

IPX and Diameter Proxy Roles in LTE Roaming

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LTE Market Update



- » LTE is mainstream
- » 443 operators investing in LTE
- » 202 commercially launched networks in 77 countries
- » 100M+ LTE subscribers
- » 1,064 LTE user devices confirmed from 111 manufacturers
 - » 647 new LTE user devices since July 2012
- » 1800 MHz is most dominant band for LTE deployments
 - » Used in over 43% of networks
 - » Supporting 20 million subs
- » LTE Roaming in production today for some MNOs



Source: Global Mobile Suppliers Association (8/25/13)
http://www.gsacom.com/news/gsa_385.php



IPX Role in LTE Evolution

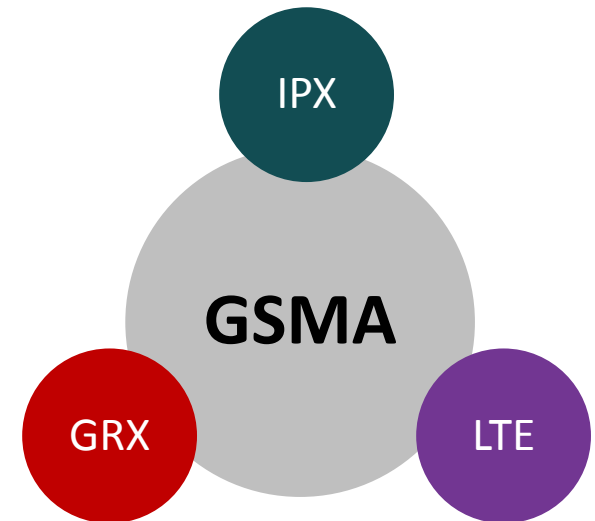


» GRX today

- » Supports GRPS, EDGE, 3G, HSPA data roaming and MMS interworking
- » No inherent support for LTE or IMS
- » Only specified for use by MNOs
- » No required support for QoS

» IPX pivotal to LTE roaming/interworking ecosystem

- » Developed by GSMA
- » Foster open standardized IP connectivity for multiple types of service providers
- » Provides for end-to-end QoS for roaming and interworking for LTE and IMS
- » Fully backward compatible with GRX networks
- » Available for use by MNOs, FNOs, ISPs and ASPs





