

# Casa Systems

## Axyom™ HeNB and HNB Gateways

Casa System's virtual Small Cell Core is part of Casa's overall Small Cell Solution consisting of the Axyom Small Cell Core, Axyom Small Cell Manager and Apex Small Cells.

Casa Systems' virtual Home eNodeB and Home NodeB Gateways (HeNB and HNB GWs) are key elements of the Axyom Small Cell Core. They provide the aggregation of control and user plane traffic and capabilities necessary to manage large clusters of small cells. Legacy EPCs alone are not capable of either technically or cost effectively supporting large small cell deployments. The HeNB-GW and HNB-GW provide the following capabilities:

- Aggregation of signaling and traffic between all of the small cells and the core network. This aggregation provides the Evolved Packet Core (EPC) and 3G Core with much needed signaling / paging capacity relief.
- Support for subscribers as they move between macrocell and small cell coverage. To support efficient LTE handovers, the HeNB Gateway also functions as an X2 and S1 Proxy Gateway.
- Multivendor support of 3G and 4G small cells. The Axyom HeNB and HNB Gateways not only support Casa's Apex small cells but they support small cells from many other vendors.
- Secure access to small cells when the virtualized HeNB and HNB are integrated with Casa's Axyom SeGW.

Casa's HeNB and HNB Gateways run on Casa's Axyom Software Platform, which is a carrier-grade software architecture that provides the highest level of performance and control. As a result, Casa's HeNB and HNB Gateways lead the market in terms of aggregation density. Supporting up to hundreds of thousands of HeNBs and HNBs per server, the Axyom HeNB and HNB Gateways provide savings for mobile service providers by reducing server footprint, Opex and Capex.

### Highlights

- Virtualized 3GPP HeNB and HNB Gateway solutions deployable on x86 servers
- Capable of supporting Casa's Apex Small Cells and other vendors' 3G and 4G small cells and EPC cores
- Industry-leading density - over 100,000 small cells supported
- The Axyom HeNB Gateway supports efficient LTE handovers by functioning as an X2 and S1 Proxy Gateway
- Paging optimization and congestion control
- The Axyom HeNB and HNB Gateway VNFs can be deployed on bare metal, as a virtual machine or in a container

## Key Features

Some of the key features supported by the Axyom HeNB and HNB Gateways include:

- Full integration with Casa's Axyom Security Gateway
- Interoperability with third party security gateways
- Full idle and active mode mobility between macro and small cells and between small cells
- Virtual Gateway Support
- Paging Optimization
- Closed Subscriber Groups support
- Overload and congestion control
- Stream Control Transmission Protocol (SCTP) multi-homing
- Subscriber and session exposure for presence / location via a RESTful API

<p><b>HeNB Gateway Functions</b></p>	<ul style="list-style-type: none"> <li>• 3GPP R12 standard support for LTE small cells &amp; EPC</li> <li>• S1-MME, S1-U and X2 interfaces</li> <li>• S1-Flex high availability load balancing for networks with MME control plane resources pools</li> <li>• Supporting up to 200,000 HeNB connections and up to 2M UEs while delivering 40Gbps S1-U throughput per server RU</li> <li>• Multi-vendor small cell support using the following compatibility features:                             <ul style="list-style-type: none"> <li>• Support for IPv6 S1 small cell traffic connectivity to an IPv4 EPC core</li> <li>• Support for 28 bit to 20 bit eNB ID mapping for small cell integration with legacy MMEs</li> </ul> </li> </ul>
<p><b>HNB Gateway Functions</b></p>	<ul style="list-style-type: none"> <li>• 3GPP R11 standard support for HSPA / UMTS small cells and core</li> <li>• Iu-ps (connecting to the SGSN), Iu-cs (connecting to the MSC), IuH, Iu over IP and Iu-flex support</li> <li>• Supporting up to 100,000 HNB connections and up to 1M UEs while delivering 40 Gbps throughput per server RU</li> </ul>