



XN Series Wi-Fi Arrays

January 21, 2011
Release 5



XIRRUS is a registered trademark of Xirrus, Inc. All other trademarks and brand names are marks of their respective holders.

Please see Legal Notices, Warnings, Compliance Statements, and Warranty and License Agreements in the *Wi-Fi Array User's Guide*, Part Number 800-0006-001.

All rights reserved. This document may not be reproduced or disclosed in whole or in part by any means without the written consent of Xirrus, Inc.

Part Number: 812-0004-001C January 21, 2011

Quick Installation Guide

This Guide covers the steps required to install the Xirrus XN16, XN12, XN8, or XN4 Wi-Fi Array on a T-bar ceiling and execute the initial power up of the Array. If installing the Array with a wall bracket (XS-BKT-WALL-3900-3700 or -3500), indoor enclosure (XE-2020), or outdoor enclosure (XE-4000), refer to the accompanying Quick Installation Guide shipped with those products.

Product specifications start on [page 10](#). For additional information and advanced installation instructions, see the *Wi-Fi Array User's Guide* (Part Number 800-0006-001).

1

You Need the Following Items:

- ◆ If an optional Wi-Fi Array Installation Kit was ordered, it is in the carton labeled, “Open Me First.” It contains this Guide, a warranty card, and a serial console cable. Cable lengths up to 25’ are supported, per the RS-232 specification.
- ◆ Accessory Kit (included in each Wi-Fi Array carton), containing four ceiling mount clip sets, and short orange Cat 5e cables (1 for XN8, 2 for XN12/XN16).
- ◆ Workstation with a Web browser to configure the Wi-Fi Array.
- ◆ Flat screwdriver and 7/16” nut driver for attaching the T-bar clips to the ceiling grid.
- ◆ Knife for cutting an access hole in the ceiling tile.
- ◆ Copper Ethernet connection(s) to your wired network.
- ◆ Power—XN Arrays are powered via Xirrus Power over Gigabit Ethernet (PoGE) using Ethernet Cat 5e or Cat 6 cable(s) that also carry data traffic. You must provide network connections and Ethernet cable runs from the injector port to each Array port to be powered. Each PoGE module requires an AC outlet. A splitter is incorporated in all powered Array ports. Use *only* Xirrus PoGE injector modules to power Arrays. See the *PoGE Installation Guide* (812-0057-001) for more information. Recommended injectors are:
 - For XN4, XN8: use XP1-MSI-75M (remotely manageable) or XP1-MSI-75.
 - For XN12, XN16: use the remotely manageable XP2-MSI-95M or XP8-MSI-70M. Use two ports on these multi-port injectors to support the high bandwidth of the XN12 or XN16 Array and to provide redundancy.

The Array must be connected to PoGE networks without routing cabling to the outside plant—this ensures that cabling is not exposed to lightning strikes or possible crossover from high voltage lines.

2

Choose a Suitable Location

- ◆ The best location is ceiling-mounted within an open plan environment.
- ◆ Choose a location that is central to your users. Refer to the *Wi-Fi Array User's Guide* for placement details.
- ◆ Keep the unit away from electrical devices or appliances that generate RF noise—at least 3 to 6 feet (1 to 2 meters).
- ◆ Maintain a distance of at least 50 feet between additional Wi-Fi Arrays.

3

Mark the Placement of the T-Bar Clips

- ◆ Use the Array mounting plate to mark the placement of the four T-bar clips on the metal ceiling support grid.
 - The red arrow sticker on the mounting plate indicates the direction of **abgn2**. Orient the mounting plate so that the Array's **abgn2** omni-directional monitoring radio is pointing approximately in the direction of least required wireless signal coverage—for example, a nearby exterior wall or entrance.
 - Note the four mounting holes indicated in [Figure 1](#) for your Array. Position the plate to line up these holes with the ceiling grid. Mark the four locations on the grid.
- ◆ Mark the outline of the cable feed opening. For the XN4, make the hole about 2" wide. ([Figure 2](#), step a)

