

# Keysight Technologies

## Network Monitoring

## Content Intercept Manager

Enabling Lawful Intercept agencies  
to keep pace with evolving cellular networks

Data Sheet

CIM is a flexible tool allowing precise  
and secure lawful interception in both  
tactical and sustained deployments

## Overview

Intercept agencies face the extreme challenge of maintaining effective operations in a constantly changing telecommunications technology landscape.

In mobile communications GSM remains the dominant technology with approximately 66% of the world's mobile subscribers. The vast majority of GSM network operators have evolved their networks by introducing UMTS, HSPA and LTE access. While GSM is the dominant technology CDMA remains an important technology and with the advent of LTE CDMA operators at last have a route to high speed data services. As of Fall 2013 there are 406 telecoms operators in 123 countries who have committed to commercial LTE network deployments or are engaged on trials, technology testing or studies, with 213 commercial networks live around the world. These networks are delivering services to over 63 million subscribers around the globe. Keysight Technologies, Inc. has evolved with the networks and is in a position to ensure that those with the legal right to monitor communications can maintain effective operations in the new and legacy domains.

Content Intercept Manager (CIM) is part of Keysight's powerful portfolio of Network Monitoring solutions targeted at the global security and safety market. CIM allows personnel to quickly and easily intercept cellular communications based upon pre-defined and legal targeting information. The solution is based upon high density passive probes and is totally independent of the telecoms network elements. It handles a high volume of call intercepts and supports many complex combination of call filters. Configuration and operation has been designed to be fast, flexible and productive, with automatic discovery of all relevant control and user plane information plus an easy-to-use graphical interface for creating, viewing and editing points of interest.

## Easy targeting, usage and system set-up

The CIM solution reconstructs and records voice, SMS (text), Fax, DTMF (inband tones) and mobile data from cellular networks. It can handle a large volume of points of interest – potentially 5000 per system – and supports many complex call filtering scenarios including the actual telephone number (MSISDN), the network number for the subscriber (IMSI), the identity number for the mobile station (IMEI) or calling and called numbers. These filters may be prioritized and updated dynamically.

Cellular networks constantly change their configuration parameters in real-time. CIM automatically discovers the required control and user plane parameters from cellular networks, which means that users need little or no prior network knowledge. Operating the system is also

## Keysight expertise

In common with all Network Monitoring solutions, CIM is totally independent of the network equipment vendor and does not interact with network equipment. It leverages Keysight's proven skills and expertise in wireless test to provide tightly-specified intelligence information, cost-effectively, reliably and efficiently. It can be scaled as required for use in passive, single or multi-point access applications.

## Targeting key technologies

In order to be effective CIM must be able to support a wide range of cellular technologies and the key links/interfaces within them as follows:

Cellular technology	Key link/interface
GSM (voice/SMS/Fax)	Abis (uplink and downlink only or both)
GSM (voice/SMS/Fax)	A-interface
UMTS (voice/SMS/Fax)	IuCS
GSM/UMTS (data)	GPRS Gn
CDMA (voice/SMS/Fax)	A1
LTE (data)	S1, S6a

easy and intuitive. A simple graphical user interface helps to visualize the data captured, update and track details of suspects and reprioritize them. Filters for handsets or numbers of interest can be quickly created and dynamically edited, allowing voice communications, SMS and mobile data to be monitored in real time or stored for later analysis. Users listening to calls in real time can be alerted by the system when calls with higher priority start and are given the option to switch between them.

The CIM user interface runs on a standard PC/Laptop and up to ten users may use the system simultaneously. The product scales from tactical point solutions to solutions covering an entire cellular network.

## Real time status screen view UMTS

Real time view and audio playback of active voice and SMS communications

- Listen to target calls in real-time
- Decoded SMS displayed in native language
- Users can quickly and easily customize the screen to show the data most pertinent to their needs
- In addition to providing call view and audio playback in real-time all calls matching target criteria are stored for later analysis and play-back

