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Data Sheet

R1900 Series 5G Ruggedized Router

2024 - 08 - 16

Cradlepoint's NetCloud Mobile Performance Service with the R1900 Series Router is a ruggedized 5G networking platform, designed to provide persistent connectivity for in-vehicle deployments. Cradlepoint NetCloud provides connectivity, network, security, location, and IoT services to connect everything in the vehicle, while providing access to IT for remote management, troubleshooting, and analytics.

Ideal for High-Performance In-Vehicle Connectivity

For organizations that depend on field forces and mobile networks, the Cradlepoint R1900 Series Router with the NetCloud Mobile Performance Service plan provides a ruggedized GNSS/GPS-enabled in-vehicle network solution. When coupled with the Advanced Mobile Performance Service plan, it provides threat management, web filtering, application visibility, analytics, and advanced GNSS/GPS functionality including location tracking and cellular coverage maps. The R1900 accommodates environmentally harsh environments while delivering enterprise-class standards of reliability, scalability, comprehensive management, and security.

5G Embedded High-Performance Solution

The R1900 mobile router includes an embedded 5G modem that can automatically connect to Cat 20 LTE if the vehicle moves outside of 5G coverage. In addition, the R1900 Series Router is designed to accept the RX30 managed accessories which provide either four additional GbE PoE ports or four additional GbE ports and a second modular modem. It also has the ability to act as a controller for a separate Cradlepoint 5G Wideband Adapter. These two capabilities, along with the continually improved NetCloud platform, ensure the ability for future expansion and the best investment protection available.

Product Page

NetCloud Service

Quick Start Guide

Notable Benefits

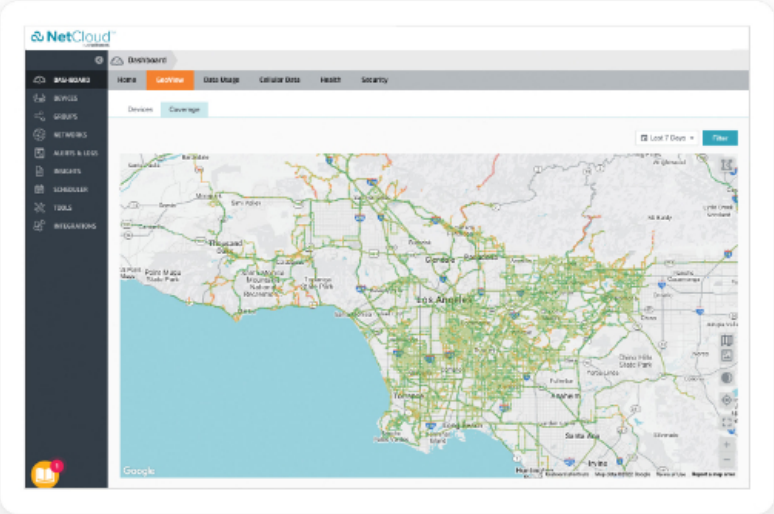
- Deploy the ultimate 5G NR / Cat 20 LTE mobile networking solution with industry-leading features
- Add a second cellular modem with the optional RX30 managed accessory for simultaneous dual-carrier connectivity
- Take advantage of Wi-Fi 6 for the best possible connections
- Enable unified edge security with application aware multi-zone firewalls, IDS/IPS, and internet security
- Define policies through centralized cloud-based management for easy deployment at scale
- Integrate into Automatic Vehicle Location systems with discrete GNSS and dead reckoning
- Create a cellular coverage map for complete visibility into your area's 5G and LTE coverage
- Extend your deployment with additional PoE ports, GPIOs, NetCloud SDK and API, Bluetooth, and container support for customizable solutions

Key Software Capabilities

Cradlepoint NetCloud Mobile Performance Service with the R1900 mobile router provides everything needed to unlock the power of 5G and connect vehicles, users, and IoT to critical applications and services. NetCloud includes router software for optimizing routing, VPN, SD-WAN, and security capabilities along with capabilities centralized in the cloud such as group policy definition, reports, troubleshooting, and analytics dashboards as well as cellular coverage maps. The service comes with a warranty for as long as there is an active subscription on the router, online training, live and online support, and continuous software updates for both the router and the modem.

Coverage Map

NetCloud uses GNSS/GPS and 5G/4G cellular health to provide precise analytics about location and signal strength. Data can be mapped to display both the current and historical locations of a vehicle, as well as generate detailed coverage maps that display cellular health, allowing users to gain operational insights and solve problems.



