

Ite/epc

Addressing the Mobile Broadband Tidal Wave

The mobile Internet has changed the way people communicate, stay informed, and are entertained. With more compelling services and multimedia mobile computing devices, users are increasingly entering the network and consuming significant bandwidth.

This requires operators to deploy a core network that combines performance with intelligence. An intelligent core network will allow them to deliver a robust multimedia environment, enhance and manage the subscriber experience, and monetize network traffic, while optimizing network efficiency to improve capital and operational expenditures.

Long Term Evolution (LTE) is the next generation mobile wireless technology designed to deliver broadband speeds that will unleash the full potential of the mobile network.

The emergence of mobile broadband technologies such as LTE, the rise of compelling billing plans, and drastically improved multimedia device usability is resulting in a traffic tidal wave that requires a next generation multimedia core network.

Starent Networks is a leading global developer of multimedia core equipment for the world's most demanding mobile broadband networks. A true mobile broadband core network starts with the system intelligence and high performance of Starent Networks' ST40, which is now the Cisco ASR 5000.

LTE provides the data speeds to deliver ultra high-speed mobile broadband. The primary goals of LTE are increasing bandwidth, improving spectral efficiency, reducing latency, lowering the cost per byte, and enabling improved mobility. This combination aims to enhance a subscriber's interaction with the network and further drive the adoption of mobile multimedia services, such as on-line television, streaming video, video-on-demand, social networking, and interactive gaming.

Radio access solutions are a primary consideration of the LTE deployment strategy, as it impacts the mobile operators' most valued asset, spectrum. However, equally important is the multimedia core network.

The Evolved Packet Core - The Next Generation Packet Core for All Networks

LTE evolution calls for a transition to a "flat," all-IP core network with open interfaces, called the Evolved Packet Core or EPC.

The goal of the EPC is higher throughput, lower latency, simplified mobility between 3GPP and non-3GPP networks, enhanced service control and provisioning, and efficient use of network resources. While the EPC has been defined in conjunction with LTE, it is an open next generation packet core for all networks, including 2.5G, 3G, 4G, non-3GPP, and even fixed networks. In addition, while the EPC is one of the smallest percentages of overall wireless infrastructure spending, it provides the greatest potential impact on overall network profitability through generation of new services combined with cost savings through operational efficiencies.

As a result, mobile operators are looking for the best multimedia core solutions to deliver an optimum user experience and build an efficient, intelligent network.

Key considerations for the multimedia core network include:

- Support for multiple access networks types, including 2.5G, 3G, and 4G
- Deployment flexibility and network optimization including backhaul
- Seamless and flexible evolution from 2.5G/3G to 4G
- Massive increase in signaling
- Increased user plane performance
- Session-state and subscriber management
- Integration of intelligence and policy control at the mobility anchor point
- Security

- Voice grade reliability
- Reporting, monitoring, accounting, and charging
- Roaming
- Support for multimedia services over the packet switched infrastructure

Starent Networks is exceptionally well positioned to address these challenges and assist in the migration to the LTE EPC. We are focused exclusively on the needs of the mobile operator's multimedia core network, bringing the products and expertise needed for this evolution.

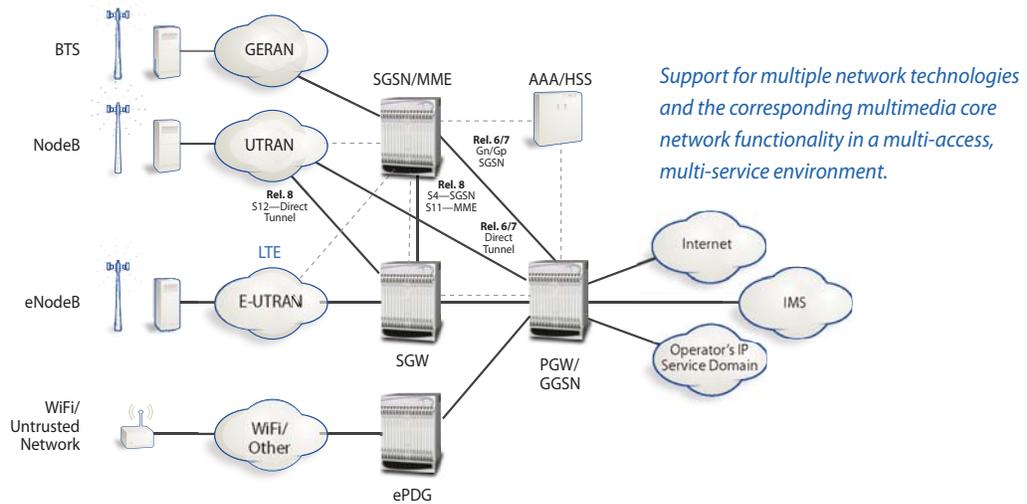
Starent's Solution

Platform

Starent's ST40, which is now the Cisco ASR 5000, combines high capacity, high availability, and powerful performance with unparalleled subscriber and network intelligence. Designed for the evolution from 3G to 4G, the ST40, which is now the Cisco ASR 5000, is the benchmark for today's and tomorrow's multimedia enabled core network. The ST40, now the Cisco ASR 5000, utilizes a simple, flexible distributed architecture that allows you to support multiple access technologies, subscriber mobility management, and call control capabilities, as well as In-line Services. With its leading edge throughput, signaling, and capacity, the ST40, now the Cisco ASR 5000, can readily support all EPC network functions.

