BreadCrumb® JR2

Portable Wireless Mesh Network Node

The Rajant BreadCrumb JR2 is a wireless device that forms a mesh network when used in conjunction with other BreadCrumb systems. This portable, wireless mesh network node contains one transceiver and one external antenna port. It provides Ethernet and Wi-Fi Access Point interfaces to enable data, voice, and video applications. The JR2 is weather-resistant and can be operated outdoors year-round.

BreadCrumb JR2 Key Features

- Rajant's patented InstaMesh® networking software, enabling the network to quickly adapt to rapidly-deployed and quickly- or constantly-moving network elements

- 2.4 GHz and 5 GHz radio frequencies supporting a wide variety of applications and environments

- Lightweight and portable

- Low power consumption

- Support for several strong cryptographic options used for data and MAC-address encryption and per-hop, per-packet authentication (list of options on page 3)

- High bandwidth for data, voice, and video applications

- Scalability to hundreds of mobile, high-bandwidth nodes

- Integrated Wi-Fi Access Point service for compatibility with millions of commercial off-the-shelf (COTS) client devices such as laptops, tablets, smart phones, IP cameras, sensors, and other IP devices

- Self-configuring operation for fast and easy deployments

- Reliable and fast off-loading to Ethernet via multiple, simultaneous bridge-mode links through the Automatic Protocol Tunneling (APT) feature

- Mesh Clustering to designate per-BreadCrumb sub-meshes that will only mesh with a user-specified series of nodes, useful to isolate one or more groups of BreadCrumbs to mesh with each other and not with other nodes outside the user-defined mesh cluster

Utilizing JR2 BreadCrumbs to Your Advantage

The JR2 is our most affordable BreadCrumb solution. This single-transceiver, single-antenna system is frequently used in private wireless networks for on-body and on-vehicle mobile communications and remote connectivity. The JR2 BreadCrumb's small footprint and weather-resistence make it a good choice for in-field employees or contractors, manned or unmanned in-motion vehicles, and manned or unmanned roving equipment. In remote areas where you need connectivity between a few select assets or people, the JR2 provides an excellent solution.
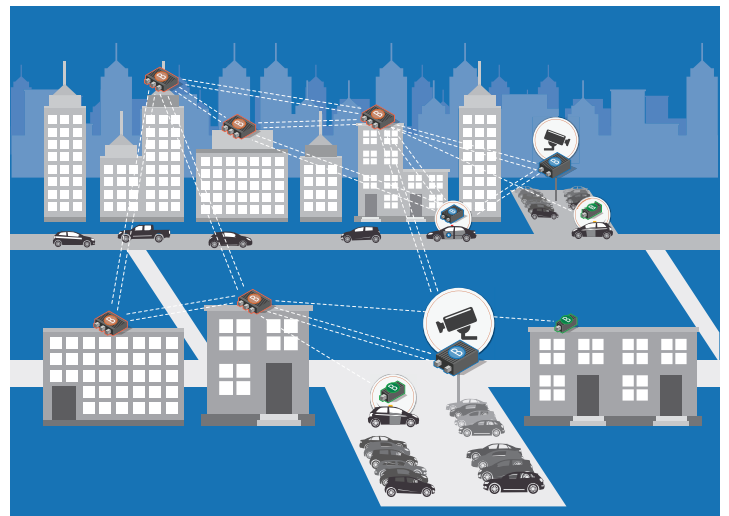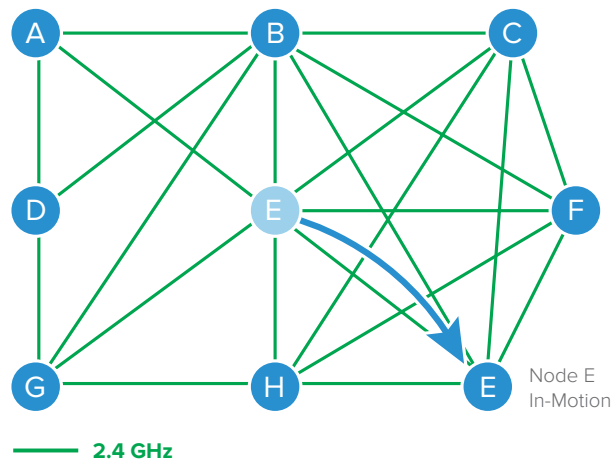
JR2 BreadCrumbs are designed to perform flawlessly in a variety of locations such as a remote fire station or parking area as well as on mobile vehicles such as fire trucks, police cars, and surveillance vehicles. These systems integrate seamlessly with our LX5 and ME4 models to form a complete meshing solution.

