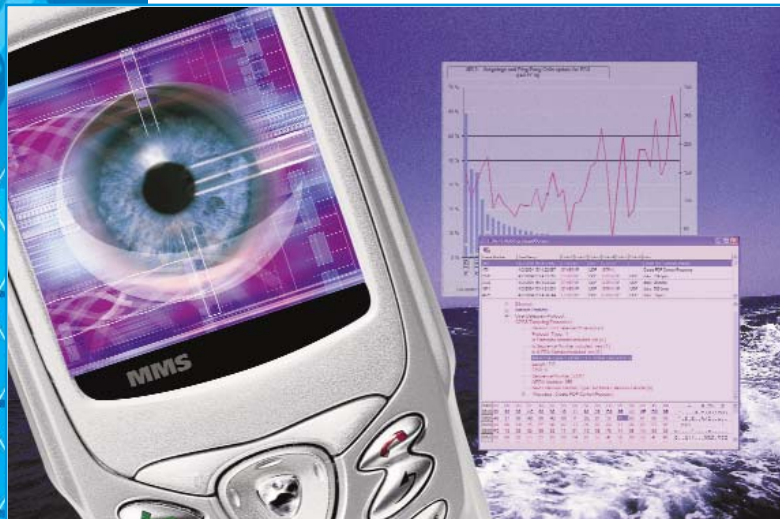


Cigale Gn / Gp / Gi

Maximize QoS of Mobile Data Services and
accelerate troubleshooting

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Mobile Data Network
Monitoring

Service QoS/QoE
optimization

Fast Troubleshooting

Detailed Call Traces

Cigale software is a powerful QoS analysis and troubleshooting tool.

Cigale ensures an optimised QoS via top-down troubleshooting facilities such as xDR (Data Records that provide summaries of PDP and mobility procedures, Packet Sessions and IP Procedures) and Call Trace. Cigale is relying on an elaborate decoding of the signalling and data messages exchanged across the Gn/Gp and Gi interfaces.

Mobile operators can easily optimize the quality of their core data network and solve interoperability issues. They gain a competitive advantage by offering their subscribers the very best service.

Typical applications

- Problems detection and troubleshooting for O&M
- Per Service/Application QoS audits for performance optimization
- Investigation of network inter-connection issues
- Roaming Activity Analysis
- Service Access efficiency Analysis
- Traffic analysis per GSN
- Service QoS optimization HTTP, WAP, MMS, email...

Astellia

Overview

Cigale Gn/Gp/Gi enables operators to gain a competitive advantage with a quick return on investment by ensuring an effective resolution of QoS and performance issues up to Service and Application layers.

Cigale Process

The uniqueness of Cigale process combines highly innovative technology (state engine, event transition, user's activity report) with in-depth operator knowledge.

This makes Cigale results immediately useful and highly meaningful.

Features

- Automatic reconstruction of the network
- Performed procedures & success rates statistics (Path, Tunnel, Mobility Management)
- GTP V0 (GPRS) and GTP V1 (GPRS-UMTS) analysis
- GTP Session Data Records (per Tunnel procedure summaries, per Session and IMSI QoS Perception)
- DNS transactions Data Records, Radius/DHCP transactions Data Records (troubleshoot transactions occurring between nodes of the Mobile Core Network)
- Application sessions Data Records per application transactions Data Records WAP, HTTP, MMS, SMTP, POP3, IMAP (per application QoS perception, servers accessibility troubleshooting)
- Message traces and Complete Protocol Decoding up to service level (WAP, MMS, HTTP, email etc.).

Activity Analysis

Activity Analysis is the Viewing application that enables a quick and in-depth analysis of all sessions and messages of all mobiles registered by Cigale. Contextual search and filtering allow quick investigation and precise understanding of complex problems.

Four levels of views combined with navigation facilities allow a comprehensive top-down approach:

Transition Statistics

provides statistics related to every protocol event.

CDR's/PSDR's/IPDR's

display tables of Activity Reports where each line sums up important information of:

- GTP-C PDP Context, mobility procedures (CDR)
- a packet session between the MS and one application server (PSDR)
- an IP procedure summary (IPDR) such as HTTP GET, MMS Retrieve Conf etc.

