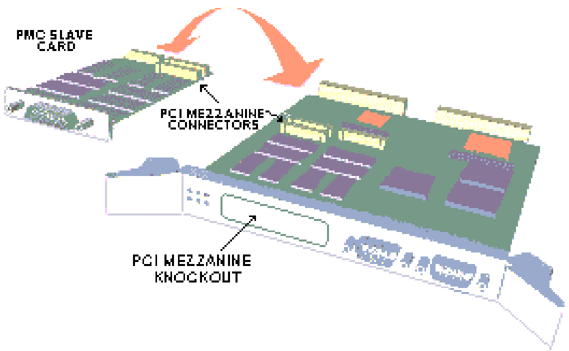
PMC - The New Super Mezzanine Standard

The Multibus, VME and Futurebus+ suppliers have joined forces to agree on a common standard for mezzanine boards. The result is PMC (PCI Mezzanine Card) - a mezzanine bus based on the well established high performance PCI (Peripheral Component Interconnect) specification. PCI is now used by most high performance PC system suppliers and add-in card vendors. Hence, it is very well supported, low cost and readily available.

What is PCI
PCI was developed by Intel as a very high performance local bus to provide a means of inter-connecting components together on a board but with no external access. Its purpose was to provide a simple low-cost way to add high performance peripheral components like graphic controllers and I/O devices to a CPU. Following the initial release of this interface, a modified definition was derived which provided an external interface - this became known as the PCI bus. This bus allows for PCI boards to be plugged into the PCI bus connector. PCI provides many features including data transfer rates of 132Mbytes/s (264Mbytes/s for 64-bits), support for a system similar to Multibus II's Interconnect and 3.3V interfaces.

Mezzanine Problems ... and Solutions
Mezzanine cards have long been a popular method of adding additional or specialized I/O to processor boards. In the Multibus II market, there already exists standards such as iSBX and MIX from Intel, but these interfaces are relatively low performance and do not have a wide multi-vendor support. Concurrent Technologies overcame the performance problem by adding high performance I/O directly onto the board therefore achieving very high data transfer rates and low latency between the CPU, Memory and I/O. This is much better than using either of the existing mezzanine standards because the processor does not have to sit idle (waitstates inserted) waiting for these slow expansion interfaces to respond. With new CPUs, like the Pentium a lot of CPU time can be wasted with these slow interfaces. However, if a very fast expansion interface was available, that did not force the CPU to sit idle, then high performance mezzanine systems could be built using this expansion interface. PCI provides such an expansion interface and with its wealth of support from any different processor and peripheral component manufacturers as well as PC vendors, the bus is an ideal choice for use as a low cost mezzanine system.

The PMC Standard
PCI boards have a form-factor very similar to that of the conventional AT (ISA) boards so that they remain compatible with existing PC packaging. In a PC system, PCI boards (like ISA boards) are mounted at a 90° to the board - as this would occupy about 5 (Multibus II or VME) slots! However, by mounting the PCI card in a plane parallel to the Multibus II or VME board and using different low profile connectors, a PCI board can be fitted onto Multibus II or VME boards - and within a single slot. This connection system together with PCI interface is called PMC.



The group of companies defining the PMC specification wanted to use as many existing standards as possible. Therefore the PCI (Version 2.0) electrical and logical specification was selected together with the IEEE's proposed CMC (Common Mezzanine Card) standard. CMC defines the size of the slave mezzanine cards, the type of connector to be used and the position of the connectors on the master board and on the slave board. Multiple 64-pin low profile connectors are utilized. The PMC standard defines which connector pins are used for which PCI signals; in addition it defines 64 of the connector pins for use I/O signals. The PMC standard is known as the IEEE P1386.1.

A single size PMC module measures 74mm x 149mm. Two such modules could therefore fit side by side on a Multibus II or VME motherboard. Depending upon the specific implementation of a slave PMC board, the user I/O can be accessed either through the P2 connector or directly through the front panel of the motherboard.

Benefits
As an IEEE standard, PMC assures users that any host or module complying with the standard will function with any other module or host designed to the standard. This offers users flexibility to mix and match different host cards and modules. PMC is an open standard. It brings to Multibus II and VME a wealth of I/O products and capabilities which have not been readily available before.

For high performance Multibus II users, it offers an extremely high performance I/O interface for their specialized I/O requirements. More graphics options will be available. And yet, since the boards will essentially have originated from the large volume word of PCs, the price of these modules should be relatively low.

Mezzanine cards will continue to provide a method of customizing and optimizing the use of Multibus II and VME motherboards. PMC brings mezzanine technology up to date.

Go back to our Home Page.