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Data Sheet

R1900 Series 5G Ruggedized Router

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.

Notable Features

- 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

Ideal for High-Performance In-Vehicle Connectivity

For organizations that depend on field forces and mobile networks, the Cradlepoint R1900 mobile 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 mobile 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.

Performance

Stateful Firewall Throughput:	IPS Throughput:	Application Aware Services & Analytics:	IPSec VPN Throughput:	Concurrent VPN Tunnels:	Concurrent Sessions (TCP):	Typical Client Count:
940 Mbps	**940 Mbps**	**940 Mbps**	**400 Mbps**	**20**	**32,000**	**100**

Performance testing was 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.

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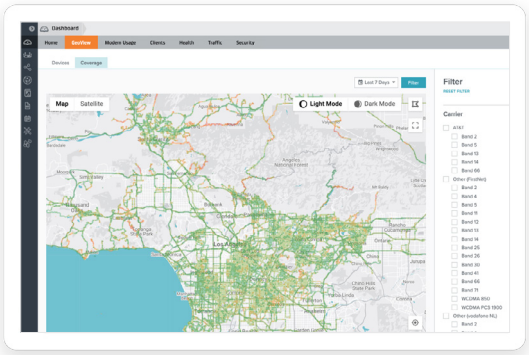
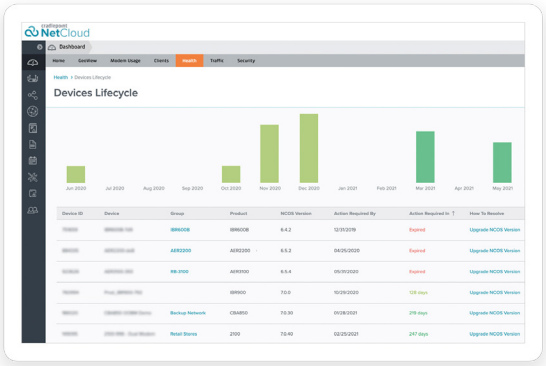
Key Software Capabilities

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.



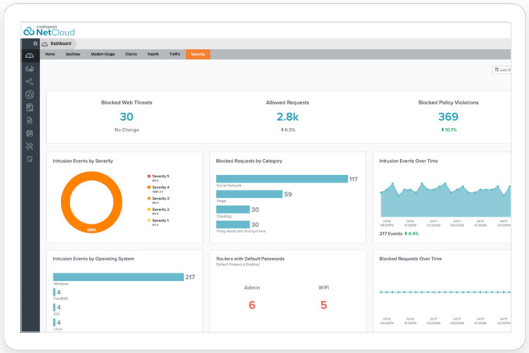


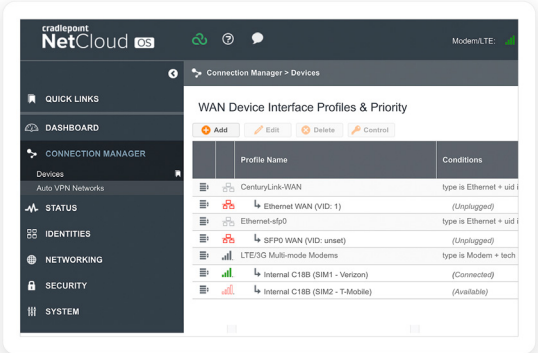
Advanced Software Lifecycle Management

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.

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 GbE (60 W PoE 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
Bluetooth:	Embedded Bluetooth Low Energy 5.1 — Max TX Power: 10dBM — 1 x RP-SMA Bluetooth antenna connector†
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†
†**NOTE**: All antenna interfaces require cabled out external antennas and are not compatible with direct-attached antennas.	
ENVIRONMENTAL	
Temperature:	Operating: -30 °C to 70 °C (-22 °F to 158 °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)
PHYSICAL	
Size:	172 x 148 x 41 mm (6.77 x 5.82 x 1.61 in)
Weight:	0.98 kg (2.15 lb)

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Hardware Specifications

The following features are delivered through the hardware.

