

How to Effectively Measure and Monitor Activity in Your Portal Environment

*An Oracle White Paper
December 2004*

How to Effectively Measure and Monitor Activity in Your Portal Environment

Executive Overview.....	3
Monitoring And Administering Your Oracle Portal.....	4
Oracle Application Server & Oracle Enterprise Manager.....	4
Oracle Portal & The Oracle Enterprise Manager 10g Application Server Control.....	5
Real Time Monitoring	5
Administration.....	6
Diagnostic Log File Correlation Via The Oracle Enterprise Manager 10g Application Server Control Log Viewer	7
Oracle Portal & The Oracle Enterprise Manager Grid Control.....	8
Historical Metric Reports.....	9
Thresholds and Automatic Notifications	10
Summary	10
Measuring Portal Activity.....	10
Business Centric Portal Analytics	11
The Bottom Line: How Is My Portal Being Used	12
Addressing Your Business Centric Portal Analytics Needs.....	12
NetIQ WebTrends.....	13
Omniture SiteCatalyst.....	13
Omniture SiteCatalyst Reports	14
My Oracle and Business Centric Portal Analytics – Case Study.....	14
Most Popular Pages Report	15
Deploying Omniture SiteCatalyst on My Oracle.....	16
Summary	17
Conclusion.....	18

How to Effectively Measure and Monitor Activity in Your Portal Environment

EXECUTIVE OVERVIEW

Today's enterprises are gaining competitive advantage and realizing increased productivity by deploying enterprise portals within their IT infrastructures. Enterprise portals are specifically designed to be the single source of interaction with corporate information and the focal point for conducting day-to-day business. Oracle Application Server 10g includes a complete and integrated solution for building, deploying, and maintaining a world-class enterprise portal.

Oracle Portal combines a rich, declarative environment for creating a portal Web interface, publishing and managing information, accessing dynamic data, and customizing the portal experience along with an extensible framework for any Web-based technology, including J2EE-based application access and Web Services. Using Oracle Portal, e-businesses have the power to connect employees, partners, and suppliers with the information they need as well as the flexibility to create views tailored to each community.

In the Oracle Application Server, monitoring and administration tasks are performed via Oracle Enterprise Manager. Although these tasks can be applied to all OracleAS components, each component makes use of the Oracle Enterprise Manager services and interface to a different extent.

As well as monitoring how your portal is performing, you will also want to measure how your portal is being used. For example you need answers to 'How many people are visiting your portal', 'what are the top-10 pages', and 'What time is the best for taking a downtime'.

This paper describes how to take advantage of the management features of Oracle Enterprise Manager for administering and monitoring Oracle Portal as well as how Web Analytics products/services such as Omniture SiteCatalyst can help you answer common 'Business Centric Portal Analytics' questions. This paper further provides a Case Study on how the My Oracle business owners use Omniture SiteCatalyst to meet their business centric portal analytics needs.

MONITORING AND ADMINISTERING YOUR ORACLE PORTAL

Oracle Application Server & Oracle Enterprise Manager

Oracle Portal 10g utilizes two related management interfaces that, when used together, provide a complete set of efficient tools to reduce the cost and complexity of managing your enterprise:

- Oracle Enterprise Manager 10g Application Server Control (Oracle Application Server Control). Installed with every instance of the Oracle Application Server (OracleAS), the Application Server Control immediately provides you with the management tools you need to monitor and administer a single OracleAS instance.
- Oracle Enterprise Manager 10g Grid Control. The Oracle Enterprise Manager Grid Control provides a wider view of your network so you can manage multiple OracleAS instances. In addition, the Grid Control provides a robust feature set designed to help you manage all aspects of your enterprise, including your Oracle databases, hosts, listeners, and other components. (**Note:** The Grid Control is installed separately using an Oracle Enterprise Manager installation CD-ROM).

For Oracle Portal 10g the Grid Control can be used for monitoring multiple instances from the one console whereas you must drill-down to the corresponding Application Server Control to perform configuration tasks.

