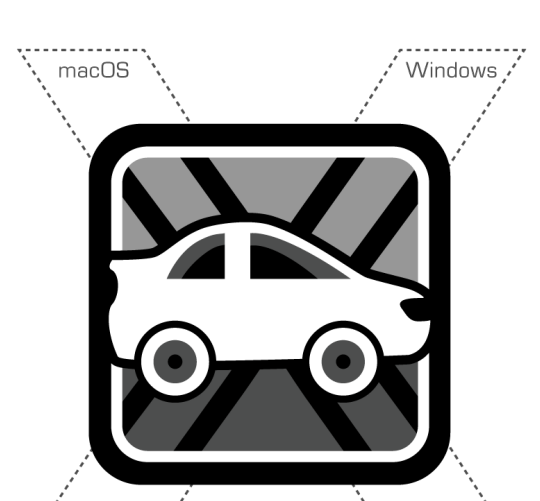
Vehicle Spy X

Cross Platform Vehicle Network Software for Automation, Python, AUTOSAR

The current landscape of automotive network engineering requires more than a PC based, closed tool chain. Automation of testing and validation, groups spread out over the world, and the advent of Python demands much more. Vehicle Spy X solves these central problems facing automotive network engineering.



Key Applications

- Test Automation
- AUTOSAR Restbus Simulation
- Virtual ECU Testing
- Protocol Conformance Testing
- Test Report Generation
- Python integration with your CI/CD system

Automate and Script Your Testing with Python

Instead of relying on proprietary scripting languages, Vehicle Spy X allows you to use any module within its core via scripting in Python. You can now leverage the power of Vehicle Spy X's core library of functions and pair it with all of your favorite Python code to minimize cost, maximize value, and maximize efficiency.

Cross Platform Support

Now you can work on Windows, Linux, macOS or embedded Linux platforms. You can even mix and match as needed. For example, operate a Monitor view on a macOS device while running Python scripts or using the Terminal View on a Windows computer, and perform testing using an embedded Linux device, all networked together. Vehicle Spy X can run on your embedded Linux autonomy platform, or your infotainment system to leverage the hardware that is already part of your vehicle!

INTREPID CONTROL SYSTEMS
www.intrepidcs.com

1850 Research Drive
Troy, MI 48083 USA
Phone: +1 (586) 731-7950
Fax: +1 (586) 731-2274

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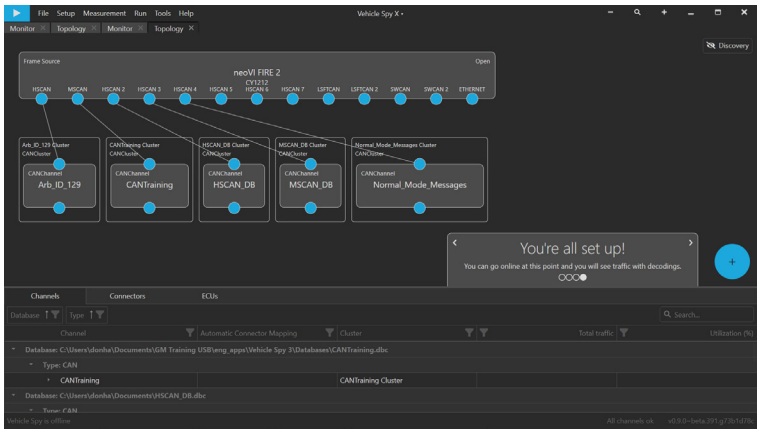
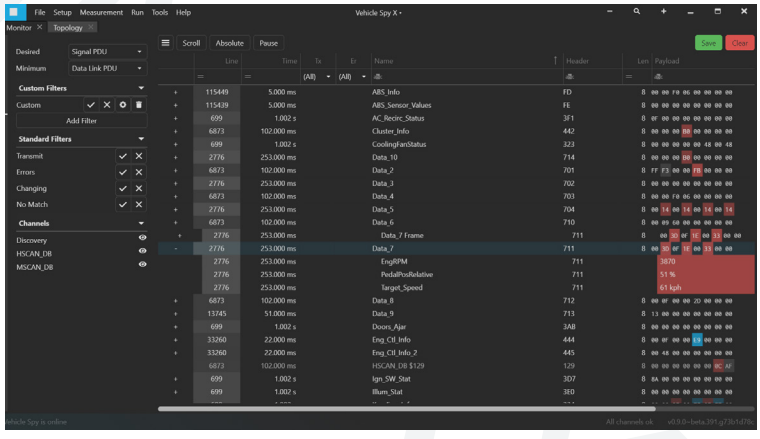
Topology View

The Topology View is a graphical representation of sources of network traffic, network databases that interpret the data, and the ECUs related to those databases.Sources of traffic are known as Frame Sources. Each Frame Source appears as a block. Database files will create blocks for each Network and ECU within the DBC or ARXML file. Connectors appear on each block so you can connect Frame Sources to the appropriate Database network and ECUs. You can even bridge channels from different Frame Sources to effectively create a gateway.



