

ELinOS 7.1

工业级Linux

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ELinOS能够节省开发者的时间和精力，帮助他们专注于自己的应用程序。工业级Linux带有一个方便用户使用的集成开发环境，同时提供最佳软件包满足客户的需求，并提供世界一流的技术支持。

ELinOS非常注重安全性并支持通过在容器中分离不同应用程序来将它们隔离。ELinOS支持用于嵌入式系统应用程序开发的工具和内核。为了应对当今的大量嵌入式平台和I/O设施，ELinOS使用最新内核版本并提供长期支持。所支持的开发语言为C和C++。



功能配置器



LTS内核



Qt embedded

开放式SSH
开放式VPN基于Eclipse
的IDE基于QEMU
的硬件仿真器应用程序
调试集成式
防火墙Docker
支持

ELINOS功能

- 工业级
- 基于Eclipse的IDE, 适用于嵌入式系统 (CODEO)
- 多个Linux内核版本, 包括带有实时增强的Kernel 5.10 LTS
- 快速、简单的目标功能配置
- 硬件仿真 (QEMU)
- 广泛的文件系统支持
- 应用程序调试
- 目标分析
- 在PikeOS for para-virt 和HwVirt上运行
- 针对PowerPC、x86、ARM 进行验证和测试
- 支持32和64位处理器
- 包含适用于主要嵌入式主板和芯片厂商的BSP
- 高性价比的许可证模式
- 含五年标准支持

管理嵌入式Linux的多功能性

创建一个基于嵌入式Linux的系统就像在拼图一样，需要把正确的拼图块放在一起。这需要对Linux的多功能性有深刻的理解，而且需要花费一定的时间选择组件、开发主板支持工具包和驱动程序并测试整个系统，无论是新手还是老手都不例外。

通过ELinOS, SYSGO提供“开箱即用”体验，让开发者可以专注于开发具有竞争力的应用程序本身。ELinOS整合了功能配置器等相应的工具，能够帮助您建立系统并推动项目的成功，包括一个内置完整性验证的图形化配置前端。

应用程序和配置环境

除了标准工具外，远程调试、目标系统监控和时序性分析对应用程序的开发也必不可少。

CODEO是一个基于Eclipse的完整开发环境。通过功能配置器，开发者可以在高层次上定义系统配置。根文件系统和Linux内核配置会自动跟随功能配置变化生成，只考虑实际需要的组件。这种机制减少了内存的占用，相比标准Linux系统大大减少了可能的攻击载体数量。

系统要求

- 64位Linux主机发行版
- 在Debian、Fedora、Ubuntu、OpenSUSE、Windows 10 (64位) 上测试
- 4 GB自由磁盘空间
- 2 GB RAM
- Java运行时环境11

多功能嵌入式LINUX

内核

ELinOS 7.1包含LTS Kernel 5.10，对嵌入式使用率和实时扩展进行了优化。其他内核版本可用于部分BSP。Linux内核根据项目配置自动定制并在CODEO IDE中进行编译。开发工具链以gcc-10.2为基础，glibc 2.31作为C库提供。来自Yocto BSP的厂商内核可以轻松导入到ELinOS系统中。

支持的硬件

支持多种CPU架构、单核和多核平台。ELinOS已针对以下硬件进行了测试和验证：

- x86, x86-64 • PPC e500mc, PPC e5500 (64位)
- ARM v7hf • ARM v8 (64位)

支持的主板

为我们硬件合作伙伴的各种主板、主要嵌入式主板和芯片厂商提供合格的BSP。

- AMD • Intel • Raspberry Pi • NXP • Phytec • Renesas
- TQ Systems • Texas Instruments • Xilinx • 其他

其他项目模板和可定制的功能集

提供用于典型嵌入式Linux使用领域的预配置模板和构建块支持快速、简单的项目启动。

- 网络设备 • 网络服务器 • QT embedded • GTK • X11
- Wayland / Weston • 占用面积最小的Linux • 其他

模拟目标

CODEO IDE包含基于QEMU的目标硬件仿真器，可在桌面计算机上运行项目。

支持的文件系统

可选择典型Linux、Windows和嵌入式文件系统并轻松交换。

- Ext4/3/2 • UBIFS • btrfs • JFFS2 • SquashFS • FAT • NTFS • RAM文件系统 • NFS v4.1 • F2FS • 其他

