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OpenCAPI 3.0 Ready Test Resources Engineering Note

Version 1.0

20 May 2020—OpenCAPI Confidential

Approved

Approved for Distribution to OpenCAPI Members Only

OpenCAPI 3.0 Ready Test Resources Engineering Note

OpenCAPI Compliance Work Group
OpenCAPI Consortium

Version 1.0 (20 May 2020)

Abstract

This document defines the requirements that need to be met to be asserted as an OpenCAPI 3.0 Ready device or OpenCAPI 3.0 Ready host. It is the work product of the OpenCAPI Consortium Compliance Work Group

This document is handled in compliance with the requirements outlined in the OpenCAPI Consortium Work Group (WG) process document. Comments, questions, etc. can be submitted to membership@opencapi.org.

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Revision log

Each release of this document supersedes all previously released versions. The revision log lists all significant changes made to the document since its initial release.

Revision date	Summary of changes
20 May 2020	Version 1.0. Initial release.

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About this document

This document defines the requirements that must be met to be asserted as an OpenCAPI 3.0 Ready device or OpenCAPI 3.0 Ready host. It is the work product of the OpenCAPI Consortium OpenCAPI Compliance Work Group.

Conventions

The OpenCAPI Consortium documentation uses several typesetting conventions.

Notes

This section describes Engineering and Developer notices.

Engineering notes

Engineering notes provide additional implementation details and recommendations not found elsewhere. The notes might include architectural compliance requirements. That is, the text might include Architecture compliance terminology. These notes should be read by all implementation and verification teams to ensure architectural compliance.

Engineering note:

This is an example of an Engineering note. Lorem ipsum dolor sit amet, consectetur adipiscing elit. Proin cursus hendrerit enim, vel tempus nibh ornare ut. Quisque ac augue eu augue convallis hendrerit. Mauris iaculis viverra ipsum nec dapibus. Nunc at porta libero. Curabitur luctus ultrices augue non pulvinar. Vestibulum mattis non ipsum at venenatis. Suspendisse euismod, neque et suscipit luctus, odio metus semper lectus, quis volutpat est libero quis nunc. Vivamus rutrum mauris sed tristique malesuada.

Developer notes

Developer notes are used to document the reasoning and discussions that led to the current version of the architecture. These notes might also include recommended changes for future versions of the architecture, or warnings of approaches that have failed in the past. These notes should be read by verification teams and contributors to the architecture.

Developer note:

This is an example of a Developer note. Lorem ipsum dolor sit amet, consectetur adipiscing elit. Proin cursus hendrerit enim, vel tempus nibh ornare ut. Quisque ac augue eu augue convallis hendrerit. Mauris iaculis viverra ipsum nec dapibus. Nunc at porta libero. Curabitur luctus ultrices augue non pulvinar. Vestibulum mattis non ipsum at venenatis. Suspendisse euismod, neque et suscipit luctus, odio metus semper lectus, quis volutpat est libero quis nunc. Vivamus rutrum mauris sed tristique malesuada.

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Terms

The following terms are used in this document.

AFU	Attached functional unit. Architecturally, AFU refers to an end-point unit or resource. Communication from the processor to the AFU goes through a protocol stack, transaction layer (TL), data link layer (DL), and physical medium layer (PHY). Command and data packets at the AFU interface are specified by the AFU command/data interface, which is the interface between the AFU protocol stack and the AFU.
DL	OpenCAPI data link layer found on the host processor.
DLx	OpenCAPI data link layer found on the external OpenCAPI device.
DUT	Device under test.
OpenCAPI Ready™	The term defined in this document that asserts a minimum set of characteristics has been met to show a product should be interoperable with other OpenCAPI products.
OS	Operating system.
PHY	Physical medium layer. The PHY layer interfaces to the DL and the network.
TL	OpenCAPI transaction layer found on the host processor.
TLx	OpenCAPI transaction layer found on the external OpenCAPI device.
TMLA	Trademark license agreement.

References

The following documents can be helpful when reading this specification.

OpenCAPI 3.0 Transaction Layer Specification

25 Gbps Physical Signaling Specification

25 Gbps Interface Mechanical Specification

OpenCAPI 3.0 Certified Definition

OpenCAPI 3.0 Ready Definition

The following information is located on the OpenCAPI Consortium website:

- OpenCAPI Ready trademark
- OpenCAPI Ready mark (Logo)
- OpenCAPI Ready list
- OpenCAPI Ready request form
- TMLA links/references/options

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1. Introduction

The OpenCAPI Ready™ program is used by the OpenCAPI Consortium to enable OpenCAPI ecosystem product developers to indicate that a product has been shown/demonstrated to meet a minimum set of characteristics and should be interoperable with other OpenCAPI Ready products. This document serves as a reference for systems, processors, devices, and software that may service as interoperable partners when performing OpenCAPI Ready testing.

1.1   Interoperable systems

Table 1-1. List of examples of OpenCAPI 3.0 capable host systems that may be used for OpenCAPI Ready testing

Company	Product Name	Link	Notes
IBM	Power System IC922	IC922	
IBM	Power System AC922	AC922	
Note: For other host systems, check the OpenCAPI Ready List on OpenCAPI.org.			

Table 1-2. List of examples of OpenCAPI 3.0 capable host processors that may be used for OpenCAPI Ready testing

Company	Processor Name	Link	Notes
IBM	POWER9 Monza	Monza	
IBM	POWER9 LaGrange	LaGrange	
Note: For other host processors, check the OpenCAPI Ready List on OpenCAPI.org.			

Table 1-3. List of examples of OpenCAPI 3.0 capable devices that may be used for OpenCAPI Ready testing

Company	Device Name	Link	Notes
Alpha Data	ADM-PCIE-9H7	9H7	
Alpha Data	ADM-PCIE-9H3	9H3	
Alpha Data	ADM-PCIE-9V3	9V3	
Bittware	250-SoC	250-SoC	
Note: For other devices check the OpenCAPI Ready List on OpenCAPI.org.			

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1.2   Kernels and operating system distros

An OpenCAPI-capable host kernel that may be used is the Linux Kernel, version 4.18 or greater:
https://www.kernel.org/

The following Linux distros may also be used:

- Ubuntu 18.10 – comes with libocxl 1.1

- Ubuntu 18.04 LTS – must update to at least libocxl 1.1 using the link in _Section 1.3 API libraries_.

- RHEL 7.6-ALT – must install libocxl

- RHEL 8.0 – comes with accepted libocxl version.

1.3   API libraries

An OpenCAPI capable host API library that may be used for OpenCAPI Ready assertion is the libocxl driver,
at least version 1.1 or greater, located here: https://github.com/OpenCAPI/libocxl.

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