LESS

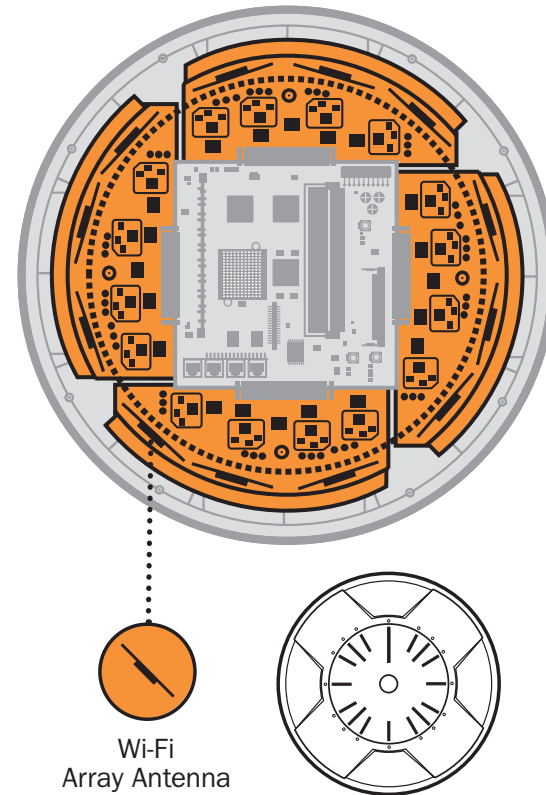# Wi-Fi Array Architecture

Cellular Array Antennas

Cellular
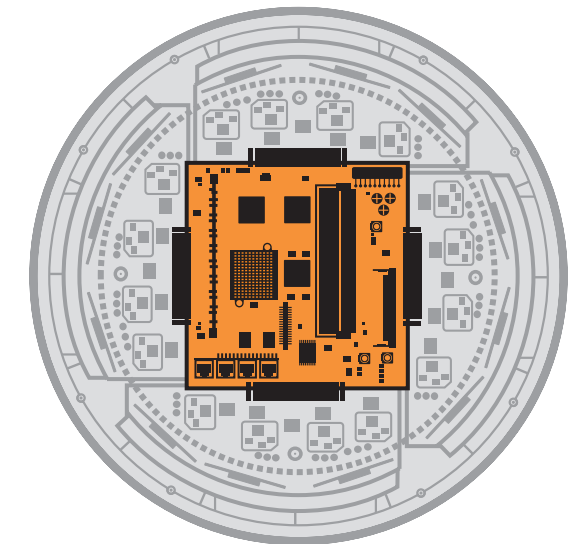Array Antenna
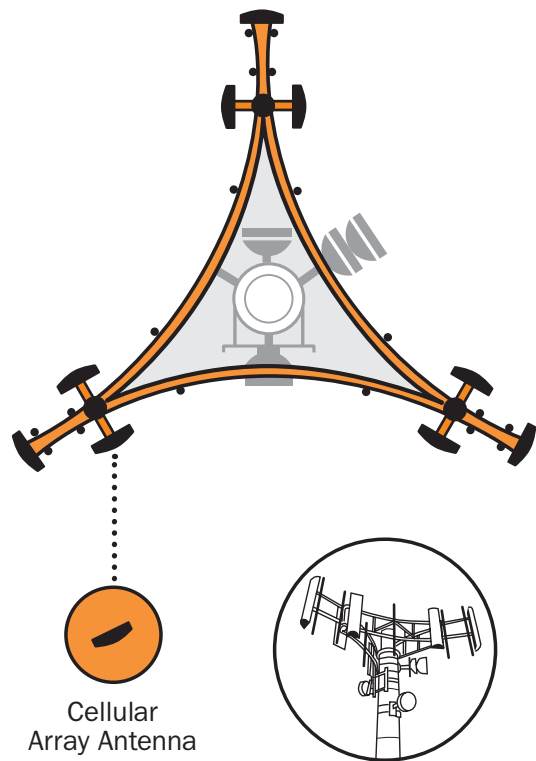
Wi-Fi Array Antennas

