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TEMS™ VISUALIZATION ENTERPRISE

BRIDGING THE OPTIMIZATION GAP

SEE YOUR NETWORK IN A WHOLE NEW WAY

TEMS Visualization bridges the gap between traditional performance-management solutions and drive-test solutions.

Since its introduction, TEMS Visualization has revolutionized the way operators troubleshoot their WCDMA and GSM networks. The tool post-processes event-based data generated by the Ericsson infrastructure, analyzing and organizing it for use in troubleshooting, monitoring, and verifying network functionality.

This ability to look at real individual call data from the infrastructure side bridges the gap between ordinary performance management systems and traditional drive testing. While performance management tools provide powerful statistical and trending functionality, and drive test tools capture a specific slice of the network in great detail, TEMS Visualization gives a closer look at detailed information from large volumes of traffic.

TEMS VISUALIZATION 7.0 ENTERPRISE – A MAJOR NEW ADVANCE FOR WCDMA OPERATORS

This latest version of TEMS Visualization is not a simple upgrade from previous releases. It is an Enterprise-grade solution that takes the processing and analysis of event data to a completely new level. TEMS Visualization 7.0 Enterprise provides RF engineers a dramatically more effective way to troubleshoot and optimize WCDMA networks.

The General Performance Event Handling (GPEH) application available in Ericsson networks enables the collection, retrieval, and storage of event data for WCDMA. Files are generated in the network elements (RNC) and collected together in the OSS-RC file storage.

TEMS Visualization 7.0 Enterprise post-processes this extremely powerful data source. The Enterprise designation signals a completely new platform for TEMS Visualization:

Powerful – TEMS Visualization 7.0 Enterprise is a true client/server solution, designed for 64-bit servers. Large volumes of data can be processed, stored centrally, and then accessed remotely through the client application.

Automated – Data processing can be completely automated. Also, the new Diagnostics features are designed to help users find root causes for RF and capacity problems more quickly.

Better decisions – The large volumes of decoded event data and smaller volumes of calculated statistical data are stored separately. This means statistical data can be stored and analyzed over longer time periods – giving operators more confidence in their decision making.

HOW TEMS VISUALIZATION ENTERPRISE WORKS

As illustrated in the figure, the TEMS Visualization Enterprise system consists of two main components, the Server and the Clients.

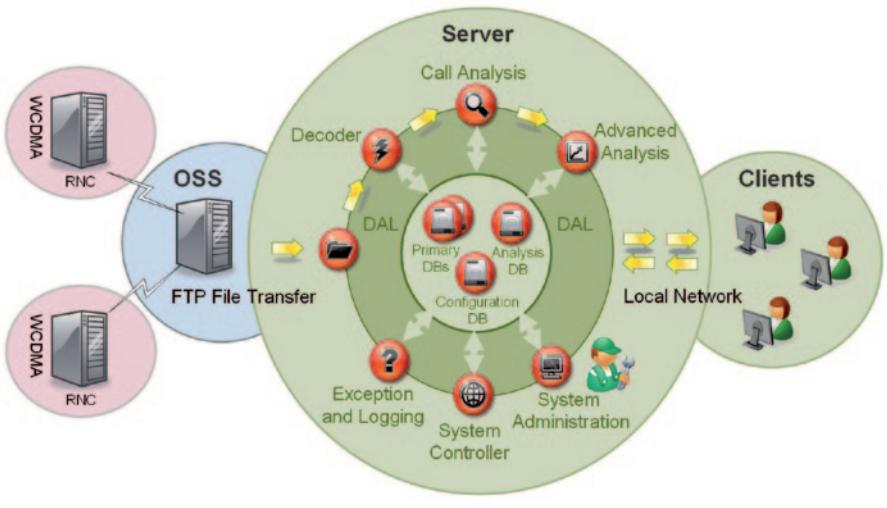
The Server handles the collection, processing, and storage of all data. **A powerful data processing engine** keeps pace with increasing data volumes. TEMS Visualization Enterprise 7.0 has been designed from the bottom up with 64-bit support and multi-core/CPU in mind.

The Clients send queries down to the Server, collect the results, and depict them visually. Users install the Client software locally on their own machines with no need for any other remote access software.

The separation of the data into **Primary and Analysis Databases** is a crucial part of TEMS Visualization Enterprise. This separation of data allows users to perform troubleshooting and optimization tasks based on data collected over long time periods, which gives more confidence to decision making.

After recordings have been set up in the OSS-RC, the data flow through the TEMS Visualization Enterprise system can be **immediate and completely automatic**. There is no need for manual processing work or scheduling of tasks at any stage. This can be extremely useful for early troubleshooting of problems.

System overview



MAIN FEATURES

Automated Network Diagnostics

Many of the reasons behind performance degradation are basic issues. Congestion can push traffic to non-optimal cells, installation problems can cause swapped feeders or over-shooting cells, real-life coverage can differ from predictions, and equipment can fail. The Capacity Diagnostics and RF Diagnostics features highlight cells suffering from these basic issues and try to identify the root causes.

Capacity Diagnostics allows cells with resource issues to be quickly identified. Peak usage statistics for a number of key resource types are calculated. Cells with issues can then be investigated in detail with charts showing, in high resolution, the usage of resources such as channel elements, power, and active HS users.

