Datasheet

DIAMETER-BRICKS

DIAMETER-BRICKS from Enea® is a signaling protocol specified by IETF to perform AAA (Authentication, Authorization and Accounting) functions in IMS (IP multi media system) next generation networks.

DIAMETER has been adopted by 3GPP and 3GPP2 standards bodies for AAA in IMS mobile systems and networks and is designed to perform these functions in both local and roaming (ROAMOPS model) situations. It is also the AAA protocol selected by TISPAN, the ETSI committee in charge of FMC (Fixed Mobile Convergence) standardization.

DIAMETER has been designed to ensure as much backward compatibility as possible with the RADIUS (Remote Authentication Dial In User Service) protocol widely deployed in current intranet and internet configurations. DIAMETER introduces many enhancements in order to address several RADIUS shortcomings and deficiencies such as lack of end-to-end security, limited size of length and identifier fields, and limited failure detection mechanisms.

DIAMETER is defined as a base protocol used in conjunction with a set of applications. Its base protocol provides mechanisms for reliable transport, message delivery and error handling between DIAMETER clients and servers. It provides:

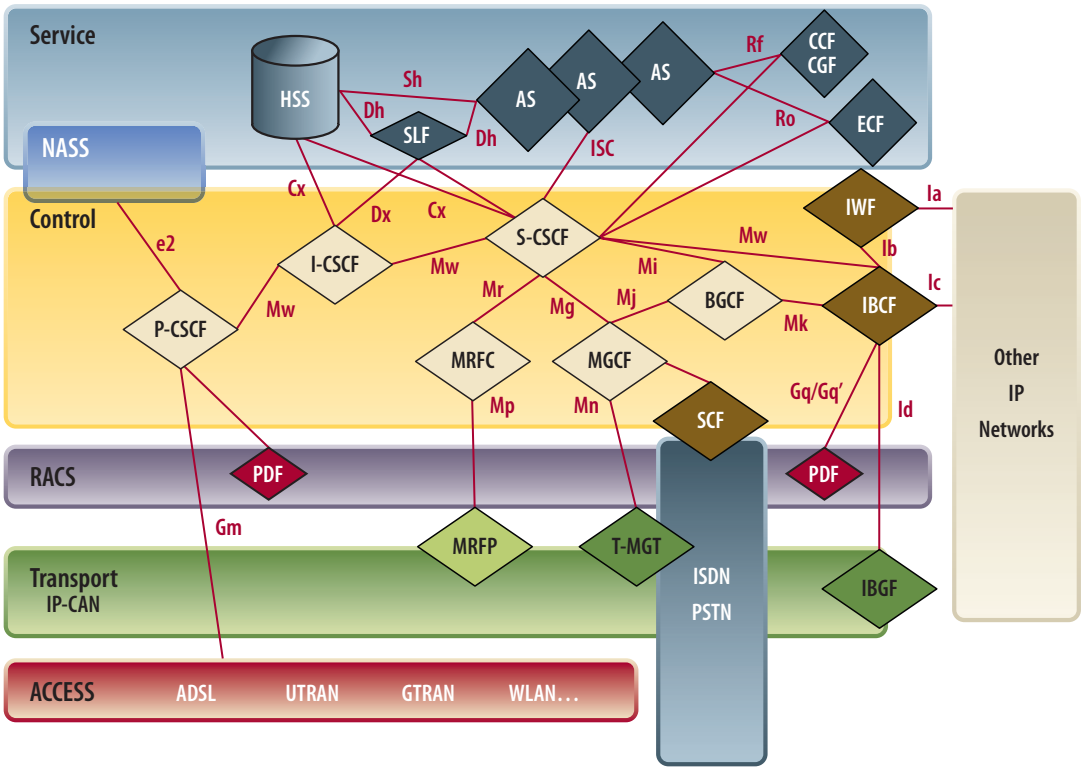
- Delivery of AVPs (Attribute Value Pairs)
- Capabilities negotiation
- Error notification
- Basic services necessary for applications, such as handling of user sessions or accounting

DIAMETER can be extended through addition of new commands and AVPs in order to face ever expanding set of new application requirements.

DIAMETER-Bricks is the Enea implementation of the DIAMETER protocol. The standardized protocol mechanism, AVP and messages for Cx/Dx, Sh, e2, Ro, Rf, Gq/Gq', Gx, Gy, Zh, Zn, Rx, a2 IMS interfaces are available in DIAMETER-Bricks. The list of supported interfaces is constantly expanding. Contact Enea for the latest up-to-date information.

