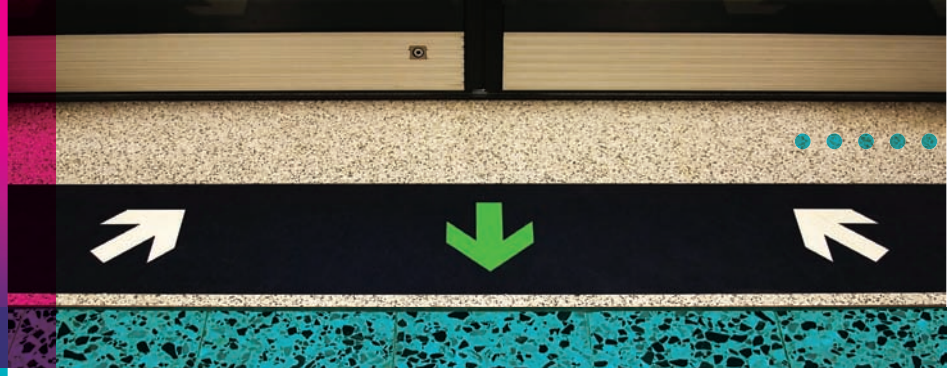
Alcatel-Lucent 1357 ULIS
Unified Lawful Interception Suite

The Alcatel-Lucent 1357 ULIS adds lawful-interception functions to Alcatel-Lucent products, adapting their internal interfaces to the standard lawful-interception interfaces of Law-Enforcement Agency monitoring facilities.



Address lawful-interception requirements

Lawful interception of telecommunications is a capability that allows authorized organizations or Law Enforcement Agencies (LEAs) to detect and intercept the use of telecommunications facilities by criminal or terrorist organizations.

All telecommunications operators are obliged to comply with government regulations to enable the interception of any type of call, and most countries have adopted global lawful-interception requirements and standards.

However, with the convergence of voice and data and the rapid transformation of operator networks to IP, the lawful interception of voice and data communications is becoming increasingly challenging for both service providers and LEAs.

In addition, most current solutions are fragmented and therefore do not provide a complete lawful-interception capability across all networking domains, functions and interfaces.

Further complicating the issue, government authorities/LEAs and network operators have different objectives, activities, constraints and liabilities and require different systems and approaches for lawful interception.

Government authorities/LEAs require turnkey solutions that adhere to relevant standards and operating procedures. They are not concerned with the underlying network topologies that are in a state of constant evolution.

For network operators, lawful interception is non-core business. They therefore require systems that can be installed and maintained with minimal cost and with no impact to the performance or reliability of their existing networks and services.

At the same time, lawful interception requires very close cooperation between government authorities/LEAs and network operators.

Alcatel-Lucent addresses the needs of government authorities/LEAs and network operators with the Alcatel-Lucent 1357 Unified Lawful Interception Suite (ULIS).

Apply a comprehensive solution

The Alcatel-Lucent 1357 ULIS is a complete communications-interception solution. It provides government authorities/LEAs and network operators with an integrated system for transparently intercepting and extracting real-time information from vast amounts of voice, data and multimedia communications over virtually any type of network.

With the ability to intercept any type of communications traffic and to monitor selected subscribers in real time, the Alcatel-Lucent 1357 ULIS provides LEAs with:

- **Intercept-Related Information (IRI)** – The signaling information that provides the source and destination of a call, as well as supplementary data such as date/time of the event and the interception reference. The information can also convey intercepted Short Message Service (SMS), user-to-user service content, and Session Initiation Protocol (SIP) messages.
- **Content of communication (CC)** – Includes voice, fax, data, video or message content carried on a speech channel, or information exchanged on a high-speed Internet access link.

The interception system is not detectable by the parties involved in an intercepted communication, and it does not affect the basic and supplementary services of intercepted subscribers.

