Grass Valley

DATASHEET

AMPP Edge Agile Compute Node

Scalable I/O and processing nodes for Grass Valley's Agile Media Processing Platform.

AMPP® Edge provides the on-premise I/O and compute resources for AMPP applications as part of the GV Media Universe workflows.

AMPP Edge is a turnkey Linux Ubuntu server perfect for AMPP customers requiring signal contribution and transmission in and out of the AMPP SaaS platform, securely and with the lowest latency possible across any network.

In addition, AMPP Edge offers the ability to host various AMPP applications such as Flow Monitors, Clip Players, Multiviewers, Recorders, Master Control, Replay, Switchers and more, enabling production and broadcast operations from anywhere.

AMPP Edge enables remote viewing using the AMPP Flow Monitors to stream sources anywhere to an internet browser on a PC. This allows for low latency and secure streaming of multiviewer outputs from truck/venue, or camera feeds to producers in remote locations.

AMPP Edge is available in three models:

- AMPP Edge
- AMPP Edge Pro
- AMPP Edge Ultra

All models offer similar features and functions, and they differ only in their compute capacity and hardware specifications.

The **AMPP Edge (1 RU)** server is a versatile rackmount solution designed for seamless installation into facilities and transmission trucks equipped with standard racks. It offers redundant power supplies, ensuring uninterrupted operation for mission-critical workflows and RAID-1 SSD for enhanced reliability and data protection. This 1 RU server is ideal for general-purpose applications, delivering efficient performance for various edge computing tasks.

For more demanding applications, the AMPP Edge family provides higher performance alternatives. **AMPP Edge Pro (2 RU)** delivers enhanced performance suitable for intensive workloads. **AMPP Edge Ultra (2 RU)** is the most advanced server in the portfolio, featuring top-tier specifications to handle the highest demands.

The AMPP Edge series is designed to optimize performance based on workload requirements. Higher-tier models can significantly reduce the number of servers needed, providing cost and space efficiency as their superior performance might replace several lower-tier units. This scalability ensures you get the most suitable solution for your specific application, whether it's basic processing or applications with high demand for compute resources.

AMPP Edge offers SDI and SMPTE ST 2110/ST 2022-7 IP I/O options for signal acquisition and transmission up to UHD formats. IP routing is compliant with NMOS IS-04 and IS-05.

Key Features

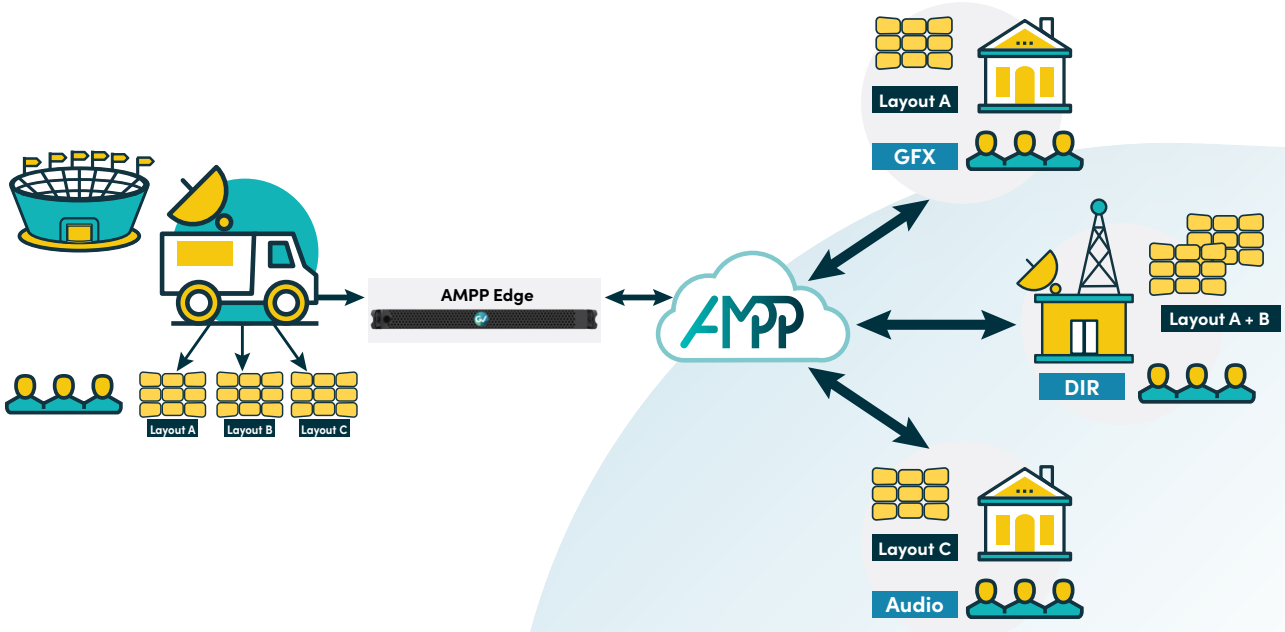
- Turnkey servers for AMPP customers managed by Grass Valley® DevOps team
- 1 RU and 2 RU rackmount or standalone versions
- Available with redundant power supplies and RAID file system
- SDI and IP interfaces for signal contribution or transmission
- Supports UHD and HDR
- IP interface compliant to SMPTE ST 2110, ST 2022-7 and NMOS IS-04/IS-05
- Low latency and secure streaming to and from AMPP SaaS platform
- Supports RIST and SRT ARQ streaming

