Spectra2 – Use Case eBook

Stress your network !

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About This eBook

Welcome to Spectra2 eBook.

In this eBook we will be illustrating a few typical Spectra2 Use cases and how they relate to the Subscriber and/or the Networks. We will highlight the steps needed to identify the root cause and suggest areas that should be fixed or improved.

We are confident that you will have an appreciation for the amount of time saved by the Spectra2 solution and will inquire more about how Tektronix Communications can help you.

Enjoy this rolodex of Use Cases!

The Core Test Team
Tektronix Communications

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UC : Use case

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x-CSCF Testing

x-CSCF server are software that provide session control for packet voice or multimedia services and meets functional requirements of 3GPP IMS, including at least S-CSCF (Serving Call Session Control Function), an element that provides session control services for mobile networks; functions include mobile registration management, session maintenance, other service interaction, charging and security
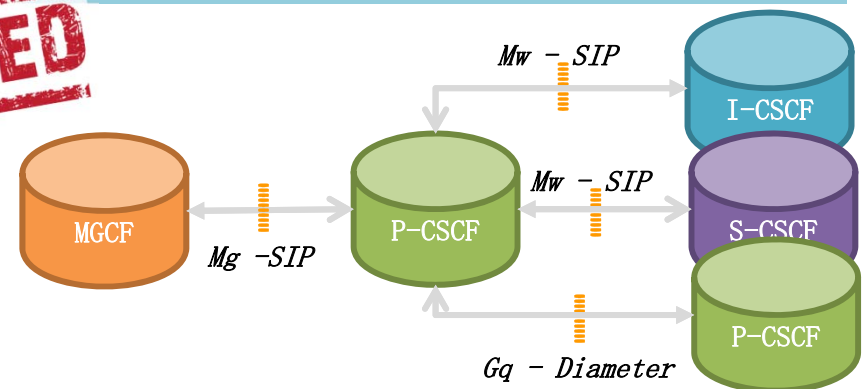
How Spectra can help ?

1. Get a SIP + Diameter trace file (Wireshark) or do a trace with the Spectra2 monitoring application

2. Import the packets

3. Replay the trace to validate your script

4. Select the load & run

5. Check statistics

1

« *Mr Tek,* I'm using SIPP for my P-CSCF test but I would like to test with more protocols involved.. **Can you help me? »**

"Of course, Spectra2 is designed to run such tests. We, for instance, implemented some very useful features like having multiple protocols into the same test script. You can then test your P-CSCF alone or inside his network"

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Mw - SIP

I-CSCF

MGCF

Mg - SIP

P-CSCF

Mw - SIP

S-CSCF

Gq - Diameter

P-CSCF

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HSS Testing

The **Home Subscriber Server** (HSS) is the main data storage for all subscriber and service-related data of the IMS. The main data stored in the HSS include user identities, registration information, access parameters and service-triggering information. This is key that the HSS delivers expected level of performance in order to serve all applications

2

« *Mr Tek,* my HSS is not performing very well under load. I can't find what is wrong and from which level of load the performances are degraded. *Can you help me?* »

"Oh yes, Spectra2 will identify the issue. We'll identify first the faulty node, HSS or I-CSCF and then check which level of load makes your HSS & network crashing. We can even play with the AVPs if you need"
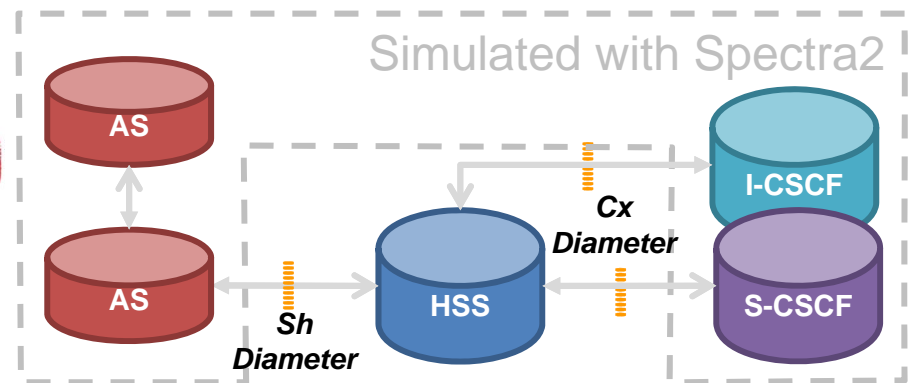
How Spectra can help ?