Advanced Software Lifecycle Management

NetCloud improves the typical software lifecycle management process. New features are continuously delivered to NetCloud and become available for the router without interrupting network performance. Software versions are tracked for every endpoint, with the latest update just a click away. Straightforward subscription and license management is easily accessible and provided to keep the network running without interruption.

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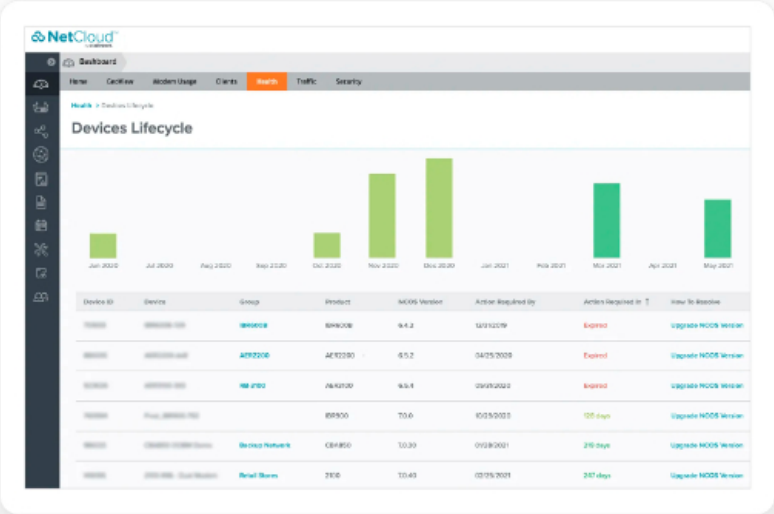
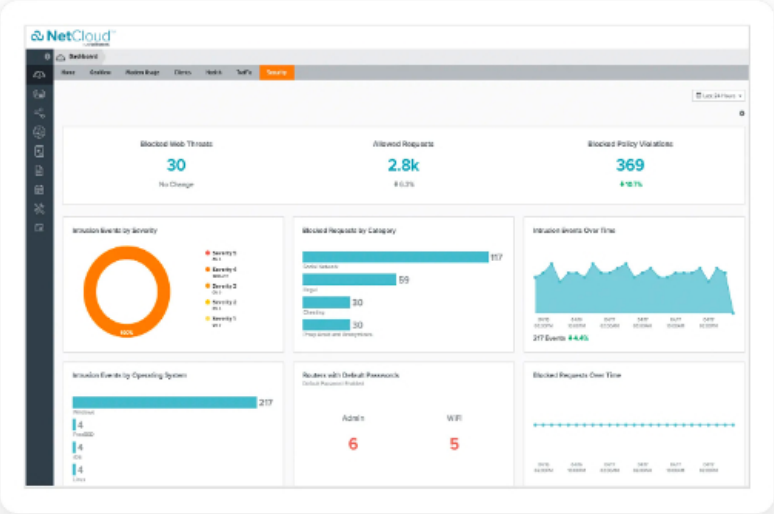


Security Services

NetCloud Advanced Service includes security features that include application aware zone-based firewall, CP Secure Threat Management (IPS/IDS), and CP Secure Web Filter for protecting your network and meeting the evolving security needs of in-vehicle environments.



Connection Manager

Connection Manager provides the ability to manage all WAN connection types, including wireless, Wi-Fi-as-WAN, and wired, from a single software-defined policy. Our proprietary modem software enables users to quickly establish robust Wireless WAN connectivity while maintaining the highest level of resiliency.

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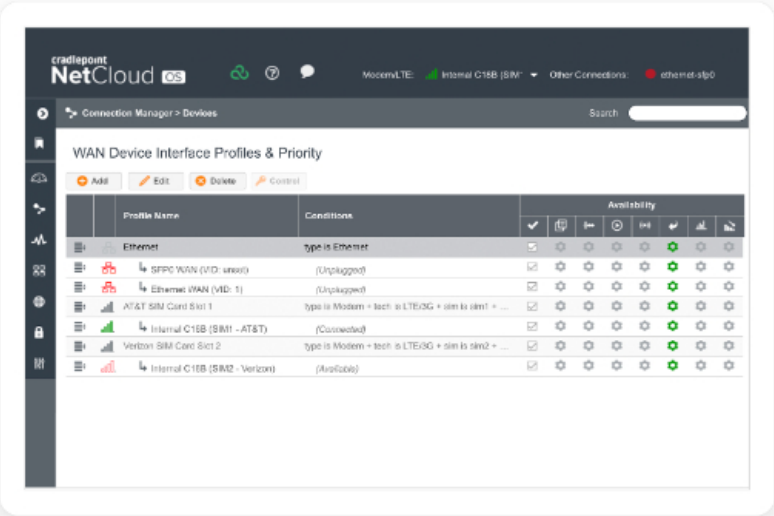