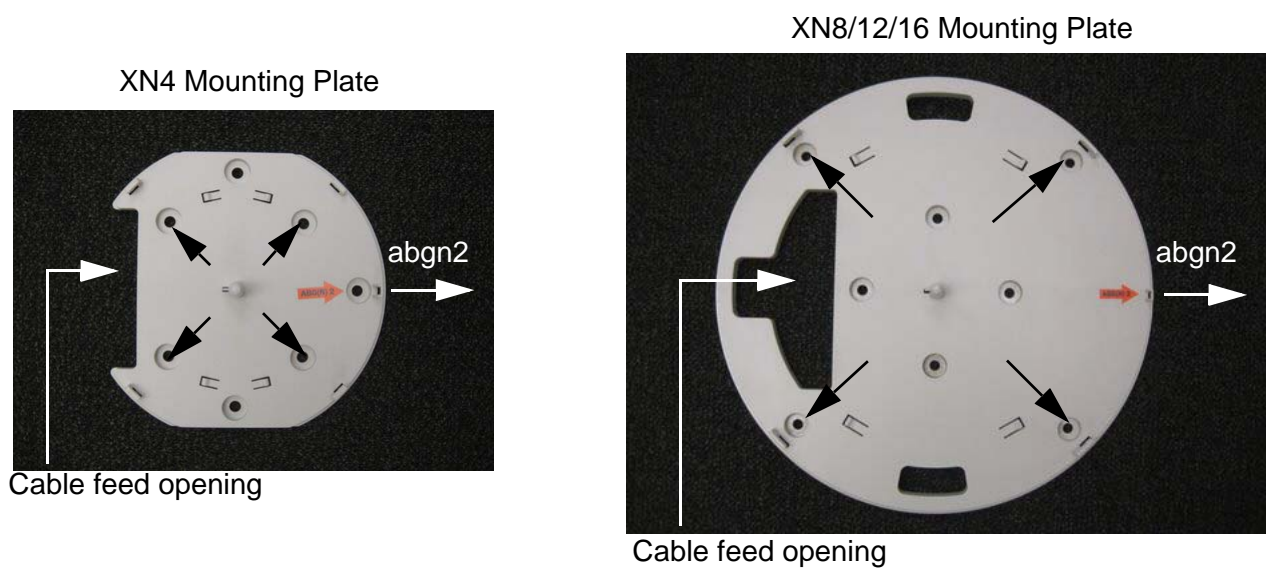
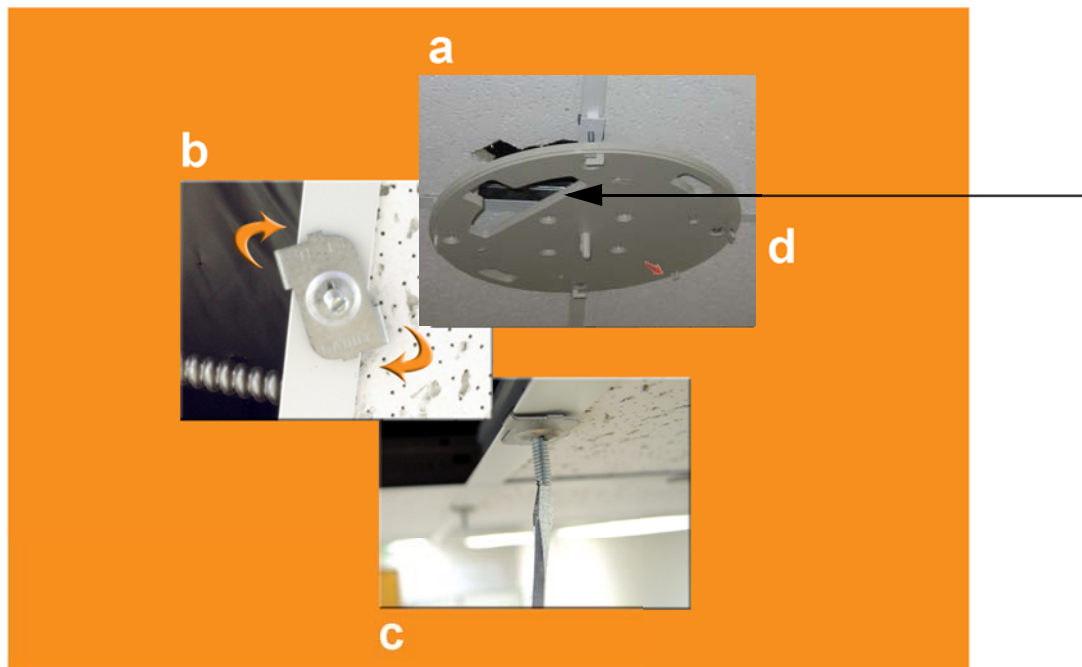


Figure 1. Marking the Location of the T-Bar Clips

4

Secure the T-Bar Clips to the Ceiling Support Grid

- ◆ Twist the four T-bar clips onto the metal ceiling support grid at the marked locations and tighten the screw posts to 10-12 lbf.ft (1.38-1.66 kgf.m)—steps b and c. *Do not overtighten the screw posts.*
- ◆ Cut an access hole for the cables in the ceiling tile (step d).