1. Start by using the Spectra2 to isolate your HSS

2. Run a progressive load test to identify the limit of your HSS

3. Test its endurance too.

4. Then mix the traffic to check impact

5. Use multiple load profiles (burst, ramp, steps, poisson …)

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Simulated with Spectra2

AS

AS

HSS

I-CSCF

S-CSCF

Cx Diameter

Sh Diameter

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Codec Conversion

Media Gateway performs the media conversion from TDM to VoIP. It also converts the Codecs to suit end terminals. This codec conversion makes it important to test scenarios in which a call originates on one codec and terminates on another Codec. The number of test scenarios are very high because of Codec combinations and also the QoS of converted Codec needs to be checked.

3

« Mr Tek, I need to test that my Media Gateway converts the Codec correctly and the QoS on terminating end is good. Can you help me? »

"Sure. Testing media is very important for our users. They not only just need to send an receive media but also check the QoS. Spectra2 offers Active and Passive QoS for all the voice codecs and its easy GUI makes different codec testing simple"
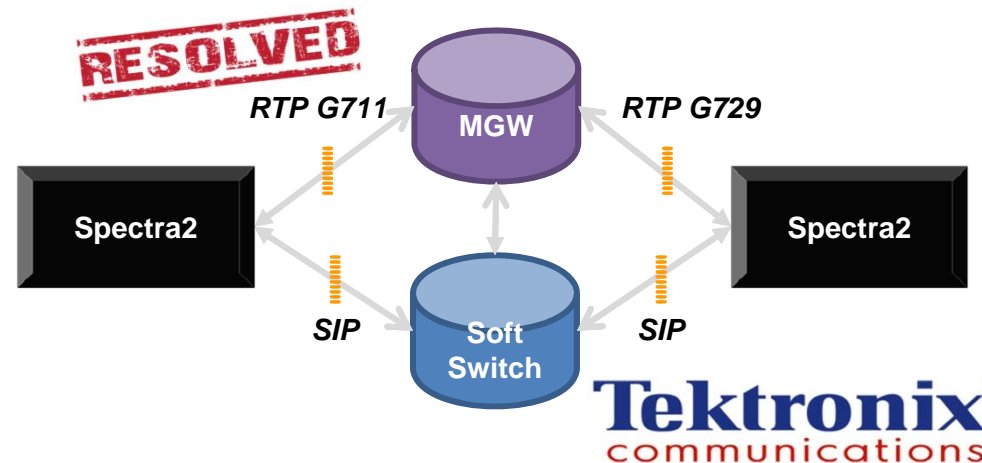
How Spectra can help ?

1. Spectra2 scripts allow a user to create originating and terminating call models.
2. It generates not only signalling, but also media. A user can choose different Codecs in originating and terminating model
3. Spectra2 supports Audio & Video quality measurment.
4. The Pass/Fail criterea based on QoS measurement enables to check the Media gateway performance

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RTP G711 MGW RTP G729

Spectra2   Spectra2

SIP   Soft Switch   SIP

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MGW Interoperability testing

A media gateway is a network element residing at border points of PSTN and IP voice networks. MGs provide in-band signaling and media interfaces between PSTN and IP networks. Media processing includes translations of TDM media and signaling information into RTP/RTCP and IP call control data. Media processed can include voice, video, fax and sometimes modem streams translation and encapsulation
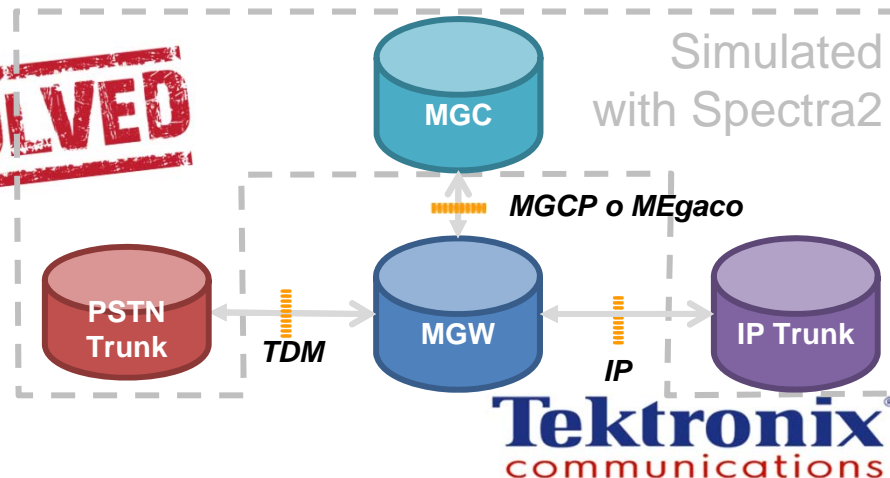
How Spectra can help ?

