Call Analyser

GSM Roaming Analyzer

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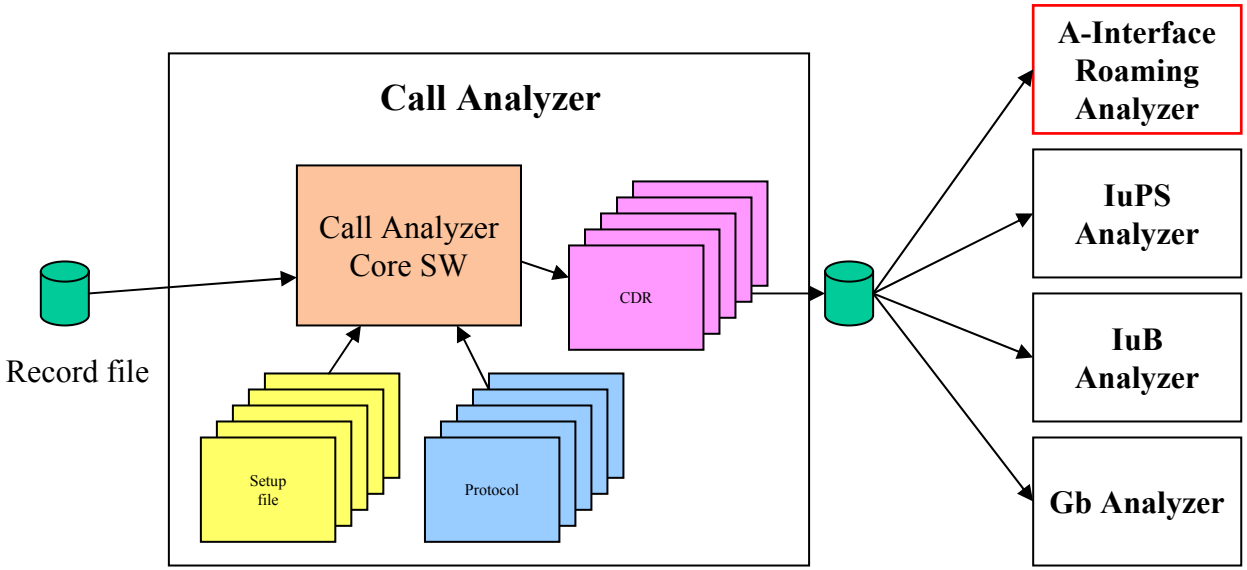
Call Analyser product family



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GSM Roaming Analyzer

- Roaming traffic is high revenue traffic and optimising the network for roamers is highly profitable
- The Roaming Analyzer focus on optimising and increasing roaming traffic
    - By analysing where roamers enter the network
    - By finding out where roamers fail to enter the network
    - By analysing of where roamers are taken from competitor networks
    - By analysing which roamers enter the network
    - By analysing of where roamers move in the network
    - By finding out where roamers generate traffic
    - By estimating where roamers are lost to competitors

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Major functions

- Cells with most incoming roamers
- Cells with roaming failures
- Cells where roamers enter from competitor network
- Cells where known roamers are entering a new LAC
- Cells where roamers generate traffic
- Cells where roamers are lost
- All reports can be filtered and combined by:
    - LAC, Cell, Operator, Latest network
- Coverage hole detection

- The Roaming Analyzer is both a reporting and a trouble shooting tool

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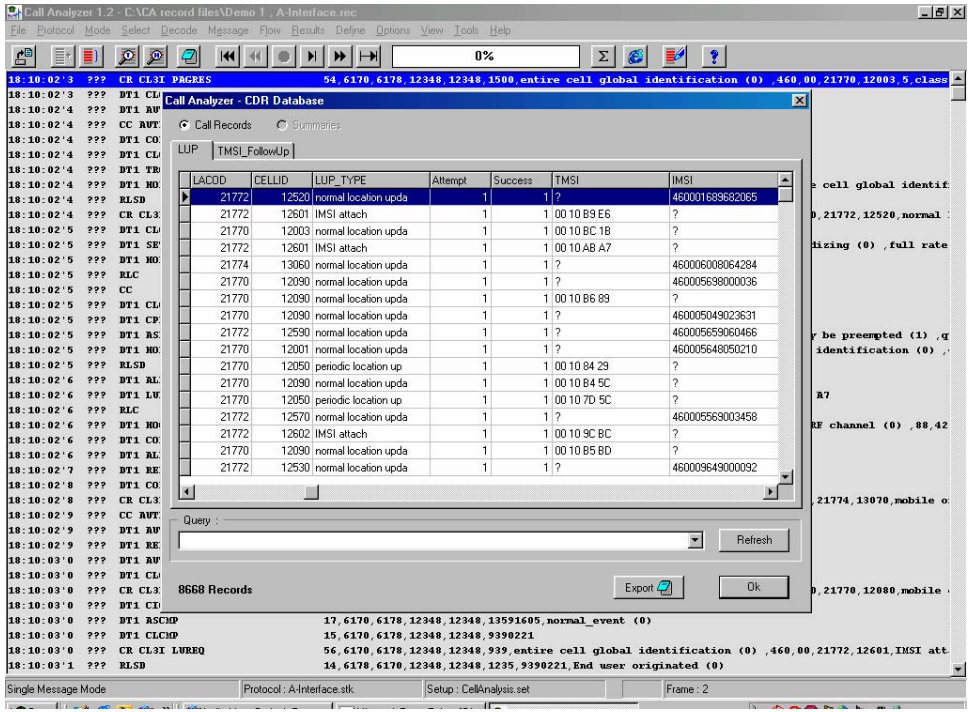
Based on CDRs from Call Analyzer



