

// SMART CAMERAS

Flashing the BSP on Alecs

Prerequisites

To get started with flashing the BSP of your Alecs camera, you need the following prerequisites:

- // Linux system with Ubuntu 20.04 or later
- // Internet access
- // Direct ethernet connection on Alecs

Action steps overview

Action steps described in the following sections:

1. Download the BSP .tgz and unpack it
2. Prepare the flash process
3. Get the port name and MAC address
4. Start the flash process
5. Run a sanity check

Download and extract the BSP package

Note:

The BSP package is a large file. Downloading, unpacking and flashing will take some time.

Please download the BSP package from:

<https://www.alliedvision.com/en/support/firmware-downloads>

Unpack the BSP package:

```
sudo tar -xzf <file>.tgz
```

Prepare the flash process

To prepare the flash process, run:

```
sudo ./prepare.sh
```

```
E: Can not write log (Is /dev/pts mounted?) - posix_openpt (2: No such file or directory)
Selecting previously unselected package nvidia-l4t-dla-compiler.
(Reading database ... 171344 files and directories currently installed.)
Preparing to unpack .../0-nvidia-l4t-dla-compiler_36.4.7-20250918154033_arm64.deb ...
Unpacking nvidia-l4t-dla-compiler (36.4.7-20250918154033) ...
Selecting previously unselected package nvidia-l4t-gstreamer.
Preparing to unpack .../1-nvidia-l4t-gstreamer_36.4.7-20250918154033_arm64.deb ...
Unpacking nvidia-l4t-gstreamer (36.4.7-20250918154033) ...
Selecting previously unselected package cuda-toolkit-12-6-config-common.
Preparing to unpack .../2-cuda-toolkit-12-6-config-common_12.6.68-1_all.deb ...
Unpacking cuda-toolkit-12-6-config-common (12.6.68-1) ...
Selecting previously unselected package cuda-toolkit-12-config-common.
Preparing to unpack .../3-cuda-toolkit-12-config-common_12.6.68-1_all.deb ...
Unpacking cuda-toolkit-12-config-common (12.6.68-1) ...
Selecting previously unselected package cuda-toolkit-config-common.
Preparing to unpack .../4-cuda-toolkit-config-common_12.6.68-1_all.deb ...
Unpacking cuda-toolkit-config-common (12.6.68-1) ...
Selecting previously unselected package libcublas-12-6.
Preparing to unpack .../5-libcublas-12-6_12.6.1.4-1_arm64.deb ...
Unpacking libcublas-12-6 (12.6.1.4-1) ...
Selecting previously unselected package libcudla-12-6.
Preparing to unpack .../6-libcudla-12-6_12.6.68-1_arm64.deb ...
Unpacking libcudla-12-6 (12.6.68-1) ...
Selecting previously unselected package libcudnn9-cuda-12.
Preparing to unpack .../7-libcudnn9-cuda-12_9.3.0.75-1_arm64.deb ...
Unpacking libcudnn9-cuda-12 (9.3.0.75-1) ...
Setting up cuda-toolkit-config-common (12.6.68-1) ...
Setting up nvidia-l4t-gstreamer (36.4.7-20250918154033) ...
Setting up nvidia-l4t-dla-compiler (36.4.7-20250918154033) ...
Setting up cuda-toolkit-12-6-config-common (12.6.68-1) ...
Setting alternatives
update-alternatives: using /usr/local/cuda-12.6 to provide /usr/local/cuda (cuda) in auto mode
update-alternatives: using /usr/local/cuda-12.6 to provide /usr/local/cuda-12 (cuda-12) in auto mode
Setting up libcudnn9-cuda-12 (9.3.0.75-1) ...
Setting up cuda-toolkit-12-config-common (12.6.68-1) ...
Setting up libcudla-12-6 (12.6.68-1) ...
Setting up libcublas-12-6 (12.6.1.4-1) ...
Processing triggers for libc-bin (2.35-0ubuntu3.13) ...
Step 6: Create default user...
Creating: Username - alecs, Password - alecs, Autologin - false
Adding user 'alecs' to group 'gdm' ...
Adding user alecs to group gdm
Done.
Adding user 'gdm' to group 'video' ...
Adding user gdm to group video
Done.
```

