

White Paper

Win in the flat world

Analytical Corporate Expense Reporting and SOX compliance using Oracle Applications

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Executive Summary

Large organizations are typically organized by responsibility centers (commonly known as cost centers, profit centers etc). The concept of responsibility accounting states that the responsibility centre manager is answerable for all costs and revenues that are incurred in that centre. The centre manager plans costs and revenues of his or her responsibility centre and approves financial information charged to it.

Section 302 of the Sarbanes-Oxley act of 2002, requires that the officers signing and certifying financials (typically the CEO and the CFO) of an organization certify that all financial disclosures made by the company are truthful and reliable and that the disclosure processes and controls of the company that they oversee are adequate to produce consistent financial information that stakeholders can rely on.

Section 302 (4) further states that it is the responsibility of the signing officers to:

- a) Establish and maintain internal controls
- b) The internal controls are designed to ensure that material information related to the issuers and its consolidated subsidiaries are made known to such signing officers by others within the entities.

In compliance with Section 302 (4) (b), large organizations typically require that responsibility center managers certify financials of all areas under their direct and indirect control. This provides signing officers with smoother, quicker and more reliable means to assess compliance of internal controls.

Section 404 puts the responsibility on the management to establish and maintain adequate internal controls for the capture and reporting of financial reports and to periodically review and validate the adequacy of these controls.

To enable the availability of accurate information on a near real-time basis, large organizations typically aim to provide their responsibility center managers with a robust analytical reporting system.

In this document, the authors evaluate the existing Oracle ERP tools available to meet these compliance requirements and some of the limitations with these tools. They discuss a custom reporting application that can be deployed in any Oracle GL implementation to provide responsibility center managers with the relevant information to meet the compliance requirements discussed above. The solution provides performance dashboards and pre-built reports providing the ability to sign-off and archive financial information with notes and explanations to support SOX compliance requirements. In addition, the authors have also provided a technical overview of this solution and some significant performance considerations.

This document details a business solution consisting of a set of financial dashboards and reports that help business users monitor performance and assist in complying with the SOX-related requirements of certifying financials and internal controls.

Introduction

Various accounting and financial scandals in the United States and in the European Union have rocked the global capital markets. Companies involved in these scandals included many bellwether corporations such as Enron, Tyco and Worldcom. These scandals cost the investing public billions of dollars as the share prices of these large corporations tumbled.

Regulatory bodies around the world have introduced new laws such as the Sarbanes-Oxley act of 2002 in the United States or have gone ahead and broadened the scope and strengthened existing rules. An example of the latter is the 8th Directive in the European Union that strengthens investor confidence in the accounting disclosures made by all public listed companies.

In summary, these laws mandate that senior executives take individual responsibility for the accuracy and completeness of corporate financial reports. It defines the interaction of external auditors and corporate audit committees. It also specifies the responsibility of corporate officers for the accuracy and validity of corporate financial reports.

The Sarbanes-Oxley act puts the onus of reliability squarely on the shoulders of the Senior Executive officers of the organization signing financial disclosures. CEOs and CFOs now need to make a disclosure with respect to the truthfulness and reliability of not only the data but also that the disclosure processes followed were appropriate and that the internal controls of the company that they oversee are adequate to produce consistent financial information that stakeholders can rely on.

The act also requires that the signing officers not only establish internal controls but also conduct a periodic review of the adequacy of the internal controls that have been established.

Section 906 of the Sarbanes-Oxley act further stipulates that the signing officers provide an accompanying statement with all quarterly and yearly results that certify that the information contained in the periodic reports fairly present all material aspects of the financial position of the organization. Failure to comply with this requirement stipulates both, a monetary penalty of \$1,000,000, and imprisonment of up to 10 years. Wilful misstatement may result in a monetary penalty of \$5,000,000 and imprisonment of up to 20 years.

Large organizations that follow a decentralized management structure are typically organized by responsibility centers. These centers may be designated as cost centers, revenue centers, profit centers or investment centers.

In compliance with Section 302 (4) (b) the responsibility center manager is responsible to certify financials of the centers that they oversee.

