V-Series V3000 GA Linux Driver Release Notes

Revision:	**0.80**
Issue Date:	**October 2022**

Revision History

Date	Revision	Description
October 2022	0.80	V3C14/V3C16 GA release
July 2022	0.70	V318I/V3C44 GA release
April 2022	0.60	V3C48 GA release
March 2022	0.50	Initial NDA release.

Chapter 1 Overview

AMD's Linux® drivers include an open-source Linux driver for AMD's embedded platforms and other peripheral devices on selected development platforms.

New features supported in this release:

1. Main line kernel 5.18 stable support.
2. Ubuntu 22.04 support enabled
3. V3C48 GA
4. V3C44 GA
5. V3C18I GA
6. V3C16 GA
7. V3C14 GA

Chapter 2 Target SoC

1. V3C48 (8-core 45W CPU)
2. V3C44 (4-core 45W CPU)
3. V3C18I (8-core 15W CPU)
4. V3C16 (6-core 15W CPU)
5. V3C14 (4-core 15W CPU)

Chapter 3 Linux® Kernel Support

1. 5.18.0 stable

Chapter 4 Linux Distribution Support

1. Ubuntu 22.04

Chapter 5 Component Versions

The following table shows git commit details of the sources and binaries used in the package.

The patches in the patches folder of this release package must be applied on top of the git commit mentioned in the following table to get the full sources corresponding to this driver release. The sources directory in this package contains patches pre-applied to these commit IDs.

Component Name	Version	Commit ID	Source Link for Git Clone
Kernel	5.18.0-stable	4b0986a3613c92f4ec1bdc7f60ec66fea135991f	*https://github.com/torvalds/linux/tree/v5.18*

Chapter 6 Driver Installation

6.1 Installation Procedure for Linux Driver from Debian Binaries

Debian binaries are available in the binaries folder, which is in the root directory.

6.1.1 Debian Installation with the Script

The prebuilt Debian packages can be installed by running the install_debs.sh shell script as sudo, which is provided along with the amd-linux driver package.

Note: Please ensure that the existing directory structure of the amd-linux driver package is not altered when running install_debs.sh.

The script to install the Debian package is located in the root folder. Make it executable with the following command, then run with sudo.

```
$> sudo chmod +x install_debs.sh
```

Debian installation can be done by running install_debs.sh with sudo.

When prompted by the EULA, answer Y/N:

```
$> sudo ./install_debs.sh
```

Installation can also be done the following way, which provides the EULA:

```
$> sudo ./install_debs.sh -a
```

The following provides a EULA which requires a Y/N answer (case sensitive):

```
$> sudo ./install_debs.sh -acceptEULA
```

The following commands are for silent installation:

```
$> sudo ./install_debs.sh -a -s
$> sudo ./install_debs.sh -acceptEULA –silent (CASE sensitive)
On successful installation
sudo reboot
your system is ready with the required drivers.
```

Chapter 7 Features Supported on V3000

Supported features are listed in the following table.

Feature Group	Feature	Kernel 5.18.0-stable
Power Management	S3	Yes
	S5	Yes
	Cold reset	Yes
	Warm reset	**No**
Peripherals(I/O)	PCIe	Yes
	NVMe	Yes
	USB 2.0	Yes
	USB 3.1	Yes
	USB 4.0	Yes
	SATA	Yes
	I2C (0-3)	Yes
	UART	Yes
	GPIO	Yes
	WDT	Yes
	SMBUS	Yes
	SPI	Yes
	eMMC	Yes (USB/PCIe to eMMC bridge)
RJ45	10M	Yes
	100M	Yes
	1G	Yes
	2.5G	Yes
	10G	Yes
SFP+ (connector)	10M	Yes
	100M	Yes
	1G	Yes
	10G	Yes
	10GBASE_KR [AN=OFF, ON]	Yes
	2.5G [AN=OFF]	Yes
AIC1 – Inphi phy(SFP+)	10M/100M/1G/10G	Yes
AIC1 – TI Re-Timer(SFP+)	10M/100M/1G/10G	Yes
AIC2 – 1G-Base-T	10M/ 100M / 1G	Yes
AIC2 – 10G-Base-T	10M/100M/1G/2.5G/10G	Yes
AIC3 – 1G-Base-T	10M/ 100M / 1G	Yes
AIC3 – 10G-Base-T	NA	**No**