- Easy to add new features
- Protocols already available
- User defined flows for generation of CDRs
- Data are available for detailed analysis
- Flows and events from the roaming analyzer are available for search and filter
- Fast implementation of new features

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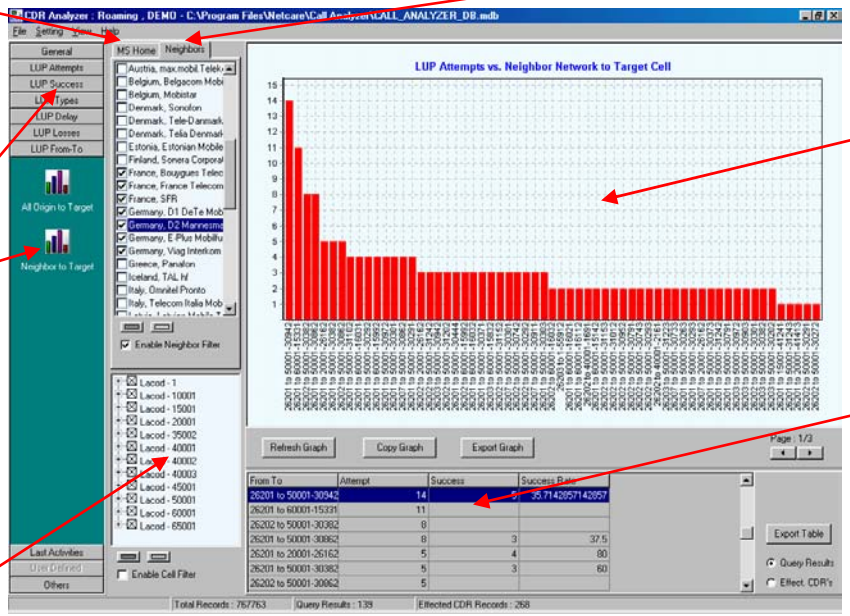
General functions

Apply filter for home network

Apply filter for the last network the subscriber was active in (e.g. to see only subscribers taken from a competitor)



Graphical results

Select function

Tabular results

Apply filter for LAC or Cell ID

All filters can be activated for all reports

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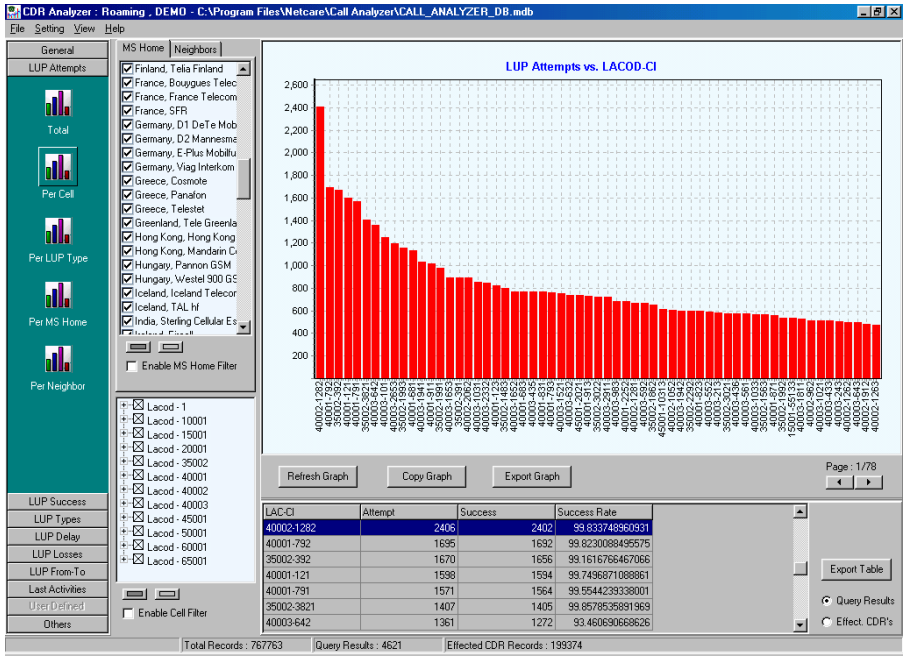
Detecting roamers - 1