Use the mounting plate to mark and cut an access hole for the cables _____

Figure 2. Securing the T-Bar Clips to the Grid (Mounting Plate for XN8/XN12/XN16 shown)

5

Install the Mounting Plate

Refer to Figure 3.

- ♦ Align the Array's mounting plate and secure it to the four T-bar clips using the nuts provided (steps e and f). Tighten the nuts to 10-12 lbf.ft (1.38-1.66 kgf.m), but *do not* overtighten.

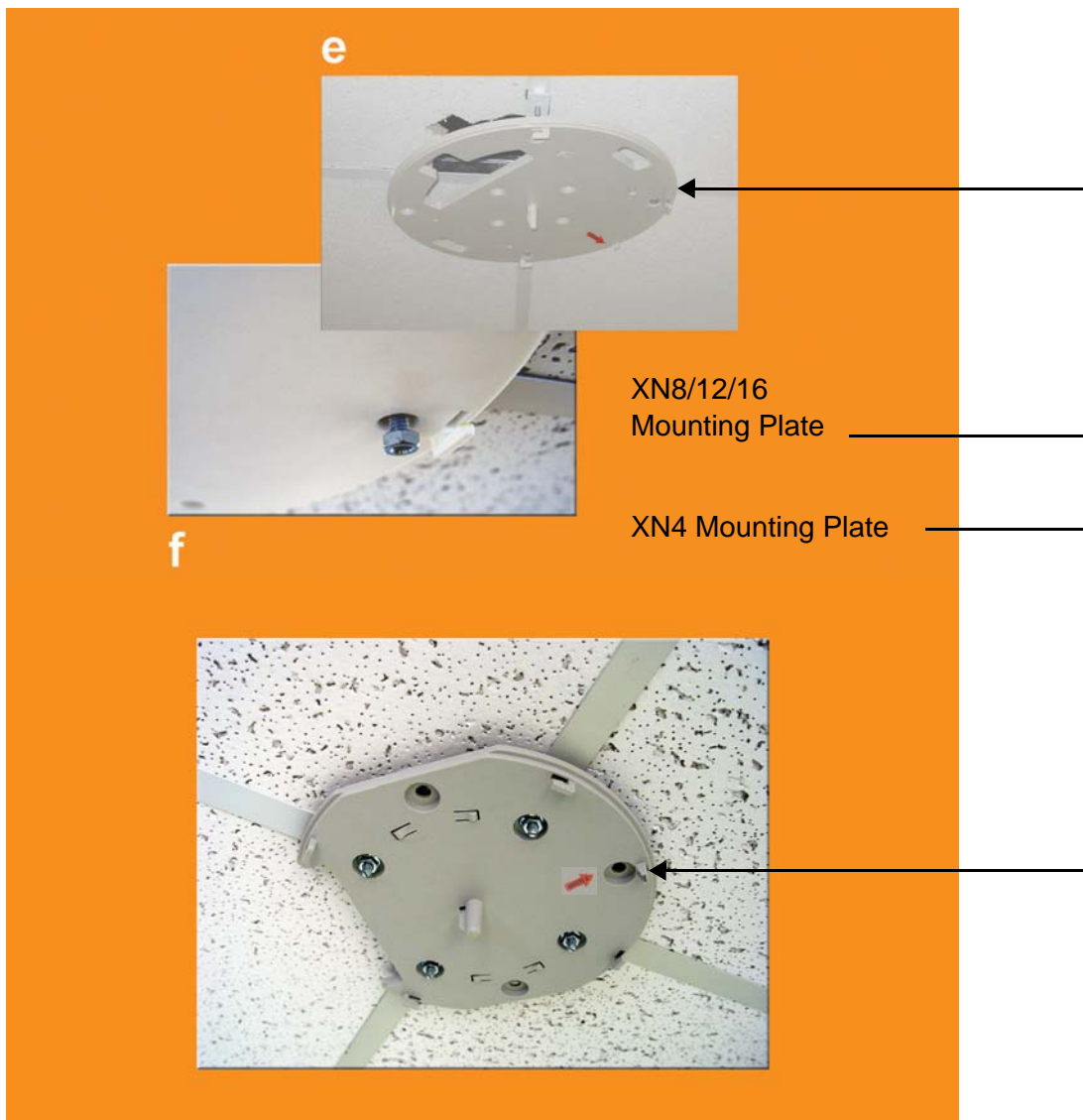


Figure 3. Installing the Mounting Plate

6

Connect the Cables

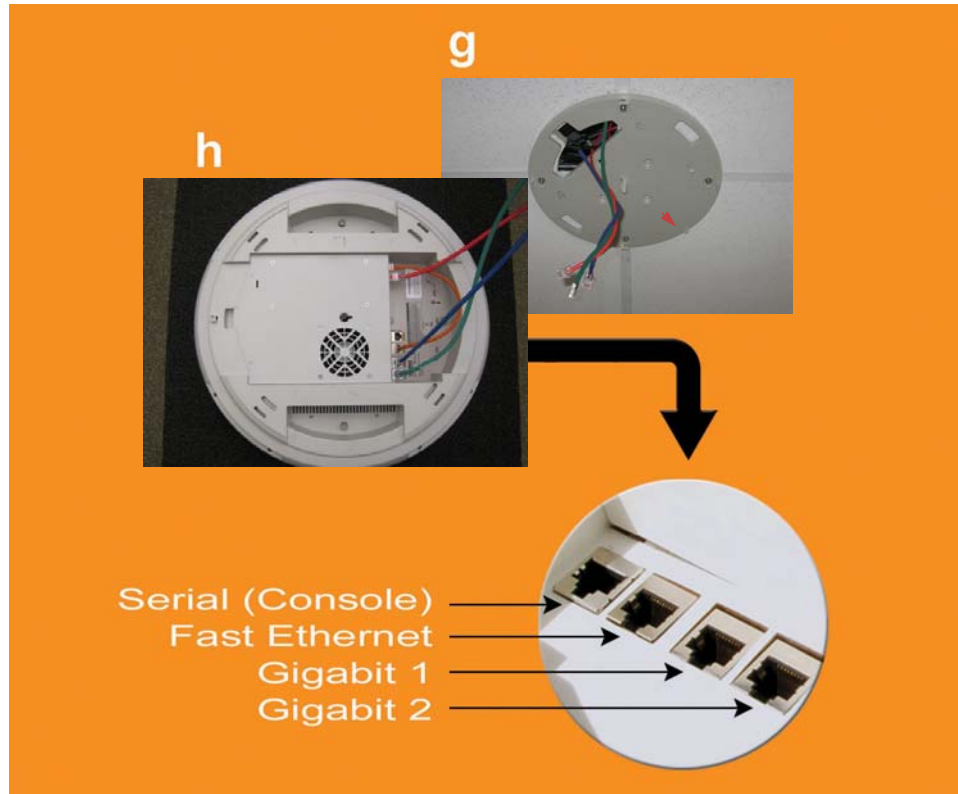


Figure 4. Connecting the Cables

For the XN8, XN12, or XN16, use the procedure below and refer to [Figure 4](#) and [Figure 5](#). For the XN4, skip to the next procedure. All of these Array models have integrated splitters, so external splitters are not needed. See the *PoGE Installation Guide* for complete details on the Xirrus injector modules and Array compatibility.

For the XN8, XN12, or XN16:

The XN8 uses one PoGE connection, while two connections are recommended for the XN12 or XN16 to support their higher bandwidth and provide redundancy. The data connections may be provided using two ports on an XP2-MSI-95M or XP8-MSI-70M injector. This requires two gigabit network connections to the injector. If your application requires only one of the XN12/XN16 data ports, you may connect to a single port on the XP2-MSI-95M injector.

