

Load, Security and Resiliency Testing in the 5G/IoT Era

Ian Carpenter - Valid8

Link to the Recorded Event:

<https://youtu.be/FuenihsLKlw>



Interacting During This Event

- Slides and Recording will be sent after the event
- Enter Questions into the Question Bar
- We'll try to get to as many questions as possible at the end of the presentation

Today's Speakers



Ian Carpenter
President, CEO and Founder
Valid8

About Valid8

- In business for over 18 years
- Expertise : Telecom Networking
 - Products : World-class testing platform & applications
 - Multi-Domain (5G, 4G, IoT, MCX, VoLTE/IMS, RCS, Cloud/Lab)
 - Multi-Industry (Telecom, Automotive, Public Safety, Healthcare, Aerospace, Private 4G/5G Networks)
 - Multi-Purpose (Security, Performance, Conformance, Customizable, Flooding, Fuzzing, Handovers)
- Services : Custom solutions and support
- Customers :
 - Large FT500 & small organizations
 - Equipment vendors, service providers & integrators
- Locations world-wide

VALID8 OFFICES



What is Meant by "Load, Security and Resiliency Testing"

- **Load** - Creating a large number of mobile initiated procedures including
 - Attach,
 - User Session Establishment,
 - Detach
- **Security** - Ensure that security procedures work, and the network handles correct and incorrect messages
 - Diameter
 - GTPv2-C / PFCP
 - HTTP
 - NGAP/S1AP
 - NAS - Falling back to older security modes
- **Resiliency** - how the network recovers from a failure, including failover and recovery time
 - Cut links
 - Measure the failover time
 - Reenable links
 - Measure the recovery switch back time

Challenges Performing Load, Security and Resiliency Testing

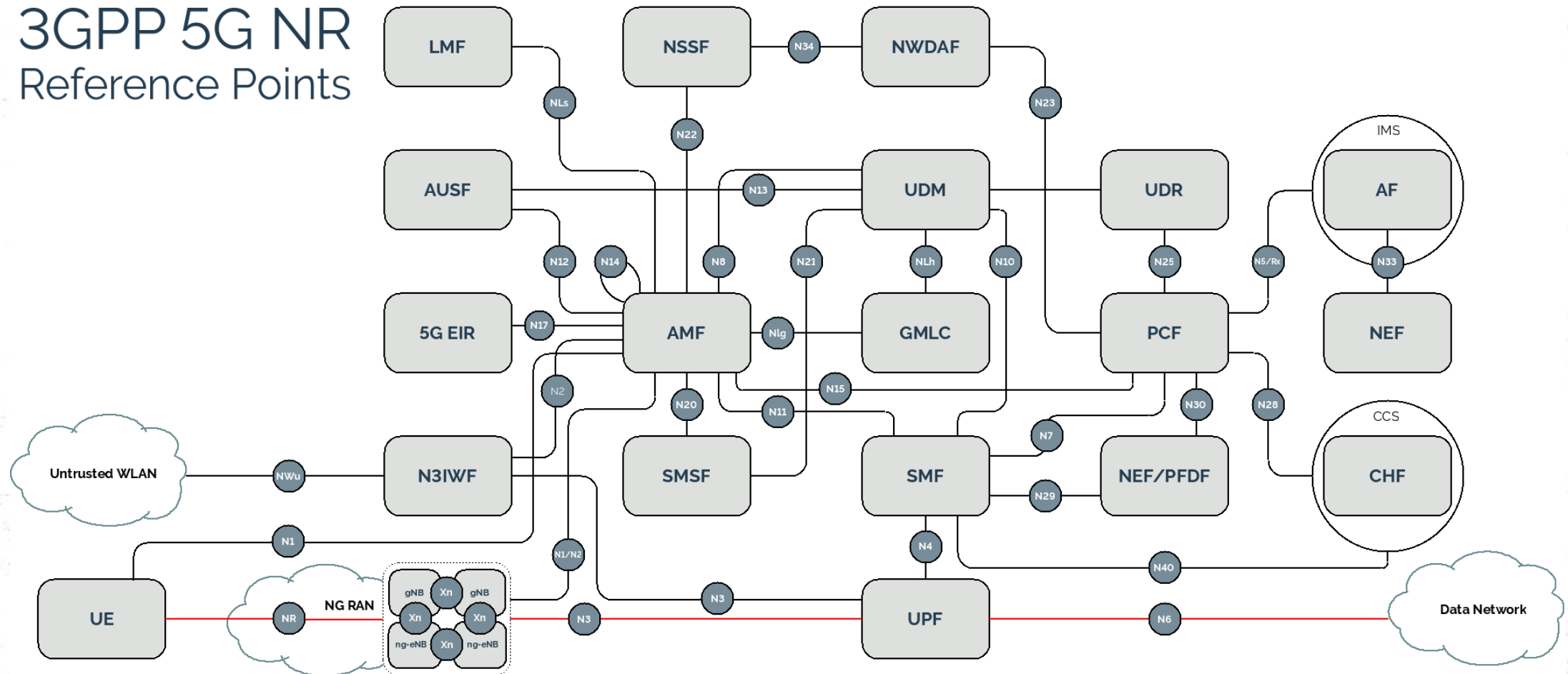
- Difficult to simulate large numbers of IoT devices without spending a lot of time and money
- Inflexible test capabilities. Unable to simulate specific, real-world threats
- Hard to interpret/take action on the results