Content Intercept Manager: root on 10.192.21.70

File Find View Configure Help

Auto-Play ON Audio Initialised

Call Start Time	Call Status	Call Duration	Interface	Media	Called Party Number	Calling Party Number	IMSI	TMSI
2011/04/04 17:20:48.792 BST	Active		Iu interface		201110020		595211100000020	525010BCC01000140
2011/04/04 17:20:44.786 BST	Active		Iu interface		201110019		595211100000019	525010BCC01000130
2011/04/04 17:20:44.163 BST	Active		Iu interface		200110020		595211000000020	525010BCC00900140
2011/04/04 17:20:40.785 BST	Active		Iu interface		201110018		595211100000018	525010BCC01000120
2011/04/04 17:20:40.162 BST	Active		Iu interface		200110019		595211000000019	525010BCC00900130
2011/04/04 17:20:38.506 BST	Active		Iu interface		199110020		595210900000020	525010BCC00800140
2011/04/04 17:20:36.785 BST	Active		Iu interface		201110017		595211100000017	525010BCC01000110
2011/04/04 17:20:36.122 BST	Active		Iu interface		200110018		595211000000018	525010BCC00900120
2011/04/04 17:20:34.505 BST	Active		Iu interface		199110019		595210900000019	525010BCC00800130
2011/04/04 17:20:34.404 BST	Active		Iu interface		198110020		595210800000020	525010BCC00700140
2011/04/04 17:20:32.745 BST	Active		Iu interface		201110016		595211100000016	525010BCC01000100
2011/04/04 17:20:32.121 BST	Active		Iu interface		200110017		595211000000017	525010BCC00900110
2011/04/04 17:20:30.506 BST	Active		Iu interface		199110018		595210900000018	525010BCC00800120
2011/04/04 17:20:30.404 BST	Active		Iu interface		198110019		595210800000019	525010BCC00700130
2011/04/04 17:20:29.174 BST	Active		Iu interface		197110020		595210700000020	525010BCC00600140
2011/04/04 17:20:28.746 BST	Active		Iu interface		201110015		595211100000015	525010BCC010000F0
2011/04/04 17:20:28.121 BST	Active		Iu interface		200110016		595211000000016	525010BCC00900100
2011/04/04 17:20:26.466 BST	Active		Iu interface		199110017		595210900000017	525010BCC00800110
2011/04/04 17:20:26.404 BST	Active		Iu interface		198110018		595210800000018	525010BCC00700120
2011/04/04 17:20:25.174 BST	Completed	00:01:58.510	Iu interface	AUDIO	197110019		595210700000019	525010BCC00600130
2011/04/04 17:20:24.745 BST	Completed	00:01:58.480	Iu interface	AUDIO	201110014		595211100000014	525010BCC010000E0
2011/04/04 17:20:24.123 BST	Completed	00:01:58.473	Iu interface	AUDIO	200110015		595211000000015	525010BCC009000F0
2011/04/04 17:20:22.466 BST	Completed	00:01:58.490	Iu interface	AUDIO	199110016		595210900000016	525010BCC00800100
2011/04/04 17:20:22.405 BST	Completed	00:01:58.461	Iu interface	AUDIO	198110017		595210800000017	525010BCC00700110
2011/04/04 17:20:21.215 BST	Completed	00:01:58.462	Iu interface	AUDIO	197110018		595210700000018	525010BCC00600120
2011/04/04 17:20:20.745 BST	Completed	00:01:58.474	Iu interface	AUDIO	201110013		595211100000013	525010BCC010000D0
