

# Casa Systems Distributed Access Architecture Solutions

## Summary

Casa Systems' award winning Distributed Access Architecture Solutions are designed to give service providers flexible capacity expansion alternatives that leverage existing HFC investments to push fiber deeper into the network, reduce network complexity, and deliver higher bandwidth services to customers.

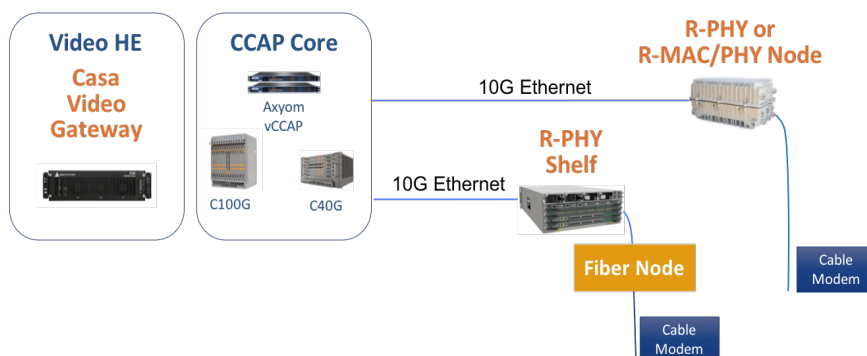
Distributed Access Architectures offer a new approach for service providers who need to increase capacity in their networks.

Casa Systems' family of Distributed Access Architecture solutions are designed to help service providers push capacity to the edge to improve the services their subscribers enjoy, extract more value from existing investments, and maintain smooth operations in the transition from centralized to distributed access architectures.

Casa's Distributed Access Architecture (DAA) family includes:

- Physical or virtual CCAP cores that deliver full CCAP, full spectrum DOCSIS® 3.1 support, and are compliant with CableLabs' interoperability standards
- The CCAP Service Card (CSC), deployable in Casa's C100G or C40G chassis, which provides the complete DOCSIS and EQAM MAC functions as well as traffic aggregation for the Distributed Access nodes or shelves
- A range of Distributed Access (DA) node and shelf form factors that perform complete DOCSIS and EQAM PHY or MAC/PHY functions and can be optimally located based on service provider needs
- 10G Ethernet transport between the CCAP core and the DA nodes.

## Casa Systems' Distributed Access Architecture Solutions



## Highlights

**Award Winning Design.** BTR 2016 Diamond Technology Review Award for Distributed Access Architecture Solutions

**Standards Compliant.** Casa's physical and virtual CCAP cores and Casa's remote PHY / Remote MAC / PHY nodes and shelves support CableLabs interoperability standards (DEPI / UEPI)

**Gigabit+ Performance.** Full spectrum DOCSIS 3.1 support with 10G Ethernet transport deliver 1Gbps+ services to subscribers

**Full CCAP.** Proven and demonstrated true CCAP functionality (integrated video, voice and data) in DAA environment

**Investment Protection.** Use existing CCAP core (C40G or C100G) and existing cable modems or set-top devices

**Simplified Management.** Existing CLI / SNMP allows the DAA system to be managed by existing back office systems and NETCONF / YANG support enables management via intelligent orchestrator

**Video Support.** VOD, SDV, and Broadcast video services support, including encryption, enabling full migration from analog to digital optics. The Casa Video Gateway can be deployed to integrate linear BC channels without expensive Video Headend upgrades. And, Casa's solution provides narrowband forward and return support which can be used for monitoring the downstream and upstream spectrum, via 2 NDF and 8 NDR ports.

**Strong Security.** User data (DOCSIS and video) is all encrypted at the node / shelf. IPsec secures management / control messages between the CCAP core and DA node / shelf

Transitioning from a centralized cable access architecture to a distributed network is a significant step for most service providers and raises discussion and concerns about the ability to transition existing services to the new architectures. Casa Systems understands these concerns and our solutions provide a logical approach to the challenges service providers may encounter as they make the transition.

Beyond the transition to distributed access architectures, service providers are looking for solutions that will enable a pragmatic shift from physical to virtualized cable access solutions. Casa's approach enables a graceful transition, allowing service providers to leverage existing infrastructure within a hybrid architecture.