Hardware Specifications

The following features are delivered through the hardware.

INTERFACES	
Modem:	Embedded 5GB NR FR1 low-, mid-band, and 4G LTE Category 20 modem — 4 x SMA cellular antenna connectors†
Ethernet:	4 x GbE (LAN/WAN switchable)
PoE:	Optional RX30 Managed Accessory PoE Switch — 4 x PoE 802.3bt Type 3 (up to 60 W per port) — 60 W total PoE power budget
Wi-FI:	Dual-radio, dual-band, concurrent operation (2.4 GHz and 5 GHz) — 2x2 MU-MIMO 802.11ax Wi-Fi 6 with DFS — 574 Mbps (2.4 GHz) & 1,200 Mbps (5 GHz) — 2 x RP-SMA Wi-Fi antenna connectors† — Global Optimized Wi-Fi & International SDR — WPA/WPA2/WPA3 Personal, WPA2/WPA3 Enterprise, Open — 802.11k, 802.11v — Wi-Fi Alliance Certified
Bluetooth:	Embedded Bluetooth Low Energy 5.2 — Max TX Power: 10 dBM — 1 x RP-SMA Bluetooth antenna connector†

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Expansion / Console:	1 x USB 2.0 Type A (Output: 5 V, 500 mA, 2.5 W) 1 x DB9 RS-232 1 x 8-pin GPIO connector — 2x4 Molex micro-fit (3 mm locking type) Optional Managed Accessories — RX30-POE 4-port GbE PoE switch — RX30-MC modular modem slot & 4-port GbE switch
GNSS / GPS:	1 x SMA GNSS antenna connector†
GNSS / GPS	
Acquisition: **(Time to First Fix)**	30 seconds (cold start)
Protocols:	— NMEA 0183 — TAIP
Constellations:	GPS, Galileo, GLONASS, BeiDou (concurrent reception)
Accuracy:	Autonomous 1 meter
Update Rate:	1 Hz (once per second)
Sensitivity:	— Acquisition: -147 dBm — Tracking: - 165 dBm — Reacquisition: -159 dBm
Frequencies:	L1, L5 (1559–1606 MHz)
Power:	— Voltage Supply: 3.1-3.8 V — Max Current: 30 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: 5% to 95% — Storage: 5% to 95%
Ingress Protection:	IP64 (dust tight and splashing water)
POWER	

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Required:	DC input steady state voltage range: 9–36 VDC (requires in-line fuse for vehicle installations) — For 9–24 VDC installations, use a 3 A fuse — For > 24 VDC installations, use a 2.5 A fuse — Connector type: 4-pin 2x2 Molex micro-fit For light rail applications: 24 VDC nominal
Features:	— ISO 7637-2 reverse polarity and transient voltage protection — Ignition sensing (automatic ON & time-delay OFF)
Consumption:	— Sleep: 15 mW — Idle: 11 W — Typical: 19 W — Heavy: 22 W
PHYSICAL	
Size:	172 x 148 x 41 mm (6.77 x 5.82 x 1.61 in)
Weight:	0.98 kg (2.15 lb)
RELIABILITY	
Calculated MTBF:	340,644 hours (Telcordia SR332 at 25 °C)
CERTIFICATIONS	
Safety:	— UL/cUL — CB Scheme — EN 60950-1 — EN 62368-1
Vehicle:	— E-Mark — SAE J1455
Rail:	— EN 45545-2:2020 HL3 — EN 50121-3-2 (Power Surge 0.5 & 1 kV Criteria A; 1.5 kV Criteria C) — EN 50155 Class S1
Materials:	— WEEE — RoHS — REACH — California Prop 65
Security:	FIPS 140-3 Level 1 Module in Process (R1900 FIPS models only)
Shock/Vibration/Humidity:	MIL STD 810G
North American Fire Safety:	NFPA 130
Flame Smoke Toxicity Test:	BSS 7239
Hazardous Locations:	Class I Div 2