咨询和支持

我们提供领先的对等支持和各类专业服务，包括培训和具体项目的咨询、与客户一起解决现场问题、为所有SYSGO工具提供为期一年的电子邮件支持、提供持续改进的全生命周期更新等。

信息安全功能

使用提供的安全机制和工具保护目标系统免受外部或内部威胁。

- 基于规则的集成式防火墙 • 安全远程外壳访问 • VPN

工业自动化

ELinOS工业级Linux明确支持工业自动化客户的需求。

- CAN • VME • IPv6 • USB 3.0 • WLAN
- 其他 (按要求提供EtherCAT等)

预编译的目标二进制文件

为加速嵌入式Linux的配置和构建过程，ELinOS工业级Linux包含了250多个预编译的应用程序和库：

- BusyBox • QT • GTK+ • XOrg-Server • OpenSSH
- OpenVPN • Lighttpd • Apache • 网络管理器
- Wayland • MariaDB • Perl • 等等

应用程序开发

开发嵌入式应用程序需要来自开发环境的特别支持。基于Eclipse的CODEO (包含在ELinOS中) 为远程调试、时序分析和收集运行时信息提供直接目标连接。

应用程序调试

CODEO包含一个基于Eclipse、使用GDB的调试器。可显示和编辑寄存器内容、变量值和中断点。

目标分析

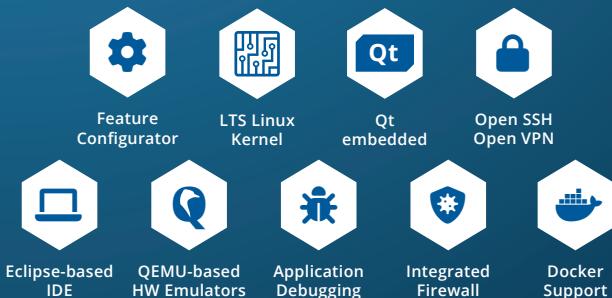
CODEO还包括一个基于Eclipse的目标分析系统。CODEO追踪工具提供可扩展的追踪功能，包括SMP和64位支持。

SYSGO公司成立于1991年，是一家值得信赖的嵌入式操作系统咨询公司，并且是欧洲虚拟机监控器操作系统技术的领先企业，能够为客户提供全球范围的全产品周期支持。我们能够满足所有行业的客户需求并提供量身定制的解决方案，满足功能和信息安全方面的最高期望。更多信息，敬请访问www.sysgo.cn/elinos

ELinOS 7.1

Industrial Grade Linux

EELinOS has been designed to allow developers to save time and effort by helping them to focus on their application. Industrial grade Linux with a user-friendly IDE goes along with the best selection of software packages to meet customer needs, and with the comfort of world-class technical support. ELinOS has a strong focus on Security and supports isolating applications by separating them in containers. ELinOS contains tools and kernel support to develop applications for embedded systems. To cope with the large number of embedded platforms and I/O facilities available today, ELinOS uses a recent kernel version with long-term support. The development languages supported are C and C++.



ELINOS FEATURES

- Industrial Grade
- Eclipse-based IDE for embedded Systems (CODEO)
- Multiple Linux kernel versions incl. Kernel 5.10 LTS with real-time enhancements
- Quick and easy target feature configuration
- Hardware Emulation (QEMU)
- Extensive file system support
- Application debugging
- Target analysis
- Runs on PikeOS for para-virt and HwVirt
- Validated and tested for PowerPC, x86, ARM
- Support of 32- and 64-bit processors
- BSPs for major embedded boards and chip vendors included
- Cost-effective licensing model
- Five-year standard support included

System Requirements

- 64-bit Linux host distributions
- Tested on Debian, Fedora, Ubuntu, OpenSUSE, Windows 10 (64-bit)
- 4 GB free disk space
- 2 GB RAM
- Java runtime environment 11

MANAGING EMBEDDED LINUX VERSATILITY

Creating an Embedded Linux based system is like solving a puzzle and putting the right pieces together. This requires a deep knowledge of Linux's versatility and takes time for the selection of components, development of Board Support Packages and drivers, and testing of the whole system – not only for newcomers.

