

DTECH Fusion eHPC

SINGLE-CASE HIGH PERFORMANCE COMPUTE SOLUTION



Getting Started Guide for AWS IoT Greengrass

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1 Document Information

1.1.1 Document revision history

| Revision | Date | Notes |
|----------|----------------|--|
| 1.0 | 24 June 2025 | Initial Release |
| 2.0 | 27 August 2025 | Removed IPMI section, added new Section 9, updated links |

1.1.2 Applicable operating systems for this guide

Installing AWS Greengrass on a DTECH Fusion eHPC running Windows Server 2022.

2 Overview

The DTECH Fusion eHPC Server is a small-form-factor server module that provides an AMD EPYCTM 7113P 64-Core 2.0 GHz CPU. A Broadcom MegaRAID 9560 controls eight (8) Solid State Drives (SSD). The Fusion eHPC Server features 512 GB of DDR4 3200 MHz Random Access Memory (RAM) and up to 7.68 GB of storage. This module supports a single Operating System (OS) or multiple virtual machines. It can be used either as a stand-alone unit or installed in a rack with other Fusion eHPC modules.

DTECH Fusion™ eHPC is an edge high performance compute solution engineered to deliver complex data, artificial intelligence, and machine learning capabilities to the tactical edge, even in Denied, Disrupted, Intermittent, and Limited (DDIL) environments.

- **SUPERCHARGED AMD CPU**
 - At its core, Fusion eHPC is powered by an AMD EPYC 64-core CPU capable of processing massive amounts of data at lightning speeds.
- **DEDICATED GRAPHICS PROCESSOR**
 - The integrated NVIDIA GPU for data-intensive processing makes Fusion eHPC perfect for AI, ML, and video analysis applications.
- **UNPRECEDENTED DATA SPEEDS**
 - Connectivity speeds up to 25 gigabit means data can be moved between users and the mission chain at new-found speeds
- **HUGE STORAGE CAPACITY**
 - The huge, fully accessible storage and integrated RAID controller means that Fusion eHPC can secure, store, and manage vast amounts of data locally.
- **RESILIENT POWER**
 - Battery-backed UPS ensures that Fusion eHPC continues to perform even in power-constrained environments.
- **TRAVELS WELL**

A single-person carry half-rack design ensures Fusion eHPC is fast and simple to deploy.

More Information Links:

https://go.cubic.com/hubfs/Cubic_DTECH_Infographic_Fusion_eHPC.pdf?hsLang=en

<https://go.cubic.com/fusion-ehpc>

3 Hardware Description

3.1.1 Datasheet

https://www.cubic.com/sites/default/files/2025-03/Cubic_DTECH_Datasheet_Fusion_eHPC.pdf

3.1.2 Standard kit contents

Compute Module Specifications



- CPU AMD EPYC™ 7713p 64-Core CPU @ 2.0Ghz (Max. Boost Clock 3.67 GHz)
- RAM 512GB DDR4 3200MHz
- GPU NVIDIA RTX 5000 ADA Generation GPU with 12,800 Cuda Cores and 32GB GDDR6 Memory
- Storage Controller Broadcom MegaRAID 9560
- SSD Slots 8 x 2.5" x 7mm
- Networking Connectivity 4 x 10/25G SFP+ Ports, 2 x 10G RJ45 Ports
- Server Management 1 x 1G RJ45 Port, Dedicated IPMI
- Serial Console 1 x DB9 Port
- Server Management Video 1 x VGA Port
- USB Connectivity 2 Type-A (USB3.2 Gen1) Ports

Power Supply/UPS Module Specifications



- AC Input Voltage: 90-265 VAC @ 43-67Hz AC
- AC Input Circuit Breaker: 20A
- DC Output Voltage: 24vDC
- DC Output Maximum Current: 35 Amps
- Projected UPS operating time: 16 Minutes (based on 500W Server/Switch demand)

<https://acumentrics.com/product/half-rack-ups/>

3.1.3 Fusion eHPC Server Specifications

1 Description

The DTECH Fusion eHPC Server is a small-form-factor server module that provides an AMD EPYC™ 7113P 64-Core 2.0 GHz CPU. A Broadcom MegaRAID 9560 controls eight (8) Solid-State Drives (SSD). The Fusion eHPC Server features 512 GB of DDR4 3200 MHz Random Access Memory (RAM) and up to 7.68 GB of storage. This module supports a single Operating System (OS) or multiple virtual machines. It can be used either as a stand-alone unit or installed in a rack with other Fusion eHPC modules. See Figure 1-1.



