

## 面向终端的网络安全处理器体系结构设计

朱宁龙, 曲思源, 戴紫彬

(解放军信息工程大学 密码工程学院, 河南 郑州 450000)

**摘要:** 提出了一种面向终端的网络安全处理器体系结构设计. 该设计采用基于宏流水的总线结构, 提高了数据平面的数据传输速率, 缓解了总线仲裁压力. 将流存储机制应用到处理器的层次化存储结构中, 结合经过指令集优化的网络安全处理引擎, 提高了多任务并行计算能力. 同时设计了安全防护电路, 用于保证处理器自身的安全性. 实验和分析证明了提出的网络安全处理器具有较高的性能, 能够满足终端设备的通信需求.

**关键词:** 网络安全处理器; 体系结构; 宏流水; 总线; 流存储

中图分类号: TP393

文献标识码: A

文章编号: 1000-7180(2015)12-0080-05

## Design of a Network Security Processor for Terminal Devices

ZHU Ning-long, QU Si-yuan, DAI Zi-bin

(Institute of Cryptography Engineering, PLA Information Engineering University, Zhengzhou 450000, China)

**Abstract:** The paper proposes an architectural design of Network Security Processor for terminal devices. This design uses macro-pipelining bus architecture, which improves the data transmitting rate of data plane and decreases the workload of bus arbitration. By introducing stream memory into the hierarchy memory architecture and using network security processor engine with optimized instruction set architecture, this design improves the ability of multi-task parallel processing. Furthermore, this design uses safe circuit to protect the processor. The results show that this design has high performance, which can meet the demand of terminal devices.

**Key words:** network security processor; architecture; macro-pipelining; bus; stream memory

作者简介:

E-mail: 860554485@qq.com.

朱宁龙 男, (1991-), 硕士. 研究方向为专用集成电路设计.