

# End-2-End Lawful Interception Verification

LIMA ÉLITE

ARCHITECTS  
IN SAFETY AND  
INTELLIGENCE

**Fully Independent.** Integrates with all LI Mediation and LEMF systems.  
**Risk Compliancy.** Facilitates auditing processes and SLA Management.  
**Gain Control.** Early detection of failed interceptions.

## INTRODUCTION

Advancements in communication technology and as a result the increasing complexities in communications systems have fostered the need for advanced LI processes. Some of the communication channels that are majorly intercepted include: VoIP, Email, SMS, images and telephony. It is mandatory for telecom providers to support lawful interception by adhering to the government regulations regarding the same.

For Law Enforcement it is critical that they can trust the data provided by telecom providers, while on the other hand for telecom providers it is essential that they can trust the deployed interception technologies in their networks.

Automated end-to-end Lawful Interception test tooling would help law enforcement in validating the complete LI chain for all operators and ensures timely detection of non-compliances of telecom providers. For telecom providers, end-to-end LI verification tooling and test LEMF functionality facilitates full system validation and demonstrable compliancy with government regulations.

### LIMA Élite

To help Law Enforcement and Telecom providers, Group 2000 developed LIMA Élite. With LIMA Élite, the complete paths from target interception in the network via the LI Mediation systems at the operators to the Law Enforcement Monitoring Facility (LEMF) are being tested for each network operator and technology (2G, 3G and 4G).

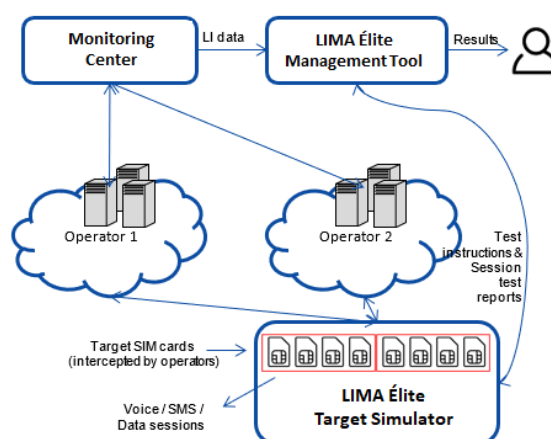


LIMA Élite is operator, network & technology independent and supports the validation of voice calls, SMS and mobile data transfer interceptions, both on metadata (IRI) and content (CC). For Law Enforcement, LIMA Élite can integrate with any LEMF.

### Our solution

LIMA Élite works independently and automatically generates calls, SMS messages and data sessions. The frequency with which this test data is generated is configurable. It will automatically cycle through the available connections, testing all operators and networks in sequence.

The SIMs used for generating test calls are being intercepted by the operators. This can be achieved through the normal process of providing warrants for these test numbers. As a consequence all traffic generated by these test numbers is intercepted and delivered to the Monitoring Center.



By forwarding the intercepted IRI and CC data on the Monitoring Center to LIMA Élite, the application can verify the correctness of the generated metadata and their contents. In case deviations are detected between the data received and expected, the tool will immediately alert the user, so that corrective measures can be taken.

### Test LEMF

Not all LEMFs support data output towards the LIMA Élite Management Tool. In an operator environment, LIMA Élite integrates with the deployed mediation system(s) and is able to simulate a LEMF. For troubleshooting purposes, the test LEMF feature of LIMA Élite provides the user with the capability to download PCAPNG files from ETSI 232 mediation systems, view the decoded IRI and SMS messages and playback the call content. With the Test LEMF feature, operators are still able to validate their Lawful Interception environment completely.

The LIMA Élite solution consists of a LIMA Élite Management Tool and a LIMA Élite Target Simulator. A LIMA Élite Target Simulator can handle up to 12 network operators e.g. 12 operators each with a 2G, 3G and 4G network.

## LIMA Elite Management Tool

LIMA Élite comes with an intuitive web-based management tool. This user friendly application provides a clear dashboard with real-time status of the LI environment. Various configuration options give the user full control of the operation of the LIMA Élite solution. For example, new validation actions can be defined and activated within seconds.

