

COMMERCIAL VEHICLES

FOUNDATIONAL SOFTWARE SOLUTIONS FOR
TRUCKS, BUSES AND DELIVERY VANS



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Commercial vehicles—trucks, buses and delivery vans—must be cost efficient to build and maintain, and they must run reliably for decades. At the same time, software-defined designs and the drive toward autonomous vehicles lead to more complex and connected vehicle systems that make development, safety certification and cybersecurity more difficult and costly to achieve. To meet the challenge, next-generation commercial vehicles must be built on a software foundation designed for safety, cybersecurity and secure connectivity.

Software-defined systems enable both innovation and simplification in a rapidly changing commercial vehicle market. A common software foundation based on a microkernel operating system (OS) or hypervisor simplifies and accelerates development when used on ECUs throughout the vehicle—in systems as diverse as the digital cockpit, secure gateway, driver assistance, telematics, battery management, and emerging high-performance compute platforms. Safety certification and support are also paramount. OEMs need a software supplier with a proven record of helping customers to meet start of production (SOP) deadlines, streamline safety certification and strengthen security. Decades-long vehicle lifespans demand the selection of a software vendor that provides support at every stage of the software development life cycle (SDLC).

BlackBerry® QNX® helps commercial vehicle manufacturers to embrace the opportunities and minimize the risks presented by ever-changing technology. Our safe and secure embedded software solutions are trusted by top vehicle manufacturers, and we work closely with Tier 1 suppliers such as Aptiv, Bosch, Denso, Panasonic and Visteon as well as with silicon partners Intel, Qualcomm, Nvidia, NXP, Renesas, and Texas Instruments to deliver leading vehicle solutions globally.

