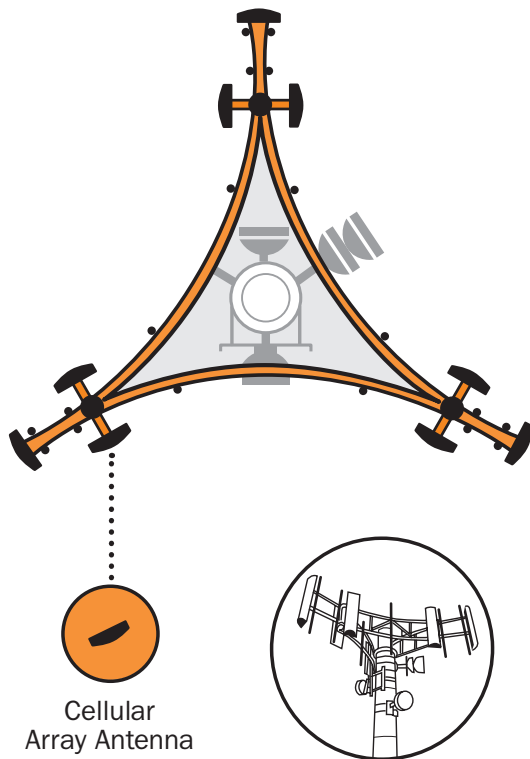


Wi-Fi Array

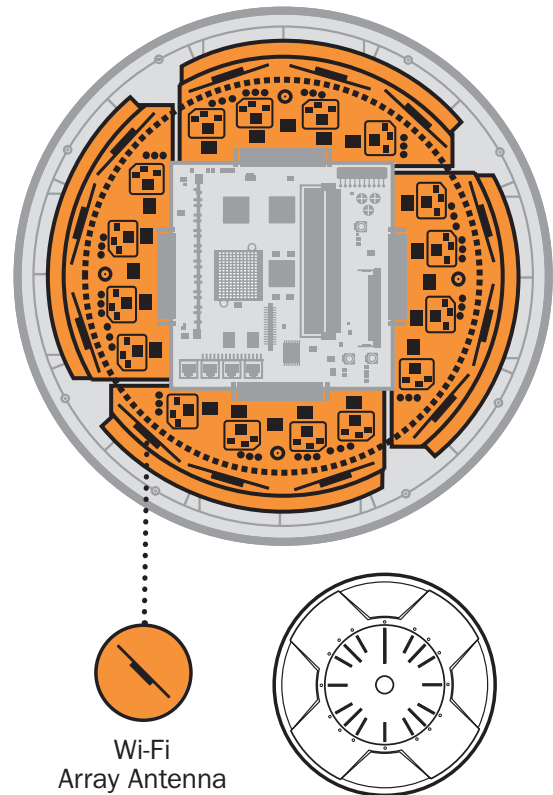


Wi-Fi Array Architecture

Cellular Array Antennas



Wi-Fi Array Antennas



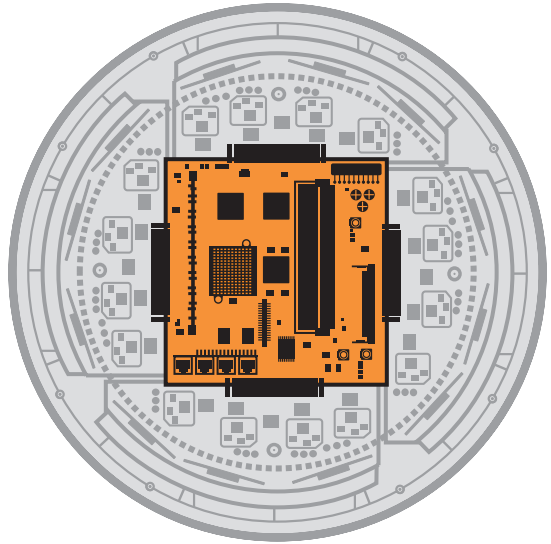
- **Multiple radios** = more bandwidth and user density
- **Directional antennas** = stronger signal strength and increased coverage
- **Sectored RF patterns** = better RF management and load balancing
- **Fewer devices** = cost, installation, and management savings

Xirrus Wi-Fi Arrays combine sectored array antennas and network switching into a single device.

