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Data Sheet

R920 Series Ruggedized Router

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The R920 Series Ruggedized Router is a uniquely agile cellular networking solution that meets organizations' needs for flexible connectivity and product standardization for vehicles and IoT. The R920 Series is a ruggedized LTE networking platform available with either Mobile or Ruggedized IoT NetCloud service plans, providing features optimized for the needs of the differing deployments.

High-Performance Vehicle Connectivity

The Cradlepoint R920 router with the NetCloud Mobile service plan provides a ruggedized GNSS/GPS-enabled in-vehicle network solution. Combined with the RX20 Managed Accessory, the R920 can be field upgraded to include a second LTE or 5G modem. When coupled with the Advanced Mobile service plan, it provides threat management, web filtering, application visibility, analytics, and advanced GNSS/GPS functionality such as location tracking and cellular coverage maps. The R920 also supports NetCloud Exchange services, which provide Zero Trust Network Access and cellular-optimized SD-WAN.

Ruggedized IoT Solution

When combined with the NetCloud Ruggedized IoT service plan, the R920 provides a versatile, ruggedized 4G LTE router solution for connecting and protecting IoT devices at scale. It can be deployed in a wide range of environmentally harsh IoT use cases such as kiosks, building automation, oil and gas, utility, and smart city infrastructure deployments. The ruggedized design and the CBRS band support make it ideal for private networks. In addition, the solution is highly extensible with APIs, SDKs, and integrations into IoT platforms, and the generous memory supports onboard edge containers. The R920 also supports NetCloud Exchange services, which provide Zero Trust Network Access and cellular-optimized SD-WAN.

Notable Benefits

— Gain fast, reliable connectivity with Cat 7 LTE providing fast upload for video and data

— Add a second LTE or 5G cellular modem for multi-link dependability

— Deploy Wi-Fi 6 for the best possible connections

— Prioritize access to public safety networks for reliable, secure connectivity

— Enable unified edge security with application-aware multizone firewalls, IDS/IPS, and available FIPS 140-3 Level 1 Implementation Under Test

— Extend your deployment and enable customized solutions with powerful edge compute capabilities, including containers, connectors, SDKs, and API support

— Utilize the R920-C7A on private cellular networks with Band 48 CBRS

Product Page

NetCloud Service

Quick Start Guide

Key Software Capabilities

Cradlepoint NetCloud Service for the R920 provides everything needed to unlock the power of LTE and connect vehicles, users, and IoT to critical applications and services. The available NetCloud IoT or Mobile service plans include the appropriate router software with powerful cloud management features for managing IoT at scale, or specific mobile features like coverage maps, integrated content filtering, intrusion detection and protection, and application-aware analytics and networking. Everything within NetCloud works together, making it easy to deploy, connect, and secure edge applications at scale across the organization.

Coverage Map

NetCloud uses GNSS/GPS and cellular health to provide precise location and signal strength analytics. Data can be mapped to display both a vehicle's current and historical locations, as well as generate detailed coverage maps that display cellular health, allowing users to gain operational insights and solve problems.
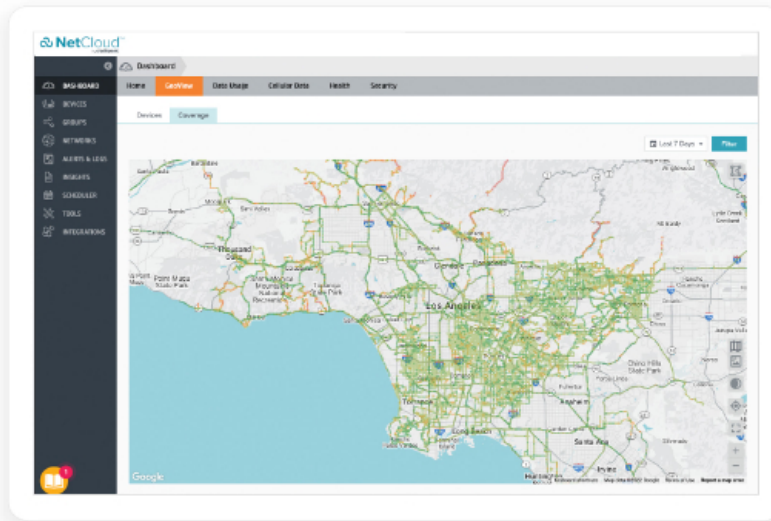

Security Services

NetCloud Service includes security features and options to optimize the R920 router to meet the evolving security needs of mobile and IoT environments. The service includes a stateful zone-based firewall with the ability to add application-aware zone-based firewall, CP Secure Threat Management (IPS/IDS), and CP Secure Web Filter with the Advanced Mobile service plan.

