eBUS SDK

Feature-rich GigE Vision and USB3 Vision compliant software development kit

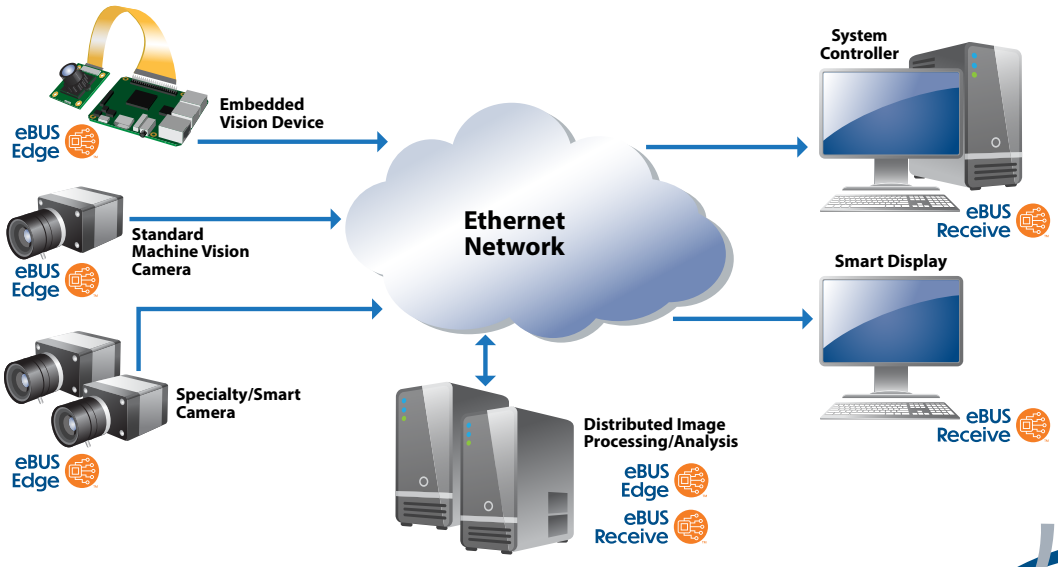
Overview

Built on decades of expertise in the vision market, eBUS SDK is the industry leading choice for image capture, display, and transmission in thousands of mission-critical automation, security and defense, and medical applications. eBUS SDK is a comprehensive solution, providing developers with a feature-rich platform that simplifies application development along with transmit and receive capabilities to streamline end-to-end data delivery between sensor devices and host applications.

- Image capture, display, and transmission through a simple API portable across Windows and Linux (x86_64 / ARM) — no need to support multiple APIs from different vendors
- Works with Vision Standard-compliant GigE, USB3, and GenICam imaging devices from any vendor
- eBUS Universal Pro driver delivers significant performance advantages, including low latency, low jitter, and low CPU utilization
- Integrated C++, Python and .NETcode support for Windows, Ubuntu, CentOS, Yocto, Debian on Raspberry Pi and NVIDIA Jetson ARM operating systems and edge devices
- Expanded operating system support for Windows 11, Ubuntu 24.04 LTS, Ubuntu 22.04 LTS, Ubuntu 20.04 LTS and CentOS Stream 9 / RedHat 9, Yocto 4.0 (Kirkstone) and Yocto 5.0 (Scarthgap), Debian 13 on ARM for Raspberry Pi 4B and Raspberry Pi 5, and support for ST Micro's STM32MP2 platforms plus JetPack 5.1 and JetPack 6.2 support means eBUS applications can be deployed on the latest NVIDIA Jetson™ AGX Xavier, Xavier NX, AGX Orin and Jetson Orin NX platforms.
- Runtime packages for Linux operating systems (x86_64/ARM) enable lightweight deployment of eBUS-based applications for devices with limited onboard storage and memory
- Comprehensive decompression support for all RapidPIX lossless applications
- Sample applications provided in various programming languages and frameworks

Features

- Device discovery, configuration, and control (master or slave)
- RapidPIX lossless compression decompression support
- High-performance streaming (transmit and receive)
- Buffer management
- Pixel format conversion
- Multicasting
- Action commands
- Network statistics
- Multiple payload types (image, raw, chunk, multi-part, GenDC)
- Multiple IP configurations
- GStreamer plug-ins available for eBUS Receive and eBUS Edge
- Robotic Operating System (ROS2) camera driver
- Dynamically generated GenICam XML
- Save acquired images (BMP, TIFF, PNG, raw binary, Pleora decompressed, MP4 video format)



GigE VISION USB3 VISION GENICAM

Pleora Technologies

eBUS SDK

eBUS SDK is built on a single API to receive video over GigE, 10 GigE, and USB that is portable across Windows and Linux, operating systems. With an eBUS SDK Seat License, designers can develop production-ready software applications in the same environment as their end-users, and quickly and easily modify applications for different media, while avoiding supporting multiple APIs from various vendors. Compared to camera vendor provided SDKs, eBUS frees developers from being tied to a specific camera. Instead they can choose the device that is best for the application. An evaluation license for eBUS SDK is available starting with eBUS SDK 7.0.0, please contact Pleora Support for additional information.