2011/04/04 17:20:20.123 BST	Completed	00:01:58.466	Iu interface	AUDIO	200110014		595211000000014	525010BCC009000E0
2011/04/04 17:20:18.466 BST	Completed	00:01:58.484	Iu interface	AUDIO	199110015		595210900000015	525010BCC008000F0
2011/04/04 17:20:18.364 BST	Completed	00:01:58.494	Iu interface	AUDIO	198110016		595210800000016	525010BCC00700100
2011/04/04 17:20:17.135 BST	Completed	00:01:58.535	Iu interface	AUDIO	197110017		595210700000017	525010BCC00600110
2011/04/04 17:20:16.746 BST	Completed	00:01:58.467	Iu interface	AUDIO	201110012		595211100000012	525010BCC010000C0
2011/04/04 17:20:16.122 BST	Completed	00:01:58.460	Iu interface	AUDIO	200110013		595211000000013	525010BCC009000D0
2011/04/04 17:20:14.466 BST	Completed	00:01:58.476	Iu interface	AUDIO	199110014		595210900000014	525010BCC008000E0
2011/04/04 17:20:14.364 BST	Completed	00:01:58.488	Iu interface	AUDIO	198110015		595210800000015	525010BCC007000F0
2011/04/04 17:20:13.134 BST	Completed	00:01:58.528	Iu interface	AUDIO	197110016		595210700000016	525010BCC00600100
2011/04/04 17:20:12.746 BST	Completed	00:01:58.461	Iu interface	AUDIO	201110011		595211100000011	525010BCC010000B0
2011/04/04 17:20:12.082 BST	Completed	00:01:58.493	Iu interface	AUDIO	200110012		595211000000012	525010BCC009000C0
2011/04/04 17:20:10.466 BST	Completed	00:01:58.470	Iu interface	AUDIO	199110013		595210900000013	525010BCC008000D0
2011/04/04 17:20:10.364 BST	Completed	00:01:58.480	Iu interface	AUDIO	198110014		595210800000014	525010BCC007000E0
2011/04/04 17:20:09.175 BST	Completed	00:01:58.481	Iu interface	AUDIO	197110015		595210700000015	525010BCC006000F0
2011/04/04 17:20:08.706 BST	Completed	00:01:58.494	Iu interface	AUDIO	201110010		595211100000010	525010BCC010000A0
2011/04/04 17:20:08.081 BST	Completed	00:01:58.488	Iu interface	AUDIO	200110011		595211000000011	525010BCC009000B0
2011/04/04 17:20:06.466 BST	Completed	00:01:58.463	Iu interface	AUDIO	199110012		595210900000012	525010BCC008000C0
2011/04/04 17:20:06.365 BST	Completed	00:01:58.474	Iu interface	AUDIO	198110013		595210800000013	525010BCC007000D0
2011/04/04 17:20:05.175 BST	Completed	00:01:58.473	Iu interface	AUDIO	197110014		595210700000014	525010BCC006000E0
2011/04/04 17:20:04.706 BST	Completed	00:01:58.485	Iu interface	AUDIO	201110009		595211100000009	525010BCC01000090
2011/04/04 17:20:04.082 BST	Completed	00:01:58.480	Iu interface	AUDIO	200110010		595211000000010	525010BCC009000A0
2011/04/04 17:20:02.426 BST	Completed	00:01:58.496	Iu interface	AUDIO	199110011		595210900000011	525010BCC008000B0
2011/04/04 17:20:02.365 BST	Completed	00:01:58.467	Iu interface	AUDIO	198110012		595210800000012	525010BCC007000C0
2011/04/04 17:20:01.175 BST	Completed	00:01:58.467	Iu interface	AUDIO	197110013		595210700000013	525010BCC006000D0
2011/04/04 17:20:00.705 BST	Completed	00:01:58.479	Iu interface	AUDIO	201110008		595211100000008	525010BCC01000080