In order to facilitate compliance with the organizational and statutory expectations, large corporations implement robust financial compliance and management reporting systems.

Ideally such a system should provide the following capabilities:

- ✓ Provide responsibility center managers with a dashboard that reflects the performance of the responsibility center as a whole to facilitate management by exception
- ✓ Ability to view data driven by Key Performance Indicators (KPI's)

- ✓ Ability to view an aggregated income statement providing a comparison of actual against plans, forecasts and previous year performance
- ✓ Provide an aggregated view of the statement of assets and liabilities that are overseen by their responsibility centers
- ✓ The ability to investigate any variances or abnormalities by drilling down to the individual responsibility center and the originating transaction
- ✓ Ability to record and review variance explanations at any level of the responsibility chain
- ✓ Ability to filter and analyze data on various pre-defined dimensions
- ✓ Ability to sign off and archive responsibility center level income statements facilitating SOX 302 compliance

Existing Oracle Tools

In light of the above requirements, we have evaluated some of the existing reporting tools provided by Oracle Applications.

Daily Financial Intelligence (DFI)

Oracle Discoverer (Disco)

Oracle Business Intelligence Suite Enterprise Edition (OBIEE)

Daily Financial Intelligence is a component of Oracle E-Business Intelligence that aims at providing key financial information to help managers in decision making. Financial information is pre-aggregated and provided in the form of dashboards and reports. This happens on a near real-time basis enabling managers to proactively act on the same rather than waiting till the period end to view their performance. These financial dashboards provide summarized information in the form of Key Performance Indicators (KPI) and graphs and provide an ability to drill down to the originating transaction.

Oracle Discoverer is an ad-hoc query and reporting tool with web publishing capability. It can leverage the existing Oracle Security architecture to restrict data access to users. Reports can be created by any user and shared with relevant users for financial reporting.

Oracle Business Intelligence Suite Enterprise Edition (OBIEE) is a collection of Business Intelligence (BI) products aimed to provide enterprise wide information for business decision making. It comes with a range of BI products like dashboards, adhoc queries, alerts etc to facilitate enterprise wide reporting and analysis. It uses a web service-based architecture designed to handle very high volumes of data. It can easily integrate with the existing IT infrastructure and access data from a variety of Oracle and non-Oracle sources.

Key Features

Products/Tools	Key Features
Daily Financial Intelligence	<ul style="list-style-type: none"> • Low cost of implementation • Pre-aggregated data leading to better performance • Near real-time data depending upon frequency of refresh • Ability to perform incremental refresh • Drill down to transaction level information • Capable of using manager reporting (employee hierarchy) to support responsibility accounting • Allows managers to delegate access in their absence
Discoverer	<ul style="list-style-type: none"> • Graphical and tabular analytical capabilities • Pre-packaged End User Layer (EUL) helps user in creating reports from Oracle E-Business Data Model • Getting real-time data on accessing the pre-packaged EUL • Can use GL Security rules for data security
OBIEE	<ul style="list-style-type: none"> • Full range of BI products for enterprise wide reporting • Sources data from variety of heterogeneous sources including both relational databases and multi-dimensional applications. • Supports function or role-based security • High level of integration with MS Office and it also supports disconnected analytics

Mapping to Compliance Requirements

Feature	DFI	Disco	OBIEE
Provide responsibility center managers with a performance dashboard that reflects the performance of their responsibility area to facilitate management by exception.	✓ *1		✓
Ability to view data driven by Key Performance Indicators (KPI's)	✓	✓	✓
Ability to view an aggregated income statement providing a comparison of actual against plans, forecasts and previous year performance	✓	✓	✓
Provide an aggregated view of the statement of assets and liabilities that are overseen by their responsibility centers	✓	✓	✓
The ability to investigate any variances or abnormalities by drilling down to the individual responsibility center and the originating transaction	✓	✓	
Ability to record and review variance explanations at any level of the responsibility chain			
Ability to filter and analyze data on various pre-defined dimensions	✓	✓	✓
Ability to sign off and archive responsibility center level income statements facilitating SOX 302 compliance			

**1 Daily financial intelligence provides rollup only based on the employee supervisory hierarchy and does not allow rollup based on custom hierarchies such as the cost center hierarchy*

While each of the analyzed tools provides some of the capabilities that have been identified as requirements, two significant limitations have been identified:

Ability to enter variance explanations that are visible to higher levels of management:

None of these tools provide the ability for managers to enter comments or variance explanations which can be stored within the database for future reference. Variance explanations are a key input into the monthly financial review process and serve as a key input for planning and forecasting.

