



## Unleash the Power of Modularity in Industrial-Grade Edge AI Computing

In recent years, we have witnessed an extraordinary technological revolution that has reshaped numerous industries and paved the way for unprecedented advancements. One such transformative force is the rise of industrial-grade Edge AI (Artificial Intelligence) solutions. Combining the power of artificial intelligence with the capabilities of edge computing, C&T introduces its modular EDGEBoost Nodes technology. The EDGEBoost Nodes allow C&T's AI Edge Inference Computers to support additional performance accelerators and high-speed data storage for Edge AI deployments. This cutting-edge technology has the potential to revolutionize the way industrial operations are carried out.

As the demand for real-time insights and autonomous decision-making grows in various industries, the rise of industrial-grade Edge AI promises to be a game-changer. It brings together the power of AI and the advantages of edge computing, addressing the limitations of traditional cloud-based approaches. With the combination of C&T's RCO-6000 Series and the EDGEBoost Nodes providing scalable GPUs, NVMe Storages, SATA Storages, RAID Cards, or other PCIe/PCI expansion cards, C&T's AI Edge Inference Computer can deliver the optimal low-latency, resilient, and secure AI solutions.



AI & ML



Machine Vision



Industrial Automation



Telematics & Transportation



Metrology & Defect Detection



Security Surveillance



Smart Retail and Kiosks



ADAS and Autonomous Vehicle Data Capture & Storage



## Introducing the **EDGEBoost Nodes Series**

EDGEBoost Nodes are modular add-on nodes designed for C&T's AI Edge Inference Computer or also known as the RCO-6000 Series. These add-on nodes provide an easy and cost-effective upgrade for the rugged, fanless computer. They elevate computer performance through additional performance accelerators. The EDGEBoost Nodes deliver powerful real-time inferencing capabilities and high-speed data storage performance for intensive industrial-grade Edge AI applications.



A key advantage of the EDGEBoost Nodes is their wide array of customizable specs. The EDGEBoost Nodes have up to 17 configurations and will have more variations to come from the ongoing product development. With EDGEBoost Nodes having the ability to upgrade and swap components, solution integrators can adapt to evolving technologies and extend the lifespan of the systems. This reduces the risk of obsolescence and ensures that the computer can keep up with changing demands and emerging industry standards.



