

## Introduction

CS3516 is a network processor that integrates a dual CPU core, dual gigabit Ethernet MAC, dual IDE channel with single PATA and dual SATA interfaces, dual USB2.0, a wide range of peripheral device interfaces for multimedia applications and an extensive array of hardware acceleration that enhances the network throughput, file transfer and RAID performance. There are three devices in the this product family.

The CK35163 is a Gigabit Storage Router Gateway Design based on CS3516. The Reference Design SDK provides network equipment manufacturers a comprehensive platform to develop a highly integrated multi-function system.

Product Name	IC Package
CS3518	400-pin FBGA Dual Core
CS3516	400-pin FBGA Single Core
CS3512	324-pin FBGA Single Core

The reference design not only provides a very low BOM cost but is also ready for mass production. The Reference Design SDK includes the complete development environment and tools that are Open software architecture-based with standard Linux platform for ease of integrating additional features and applications.

## Hardware Reference Design Features



- Processor
  - CS3516 Network Processor
- DDR SDRAM
  - 2 x 16 Mb x16 333 MHz DDR
- Nonvolatile Memory
  - 16 MByte Parallel NOR Flash
- Network Interface
  - Gigabit Ethernet WAN Interface
  - 5-Port Gigabit Ethernet Layer2 switch
- Peripherals
  - USB2.0 Host and Device
  - V2.2 66MHz MiniPCI
  - 2 x SATA Interface
  - RS232 Serial Port
  - JTAG Interface

## Software Reference Design Features

### Operating System

- Linux 2.6.15 with VMM support

### Network Protocol Support

- UDP/TCP/ICMP
- ARP/RARP
- IPv4
- IPv6 packet forwarding
- VLAN Support (802.1q)

### Network Interface

- MAC Cloning
- WLAN Interfaces
  - 802.11a/b/g Access Point
  - 802.11n Access Point and Client
  - Supports WEP 64bit/128bit, WPA-TKIP/AES, WPA 2-PSK, and WPA2-ENT
  - Support Adhoc and Infrastructure mode
  - WPS support
  - Support 802.1x Free Radius Auth
  - Configurable Transmission Rate Settings
  - Configurable RTS Threshold
  - Configurable Fragment Threshold
  - Automatic or manual rescan for Roaming.
  - Support multiple LAN and WAN ports
    - 10/100/1000 MBps Fast Ethernet port
    - Auto detection or manual configuration of port speed.

### Routing and Bridging Support

- Network Address Translation Support (NAT) with maximum 4 K entries
  - Software and hardware Accelerated NAT
  - NAT-NAPT, RFCs 3022
  - Static NAT and NAPT

- Dynamic Routing: RIP V1/V2, OSPF
- Static Routing
  - Routing Table Control
  - Support LAN-LAN and WLAN-LAN Bridging

### Firewall/Gateway

- Gateway Protocols
  - Static IP/Dynamic IP (DHCP)
  - PPPoE/Dual Access PPPoE/Multiple PPPoE
  - PPTP
  - L2TP
- Support Multicast Streams
- Stateful Packet Inspection
- IP/MAC Address Filtering
- DMZ support
- Virtual Server Support
  - Port Forwarding up to 100 Rule
  - Port Triggering/Special Applications support up to 100 rules.
- Support transparent mode
- Support PPTP/L2TP and IPSEC VPN passthru
- Application Level Gateway (ALG) Modules
  - Special applications rule assisted by the hardware packet parser engine
  - PPTP/IPSec/L2TP pass-through
  - FTP/ICQ/PaITalk/MSN Messenger/NetMeeting
- Support H.323/SIP NAT Traversal

## VPN

- Encryptions 3DES/AES (Rijndael), DES/TwoFish/Blowfish/CAST-128
- MD5/SHA1 Authentications
- Automated Key Management with IKE/ISAKMP with Perfect forward secrecy (PFS). Group 1-MODP 768, Group 2-MODP 1024, Group 5-MODP 1536, Group 14-MODP 2048, Group 15-MODP 3072, Group 16-MODP 4096, Group 17-MODP 6144 and Group 18-MODP 8192.
- Support X.509 v3 certificates, Pre-shared keys and manual keying.
- Radius authentication support with X.509.
- Support 25 profiles of PPTP/L2TP
- PPTP
  - Using MPPE ( RC4 128bit/192bit/256bit)
  - Authentication Protocol CHAP, PAP, MS-CHAP V1/V2
- IPSec
  - Authentication: MD5-HMAC, SHA-HMAC and SHA-224/256/384/512-HMAC
  - Peer Authentication that supports built-in database, IP, DNS-name, Email or X.500 Distinguished Name.
  - Supports IPSec NAT traversal
  - Supports DHCP broadcast (RFC 3456)
- SSLVPN
- Supports Tunnel and Transport Mode

## Services

- Network Services/Applications
  - DHCP Server and Client
    - DHCP Reservation Support (24 Rules)
    - DHCP Relay Server
  - Dynamic DNS Support
  - TFTP client
  - PPPoE/PPTP Client
  - UPnP device support
  - WINS Client
- File Server Services
  - Apple Bonjour Support
  - CIFS/Samba, FTP and NFS Server
- Printer Server
- User Applications
  - Bit Torrent Compatible Applications
  - Casgle Broadcatcher Agent

## Storage Management

- Support multiple Hard Drive configuration
  - XFS, NTFS, EXT2, EXT3 and FAT32
  - USB1.1 or USB2.0 Hard Drive Support
  - Single IDE, Single SATA or Dual SATA hard disk drive support.
- User based disk quota support
- RAID Support
  - RAID 0,1, and 5
  - Hardware Assisted RAID5
- Hardware Accelerated Hard Disk Encryption
  - Support EXT2, EXT3 and XFS
- Hard Disk Health Details/SMART support
- JBOD

## System Management

- Configuration Backup
- Local Access List Management
- User/ Group Management
  - Support multiple databases with 25 users per database
- System Name
- Web Based User Interface for Management
  - Remote Upgrade, software reset, and hard disk management.
  - Factory reset
  - Admin Account
- Support SSH and Telnet Command Line Interface (CLI)

- System status reporting and notification
  - Email Alert
  - Syslog and syslog redirect
  - DHCP Clients Report
- Connection Detail
- Single Button Data Backup
- LED Indicator for system status
- MS Windows setup utility
- Support flash based or hard disk boot up
- Time/Date support
  - User configured
  - NTP
- System Diagnostic Tools
  - Ping
- Support time based scheduling of access control rules
- System Log
  - External Syslog support
  - Up to 1600 internal log storage
  - Support exporting in CSV format
  - Sortable with IP address, Date, Time, Keyword of user input, and policy.
  - Traffic Monitoring of al LAN, WAN and Wireless Packet
- Active sessions listing
- Wireless Clients listing
- LAN Clients listing
- Active VPN listing

### Performance

<b>NAT Throughput</b>	Over 900 Mbps with RFC2544 testing
<b>Firewall Throughput</b>	Over 800 Mbps with RFC 2544 testing (Application Specific)
<b>Maximum Concurrent Sessions</b>	100,000
<b>New Sessions/Second (Ramp rate)</b>	10,000 ~ 15,000
<b>AES Throughput</b>	80 Mbps with RFC 2544 testing
<b>Firewall Policies</b>	600 rules
<b>VPN Tunnels</b>	100 maximum

### Ordering Information

<b>Part Number</b>	CK35163
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