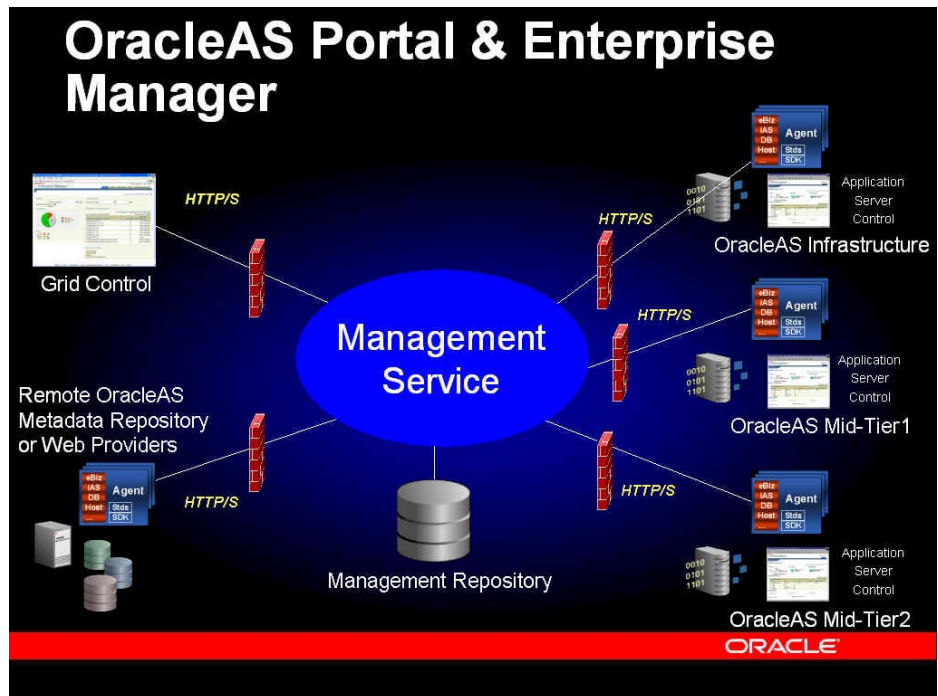


Figure 1. Oracle Portal & Oracle Enterprise Manager

Oracle Portal & The Oracle Enterprise Manager 10g Application Server Control

Each Oracle Portal Oracle home contains its own Application Server Control installation. You can use the Application Server Control to manage your Oracle Portal mid-tier in three fundamental ways:

- Real Time Monitoring
- Administration
- Detailed Log File Diagnostics

Real Time Monitoring

In addition to containing its own Application Server Control installation, each Oracle Portal oracle home also contains its own Oracle Management Agent installation. Starting the Application Server Control for a given Oracle Home also starts the associated Management Agent as the Application Server Control relies on the Management Agent for its supply of real time metrics.

In the case of the Portal Target Page the Application Server Control provides a rich display of metrics To see this information, click Portal:<portal DAD name> in the list of system components. The default schema name is *portal*. (Alternatively you can access this page directly from within Oracle Portal. First click the Administer tab on the Portal Builder page, click the Portal sub-tab and then click Portal Service Monitoring.)

This is the first place to go to check the health of your Portal installation. From this page you can see the overall status of the Portal midtier itself, data on how the midtier is using the OracleAS Metadata Repository, and status of all other OracleAS Components that the Portal is dependent upon. For information on how to troubleshoot your portal, see chapter 13 “Troubleshooting Oracle Portal” in the Oracle Portal Configuration Guide.

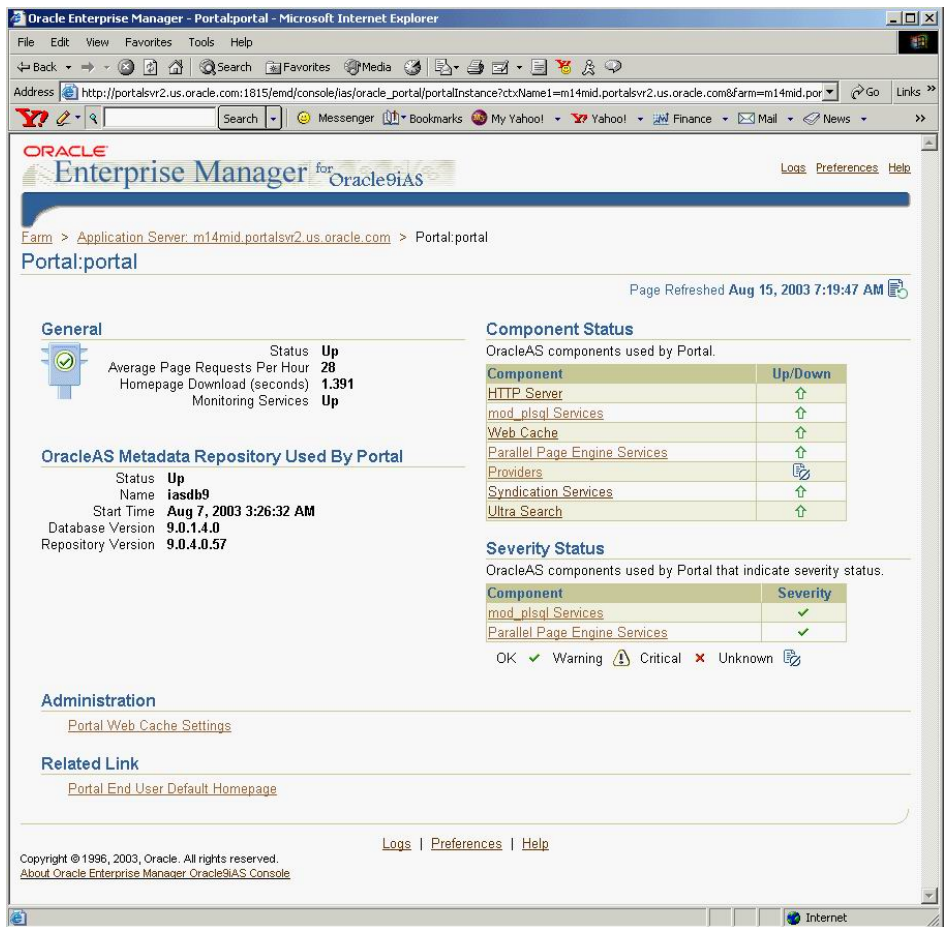


Figure 2. Oracle Application Server Control main Portal page

Administration

The page depicted in Figure 2 also allows you to easily access several administration tasks, including:

- Creating, Editing and Deleting DADs via the DAD wizard (by drilling through to the DAD wizard from the mod_plsql Services link)
- Changing the Portal Web Cache Settings that this Portal midtier uses
- Editing the OC4J_Portal Web.xml configuration file (by drilling through to the OC4J_Portal Target Page from the Parallel Page Engine Services link)

In addition you can perform the following tasks from the Application Server page:

- Reassociating an Oracle Portal midtier with a new Identity Management Server (SSO & OID)
- Reassociating an Oracle Portal mid-tier installation with a new, different, or relocated OracleAS Metadata Repository

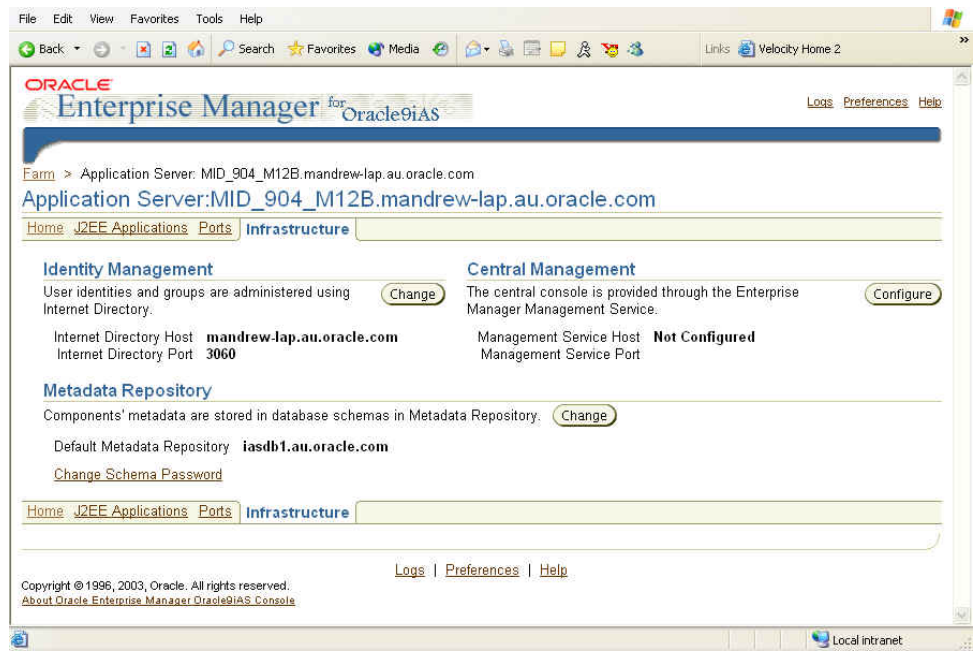


Figure 3. Oracle Application Server Control page showing re-association page

Diagnostic Log File Correlation Via The Oracle Enterprise Manager 10g Application Server Control Log Viewer

One important step in troubleshooting an Oracle Portal installation is examining the log files of the various OracleAS components that Oracle Portal uses. You can do this from the Application Server Control UI by clicking the Logs link in the top right hand corner of every page.

Because Oracle Portal can satisfy a large number of requests simultaneously, tracing a single request through the various Oracle Portal components can be difficult, as information relating to these requests is intermingled.

Oracle Portal makes use of an Execution Context Identifier (ECID), a unique number that is assigned to a request and attached to information recorded for that request. As a request is passed from one component to another, the ECID is incremented to form a sequence. This means that an individual request can be tracked through any number of components by following this ECID sequence.

An ECID is generated by the first OracleAS component to receive a request without an ECID. Figure 4 shows the process through which a request with an ECID (represented by a solid arrow) is incremented as it moves through the system.

