PRESS INFORMATION

Bosch Rexroth introduces new features to the operating system ctrlX OS: virtualization, three variants and new functions

Manuela Kessler | 07.10.2025 | Lohr am Main / Germany | PI 044/25

- Virtualized version of ctrlX OS removes boundaries between OT and IT
- Open operating system now available in three versions for different individual requirements
- LTS version 3.6 includes new functions for networking, ease of use, diagnostics
- High level of security: secure by design, TÜV certified, CRA-ready

The Linux-based operating system ctrlX OS offers numerous innovations. (Image source: Bosch Rexroth AG)

Bosch Rexroth is rapidly evolving its open, Linux-based operating system ctrlX OS. With a virtualized solution, three tailor-made variants and a new Long Term Support (LTS) release, Bosch Rexroth is responding to the increasing requirements of industrial automation. The aim is to achieve greater flexibility, seamless integration between operational technology (OT) and IT, and high levels of security. ctrlX OS already meets the key requirements of the Cyber Resilience Act (CRA).

ctrlX OS is hardware-independent and creates an end-to-end software base for automation solutions of all kinds. The Linux-based operating system runs on a wide range of devices, from the field level to the cloud. With app technology based on the smartphone principle and standardized interfaces, automation solutions can be flexibly designed and quickly adapted, without dependence on proprietary systems.

Applications can be easily added through the ctrlX OS Store, where Bosch Rexroth and its partners from ctrlX World provide numerous apps for a wide range of automation challenges: from motion and communication to data analysis and IT and OT security.

“The market penetration of ctrlX OS is growing. More and more OEMs are integrating the open operating system into their hardware to create innovative solutions for their markets. At the same time, the partner network ctrlX World is constantly growing and evolving. This is made possible by the open and modular architecture of ctrlX OS. Partners bring additional software to the ctrlX OS Store and expand the range with compatible hardware. Now, we are taking the next steps,” explains Steffen Winkler, Senior Vice President Sales, Business Unit Automation & Electrification Solutions at Bosch Rexroth.

Virtualization removes boundaries between IT and OT

In addition to flexibility in device selection, the location issue is also gaining in importance: nowadays, applications need to run where it is strategically and technically optimal – be this in a control system, on an edge device or in the cloud. ctrlX OS is now also available as a virtual machine, which customers can host on their own server infrastructure. Interfaces, data models and apps remain identical to the physical version. Companies benefit from the full range of services with more efficient resource utilization, flexible scalability and simplified administration through established IT processes.
“With the virtualization of ctrlX OS, we are breaking down the last silos between machine control and IT,” says Winkler. “We offer seamless continuity. Customers now have the flexibility to run their applications where it makes the most sense – in a control system for demanding real-time requirements, and on an edge device or server for non-real-time critical requirements. This is a decisive step toward a fully networked and software-driven factory.”

Three ctrlX OS variants for individual requirements

Bosch Rexroth now offers ctrlX OS in three versions, each addressing different needs – from a turnkey solution to tailor-made systems. With all versions, users benefit from the open approach and access to the ecosystem with open interfaces, a freely available Software Development Kit (SDK), the Community and central device management.
The standard version is aimed at companies looking for a quick start: a ready-made system image for standard x86/64 hardware with direct access to the ecosystem. This is the fastest way to use ctrlX OS on a wide range of commercial devices.
The customized version gives customers the possibility of deep technical adaptation at the kernel level, which allows specific hardware drivers to be integrated, for example. This enables companies to continue to use their existing hardware, reduce their need for maintenance work and increase security.
The premium version allows deep customization across the entire operating system and the digital infrastructure behind it – right through to branding and custom user guidance for comprehensive product integrations. This variant is ideal for partners who want to put ctrlX OS at the heart of their own solutions.

LTS 3.6: Improvements at system level

To ensure long-term stability and maintainability, Bosch Rexroth periodically releases LTS versions with targeted enhancements. Among other things, the new LTS release ctrlX OS 3.6 enables the integration of network drives to incorporate storage locations of other computers or servers in ctrlX OS and ensures easy access to external media such as USB sticks or SD cards.
A new Partition Manager provides efficient storage management. Other new features include support for redundancy protocols to ensure high-availability networks and the detailed analysis of network traffic at Transmission Control Protocol level.

Security at every level

Due to increasing networking, security has become a fundamental requirement in automation. This is also underlined by new legal regulations such as the Cyber Resilience Act (CRA). ctrlX OS is optimally prepared for the requirements of the CRA, developed in line with secure-by-design and secure-by-default principles, and meets the requirements of IEC 62443-4-2 Security Level 2 with certification from TÜV Rheinland.
“With ctrlX OS, Bosch Rexroth is already prepared for the regulations of the CRA. By the end of 2027, all products from the world of our automation system ctrlX AUTOMATION will be aligned with the criteria. Our customers can therefore be confident that our solutions will keep them fit for the future,” says Winkler.

Basic Information Bosch Rexroth

As one of the world’s leading suppliers of drive and control technologies, Bosch Rexroth ensures efficient, powerful and safe movement in machines and systems of any size. The company bundles global application experience in the market segments of Mobile and Industrial Applications as well as Factory Automation. With its intelligent components, customized system solutions, engineering and services, Bosch Rexroth is creating the necessary environment for fully connected applications. Bosch Rexroth offers its customers hydraulics, electric drive and

control technology, gear technology and linear motion and assembly technology, including software and interfaces to the Internet of Things. With locations in over 80 countries, around 32,600 associates generated sales revenue of 6.5 billion euros in 2024.

Basic Information Bosch

The Bosch Group is a leading global supplier of technology and services. It employs roughly 418,000 associates worldwide (as of December 31, 2024). The company generated sales of 90.3 billion euros in 2024. Its operations are divided into four business sectors: Mobility, Industrial Technology, Consumer Goods, and Energy and Building Technology. With its business activities, the company aims to use technology to help shape universal trends such as automation, electrification, digitalization, connectivity, and an orientation to sustainability. In this context, Bosch's broad diversification across regions and industries strengthens its innovativeness and robustness. Bosch uses its proven expertise in sensor technology, software, and services to offer customers cross-domain solutions from a single source. It also applies its expertise in connectivity and artificial intelligence in order to develop and manufacture user-friendly, sustainable products. With technology that is "Invented for life," Bosch wants to help improve quality of life and conserve natural resources. The Bosch Group comprises Robert Bosch GmbH and its roughly 490 subsidiary and regional companies in over 60 countries. Including sales and service partners, Bosch's global manufacturing, engineering, and sales network covers nearly every country in the world. Bosch's innovative strength is key to the company's further development. At 136 locations across the globe, Bosch employs some 87,000 associates in research and development.

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