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VELOCITY VR-950 ENTERPRISE RESILIENT MOBILE DATA ROUTER

TAKING YOUR MISSION-CRITICAL COMMUNICATION TO THE NEXT LEVEL

velocity

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THE VELOCITY VR-950 IS AN ENTERPRISE RESILIENT MOBILE DATA ROUTER FOR NEXT-GENERATION SMART VEHICLE COMMUNICATIONS SOLUTIONS THAT REQUIRE RELIABLE CONNECTIVITY AND HIGH AVAILABILITY IN MISSION-CRITICAL APPLICATIONS. DELIVERING HIGH PERFORMANCE COMMUNICATIONS FOR DEMANDING AND MISSION-CRITICAL VOICE AND DATA APPLICATIONS VIA MULTIPLE MOBILE NETWORKS, THE VELOCITY VR-950 IS INTENDED FOR EMERGENCY SERVICES, PUBLIC UTILITIES AND PUBLIC TRANSPORT USERS THAT REQUIRE RELIABLE COMMUNICATIONS ACROSS MULTIPLE RADIO NETWORKS FOR DATA AND VOICE APPLICATIONS.

FEATURES

VEHICLE AREA NETWORK

- Velocity VR-950 provides a four-port Gigabit Ethernet Switch for the Vehicle Area Network (VAN) and connections to devices such as mobile data terminals, vehicle computers, tablet PCs, laptops, ANPR systems or medical equipment.
- A fifth Ethernet port may be connected directly to an MDT or used for an additional bearer such as Satellite Uplink connection.

MOBILE NETWORK SUPPORT

- Velocity VR-950 has provision for two PCI M.2 radio modules for simultaneous operation on two cellular networks. Each module supports dual SIM for a primary and fallback network (max 4 SIM cards).
- Simultaneous operation on different networks allows Velocity VR-950 to maintain connections and route traffic over either network without delays associated with switching between networks.

Radio modules support 3GPP Release 12 with the Emergency Services QCIs for voice and data

WIRELESS (WI-FI) SUPPORT

- Velocity VR-950 supports two 802.11 wireless cards so that one can provide a Wireless Access Point ("hotspot") in and around the vehicle while the second card operates in 'Station' mode and can connect as a client to authorised Wi-Fi networks.
- Both wireless cards support 802.11a/b/g/n/ac and operation on 2.4GHz or 5GHz bands with dual-stream MIMO.
- Wi-Fi security includes WPA, WPA2, WPA2-Enterprise (EAP-TLS) and AES256 encryption.

GNSS RECEIVER & LOCATION SERVICE

- Velocity VR-950 incorporates a high performance 72 channel Ublox multi-constellation concurrent GNSS receiver for vehicle tracking and location based services.
- Real-time location information is available to all devices on the vehicle network (LAN or Wi-Fi) using an open source GPSD protocol.

DEVICE MANAGEMENT

- Velocity VR-950 can be managed via Velocity's secure web based Mobile Device and Management (MDM) system.
- Operating system updates and application software can be delivered Over-The-Air (OTA).

VEHICLE TRACKING

- Velocity VR-950 incorporates Automatic Vehicle Location (AVL) that provides a rules-based, event-driven vehicle tracking subsystem.
- Implementing vehicle tracking in the vehicle communications hub ensures that resources can be located even when the mobile data terminal is switched off or away from the vehicle.

OPERATING SYSTEM SERVICES

- Velocity VR-950 operating system provides a range of services for devices connected to the vehicle area network and Wi-Fi hotspot including DHCP server, DNS server, NTP server, SMB/CIFS file server, printer server, web server, video server and stateful packet inspection firewall with Network Address Translation (NAT) and Port Address Translation (PAT)

VEHICLE TELEMATICS

- Velocity VR-950 provides two CANbus interfaces and a K-Line interface for connection to Engine Control Units (ECU) to fetch vehicle diagnostics and performance data and forward it to central systems for analysis.
- Telematics provide fleet managers with information about vehicle faults before they are reported by staff and can prevent vehicles from being used when potentially unsafe.

DRIVER BEHAVIOUR MONITORING

- Velocity VR-950 incorporates a 3-axis MEMS sensor for monitoring and recording acceleration and high g-force events and reporting unusual driver behaviour, impacts or collisions.

INTEGRATED SOLUTION

Velocity VR-950 combines key functions in to a single box solution including:

- Multibearer vehicle router
- Ethernet switch for vehicle network
- Wi-Fi Hotspot (Access Point), Wi-Fi client (Station Mode)
- Video server for cameras
- Audio for cellular and MCPTT voice to provide a high performance vehicle communications platform and deliver reliable connectivity on commercial networks and the Emergency Services Network (ESN).

MODULAR DESIGN

Velocity VR-950 is based on the Smart Mobility Architecture (SMARC) - an open hardware specification for high performance, low power, mobile computing systems that focus on connectivity and communications.

The modular approach allows platform to be tailored to customer requirements and the ability to upgrade modules and protect investment through the life of the product.