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EDGE COMPUTING	
CPU:	Quad-core ARMv8 64-bit
Memory:	Up to 1.8 GB See Adjusting Memory Resources for NetCloud Container Orchestrator for more information.
Flash Storage:	Up to 6 GB See Adjusting Memory Resources for NetCloud Container Orchestrator for more information.
Applications:	Docker containerized applications
CLOUD SERVICES	
Service Plans:	NetCloud Service for Mobile Performance
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 dBm Conducted — 5260–5825 MHz: 21.90 dBm Conducted
E.U.:	— 2.4 GHz: 14.00 dBm Conducted — 5500-5700 MHz: 18.00 dBm Conducted
Canada:	— 2.4 GHz: 23.00 dBm Conducted — 5500-5580 MHz: 22.00 dBm Conducted — 5660-5825 MHz: 21.89 dBm Conducted
Japan:	— 2.4 GHz: 16.92 dBm Conducted — 5500-5720 MHz: 21.00 dBm Conducted
Global Safe Mode:	2.4 GHz: 14 dBm Conducted
PERFORMANCE†††	
Stateful Firewall Throughput:	940 Mbps
IPS Throughput:	940 Mbps
Application Aware Services & Analytics:	940 Mbps
IPsec VPN Throughput:	400 Mbps
Concurrent VPN Tunnels:	10
Concurrent Sessions (TCP):	32,000
Typical Client Count:	100
Layer 2 / Layer 3 VLANs:	Up to 64
LEDs	
	Refer to the R1900 Quick Start Guide.

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*†**NOTE:** All antenna interfaces require cabled out external antennas and are not compatible with direct-attached antennas.*
††Wi-Fi and cellular performance may degrade, the RX30 managed accessory is not supported, and the 5G cellular modem might fallback to LTE connectivity when operating above 70 ºC.
†††Performance testing was conducted based on requirements as defined in RFC2544 using fixed-frame 1518-byte packets. Throughput results reflect unidirectional 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	R1900-5GB
Technology:	5G FR1 NSA/SA and 4G LTE — LTE Advanced Pro Category 20 — Dual SIM slots, 4FF form factor — 3GPP Release 15
3G:	WCDMA/UMTS/HSPA+
Carrier Aggregation:	LTE Only — Downlink: Up to 7CA — Uplink: Up to 2CA LTE + 5G NR ENDC — Downlink: 1CA — Uplink: 1CA See Understanding Carrier Aggregation.
Peak Rates:	— Downlink: Up to 4.14 Gbps — Uplink: Up to 660 Mbps
MIMO:	4x4 MIMO
Modulation:	5GB FR1 — Downlink: Up to 256 QAM — Uplink: Up to 256 QAM. (Only enabled on particular carrier equipment from 9190 data sheet.)
4G/LTE Bands:	FDD — B1 (2100), B2 (1900), B3 (1800), B4 (1700), B5 (850), B7 (2600), B8 (900), B12 (700), B13 (700), B14 (700), B17 (700), B18 (850), B19 (850), B20 (800), B25 (1900), B26 (850), B28 (700), B29 (700), B30 (2300), B32 (1500), B66 (1700), B71 (600) TDD — B34 (2000), B38 (2600), B39 (1900), B40 (2300), B41 (2500), B42 (3500), B43 (3700), B46 (5200), B48 (3500)

