

Casa Systems C100G Converged Cable Access Platform (CCAP)

Winning and keeping residential and enterprise video and Internet services customers has never been tougher. Service providers face a range of competition in a business that requires rapid response but is still capital intensive. They need partners who are fast enough to get them ahead of their competition and committed to keeping them there, which is why more and more, leading providers depend on Casa Systems.

Casa has consistently designed today's products with tomorrow in mind, and has proven to be the most reliable partner in the industry in delivering high performance solutions at each technology shift in cable access networks. Designed from the beginning to deliver gigabit+ services from a true CCAP platform, the C100G enables a smooth transition from DOCSIS® 3.0 to DOCSIS 3.1 and to Distributed Access Architectures (DAA). The C100G can also support integrated EPON using DOCSIS Provisioning of EPON v2 (DPoEv2).

Casa's C100G was selected as the cable industry's best new product in its debut year, 2013*. Since its launch, the C100G has achieved a remarkable number of firsts:

- First and only CCAP to attain full DOCSIS 3.0 certification
- First and only CCAP that has proven the service convergence envisioned by the industry in the CCAP standard, delivering converged video and data to millions of subscribers
- First CCAP to support full DOCSIS 3.1 spectrum in 2015 — Supports full 192 MHz OFDM and 96 MHz OFDMA with no field upgrades and no new hardware required
- First CCAP with a Remote-PHY solution in 2016, with the addition of a single card to the C100G chassis.

The C100G's track record of firsts is the product of visionary design and development choices made by Casa Systems that are paying dividends for our customers today. Those choices are enabled by our Axyom Software Architecture, which provides the ability to adapt to changing industry standards more quickly than competitors.

Service providers who choose the C100G obtain competitive advantages today, including the ability to deliver faster high-speed data rates, lower OPEX, and improve subscriber Quality of Experience. More importantly, the C100G delivers strategic benefits for the long term — including lower lifetime TCO, and investment protection as networks evolve.

Deployed by some of the world's leading service providers, the C100G is the gold standard for current and future CCAP capabilities.



Highlights

Proven True CCAP

DOCSIS PHY and MAC, EdgeQAM video, routing and MPLS, and subscriber and traffic management control in one chassis. Only CCAP solution in the industry delivering video and data over a single port in commercial deployments

Full Spectrum DOCSIS 3.1 Support

Full 192 MHz OFDM / 96 MHz OFDMA spectrum block support with existing hardware

Backward Compatibility

Full support for DOCSIS 1.0 — DOCSIS 3.0 concurrent with DOCSIS 3.1

Scalability

Full 1.2 GHz spectrum support per service group. Up to 255 service groups with Distributed Access Architecture (DAA)

Reliability

99.999% availability, full redundancy

Density

13 RU, 14 slot chassis

Low Power Consumption

3.6kW per fully loaded chassis

Forward Engineered

Smooth transition to DOCSIS 3.1, DAA and PON

*The C100G was awarded "Best New Cable Product of the Year" in 2013 by Light Reading's Leading Lights, "Best Cable and Video Architecture" and "Best in Show - Green Installation" in 2015 by Fierce Innovation

Feature Benefit

Density and Scalability

13 RU, 14 slot chassis (12 subscriber slots, 2 management modules)	Industry leading density in a small footprint, proven to reduce OPEX significantly over legacy solutions.
Up to 255 Service Groups with DAA	Casa's DAA solution, enabled by the CSC card in the C100G, offers various DAA node form factors to meet service provider needs. Note that up to 192 individual DAA nodes can be supported
Downstream (DS) Capacity	Available today with DOCSIS 3.1 - full 1.2 GHz spectrum support. Per port support for up to two (2) 192 MHz downstream OFDM blocks along with multiple SC-QAM channels.
Upstream (US) Capacity	Available today with DOCSIS 3.1. Up to two (2) 96 MHz upstream OFDM blocks along with multiple SC-QAMs per port can supported.
1+ Terabit Backplane	End user speeds can be constrained at various points. Adequate bandwidth between the switch card and line card assures higher throughput.

Affordability

Low Power Consumption	Reduce costs and energy consumption with a fully loaded 13RU chassis that consumes < 3.6kW.
OPEX Reduction	Beyond industry leading density, as the only proven CCAP in the field delivering video and data over a single port, the C100G is proven to reduce space and power requirements by at least 30%.

Reliability

Product Reliability	99.999% availability and hitless failover assure services are consistently delivered to subscribers.
Vendor Reliability	Casa Systems' track record proves a reliable history of bringing new technologies to market first, at each generational shift. Casa's winning design, vision of the future, freedom from reliance on third party silicon providers, and passion to be first with the best solution all create value for our customers. Service providers who want faster time to revenue, lower lifetime TCO, and gigabit+ speeds today choose Casa Systems.
Service and Support	Casa's support engineers own our customers' problems from the first contact (we do not use call external centers) to resolution with a sense of urgency and ownership — even if the problem turns out to be with another vendor's equipment. This means less network downtime for our customers.