Identify where roamers enter the network

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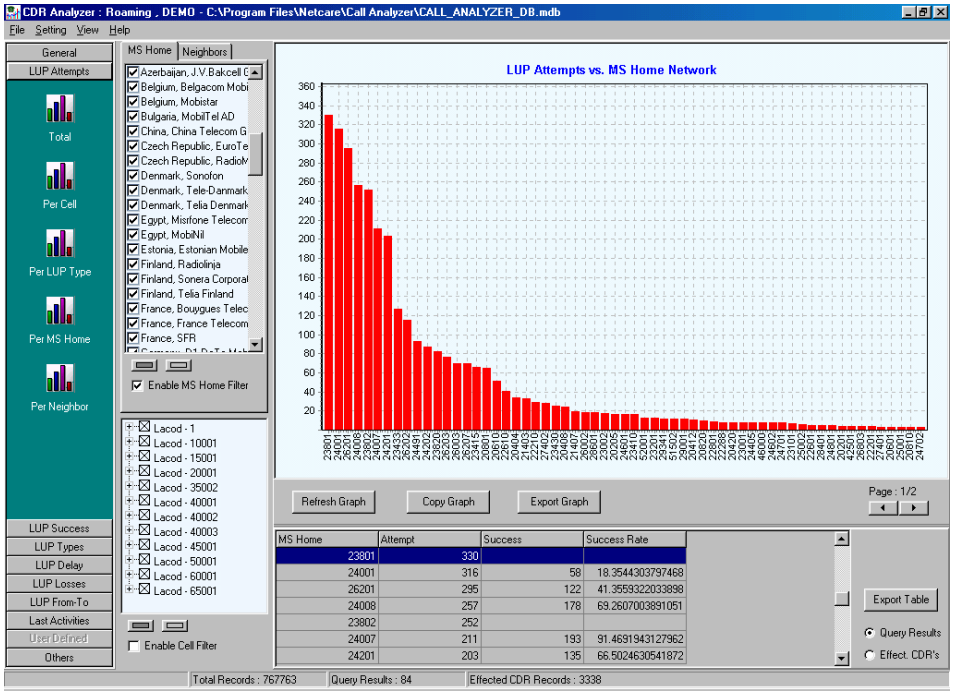
Detecting roamers - 2



Find out which roamers that enter the network

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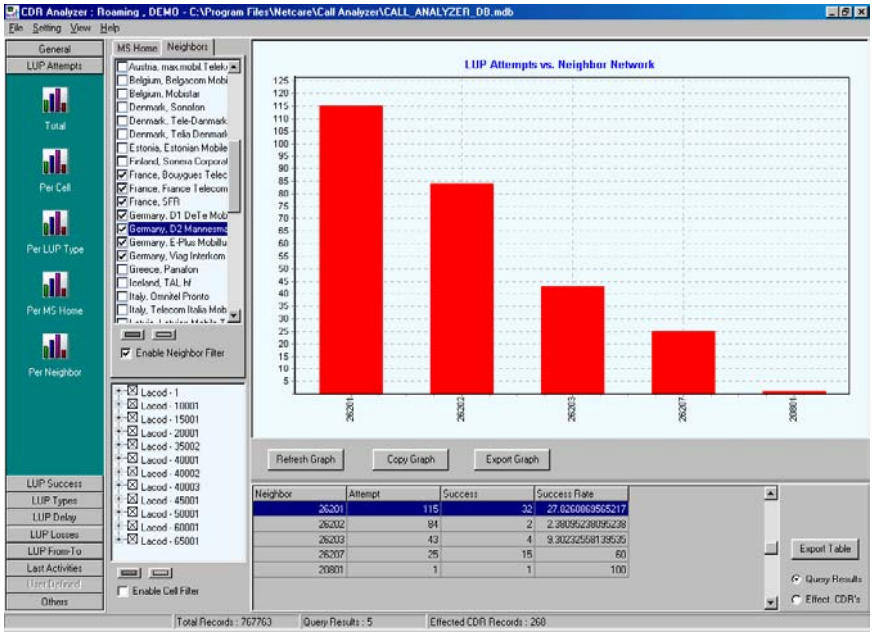
Detecting roamers - 3



Use neighbour filter to select competitor networks and find out how many roamers you take from each of your competitors