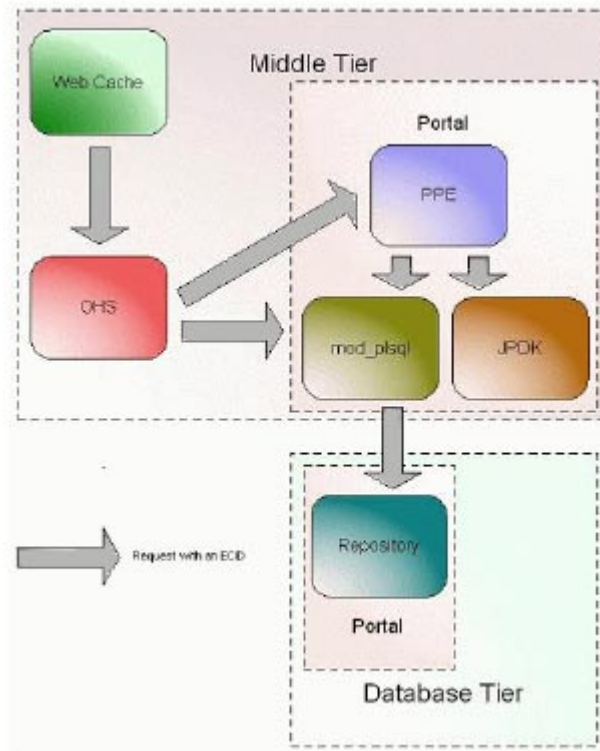


Figure 4. Oracle Portal ECID generation and flow

The Application Server Control Log Viewer allows the Administrator to visually correlate a number of log file entries together, based on the ECID, to expose the request flow from one component to another.

Oracle Portal & The Oracle Enterprise Manager Grid Control

The Oracle Enterprise Manager Grid Control is installed into its own, separate oracle home from the Oracle Portal Oracle home it is managing. In the majority of cases the Grid Control is actually installed on a completely separate node to your OracleAS installation. The Oracle Enterprise Manager Grid Control installation consists of the Management Agent, Management Service and Management Repository.

- The Oracle Management Agent is a process that is deployed on each monitored host, and is responsible for monitoring all targets on the host, for communicating that information to the middle-tier Management Service, and for managing and maintaining the host and the products installed on the host. Each OracleAS installation has one Oracle Management Agent pre-installed with every Oracle Home.
- The Oracle Management Service is a web application deployed on an instance of Oracle Application Server 10g J2EE and Web Cache. It renders the user interface for the Grid Control, works with all Management Agents in

processing monitoring and job information, and uses the Management Repository as its data store.

- The Oracle Management Repository consists of two or more tablespaces in an Oracle database that contains all the information available about administrators, targets, and applications that are managed within Enterprise Manager.

The Management Service uploads the monitoring data it received from the Management Agent to the Management Repository. The Management Repository then organizes the data so that the data can be retrieved by the Management Service and displayed on the Grid Control. Because data is stored in the Management Repository, it can be shared between any number of administrators accessing the Grid Control.

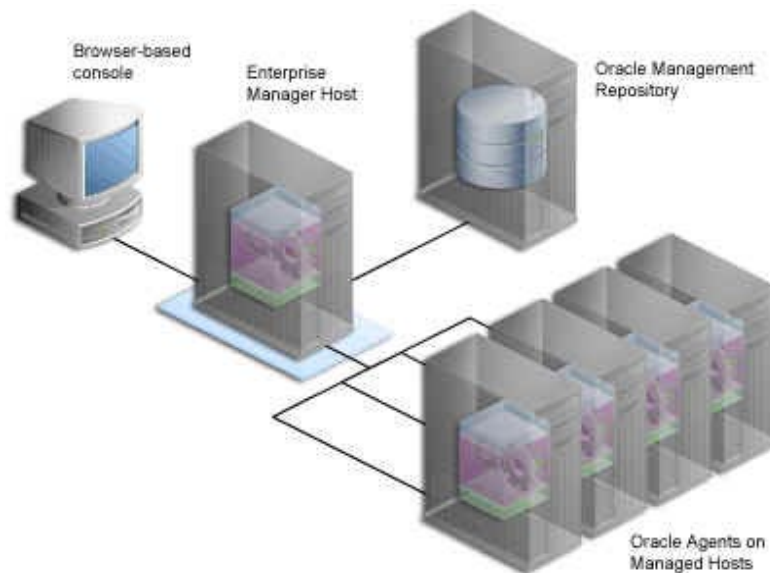


Figure 5. Oracle Enterprise Manager Grid Control architecture

The Grid Control is used for managing Oracle Portal in two primary ways:

- Displaying historical metric and performance information
- Configuring alert thresholds and proactive notification mechanisms

Historical Metric Reports

Whereas the Application Server Control displays real time metrics, the Grid Control shows metrics that have been *collected* over a period of time. The range of Oracle Portal metrics that are to be collected are configured (by default) at install time.

You can use these collected metrics to monitor historical trends. For any of the collected metrics you can graph their performance over a period of time of up to

31 days. In addition you can also graph this same metric side by side with the same metric from a different Oracle Portal installation that is also being monitored.

In addition to using the supplied graphs and reports that are part of the Grid Control to view these collected metrics you may use any standard relational reporting tool to create your own reports. Access to the collected metric data is possible via a set of public database views that are documented in the Grid Control document 'Extending Enterprise Manager' which is available from Oracle Technology Network (<http://otn.oracle.com>).

Thresholds and Automatic Notifications

In the Grid Control, you can define and adjust the thresholds for Oracle Portal metrics. Thresholds are boundary values against which monitored metric values are compared. You can specify a warning threshold such that, when a monitored metric value crosses that threshold, a warning alert is generated. Alerts can notify you of impending problems that you can address in a timely manner. Alerts specific to Oracle Portal can be viewed from the Portal Target page in the Grid Control.