POWER	
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
Required:	ISO 7637-2 reverse polarity and transient voltage protection Ignition sensing (automatic ON & time-delay OFF)
Consumption:	— Idle: 11 W — Typical: 19 W — Heavy: 22 W
CERTIFICATIONS	
Safety:	UL/cUL, CB Scheme, EN 60950-1, EN 62368-1, e-Mark
Materials:	WEEE, RoHS, REACH, California Prop 65
Shock/Vibration/ Humidity:	MIL STD 810G and SAE J1455
Interruption of Voltage Supply:	EN 50155 Class S1
Electromagnetic Compatibility (EMC):	EN 50121-3-2 (Power Surge 0.5 & 1 kV Criteria A; 1.5 kV Criteria C)
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
LEDs	
Refer to the R1900 Quick Start Guide.	

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Enterprise-Class Modem Specifications

SPECIFICATION	R1900-5GB
Technology:	5G NR (low-band, mid-band FR1) and 4G LTE Category 20 LTE Advanced Pro with Dual Connectivity — Dual SIM slots, 4FF form factor
Fallback:	WCDMA/UMTS/HSPA+
Carrier Aggregation:	LTE only; up to 7CA downlink, 2CA uplink ENDC 5G + LTE; downlink and uplink supported Refer to the Modem Carrier Aggregations article.
Peak Downlink Rates:	Up to 4.14 Gbps — based on 20 Layers LTE + TDD (100 MHz BW, 256 QAM, 4 x 4)
Peak Uplink Rates:	Up to 660 Mbps — based on 2 Layers LTE + TDD (100 MHz BW, 256 QAM, SISO)
MIMO:	4x4 MIMO
QAM:	Up to 256
LTE Bands:	B1, B2, B3, B4, B5, B7, B8, B12, B13, B14, B17, B18, B19, B20, B25, B26, B28, B29, B30, B32, B34, B38, B39, B40, B41, B42, B46, B48, B66, B71
5G NR Bands:	n1, n2, n3, n5, n28, n41, n66, n71, n77, n78, n79
WCDMA Bands:	B1, B2, B3, B4, B5, B6, B8, B9, B19
Power:	LTE only; 23 dBm ± 1 (typical conducted) ENDC 5G + LTE; 20 dBm ± 1 (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)
Network Operator Certifications:	AT&T, T-Mobile, Verizon†
Public Safety Network Certifications:	FirstNet Ready™ (LTE now, 5G pending), 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.*

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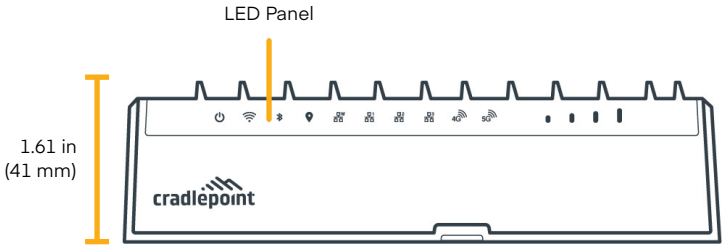
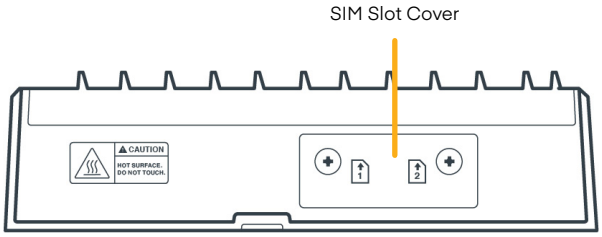
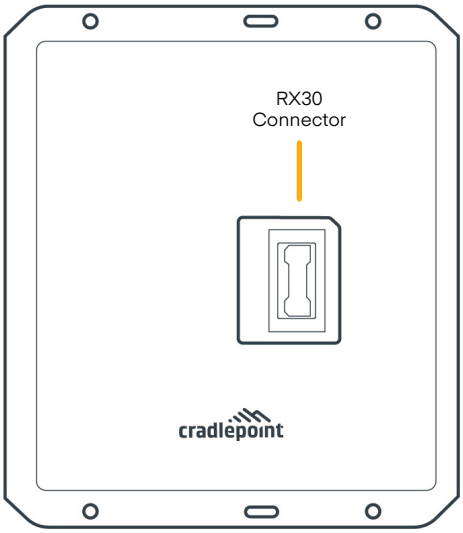
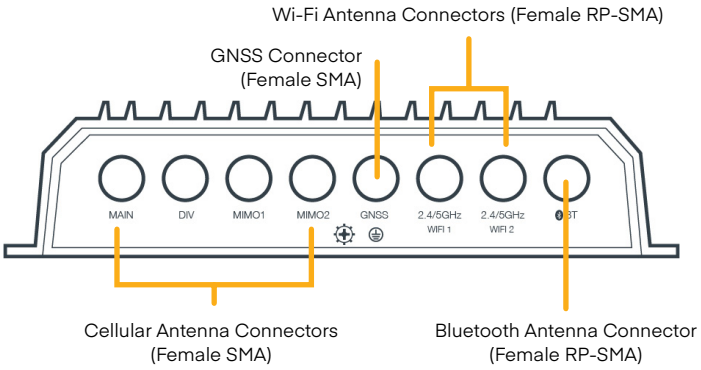
Hardware

