Connect Tech

BOARD SUPPORT PACKAGE

For Connect Tech NVIDIA® Jetson AGX Xavier™ Carriers

BSP Version: AGX-AVT-35.4.1 V001
Last Updated: 2024/05/21

1. Introduction

This Board Support Package adds support for the Connect Tech Jetson AGX Xavier™ family of carrier boards to Linux4Tegra. It includes any extra files required to use all the features of the Connect Tech carriers.

Please check Section 3. For supported features for your board and Section 8 for the changes made between versions. You can check which version of the BSP you have installed by running:

cat /etc/cti/CTI-L4T.version

Check for the Latest Version of the CTI-L4T BSP at:
https://connecttech.com/resource-center/l4t-board-support-packages/

2. Requirements

- x86/x64 based host machine running Ubuntu 18.04 or 20.04
- JetPack 5.1.2 / L4T 35.4.1 installed (see Section 4)
- Jetson AGX Xavier™ module
- Connect Tech Jetson AGX Xavier™ Carrier
- USB Cable for flashing

  *L4T version can be found in /etc/nv_tegra_release and will look like this:
  # R35 (release), REVISION: 4.1

3. BSP Features

3.1 Supported Cameras in BSP

- Allied Vision Alvium 1500 C and 1800 C sensors

3.2 Product Specific Details

AGX101 (Rogue)

- CAN Support
- USB 3.1 Support
- USB OTG Flashing Support
- GbE Phy Support
- SPI support
- UART support
- I2C support
- GPIO support
- NVMe card support
- Wifi/Bluetooth card support
- Micro SD card support
- HDMI support
- JCB005 with Allied Vision Camera Support (4 Cam & 6 Cam support)
- JCB006 with Allied Vision Camera Support

AGX103 (RogueX)

- CAN Support
- USB 3.1 Support
- USB OTG Flashing Support
- Wifi/Bluetooth card Support
- NVMe card support
- I2C Support
- GPIO Support
- GbE Phy Support
- SPI support
- UART support
- HDMI support
- Micro SD Card support.
- JCB005 with Allied Vision Camera Support (4 Cam & 6 Cam support)
- JCB006 with Allied Vision Camera Support

AGX104 (Rudi-AGX)

- CAN Support
- USB 3.1 Support
- USB OTG Flashing Support
- Wifi/Bluetooth card Support
- NVMe card Support
- GbE Phy Support

- SPI Support
- SD Card Support
- HDMI Support
- I2C Support
- GPIO Support
- RS485 Support
- UART Support
- Cellular card support

AGX105 (Rogue-10G)

- CAN Support
- USB 3.1 Support
- USB OTG Flashing Support
- Wifi/Bluetooth card Support
- NVMe card support
- OCuLink connector
- I2C Support
- GPIO Support
- GbE Phy Support
- 10G GbE Phy Support
- SPI support
- UART support
- HDMI support
- Micro SD Card support.
- JCB005 with Allied Vision Camera Support (4 Cam & 6 Cam support)
- JCB006 with Allied Vision Camera Support

AGX108 (RogueX2)

- CAN Support
- USB 3.1 Support
- USB OTG Flashing Support
- GbE Phy Support
- SPI support
- UART support
- I2C support
- GPIO support
- NVMe card support
- Wifi/Bluetooth card support
- Micro SD card support
- HDMI support
- x8 PCIe

- JCB005 with Allied Vision Camera Support (4 Cam & 6 Cam support)
- JCB006 with Allied Vision Camera Support

3.3 Limitations and Known Issues

1. OTA deb package update is currently not supported in this package. Please do not run apt-get upgrade nvidia-l4t-kernel, as you can break the OS.

4. Installation

4.1 Obtaining NVIDIA® Jetpack

Before Installing the BSP you will need to install JetPack 5.1.2 on the host system using the NVIDIA® SDK Manager (section 4.1.1) or from the NVIDIA® Embedded Download Center (section 4.1.2)

4.1.1 Installing JetPack from SDK Manager

Please follow installation steps from kdb373 for Jetpack 4.2+
https://connecttech.com/resource-center/kdb373/