Editing metric thresholds is useful because you can add or change the thresholds to fit the monitoring needs of your organization. When defining a threshold, you should choose a value that avoids too many unnecessary alerts.

Once you have tailored your thresholds to your organization you can set up notification alerts to execute when certain metrics exceed the pre-set thresholds.

To set up a notification in the Grid Control you first establish at least one Notification Method for either an Outgoing Mail Server, a Script (OS Command or PL/SQL) or an SNMP Trap. Once you have a Notification Method defined then you can link it to a Notification Rule through which you can choose the targets and conditions for which you want to receive notifications in the Grid Control.

Summary

The combination of Oracle Portal 10g and Oracle Enterprise manager provides a powerful yet easy to use environment for managing and monitoring your Portal deployments. Application Server Control provides Administrators with an out of the box environment to view real time metrics and log file information for powerful troubleshooting. In addition the Grid Control provides Administrators with a flexible architecture for examining historical trends in metrics information as well as the ability to configure notifications for proactive management.

MEASURING PORTAL ACTIVITY

Monitoring your portal is one side of the coin, in understanding your portal. Measurement is the other. Who is using the Portal? How? When? What pages/links are most effective? What are users accessing? Measurement is

achieved through 'Business Centric Portal Analytics'. Business centric portal analytics is targeted towards business users and executives, site content contributors, page designers, portal administrators, and business users.

Business Centric Portal Analytics

Today Oracle is realizing increased productivity through its enterprise portal, My Oracle (Figure 7). My Oracle is specifically designed to be the single source of interaction with Oracle's corporate information and the focal point for employees conducting their day-to-day business. My Oracle provides Oracle employees with access to the applications and tools they need to do their job. It also acts as a single source of truth to the information they need. My Oracle is based on Oracle Portal. To learn more about My Oracle, please see the 'Portal Implementation Case Study: My Oracle' White Paper on Oracle Portal Center on the Oracle Technology Network.

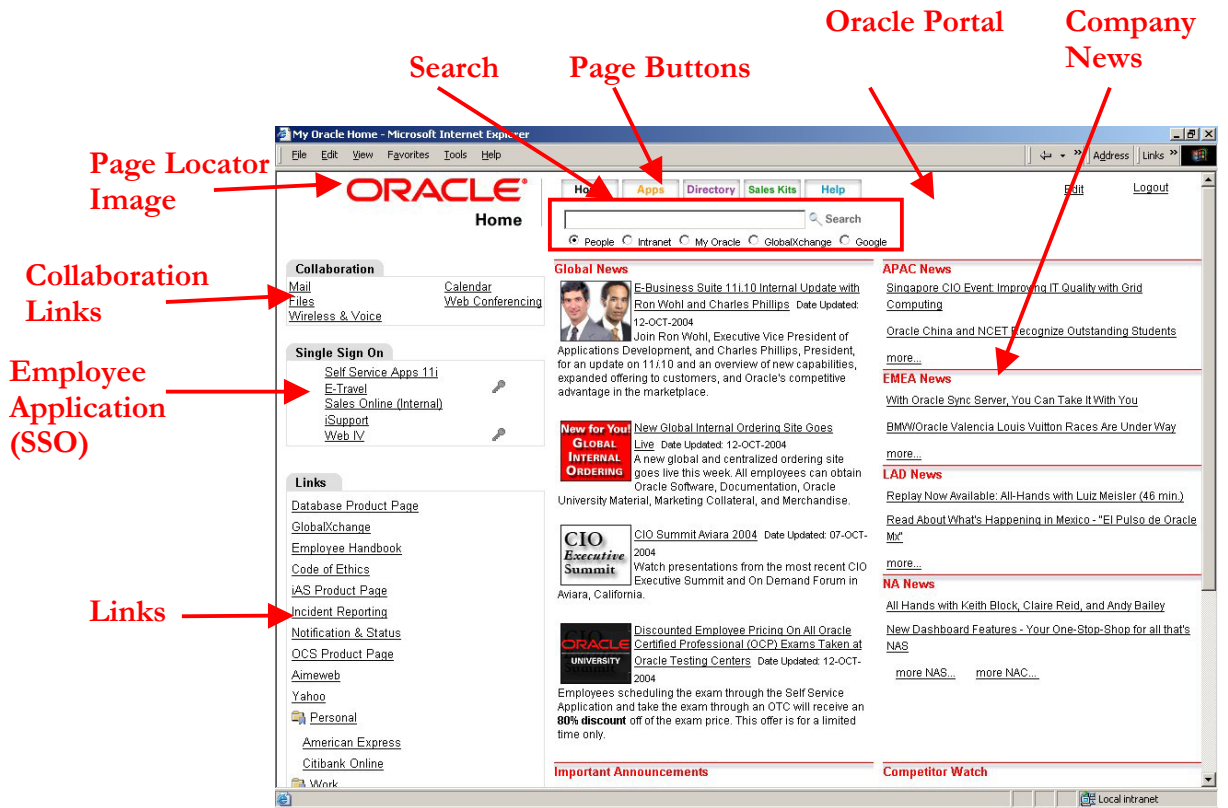


Figure 7. My Oracle Home Page

You'll see how the My Oracle business owners were able to use Omniture (www.omniture.com) SiteCatalyst to address the needs of knowing how their portal was being used.