9 OUT OF THE TOP 10
automotive
OEMs

290+
automotive
programs

Design wins in
24 OUT OF THE TOP 25
electric vehicle
OEMs

215+
million vehicles on
the road today

7 OUT OF THE TOP 7
automotive
Tier 1s

#1
vehicle
operating
system





WHY LEADING COMMERCIAL VEHICLE MANUFACTURERS CHOOSE BLACKBERRY QNX

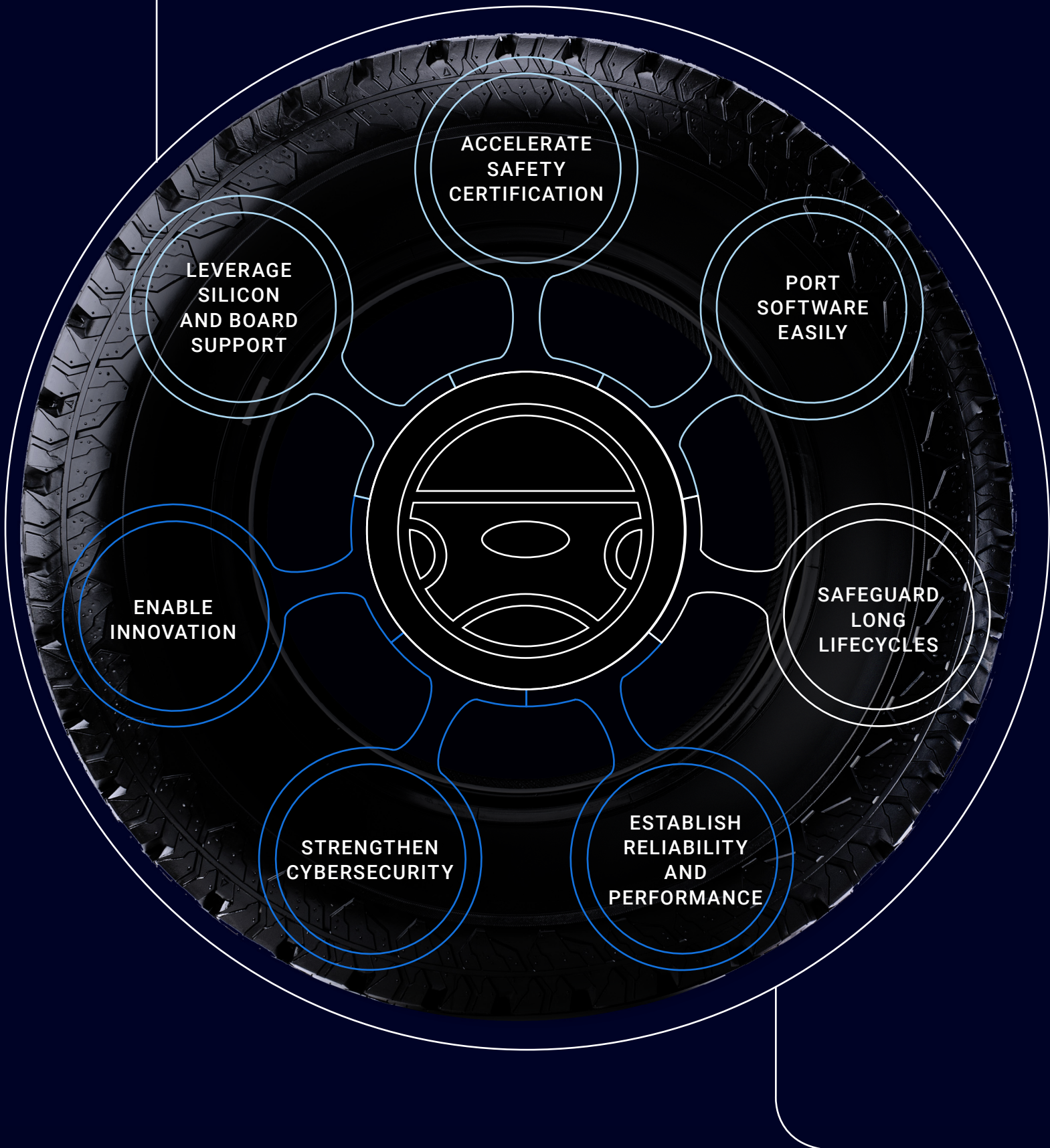
BlackBerry QNX helps commercial vehicle manufacturers and suppliers to overcome many challenges at once. The same QNX software foundation that enables companies to build in safety and cybersecurity also helps them to simplify safety certification, adapt legacy software, improve reliability, safeguard long product life cycles and enable innovation.

BlackBerry QNX solutions are standards based and offer proven development tools for building safety-critical and other vehicle systems. We pre-certify variants of our operating system and hypervisor to ISO 26262 ASIL D and provide certified solutions for safe communications and safe graphics, along with safe system libraries and middleware. Our software is backed by decades of trusted professional services.

“Using a single OS and hypervisor for high-performance systems in the truck delivers huge economical and technical benefits to our operations and enables us to bring customer value to market faster and more efficiently.”

—Mikael Adelsberg, SVP of Connected,
Autonomous and Embedded Systems at Scania





ACCELERATE SAFETY CERTIFICATION

When you use a pre-certified foundation, you need certify only what you build, not the operating system you build it on. Certified to ISO 26262 ASIL D by TÜV Rheinland, the QNX® OS for Safety, QNX® Hypervisor for Safety and QNX® Black Channel Communications Technology enable your company to focus time and talent on its own value-added components and applications. Even the C and C++ toolchains are qualified to IEC 61508 and ISO 26262, and pre-certified C and C++ libraries are also available.

PORT SOFTWARE EASILY

BlackBerry QNX products are POSIX compliant, so they make it easy to port from Linux or another OS without a lot of recoding, and QNX supports the AUTOSAR Adaptive standard, too. Developers ramp up quickly on the QNX® Software Development Platform (SDP), as it looks and feels like Linux and uses the industry-standard Eclipse development environment, GNU compiler collection (gcc) and APIs (e.g., PSE54, OpenGL® ES). Plus, BlackBerry QNX offers engineering services and board support packages (BSPs) for the most current automotive and industrial-qualified system-on-a-chips (SoCs) to streamline your development.

The use of trusted software that seamlessly scales from single core to multicore to high-performance compute platforms ensures portability and design flexibility. In addition, the QNX Hypervisor and the QNX Hypervisor for Safety isolate entire systems as guests in virtual machines, so you can port legacy code and implement new features with confidence that the new code won't affect other systems.