AMPP Edge Use Cases

AMPP Edge for Remote Monitoring

In the context of remote working, a simple use case of an AMPP Edge is to stream local sources, from a venue or an outside broadcast (OB) truck, to a tablet or PC with just a web browser and an internet connection. For example, multiviewer outputs are acquired from the OB truck and streamed to production staff members anywhere in the world, which allows them to participate in the production without being physically present.

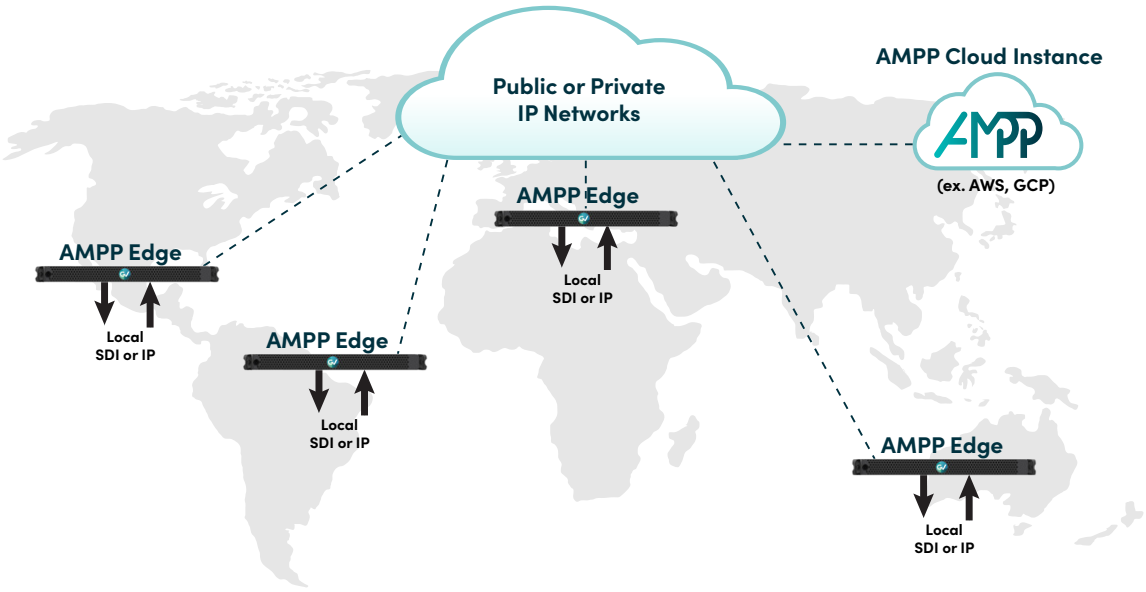
- Production-grade monitoring experience:
  - High quality (full HD resolution)
  - Low latency (as low as 2-3 frames)
- Accessible via standard home internet connection:
  - Low bandwidth (~5 Mb/s)
  - Secured with encryption and authentication



