Managing batch and business processes in Oracle environments

Batch processing dates back to the mainframe and has thus been around for decades. After falling out of favor, it has made a comeback due to pressures to consolidate staff and save money. Oracle environments are no exception. Today IT shops are under more and more pressure to reduce costs through automation – batch and business process automation can help.

In this e-book, readers can learn about the history of batch processing and the various batch technologies that exist today. Learn what batch processes are available in Oracle environments such as E-Business Suite and PeopleSoft, and find out when batch is appropriate for managing business processes, and when a more manual approach might be best.

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Resources from UC4 Software
Chapter 1: Managing batch jobs

By Frank Ohlhorst, Contributor

In its simplest form, a batch job is just a script scheduled to run at a preset time, ideally without human intervention. Today, you can find batch jobs everywhere -- executing backups, closing out accounting periods, archiving data and so on. However, the lowly batch job starts to show its true nature when used for enterprise-level database functions.

Batch jobs can move massive amounts of data, build indexes, expand databases and perform countless other functions critical to the health of a data store. Yet they pose significant challenges in today’s Web-connected, 24/7 IT world. For example, the typical online shopping cart relies on a database supporting it. The shopping cart needs to be available nonstop and provide a consistent experience for the customer, and it can’t undergo interruptions because of maintenance processes. Many other IT services fit into the same bucket of high availability, making it that much harder to batch out some work.

When to run batch processes, or whether it matters anymore

In the past, the trick was to run batches during off-hours, and in most cases that still holds true. If your business does not have a 24/7 operational window, batches can be easily executed in the off-hours. The real trick is to incorporate scheduling software that can execute batches based on a predetermined schedule but that offers somewhat elastic settings, such as scheduling batches for the last day of the week, month and so on.

The best time to run maintenance batch jobs is directly after a backup event but before business operations resume. However, in some cases the backup window may be large, reducing off-hours availability for batch processing. In many cases, that can create a delicate ballet of events that overlap but do not interfere with each other. So design your backup event to handle databases and other elements affected by a batch process first, calculate the time that event needs to occur and then schedule the batch process to execute after that part of the backup process. It is not an exact science, but many IT shops should be able to accomplish the scheduling gyrations needed to make it all work.
Nevertheless, many businesses do not have an availability window for data-intensive chores such as backups, automated scripts and batch jobs. While that may seem like an insurmountable challenge, technology has evolved to include intelligent execution of events that has little effect on live operations.

For example, Oracle has several tools that take some of the pain out of the batch-job process. Oracle Batch Manager is a good example. It has a Windows graphical user interface (GUI) that simplifies the design of Oracle batch processes and can work with the Job Scheduling component of Oracle’s Enterprise Manager application. The idea here is that you can predefine, test, validate and schedule batch processes and have a clear idea of what the expected results are and how the process affects operations.

Many other database vendors include similar tools, which help to simplify building batches and executing them. However, there are several critical elements that they should share to bring success to batch processes. First is a batch-building (or scripting) language that can be accessed via a GUI. There should also be error checking and testing capabilities. Another important element is intelligent scheduling, where schedules can be defined. Finally, there should be auditing and reporting functions that documents the execution of the batch and records results.

**Batch processing has gotten more advanced**

Luckily, batch processing has gotten rather sophisticated over the last few years. Batches can be run against active databases and applications, without disrupting the service that the batch is impacting. While that may not be true for every batch command, the majority of processes seemed to be covered -- such as rebuilding indexes, expanding databases, modifying rights and so on.

That further simplifies the management of batch processing while allowing operations to be more efficient, since downtime is no longer part of the equation. However, there are some processes that will impact operations no matter how you plan it, such as relocating a database to a different storage pool or creating a snap shot or archive. There is an easy answer to those problems, and it comes in the form of education. Many vendors have put together best practices and technical tips that can help alleviate those concerns.
One other element to consider is performance of the batch process -- if execution of a batch takes too long or interferes with operational windows, something will need to change to accommodate the process. In most cases, that means offloading the batch job to alternative hardware or adding additional hardware to handle the processing demand.

For larger enterprises, especially those dealing with big data or multibillion-record databases, the best option is to offload batch processing to dedicated hardware, allowing batches to run without affecting operational readiness of applications. That way, batch execution can be tuned to use the maximum available resources or to use load balancing or virtualization to maximize performance.
Chapter 2: Batch jobs in Oracle environments

By Frank Ohlhorst, Contributor

In the Oracle realm, there are many different ways to manage and execute batch jobs, depending on the Oracle technology in use. Most Oracle database administrators approach batch-job processing from the command-line interface (CLI), but that is a manual process and requires hands-on knowledge, monitoring, execution and validation.