L2/L3 Switch



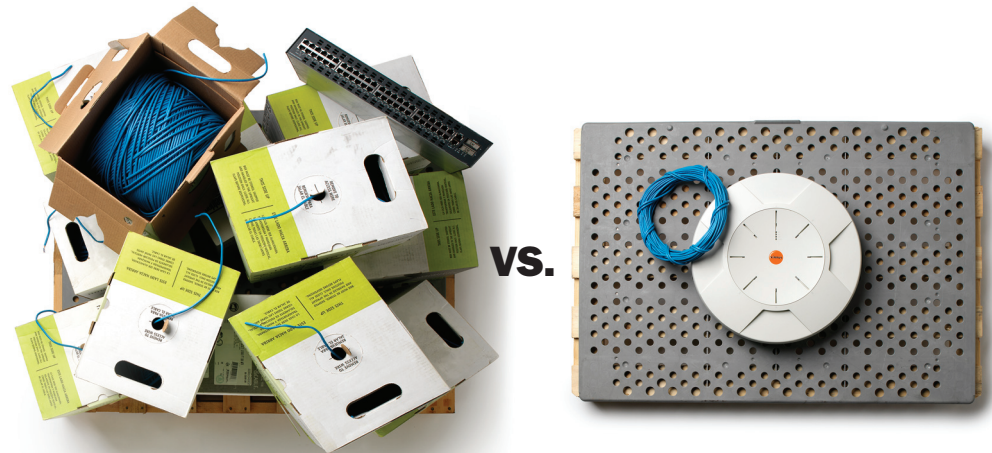
Wi-Fi Array Switch



- **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
- **More bandwidth** = enhanced user experience and network efficiency

Xirrus Differentiators

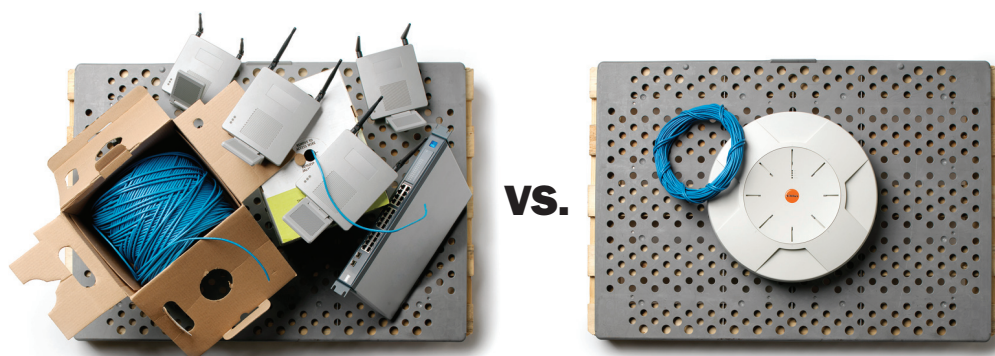
The Xirrus Wi-Fi Array replaces Ethernet workgroup switches by distributing the network intelligence and security to the network edge along with mobility and flexibility.



	24-Port Ethernet Workgroup Switch	Xirrus XN8 Wi-Fi Array
Users	24	24
Link Bandwidth	1Gbps	300Mbps
Uplinks	2GigE	2GigE
Mobility	No	Yes
Security	Very Good	Very Good
Availability	Very Good	Very Good
Management	Very Good	Very Good
Moves/Adds/Changes	Average	Very Good
Installation	Poor (Cables, Jacks, Jumpers, Switches)	Very Good (Fewer Cables, No Closet Equipment)
# of Devices	Same	Same
# of Cables	Poor (10X More)	Excellent (90% Less)
Cost Per User	Good	Very Good

It's time to replace switched Ethernet to the desktop with Wi-Fi as the primary network connection.

The Xirrus Wi-Fi Array obsoletes all other Wi-Fi offerings by delivering 400% more coverage, bandwidth, and user connections while using 75% fewer devices, cables, and switch ports.