AMPP Edge for Global Routing

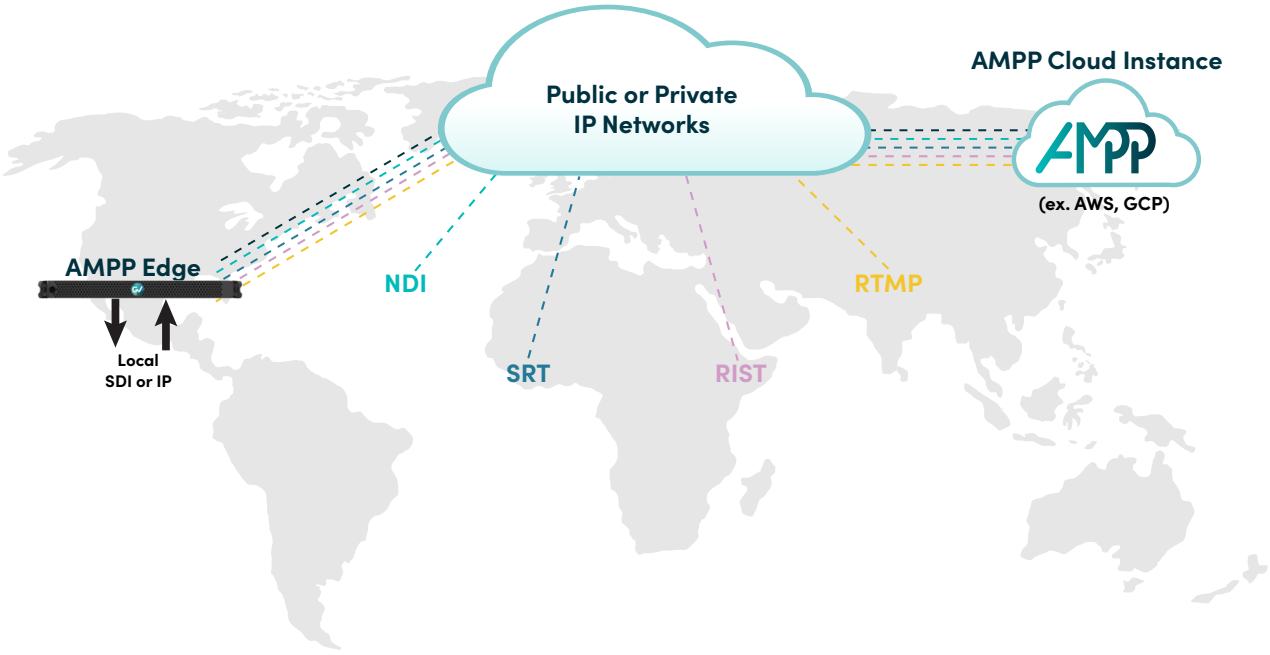
Once a signal is acquired locally using an AMPP Edge, it can be routed to any other AMPP Edge anywhere in the world, or to an AMPP cloud instance running on cloud infrastructure providers. Once the signal reaches its destination, it is delivered back locally as an SDI or IP source. This easily accomplished using the AMPP routing service. Local signals can be acquired and delivered in SDI or IP (SMPTE ST 2110, SMPTE ST 2022-7, NDI, MPEG-TS and more).

- Intelligent timing: outputs from multiple locations all co-timed
- Low latency: Edge-Cloud-Edge round trip in less than 1 second
- Easy connectivity: automatically routes streams across multiple networks
- Streams include video, all audio channels and the complete ancillary data



AMPP Edge for Contribution

AMPP supports all common local input and output formats including SMPTE ST 2110, NDI and SDI for easy connecting to your existing devices. Global inputs and outputs allow you to stream between different AMPP fabrics and lets you choose the best possible transport for low-latency and high-quality streaming. Supporting RIST and SRT for reliable transport even over public Internet, AMPP gives you a wide variety of profiles to fit your needs.