1. Set up background traffic with simple calls.

2. Define a set of scripts using the CODEC you need to test.

3. Run this all together

4. See Voice Quality results (PESQ, MOS …)

4

« *Mr Tek,* I need to benchmark MGW vendors. I want to evaluate the translation of TDM to IP and the CODEC support. *Can you help me?* »

"Our customers like the way we test convergence. We offer TDM to/from IP inside the same test and with media. Voice or Video quality problems are then highlighted very quickly. Let me show you how easy it is to set up such test."

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MGC

MGCP o MEgaco

PSTN Trunk — *TDM* → MGW ← *IP* → IP Trunk

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PBX quality testing

Todays telecom landscape becomes more and more complicated and far from beeing homogenous. Call initiated from ISDN interface needs to be connected to VoIP terminal providing appropriate voice/video transcoding. Telecom equipement must make sure that their product will provide stable, good quality in all possible call configurations at a given traffic level.
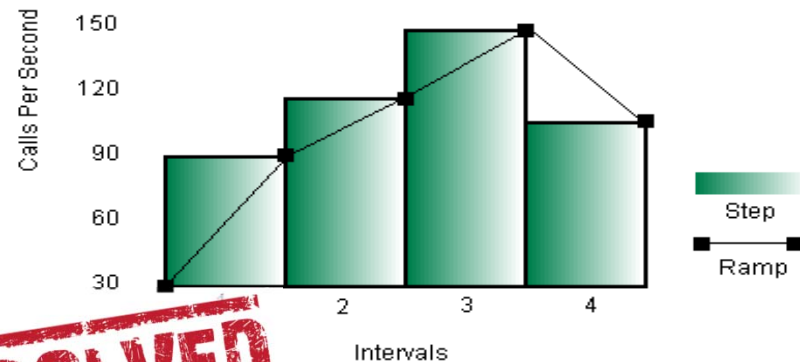
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« *Mr Tek,* We are developing new PBX, which supports both VoIP and ISDN extensions. We want to make sure that voice quality will satisfy our customers. **Can you help me?**»

How Spectra can help ?

"Spectra2 can generate and terminate calls over ISDN and VoIP technology, including also generation of audio & video traffic and verification of quality. With Spectra2 you can measure how your customer will be satisfied of your product!"

1. Spectra2 multigenerator feature allows to generate, at the same time, traffic on many different protocols like SIP, DSS1, ISUP, etc. and interfaces (E1, Eth)

2. It generates not only signalling – but also media streams encoded with most of codec used today.

3. Spectra2 supports Voice & Video quality measurment (PESQ, MOS or others).

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SIP/H323 Inter-working

A soft switch supports multiple protocols and has to be integrated in networks which support legacy and new technologies. It is important to test that soft switch converts calls on different protocols. To check that the soft switch supports old VoIP networks on H.323 and new IMS clients on SIP it is required to test the protocol conversion between these two protocols.
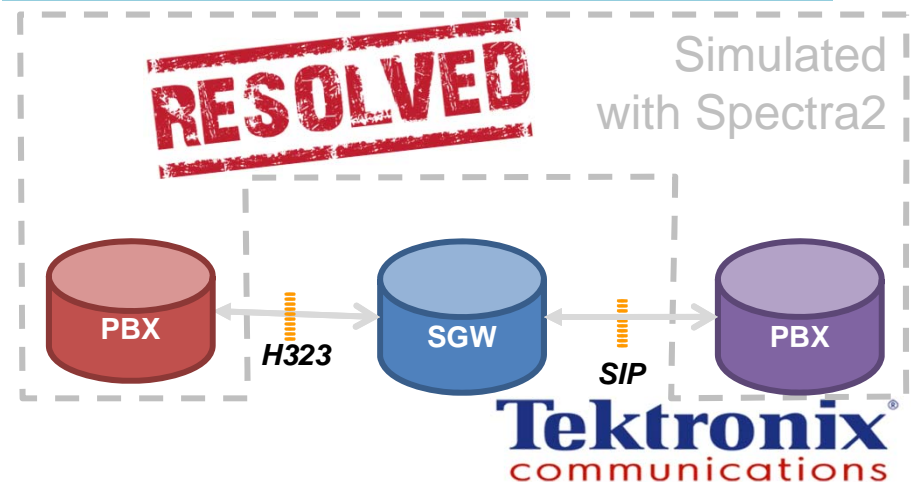
How Spectra can help ?