	Thin AP + Controller	Xirrus XN8 Wi-Fi Array
Bandwidth	600Mbps	2.4Gbps
Coverage	1X	4X
Security	Very Good	Very Good
Threat Sensor	Time Sliced/Overlay	Integrated
# of Users	128 Max	512 Max
# of Devices	4 + Controller	1
# of Cables	4	1
Warranty	1 Year HW/90 Days SW	5 Year HW/90 Days SW
Signal Strength Guarantee	No	Yes
Services	Paid	Free

Leaders

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
CCC Information Services • National Institute of Health • RTKL Associates • Occam Networks
Workday • International Telecommunications Union • Robert Jones Agnes Hunt Orthopedic Hospital
Alder Hey Children's Hospital • OZ Architecture • Sasaki • JP Morgan Chase

Education

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

Carnegie Mellon University • Washington County School District • Moorpark Unified School District
Pourde School District • Creighton School District • Instituto Tecnológico De Monterrey
Colorado State University • Florida State University • Washburn University • Mexico University
Forsyth County Schools • Pepperdine University

Manufacturing

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

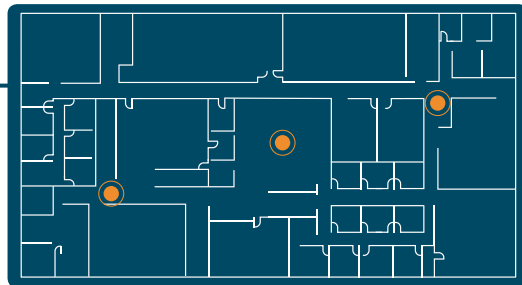
Questar • Marvin Woods Products • Santa Fe Natural Tobacco Company • Yuba Heat Transfer
Niagra Water • Bonipak • Cellynne • Pressure Systems • Water Gremlin • Kafrit Industries
Middleton Paper • Easterline • Monavie • Metalwest • FN Manufacturing • Aspect Energy
Pierce Transit • Impress Communications • Marmont • TATA • Swan Italia • Enbridge

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
St. Regis Hotels and Resorts • The Disney Swan and Dolphin Hotels • Farnborough International
Geneva Palexpo Conference Center • Palace Hotel • Marriott Hotels and Resorts

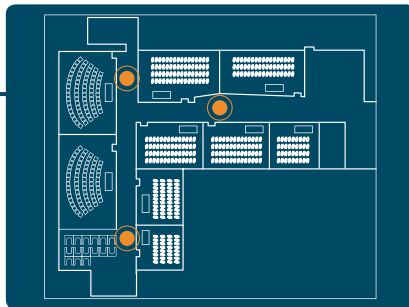
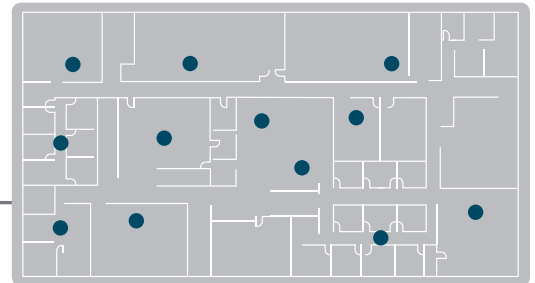
The Xirrus Wi-Fi Array platform provides leaders with high performance Wi-Fi.



• Xirrus

VS.

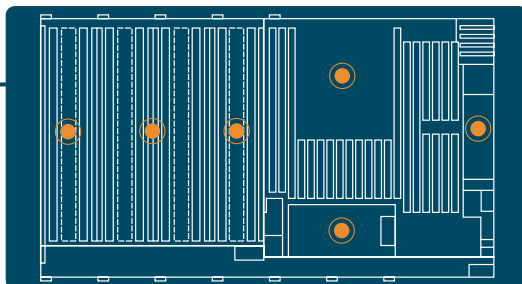
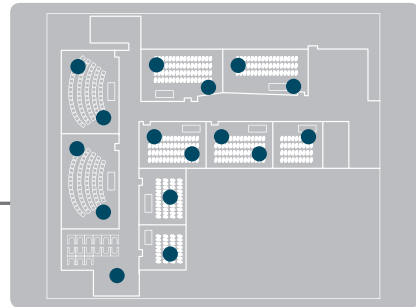
• Competition



• Xirrus

VS.

