

Redwood Business Solutions

Making complex processes easy to manage.

At A Glance

Industry

- Automotive

Environment

- Home-grown applications for vehicle and parts warehouse management
- i2, Brio & Oracle databases
- 50 UNIX servers - HP SuperDome & Sun Web Servers

Key Challenges

- Ensuring all data updates are completed on time for business users
- Need to monitor increasingly complex cross-platform processing environment
- No ability to establish dependencies between jobs

The Solution

- Management and control of approximately 70,000 jobs in a typical week
- Maintenance of complex job dependencies
- Complete automation of enterprise data warehouse

Key Benefits

- Better informed decision making based on the current and relevant data
- Centralized control and monitoring of entire job scheduling environment
- More efficient overnight batch processing with fewer errors and interruptions



Toyota revs up its 10 terabyte data warehouse with Cronacle

As one of the world's leading motor manufacturers, Toyota knows that outstanding after sales service and support is a key differentiator in the highly competitive automotive market. To ensure that senior management are armed with both accurate and up-to-date business information, Toyota turned to Cronacle, an event-driven job scheduling solution from Redwood Software, for automating its entire data warehouse.



The Toyota brand is synonymous with comfort, innovation and value for money and as the world's third largest automaker, Toyota Motor Corporation knows that outstanding after sales service and support is a key differentiator in a highly competitive market place. Nowhere is this more apparent than in the North American automotive market, where Toyota Motor Sales has established itself as one of the nation's top suppliers of new passenger vehicles. Making shrewd decisions based on accurate and up-to-date business information has supported Toyota's management in achieving this success.

Instrumental in enabling management to make the right decisions at Toyota is a 10 terabyte data warehouse; continuously fed from each major Toyota application, including the in-house developed vehicle management system, parts distribution and finance systems. This information is made available to 1000 end-users for analysis and reporting using Brio and other reporting and query tools. Ensuring that the enterprise data warehouse is refreshed

on a timely basis is a major operational challenge, as each week 70,000 jobs, executing across 50 UNIX servers sustain a continual feeding process. As part of the planning of its data warehouse project, Toyota identified that a job scheduling solution would enable it to automate the movement of data between systems.

Job Scheduling was a Good Fit for Toyota's Data Warehouse

Richard Berg, Technology Manager for Toyota Motor Sales, takes up the story: "We needed to find a product that would load database information from each of our applications into the enterprise data

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**Richard Berg, Technology Manager
Toyota Motor Sales**



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warehouse. Previous experience with mainframe systems, as well as knowing the volume of data we need to shift on a weekly basis, meant that we would need a job scheduler. Relying on 'cron' for operating system scripts wasn't giving us the ability to program our schedules or establish any dependencies between jobs."

Toyota researched the market for a suitable solution and selected Cronacle because it fitted the data warehouse requirement from both an architectural as well as an operational perspective. Berg continues: "Cronacle was easy to use in comparison to other products and also offered the flexibility and processing power required for handling our high volumes of workload, which featured complex dependencies. The fact that Redwood Software specialized in job scheduling made us feel safe in the knowledge that the vendor was very experienced in this area."

Dimitrios Loumakis, Project Manager for Toyota Motor Sales, comments: "Most of our applications have been developed in-house around an Oracle database. We need to extract information from each of these systems and perform data transformations, normally using Informatica, for uploading into our data warehouse. With Cronacle, we could see how easy it was to automate dependencies between jobs. Its parameters enable us to incorporate lots of flexibility, while also maintaining a high level of granular control over job flows, even when

they're running on different UNIX server platforms."

As well as automating data uploads from in-house applications at Toyota, Cronacle has been used to manage the movement and processing of data from other systems. In one example Cronacle manages a sequence of processes that begins with data sent by an IBM mainframe. This data is then cleansed before being uploaded in to an i2-based warehouse management application. From i2, the data is transferred into the enterprise data warehouse. The loop is completed when Cronacle returns analyzed data back to the IBM mainframe.

Berg adds: "Cronacle is able to manage this complete chain of events which is a fantastic time saver for us at an operational level. We only get alerted if there is an error."

Event-Driven Processing

Cronacle's ability to manage workload on an event-driven basis in addition to clocks and calendars was another reason why Toyota chose the solution. Loumakis continues: "In most instances our processes are event-driven and quite often processing needs to be based on a chain of events. A good example of this is in our warehouse system, which runs about 5,000 jobs a day, all triggered by different permutations in events. Cronacle is well suited in supporting this type of processing requirement."

Cronacle has enabled Toyota to automate its enterprise data warehouse, ensuring that data is kept fresh and relevant for users. Berg adds: "At the end of the day, our users are making important business decisions based on the data they extract from the warehouse. With Cronacle automating all data updates, we can ensure that users are armed with the most up-to-date information possible to help with their decision making."

Cross-Platform Job Scheduling for the Future

Cronacle has proven itself in meeting all of the data warehousing challenges laid down at Toyota. It is now the standard scheduler for the company's UNIX-based applications. There are plans to roll out a new warranties application system running on a J2EE platform. With Cronacle offering Java, UNIX and Windows NT/2000 support, it will be used to automate the batch processing required to support this new application.

Loumakis adds: "We are starting to explore the use of server farms executing jobs across the existing UNIX machines as well as Windows 2000 servers. Cronacle's ability to dynamically route workload based on current system resource availability will support this initiative. Also, having centralized control of jobs executing in Windows 2000 alongside UNIX platforms is a significant benefit - operators will not need to become familiar with a new tool when managing Windows 2000 jobs. Sharing data across UNIX and Windows 2000 platforms is also a big benefit."

Richard Berg concludes: "The greatest challenge we face is time. For our management to be equipped with the best information on which to make key business decisions, we need to keep our data in good shape. If the system breaks, we need to restart and be up and running in time. Cronacle enables us to meet that goal. I don't think we could have done better in growing our data warehouse environment than choosing Cronacle."



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