1. Import the SIP and H.323 PDU's required for the test scenario from the ready to use libraries

2. Setup the end points for H.323 and SIP User Agents

3. Create a multi-protocol tester script with one SIP call leg and one H.323 call leg.

4. Execute the script and look at the capture to understand where DUT is making errors.

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« *Mr Tek,* *I need to test that my device does a correct conversion of an SIP to H.323 call. Also I want to test media on both calls.* *Can you help me? »*

"Our customers like the way we test multi-protocol. We offer an very flexible and easy to use environment to create multi-protocol test scenarios. The Spectra2 tool chain simplifies complex test scenario testing"

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PBX — *H323* → SGW ← *SIP* → PBX

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SIP Trunking

Trunk is a concept in Telephony whereby multiple channels can be grouped together to carry traffic between two devices / entities. E.g. SS7 Trunks, CAS trunk…

SIP Trunk is an extension of this concept. The kind of device / entity involved could be an SIP-IP-PBX and its Telephony Service Provider between two VoIP-Gateways, and so on

How Spectra can help ?

1. Before the new release, load & run one of our ready to use test suite.

2. Store the result

3. Implement the release

4. Rerun the same test suite

5. Compare results

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*« **Mr Tek,** twice a year I receive new releases from my PBX provider, I want to insure we keep the same level of service. **Can you help me? »***

"This is a safe decision to do non regression testing. When migrating from a release to another, everything can happen. Spectra2, with its test suite automation feature will give you a complete & detailed picture of what changed with the new release."

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The Tester tree view enables you to view a list of scripts you create. In this area, you can organize your scripts by keeping them in separate folders.

The Scripting view enables you to create a tester script by using a grid interface. You can enter up to 256 lines of code in a tester script. In this area, you can also enter a description of the script and set the number of times you want the script to repeat.

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Billing system verification

Two operators, before opening traffic exchange – need to verify interconnect point. One of many tests which needs to be performed is a billing verification to proof that all calls will be properly and equally counted by both parties. The safest method of such test is to generate high enough number of calls (>10k) of various type (successfull, unsuccessfull, short, long etc.) and compare later results from both billing systems and – the source of the traffic – which is a traffic generator.

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«Mr Tek, I need to verify my billing system at interconnect point with others operators. This requires to generate few thousands of calls according to strictly defined scenario Can you help me?»

"Spectra2 can generate traffic with precisely controlable amount and duration of calls. Customizable statistics will show you final number of all calls and its total duration. Spectra2 is a perfect solution for you!"

How Spectra can help ?

1. Prepare simple scripts to generate calls (over SIP, ISUP, DSS1 – depends on requirements)

2. Choose time intervals duration – like 3 sec. 10 sec. 30 sec. 60 sec 180 sec. etc.

3. Configure Generator to mix those scripts into required traffic (like: 10sec – 20%, 30 sec – 30%, 60 sec – 50%)

4. Run generator !

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Call issue Reproduction / Wireshark Import

Support Team have high pressure. They need to manage a lot of requests in a short time to respect SLAs and avoid penalties to their companies. The work is usually made of 2 parts : reproducing customer environment and specific network behavior. The information provided by the customers are usually limited and slow the analysis.
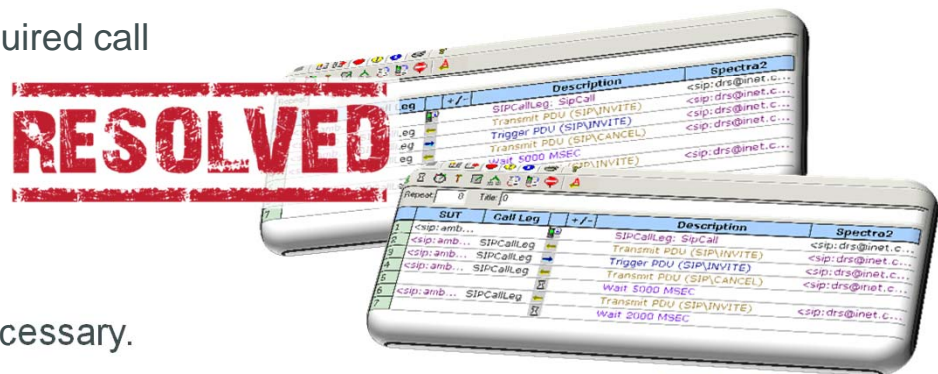
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*« **Mr Tek,** my support team needs to analyze a lot of customer complains in a short time. I am looking for a solution to help them being more effecitve. **Can you help me? »***