Get the port name and MAC address

Configure the port on Alecs to persistent IP, for example:

IP: 192.168.1.50

Gateway: 255.255.255.0

Get the port name with command:

`ip link`

```
test@test-Precision-Tower-5810:~/Documents/alecs/Alecs-L4T_R36.4.3-avt1.0.2.4883112$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
2: enp0s25: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 18:66:da:07:f6:bf brd ff:ff:ff:ff:ff:ff
    inet 10.49.104.63/23 brd 10.49.105.255 scope global dynamic noprefixroute enp0s25
        valid_lft 2482641sec preferred_lft 2482641sec
    inet6 fe80::4a04:d9b9:4245:f31a/64 scope link noprefixroute
        valid_lft forever preferred_lft forever
3: enx00249b06c501: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 00:24:9b:06:c5:01 brd ff:ff:ff:ff:ff:ff
    inet 192.168.1.50/24 brd 192.168.1.255 scope global noprefixroute enx00249b06c501
        valid_lft forever preferred_lft forever
    inet6 fe80::e393:1f9d:1c0f:bd76/64 scope link noprefixroute
        valid_lft forever preferred_lft forever
4: docker0: <NO-CARRIER,BROADCAST,MULTICAST,UP> mtu 1500 qdisc noqueue state DOWN group default
    link/ether 02:42:b2:3f:1f:f6 brd ff:ff:ff:ff:ff:ff
    inet 172.17.0.1/16 brd 172.17.255.255 scope global docker0
        valid_lft forever preferred_lft forever
```

Get the MAC address with command:

`arp -a`

```
test@test-Precision-Tower-5810:~/Documents/alecs/Alecs-L4T_R36.4.3-avt1.0.2.4883112$ arp -a
? (10.49.104.82) at <incomplete> on enp0s25
? (192.168.1.10) at 00:0a:47:ff:e0:0f [ether] on enx00249b06c501
_gateway (10.49.104.1) at 1a:c2:41:bc:a8:69 [ether] on enp0s25
```

Start the flash process

Start the flash process with:

`sudo python3 recovery_flash.py <port name> <MAC Address>`

Example:

`sudo python3 recovery_flash.py enx00249b06c501 00:0a:47:ff:e0:0f`

```
test@test-Precision-Tower-5810: ~/Documents/alecs/Alecs-L4T_R36.4.3-avt1.0.2.4883112
File "/home/test/Documents/alecs/Alecs-L4T_R36.4.3-avt1.0.2.4883112/recovery_flash.py", line 256, in <module>
  board_id = chkboardinfo(tfile.name, '-i').strip()
File "/home/test/Documents/alecs/Alecs-L4T_R36.4.3-avt1.0.2.4883112/recovery_flash.py", line 53, in chkboardinfo
  return subprocess.run(['Linux_for_Tegra/bootloader/chkboardinfo', arg, path], capture_output=True).stdout.decode()
File "/usr/lib/python3.10/subprocess.py", line 503, in run
  with Popen(*popenargs, **kwargs) as process:
File "/usr/lib/python3.10/subprocess.py", line 971, in __init__
  self._execute_child(args, executable, preexec_fn, close_fds,
File "/usr/lib/python3.10/subprocess.py", line 1863, in _execute_child
  raise child_exception_type(errno_num, err_msg, err_filename)
NotADirectoryError: [Errno 20] Not a directory: 'Linux_for_Tegra/bootloader/chkboardinfo'
test@test-Precision-Tower-5810:~/Documents/alecs/Alecs-L4T_R36.4.3-avt1.0.2.4883112$ sudo python3 recovery_flash.py enx00249b06c501 00:0a:47:ff:e0:
0f
[sudo] password for test:
-----
Allied Vision ALECS network recovery flash
-----
Step 1: Starting recovery mode...
Please power on your device now!
Step 2: Reading system information...
Step 3: Prepare images for flashing...
Step 4: Flash images...
Writing rootfs... to /dev/disk/by-path/ip-fe80::20a:47ff:feff:e00f:3260-iscsi-iqn.2025-04.local.alecs:recovery-flash-lun-1
```

After Step 1 (see previous screenshot), repower the camera. Once it is repowered, the camera goes into recovery mode and the LED on the sides of the camera blinks RED.