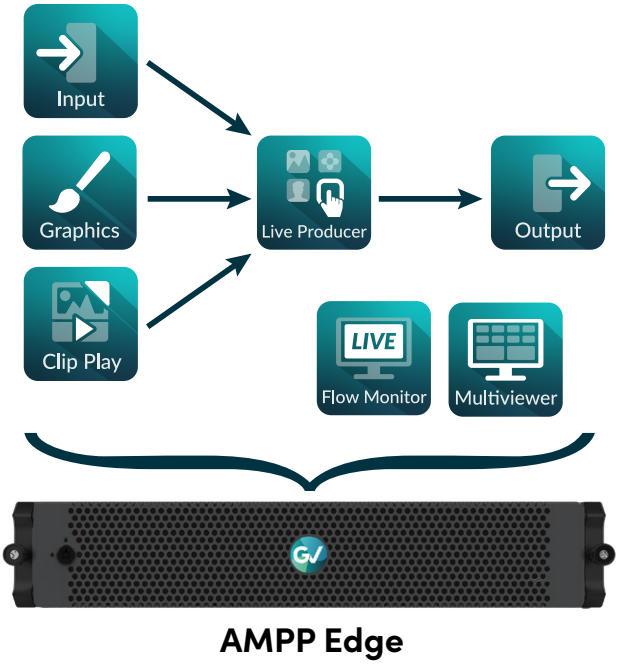
Spin Up AMPP Processing Applications

In addition to signal I/O and contribution, an AMPP Edge offers on-premise compute resources to run AMPP Applications: master control or live production switcher, audio mixer, graphics and more!

Easily configure and spin up a complete media worfklow, including built in live monitoring with flow monitors and multiviewers.

AMPP Applications

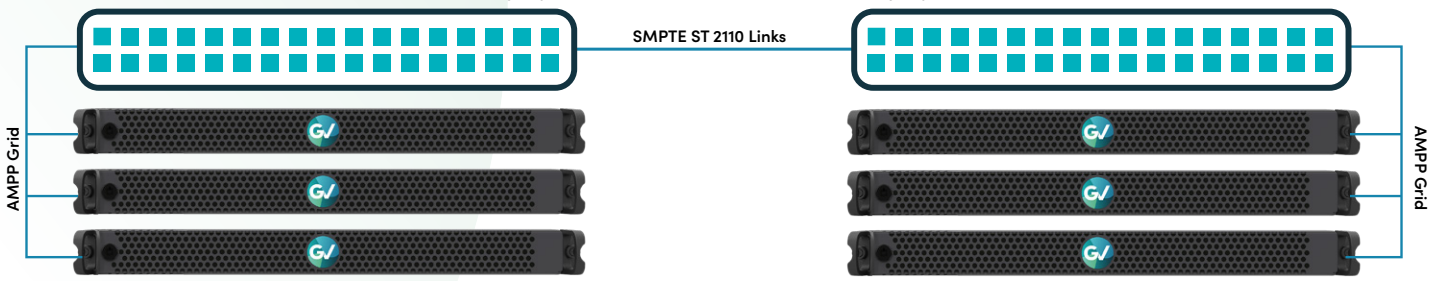
Sample Processing Workflow Hosted on AMPP Edge



