COMVERSE INFOSYS

# *STAR-GATE*™

**Annex: Intercepting PacketCable**

**Compliance with CALEA and ETSI Delivery and Administration Standards.**

***In this document…***

**USA**
Tel: +1-703-818-2130
Fax: +1-703-818-2131
E-mail: marketing.citi@cominfosys.com

**Israel**
Tel: +972-3-766-4119
Fax: +972-3-766-4747
E-mail: marketing@icominfosys.com

*http://www.cominfosys.com*

# Introducing *STAR-GATE*™ Enhancements for Packet Cable Networks

## Overview

Legalization of Internet surveillance is taking place worldwide, and operators of Internet Protocol (IP) networks will soon be required to provide communication interception services for law enforcement agencies. Networks falling under the new requirements include:

◆ GPRS networks

◆  UMTS packet data

◆ ISPs

◆ CDMA 1XRTT

◆ VoIP

◆ Packet Cable telephony

The requirements of IP networks are similar to those of circuit switched operators: to intercept all communications of users who have been targeted by law enforcement agencies. The implementation, however, is quite different.

The ability to intercept various forms of Internet media presents great legal and technological challenges.

Comverse Infosys, a pioneer and leader in the development of Lawful Interception (LI) products, is proud to present the solution to the challenge: STAR-GATE for PacketCable

The following diagram illustrates STAR-GATE's architecture:
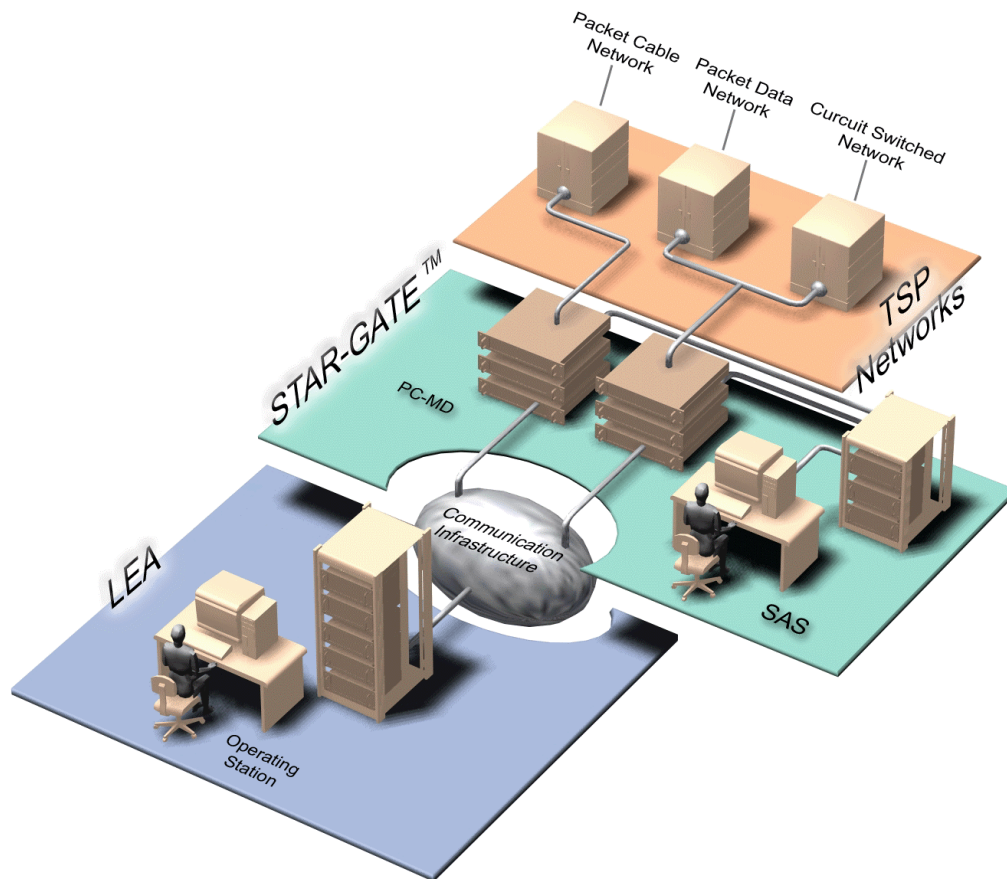


