

AWR/ASH – Understand an Application's Database Usage

Building a tool to mine the AWR and ASH tables.

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Agenda

- **Introductions**
- **Our Use Cases for the Tool**
- **Building the Tool**
- **Some Concepts/Objects for the Tool**
- **Overview of Info Retrieved from AWR and ASH Tables**
- **Demo (Insight from the AWR and ASH Tables)**
- **General Q & A**



Introductions

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- **Me**
- **Guidewire**
- **Guidewire's Applications and Platform**
- **History of our Tool**



Our Use Cases for the Tool

Our Use Cases for the Tool

- **Internal Perf Testing**
 - Understand where time spent
 - Identify potential problems early
 - Understand how application using database
- **Remote Debugging a Customer Issue**
 - Perceived problem may not be actual problem
 - Understand how customer using application
 - Identify potential scaling issues



Building the Tool

Building the Tool (Part I)

- **Take an incremental approach**
 - Track potential work
- **Integrate knowledge of application and data model concepts**
- **Answer unanswered questions (continual improvement)**
- **Instrument queries used to build tool**

Building the Tool (Part II)

- **Use queries that do large set operations**
 - Get plans for all queries in a single statement
- **Do as much work as possible in app server/calling program**
 - We do some aggregations in app server
 - We process each ASH event multiple ways in app server
- **Build object graph from query results**
- **Generate output from object graph**



Some Concepts/Objects for the Tool

Concepts/Objects for the Tool

- **Query**
 - Execution statistics, text, ASH events, parsing action, ...
 - Plans
- **Plan**
 - Row sources
 - Accessed objects (tables and indexes)
 - Cost estimates
 - Queries sharing plan
- **Database Object (tables, indexes, materialized views)**
 - Referencing queries
 - I/O statistics



Our AWR Download

What we get from AWR and ASH

Download Contents

- **All queries captured by AWR**
 - Execution statistics, query plans
 - Various subgroups by query type
 - Flagged queries
 - Queries sharing plans
 - Analysis of plan changes over time (optional)
- **Hot objects captured by AWR**
- **Sys time model statistics**

Download Contents (cont'd)

- **All ASH wait events**
 - Resource usage by module, action, identifier, query, ...
 - Graph aggregated wait events, grouping by all, action, query, ...
 - Identify busiest ASH sample times
- **Histograms for sampled executions by query**
 - Include action, identifier, times, ... (for longest executions)

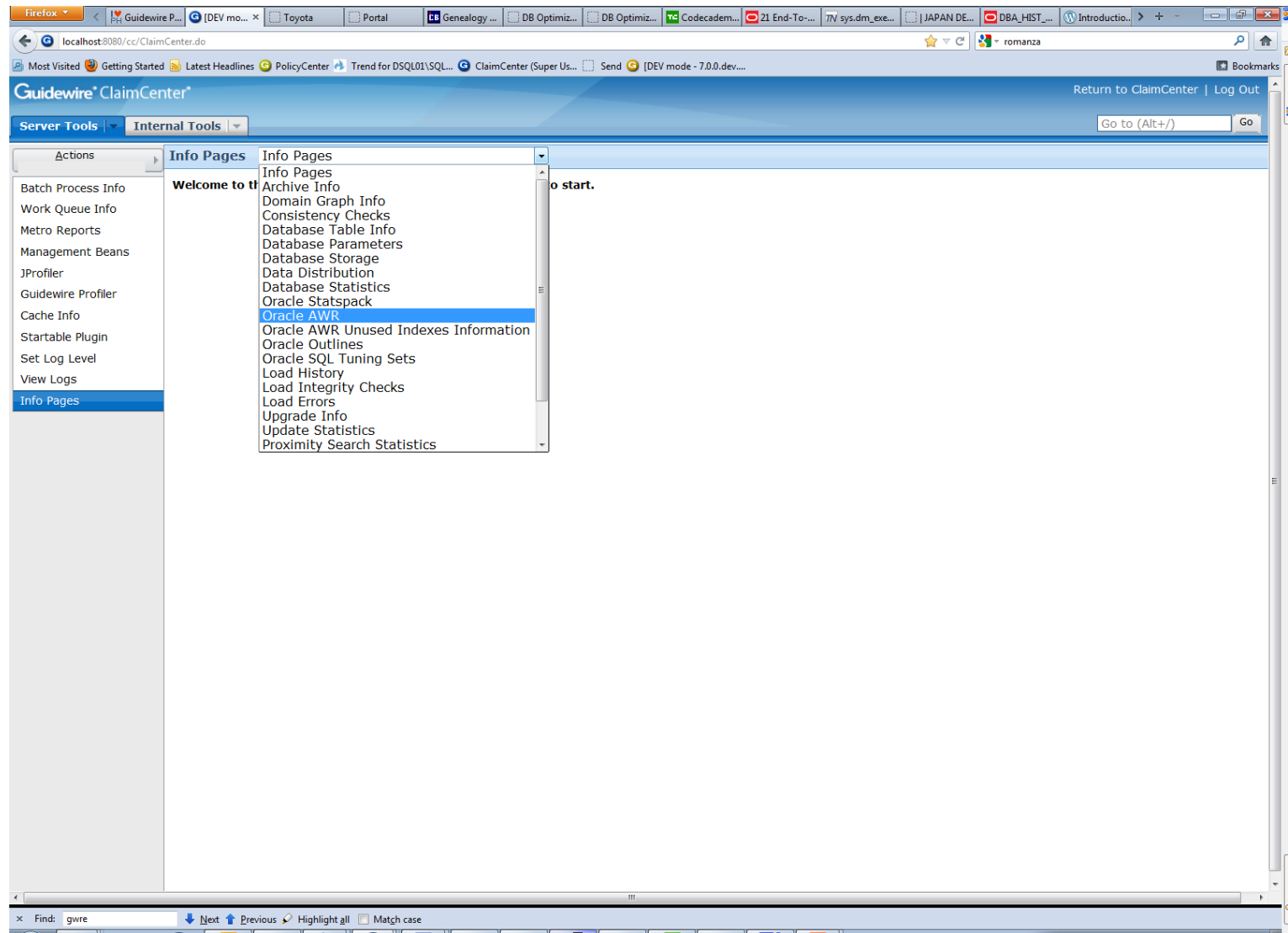
Download Contents (cont'd)

