eBUS Edge

GigE Vision Compliant Software Connectivity for Imaging Solutions

Overview

eBUS Edge is a software platform that converts cameras, imaging solutions and embedded and IoT devices to fully compliant GigE Vision, GenICam devices without requiring any additional hardware. The software transmitter enables seamless standards-based integration between devices and machine vision and edge processing.

By adding eBUS Edge to a CPU's software stack, devices support image transmission and can respond to control requests from a host PC. Designers can upgrade to GigE Vision connectivity for any device, retain existing processes and infrastructure, while using any standards-compliant third-party image processing solution. Integrated GigE Vision and GenICam support lets users continue to control devices over Ethernet. Device and system designers can write code once and then deploy it on different operating systems or hardware platforms with a portable C++, .NET or Python API and built-in buffer management compatible with all sensor types.

The software platform includes tiered feature-based license options to meet performance demands for high-value imaging and sensor platforms. This includes systems requiring multi-stream or single-stream, GenDC or multi-part 3D/2D/1D data streaming and single-stream 2D/1D transmission for price-sensitive cameras, embedded platforms, and IoT devices. eBUS Edge supports the GigE Vision standard, contact Pleora if USB3 Vision image transmission is required.

Multi-Source Data Streaming

eBUS Edge supports standardized multi-source data streaming to simultaneously transmit multiple sources/stream channels. In the example of 3D, this could be:

- One stream channel for 3D data transmission via multi-part or GenDC.
- One stream channel for original 2D image from the left camera via image payload with extended chunk mode.
- One stream channel for original 2D image from the right camera via image payload with extended chunk mode.
- eBUS Receiver obtains the GenDC or multi-part 3D data for handoff to processing software (end-user does not have to write a low-level GigE Vision GenDC or multi-part receiver.) The data can also be received by a GenDC or multi-part capable third-party receiver application.

Multi-source can also be used to transmit one stream channel of uncompressed data and one stream channel of compressed data or aggregate multiple sensor sources into a single physical link.

Features

- Tiered licensing options to add GigE Vision connectivity to high-end imaging devices and price-sensitive applications including embedded devices
- Allows developers to create a software-based GigE Vision 2.2 and GenICam compliant device with support for various payload types, including:
  - GenDC for transmission of generic data containers (1D/2D or 3D data),
  - Multi-part support for 3D data transmission,
  - Chunk data payload for transmission of raw chunks,
  - Image payload support with extended chunk mode for transmission of 1D/2D image data with associated metadata
- Write your code once and deploy it on different operating systems – eBUS Edge API available in C++, .NET and Python for all supported operating systems
- Designed for both Intel and ARM architectures and compatible with all sensor and camera types
- Includes GigE Vision Streaming Protocol (GVSP) and GigE Vision Control Protocol (GVCP)
- Customizable GenICam (GenApi) interface, for different sources
- Persist user configuration across power cycles
- Add multiple stream channels for multi-source devices

Supported Operating Systems

- Windows 10/11 (64-bit)
- Linux x86:
  - Ubuntu 20.04/22.04/24.04/26.04 LTS (64-bit)
  - CentOS 9 Stream (64-bit)
  - RedHat 9 (64-bit)
- NVIDIA Jetson ARM devices supporting JetPack 5.1, JetPack 6.2 and JetPack 7.2
- Raspberry Pi 4B and Raspberry Pi 5 devices supporting Raspberry Pi OS (64-bit, Debian 13 based, Kernel 6.1)
- Yocto 4.0 (Kirkstone), Yocto 5.0 (Scarthgap) and Yocto 6.0 (Wynrose)
- OpenSTLinux 6.10 for ST Micro STM32 MP2 platforms

