

Apex™ Lifestyle Small Cell

The Obelisk - Coverage / Capacity

LTE-FDD, LTE-TDD

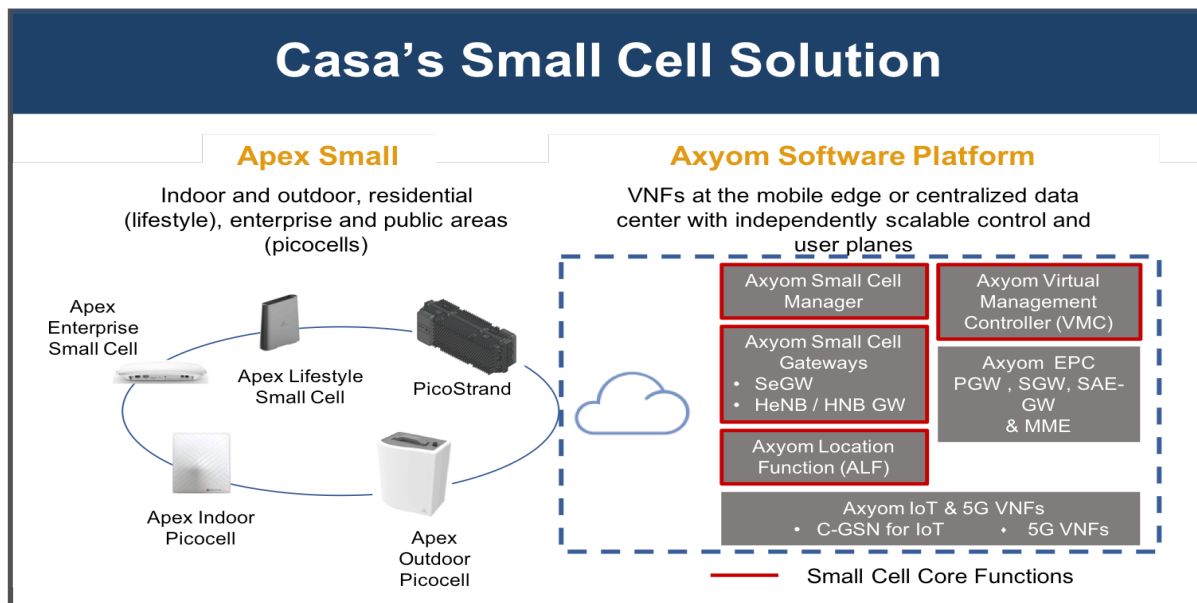


Casa Systems' end-to-end small cell solution is designed to address the need for mobile network coverage and capacity for today's subscribers and use cases. Casa's Apex Radio Access Network (RAN) solutions include a range of small cell solutions – lifestyle small cells, enterprise small cells, the PicoStrand (a strand mount picocell), indoor picocells, and outdoor picocells - to meet service providers' many different deployment requirements.

Casa's Apex Lifestyle Small Cells are designed to fit contemporary lifestyles and will not be hidden away in a closet. The color, shape, texture and accessory options will help service providers mitigate customer churn and even add revenues through accessory sales. As the figure below shows, Apex Indoor Picocells are part of Casa's overall Small Cell Solution.

Other components of the solution include:

- The Axyom Small Cell Manager - H(e)MS and real-time SON functions that reduce operational costs, speed time to market, and optimize the customer experience. An advanced GUI gives control over all small cell parameters.
- The Axyom Small Cell Gateways - aggregation of control and user plane traffic and capabilities necessary to manage large clusters of small cells.
- The Axyom Virtual Management Controller - VNF management and integration.
- The Axyom Location Function - real-time small cell location information which is critical in some countries to support emergency services.



Technical Specifications

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| GENERAL | |
| Max TX Power | 20 dBm (2 streams @17 dBm), 100 mW |
| Antenna Configuration | 2 x 2 MIMO DL, UL Rx diversity (2 Tx /2 Rx) |
| Antennas | 3 Internal Antennas |
| Network Listen | 1700-2100 MHz, 2500 -2700 MHz |
| BW Channelization | 3.5, 5, 10, 15, 20 MHz |
| Interfaces | LTE: S1-U, S1-MME, X2 |
| Backhaul Options | 10/100/1000 Gigabit Ethernet, RJ-45 |
| PHYSICAL AND ENVIRONMENTAL | |
| Dimensions | 160mm x 160mm x 40mm |
| Weight | 350 Grams |
| Nominal Power Consumption | < 7.5W at full capacity |
| Power | 12 VDC@1.5A, power supply @ 220 VAC |
| Protection | IP40 |
| FREQUENCY BANDS | |
| | 3, 4, 7, 38, 40, or 41 - additional bands and band combinations upon request |
| CAPACITY | |
| Max. Data Throughput | 150 Mbps DL / 50 Mbps UL |
| Max. Simultaneous Active Users | RRC Connected users: 32 Scheduled Users / TTI: 8 |
| RADIO ACCESS TECHNOLOGY | |
| | R13 |
| OTHER FEATURES | |
| Advanced Feature Support | Access control: open, Hybrid or Closed access Timing / Phase synchronization; OTA, IEEE1588v2, GNSS CMAS (Commercial Mobile Alert System) ETWS (Earthquake and Tsunami Warning System) ICIC (Inter-Cell Interference Coordination) LIPA (Local IP Access Breakout) SIPTO (Selective IP Traffic Offload) Voice: CSFB and VoLTE |
| Security Features | IPSEC: AES, 3DES PKI: IKEv2 key management, certificate-based authentication (x.509) Secure boot |

Technical Specifications

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| <p>Axyom Small Cell Manager</p> | <p>OAM&P</p> <ul style="list-style-type: none"> • H(e)MS small cell management system functions (3GPP TS 32.592 and TS 32.593) • TR-069 Auto-Configuration Server (with TR-196 and TR-181 Data Model Support) • KPI Management standard KPI definition (TS 32.453), custom KPI definition support • Fault Management 3GPP TS 32.111-2 Alarms (IRP/IS) • Syslog Server • X2 Gateway <p>SON</p> <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) • Physical Cell Identity (PCI) autoconfiguration • Radio Environment Management (REM) • S1/X2 autoconfiguration • RACH channel self-configuration • Channel Selection • Transmission Power Management • Optical Cluster Configuration |
| <p>Supported Services</p> | <p>Supported services include:</p> <ul style="list-style-type: none"> • LIPA: Local IP Access with a Local GW included in the eNB subsystem supported for providing edge & local offloading • SON: Hybrid SON support with dSON and cSON; dSON agent can work with or without cSON and supports using a real-time interface through X2 or TR-069; SON macro integration supported through X2-GW, X2-Proxy or direct connection • TR-069: TR-069 agent supports TR-196v2 and TR-181 data models |