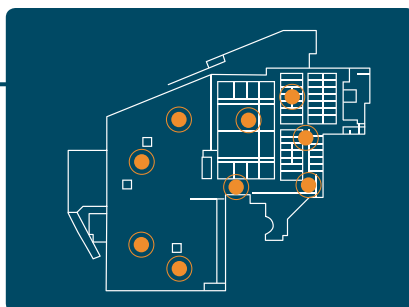
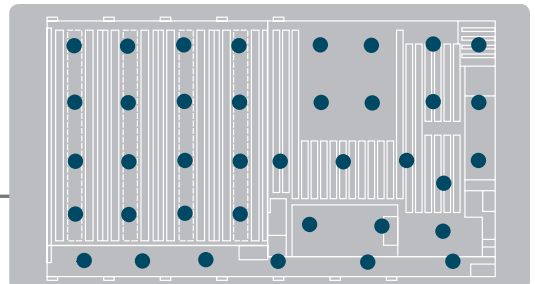
• Competition



• Xirrus

VS.

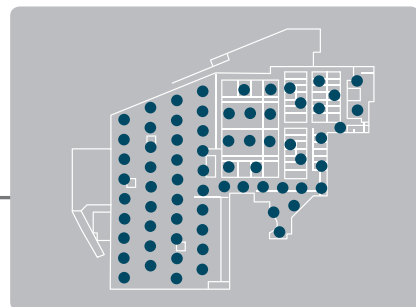
• Competition



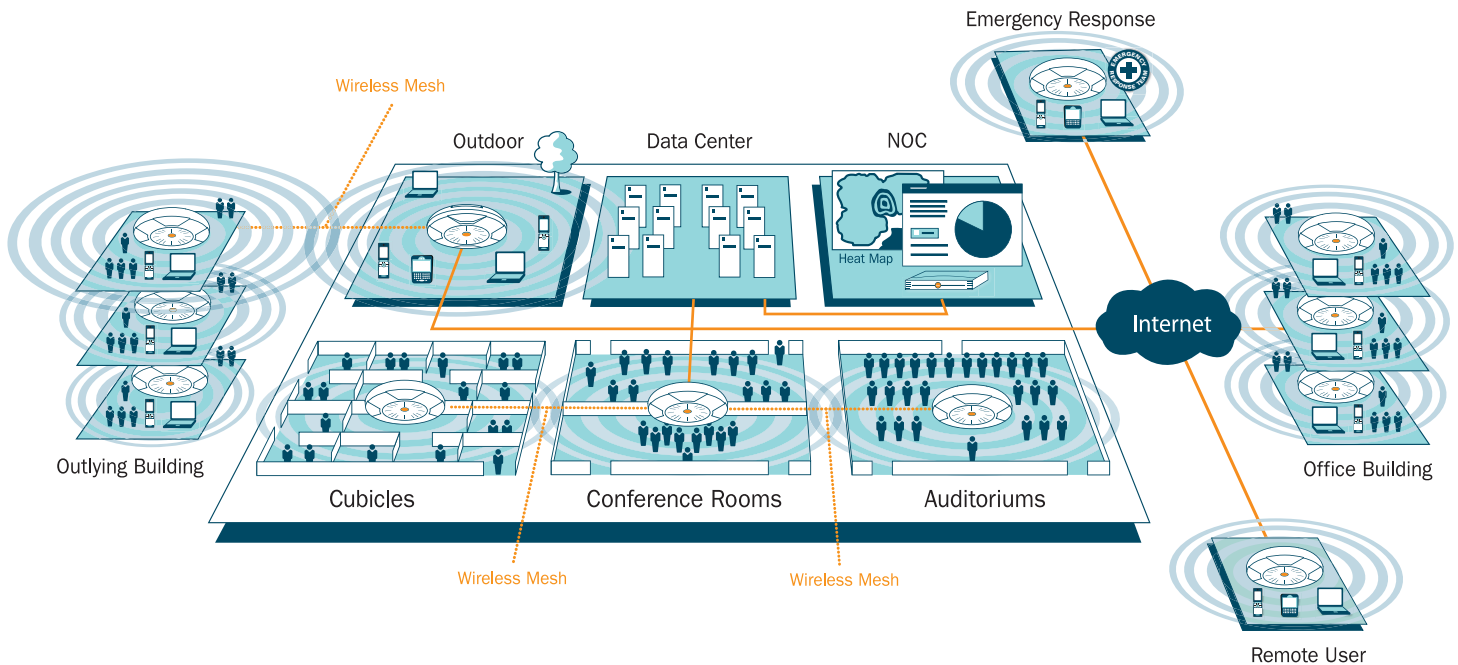
• Xirrus

VS.

