



Application Note

## LIMS Gateway Use Cases

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# 1 Using Media Gateways in LI Environments

Voice over IP (VoIP) has been around for many years and is expected to have a bright future in modern wireline and wireless telecom networks. Many new communications services build on all-IP networks and facilitate a new way of integrated voice and data communication. But ... good old telephone networks and traditional circuit switches are here to stay. Realistically, legacy network equipment and devices will not be replaced in all cases, or will continue to offer a level of reliability and availability that is hard to achieve in pure VoIP networks. There are many use cases where gateways are deployed for converting signaling and media, thus combining the best of both worlds, circuit-switched and packet-switched.

This application note describes several use cases where specialized media gateways – Utimaco LIMS Gateway – are employed for lawful interception purposes.

## 1.1 VoIP to TDM

This use case shows a scenario where a VoIP service (e.g. VoLTE) is monitored, but the monitoring facilities of the authorized law enforcement agency (LEA) expect intercepted calls and faxes to be delivered over ISDN lines. This is a common requirement by LEAs that have built their monitoring system on legacy networks and circuit-switched services such as PSTN or GSM. Changing the monitoring center for each kind of VoIP service is seen by many as complex, time-consuming and involving costly software and hardware upgrades. A simple and straight-forward approach is to use a media gateway.

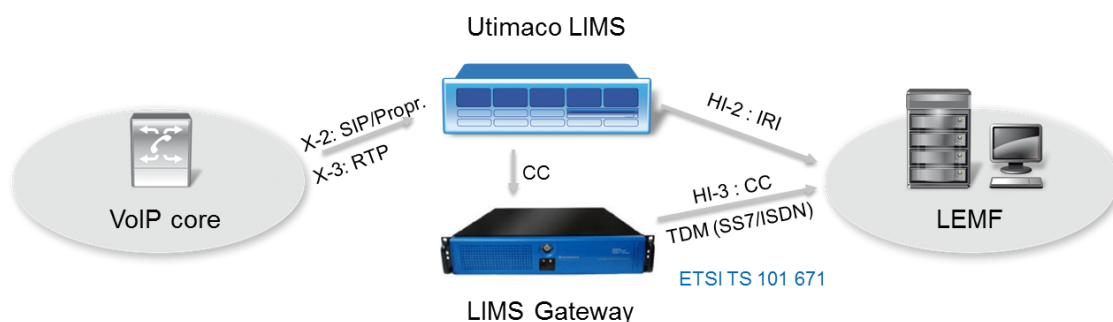


Figure 1) VoIP to TDM Mediation

The LIMS Gateway together with the Utimaco LIMS mediate all intercepted VoIP calls in near real-time and in compliance with common handover standards for TDM delivery; i.e. over E1/T1 trunks. Some VoIP networks may use proprietary formats and protocols for intercepted signaling and media. LIMS mediates all such calls and data in accordance with the appropriate HI standards. VoIP signaling events are mapped to the appropriate signaling messages in the TDM network, and combined with correlation information as required.

## 1.2 TDM to VoIP

In another common use case, calls are intercepted in a circuit-switched network, but the LEA expect them to be delivered over IP links; e.g. because IP links are more cost-efficient and/or provide more capacity than available E1/T1 trunks. The LIMS gateway can be used to terminate intercepted CS calls and for conversion to VoIP. The LIMS Mediation Device then mediates all calls and signaling in compliance with the appropriate HI standard, in this case ETSI 102 232-6 (Lawful Interception (LI); Handover Interface and Service-Specific Details (SSD) for IP delivery; Part 6: Service-specific details for PSTN/ISDN services).

