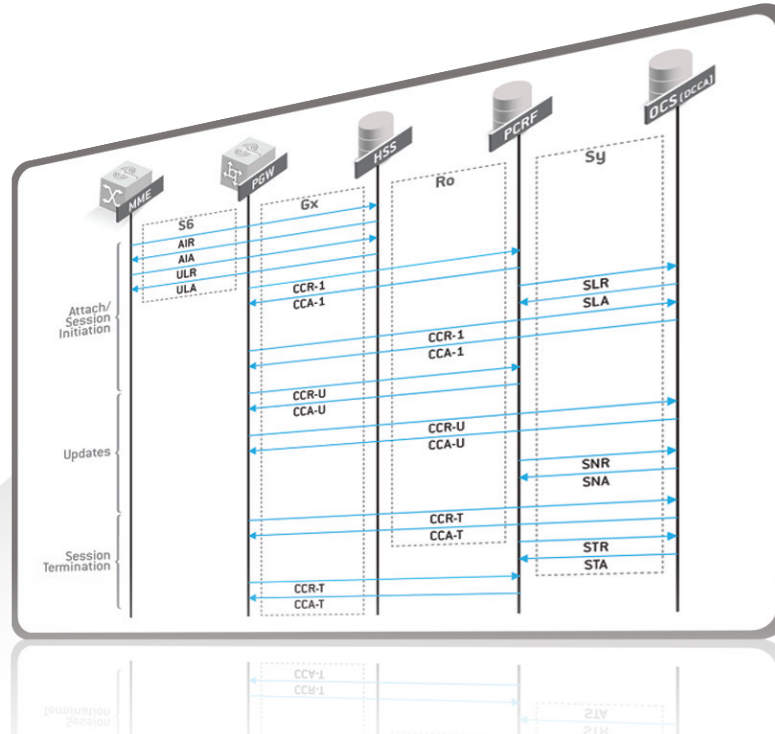# EXFO Diameter Testing Solution

HIGH PERFORMANCE AND CAPACITY DIAMETER LOAD-TESTING SOLUTION

Easy-to-use, high-performance and high-capacity regression, conformance and Diameter load-testing solution enabling Diameter device testing during the various stages of IP-multimedia-subsystem (IMS) and long-term evolution (LTE) network development and deployment.

KEY FEATURES

Runs on commercial off-the-shelf (COTS) multicore servers

+200-million subscriber emulation

+1.2-million transactions per second (TPS)

NFV-ready—runs on virtual machines

No scripting required: easy to use, Action-driven

Flexible license model: fixed and floating

Comprehensive set of Diameter node emulators

Full coverage of all 3GPP Diameter interfaces

Regression, conformance and load testing

Support for multiple 3GPP releases (Rel-10, Rel-11, Rel-12)

SmartAVP™ to define any standard and proprietary attribute-value pairs (AVPs)

SmartEvents™ to build simple to sophisticated use cases

Stateful emulation across multiple Diameter interfaces

OVERVIEW

Core network signaling has been transformed from SS7-based protocols to session initiation protocol (SIP), Diameter and Megaco. While SIP and Megaco drives the control-plane traffic, bringing rich media services such as Voice over LTE (VoLTE), rich communication service (RCS) and web real-time communications (WebRTC), Diameter is what truly enables critical functions in the IMS, 3G and 4G LTE networks. Diameter signaling exchanges information vital to managing and monetizing mobile data services, such as subscription, authentication, authorization and accounting (AAA), policy and charging control (PCC), mobility management and subscriber management. EXFO's Diameter test solution provides complete test functionality for all network elements supporting the Diameter signaling protocol, as depicted in the figure below.
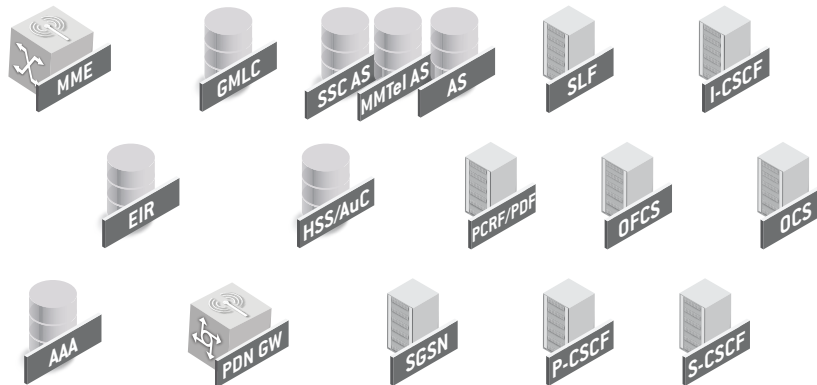
EXFO TEST SOLUTION