STAR-GATE provides a turnkey solution for telecom network operators.  The solution is based on the following components:

| | |
|---|---|
| **Surveillance Administration Subsystem (SAS)** | Provides administrative functions to both circuit switched and packet data networks. |
| **Mediation Device (MD)** | Designed for circuit switched, Packet data and Packet Cable environments, it receives the intercepted data from the various networks access points and delivers it to predefined  Law Enforcement Agencies (LEAs) sites. |

The Mediation Device performs all functions necessary to acquire and deliver intercepted communications to the appropriate law enforcement agency accurately, securely and in compliance with the law. Its basic tasks include:

◆ **Collecting** intercepted data from the network provider.

◆ **Converting** messages into the required LI-standard format.

◆ **Delivering** intercepted communications to the appropriate law enforcement agency.

# Comprehensive Solution

Unifying the access and delivery of communication surveillance into a single product, STAR-GATE offers a comprehensive product that serves all functional needs, and provides the following advantages:

◆ **Wide Range of Protocols:** STAR-GATE provides full support for various protocols for communication content and intercept-related information. Regardless of the protocols used by the network provider and the law enforcement agency, STAR-GATE translates intercepted data into the LI-standard format and delivers it to the appropriate agency.

◆ **Wide range of technologies:** STAR-GATE is specifically designed to accommodate LI standards for mobile packet data networks such as **GPRS for GSM & TDMA, 1XRTT for CDMA, EDGE**. In addition, the product provides an excellent LI solution for fixed packet data networks such as **Internet Service Provider** backbones and **Packet Cable**. STAR-GATE supports various ISP LAN technologies like Ethernet Half and Full Duplex, Fast Ethernet Half and Full Duplex, and FDDI.

◆ **Multiple nodes:** Each STAR-GATE Mediation Device (MD) can be connected to several different types of network provider's nodes concurrently. Multi-node support reduces initial setup costs and simplifies deployment by offering capacity management. The enhanced capacity can be deployed efficiently in a regional framework that adheres to the published configuration guidelines.

◆ **Multicasting:** The MD can deliver intercepted call data and contents to different law enforcement agencies simultaneously, supporting a different delivery protocol per agency, if necessary.

# Functional Description

This section provides an overview of STAR-GATE for Packet Cable operations and describes the following subjects:

❖ Communication monitoring components

❖ Data flow

❖ Main features

## Communication Monitoring Components

The process of monitoring communications consists of three primary stages: access, delivery and collection/processing.

STAR-GATE performs the delivery function using the following product:

**Delivery:** Collecting the Intercepted communication contents and related information arriving from the network provided Access nodes and distribute them to the monitoring centers of the Law Enforcement Agencies. These functions  performed by STAR-GATE using a Mediation Device.

**Administration**: All administrative operations are performed by the STAR-GATE Surveillance Administration Subsystem (SAS).

The following logical block diagram illustrates the STAR-GATE configuration, consists of a SAS and Mediation Device integrated with the Network Access nodes and the Law enforcement agency equipment
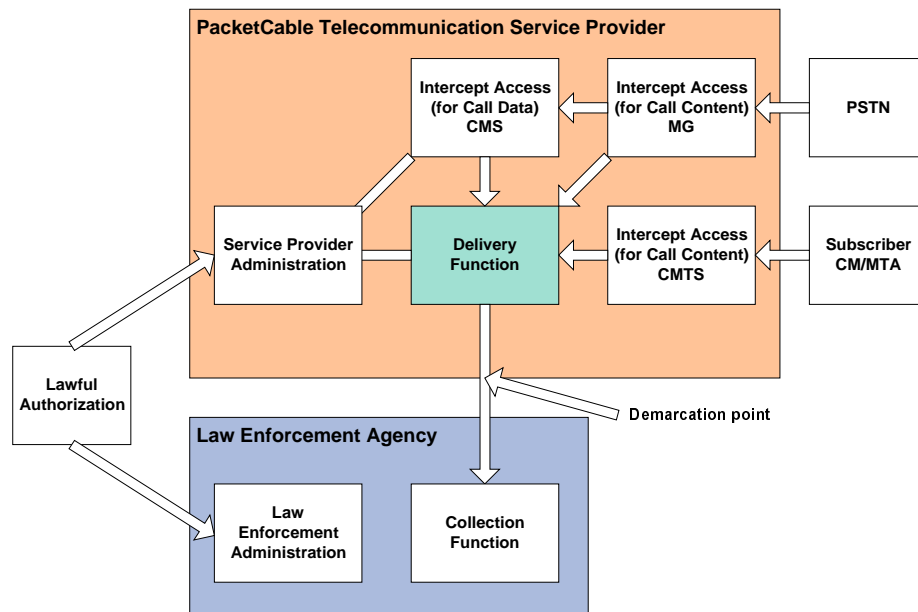