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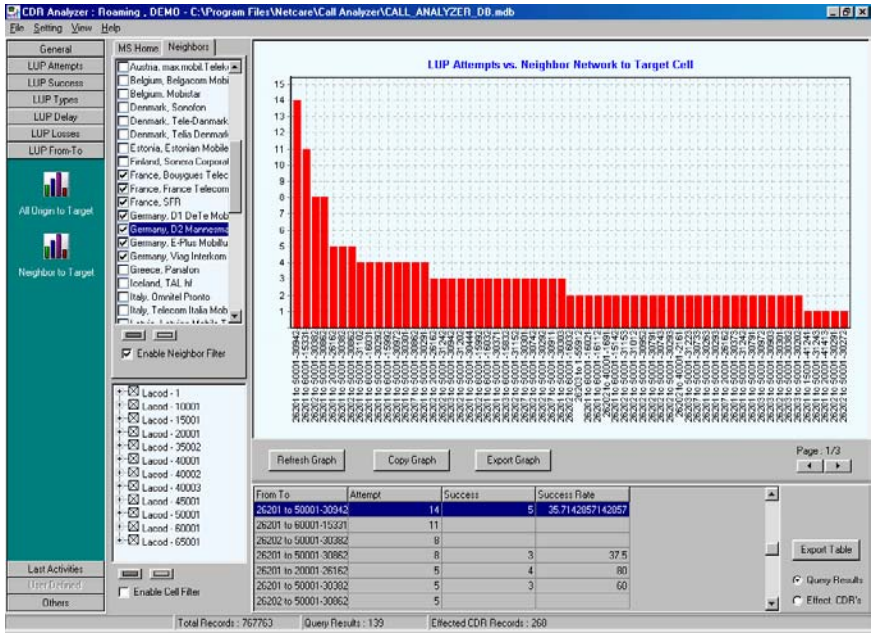
Detecting roamers - 4



Detecting in which cells you take roamers from competitor's network

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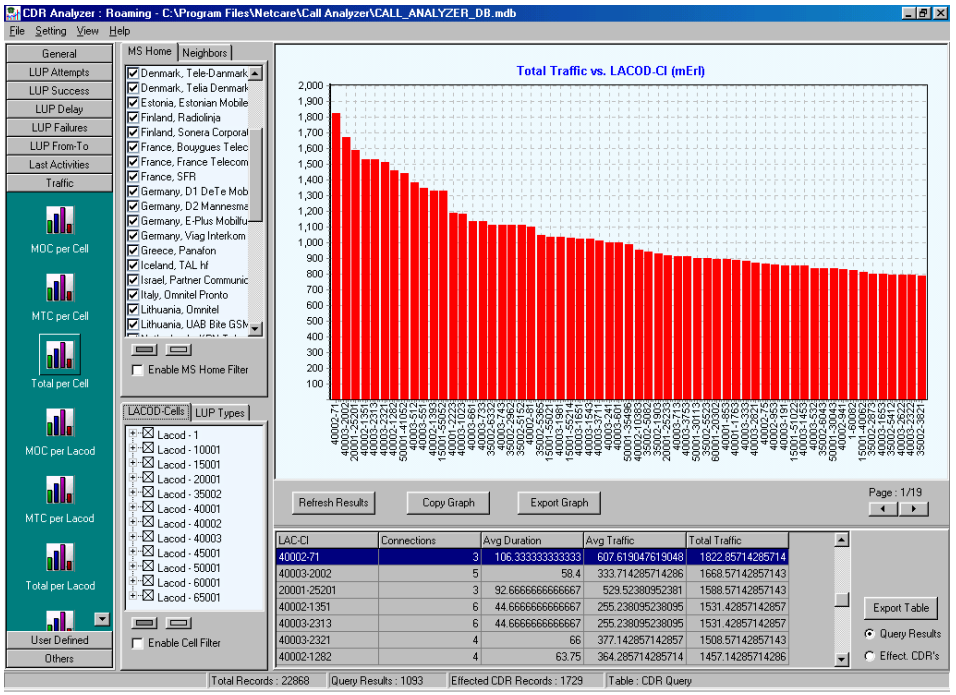
Roaming traffic

See the traffic generated by roamers

You can sort by:

- **Home network**
- **Cell ID**
- **LAC**
- **MTC**
- **MOC**
- **Total**
- **Use all filters**



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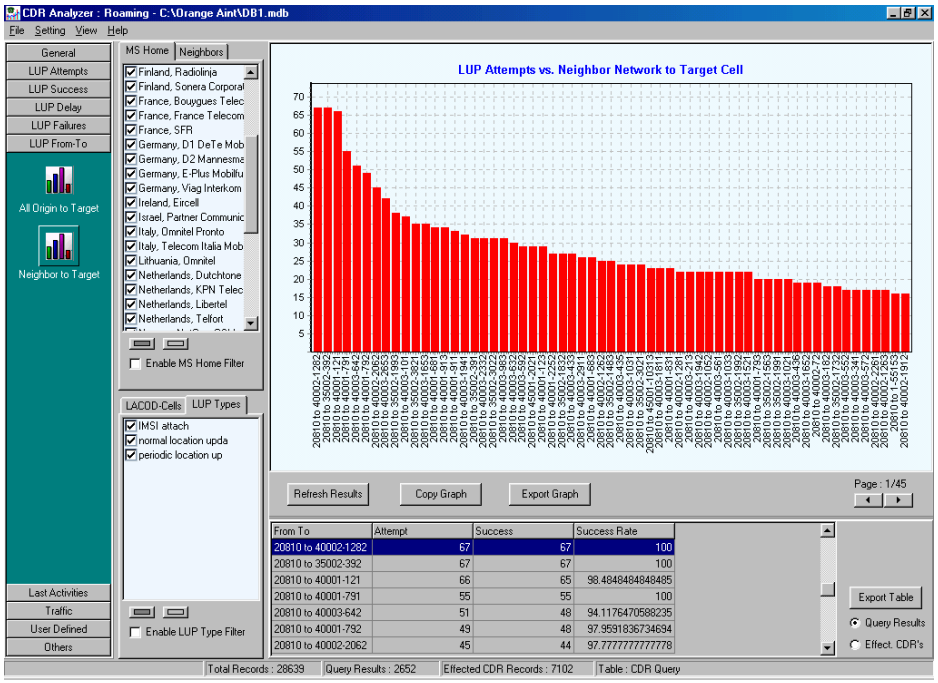
Roamers movements



