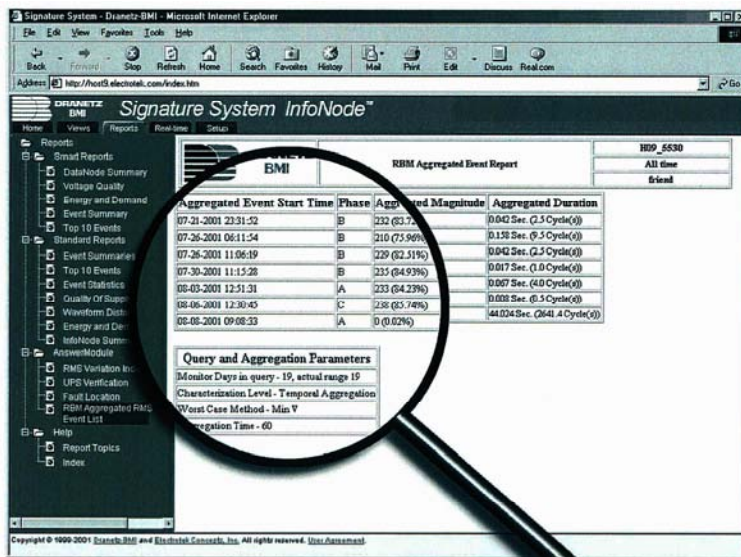*AnswerModule*®

Advanced Event Characterizer / Reliability Benchmarking

Measure and Benchmark Utility Service Reliability

Monitoring is the key to assessing power system performance, however, collecting data is simply not enough to establish service reliability levels and ensure that they are being met. Utilities must
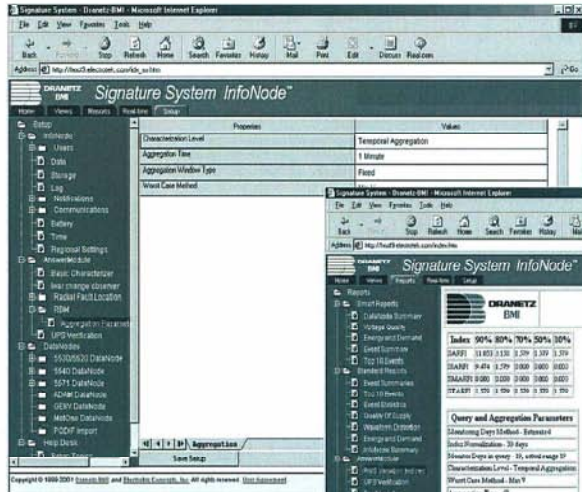

establish benchmarks for service quality and continually measure their performance against them. Several years ago, the Electric Power Research Institute (EPRI®), developed a service assurance approach called the Reliability Benchmarking Methodology (RBM). Under contract to EPRI, Electrotek Concepts® developed a series of indices that utilities could use to assess service performance in terms of quality as opposed to interruptions, a standard practice in the industry. Increased sensitivity of customer equipment and processes to power quality variations has indicated a need to measure performance beyond sustained interruptions. The RBM approach to assessing system performance addresses this need.

The indices were designed to assess service quality for a specified circuit area and are scalable. They are calculated based on the rate and severity of occurrence of different disturbance types and focus on sag frequency:
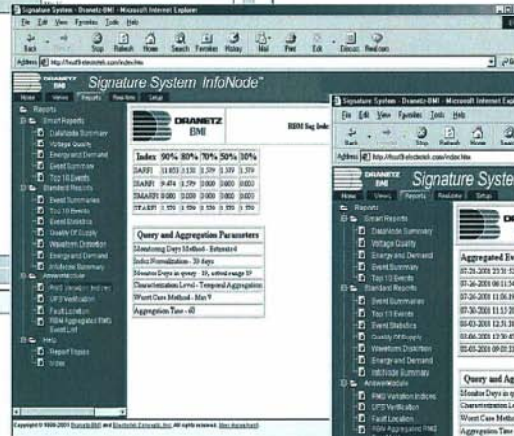
- System Instantaneous Average RMS Variation Frequency Index (SIARFI);
- System Momentary Average RMS Variation Frequency Index (SMARFI);
- System Temporary Average RMS Variation Frequency Index (STARFI);
- System Average RMS Variation Frequency Index (SARFI).

SIARFI, SMARFI, and STARFI serve as components of SARFI, which represents the average number of RMS variation measurement events occurring per customer served. SIARFI, SMARFI, and STARFI represent the number of sags occurring over different durations.

The Advanced Event Characterizer/Reliability Benchmarking AnswerModule®, located within the Encore Series Software, employs proven algorithms to extract and analyze captured events, characterize them, and compile indices for performance analysis.


This unique software tool characterizes the event in terms of voltage peak, frequency, duration and depth of the voltage sag, as well as other factors, enabling the user to classify the event based on either IEEE Standard 1159 or a custom-defined table or severity level.

Setup for the RBM Reporter.

The RBM Reporter calculated service quality indices from data collected from the Encore Series System
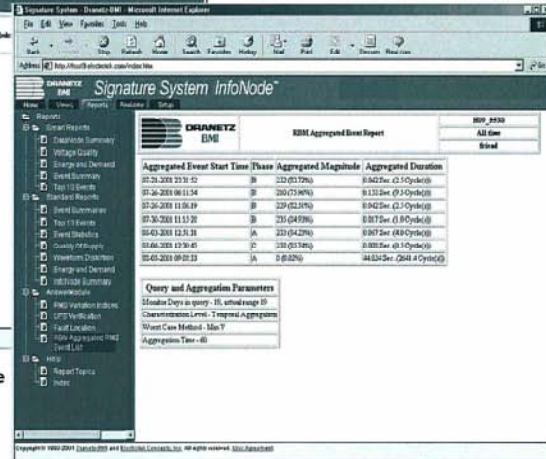
The RBM Reporter creates an aggregated RMS event list which is used to calculate the indices

Specifications for Charcterizer/Reliability Benchmarking AnswerModule

Operating environment:
Installed in any InfoNode
or Encore Series Software.

Input data:
Accepts waveform data from any DataNode® that provides greater than 64 samples/cycle for 3-phase Voltages & currents, RMS record must also be present.

Output information:
Aggregated list of RMS Events
SIAFI, SMARFI, and SARFI indices.

Applications:
Compiles indices of collected events to establish power system performance levels.

Algorithms:
Algorithms for voltage analysis and characterization
Also algorithms for index calculation.

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