Status History Points of Interest Probe Status Archive

# of Calls: 100 Archiving: Off Unarchived data: -- MSS Disk Free: 94% Probes: Online

# Real time status screen view UMTS

Real time view illustrating some of the additional fields available when monitoring LTE networks

- Capture data sessions in real time
- View/filter LTE Global Unique Temporary id
- View EUTRAN CGI (Cell id)
- Detach mode, how did the session terminate?

Content Intercept Manager: root on 10.192.17.83

File Find View Configure Help

Auto-Play ON

Audio Initialised

Filter Name	Call Start Time	Call Status	Media	EUTRAN CGI	GUTI	IMSI	IMEI/ESN	Release Cause	RRC Establishment Cause	Detach Initiator	Detach Mode
BP_IMSI_0000	2013/09/13 12:38:41.776 BST	Completed	ETHERNET	310-13-000070145	310-13-32768-001-1413233972	240011234567000	14054123456000	UE Associated Signalling	MO Signalling	UE Initiated	switch off
BP_IMSI_0001	2013/09/13 12:38:41.776 BST	Completed	ETHERNET	310-13-000070145	310-13-32768-001-1413233973	240011234567001	14054123456001	UE Associated Signalling	MO Signalling	UE Initiated	switch off
BP_IMSI_0002	2013/09/13 12:38:41.776 BST	Completed	ETHERNET	310-13-000070145	310-13-32768-001-1413233974	240011234567002	14054123456002	UE Associated Signalling	MO Signalling	UE Initiated	switch off
BP_IMSI_0003	2013/09/13 12:38:41.776 BST	Completed	ETHERNET	310-13-000070145	310-13-32768-001-1413233975	240011234567003	14054123456003	UE Associated Signalling	MO Signalling	UE Initiated	switch off
BP_IMSI_0004	2013/09/13 12:38:41.776 BST	Completed	ETHERNET	310-13-000070145	310-13-32768-001-1413233976	240011234567004	14054123456004	UE Associated Signalling	MO Signalling	UE Initiated	switch off
BP_IMSI_0005	2013/09/13 12:38:41.776 BST	Completed	ETHERNET	310-13-000070145	310-13-32768-001-1413233977	240011234567005	14054123456005	UE Associated Signalling	MO Signalling	UE Initiated	switch off
BP_IMSI_0006	2013/09/13 12:38:41.776 BST	Completed	ETHERNET	310-13-000070145	310-13-32768-001-1413233978	240011234567006	14054123456006	UE Associated Signalling	MO Signalling	UE Initiated	switch off
BP_IMSI_0007	2013/09/13 12:38:41.776 BST	Completed	ETHERNET	310-13-000070145	310-13-32768-001-1413233979	240011234567007	14054123456007	UE Associated Signalling	MO Signalling	UE Initiated	switch off
BP_IMSI_0008	2013/09/13 12:38:41.776 BST	Completed	ETHERNET	310-13-000070145	310-13-32768-001-1413233980	240011234567008	14054123456008	UE Associated Signalling	MO Signalling	UE Initiated	switch off
BP_IMSI_0009	2013/09/13 12:38:41.776 BST	Completed	ETHERNET	310-13-000070145	310-13-32768-001-1413233981	240011234567009	14054123456009	UE Associated Signalling	MO Signalling	UE Initiated	switch off
BP_IMSI_0000	2013/09/13 12:40:22.294 BST	Completed	ETHERNET	310-13-000070145	310-13-32768-001-1413233972	240011234567000	14054123456000	UE Associated Signalling	MO Signalling	UE Initiated	switch off
BP_IMSI_0001	2013/09/13 12:40:22.294 BST	Completed	ETHERNET	310-13-000070145	310-13-32768-001-1413233973	240011234567001	14054123456001	UE Associated Signalling	MO Signalling	UE Initiated	switch off
BP_IMSI_0002	2013/09/13 12:40:22.294 BST	Completed	ETHERNET	310-13-000070145	310-13-32768-001-1413233974	240011234567002	14054123456002	UE Associated Signalling	MO Signalling	UE Initiated	switch off
BP_IMSI_0003	2013/09/13 12:40:22.294 BST	Completed	ETHERNET	310-13-000070145	310-13-32768-001-1413233975	240011234567003	14054123456003	UE Associated Signalling	MO Signalling	UE Initiated	switch off
BP_IMSI_0004	2013/09/13 12:40:22.294 BST	Completed	ETHERNET	310-13-000070145	310-13-32768-001-1413233976	240011234567004	14054123456004	UE Associated Signalling	MO Signalling	UE Initiated	switch off
BP_IMSI_0005	2013/09/13 12:40:22.294 BST	Completed	ETHERNET	310-13-000070145	310-13-32768-001-1413233977	240011234567005	14054123456005	UE Associated Signalling	MO Signalling	UE Initiated	switch off
BP_IMSI_0006	2013/09/13 12:40:22.294 BST	Completed	ETHERNET	310-13-000070145	310-13-32768-001-1413233978	240011234567006	14054123456006	UE Associated Signalling	MO Signalling	UE Initiated	switch off
BP_IMSI_0007	2013/09/13 12:40:22.294 BST	Completed	ETHERNET	310-13-000070145	310-13-32768-001-1413233979	240011234567007	14054123456007	UE Associated Signalling	MO Signalling	UE Initiated	switch off