Sign-off and archival of financial reports: Ability for responsibility center owners to sign off and archive reports on a periodic basis.

Section 302 (4) (b) states that the signing officers may rely on validations and disclosures made by other managers within the entities. As a result of this, signing officers would need to rely on signed off financials by responsibility center managers with explanation of variances. The aforementioned deficiencies in the standard reporting tools are a significant gap in complying with certification requirements.

ACE - Analytical Corporate Expense Reporting

In the absence of any tools directly available from Oracle to provide companies with all the capabilities listed above, the authors got involved in designing and developing a custom tool that can be added as a bolt-on with any Oracle General Ledger implementation. This tool has been named as ACE - Analytical Corporate Expense Reporting.

ACE is an analytical reporting solution that aims to equip Responsibility Center Managers (RCMs) with valuable financial information on a near real-time basis to periodically monitor performance of all areas under their domain of responsibility. It also helps them proactively identify problem areas if any and take the necessary corrective actions.

The ACE tool comprises of a set of layered dashboards. The [primary dashboard](#) provides the managers with a quick view of performance against Key Performance Indicators (KPI), a high level snapshot income statement and a summarized position of assets and liabilities. The income statement accounts are also summarized based on responsibility centers and subordinates reporting to the manager.

Best practices around account definitions mandate the use of hierarchies to summarize data to logical reporting levels. The income statement on the primary dashboard start at the highest level of the account hierarchy typically comprising of the following summary accounts: Revenue, Cost of sales, G&A expenses and Non-operating expenses.

From each of these summary accounts on the primary dashboard, the RCMs have the ability to [drill down](#) to lower levels of account rollups down to the level of the account code combination and the actual [transactions](#) that make up the balances. In the lower level dashboards, the RCMs can slice and dice data using:

- a) All the dimensions of the chart of accounts
- b) The time dimension (Period to date, Quarter to date, Year to date)
- c) The RCM name of any other manager that reports into him/her.

Each of the dashboards provides a comparison of actual costs and revenue to plans and forecasts and a percentage (%) comparison (better/ worse) against the previous year for the corresponding time period.

In addition to drilldown from the summarized income statement and statement of assets and liabilities, the ACMs also have the ability to drilldown from the [summary by manager](#) section on a selected manager who reports to them.

The ACM has the ability to enter variance explanations at the combination level of the [account and the cost center](#) down to the level of the [code combinations](#).

These variance explanations are visible up the management chain to all RCMs above the current manager into whom these financials roll up.

In addition to providing the aforementioned analytical capabilities, the ACE dashboard also provides the RCM with the ability to [sign off](#) each of the responsibility centers for which they are accountable. At the time of signing off the cost centers, the tool also generates an ACE sign off report that is archived for future reference and compliance audits.

After month end close, the ACE tool has a notification mechanism that sends an email message to all RCMs stating that the month is officially closed and that they can now proceed to review and sign off their financial statements. The system will also send reminder emails to RCMs who have not signed off based on a preset frequency.

To accommodate vacations, attritions and job rotation, the ACE tool also provides two levels of [delegation](#). An RCM can grant view delegation access to any employee of the company in his or her responsibility center. These viewing delegates will also have the ability to enter variance explanations as appropriate and generate preliminary responsibility center ACE reports.

An RCM or an administrator can also grant sign-off delegation to specific responsibility centers. While view delegation can be granted to multiple people, sign-off delegation can be granted at maximum to only person at a time to maintain onus of responsibility on one person.

The ACE tool also includes a [sign-off monitor](#) that shows the status of sign off of responsibility centers. At the RCM level, it would show only the responsibility centers that he or she is directly or indirectly (rolled up) responsible to sign off. An RCM can access prior signed off reports (from the archive) using the sign off monitor.