Diameter Role in LTE Evolution

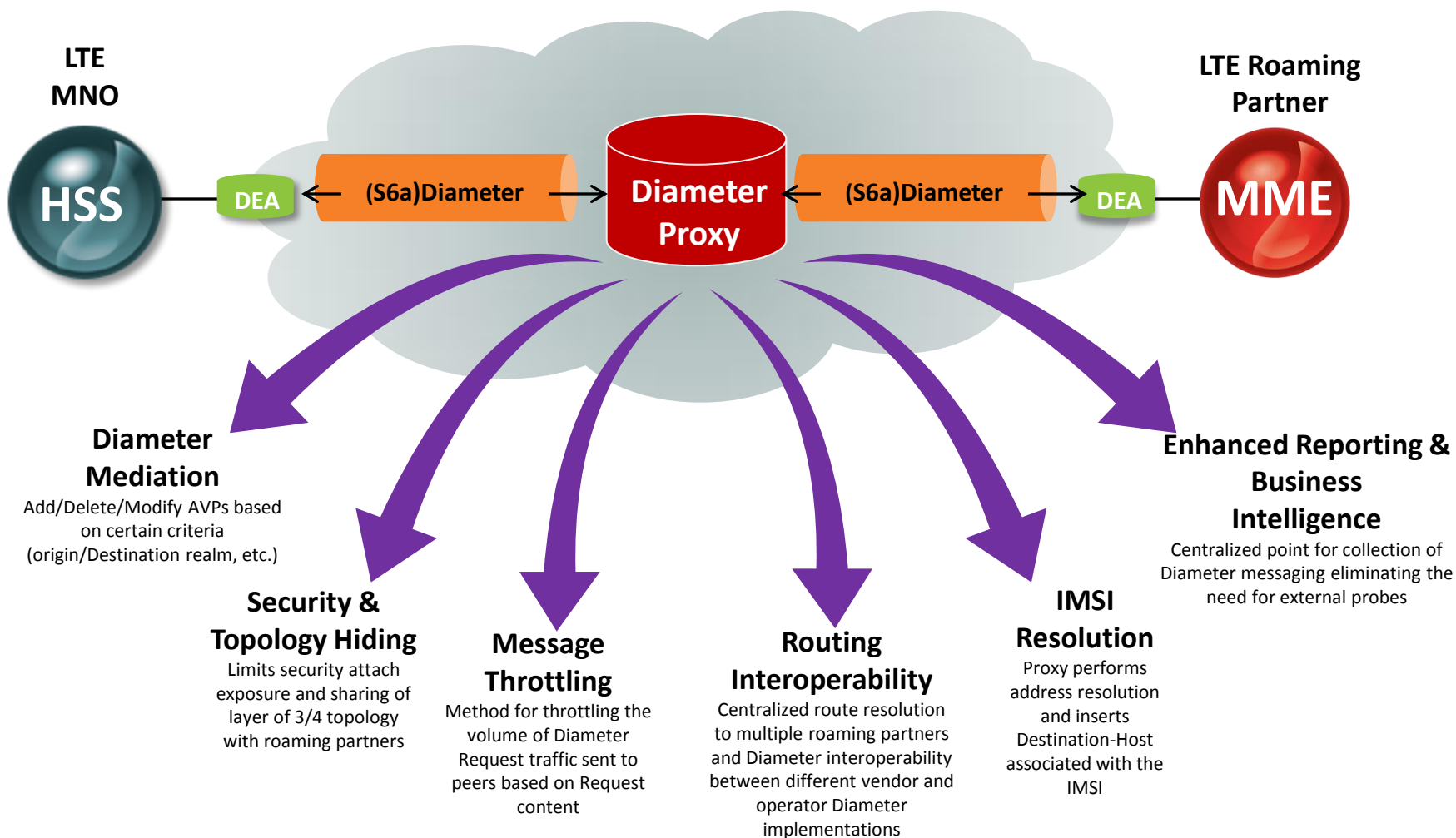


- » 2G/3G GSM networks use GSM MAP signaling protocol for procedures such as registration, authentication, security, identity management & handover services
- » 4G LTE networks use Diameter signaling protocol for many of these procedures
- » In LTE environment, registration messages received would be based on Diameter (rather than GSM MAP)
- » Diameter protocol introduces notions of Diameter agents
 - » **Diameter Edge Agent (DEA):** accept requests and relay messages to other Diameter nodes
 - » **Diameter Proxy Agent:** relay function + message modification to provide value-added services, enforce rules on different messages or perform administrative tasks for a specific realm