### Performance Accelerators Provided by the EDGEBoost Nodes:



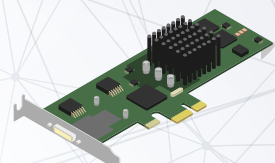
GPU Card  
PCIe x16



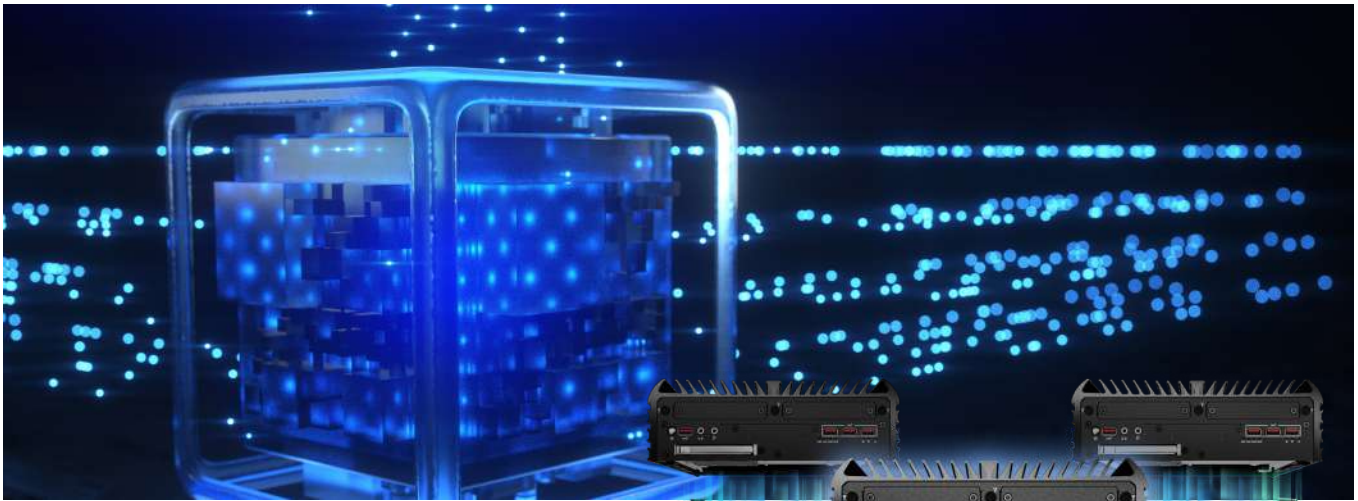
NVMe/SATA  
Storage



Hardware RAID  
Card



PCIe/PCI  
Expansion Card



## Innovative Modular Designs

The EDGEBoost Nodes are designed with C&T's proprietary mechanical design that provides the ability for a rugged fanless industrial computer to seamlessly pair with the performance accelerators add-on, or "EDGEBoost Nodes." The EDGEBoost Nodes can be easily installed, removed, and replaced with another node, providing ease of upgrade or maintenance for solution integrators. Moreover, the nodes are built with robust modular technologies, including hot-swappable drives, hot-swappable storage bricks, and a hot-swappable adaptive fan. Hot-Swappable technology simplifies maintenance and repair processes. When a component fails, it can be individually replaced, minimizing downtime and reducing repair costs. In addition, by having modular components, the systems can be easily transported and assembled in various locations. Therefore, with these innovative modular designs, the EDGEBoost Nodes offer various advantages for solution integrators and industrial Edge AI deployments



Modular



Cost Efficient



Faster Delivery



Easy Maintenance



Future-Proof

## EDGEBoost Nodes Benefits

- Scalable, Expandable, and Flexible.
- Cost Effective Solution
- Faster Time-To-Market
- Quick Upgrade
- Easy Maintenance
- Portable Design
- Future-Proof Technology





## Certification Ready

C&T's in-house testing lab facility ensures the quality, performance, and reliability of the EDGEBoost Nodes amid industrial deployments. Moreover, the RCO-6000 Series and the EDGEBoost Nodes are validated by various certifications, meeting international standards across diverse markets and industries. All of the EDGEBoost Nodes configurations and hot-swappable modules are covered by these different global standards and certifications for rugged edge applications.

- CE
- FCC Class A
- UL Certified



## Built Rugged. Built Ready.

A major breakthrough of the EDGEBoost Nodes is its ability to withstand harsh industrial environments despite its modular design. The EDGEBoost Nodes have wide temperature ranges, accommodating numerous challenging thermal conditions at the rugged edge. The EDGEBoost Nodes are also hardened to endure exposure to impact and vibrations, which are common in rugged industrial environments. Some of the EDGEBoost Nodes even comply with the military standard MIL-STD-810H in shock and vibration, enabling deployment in environments where the system is exposed to frequent shock and vibration.



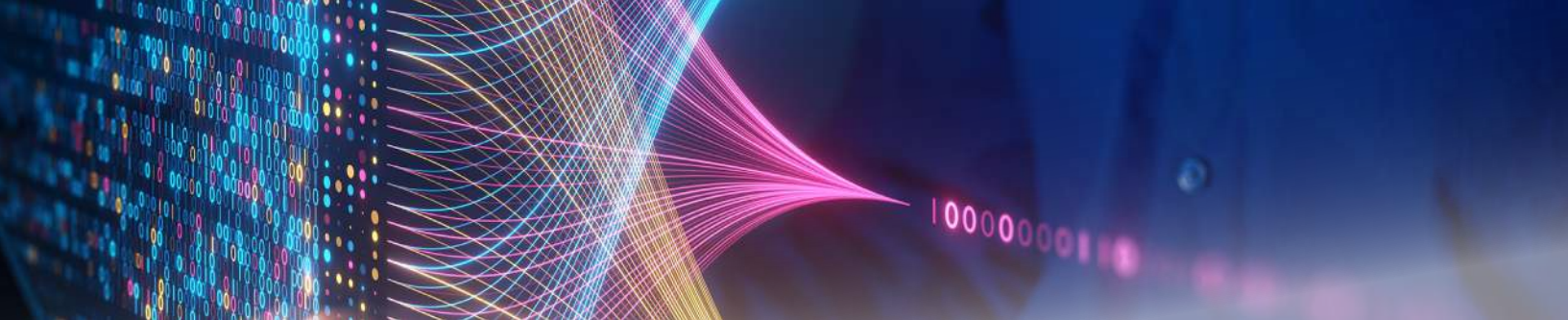
### EDGEBoost Nodes SATA and PCIe/PCI Series

