Metso Automation delivers performance by switching to RDM Server

Metso Automation, Norcross, GA

www.metsoautomation.com

Industrial Automation

Employees: 3,600

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Metso Automation was facing performance in their data collection application based on a leading Open Source database solution. They replace the database with Raima's RDM Server and were able to gain better than expected performance along with the ability to model more complex data structures. Metso Automation specializes in automation and information management application networks and systems, field control technology and life cycle performance services. Its main customers are large process industry plants in the power, energy, and oil and gas industries as well as the pulp and paper industry. Their customers demand reliability and cost efficiency from their products and value low risk and security in supplier relations

About the Application

Metso's IMAS™ Process Control Data Server (PCDS) integrates all advanced control and optimization applications to a single database for all process information resulting in reduced solution development and maintenance time. The PCDS is the heart of the AQC Solution™. It collects and stores data from the distributed control systems, mill information systems, and lab quality databases. The advanced control and optimization modules utilize this data and the results are sent back to the PCDS. The PCDS then sends the control actions back to the distributed control systems. The PCDS communicates to the distributed control system via OPC client software for read and write functionality. Information from mill information systems and lab quality databases are directly interfaced and channeled through DataPipe to the PCDS. The PCDS can be assessed remotely for engineering or operation support. The IMON™ Performance Monitor is connected to the PCDS and as a result has access to all the information required to monitor the performance of the advanced control and optimization modules.

The Challenge

Metso had used RDM Server in the past, and at that time embedded database was known as Velocis, but with the open source movement in full swing and Metso's acquisition of Pacific Automation and the Velocis based IMAS product, a decision was made to standardize on the leading open source SQL databases solution. In addition to the appeal of an open source solution, the ease of use of a pervasive standards based query language and popular relational model were also contributing factors for the move away from RDM Server.

It soon became apparent that the SQL database solution was not able to perform at the level Metso and its customers had expected. "At the high rate of speed and volume of sensor data being passed into IMAS database we started to see delays in the data collection resulting in the loss of key tag information with the SQL database. We send set points out to clients every 30 seconds and we were seeing consistent delays up to 2 to 3 minutes resulting in the loss of 6 or more set points. In some cases we would see extreme delays of up to 5 minutes", saysDevin Cole, IMAS Project Manager.

A majority of the problem was attributed to innate complexity of the data being modeled within the IMAS application which doesn't fit easily into the constraints of the relational database model. The complexity of the inter table relationships needed to represent the data arrays caused the transactions that inserted the new data values to take the 2 to 3 minutes to complete.

"With RDM Server 8.0 the data delays completely disappeared. We didn't do any formal performance testing but we saw at least 50% better performance when comparing RDM Server to the SQL database solution," Randy Mok, IMAS Developer.

In addition the database size grew exponentially requiring additional storage and maintenance.

The Solution

The solution for Metso was to go ahead and replace the SQL database with RDM Server 8.0. They utilized the Raima Database Manager distinctive network database model, its unique ability to store structures and arrays and server extensions.

Along with the dramatic increase in performance Metso also saw a significant decrease in the amount of storage required for the application data.
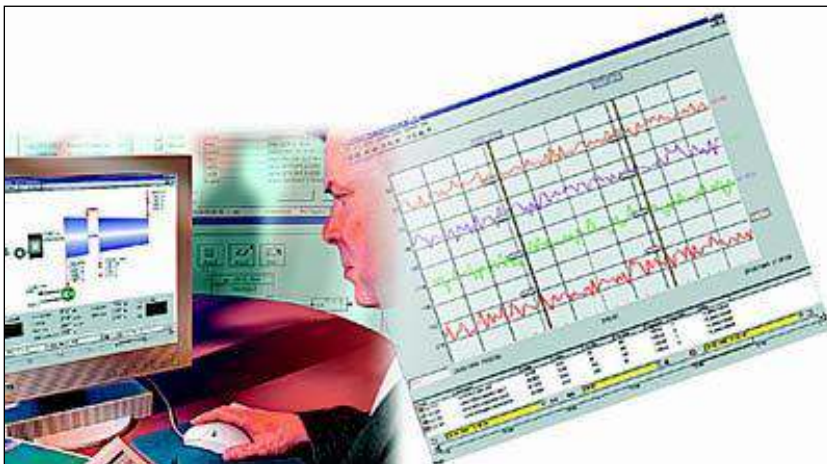
This dramatic decrease is attributed to the use the Raima Database Manager Network data model which eliminates the need for indices to relate data from two or more tables.

Another benefit Metso was able to realize by using Raima was the ability to use RDM Servers multiple APIs. For the collecting and reporting of data they used the C navigational API which gave them the performance they required. They also used the SQL API to easily make configuration changes allowing both data and configurations to be stored within the same database.

"The size of the RDM Server database is half that of the previous database solution. With the average IMAS installation constantly running well over two years this is a significant cost savings in total storage hardware requirements," Devin Cole, IMAS Project Manager.

Conclusion

RDM Server 8.0 delivers the performance demanded by on a control server where others just can't keep up. The ability to handle complex data and the use of RDM Servers navigational API eliminated the latency problems they were seeing with the previous SQL database solution. This has enabled Metso to once again deliver a high quality high performance solution to their customers.

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