Road to the Future

Investment Protection	Future engineered design enables transition to DOCSIS 3.1 with no new hardware required and transition to DAA with the addition of a single new card (the CSC or CCAP Services Card), as well as support for DPoEv2. Service providers' investments in the C100G are protected as networks evolve toward a more distributed future.
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Clear Roadmap

Casa's roadmap from today's C100G capabilities through distributed access architectures toward virtualization of key network functions is clearly defined and takes advantage of a winning design that keeps our customers ahead of their competitors.

Technical Specifications

System	DOCSIS Features	IP Features	Video Features
2x600 Gbps switching capacity	Full DOCSIS 3.1 compliance	OSPF v2 and OSPF v3	Table based VOD
MPEG switching from any port to any port	Full DOCSIS 3.0 compliance	IS-IS (IPv4 & IPv6)	SDV session based VOD
14 slots per system - Downstream and upstream DOCSIS, PON, CSC and, switch & management modules supported	Full EuroDOCSIS 3.0 compliance	RIPv2 and RIPv6	Linear Broadcast
	DOCSIS 3.0 and DOCSIS 3.1 channel bonding	BGP (IPv4 & IPv6)	VOD encryption:
	DOCSIS 3.1 OFDM channel bonding with SC-QAM	PIM-SM	<ul style="list-style-type: none"> PME, PKE, DVB Simulcrypt
	DOCSIS 3.0 downstream channel bonding up to 32 channels	IGMP snooping	Broadcast encryption:
	DOCSIS 3.0 upstream channel bonding up to 8 channels	IGMP v2 and v3	<ul style="list-style-type: none"> DVB Simulcrypt
	DOCSIS 3.0 AES encryption/decryption DOCSIS 3.0 IPv6	Static IP routing	
	DOCSIS 3.0 Multicast	DHCP Relay and option 82	
	Complete DOCSIS/ EuroDOCSIS 1.1 features	DHCPv6	
	DOCSIS/EuroDOCSIS 2.0	DHCP prefix delegation	
	A-TDMA (standard) PacketCable 2.0 compliant	Multiple DHCP servers	
	PacketCable MultiMedia (PCMM) I06 DSG	Proxy ARP	
	BSoD L2VPN	IP subnet bundling	
	TaFDM	Multiple default routes	
		Access Control Lists	
		L2 MPLS	
		L3 MPLS	
		L2VPN VLAN Tagging	
		IPFIX	

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

Electronic mail notification

Resource usage reporting

TACACS+ and RADIUS

DOCSIS Downstream Modules

The C100G can be flexibly equipped with any of the following downstream modules.

DS 8x96	The DS8x96 provides a lower capacity option
DS8x192	Delivers DOCSIS 3.1 modem capabilities of up to 2 OFDM (192 MHz) channels per port along with multiple SC-QAM channels Flexible support for multiple SC-QAM channels and OFDM channels

Please refer to the respective datasheets for each of the above modules for details regarding QAM modulations, QAM constellations, Data Rates, Frequency Ranges, Channel Widths, and other technical specifications.

DOCSIS Upstream Modules

The C100G can be flexibly equipped with any of the following upstream modules.

US 16x8 (16 port I/O option)	8 ATDMA per port (DOCSIS 3.0) 1 OFDMA (96 MHz) + 4 ATDMA per port
US 16x8 (32 port I/O option)	4 ATDMA per port

Please refer to the respective datasheets for each of the above modules for details regarding QAM modulations, QAM constellations, Data Rates, Frequency Ranges, Channel Widths, and other technical specifications.

Please refer to the following for information regarding additional technologies supported by the C100G:

- DAA - DAA Product Overview and Distributed Access (DA500, DA1000 and DA2000) & CSC8x10G Card data sheets
- PON using DPoEv2 -PON Product Overview and 16x10G PON Card & SMM300G data sheets

Switch and Management Modules (SMM)

SMM8x10G	Eight 10 GigE interfaces Two GigE interfaces GigE copper or fiber SFP Full line-rate support
SMM300G	Two 100GE interfaces (QSFP28) Ten 10GE interfaces (SFP+) SyncE and 1588 Precision Timing GigE copper or fiber SFP Full line-rate support

RF I/O Downstream Module (RFD)

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

RF I/O Upstream Module (RFU)

Number of ports	16 or 32 ports per module
Connector	16 port: F-type, 75 Ω 32 port: MCX

Additional Features

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

Mechanical

Form factor	13RU
Height	22.75 in. / 578 mm
Width	19 in. / 482 mm
Depth	16 in. / 406 mm
Weight	120 lbs / 54.4 kg(fully loaded)
Mounting	19 inch, 13 rack unit high
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	< 3600 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
