

Apex™ Enterprise Small Cell Coverage / Capacity + Monetization



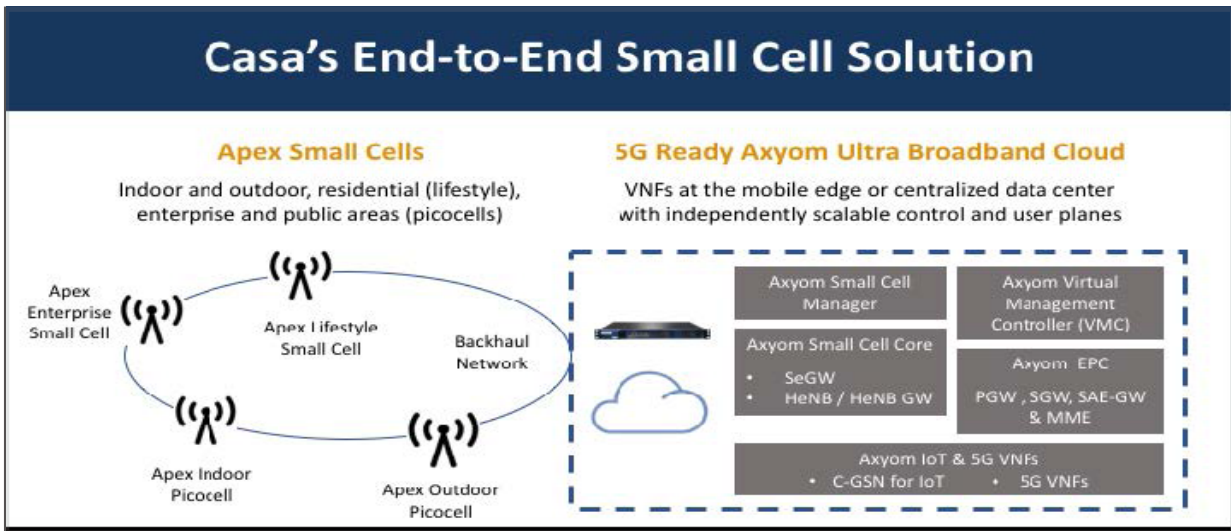
Casa Systems' end-to-end small cell solution is designed to address the need for mobile network coverage and capacity for today's subscribers and use cases, and are ready as the core network evolves to 5G. Casa's solutions include a range of Apex small cells – indoor and outdoor, residential (lifestyle), enterprise and public area (picocells) - to meet service providers' evolving needs.

Casa's Apex Enterprise Small Cell is designed for business environments. The Enterprise small cell leverages Casa Systems' in-house designed L2/L3 Protocol Stack software, designed for the challenges of dense heterogeneous environments. Casa's Axyom™ Small Cell Core provides integrated security and also acts as an X2 gateway and provides the scale, intelligence, and deployment flexibility needed for mobile edge computing and 5G ultra-fast, ultra-dense and ultra-low latency use cases. Deployable at the edge on a COTS x86 server, or as independently scalable control and service forwarding elements at a centralized location, Casa's mobile access solutions enable a range of new services, including location insight and Private LTE.

The Axyom Small Cell Manager provides H(e)MS and real-time SON functions that reduce operational costs, speed time to market, and optimize the customer experience. Network data becomes actionable intelligence and is leveraged by algorithms for self-configuration, self-optimization and self-healing while an advanced GUI gives control over all small cell parameters. Zero-touch plug-and-play provisioning and self-organizing features combine to minimize service provider installation costs. The unified management framework includes Fault and Performance Management from a shared data store, a Syslog server and a SmallCell Forum FAPI-compliant SON-API for northbound integration with external SON servers to facilitate integration and hand-over with macro-RAN environments.

Key Features

- High performance 3GPP LTE Protocol Stack
- Up to 32 active users, 8 scheduled users / TTI
- MIMO 2x2 and Network Listen RF interfaces
- Self-configuration based on TR-069
- ARNF algorithms for self-managing and optimal neighbor list
- High efficiency multi-agent platform for SON and O&M
- Advanced LTE scheduler including QoS aware scheduling and frequency selective scheduling
- Support of frequency dynamic ICIC and MRO



Delivering high performance with minimum power consumption and smooth integration with existing RAN assets, the Apex[®] Enterprise small cell is ideally suited for network densification while also supporting CSFB, VoLTE, and QoS based services. Casa's Open API Framework includes, e.g., geo-location APIs that leverage zonal presence and traffic flow information available from the Apex Enterprise Small Cell to enable new services.

Casa Systems' mobile broadband solutions are engineered for high performance, strong security, ease of integration, and most of all, flexibility. Whether seeking small cells to densify an existing network and add capacity, or to profit from new services like Private LTE or location insight services or security-as-a-service, service providers will find a comprehensive and innovative answer with Casa. Like Private LTE or location insight services or security-as-a-service, service providers will find a comprehensive and innovative answer with Casa.

Technical Specifications

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| Radio Access Technology Support | R9 with feature support from R10, R11, R12 and R13 |
| Max. Transmit Power | 24 dBm (2 streams, 21dBm), 250 mW |
| RF Ports (Tx, Rx) - MIMO | 2 |
| Network Listen | 1700 - 2100 MHzm 2500 - 2700 MHz |
| Max. Simultaneous Active Users | RRC Connected Users: 32 Scheduled User / TTI: 8 |
| Band Support | LTE bands: 3, 4, 7, 38, 40, 41, additional band support available on request |
| Antennas | 3 internal antennas |
| Antenna Configuration | 2x2 MIMO DL, UL Rx diversity (2Tx/2Rx) |
| Duplex Mode | FDD / TDD |
| BW Channelization | 3, 5, 10, 15, 20 MHz |

Technical Specifications

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|---------------------------------|---|
| Backhaul Options | 10/100/1000 Gigabit Ethernet, RJ-45, SFP |
| Interfaces | LTE: S1-U, S1-MME, X2 |
| Advanced Feature Support | <p>Access control: open, hybrid or closed access</p> <p>Advanced LTE scheduler with QoS aware scheduling and frequency selective scheduling</p> <p>Standard IOI, RNTP and HII messages over X2 adapted to the HeNB needs for Interference Management</p> <p>Support of frequency dynamic ICIC and MRO</p> <p>Support of CSFB, VoLTE, ViLTE and QoS based services</p> <p>LTE and IRAT mobility support</p> |
| Security Features | <p>IPSEC: AES, 3DES</p> <p>PKI: IKEv2 key management, certificate-based authentication (x.509)</p> <p>Secure boot</p> |
| SON | <p>Self-optimization</p> <ul style="list-style-type: none"> • Mobility load balancing (MLB) • Mobility robustness optimization (MRO) • Capacity and coverage optimization (CCO) • RACH organization • Energy saving <p>Self-healing</p> <ul style="list-style-type: none"> • Automatic cell outage detection • Software recovery <p>Self-configuration</p> <ul style="list-style-type: none"> • Automatic neighbor relation (ARO) • Automatic physical cell identity (PCI) • Dynamic S1-MME configuration • Radio environment management (REM) • Frequency synchronization • Dynamic X2 configuration • Automatic primary scrambling code (PSC) • Automatic LAC (location area code) / RAC (routing area code) • Common pilot channel (CPICH) max power setting • Automatic UARFCN |
| Dimensions | 220 mm x 220 mm x 42 mm |
| Weight | 450 grams |
| Power Consumption | < 15W at full capacity |
| Power / PoE | 12 VDC@2A, power supply @ 220 VAC / 802.3at |
| Protection | IP40 |