Figure 1-1 DTECH Fusion eHPC Server

1.1 Physical Specifications

| | |
|--------------------------------------|--|
| Dimensions | Power |
| Width 9.5" / 24.13 cm (1/2 Rack) | Server Input Voltage 24 VDC |
| Depth 13.5" / 34.29 cm | Server Maximum Current 25 Amps |
| Height 5.25" / 13.34 cm (3U Rack) | Server Output Voltage 24 VDC |
| Weight 24.25 lb / 11 kg | (unregulated, passed through from input) |
| Operating/Storage Temperature | |
| Operating: 0°C–50°C | |
| Storage: -20°C–85°C | |

Table 1-1 Physical Specifications

1.2 Computer Specifications

| | |
|--------------------|--|
| CPU | AMD EPYC™ 7713P 64-Core @ 2.0 GHz |
| RAM | 512 GB DDR4 3200 MHz |
| GPU | NVIDIA RTX 5000 Generation GPU with 12,800 Cuda Cores and 32 GB GDDR6 Memory |
| Storage Controller | Broadcom Megaraid 9560 |
| SSD Bays | 8 Bays, 2.5" x 7 mm |

Table 1-2 Computer Specifications

1.4 Indicators and Controls

The Fusion eHPC Server indicators and controls are shown in Figure 1-4.

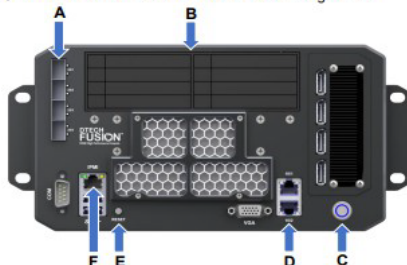


Figure 1-4 Fusion eHPC Server Front Indicators and Controls

| | Description |
|---|---|
| A | SFP+ LED Steady Green – Port is connected to a device. Blinking Amber – Port is passing data. |
| B | SSD/HDD Activity Indicator Steady Green – Indicates SSD/HDD is installed. Blinking Green – Indicates SSD/HDD is in use. |
| C | Power On/Off Switch – Turns the server module on/off. |
| C | Power Indicator – Illuminates blue when module is powered on. |
| D | RJ45 Ethernet LEDs Steady Green – Port is connected to a device. Blinking Amber – Port is passing data. |
| E | Reset 20 second Press – Reboots the IPMI instance. Single press – Illuminates blue for server identification Illuminates blue via IPMI management console for server identification |
| F | IPMI LEDs Steady Green – Port is connected to a device. Blinking Amber – Port is passing data. |

Table 1-4 Fusion eHPC Server Indicators and Controls

1.3 Ports and Connectors

Figure 1-2 and Figure 1-3 show the Fusion eHPC Server ports and connectors.

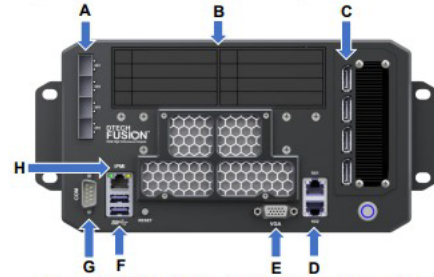


Figure 1-2 Fusion eHPC Server Front Ports and Connectors

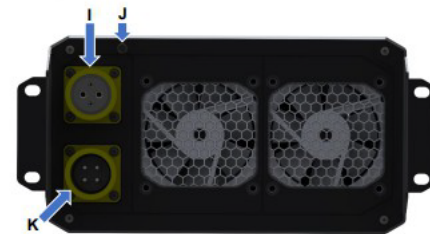


Figure 1-3 Fusion eHPC Server Rear Ports and Connectors

| | Description |
|---|--------------------------------------|
| A | 4 x 10/25G SFP+ Ports |
| B | 8 x SSD Bays |
| C | 4 x DisplayPort (GPU model only) |
| D | 2 x 10G RJ45 Ports |
| E | VGA port – Server Management Video |
| F | USB – 2 Type-A (USB 3.2 Gen 1) ports |
| G | COM port |
| H | IPMI |
| I | DC OUT |
| J | Ground |
| K | DC IN |

Table 1-3 Fusion eHPC Server Ports and Connectors

1.5 SSD Card Access

The eHPC Server can be equipped with up to eight (8) SSDs for persistent storage of applications and data.

Users can select from a wide range of Cubic SSD options, or they may choose to provide their own SSD or HDD drives. The eHPC Server provides an easy-to-access SSD panel for quickly installing or removing a drive (see Figure 1-5).