Hosted Diameter Proxy Role in LTE





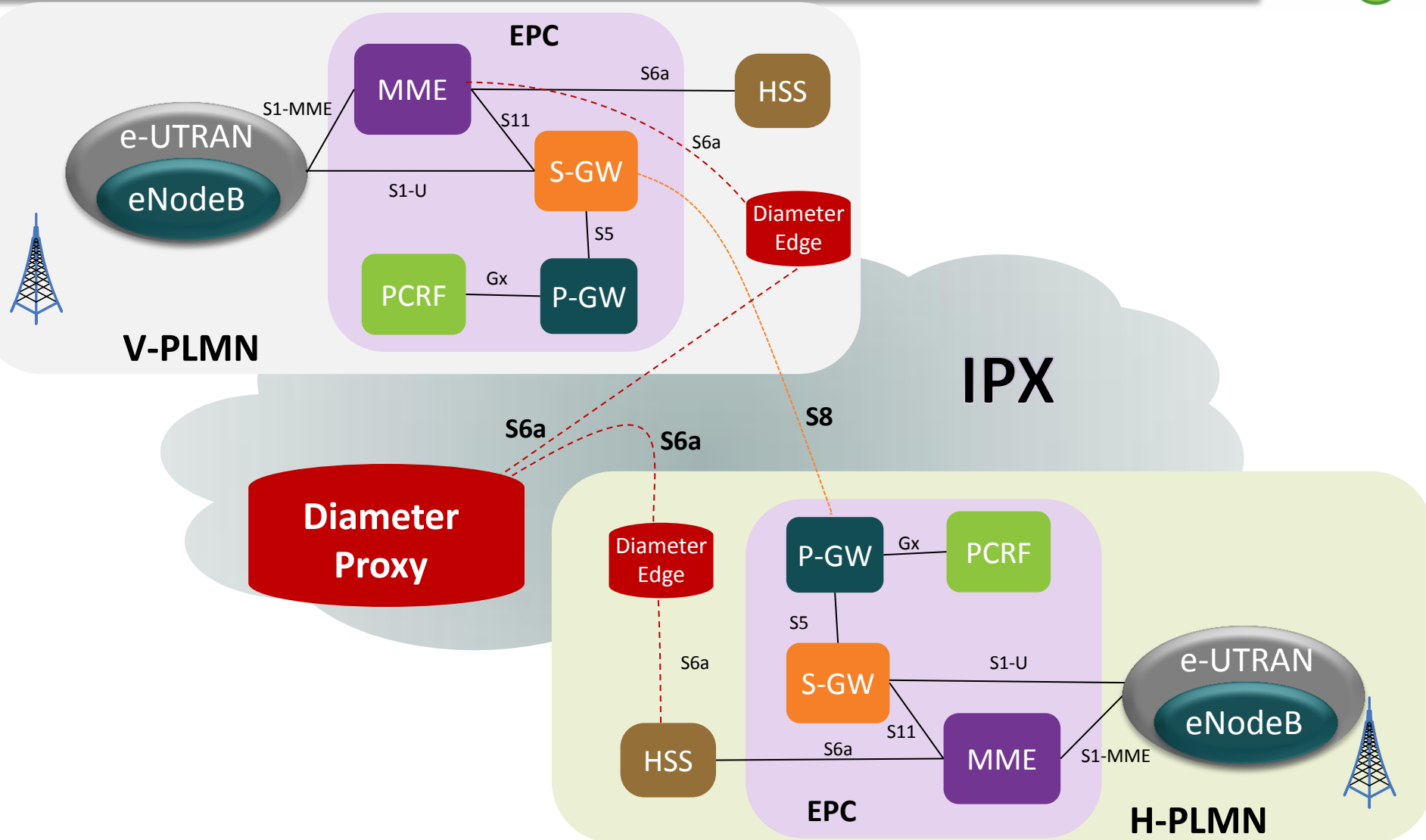
Hosted Diameter Proxy Features



- » Diameter mediation
 - » Add/delete/modify AVPs based on certain criteria (origin/destination-realm, etc.)
- » Security and topology hiding
 - » HSS, MME topology hiding
 - » Limits security exposure and sharing of network topology with roaming partners
- » Message throttling
 - » Method for throttling the volume of Diameter Request traffic sent to peers
 - E.g. A registration storm resulting from an HSS failure could result in the remaining HSS nodes becoming overloaded
- » Routing and interoperability
 - » Allows centralized route resolution to multiple roaming partners and Diameter interoperability between different vendor and operator Diameter implementations
- » IMSI resolution
 - » Proxy performs address resolution and inserts Destination-Host /Realm associated with the IMSI
- » Enables enhanced reporting and business intelligence
 - » Centralized point for collection of Diameter messaging eliminating the need for external probes
- » VAS application support
 - » E.g. SoR, Welcome SMS Notification



IPX & Hosted Diameter Proxy

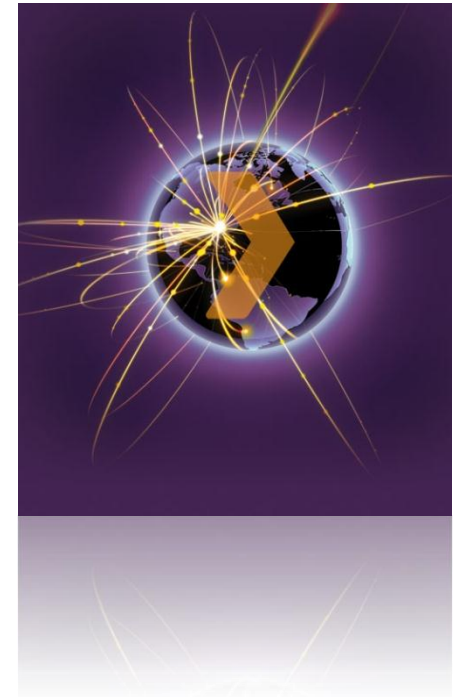




IPX & Hosted Diameter Proxy Benefits



- » Simplify new operator connections
 - » Interfaces and complexity to increase as Diameter networks expand
- » Resolve interoperability challenges
 - » Permits operator to focus on daily operations and other priorities
- » Single transfer point
 - » Streamlines, improves data network routing efficiency
- » Reduce SCTP association complexity
 - » Consolidates multiple connections into a single SCTP association pair to Diameter Proxy
- » Deliver more services, lower costs
 - » Value-Added Services and Business Intelligence
 - » Avoid expensive hardware purchases, maintenance or support





Syniverse at a Glance



3

Lines of business:
Network, Roaming
and Messaging

5+

Billion mobile
subscribers reached

1500+

Customers

2+

Billion P2P messages
processed daily

200

Countries

Top 10

Operators globally

200

Employees located in
Greater China





Thank You



Q&A



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