Wi-Fi
Array Antenna

L2/L3 Switch

Wi-Fi Array Switch

- **Multiple radios** = more bandwidth and user density

- **Directional antennas** = stronger signal strength and increased coverage

- **Sectored RF patterns** = better RF management and load balancing

- **Distributed to the edge** = more efficient switching decisions

- **Intelligence at the edge** = more efficient QoS and VLAN-tagging

- **Security at the edge** = better protection of all network traffic

Xirrus Differentiators

The Xirrus Wi-Fi Array replaces Ethernet workgroup switches, distributing the network intelligence and security to the network edge while also providing the mobility and flexibility lacking in the workgroup switches.
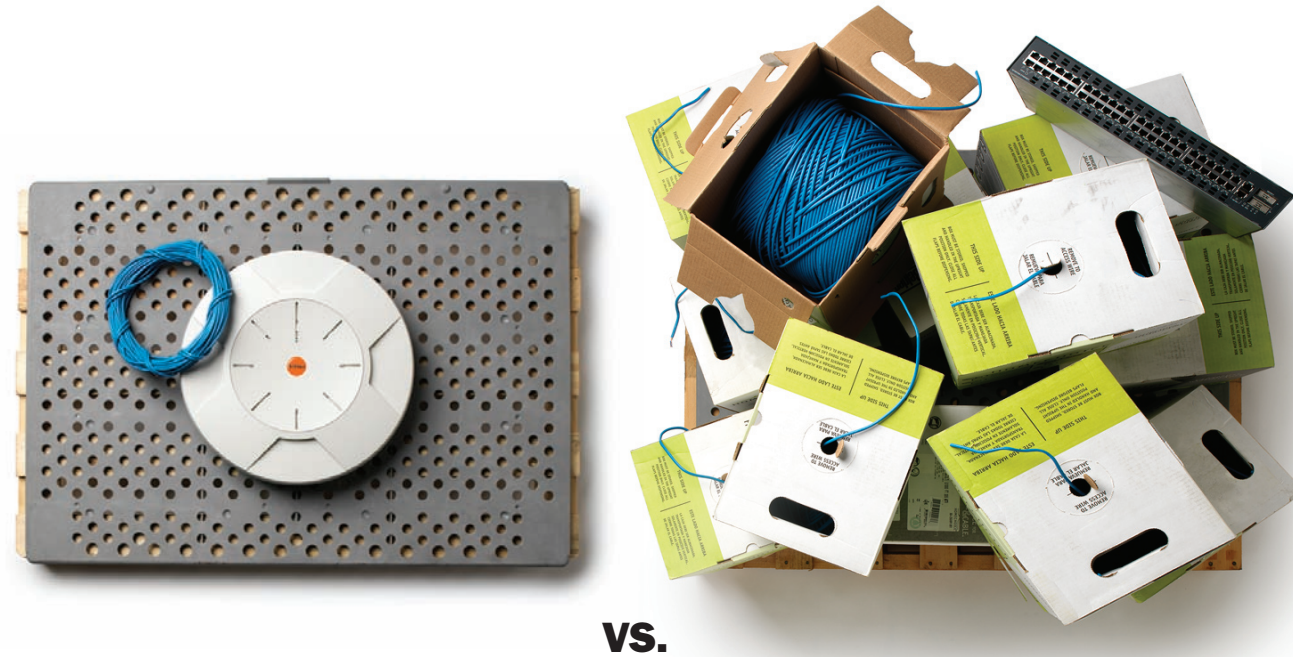
The Xirrus Wi-Fi Array obsoletes all other Wi-Fi offerings by delivering 400% more coverage, bandwidth, and users while using 75% fewer devices, cables, and switch ports.

VS.

VS.
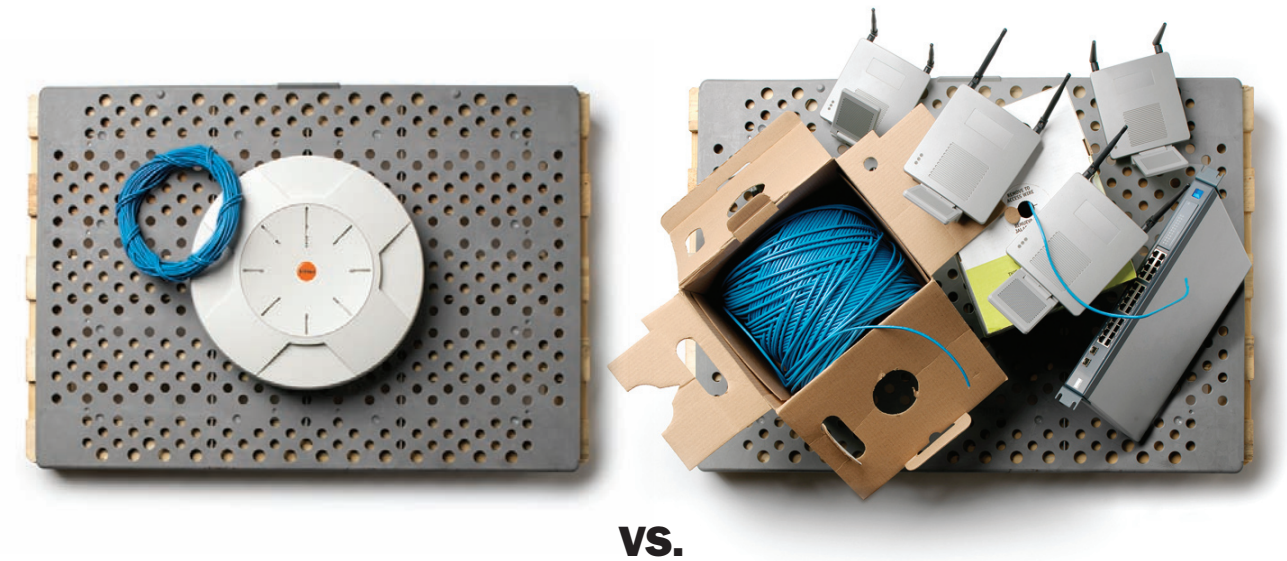
	Xirrus XN8 Wi-Fi Array	24-Port Ethernet Workgroup Switch
Users	24	24
Bandwidth	300 Mbps	1 Gbps
Uplinks	2 GigE	2 GigE
Mobility	Yes	No
Installation	Simple (Fewer Cables, No Closet Equipment)	Complex (Cables, Jacks, Jumpers, Switches)
Cost	$$	$$$