- Wide Operating Temperature -25°C to 70°C
- 50G Shock and 5 Grms Vibration Resistant

### EDGEBoost Nodes NVMe and GPU Series

- Wide Operating Temperature -25°C to 60°C
- 20G Shock and 3 Grms Vibration Resistant





# Dissecting the EDGEBoost Nodes

## Key Technologies & Features

The EDGEBoost Nodes Series are built and designed with state-of-the-art technologies and features to ensure its optimal performance and compatibility for the Rugged Edge AI deployments. These key technologies incorporate modularity, data security, industrial reliability, and performance accelerators compatibility.

## Data Security Features

- Safe Eject Button
- Safety Bracket
- Anti-Theft Lock
- Hardware RAID (NVMe)
- Programmable Software API

## Configurable Hardware RAID

The Edge AI Inference computer comes with both software and hardware RAID, offering RAID 0, 1, 5, and 10. The EDGEBoost Nodes offer a configurable hardware RAID card through the PCIe expansion slot for its NVMe drives. One of the RAID cards C&T offers with the EDGEBoost Nodes is the Broadcom MegaRAID 9560-16i, adding RAID 6 and maximizing the RAID performance overall. Configuring your system with a dedicated RAID controller can boost the performance of your system by offloading RAID functions from the host system's CPU to the RAID controller. Offloading RAID functions to a dedicated RAID controller allows the CPU to focus on running a higher edge computing workload.



## Safe Eject Button

Adding to the ease of offloading data from the EDGEBoost Nodes to the cloud is the availability of a physical button on the system that initiates the ejection of storage media for the safe removal of the SSD canister or individual SSDs. Pressing the button suspends all I/O operations and read/write operations to the storage devices to prevent the loss or corruption of data.



## Safety Bracket and Anti-Theft Lock

The hot-swappable SSD storage and the storage canister bricks are safely guarded with a safety bracket and an anti-theft lock. The safety bracket prevents the storage from accidentally being loose from constant shock and vibration. Whereas the anti-theft lock ensures that only the intended user with the key can access the storage, preventing fraudulent situations amid remote and unsupervised deployments.



## Programmable Software API

By providing a programmable API, the EDGEBoost Nodes can empower developers to extend the functionality of the EDGEBoost Nodes and their software integration according to specific requirements. With EDGEBoost Nodes supporting programmable software API, it enables developers to integrate their software applications into the EDGEBoost Nodes, manage file operations, retrieve and store data, and perform various data logging and analysis tasks. Programmable SW APIs are widely used in various domains, including web development, mobile app development, cloud computing, and software integration.



## Hot-Swappable Storages and Canister Bricks

Having a robust and scalable data storage solution is a growing concern for today's hardware users. So, we've added the ability to hot-swap not only for each individual NVMe drive but multiple drives can be hot-swapped thanks to the availability of hot-swappable drive canisters. Drive canisters streamline the process of accessing and moving data from the Edge AI Inference computer to a central computer, especially for users that need to offload data from the PC frequently. The EDGEBoost Nodes can be configured with SATA or NVMe drives. The EDGEBoost Nodes with SATA drives provide a cost-effective, high-density storage solution for applications that require better dollar value per gigabyte of storage. In comparison, the EDGEBoost Nodes with NVMe drives offer high-speed data transfer for real-time and mission-critical applications.