The sign-off monitor also has a SOX compliance organization view. This allows the compliance organization to identify from one screen, the list of all responsibility center managers who have not complied with the monthly sign off process.

Key Features

Some of the key features of this analytical reporting tool are as follows: -

I. Data Security

ACE leverages the manager reporting hierarchy to restrict the data access of the user to either the cost centers owned by him or her or the cost centers owned by managers reporting to him or her.

II. Dashboards & KPI

ACE comes with a set of dashboards to give a bird's eye view of the organization for the logged-in manager. It reports on KPIs like Expected Revenue/ Expense based on actual dollars till the current period and Plan/ Forecast for the remaining periods. It also provides summarized assets and liabilities position and a break up of expenses by managers. One can view the data for a period, quarter to date and year to date based on the period type selected.

ACE Dashboard (KPI Region, Income & Expense Summary, Balance Sheet Summary and Summary by Manager Region)

ORACLE										
										Home Logout Preferences
Cost Center Financial Summary										
Month	MAR-08	Period Type	Month	Manager	Manager 1	Cost Center	ALL	Find		
Sign Off Form										
KPI Region										
Name	Revenue	Expense Computation								
Projected Year End based on Actuals Plus Plan for the rest of the year	0	3,560,275 Actuals from JAN-08 to MAR-08 plus Plan from APR-08 to DEC-08								
Full Year Plan	0	3,891,667								
Projected Year End based on Actuals Plus Forecast for the rest of the year	0	3,568,368 Based on MAR-08 version of Forecast								
Income and Expense Summary										
Account	Account Description	Actual Amount	Plan Amount	Better/Worse than Plan	Plan Variance (%)	Forecast Amount	Better/Worse than Forecast	Forecast Variance (%)	Prev Year Variance (%)	% of Total
5000000	OPERATING EXPENSES	6,500	334,886	328,386	98.1	301,136	294,636	97.8	<97.4>	100.0
Actual Amount: 6,500		Plan Amount: 334,886		Better/Worse than Plan: 328,386		Forecast Amount: 301,136		Better/Worse than Forecast: 294,636		Plan Variance (%): 98.1
										Forecast Variance (%): 97.8
Balance Sheet Summary Report										
Account	Account Description	Beginning Balance	Period Activity	Ending Balance						
2000000	LIABILITIES	<141,288,093>	131,003,490	<10,284,603>						
Summary By Manager										
Name	Actual Amount	Plan Amount	Plan Variance (%)	Forecast Amount	Forecast Variance (%)	Prev Year Variance (%)	% of Total			
Manager 1	3,045	109,733	97.2	83,403	96.3	88.9	46.8			
Manager 1.1	3,043	118,608	97.4	102,572	97.0	97.9	46.8			
Manager 1.2	412	106,545	99.6	115,161	99.6	99.5	6.3			
Actual Amount: 6,500		Plan Amount: 334,886		Forecast Amount: 301,136		Plan Variance (%): 98.1		Forecast Variance (%): 97.8		

III. Drill Down

Enables the user to drill down to lower levels in the account hierarchy to nail down the problem area and take the relevant corrective action. A user can drill down to the transaction level and can even view the additional attributes captured in descriptive flex fields. One can also export the data onto MS Excel for offline analysis.

Drill Down to Level 3 Accounts from Income & Expense Summary Region on Dashboard

ORACLE UA ACE REPORTING Home Logout Preferences

Cost Center Financial Summary > **Level 3 Account Summary**

Month: MAR-08 | Period Type: Month | Manager: Manager 1 | Cost Center: ALL | Account: ALL | Sub Account: ALL | Location: ALL | Company: ALL Export to Excel