See where roamers come from when they enter each cell

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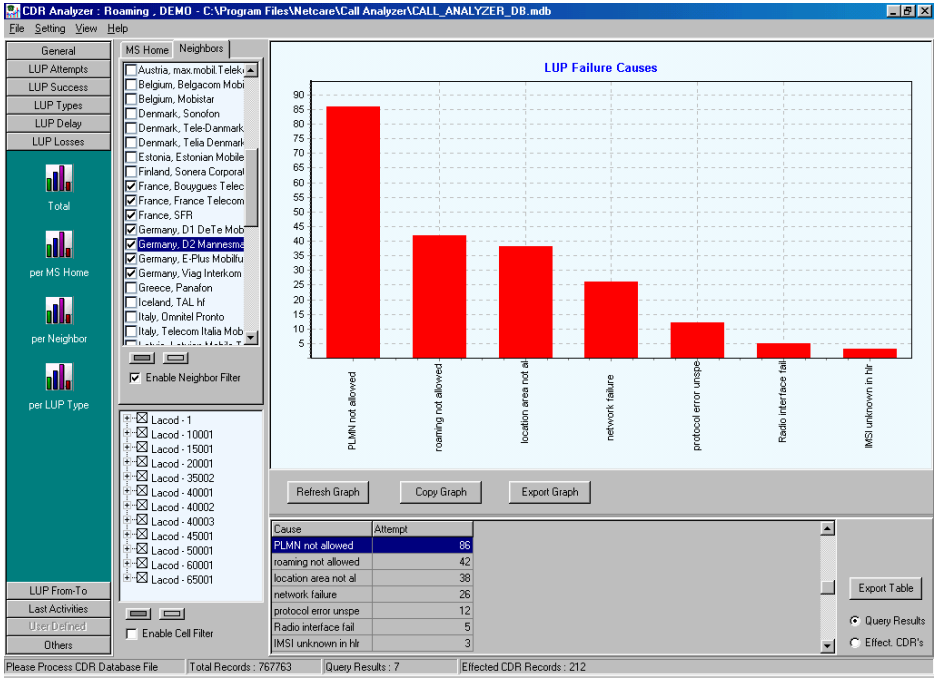
Roaming failures -1



Location update failures show problems in entering the network

Apply cell filter to see where you have radio failures when roamers try to enter

Apply home network filter to see which roamers that get roaming not allowed

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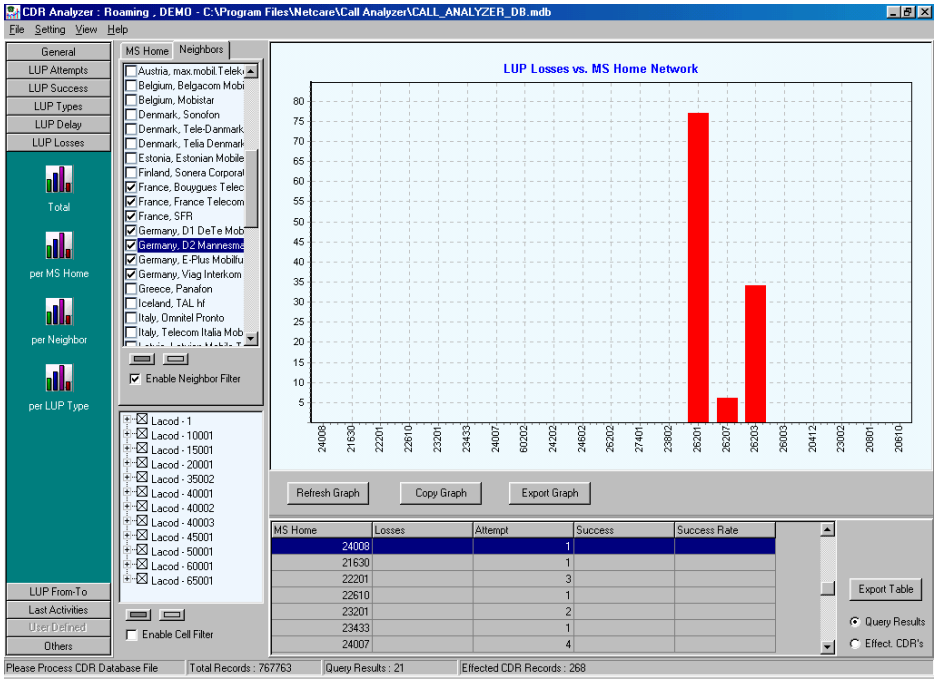
Roaming failures - 2