SAFEGUARD LONG LIFECYCLES

Commercial vehicle owners need customer support and service for many years after the start of production. BlackBerry QNX supports customers throughout the production life cycle and provides ongoing support for as long as needed. BlackBerry QNX experts can help with any version of QNX OS and provide unmatched support for all our products over the lifetime of your products.

ESTABLISH RELIABILITY AND PERFORMANCE

Highly available, robust software systems for vehicles require a fail-proof foundation. The QNX Neutrino® RTOS and the QNX® Hypervisor help commercial vehicle OEMs develop robust, reliable systems. The QNX microkernel architecture provides the real-time behavior and comprehensive separation and isolation needed for critical systems. All QNX RTOS services run outside of kernel space, facilitating high-availability, fault-tolerant designs. The QNX Hypervisor uses a priority-based virtual CPU (vCPU) sharing model with adaptive partitioning to control the allocation of processing power among competing virtual machines, ensuring that compute time is always available for the needs of complex, high-performance vehicle systems.

STRENGTHEN CYBERSECURITY

A cybersecurity breach can put drivers, passengers and the public at risk. Building and maintaining a secure system requires a reliable and secure OS, secure over-the-air (OTA) software updates, a secure supply chain and managed public key infrastructure (PKI) authentication.

BlackBerry QNX solutions provide a layered approach to security that won't hamper functionality or performance. The QNX Neutrino RTOS reduces the attack surface by running services outside of the kernel space and provides granular control of system privilege levels, an AES-256 encrypted and self-verifying file system and secure boot. QNX Black Channel Communications Technology helps ensure safe data communication over unsafe links (e.g., UDP, TCP, CAN). BlackBerry Jarvis™, our software composition analysis solution, can help you uncover and remediate software vulnerabilities in components from across your complex supply chain. BlackBerry also provides a secure over-the-air (OTA) software update solution, managed PKI authentication and FIPS (Federal Information Processing Standards) so that developers have the essential building blocks to create secure embedded systems.

ENABLE INNOVATION

Vehicle manufacturers have critical data access, collection and management challenges. The wide variety of vehicle sensors with unique data formats require highly specialized skills to develop vehicle software and to access and interact with vehicle data, especially data contained in vehicle safety-critical subsystems. BlackBerry IVY™ brings together BlackBerry QNX and AWS technologies to deliver an edge-first, scalable, cloud-connected software platform that enables vehicle manufacturers to create personalized driver and passenger experiences and improve operations of connected vehicles.

SILICON AND BOARD SUPPORT

BlackBerry QNX also helps customers streamline development timelines through its deep, optimized integration for SoCs and reference hardware platforms, delivered as [board support packages](#) (BSPs), as well as through its professional services, including safety and security services. QNX BSPs provide an abstraction layer of hardware-specific software that facilitates the implementation of the QNX Neutrino RTOS on a given board. The extensive QNX BSP library includes BSPs for SoCs and reference hardware platforms manufactured by leading hardware manufacturers. In addition, the QNX Neutrino RTOS supports a wide selection of Arm® and x86 GPUs.