# Data Flow

## Access

The Access Device performs the following functions:

**1  Acquiring:** The Access function resides at the Service provider's relevant nodes and intercepts all targeted subscriber transactions.

**2  Filtering:** The Access function filters the data communicated to or from targeted subscribers. Data is intercepted according to the defined interception criteria, which depend on the network type. For example, in a GPRS network, the interception criterion is IMSI. In an ISP network, it can be the IP address, TCP port or e-mail address, for both source and destination. , For Packet Cable it is the Telephone number.

**3  Forwarding:** The Access function forwards the target's intercepted packets to the MD for further processing and delivery to the LEA's monitoring centers.

## Delivery

STAR-GATE's Mediation Device mediates between the network provider, the law enforcement agency and the Surveillance Administration Subsystem (SAS), and performs the following functions:

**1 Network Interfacing:** The Mediation Device receives intercepted information from the relevant network nods. The information is collected by the Mediation Device and can include both communication content and data.

**2 Conversion:** The Mediation Device converts the collected data format into the requisite LI-standard format.

**3 Delivery:** The Mediation Device delivers the data directly to the appropriate law enforcement agency. Data is sent via LAN to the site router and from there to the collection function located at the law enforcement agency site. There are two communication delivery options: such as GTP* FTP. The Mediation Device can buffer files using mass memory or RAM disk, or use stream buffers for very rapid delivery, depending on the recipient's needs.

**4 Target Provisioning:** The Mediation Device receives administrative data from the STAR-GATE's Surveillance Administration Subsystem and distribute it to the appropriate network nodes.

## Buffering option

STAR-GATE offers a completely secure solution and ensures that no data is lost due to communication failures. To this end, the Mediation Device operates according to a store and forward principle, and a recovery mechanism identifies communication failures and recurringly attempts to reestablish the communication connection and to complete unsuccessful delivery missions.