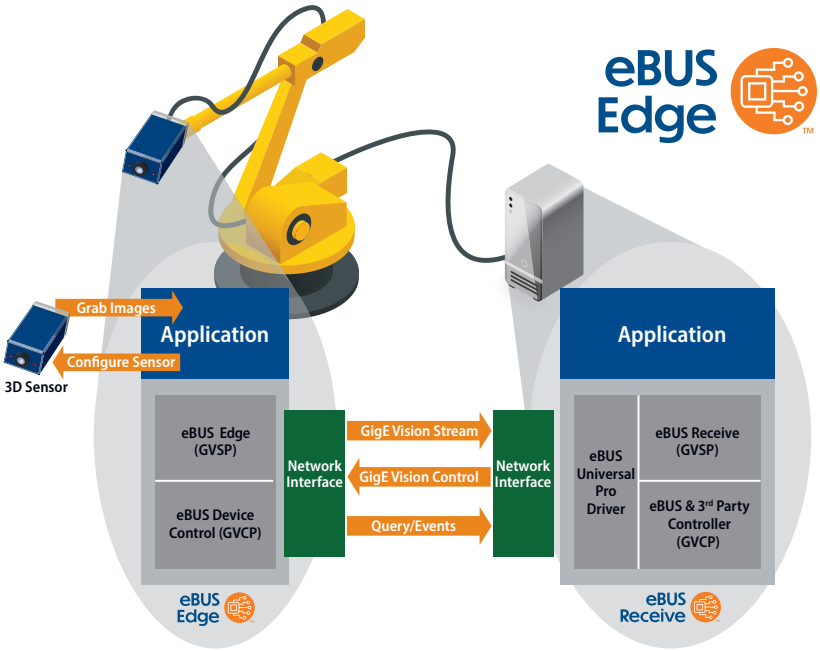
GENICAM GIGE VISION

Pleora Technologies

eBUS Edge

Simplifying 3D System Design with eBUS Edge

With integrated multi-part support, sensor data from multiple sources or regions can be transmitted with associated metadata, such as sensor information, GPS data, timestamp, etc. Designers can simplify the deployment of 3D inspection applications while retaining existing third-party processing tools. eBUS Edge interoperates seamlessly with Pleora's eBUS SDK as well as any off-the-shelf GigE Vision/GenICam compliant third-party software libraries.



In a stereoscopic 3D camera application, images from the left and right cameras, a 3D depth map, confidence map, and metadata (chunk data) are integrated into the multi-part payload container sent to the receiver. eBUS Edge transmits the uncompressed 3D data as a part of a uniform timestamped container. The software sends multiple images or 3D data types using multi-part payloads over Ethernet cabling, in a GigE Vision and GenICam compliant manner. Data from multiple sensors can be synchronized and trans-ported in parallel using multiple streams. A computer can receive, analyze, and display 3D point data and other 2D imaging data from all cameras and sensors.

Licensing

An eBUS Edge runtime license is required to transmit GigE Vision streams on a camera or device. One license per camera or device is required to avoid disconnection after 15 minutes. Applications written using eBUS Edge module will not need a GEV-Rx license to receive the stream. Requires eBUS SDK 6.0 or higher.

Ordering Information

eBUS SDK SEAT LICENSE (eBUS SDK 7.1 AND HIGHER) – KEY-BASED LICENSING

Physical Machine (Bare-Metal)

990-4100	**eBUS SDK Physical Machine Seat License Key** Provides one user with access, on a physical machine (bare-metal), to all available eBUS SDK modules for both eBUS Edge and eBUS Receive modules. Includes the multiple GigE Vision stream channel with any payload type eBUS Edge module (990-4105), and the eBUS GigE Vision Receive Runtime (990-4111) and the eBUS USB3 Vision Receive module (990-4115) for all supported platforms and a one-year subscription to eBUS SDK Basic Maintenance and Support (990-1029).
990-4102	**eBUS SDK Physical Machine Developer Seat License Key Bundle** Provides one user with access, on a physical machine (bare-metal), to all available eBUS SDK modules for both eBUS Edge and eBUS Receive modules. Includes the multiple GigE Vision stream channel with any payload type eBUS Edge module (990-4105), and the eBUS GigE Vision Receive Runtime (990-4111) and the eBUS USB3 Vision Receive module (990-4115) for all supported platforms and a one-year subscription to eBUS SDK Developer Annual Maintenance and Support.