• Competition



Xirrus Product Family



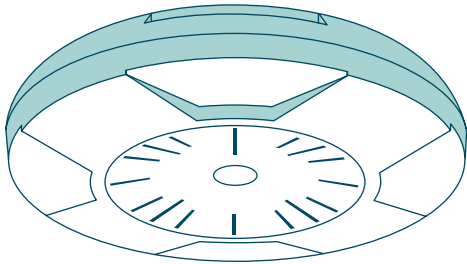
The Xirrus Wi-Fi Array architecture displaces both overlay Wi-Fi offerings and switched Ethernet to the desktop — ideal for offices, cubicles, conference rooms, auditoriums, campuses, warehouses, remote users, emergency response, etc.

The Wi-Fi Array integrates 4, 8, 12, 16 or 24 802.11abg+n 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 product family includes:

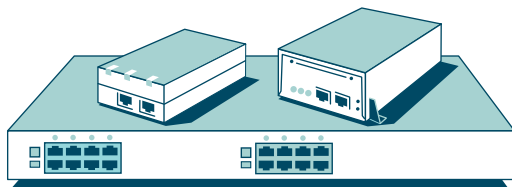
- 4, 8, 12, 16 or 24 802.11abg+n Wi-Fi Arrays
- Central management system
- RF planning and management tools
- Intrusion Detection & Prevention Systems
- AC or Power over Gigabit Ethernet DC systems
- Enclosures and mounting options

Nothing can touch the Xirrus Wi-Fi Array when it comes to coverage and bandwidth delivered.



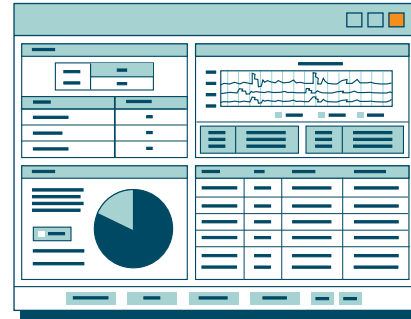
Wi-Fi Array

The Xirrus Wi-Fi Array delivers 2X more range, 4X more coverage, 8X more bandwidth, 14X more throughput per cable drop - using 75% fewer devices, cables, and switch ports with the fraction of the installation time over any other offering.



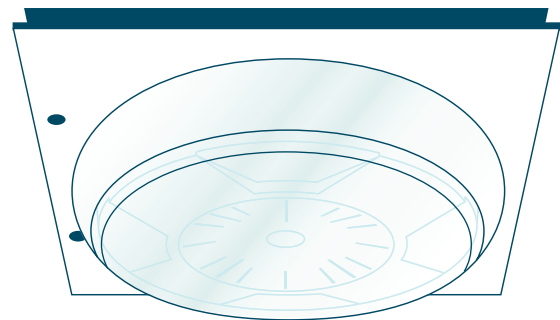
Power Options

Xirrus offers both AC and Power over Gigabit Ethernet (PoGE) DC systems to provide simple, low cost options to remotely power Xirrus Arrays. The PoGE system delivers DC power in-line with the Array's Gigabit Ethernet data connection.