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5G NR Bands:	NSA and SA — n1 (2100), n2 (1900), n3 (1800), n5 (850), n7 (2600), n8 (900), n12 (700), n20 (800), n25 (1900), n26 (850), n28 (700), n38 (2600), n40 (2300), n41 (2500), n48 (3500), n66 (1700/2100), n71 (600), n77 (3700), n78 (3500), n79 (4900)
3G Bands:	B1, B2, B3, B4, B5, B6, B8, B9, B19
Power:	LTE — LTE bands: 23 dBm ± 1 (typical conducted) — LTE HPUE: 25 dBm ± 1 (B41 standalone mode only) LTE + 5G NR ENDC — LTE + 5G NR: 20 dBm ± 1 (typical conducted) 5G NR — 5G NR bands: 23 dBm ± 1.5 (typical conducted)
Antennas:	4 x SMA female connectors — External cabled out 600 MHz - 6 GHz cellular antennas (not included)
GNSS/GPS:	Discrete active GPS with dead reckoning
SMS:	Yes
Regulatory:	FCC (U.S.), IC (Canada), CE (EU), RCM (AU/NZ) (pending)
Network Operator Standards:	PTCRB (U.S., Canada), GCF (Worldwide)
GCF Global Operators:	https://www.globalcertificationforum.org/membership/gcf-members.html†
PTCRB North America Operators:	https://www.ptcrb.com/about/
Network Operator Certifications:	AT&T, EE, Telstra, T-Mobile, Verizon†
Public Safety Network Certifications:	ESN (4G), FirstNet Trusted™, T-Mobile Connecting Heroes, Verizon Frontline, Verizon Response Verified (pending)
Private Cellular Network:	Yes, includes FCC Part 96 (CBRS Band 48)

†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, to operate on their network. 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

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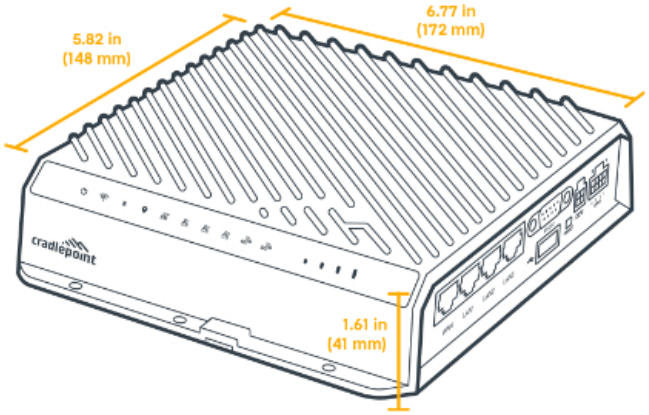
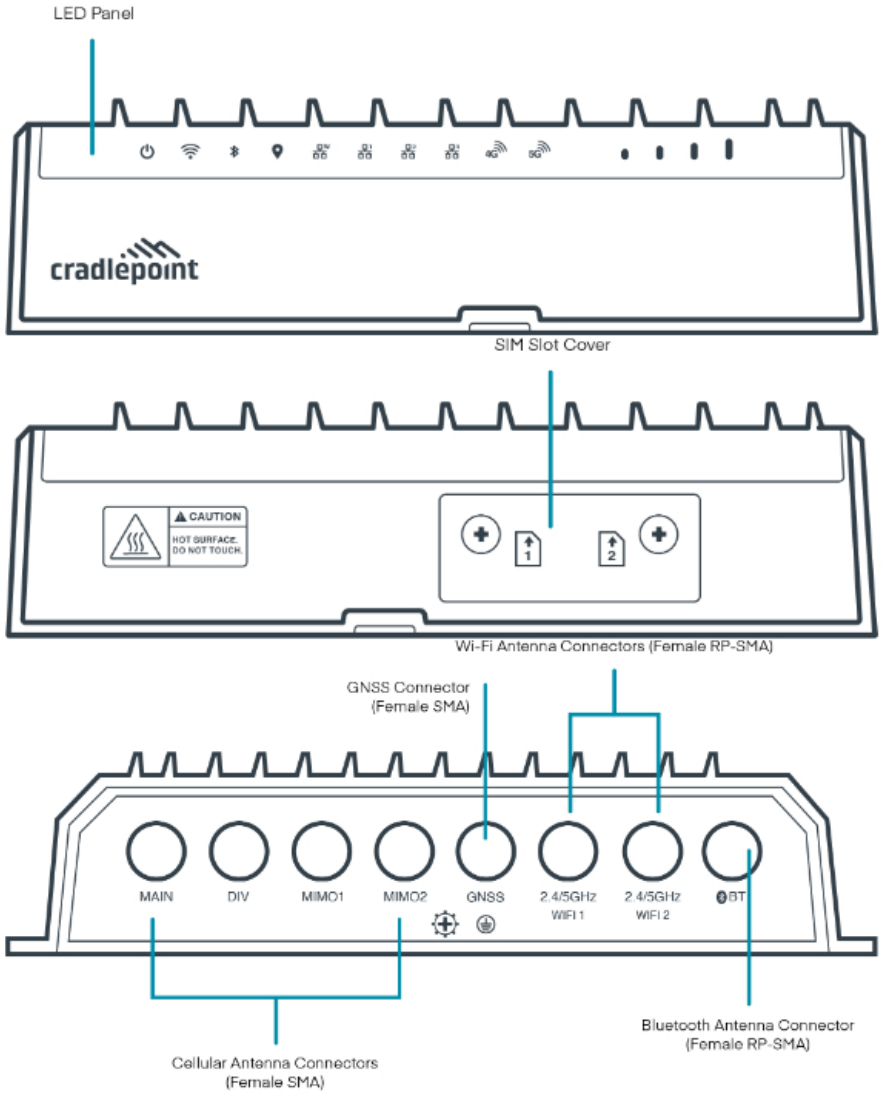