A large, irregular red ink splatter or blotch is centered on a white background. The splatter has a textured, painterly appearance with various shades of red and some darker, almost black, areas. It has several smaller droplets and splatters radiating from its edges.

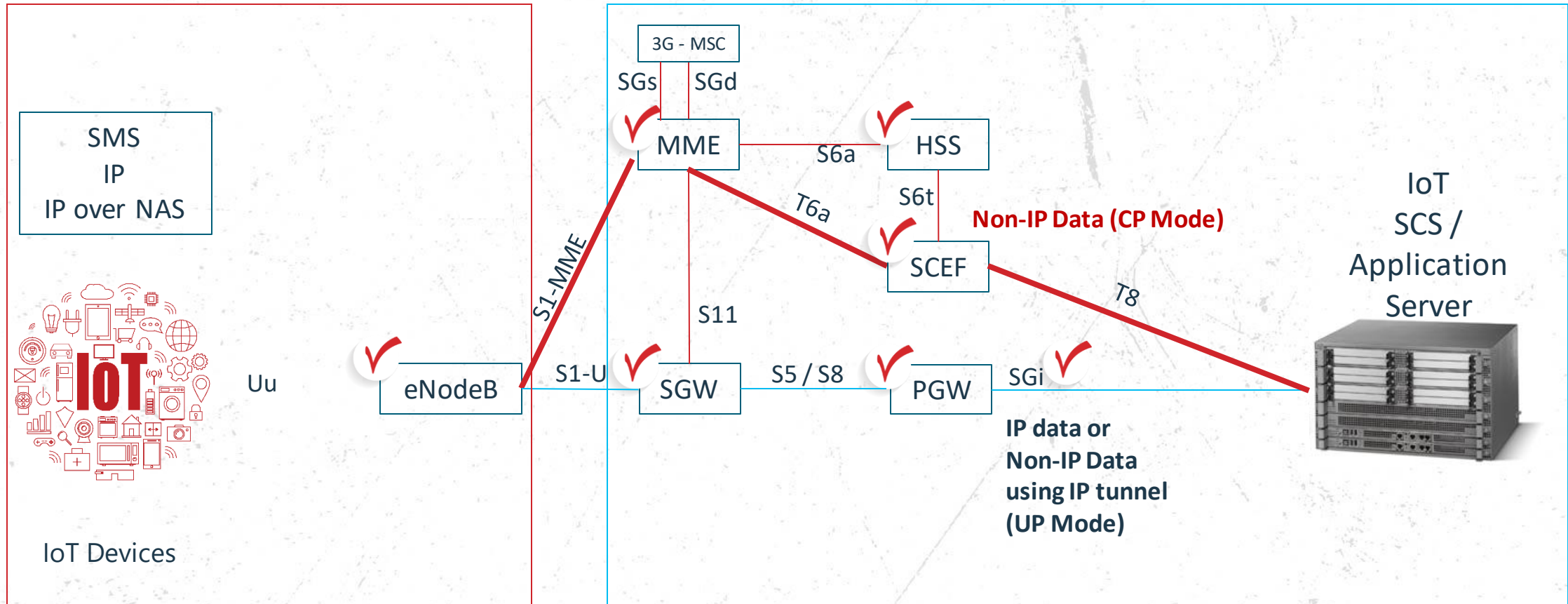
Valid8 Demonstration

DEMO - 5G UPF TESTING

3GPP 5G NR Reference Points



DEMO - 4G IoT NETWORK TESTING



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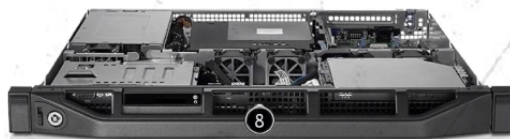
Flexible, Robust Testing Capabilities

- Uncovering common vulnerabilities
- Simulating test cases at scale
- Customizing tests for real-world scenarios
- Flexible, actionable output and reporting
- Cost-effective, virtualized testing