Income and Expense Summary

Account Description	Actual Amount	Plan Amount	Better/Worse than Plan	Plan Variance (%)	Forecast Amount	Better/Worse than Forecast	Forecast Variance (%)	Prev Year Variance (%)	% of Total
5110000 SALARIES	0.00	206,642.00	206,642.00	100.0	189,172.99	189,172.99	100.0	<100.0>	0.0
5120000 FRINGE BENEFITS	81.98	79,163.00	79,081.02	99.9	72,541.45	72,459.47	99.9	<99.9>	1.3
5300000 PURCHASED SERVICES	234.00	11,097.00	10,863.00	97.9	12,087.33	11,853.33	98.1	<93.9>	3.6
5390000 COMMUNICATION & UTILITIES	867.44	1,888.00	1,220.56	64.6	1,887.75	1,220.31	64.6	157.4	10.3
5450000 PERSONNEL-RELATED	5,513.55	26,664.00	23,150.45	80.8	17,914.00	12,400.45	69.2	<78.3>	84.8
5910000 OTHER OPERATING EXPENSES	2.98	1,306.00	1,303.02	99.8	1,206.08	1,203.10	99.8	<99.5>	0.0
5950000 TRANSFER PRICING	0.00	6,126.00	6,126.00	100.0	6,326.17	6,326.17	100.0	<100.0>	0.0

Actual Amount: 6,499.95 | Plan Amount: 334,886.00 | Better/Worse than Plan: 328,386.05 | Plan Variance (%): 98.1
 Forecast Amount: 301,135.77 | Better/Worse than Forecast: 294,635.82 | Forecast Variance (%): 97.8 Export to Excel

Drill down to Cost Center Detail Report from Summary by Manager Region

ORACLE UA ACE REPORTING Home Logout Preferences

Cost Center Financial Summary > Summary by Manager Report > **Cost Center Details by Manager Report**

Month: FEB-08 | Period Type: Month | Manager: Manager 1 Export to Excel

Cost Center Details

Cost Center	Actual Amount	Plan Amount	Plan Variance (%)	Forecast Amount	Forecast Variance (%)	Prev Year Variance (%)	% of Total
0905247	6,422.71	9,507.00	32.4	9,506.79	32.4	75.6	6.3
0905255	95,114.49	86,938.00	<9.4>	127,345.20	25.3	0.0	93.7

Actual Amount: 101,537.20 | Plan Amount: 96,445.00 | Plan Variance (%): <5.3>
 Forecast Amount: 136,851.99 | Forecast Variance (%): 25.8 Export to Excel

Finally Drill Down to Transaction Level Details through the Account Hierarchy

ORACLE UA ACE REPORTING Home Logout Preferences

Cost Center Financial Summary > Summary by Manager Report > Cost Center Details by Manager Report > Level 2 Account Summary > Level 3 Account Summary > Level 4 Account Summary > Account Summary > Code Combination Level Summary > **Transaction Details Report**

Export to Excel

Account Code Combination	Code Combination Description	Month	Journal Type	Journal Source	Journal Category	Batch Name	Journal Description	10 Digit Account	Journal Accounting Line Date	Reference	Additional Information	Functional Entered Currency	Entered Currency	Amount	Code
5110401.0000.0905247.0000.1100.0000.0000	SALARIES - C&D PROJECT.	FEB-08	Month	UA Payroll	LABOR DISTRIBUTION	B06404-MAR-2008	03000 - 3601A	5831173601	1866	29-Feb-2008	Journal Import Created	Pay Number:03 Pay Code:08 Pay Source:0 Labor Type:A	USD	11,422.00	1

Export to Excel

IV. Variance Analysis

ACE allows users to enter comments at different levels in the account hierarchy to explain the variances with respect to Plan/ Forecast and Previous year. These variance explanations will be available for future reference. Once a report for a particular period is signed off, the comments field is frozen for any updates.

Enter Variance Explanations for a Cost Center

ORACLE UA ACE REPORTING

Home Logout Preferences

Cost Center Financial Summary > Summary by Manager Report > Cost Center Details by Manager Report > Level 2 Account Summary >

Level 3 Account Summary

Month: FEB-08 Cost Center: 0905247 Location: ALL
 Period Type: Month Account: ALL Company: ALL
 Manager: Manger 1 Sub Account: ALL