Feature-rich platform simplifies application development along with receive and transmit capabilities

eBUS SDK complies fully with the GigE Vision, USB3 Vision and GenICam standards. It interoperates seamlessly with Pleora's extensive portfolio of video interface products, as well as with standards-compliant products from other manufacturers. Purchasing the eBUS SDK (eBUS SDK Seat License) includes access to online support and technical documentation. For dedicated technical expertise, including installation and configuration support, Maintenance and Support Annual Subscriptions are available. Note that the evaluation license is for 30 days and is provided without any support.

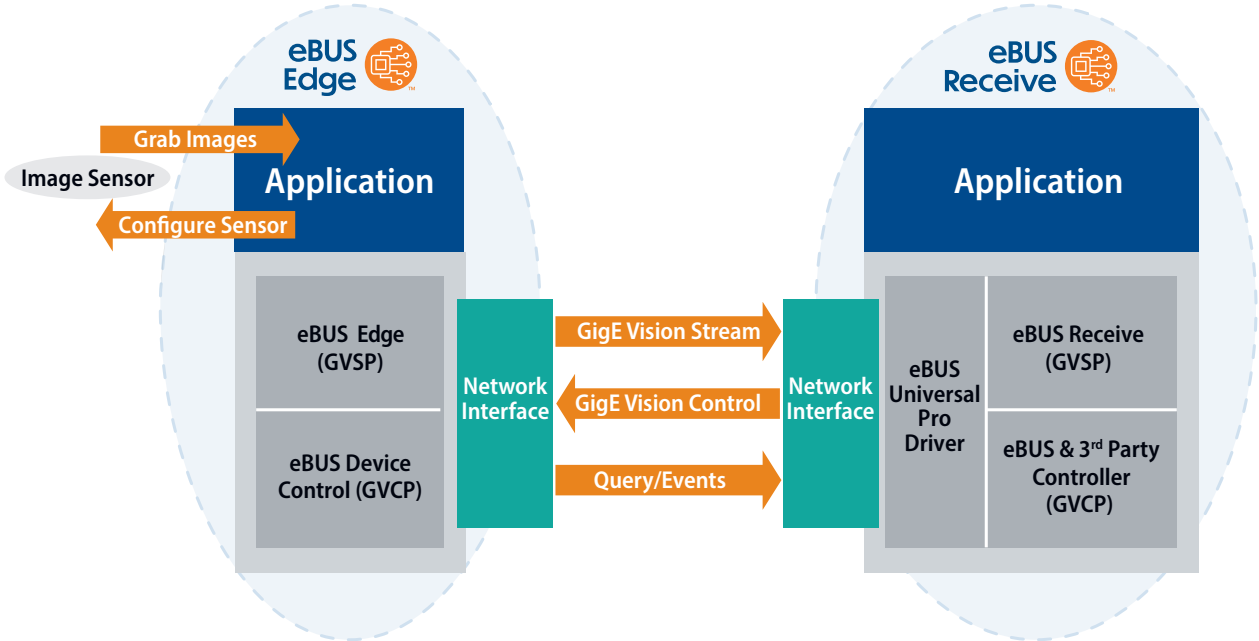
eBUS Edge for Sensor Devices

eBUS Edge is a software implementation of a full device level GigE Vision transmitter, without requiring any additional hardware. Adding eBUS Edge to a CPU's software stack turns it into a fully compliant GigE Vision device that supports image transmission and enables the device to respond to control requests from a host controller. eBUS Edge is GigE Vision and GenICam compliant, meaning end-users can use any standards-compliant third-party image processing system. eBUS Edge is available with a C++ API (Windows and Linux x86_64/ARM), .NET API (Windows and Linux x86_64/ARM) and Python API (Windows and Linux x86/ARM, 64-bit only). eBUS Edge currently supports the GigE Vision standard, contact Pleora if USB3 Vision image transmission is required.

eBUS Receive for Host Applications

eBUS Receive manages high-speed reception of images or data into buffers for hand-off to the end application. Developers can write applications that run on a host computer to seamlessly control and configure an unlimited number of GigE Vision or USB3 Vision and GenICam compliant sensors. Available in .NET (Windows + Linux x86_64/ARM), C++ (Windows + Linux x86_64/ARM) and Python (64-bit Windows + Linux x86/ARM).