Monitor View

The Monitor View is more than a view of frames or messages. It's designed to be more concise and flexible for AUTOSAR and more complex data structures. You can show any PDU level as the top level, and you can filter for only the PDU layers of interest. This allows for clearer support of AUTOSAR, FlexRay and more elaborate data structures. It also allows you to focus only on the layers of interest to you. Of course, viewing messages in the same manner as the original Messages View is still possible with the Monitor View, which is the default. Activity Highlighting now also indicates whether values are increasing or decreasing by color, as well as whether the change is periodic or event-based.



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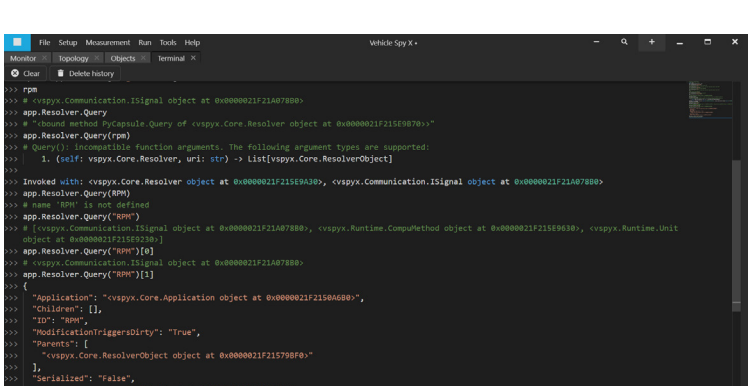
Terminal View

The Terminal View allows you to access all the features of Vehicle Spy through a terminal window, concurrently with all other views. This allows you to control and get data from Vehicle Spy X itself via a terminal window. This feature can be used remotely as well (eg: another computer in your bench area, or another user elsewhere in the world.) The Terminal has all the features of Visual Studio Code Editor. Powerful functions such as the Resolver and Trace allow you to assign a PDU to a variable, and to retrieve that PDU's information as needed.



Automation and Reporting

The current state of testing and development demands more and more automation. Vehicle Spy X is very well suited to run in headless environments, docker containers and cloud services. Vehicle Spy X's scripting can be used to automate tests, determine performance calculations, and gather metrics. With a very slight change to your script, you can run the tests automated or live for user review. Vehicle Spy X can also build automated reports to present your results. Vehicle Spy X can also integrate with your CI/CD server.

Contents

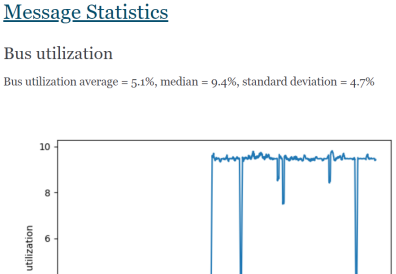
- Report
  - Message Statistics
  - ISO 15765-2:2016

Report

Message Statistics

Bus utilization

Bus utilization average = 5.1%, median = 9.4%, standard deviation = 4.7%



ISO 15765-2:2016

Errors

0 protocol errors (12 successful single frame transactions, 489 successful multi-frame transactions)

ST_{min}

Differential Statistics

Client	Server	Min	Max	Avg	Std. dev.
ECU1	ECU2	-547 µs	6.373 ms	2.623 ms	194 µs

Violations

1 ST_{min} violations

Client	Server	Requested	Observed	Time	CF line	Last CF/FC line	FC line
ECU1	ECU2	1 ms	453 µs	2019/11/01 17:21:23:290554	24992	24991	24944