Save Export to Excel

Account	Account Description	Cost Center	Actual Amount	Plan Amount	Better/Worse than Plan	Plan Variance (%)	Forecast Amount	Better/Worse than Forecast	Forecast Variance (%)	Prev Year Variance (%)	% of Total	Comments
5110000	SALARIES	0905247	4,656.95	6,568.00	1,911.05	29.1	6,567.65	1,910.70	29.1	<17.4>	72.5	
5120000	FRINGE BENEFITS	0905247	1,764.99	2,489.00	724.01	29.1	2,489.14	724.15	29.1	<12.7>	27.5	
5390000	COMMUNICATION & UTILITIES	0905247	0.77	50.00	49.23	98.5	50.00	49.23	98.5	<1.3>	0.0	
5450000	PERSONNEL-RELATED	0905247	0.00	400.00	400.00	100.0	400.00	400.00	100.0	0.0	0.0	

WARNING!!! Please save your work before navigating to next records

Actual Amount: 6,422.71 Plan Amount: 9,507.00 Better/Worse than Plan: 3,084.29 Plan Variance (%): 32.4
 Forecast Amount: 9,506.79 Better/Worse than Forecast: 3,084.08 Forecast Variance (%): 32.4

Save Export to Excel

Variance explanation at the level of the account code combination

V. Sign Off and Archival of Report

The ACE tool provides functionality to sign off the responsibility center reports on a periodic basis. The signed off reports (Adobe Acrobat .pdf files) are archived for future reference. A Sign Off signifies the confirmation from the RCM that all expenses and revenues are accurate and that all accruals have been accounted. Users can also generate preliminary reports before the final Sign Off. All the comments entered at various levels are printed on the signed off report.

In addition to entering variance explanations at the level of the combination of account and cost center, the RCM can also enter a higher level variance explanation at the level of the responsibility center. This explanation would be entered on the sign off screen prior to sign off.

Sign Off Form for Generating Prelims, Entering Report level comments and Signing Off the Expense Reports

ORACLE UA ACE REPORTING [Home](#) [Logout](#) [Preferences](#)

Sign Off Form

Manager: Manager 1 Period: MAR-08 Cost Center: ALL

Sign Off Details

Select All | Select None

Cost Center	Report Level Comments	Generate Preview	Expense Summary Report	Expense Detail Report
<input type="checkbox"/> 0905247	The numbers look ok	Generate Preview	Expense Summary Report	Expense Detail Report
<input type="checkbox"/> 0905255		Generate Preview	Expense Summary Report	Expense Detail Report

Save Sign Off

VI. Delegation

RCMs can delegate the View and Sign Off access to their subordinates for performing the variance analysis and entering comments. This also helps a lot in vacation planning. RCMs can only delegate the access to cost centers directly owned by them. However, an administrator role can perform delegations on behalf of all managers. ACE supports two types of delegations:

View Delegation, where the delegate can view information, enter comments and generate preliminary reports.

View Delegation Form to delegate View access to subordinates

ORACLE UA ACE REPORTING [Home](#) [Logout](#) [Preferences](#)

View Delegation Form

Grant From: Manager 1 [Requery](#)

View Delegation Details

Grant To	Start Date	End Date
Secretary 1	20-Feb-2008	
	30-Apr-2008	

Save Add Row

Sign off Delegation, where the delegate can sign off the reports in the system on behalf of the RCM.

VII. Sign Off Monitor

ACE provides a sign off monitor to view the sign off status of all the Cost Centers that roll up directly or indirectly to the logged-in manager's organization. This monitor can also be used by Inter Audit or the SOX team to ensure that all Cost centers are signed off by the due date.

Sign Off Monitor

ORACLE UA ACE REPORTING Home Logout Preferences

Sign Off Monitor Export to Excel

Manager: Cost Center: Division:

Status: Period:

Sign Off Status

Cost Center	Period	Manager	Sign Off Status	Signed Off By	Sign Off Date	Expense Summary Report	Expense Detail Report
0905247	FEB-08	Manager 1	Signed Off	Krohn, Marc	18-Mar-2008	<input type="button" value="Expense Summary Report"/>	<input type="button" value="Expense Detail Report"/>
0905249	FEB-08	Manager 1.1	Signed Off	Batty, Judy	17-Mar-2008	<input type="button" value="Expense Summary Report"/>	<input type="button" value="Expense Detail Report"/>
0905255	FEB-08	Manager 1	Signed Off	Krohn, Marc	18-Mar-2008	<input type="button" value="Expense Summary Report"/>	<input type="button" value="Expense Detail Report"/>
0905265	FEB-08	Manager 1.2	Signed Off	Wendt, Lynn	19-Mar-2008	<input type="button" value="Expense Summary Report"/>	<input type="button" value="Expense Detail Report"/>