Management System

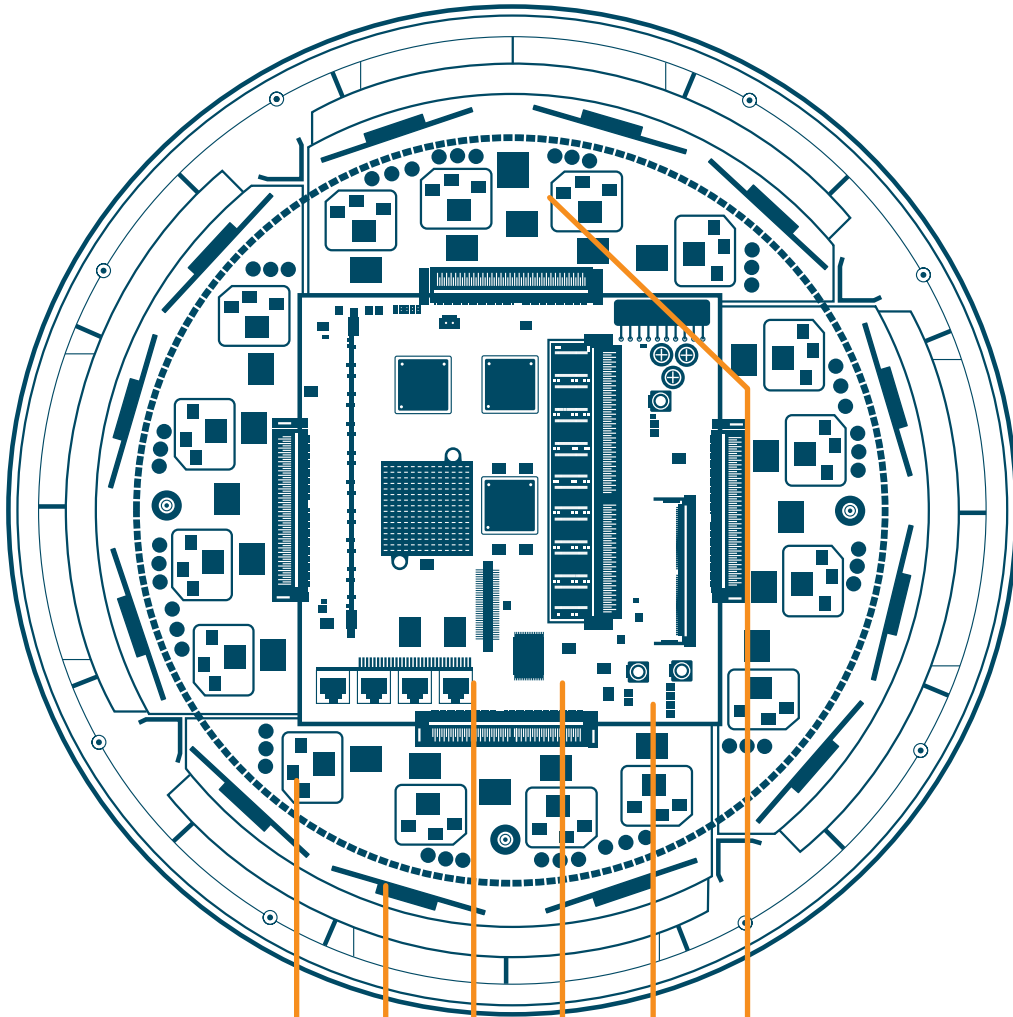
The Xirrus Management System (XMS) provides centralized configuration management, security control (IDS/IPS), performance monitoring, and reporting for hundreds of Arrays across a Layer 3 network.



Enclosures

Xirrus provides a family of Array enclosures and mounting solutions that offer flexible options for deploying Wi-Fi Arrays in a variety of environments and that aid in the protection of mission-critical networks.

Xirrus 802.11abg+n Wi-Fi Array



4, 8, 12, 16 or 24 802.11abg+n Radios

Wi-Fi Threat Sensor

High-gain Directional Antennas

Wi-Fi Stateful Firewall

Onboard Gigabit Switch

Wi-Fi Controller

Xirrus 802.11abg+n Wi-Fi Array Specifications



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 802.11a/b/g+n Access Points	4	4	4	4
	Integrated 802.11a+n Access Points	-	4	8	12
	Total Integrated Access Points	4	8	12	16
	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
	# of Integrated Antennas	20	36	36	48
Wi-Fi Switch Specifications	Integrated Wi-Fi Switch Ports	4	8	12	16
	Gigabit Uplink Ports	1	2	2	2
	Maximum Associated Users	256	512	768	1024

Xirrus Management System

Layers 3 Centralized Management for up to hundreds of Arrays

General Array Specifications

Wireless Standards

- 802.11a, 802.11b/g, 802.11g-only, and 802.11n modes
- 802.11d, 802.11e, 802.11h, 802.11i