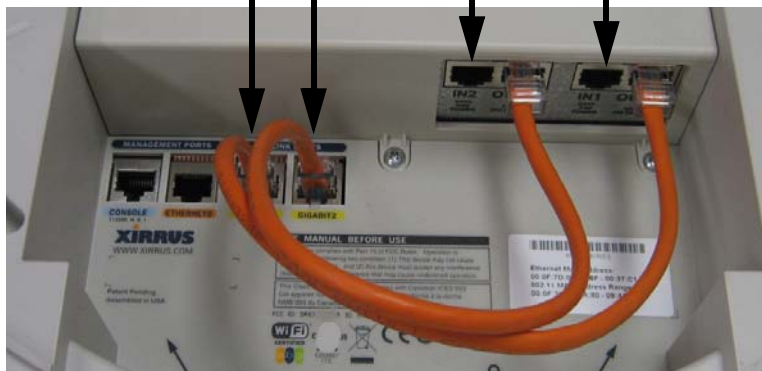
- ◆ Feed the Ethernet cable(s) through the access hole in the ceiling tile and the mounting plate. (Figure 4)
- ◆ Connect the Cat 5e or Cat 6 cable(s) coming from the PoGE injector(s) to the Array's Data and Power **IN** ports as indicated in Figure 5—use one or two connections for the XN12 or XN16, and only one connection for the XN8.

Do not connect the cable from an injector directly to a Gigabit port! It must be connected to the IN port.

- ◆ XN8: Connect a supplied short (about 6") orange Cat 5e cable from the Array's Data **OUT** port to **GIGABIT1**. Connect any additional Ethernet and serial cables as required.
- ◆ XN12 and XN16: Connect a supplied short orange Cat 5e cable from the Array's **OUT1** port to **GIGABIT1**, as shown. Similarly, connect **OUT2** to **GIGABIT2**. Connect any additional Ethernet and serial cables as required.

Connect **OUT** ports to **GIGABIT1** and **GIGABIT2** ports with short cables

Connect Cat 5e (from PoGE Injector) to both **IN** ports.



**XN12/XN16
shown**

Figure 5. Connecting the Cables (Dual-PoGE connections shown)

For the XN4:

- ◆ Feed the PoGE cable through the access hole in the ceiling tile and the mounting plate, then connect the cable to the **GIGABIT1** port on the XN4 Array. The Gigabit1 port is the data and management connection to the Array. A splitter is integrated with this port. (Figure 6)



Connect Cat 5e
(from PoGE
Injector)
to **GIGABIT1**

XN4 shown

Figure 6. Connecting the Cable (PoGE—XN4)

7

Attach the Wi-Fi Array to the Mounting Plate

Refer to Figure 7.

- ◆ Align the keyed slot in the center of the Array with the key post on the mounting plate.

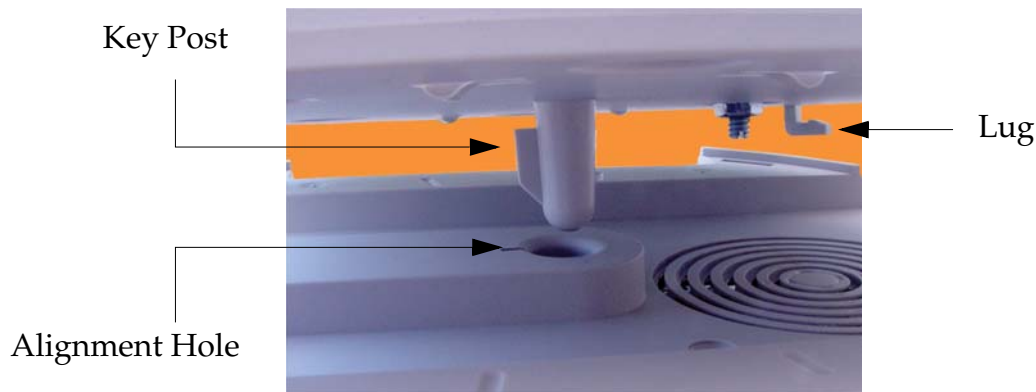


Figure 7. Attaching the Array to the Mounting Plate

- ◆ Turn the Wi-Fi Array to the right to lock the unit into place—similar to the assembly of a smoke detector.

8

Log In to the Wi-Fi Array

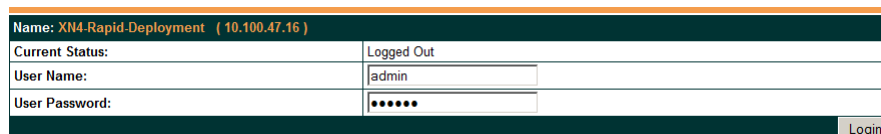
Refer to Figure 8.