DIAMETER

All interfaces and entities composing IMS are not represented on the previous diagram in order to simplify its representation. The following lists of acronyms and reference points show which products are relevant according to customer development.



IMS TISPAN MAIN ACRONYMS

ACRONYMS	DEFINITIONS
P-CSCF	Proxy Call State Control Function
PDF	Policy Decision Function
I-CSCF	Interrogating Call State Control Function
S-CSCF	Serving Call State Control Function
MGCF	Media Gateway Control Function
T-MGF	Trunking Media Gateway Function
BGCF	Border Gateway Control Function
SGF	Signaling Gateway Function
IMGW	IMS Media Gateway
IWF	Inter Working Function
IBCF	Interconnection Border Control Function
IBGF	Interconnection Border Gateway Function
MRFC	Media Resource Function Controller
MRFP	Media Resource Function Processor
AS	Application Server
HSS	Home Subscriber Server
SLF	Subscriber Location Function
NASS	Network Attachment Sub System
RACS	Resource and Admission Control Sub System
IP-CAN	PI Connectivity Access Network
CCF	Charging Collection Function (Off line Charging System)
ECF	Event Charging Function (On line Charging System)

IMS SIGNALING RELATED REFERENCE POINTS

REF POINT	DEFINITION	SIGNALING PROTOCOLS	ENEA NETBRICKS PRODUCTS
Cx	CSCF–HSS	DIAMETER	DIAMETER-BRICKS
Sh	AS–HSS	DIAMETER	DIAMETER-BRICKS
Mr	CSCF–MRFC	SIP	SIP-BRICKS
Mp	MRFC–MFRP	H.248 (Megaco)	MEGACO-BRICKS
Mw	CSCF–CSCF	SIP	SIP-BRICKS
Mg	MGCF–CSCF	SIP	SIP-BRICKS
Mc	MGCF–IMS MGW	H.248 (Megaco)	MEGACO-BRICKS
Rf	x-CSCF–CCF MGCF–CCF,MRFC–CCF AS–CCF	DIAMETER	DIAMETER-BRICKS
Ro	CSCF–ECF AS–ECF MRFC–ECF	DIAMETER	DIAMETER-BRICKS
Gq	P-CSCF–PDF	DIAMETER	DIAMETER-BRICKS
Gm	US–P-CSCF	SIP	SIP-BRICKS

DIAMETER-BRICKS

DIAMETER-Bricks is a portable implementation of DIAMETER base protocol. It is compliant with:

- IETF RFC 3588–DIAMETER Base Protocol
- IETF RFC 3589–DIAMETER Command Codes for Third Generation Partnership Project (3GPP) Release 5
- IETF RFC 3539: Authentication, Authorization and Accounting Transport Profile
- ETSI TS 129 328 (i.e. 3GPP TS 29.328)–IP Multimedia Subsystem (IMS) Sh interface signaling flows and message contents–Release 5 and 6
- ETSI TS 129 329 (i.e. 3GPP TS 29.329)–Sh interface based on the DIAMETER protocol– Release 5 and 6
- 3GPP2 X.S0013-011 (i.e. future TIA 873.011)–Sh interface based on DIAMETER Protocols–Protocol details
- ETSI ES 283 035–e2 interface based on DIAMETER Protocol
- ETSI TS 129 228 (i.e. 3GPP TS 29.228)–IP Multimedia (IM) Subsystem Cx and Dx Interfaces; Signaling flows and message contents–Release 5
- ETSI TS 129 229 (i.e. 3GPP TS 29.229)–Cx and Dx interfaces based on the DIAMETER protocol; Protocol Details–Release 5
- 3GPP2 X.S0013-006 (i.e. future TIA 873.006)–Cx interface based on DIAMETER Protocols–Protocol details
- 3GPP TR 23.815–Charging implications of IMS Architecture
- 3GPP TR 32.225–Charging data description for IP Multimedia Subsystem
- 3GPP TS 32.299–DIAMETER Charging Applications
- IETF RFC 4006–DIAMETER Credit Control Application
- ETSI TS 32.251–Packet switched domain charging
- 3GPP TS 29.208–End to End Quality of Service (QoS) Signaling flows.
- 3GPP TS 29.209–Policy control over Gq interface.
- ETSI TS 183 017–DIAMETER protocol for session based policy between AF and SPDF

DIAMETER-Bricks functions are available through the following set of configurable APIs:

- Full control API providing access to all available commands and AVPs
- Selectable oriented API restricted to command and AVP required at reference points (Cx/Dx, Sh, Ro/Rf, Gq) and implementing interface specific content controls

DIAMETER-Bricks utilizes object oriented design and a message passing mechanism for inter-entity communication. Interfaces to many commercial operating systems are provided including Linux, Microsoft Windows®, AMX®, Nucleus®, Enea OSE®, PSOS+®, Thread-X, Unix, VRTX®, and VxWorks®.