MULTIBEARER ROUTER

Velocity VR-950 combines two or more wide area cellular or Wi-Fi networks to provide high availability IP connectivity for devices in and around the vehicle connected to the wired LAN or the Wireless Access Point ("hotspot").

Our Velocity technology provides a multi-bearer tunnel with traffic prioritisation and supports the use of critical and non-critical EPS bearers on 4G networks with 3GPP Release 12 QCIs for priority users.

Bearers are managed by tagging traffic with IP Differentiated Services ("DiffServ") quality of service indicators with four levels of priority:

- Critical: mission critical and safety of life
- Essential: high priority traffic
- Routine: standard traffic (web, mail)
- Low Cost: bulk data (e.g. map updates)

Access to priority bearers achieved by user equipment tagging traffic via the DiffServ field in IP headers or by static configuration in the integrated firewall.

POWER MANAGEMENT

Velocity VR-950 has two independent power supply inputs and an integrated battery that acts as a UPS and ensures continuous operation during transients such as engine starting.

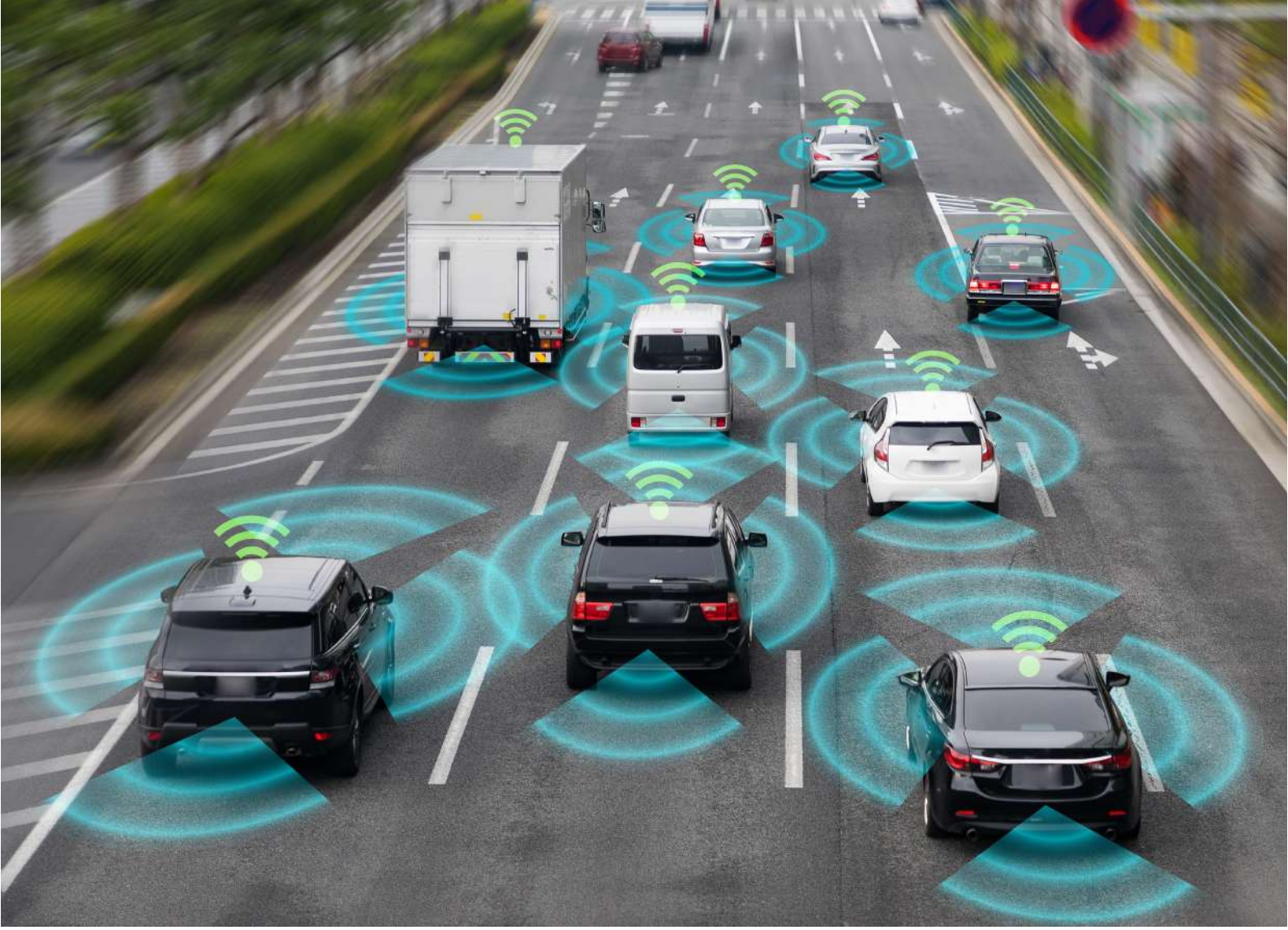
The power management subsystem maximises availability of the communications system but also reports vehicle power issues to a central logging service for fleet management and maintenance.