- ◆ Establish a network connection to the Array. Be aware of the following:
 - By default, the Array's Ethernet interfaces use DHCP to obtain an IP address.
 - Open a Web browser. In the URL field, enter the IP address assigned by your DHCP server. If you are using DHCP and DNS, then you can use the Array's default host name, which is its serial number (for example, XN0823091CACD).
 - If the assigned IP address is unknown, it can be read via the Array's Console (serial) port from the Command Line Interface (refer to the *Wi-Fi Array User's Guide* for more information).

To connect directly to the Array console port, your computer must be equipped with a male 9-pin serial port and terminal emulation software such as HyperTerminal. Use the following settings when establishing a serial connection:

Bits per second	115,200
Data bits	8
Parity	None
Stop bits	1
Flow control	None

- If a DHCP server is not being used, you may connect using the Array's default IP addresses (10.0.2.1 for Gigabit 1 and Gigabit 2, and 10.0.1.1 for Fast Ethernet).
- Your workstation must be configured to be on the same subnet as the Array.
- ◆ At the Security window, click on the **Continue** or **Yes** button.
- ◆ At the login prompt, enter the default user name and password (the default is **admin** for both).



Name: XN4-Rapid-Deployment (10.100.47.16)	
Current Status:	Logged Out
User Name:	admin
User Password:	*****
Login	

Figure 8. Login Prompt

- ◆ You are now logged in to the Wi-Fi Array.

9

Configure the Wi-Fi Array

- ◆ From the Home Page, click on **Express Setup**. Refer to Figure 9.

XN4 Wi-Fi Array		XIRRUS
Status	Name: SS-XN4 (10.100.47.25) Uptime: 0 days, 0 hours, 4 mins	
Array	Host Name:	SS-XN4
Network	Location Information:	SE Corner
RF Monitor	Admin Contact:	J Johnson
Stations	Admin Email:	jjj@xyzcorp.com
Statistics	Admin Phone:	805-555-0483
System Log	SNMPv2 Settings	
Configuration	Enable SNMPv2:	<input checked="" type="radio"/> Yes <input type="radio"/> No
Express Setup	Read-Only Community String:
Network	Read-Write Community String:
Services	Gigabit Ethernet 1 Settings	
VLANs	Enable Interface:	<input checked="" type="radio"/> Yes <input type="radio"/> No
Security	Allow Management On Interface:	<input checked="" type="radio"/> Yes <input type="radio"/> No
SSIDs	Configuration Server Protocol:	<input checked="" type="radio"/> DHCP <input type="radio"/> Static
Groups	IP Address:	10.100.47.25
IAPs	IP Subnet Mask:	255.255.255.0
WDS	Default Gateway:	10.100.47.1
Filters	SSID Settings	
Clusters	SSID (Wireless Network Name):	
Tools	Wireless Security:	Open
Help	Admin Settings	
System Tools	New Admin User (Replaces user "admin"):	
CLI	New Admin Privilege Level:	1 : read-write
Options	New Admin Password:	
Logout	Confirm Admin Password:	
Log Messages	Time and Date Settings	
Critical 2	Current Array Date and Time:	Wed Dec 15 2010 00:37:56
Warning 2	Time Zone:	((GMT) Greenwich Mean Time: Dublin, Lisbon, London)
Information 12	Auto Adjust Daylight Savings:	<input type="checkbox"/>
	Use Network Time Protocol:	<input checked="" type="radio"/> Yes <input type="radio"/> No
	NTP Primary Server:	ntp.xirrus.com
	NTP Secondary Server:	
	IAP Settings	
	Enable/Configure All IAPs:	<input type="button" value="Execute"/>
		<input type="button" value="Apply"/> <input type="button" value="Save"/>

Figure 9. Express Setup Window

- ◆ Enter your basic configuration data, then click on the **Save** button to save your settings.
- ◆ Click **Execute** at the bottom of the page to set up/enable all IAPs (radios) automatically.
- ◆ With a basic configuration established the Wi-Fi Array is now functional. Refer to the *Wi-Fi Array User's Guide* for additional configuration information.