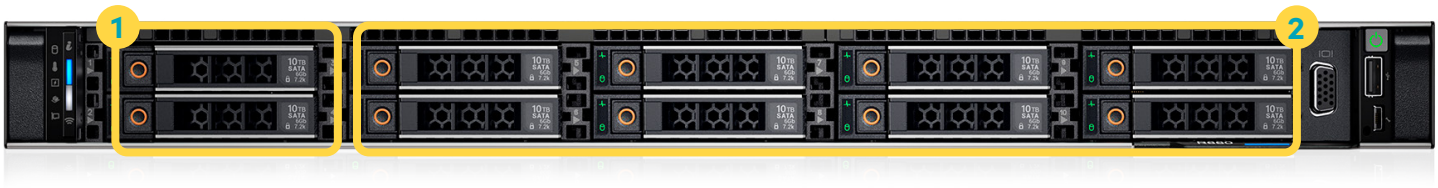
AMPP Edge

AMPP Grid

AMPP Grid provides data center scalability by allowing multiple nodes to work in unison as a single pool of compute. The total I/O of the system grows as more AMPP Edge devices are added. Systems connected with AMPP Grid can grow incrementally, adding a node at a time to effectively manage cost. AMPP Grid can be used with Linux OS only. To build a system with AMPP Grid in different locations, SMPTE ST 2110 links between those locations are required.



AMPP Edge — Front Panel & Options



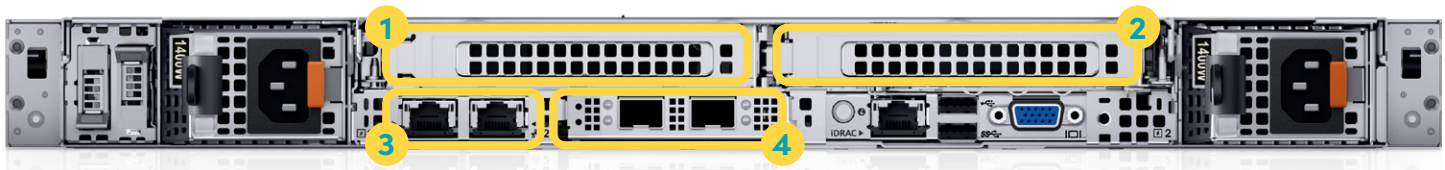
CPU: Dual Intel Xeon SILVER

1. Boot Drives

2. Up to eight media drives:

- **SSD-1920-D16 —** Internal 1.92 TB Mixed Use SSD SATA drive
- **SSD-3840-D16 –** Internal 3.84 TB Mixed Use SSD SATA drive

AMPP Edge — Rear Panel & Options



1. 1x NVIDIA L4 GPU (default)

2. Optional:

- **GV-HW-CX6-1HG-2110** — IP expansion card dedicated for uncompressed and compressed video transmission (i.e., 2110) — Dual 100G Base-X QSFP28. Includes Rivermax license supported for 5 years.
- **GV-HW-CX6-1HG-GRID** — IP expansion card dedicated for AMPP Grid — Dual 100G Base-X QSFP28.
- **GV-HW-DTC-8P2C-SDI —** SDI expansion card with eight HD-BNC ports supporting 3G SDI. Two of these ports support 12G SDI.

3. Embedded 2x 1 GbE Base-T RJ45

4. Optional:

- **GV-HW-OCP-E810-BX —** IP expansion OCP NIC card dedicated for compressed video transmission or LAN — Dual 1/10/25G Base-X SFP28.
- **GV-HW-OCP-X710-BT —** IP expansion OCP NIC card dedicated for compressed video transmission or LAN — Dual 1/10G Base-T RJ45.

AMPP Edge Pro/Ultra — Front Panel & Options

PRO CPU: Dual Intel Xeon GOLD

ULTRA CPU: Dual Intel Xeon PLATINUM

1. Optional:

- **GV-HW-CX6-1HG-2110** — IP expansion card dedicated for uncompressed and compressed video transmission (i.e., 2110) — Dual 100G Base-X QSFP28. Includes Rivermax license supported for 5 years.
- **GV-HW-CX6-1HG-GRID** — IP expansion card dedicated for AMPP Grid — Dual 100G Base-X QSFP28. Only one card can be selected per server.
- **GV-HW-DTC-8P2C-SDI —** SDI expansion card with eight HD-BNC ports supporting 3G SDI. Two of these ports support 12G SDI.