EXFO's QualityAssurer Series of high-performance, high-capacity simulators is used by equipment manufacturers and mobile operators to verify their wireless networks (LTE, EPC and IMS) in the lab before deployment. Our tools are used to recreate and simulate the real-world network traffic patterns of millions of subscribers accessing VoLTE/SRVCC, WebRTC, small cells, and the Wi-Fi offload service. EXFO's dsTest™ Diameter test product powered by Developing Solutions® is a complementary solution to the QualityAssurer simulator product, and can help isolate and test network elements that support Diameter protocols such as policy and charging rules function (PCRF) and diameter routing agent (DRA).
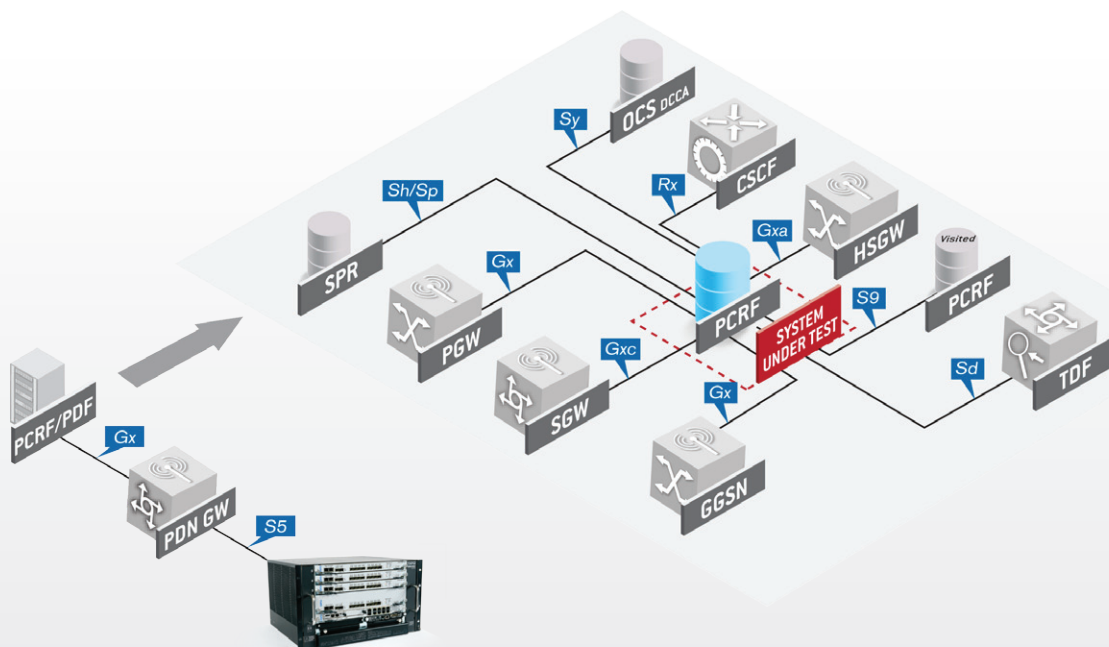
dsTEST™

DsTest™ is a Linux-based software product designed to run on a wide variety of commercial Intel-based or AMD Optiron-based servers, enabling our customers to invest in the COTS hardware that best suits their needs. The highly threaded software architecture is designed to efficiently utilize multicore and 64-bit central processing units (CPUs). As a result, emulation of over 200-million subscribers and more than 1.2M TPS per single server or multiple servers, or even virtual machines (VMs), depending on the licensed subscriber capacity, TPS and server hardware configuration, i.e., available memory and cores.

The dsTest™ software is supported in the following
64-bit Linux operating systems:

> Red Hat/CentOS Release 6

> Red Hat/CentOS Release 7

> Ubuntu 12.04 LTS

> Ubuntu 12.10

> Ubuntu 13.04

> Ubuntu 13.10

> Ubuntu 14.04

License
and test

SINGLE SERVER

License
and test

Test

Test on VMs

MULTIPLE SERVER

dsCLIENT™

The dsClient™ product, which is used to control and interact with dsTest™, comes in the following two flavours:

1) The dsClient™ command line interface (CLI) that is bundled with dsTest™ can be run on the dsTest™ server or any compatible Linux operating system (OS). Automation is possible via scripting languages such as TCL or clients such as SSH and Telnet. The dsClient™ software can connect to both local and remote servers.

2) The dsClient™ graphical user interface (GUI) is a stand-alone Java-based GUI application that can be run on the Windows or Linux OS, on both laptop and desktop computers.