SERVICE AND SUPPORT

Velocity VR-950 is supplied with a three year return to base (RTB) hardware warranty and can be purchased with a software support contract or as part of a managed service provided by Simoco or one of its delivery partners.

TELEPHONY AND MCPTT

Velocity VR-950 provides a microphone, speaker and PTT connection and supports VoLTE cellular calls and Mission Critical PTT over Cellular (PoC) with appropriate 3rd Party software (not supplied).



KEY FEATURES

- Smart Mobility Architecture (SMARC)
- Modular and expandable design
- Four port Gigabit Ethernet switch
- Dual 2G/3G/4G/LTE radio modules
- Wireless Access Point (“Hotspot”)
- Simultaneous Wi-Fi Client (Station mode)
- Velocity multi-bearer router technology
- IP Differentiated Services traffic prioritisation
- High performance GNSS receiver
- USB expansion ports
- RS232 and RS485 serial for legacy devices
- CANbus and K-Line for vehicle telematics
- SD card internal storage
- Audio interface for cellular and MCPTT
- GPIO for vehicle telemetry
- External antenna connectors
- Dual independent 12V/24V vehicle power
- Integrated UPS function

NETWORK CONNECTIVITY

- 2G, 3G and 4G/LTE support
- 5G upgradable
- Emergency Services Network (ESN) ready
- ESN Critical voice and data bearers
- Wi-Fi 802.11a/b/g/n/ac Access Point
- Satellite modem (via USB or LAN)
- Serial port for Radio terminal integration

APPLICATIONS

- Smart Vehicle Gateway
- Mobile data communications hub
- Vehicle Area Network (VAN) router
- Wireless access “hotspot”
- Vehicle location and tracking
- Vehicle telemetry and monitoring
- Mission Critical PTT voice communications

VELOCITY VR-950 TECHNICAL SPECIFICATIONS

Processor and Memory

SMARC v2.1 System-on-Module
NXP iMX8 series multi-core ARM Cortex Processor (upgradable)
2Gb or 4Gb LPDDR4 RAM (option)
4Gb-128Gb eMMC FLASH memory (option)
Secure Digital (SD) card slot (max 128Gb)

LTE/4G/3G/2G Cellular Radio Modules

Quantity	2 (Simultaneously active and aggregated)	
Category	Cat 12 (Downlink up to 600Mbps, Uplink up to 100Mbps) (upgradable)	
3GPP	Release 12 supporting emergency services QCIs	
Frequency Bands	LTE-FDD	B1/B2/B3/B4/B5/B7/B8/B9/B12/B13/B14/B17/B18/B19/B20/B21/B25/ B26/B28/B29*/B30/B32*/B66
	LTE-TDD	B38/B39/B40/B41 with 1T2R diversity and Carrier Aggregation
SIM Card Slots	4 (2 per Cellular Radio Module)	
Connectors	4x SMA (2 per Cellular Radio Module)	

*LTE-FDD B29 and B32 support receiving only, and are only for secondary component in 2xCA

External Interfaces

Ethernet	4 port Gigabit Ethernet switch		
	Gigabit Ethernet LAN/WAN port (optional)		
Wi-Fi	Quantity:	2 (Simultaneous Access Point and Client)	
	Type:	Enterprise Class Access Point	Combined Wi-Fi/Bluetooth Client
	Frequency:	2GHz/4.9GHz/5GHz	2GHz/5GHz
	Standards:	802.11a/b/g/n/ac	802.11a/b/g/n/ac
	Streams:	2x2 MIMO	2x2 MIMO
	Bluetooth:	N/A	V5.0 (incl. BLE)
	Connectors:	2x SMA	2x SMA

Integrated Sensors

72 Channel Ublox 8 concurrent GNSS receiver with active antenna power, fault monitoring and jamming detection - SMA RF connector (upgradable)
3-Axis accelerometer ±16G 16-bit at 100Hz
Temperature -25°C to +125°C ±0.5°C

Operating System

Devuan 4.0 Linux OS

Power

Supply	9-36V DC negative earth with dual independent inputs
Consumption	5-25 Watts (depending on accessory power draw)
Internal	7.4V 2600mAh LiPo battery

Security Features

Encrypted file system (option)
Secure key storage and case tamper detection

Other Interfaces

2x USB 2.0 Host ports
2x RS232 serial ports (RJ45)
2x RS485 ports (RJ45)
2x CANbus (ISO11898-1)
1x K-Line (ISO9141)
8x General Purpose Inputs
4x General Purpose Outputs
1x USB mini-B (Service & Diagnostics)
Internal SATA expansion port (optional)
DisplayPort interface for monitor
Microphone + PTT input (RJ45)
Speaker output 10W into 4 Ohms

Physical Specifications

Size	238mm (W) x 166mm (D) x 66mm (H)
Weight	1.3kg
Temperature	-20°C to +60°C
Humidity	0-90% RH (non-condensing)
IP Rating	IP54
Enclosure	Heavy duty Aluminium extrusion
	Mounting kit supplied

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