	Xirrus XN8 Wi-Fi Array	Thin AP + Controller
Bandwidth	2.4 Gbps	600 Mbps
Coverage	4X	1X
Threat Sensor	Integrated	Time Sliced/Overlay
# of Users	512 Max	128 Max
# of Devices	1	4 + Controller
# of Cables	1	4

Customers

Enterprise

Xirrus delivers a 4:1 advantage within a 280,000sqft office space

Academy of Television Arts and Sciences • Boy Scouts of America • Concord Music Group • Amyris
Alder Hey Children's Hospital • Liverpool Women's Hospital • RTKL Associates • OZ Architecture
Sapiens • International Telecommunications Union • Robert Jones & Agnes Hunt Orthopedic Hospital
Great Plains Health Alliance • National Institute of Health • Sasaki • JP Morgan Chase • Workday
Whatcom Transportation Authority • Royal Marsden Hospitals • United States Marine Forces Pacific

Xirrus

VS.

Competition
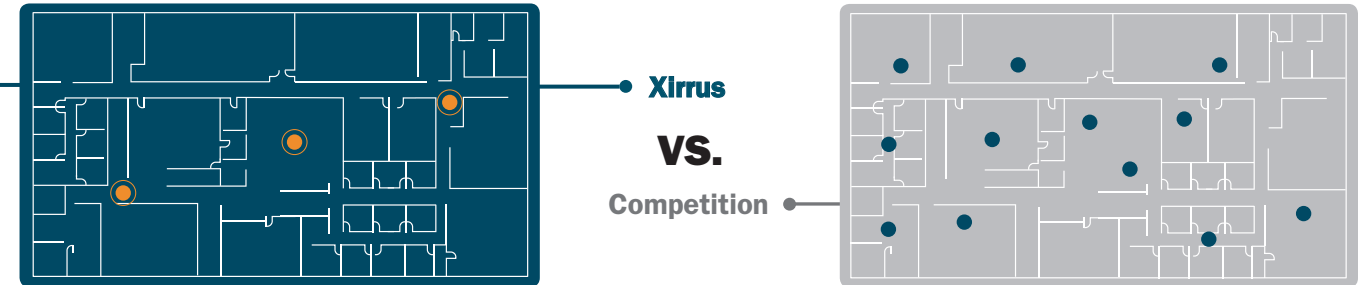
Education

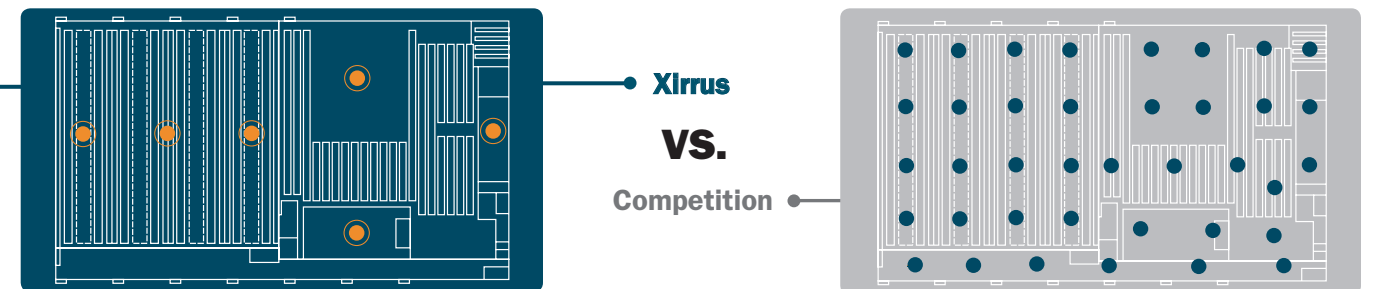### Xirrus delivers a 5:1 advantage within a 100,000sqft building

