

Moxa Industrial Linux

Moxa's Debian-based optimized OS to accelerate development, enhance security, and lower TCO



Features and Benefits

- Debian-based OS for effortless migration of Ubuntu and Raspberry Pi applications
- MIL-powered IPCs deliver up to 1.5 times higher operational efficiency
- Simplifies I/O and network configurations and update management
- Maximizes uptime and reliability with robust dual file system design
- 10-year long-term support to lower total cost of operations (TCO)
- Compliance with IEC 62443-4-2 Security Level 2 requirements

Introduction

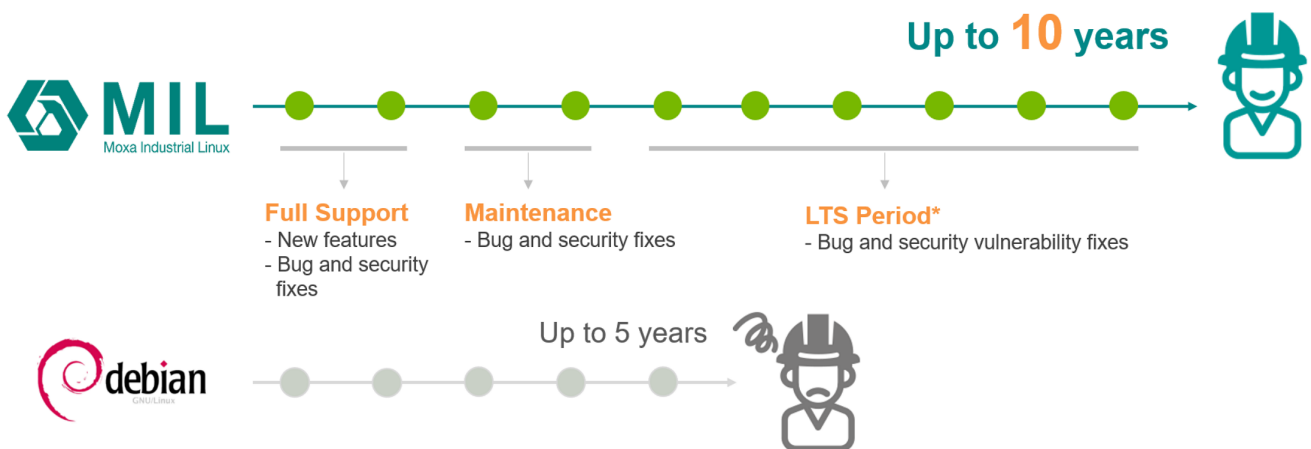
Moxa Industrial Linux (MIL) is a high-performance, industrial-grade Linux distribution developed by Moxa to accelerate the deployment of industrial projects. Based on standard Debian for smooth application development and migration, MIL is purpose-built for Moxa hardware integration to maximize performance and extend system longevity. MIL enables Moxa IPCs running it to be up to 1.5 X better operational efficiency compared with IPCs running third-party OSes. The MIL Secure platform's compliance with IEC 62443-4-2 Security Level 2 requirements and alignment with EN 18031 (RED-DA) wireless cybersecurity requirements reduce security development and validation timelines by up to 6 months.

To address long-term system needs, MIL comes with 10-year Linux support that includes security patches and bug fixes. This 10-year life cycle, which is double the standard 5-year Debian support, is included at no extra subscription cost, significantly lowering your total cost of ownership (TCO). Moxa is also a member of The Linux Foundation® and its Civil Infrastructure Platform (CIP) project to ensure your projects are secure, reliable, and sustainable.