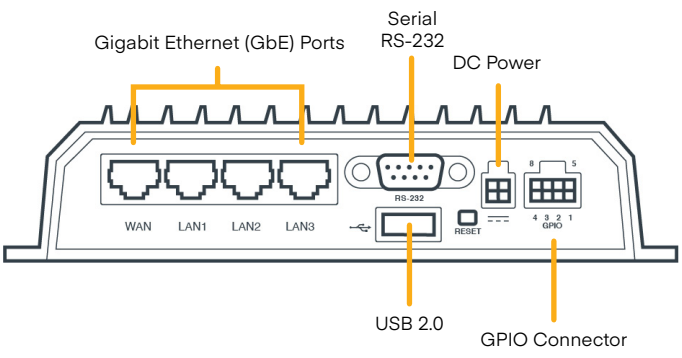
Physical Measurements



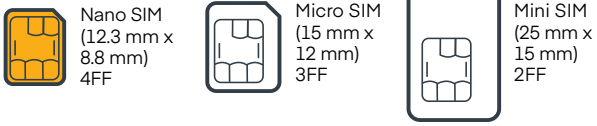








Correct SIM: Nano SIM — 4FF



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

For more details on the R1900 Series router, included with the NetCloud Mobile Performance Packages, see below.

NetCloud Package & Plans

REGION	DESCRIPTION	PART NUMBER
All Regions:	NetCloud Mobile Performance Essentials Plan and R1900 Series router with Wi-Fi (5G modem), no AC power supply or antennas	MB0x-19005GB-GA
	NetCloud Mobile Performance Essentials + Advanced Plan, and R1900 Series router with Wi-Fi (5G modem), no AC power supply or antennas	MBAx-19005GB-GA
	NetCloud Mobile Performance Advanced Plan (requires Essentials Plan)	MB0x-NCESS-R
Renewals:	NetCloud Mobile Performance Networking — Essentials Packages Renewal	MB0x-NCESS-R
	NetCloud Mobile Performance Networking — Advanced Packages Renewal	MB0x-NCADV-R
	NetCloud Mobile Performance Networking — Essentials + Advanced Packages Renewal	MBAx-NCEA-R

x = 1, 3, or 5 (years)

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Accessories

INCLUDED	PART NUMBER
GPIO & Power Cable, 2x2, 3 meters, 20AWG	170864-000
Mounting Screw Pack	N/A
Mounting Template	N/A
OPTIONAL	
RX30-PoE Managed Accessory — PoE Switch	MB-RX30-POE
RX30-MC Managed Accessory — Modular Modem & Switch (modem sold separately)	MB-RX30-MC
Second MC400 Modular Modem (for use with the RX30-MC Managed Accessory)†:	MA-MC400-1200M-B MC400LP6 MC400LP5
OBD-II Adapter Kit	170758-000
Power Supply, 12V, 2x2 Small (requires a line cord)	170869-000
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
For non-production bench testing only: — Cellular Antenna, 600 MHz - 6 GHz, SMA Black Mini (Qty 4) — Wi-Fi Antenna, Charcoal, Dual-Band 2.4/5GHz, RPSMA (Qty 2)	 170704-002 170836-000

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

Support & Warranty

The R1900-5GB router is only sold as a component of NetCloud Mobile Performance Essentials or Essentials + Advanced Packages.

— 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.

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