

# Xilinx Runtime (XRT) Release Notes

UG1451 (v2020.2) February 1, 2021

# Revision History

The following table shows the revision history for this document.

Section	Revision Summary
<b>02/01/2021 Version 2020.2</b>	
<a href="#">XRT Operating System Support</a>	Updated support for RHEL/CentOS v8.1 and v8.2. Added Virtualization Support information.
<a href="#">Software Component Versions</a>	Updated build version and Git Hash for Alveo™ cards, and GitHub Tag.
<a href="#">New Features</a>	Updated platform support Updated Slave bridge and DDR retention features
<b>11/24/2020 Version 2020.2</b>	
<a href="#">XRT Operating System Support</a>	Updated OS Support.
<a href="#">Software Component Versions</a>	Updated with new content.
<a href="#">Chapter 2: What's New</a>	Updated with new content.
<a href="#">New Features</a>	Updated with new content.
<a href="#">Major Changes</a>	Updated with new content.
<a href="#">Known Issues</a>	Updated link to known issues answer record.
<b>08/20/2020 Version 2020.1 PU1</b>	
<a href="#">XRT Operating System Support</a>	Added new topics describing OS support.
<a href="#">Software Component Versions</a>	Updated with 2020.1 PU1 values.
<a href="#">New Features</a>	Updated with new content.
<a href="#">Resolved Issues</a>	Updated with new content.
<a href="#">Known Issues</a>	Updated with new issue and updated link for the Answer Record.
<a href="#">References</a>	Updated with new referential documents.
<b>06/03/2020 Version 2020.1</b>	
Initial release.	N/A

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## Chapter 1

# About Xilinx Runtime (XRT)

Xilinx® Runtime library (XRT) facilitates communication between your application code (running on an embedded Arm® or x86 Host) and the accelerators deployed on the reconfigurable portion of PCIe®-based Xilinx accelerator cards, Zynq® UltraScale+™ MPSoC-based embedded platforms, or ACAPs.

XRT is an open source project. Its source code is hosted at <https://github.com/Xilinx/xrt>, and its documentation is located at <https://xilinx.github.io/XRT/>.

Using XRT with the Vitis™ unified software platform is documented in [Vitis Accelerated Software Development Flow Documentation](#) in the Application Acceleration Development flow of the *Vitis Unified Software Platform Documentation* (UG1416).

# XRT Operating System Support

Operating System <sup>1</sup>	Architecture	Supported Versions	Kernel Version
RHEL/CentOS	x86_64	7.4	3.10.0-693
		7.5	3.10.0-862
		7.6	3.10.0-957
		7.7	3.10.0-1062
		7.8	3.10.0-1127
		8.1	4.18.0-147
		8.2	4.18.0-193
Ubuntu <sup>2</sup>	x86_64	16.04.5 LTS	4.4.0-179-generic
		16.04.5 LTS	4.4.0-186-generic
		18.04.1 LTS	4.15.0-101-generic
		18.04.2 LTS	4.15.0-45-generic
		18.04.4 LTS <sup>3</sup>	4.15.0-76-generic
		20.04 LTS	5.4.0-52-generic
PetaLinux	aarch64, cortexa9	2020.2	5.4

## Notes:

1. All the supported Operating Systems are tested with general access versions (GA). Ubuntu Hardware Enhancement (HWE) is not supported.
2. Ubuntu [Live Patch Service](#) might apply kernel patches automatically. XRT is not tested against live patches. It is recommended that you disable kernel auto upgrade to prevent incompatibility issues.
3. Ubuntu 18.04.4 Desktop version enables HWE by default, but the server version does not. For version details, refer to the [Ubuntu website](#).

**Note:** The kernel-headers package is required by XRT during installation. CentOS only provides kernel-headers packages for some releases, so XRT can only support the CentOS OS versions that provide kernel-headers packages.

## Operating System End-of-Life Support Notification

Beginning in the 2021.1 release, XRT will no longer support RHEL/CentOS 7.4 and 7.5 due to the end of extended update support for these operating systems.

For more information, refer to the Redhat Lifecycle policy: <https://access.redhat.com/support/policy/updates/errata/>

## Virtualization Support

XRT can be used in the KVM virtualization environment with all the operating systems listed above as the guest.

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## Software Component Versions

Component	Version
Release Name	2020.2
XRT Build Version for Alveo	2.8.743
XRT Git Hash for Alveo	77d5484b5c4daa691a7f78235053fb036829b1e9
XRT GitHub Tag	202020.2.8.743
XRT Git Hash for PetaLinux	f19a872233fbfe2eb933f25fa3d9a780ced774e5
XRT GitHub Tag	202020.2.8.0_PetaLinux

## Chapter 2

# What's New

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## New Features

This version of Xilinx® Runtime (XRT) includes the following new features.

- **Support for new operating system versions:**

RHEL/CentOS: Version 8.2

Ubuntu: Version 20.04 LTS

- **Platform support:**

Support has been added for data-driven two stage platforms (2RP), in which the Alveo™ platform is constructed by base for PCIe channel and shell for DMA and other IP.

- **Versal AI Engine support:**

Added to support RTP, error handling, full array reconfiguration, and graph API.

- **Improved support for HBM-enabled platforms:**

XRT APIs (OpenCL or Native XRT APIs) now allow creating and maintaining buffers larger than a HBM bank size (256 MB+) corresponding to the bank group as per the kernel connection in the hardware (generated by v++). This improved HBM support is available for the Alveo U50 card and U50LV running one of the platforms listed in the *Alveo Data Center Accelerator Card Platforms User Guide* ([UG1120](#)).

- **Next generation Xilinx board management utilities:**

Next generation Xilinx Board Management utilities ([xbutil](#) and [xbmgmt](#)) are available for preview.

**Note:** Current generation of board management utilities will be moved to maintenance mode in 2021.1. At that time, new features will only be added to next generation utilities.

- **Slave bridge and DDR retention features:**

The slave bridge can allow kernel to access host memory directly. DDR retention can keep DDR contents when reloading xclbin. These features can be configured and used by XRT for the Alveo platforms that support them. For more information, refer to <https://xilinx.github.io/XRT/master/html/sb.html>.

These features can be configured and used by XRT for the Alveo platforms that support them.

- **New API:**

`xrtIniStringSet()` and `xrt::ini::set()` added for overriding `xrt.ini` switches.

- **pybind11 based Python wrappers:** Added for native XRT C++ APIs.
- **LPDDR:** Enabled for edge platforms.

## Major Changes

This release includes the following major changes.

- Clean Python binding for XRT C++ Native APIs.
- XILINX\_XRT is no longer required to be set on embedded platforms.
- xbutil has the following enhancements:
  - xbutil now reports board power warnings.
  - The xbutil query has been enhanced to show the memory base address.
  - xbutil commands show a warning if the OS or Kernel is not officially supported.
- XRT RPM/DEB package dependencies have been slimmed down.
- xbsak is deprecated. Use xbutil instead.

## Known Issues

For up-to-date information about known issues, refer to [Xilinx Answer Record #75819](#).



## Appendix A

# Additional Resources and Legal Notices

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## Xilinx Resources

For support resources such as Answers, Documentation, Downloads, and Forums, see [Xilinx Support](#).

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## References

The following documents provide useful, supplemental material.

- [Xilinx XRT Portal](#)
  - [XRT source code on GitHub](#)
  - [XRT Documentation](#)
  - *Vitis Unified Software Platform Documentation* ([UG1416](#))
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