MACH7-iDC

"Intelligent DIAMETER Controller"

Introduction

With increase in complexities of 4G and LTE networks and extreme service demands due to proliferation of new devices like Smartphones, tablets etc., telecom operators need efficient control of DIAMETER signaling traffic to address routing, interoperability, security and scalability challenges.

The **MACH7-iDC**, the DIAMETER Signaling Controller, unleashes teleSys' core competencies and vast all-round signaling experiences, delivering a state-of-the-art signaling transfer solution for DIAMETER with intelligent routing, address translation and security while resolving scalability, interoperability and high-availability challenges efficiently. It plays a key role in managing DIAMETER signaling for Authentication, Authorization, Charging, Mobility Management and QoS control.

Product Overview

The **MACH7-iDC** product, built on the carrier-proven MACH7 High Available framework, is equipped with all functional features of a next-generation *Signaling Router*, application aware *Load Balancer* and an inter-networking *Service Mediation* solution. It enables efficient signaling routing with dynamic load-distribution while filtering out fraudulent traffic, managing overload and congestion control.

The **MACH7-iDC** platform offers innovative, reliable and scalable signaling infrastructure to network equipment manufacturers and service providers, allowing them the most cost-efficient path to successful network optimization, evolution and growth.

Key Features

- **ALL-IN-ONE SOLUTION**

  The MACH7-iDC consolidates several DIAMETER signaling solutions with multiple application/interface support into one platform, including Routing Agent (**DRA**), Edge Agent (**DEA**), Subscriber Location Function (**SLF**) and Inter-working function (**IWF**).

- **ADVANCED ROUTING & ADAPTABILITY**

  Centralizes routing, traffic management and load-balancing tasks for all connected nodes. Offers a wide range of stateless and state-full DIAMETER routing cases using different combination of AVPs and other parameters; routing rules can also be tailored for specific scenarios for rapid interoperability and to fulfill application requirements.

- **TRAFFIC SCREENING & NETWORK SECURITY**

  Message filtering based on different message parameters including AVP contents maintains service integrity, ensures security and protects system from unwanted and fraudulent traffic.

- **PROTOCOL INTER-WORKING**

  Ensures seamless multi-level inter-working with already installed network elements across diverse networks facilitating network evolution, which includes:

  - **IP interworking**: Between IPv4 and IPv6 networks
  - **Transport interworking**: Between DIAMETER over TCP and DIAMETER over SCTP
  - **Network & Application interworking**: Between DIAMETER and SS7 MAP, CAMEL, RADIUS, LDAP etc.

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- **DYNAMIC TRAFFIC RATE CONTROL**

  Enhances service availability by enabling signaling overload control and protection against denial-of-service (DoS) attack.

- **CARRIER GRADE RELIABILITY**

  Guarantees 5-nines high-availability requirements for telecom core network services, using redundant hardware and software components, with no Single-Point-of-Failure.

- **MATCHLESS SCALABILITY**

  With unprecedented throughput performance (very low latency and high transaction rate) on each computing element (CE), system allows in-service upgrades for capacity and throughput with new CE(s), for cost-effective growth.
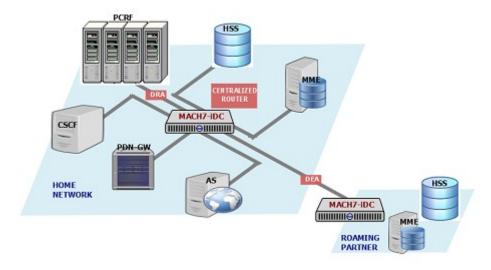
- **OPEN ARCHITECTURE**

  Operating on Solaris and Linux, over wide-range of open computing systems from leading vendors, the MACH7-iDC incorporates industry-standard signaling interfaces to allow ease in interoperability and operations to its users.
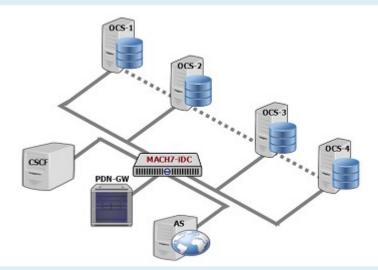
Solution Use Cases

INTELLIGENT ROUTING CONTROLLER

- Flexible routing based on Realms, Application-id, Host, IMSI or other AVP contents.
- As a **Centralized DIAMETER Router**, it facilitates seamless network expansion by aggregating connections to all DIAMETER network elements eliminating meshed network inter-connections between them.
- Enables a common inter-connect point for all **roaming traffic** as a **DIAMETER Edge Agent (DEA)** ensuring network security and hiding network topologies.
- With **DIAMETER Routing Agent (DRA)** capability, it allows unlimited service scaling with multiple PCRF elements deployment confirming IP-CAN session stickiness routing.
- Reduces network complexity, simplifies network routing and inter-operability allowing flexible growth.

teleSys Software, Inc. 1900 South Norfolk., Suite 320, San Mateo, CA, USA,94403, Tel: +1-650.522.9922, Fax: +1-650.522.9929 - www.telesys.com

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SMART LOAD BALANCER

- Concentrated access point to the core, for application servers, while aggregating signaling traffic with intelligent routing, address translation and security.
- Comprehensive dynamic load distribution to connected application servers for their horizontal scalability, with high-availability and service assurance.
- Intelligent Application level routing based on customized routing criteria as below:
    - **Context** aware, confirming session stickiness
    - **Service** based, using the DIAMETER AVP contents
    - **Subscriber data** based, using SLF capability
- Efficient and centralized signaling control for application servers facilitating non-disruptive service migration, expansion and upgrade.

ALL-ROUND SERVICE MEDIATION

- Rapid introduction of next-generation services with ease-of-interoperability and re-use of legacy infrastructures.
- Enables service interaction and mediation between DIAMETER realm and other network protocols like SS7 MAP, CAMEL, RADIUS, LDAP etc.
- Provides DIAMETER signaling normalization capability between vendors, elements and networks, to mitigate interoperability challenges.

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Specifications

Networking	IPv4, IPv6, IPv4-IPv6 interworking
Transport Protocol	SCTP, TCP, UDP SIGTRAN, GTP
DIAMETER Base	IETF RFC 3588
DIAMETER Reference Points	Cx, Dx, Gx, Gy, Gz, Ro, Rf, Rx, S6a, S6d, S9, S13, Sh, SWx, Wx, and others
IETF DIAMETER Agents	Proxy, Relay, Re-direct and Translation
3GPP/3GPP2 DIAMETER Agents	DIAMETER Routing Agent (DRA) Subscriber Locator Function (SLF) Inter-working Function (IWF)
GSMA DIAMETER Agents	DIAMETER Edge Agent (DEA) S6a/S6d Proxy IWF S6a/S6d to Gr
Interworking Protocols	SS7 MAP, SS7 CAMEL, INAP, SIP, RADIUS, LDAP, HTTP, SOAP, SQL and others
Throughput Capacity	Scalable to 1 Million messages per second per cluster
OAM&P	Browser based GUI, Command line interface (CLI) with Access Control and transaction logging
Network Management	Alarm monitoring via SNMPv2
Troubleshooting	Full debugging and tracing capabilities for the transmitted & received MSUs
Statistics	Comprehensive statistics for each reference points
Supported Hardware	Rack servers, ATCA and Blade servers

teleSys Software, Inc.

teleSys is the premier provider of advanced Telecommunications solutions for the next generation LTE Signaling Networks, providing open systems hardware and software.