

SW5000 Network Content Processor

Product Brief

Introduction

The SW5000 Network Content Processor (NCP) is a high-performance processor optimized for Layer 4 protocol termination and Layer 5 to 7 content processing. The SW5000 performs hardware-based functions that accelerate packet and content processing.

The SW5000 enables OEMs to build flexible and scalable network systems that run advanced line rate IP applications. It enables OEMs to develop best-in-class single-application or multi-application products, such as a security gateway with combined firewall, VPN, and intrusion detection features.

Application Examples

- Firewall / VPN systems
- Application firewalls
- Intrusion detection
- Virus scanners
- Content filters
- Content switches
- SSL accelerators
- IP service switches
- Media gateways
- Signaling gateways
- Soft switches
- Web caches
- Lawful intercept
- P2P traffic managers

Overview

The SW5000 combines the performance of hardware with the flexibility of software. Processing-intensive functions are embedded in specialized silicon to maximize performance. Protocol state machine implementation and error handling reside under firmware control. This combined approach gives the SW5000 unparalleled scalability and flexibility.

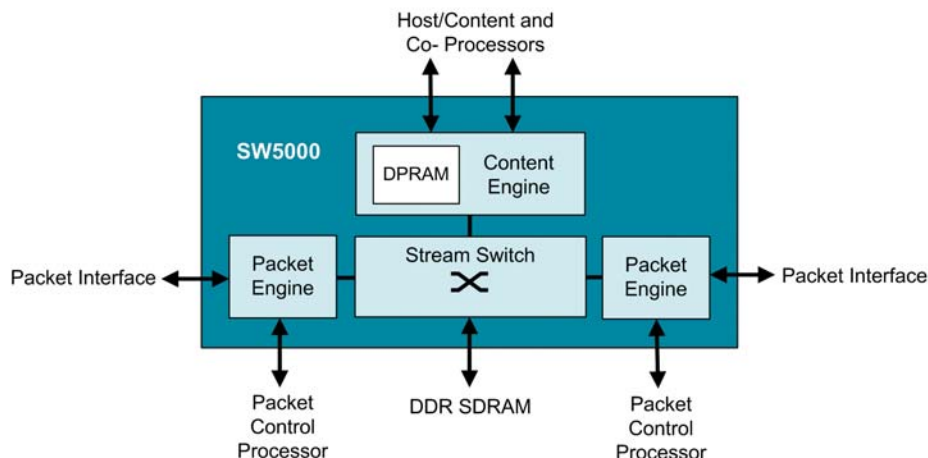
With 5 Gbps (full duplex) throughput, the SW5000 facilitates a wide range of system designs and performance options. The architecture provides a layered approach that takes advantage of industry-standard processors, coprocessors, and memory.



Unlike network processors, which examine data packet-by-packet, the SW5000 performs stream-based content processing. By converting packet-based traffic into contiguous streams of data and processing the resulting streams, the SW5000 maximizes content processing efficiency.

Key Features

- Wire-speed silicon-based Layer 2 to 4 processing, including Layer 2 to 4 classification and full TCP termination
- High-performance silicon-based Layer 5 to 7 processing features, including content searching, examination, modification, and replication
- Advanced stream management and embedded switching features, including:
 - L4 to L7 switching and data mover assists
 - Optimized use of memory and I/O bandwidth through zero-copy data management and other techniques
 - Stream scheduling with dynamic pipelining to maximize processing efficiency and flexibility
- An industry-standard programming model and instruction set for application software development.
 - C compiler with GNU tool chain
 - Sockets-based API with Seaway Extensions



The SW5000 increases system performance, reduces costs, improves system flexibility, and shortens time-to-market:

Performance

- Improves system price/performance by 10 to 20 times
- 5 Gbps full duplex Layer 4 termination (for example, TCP or UDP)
- Control and management of 2 million concurrent Layer 4 sessions
- 300,000 Layer 4 session setups per second
- 20 Gbps stream switching (patented technology)
- 66 million access control list (ACL) comparisons per second
- Hardware-based content processing assists, including content searching at 17 Gbps and stream replication at 10 Gbps

Flexibility

- Implements any Layer 4 protocol in the IP suite (for example, TCP, UDP, SCTP)
- Content processing software can view the SW5000 as a "fast TCP/IP stack"
- Seamless 4.25 Gbps full duplex interface to state-of-the-art IPSec, SSL, and pattern-matching coprocessors
- 64 K virtual domains providing unique security, IP addressing, or interface domains

Rapid Prototype and Design

The SW5000 is an integrated hardware and software package.

Standard GNU Tool Chain

- C compiler and linker
- Debugger, etc.

Seaway System Software

- Complete high performance network stack including full featured TCP and UDP implementations
- API library including an industry-standard sockets interface with extensions
- Reference applications

Development Platforms

- Virtual Development Platform. A complete "board level" simulation package including cycle-accurate simulation of the SW5000.
- Hardware Development Platform. A 6U cPCI chassis with SW5000 evaluation board, Gigabit Ethernet module and I/O module.

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