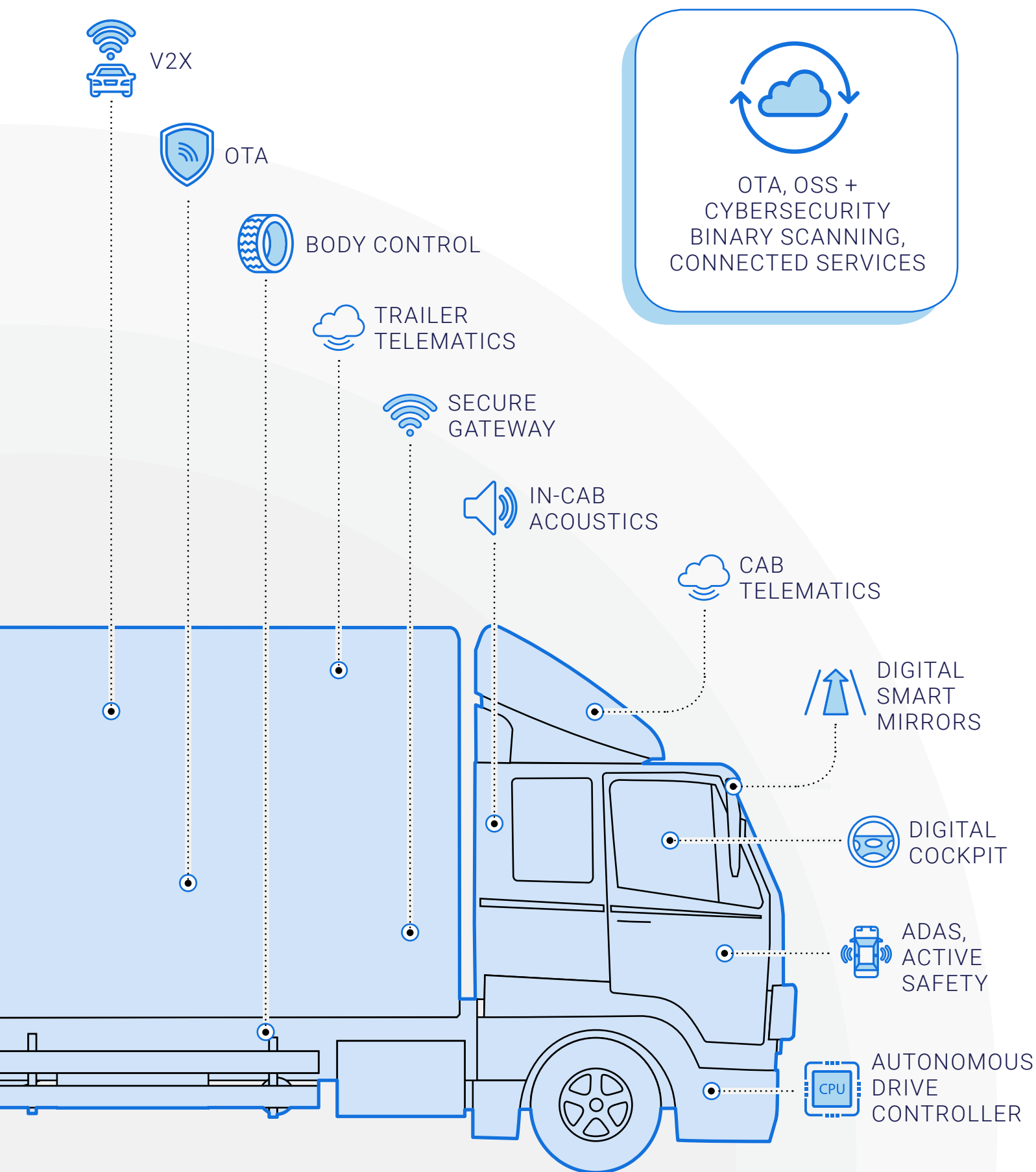
SOFTWARE SOLUTIONS FOR COMMERCIAL VEHICLES

BlackBerry QNX solutions are designed with a focus on the safety, security and real-time determinism needed for the next generation of trucks, buses and delivery vans. For more than 40 years, the BlackBerry QNX microkernel operating system has provided the foundation for hundreds of millions of critical systems deployed in more than 215 million passenger vehicles and a growing number of commercial vehicles.

Commercial vehicle OEMs and suppliers globally choose BlackBerry QNX software, support and services to reduce time to market and development costs. We have the expertise to provide the software, support and professional services you need to deliver safe, secure and reliable systems faster for the whole vehicle.

“BlackBerry QNX is a true partner and has provided us with the foundation we need to produce the safe and secure vehicles of tomorrow. BlackBerry is well aligned with the automotive challenges within electrification, automation and connectivity and the technical solutions needed in these domains.”

