WNDRVR Studio

DEPLOY: DEVICE SOFTWARE

UTILIZING A VIRTUALIZED PLATFORM TO LEVERAGE LEGACY INVESTMENTS

THE CHALLENGE

Government subsidies for Internet Protocol standardization and increasing use of artificial intelligence are boosting the adoption of intelligent devices for reliable and secure movement of data in the manufacturing sector.

A company making smart routers is trying to expand its market share by building a compact, rugged, industrial-grade router with triple-band connectivity, OPC UA protocol support, and backup LTE support to ensure high availability and quality of service (QoS) with guaranteed uptime of a least six nines. These routers will power the data exchange between sensors and aggregators operating in environmental conditions that are crucial to ensuring quality.

To minimize costs, the company wants to use its main differentiator, the user interface already deployed in existing products, which is based on a version of Linux with preempt-rt patches and achieves a latency of less than 80 ms.

However, to achieve six-nines uptime, high throughput, and a reduced latency time of less than 10 ms, additional optimizations such as Linux kernel virtual memory management on non-uniform memory access (NUMA) or CPU partitioning are required at the operating system level. Investing in a certified real-time operating system (RTOS) will address all performance-related requirements, but migrating or reimplementing the user interface is cumbersome and costly.

THE SOLUTION

Using Wind River® Studio integrated runtimes, the team can leverage the Wind River Helix™ Virtualization Platform Type 1 hypervisor with VxWorks® and Wind River Linux running side by side. To achieve the desired performance, the team can build on the deterministic, priority-based, preemptive RTOS runtime with low latency and minimal jitter. Existing Linux assets can be easily migrated to Wind River Linux and run in a separate partition, next to the RTOS environment.

THE RESULTS

The solution is achieving the desired performance and implementation of OPC UA, and the device is passing the extensive testing and validation process of the IEC 61508 certification authority. The new certified solution allows the company to expand its addressable market and demand a premium price, without compromising its existing, well-established, and popular Linux-based user experience.

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