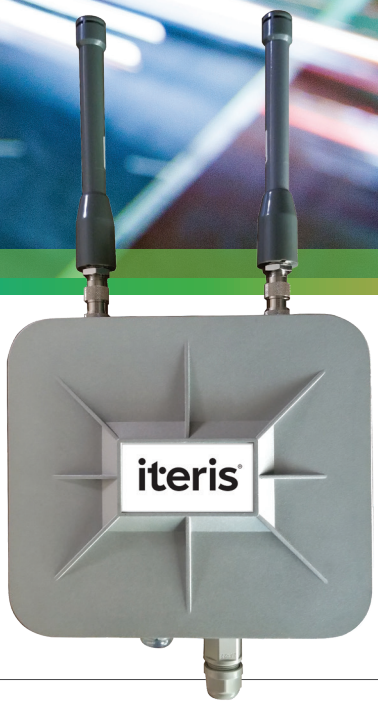
BlueTOAD® CV

C-V2X Roadside Unit

Combine traveler information with vehicle-to-infrastructure data



Integrated Traveler Information
Delivers integrated traveler information and connected vehicle data

Foundation for V2X Applications
Supports a comprehensive suite of V2X applications, including signal priority and preemption

Safety Data Management
VantageARGUS CV utilizes basic safety message data aggregation and management

Traffic Signal Priority and Preemption

Beyond delivering integrated traveler information and connected vehicle (CV) data, Iteris' roadside unit (RSU) solution (5.9 GHz wireless and VantageARGUS CV™) provides the foundation for managing a full suite of vehicle-to-everything (V2X) applications, including signal priority and preemption. The C-V2X standard signal request messaging (SRM) and traveler information message (TIM) processing available in the Iteris RSU enables the implementation of dedicated applications to handle simultaneous priority requests, covering a range of V2X signal priority, preemption, and personal mobile applications:

- Intelligent signal timing applications
- Emergency vehicle preemption
- Transit, public works or freight vehicle signal priority and mobility efficiency applications
- Pedestrian and bicycle mobility and safety

Delivering new levels of roadside sensor capabilities

BlueTOAD CV provides cellular vehicle-to-everything (C-V2X) 5.9 GHz technology, essential V2X interconnectivity for safety and mobility applications in CV initiatives.

With extensive experience in deploying and maintaining roadside technology, Iteris, through its VantageARGUS CV web-based analytics software, offers a versatile V2I roadside application platform supporting a variety of CV applications. Vehicle basic safety message (BSM) and CV data collection, management and performance measures analytics shared with intelligent signal timing applications.

These applications include comprehensive RSU monitoring capabilities, along with utilities to support the full suite of V2X message validation and verification requirements for agency project specifications and CV industry standards.

OMNIAIR CONSORTIUM *Certification Pending*

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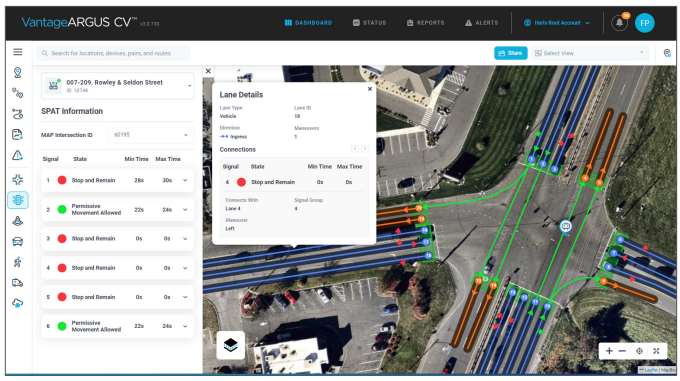
VantageARGUS CV is now optimized for travel-time, V2X data visualization, and RSU monitoring, leveraging data aggregation and management analytics strategies. This integrated safety and mobility traffic monitoring system allows city traffic departments, county, state, MPO's and engineering service providers can now realize ROI on day one in their CV initiatives.