The Bottom Line: How Is My Portal Being Used

Everyday Oracle Portal and website business owners are faced with common questions on how their portal is being used. They need to be able to answer questions such as:

- How many people are visiting my portal?
- What are the Top 10 Pages on my portal?
- What content are my users downloading?
- How are they finding my portal?
- When is the peak/off-peak time visiting time?
- What time is best for taking a downtime?

Most often these questions go unanswered. Portal business owners such as Site Managers, Marketing, Sales and Human Resource specialists need timely, relevant, information on how their portal is being used. Site managers need to know how users are responding to the site structure, Marketing managers need to know which pages users are looking at, and how they can highlight pages more prominently, Sales managers need to know what content are sales people looking at, and HR people need to know how many people are accessing the Self Service Applications.

You can make costly decisions if you don't know how your portal is being used. You could invest in a custom built solution that will end up costing you and your company more than you want or need to spend.

The bottom line is that your portal business owners need timely, relevant, information to effectively do their jobs. Your company can't afford to manage its site without knowing how it is being used.

As you'll see Web Analytics products/services such as Omniture's SiteCatalyst can provide answers to your portal usage questions.

Addressing Your Business Centric Portal Analytics Needs

Some of your business centric portal analytics needs can be addressed via the portal performance reports, but solutions such as Omniture SiteCatalyst or NetIQ WebTrends provide a more complete understanding of how your portal is being used.

The Oracle Portal Performance Reports are included within Oracle Portal. The reports provide the following types of information: How long an overall request took, how much of that time was spent in a user's procedure, what user made the request, whether a database connection was obtained from the connection pool, what type of caching was used, etc. The reports execute against the data collected by the performance logging service of mod_plsql. For a full description of how to implement this logging service, please see the Tech Note 'Portal Performance Monitoring in Oracle Portal' on Oracle Portal Center on the Oracle Technology Network. These capabilities thus require no additional software purchase.

You could use the Oracle Portal Performance Logs to assess portal usage as well as performance. However, the Portal Performance logs will need to be parsed to extract the necessary data, and that data extracted to produce charts for determining portal usage. Thus, you won't get all the information your business users need, and it won't be immediate. Third party solutions, such as Omniture's SiteCatalyst or WebTrends, provide immediate information on portal usage.

The Oracle Portal Performance Logs are still used on My Oracle to maintain a history of the CPU costs of generating content from within a web provider versus the additional framework costs versus the overall page generation costs. We also use the Portal Performance Logs to determine the fastest and slowest running portlets. Web Analytics solutions such as SiteCatalyst and WebTrends do not currently provide this level of portal performance information.

NetIQ WebTrends

NetIQ WebTrends works by extracting data contained within the web server logs or by collecting data from the web client. With WebTrends 7, WebTrends provides a remotely hosted service, as well as a customer installable software solution. You can learn more about NetIQ WebTrends at <http://www.netiq.com/webtrends/>.

Omniture SiteCatalyst

Omniture SiteCatalyst is a remotely hosted, subscription-based reporting solution for real-time web site analysis. Omniture is the first company to provide real-time web analytics. Omniture has been helping enterprise-class web site business owners since 1996 to answer the tough questions that drive their online success. Omniture's customers include Oracle, General Motors, EBay, AOL Time Warner, Hewlett-Packard, and more.

SiteCatalyst provides thousands of built-in and custom report combinations that match the individual needs of your business. This flexible, in depth reporting lets you drill down through more than just 'average' site statistics to identify, analyze and measure the factors that most influence your portal's success.

SiteCatalyst works by placing the Omniture SiteCatalyst code on the portal pages you want to track. It provides real-time data and analysis right away. Anyone equipped with an Omniture SiteCatalyst account can quickly, easily, and securely get up-to-the minute information about your portal usage.

You can learn more about Omniture SiteCatalyst at www.omniture.com.

Omniture SiteCatalyst Reports

Omniture SiteCatalyst's advanced reporting capabilities generate over 150,000 report combinations:

- Traffic reporting lets you analyze all aspects of visitor activity, such as traffic patterns, popular channels, preferred technology and finding methods used.
- Customer data, including customer loyalty, sales cycle, products purchased, promotional activity and affiliate programs, are identified by Commerce reporting.
- Paths reports let you track and record entire browsing paths of both your visitors and customers, from start to finish. You can easily view your site traffic as it flows from one page or item to the next, discover new patterns and popular paths, or search out the specific paths that your visitors take.
- Custom Insight reporting and a fully interactive calendar let you quickly identify and track any factors you can identify, for any time period you choose.

These and Omniture's other features present the facts, trends, and insight you need to answer your portal usage questions. With the answers to your portal's business related questions, you can spend your time improving and executing your portal initiatives, rather than acquiring the information needed to justify changes.