2. Optional:

- **GV-HW-CX6-1HG-2110** — IP expansion card dedicated for uncompressed and compressed video transmission (i.e., 2110) — Dual 100G Base-X QSFP28. Includes Rivermax license supported for 5 years.
- **GV-HW-CX6-1HG-GRID** — IP expansion card dedicated for AMPP Grid — Dual 100G Base-X QSFP28. Only one card can be selected per server.
- **GV-HW-DTC-8P2C-SDI —** SDI expansion card with eight HD-BNC ports supporting 3G SDI. Two of these ports support 12G SDI.

3. Boot drives (OS)

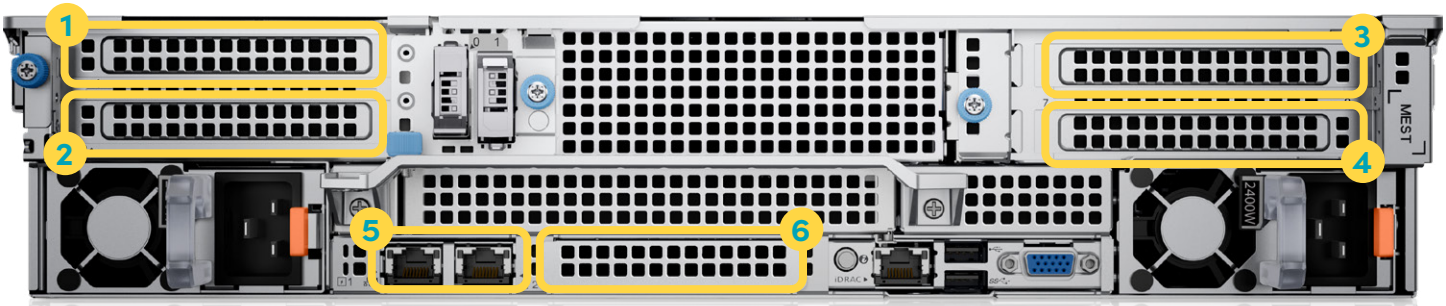
4. Up to six media drives:

- **SSD-1920-D16 —** Internal 1.92 TB Mixed Use SSD SATA drive
- **SSD-3840-D16 —** Internal 3.84 TB Mixed Use SSD SATA drive

5. 1x NVIDIA L4 GPU (default)

6. 1x NVIDIA L4 GPU (default)

AMPP Edge Pro/Ultra — Rear Panel & Options



1. Optional:

- **GVAMPP-HW-L4GPU —** NVIDIA L4 GPU expansion card dedicated for AMPP Edge Pro and AMPP Edge Ultra only.

2. Optional:

- **GVAMPP-HW-L4GPU —** NVIDIA L4 GPU expansion card dedicated for AMPP Edge Pro and AMPP Edge Ultra only.

3. Optional:

- **GV-HW-CX6-1HG-2110 —** IP expansion card dedicated for uncompressed and compressed video transmission (i.e., 2110) — Dual 100G Base-X QSFP28. Includes Rivermax license supported for 5 years.
- **GV-HW-CX6-1HG-GRID —** IP expansion card dedicated for AMPP Grid — Dual 100G Base-X QSFP28. Only one card can be selected per server.
- **GV-HW-DTC-8P2C-SDI —** SDI expansion card with eight HD-BNC ports supporting 3G SDI. Two of these ports support 12G SDI.

4. Optional:

- **GV-HW-CX6-1HG-2110 —** IP expansion card dedicated for uncompressed and compressed video transmission (i.e., 2110) — Dual 100G Base-X QSFP28. Includes Rivermax license supported for 5 years.
- **GV-HW-CX6-1HG-GRID —** IP expansion card dedicated for AMPP Grid — Dual 100G Base-X QSFP28. Only one card can be selected per server.
- **GV-HW-DTC-8P2C-SDI —** SDI expansion card with eight HD-BNC ports supporting 3G SDI. Two of these ports support 12G SDI.

