Casa Systems C10G Series

Casa Systems manufactures the industry's only DOCSIS 3.0 Cable Modem Termination Systems (CMTSs) that have earned full gold-level DOCSIS 3.0 qualification from CableLabs and comply with the full DOCSIS 3.0 feature set.

The C10G DOCSIS 3.0 CMTS combines a third-generation DOCSIS system into a single powerful 12RU platform.

casa systems

Casa Systems C10G CMTS

Feature Highlights

Full DOCSIS 3.0 Compliant
Multi-channel DRFI RF for Annex A, B & C, downstream channel bonding up to 64 channels, upstream channel bonding up to 64 channels, IPv6, AES encryption/decryption, multicast QoS, bonded channel multicast, multiple logic upstream channels, 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

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 704DSx64US for IP video to 384DSx384US for typical broadband service deployment in a single chassis

Overview

The Casa Systems C10G Cable Modem Termination System (CMTS) is a new class of DOCSIS 3.0 cable edge device that delivers unprecedented performance and scalability in a 12RU platform.

As a third-generation CMTS, the C10G has several unique capabilities beyond DOCSIS 3.0 features.

The C10G supports complete separation of downstream (DS) channel capacity and upstream (US) channel capacity in a single physical chassis, providing a flexible downstream to upstream channel ratio. Cable operators can add downstream channels and upstream channels completely independently within the same chassis. Business users may require more symmetric downstream to upstream traffic ratios, while residential broadband is typically more asymmetric.
For IPTV or video-over-IP applications, significantly more downstream traffic is required than the upstream traffic.

The C10G delivers unprecedented channel density compared to a second generation CMTS. It supports up to 704 DS and 64 US channels

This extremely high downstream channel density makes it economical to provide video-over-IP service or IPTV today.

In addition to channel density, the C10G goes beyond the DOCSIS 3.0 specification by delivering dynamic channel bonding capability in both the downstream and the upstream directions.
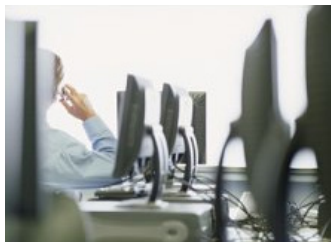
The C10G's revolutionary DOCSIS bandwidth capacity and cost per bit of DOCSIS bandwidth provides an unprecedented opportunity for cable operators to cost-effectively provision high-bandwidth IP services such as IPTV, interactive gaming, traditional broadband access and voice over IP (VoIP) services.

Converged Cable Access Platform (CCAP) Ready

While competing solutions require forklift upgrades, the C10G takes different approach.

It was designed from the ground up to support higher density and increased function-

Casa Systems C10G CMTS

ality which have become corner-stones of the CCAP specification.

The C10G delivers the highest density in the industry and its service creation capability allows cable operators to deploy DOC-SIS, IPTV and digital video over a single port on a single chassis today.

This Integrated CCAP (I-CCAP) platform, combined with its significantly increased channel density, lowest power consumption available, and rapid feature development will result in lower capex/opex cost and drive down the total cost of ownership.

Investment Protection

For those cable operators who aren't ready to deploy CCAP right now, the C10G can seamlessly migrate to CCAP by adding the new CCAP DS8x96 module without changing any other hardware on the platform. This protects their initial investment in Casa Systems while providing additional capex and opex savings moving forward.
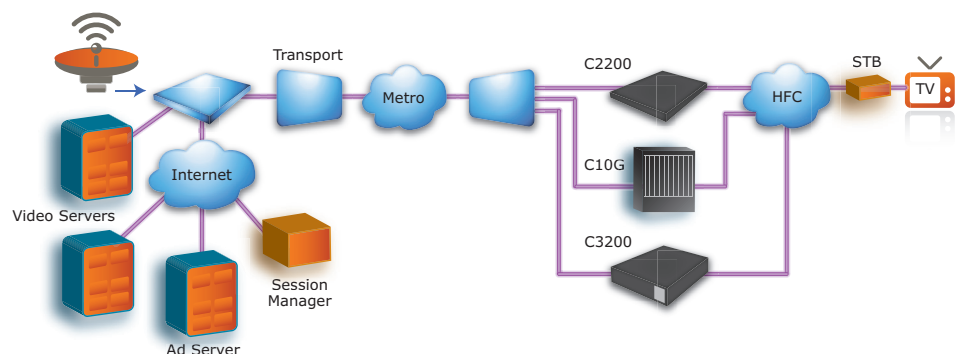
Modular and Flexible Architecture

The C10G CMTS comes in a 12RU chassis. It is based on a modular architecture that gives cable operators the maximum flexibility in tailoring their networks according to the requirements of their services.

The C10G consists of; 2 Switch and Management Module slots for redundancy; 12 slots for DOCSIS interface modules (DS DQM modules or US DCU modules); and 12 slots for RF I/O modules (8-port DS or 16-port US).

Any combination of downstream modules and upstream modules are supported by the platform. This enables an extremely flexible downstream to upstream channel ratio.

The DOCSIS QAM Module (DQM) is a complete DOCSIS downstream unit that includes DOCSIS packet processing, QoS, DOCSIS downstream MAC, PHY and RF up-conversion.

