

TETRA BS Load Generator



TETRA is a mobile radio standard comparable to GSM (German D1/D2/E-Net) which is mainly used in areas with private radio and trunked mobile radio. Typically it is used for ground radio services at airports, for fire department and police radio.

The **TETRA BS Load Generator** developed by fjord-e-design is designed to **carry out load tests for TETRA base stations. The software simulates the traffic caused by thousands of mobile stations at the base station to be tested to create complex load scenarios. Register processes, group attachments, calls and short data service transmissions (also status SDS) are simulated among others.**

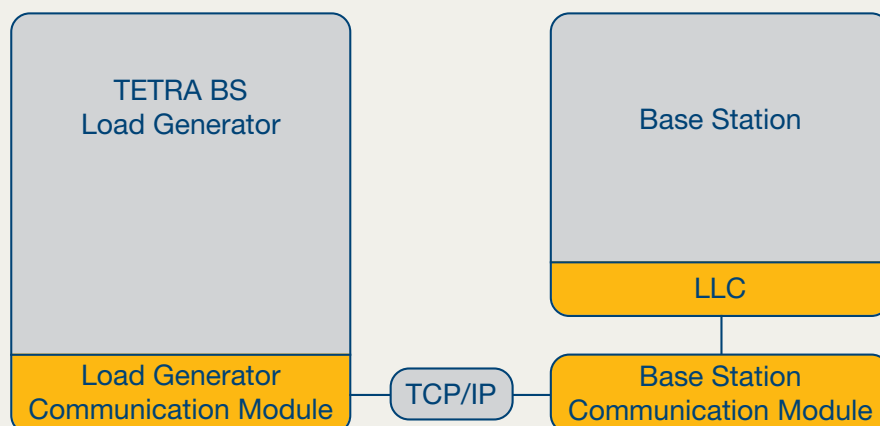
The software is based on the TETRA MS Protocol Stack and works above the UMAC, which was replaced by a communications module based on TCP/IP (Load Generator Communication Module). With the corresponding counterpart at the base station (base station communication module) this system can be used to test the layers of your base station above UMAC.

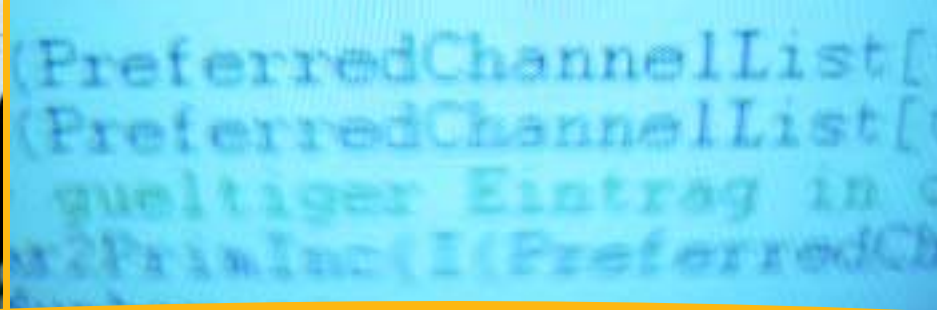
You can set the number of mobile stations, which have configurable characteristics regarding registration (number, retention time etc.), call structure (number, call duration, group call, etc.) and data (SDS, status SDS, number, length, etc.). The mobile stations of a set always show the same statistical base characteristics.

This allows you to test your software regarding functionality and stability even while you are still developing or testing the base stations.

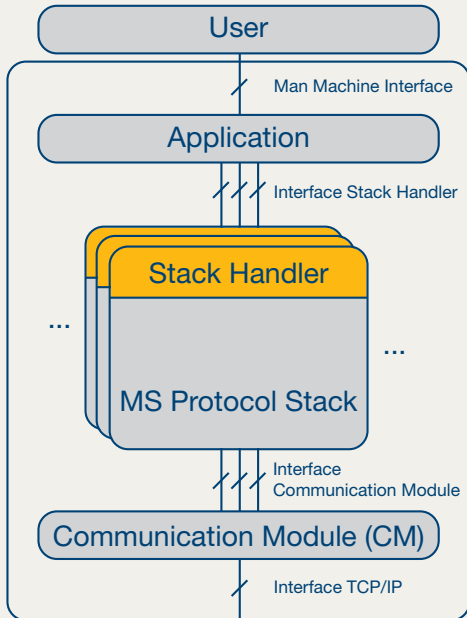
Application:

- Load test
- Generating a base load
- Testing the protocols of the base station (MS simulator)
- Generating random sequences of test scenarios (excellent addition of statistical test cases)





Architecture of the software



The left diagram shows the structure of the software in detail. The core of the test system is a TETRA MS protocol stack, which can be instantiated several times (one instance per simulated TETRA mobile station).

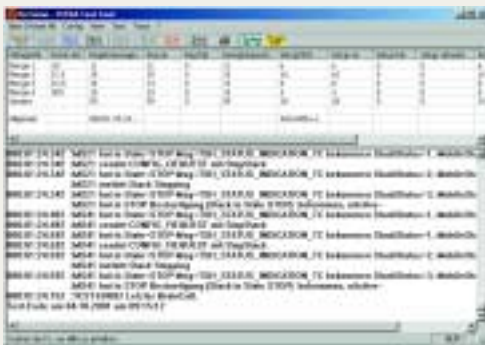
On top of the respective stack instances a stack handler is situated, which offers a simplified interface with the application.

Beneath the stack instances a communication module (CM) is situated, which replaces the lower layers (UMAC, LMAC and physical layer) of the TETRA MS Protocol Stack. The CM communicates via a TCP/IP connection (UDP is also possible) with the base station.

The interface stack handler offers a simply structured interface, which can be disclosed to you if required. It is therefore possible to tailor the application to your needs and to develop additional features.

User interface

The user interface is based on Windows. The following two screen shots show the statistical evaluation and the parameter setting of the TETRA BS Load Generator.



System requirements (PC)

- Windows 98/2000
- Ethernet networking card (TCP/IP)
- Graphics card (at least 1024x768)
- USB port for dongle
- At least 128 MB memory (256 MB recommended)
- Processor: at least 500 MHz
- Sufficient space on hard drive (depending on the duration of the analysis)

Features





Performance data

Number of mobile stations: > 1000
Division into sets: 4

Set properties

- Number of mobile stations [N]
- SSI
- Allocated GSSI
- Additional SSIs which can be called

Data for registration

- Average registered time [min]
- Average not registered time [min]

Communication types

- Individual call / simplex
- Individual call / duplex
- Group call (only unacknowledged, no broadcast call)
- SDS (variable length and status, reception possible for all types)
- **The following parameters can be set for the communication types:**
 - Average length of a call [s] respectively a SDS message [N]
 - Average length of a pause between two calls [s] respectively SDS messages [s]
 - Average length of the PTT touch input and the pause between two acknowledgements [ms]
 - Share of the status messages in regard to the SDS messages [%]

Evaluations

- Output of the statistical data in a table for each set and all sets:
 - Number of successful / unsuccessful registrations [N]/[%]
 - Number of attempted call set-ups / messages
 - Share of the successful and unsuccessful attempts [N]/[%]
 - Share of the attempts rejected by the opposite station [N]/[%]
 - De-registrations and call clearings [N]
 - Received SDS [N]
- Trace of the entire data traffic in a debug file

Interfaces

- Man Machine Interface (MMI)
- Interface Stack Handler (SH)
- Interface Communication Module (CM)
- Interface TCP/IP (UDP optional)
- File access
- Printer

Features

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