The R920 supports NetCloud Exchange (NCX), a unified network and security WAN architecture built upon zero-trust principles and optimized for cellular. NCX helps lean IT organizations simplify deployment and management with shared policies and simplified processes.
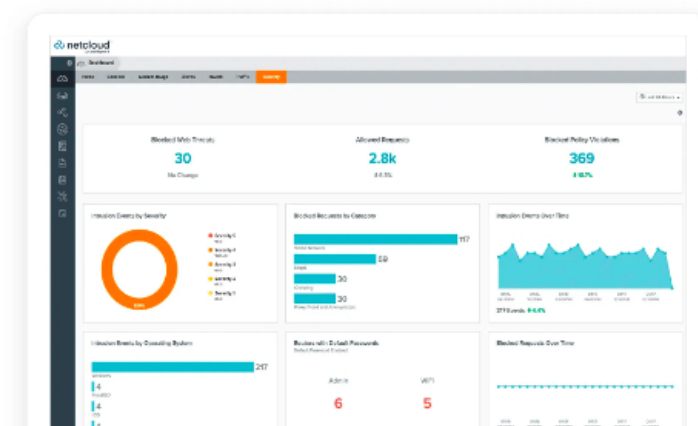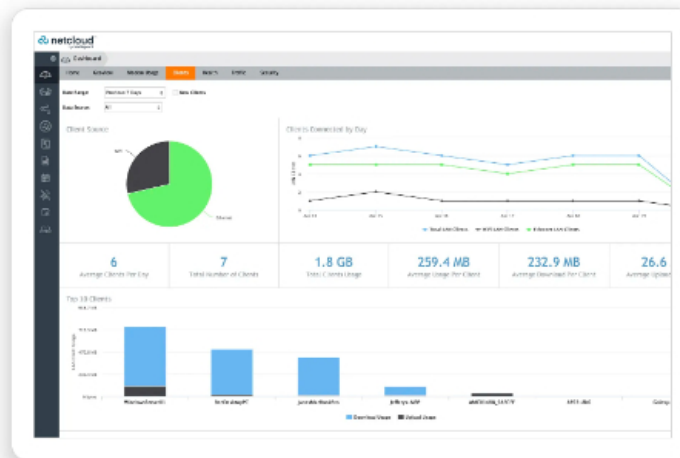
Extensibility and Integrations

NetCloud Service and the R920 router can provide higher levels of insights and control by exchanging network data with third-party applications. Leverage pre-built connections to partner applications or create custom connections across a variety of use cases using the NetCloud Container Orchestrator, NetCloud SDK, or NetCloud API.
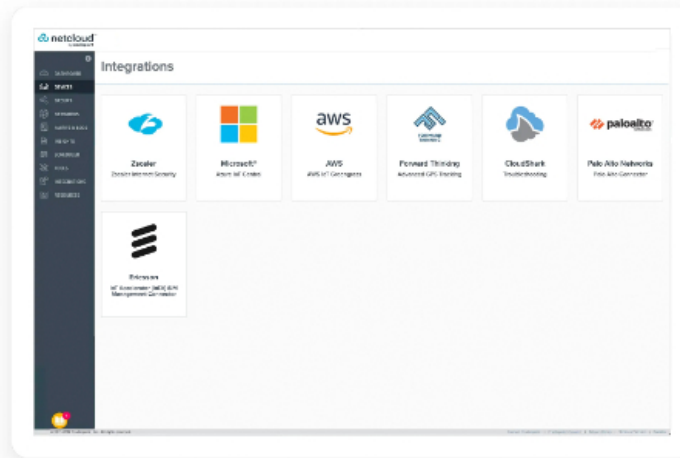
Cloud Services

NetCloud Manager delivers true zero-touch deployment with the ability to define and deliver policy across entire groups of endpoints. Users can create a cloud-orchestrated hub and spoke VPN network, and gain insights and analytics required for rapid troubleshooting and diagnostic workflows.