RF Diagnostics automatically highlights cells in the network suffering from RF issues. By analyzing Measurement Reports cells are identified which are suffering from out of coverage, high DL interference, high UL interference, or UL/DL imbalance. Further analysis is then also performed to identify the potential causes of these issues, such as missing IRAT/IFHO handovers, UL path losses, overshooting cells, or pilot pollution. The MRR-W feature in the Ericsson OSS-RC is required.

Optimization Decision Support

Intra-frequency Neighbor Optimization makes it possible to easily verify the neighbor plan and find both missing neighbors and non-utilized existing neighbors in a WCDMA network. In WCDMA, an accurate neighbor plan is crucial for network performance. Missing neighbor statistics, as reported by actual users, existing neighbor usage and pilot pollution statistics are presented. This information is linked to the map view for easy analysis. Changes can be made and saved to a BulkCM format file for import into the OSS-RC.

Coverage Area Optimization allows overshooting cells to be quickly identified and down-tilts adjusted. An algorithm calculates an overshooting distance for each cell. During processing, the percentage of overshooting calls for the cell are then calculated. Detailed investigation of the calls established in each distance band and the quality of those calls can also be performed in charts and on the map.

Detailed Investigations

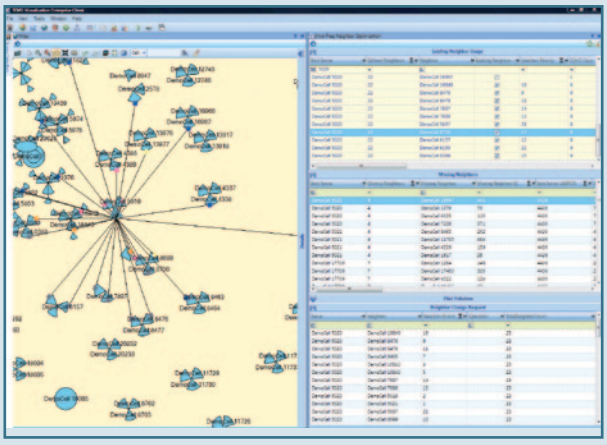
Exception Analysis summarizes all the GPEH messages recorded for the selected scope and all the TEMS Visualization events generated. For selected GPEH messages, it is possible to drill down even further and get counts of the occurrences for different RAB types and also different cause values. This is an extremely powerful way to determine the root causes of network problems. Calls containing the selected events can then be sent to Call Analysis.

Call Analysis allows drilldown to the individual call level. The sequence of signaling messages can be seen, and the reasons behind problems such as blocked and dropped calls can be investigated in great detail. Large groups of calls can also be analyzed for patterns. This is an extremely powerful feature which can, for example, quickly determine if all dropped calls in a cell are generated by the same user or on the same RAB type.

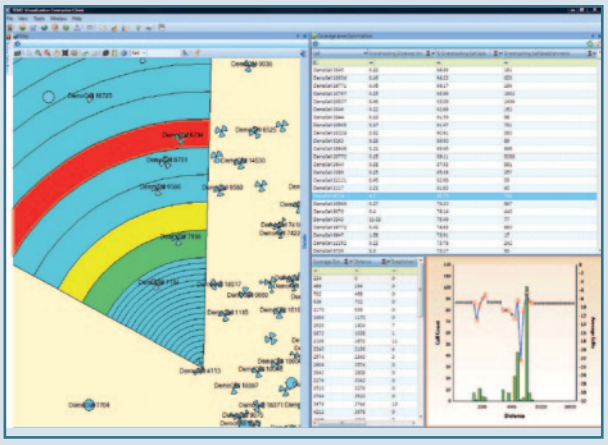
GENERAL FEATURES

- TEMS Visualization Enterprise can take in the BulkCM format directly from the Ericsson OSS-RC and store the required information in the Project database. This includes neighbor cell relations and selection priorities and other cell parameters required for the features.
- Any missing information – such as latitude, longitude and antenna direction, and beamwidth – can be taken from a reference file.
- TEMS Visualization includes the most widely used map engine in the world, MapInfo's MapExtreme®. This makes it possible to reuse all the maps currently used in TEMS™ Investigation and MapInfo.
- The functionality in the Map View includes thematic mapping display from all of the advanced TEMS Visualization Enterprise features.
- TEMS Visualization Enterprise makes it easy to differentiate on the map cells for different carriers (UARFCN) at the same site location. Separate display filters are automatically created.
- TEMS Visualization uses the Microsoft® SQL Server 2008 Enterprise database solution.

Intra-frequency Neighbor Optimization



Coverage Area Optimization



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NETWORK REQUIREMENTS

Ericsson GPEH Module

- Ericsson WCDMA P6-P7FP with GPEH
- MRR-W in OSS-RC also required for RF Diagnostics feature

A REVOLUTIONARY SOLUTION

GPEH is an extremely powerful source of data, collected in the Ericsson RNC, which records event data for large volumes of user traffic with more detail and more cost effectively than is possible using passive probes.

TEMS Visualization Enterprise adds value by taking this data and automatically processing, analyzing, and highlighting network performance issues up to the network optimization engineer. Detailed investigation down to individual call data is also possible when required. All this is possible without users ever needing to leave their desks.

TEMS Visualization Enterprise is ideal for both troubleshooting of network problems on a cell-by-cell basis and for regional optimization. TEMS Visualization Enterprise gives operators the information they need to get the optimal performance from their network in the most efficient manner possible.

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