## The EDGEBoost Nodes have multiple types of hot-swappable storages:

- 2.5" Hot-Swappable SATA Drives 7mm and 15mm
- 2.5" U.2 Hot-Swappable NVMe Drives 7mm and 15mm
- 7mm and 15mm SATA Storage Canister Bricks
- 7mm and 15mm Hot-Swappable NVMe Canister Bricks



\*The SATA Storage Canister Bricks are not removable/hot-swappable

\*The 15mm SATA and NVMe Drive Bay can support 15mm/9mm/7mm Drives

### 7mm SATA/NVMe



2.5" Drive Bay



4x SSD Canister Brick

### 15mm SATA/NVMe



2.5" Drive Bay



2x SSD Canister Brick



## Hot-Swappable and Adaptive Fan

For optimal thermal regulation, the EDGEBoost Nodes come with a hot-swappable and adaptive fan to deliver cooling where it counts. The integrated adaptive fan is necessary to remove the heat generated from the GPU and NVMe storage devices, neutralizing temperature spikes often experienced by high-performance NVMe and GPU technologies. The adaptive fan can smartly adjust the cooling power based on temperature fluctuation. Furthermore, the hot-swappable fan makes cleaning and replacing them super easy and quick to eliminate unwanted downtime. The SATA EDGEBoost Nodes support the adaptive fan. The NVMe and the GPU EDGEBoost Nodes adaptive fans are hot-swappable.

## Industrial-Grade Locking Brackets for GPU Cards

Inside the EDGEBoost Nodes PCIe expansion slots are industrial-grade locking brackets that are easily adjustable mechanical brackets. These brackets provide locking reinforcement for the GPU card and other expansion cards to ensure resistance against shock and vibration. The EDGEBoost Nodes can support a PCIe16 GPU card with dimension of 235 mm in length, 112 mm in width, and up to 3-slot high.



## Additional Power Supply for GPU Cards

The EDGEBoost Nodes support additional power supply for GPU and NVMe expansions. The second power supply delivers stable power up to 280W for the GPU card and the NVMe drives with a wide voltage of 12~48VDC support. The 280W power supply allows the EDGEBoost Nodes to provide various robust GPU cards for more intensive real-time Edge AI workloads. With the second power supply unit powering the GPU card and the NVMe drives, the rugged fanless computer's power supply can power its high-performance CPU and connected peripherals, including multiple PoE cameras and a 5G cellular module.



## Some Supported GPU Cards for the EDGEBoost Nodes

- NVIDIA T1000: 4G RAM | 896 CUDA Core | 50W | 4x mDP
- NVIDIA RTX A2000: 12G RAM | 3328 CUDA Core | 70W | 4x mDP
- NVIDIA RTX 4000 (SFF): 20G RAM | 6144 CUDA Core | 70W | 4x mDP





# Mix & Match EDGEBoost Nodes Guide

Configure the RCO-6000 Series with different EDGEBoost Nodes to meet your specific Edge AI requirements for various industrial deployments. The EDGEBoost Nodes can be configured with different combinations of SATA Storage, NVMe Storage, GPU Card, PCIe/PCI expansions, and Hardware RAID card. Below is a quick guide based on the performance accelerators, technologies, and features.

## Top - Compatible RCO-6000 Series



### RCO-6000-RPL

Intel® 13<sup>th</sup>/12<sup>th</sup> Gen RPL/ADL CPU

## Bottom - EDGEBoost Nodes (PCIe Gen 4 Series)

### > PCIe Gen 4 Series



#### EBND-2-EXP-G4

- 1x PCIe x16 (Gen 4), 1x PCIe x1 (Gen 3) or 1x PCIe x16 (Gen 4), 1x PCIe x8 (Gen 4)

### > GPU Gen 4 Series



#### EBND-2-PWR-G4

- 1x PCIe x16 (Gen 4), 1x PCIe x1 (Gen 3) or 1x PCIe x16 (Gen 4), 1x PCIe x8 (Gen 4)
- 12-48VDC Power Supply (280W)