Figure 1-5 Drive Bay Features and Access

| | Description |
|---|-----------------------------------|
| A | Drive Tray Ejection Button |
| B | LED Indicator |
| C | Drive ID Plug Slot (use optional) |

Table 1-5 Drive Bay Features

4 Set Up Development Environment

Download Windows Server 2022

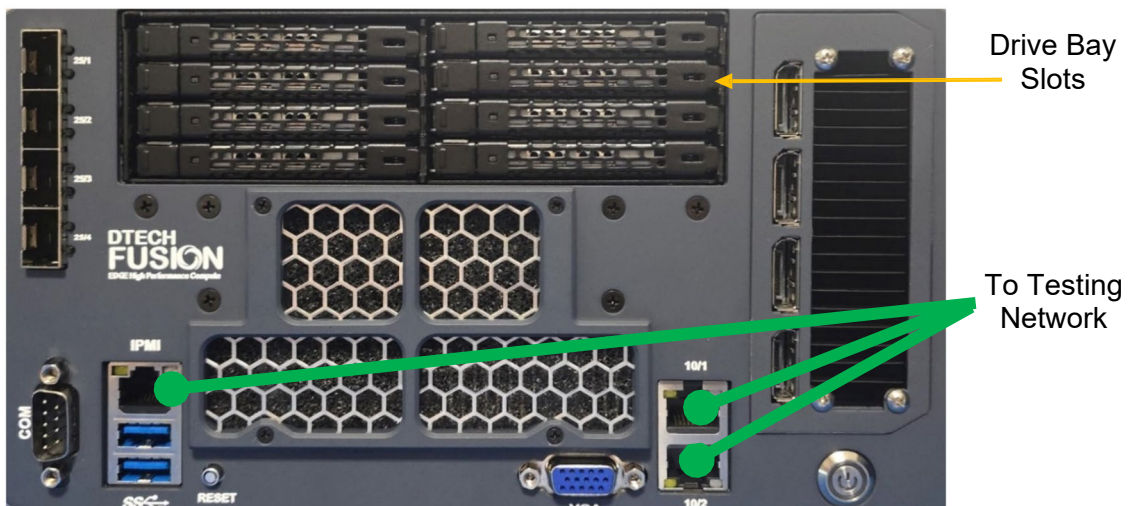
1. Download the ISO:
 - Obtain the Windows Server 2022 ISO file from the [Microsoft Evaluation Center](#).
 - If required, register or sign in to access the download.
2. Create Bootable Media:
 - Create a bootable DVD or USB drive using tools like [Rufus](#).
 - Burn the ISO file to the chosen media.
3. Other software required to develop applications for the device
 - Download and install Windows Server 2022 Chipset for DTECH Fusion eHPC from provided link:

<https://www.asrockrack.com/general/productdetail.asp?Model=ROMED4ID-2T#Download>

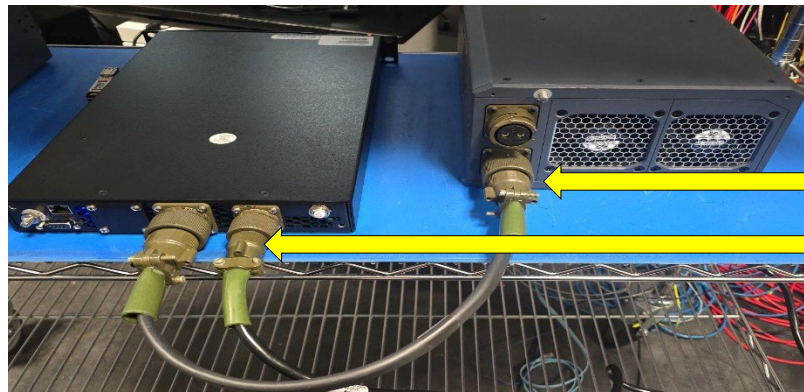
5 Set up Device Hardware

1.) Setup:

- a) Ensure all main elements are present: Motherboard, CPU, RAID Card, GPU (for the GPU version only), and Ethernet NICs.
- b) Make the following connections:
 - i) Connect RJ45 IPMI port, 10/1, 10/2, 25GB cables, console cable, USB flash drive, USB Mouse/Keyboard to the unit.
Note: VGA KVM may be used.
 - ii) Connect IPMI, 10/1, and 10/2 RJ45 Ethernet ports to a Network with Internet access.
 - iii) Verify all 8 SSD SATA drives are installed in the drive bay slots.
If no SSDs are present, install 8 SATA SSDs in the drive bay slots.



- iv) Connect Acumentrics Uninterrupted Power Supply (UPS) to AC wall power and connect eHPC to Acumentrics UPS.
 - (a) Validate there is a red LED inside the fan screen area.
 - (b) Validate there is a green LED on the screen next to the heart symbol



UPS → eHPC DC

AC power → UPS



Red LED

Heart Symbol

- c) Press the green “ON” button to turn on the Acumentrics UPS.
- i) Verify the LED inside the fan area has turned green.
 - ii) Verify that there are green LEDs down the Battery charged section on the Acumentrics UPS.

Note: May be from 1 to 5 LEDs present depending on the charge status.