Hardware Specifications

The following features are delivered through the hardware.

INTERFACES	
Modem:	Embedded Cat 7 LTE modem — 2 x SMA cellular antenna connectors
Ethernet:	2 x GbE (LAN/WAN switchable)
Wi-Fi:	Dual-radio, dual-band, concurrent operation (2.4 GHz and 5 GHz) — 2x2 MU-MIMO 802.11ax Wi-Fi 6 with DFS — Modes: AP, Wireless Client, and Wi-Fi as WAN — 574 Mbps (2.4 GHz) and 1.2 Gbps (5 GHz) — 2 x RP-SMA Wi-Fi antenna connectors — WPA/WPA2/WPA3 Personal, WPA2/WPA3 Enterprise, Open — 802.11k (AP mode only), 802.11v — Wi-Fi Alliance Certified
Bluetooth:	Embedded Bluetooth Low Energy 5.1 — Max TX Power: 10 dBM — 1 x RP-SMA Bluetooth antenna connector[†]
Expansion:	— 1 x USB 2.0 Type A (Output: 5 V, 500 mA, 2.5 W) with screw lock feature for mechanically secure connections — 1 x 2-pin GPIO connector (shared with the DC power connector) — 2x2 Molex micro-fit (3 mm locking type)
GNSS / GPS:	1 x SMA GNSS antenna connector

GNSS / GPS	
Acquisition: **(Time to First Fix)**	32 seconds (cold start)
Protocols:	NMEA 0183
Constellations:	— GPS — Galileo — GLONASS — BeiDou — QZSS (simultaneous tracking)
Accuracy:	Horizontal: < 5 m (50%), < 9 m (95%)
Update Rate:	1 Hz (once per second)

Sensitivity:	— Acquisition: -145 dBm — Tracking: - 160 dBm

Frequencies:	L1
Power:	— Voltage Supply: 3.05-3.25 VDC — Max Current: 100 mA

ENVIRONMENTAL

Temperature:	— Operating: -30 °C to 75 °C (-22 °F to 167 °F)[††] — Storage: -40 °C to 85 °C (-40 °F to 185 °F)
Humidity:	— Operating: 10% to 90% — Storage: 5% to 95%
Ingress Protection:	IP64 (dust tight and splashing water)

POWER

Required:	DC input steady state voltage range: 9–36 VDC — For 9–12 VDC installations, use a 3 A fuse For > 24 VDC installations, use a 2 A fuse
Features:	Ignition sensing (automatic ON and time-delay OFF)
Consumption:	— Sleep: 15 mW — Idle: 9 W — Typical: 14.5 W — Heavy: 15.2 W

PHYSICAL

Size:	133.6 x 121.5 x 41 mm (5.26 x 4.78 x 1.61 in)
Weight:	595 g (1 lb 5 oz)

RELIABILITY

Calculated MTBF:	388,022 hours (Telcordia SR332 at 25 °C)

CERTIFICATIONS

Safety:	— UL/cUL — CB Scheme — EN 62368-1
Vehicle:	— E-Mark — SAE J1455 Operating Sinusoidal Vibe, Category 2
Rail:	EN 61373 Category 1, Class B (Railway rolling stock)
Materials:	— WEEE — RoHS, RoHS-2 — California Prop 65

Security:	FIPS 140-3 Level 1 Module in Process (R920 FIPS models only)
Shock/Vibration/Humidity:	— MIL SD 810G Meth. 514.6, Annex C, 2.1-Category 4 — MIL SD 810G Section 2.2.2 Procedure 1
Hazardous Locations:	Class I Div 2

EDGE COMPUTING

CPU:	Dual-core ARMv8 64-bit
Memory:	Up to 921 MB See Adjusting Memory Resources for NetCloud Container Orchestrator for more information.
Flash Storage:	Up to 8 GB See Adjusting Memory Resources for NetCloud Container Orchestrator for more information.
Applications:	Docker containerized applications

CLOUD SERVICES

Service Plans:	NetCloud Service for Mobile, NetCloud Service for Ruggedized IoT
Service Add-Ons:	NetCloud Exchange, NetCloud Advanced
Support:	NetCloud Packages include support for the full subscription term.
Warranty:	All Cradlepoint hardware products are covered by a limited lifetime warranty for as long as they have a subscription license to an active NetCloud Service Plan.
Device Management:	NetCloud Manager for the full subscription term.
Software Updates:	NetCloud Manager for the full subscription term.