### > NVMe Series



#### EBND-2-2NVME-G4

- 2x Hot-Swap 2.5" NVMe SSD Bay (15mm)
- PCIe Gen 4 Expansion

### > SATA Storage Series



#### EBND-2-2SATA-G4

- 2x Hot-Swap 2.5" SATA Drives (15mm)
- RAID 0, 1, 5, 10
- PCIe Gen 4 Expansion



#### EBND-2-4SATA-G4

- 4x Hot-Swap 2.5" SATA Drives (7mm)
- RAID 0, 1, 5, 10
- PCIe Gen 4 Expansion





Top - Compatible RCO-6000 Series



**RCO-6000-CML**

Intel® 10<sup>th</sup> Gen CML CPU

Bottom - EDGEBoost Nodes (PCIe Gen 3 Series)

› **PCI/PCIe Expansion Series**



**EBND-2-EXP**

- PCIe x16/ PCI Expansions

› **GPU Series**



**EBND-2-PWR**

- PCIe x16/ PCI Expansions
- 12-48VDC Power Supply (280W)

› **SATA Storage Series**



**EBND-2-2SATA**

- 2x Hot-Swap 2.5" SATA Drives (15mm)
- RAID 0, 1, 5, 10
- PCIe Expansion



**EBND-2-4SATA**

- 4x Hot-Swap 2.5" SATA Drives (7mm)
- RAID 0, 1, 5, 10
- PCIe Expansion

Top - Compatible RCO-6000 Series



**RCO-6000-CML**

Intel® 10<sup>th</sup> Gen CML CPU



**RCO-6000-RPL**

Intel® 13<sup>th</sup>/12<sup>th</sup> Gen RPL/ADL CPU

Bottom - EDGEBoost Nodes

› **NVMe Series**



**EBND-8NVME-S**

- 8x Hot-Swap 2.5" U.2 NVMe Drives (7mm)
- RAID 0, 1, 5, 10



**EBND-4NVME-S**

- 4x Hot-Swap 2.5" U.2 NVMe Drives (15mm)
- RAID 0, 1, 5, 10



**EBND-4NVME-H**

- 8x Hot-Swap 2.5" U.2 NVMe Drives (7mm)
- RAID 0, 1, 5, 6, 10
- Hardware RAID 6

› **NVMe and GPU Series**



**EBND-4NVME-GPU**

- 1x GPU PCIe x16 Expansion
- 4x Hot-Swap 2.5" U.2 NVMe Drives (7mm)



**EBND-2NVME-GPU**

- 1x GPU PCIe x16 Expansion
- 2x Hot-Swap 2.5" U.2 NVMe Drives (15mm)

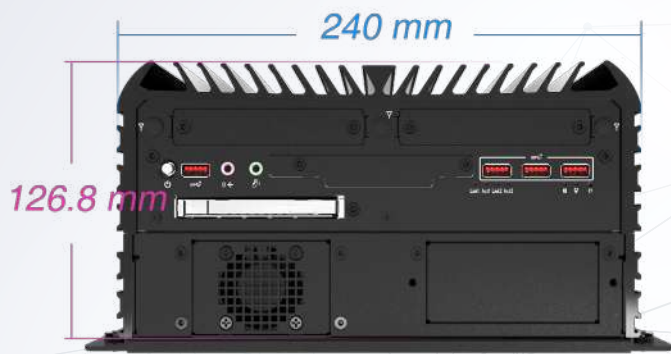


**EBND-4NH-1E**

- 1x PCIe x16 Slot
- 1x Hardware RAID 6
- 4x Hot-Swap 2.5" U.2 NVMe Drives (7mm)

# EDGEBoost Nodes Sizes Guide

Another way to differentiate the EDGEBoost Nodes when size is in consideration is to differentiate in terms of their height or number of expansion slots.



Firstly, there are EDGEBoost Nodes with 2-Slot high, measured at 240 (W) x 261 (D) x 47.8 (H) mm. The 2-Slot EDGEBoost Nodes support either SATA drives, a GPU card, or PCIe/PCI expansion cards. Combined with the RCO-6000 Series the height will measure at 126.8 (H) mm in total.



