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Workday reports: A brief guide to optimization

Authors

Stephan Dolan
Technology Leader – AMS

Scott Winn
Workday Manager – AMS

Kaarthik Arumugam
Workday Senior Consultant – AMS

Reports in Workday are critical. They're a gateway across the organization to information that's stored and secured in Workday. This is where:

- Employees see personal information, as well as time entries and approvals.
- Managers can check open or closed job requisitions.
- Payroll administrators review payroll records for validation.
- System administrators extract records for use by vendors leveraging flat files or APIs for use by external systems.

Creating reports in Workday can be a fairly straightforward task but it is critical that the report be efficient and not overly complex. Optimizing reports during the initial phases of report writing will allow for expected results to be returned in the least resource intensive and quickest way possible. Inefficient reports can result in incorrect or incomplete data being returned and/or long running reports that can impact overall tenant performance.

There are some essentials to consider in building a custom report or managing a standard report. These include a strong understanding of the domain and the functional requirements to limit the data being returned. Knowledge of the Primary and Relational Business Objects will limit the number of database reads. And finally, an understanding of how to: leverage index data sources, to optimize calculated fields, to implement static fields, to run report log validation and to execute performance tuning.

See below for a brief review of each of these topics, as well as a case study on reducing report runtime from over 6 hours to 1.5 hours.

Optimization factors

Here are the top five factors affecting report performance, along with recommendations for building or modifying reports for improved efficiency and runtimes:

1. **Data source:** This is the critical factor in report runtime and performance. Try to select an indexed data source with predefined data source filters and built-in prompts. Use of reporting and analytics driven data source without comprising information extract. This will enable quick data retrieval and small data subset extraction, resulting in faster report runtime.

2. **Filter conditions:** Order report filters such that the first filter reduces the data set by the maximum number of rows. Continue selecting subsets in this way until the last filter. This will ensure that each filter will operate on fewer records and enhance the speed of the report. Look for ways to include global static or audit fields in the report so the search works efficiently via cache mechanism and avoid object-type fields.

3. **Fields:** Always use simple fields as the first column in the report rather than object-type fields. Select related business object fields that result in the least number of records without compromising performance while meeting the business need. Be cautious with the number and complexity of calculated fields. Review alternative transformations, if required.

4. **Sort:** Sort on simple field types if necessary and avoid sorting on object field types. Also consider using alternate frameworks and approaches to group by, leveraging mathematical computations or sorting instead of performing it during report execution.

5. **Security:** This affects the performance of user-defined reports. Since security is applied at the field and data levels, the more fields with complex security there are, the longer it will take the report to process.

Performance tuning

From start to finish, these three steps will help you tune up:

1. **Identify:** Configure report logs for the selected reports in lower tenants. This will help you understand the time footprint regarding total execution, initialization and data retrieval, sub report invocation, filtering, sorting, grouping, field access and processing. Use customer logs (performance data), support logs (additional performance drivers) and internal logs (technical specifications for developers) to get data retrieval statistics. By collecting and reviewing these data points, you can recognize the access models, design approaches, delays and preferable optimization techniques.
2. **Choose:** To improve report runtimes, review and use available index data source and associated business objects. See 'Index considerations' below for a synopsis of the need to index, the advantages of it—and the potential problems if used incorrectly.
3. **Deploy:** Tune custom filters, sub-filters, data source filters and built-in prompts to optimize overall report efficiency. Ensure that the first column in the field or filter is static (not an object type). When additional data is retrieved with internal reference and pointers, actionable fields can affect performance. Use sorting, if possible, in studio instead of in reports. In this way, it can be performed much quicker on a limited number of records.

Index considerations

Indexing is a key strategy to retrieve information quickly and efficiently. It scans and identifies required records using optimal search patterns with pointers and stored index values. Workday standard data source, which results in large dataset extracts, might cause delay, so take care in selecting the data source that will result in fewer but necessary results.