- **V\$ tables (optional)**
 - Detailed row source plans (`STATISTICS_LEVEL = ALL`)
 - Peeked bind variables
- **SQL Monitor (optional)**
 - Details of every captured execution
- **Database configuration**
- **Database statistics (optional)**



Demo

Getting the Download (Step 1)



Getting the Download (Step 2)

The screenshot shows the Guidewire ClaimCenter interface. The main content area displays 'Oracle AWR Information' for 'Oracle AWR'. There are 'Refresh' and 'Disable Paging' buttons. A message states: 'Please select two snapshots from the same instance start up time and press download (1 - 14 of 14)'. Below this is a table with the following data:

	ID	Snapshot Time	Oracle Instance Startup Time	Description
<input type="checkbox"/>	934	Mar 13, 2012 02:03 PM	Mar 13, 2012 11:53 AM	
<input type="checkbox"/>	933	Mar 13, 2012 01:05 PM	Mar 13, 2012 11:53 AM	
<input type="checkbox"/>	932	Mar 13, 2012 12:00 PM	Mar 13, 2012 11:53 AM	
<input type="checkbox"/>	931	Mar 13, 2012 07:46 AM	Mar 13, 2012 05:39 AM	
<input type="checkbox"/>	930	Mar 13, 2012 06:52 AM	Mar 13, 2012 05:39 AM	
<input type="checkbox"/>	929	Mar 13, 2012 05:46 AM	Mar 13, 2012 05:39 AM	
<input type="checkbox"/>	928	Mar 13, 2012 04:50 AM	Mar 13, 2012 02:38 AM	
<input type="checkbox"/>	927	Mar 13, 2012 03:51 AM	Mar 13, 2012 02:38 AM	
<input type="checkbox"/>	926	Mar 13, 2012 02:46 AM	Mar 13, 2012 02:38 AM	
<input type="checkbox"/>	925	Mar 13, 2012 12:35 AM	Mar 12, 2012 10:26 PM	
<input type="checkbox"/>	924	Mar 12, 2012 11:40 PM	Mar 12, 2012 10:26 PM	
<input type="checkbox"/>	923	Mar 12, 2012 10:35 PM	Mar 12, 2012 10:26 PM	
<input type="checkbox"/>	922	Mar 12, 2012 10:03 PM	Mar 12, 2012 09:52 PM	
<input type="checkbox"/>	921	Mar 12, 2012 09:52 PM	Mar 12, 2012 09:52 PM	

The left sidebar contains a menu with the following items: Actions, Batch Process Info, Work Queue Info, Metro Reports, Management Beans, JProfiler, Guidewire Profiler, Cache Info, Startable Plugin, Set Log Level, View Logs, and Info Pages (highlighted). The bottom of the browser shows a search bar with 'Find: gwre' and navigation buttons for 'Next', 'Previous', 'Highlight all', and 'Match case'.