The eBUS Universal Pro driver reduces CPU usage when receiving images or data, leaving more processing power for meeting latency and throughput requirements for real-time applications. The eBUS Universal Pro driver is easily integrated into third-party processing software to bring performance advantages to end-user applications.



eBUS Player Toolkit

The eBUS Player Toolkit included with the eBUS SDK Seat license or downloadable as a standalone application includes useful setup, configuration, and troubleshooting support for Windows based systems. It includes:

- **eBUS Player:** Allows users to control the parameters of GigE Vision and USB3 Vision compliant devices. The player allows users to view streaming data and adjust device configuration to determine optimal settings for the vision system. Note: the source code for eBUS Player is included as one of the code samples in the SDK.
- **eBUS Universal Pro Driver:** Assists in transferring video from a GigE Vision stream to vision system applications, ensuring delivery with low, consistent latency while reducing CPU resource utilization.
- **Raw Image Viewer:** View raw binary images saved with eBUS Player.
- **Camera Link Setup Assistant:** Specify location of CL Protocol DLL files and automatically generates (or updates) GENICAM_CLPROTOCOL environment variable.
- **PTC Evaluation Tool:** Load images to emulate RapidPIX lossless compression to determine the compression ratio. Also evaluate the CPU usage and decompression time while decompressing RapidPIX compressed images.

Developer Support Subscription

Pleora provides a comprehensive range of basic, standard, and developer maintenance and support offerings to help our customers speed design and reduce the total cost of ownership for final products.

Basic: Access to Pleora software maintenance releases for one year (365 days) from date of purchase, basic installation support, and online support tools.

Standard: Access to maintenance releases for one year (365 days) from date of purchase, code samples, online support tools, with additional best practice guidance and troubleshooting for standard installation, setup, and configuration.

Developer: Access to maintenance releases for one year (365 days) from date of purchase, code samples, online support tools, best practice guidance and troubleshooting for standard installation, setup and configuration, with additional 'priority access' for functional support from a dedicated team of senior application engineers. This maintenance and support offering is suited for customers requiring ongoing developer support during testing and development stages.

LICENSING

Applications written with eBUS libraries will require a runtime license for deployment to target device. Unlicensed Receive applications will introduce a watermark, whereas unlicensed Transmit applications will stop streaming after 15 minutes.

SUPPORTED DEVELOPMENT ENVIRONMENTS

CC# .NET, and VB .NET using Visual Studio 2022, and .NET version 8[1]
C++ using Visual Studio, 2019 and 2022[1]
C++ using GCC on Red Hat Linux and Ubuntu[2]
Python Support[2] • Ubuntu 24.04 LTS (64-bit): 3.12 (Default)[3] • Ubuntu 22.04 LTS (64-bit): 3.10.6 (Default)[3] • Ubuntu 20.04 LTS (64-bit): 3.8.10 (Default)[3] • CentOS 9 Stream (64-bit): 3.9 (Default)[3] • NVIDIA Jetson ARM (JetPack 5.1): 3.8.10 (Default)[3] • NVIDIA Jetson ARM (JetPack 6.2): 3.10 (Default)3 • Debian 13 for ARM for Raspberry Pi 4B / 5: 3.13 (Default)[3] • Yocto 4.0 (Kirkstone): 3.10 (Default)[3] • Yocto 5.0 (Scarthgap): 3.12 (Default)[3] • OpenSTLinux 6.1: 3.12 (Default)[3]

[1] For both eBUS Receive and eBUS Edge
[2] Python not installed by default on this Operating System
[3] Python comes pre-packaged with specified version on this particular Operating System

SUPPORTED STANDARDS

Protocols	GigE Vision 2.2 (and earlier), USB3 Vision 1.2 (and earlier)
Camera control	GenICam, GenApi 3.4.1, GenCP 1.1

SUPPORTED OPERATING SYSTEMS

	GigE Vision 2.2	USB3 Vision 1.2
• Microsoft Windows 10 and 11 (64-bit) on x86_64 architecture	Supported	Supported
• Red Hat Enterprise LInux 9 (64-bit) and CentOS Stream 9 (64-bit) on x86_64 architecture	Supported	Supported
• Ubuntu 20.04 LTS (64-bit) on x86_64 architecture • Ubuntu 22.04 LTS (64-bit) on x86_64 architecture • Ubuntu 24.04 LTS (64-bit) on x86_64 architecture	Supported	Supported
• Ubuntu 20.04 LTS (64-bit) on NVIDIA Jetson AGX Xavier, Xavier NX, AGX Orin, Orin NX, Orin Nano (JetPack 5.1.4) • Ubuntu 22.04 LTS (64-bit) on NVIDIA AGX Orin and Orin NX (JetPack 6.2)	Supported	Supported
• Raspberry Pi OS (64-bit, Debian 13 based, Kernel 6.1)	Supported	Supported
• Yocto 4.0[1] (Kirkstone) • Yocto 5.0[1] (Scarthgap)	Supported	Supported
• OpenSTLinux 6.1[2]	Supported	Supported