Carnegie Mellon University • Bogner Regis Community College • Plano Independent School District
Pepperdine University • Roxbury Latin School • Atlanta Public Schools • Tomlinscote School
Moorpark Unified School District • Marist College Ashgrove • Lawrence Technological University
Bristol Brunel Academy • College of Charleston • Chapman University • Atlanta Public Schools
Canterbury College • Salem State University • University of Osnabruck • Monash University

Xirrus

VS.

Competition
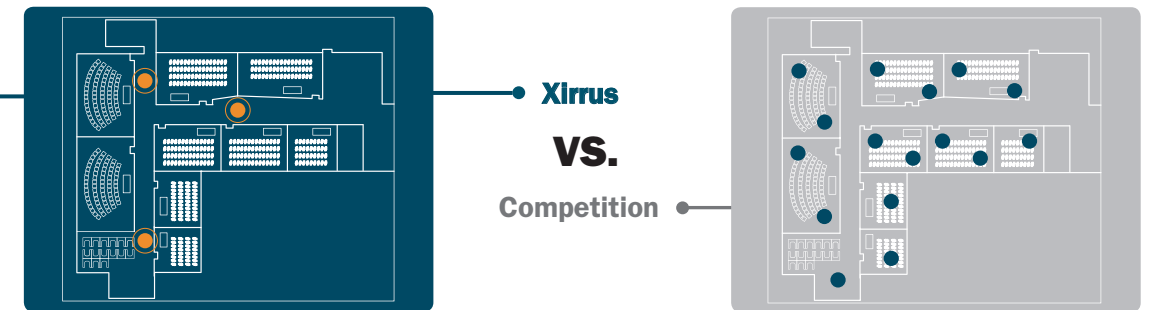
Manufacturing

### Xirrus delivers a 6:1 advantage within a 320,000sqft warehouse

Questar • Marvin Woods Products • Santa Fe Natural Tobacco Company • Yuba Heat Transfer
Niagara Water • Bonipak • Pressure Systems • Kafrit Industries • Water Gremlin • Cellynne
Middleton Paper • Easterline • Monavie • Metalwest • Aspect Energy • Elettronica Industriale
Professional Hospital Supply • Contship Italia • SAMP Control • Car Sound • AMP Control
Enbridge • Impress • TATA S.P.A. • Marmotand • Pregis Group • F N Manufacturing

Xirrus

VS.

Competition

Hospitality

Xirrus delivers an 8:1 advantage within a 1,000,000sqft conference center

Epcot Center • Hilton Hotels and Resorts • Westin Hotels and Resorts • Four Seasons Hotels
Sheraton Hotels and Resorts • Caribe Royal Hotels and Resorts • W Hotels • H2C Hotels
The Disney Swan and Dolphin Hotels • St. Regis Hotels and Resorts • Farnborough International
Edgbaston Cricket Ground • Palace Hotel • Marriott Hotels and Resorts • Cannes Festival
Geneva Palexpo Conference Center • Bell Harbor International Convention Center • Tour de France

Xirrus

VS.

Competition
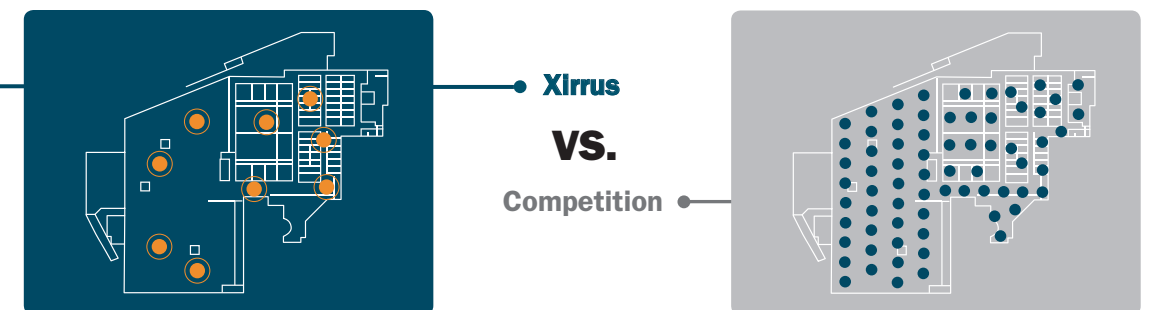
Wi-Fi Arrays

The Xirrus Wi-Fi Array architecture displaces both overlay Wi-Fi offerings and switched Ethernet to the desktop — ideal for offices, cubicles, conference rooms, auditoriums, campuses, warehouses, remote users, emergency response, etc.

