

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 smooth transition from DOCSIS® 3.0 to DOCSIS 3.1 and to distributed access architectures. The C100G can also support DOCSIS provisioning of EPON (DPoE) implementations, as well as both analog and digital fiber connectivity.

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 video and data over a single port to millions of subscribers
- First CCAP to support full DOCSIS 3.1 spectrum (full 192 MHz OFDM and full 96 MHz OFDMA) in 2H 2015 — with no field upgrades and no new hardware required
- First CCAP ready with a Remote-PHY solution this year (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 include our Software Defined Cable 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.

*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 Awards

Highlights

Proven True CCAP

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

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

Capacity (Per Chassis)

Up to 6,144 downstream channels
Up to 768 upstream channels

Scalability

Up to 128 DOCSIS channels per service group and 72 service groups (64 with HA)

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 and / or Remote-PHY

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.
72 Service Groups (without HA), 64 Service Groups (with HA)	Improve customer QoE through reduction of service group sizes.
Up to 384 Service Groups with Remote-PHY	Casa's Remote-PHY solution, enabled by the CSC card in the C100G, offers various Distributed Access node form factors to meet service provider needs.
Downstream (DS) Capacity	Compete today with gigabit+ services, enabled by up to 1,024 downstream channels per DS card, scalable to 6,144 DS channels in a fully loaded chassis or 5,120 DS channels in an N+1 card configuration.
Upstream (US) Capacity	Assure capacity for an increasingly upstream future with up to 128 upstream channels per US card, scalable to 768 US channels in a fully loaded chassis or 640 US channels in an N+1 card configuration.
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 have no call 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 Remote-PHY with the addition of a single new card (the CSC or CCAP Services Card), as well as support for DPoE. 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
2x600 Gbps switching capacity	Full DOCSIS 3.1 compliance	OSPF v2 and OSPF v3
MPEG switching from any port to any port	Full DOCSIS 3.0 compliance	IS-IS (IPv4 & IPv6)
12 DOCSIS module slots per system	Full EuroDOCSIS 3.0 compliance	RIPv2 and RIPv2
1~11 Downstream modules per system	DOCSIS 3.0 and DOCSIS 3.1 channel bonding	BGP (IPv4 & IPv6)
1~11 Upstream modules per system	DOCSIS 3.1 OFDM channel bonding with SC-QAM	PIM-SM
	DOCSIS 3.0 downstream channel bonding up to 32 channels	IGMP snooping
	DOCSIS 3.0 upstream channel bonding up to 8 channels	IGMP v2 and v3
	DOCSIS 3.0 AES encryption/decryption	Static IP routing
	DOCSIS 3.0 IPv6	DHCP Relay and option 82
	DOCSIS 3.0 Multicast	DHCPv6
	Complete DOCSIS/EuroDOCSIS 1.1 features	DHCP prefix delegation
	DOCSIS/EuroDOCSIS 2.0	Multiple DHCP servers
	A-TDMA (standard)	Proxy ARP
	PacketCable 2.0 compliant	IP subnet bundling
	PacketCable MultiMedia (PCMM) I06	Multiple default routes
	DSG	Access Control Lists
	BSoD L2VPN	L2 MPLS
		L3 MPLS
		L2VPN VLAN Tagging

Management

DOCSIS QAM Module (DQM)

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

DS 8x96	1,024 channels, 128 channels / port
DS 8x192	Exceeds DOCSIS 3.1 modem capabilities of 2 OFDM (192 MHz) channels per port 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 Control and Upstream Modules (DCU)

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

US 16x8 (16 port I/O option)	8 ATDMA per port (DOCSIS 3.0) 1 OFDMA + 4 ATDMA per port (DOCSIS 3.1)
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.

Switch and Management Modules (SMM)

SMM 2x10G	Two 10 GigE interfaces Eight GigE interfaces GigE copper or fiber SFP Full line-rate support
SMM8x10G	Eight 10 GigE interfaces Two GigE interfaces 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	21 in. / 533 mm
Width	19 in. / 482 mm
Depth	16 in. / 406 mm
Weight	120 lbs (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