WI-FI POWER

FCC:	— 2.4 GHz: 23.18 dBm conducted — 5150–5250 MHz: 21.73 dBm conducted — 5250–5350 MHz: 22.17 dBm conducted — 5470–5725 MHz: 20.79 dBm conducted — 5725–5850 MHz: 20.97 dBm conducted
IC:	— 2.4 GHz: 23.18 dBm conducted — 5150–5250 MHz: 22.7 dBm conducted — 5250–5350 MHz: 17.16 dBm conducted — 5470–5725 MHz: 20.9 dBm conducted — 5725–5850 MHz: 22.17 dBm conducted
Europe:	— 2.4 GHz: 14.23 dBm conducted — 5150-5250 MHz: 17.03 dBm conducted — 5250-5350 MHz: 17.12 dBm conducted — 5500-5700 MHz: 22.05 dBm conducted
Australia/ New Zealand:	— 2.4 GHz: 14.23 dBm conducted — 5150-5250 MHz: 17.03 dBm conducted — 5250-5350 MHz: 17.12 dBm conducted

— 5500-5700 MHz: 22.05 dBm conducted

— 5475-5825 MHz: 22.18 dBm conducted

PERFORMANCE[†††]	
Stateful Firewall Throughput:	940 Mbps
IPS Throughput:	940 Mbps
Application Aware Services & Analytics:	940 Mbps
IPsec VPN Throughput:	100 Mbps
Concurrent VPN Tunnels:	20
Concurrent Sessions (TCP):	130,000
Typical Client Count:	30
LEDs	
See the R920 Series Ruggedized Router Quick Start Guide.	

[†]NOTE: All antenna interfaces require cabled out external antennas and are not compatible with direct-attached antennas.

[††]Wi-Fi and cellular performance may degrade and the RX20 managed accessory is not supported when operating above 70 ℃.

[†††]Performance testing conducted based on requirements as defined in RFC2544 using fixed-frame 1518-byte packets. Throughput results reflect uni-directional UDP traffic with less than 1% packet loss as tested with wired connections. Results do not reflect performance of the cellular wireless operator networks.
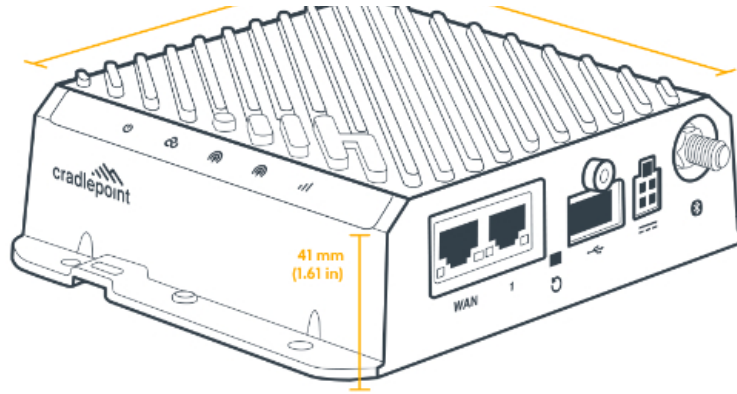
Enterprise-Class Modem Specifications

