ADB3 Driver 1.1.0 for Linux Release Note

Introduction

This release note accompanies the ADB3 Driver for Linux. The latest version of this driver can be found at:
ftp://ftp.alpha-data.com/pub/admxrcg3/linux
For support, send e-mail to **support@alpha-data.com**

Operating systems supported

This release of the ADB3 Driver supports the following operating systems:

- GNU/Linux distribution with 2.6.x kernel

Due to the ever-changing nature of GNU/Linux, Alpha Data cannot guarantee that this driver can be successfully configured, built, installed and run on all Linux distributions past, present and future. Alpha Data makes best-efforts to ensure compatibility with all Linux distributions, but should a problem be encountered, please contact **support@alpha-data.com**.

Hardware supported

This release of the ADB3 Driver supports the following Alpha Data hardware:

- ADM-XRC-6TL
- ADM-XRC-6T1

License Agreement

This release of software is licensed according to the terms of GNU Public License Version 2 (GPL V2). A copy of this license can be found in the file **gpl-2.0.txt** within this software package. Please contact Alpha Data if alternative licensing conditions are required.
Alpha Data reserves the right to use a different license agreement for future releases of this software.

Installation instructions

This release of the driver is distributed in source code form as a tarball (.tar.gz file extention). Please refer to the README file inside the tarball for instructions on how to configure, build and install the driver.

Known issues

Security considerations

As of release 1.1.0, the script **adb3.rc** that creates device nodes in **/dev** applies permissions 666 (previous version of the driver applied permissions 600). When a user-mode process attempts to open a device, the driver verifies that either (a) the user-mode process is opening the device in "read only" mode, or (b) the user owning the process is a system administrator. If neither are true, the driver rejects the attempt to open the device. In the case of (a), the driver restricts the user-mode process to using a subset of the device's functionality so that the device does not compromise system security.

VPD write-protection mechanism

The VPD write-protection mechanism described in the ADM-XRC Gen 3 SDK User Guide is implemented as of release 1.1.0. To enable write-to-VPD, the kernel module parameter **EnableVpdWrite** must be nonzero.

This value is set when the driver starts, so it can be changed only by unloading the driver and restarting the driver with a different value for **EnableVpdWrite**. If this parameter is not specified, the driver considers it to be zero (write-to-VPD disabled).

Partial udev support

In this release of the driver, a script **adb3.rc** is provided in order to start the driver. This creates device nodes in **/dev** rather than relying on **udev** rules. This will be corrected in a future release.

Downgrading to an earlier version

When downgrading to an earlier version of the driver, remove all files named **/usr/lib/libadmxrc3.***, (and **/usr/lib64/libadmxrc3.*** if on a 64-bit bi-architecture machine), before executing the **make install** command as root. Otherwise, the shared libraries remaining from the later version of the driver will be preferred by the system as they have a higher version number.

When downgrading to a driver earlier than 1.1.0, delete any device nodes /dev/admxrc3* before installing the earlier driver, as a safety precaution. This is recommended because a pre-1.1.0 ADB3 driver relies upon the device nodes being owned by root with permissions 600 in order to restrict access to privileged users.

Fixed-local addressing DMA transfers

The flag ADMXRC3_DMA_FIXEDLOCAL currently has no effect for the ADM-XRC-6TL and ADM-XRC-6T1 when used with the DMA functions in the ADMXRC3 API.

Release history

Release 1.1.0

Corrections:

1. Fixed a potential memory corruption issue on some architectures due to incorrect byte size calculation in device context structure.
2. Fixed a memory leak related to CFI Flash functionality when stopping and restarting the driver.
3. Fixed user VPD area (VPD space address range 0x100000-0x1FFFFF) not being accessible on ADM-XRC-6TL and ADM-XRC-6T1.
4. Corrected error codes returned by several ADMXRC3 API functions when invalid parameters are passed:
    1. Non-Locked DMA functions now return 'ADMXRC3_INVALID_BUFFER' if the 'pBuffer' and/or 'length' parameters are invalid.
    2. Locked DMA functions now return 'ADMXRC3_INVALID_BUFFER_HANDLE' if the 'hBuffer' parameter is invalid.
    3. ADMXRC3_Unlock now returns 'ADMXRC3_INVALID_BUFFER_HANDLE' if the 'hBuffer' parameter is invalid.
5. Fixed 'ADMXRC3_Unconfigure' failing with 'ADMXRC3_NOT_OWNER' even when the target FPGA has no owner.
6. Fixed the ADMXRC3 DMA functions not properly co-validating the 'local' and 'length' parameters.
7. Fixed the ADMXRC3 Locked DMA functions not properly co-validating the 'offset' and 'length' parameters.
8. Fixed the ADMXRC3 nonblocking DMA functions incorrectly returning 'ADMXRC3_SUCCESS' instead of 'ADMXRC3_PENDING' when 'length' is zero and all other parameters are OK.
9. Fixed the ADMXRC3 non-Locked DMA functions not properly co-validating the 'pBuffer' and 'length' parameters.

10. Fixed certain ADMXRC3 API functions not trapping NULL pointers being passed, typically resulting in an application crash.
11. Fixed a bug in driver parameter handling so that driver parameters are now correctly applied and have correct default values.
12. Implemented VPD write-protection mechanism (now protected by default).
13. Added workaround for 4k crossing issue in ADB3 Bridge rev 0x01 and earlier. Workaround is not applied for rev 0x02 or later.

Enhancements:

14. Added support for ADM-XRC-6T1.
15. Added API function ADMXRC3_OpenEx, which allows an unprivileged process to open a device in "read only" mode and use a subset of the ADMXRC3 API functions.
16. Added API functions ADMXRC3_StartNotificationWait and ADMXRC3_FinishNotificationWait, which allow Linux applications to wait for events (since there is no Linux equivalent of ADMXRC3_RegisterWin32Event).
17. Added API function ADMXRC3_GetCardInfoEx (with structure ADMXRC3_CARD_INFOEX), which returns a superset of data supplied by ADMXRC3_GetCardInfoEx.
18. Added diagnostic API functions ADMXRC3_GetSensorInfo and ADMXRC3_ReadSensor, with associated types and structures. These functions allow applications to monitor the health of a Gen 3 reconfigurable computing card.

Release 1.0.0

This is the first release of the ADB3 Driver for Linux.

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