The Alcatel-Lucent 1357 ULIS is the lawful-interception solution for the following products:

CLASSIC FIXED AND MOBILE

Alcatel-Lucent 1000 E10
Alcatel-Lucent 1000 S12
Alcatel-Lucent 5ESS
Alcatel-Lucent 1000 MSC-E10

NEXT-GENERATION NETWORK (NGN)/IP MULTIMEDIA SUBSYSTEM (IMS) FIXED AND MOBILE

Alcatel-Lucent 5020 MGC-12
Alcatel-Lucent 5060 MGC-10
Alcatel-Lucent 5060 WCS
Alcatel-Lucent 5020 CSC
Alcatel-Lucent 5060 ICS
Alcatel-Lucent 5450 ISC

IP FIXED AND MOBILE

Alcatel-Lucent 7450 ESS and 7750 SR
Alcatel-Lucent 5750 SSC
Alcatel-Lucent 7500 SGSN
Alcatel-Lucent 7604 GGSN

Other network-infrastructure manufacturers' aggregation or edge routers

Choose standalone or turnkey

Three primary elements are required within the public network to achieve lawful interception:

- **Internal Intercept Function (IIF)** – Located within the network nodes. The IIF is responsible for generating the IRI and CC.
- **Mediation function** – Clearly delineates the public network from law-enforcement monitoring facilities (LEMFs). The mediation function communicates with the IIF using internal network interfaces (INIs), which can be proprietary. It also communicates with one or more LEMFs through locally standardized Handover Interfaces (HI2 and HI3).
- **Administration function** – Manages orders for interception in the public network. It serves interception orders, delivers the data and content to the LEA, and communicates with the internal IIF and mediation function through an INI.

These elements must feed into an LEMF, which records and processes intercepted calls on the LEA side.

As a standalone offering, the Alcatel-Lucent 1357 ULIS performs the interception-mediation function between an operator's network and LEAs. Interception mediation is required to translate internal IRI/call content to the standard external formats required by the LEMF. The Alcatel-Lucent 1357 ULIS is compliant with lawful-interception standards worldwide. Moreover, when the IIF is not available in IP network nodes, the Alcatel-Lucent 1357 ULIS can generate the IRI and CC.

The Alcatel-Lucent 1357 ULIS can also be part of a turnkey lawful-interception solution designed to provide umbrella management. Umbrella management is used for multivendor mediation functions and allows a network operator or LEA to centralize lawful-interception management. This approach can be used by a government that requires umbrella management of all telecommunications operators within a country or by a large telecommunications operator that requires centralized management of all infrastructure and equipment, as well as third-party LEMFs and monitoring centers.

Integrate end-to-end components

The Alcatel-Lucent 1357 ULIS system has three main components, shown in Figure 1 and in the generalized lawful-interception architecture in Figure 2:

- Unique Interception Management Center (IMC), which handles the lawful-interception administration function and:
  - ¬ Centralizes the management of all lawful-interception orders, particularly warrant activation/deactivation using the internal GUI or external access on the HI1 interface
  - ¬ Concentrates all IRI received from the Lawful Interception Gateways (LIGs) and transmits it to the LEMF using the HI2 interface
  - ¬ Provides single management across all network domains

To improve the total availability rate, the IMC can be provided in a high-availability configuration.

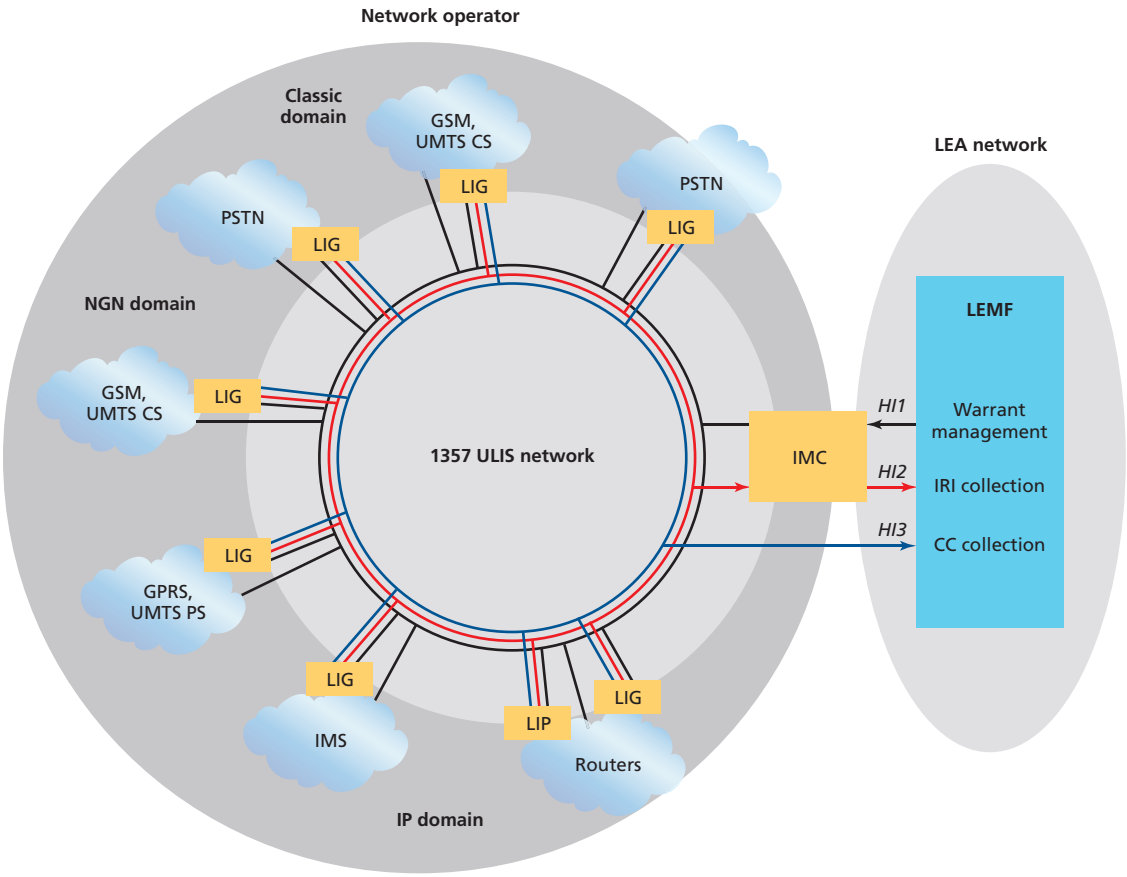
The Alcatel-Lucent 1357 ULIS offers standard Handover Interfaces (HI1, HI2 and HI3) toward the LEA/LEMF, according to:

