

MasterClaw™ for UTRAN

UMTS Service Assurance solution including UTRAN monitoring

Introduction

MasterClaw™ UTRAN signaling probes extend the MasterClaw framework, providing a complete and effective solution for true end to end UMTS network troubleshooting, performance and service analysis. The MasterClaw solution is suitable for operators looking for a permanent installation avoiding heavy adoption of semi-stationary tools.

The MasterClaw network monitoring system is based on non-intrusive probes for capturing signaling information in any part of a UMTS network including the core and the UTRAN interfaces. With a 24-by-7 UTRAN monitoring system, operators have both a real-time view of the radio access network performance as well as they can access the captured data maintained in the MasterClaw probes for troubleshooting and analysis of specific calls occurred several days before. The main applications available for UTRAN analysis in MasterClaw are:

- The MasterClaw Link and Message Statistics with a set of predefined reports and the possibility to setup customizable alarms and dashboards and build advanced KPIs.
- The MasterClaw Traffic Observer that allows creating custom views on any link counter to provide graphical display of the network status suitable for Network Operation Centers.
- The MasterClaw Call Trace Application that correlates messages belonging to the same procedure, session or call and speeds up troubleshooting operations related to specific customers or transactions.
- The MasterClaw Protocol Analysis application that provides advanced filtering options and visualization along with a full decoding of all interesting messages.

MasterClaw UTRAN Probes

The MasterClaw UTRAN probes offers high-performance, non-intrusive data tapping of lub and lur interfaces with data processing as well as automated historical and real-time call and data control troubleshooting. The ATM probe consists of two CPUs and a dual port STM-1 ATM link unit assuring support of lub and lur interfaces



Benefits

- Permanent UTRAN surveillance on high revenue areas
- Reduce 3G network access problems in high revenue areas
- Proactively address problems related to mobility management within UTRAN, but also between 3G and 2G radio access technologies
- One tool for end-to-end network and service performance monitoring across UTRAN and the Core Networks

Features

- Supports UTRAN over IP and over ATM, including HSDPA and HSUPA related signaling
- Counter based KPIs provides insights into performance of network elements like NodeBs and RNCs
- Detailed protocol analysis and call tracing of UTRAN signaling and possibility to correlate with core network messages such as RANAP, etc.
- Real time deciphering of UTRAN signaling in case of ciphered networks
- Integrated and completely supported by the MasterClaw framework and applications; ease of use and simplified administration

deployed over STM-1 vc4 links (traditional UTRAN over ATM). This hardware solution fits into existing MasterClaw subracks and can be installed along with other MC core network probes (e.g. lu). The IP probe consists instead of a standard server, running Linux OS and Anritsu dedicated software, and a dedicated PCI link unit, capable of managing the load of aggregated lub interfaces over multiple GE links.

Complete decoding and tracing of signaling over lub and lur interfaces is available covering Radio Network Control Plane (NBAP, RNSAP), Transport Network Control Plane (ALCAP) and Control User Plane (RRC), including HSDPA and HSUPA related signaling.

MasterClaw Real Time Deciphering

Real time deciphering is also provided on ciphered networks by means of context servers capable of handling, using the default basic configuration, up to 1 million simultaneous contexts per site. The context servers are collecting in real time relevant information about all UMTS contexts taking place in one regional site, handling also scenarios involving more RNCs or MSC-S. Keys are collected from the lu interfaces and then used to decipher Control User Plane signaling (RRC) over lub and lur interfaces.

One context/deciphering server has to be deployed for each regional site to ensure minimum latency between key collection and deciphering of traffic. An example of deployment is shown in Figure 1. MasterClaw users do not have to care about deciphering and everything is handled in a transparent way by the system.

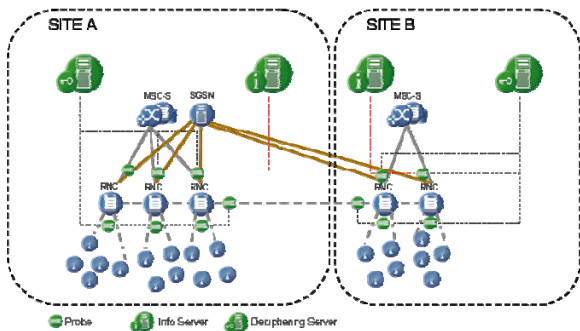


Figure 1: Typical example of UMTS deciphering and Info server deployment across different sites

Applications and Examples

All applications available in MasterClaw are also suitable for UTRAN analysis. This means that there is no need to spend time getting used to new GUIs or presentation tool. Figure 2 shows an example of Call Trace sequence diagram including lub/iur signaling. Combinations of lub, lur and lu protocols can also be analyzed via the MasterClaw Protocol Analyzer. Statistical analysis of data is also important when looking at UTRAN performances. Traffic Observer and Link and Message statistics provide counter based view capabilities.

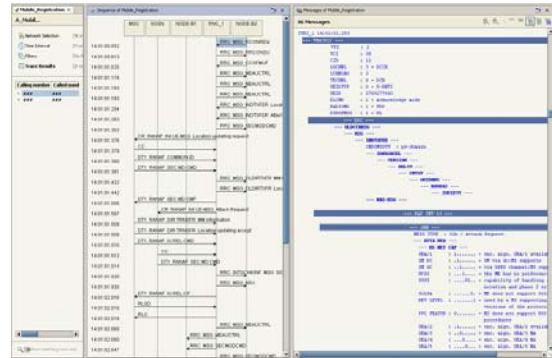


Figure 2: Calls and sessions over lub can be traced using the Call Trace application. Messages can be correlated with core network signaling

Link and Message Statistics has a set of standard reports focusing on UTRAN signaling messages. Statistics are based on hundreds of RRC, NBAP, RNSAP and ALCAP counters available in the system. Users can extend the solution by easily creating custom reports (see Figure 3).

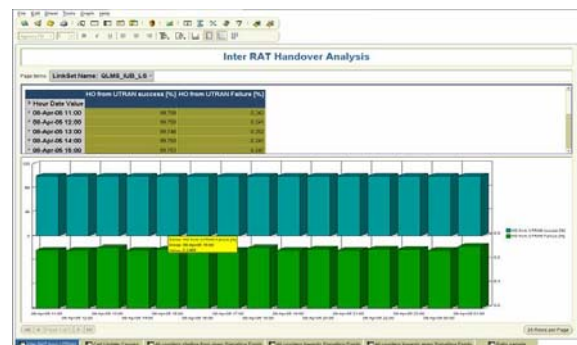


Figure 3: Link and Message statistic, UTRAN custom report example

Summary

UTRAN Probes, together with the MasterClaw core network solution, enable operators to rely on a true end to end monitoring solution for UMTS networks providing full correlation between lub, lur, lu CS, lu PS, Nc, Mc, Gn, Gi, etc. The large set of scenarios covered by the system simplifies any sort of analysis that can be performed on a live network. A common entry point, the MasterClaw Web Portal, and a set of applications suitable for the various needs complete the solution designed to scale and provide true continuous surveillance of UMTS access networks.

The MasterClaw UTRAN solution is specifically designed for operators looking for scalability, centralized management and cross correlation between UTRAN and the core network.