Virtual Machine or Containerized Environment

990-4101	**eBUS SDK Virtual Machine or Containerized Environment Seat License Key** Provides one user with access, on a virtual machine or containerized environment, to all available eBUS SDK modules for both eBUS Edge and eBUS Receive modules. Includes the multiple GigE Vision stream channel with any payload type eBUS Edge module (990-4105), and the eBUS GigE Vision Receive Runtime (990-4111) and the eBUS USB3 Vision Receive module (990-4115) for all supported platforms and a one-year subscription to eBUS SDK Basic Maintenance and Support (990-1029).
990-4103	**eBUS SDK Virtual Machine or Containerized Environment Developer Seat License Key Bundle** Provides one user with access, on a virtual machine or containerized environment, to all available eBUS SDK modules for both eBUS Edge and eBUS Receive modules. Includes the multiple GigE Vision stream channel with any payload type eBUS Edge module (990-4105), and the eBUS GigE Vision Receive Runtime (990-4111) and the eBUS USB3 Vision Receive module (990-4115) for all supported platforms and a one-year subscription to eBUS SDK Developer Annual Maintenance and Support.

eBUS Edge Ordering Information (cont'd)

eBUS SDK Evaluation Seat License	
990-4104	**eBUS SDK Evaluation Seat License Key** Provides one user with access, on a physical machine, virtual machine, or containerized environment, to all available eBUS SDK modules for both eBUS Edge and eBUS Receive modules. Includes the multiple GigE Vision stream channel with any payload type eBUS Edge module (990-4105), and the eBUS GigE Vision Receive Runtime (990-4111) and the eBUS USB3 Vision Receive module (990-4115). Maintenance and support are not included. NB: eBUS SDK evaluation packages are available for Windows 11 and Ubuntu 24.04 LTS (x86).

PREVIOUS GENERATIONS eBUS SDK (VER 3.1 – 7.0)

Physical Machines (Bare-Metal) and Virtual Machines or in a Containerized Environment – File-based License, requires a Fixed MAC Address from the Deployment System

990-1024	**eBUS SDK Seat License** Entitles a single user, on a physical machine, virtual machine, or containerized environment, 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.

eBUS EDGE TRANSMITTER (eBUS SDK 7.1 AND HIGHER) – KEY-BASED LICENSING

Physical Machine (Bare-Metal)

990-4105	**eBUS Edge Runtime License Key for Physical Machines (Bare Metal) — Multiple GigE Vision Stream Channels with Any Payload Type** For eBUS Edge applications deployed on a physical machine (bare-metal). Supports multiple GigE Vision stream channels, subject only to available bandwidth and hardware capabilities, and all supported payload types: image payload with extended chunk mode (metadata), chunk data payload, multipart payload, and GenDC payload.
990-4107	**eBUS Edge Runtime License Key for Physical Machines (Bare Metal) — Single GigE Vision Stream Channel with Any Payload Type** For eBUS Edge applications deployed on a physical machine (bare-metal). Supports one GigE Vision stream channel and all supported payload types: image payload with extended chunk mode (metadata), chunk data payload, multipart payload, and GenDC payload.
990-4109	**eBUS Edge Runtime License Key for Physical Machines (Bare Metal) — Single GigE Vision Stream Channel with Image Payload Type** For eBUS Edge applications deployed on a physical machine (bare-metal). Supports one GigE Vision stream channel and the image payload type with extended chunk mode (metadata).

Virtual Machine or Containerized Environment

990-4106	**eBUS Edge Runtime License Key for Virtual Machines or Containerized Environments — Multiple GigE Vision Stream Channels with Any Payload Type.** For eBUS Edge applications deployed on a virtual machine or con-tainerized environment. Supports multiple GigE Vision stream channels, subject only to available bandwidth and hardware capabilities, and all supported payload types: image payload with extended chunk mode (metadata), chunk data payload, multipart payload, and GenDC payload.
990-4108	**eBUS Edge Runtime License Key for Virtual Machines or Containerized Environments — Single GigE Vision Stream Channel with Any Payload Type** For eBUS Edge applications deployed on a virtual machine or containerized environment. Supports one GigE Vision stream channel and all supported payload types: image payload with extended chunk mode (metadata), chunk data payload, multipart payload, and GenDC payload.
990-4110	**eBUS Edge Runtime License Key for Virtual Machines or Containerized Environments — Single GigE Vision Stream Channel with Image Payload Type** For eBUS Edge applications deployed on a virtual machine or containerized environment. Supports one GigE Vision stream channel and the image payload type with extended chunk mode (metadata).

PREVIOUS GENERATIONS eBUS SDK (VER 3.1 – 7.0)

Physical Machines (Bare-Metal) and Virtual Machines or in a Containerized Environment – File-based License, requires a Fixed MAC Address from the Deployment System

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), multipart payload and GenDC payload) to transmit image/video data.

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