InstaMesh®

InstaMesh is the advanced, patented[1] protocol developed by Rajant that directs the continuous and instantaneous forwarding of wireless and wired connections. It enables complete network mobility, robust fault tolerance, high throughput, and low latency with very low maintenance and administrative requirements. Because InstaMesh operates at Layer 2 and does not use a root node or LAN Controller, mobility and bandwidth are maximized. No matter how you configure your network, InstaMesh networking software always determines the most efficient pathway between any two points, even when those points are in motion.

This diagram shows how your Rajant mesh network can adapt to the changes caused by the movement of Node E. New links are established in real-time keeping the network available, intact and secure.

[1] U.S. Patent 9,001,645

Node E In-Motion

—— **2.4 GHz**

Model	
JR2–24	2.4 GHz
JR2–50	5 GHz

Wireless	2.4 GHz	5 GHz
Antenna Connector	(1) Type N (male)	(1) Type N (male)
Frequency	2.402 – 2.472 GHz	5.735 – 5.835 GHz; frequency bands vary based on country codes: U-NII-1: 5150-5250 MHz U-NII-2A: 5250-5350 MHz U-NII-2C: 5470-5725 MHz U-NII-3: 5725-5850 MHz
Modulation	DSSS, CCK, OFDM	OFDM
Max. Physical Layer Data Rate	150 Mbps (throughput varies)	150 Mbps (throughput varies)
Max. RF Transmit Power[2]	32 dBm ± 2 dB	31 dBm ± 1 dB
Receive Sensitivity	Varying between -93 dBm ±1 dB and -71 dBm ±1 dB	

[2] RF transmit power is governed by local regulations and varies by frequency.

Network & Security

Network Functionality	VLAN and QoS support; Access Point; Bridge; Gateway; DHCP; NAT and Port Forwarding; Automatic Protocol Tunneling (APT).
Security	• Multiple cryptographic options, including NSA Suite B algorithms (implementation not certified). For information on models with full Suite B certification, contact Rajant or your authorized Rajant partner. • Separately configurable data and MAC address *encryption* via AES256-GCM, AES192-GCM, AES128-GCM, AES256-CTR, AES192-CTR, AES128-CTR, XSalsa20, XSalsa20/12, and XSalsa20/8. • Configurable per-hop, per-packet *authentication* between BreadCrumbs via AES256-GMAC, AES192-GMAC, AES128-GMAC, HMAC-SHA512, HMAC-SHA384, HMAC-SHA256, HMAC-SHA224, and HMAC-SHA1. • Supports IEEE 802.11i: AES-CCMP and TKIP encryption, WPA-Personal/Enterprise, WPA2-Personal/Enterprise, 802.1x; 64/128-bit WEP; Access Control Lists; Compatible with Layer-2 and Layer-3 client/server and peer-to-peer security solutions; Compatible with Harris SecNet 54® encryption.

Power

Input Voltage	8 — 30 VDC
Power Consumption[3]	JR2–24: 2.6 W (average, idle); 11.5 W (maximum, peak) @ 24 V JR2–50: 2.6 W (average, idle); 12.7 W (maximum, peak) @ 24 V

[3] Power consumption depends on transceiver configuration.

Input / Output

Ethernet	(1) 10/100 Mbps, IEEE 802.3, RJ-45, auto MDI/MDIX
LED	Status LED
Switch	LED Configuration / Zeroize Keys and Restore Factory Defaults Switch

Physical

Dimensions	216 mm x 60 mm x 38 mm (8.49" x 2.36" x 1.50")
Weight	300 g ± 15 g (10.6 oz ± 0.53 oz) (weight depends on transceiver configuration)
Temperature[4]	Operating: -30 °C to 70 °C (-22 °F to 158 °F) Storage: -40 °C to 80 °C (-40 °F to 176 °F)
Humidity	95% (non-condensing)
Enclosure	Designed to IP67 Ingress Protection (dust-tight and waterproof to 1 m depth)
Certification	FCC Part 15 (USA): JR2–24, JR2–50 CE mark (European Economic Area, Switzerland and Turkey): JR2-24, JR2-50 AS/NZS 4268 (Australia and New Zealand): JR2–24, JR2–50
Warranty	90 days

[4] Rajant provides warranty coverage to -40° C (-40° F).

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