With ELinOS, SYSGO offers an 'out-of-the-box' experience which allows to focus on the development of competitive applications itself. ELinOS incorporates the appropriate tools, such as a feature configurator to help you build the system and boost your project success, including a graphical configuration front-end with a built-in integrity validation.

APPLICATION & CONFIGURATION ENVIRONMENT

In addition to standard tools, remote debugging, target system monitoring and timing behaviour analyses are essential for application development.

CODEO is a complete Eclipse-based development environment. By means of the feature configurator, the developer is enabled to define the system configuration on a high level. The generation of the root file system and the Linux kernel configuration follow changes of the feature configuration automatically, by just considering components that are actually required. This mechanism lessens memory footprint and results in a significantly reduced number of possible attack vectors compared to a standard Linux system.

VERSATILE EMBEDDED LINUX

Kernel

ELinOS 7.1 includes LTS Kernel 5.10 with optimizations for embedded usage and real-time extensions. Other kernel versions are available for selected BSPs. The Linux kernel is automatically tailored based on the project's configuration and compiled within the CODEO IDE. The development toolchain is based on gcc-10.2, glibc 2.31 is provided as C library. Vendor kernels from a Yocto BSP can be easily imported into an ELinOS system.

Supported Hardware

Support for many CPU architectures, single- and multi-core platforms. ELinOS is tested and validated for:

- x86, x86-64 • PPC e500mc, PPC e5500 (64-bit)
- ARM v7hf • ARM v8 (64-bit)

Supported Boards

Qualified BSPs are available for various boards of our HW partners, major embedded board and chip vendors.

- AMD • Intel • Raspberry Pi • NXP • Phytel • Renesas
- TQ Systems • Texas Instruments • Xilinx • Others

Project Templates and customizable Feature Sets

Pre-configured templates and building blocks for typical embedded Linux usage domains are supplied to support a fast and easy project start.

- Network Device • Web server • QT embedded • GTK • X11
- Wayland / Weston • Minimal footprint Linux • Others

Simulation Targets

The CODEO IDE includes QEMU-based target HW emulators, allowing to run the project on a desktop computer.

Supported File Systems

Typical Linux, Windows and embedded file systems can be chosen and easily exchanged.

- Ext4/3/2 • UBIFS • btrfs • JFFS2 • SquashFS • FAT • NTFS
- RAM file systems • NFS v4.1 • F2FS • Others

TRAININGS, CONSULTING & SUPPORT

We provide an outstanding peer-to-peer support and a broad range of professional services. This includes trainings and project-specific consulting, live problem solving with the customer, a one-year E-Mail-based support for all SYSGO tools and life cycle updates to benefit from ongoing improvements.

Security Features

Secure the target system against external or internal threats using provided Security mechanisms and tools.

- Integrated rule-based firewall • Secure remote shell access
- VPN

Industrial Automation

ELinOS Industrial Grade Linux explicitly supports the needs of Industrial Automation customers.

- CAN • VME • IPv6 • USB 3.0 • WLAN
- Others (EtherCAT, ... upon request)

Pre-Compiled Target Binaries

To accelerate the embedded Linux configuration and building process, ELinOS industrial grade Linux includes more than 250 pre-compiled applications and libraries:

- BusyBox • QT • GTK+ • XOrg-Server • OpenSSH • OpenVPN
- Lighttpd • Apache • Network manager • Wayland • MariaDB
- Perl • And many more

APPLICATION DEVELOPMENT

Developing embedded applications needs special support from the development environment. Direct target connection for remote debugging, timing analysis and to gather runtime information is provided by the Eclipse-based CODEO (included in ELinOS).

Application Debugging

CODEO includes a debugger-based on Eclipse utilizing GDB. Register contents, variable values and break points can be displayed and edited.

Target Analysis

CODEO also includes a target analysing system based on Eclipse. The CODEO trace tool offers extended tracing capabilities, including SMP and 64-bit support.

Founded in 1991, SYSGO became a trusted advisor for Embedded Operating Systems and is the European leader in hypervisor-based OS technology offering worldwide product life cycle support. We are well positioned to meet customer needs in all industries and offer tailor-made solutions with highest expectations in Safety & Security. More information at www.sysgo.cn/elinos