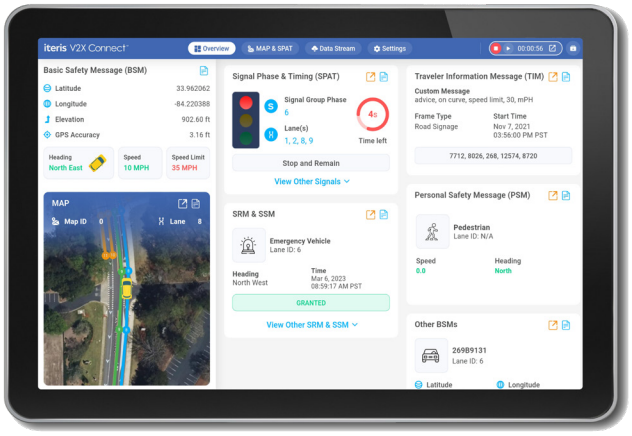


The RSU serves as a platform to manage and visualize the complete range of V2X applications acting as the primary information source for personal mobile applications.

Iteris V2X Connect™ Tablet App

The BlueTOAD Spectra CV RSU connects with the Iteris V2X Connect app and Iteris' VantageARGUS CV analytics software platform, offering:

- Real-time verification of SAE J2735 (2024+) V2X messages
- Validation tools for SAE J2735, IEEE 1609.2/3, and Connected Transportation Interoperability (CTI 4501/4502)
- SPaT/MAP status display and validation
- Highly accurate location-based services to ensure deployment meets agency requirements
- On-board unit (OBU) and RSU CV data capture, management, and analytics



Specifications

Core Features	U.S. (IEEE, SAE) protocols
	V2X Facilities Software (SAE protocols)
	V2X Services API (GNSS, V2X Radio)
	Quad-core ARM A35 @ 1.2GHz + M4 (~9000DMIPS)
	2 GB LPDDR4 SDRAM
	256 MB QSPI NOR flash
	8 GB eMMC mass storage
	LTE-V2X R14/15 radio
	GNSS for position and timing
	USB 3.0 (Type-C)
	USB 2.0 Debug (microB)
Connected Vehicle Standards Conformance	
	EEE 1609
	SAE J2735
	SAE J2945/1
	SAE J3161/1
	NTCIP 1218 v01.38
	SLSS aware
Frequency Band	LTE-V2X: 5.9GHz ITS (5895 – 5925 MHz)
	GNSS: L1 C/A, L1OF, B1, B1I, E1/BC, G1
Security	Developed in compliance with ISO 21434 cyber security standard
	V2X Hardware Security module (HSM)
	NIST/Brain pool ECC up to 512b
	HSM storage > 10k keys, 15-year retention
	FIPS 140-2 Level 3 / EAL6+
	Integrated Firewall
	Secure Boot
Bandwidth	LTE-V2X: 20MHz, IEEE Ch. 183
Antenna Diversity	LTE-V2X: RX Diversity (MRC), TX Diversity (CDD) Max Transmit Power
	LTE-V2X: Up to +23 dBm
Receiver Sensitivity (single input)	
	LTE-V2X target: -95dBm
	(MCS 11, 367 octets, HARQ)
GNSS	2.0m CEP (up to 10Hz)
V2X Security	NIST/Brainpool ECC up to 512b
	HSM storage > 10k keys, 15-year retention
	FIPS 140-2 Level 3 / EAL6+
Operating System	Embedded Linux
Operating Temperature Range	
	-40°C to +85°C (PCBA)
V2X Printed Circuit Board Assembly (PCBA) Power Supply	
	12V ±10% (< 12 Watts)
PoE Voltage	48 VDC 110/230 VAC supply to injector
Enclosure	Aluminum Die-Cast Enclosure
Dimensions	10.7"x 9.7" x 3.5"
Weight	< 10 lbs.

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