—Mark Mohr, SVP Vehicle Technology at Volvo Group





ADAS AND AUTOMATED DRIVE

When it comes to the driving functions of the vehicle, safety is the top priority. Vehicle software must process data from sensors such as cameras, LiDAR and radar in real time to make safe decisions on the control of the vehicle. BlackBerry QNX powers advanced driver assistance systems (ADAS) with an OS certified to ISO 26262 ASIL D, as well as frameworks and middleware to enable automated drive features. BlackBerry QNX leads the way in ADAS and other advanced automotive technologies with initiatives like the BlackBerry QNX Autonomous Vehicle Innovation Centre (AVIC), a catalyst for the private, public and academic sectors to collaborate on innovations in connected, automated and autonomous vehicles.

Related Products: QNX OS for Safety, QNX Hypervisor for Safety, QNX® Sensor Framework



DIGITAL COCKPIT

Today's digital cockpits seamlessly integrate instrument clusters, infotainment and telematics features, putting all of the vehicle's critical information in front of the driver in a well-orchestrated interface. BlackBerry QNX enables digital cockpits that integrate multiple in-car systems while separating safety-critical systems from non-safety critical systems. BlackBerry QNX has been selected to deliver some of the most innovative experiences for trucks and buses by industry-leading manufacturers including Scania and Volvo Trucks.

Related Products: QNX Hypervisor, QNX Hypervisor for Safety, QNX® Advanced Virtualization Frameworks, QNX® Acoustics Management Platform, QNX® Sensor Framework, QNX® Multimedia Suite, QNX® Speech Framework, QNX® SDK for Smartphone Connectivity



TELEMATICS

BlackBerry provides the foundation for reliable and secure communication for applications like fleet and asset management. We provide the foundation for platforms that enable telematics capabilities today and into the future.

Related Products: QNX Neutrino RTOS



IN-CAB ACOUSTICS

Vehicle acoustics encompass a range of in-cabin sound features that need to be managed. The QNX Acoustics Management Platform (AMP) was developed to enable automakers to design and manage the total sonic experience in their vehicles. It offers a pure software solution designed to run on general-purpose application processor cores – saving bill-of-material costs and shortening time to production. The solution delivers uncompromising sound quality, noise and echo cancellation, in-car communication, handsfree communication, tuning tools, engine sound enhancement and external pedestrian alert solutions.

Related Products: QNX Acoustics Management Platform



SECURE GATEWAY

Secure gateways are critical for functions that require access to an outside network, for example, telematics functions that need to connect with infrastructure or software updates via OTA. BlackBerry QNX provides a foundational real-time operating system and secure solutions that enable you to build secure automotive gateways to protect vehicles from outside cyberattacks.

Related Products: QNX Neutrino RTOS, Certicom® Managed Public Key Infrastructure (PKI) Service, BlackBerry QNX OTA

Note: Ask us about firewall integration



DIGITAL SMART MIRRORS

Smart mirrors enhance visibility around the vehicle to help drivers maneuver through tight spots and can minimize rear-view blind spots. Commercial vehicle drivers need to trust their mirrors, so safety and reliability are paramount. BlackBerry QNX provides a foundation for safe, reliable camera monitoring systems with the ASIL certification using the QNX OS for Safety, safe communications and other certified software components. The QNX Sensor Framework provides low-latency camera and sensor input, enhancing the foundation for smart mirrors.

Related Products: QNX OS for Safety, QNX® Sensor Framework



OVER-THE-AIR (OTA) SOFTWARE UPDATES

BlackBerry provides a proven, reliable and secure OTA software update solution to support software updates and enable preventive software maintenance over the lifetime of a vehicle.

Related Products: BlackBerry QNX OTA



V2X

Vehicle-to-everything (V2X) is technology that enables vehicles to communicate with surrounding vehicles and external infrastructure. BlackBerry® Certicom® Security Credential Management System (SCMS) services for securing vehicle-to-vehicle and vehicle-to-everything (V2X) communication are based on industry technology standards. The SCMS platform is built to IEEE 1609.2 and CAMP specifications, and offers trusted security credentials to vehicle OEMs, Tier 1s, road operators and specialty service vehicles.