TELECOM PRODUCTS & SERVICES

Pick the form-factor that best suits
your needs:

- ✓ Dell Rugged Laptop (F1R)
- ✓ Panasonic Toughbook (F1T)
- ✓ Compact Industrial (F1C)
- ✓ Dell/HP 19" server
- ✓ Valid8 M-series HW (M5)
- ✓ Virtual Machine



Q & A

For more information visit:
www.valid8.com

- ✓ Solutions for Security
- ✓ Solutions for Conformance

Email: info@valid8.com

Call: +1 781 702 4434

Additional Slides

Automation

- Can be integrated into any Continuous Integration (CI) system via the HTTP API, including
 - Jenkins
 - CircleCI
 - Gitlab
 - and others

CDR—
visibility per
call

Save

Open

Choose File

No file chosen

9/28/2016, 4:10:07 PM - 9/28/2016, 4:12:03 PM

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Testing. Innovation.

Decode Mode

Time Display

Toggle Details

Flow

10000

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No	Source	Start	Stop	Result	APS	MOS	Call Id	Calling PN	Called PN	Protocol	Media	Len...	C...	P...	P...	M...	T...	R...	C...
0	trafficOriginator	9/28/2016, 4:09:37 PM	9/28/2016, 4:10:07 PM	Successful (1000)	0.388		pQAAVdSI7...	user1000...	user2000@e...	JSON	opus / h264	30479	166	140			0	0	
1	trafficOriginator	9/28/2016, 4:10:09 PM	9/28/2016, 4:10:40 PM	Successful (1000)	0.766		pQAAVdSI7...	user1000...	user2000@e...	JSON	opus / h264	30496	56	51			0	0	
2	trafficOriginator	9/28/2016, 4:10:43 PM	9/28/2016, 4:11:13 PM	Successful (1000)	0.654		pQAAVdSI7...	user1000...	user2000@e...	JSON	opus / h264	30503	89	84			0	0	
3	trafficOriginator	9/28/2016, 4:11:17 PM	9/28/2016, 4:11:47 PM	Successful (1000)	0.648		pQAAVdSI7...	user1000...	user2000@e...	JSON	opus / h264	30497	90	86			0	0	
4	trafficOriginator	9/28/2016, 4:12:01 PM	9/28/2016, 4:12:03 PM	No Answer (5200)	0.000			user1001...	user2001@e...	JSON		2014						0	
5	trafficOriginator	9/28/2016, 4:11:50 PM	9/28/2016, 4:12:03 PM	No Answer (5200)	0.000		pQAAVdSI7...	user1000...	user2000@e...	JSON		12284						0	

Call Id	Calling PN	Called PN	Final PN	Transport	Signaling
pQAAVdSI7atdsgr0T5181xm2CoAAAM_1000	user1000@example.com	user2000@example.com	user2000@example.com	Protocol wss/tcp	Protocol JSON
				L2 source -	Call Setup Time 90ms
				L2 dest -	Post Dial Delay 86ms
				L3 source 10.148.94.155:10000	Post Pickup Delay -
				L3 dest 10.148.94.27:7002	Media Delay -
					Retransmissions -
					Tear Down Time 0ms
					APS <div></div>
					Codec
					Tx/Rx Bytes
					Tx/Rx Packets
					Payload Type
					Jitter
					Fractional Loss
					Latency

Dashboard— continuous monitoring



The Valid8 Solution

FLEXIBLE AND COST-EFFECTIVE TOOLS



All-in-one, **cost-effective**
base platform



Highly configurable:
add only the tools you need



Simulated independent **3rd-party**
environment for testing



Summary

Product	SIP
Application	Load Tester
Configuration	selftestOriginator.config
Firmware	7.90.0
Version	IAC000

Started	Sep 28th 2016, 04:09:37 pm (UTC-04:00)
Stopped	Sep 28th 2016, 04:12:12 pm (UTC-04:00)
Elapsed	0h 2m



Traffic Originator

Attempts	6
Failure	2
OK	4
Stops	6
Unknown	0
Active	0.3 _{avg} (0.0-1.0)

Protocol Engine Platform

- Valid8's advanced run-time environment is designed specifically for testing signaling systems such as telecommunications and network equipment, web applications and APIs, and appliances.
- Designed from the ground up to be browser controlled, the Linux-based Protocol Engine offers flexibility and versatility that is unmatched by rival tools. The modern and responsive user interface provides control, scenario editing, remote access and sharing capabilities. Call-flows can be modified and integrated version control aids team driven development and testing. Our open Cloud API allows complete integration into existing test automation environments.

