

基于 PCIE 非透明桥的嵌入式异构平台设计

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摘要: PCI Express(PCIE)总线因其具有传输带宽高、全新的点对点互连架构和对 PCI 总线高度兼容等优点已在计算机平台中获得广泛应用.在通过 PCIE 桥接两个以上处理器系统的场合, PCIE 非透明桥 (NTB) 有效地隔离的桥两端系统的 PCIE 总线域, 防止桥两端寻址冲突. 本文使用 PCIE 交换芯片 (PCIE Switch) 以非透明桥的方式连接 CPU 和双 GPU, 搭建高性能嵌入式异构计算平台.在软件层设计上, 本文基于 Linux 操作系统, 完成了 PCIE 总线驱动和 PCIE Switch 的驱动设计, 实现了多个 Root 之间的高速通信.

关键词: PCIE; 非透明桥; 交换芯片; 嵌入式; 异构平台
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An Application of PCIE Non-transparent Bridge on A Heterogeneous Platform

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Abstract: PCI Express (PCIE) bus has been widely used in the computer platform because of the high bandwidth, the point-to-point interconnect architecture , highly compatible to PCI bus and so on. When more than two processor systems are connected by PCIE bridge, PCIE non-transparent bridge (NTB) effectively isolates the PCIE bus domain of both ends of the bridge, preventing conflict when addressing. In the paper, PCIE switch connects the CPU and double GPU by way of a non-transparent bridge to build the embedded heterogeneous computing platform of high-performance. In the design of software layers, the PCIE bus driver and PCIE Switch driver design is completed based on the Linux operation system. At last, the paper achieves a high-speed communication between a plurality of Root.

Key words: PCIE; non-transparent bridge; switching chip; embedded

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