Frequency Bands 11a/b/g

- 11b/g/n: 2.412-2.462 GHz (FCC)
- 11b/g/n: 2.412-2.472 GHz (ETSI)
- 11b/g/n: 2.412-2.484 GHz (TELEC)
- 11a/n: 4.940-4.990 (Safety)
- 11a/n: 5.15-5.25 GHz (UNII I)
- 11a/n: 5.15-5.25 GHz (TELEC)
- 11a/n: 5.25-5.35 GHz (UNII II)
- 11a/n: 5.470-5.725 (ETSI)
- 11a/n: 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 of cell coverage
- Integrated 24/7 multi-channel Spectrum Analyzer

Wireless Backhaul

- Up to 3 Integrated Access Points bonded—162Mbps 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 & prevention (wired and wireless) 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, 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

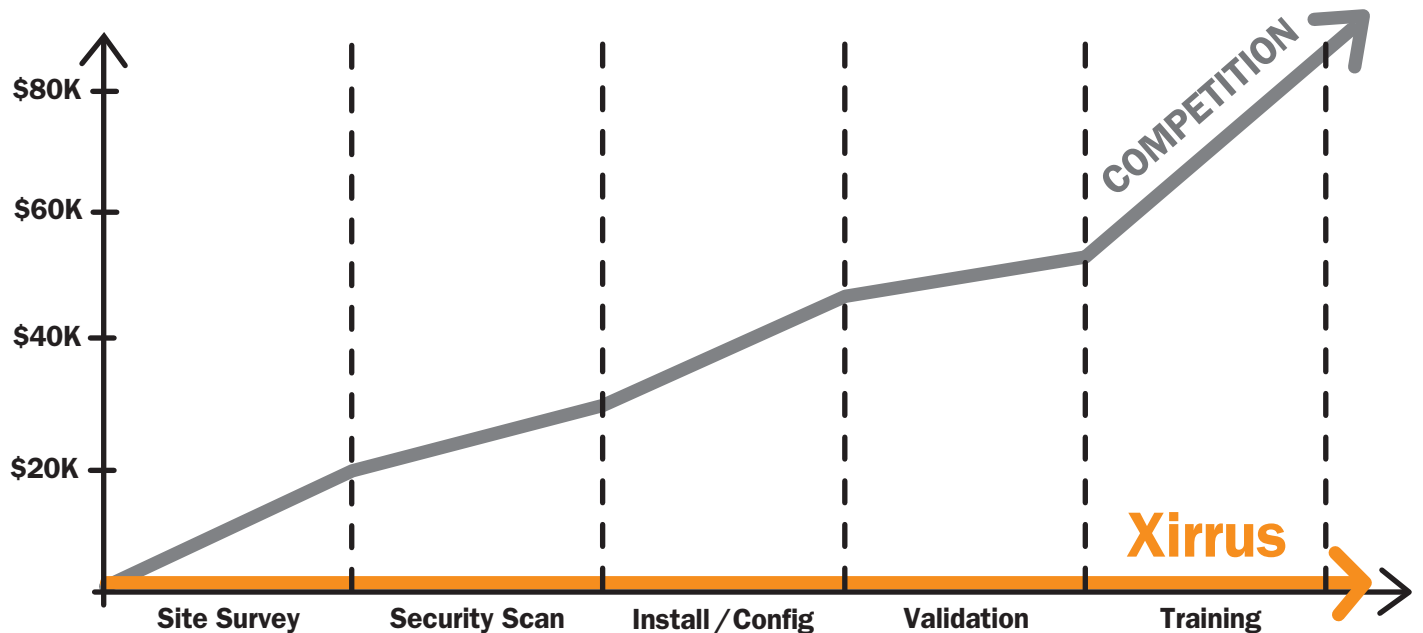
802.11n Upgradeable

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

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

Professional Services

Xirrus will not charge to get your wireless network designed and implemented.



Site Survey

Xirrus will conduct an onsite survey with real equipment to determine the number and location of Wi-Fi Arrays, plus give you a Signal Strength Guarantee.

Security Scan

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

Installation & Configuration

Xirrus will work with you to ensure the wireless network is installed properly and optimally configured to ensure the Wi-Fi network is implemented successfully.

