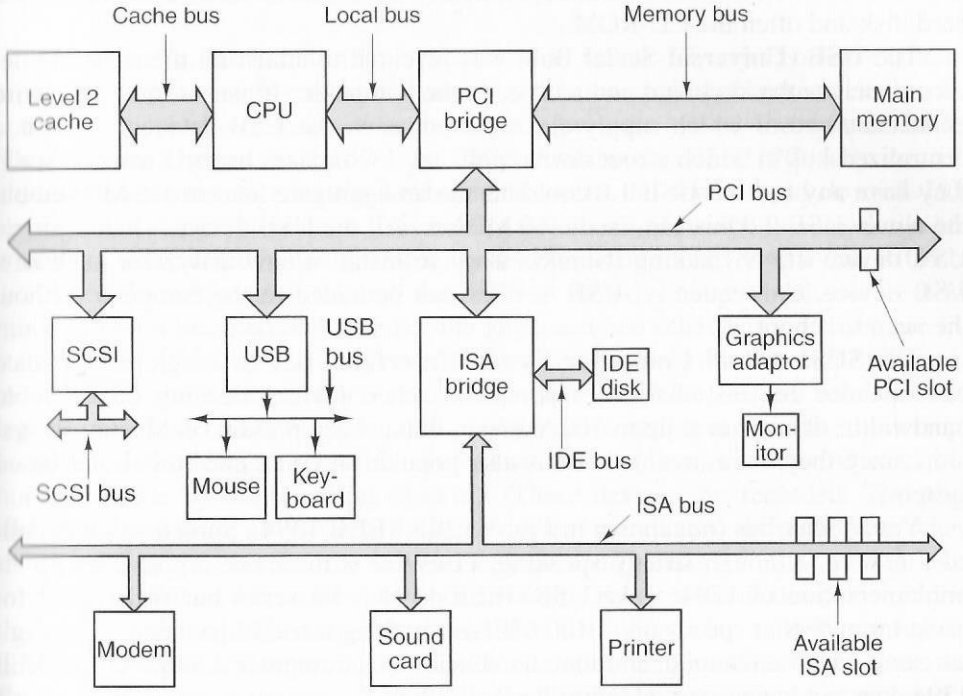

Figure 1-12. The structure of a large Pentium system

must be aware of all of them for configuration and management. The two main buses are the original IBM PC **ISA (Industry Standard Architecture)** bus and its successor, the **PCI (Peripheral Component Interconnect)** bus. The ISA bus, which was originally the IBM PC/AT bus, runs at 8.33 MHz and can transfer 2 bytes at once, for a maximum speed of 16.67 MB/sec. It is included for backward compatibility with old and slow I/O cards. Modern systems frequently leave it out and it is dying off. The PCI bus was invented by Intel as a successor to the ISA bus. It can run at 66 MHz and transfer 8 bytes at a time, for a data rate of 528 MB/sec. Most high-speed I/O devices use the PCI bus now. Even some non-Intel computers use the PCI bus due to the large number of I/O cards available for it. New computers are being brought out with an updated version of the PCI bus called **PCI Express**.

In this configuration, the CPU talks to the PCI bridge chip over the local bus, and the PCI bridge chip talks to the memory over a dedicated memory bus, often running at 100 MHz. Pentium systems have a level-1 cache on chip and a much larger level-2 cache off chip, connected to the CPU by the cache bus.

In addition, this system contains three specialized buses: IDE, USB, and SCSI. The IDE bus is for attaching peripheral devices such as disks and CD-ROMs to the system. The IDE bus is an outgrowth of the disk controller interface