# Technical Solutions

This section provides an overview of STAR-GATE's technical solutions for packet data networks, and describes the following options:
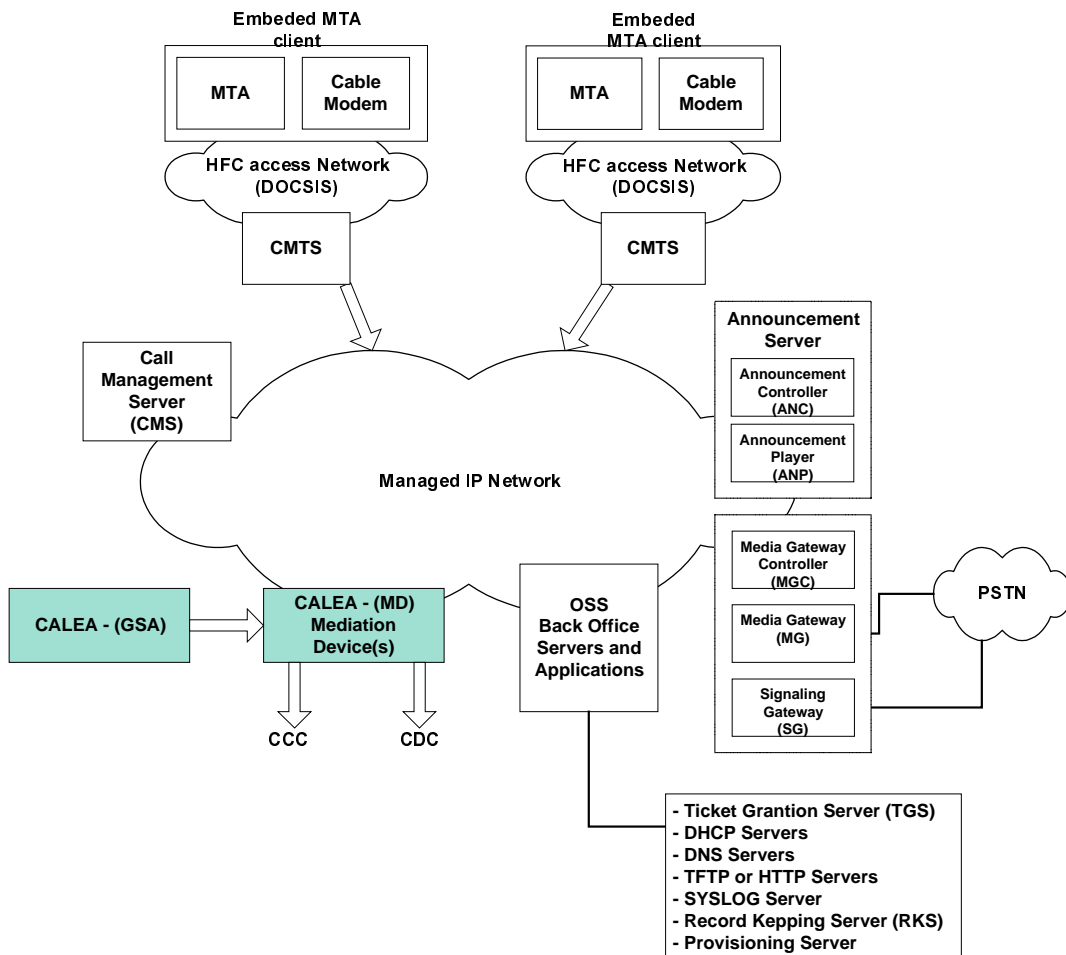
◆ Switch based delivery solution

◆ GPRS access and delivery solution

◆ ISP access and delivery solution

## Network Based Delivery Solution

This section describes a typical switch based solution and presents the following items:

◆ System Architecture

◆ Functionality

◆ Capacity

# System Architecture

The configuration for PacketCable is similar to the generic STAR-GATE solution for circuit switched and Packet Data networks. Communication is accessed via the network infrastructure equipment, therefore, this solution requires that a dedicated access feature be installed in the service node.

The service node provides both Communication Contents and Intercept Related Information to STAR-GATE's Mediation Device.

STAR-GATE's Mediation Device interfaces between the packet Cable network nodes and the LEA monitoring centers. It collects the Interception Related Information and Communication Content from the associated service nodes, converts them into the required format and delivers the outputs to the monitoring centers defined for the particular target.

## Functionality

The PacketCable STAR-GATE solution supports the following access and delivery abilities:

❖ **Interception Criteria**: Telephone Number

❖ **Intercepted Traffic**: All internal network traffic Provided by the access function in the service nodes.

❖ **CRI** : Depending on Node capability the Mediation Devices provides all specified LI standard events.

❖ **Target Provisioning to Service Nodes**: Forwarding of target provisioning requests from the Surveillance Administration Subsystem (SAS) to the Service Nodes.

❖ **Target Synchronization**: Synchronization of the Call Management Server (CMS) target list and the targets list in SAS database.

## Capacity

❖ Number of targets: 4000

❖ Number of MCs: 50

❖ Number of simultaneously attached targets: 200

❖ Maximum  traffic throughput : 5 Mbps (In and out)

❖ Number of simultaneous active sessions: 100 (assuming average session throughput of 50kbps)