10-year Long-term Support

Moxa Industrial Linux allows users to keep the same kernel version and Debian user space without having to frequently upgrade the entire system. In addition, subscription services for Moxa Industrial Linux, throughout its 10-year life cycle, provide security updates and bug fixes that include:

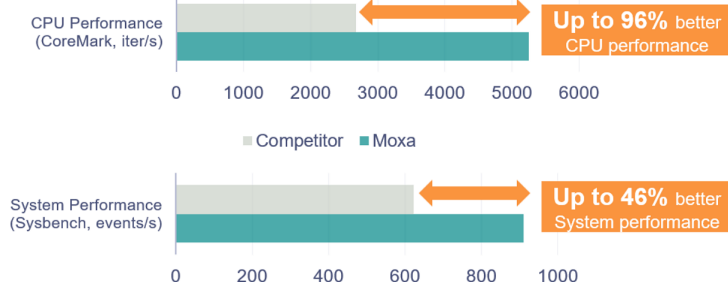
- Critical security patches
- High-priority bug fixes



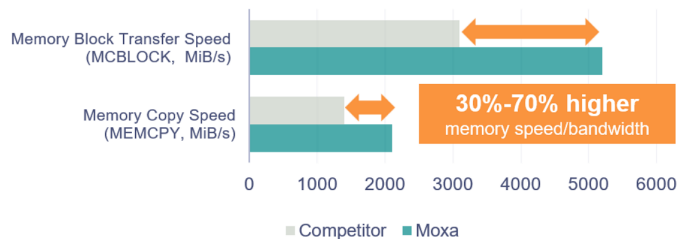
Optimized Debian Performance

MIL combines proven stability, performance, and a comprehensive Debian package repository with Moxa's deep hardware-software optimization. This vertical integration delivers better system and CPU performance as compared with generic OS distributions, delivering both open-source flexibility and industrial-grade power.

CPU/System Benchmark Comparison



Memory Benchmark Comparison

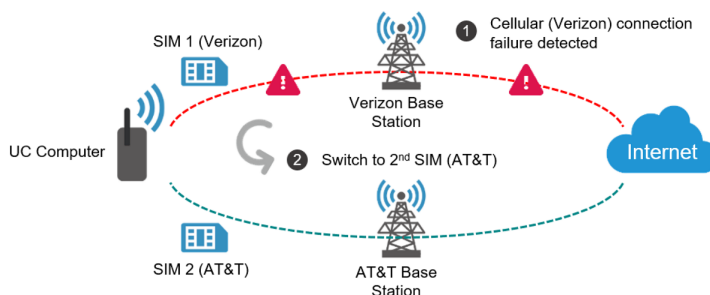


Reliable Network

MIL comes with built-in network connection keep alive with failover in the Moxa Connection Manager (MCM) tool.

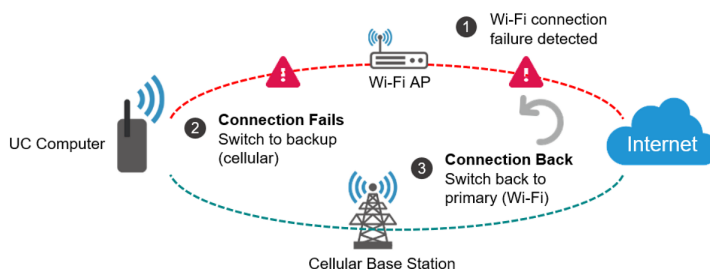
Failover Between Profiles (e.g., SIM)

Create multiple profiles for a network interface and MCM will automatically failover according to the profile priority settings



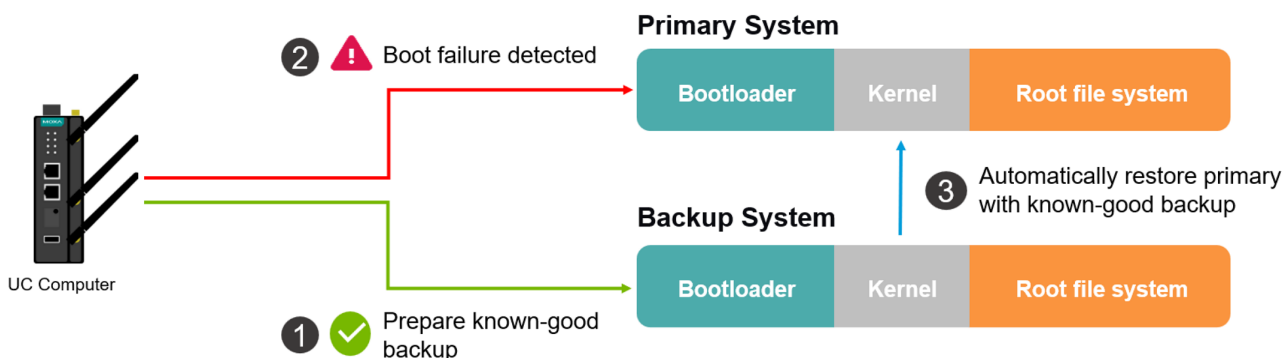
Failover/Failback Between Interfaces (e.g., Wi-Fi, Cellular)