The Wi-Fi Array integrates 4, 8, 12, 16 or 24 802.11abgn radios coupled to a high-gain directional antenna system into a single device along with an onboard multi-gigabit switch, Wi-Fi controller, firewall, dedicated Wi-Fi threat sensor, and an embedded spectrum analyzer. The Wi-Fi Array provides more than enough bandwidth, security, and control to replace switched Ethernet to the desktop as the primary network connection. The Xirrus Wi-Fi Array delivers the most coverage, bandwidth, throughput, and support for more users on a per device and per system basis that anything else available on the market today - resulting in a solution that uses 75% fewer devices, cabling, switch ports, power, space, and installation time compared with any other offering.

The Xirrus Wi-Fi Array delivers:
- 2X more range
- 4X more coverage
- 8X more bandwidth
- 75% fewer devices, cables, and switch ports

Management System

The Xirrus Management System (XMS) provides a powerful platform for central management of a Xirrus Wi-Fi Array network. The XMS automatically discovers, configures, and monitors an Array network, and can scale from single site to large scale, multi-site deployments.

The XMS utilizes a client/server architecture. The central XMS server provides an aggregation point for configuration and monitoring of all managed Arrays. The client provides the application interface to the user and can be run across the network from any standard Java-enabled browser. The XMS is available as a server appliance or as a stand-alone application for operation on a Windows server.

Key Features
- Automatic network discovery of Xirrus Wi-Fi Arrays "out-of-the-box"
- Policy-based configuration for easy set up of one or many Arrays
- Consolidated Dashboard view of Array, Radio, Station, Security, Performance, and Alarm status
- Hundreds of statistics on all aspects of Array and Station status and performance
- Centralized view and classification of rogue APs and wireless devices
- Aggregated view of alarms and syslogs for fault monitoring of the entire Array network
- Push software upgrades to one or more Arrays simultaneously

Indoor Enclosures

Xirrus provides a variety of indoor covers to fit a variety of needs. The Indoor Snap-on Cover provides concealment for Wi-Fi Arrays when you don't want the Array's face to be visible, while the Protective Enclosures provide protection from impact and particles.

Power Options

Xirrus offers a Power over Gigabit Ethernet (PoGE) DC system to provide a simple, low cost means to remotely power Xirrus Arrays. The PoGE system delivers DC power in-line with the Array's Gigabit Ethernet data connection up to 100m over Category 5e or 6 cable.

Outdoor Enclosures

The protective outdoor enclosure is intended for outdoor applications where securing an Array from harsh environments is required. This enclosure offers protection from rain, heat, cold, direct sun, and wind while providing an additional layer of physical security.

Rapid Deployment Kits

The Xirrus Rapid Deployment Wi-Fi Kit is the only solution capable of supporting hundreds of users over large coverage areas with such simplicity, making it the perfect solution for meetings, conferences, expositions, disaster response, and command posts.

Xirrus 802.11n Wi-Fi Array

Wi-Fi Management	XN4	XN8	XN12	XN16
RF Specifications				
Maximum Wi-Fi Bandwidth	1.2Gbps	2.4Gbps	3.6Gbps	4.8Gbps
Typical Coverage Area (Indoor)	75,000sqft	125,000sqft	125,000sqft	125,000sqft
Integrated 802.11abgn Access Points	4	4	4	4
Integrated 802.11an Access Points	-	4	8	12
Dedicated Wi-Fi Threat Sensor	Yes	Yes	Yes	Yes
Maximum Wi-Fi Backhaul Link	900Mbps	900Mbps	900Mbps	900Mbps
RP-TNC Connectors	1	3	3	3
Sectored Antenna Specifications				
802.11abgn	3dBi (180˚)	3dBi (180˚)	3dBi (180˚)	3dBi (180˚)
802.11an	3dBi (180˚)	6dBi (90˚)	6dBi (90˚)	6dBi (60˚)
RF Monitor	2dBi (360˚)	2dBi (360˚)	2dBi (360˚)	2dBi (360˚)
Wi-Fi Switch Specifications				
Integrated Wi-Fi Switch Ports	4	8	12	16
Uplink Ports	1	2	2	2
10/100 Management Port	-	1	1	1
Maximum Associated Users	256	512	768	1024