My Oracle and Business Centric Portal Analytics – Case Study

My Oracle usage has risen month-on-month since deploying Omniture SiteCatalyst. We understand what our users are looking at, and what they are not. We spend more time on developing the right portal. Users spend less time looking for content.

This case study shows how My Oracle benefited through using Omniture SiteCatalyst for its business centric portal analytics. It also describes how SiteCatalyst was deployed on Oracle's employee portal.

My Oracle is the portal for Oracle employees. The My Oracle business owners have the same common business questions as you, on how their portal is being used. Over the years, attempts were made to use the Oracle Portal logs to answer these questions. This involved at least two servers to record and crunch, on an overnight basis, the 3GB of log data generated on a daily basis. Yet we were unable to answer our business user's questions:

- No real-time information for decision makers
- No charting capabilities
- No ability to answer business users questions

- No ability to answer historic portal usage questions, since the data was not available.

To address the business user's needs, we examined the option of building a comprehensive business Centric Portal Analytics solution, licensing and installing a solution, or using a third-party hosted solution. As our requirements developed, we decided that we wanted a hosted solution. We did not want to manage or maintain any hardware or software, and we did have the resources required to analyze log files or run the web analytics applications. WebTrends hosted and installed solutions did not at that time meet our requirements. Thus we choose Omniture SiteCatalyst for My Oracle.

With Omniture SiteCatalyst, My Oracle business owners have access to all the reports they need, whenever they need them. Since it is easy to deploy and administer, SiteCatalyst also saves Oracle money. Only one person - on very a limited basis - is responsible for managing the Omniture SiteCatalyst deployment on My Oracle.

The Omniture SiteCatalyst reports that the My Oracle business users use the most are:

- Most Popular Pages Report
- Daily/Hourly Unique Visitors Per Day
- Page Views per Hour/Day

The Most Popular Pages Report is discussed here. Usage of the other two reports are discussed in the 'Portal Implementation Case Study: My Oracle' White Paper on Oracle Portal Center on the Oracle Technology Network.

Most Popular Pages Report

The Most Popular Pages report (Figure 8) ranks pages on a site based on those that receive the most traffic. By default, pages are ranked by the number of times they were viewed, with the pages receiving the most page views listed first. The Most Popular Pages report can be viewed by visits, meaning you can now see which pages are most popular on a per-visit basis.

This report also lists all pages being tracked by SiteCatalyst, so you can verify that the SiteCatalyst code is indeed on the pages you want to monitor. This report is used to:

- Identify important pages that are getting missed so we can highlight them more prominently.
- Evaluate marketing effectiveness related to announcements made within Oracle.
- Monitor traffic to all pages in one easy-to-read report.
- Discover the pages or products in which our visitors are most interested.

