

Unprecedented performance and scalability demonstrated for meter data management

Performance testing results of AMT-SYBEX Affinity Meterflow application using IBM Informix TimeSeries software



Highlights

Ten million meters scalable to one hundred million meters for five billion daily meter readings

IBM and AMT-SYBEX testing has demonstrated the capability of the IBM® Informix® TimeSeries software to enable the Affinity Meterflow™ application to offer linear scalability up to 100 million meters to load and process meter data at 30-minute intervals in less than 8 hours. The time required for 10 million meters took less than 36 minutes.

Executive summary

In August 2011, IBM and AMT-SYBEX, an IBM Business Partner and provider of high-performance energy data processing solutions for energy and utilities companies across Europe, collaborated to perform a benchmark test of Affinity Meterflow (formerly Smart DTS), AMT-SYBEX's solution for meter data management (MDM). The Affinity Meterflow application uses IBM Informix TimeSeries software to manage smart meter data. The benchmark was performed at the IBM Power Systems Benchmark Center in Montpellier, France, on a single IBM POWER7® system, utilizing 16 cores.¹

Understanding the significance of this benchmark may help energy and utilities organizations and MDM solution providers to:

- Deploy best-in-class MDM solutions
- Dramatically reduce storage and system costs
- Accelerate time-to-value gained from smart meter data
- Reduce risk of smart meter deployments
- Help protect growing smart meter investments



The results of this benchmark demonstrate the substantial business value that use of Informix TimeSeries combined with a proven MDM application can deliver to the energy and utilities industry. We invite the reader to compare these results with other published benchmark results.

- **Faster processing of meter data means faster business processes that use that data**
 - Achieved daily billing calculations of 21,000 bills per minute while concurrently running the data load
- **Significant reduction in storage requirements**
 - Total storage required for one month of interval and register data for 100 million meters was less than 4 terabytes
 - Average throughput exceeded 420,000 records per second in meter data load using standard storage disks
- **Consistent, scalable performance helps yield highly predictable costs**
 - Daily end-to-end processing times remained constant for 100 million meters over a 31-day period, irrespective of the amount of data stored
 - Storage requirements remained linear over time

These results are enabled by the unique technology of the Informix TimeSeries software, used together with a proven MDM solution such as Affinity Meterflow. Unlike traditional relational databases, Informix TimeSeries technology consolidates and organizes time-stamped (interval) data in a way that requires less storage space and enables significantly improved data load and query times.

In summary, the benchmark results show that Informix TimeSeries software is able to break the bottleneck of massive MDM and deliver significant business benefits to utility organizations, as well as to ISVs offering packaged MDM solutions such as Affinity Meterflow from AMT-SYBEX.

The value of the benchmark

Data is increasingly the lifeblood of every industry, but a deluge of digitized information can create huge disruptions and risk if not anticipated and effectively managed. Consider the communications industry, forced to accelerate huge infrastructure investments as their systems and networks strain under the data pressure created by an avalanche of smart devices and new data services.

Enter the smart meter.

As the cornerstone of Smart Grid initiatives and Advanced Metering Infrastructure (AMI), smart meters promise to deliver significant benefits to energy and utilities organizations and their consumers. Smart meters fundamentally change how and when energy usage data is collected. The result is a tsunami of data that must be processed, transferred, stored and analyzed, creating unforeseen technical challenges and business risks for which many utility organizations are not prepared.

As AMI initiatives increase, how does a buyer compare one MDM solution to another? Armed with the knowledge that MDM will create data storage and performance challenges, how does a buyer know the amount of systems and storage that will be needed or whether service-level agreement goals have been met?

Answers to these questions are determined by many factors, including the database system that sits at the core of all MDM solutions, whether packaged or home-grown. Does it matter which data management solution is used?

The answer is decidedly *yes*.

Providers of MDM solutions understand that faster processing of meter data enables faster business processes that utilize that data (such as meter-to-cash) and faster data analysis. With a database system as the enabling technology, performance is affected by the speed, efficiency, and scalability of that database system.

IBM has conducted several Proof of Concepts (PoCs) with a number of companies using Informix TimeSeries as the enabling technology in the customer's own MDM applications. In each PoC, Informix TimeSeries consistently outperformed the customer's existing solutions, at times enabling up to 50 to 70 times faster processing of meter data, while requiring as little as 30 percent of the storage.

The benchmark was conceived and conducted to illustrate these benefits in tangible ways. It tested the preparation, loading and validation, estimation and editing (VEE) of meter data for a 10 million-meter utility, as well as a "day-in-the-life" scenario for a 100 million-meter utility. If you compare the performance of Affinity Meterflow with other MDM solution offerings that do not use Informix TimeSeries software, we believe you will conclude that these performance and scalability results are exceptional.

For more information

To see the complete benchmark test and results, please visit:
<https://www.ibm.com/developerworks/forums/thread.jspa?threadID=390441>



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1 Performance data resulting from the benchmark testing contained in this summary were determined in various controlled laboratory environments using a specific hardware and software configuration, are provided AS IS, and are for reference purposes only. The results that may be obtained in other operating environments may vary significantly. Factors that may influence actual results include, but may not be limited to, the specific hardware (servers, storage, etc.) used, application environments, and use of data compression, etc.



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