Xirrus Management System — Layer 3 Centralized Management for up to hundreds of Arrays

Image labels (left)

- 4, 8, 12, 16, or 24 802.11abgn Radios
- High-gain Directional Antennas
- Onboard Gigabit Switch
- Wi-Fi Controller
- Wi-Fi Stateful Firewall
- Wi-Fi Threat Sensor

General Array Specifications

Wireless Standards
- 802.11a, 802.11bg, 802.11g-only, and 802.11n modes
- 802.11d, 802.11e, 802.11h, 802.11i
- Upgradeable to 802.11n

Frequency Bands 11a/b/g
- 11b/g: 2.412-2.462 GHz (FCC)
- 11b/g: 2.412-2.472 GHz (ETSI)
- 11b/g: 2.412-2.484 GHz (TELEC)
- 11a: 4.940-4.990 (Safety)
- 11a: 5.15-5.25 GHz (UNII I)
- 11a: 5.15-5.25 GHz (TELEC)
- 11a: 5.25-5.35 GHz (UNII II)
- 11a: 5.470-5.725 (ETSI)
- 11a: 5.725-5.825 GHz (UNII III)

RF Management
- Automatic channel optimization
- Automatic cell sizing
- Each RF sector individually configurable
- Sharp Cell technology tightly controls edge of cell coverage
- Integrated 24/7 multi-channel Spectrum Analyzer

Wireless Backhaul
- Up to 3 Integrated Access Points
- Bonded~900Mbps per link
- Up to 4 Wireless Backhauls per Array
- Automatic link failover

Multiple SSID Support
- Up to 16 separate SSIDs can be defined
- Map Security, VLAN, QoS and Guest Access settings to each SSID
- Set SSIDs by frequency band
- Set bandwidth limits per SSID
- Tie specific DHCP pools per SSID

Security
- WPA-TKIP: WPA-PSK-TKIP, WPA-AES, WPA-PSK-AES
- WPA2-802.11i: WPA2-AES, WPA2-PSK-AES, WPA2-TKIP, WPA2-PSK-TKIP
- WEP 40bit/128bit encryption
- Integrated Firewall & Filtering
- Supports multiple security settings
- Station to Station blocking
- Define access by time of day

User and System Authentication
- WPA Pre-shared Key authentication
- Web Page Redirect (Captive Portal)
- Built-in RADIUS Server Supports up to 1,024 users
- 802.1x EAP-TLS
- 802.1x EAP-TTLS
- 802.1x PEAP (MS-CHAPv2)
- LEAP pass-through
- MAC Access Control Lists

Intrusion Detection and Prevention
- Continuous RF monitoring across all 2.4GHz and 5GHz 802.11 channels
- GUI console presents real-time view of wireless network health
- Detection and prevention of Rogue APs
- Packet level sniffing and decoding
- Notification of alerts & alarms
- Detailed compliance reporting

Quality of Service (handled at the Array)
- 802.1p wired traffic prioritization
- 802.11e wireless prioritization
- MAP COS to TCID
- Fair Queuing of downstream traffic
- Spectralink Voice Priority (SVP)

Users Supported
- Supports up to 64 associated users per Integrated Access Point
- Recommended provisioning of 15 users per Integrated Access Point

Client Load Balancing
- Automatic between Integrated Access Points

Roaming
- Caches Pairwise Master Keys (PMK) between Arrays for fast L2 & L3 roaming

VLAN Support
- 802.1Q compliant
- Supports up to 16 VLANs

Networking Services
- DHCP Client, DHCP Server (Multiple Pools), NAT, NTP
- 802.1D Spanning Tree Protocol
- IGMP Snooping/Pruning
- Web Page Redirect

Resiliency
- 100% overlap between RF sectors
- Redundant wireless backhaul connections
- Dual Gigabit uplinks offer failover
- Complete Array to Array failover mode

Management
- Web-based HTTPS, SNMPv1/v2c/3, CLI via SSHv2, FTP, TFTP and Xirrus MIB
- Syslog Reporting for alerts/alarms
- Integrated on-line help
- Centralized L3 management of multiple Arrays via the optional Xirrus Management System (XMS)

Location Services
- Integrated single Array station locationing with multiple directional radios
- Centralized multi-Array station and rogue locationing

Serial Interface
- One RS232 with RJ45 connector

Environmental
- 0˚C to 50˚C
- 0-90% humidity (non-condensing)

Radio Approvals
- FCC (United States)
- ETSI (Europe)