"Your team will love the Spectra2 ! Our solution is already helping a lot of support teams. Your people are probably familiar with protocols and this is the only pre requirement to use the Spectra2. Reproducing a customer problem is a matter of minutes"

How Spectra can help ?

1. Ask the customer to provide a simple wireshark trace.

2. Import the trace into the Spectra2 and select required call bu sing the call trace feature.

3. **Convert the call into a script**.

4. Rerun the script to reproduce the issue in lab

5. Implement fix & recheck. Modify the frames if necessary.

IN platform testing

New service deployment on IN platform is not an easy task... You need to make sure that new service implementation, especially in SCF, is ready to meet all possible chalenges: various versions of CAP/INAP in remote SSFs, various subscribers data settings and the most unpredictable – the load. The only way to make sure your platform will not crash is to test with a traffic. But better not a real one!
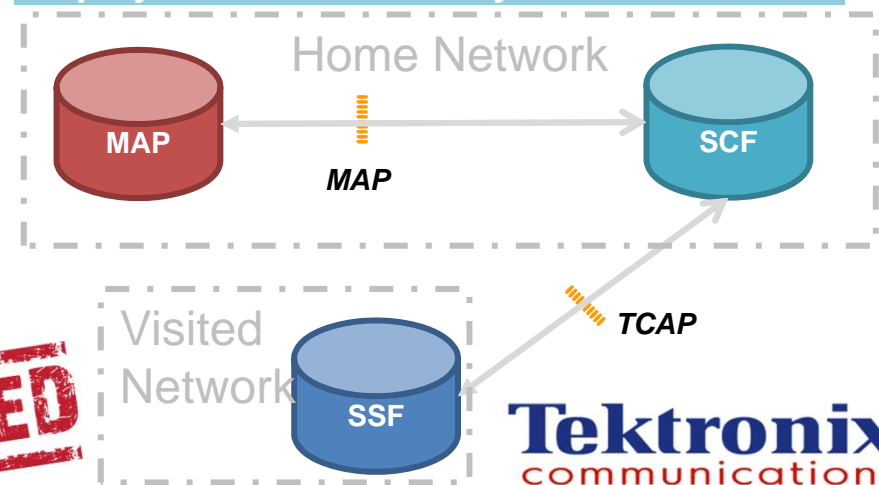
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*« **Mr Tek,**. We are going to implement new service on our new IN platform. We need to make sure that our SCF properly handle all request at the volume we estimate. **Can you help me?**»*

"Spectra2 can generate & terminate transactions over INAP/CAP/MAP. It can emulate complete environment towards your SCF: SSF, HLR and simulate subscibers traffic at desired level. You can be sure that with Spectra2 new service deployment will be an easy task"

How Spectra can help ?

1. Spectra2 allows to program multi-leg scripts, with one script, you can coordinate message flows of MAP, INAP and CAP transactions.
2. With Spectra2 you can easily controll traffic level and mix different transaction scenarios (unsuccessfull, sucessfull, delayed etc.)
3. With user-defined statistics you can measure how effective was your platform and how response-time was changing with load level

Home Network

MAP

SCF

MAP

Visited Network

SSF

TCAP

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Interested in the use cases seen in this eBook and want to learn more? No problem! We'd be happy to talk to you.

USA :	James Lommen	+1 214.529.0701
	Mark Federowski	+1 732.278.3378
EMEA & LATAM :		
	Martial Gruyer	+33 787.027.079
	Sophie Wojciechowski	+33 672.046.489
India :	Vikas Tyagi	+91 984.500.7601
China :	Fiona Zhao	+86 139.0113.5002
Japan & Rest of Asia :		
	Kazunori Omori	+81 3 6714 3096