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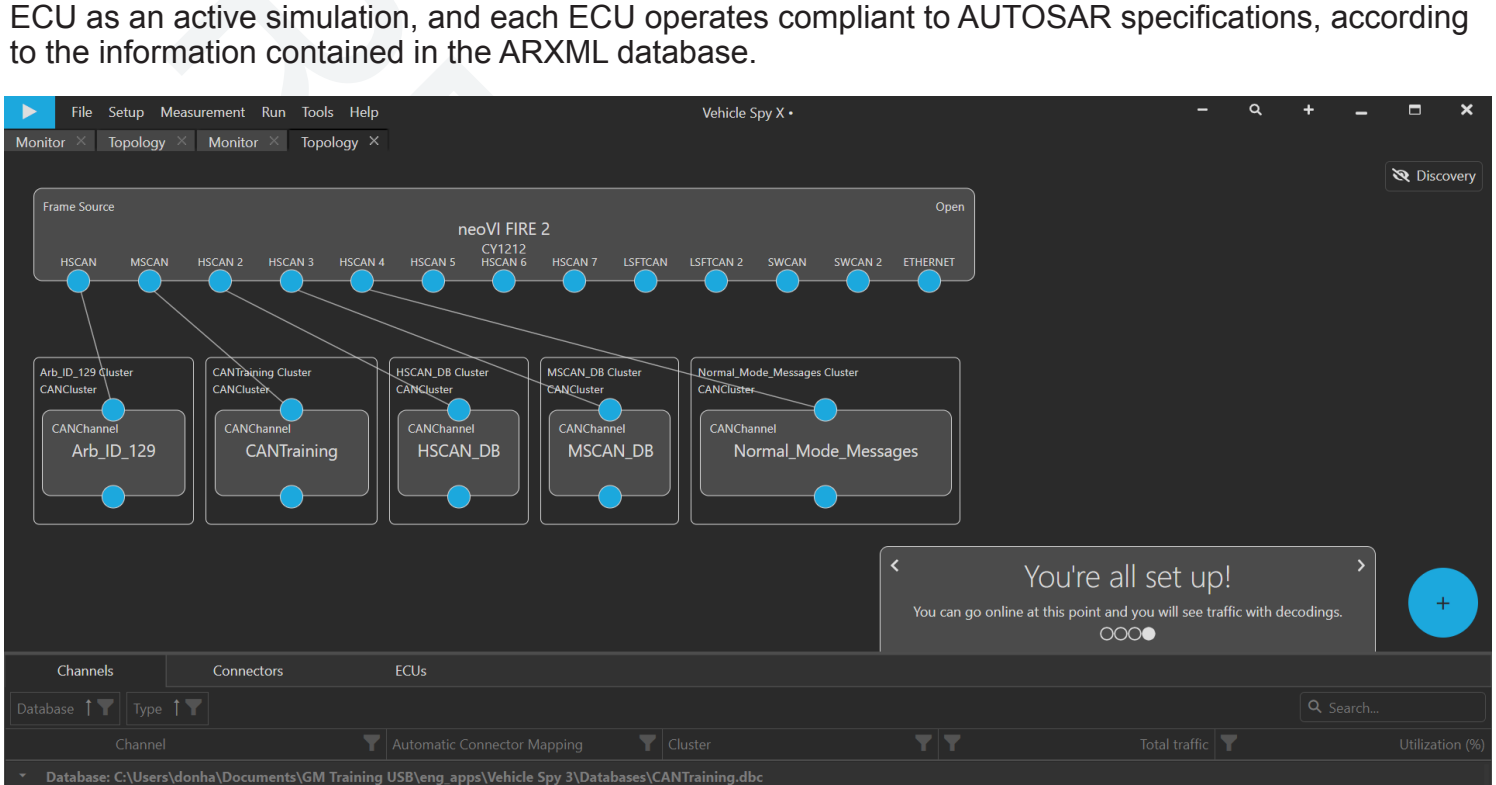
ECU Simulation (Restbus simulation) with AUTOSAR Support

Vehicle Spy X is built on a robust and complete AUTOSAR ECU Simulation Engine. This provides a faithful restbus simulation with AUTOSAR support. Simulation can take place entirely within the Vehicle Spy X environment, or using a Frame Source device such as an Intrepid neoVI.

The Topology View provides access to each ECU within the AUTOSAR clusters. You can enable each ECU as an active simulation, and each ECU operates compliant to AUTOSAR specifications, according to the information contained in the ARXML database.



AUTOSAR ARXML file loaded and ready for Restbussimulation. All ECUs are simulated., traffic using a bus capture (Simulation VSB) as the Frame Source.

You can choose your observation perspective, and change/monitor values in the Monitor as well as Terminal for live review and Python scripting. Vehicle Spy X can also be integrated into HIL/vHIL/XIL applications.

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Virtual ECU Testing

Vehicle Spy X's powerful scripting can also be used in functional testing and conformance testing of virtual ECUs, such as an ECU in a docker container. The tester can choose to interact at any layer of the OSI model, such as the network layer (eg: IP), transport layer (eg: ISO 15765-2, TCP/UDP) or the session layer (eg: ISO 14229 or ISO 13400). Leveraging Vehicle Spy X's scripting capabilities to perform functional testing, diagnostic stack conformance testing, and edge case and timing testing. Vehicle Spy X can also be used in conjunction with a virtual HIL (vHIL) environment as well.

Ordering Information

Vehicle Spy X is in its Advance Release Period. To order, please contact your Intrepid sales representative to make sure Vehicle Spy X is right for your application.

Part Number	Description
VSPYX-ENT	Vehicle Spy X Enterprise software license
VSPYX-PRO	Vehicle Spy X Professional software license
VSPYX-BASIC	Vehicle Spy X Basic software license

Specifications subject to change; please contact Intrepid for the latest information. All trademarks are the property of their respective owners.

Note: Vehicle Spy is supported by many vehicle interface hardware options. Please visit Intrepid's website for more information.

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