Safety and EMI Compliance
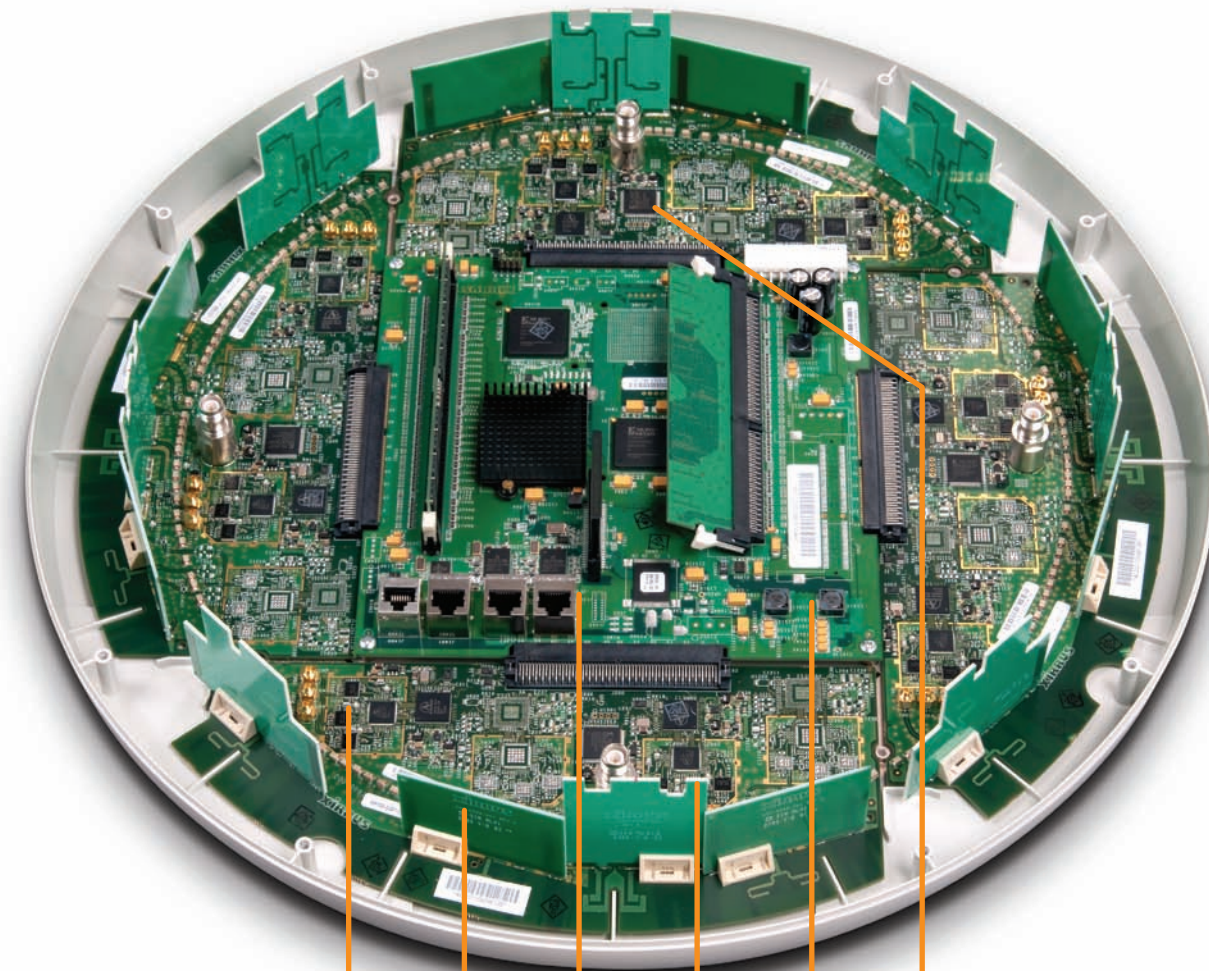- FCC Class A
- UL/cUL EN60950
- EN60601

Warranty
- 5 Year Hardware
- 90 Day Software

802.11n Upgradeable
- Pre-architected to support 802.11n
- Modular, replaceable radios
- 802.11n Upgrade Program available

Protected by Patent #US D526,973 S. Other patents pending.