Luckily, Oracle offers many tools that make the batch creation and execution process a little easier, and there are also third-party tools that can simplify batch execution and management. With Oracle’s E-Business Suite, the tool of choice is the Oracle Concurrent Manager, or more correctly, one of the Oracle Concurrent Managers. There are several Concurrent Managers, each governing flow within each Oracle Apps area. In addition, there are “super” Concurrent Managers, whose job is to govern the behavior of the slave Concurrent Managers.

Batch in E-Business Suite

With that in mind, E-Business Suite has three important master Concurrent Managers: the Internal Concurrent Manager, the Standard Manager and the Conflict Resolution Manager. Each is responsible for managing various processes in E-Business Suite, and whole books have been dedicated to the intricacies of the Concurrent Managers. Nevertheless, understanding how Concurrent Managers interact with E-Business Suite is a critical component of designing, tuning and managing batch jobs.

Third-party tools offer additional functionality for E-Business Suite. They provide functions for batch-production processes, including complete automation of E-Business Suite jobs, while offering synchronization of external production (Unix and Windows NT, among others) with internal E-Business Suite production. They include real-time monitoring of Oracle E-Business Suite production, enhanced scheduling and sequencing functionalities for E-Business Suite batch jobs. Third-party tools add another level of management to the process and help build automated solutions and integration.
Dealing with batch processes is not unique to Oracle’s E-Business Suite. PeopleSoft and JD Edwards also require batch processing for their environments, and business platforms have similar challenges, yet they differ in execution.

**Batch processing in PeopleSoft applications**

PeopleSoft relies on PeopleTools Process Scheduler to run jobs on a regular schedule. Perhaps one of the biggest differences in how PeopleSoft handles batches comes from the use of Application Engine programs, which comprise PeopleSoft's batch processing technology. These programs are developed in Application Designer and consist of blocks of PeopleCode and SQL, which are then stored to be executed by the Process Scheduler. Application Designer is used for more than batch processes; it is also used to design and build code for other functions as well. That adds a layer of complexity to the batch process but also gives batch processing more flexibility.

Of course, there are third-party products that can enhance batch design and processing of PeopleSoft PeopleCode-based batches. Whether or not a third party tool is required is up to the administrator, who can judge whether the in-house batch code builders have the knowledge, time and initiative to code and manage batch processes using native tools.

**The ins and outs of batch with JD Edwards**

Much the same can be said for JD Edwards EnterpriseOne. Third-party tools are available, and it really is an administrative decision on whether or not to use them. However, batch-processing design in EnterpriseOne is rather sophisticated, and JD Edwards devotes a great deal of resources for supporting batch processing.

The process for building batch jobs under EnterpriseOne is similar to those in other platforms, but there are underlying differences that make the process unique. With EnterpriseOne’s native tools, building a batch process means creating a Batch Application task. That task is built using the Workflow Modeler, which offers a graphical representation of how elements will be executed. The actual batch commands are inserted into application query forms from a lookup of available commands.
The formulaic process of building batch processes is easy, but the programmer must have intimate knowledge of how the functions work. What’s more, the formulaic process can be somewhat limiting in flexibility and proves best for batch processes such as quarterly ledger posts and report generation.

Batches are run using the EnterpriseOne Workflow Scheduler, which allows you to launch and halt instances automatically or manually. For automatic execution, Workflow Scheduler runs on the enterprise server where Workflow Modeler resides.

Batch processing can be a complicated process, and the various vendors handle those tasks in different fashions. However, all benefit from the use of third-party tools, which can streamline batch creation and improve batch management -- saving time, resources and ultimately improving the return on investment of an enterprise platform.
Chapter 3: Connecting batch jobs to business processes

By Frank Ohlhorst, Contributor

Increasing interest in IT automation has brought batch processing back to the forefront, and the ability to automate tasks provides advantages for IT shops focused on supporting core business processes.

Batch processing dates to the early mainframe days. The true value of the batch process in the mainframe era was the ability to execute time-consuming processes with little human intervention. It was perhaps, the original definition of business process automation (BPA). But faster systems, 24/7 operations and modern applications nearly killed the need for batch. Instead, administrators chose to execute tasks manually as part of an operational procedure.

And now it is all changing again. BPA has become more important in today’s stressed IT departments, and batch processing is one way to bring automation back into the picture. In addition, most enterprise software has added process managers, scripting, scheduling and workflow tools that help create and run batch jobs.

However, questions remain: When should you use batch processing? How do you prove its value? What batch management tools should you use? There are no simple answers, but there are guidelines that help administrators make the right decisions.

On the question of when to use batch: A simple rule of thumb is to run batch for any repetitive task. Quarterly accounting reports are one example. These reports are often delivered to specific departments on a regular basis, such as an invoicing report for the accounting department. IT departments can form a batch process to create and electronically deliver those reports.
Benefits of batch processing beyond reporting

Benefits of batch extend beyond report generation, however. IT managers should be aware of all possibilities as well as the steps needed to increase automation and reduce use of dedicated resources. External factors such as decreased budgets and staff are driving IT departments toward BPA.