BP_IMSI_0008	2013/09/13 12:40:22.294 BST	Completed	ETHERNET	310-13-000070145	310-13-32768-001-1413233980	240011234567008	14054123456008	UE Associated Signalling	MO Signalling	UE Initiated	switch off
BP_IMSI_0009	2013/09/13 12:40:22.294 BST	Completed	ETHERNET	310-13-000070145	310-13-32768-001-1413233981	240011234567009	14054123456009	UE Associated Signalling	MO Signalling	UE Initiated	switch off
BP_IMSI_0000	2013/09/13 12:42:02.812 BST	Completed	ETHERNET	310-13-000070145	310-13-32768-001-1413233972	240011234567000	14054123456000	UE Associated Signalling	MO Signalling	UE Initiated	switch off
BP_IMSI_0001	2013/09/13 12:42:02.812 BST	Completed	ETHERNET	310-13-000070145	310-13-32768-001-1413233973	240011234567001	14054123456001	UE Associated Signalling	MO Signalling	UE Initiated	switch off
BP_IMSI_0002	2013/09/13 12:42:02.812 BST	Completed	ETHERNET	310-13-000070145	310-13-32768-001-1413233974	240011234567002	14054123456002	UE Associated Signalling	MO Signalling	UE Initiated	switch off
BP_IMSI_0003	2013/09/13 12:42:02.812 BST	Completed	ETHERNET	310-13-000070145	310-13-32768-001-1413233975	240011234567003	14054123456003	UE Associated Signalling	MO Signalling	UE Initiated	switch off
BP_IMSI_0004	2013/09/13 12:42:02.812 BST	Completed	ETHERNET	310-13-000070145	310-13-32768-001-1413233976	240011234567004	14054123456004	UE Associated Signalling	MO Signalling	UE Initiated	switch off
BP_IMSI_0005	2013/09/13 12:42:02.812 BST	Completed	ETHERNET	310-13-000070145	310-13-32768-001-1413233977	240011234567005	14054123456005	UE Associated Signalling	MO Signalling	UE Initiated	switch off
BP_IMSI_0006	2013/09/13 12:42:02.812 BST	Completed	ETHERNET	310-13-000070145	310-13-32768-001-1413233978	240011234567006	14054123456006	UE Associated Signalling	MO Signalling	UE Initiated	switch off
BP_IMSI_0007	2013/09/13 12:42:02.812 BST	Completed	ETHERNET	310-13-000070145	310-13-32768-001-1413233979	240011234567007	14054123456007	UE Associated Signalling	MO Signalling	UE Initiated	switch off
BP_IMSI_0008	2013/09/13 12:42:02.812 BST	Completed	ETHERNET	310-13-000070145	310-13-32768-001-1413233980	240011234567008	14054123456008	UE Associated Signalling	MO Signalling	UE Initiated	switch off
BP_IMSI_0009	2013/09/13 12:42:02.812 BST	Completed	ETHERNET	310-13-000070145	310-13-32768-001-1413233981	240011234567009	14054123456009	UE Associated Signalling	MO Signalling	UE Initiated	switch off
BP_IMSI_0000	2013/09/13 12:43:43.329 BST	Active	ETHERNET	310-13-000070145	310-13-32768-001-1413233972	240011234567000	14054123456000	UE Associated Signalling	MO Signalling	UE Initiated	switch off
BP_IMSI_0001	2013/09/13 12:43:43.329 BST	Active	ETHERNET	310-13-000070145	310-13-32768-001-1413233973	240011234567001	14054123456001	UE Associated Signalling	MO Signalling	UE Initiated	switch off
BP_IMSI_0002	2013/09/13 12:43:43.329 BST	Active	ETHERNET	310-13-000070145	310-13-32768-001-1413233974	240011234567002	14054123456002	UE Associated Signalling	MO Signalling	UE Initiated	switch off
BP_IMSI_0003	2013/09/13 12:43:43.329 BST	Active	ETHERNET	310-13-000070145	310-13-32768-001-1413233975	240011234567003	14054123456003	UE Associated Signalling	MO Signalling	UE Initiated	switch off
BP_IMSI_0004	2013/09/13 12:43:43.329 BST	Active	ETHERNET	310-13-000070145	310-13-32768-001-1413233976	240011234567004	14054123456004	UE Associated Signalling	MO Signalling	UE Initiated	switch off
BP_IMSI_0005	2013/09/13 12:43:43.329 BST	Active	ETHERNET	310-13-000070145	310-13-32768-001-1413233977	240011234567005	14054123456005	UE Associated Signalling	MO Signalling	UE Initiated	switch off
BP_IMSI_0006	2013/09/13 12:43:43.329 BST	Active	ETHERNET	310-13-000070145	310-13-32768-001-1413233978	240011234567006	14054123456006	UE Associated Signalling	MO Signalling	UE Initiated	switch off
BP_IMSI_0007	2013/09/13 12:43:43.329 BST	Active	ETHERNET	310-13-000070145	310-13-32768-001-1413233979	240011234567007	14054123456007	UE Associated Signalling	MO Signalling	UE Initiated	switch off
BP_IMSI_0008	2013/09/13 12:43:43.329 BST	Active	ETHERNET	310-13-000070145	310-13-32768-001-1413233980	240011234567008	14054123456008	UE Associated Signalling	MO Signalling	UE Initiated	switch off
BP_IMSI_0009	2013/09/13 12:43:43.329 BST	Active	ETHERNET	310-13-000070145	310-13-32768-001-1413233981	240011234567009	14054123456009	UE Associated Signalling	MO Signalling	UE Initiated	switch off