Specifications

Product Specifications—XN16, XN12, XN8, and XN4

Element	Specifications
Number of Users	Maximum of 96 associated users per radio XN16: 1536 users per Array XN12: 1152 users per Array XN8: 768 users per Array XN4: 384 users per Array
Physical	XN16/XN12/XN8: Diameter: 18.65 inches (47.37 cm) Height: 3.87 inches (9.83 cm) Weight: 10 lbs (3.63 kg) XN4: Diameter: 12.58 inches (31.95 cm) Height: 2.58 inches (6.55 cm) Weight: 3.5 lbs (1.59 kg)
Environmental	Operating Temperature: 0°C to 55°C 0% to 90% relative humidity (non-condensing) Storage Temperature: -20°C to 60°C 5% to 95% relative humidity (non-condensing)
System	XN16/XN12/XN8: 1 GHz CPU XN4: 825 MHz CPU 1 GB system flash XN16/XN12/XN8: 1 GB RAM XN4: 512 MB RAM
Integrated Switch	2.1 Gbps integrated wireless switch
Chassis	Lockable mounting plate, Kensington lock slot

Element	Specifications
Electrical	<p>All Models: PoGE (DC) Input Power: Power over Gigabit Ethernet—no splitter required, 48VDC, Maximum 2A For PoGE, see “Power over Gigabit Ethernet Compatibility Matrix” on page 443.</p> <p>XN12/XN16: Dual PoGE inputs are provided</p> <p>XN8: Each Array supports a single PoGE input</p> <p>XN4: A single PoGE input is provided</p> <p>Nominal Power: XN16: 90W XN12: 75W XN8: 60W XN4: 35W</p>
Interfaces	<p>Serial Console Port: 1 x RS232 – RJ45 connector, for local configuration</p> <p>Ethernet Interfaces - XN16/XN12/XN8: 2 x Gigabit 100/1000 Mbps uplink ports for link aggregation, redundancy, or bridging 1 x Fast Ethernet 10/100 Mbps, for out of band management</p> <p>Ethernet Interfaces - XN4: 1 x Gigabit 100/1000 Mbps uplink port</p> <p>Status LEDs: System status, Ethernet, Radio</p>
Networking	DHCP client, DHCP server (multiple DHCP pools), DNS Client, NTP client, NAT

Element	Specifications
Management	<p>Xirrus Management System (XMS)—Layer 3 Element Management System</p> <p>HTTPS Web Management Interface (WMI)</p> <p>Industry-standard CLI via SSHv2, Telnet, local serial Console</p> <p>Enable/disable management for any interface</p> <p>Read-write and read-only admin accounts may be authenticated via RADIUS</p> <p>SNMP v1, v2c, v3</p> <p>Configuration Files—text-based files may be imported, exported, or compared</p> <p>NetFlow—IP flow information (traffic statistics may be sent to an external Collector)</p> <p>FTP, TFTP</p> <p>Syslog reporting for alerts/alarms—messages may be stored on internal Syslog server or sent to up to three external syslog servers.</p> <p>Cisco Discovery Protocol (CDP)—obtain protocol addresses and platform information for neighboring devices</p>
Quality of Service (QoS) Support	<p>Multiple SSIDs:</p> <p>16 unique SSIDs per Array</p> <p>Each SSID beacons a unique BSSID per radio</p> <p>VLAN and QoS settings for each SSID</p> <p>VLANs:</p> <p>Up to 16 VLANs, 802.1Q, 802.1p</p> <p>Prioritization:</p> <p>802.11e wireless prioritization</p> <p>802.1p wired prioritization</p> <p>Fair queuing of downstream traffic</p> <p>Wireless Voice Support:</p> <p>Spectralink Voice Priority (SVP) protocol</p>

Element	Specifications
Security	<p>Wireless Encryption Line speed, hardware-accelerated encryption modes: WPA TKIP WPA2 AES WEP 40/64 WEP 104/128</p> <p>Wireless Authentication: Open Pre-shared Key 802.1X EAP PEAP EAP-TLS EAP-TTLS EAP-LEAP Pass-through Web Page Redirect (Captive Portal) MAC Address Access Control List (ACL) CHAP, PAP</p> <p>Firewall: Integrated stateful-inspection, rules-based firewall</p> <p>IDS/IPS: Integrates with Xirrus XDM Intrusion Detection/ Prevention System for real-time wireless security protection</p> <p>Rogue AP detection and blocking: Integrated Rogue AP detection and alerting via dedicated internal RF Threat Sensor. Rogue AP can be shielded</p> <p>Integrated RADIUS Server: Integrated 802.1x Authentication Server supporting EAP-PEAP</p> <p>Time of Day Access: Specify when access is allowed, per SSID or User Group</p> <p>Station-Station Blocking: Station-to-Station traffic blocking option</p>
Wireless	<p>Wireless Standards: 802.11a 802.11b 802.11d 802.11g 802.11e 802.11h 802.11i 802.11j 802.11n</p>