Chapter 8 Supported Platforms

1. V3C48 FOX Platform
2. V3C44 FOX Platform
3. V3C18I FOX Platform
4. V3C16 FOX Platform
5. V3C14 FOX Platform

Chapter 9 Tested Platform Configurations

The following table shows the system configuration that was used for testing the driver package.

V3C48 - V3C44 – V318I – V3C16 – V3C14	
CPU	V3000
OPNs	Latest Revision: AIC1; AIC2 ; AIC3; B1-DVT: V3C48;V3C18i;V3C44; V3C14; V3C16;
Board Type	Fox, Direct Mount
TDP	V3C48: 45W V3C44: 45W V3C18I: 15W V3C16: 15W V3C14: 15W
BIOS version	RFX1001C
BIOS edits	AMD→CB→FCH Common options→XGBE→XGBE 0 & 1 Enabled AMD→PB→PCI express configuration XGBE Port 0 controller→SFP XGBE Port 0 mode selection→10G/1G Backplane XGBE Port 0 speed selection→10G/1G XGBE Port 1 controller→SFP XGBE Port 1 mode selection→10G/1G Backplane XGBE Port 1 speed selection →10G/1G
Memory (DDR5)	2x16 GB [Direct Mount]
DIMMs	DDR5, 4800 MT/s
Storage disk	Samsung M.2 NVME 500 Gb and SATA SSD Crucial 250 Gb
Ethernet connectors	• 10G SFI Optical: Finisar (FTLX8574D3BCV and FTLX8574D3BCL), Intel (FTLX8574D3BCV-IT) • 10G Optical DAC: Fiberstore (SFPP-A020) • 10G KR (Backplane): Molex DAC cable (747521101) and AMPHENOL SFP DAC CABLE (571540002) • 1G Bel SFP [SFP-1GBT-06] and Finisar [FCLF8520P2BTL]

Known Issues/Limitations

1. Use DAC cable of length <= 5 meters.
2. UART provisioned for 1 x4 wire and 4 x2 wire modes only
3. DUT Fails to boot to OS, when PCIe tunneling storage devices connected to USB4 J50/J60 Ports.
4. Ethernet feature not supported in this release:
    a. PPS not enabled
    b. IEEE1588 PTP partially supported
        i. 2-3 minutes of delay is observed b/w each synchronization. This we are observing in SFP+ modes only
        ii. Sporadically tx timeout error also occuring
5. Ethernet stability issues
    a. AIC1 InPhi Phy 10G link stability issue in P2P mode only; mitigating with switch as link partner instead of another Fox
    b. Link detection issues on SFP Port 0/1 for 1G speed with FS copper module (SFP-GB-GE-T 1000BASE-T) with Cat 5 UTP cable
    c. Randomly ping unreachable while performing MTU Link stability on AIC1 (TI Re-timer) Port 0
    d. Link up failure issue after S3 on SFP+ Connector, with 1G/100M/10M as speed and 1G Bel modules connected on both the ports
6. Random Throughputs issues observed in below modes
    a. Soldered down 10G Base-T, 2.5G/1G/100M Speed
    b. Backplane AN=OFF 10G modes; observed in V3C18i DVT at -40 deg
    c. 10G SGMII throughput, observed in V3C18i DVT at 25 deg
7. Refer **“Platform User Guide”** from dev hub for USB-C J60 port, RJ45, AIC1 and AIC2 rework details

Chapter 10 Support

Please contact your Field Applications Engineer for support on this release.