5. Embedded 2x 1 GbE Base-T RJ45

6. Optional:

- **GV-HW-OCP-E810-BX —** IP expansion OCP NIC card dedicated for compressed video transmission or LAN — Dual 1/10/25G Base-X SFP28.
- **GV-HW-OCP-X710-BT —** IP expansion OCP NIC card dedicated for compressed video transmission or LAN — Dual 1/10G Base-T RJ45.

Specifications

I/O

SDI with GV-HW-DLC-8P2C-SDI expansion option:

8x SD/HD/3G-SDI configurable inputs or outputs HD-BNC connectors

- Two of these eight ports support 12G – 12G-SDI (SMPTE ST 2082-10)
- 3G-SDI Level A (SMPTE ST 425-1 Level A Mapping)
- 3G-SDI Level B-DL (SMPTE ST 425-1 Level B Dual-Link Mapping)
- 3G-SDI Level B-DS (SMPTE ST 425-1 Level B Dual-Stream Mapping)
- Quad Link 3G-SDI (SMPTE ST 425-5)
- HD-SDI (SMPTE ST 292)
- SD-SDI (SMPTE ST 259)

IP with GV-HW-CX6-1HG-2110 expansion option:

- Dual 10G/25G SFP (EC9733) or Dual 100G QSFP (EC9734)
- SMPTE ST 2022-7
- SMPTE ST 2110-20 uncompressed video over IP
- SMPTE ST 2110-30 PCM audio over IP
- SMPTE ST 2110-40 ancillary data over IP
- NMOS IS-04 and IS-05 discovery, registration and connection management
- SMPTE ST 2059 PTP synchronization

WAN/LAN transport:

- SMPTE ST 2022-2/MPEG-TS
- RIST/TR-06 Basic and Main Profile
- SRT
- RTMP(S)
- NDI

Encryption and protection:

- Flex-FEC
- DTLS-SRTP encryption

Video codecs:

- AVC/H.264: 4:2:0 or 4:2:2, 8- and 10-bit
- HEVC/H.265: 4:2:0 8- and 10-bit

Audio codecs:

- AAC
- Opus

Video Formats

Resolution: 480 (NTSC), 576 (PAL), 720 (HD), 1080 (full HD), 2160 (UHD)

Scan: Interlaced or progressive

Frame Rate (Hz): 23.97, 24, 25, 29.97, 50, 59.94

SDI I/O:

- (3G Level A) 1080p50/59.94
- (UHD quad-link) 2160p59.94 and 2160p50

Audio

SDI and SMPTE ST 2110: Up to 16 tracks per channel

Input: 48 kHz, 16- or 24-bit digital audio

Reference Genlock (with GV-HW-DLC-8P2C-SDI)

Blackburst analog and tri-level sync

Single HD-BNC connector

Dimensions

Important Note: Please be advised to pay close attention to the depth of servers when planning your installation. The AMPP Edge Pro and AMPP Edge Ultra servers have a depth of 911 mm (35.86 in.). Ensure that your server racks and installation environment can accommodate this size.

AMPP Edge (1 RU): 788 mm (17 in.) depth

AMPP Edge Pro (2 RU): 911 mm (35.86 in.) depth

AMPP Edge Ultra (2 RU): 911 mm (35.86 in.) depth

Supported on-premise I/O formats:

- SDI (with GV-HW-DLC-8P2C-SDI)
- SMPTE ST 2110 with NMOS IS-04/05 support (with GV-HW-CX6-1HG-2110)
- SMPTE ST 2022-7 (with IP expansion option)
- NDI, including fill & key

Codecs and wrappers:

- H.264, H.265
- SRT
- RIST
- And more!

Ordering

AMPP Edge Nodes

GVAMPP-HW-D16-ST

GV AMPP Edge 1 RU server for HD/UHD I/Os and edge processing workflows. Linux Ubuntu OS-based. Supported by dual Intel Xeon Silver CPUs and 1x NVIDIA graphics card. Requires either optional card for SDI or SMPTE ST 2110 IP workflows.