- iii) Verify there is a green LED next to the wave symbol on the UPS.

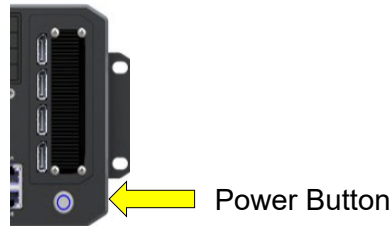


Green LED

Status

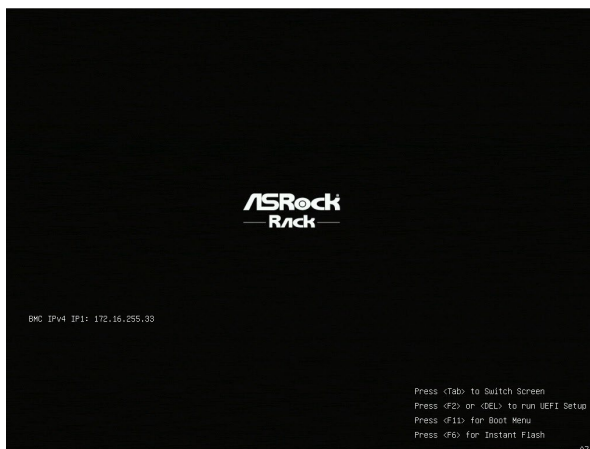
Power On

- d) Power ON the eHPC Server. Push down the power button and validate that it illuminates blue.



2.) BIOS Setup and Network Boot:

- a) After a few minutes, a BIOS splash screen should appear on the monitor connected to the UUT. The following process will setup the BIOS properly to PXE network boot:



Enter the BIOS by pressing the *Delete* key.

3.) Accessing the RAID Controller BIOS:

4.) Configuration Management:

- a) Once inside the controller BIOS, navigate to the "Configuration Management" or similar section.

5.) Create Virtual Drive:

- Select the option to create a new virtual drive.
- Select RAID Level:
- Choose RAID 5 as the desired RAID level.
- Select Drives:
- Choose the physical hard drives to include in the RAID 5 array.

6.) Configure Parameters:

- a) Set any necessary parameters like drive capacity, stripe size, etc.
 - b) Save Configuration:
 - c) Save the new virtual drive configuration.
 - d) Confirm the changes and exit the configuration utility.
- 7.) Insert Bootable Windows Server 2022 Prepare for Installation:**
- 8.) Press F11 at BIOS splash screen**
- 9.) Install Windows Server 2022:**
- a) Boot from the DVD or USB drive.
 - b) Follow the on-screen prompts, selecting preferred language, time format, and keyboard layout.
 - c) Choose the installation type (custom or upgrade).
 - d) Select the disk or partition to install Windows Server 2022.

6 About AWS IoT Greengrass

To learn more about AWS IoT Greengrass, see [How AWS IoT Greengrass works](#) and [What's new in AWS IoT Greengrass Version 2](#).

7 Greengrass Prerequisites

Refer to the online documentation detailing the [prerequisites](#) needed for AWS IoT Greengrass. Follow the instructions in the following sections:

[Step 1: Set up an AWS account](#)

[Step 2: Set up your environment](#)

8 Install AWS IoT Greengrass

Follow the online guide to [Install with automatic provisioning](#). Refer to the instructions in the following steps:

- [Set up the device environment](#)
- [Provide AWS credentials to the device](#). For development environments, use the option “Use long-term credentials from an IAM User”. An example of how to do this is shown below:

```
export AWS_ACCESS_KEY_ID=<the access key id for your user>  
export AWS_SECRET_ACCESS_KEY=<the secret access key for your user>
```
- [Download the AWS IoT Greengrass Core software](#)
- [Install the AWS IoT Greengrass Core software](#)

9 Create a “Hello World” Component

In Greengrass v2, components can be created on the edge device and uploaded to the cloud, or vice versa.

- Create the Component on Your Edge Device
 - To Create a Hello World component, Follow the instructions online under the section, [Develop and test a component on your device](#) to create, deploy, test, update and manage a simple component on your device.
- Upload the Hello World Component
 - Follow the instructions online at [Create your component in the AWS IoT Greengrass service](#) to upload your component to the cloud, where it can be deployed to other devices as needed.
- Deploy Your Component
 - Follow the instructions online at [Deploy your component](#) to deploy and verify that your component is running.

10 Troubleshooting

If the DTECH Fusion eHPC does not power on check physical connections.

- Verify the power cable is securely connected to both the server's power supply and the power outlet.
- Power Status Indicators: Look for any LED status lights on the server.

For further troubleshooting or installation issues please contact website:

cubic.com/support/defense

For more information, refer to the online documentation [Troubleshooting Greengrass v2](#).