With the dsClient™ GUI, you can create and run testing scenarios, graph real-time measurements, and manage your dsTest™ servers and testing scenarios. The dsClient™ GUI includes the following key features:
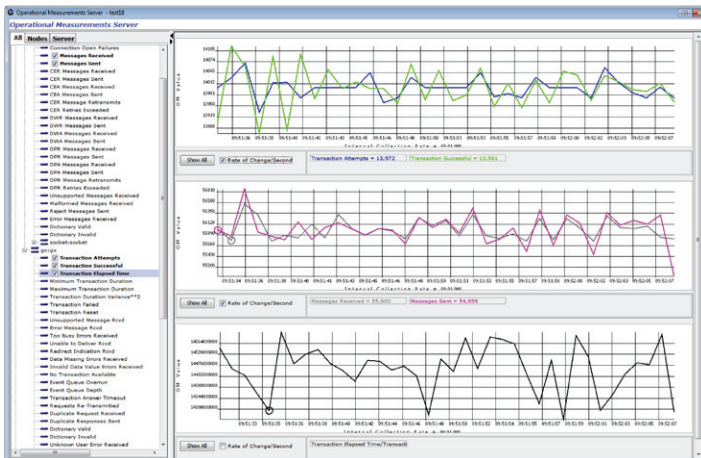
> XML document creation, maintenance and management
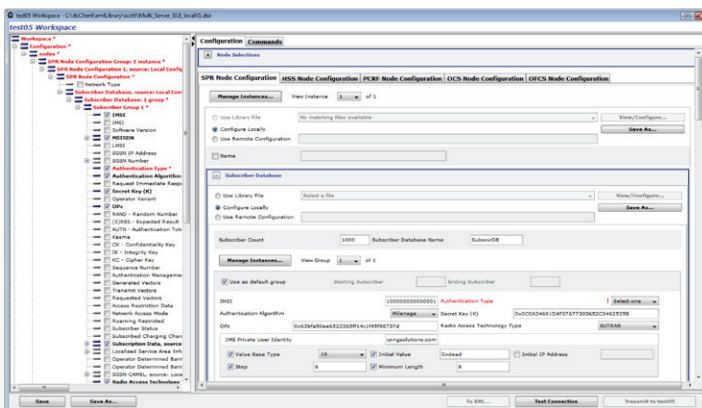
› SmartFlow™/SmartEvents™ creation using a visual, drag-n-drop state machine diagramming tool
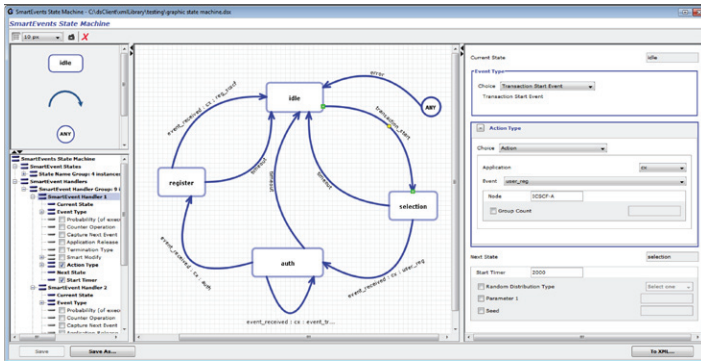
› Operational measurement (OM) display and graphing

› Packet capture and display

› Bundling of files for archiving or handing off to other users for import into their dsTest™ XML libraries

› DsTest™ server management

› Interaction with tests while they are running

› Integrated SSH connection for direct interaction with the dsTest™ server

TECHNICAL SPECIFICATIONS

DsTest™ was designed explicitly to facilitate cost-effective testing of Diameter protocols and applications. In addition, it supports advanced testing, such as interworking with the MAP, CAMEL, DNS, DHCP and LDAP protocols. The subscriber capacity and TPS licenses enable customers to validate network performance and capacity in a realistic network environment with a mix of subscriber profiles, thereby replicating a deployed live network configuration. In addition to capacity and TPS licenses, network interface applications (client simulators or service node emulators) are individually licensed as listed below, allowing customers to purchase only the interface functionality that is required. These applications provide true emulation as per 3GPP and other applicable standard features, eliminating the need to write difficult scripts for messages and responses.

Server Emulation	Client Emulation	Interfaces/Protocol
HSS	MME	S6a, S6d
AAA	PGW	S6b
PCRF	PCEF	Gx
AAA	GW	Sta
HSS	AS	Sh
HSS	CSCF	Cx
PCRF	AF/CSCF	Rx
PCRF	OCS	Sy
OCS	CTF	Gy, Ro
OFCS	CTF	Gz
Ga Server	Ga Client	Ga
HLR	SGSN	Gr, Gr'
MSC	MME	SGs
EIR	MME	S13, S13'
AAA	ePDG	Swm
AAA	GW	Swa
AAA	HSS	Swx
H-PCRF	V-PCRF	S9
PCRF	Gxx Client	Gxx
GMLC	MME	SLg
GMLC	SLh Client	SLh
GMLC	SLs Client	SLs
PCEF	TDF	Sd
AAA	ANGW	Radius
3GPP AAA	3GPP ANGW	Radius
WA AAA	WA ANGW	Radius
LDAP Server	LDAP Client	LDAP
DNS Server	DNS Client	DNS
HLR	GMSC	C
HLR	MSC	D, D'
HSS	GMSC	E

ORDERING INFORMATION

For ordering information, please contact isales@EXFO.com

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