Status History Points of Interest Probe Status Archive

# of Calls: 40 # of Media: 30 Archiving: OFF Unarchived data: -- MSS Disk Free: 89% Probes: 11/11

## Detailed view screen

Drill down on selected call of interest:

- Examine individual events for each phase of a selected call in detail
- View more esoteric fields of interest (e.g. Mobile Station classmark) to gain greater insight into your targets behaviour (point of interest groups may choose handsets with specific capabilities)

## Multi-level security access procedures

Access to CIM is controlled via rigorous protocols and procedures, so that only authorized users are able to set up targets or view the data generated by CIM. Usernames and password authentications are required whenever users log on to the system. Additional restrictions can be imposed by setting up user permissions that restrict the viewing of certain points of interest to a subset of users. Encrypted VPN data communication methods are supported.

The screenshot displays the Content Intercept Manager (CIM) interface. The top window shows a table of call records with columns for Call Start Time, Call Status, Call Duration, Interface, Media, Called Party Number, Calling Party Number, IMSI, and TMSI. Below the table, the 'Classmark' section is expanded, showing detailed information for a selected call (Call ID: 401010). The classmark information is organized into two sections: Classmark 1 and Classmark 2, each listing various capabilities and their status (e.g., 'RF power capability=class 1', 'A5/1 algorithm supported=encryption algorithm A5/1 available'). The bottom status bar indicates '# of Calls: 100', 'Archiving: Off', 'Unarchived data: --', 'MSS Disk Free: 94%', and 'Probes: Online'.

Call Start Time	Call Status	Call Duration	Interface	Media	Called Party Number	Calling Party Number	IMSI	TMSI
2011/04/04 17:19:46.324 BST	Active		Iu interface		198110008		595210800000008	5250108CC00700080
2011/04/04 17:19:45.135 BST	Active		Iu interface		197110009		595210700000009	5250108CC00600090
2011/04/04 17:19:44.665 BST	Active		Iu interface		201110004		595211100000004	5250108CC01000040
2011/04/04 17:19:44.042 BST	Active		Iu interface		200110005		595211000000005	5250108CC00900050
2011/04/04 17:19:42.427 BST	Active		Iu interface		199110006		595210900000006	5250108CC00800060
2011/04/04 17:19:42.324 BST	Active		Iu interface		198110007		595210800000007	5250108CC00700070
2011/04/04 17:19:41.134 BST	Active		Iu interface		197110008		595210700000008	5250108CC00600080
2011/04/04 17:19:40.665 BST	Active		Iu interface		201110003		595211100000003	5250108CC01000030
2011/04/04 17:19:40.042 BST	Active		Iu interface		200110004		595211000000004	5250108CC00900040
2011/04/04 17:19:38.386 BST	Active		Iu interface		199110005		595210900000005	5250108CC00800050
2011/04/04 17:19:38.324 BST	Active		Iu interface		198110006		595210800000006	5250108CC00700060
2011/04/04 17:19:37.134 BST	Active		Iu interface		197110007		595210700000007	5250108CC00600070
2011/04/04 17:19:36.665 BST	Active		Iu interface		201110002		595211100000002	5250108CC01000020
2011/04/04 17:19:36.042 BST	Active		Iu interface		200110003		595211000000003	5250108CC00900030
2011/04/04 17:19:34.386 BST	Active		Iu interface		199110004		595210900000004	5250108CC00800040
2011/04/04 17:19:34.285 BST	Active		Iu interface		198110005		595210800000005	5250108CC00700050
2011/04/04 17:19:33.134 BST	Active		Iu interface		197110006		595210700000006	5250108CC00600060
2011/04/04 17:19:32.666 BST	Active		Iu interface		201110001		595211100000001	5250108CC01000010
2011/04/04 17:19:32.043 BST	Active		Iu interface		200110002		595211000000002	5250108CC00900020
2011/04/04 17:19:30.387 BST	Active		Iu interface		199110003		595210900000003	5250108CC00800030
2011/04/04 17:19:30.284 BST	Active		Iu interface		198110004		595210800000004	5250108CC00700040
2011/04/04 17:19:29.094 BST	Active		Iu interface		197110005		595210700000005	5250108CC00600050
2011/04/04 17:19:28.002 BST	Active		Iu interface		200110001		595211000000001	5250108CC00900010
2011/04/04 17:19:26.386 BST	Active		Iu interface		199110002		595210900000002	5250108CC00800020
2011/04/04 17:19:26.284 BST	Active		Iu interface		198110003		595210800000003	5250108CC00700030
2011/04/04 17:19:25.094 BST	Active		Iu interface		197110004		595210700000004	5250108CC00600040
2011/04/04 17:19:22.386 BST	Completed	00:01:59.404	Iu interface	AUDIO	199110001		595210900000001	5250108CC00800010
2011/04/04 17:19:22.284 BST	Completed	00:01:59.401	Iu interface	AUDIO	198110002		595210800000002	5250108CC00700020
2011/04/04 17:19:21.094 BST	Completed	00:01:59.371	Iu interface	AUDIO	197110003		595210700000003	5250108CC00600030
2011/04/04 17:19:18.285 BST	Completed	00:01:59.219	Iu interface	AUDIO	198110001		595210800000001	5250108CC00700010
2011/04/04 17:19:17.094 BST	Completed	00:01:59.168	Iu interface	AUDIO	197110002		595210700000002	5250108CC00600020
2011/04/04 17:19:13.094 BST	Completed	00:01:58.948	Iu interface	AUDIO	197110001		595210700000001	5250108CC00600010

