EAI-I131
Getting Started Guide for AWS IoT Greengrass

Table of Contents

1   Document information

1.1   Document revision history

Version	Date	Description
1.0	2025-07-31	Initial release

1.2   Applicable operating systems for this guide

- **Device OS**: NVIDIA Jetson Linux (JetPack 5.1.3)
- **Host OS**: Ubuntu 22.04 LTS (for development)

2   Overview

The EAI-I131 is an industrial-grade AI inference system designed for 5G edge computing. Built with NVIDIA® Jetson Orin NX/Nano modules, it delivers up to 100 TOPS of AI processing power, making it ideal for advanced AI applications at the edge. This guide provides step-by-step instructions to set up AWS IoT Greengrass V2 on the EAI-I131, enabling seamless integration with AWS cloud services for IoT and edge computing applications.

Key features include:

- NVIDIA® Jetson Orin NX/Nano platform with up to 100 TOPS AI performance
- Multiple connectivity options: 2x GbE PoE LAN, LTE/5G Sub6, and Wi-Fi support
- Industrial-grade design with -40°C to 70°C operating temperature range
- Rich I/O interfaces for industrial applications

3 Hardware description

3.1 Datasheet

For detailed specifications, visit: www.lannerinc.com/products/edge-ai-appliances/eai-i131

3.2 Standard kit contents

The EAI-I131 standard package includes:

- 1x EAI-I131 IoT Edge AI Box PC
- 1x Terminal Block Kit (5-pin×2 / 6-pin×2 / 2-pin×1)
- 1x Micro USB Cable (for device flashing)
- 1x Wall Mount Set
- 1x Quick Installation Guide

Note: Power adapter is not included in the standard kit. A 12V DC power supply is required.

3.3 User provided items

- 12V DC Power Supply (ATX +12VDC typically)
- Ethernet cable for network connectivity
- Monitor and HDMI cable (for initial setup)
- USB keyboard (for initial setup)
- Host computer running Ubuntu 22.04.4 LTS (for development

3.4 3rd party purchasable items

- LTE/5G module (if wireless connectivity required)
- Wi-Fi module (if Wi-Fi connectivity required)
- Appropriate antennas for wireless modules
- SIM card (for LTE/5G connectivity

3.5 Additional hardware references

For more information about the EAI-I131 hardware, please visit:

- Lanner Electronics Support

- [EAI-I131 User Manual](#)

4 Set up your development environment

4.1 Tools installation (IDEs, Toolchains, SDKs)

The EAI-I131 comes with pre-installed Jetson Linux. No additional development environment setup is required for basic Greengrass deployment.

For custom image development, refer to the [EAI-I131 Developer Guide](#).

4.2 Additional software references

- [NVIDIA Jetson Developer Resources](#)
- [AWS IoT Greengrass Documentation](#)

5 Set up device hardware

5.1 Hardware Setup Overview

- Connect 12V DC power to the 2-pin terminal block
- Connect Ethernet cable to one of the GbE ports
- Connect monitor via HDMI and USB keyboard (for initial setup)
- Press power button to start the device

5.2 Front Panel Components

- **HDMI Port**: 1x HDMI 2.0A/B @ 4Kp60 with screw lock
- **USB Ports**: 2x USB 3.0 Type-A
- **Power Button**: System power on/off
- **Reset Button**: System reset
- **Status LEDs**: Power and system status indicators

5.3 Rear Panel Components

- **Ethernet Ports**: 2x GbE RJ45 with PoE support (IEEE 802.3af/at)
- **Serial Ports**: 2x DB9 for RS232/422/485 (COM2 optional for CAN 2.0)
- **Digital I/O**: 4x DI and 4x DO terminal blocks
- **Audio**: Line-in and Line-out jacks
- **Power Input**: 2-pin terminal block for 12V DC

5.4 Initial Hardware Setup

1. **Connect Power**:

- o   Connect a 12V DC power supply to the 2-pin terminal block
- o   Ensure proper polarity (marked on the device)
2. **Network Connection**:
   - o   Connect an Ethernet cable to one of the GbE ports
   - o   Both ports support PoE if you have a PoE-enabled switch
3. **Console Access** (for debugging):
   - o   Connect a monitor via HDMI
   - o   Connect a USB keyboard
4. **Optional Modules Installation**:
   - o   For Wi-Fi: Install module in M.2 2230 E-Key slot
   - o   For LTE/5G: Install module in M.2 3042/52 B-Key slot
   - o   Install appropriate antennas in the antenna holes

5.5   LED Indicators

LED	Color	Status	Description
Power	Green	On	System powered on
Power	Off	Off	System powered off
Status	Green	Blinking	System running normally
Status	Red	On	System error

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

7.1   Build a Linux image with AWS IoT Greengrass prerequisites

Install Java 11 on the EAI-I131:

```bash
sudo apt update
sudo apt install -y default-jdk
```

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, you can 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

9.1 Create the component on your edge device

Follow the instructions online under the section Develop and test a component on your device to create a simple component on your device.

9.2 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.

9.3 Deploy your component

Follow the instructions online at Deploy your component to deploy and verify that your component is running.

10 Troubleshooting

10.1 GPU Access for Greengrass Components

To enable GPU access for Greengrass components on the Jetson platform:

```bash
# Add ggc_user to video group
sudo usermod -aG video ggc_user
# Restart Greengrass service
sudo systemctl restart greengrass.service
```

10.2 Check Greengrass Service Status

```bash
sudo systemctl status greengrass.service
```

10.3 View Greengrass Logs

```bash
sudo journalctl -u greengrass.service -f
```

If you have any questions, please contact us at support@lannerinc.com.

For more information, refer to the online documentation *Troubleshooting Greengrass v2*.