Related Products: QNX Neutrino RTOS, BlackBerry Certicom Security Credential Management System (SCMS)



TRAILER TELEMATICS

The transportation and logistics industries are constantly faced with solving issues associated with increasing vehicle utilization, saving driver time, identifying theft or unauthorized use, and improving maintenance scheduling. BlackBerry® Radar® is a data-driven asset monitoring device that helps automate operations and improve utilization of trailers, containers, chassis and other remote assets, while ensuring assets are safe and secure. The solution provides near real-time information such as vehicle location, route and mileage, temperature, humidity, door status and cargo load state—all presented in an intuitive on-line dashboard to make logistics operations more efficient.

Related Products: BlackBerry Radar H2, BlackBerry Radar R2



HIGH-PERFORMANCE CONTROLLERS

In response to the massive amount of compute power demanded by today's critical systems, BlackBerry QNX provides the foundational software that enables the consolidation of several discrete ECUs into a centralized high-performance domain controller. This allows for virtualization of automotive operating systems and the safe consolidation of functions in domains such as powertrain systems and body controllers.

Related Products: QNX Neutrino RTOS, QNX Hypervisor, QNX Hypervisor for Safety, QNX OS for Safety



SUPPORT & SERVICES

BlackBerry QNX is your partner throughout the vehicle lifespan. We offer a range of services to help you reach your goals faster. The BlackBerry QNX services teams have deep knowledge of embedded systems, functional safety and security—and a 100 percent success rate in achieving safety certifications with our customers. We also have a 100 percent success rate meeting customer start of production deadlines for all types of systems, whether safety critical or not.

At BlackBerry QNX, we back up our products with top-quality support, best-in-class documentation and expertise from the developers and engineers who built the QNX products you use. Whether you want help with staff augmentation, kickstarting a project or certifying products, our embedded systems development and OS experts can provide the right knowledge and experience at the right time.



PROVEN EXPERIENCE

Thousands of person-years in development, support, integration



SERVICE EXCELLENCE

100% success at meeting OEM start of production (SOP) deadlines



INTEGRATION & OPTIMIZATION

High-performance software for custom hardware, delivered when you need it



DEEP EXPERTISE

Experts in all areas of in-vehicle embedded device software



GLOBAL FOOTPRINT

Regional experienced teams in North America, EMEA, APAC



COMMITMENT

Dedicated, dependable, trusted staff

SAFETY AND SECURITY SERVICES

The BlackBerry QNX safety and security services teams possess deep knowledge of functional safety and security, and a 100% success rate in achieving safety certifications with our customers. With a legacy in security, BlackBerry has the expertise you need to secure both systems and supply chains.

PROFESSIONAL SERVICES

The BlackBerry QNX global professional services teams help bring safe, secure and reliable products to market on time, on budget and with quality. With a 40-year proven track record, full-stack expertise and flexible engagement models, we can fit our expertise to your needs, including custom development.

TRAINING

BlackBerry QNX offers courses customized for your project on functional safety and embedded design. All QNX training courses are hands-on and instructor-led and use real-world examples to give your development team the grounding needed in BlackBerry QNX.

SUPPORT AND MAINTENANCE

BlackBerry QNX provides unmatched support, including support packages and services that span the entire life cycle of systems built with QNX solutions, a managed product life cycle with regular updates and fixes, and technical advice from developers, engineers and architects.



SOFTWARE AT-A-GLANCE

FOUNDATION PRODUCTS

QNX Neutrino Real-Time Operating System	This deterministic, flexible foundation for your next-generation products has a unique microkernel architecture that provides scalability, dependability and layered security features.
QNX Hypervisor	This embedded virtualization solution with a microkernel architecture enables multiple OSs (QNX, Android, Linux) to operate safely on the same system-on-a-chip (SoC).
QNX Software Development Platform	The power of QNX Neutrino RTOS plus the QNX Momentics® Tool Suite provides a POSIX-compliant, Linux-like development platform.