Sort roaming failures per home network to see if specific roamers cannot enter the network

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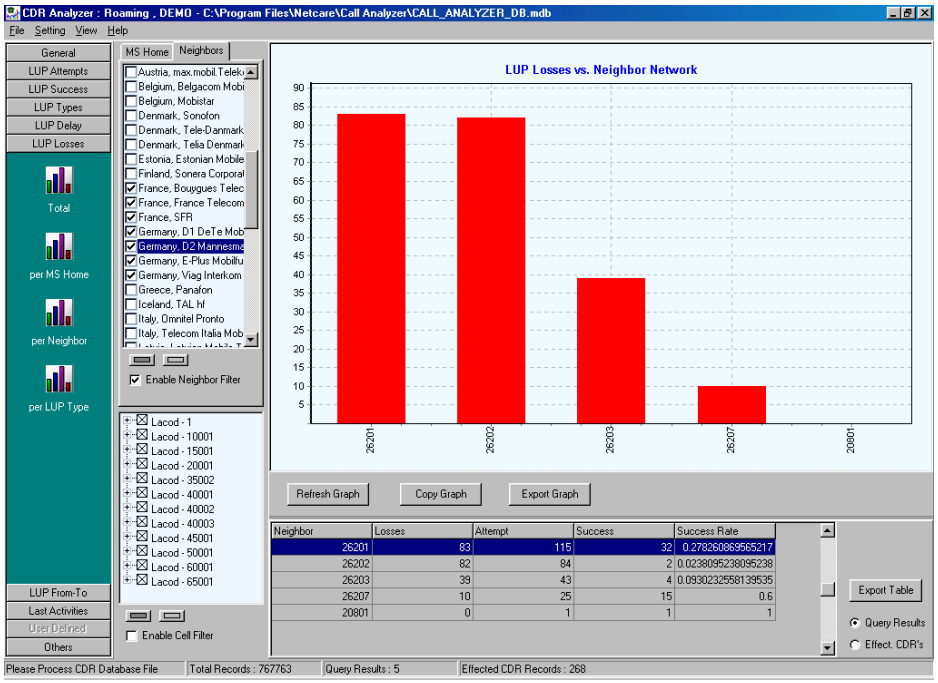
Roaming failures - 3



Neighbor	Losses	Attempt	Success	Success Rate
26201	83	115	32	0.278260869565217
26202	82	84	2	0.0238095238095238
26203	39	43	4	0.0930232558139535
26207	10	25	15	0.6
20801	0	1	1	1

Roaming failures per previous network (neighbour network) can show you if you have a problem taking roamers from your competitors. Apply cell filter to see where in the network the problem is

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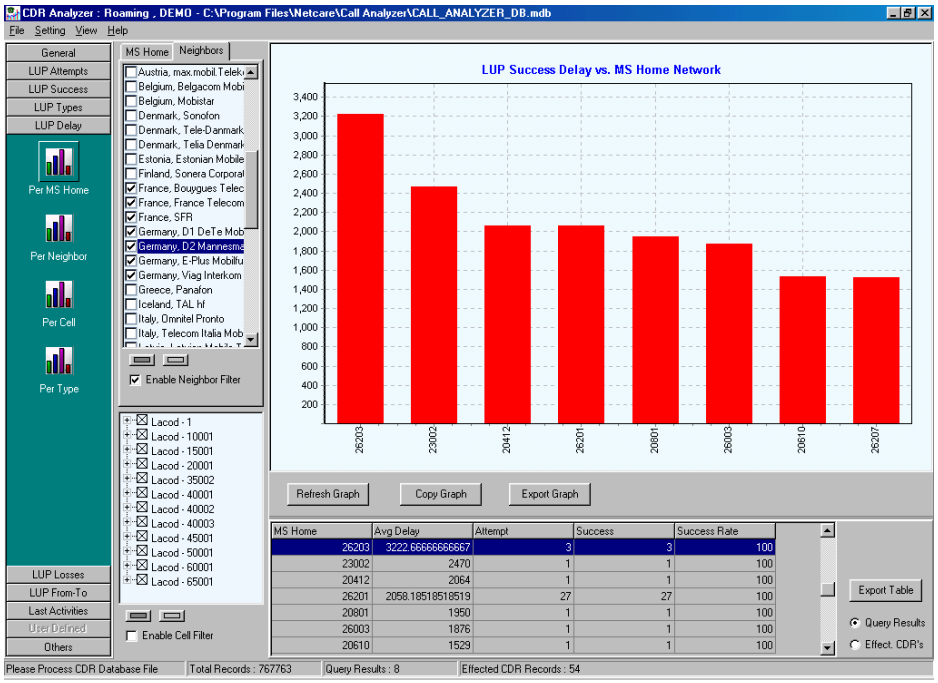
Roaming failures - 4