Xirrus does not routinely charge for professional services – we do it right the first time!
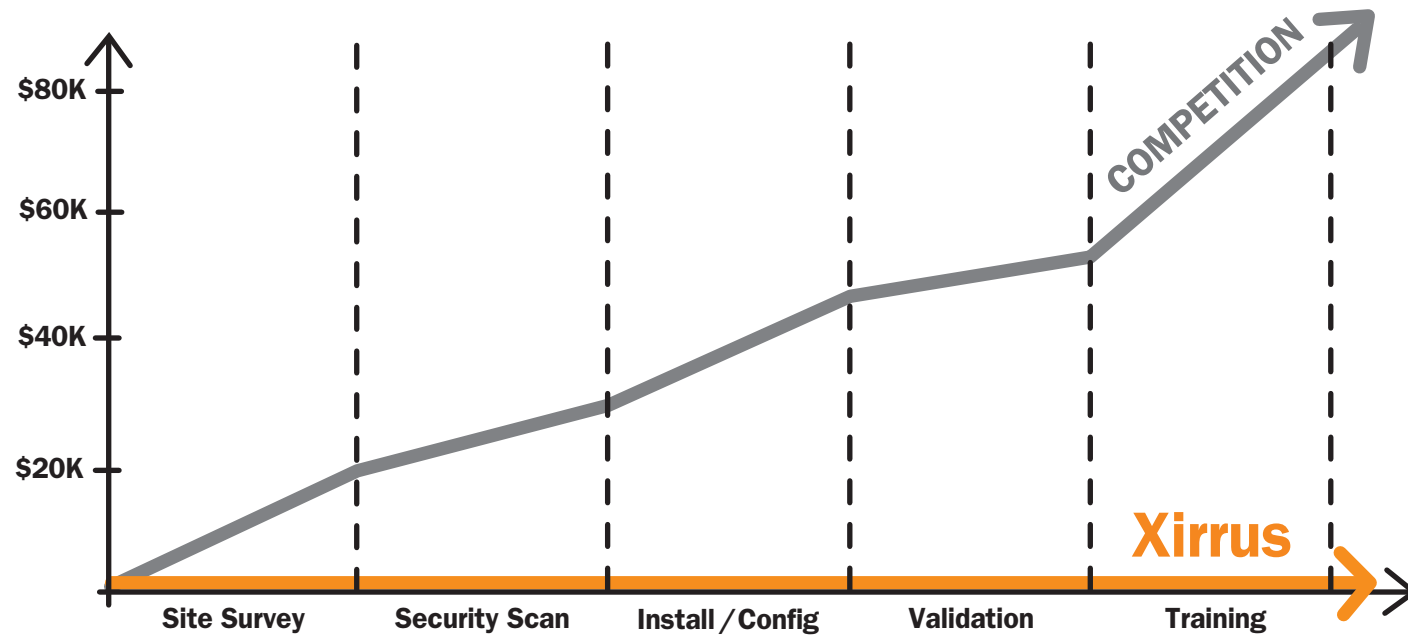
Site Survey

Xirrus will conduct an on-site survey with real equipment to determine the number and location of Wi-Fi Arrays, plus give you an Implementation Guarantee.

Security Scan

Xirrus will scan your RF environment to identify potential security threats to your wireless network, such as rogue AP detection and Ad HOC stations.

Installation & Configuration

Xirrus will work with you to ensure the wireless network is installed properly and optimally configures to ensure your network success.

Validation

Xirrus will re-scan your facility to validate proper signal strength and performance per the agreed upon wireless plan.

Training

Xirrus works with you to ensure you and your staff are trained on all aspects of the wireless network, including Wi-Fi technology, installation & configuration, and system trouble shooting.

Xirrus, the only Wi-Fi Power Play™, manufactures the Wi-Fi Array® architecture that displaces both overlay Wi-Fi offerings and switched Ethernet or Fast Ethernet to the desktop. Unlike traditional access points, the Wi-Fi Array integrates 4, 8, 12, 16 or 24 802.11abgn radios along with a high-gain directional antenna system, onboard multi-gigabit switch, Wi-Fi controller, firewall, dedicated Wi-Fi threat sensor, and an embedded spectrum analyzer into a single energy-efficient and cost-effective device using 75% fewer devices, cabling, switch ports, power, space, and installation time compared with any other offering. Xirrus products are designed and manufactured in the United States. Xirrus is Wi-Fi Alliance Verisign, PCI, FIPS 140-2, and ISO 9001:2008 Certified.

Who Are We?

The only Wi-Fi Power-Play in the industry!

When To Use Us?

When you are serious about having Wi-Fi that works!

Why Do We Win?

No one can beat us head-to-head in Wi-Fi coverage, bandwidth, or user density while using as few devices!

What Do We Do Different?

Unlike our competitors, our architecture is fully distributed and is made up of dense radio devices with switch-like capacity and intelligence at the edge!

How Do We Do It?

With the Wi-Fi Array — the most energy efficient and cost effective device in the industry that integrates into a single device:

- 4, 8, 12, 16, or 24 802.11abgn integrated access points
- High-gain directional antenna system
- Multi-gigabit switch
- Wi-Fi controller
- Wi-Fi firewall

Site Survey Sketch

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