Ovation™ Database Server

Data Sheet

Features

- Houses the Master Database, which populates a distributed database contained on all machines
- Utilizes Oracle 11.2 for the Master Relational Database
- Stores system configuration, control algorithm information, and process point information
- Uses system editing functions to track changes such as those provided by the Ovation Developer Studio and the Ovation Control Builder

The Ovation Database Server offers a secure, reliable, and scalable server platform to support the complex database processes. Not only optimized for high performance environments, the Ovation Database Server helps to increase the availability and intercommunication of crucial plant data.

Ovation's Database Server uses a Relational Database Management System (RDBMS) philosophy. This philosophy, which stores data in the form of related tables, provides a very powerful mechanism for extracting related data.

A Relational Database Management System stores information in tables — rows and columns of data — and conducts searches by using data in specified columns of one table to find additional data in another table. In a relational database, the rows of a table represent records (collections of information about separate items) and the columns represent fields (particular attributes of a record). In conducting searches, a relational database matches information from a field in one table with information in a corresponding field of another table to produce a third table or view that combines requested data from both tables. The Ovation engineering tools have a user interface that provides many highly sophisticated views of this data.

Many pieces of information in the Ovation system, including system configuration, control algorithm information, and the process point database are stored in the Ovation Database. The Ovation Database provides the capability to integrate and organize the massive amounts of raw data in the system to create meaningful and valuable information.

All programming tools and user interfaces store their data in the Ovation Database. The information is subsequently transmitted to the control system.

Ovation Database Types

At the heart of the RDBMS is the Ovation Database, which consists of a master database that creates and populates various Distributed Databases.

The Distributed Database contains subsets of information from the master database and is stored locally on a drop to allow that drop to operate independently. A Distributed Database is present on each drop in the system and is continually updated as point information changes.

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Changes to the master database are performed using system editing functions such as those provided by the Ovation Developer Studio and the Ovation Control Builder. As changes are made and/or loaded to Ovation drops, the server performs a multicast broadcast of applicable data for each change in sequence.

The server also periodically broadcasts (via multicast) the Plant Mode Point Information, primary/partner drop information, drop mismatch information, and the current sequence number. Clients use the current sequence number to determine if they need to explicitly request an update.

Database Creation

The creation of the Ovation database is a product of a combined effort between customer design engineers and Emerson Project engineers. Typically, the following process is used:

1. Customer determines the names and types of I/O points that are needed for the system. This information is based on the quantity and types of devices that need to be monitored in his control system.
2. Customer and/or Emerson enters these points into a database tool (such as DBID, Access, or Excel) along with the fields required for each point.
3. Emerson decides what Ovation I/O modules are needed in order to handle the proposed points.
4. Emerson determines how I/O modules should be mounted in the system cabinets so that the total of all the points can be partitioned accordingly.
5. Point information from the customer is entered into DBID and then imported into the master database.
6. Point-by-point changes can be done using the Developer Studio point building tool. Mass changes can be done by taking data out of the master database and inserting it into DBID for editing. After the edits are completed, the file can be imported into the master database again.

Relationship with the Engineer Functions

Having all the pertinent system information in one database provides the flexibility and processing speed needed to ensure that Ovation is able to perform all its functions quickly and efficiently.

The Ovation Database has a relationship with other Ovation functions as described below:

Ovation Developer Studio — The Developer Studio also serves as a "window" into the Ovation Database Server. The Developer Studio provides a package of tools necessary to build and maintain a process control system. Using the tools available, you can build an entire system, import information from a previously created database into the Developer Studio, and edit and update attributes such as network configurations and point information. As a fully integrated advanced software program, the Developer Studio creates and maintains Ovation drop types, control strategies, process graphics, point records, and system-wide configurations, including integrated security features.

Ovation Control Builder — Algorithm and Control Builder default points are created, deleted, and modified with the Control Builder. Control program instructions are created and deleted with the Control Builder. The logic that is created and edited by the Control Builder affects the Ovation database since the database is modified to reflect the logic changes. The Load function of the Ovation Developer Studio is used to load the information to the originating drop(s).