[1] Tested on NXP i.MX8 platform, Raspberry Pi4B/5 platforms and MediaTek Genio 510 platforms
[2] For eBUS Edge only, tested on STM32 MP2 platform

eBUS SDK

SOFTWARE INCLUDES

eBUS SDK	Provides versatile, robust, and easy-to-understand classes, methods, and properties that allow developers to quickly build high-performance vision applications. Support for high performance image acquisition using eBUS Universal Pro Driver or NIC manufacturer's driver.
eBUS Universal Pro Driver	Enhances existing general-purpose drivers shipped with NICs and USB 3.0 controllers. Increases image acquisition throughput and performance, decreases latency and jitter, while minimizing CPU utilization.
DirectShow Filter	Enables easy integration of GigE Vision and USB3 Vision cameras with image display, analysis, and compression filters in the DirectShow ecosystem.
OEM Integration	Includes merge modules for inclusion in installation packages built with Microsoft Visual Studio, or with applications such as Flexera Installshield.
GStreamer Plug-Ins	Plug-ins available for use with GStreamer for eBUS Edge and eBUS Receive on Linux platforms (x86 / ARM). Contact Pleora support for additional information.
Robotic Operating System (ROS2)	Provides a camera driver for use with GigE Vision cameras in the Robotic Operating System (ROS2) environment. Contact Pleora support for additional information.
Sample Applications	Demonstrates advanced networking topics, such as GigE Vision compliant image stream transmission, multicast communication, and link recovery.
Documentation	• Quick Start Guides • User Guides • Class and method documentation • eBUS Player

ORDERING INFORMATION

990-1024	**eBUS SDK Seat License** • Entitles a single user access to all available eBUS GigE Vision and USB3 Vision modules (eBUS Edge (990-4000), GEV-Rx and U3V-Rx). Includes one year maintenance for access to all eBUS SDK updates. Required for use with eBUS 6.0 onwards. • eBUS Edge module is available for Windows and Linux only • Developer Support Subscription sold separately.
990-4000	**eBUS Edge Runtime License — Multi-Source with Any Payload Type** Supports multiple stream channels (limited by available bandwidth only and the hardware capabilities) and ANY supported payload type (including: image payload with extended chunk mode (metadata), chunk data payload (raw chunks), multi-part payload and GenDC payload) to transmit image/video data.
990-4001	**eBUS Edge Runtime License — Single Source with Any Payload Type** Supports ONLY a single stream channel AND ANY supported payload type (including: image payload with extended chunk mode (metadata), chunk data payload (raw chunks), multi-part payload and GenDC payload) to transmit image/video data.
990-4002	**eBUS Edge Runtime License — Single Source with Image Payload Type** Supports ONLY a single stream channel AND ONLY image payload type with extended chunk mode (metadata) available to transmit image/video data.
990-1000	**eBUS Receive GEV-Rx License File —** A GigE Vision receiver runtime license required for applications which need to receive GigE Vision streams from a camera or device that does not contain Pleora transmitter technology. One license per device required to remove a watermark from the video or image. No limit to number of receive streams per device. Requires eBUS SDK 3.1 or higher. Not required for images coming from Pleora hardware devices, IP cores and eBUS Edge licensed transmitters.
990-1005	**eBUS Receive U3V-Rx License File —** A USB3 Vision runtime license required for applications which need to receive USB3 Vision streams from a camera or device that does not contain Pleora transmitter technology. One license per device required to remove a watermark from the video or image. No limit to number of receive streams per device. Requires eBUS SDK 3.1 or higher. Not required for images coming from Pleora hardware devices and IP Cores.
990-1018	**GEV/U3V-Rx Dongle —** A USB micro-dongle containing single-channel GigE Vision and USB3 Vision receiver licenses required for Windows and Linux (x86 platform) applications which need to receive video from a camera or device that does not contain Pleora transmitter technology. The licenses removes a watermark from the video or image. It can be used with either a GigE Vision camera or device, a USB3 Vision camera or device, or with both simultaneously. Requires eBUS SDK 5.0 or higher for Windows support and eBUS SDK 6.2 or higher for Linux (x86 platform) support. Not required for images coming from Pleora hardware devices, IP cores and eBUS Edge licensed transmitters. NOTE - Dongle not supported on Linux (ARM platforms). If you need to use Linux (ARM platforms), install the license file available for purchase online.
Maintenance and Support Services	Pleora provides a comprehensive range of basic, standard, and developer maintenance and support offerings to help our customers speed design and reduce the total cost of ownership for final products. See **https://www.pleora.com/resources/maintenance-and-support/** for details.

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