SAFETY-CERTIFIED PRODUCTS

QNX OS for Safety	Built on the same microkernel architecture as the QNX Neutrino RTOS, the QNX OS for Safety is pre-certified to ISO 26262 ASIL D and to IEC 61508 SIL 3. QNX OS for Safety enables you to easily port Linux-based prototypes to the QNX real-time OS (RTOS) and get all the documentation and support you need for certification.
QNX Hypervisor for Safety	This real-time microkernel hypervisor provides the reliability and performance of the QNX RTOS and enables multiple OSs to operate safely in isolation and in parallel on the same SoC. It is the first embedded hypervisor pre-certified to ISO 26262 ASIL D and to IEC 61508 SIL 3.
QNX Black Channel Communications Technology	Certified to ISO 26262 ASIL D, QNX Black Channel Communications Technology helps provide safe and verified data communications for embedded systems. The technology is based on the safe data communication requirements identified in IEC 61508 and mitigation measures defined in AUTOSAR End-to-End (E2E) communication protection profiles.

SECURITY SOLUTIONS


BlackBerry Jarvis	This cloud-based software composition analysis solution blends system exploration technology and expert services to provide powerful capabilities for examining a complete software product for security vulnerabilities and software craftsmanship.
BlackBerry QNX Over the Air	This customized remote software update solution addresses the complex requirements of embedded system manufacturers. It can be tailored to seamlessly and securely update and manage endpoints on a variety of embedded systems.

BlackBerry Radar	BlackBerry Radar is a complete asset tracking solution providing reliable visibility to trailer, chassis, containers and equipment.
BlackBerry Certicom Solutions	BlackBerry Certicom solutions provide device security, anti-counterfeiting and product authentication to deliver end-to-end security with managed public key infrastructure, code signing and other applied cryptography and key management solutions.
AUTOMOTIVE SOFTWARE	
BlackBerry IVY	BlackBerry IVY brings together BlackBerry QNX and AWS technologies to deliver a scalable, cloud-connected software platform that enables vehicle manufacturers to create personalized driver and passenger experiences and improve operations of connected vehicles.
QNX Acoustics Management Platform (AMP)	Designed to run on general-purpose application processor cores for cost-effective high-fidelity sound, QNX AMP enables vehicle manufacturers to design and manage the total vehicle sonic experience with a pure software solution.
QNX Advanced Virtualization Frameworks	These industry-standard, hardware-independent frameworks enable guest OSs to share hardware and software services such as graphic displays, acoustic environments, touchscreens, media storage devices, video streams and cameras. The frameworks also extend the capabilities of the QNX Hypervisor.
QNX Sensor Framework	This framework enables developers to integrate sensor feeds from diverse sources (e.g., camera, radar, LiDAR, IMU, GPS sensors) into safety-critical embedded systems, including autonomous driving applications.
QNX Multimedia Suite	This suite of products enables developers to easily implement media capabilities including playback and recording of rich audio and video content in embedded systems.
QNX Graphics Framework	This mature and advanced graphics framework simplifies the creation of interactive user experiences by providing developers all the functionality required to work with industry standards for UI development.
QNX Speech Framework	Designed to ease and accelerate the development of voice-controlled embedded systems, this framework abstracts the complexities of speech recognizers and natural language processing engines from the OS platform and applications.
QNX SDK for Smartphone Connectivity	This SDK enables developers to integrate industry-standard mobile phone protocols for mirroring mobile content to the vehicle's dashboard display. This offering includes solutions for Apple CarPlay and Android Auto.

ABOUT BLACKBERRY QNX

BlackBerry QNX is a trusted supplier of safe and secure operating systems, hypervisors, frameworks and development tools and provides expert support and services for building the world's most critical embedded systems. The company's technology is trusted in more than 215 million vehicles and is deployed in embedded systems around the world across a range of industries including automotive, medical devices, industrial controls, transportation, heavy machinery and robotics. Founded in 1980, BlackBerry QNX is headquartered in Ottawa, Canada, and was acquired by BlackBerry in 2010.

BlackBerry QNX software and development tools are standards based and enable companies to adopt a scalable software platform strategy across product lines and business units. The BlackBerry QNX software portfolio, including safety pre-certified products, is purpose built for embedded systems and scales from single-purpose devices to highly complex systems of mixed criticality. Because we are successful only when you are, you can rely on our support and professional services teams to provide the expertise you need, when you need it —throughout the entire product development life cycle.



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