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[PCI-X 66-533](#)
[PCI Express](#)

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[Home](#) > [Specifications](#) > [PCI Express](#) > **PCI Express Base 2.0 Specification**


PCI Express® Base 2.0 Specification

PCI EXPRESS SPECIFICATIONS

Download the Specification (Members only)

- [PCI Express Base 2.0 Specification](#) (4MB) - This version includes the change bar.
- [PCI Express Base 2.0 Specification](#) (3.4MB) - This version does not include the change bar.

Signaling

PCI Express Base 2.0 specification doubles the interconnect bit rate from 2.5 GT/s to 5 GT/s in a seamless and compatible manner. The performance boost to 5 GT/s is by far the most important feature of the PCI Express 2.0 specifications. It effectively increases the aggregate bandwidth of a 16-lane link to approximately 16 GB/s. The higher bandwidth will allow product designers to implement narrower interconnect links to achieve high performance while reducing cost.

Protocol & Software

A number of optimizations and improvements have been made to the protocol and software layers of the PCI Express architecture in the PCI Express Base 2.0 specification. These include:

- Dynamic link speed management – to control the speed at which the link is operating
- Link bandwidth notification – to notify software (operating system, device drivers, etc) of changes in link speed and width
- Capability structure expansion – to expand the control registers to better manage devices, slots and the interconnect
- Access control services – optional controls to manage peer-peer transactions
- Completion timeout control – to define a required disable mechanism plus related optional enhancements
- Function-level reset – optional mechanism to reset functions within a device
- Power limit redefinition – to redefine slot power limit values to accommodate devices that consume higher power

Other

In addition, the PCI Express Base 2.0 specification has been updated with numerous errata and editorial changes for enhanced consistency and readability.

The companion PCI Express Card Electromechanical 2.0 specification is currently at revision 0.9, having completed its 60-day member review. The PCI-SIG anticipates that this specification too will be released in the near future.

Two versions of the PCI Express Base 2.0 specification are available. The version with the change bars is provided for ease of comparison and change tracking. The version with no change bars is slightly easier to read.

Be sure to check the list of [PCI Express ECNs](#) for the latest updates for this specification.

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