SPECIFICATION	R920-C7A	R920-C7B
Technology:	Cat 7 LTE — Dual SIM slots, 4FF form factor — SIM-based auto-carrier selection — 3GPP Release 11	Cat 7 LTE — Dual SIM slots, 4FF form factor — SIM-based auto-carrier selection — 3GPP Release 11
3G:	WCDMA/UMTS/HSPA+	WCDMA/UMTS/HSPA+
Carrier Aggregation:	— Downlink Cat 7 with 2 CA with 64 QAM = 300 Mbps — Uplink Cat 13 with 2 CA 64 QAM = 150 Mbps See Understanding Carrier Aggregation.	— Downlink Cat 7 with 2 CA with 64 QAM = 300 Mbps — Uplink Cat 13 with 2 CA 64 QAM = 150 Mbps See Understanding Carrier Aggregation.
Peak Downlink Rates:	— LTE: 300 Mbps — WCDMA: 42.2 Mbps	— LTE: 300 Mbps — WCDMA: 42.2 Mbps
Peak Uplink Rates:	— LTE: 150 Mbps — WCDMA: 5.76 Mbps	— LTE: 150 Mbps — WCDMA: 5.76 Mbps
MIMO:	2x2 MIMO	2x2 MIMO
Modulation:	— Up to 64 QAM DL — Up to 64 QAM UL	— Up to 64 QAM DL — Up to 64 QAM UL

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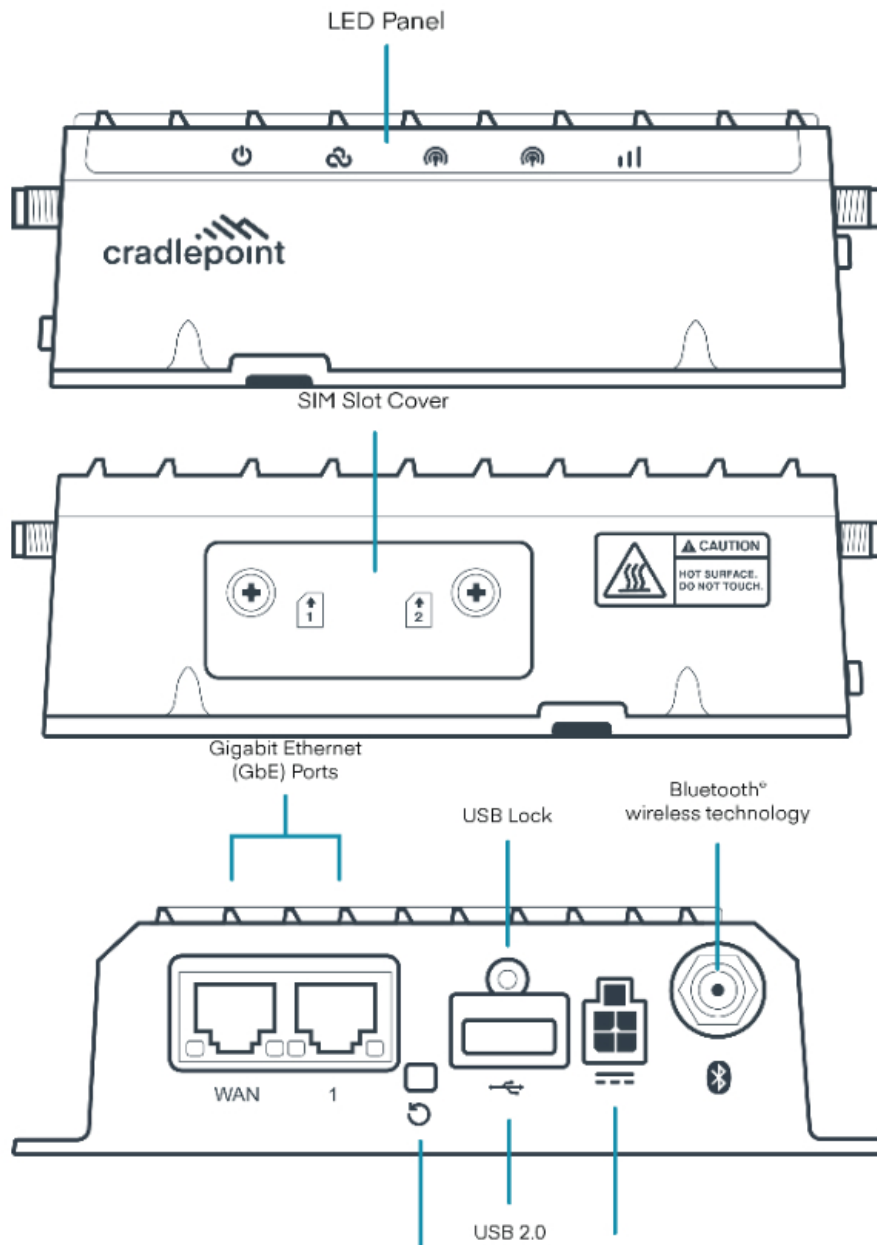| 4G/LTE Bands:	LTE FDD	LTE FDD
	— B2 (1900), B4 (1700), B5 (850), B7 (2600), B12 (700), B13 (700), B14 (700), B25 (1900), B26 (850), B66 (1700), B71 (600)	— B1 (2100), B3 (1800), B7 (2600), B8 (900), B20 (800), B28 (700), B32 (1500)
	LTE TDD	LTE TDD
	— B41 (2500), B42 (3500), B43 (3700), B48 (3500)	— B38 (2600), B40 (2300), B41 (2500), B42 (3500), B43 (3700)
3G Bands:	B2, B4, B5	B1, B5, B8
Power:	LTE 22.5 dBm ± 1, DC-HSPA+ 23 dBm ± 1	LTE 22.5 dBm ± 1, DC-HSPA+ 23 dBm ± 1
Antennas:	— SMA female connectors, external 600 MHz - 6 GHz cellular paddle antennas (Qty 2, included only with IoT packages) — (LTE) External Multi-Band 2 x 2 MIMO Antenna System	— SMA female connectors, external 600 MHz - 6 GHz cellular paddle antennas (Qty 2, included only with IoT packages) — (LTE) External Multi-Band 2 x 2 MIMO Antenna System
GNSS/GPS:	Active GNSS	Active GNSS
SMS:	Yes	Yes
Regulatory:	FCC (U.S.), IC (Canada)	CE (EU)
Network Operator Standards:	PTCRB (U.S., Canada)	GCF (Worldwide)
GCF Global Operators:	https://www.globalcertificationforum.org/membership/gcf-members.html[†]	https://www.globalcertificationforum.org/membership/gcf-members.html[†]
PTCRB North America Operators:	https://www.ptcrb.com/about/	https://www.ptcrb.com/about/
Network Operator Certifications:	AT&T, T-Mobile, Verizon[†]	See note[†]
Public Safety Network Certifications:	FirstNet Trusted™, T-Mobile Connecting Heroes, Verizon Frontline	N/A
Private Cellular Network:	Yes, includes FCC Part 96 (CBRS Band 48)	N/A

