

# AXIe Specifications Get a Facelift

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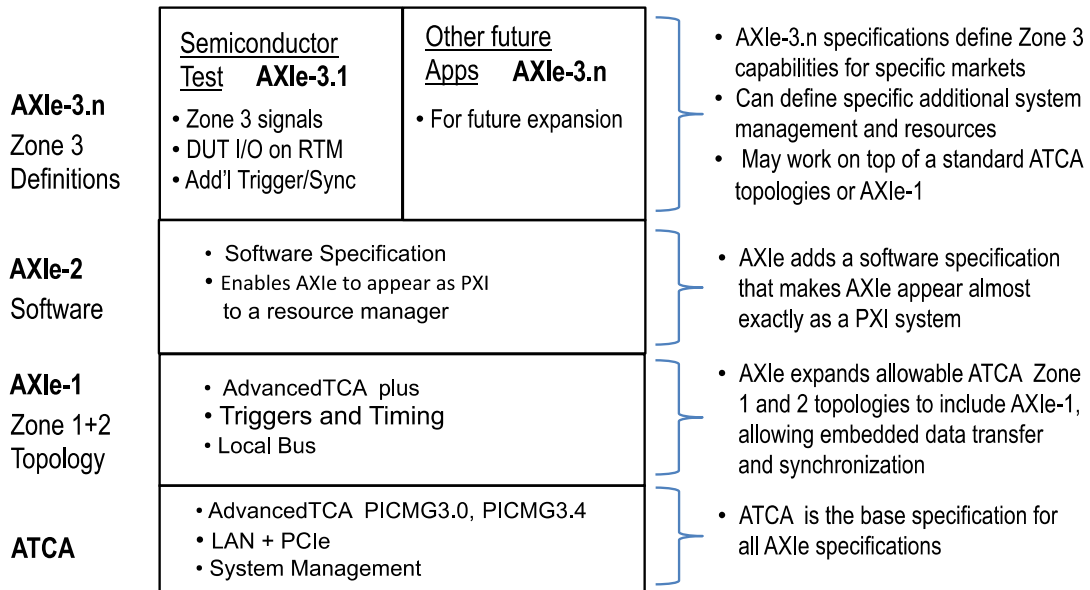
If you are like many readers, you may be confused by the AXIe specification numbering system. Many people assume a specification with a decimal point denotes a revision number, not a different specification. In order to simplify the AXIe specification hierarchy, decimal points have been removed from all but the Zone 3 specifications.

In other words, AXIe 1.0 (Base Architecture Specification) has become AXIe-1, and AXIe 2.0 (Base Software Specification) has become AXIe-2. AXIe 3.1 (Semiconductor Test Extension) inserts a hyphen to become AXIe-3.1. Each of these specifications will have its own revision number, such as AXIe-1 Rev. 1.0.

The figure below shows the hierarchy of specifications:

## AXIe Specification Structure

AXIe is a scalable family of specifications allowing a portfolio of applications.



Let's quickly review the AXIe specifications, starting from the bottom up. All AXIe specifications are based on the AdvancedTCA industrial computer specification, commonly referred to as ATCA. Power, cooling, system management and the LAN and PCI Express fabrics are defined by ATCA.

AXIe-1 (Base Architecture Specification) adds Triggers, Timing and Local Bus through an instrumentation specific topology. AXIe allows a system to use a standard ATCA topology, or AXIe-1. It also more rigorously defines PCI Express communication,

allowing Gen 2 speeds to each module of 2GB/s. For higher speeds, a 62 lane local bus enables speeds in excess of 600Gb/s between adjacent slots. Current products have already demonstrated 40GB/s, or 320Gb/s, streaming bandwidth using the AXIe-1 local bus. AXIe-1 is commonly used for general purpose instrumentation.

AXIe-2 is a software specification whose main purpose is to specify the software necessary to identify and support the AXIe chassis, system modules, and instrument modules that comply with AXIe-1. To do so, it builds upon PXI-2 (PXI Software Specification) and PXI-6 (PXI Express Software Specification). This allows AXIe systems to largely be perceived as PXI systems from a system controller, and to be supported by existing PXI utilities. For this reason, combined with its adoption of PCI Express, AXIe is commonly referred to as the big brother of PXI.

There is a third connector region in the ATCA specification that is user defined, and is referred to as Zone 3. It is an optional connector that can include capabilities not found in the two standard connectors (called Zone 1 and Zone 2). In this case, AXIe has provisions for market-specific specifications to be numbered AXIe-3.n. The AXIe Consortium has defined AXIe-3.1 (Semiconductor Test Extensions) to address semiconductor test applications. AXIe-3.1 adds additional synchronization features as well as Device Under Test I/O to enable fixturing solutions commonly found in semiconductor applications.

Though each specification stands on its own, and can be used independently, the AXIe Consortium is encouraging the use of AXIe-1 and AXIe-2, with AXIe-3.1 being an option. This delivers a high degree of compatibility between AXIe products, including using AXIe-1 instruments in AXIe-3.1 systems. AXIe-2 then brings the extra benefit of easy integration with PXI.