Configure multiple backup interfaces (Ethernet, Wi-Fi, and cellular) and MCM will automatically failover according to the interface priority settings when there is a connection issue and failback after the connection is restored.



Dual File System With Automatic Failback

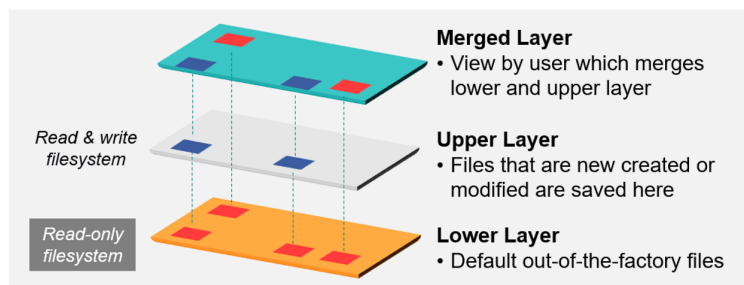
MIL comes with automatic system failback that restores the system to the last known secure working state in the event of a system failure to boot due to a power outage during a critical update or due to an unauthorized change to a critical software that causes Secure Boot to fail.



Robust File System

The robust file system integrated into Moxa Industrial Linux provides extra protection during firmware upgrades and downgrades with:

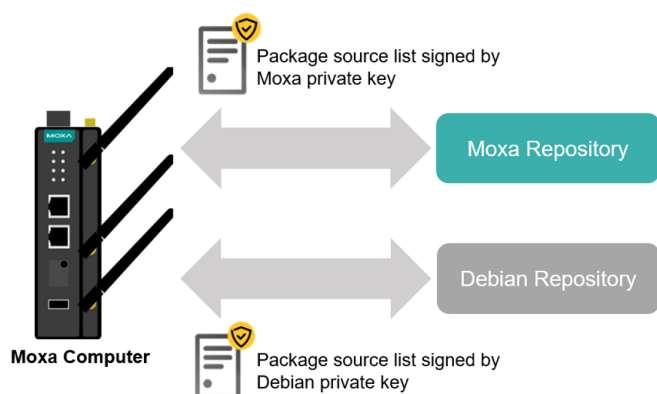
- Guaranteed system operation when there are power losses during firmware upgrades/downgrades
- Fast and secure reset-to-default function built into the system



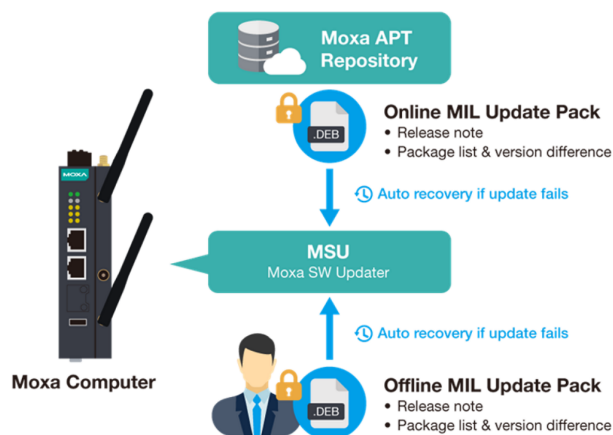
Flexible and Secure Software Updates

- Secure APT updates: MIL supports secure over-the-air package updates via APT. Package sources are verified using GPG signatures from Moxa and Debian to ensure authenticity and integrity.
- Streamlined updates with MSU: MSU provides a unified update workflow with online and offline update packs, complete release notes, and package-version difference summaries. Built-in digital signature validation and automatic recovery mechanisms ensure safe and reliable updates even in remote deployments.