- ↔ Third-Generation Partnership Project (3GPP) specifications 33.106, 33.107, 33.108
- ↔ ETSI ES 201 671
- ↔ ETSI TS 102 232-1, 102 232-3, 102 232-4, 102 232-5, 102-232-6
- ↔ ATIS (CALEA) T1.678
- ↔ System of Operative Investigative Activities (SORM) standard, and several Chinese interfaces

The Alcatel-Lucent 1357 ULIS adapts the internal interfaces of Alcatel-Lucent products to international standards on the LEMF side.

Other standards can be adapted on request.

Figure 1. The Alcatel-Lucent 1357 ULIS in fixed and mobile networks



- **Distributed LIGs**
  - ¬ Manage IRI and CC mediation functions
  - ¬ Generate and deliver IRI and CC according to the network topology of the LEMF or monitoring centers

The number of LIGs depends on the network size and the targeted traffic flows.

Depending on the CC delivery type toward the LEMF or monitoring center, the LIG architecture can be Circuit Switched (LIG-CS) or IP-based (LIG-IP).

To improve the total availability rate, the LIG-IP can be provided in an automatic-redundancy configuration.

- **Distributed Lawful Interception Probes (LIPs)**
  - ¬ Used when no IIF is present in a service-provider core network
  - ¬ Can handle IRI and/or CC network internal functions

The number of LIPs depends on the network size and the targeted traffic flows.

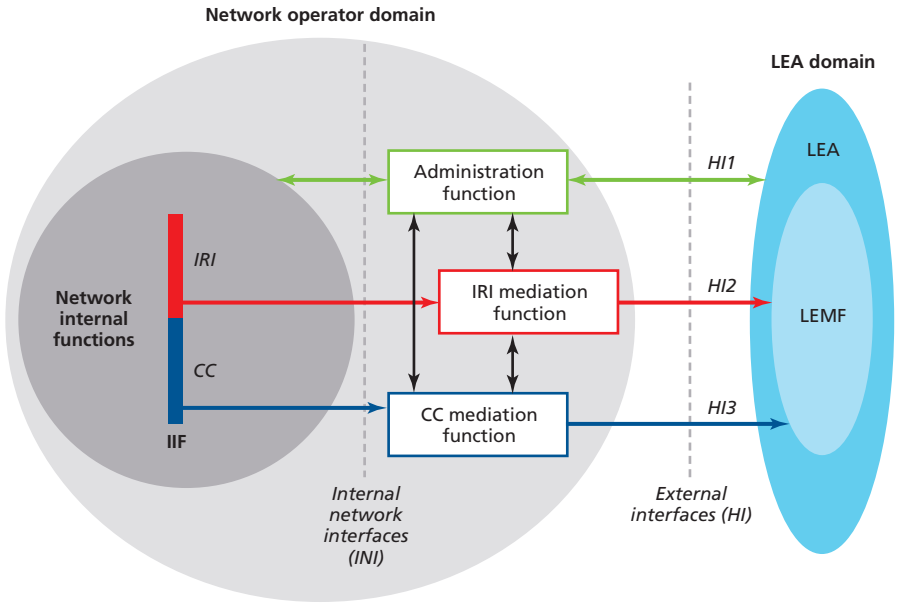
Intercepted communications are recorded and processed by the LEMF. If the LEMF is not an Alcatel-Lucent product, Alcatel-Lucent can provide it as part of a complete integrated solution.