Features



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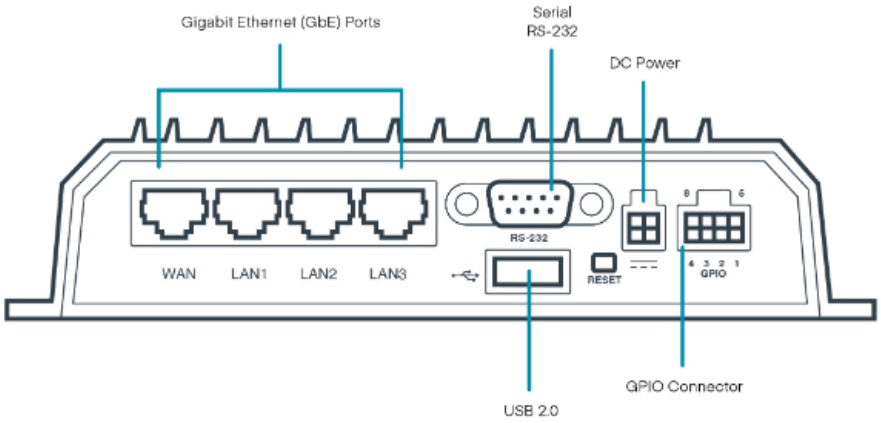

SIM Card Info

Ordering Guide

NetCloud Mobile Performance Essentials packages and plans contain all the features and capabilities required for a broad range of mobile or in-vehicle 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 Performance Advanced Plan** can be added to the NetCloud Mobile Performance Essentials Package at any time.
See additional details of what is included in the Essential and Advanced NetCloud software: cradlepoint.com/netcloud-service

NetCloud Mobile Performance Packages for the R1900 Series Router

REGION	MODEM	MOBILE PACKAGE PLAN	PART NUMBER
United States Federal Government:	5G with Wi-Fi & 4FF SIM, no AC power supply or antennas	TAA Compliant NC — Essentials TAA Compliant NC — Essentials + Advanced	TAA-MB0y-19005GB-GA TAA-MBAy-19005GB-GA
	5G with Wi-Fi, 4FF SIM optional but not included, no AC power supply or antennas	TAA Compliant NC FIPS — Essentials + Advanced	TAA-MBAy-19005GB-FA
	5G with Wi-Fi	Renewal FIPS — Essentials + Advanced	MBAx-NCESSF-R
All Regions:	5G with Wi-Fi, no AC power supply or antennas	Essentials Essentials + Advanced	MB0x-19005GB-GA MBAx-19005GB-GA

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5G	Advanced	MB0x-NCADV
	Renewal Essentials	MB0x-NCESS-R
	Renewal Advanced	MB0x-NCADV-R
	Renewal Essentials + Advanced	MBAx-NCEA-R