Secure Advanced Packaging Tool (APT)



Moxa Software Updater (MSU)



Specifications

Security Functions

Hardware-based Security	TPM 2.0, Hardware Root of Trust Secure Boot
Intrusion Detection	Host-based Intrusion Detection
Security Tools	Security Diagnostic Tool, Security Event Auditing, Secure Update
Disk Protection	LUKS Disk Encryption
Recovery	One-step recovery to the last known secure state, Dual-system design with automatic fallback
Reliability	Network Keep Alive, Network Failover and Failback

Supported Devices

Moxa Industrial Linux 1 (supported until Dec 2027)	<p>HW Rev. 1.0.0 and later:</p> <ul style="list-style-type: none"> - UC-2100 Series - UC-3100 Series - UC-5100 Series - UC-8100A-ME-T Series - UC-8200 Series - UC-8540/8580 Series (download MIL1 image from the product page) <p>HW Rev. 2.1.0 and later:</p> <ul style="list-style-type: none"> - UC-8410A Series (download MIL1 image from the product page) <p>HW Rev. 3.0.0 and later:</p> <ul style="list-style-type: none"> - UC-8100 Series - UC-8100-ME-T Series
Moxa Industrial Linux 3 (supported until Dec 2031)	<p>UC-1200A/2200A Series (HW Rev. 1.0.0 and later):</p> <ul style="list-style-type: none"> - Preinstalled with MIL3 Standard - Order MIL3 Secure via the UC-1200A (CTO) or UC-2200A (CTO) model <p>UC-3400A Series (HW Rev. 1.0.0 and later):</p> <ul style="list-style-type: none"> - Preinstalled with MIL3 Standard - Order MIL3 Secure via the UC-3400A (CTO) model <p>UC-4400A Series (HW Rev. 1.0.0 and later):</p> <ul style="list-style-type: none"> - Preinstalled with MIL3 Standard - Order MIL3 Secure via the UC-4400A (CTO) model <p>UC-8200 Series (HW Rev. 2.0.0 and later):</p> <ul style="list-style-type: none"> - Order MIL3 Secure via the UC-8200 (CTO) model <p>V1200 Series (HW Rev. 1.0.0 and later):</p> <ul style="list-style-type: none"> - Preinstalled with MIL3 Secure <p>V3200 Series (HW Rev. 1.0.0 and later):</p> <ul style="list-style-type: none"> - Order MIL3 Secure via the V3210 (CTO) model <p>V3400 Series (HW Rev. 1.0.0 and later):</p> <ul style="list-style-type: none"> - Order MIL3 Secure via the V3400 (CTO) model
Moxa Industrial Linux 4 (supported until Aug 2035)	<p>UC-1200A/2200A Series (HW Rev. 1.0.0 and later):</p> <ul style="list-style-type: none"> - Preinstalled with MIL3 Standard - Order MIL4 Standard/Secure via the UC-1200A (CTO) or UC-2200A (CTO) model <p>UC-3400A Series (HW Rev. 1.0.0 and later):</p> <ul style="list-style-type: none"> - Preinstalled with MIL3 Standard - Order MIL4 Standard/Secure via the UC-3400A (CTO) model <p>UC-4400A Series (HW Rev. 1.0.0 and later):</p> <ul style="list-style-type: none"> - Preinstalled with MIL3 Standard - Order MIL4 Standard/Secure via the UC-4400A (CTO) model <p>UC-8600A Series (HW Rev. 1.0.0 and later):</p> <ul style="list-style-type: none"> - Preinstalled with MIL4 Standard - Order MIL4 Secure via the UC-8600A (CTO) model

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