Wait still the Flash Successful message appears as shown in the following screenshot:

```
test@test-Precision-Tower-5810: ~/Documents/alecs/Alecs-L4T_R36.4.3-avt1.0.2.4883112
NotADirectoryError: [Errno 20] Not a directory: 'Linux_for_Tegra/bootloader/chkboardinfo'
test@test-Precision-Tower-5810:~/Documents/alecs/Alecs-L4T_R36.4.3-avt1.0.2.4883112$ sudo python3 recovery_flash.py enx00249b06c501 00:0a:47:ff:e0:
0f
[sudo] password for test:
-----
Allied Vision ALECS network recovery flash
-----
Step 1: Starting recovery mode...
Please power on your device now!
Step 2: Reading system information...
Step 3: Prepare images for flashing...
Step 4: Flash images...
Writing rootfs... to /dev/disk/by-path/ip-fe80::20a:47ff:feff:e00f:3260-iscsi-iqn.2025-04.local.alecs:recovery-flash-lun-1
Erasing kernel partition...
Writing kernel...
Verify ok.
Erasing device tree partition...
Writing device tree...
Verify ok.
Finishing up...
Step 5: Set rootfs slot a to bootable
Warning: Permanently added 'fe80::20a:47ff:feff:e00f%enx00249b06c501' (RSA) to the list of known hosts.
Warning: Permanently added 'fe80::20a:47ff:feff:e00f%enx00249b06c501' (RSA) to the list of known hosts.
Step 5: Bootloader update
Warning: Permanently added 'fe80::20a:47ff:feff:e00f%enx00249b06c501' (RSA) to the list of known hosts.
Warning: Permanently added 'fe80::20a:47ff:feff:e00f%enx00249b06c501' (RSA) to the list of known hosts.
1+0 records in
1+0 records out
Warning: Permanently added 'fe80::20a:47ff:feff:e00f%enx00249b06c501' (RSA) to the list of known hosts.
Flash successful!
The camera is rebooting now!
test@test-Precision-Tower-5810:~/Documents/alecs/Alecs-L4T_R36.4.3-avt1.0.2.4883112$
```

Known error

```
test@test-Precision-Tower-5810:~/Documents/alecs/Alecs-L4T_R36.4.3-avt1.0.2.4883112$ sudo ./prepare.sh
-----
Preparing Allied Vision ALECS Jetpack 36.4.3 flash environment
-----
Step 1: Downloading Jetson Linux Driver Package (BSP)...
./prepare.sh: 23: curl: not found

bzip2: Compressed file ends unexpectedly;
       perhaps it is corrupted? *Possible* reason follows.
bzip2: Inappropriate ioctl for device
       Input file = (stdin), output file = (stdout)

It is possible that the compressed file(s) have become corrupted.
You can use the -tvv option to test integrity of such files.
```

This means that curl is not installed. Install curl with: `sudo apt install curl`

Run a sanity check

```
test@test-Precision-Tower-5810:~/Documents/alecs/Alecs-L4T_R36.4.3-avt1.0.2.4883112$ ssh -XY alecs@192.168.1.10
@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@
@    WARNING: REMOTE HOST IDENTIFICATION HAS CHANGED!     @
@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@
IT IS POSSIBLE THAT SOMEONE IS DOING SOMETHING NASTY!
Someone could be eavesdropping on you right now (man-in-the-middle attack)!
It is also possible that a host key has just been changed.
The fingerprint for the ED25519 key sent by the remote host is
SHA256:LG+DauOLaICn38MOYBDNxTMAU28NoICUWuPgjkLVK0.
Please contact your system administrator.
Add correct host key in /home/test/.ssh/known_hosts to get rid of this message.
Offending ECDSA key in /home/test/.ssh/known_hosts:3
  remove with:
  ssh-keygen -f "/home/test/.ssh/known_hosts" -R "192.168.1.10"
Host key for 192.168.1.10 has changed and you have requested strict checking.
Host key verification failed.
test@test-Precision-Tower-5810:~/Documents/alecs/Alecs-L4T_R36.4.3-avt1.0.2.4883112$
```

After the camera was flashed: When the camera is trying to connect via ssh, the error shown in the above screenshot may occur.

Clear the Host key:

```
ssh-keygen -R 192.168.1.10
```

Reconnecting via SSH should now work as expected.