EPC Network Functions

The LTE EPC defines a series of network functions that flatten the architecture by minimizing the number of nodes in the network. This reduces capital and operational expenditures, thereby trimming the overall cost per megabyte of traffic, while improving network performance. Starent provides the functions defined for the LTE EPC, including:



Mobility Management Entity (MME)—resides in the control plane and manages states (attach, detach, idle, RAN mobility), authentication, paging, mobility with 3GPP 2.5G/3G nodes (SGSN), roaming, and other bearer management functions.

Serving Gateway (SGW)—sits in the user plane where it forwards and routes packets to and from the eNodeB and Packet Data Network Gateway (PGW). Also serves as the local mobility anchor for inter-eNodeB handover and roaming between 3GPP systems, including 2.5G/3G networks.

Packet Data Network Gateway (PGW)—acts as the interface between the LTE network and packet data networks, such as the Internet or IMS networks. It is the mobility anchor point for intra 3GPP and non-3GPP access systems. Also acts as the Policy and Charging Enforcement Function (PCEF) that manages Quality of Service (QoS), online/offline flow-based charging data generation, deep packet inspection, and lawful intercept.

Evolved Packet Data Gateway (ePDG)—is the element responsible for interworking between the EPC and untrusted non-3GPP networks, such as a wireless LAN.

Release 8 Serving GPRS Support Node (SGSN) —also known as the S4 SGSN, provides control, mobility, and user plane support between the existing 2.5G/3G core and the EPC. Provides the “S4” interface that is equivalent to the Gn interface used between the SGSN and GGSN.

The Starent Difference

Starent’s multimedia core platforms are purpose-built to address the needs of the mobile multimedia core market. Starent brings a history of innovative solutions that already

meet many of the requirements of the EPC, such as integrated intelligence, simplified network architecture, high bandwidth performance capabilities, and enhanced mobility.

This means Starent’s solutions are capable of supporting 2.5G/3G today, and through in-service software upgrades, support mobile broadband functionality as LTE networks are deployed. Our platforms are capable of supporting multiple functions in a single node, allowing a single platform to concurrently act as an MME, Release 8 SGSN and SGW, SGW and PGW, or even as a 2.5G/3G and LTE EPC node. Mobile operators who want to smoothly migrate their networks can maximize their investments and offer an exceptional experience to their customers.

Specific key features include:

Network Flexibility

- Common platform for all network functions
- Integration and co-location of multiple core functions
- Software architecture that enables service reconfiguration and online upgrades
- Evolution from 3G to LTE
- Single Operations, Administration, and Management (OA&M), policy, and charging integration

Superior Overall Performance

- High performance across all parameters - signaling, throughput, density, and latency
- Linear scaling of network functions and services
- Allows 2.5G/3G/LTE service on any card running anywhere in the system
- Resources distributed across the entire system

Integrated Intelligence with Enforcement

- Integrated deep packet inspection, service control and steering
- Value-added In-line Services
- Integrated policy enforcement with tightly coupled policy and charging
- Support for integrated SIP and/or IMS functions
- Consolidated accounting and billing

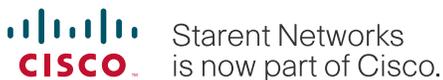
Highest Reliability

- No sessions lost due to any single hardware or software failure
- Automatic recovery of fully established subscriber sessions
- Inter-chassis session recovery or geographic redundancy
- NEBS Level 3 certification

CONCLUSION

While the deployment of LTE radio access networks receives considerable attention, the Evolved Packet Core or EPC has emerged as critical for delivering next generation mobile broadband services. As such, mobile operators must look for solutions that can address today's requirements while positioning them for future technologies.

At Starent Networks, our entire focus is on the multimedia core network and the challenge it presents to the mobile operator. We have led the industry with intelligent, high-performance solutions that have changed the packet core environment to a true multimedia core network. We will continue to leverage our proven experience and expertise to become your trusted advisor and deliver best-of-breed solutions that evolve the mobile operator's network and help deliver on the promise of true mobile broadband.



Starent Networks, Corp.

30 International Place
Tewksbury, MA 01876

T: +1-978-851-1100

F: +1-978-640-6825

www.starentnetworks.com

Starent Networks maintains offices and development centers around the world. For the latest contact information, please go to <http://www.starentnetworks.com/en/about/global-presence/default.cfm>

© 2010 Cisco and/or its affiliates. All rights reserved.

Cisco, the Cisco logo, and Starent are trademarks or registered trademarks of Cisco and/or its affiliates in the US and other countries. Third party trademarks mentioned in this document or website are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company.

Copyright © 2009 Starent Networks, Corp.

The material contained in this document is for informational purposes only and is subject to change without notice. No part of this document may be reproduced, transmitted, transcribed, or stored in a retrieval system in any form or by any means without the written permission of Starent Networks, Corp. Starent and the Starent logo are registered trademarks of Starent Networks, Corp. Starent, ST16, and ST40 are trademarks of Starent Networks, Corp. Any trademarks, trade names, service marks, or service names owned or registered by any other company and used in this documentation are the property of their respective companies.