Secondly, there are EDGEBoost Nodes with 3-Slot high, measured at 240 (W) x 261 (D) x 87.9 (H) mm. The 3-Slot EDGEBoost Nodes support either NVMe drives, NVMe with RAID card, a GPU card, or the combination of NVMe drives and a GPU card. Combined with the RCO-6000 Series the height will measure at 166.9 (H) mm in total.



NEW

# EDGEBoost Nodes PCIe Gen 4 SERIES

## SATA Storage Series



- **EBND-2-2SATA-G4**

- 1x SATA EDGEBoost Canister Brick
  - > 2x Hot-Swappable 2.5" SATA Drives (15 mm)
  - > RAID: 0, 1, 5, 10
- Data Security: Safety Bracket
- Adaptive Cooling Fan
- Configurable Expansions:
  - > 1x PCIe x16 (Gen 4),  
1x PCIe x1 Open End (Gen 3)
  - > 1x PCIe x16 (8-Lanes, Gen 4),  
1x PCIe x8 (8-Lanes, Gen 4)



- **EBND-2-4SATA-G4**

- 1x SATA EDGEBoost Canister Brick
  - > 4x Hot-Swappable 2.5" SATA Drives (7 mm)
  - > RAID: 0, 1, 5, 10
- Data Security: Safety Bracket
- Adaptive Cooling Fan
- Configurable Expansions:
  - > 1x PCIe x16 (Gen 4),  
1x PCIe x1 Open End (Gen 3)
  - > 1x PCIe x16 (8-Lanes, Gen 4),  
1x PCIe x8 (8-Lanes, Gen 4)

## NVMe Series



- **EBND-2-2NVME-G4**

- 1x SATA EDGEBoost Canister Brick
  - > 2x Hot-Swappable U.2 2.5" NVMe Drives (15mm)
  - > RAID: 0, 1
- Data Security: Safety Bracket
- Adaptive Cooling Fan
- Configurable Expansions:
  - > 1x PCIe x16 (Gen 4),  
1x PCIe x1 Open End (Gen 3)
  - > 1x PCIe x16 (8-Lanes, Gen 4),  
1x PCIe x8 (8-Lanes, Gen 4)

NEW

# EDGEBoost Nodes PCIe Gen 4 SERIES

## PCIe Expansion Series

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- **EBND-2-EXP-G4**

- Configurable Expansions:
  - > 1x PCIe x16 (Gen 4), 1x PCIe x1 Open End (Gen 3)
  - > 1x PCIe x16 (8-Lanes, Gen 4), 1x PCIe x8 (8-Lanes, Gen 4)
- Adaptive Cooling Fan
- Card Dimension: 2-Slots High | 235 (L) x 112 (W) mm

## GPU Series

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- **EBND-2-PWR-G4**

- Configurable Expansions:
  - > 1x PCIe x16 (Gen 4), 1x PCIe x1 Open End (Gen 3)
  - > 1x PCIe x16 (8-Lanes, Gen 4), 1x PCIe x8 (8-Lanes, Gen 4)
- Card Dimension: 2-Slots High | 235 (L) x 112 (W) mm
- Second Power Supply: 4-Pin | 280W | 12 ~ 48VDC
- Industrial-Grade Locking Brackets
- Adaptive Cooling Fan

# EDGEBoost Nodes PCIe Gen 3 SERIES

## PCI/PCIe Expansion Series



- **EBND-2-EXP**

- Configurable Expansions:
  - > 1x PCIe x16, 1x PCI
  - > 2x PCIe x16 (8-Lanes)
  - > 2x PCI
- Adaptive Cooling Fan
- Card Dimension: 2-Slots High | 235 (L) x 112 (W) mm

## SATA Storage Series



- **EBND-2-2SATA**

- 1x SATA EDGEBoost Canister Brick
  - > 2x Hot-Swappable 2.5" SATA Drives (15 mm)
  - > RAID: 0, 1, 5, 10
- Data Security: Safety Bracket
- Adaptive Cooling Fan
- Configurable Expansions:
  - > 1x PCIe x16, 1x PCI
  - > 2x PCIe x16 (8-Lanes)
  - > 2x PCI