Business Process for SOX Compliance

The Business Process for SOX Compliance includes the following steps:

1. The Responsibility Center Managers (RCMs) including the support staff will monitor the dashboard to identify any abnormalities or missing expenses etc
2. RCMs can also generate Preliminary Cost Center Expense Reports to identify abnormalities. These will be fixed by necessary correction or accrual entries duly approved by the relevant management level
3. After period close, an email notification will be sent out to all RCMs that the period has been closed and the Cost Center Expense Reports are available for sign off
4. All RCMs are expected to sign off the reports relating to their cost centers by 25th of the following month
5. As part of the Sign Off process, the user will generate preliminary reports; enter comments to explain the variances above threshold limits set by the company.
6. RCMs can also enter the Cost Center Level Comments to sum up the performance, if required.
7. Finally on Sign Off, the Cost Center Expense Report is archived for future reference. This archived report can be accessed from the Sign Off monitor screen.
8. The SOX compliance organization will use the Sign Off monitor to check the sign off status for all the Cost centers within an organization.
9. RCMs can use the View delegation and Sign Off delegation screens to delegate access to subordinates.

Technical Design Considerations

Why Oracle Application Framework (OAF)?

Oracle Application Framework (OA Framework) is the Oracle Applications development and deployment platform for self service web-based business applications. The framework always insists on the following points:

1. Enhancing End User Productivity
2. Improving Enterprise Performance and Scalability
3. Developer Productivity
4. Application Customizability

OA Framework is based on the industry standard J2EE MVC design pattern.

The MVC architecture is a component-based design pattern with interfaces between the Model, View and Controller. The Model is where the application implements its business logic. The View is where the application implements its user interface and the Controller is where the application handles user interaction and directs business flow.

Benefits of OAF

I. Integrated Development Environment

Oracle9i JDeveloper provides features like easy-to-use wizards, a hierarchy navigator and a property sheet.

II. Personalization and Extensions

Personalization corresponds to tailoring the layout or UI (User Interface) of a page depending on the business need. Personalization can be implemented at several levels by one of the following three authors: application developer, application administrator and end user.

Extensions are used to extend the functionality for a business need. Using a combination of OA Extension wizards and built-in personalization screens, several user interface and business logic extensions are made possible at a minimal cost to development with little-to-no maintenance cost.

III. Enhanced User Interface

Partial Page Rendering (PPR) - PPR is a means by which designated parts of a page, rather than the whole page, is refreshed when the user performs certain actions.

Accelerator (Hot) Keys - OA Framework supports mnemonic accelerator keys for selected buttons and enables developers to assign numeric access keys to product specific user actions.

LOV Auto Completion - Lists of Values (LOVs) are used when the list of possible values is long and the user may want to conduct a search before picking a value.

IV. Built-in Security

HTML-based applications offer great user and administrator convenience, but special care must be taken to ensure that these applications are secure. OA Framework provides built-in protection against known HTML hacking strategies, leaving the application developer free to concentrate on application functionality.

OAF - Challenges

Some of the challenges faced while implementing the solution.

I. Drill down

We had a requirement of providing a hyperlink for account hierarchy for drilling down to the lowest transaction level. Parameter passing has to be handled properly to achieve this functionality.

II. Stored PDF Reports

We need to display a link for fetching the stored signed off pdf reports from the database.

III. Summarized Information

We had to provide summarized information for the responsibility center manager. Instead of deriving the information in the runtime, we have created Materialized Views (MV) to get the data. Page will be fetching the data from MVs.

Limitations of formatting

I. Right Alignment of Numbers

In 11.5.10, numbers that are totaled or have currency code set are End-justified. For all other numbers, the alignment is Start-justified. Hence the alignment of percentages to Right-justified resulted in creation of a function.

