**AXIe-0 Standard Formalized**

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The AXIe-0 standard is advancing to a formal specification.

You may ask, "What is AXIe-0?"

AXIe-0 is pronounced "AXIe Zero" and is titled "Low-Cost Instrument Architecture."
Like Coke Zero, AXIe-0 is the diet version of its namesake, AXIe. But instead of
cutting calories, AXIe-0 cuts cost and complexity.

AXIe-0 was conceived to meet two objectives. The first objective was to create a
standard that would significantly lower the cost of modular instrumentation and
switching solutions. The second objective was complete upward compatibility to
AXIe-1, the mainstream standard. This is why it was called AXIe-0; it is a subset of
the existing AXIe-1 specification.

AXIe-0 retains the module size and board area of the current AXIe-1 Base
Architecture, while delivering a cost-effective platform for vendors and users not
needing the full capability of AXIe-1. The module is 1.2 inches thick, 11 inches deep,
and 12.7 inches wide (or tall) depending on whether the module is horizontal or
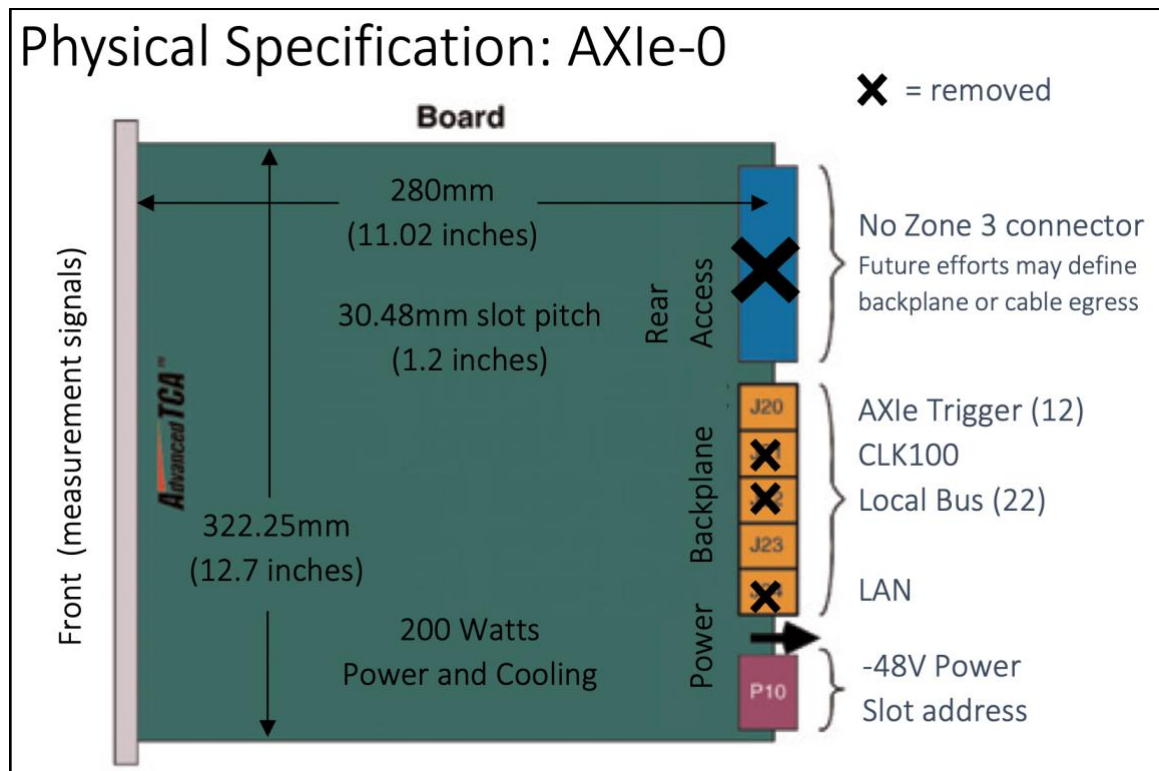vertical. Like AXIe-1, a chassis may have anywhere from 2 slots to 14.

**Figure 1. The image shows the board size of AXIe-0. Four connectors are eliminated, significantly reducing chassis and module costs.**

The cost savings come from simplifying the power, cooling, management, and backplane. An entry level AXIe-0 chassis consists of a LAN GbE switch, a 12-lane 100MHz AXIe trigger bus, a 100MHz Clock, and 200 watt/slot cooling and power. The LAN interface makes the individual modules each seem like LAN-based instruments, specifically LXI instruments. You can read more details here.