LIMA Elite

Dashboard

Reports

Alarms

Config Actions

Config Stats

Settings

Audit

Download

Logout

Dashboard

CURRENT FLOW STATUS

Flow number: 21  
Start time: Tue Nov 05 09:42:06 CET 2019  
End time: Tue Nov 05 09:42:12 CET 2019  
Flow execution status: ●  
Validation time:  
Validation result: ○  
Next run: Tue Nov 05 09:47:12 CET 2019

CURRENT FLOW REQUESTS

Type	Sim	Tech	ID	Start Time	End Time	Status	Validated	Error Code	Error Description
VOICE	KPN Demo	GSM	100171	2019-11-05 09:42:09	2019-11-05 09:42:10	<span>●</span>	<span>●</span>		
VOICE	VF-NL De...	UM...	100172	2019-11-05 09:42:10	2019-11-05 09:42:11	<span>●</span>	<span>●</span>		
VOICE	VF-NL De...	GSM	100173	2019-11-05 09:42:11	2019-11-05 09:42:11	<span>●</span>	<span>●</span>		
SMS	KPN Demo	GSM	100174	2019-11-05 09:42:11	2019-11-05 09:42:11	<span>●</span>	<span>●</span>		
SMS	VF-NL De...	LTE	100175	2019-11-05 09:42:11	2019-11-05 09:42:11	<span>●</span>	<span>●</span>		
DATA	KPN Demo	GSM	100176	2019-11-05 09:42:11	2019-11-05 09:42:11	<span>●</span>	<span>●</span>		
DATA	VF-NL De...	UM...	100177	2019-11-05 09:42:12	2019-11-05 09:42:12	<span>●</span>	<span>●</span>		
SMS	KPN Demo	GSM	100178	2019-11-05 09:42:12	2019-11-05 09:42:12	<span>●</span>	<span>●</span>		
VOICE	VF-NL De...	UM...	100179	2019-11-05 09:42:12	2019-11-05 09:42:12	<span>●</span>	<span>●</span>		

LAST 5 FLOW RESULTS

Execute ID	Start Time	End Time	Status	Validated Time	Validation Result
21	2019-11-05 09:42:06	2019-11-05 09:42:12	<span>●</span>		<span>○</span>
20	2019-11-01 15:48:15	2019-11-01 15:48:15	<span>●</span>	2019-11-01 15:48:55	<span>●</span>
19	2019-11-01 15:43:14	2019-11-01 15:43:15	<span>●</span>	2019-11-01 15:43:54	<span>●</span>
18	2019-11-01 15:38:14	2019-11-01 15:38:14	<span>●</span>	2019-11-01 15:38:53	<span>●</span>
17	2019-11-01 15:33:12	2019-11-01 15:33:14	<span>●</span>	2019-11-01 15:35:52	<span>●</span>

LAST ALARMS

Execute ID	Time	Code	Alarm
	2019-11-01 14:16:57	201	Incomplete configuration
	2019-04-09 09:18:00	201	Incomplete configuration

### KEY FEATURES

Network & technology independent.  
Works with 2G, 3G, 4G networks of all NE vendors

LEMF independent and integrates with any LEMF System

LI Environment independent and integrates with any LI mediation system;  
Voice calls, SMS and mobile data transfers interceptions

Supports validation of Metadata and Content interceptio. HI2 and HI3 streams

Test LEMF. Playback of call content/audio, view decoded IRI messages and view SMS messages

### TECHNICAL SPECIFICATIONS

**LIMA Élite Target Simulator**  
Supports networks [2G, 3G & 4G] of up to 12 operators

Supported bands: FDD LTE: B1/B3/B5/B7/B8/B20  
UMTS: B5/B8/B1 [850/900/2100MHz]  
GSM: 850/900/1800/1900MHz

**LIMA Élite Management Tool**  
Operating system: CentOS 7.x or Red Hat 7.x

User friendly web-based GUI for configuration purposes

Comprehensive logging and auditing

Alerting via e-mail, SNMP, Nagios

Supports virtual and bare metal deployments

## OUR COMPLIANCE SOLUTIONS



### LIMA COMPLIANCE PORTFOLIO

Comprehensive solutions for service providers, enterprises, law enforcement, and intelligence agencies.

- LIMA Lawful Intercept
  - Warrant Management
  - Provisioning and Mediation
  - Location enrichment
  - Passive and active IP interception
  - E-mail monitors
  - VoIP monitors
  - Mobile data monitors
  - Workflow support
- LIMA Data Retention
  - LIMA Disclosure Management
  - LIMA Data Retention store
  - Workflow support
- LIMA Élite
  - Lawful Interception End 2 End validation
  - Test LEMF functionality

### LIMA NETWORK MANAGEMENT AND SENSING PORTFOLIO

For more information about Group 2000's Network Management and Sensing solutions, please visit [www.group2000.com](http://www.group2000.com).

## ARCHITECTS IN SAFETY AND INTELLIGENCE

### WHY GROUP 2000?

- Group 2000 is an independent global solutions provider of interception and intelligence solutions
- Group 2000 delivers and preserves essential and reliable interception knowledge
- Group 2000 has global experience in the public and telecommunication domain
- Group 2000 minimizes complexity, delivering end to end solutions
- Group 2000 has technology partnerships with leading suppliers
- Group 2000 is an active member of ETSI
- Group 2000 LIMA solutions are modular and scalable to support the largest networks