x = 1, 3, or 5 years
y = 3 or 5 years

Accessories

INCLUDED	PART NUMBER
GPIO Cable, 2x2, 3 meters, 20AWG	170864-000
Mounting Screw Pack	N/A
Mounting Template	N/A
OPTIONAL	
GPIO Cable, Small 2x2 Black, 3 meters, 22 AWG	170585-001
One of the following line cord options: — Line Cord, U.S. (C7), 1.8 meters, North America — Line Cord, EU (C7), 1.8 meters, European Union — Line Cord, UK (C7), 1.8 meters, United Kingdom — Line Cord, AU (C7), 1.8 meters, Australia	170623-001 170623-002 170623-003 170623-004
Small 2x2 Power to Barrel Adapter, 152 mm	170665-000
For non-production bench testing only: — Cellular Antenna, 600 MHz - 6 GHz, SMA Black Mini (Qty 4) — Wi-Fi Antenna, Charcoal, Dual-Band 2.4/5 GHz, RPSMA (Qty 2)	170704-002 170836-000
Mag Mount Kit	170718-000
OBD-II Adapter Kit	170758-000
GPIO Cable, Small 2x3 MPP Black, 3 meters, 18 AWG	170858-000
GPIO Cable, Small 2x2 MPP Black, 3 meters, 20 AWG	170864-000
Power Supply, 12 V, Small 2x2 (C7 line cord not include), -30 °C to 70 °C (-22 °F to 158 °F)	170869-000
Rail Safe GPIO Cable, Small 2x2 Black, 3 meters, 20 AWG	170871-000
LTE Captive Modem Accessory, Indoor — CBA550-150M-D (150 Mbps modem), Americas — CBA550-150M-D (150 Mbps modem), Global — L950-C7A (300 Mbps modem), Americas — L950-C7A (300 Mbps modem), Global	170900-001 170900-002 170900-005 170900-006

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5G Captive Modem Accessory, Outdoor — W2005-5GB (4.1 Gbps modem), AP — W4005-5GB (7.5 Gbps modem), High Band, North America — W1855-5GC (3.4 Gbps modem), North America — W1855-5GC (3.4 Gbps modem), EU — W1855-5GC (3.4 Gbps modem), UK — W1855-5GC (3.4 Gbps modem), AP — R2105-5GB (4.1 Gbps modem), Captive Modem and Wi-Fi Accessory, Global — R2155-5GB (4.1 Gbps modem), Captive Modem Accessory, Global	 170900-009 170900-011 170900-016 170900-018 170900-019 170900-021 170900-014 170900-015
5G Captive Modem Accessory, Indoor — W1850-5GB (4.1 Gbps modem), Americas — W1850-5GB (4.1 Gbps modem), Global — W1850-5GC (3.4 Gbps modem), Americas — W1850-5GC (3.4 Gbps modem), Global	 170900-012 170900-013 170900-017 170900-020
RX30-MC Managed Accessory — Modular Modem and Switch (modem sold separately) — MC400 LTE Advanced Pro Modem (1200 Mbps) upgrade for Mobile. Includes IBR1700 with COR Extensibility Dock doors, no antennas† — MC400 5G Modem (requires 4FF SIM) upgrade for R1900 with RX30-MC or IBR1700 Mobile Routers with doors†	MB-RX30-MC MA-MC400-1200M-B MB-MC400-5GB
RX30-PoE Managed Accessory — PoE Switch	MB-RX30-POE
UNITED STATES FEDERAL GOVERNMENT	
GPIO Cable, Small 2x2 Black, 3 meters, 22 AWG	TAA-170585-001
LTE Captive Modem Accessory, Indoor, CBA550-150M-D (150 Mbps modem), Americas	TAA-170900-001
LTE Captive Modem Accessory, Indoor, L950-C7A (300 Mbps modem), Americas	TAA-170900-005
5G Captive Modem Accessory, Outdoor, W2005-5GB (4.1 Gbps modem), North America	TAA-170900-007
5G Captive Modem Accessory, Outdoor, High-Band, W4005-5GB (7.5 Gbps modem), North America	TAA-170900-011
5G Captive Modem Accessory, Indoor, W1850-5GB (4.1 Gbps modem), Americas	TAA-170900-012
RX30-MC Managed Accessory — Modular Modem and Switch (modem sold separately) — MC400 LTE Advanced Pro Modem (1200 Mbps) upgrade for Mobile. Includes IBR1700 with COR Extensibility Dock doors, no antennas† — MC400 5G Modem (requires 4FF SIM) upgrade for R1900 with RX30-MC or IBR1700 Mobile Routers with doors†	TAA-MB-RX30-MC TAA-MA-MC400-1200M-B TAA-MB-MC400-5GB
RX30-PoE Managed Accessory — PoE Switch	TAA-MB-RX30-POE

†*Refer to the Cradlepoint MC400 Modular Modem webpage for more information about modular modems.*

Support & Warranty

The R1900 Series 5G Ruggedized Router is only sold as a component of NetCloud Mobile Performance Essentials or Essentials + Advanced Packages

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- NetCloud Packages include support for the full subscription term.
- 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.

More Information

Find the most up-to-date information at cradlepoint.com/r1900

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