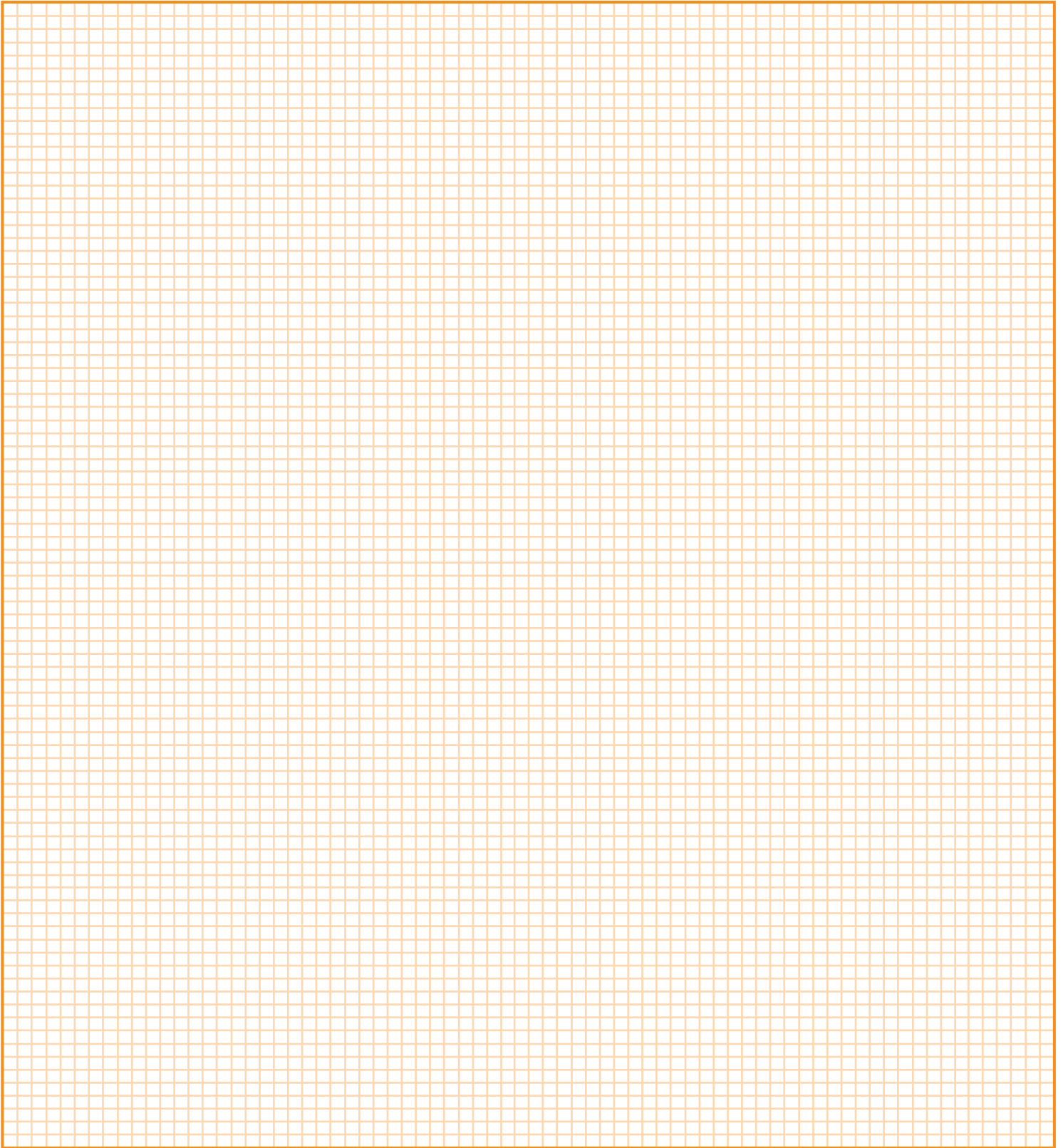
Validation

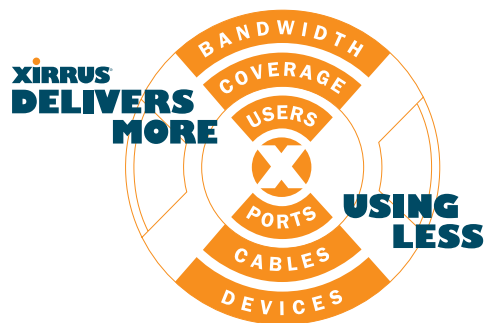
Xirrus will re-scan your facility to validate proper signal strength and performance per the agreed upon wireless plan.

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 troubleshooting.

Site Survey Sketch





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