Session Id: 0AC015364D99EE99, Filter: CALL003

Event Reports | SMS | Supplementary Services | Location | **Classmark** | GPRS | SIP (SDP) | Event Reports (CSV)

Classmark 401010

Classmark 1

- RF power capability=class 1
- A5/1 algorithm supported=encryption algorithm A5/1 available
- ES IND=Controlled Early Classmark Sending option is not implemented in the MS
- Revision level=Used by mobile stations supporting R99 or later versions of the protocol

Classmark 2

- Frequency Capability=MS does not support the E-GSM or R-GSM band
- VGCS notification reception=no VGCS capability or no notifications wanted
- VBS notification reception=no VBS capability or no notifications wanted
- SM (MT SMS pt to pt) capability=Mobile station does not support mobile terminated point to point SMS
- SS Screening Indicator=capability of handling of ellipsis notation and phase 2 error handling
- PS (pseudo-synchronization) capability=PS capability not present

Status | History | Points of Interest | Probe Status | Archive

# of Calls: 100 | Archiving: Off | Unarchived data: -- | MSS Disk Free: 94% | Probes: Online

## Content Intercept Manager Platform

Content Intercept Manager consists of:

### Metadata/Voice Acquisition Platform

Probes extract data from the appropriate cellular network interfaces. The probes are able to automatically discover all required network data and run IMSI/TMSI mapping so that the system can constantly track and update the allocation of a TMSI for a particular IMSI within a cellular network.

The probe then needs to discover the relationship between the path ID in the signaling and the channels carrying the AMR encoded voice in order to capture and reconstruct both sides of the conversation. Probes are remotely accessible and controllable, allowing extended operation and data forwarding to the Media Server or an external storage and analysis platform. The data format is compatible with legacy database systems and can be readily integrated with many existing solutions.

### Media Server System

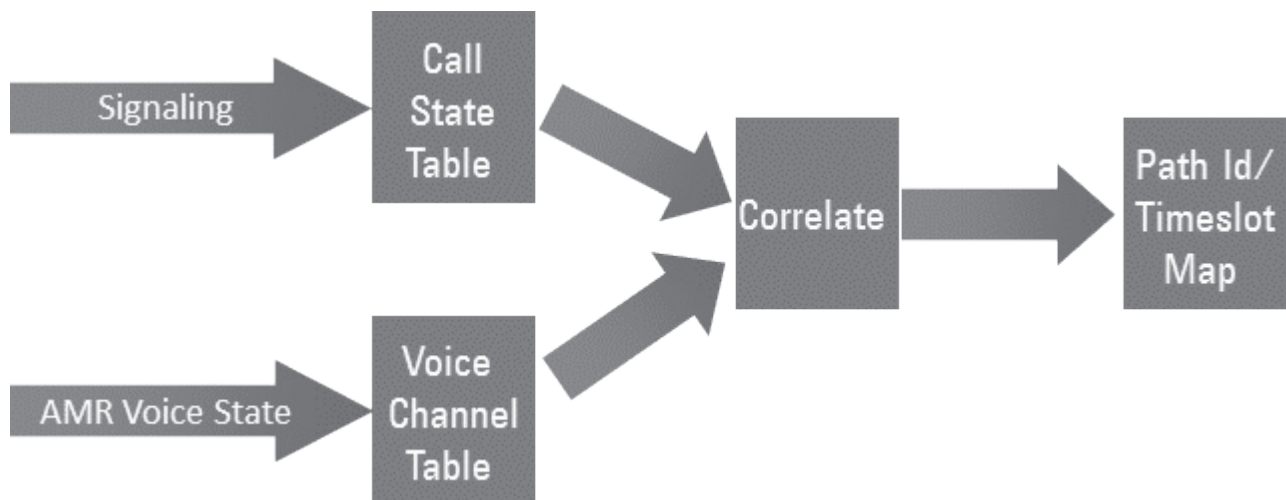
The Media Server System handles the storage of user and control plane files for user-defined targets.