II. Formatting table rows

To format the amounts in table rows - The format mask is a comma separator for thousands without any precision and braces () for negative values. Percentages should have 1 decimal place.

To format the amounts in table rows - The format mask is a comma separator for thousands with 2 precision and angle brackets < > for negative values.

III. Formatting total row

To format total row values → Total value for a column is displayed if the "Total Value" property is set to True. To format a total value, we need to set the attribute value of the column with the "CURRENCY_CODE" constant.

IV. Replacing total row values with calculated values

To calculate the total percentage and place it in total value for the Percentage column - The total values reflect only the current visible records and not all the records queried.

So if we have more number of records and we need to display the grand total, we can calculate the total (using a separate VO) and place this value in the total value of the column. For percentages also, we need to calculate it separately as the total of individual percentages will not be correct.

V. Changing fonts

We can use an interactive user interface called CSS Style Lookup to preview a specific item style with a selected CSS Style applied to it. We should use CSS Style Lookup to simulate the look and feel of an item style before making the actual CSS style change to the pages with OA Personalization Framework.

Data Summarization

Materialized View Approach

As data volumes are high in terms of financial transactions, it is heavily performance intensive to fetch the information from the base tables and sum them up.

As a solution, we have decided to create materialized views to have the data that is needed in the page. We have created the following list of materialized views to ease the process of getting the details at runtime.

- Summary MV – view to store the information rolled at code combination and period. It is a combination of Actuals MV and Budget MV
- Actuals Summary MV – view to store the actuals information of code combination that has an activity
- Budget Summary MV – view to store the budget information of code combination that does not have an actuals transaction
- Transaction MV – view to store the transaction line level information
- Account Level Info MV – view to store the information of account rollups
- Manager MV – view to store the information of parent, child relationship of managers

Refresh Strategy with MV Approach

The Materialized Views are scheduled to refresh every night. It took around 3-4 hrs for data volumes of 15 periods and 250,000 code combinations each period. Since it is a total refresh, it took a long time to complete. This cannot be made as Incremental refresh as it involves complex queries of function and procedure calls.

Table Approach

As businesses need near real-time data, we had to think of an alternative approach to improve refresh time. We have come up with the following method of programs populating the table every hour and the MV will be created out of the tables.

- Transaction Program – It will fetch the posted journal transactions every hour and populate the custom table

- Actual Program – Fetch the transactions processed in the transaction program and summarize it to store at code combination and period level
- Budget Program - Fetch the budget information that does not have actuals, summarize it to store at code combination and period level
- Forecast Program - Fetch the forecast information that does not have actuals, summarize it to store at code combination and period level
- Actual Summary MV – View to store the actuals information of code combination that has an activity
- Budget Summary MV – View to store the budget and forecast information of code combination that does not have an actuals transaction
- Summary MV – It is a combination of actual summary MV and budget summary MV

As we have achieved the incremental refresh through the hourly refresh of tables, this improved the performance of creating MV.

Refresh Strategy with Table Approach

The Materialized Views take 20-30 minutes for entire refresh of data. Hence the refresh program is scheduled twice a day and it can be run on adhoc basis as well as it takes less time.

Performance Considerations

- Materialized Views refresh takes long time if it has to deal with large volumes and full refresh. Incremental refresh cannot be achieved if we have complex queries.
- Hence, we had to think of alternative method of storing the data in the table and we have created MV out of the tables.
- We have created indexes on the most queried column in the materialized views. We have also created a bitmap index on period as it will improve the performance when data is fetched for period.

Conclusion

While the debate on the benefits of the new compliance laws (SOX, 8th Directive) to the investing public continues, more and more companies are finding that the task of complying with the requirements of section 302 and 404 are becoming extremely tedious and cost and resource intensive.

While an RCM is expected to monitor performance of his or her responsibility centre on a periodical basis using robust analytical reporting tools, the process of validating and documenting their observations and complying with legal requirements should not necessitate a separate and independent process. Instead, it should be baked into the management process.

The ACE tool aims to reduce the cost of compliance by making it entirely incidental with sound financial performance management.

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