MS Home	Avg Delay	Attempt	Success	Success Rate
26203	3222.66666666667	3	3	100
23002	2470	1	1	100
20412	2064	1	1	100
26201	2058.18518518519	27	27	100
20801	1950	1	1	100
26003	1876	1	1	100
20610	1529	1	1	100

Measure the delay in location update per home network may indicate problems if an HLR have long response times

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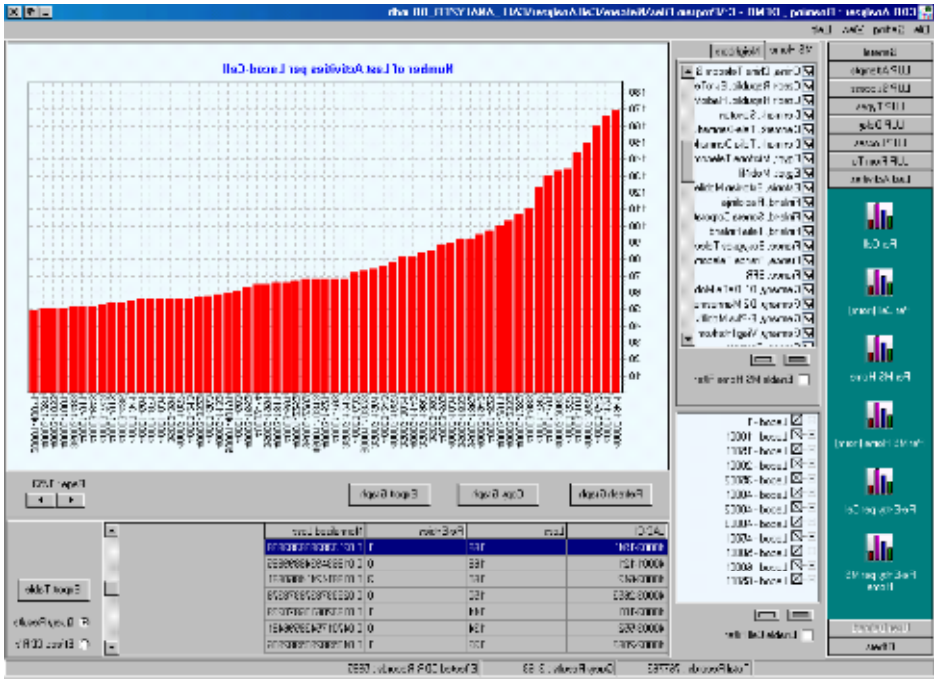
Loosing roamers

- The Roaming Analyzer links all TMSI to the IMSI if possible
- It detects in which cell each subscriber had the last activity
- It then detects if the subscriber enter the cell again from a competitor's network
- If a cell has many re-entries it is clear that roamers are lost in this cell and some of them can come back
- Use cell filter to find out in which cell you loose roamers and neighbour filter to find out to which competitor you loose them



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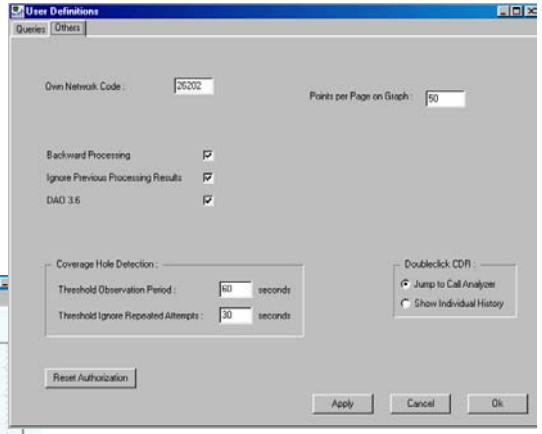
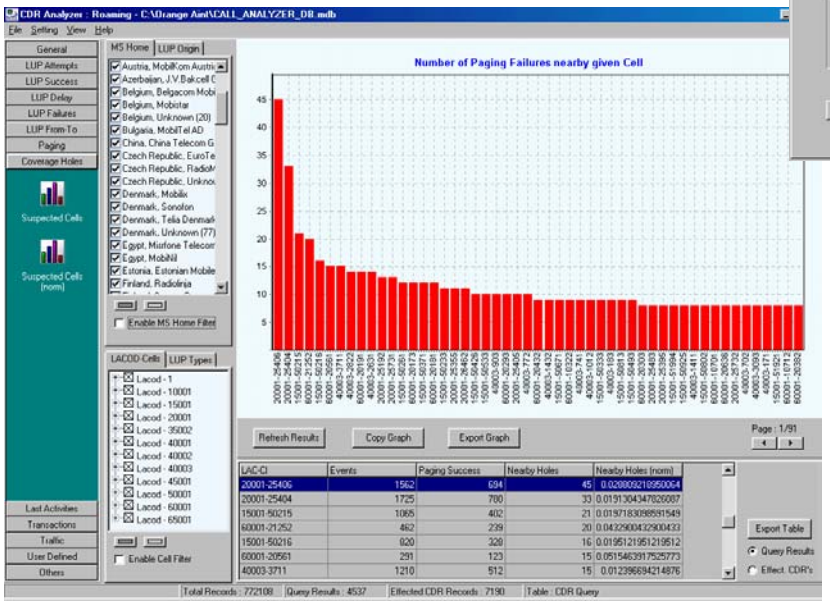
Detection of coverage holes