Other business processes that can benefit from batch include archival and backup chores, purges of temporary files and mass migrations of customer information. Archiving using batch can be beneficial if the archiving involves moving data from expensive tier 1 storage down to tier 3 or lower, for example. Moving unused data sets to less expensive storage frees up tier 1 storage resources, helping to lower the total cost of ownership for storage. Batch helps this happen with little human intervention.

In the accounts payable and receivable department, batch can help with data entry, invoice processing and check runs. Some accounting processes are compute-intensive, and performing these functions in real time can impact productivity. Some of that computing overhead can be reduced by having tasks such as data entry run during business hours, while the actual calculations and processing of the data runs in the off-hours using batch processes. This can allow compute resources to be leveled and balanced, perhaps eliminating the need to buy additional processing power.

When batch might not be the right answer

The desire for efficiency drives BPA, and that can highlight the need for batch processing. That said, applying batch to every business task can be counterproductive. Sometimes certain tasks change regularly, so administrative control is the best way to handle changes.

Monitoring batch processes is still crucial. Fortunately, batch jobs can include update logs, reports and even updating databases that track data movement. Using reporting can also reduce overhead needed for auditing, which is often tied to compliance requirements. When batch jobs are designed and implemented correctly, IT can see reduced costs, tightened controls and a clearer audit trail. That delivers improved return on investment with several IT processes.
All things considered, batch processing is a valuable capability for organizations looking to reduce costs, leverage BPA and increase the value of their existing IT infrastructure.
Chapter 4: Business process automation in Oracle environments

By Frank Ohlhorst, Contributor

It is no secret that IT exists to serve business needs. The IT department is just another core business service, such as human resources or sales. Yet IT operations have a big effect on business, simply because all other departments rely on IT to function.

IT is often a target for bean counters and executives looking to improve efficiency. Fortunately, IT departments in Oracle environments have an advantage. They can use software that handles business process automation (BPA) and business process management (BPM). These tools can build batch procedures that help to automate core IT processes -- and bean counters love automation, because automation equals savings.

Oracle offers several paths to automation, including using batch processes, scripts and third-party tools. But automation is worthless if you don't manage it properly. Otherwise you will lose data and miss business objectives. One of Oracle’s primary tools is its Business Process Analysis Suite, which lays the groundwork for business process management and automation.

The benefits of business process automation tools

Designing and testing automated processes is not new – it has been done manually for decades since the early mainframe days when batch processing handled all operations. But automation tools today are more sophisticated, incorporating standards and helping reduce errors. The result? More flexibility and quicker implementation.

Adherence to standards in BPA software is important. Staff can change, sometimes in mid-project. Using standards can include industry-accepted best practices and reduce learning curves.

Another critical feature for BPA software is self-documenting procedures. As designs are created, documentation is built-in. Using this alongside change management and graphical
design tools can help create an auditable design document. Auditing is critical for compliance and other legal requirements.

There is more to management and automation than following canned templates and pre-authored scripts. In the real world, BPM reaches across several technologies and ancillary services such as service-oriented architecture, event-driven architecture and dynamic reporting.

**Oracle and third-party approaches to business process automation**

Oracle’s approach with its Business Process Analysis software includes the ability to rapidly model business processes and convert them to IT executables. It also offers process simulation, detailed reporting and cross-platform support. The software is divided into four integrated components -- Business Process Architect, Business Process Repository, Business Process Simulator and Business Process Publisher.

The division of tasks lends itself well to collaborative environments, where various IT staffers can take part in designing the process and validating the design before it is implemented. Various third-party tools offer similar features in their business process automation software packages as well.

Ideally, senior-level managers will architect the processes and work with various business units. That leads to deployment and automation of IT operations, and the related business processes.

Understanding the process is as important as the process itself, and Oracle knows it. Its software offers an advantage to IT pros looking to bring automation into complex, multiplatform environments, where efficiency is a must and IT must be tied to business goals. The larger the corporate entity, the more intensive the BPA process becomes, requiring simulations and audits to prove the value of the processes and protect against catastrophic errors.

While Oracle can readily provide the tools to make BPA and BPM realities, it is the ideology that must be mastered first to guarantee that value is delivered.
Resources from UC4 Software

Accelerate Your Oracle E-Business Suite Performance

Case Study: Jacobs Engineering Group Experiences 25% Time Savings

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UC4 Software delivers the industry’s only unified automation solution. We help customers achieve ONE Automation, a single enterprise-wide approach that intelligently integrates the automation of business processes, applications and IT infrastructure onto one platform. UC4 makes it easier for enterprises to rapidly and reliably deliver IT services. UC4 is the world’s largest independent automation software company. More than 2,000 organizations worldwide trust UC4 to automate their business.