[†]*Cellular carriers and operators throughout the world may only require telecom industry certifications, like PTCRB or GCF, to operate on their network. Some carriers require additional testing and approval, beyond telecom certifications. A carrier listed in the approvals section means Cradlepoint completed additional testing and acquired technical approval for that given carrier. Any carrier not listed may not require additional testing or approval beyond telecom industry certifications to operate on their network.*
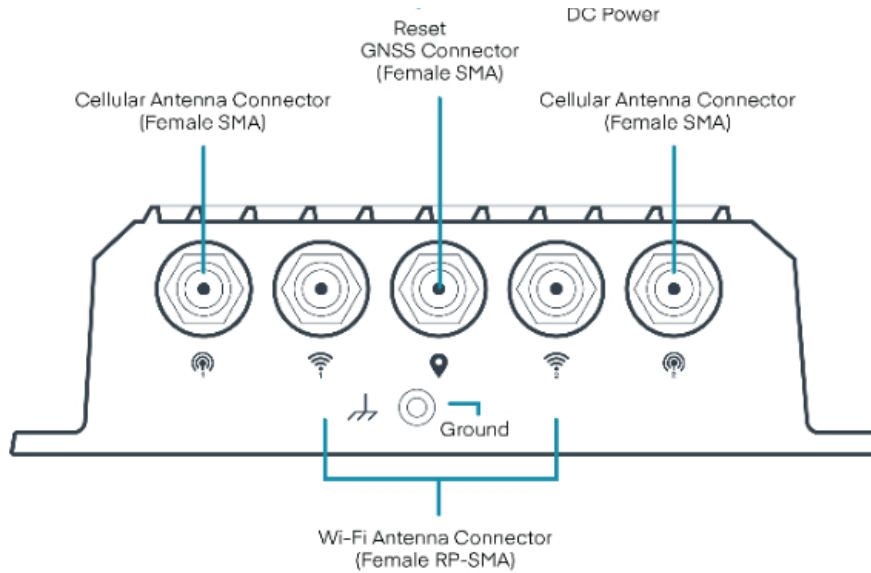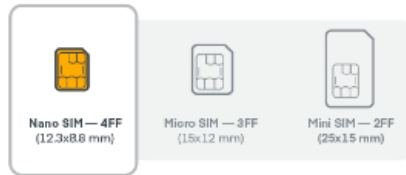
Physical Measurements & Features