- **EBND-2-4SATA**

- 1x SATA EDGEBoost Canister Brick
  - > 4x Hot-Swappable 2.5" SATA Drives (7 mm)
  - > RAID: 0, 1, 5, 10
- Data Security: Safety Bracket
- Adaptive Cooling Fan
- Configurable Expansions:
  - > 1x PCIe x16, 1x PCI
  - > 2x PCIe x16 (8-Lanes)
  - > 2x PCI

## GPU Series



- **EBND-2-PWR**

- Configurable Expansions:
  - > 1x PCIe x16, 1x PCI
  - > 2x PCIe x16 (8-Lanes)
- Card Dimension: 2-Slots High | 235 (L) x 112 (W) mm
- Second Power Supply: 4-Pin | 280W | 12 ~ 48VDC
- Industrial-Grade Locking Brackets
- Adaptive Cooling Fan

# EDGEBoost Nodes SERIES

## NVMe Series

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- **EBND-8NVME-S**

- 2x Hot-Swappable NVMe EDGEBoost Canister Bricks
  - > 8x Hot-Swappable 2.5" U.2 NVMe Drives (7 mm)
  - > RAID: 0, 1, 5, 10



- **EBND-4NVME-S**

- 2x Hot-Swappable NVMe EDGEBoost Canister Bricks
  - > 4x Hot-Swappable 2.5" U.2 NVMe Drives (15 mm)
  - > RAID: 0, 1, 5, 10

- Second Power Supply: 4-Pin | 280W | 12~48VDC
- Data Security: Safe Eject Button | Safety Bracket | Anti-Teft Lock
- Hot-Swappable Adaptive Cooling Fan



- **EBND-4NVME-H**

- 2x Hot-Swappable NVMe EDGEBoost Canister Bricks
  - > 4x Hot-Swappable 2.5" U.2 NVMe Drives (15 mm)
  - > RAID: 0, 1, 5, 6, 10
- Hardware RAID 6: Broadcom MegaRAID 9560-16i

We Create World-Class Edge Computers  
For Your Industry-Leading Solutions

# EDGEBoost Nodes SERIES

## NVMe and GPU Series



- **EBND-4NVME-GPU**

- PCIe Expansions:
  - > 1x PCIe x16 (8-Lane) for GPU
  - > 1x PCIe x4 (1-Lane)
- Card Dimension: 3-Slots High | 235 (L) x 112 (W) mm
- 1x Hot-Swappable NVMe EDGEBoost Canister Bricks
  - > 4x Hot-Swappable 2.5" U.2 NVMe Drives (7 mm)
  - > RAID: 0, 1, 5, 10



- **EBND-2NVME-GPU**

- PCIe Expansions:
  - > 1x PCIe x16 (8-Lane) for GPU
  - > 1x PCIe x4 (1-Lane)
- Card Dimension: 3-Slots High | 235 (L) x 112 (W) mm
- 1x Hot-Swappable NVMe EDGEBoost Canister Bricks
  - > 2x Hot-Swappable 2.5" U.2 NVMe Drives (15 mm)
  - > RAID: 0, 1, 5, 10



- **EBND-4NH-1E**

- PCIe Expansions:
  - > 1x PCIe x16 (8-Lane) for RAID Card
  - > 1x PCIe x16 (8-Lane)
- Card Dimension: 3-Slots High | 235 (L) x 112 (W) mm
- 1x Hot-Swappable NVMe EDGEBoost Canister Bricks
  - > 4x Hot-Swappable 2.5" U.2 NVMe Drives (7 mm)
  - > RAID: 0, 1, 5, 6, 10
- Hardware RAID 6: Broadcom MegaRAID 9560-16i

- Industrial-Grade Locking Brackets
- Data Security: Safe Eject Button | Safety Bracket | Anti-Theft Lock
- Second Power Supply: 4-Pin | 280W | 12~48VDC
- Hot-Swappable Adaptive Cooling Fan