Transmission of intercepted call content from the LIG-CS to the LEMF is generally done over the telephone network. The LIG-CS establishes the call over a Primary Rate Access (PRA) or ISDN (Integrated Services Digital Network) User Part (ISUP) interface (HI3). In a packet scenario (General Packet Radio Service [GPRS], Universal Mobile Telecommunications System [UMTS] Packet Switched [PS], IP, or IMS/Telecommunications and Internet Converged Services and Protocols for Advanced Networking [TISPAN]), the links between the LIG-IP and the LEMF occur over an IP network.

Transmission of IRI from the IMC to the LEMF uses an existing or dedicated data network over an HI2 interface. An optional HI1 interface gives external terminals access to the IMC. This interface allows LEA operators to activate/deactivate interception on a target but not to manage the interception network: they may not manage LEAs or interception areas or create an LEMF.

This option is useful for avoiding the double-keying of intercept data by operators in the IMC and LEMF.

Figure 2. The Alcatel-Lucent 1357 ULIS in an ETSI/3GPP network



LEVERAGE A FIELD-PROVEN SOLUTION

The Alcatel-Lucent 1357 ULIS has been deployed in more than 70 countries worldwide. It is a field-proven and tested system, compatible with the products of the main LEMF providers.

With this system, service providers and government authorities/LEAs can create a clear partition between the world of telecommunications operations and the world of law and justice. The Alcatel-Lucent 1357 ULIS protects the interests of both parties. It does not allow telecommunications operators to see the data and commands of LEA operators, and it does not allow LEA operators to interfere with network operations, administration and maintenance.

The Alcatel-Lucent 1357 ULIS is a flexible solution for lawful interception that allows mediation of a variety of evolving interfaces on all network elements with standard LEA interfaces. Similarly, the Alcatel-Lucent 1357 ULIS minimizes the impact on network elements when standards change.

The Alcatel-Lucent 1357 ULIS is scalable from one LIG to tens of LIGs, with one IMC managing several different networks when required. The Alcatel-Lucent 1357 ULIS permits up to 16 LEAs to share the same IMC and to monitor the same targets independently.

Partner with Alcatel-Lucent

With the Alcatel-Lucent 1357 ULIS, service providers and LEAs benefit from the experience and expertise Alcatel-Lucent has developed in all areas of telecommunications. Alcatel-Lucent has set the pace for change in communications networking technologies. We continue to innovate by combining what is possible in science and technology with what is required by the markets.

With one of the largest global research and development (R&D) capabilities in the communications industry, as well as our renowned Alcatel-Lucent Bell Labs and Research & Innovation research communities, we help bring customers to the forefront of technical innovation every day.

Through our research facilities in 14 different countries, we have invested more than 3.6 billion United States dollars in R&D and have secured more than 25,000 patents. In addition, the celebrated Bell Labs' record for innovation is unmatched and includes the development of transformational technologies such as the transistor, laser, solar cell, high-definition television (HDTV), and remote laptop-security solutions (even when a laptop is turned off).

No other vendor in the industry can match this depth and record of research and innovation. Beyond research, Alcatel-Lucent recognizes that it takes the right combination of customer services, applications and infrastructure to successfully apply technical innovations that enable new business models that improve customer relationships, increase employee productivity, and are more adaptive to changing markets.

As a proven telecommunications partner, we bring extensive experience in delivering large, multivendor, multitechnology solutions to organizations around the globe.

The Alcatel-Lucent Professional Services team is the most experienced and knowledgeable services partner in the industry, supporting the top 30 service providers as well as enterprise and government customers in over 130 countries.

Our Operations Support System/Business Support System (OSS/BSS) integration solutions, professional-services expertise and proven capabilities cover multiple areas, including consulting, end-to-end solution design and integration, deployment, migration, program management, and operations support services that encompass the entire network and service life cycle.

Alcatel·Lucent