Feature	Benefit
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### Time to Market and Ease of Transition

**Designed to CableLabs' specifications, Casa's Distributed Access solutions stay within the CCAP framework and leverage existing components, enabling early deployment**

Full CableLabs' standards compliance enables interoperability.

Faster time to market enabled by Casa's solutions which leverage existing network components, including the C100G and C40G, are managed like current CCAP installations and require no changes to existing cable modems or set-top boxes.

Less training time is required since the distributed access nodes are presented as extensions of the CCAP and managed like a single, large CCAP.

**Plug and Play Deployment**

At the CCAP core, with a C100G or C40G running software release 8.2 or beyond, plug in the CSC (CCAP Service Card) and make the necessary fiber connections.

At the Distributed Access node site, simply connect the fiber and coax cable, then power on the node.

The Distributed Access nodes are configured and managed from the CCAP core either via SNMP or CLI (on the C100G / C40G) or via NETCONF / YANG.

### Operational Simplicity

**Management of Distributed Access Nodes Mirrors Management of a Centralized CCAP**

From a management perspective, the distributed access nodes are presented as extensions of the CCAP core, and collectively managed as a single, large CCAP. In Remote MAC / PHY or Remote PHY architectures, the service provider must configure and manage a much larger set of smaller CCAPs.

### Services & Throughput

**Full CCAP Services Support - Data, Voice, Video**

Casa's Distributed Access solutions support all CCAP DOCSIS and video functions including encrypted SDV, VoD and linear broadcast video, enabling full migration from analog to digital optics. Casa's Video Gateway can be used to integrate linear broadband channels without expensive Video Headend upgrades. Narrowband Digital Forward (NDF) and Narrowband Digital Return (NDR) are supported for the seamless transport of (i) analog OOB signaling between legacy set-top boxes and headend set-top management systems, (ii) telemetry to nodes, power supplies and amplifiers over the digital network, and (iii) analog FM radio.

<b>Gigabit+ Throughput</b>	Designed for Gigabit+ services, Casa's CSC can deliver 10Gbps on the optical link to the Distributed Access node and can support at least up to 32 nodes per CSC card.
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## Density & Scaling

<b>High Density Solution, Supporting up to 192 Nodes per C100G</b>	Casa's CSC has 8x10G Ethernet/EPON interfaces. The C100G is 13 RU and can house 12 CSCs for a maximum of 96 ports, which means up to 192 Distributed Access nodes per C100G.
<b>At Least up to 255 Service Groups per C100G</b>	Improve customer QoE through reduction of service group sizes.

## TCO

<b>Simple Transition to Distributed Access Architecture</b>	Defined within the CCAP framework, the Distributed Access node supports all current CCAP services and can be introduced into the network without requiring changes to existing cable modems or set-top devices. Casa's plug-and-play solutions enable the simplest transition to distributed access architectures. The only additional equipment required for Casa's distributed access solution at the headend / hub is the CSC 8x10G line card.
<b>Simplified Management and Operations</b>	Because the Distributed Access nodes are managed as an extension of the existing CCAP architecture, and existing DOCSIS MIBs remain unchanged, overall management of the system is virtually identical to what's deployed today, reducing costs associated with downtime for learning curves.

## Security

<b>Strong Security at Every Point</b>	Distributed Access nodes are managed from the CCAP core. Management / control traffic between the CCAP core and Distributed Access Node is secured by IPSec to guard against man-in-the-middle attacks. User data is secured by DOCSIS BPI+ protocol. Video content is encrypted in the CSC with support for DVB Simulcrypt, PME and PKE.
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## Road to the Future

<b>Path to Virtualization</b>	Casa's roadmap from today's distributed access architectures to virtualization of key network functions is clearly defined and takes advantage of a winning design that keeps our customers ahead of their competitors.
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At the CCAP core, Casa's Distributed Access solution requires the addition of a new card, the CCAP Services Card, or CSC 8x10G. The CSC provides DOCSIS and EQAM MAC functions and performs traffic aggregation for the Distributed Access (DA) nodes. The CSC supports either 10G Ethernet connectivity to the DA nodes. Casa provides a range of sizes of DA nodes to provider service providers flexibility.

## Technical Specifications

Please refer to the following for the technical specifications of each of the components of Casa's Distributed Access solution: C40G CCAP, C100G CCAP, CCAP Services Card (CSC8x10G), and the DA2000/DA1000/DA500 Distributed Access Nodes Datasheets.