Element	Specifications
Wireless	<p>Number of Radios:</p> <p>XN16: 12 x 802.11a/n radios 4 x 802.11a/b/g/n radios 48 integrated antennas</p> <p>XN12: 8 x 802.11a/n radios 4 x 802.11a/b/g/n radios 36 integrated antennas</p> <p>XN8: 4 x 802.11a/n radios 4 x 802.11a/b/g/n radios 36 integrated antennas</p> <p>XN4: 4 x 802.11a/b/g/n radios 20 integrated antennas</p> <p>Max Users per Radio: 96</p> <p>Maximum Wi-Fi Bandwidth:</p> <p>XN16: 4.8 Gbps XN12: 3.6 Gbps XN8: 2.4 Gbps XN4: 1.2 Gbps</p> <p>Spectrum Analyzer: 1 integrated into Array</p> <p>Frequency Bands: 11a/n: 4.945 – 4.985 (restricted Public Safety band) 11a/n: 5.15-5.25 GHz (UNII 1) 11a/n: 5.15-5.25 GHz (TELECOM) 11a/n: 5.25-5.35 GHz (UNII 2) 11a/n: 5.470-5.725 (ETSI) 11a/n: 5.725-5.825 GHz (UNII 3) 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 (TELECOM)</p> <p>Channel Selection: Manual and Automatic</p> <p>802.11a/n Antennas: Integrated 5dBi, sectorized</p> <p>802.11b/g/n Antennas: Integrated 3dBi, sectorized</p> <p>Wi-Fi Monitoring: 1 Integrated Access Point can be set as a dedicated Wi-Fi Threat Sensor 2 dBi 360° omni-directional antenna</p> <p>802.11a/b/g/n External Antenna Connectors: 3 RP-TNC connectors (XN16/XN12/XN8) 1 RP-TNC connectors (XN4)</p> <p>NOTE: TNC antenna connection is not for outside plant connection.</p>
Performance	<p>Client Load Balancing Automatic load balancing between system radios</p>

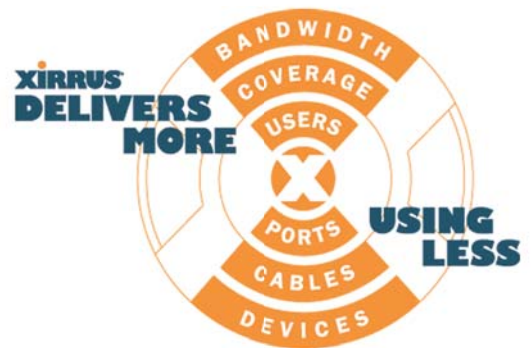
Element	Specifications
Compliance	<p>Electromagnetic: FCC Part 15.107 and 15.109, Class A ICES-003 (Canada) EN 301.893 (Europe) EN 301.489-1 and -17 (Europe)</p> <p>Safety: EN 60950 EN 50371 to 50385 CE Mark</p>
Certifications	<p>Wi-Fi Alliance: 802.11a/b/g, WPA, WPA2, and extended EAP types.</p> <p>XN16: Cofetel Cert #: RCPXIXN10-1052 XN12: Cofetel Cert #: RCPXIXN10-1052-A1 XN8: Cofetel Cert #: RCPXIXN10-1052-A2 XN4: Cofetel Cert #: RCPXIXN10-1052-A3</p>
Warranty	<p>Hardware: Five Year Standard (extendable)</p> <p>Software: 90 Days Standard (extendable)</p>

Notes

Quick Installation Guide



XN Series Wi-Fi Arrays



Xirrus, Inc.

www.xirrus.com
sales@xirrus.com

2101 Corporate Center Drive
Thousand Oaks, CA 91320, USA

1.800.947.7871 Toll Free in the US
+1. 805.262.1600 Sales
+1. 805.262.1601 Fax

Copyright© 2009, Xirrus, Inc. All Rights Reserved. Xirrus and the Xirrus logo are trademarks of Xirrus, Inc. All other trademarks belong to their respective owners. Protected by patent #US D526,973 S. Other patents pending.