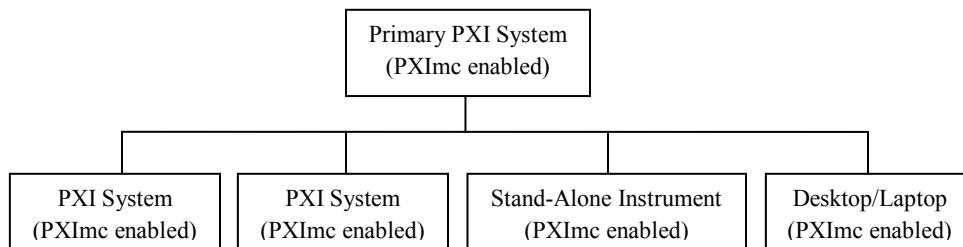


PXImc Basics

PXI MultiComputing (PXImc) is defined through the *PXI-7, PXI MultiComputing Hardware Specification Rev. 1.0* and *PXI-8, PXI MultiComputing Software Specification Rev. 1.0* released Sept. 16, 2009 by the PXI Systems Alliance. Using PXImc you can now connect multiple intelligent devices over cabled PCI Express. PXImc is completely compatible with PXI, and maintains backward compatibility with today's PXI systems. It was developed to enable high-performance, multicontroller systems, and it is a vendor-interoperable standard.

As instrumentation systems continue to increase data collection capabilities, the need for increased processing power has grown. The PXISA has addressed moving this data from the instrument to the local processing element, but there are applications which require more processing power. There are also applications in which standalone instrumentation needs to have data offloaded for combining data with other systems or greater processing capability. But I/O interfaces, at the time, were not sufficient due to bandwidth or latency limitations. Examples of these types of systems would be remote processing of data acquired by instruments; or virtual instrumentation, where all control of the instrument is handled by a remote host PC; or distributed processing systems.

PXImc was created to provide a high bandwidth, low latency interconnect between computing devices, either modular or standalone, as illustrated in the graphic below.



The PXI MultiComputing Hardware Specification builds on the PXISA Hardware Specifications and the PCI Express External Cabling Specification, and their underlying specifications. These existing industry standards are leveraged by PXImc providing off the shelf components, cabling, and connector solutions. PXImc defines a vendor-interoperable standard for multiple controller communication over the high-bandwidth, low-latency PCI Express bus and maintains backward compatibility with today's PXI systems.

Before PXImc, PXI users had two options when creating multichassis PXI systems. Using MXI-Express, they could communicate over a high-bandwidth, low-latency cabled PCI Express link but were limited to a one system controller. Alternatively, they could have used Ethernet to connect multiple PXI chassis, each with their own controllers, but the trade-offs were reduced bandwidth and higher latency.

PXImc provides a third option for high-end applications. By specifying the proper hardware and software interfaces, PXImc allows PXI systems with their own system controllers to communicate over cabled PCI Express. Additionally, the standard supports communication between laptops, high-performance computers, and stand-alone instruments. Finally, PXImc supports the use of multiple processing modules inside a single chassis to enable scalable processing power that paves the way for additional PXI features including enhanced redundancy.