CASA

C3200 (DOCSIS 3.0 Release)

Cable Modem Termination System

Overview

The Casa Systems C3200 Cable Modem Termination System (C3200 CMTS) is a new class of cable edge device that combines a third generation DOCSIS CMTS and an MPEG video Edge-QAM in a very high density, and high availability 3RU platform.

As a third generation CMTS, the C3200 has several unique capabilities beyond DOCSIS 3.0 features.

The revolutionary DOCSIS bandwidth capacity and cost per-bit of DOCSIS bandwidth of the C3200 provides an unprecedented opportunity for cable operators to cost-effectively provision high-bandwidth IP services such as IPTV or video-over-IP and interactive gaming in addition to traditional broadband access and VoIP services.

The integrated MPEG video capacity of the C3200 provides cable operators the flexibility to offer MPEG or DVB-based broadcast digital cable TV, video-on-demand (VOD), and interactive services in the same platform. The flexibility, multi-functionality and economics of the platform eliminate the need to deploy multiple parallel systems for MPEG TV, IPTV bypass and DOCSIS broadband access. The following sections detail the unique capabilities of the C3200.

Features

- **Full DOCSIS 3.0 qualified –** Multi-channel DRFI RF for Annex A, B, & C, downstream channel bonding up to 16 channels, upstream channel bonding up to 16 channels, IPv6, AES encryption/decryption, multicast QoS, bonded channel multicast, full DOCSIS 3.0 MIBs, and IPDR
- **Separate downstream and upstream modules** – Unlike traditional CMTS with fixed downstream to upstream ratio, Casa CMTS has separate downstream modules and upstream modules that provide flexible downstream to upstream ratio
- **Integrated CMTS & video QAM** – DOCSIS traffic & MPEG/DVB video traffic can share the same RF channel
- **Cost effectiveness** –The lowest cost per DOCSIS channel in the industry. The only economical solution for high bandwidth multimedia IP applications
- **Software licensing** –Ability to activate additional channels as needed up to the available physical capacity of the module
- **Superior density** – Offers the highest channel density in the industry, ranging from 80DSx16US for IP video to 48DSx48US for typical broadband service deployment in a single chassis
- **Best multi-channel RF performance** – Exceeds DOCSIS DRFI specification
- **Extended frequency range** – Downstream frequency range up to 1GHz (48~1002MHz)
- **DOCSIS 1.1 and 2.0 features** – Complete DOCSIS/EuroDOCSIS 1.1 and 2.0 feature sets; PacketCable and PCMM support, L2VPN, and DSG
- **Rich operational features** – Rich operational features such as show cable modem, flap list, spectral management and IP bundling ready for deployment
- **High availability** – Dual hot-pluggable AC power supply or DC power supply, hot-pluggable fan tray, and hot-pluggable line card modules, GigE link redundancy

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Specifications

System
- 24x2 Gbps switching capacity
- MPEG switching from any port to any port
- Six DOCSIS module slots per system
- 1~5 Downstream modules per system
- 1~5 Upstream modules per system

DOCSIS Features
- Full DOCSIS 3.0 qualified (May 2008)
- Full Euro-DOCSIS 3.0 compliant
- DOCSIS 3.0 downstream channel bonding up to 16 channels
- DOCSIS 3.0 upstream channel bonding up to 16 channels
- DOCSIS 3.0 AES encryption/decryption
- DOCSIS 3.0 IPv6
- DOCSIS 3.0 multicast
- Complete DOCSIS/EuroDOCSIS 1.1 features
- DOCSIS/EuroDOCSIS 2.0 A-TDMA (standard)
- DOCSIS/EuroDOCSIS 2.0 S-CDMA (optional)
- PacketCable 1.5 compliant
- PacketCable MultiMedia (PCMM) 1.0
- DSG
- L2VPN

IP Features
- DHCP Relay and option 82
- Multiple DHCP servers
- Proxy ARP
- IP subnet bundling
- Static IP routing
- Multiple default routes
- IGMP snooping
- IGMP v2 and v3
- Access control list
- bgp
- RIPv2
- OSPFv2
- PIM-SM
- L2VPN VLAN tagging
- IS-IS

Management
- RS232 Serial port (DB9)
- 10/100BASE-T management port
- Command line interface (CLI)
- Telnet
- SNMPv1, v2, and v3
- Standard DOCSIS and IETF MIBs
- IPDR
- Casa Systems Enterprise MIBs
- Event logging through syslog
- Electronic mail notification
- Resource usage reporting
- TACACS+ and RADIUS

Additional Features
- Dynamic upstream and downstream load balancing
- Spectrum management
- Software-defined MAC domains
- Software channel licensing
- Ingress cancellation filtering

MPEG Stream Processing
- MPEG de-multiplexing and re-multiplexing
- Unicast to multicast conversion
- PAT and PMT extraction and regeneration
- PID filtering and remapping
- PCR jitter removal and re-stamping
- SI table generation and insertion
- DVB Simulcrypt scrambling
- Session-based Encryption

Switch and Management Module (SMM)
- 10/100/1000 Mbps interfaces
- 12-port GigE copper or fiber SFP
- CWDM
- Full line-rate support

DOCSIS QAM Module (DQM)

Number of ports	4 ports per module
DQM04	4 channels, 1 ch/port
DQM08	8 channels, 2 ch/port
DQM16	16 channels, 4 ch/port
QAM modulation	Annex A, B or C
QAM constellations	64, 128, & 256 QAM
Data rates (DOCSIS)	
	27 Mbps @ 64 QAM
	38 Mbps @ 256 QAM
Data rates (EuroDOCSIS)	
	36 Mbps @ 64 QAM
	51 Mbps @ 256 QAM
Connector	F-type, 75 Ω
Frequency range (center)	91 to 867 MHz (standard) 48 to 999 MHz (optional)
Frequency accuracy	+/- 5 ppm
Frequency step size	5 kHz
Channel width	6 to 8 MHz (tunable)
Maximum output power per channel	61 dBmV @ 1-ch/port 57 dBmV @ 2-ch/port 53 dBmV @ 4-ch/port
Output step size	0.1 dB
Return loss	50 ~ 870 MHz, 14 dB 870 ~ 1002 MHz 10 dB
Modulation error rate	43 dB (equalized)
Wideband noise	-73 dBc

DOCSIS Control and Upstream Module (DCU)

DCU04	4 channels in 4 ports
DCU08	8 channels in 8 ports
DCU16	16 channels in 8 ports
Modulation	QPSK, 16, 32 & 64 QAM
Data rate per channel	0.32 – 30.72 Mbps
Input frequency range	5 – 42 MHz (DOCSIS) 5 – 65 MHz (EuroDOCSIS) 5 –55 MHz (JDOCSIS)
Connector	F-type, 75 Ω
Input range	-4 to 26 dBmV

Mechanical

Form Factor	3RU
Height	5.25 in. /133.35 mm
Width	19 in. /482.6 mm
Depth	23.5 in. / 597 mm
Weight	70 lbs
Mounting	19 inch, 3 rack unit high
Front Panel LED	power, alarm

Environmental

Operating temp	0° to 50° C
Storage temp	-40° to 70° C
Operating humidity	5% to 95%, non-cond.
Power supply	AC operating range
DC operating range	90 to 264 V (dual) -36 to –60 V (dual)
Power consumption	< 700 W (nominal)

Regulatory Compliance
- Safety: UL/IEC/CSA 60950-1
- EMC: FCC Part 15 Class A and CISPR Class A
- Immunity: EN61000-4

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