Migrating From Ubuntu to Moxa Industrial Linux (MIL)

Moxa Industrial Linux (MIL) is an industrial-grade Linux distribution built on Debian Stable. It is designed for long-term stability, security, and productization in industrial applications.

Why migrate from Ubuntu to Moxa Industrial Linux (MIL)?

Long-term Support Strategy Brings Long-term Stability for Industrial Applications

Stable Architecture:

- MIL is developed based on Debian Stable, inheriting its robust version control and architecture, making it well-suited for long-running industrial deployments.

10-year Support:

- MIL follows a generational versioning model, releasing a new generation every 4 years with a 10-year maintenance life cycle:
  - First 4 years: Two official releases per year with new features tailored to industrial environments.
  - Final 6 years: Entering stable maintenance mode, focusing on CVE patches and bug fixes to ensure long-term reliability.

Comparison with Ubuntu:

- Ubuntu LTS offers free support only for 5 years. For years 6 to 10, a paid Ubuntu Pro subscription is required, which adds to the costs.
- MIL, however, provides 10 years of free support—ideal for cost-conscious businesses.

Community-based Model—Flexible and Cost-effective

Community-based Model:

- MIL is based on Debian and developed by the open-source community, emphasizing transparency, openness, and decentralization. In contrast, a commercial subscription services, like Ubuntu Pro, could potentially change its terms and service conditions when the company's strategy shifts.

Branding Flexibility:

- MIL retains Debian's open nature and can be freely rebranded for ODM/OEM purposes. Canonical prohibits unauthorized use of the Ubuntu name or logo; modified Ubuntu-based systems must remove trademarks or acquire a license.

Cost Efficiency:

- MIL offers free OTA updates and security patches for 10 years, making it highly suitable for long-term productization. In contrast, Ubuntu Pro incurs licensing costs per device after the 5th year.

Streamlined Package Management and License Clarity

DFSG Compliance:

- MIL strictly adheres to Debian Free Software Guidelines (DFSG), helping organizations pass open-source compliance audits such as OpenChain.

Comparison with Ubuntu:

- Ubuntu includes Snap, PPAs, and non-free components by default, increasing licensing complexity and compliance risk.

Industrial-Grade OT Design of Moxa Computers and Cybersecurity Support

Purpose-built for Industrial Environments:

- Moxa industrial computers feature built-in support for DIs/DOs, RS-232/422/485, and CAN interfaces as well as a TPM v2.0 module. The computers are engineered to operate reliably in harsh environments and come with temperature tolerance over a wide range, EMI shielding, vibration resistance, and stable power delivery. MIL is optimized to run on these industrial computers, providing 10-year long-term support and compliance with IEC 62443-4-2 Security Level 2 requirements for cybersecurity for Moxa computer with MIL3 and higher.

Industrial Modules:

- MIL is purpose-built for OT environments and industrial deployments. It includes modular software tools for interface control, networking, system maintenance, security diagnostics, and software updates:

Module	Description
Moxa Computer Interface Manager (MCIM)	Unified CLI interface for managing various non-standard I/O hardware (DIs/DOs, buttons, disks, buzzers, RS-232/422/485 modes), simplifying the hardware control logic.
Moxa Connection Manager (MCM)	Manages Ethernet, Wi-Fi, cellular connections with profile prioritization, DHCP server, Keep-Alive, Failover/Failback functions, as well as traffic monitoring and diagnostics, ensuring high availability of networks.
Moxa System Manager (MSM)	Offers full system snapshot, backup, and restore functions, as well as automatic failback, factory reset, and decommission mechanisms.
Moxa Bootloader Manager (MBM)	Enables secure bootloader mode switching (Developer/Production), version checking, signature validation, upgrade management, and model compatibility verification.
Moxa Software Updater (MSU)	Provides online/offline OTA updates with delta comparisons, version info display, progress tracking, error reporting, and data export to JSON files.
Moxa Guardian (MG)	Performs security diagnostics to assess IEC 62443-4-2 Security Level 2 compliance. Provides config diff analysis and one-click remediation to strengthen device security.

Cybersecurity Support

Security Standards Compliance:

- MIL is designed with security in mind from the ground up. MIL3 complies with IEC 62443-4-2 Security Level 2 for UC-1200A, UC-2200A, UC-3400A, UC-4400A models and is certified for UC-8200 Series.
- The UC-2200A, UC-3400A, UC-4400A, and V3400 Series come preloaded with a wireless module and MIL3, and are compliant with EU RED Article 3.3, which addresses wireless communication security
- We are also preparing MIL3 and future versions to comply with the EU Cyber Resilience Act (CRA) requirements by 2026, ahead of the mandatory enforcement starting in 2027.

Comparison with Ubuntu:

- Ubuntu provides general security updates but lacks native tools for comprehensive industrial cybersecurity compliance, leaving the costs and efforts of additional integration to the customer.

Lean Design for Cost-effective Productization

- MIL offers lean installation images, eliminating unneeded components to lower the exposure to cyberattacks surface and maintenance costs. Without requiring Snap or platform registration, MIL ensures seamless, native, and ongoing support and updates.

Seamless Ubuntu Compatibility for Easy Migration

- MIL aligns with Ubuntu's *.deb format, APT package management, and systemd architecture, allowing reuse of most CLI scripts and deployment tools as is. Developers can adapt quickly, and compared to Yocto or Buildroot, MIL's Ubuntu compatibility reduces migration costs and the learning curve.

Common Migration Questions from Ubuntu Users

Q1: Is MIL completely different from Ubuntu?

No. MIL is based on the Debian Stable and can shares *.deb packages, APT tools, and CLI workflows with Ubuntu. Deployment and development processes are largely reusable. The differences are mainly in MIL's industrial focus and the absence of Ubuntu-specific components like Snap.

Q2: Can I reuse my existing Ubuntu scripts?

Yes, most scripts work if they don't depend on Snap or Canonical services. Shell scripts, systemctl commands, and APT workflows are compatible. However, we recommend testing them in a MIL environment before deploying them to cover edge cases.

Q3: Is MIL less convenient without Snap or a GUI?

No. MIL's CLI-first design is optimized for embedded and industrial use, reducing resource demands. If a GUI is needed, you can install the X server and a desktop environment via APT package management.

Q4: Can I install packages using Debian's APT package management?

Yes. MIL is fully compatible with Debian's APT system and provides access to 20,000+ open-source packages. You can install software, as you would on Ubuntu, for development or customization.

Q5: Does MIL provide security updates and CVE patches?

Yes. MIL provides 10 years of free security updates, integrating Debian patches and Moxa-maintained updates via the MIL APT server, accessible over the air (OTA) and free of cost.

Q6: Can I test MIL before deployment?

Yes, contact your Moxa regional sales representative to arrange compatibility tests prior to deployment.

Q7: Is documentation and support available?

Yes, contact us to receive an evaluation form so that our technical team can evaluate your requirements and provide tailored support and integration guidance. For additional information, visit our Software & Documentation page.

Your Trusted Partner in Automation

Moxa is a leading provider of edge connectivity, industrial computing, and network infrastructure solutions for enabling connectivity for the Industrial Internet of Things (IIoT). With over 35 years of industry experience, Moxa has connected more than 111 million devices worldwide and has a distribution and service network that reaches customers in more than 91 countries. Moxa delivers lasting business value by empowering industries with reliable networks and sincere service. Information about Moxa's solutions is available at www.moxa.com.

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