4.1.2 Installing JetPack from NVIDIA® Embedded Download Center

1. Create a new directory for installing Jetpack. Referred to as <BSP_ROOT> in these instructions

2. Go to Jetpack Release Page https://developer.nvidia.com/embedded/jetson-linux-r3541

3. Download the "L4T Driver Package (BSP)" and "Sample Root Filesystem" files for AGX Xavier™

4. Put the "L4T Driver Package (BSP)" "Sample Root Filesystem" in <BSP_ROOT>. Afterwards, you should have the following files in <BSP_ROOT>
- jetson_linux_r35.4.1_aarch64.tbz2
- tegra_linux_sample-root-filesystem_r35.4.1_aarch64.tbz2

5. Extract the "L4T Driver Package" tarball:

cd <BSP_ROOT>
sudo tar -jxf jetson_linux_r35.4.1_aarch64.tbz2

6. You should now have a new directory called Linux_for_Tegra in your <BSP_ROOT> folder. Extract the "Sample Root Filesystem" into Linux_for_Tegra/rootfs.

sudo tar -C Linux_for_Tegra/rootfs/ -xjf tegra_linux_sample-root-filesystem_r35.4.1_aarch64.tbz2

4.2 CTI BSP Installation

1. Copy the CTI-L4T-AGX-35.4.1-V###.tgz package into <BSP_ROOT>/Linux_for_Tegra.

If using Nvidia's SDK manager then "<BSP_ROOT>" will be:
~/nvidia/nvidia_sdk/<JetPack_Version>_Linux_JETSON_XAVIER_NX_TARGETS/

Otherwise if manually installing from NVIDIA® Embedded Download Center
<BSP_ROOT> will be the folder created previously

cp CTI-L4T-AGX-35.4.1-V###.tgz <BSP_ROOT>/Linux_for_Tegra

2. Extract the BSP: tar -xzf CTI-L4T-AGX-35.4.1-V###.tgz
cd <BSP_ROOT>/Linux_for_Tegra
sudo tar -xzf CTI-L4T-AGX-35.4.1-V###.tgz

3. Change into the CTI-L4T directory:
cd <BSP_ROOT>/Linux_for_Tegra/CTI-L4T

4. Run the install script (as root or sudo) to automatically install the BSP files to the correct locations:

sudo ./install.sh
#return to Linux_for_Tegra
cd ..

5. The CTI-L4T BSP is now installed on the host system and it should now be able to flash the AGX module.

5. Flashing Jetson AGX Xavier™ Modules

1. Connect the Jetson AGX Xavier™ and Carrier to the computer via USB, following the instructions in the appropriate manual.

2. Put the system to be flashed into recovery mode, following the instructions in the appropriate manual

3. To flash on the Jetson AGX Xavier™ use the following (do not add ".conf" in <config>):

Manual Flash: ./flash.sh cti/<module>/<boardname>/<config> mmcblk0p1

<module> is xavier for all xavier modules

Example:
./flash.sh cti/xavier/rogue/base mmcblk0p1

4. Once the flashing has completed, the Xavier will reboot

6. Upgrading to a New Package Release

Upgrading L4T or CTI-BSP verisons without reflashing is not currently supported.

Support for upgrades via apt and OTA packages will be added in the future

7. Switching Profiles on Xavier

1. Open a terminal on the Xavier

2. Run "sudo cti-agx-fdt.sh"

3. Select the profile you wish to switch to from the menu

4. Restart the system

Note: This script updates the dtb by appending/replacing the FDT variable in extlinux.conf
It also sets root=/dev/mmcblk0p1 by modifying the "APPEND" variable

8. Change Log

Version AGX-AVT-35.4.1 V001, May 21, 2024
- Initial release for JetPack 5.1.2, includes GPIO expander fix for later Rev D+ JCB005s
- Includes JCB005 with Allied Vision Alvium 1500/1800 C MIPI camera support
- Includes JCB006 with Allied Vision Alvium 1500/1800 C camera support

Contact Connect Tech

If you have any problems, questions or suggestions regarding the Board Support Package and hardware, please feel free to contact Connect Tech Inc.

Contact Information	
Support	Please go to the <u>Connect Tech Resource Center</u> for product manuals, installation guides, device drivers, BSPs and technical tips. Submit your <u>technical support</u> questions to our support engineers. Technical Support representatives are available Monday through Friday, from 8:30 a.m. to 5:00 p.m. Eastern Standard Time.
Contact Information	<u>support@connecttech.com</u> <u>sales@connecttech.com</u> <u>www.connecttech.com</u> Toll Free: 800-426-8979 (North America only) Telephone: +1-519-836-1291 Facsimile: 519-836-4878 (on-line 24 hours)