Valens Automotive: Taking Ultra-High-Speed In-Vehicle Connectivity to the Next Level with PCIe®

With an increasing number of devices in our connected cars – including cameras, sensors, radars, LiDARs and displays – the need for considerably higher bandwidth and better performance is around the corner. In-vehicle infrastructure is at a breaking point.

Valens Automotive is leading the market with innovative concepts, bringing the most resilient solution to in-vehicle connectivity, and delivering ultra-high speeds and more applications over a leaner infrastructure, with long-distance transmission of native PCIe.
Addressing the Challenges of In-Vehicle Connectivity

Valens’ resilient, long-distance PCIe connectivity solution enables a simplified backbone architecture, optimizing a range of applications, such as modems, shared storage and HPC connectivity. It brings:

- Configurable physical layer (PHY), supporting up to 16Gbps symmetric bandwidth, and superior performance
- Considerable savings on devices and BoM (e.g., a single central SSD can connect to several CPUs in the car)
- Ability to relocate devices in an optimal physical location for distributed compute power
- Additional features including dynamic power management, diagnostics, ability to handle electromagnetic interference, load balancing, and data link protection (encryption and authentication)

**Smart Antenna: Optimized TCU architecture**

- Multi-Gig PHY (4/8/16Gbps) for in-vehicle connectivity supporting multi-modem design (cellular (4G/5G), V2X (802.11P), internal WiFi modem, Bluetooth modem)
- Dynamic power management for low power consumption
- Lower cost by converging additional native interfaces over the same link

**Shared Storage: Central storage topology for reduced BoM**

- Storage of real-time sensor data for blackbox, multiple ECU access to the same SSD, and remote SSD deployment for easy-to-retrieve memory module
- High memory capacity for ADAS and infotainment data files
- In-vehicle virtualization for optimized resource sharing

**High Performance Computing: Seamless failover and redundancy**

- Near-zero latency (2-4 µsec), bi-directional multi-Gig connectivity
- Redundancy and modularity
- Increase in compute power
- Transactions at hardware level, no software processing required

For more information, visit [https://www.valens.com/automotive-solutions](https://www.valens.com/automotive-solutions), follow [@ValensAuto](https://twitter.com/ValensAuto), or contact us at info-auto@valens.com.

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