133.6 mm (5.26 in)   121.5 mm (4.78 in)

41 mm
(1.61 in)

Features

LED Panel

SIM Slot Cover

Gigabit Ethernet
(GbE) Ports

USB Lock

Bluetooth®
wireless technology

WAN   1

USB 2.0

Cellular Antenna Connector (Female SMA)
Reset
GNSS Connector (Female SMA)
DC Power
Cellular Antenna Connector (Female SMA)
Ground
Wi-Fi Antenna Connector (Female RP-SMA)

SIM Card Info

Nano SIM — 4FF (12.3x8.8 mm)
Micro SIM — 3FF (15x12 mm)
Mini SIM — 2FF (25x15 mm)

Ordering Guide

NetCloud Mobile and NetCloud Ruggedized IoT Essentials packages and plans contain all the features and capabilities required for a broad range of mobile, in-vehicle, and IoT applications. Essentials packages include 24x7 support (phone support: 24 hour weekdays with emergency response on weekends, web: 24x7, chat: 24x5) and a limited lifetime warranty.

For additional capabilities, a **NetCloud Mobile Advanced Plan** or **NetCloud Ruggedized IoT Advanced Plan** can be added to the NetCloud Mobile or Ruggedized IoT Essentials Package at any time.

See additional details of what is included in the Essential and Advanced NetCloud software: cradlepoint.com/netcloud-service

NetCloud Packages for the R920 Series Router

REGION	MODEM	PACKAGE PLAN	PART NUMBER
North America: **U.S. & Canada**	Cat 7 with Wi-Fi (300 Mbps), no AC power supply or antennas	**Mobile** — Essentials **Mobile** — Essentials + Advanced	MA0x-0920-C7A-NA MAAx-0920-C7A-NA
	Cat 7 with Wi-Fi (300 Mbps), with AC power supply and antennas	Ruggedized **IoT** — Essentials Ruggedized **IoT** — Essentials + Advanced	TC0y-0920-C7A-NN TCAy-0920-C7A-NN

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United States: **Federal Government**	Cat 7 with Wi-Fi (300 Mbps), no AC power supply or antennas	**Mobile** TAA Compliant NC — Essentials **Mobile** TAA Compliant NC — Essentials + Advanced	TAA-MA0y-0920-C7A-NA TAA-MAAy-0920-C7A-NA
	Cat 7 with Wi-Fi (300 Mbps), no AC power supply or antennas	FIPS TAA Compliant NC **Mobile**, Isolated Network Plan, NC-LOAD — Essentials + Advanced	TAA-MAAy-0920-C7A-FA
	Cat 7 with Wi-Fi (300 Mbps), no AC power supply or antennas	FIPS TAA Compliant NC **Mobile** — Essentials + Advanced	TAA-MAGy-0920-C7A-FA
		Mobile FIPS only — Essentials + Advanced	MAAx-NCESSF
		Renewal — **Mobile** FIPS only Essentials + Advanced	MAAx-NCESSF-R
	Cat 7 with Wi-Fi (300 Mbps), with AC power supply and antennas	Ruggedized **IoT** TAA Compliant NC — Essentials Ruggedized **IoT** TAA Compliant NC — Essentials + Advanced	TAA-TC0y-0920-C7A-NN TAA-TCAy-0920-C7A-NN
Rest of World: **Australia, European Union, Malaysia, New Zealand, Singapore, South Africa, and United Kingdom**	Cat 7 with Wi-Fi (300 Mbps), no AC power supply or antennas	**Mobile** — Essentials **Mobile** — Essentials + Advanced	MA0x-0920-C7B-GA MAAx-0920-C7B-GA