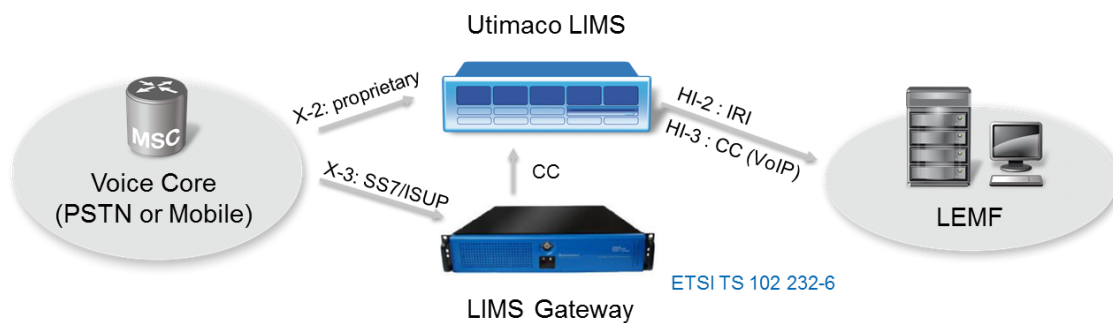


Figure 2) TDM to VoIP Mediation

## 1.3 TDM to TDM

There are even applications where mediation between two circuit-switched networks is required. For instance, some PSTN switches cannot intercept calls and faxes per target number but instead mirror *all* calls to one LIMS Gateway. The LIMS Gateway filters all calls and delivers only those calls related to a targeted phone number. Signaling data is mediated in accordance with the appropriate HI standard and can be correlated to the respective call content.

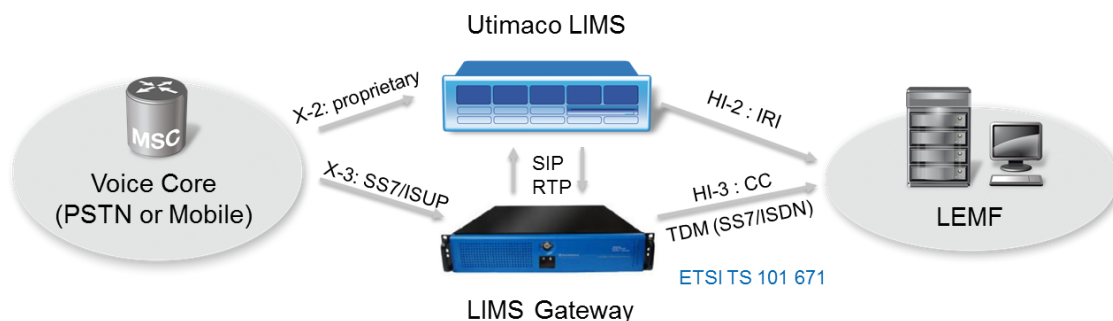


Figure 3) TDM to TDM Mediation

### 1.4 VoIP transcoding

Some VoIP services extend over various different networks and can be accessed by different phones with a variety of speech codecs. This is a challenge for industry-standard monitoring centers, which, as a rule, only support a small range of VoIP codecs. The LIMS Gateway can be used to transcode all intercepted calls on-the-fly and provide just one codec on the handover interface. For this purpose the gateway is closely integrated in the LIMS mediation system.

Realtime transcoding at the LIMS system obviously relieves the LEA from costly hardware or software upgrades. At the same time transcoding can be combined with call buffering, which is described in the following paragraph.

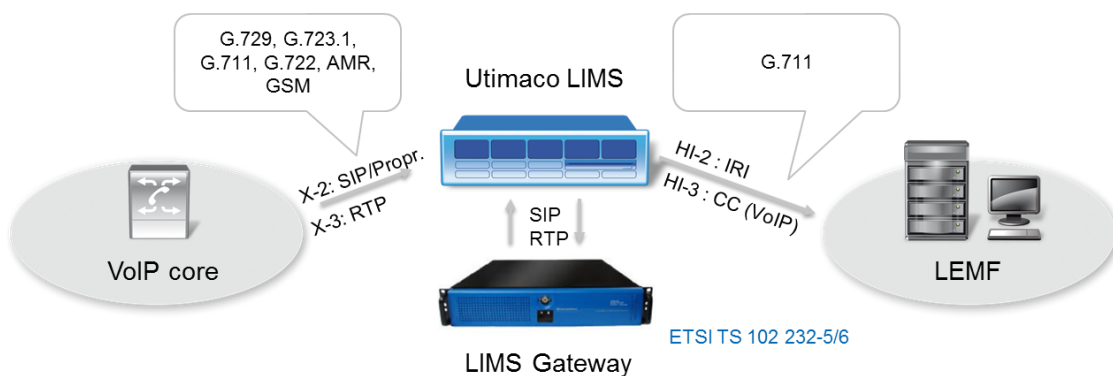


Figure 4) VoIP Transcoding

### 1.5 Call Buffering

Buffering of intercepted calls is mandated in several countries in order to enhance the resilience of the monitoring system against failures and lost calls. Buffering can be enabled on the LIMS mediation device and is virtually only limited by the storage capacity available. However, buffering requires all intercepted calls and data to be available in IP format. Thus a LIMS Gateway is required for converting circuit-switched services to IP before they can be mediated and buffered.