As a reminder, AXIe-0 modules will work in today's AXIe-1 chassis.

So, why are we updating the specification? It's because there are now real AXIe-0 products on the market, and we can "test" the specification with these real-world products. Informtest is a Russian manufacturer and integrator of ATE (Automatic Test Equipment) who has adopted AXIe-0 within its product line. They've developed numerous chassis and instruments which you can view here and here.



AXIe-0 chassis can come in different sizes and orientation
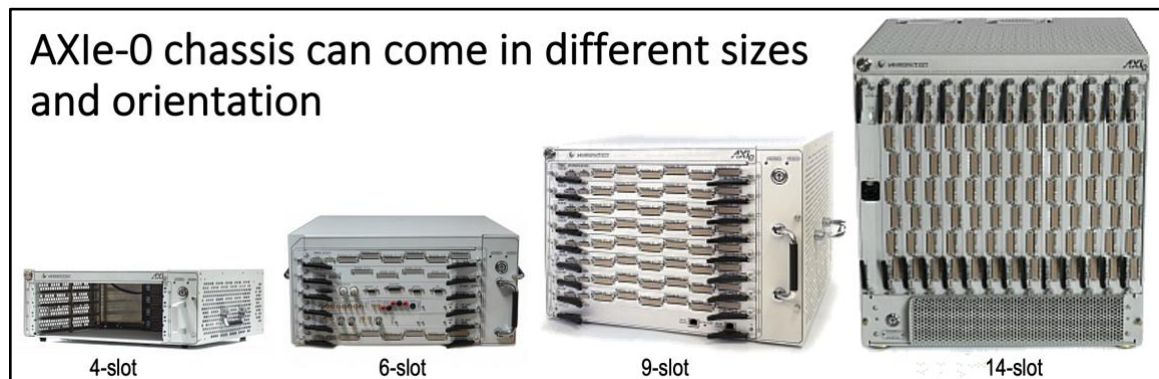
4-slot    6-slot    9-slot    14-slot

**Figure 2. AXIe-0 chassis, like AXIe-1, are scalable from 2 slots to 14. Above are some AXIe-0 chassis offered by Informtest.**

Besides the different chassis, Informtest has developed AXIe-0 modules that include signal generators, signal analyzers, frequency converters, power supplies, and numerous switches. These represent a broad range of electronic instrumentation and a good test of the AXIe-0 standard.



Informtest has also integrated a controller and display into a 6-slot chassis, shown to the left. In this case, it is packaged as a transceiver test system. It's an interesting method of retaining a bench instrument feel while leveraging AXIe-0 instruments.

Due to the experience at Informtest we can formally update the AXIe-0 specification to reflect our learnings of the standard. We've published a formal draft AXIe-0 specification here that we will be reviewing. This is a standard way the AXIe Consortium has addressed new standards in the past- a preliminary specification is released, and that standard is reviewed and formalized as we get real product experience.

We also shortened the name of the standard. It is now called "AXIe-0: Low-Cost Instrument Architecture", eliminating the reference to electronic switches. This reflects Informtest's ability to use the standard for a wide range of electronic instruments, far beyond electronic switching, though electronic switching remains a key application.

Here are some of the key changes that the new specification includes:
- Raised power capability from 50 watts per slot to 200 watts per slot
- Added a common 100MHz clock to every module
- Proposed additional of local bus capability
- Numerous small changes to match current LXI specifications
- Documentation standards to ensure chassis/module compatibility

**What's next?** The formal specification published is still in draft from. It is in review phase, and we are are soliciting comments on the specification. We expect one more iteration before becoming final. Besides whether the specification functionally works, we are making sure this is compatible with AXIe-1 and LXI to the maximum extent possible.

**A final thought.**

The AXIe standard was designed to address a wide range of high-performance instrument applications. It has certainly proven its value in that regard. Since AXIe has been announced there have been two important specification additions. One is the ODI (Optical Data Interface) specification, which breaks distance and speed barriers using a simple pluggable optical cable. The second is AXIe-0, which eliminates cost and complexity barriers to developing products and systems. Altogether, the suite of AXIe standards and products allows AXIe to address a wide set of challenging applications.