- Coverage holes are detected as unanswered paging commands
- Roaming Analyzer finds in which cell the MS was active shortly before or after it did not answer the paging
- The time to search for the MS is user-definable





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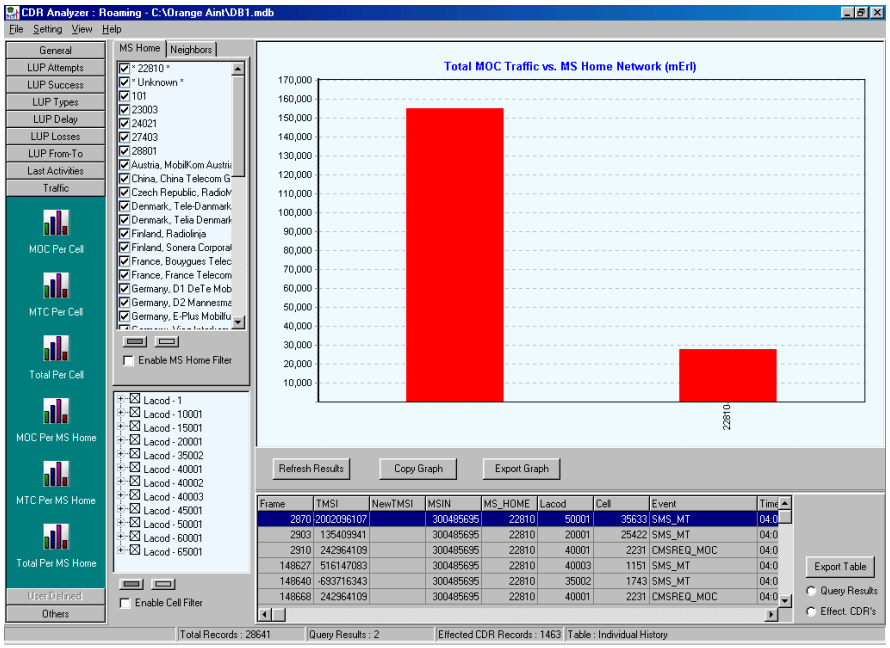
Subscriber trace

By a simple double click on a CDR record can give you a subscriber trace where you can follow all activities for a single subscriber



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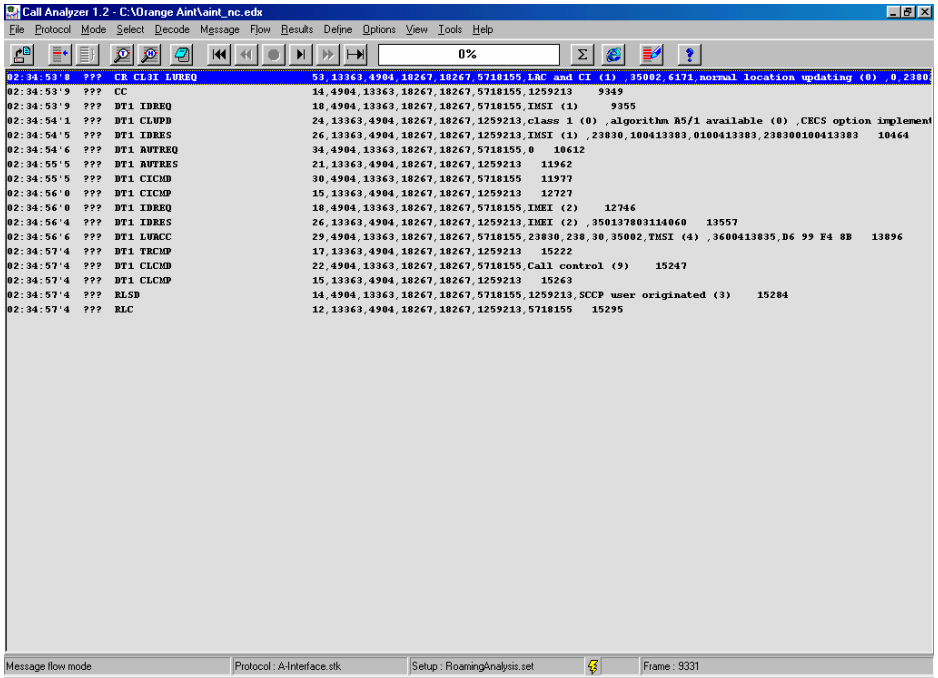
Protocol data

A double click on an activity will get you access to the full transaction or call trace in Call Analyzer where each message can be decoded



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