GVAMPP-HW-D16-PRO

GV AMPP Edge Pro 2 RU server for HD/UHD I/Os and edge processing workflows. Linux Ubuntu OS-based. Supported by dual Intel Xeon Gold CPUs and 2x NVIDIA graphics cards. Requires either optional card for SDI or SMPTE ST 2110 IP workflows.

GVAMPP-HW-D16-ULT

GV AMPP Edge Ultra 2 RU server for HD/UHD I/Os and edge processing workflows. Linux Ubuntu OS-based. Supported by dual Intel Xeon Platinum CPUs and 2x NVIDIA graphics cards. Requires either optional card for SDI or SMPTE ST 2110 IP workflows.

SSD Storage Options

SSD-1920-D16

Internal 1.92 TB Mixed Use SSD SATA drive

SSD-3840-D16

Internal 3.84 TB Mixed Use SSD SATA drive

Options

GVAMPP-HW-L4GPU

NVIDIA L4 GPU expansion card dedicated for AMPP Edge Pro and AMPP Edge Ultra only.

GV-HW-CX6-1HG-2110

IP expansion card dedicated for uncompressed and compressed video transmission (i.e., 2110) – Dual 100G Base-X QSFP28. Includes Rivermax license supported for 5 years.

GV-HW-CX6-1HG-GRID

IP expansion card dedicated for AMPP Grid – Dual 100G Base-X QSFP28. Only one card can be selected per server.

GV-HW-OCP-X710-BT

IP expansion OCP NIC card dedicated for compressed video transmission or LAN – Dual 1/10G Base-T RJ45.

GV-HW-OCP-E810-BX

IP expansion OCP NIC card dedicated for compressed video transmission or LAN – Dual 1/10/25G Base-X SFP28.

GV-HW-DTC-8P2C-SDI

SDI expansion card with eight HD-BNC ports supporting 3G SDI. Two of these ports support 12G SDI. (Available to order starting Q2 2025)

Windows OS Options

GVAMPP-OS-WS22-ST

Windows Server 2022 Operating System dedicated for AMPP Edge servers. Includes Windows OS licenses and L4 GPU license supported for 5 years. (Available to order starting Q2 2025)

GVAMPP-OS-WS22-PRO

Windows Server 2022 Operating System dedicated for AMPP Edge Pro servers. Includes Windows OS licenses and L4 GPU license supported for 5 years. (Available to order starting Q2 2025)

GVAMPP-OS-WS22-ULT

Windows Server 2022 Operating System dedicated for AMPP Edge Ultra servers. Includes Windows OS licenses and L4 GPU license supported for 5 years. (Available to order starting Q2 2025)

Transceivers Options

GV-HW-TRX-10G-SR

One (1) 1/10G SR 850 nm SFP+ transceiver. Optional for GV-HW-OCP-E810-BX.

GV-HW-TRX-25G-SR

One (1) 10/25G SR 850 nm SFP28 transceiver. Optional for GV-HW-OCP-E810-BX.

GV-HW-TRX-100G-SR

One (1) 100G SR4 850 nm QSFP28 transceiver. Optional for GV-HW-CX6-1HG-2110 and GV-HW-CX6-1HG-GRID.

Recommended Hardware Specification

You may purchase equipment for the operation of the AMPP platform independently. The equipment should meet the specified requirements listed in the table below:

Component	Recommended HW Specification
CPU	Intel Xeon 5th Generation
GPU	NVIDIA L4
IP Card for SMPTE ST 2110	Connectx 6 dx (with Rivermax license)
RAM	At least 128 GB 5600 MT/s DDR5 (all channels populated)
SSD drive for OS	At least 480 GB, mixed use

Example:

- Dual Intel Xeon Gold 6548Y+ Processor
- NVIDIA L4 GPU
- Connectx 6 dx dual 100G card
- 256 GB 5600 MT/s DDR5 RAM memory (16x 16 GB RAM modules)
- SSD SATA drive 480 GB, mixed mode

If you choose to use your own hardware, Grass Valley are not responsible for any incompatibilities or platform-related errors.