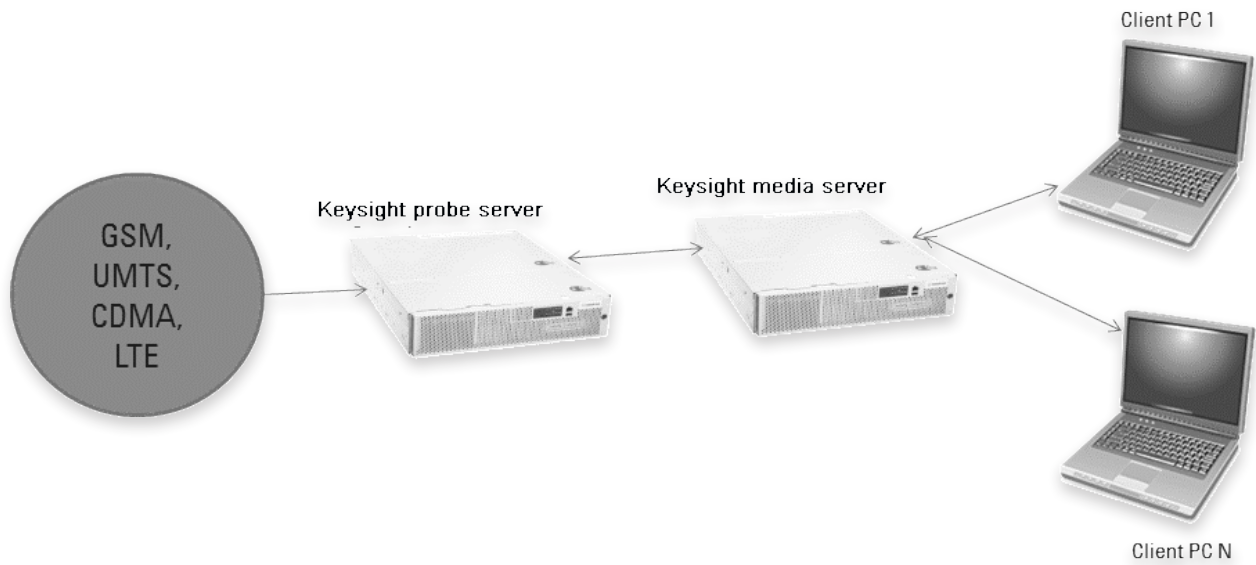
As soon as a user creates a new target, the Media Server immediately requests the probe to capture the call or SMS from the network links. It records this data and updates the status and details of all monitored calls in real time, correlating call data from multiple probes if necessary. It consolidates all the information associated with a call into a single call record, converting the data into a format that is easy to understand and use:

- Voice is extracted and converted to 2-channel .WAV files (one channel for each direction). Active voice calls can be played live on the user interface
- SMS data is extracted and decoded for user viewing
- In band DTMF tone analysis and decoding on voice calls is provided
- Supplementary services (call forwarding, call waiting, three way calling etc) are identified, captured and displayed
- User data capture for PCAP decoding

The user interface displays the current call status for all calls matching filtered POIs.

Up to ten users can connect to the Media Server System simultaneously. Besides examining calls matching monitored POI filters in real time, they can easily retrieve and view the history of all calls of interest. Defining new targets or editing existing is fast and easy.





## Key CIM benefits

- Real time view illustrating some of the additional fields available when monitoring LTE networks
- Easy to use with minimal operator training required
- Non-intrusive to the network and standards-based
- Minimum interaction with the mobile network operator
- Self-configuring – little or no network information required
- Network equipment vendor independent
- Mobile handset type independent
- Capable of handling high volumes intercepts
- Multi-level security access procedures

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