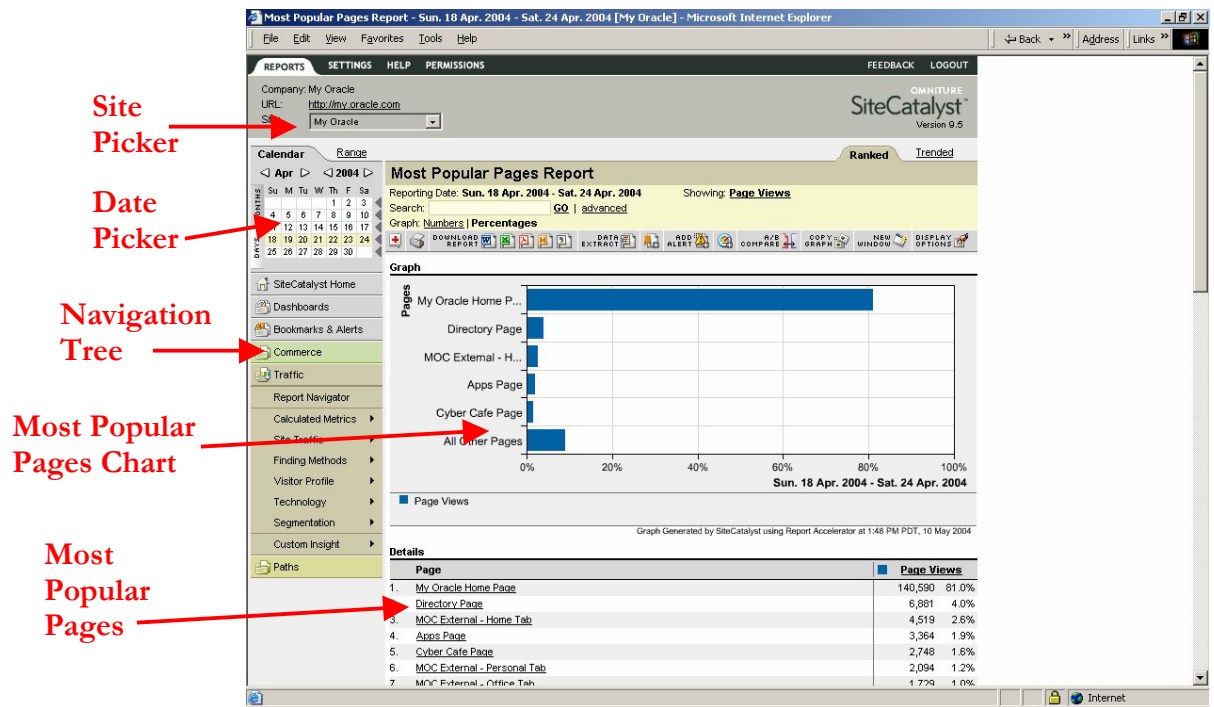


Figure 8. Omniture SiteCatalyst Most Popular Pages Report

Deploying Omniture SiteCatalyst on My Oracle

Omniture SiteCatalyst is a completely hosted web analytics solution. It works by the addition of a snippet of HTML (typically < 1K) on the pages of your portal site. In that snippet are variables with which you can customize the data being collected. A supporting JavaScript library file (typically < 15k) is also be uploaded to the portal website. This file is referenced by the HTML code snippet and is downloaded once per visitor and cached.

When the page is downloaded by a visitor to the portal, the browser executes the SiteCatalyst code while rendering the page. The SiteCatalyst code collects data about the page view (including any custom variables employed) and initiates an image request to the SiteCatalyst data collection servers. The data is passed in to the server as part of the request, and the data collection servers return a 1 x 1 pixel transparent image. The data is then processed and built into the SiteCatalyst reports which are available over the web.

For My Oracle the supporting JavaScript library file was placed on a My Oracle mid-tier and 'pinned' (i.e. permanently cached). This ensures that there is minimum impact on My Oracle performance. The HTML code (see box below) is added to the My Oracle 'Footer'. The Footer is added to any page made published to My Oracle employees. Thus Omniture SiteCatalyst automatically begins to track usage. There is nothing required to be done from the Omniture SiteCatalyst website to begin tracking a page.

```
<script language="JavaScript">
var s_pageName= ""
var url = document.location.href;
function siteCatalystPageId() {
  var regexp = eval("/&_mode=16/")
  var resultArray = url.match(regexp)
  if (resultArray) { // On Edit page
    s_pageName= document.title + " Edit Page"
  } else {
    s_pageName = document.title + " Page"
  }
}
siteCatalystPageId();
</script>
```

After adding Omniture SiteCatalyst to My Oracle we found that there was on average less than 0.3 second performance impact on the download of the first My Oracle page that a user visits. There is less than a 0.1 second performance impact on the download of subsequent pages, since the user's browser caches the Omniture SiteCatalyst cookies.

Summary

In summary, the Portal Performance Logs are useful for answering technical/performance questions. Third party solutions, such as WebTrends and Omniture, are useful for answering business related questions, such as portal usage.

When Oracle looked at means to collect usage statistics and building our solution based off the Portal reports, the advantage of Omniture SiteCatalyst over locally stored usage statistics is that it provided real-time business centric portal analytics.

How have the My Oracle business owners and the portal users benefited from business centric portal analytics? Take a look:

- Business owner benefits:
 - Receive current information to make immediate decisions.
 - Know how our portal is being used... Make better decisions.
 - Understand the users better, so can provide what they need.
- My Oracle user benefits
 - Users spend less time looking for content they need.
- My Oracle portal administrators and DBA benefits:
 - Spend more time on developing the right portal.

The business owners and the portal users have benefited from the addition of Omniture SiteCatalyst to My Oracle. The business owners receive the reports they

need. Oracle employees receive more relevant content. The corporation saves money through lower costs of providing the reports.

For My Oracle, installation of Omniture SiteCatalyst involved two easy steps:

- Deploy the Omniture SiteCatalyst base JavaScript file to a My Oracle middle-tier
- Add the Omniture SiteCatalyst HTML file to the My Oracle footer

CONCLUSION

The combination of Oracle Portal 10g, Oracle Enterprise manager and business centric portal analytics products/services such as Omniture SiteCatalyst and WebTrends provide powerful and yet easy to use tools to manage, monitor and measure your Portal deployments.



How to Effectively Measure and Monitor Activity in Your Portal Environment
December 2004

Authors: Jitinder 'Jay' Sethi, Michael Andrew

Oracle Corporation
World Headquarters
500 Oracle Parkway
Redwood Shores, CA 94065
U.S.A.

Worldwide Inquiries:
Phone: +1.650.506.7000
Fax: +1.650.506.7200
www.oracle.com

Copyright © 2004, Oracle. All rights reserved.

This document is provided for information purposes only
and the contents hereof are subject to change without notice.

This document is not warranted to be error-free, nor subject to
any other warranties or conditions, whether expressed orally
or implied in law, including implied warranties and conditions of
merchantability or fitness for a particular purpose. We specifically
disclaim any liability with respect to this document and no
contractual obligations are formed either directly or indirectly
by this document. This document may not be reproduced or
transmitted in any form or by any means, electronic or mechanical,
for any purpose, without our prior written permission.

Oracle is a registered trademark of Oracle Corporation and/or its
affiliates. Other names may be trademarks of their respective owners.