Type	Cause	Total DL	Total UL	
143	RADIUS - Normal account login	RADIUS_ACCOUNTING_RRADIUS_User_Request	147	703
143	Session complete	DEL_PDP_CTXT_RES_V1_V1_BasicAcct	1713	31489
144	RADIUS - Normal account logout	RADIUS_ACCOUNTING_RRADIUS_User_Request	147	703
144	Session complete	DEL_PDP_CTXT_RES_V1_V1_BasicAcct	463	1230
145	RADIUS - Authentication request	RADIUS_ACCESS_REQUEST	28	138
145	PDP activation request	DEL_PDP_CTXT_RES_V1_V1_Dianchushifail	8	122
145	Session complete	DEL_PDP_CTXT_RES_V1_V1_BasicAcct	2277	49048
145	Session complete	DEL_PDP_CTXT_RES_V1_V1_BasicAcct	88	258
145	Session complete	DEL_PDP_CTXT_RES_V1_V1_BasicAcct	21449	4838
145	RADIUS - Normal account login	RADIUS_ACCOUNTING_RRADIUS_User_Request	147	703
145	Session complete	DEL_PDP_CTXT_RES_V1_V1_BasicAcct	3493	2579
145	Session complete	DEL_PDP_CTXT_RES_V1_V1_BasicAcct	89	259
145	Session complete	DEL_PDP_CTXT_RES_V1_V1_BasicAcct	3684	6386
145	RADIUS - Normal account login	RADIUS_ACCOUNTING_RRADIUS_User_Request	147	703
145	Session complete	DEL_PDP_CTXT_RES_V1_V1_BasicAcct	6362	1556

xDR details include information such as:

- start/end time stamping,
- IMSI / IMEI / (P)TMSI,
- localisation (LAC/SAI/RNC),
- ringing and comm. duration,
- phone number,
- PDP address, APName,
- data traffic volume UL and DL etc.
- average and maximum session throughput
- session QoS/QoE (page download time, setup delays, MMS send/retrieve efficiency, retransmissions, jitter etc.).

Requested URI	Start Event	APN	Last event	Last Cause
http://www...	MMS_HTTP_Send	mms...	MMS_HTTP_REP	MMS_HTTP_KO
http://www...	MMS_HTTP_Send	mms...	MMS_HTTP_REP	MMS_HTTP_KO
http://	MMS_HTTP_Send	mms...	MMS_HTTP_REP	MMS_HTTP_KO
http://	MMS_HTTP_Send	mms...	MMS_HTTP_REP	MMS_HTTP_KO
http://	MMS_HTTP_Send	mms...	MMS_HTTP_REP	MMS_HTTP_KO
http://	MMS_HTTP_Send	mms...	MMS_HTTP_REP	MMS_HTTP_KO

Message level Traces and Protocol Decoding provide Flow Charts, message summaries and Detailed Protocol Display.

Combined with other Cigale applications (lu, Gb), it provides end-to-end 2,5G/3G Call Trace.



Combine Gn & Gi analysis

Gn observation allows the monitoring of the whole Mobile Core Network traffic transiting over GTP sessions and thus easily correlated with the MS and GSN pair source and destinations.

Combined Gn and Gi analysis adds the capability of troubleshooting the causes of session setup rejects, like IP address allocation issues or authentication failures.

Providing both GTP and RADIUS/DHCP Data Records in the same CDRs viewer allows fast and efficient correlation of those events with the session behaviour.

Benefits

- Both global and detailed vision of the network performance
- Local / remote GSN failures detection
- In-depth troubleshooting down to message and protocol levels
- Multi-user access to results stored in the database
- Fully vendor independent
- High processing capacity
- Compatible with all major capture platforms
- Takes advantages of Astellia OCEAN capture platform capacities and automation.

Sharing Benefits

Network Optimisation and QoS Departments gain time through fast problem analysis and detailed troubleshooting: precise problem cause and location.

Operations & Maintenance Department reduces costs through precise problem localisation and cause identification. Marketing Department has quick access to Services efficiency analysis.

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