Best Multi-channel RF Performance
Exceeds DOCSIS DRFI specification

Extended Frequency Range
Downstream frequency range up to 1GHz (48~1002MHz)

Extensive DOCSIS Features
Complete DOCSIS/EuroDOCSIS 1.1, 2.0 and 3.0 feature sets, PacketCable and PCMM support, L2VPN and DSG

Rich Operational Features
Rich operational features such as static and dynamic load balancing, 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, dual hot-pluggable SMM and hot-pluggable line card modules, GigE link redundancy

Casa Systems C10G CMTS

The DOCSIS Control and Upstream module (DCU) is a complete DOCSIS upstream unit that includes DOCSIS packet processing, DOCSIS upstream MAC and burst mode receivers.

A typical configuration for channel-bonded deployment can be 384DSx384US for a 1:1 channel ratio or 256DSx512US for a 1:2 channel ratio.

Carrier-Class Reliability

The C10G is a robust platform designed from the ground up to be carrier-class. It is NEBS compliant and includes many redundancies:

– Power-supply redundancy: dual-48VDC power supply

– Fan-tray redundancy

– Switch and Management modules: 1+1 redundancy

– QAM/Upstream modules: 10+2 redundancy

– Link redundancy: 2-port 10GigE and 8-port GigE interfaces for link fail-over

– A passive mid-plane

All modules in the C10G are designed for "hot-swap" operation and can be inserted or removed while the system remains powered and in operation.

Rich Operational Features

The C10G supports industry standard Command Line Interface (CLI) and SNMP for configuration and management. Some of the operational features supported are; static and dynamic load balancing for single and bonded channels, extensive show cable modem commands, spectral management, system resource reporting, and user privilege management.

Acting as a Layer 3 routing device, the C10G supports static as well as dynamic routing protocols such as OSPF, IS-IS, BGP, RIP, and PIM-SM.

Casa Systems C10G CMTS

System

480x2 Gbps switching capacity

MPEG switching from any port to any port

12 DOCSIS module slots per system

1~11 Downstream modules per system

1~11 Upstream modules per system

DOCSIS Features

Full DOCSIS 3.0 compliant

Full EuroDOCSIS 3.0

DOCSIS 3.0 downstream channel bonding up to 64 channels

DOCSIS 3.0 upstream channel bonding up to 64 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)

PacketCable 1.5 qualified

PacketCable MultiMedia (PCMM) 1.0

DSG

L2VPN

IP Features

OSPFv2

IS-IS (IPv4 & IPv6)

RIPv2

BGP (IPv4 & IPv6)

PIM-SM

IGMP snooping

IGMP v2 and v3

Static IP routing

DHCP Relay and option 82

DHCPv6

DHCP prefix delegation

Multiple DHCP servers

Proxy ARP

IP subnet bundling

Multiple default routes

Access Control Lists

L2VPN VLAN tagging

Management

RS232 serial port (RJ45)

10/100BASE-T management port

Command line interface (CLI)

Telnet

SSH

SNMPv1, v2 & v3

Standard DOCSIS & IETF MIBs

IPDR

Casa Systems Enterprise MIBs

Event logging through Syslog

Electronic mail notification

Resource usage reporting

TACACS+ and RADIUS

DOCSIS QAM Module (DQM)

DQM32	32 channels, 4 channels/port
DQM64	64 channels, 8 channels/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	36 Mbps @ 64 QAM
(EuroDOCSIS)	51 Mbps @ 256 QAM
Frequency range (center)	48 to 1000 MHz
Frequency step size	5 kHz
Channel width	6 to 8 MHz (tunable)
Maximum output	60 dBmV @ 1-ch/port
power per channel	56 dBmV @ 2-ch/port
	52 dBmV @ 4-ch/port
	49 dBmV @ 8-ch/port
Output step size	0.1 dB
Output accuracy	± 5ppm
Return loss	50 ~ 870 MHz, 14 dB
	870 ~ 1002 MHz 10 dB
Modulation error rate	43 dB (equalized)
Wideband noise	−73 dBc

Casa Systems C10G CMTS

DOCSIS Control and Upstream Module (DCU)

DCU32	32 channels, 2 channels per port
DCU64	64 channels, 4 channels per port
Modulation	QPSK, 8, 16, 32 & 64 QAM
Data rate/channel Mbps	0.32 – 30.72
Input frequency range (DOCSIS)	5 – 42 MHz
	5 – 65 MHz (EuroDOCSIS)
	5 – 55 MHz (J-DOCSIS)
Input range	–16 to 26 dBmV

Switch and Management Module (SMM)

Two 10 GigE interfaces
Eight GigE interfaces
GigE copper or fiber SFP
Full line-rate support

RF I/O Downstream Module (RFD)

Number of ports	8 ports per module
Connector	F-type, 75 Ω

RF I/O Upstream Module (RFU)

Number of ports	16 ports per module
Connector	F-type, 75 Ω

Additional Features

Dynamic upstream & downstream load balancing
Spectrum Management
Software-defined MAC domains
Software channel licensing
Ingress cancellation filtering

Mechanical

Form factor	12RU
Height	21 in. / 533 mm
Width	19 in. / 482 mm
Depth	16 in. / 406 mm
Weight	120 lbs (fully loaded)
Mounting high	19 inch, 12 rack unit
Front panel LED	Power & alarm

Environmental

Operating temperature	0° to 50° C
Storage temperature	–40° to 70° C
Operating humidity	5% to 95%, non-cond.
Power requirements (DC)	–40.5 to –60 V (dual)
Power consumption	< 2700 W (nominal)

Regulatory Compliance

Designed to NEBS level 3 requirements
Safety: EN/UL/IEC/CAN/CSA/C22.2 60950–1
EMC: FCC Part 15 Class A & CISPR Class A
Immunity: EN61000–4

casa systems