Workday supports indexing using indexed data source. It optimizes search and data retrieval, better aggregation and filtering on large datasets. It also contains predefined security-enabled data source filters that work more efficiently compared to normal report filters. It can be challenging to identify these data sources and fields, but it can pay off.

Consider these factors in retrieving results from a query index: It won't handle non-effective dated fields. It secures results. And it minimizes returns that require a functional information review. Custom data source, introduced in Workday 29, takes this approach further.

Custom multi-level calculated fields with index data source can be powerful, but they can affect performance if you don't take proper design and technical considerations into account.

Making it real

The customer was using Workday's report writer to build time entry and time-off data for current and retroactive period changes. The report had custom calculated fields, filters, sub-filters and prompts. The report was scheduled to extract data every week for a maximum biweekly period. A studio integration called the RaaS service was used to get the Workday XML and transform it to the clients required file format.

Source: Workday

Target: External application

Report population: 150,000 employees

Record size: 1 million rows approximately

Tool: Report writer

Problem:
As the data volume increased, the time it took to complete reports gradually increased from 30 minutes to a couple of hours. It eventually errored after hitting six hours of runtime after a few months.

Troubleshooting:
A Workday case was created. We partnered with the customer to offer a number of options, including the creation of a new data source, tuning of calculated fields and sorting of the report outputs. None, however, seemed likely to result in a quick turnaround or fix.

The fix—Report tuning:
The performance tuning methodology mentioned above was followed to identify the problems. Then, the appropriate data model was selected and the required fixes were deployed. As a part of the identification process, report logs were enabled and data pattern, including functionality, was studied. Impacted areas and processing were analyzed to resolve threads that were consuming the long runs. As a next step data source, available primary business objects and related business objects with data source filters and built-in prompts were compared and carefully selected. Functional requirements were reviewed and data elimination conditions were tuned to improve runtime. The fix was deployed leveraging available data source filters (instead of in conjunction with custom filters), enabled built-in prompts, included a new global static field that uses cached data and finally rearranged the filter sequence to enhance data retrieval process.

The result:
Report runtime was optimized from over 6 hours to 1.5 hours in production.

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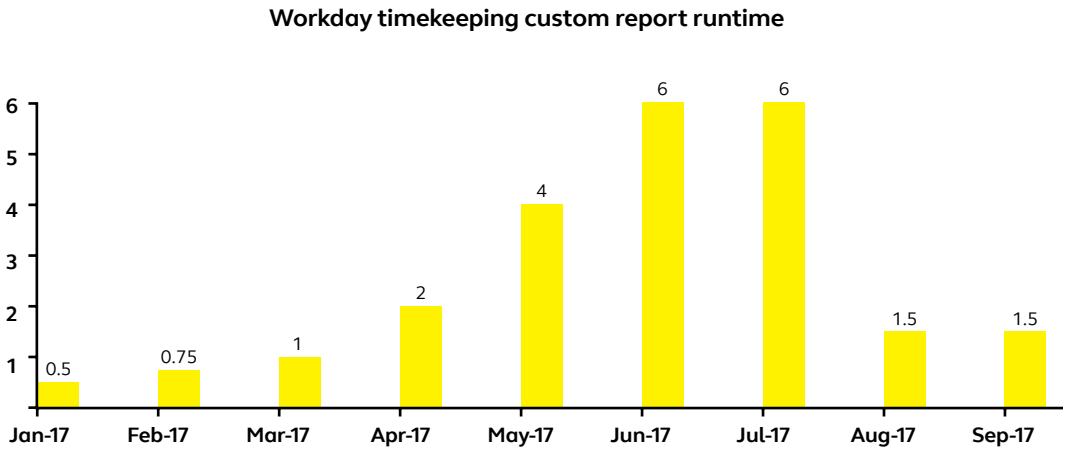

How can you optimize your Workday reports?

Take a look at your current processes and review our recommendations above. See what steps you can take to improve efficiencies and save time.

If you have questions about optimization or other aspects of Workday, contact us at **workday.solutions@alight.com.**