DIAMETER-Bricks can be easily combined with other Enea Netbricks signaling protocols (SIP-BRICKS, SCTP-BRICKS) providing a unique protocol baseline for IMS functions development. Specifically DIAMETER-Bricks addresses the OEM market of HSS, CSCF, Application Server and OSA Gateways manufacturers.

Enea can develop custom products based on DIAMETER-Bricks technology according to customers' specifications.

DIAMETER-BRICKS MAIN FEATURES:

- Support of TCP and SCTP as transport protocol with compatibility with IPSec support as specified in RFC 3554
- IPV4 and IPV6 support
- Support of multiple applications instances
- Failover and Fallback procedure to alternate diameter peers
- Complete timer management
- Support of both types of diameter applications: Authentication/Authorization and Accounting
- Built-in tracking and logging mechanism
- High level of flexibility thanks to dynamic configuration/reconfiguration procedures
- Seamless integration with other IMS signaling protocols from Enea: SCTP-BRICKS, SIP-BRICKS
- Package includes source code (including build files and application examples), documentation (English), training, warranty and support period
- Highly field proven portable design

DIAMETER-BRICKS SOFTWARE ARCHITECTURE

DIAMETER-Bricks software architecture is composed of the following entities:

- System Management: configuration and local management
- DIAMETER base protocol: FSM and syntax
  - Full API: full control DIAMETER protocol API
  - Cx API: Cx API oriented module
  - Sh API: Sh API oriented module
  - Ro/Rf API: Charging oriented API module
  - Gq API: Gq API oriented module
- SERVICES: OS Abstract Layer

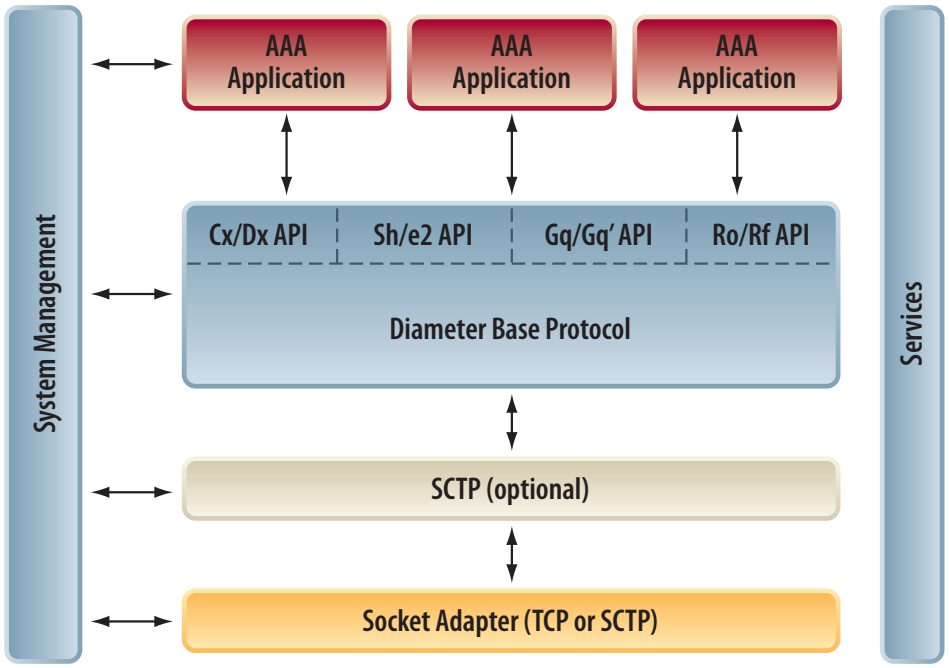
DIAMETER-Bricks service is available to:

- AAA APPLICATIONS: customer AAA diameter applications

DIAMETER-Bricks is designed for a seamless integration with:

- SCTP: Stream Control Transport Protocol
- Socket Adaptation: Standard socket interface wrapper for TCP or SCTP (when native)

DIAMETER-BRICKS SOFTWARE ARCHITECTURE



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