Getting the Download (Step 3)

The screenshot shows the Oracle AWR Information page in Guidewire ClaimCenter. The page title is "Oracle AWR Information" and the sub-header is "Oracle AWR". The page contains a list of AWR snapshots with checkboxes for selection. The "Number of Queries to Graph" is set to 10. A "Download" button is visible.

Actions

- Batch Process Info
- Work Queue Info
- Metro Reports
- Management Beans
- JProfiler
- Guidewire Profiler
- Cache Info
- Startable Plugin
- Set Log Level
- View Logs
- Info Pages

Oracle AWR Information Oracle AWR

Download Refresh Disable Paging

Probe V\$ Tables

Capture Peeked Bind Variables

Search for Queries with Multiple Historic Plans

Search for Queries that appear in the begin snapshot, but not the end snapshot

Search for Queries that appear in the end snapshot, but not the begin snapshot

Include metadata for instrumentation tables

Include Database Statistics

Probe SQL Monitor

Capture Peaked Bind Variables from AWR

Generate Calls to ASH Scripts

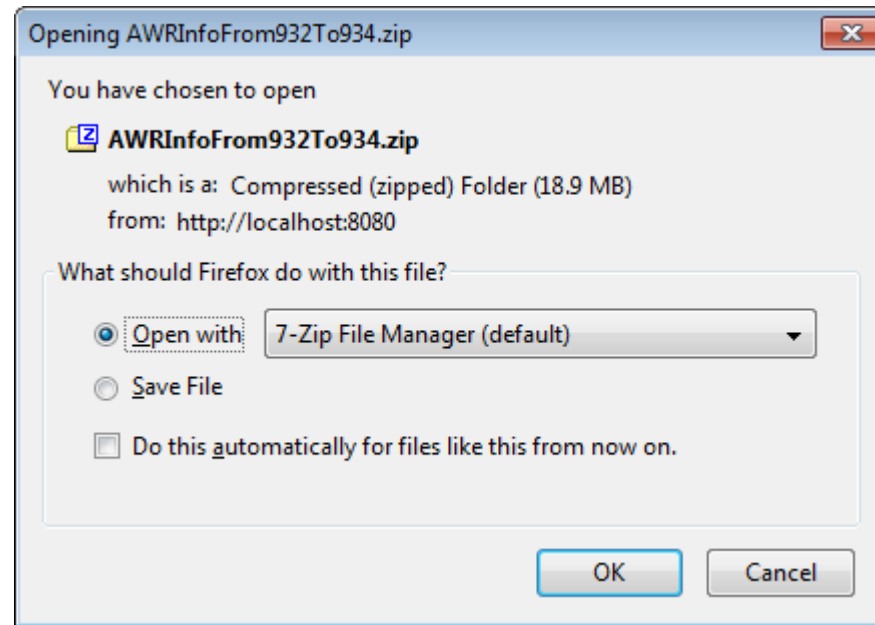
Number of Queries to Graph

Please select two snapshots from the same instance start up time and press download (1 - 14 of 14)

	ID	Snapshot Time	Oracle Instance Startup Time	Description
<input checked="" type="checkbox"/>	934	Mar 13, 2012 02:03 PM	Mar 13, 2012 11:53 AM	
<input type="checkbox"/>	933	Mar 13, 2012 01:05 PM	Mar 13, 2012 11:53 AM	
<input checked="" type="checkbox"/>	932	Mar 13, 2012 12:00 PM	Mar 13, 2012 11:53 AM	
<input type="checkbox"/>	931	Mar 13, 2012 07:46 AM	Mar 13, 2012 05:39 AM	
<input type="checkbox"/>	930	Mar 13, 2012 06:52 AM	Mar 13, 2012 05:39 AM	
<input type="checkbox"/>	929	Mar 13, 2012 05:46 AM	Mar 13, 2012 05:39 AM	
<input type="checkbox"/>	928	Mar 13, 2012 04:50 AM	Mar 13, 2012 02:38 AM	
<input type="checkbox"/>	927	Mar 13, 2012 03:51 AM	Mar 13, 2012 02:38 AM	

Find: gwre Next Previous Highlight all Match case

Getting the Download (Step 4)





General Q & A