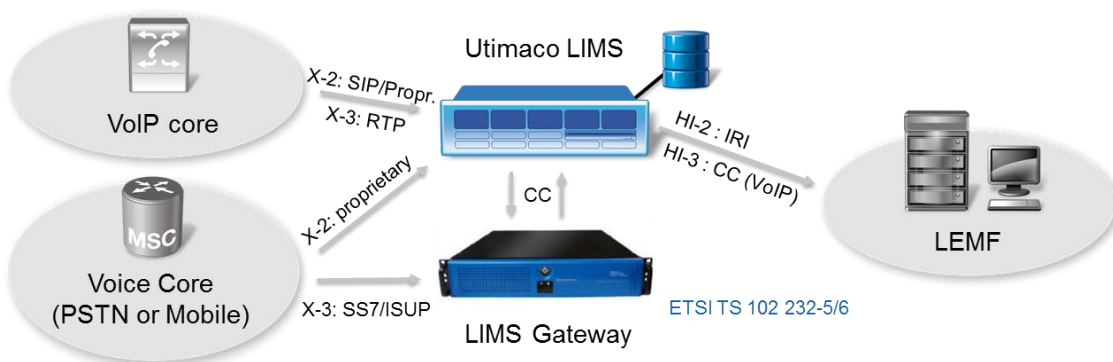


Figure 5) Call Buffering

We actually believe that there are many more applications and network configurations where the LIMS Gateway can help to reduce costs for compliance and remove barriers between traditional telephone networks and the IP world. In particular with regard to modern converged voice and data services, we see a growing need for specialized gateways to facilitate smooth network transition and interoperability between devices.

Interested in learning more about the Utimaco LIMS Gateway? Then visit [www.utimaco.com](http://www.utimaco.com) or contact your local Utimaco representative for a review of your own use case and technical requirements.

## 2 Glossary and Abbreviations

3GPP	The 3rd Generation Partnership Project (3GPP) is a co-operation between <a href="#">ETSI</a> (Europe), <a href="#">ARIB/TTC</a> (Japan), <a href="#">CCSA</a> (China), <a href="#">ATIS</a> (North America), and TTA ( <a href="#">South Korea</a> ). <a href="http://www.3gpp.org">www.3gpp.org</a>
AAA	Authentication, Authorization, Accounting
ANSI	American National Standards Institute. <a href="http://www.ansi.org">www.ansi.org</a>
CALEA	Communications Assistance for Law Enforcement Act (CALEA), U.S. Law
CC	Communication Content
CS	Circuit-Switched
ETSI	European Telecommunications Standards Institute (ETSI). <a href="http://www.etsi.org">www.etsi.org</a>
IAP	Interception Access Point, point in the network where the interception takes place
IRI	Interception-Related Information, the metadata related to a communication service, e.g., call detail records, call set-up time, caller-id, e-mail address
ISDN	Integrated Services Digital Network
MC	Monitoring Center
LEMF	Lawful Enforcement Monitoring Facility
LI	Lawful Interception
LIMS	Lawful Interception Management System
MSC	Mobile Switching Center, part of a GSM network
SGSN	Serving GPRS Support Node, part of a GSM network
TDM	Time-Division Multiplexing
UMTS	Universal Mobile Telecommunications System (UMTS) is one of the third-generation ( <a href="#">3G</a> ) <a href="#">mobile phone</a> technologies
VoIP	Voice over IP

### 3 About Utimaco

Since 1994 Utimaco has been developing lawful interception and data retention systems for telecom operators and Internet service providers. Utimaco's carrier-grade systems enable real-time monitoring and long-term data retention in public telecommunication networks. The systems interface with essentially all common network technologies and communications services. Utimaco is the preferred partner of many of the world's leading network equipment vendors. With around 250 installations in over 80 countries, Utimaco is a leading global supplier in the Lawful Interception and Data Retention market. Utimaco participates in LI standardization and supports international standardization institutes and industry associations, such as, ETSI, 3GPP, ANSI/ATIS, and Bitkom.

Customers and partners value the reliability and long-term investment security of the Utimaco security solutions. Utimaco stands for recognized product quality, user-friendly software, excellent support, and products that effectively meet market requirements.

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