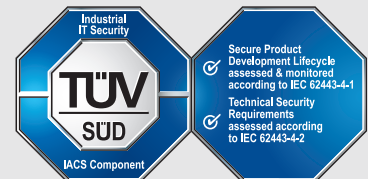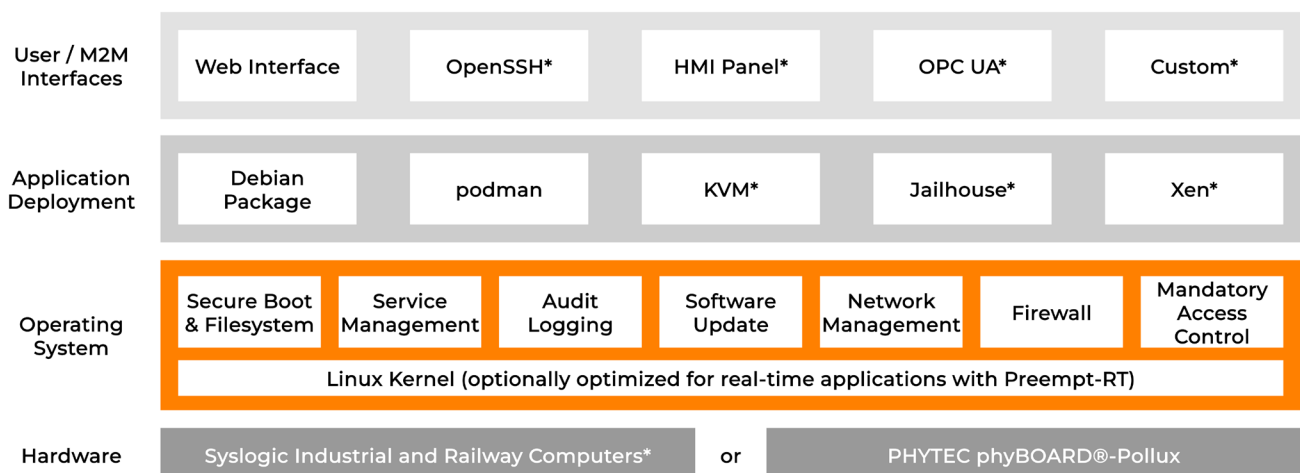# LINUTRONIX

IGLOS
by LINUTRONIX

Operating System for Embedded Systems
IEC 62443 certified and Cyber Resilience Act ready
Optimized for Industrial Automation
Based on Debian GNU/Linux
Built on the expertise of those who shaped Preempt-RT

IGLOS Secure Beacon

The Linutronix product development process is certified according to IEC 62443-4-1. Based on this foundation, Linutronix has developed IGLOS Secure Beacon - a reference implementation of the Industrial Grade Linux Operation System (IGLOS) - serving as a blueprint for future customer projects. It integrates a wide range of state-of-the-art security features. The technical security requirements of IGLOS Secure Beacon are assessed by TÜV SÜD according to IEC 62443-4-2. This enables Linutronix to provide targeted support in the certification process for customer products.

IGLOS Block Diagram

User / M2M Interfaces	Web Interface	OpenSSH*	HMI Panel*	OPC UA*	Custom*
Application Deployment	Debian Package	podman	KVM*	Jailhouse*	Xen*

Operating System	Secure Boot & Filesystem	Service Management	Audit Logging	Software Update	Network Management	Firewall	Mandatory Access Control
	Linux Kernel (optionally optimized for real-time applications with Preempt-RT)						

Hardware	Syslogic Industrial and Railway Computers*	or	PHYTEC phyBOARD®-Pollux

* Not yet covered by IEC 62443 4-2 certification of IGLOS Secure Beacon v1.0.0

Feature	Certified IGLOS Secure Beacon	Available Alternatives
Hardware Platform	• PHYTEC phyBOARD®-Pollux	• Syslogic Industrial Computers • PHYTEC phyBOARD®-Pollux • PHYTEC phyGATE®-Tauri-L • Custom hardware
Linux Kernel	• Version 6.12.11 with Preempt-RT	• Latest mainline version • Custom version and configuration
Secure Boot	• Full secure boot chain • Based on U-Boot and efibootguard	• Adaptation to selected hardware
Secure Filesystem	• Immutable system • Read-only partition for programs (dm-verity) • Read-write data partition (dm-crypt/overlayfs)	• Immutable system for increased security • Dynamic system (e.g. with LVM)
Service Management	• Systemd • D-Bus	• Alternatives on request
Audit Logging	• System and application logging with auditd • Forwarding to remote server via Kerberos	• Remote audit logging • Local audit log storage
Software Update	• SWUpdate • Connection to hawkBit via mutual TLS • Signed firmware images	• SWUpdate • RAUC • Nix • Mender • Uptane • And others
Network Management	• Network-manager • Controlled via custom web interface	• Static configuration • DHCP • NETCONF / YANG • Custom
Firewall	• Nftables • Port filtering • Denial of Service protection	• Static configuration • Dynamic via custom interface
Mandatory Access Control	• AppArmor • Both Debian-provided and custom profiles	• AppArmor (recommended) • SELinux or others on request
Application Deployment	• Native as Debian packages • Container deployment with podman	• Native • Containers • Virtualization (KVM, libvirt, Xen, Jailhouse, …)
User / M2M Interface	• Flask web application • Passwordless FIDO2 authentication	• Custom application by customer • Web interface • OpenSSH • HMI panel (X11, Wayland, Qt, …) • OPC UA • And others

Are you interested? Would you like to learn more about our products and solutions? Contact us via telephone or email.

08/2025 V1.1

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