

ORACLE 11G DATABASE REPLAY : REPLAY CAPTURE WORKLOAD FILES

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INTRODUCTION

In this part of the paper, I will provide details as how to Replay the Captured Workload on the Target Database

In this paper, I will use db02pn as Source Database and db01pn as Target Database. Source Database is the database where Workload is captured and then the workload will be replayed at Target database.

REPLAY PROCESS STEPS

1. Set up the QA System
2. Steps for Replaying a Database Workload
3. Replaying a Database Workload Using Enterprise Manager
4. Monitoring Workload Replay Using Enterprise Manager
5. Replaying a Database Workload Using APIs
6. Monitoring Workload Replay Using Views

SETUP THE QA SYSTEM

In order to setup the QA system so that it can be used to replay the Captured and processed Workload, you need to perform the following

1. Restoring the Database – It can be datapump imp or RMAN or snapshot standby option so that Source Database where Capture process is executed and Target Database where we will replay the workload should have same data.
2. Resetting the System Time – This is recommended so as to avoid the divergence in the result due to SYSDATE and SYSTIMESTAMP function captured on Workload files.

Step 1 : Login to Enterprise Manager Database console of Target Database. Then select **Software and Support** tab and then click on **Database Replay**

The screenshot shows the Oracle Enterprise Manager 11g Database Control interface. At the top, the title bar reads "ORACLE Enterprise Manager 11g Database Control" with navigation links for "Setup", "Preferences", "Help", and "Logout". The user is logged in as "SYS". The main heading is "Database Instance: orcl". A horizontal menu contains "Home", "Performance", "Availability", "Server", "Schema", "Data Movement", and "Software and Support", with the last one highlighted in a red box. Below this, the "Software" section is expanded, showing sub-sections: "Configuration" (with links for Collection Status, Clone Oracle Home, Host Configuration, Oracle Home Inventory), "Real Application Testing" (with "Database Replay" highlighted in a red box and a link for SQL Performance Analyzer), "Database Software Patching" (with links for Patch Advisor, View Patch Cache, Patch Prerequisites, Stage Patch, Apply Patch), and "Deployment Procedure Manager" (with links for Getting Started with Deployment Procedure Manager, Deployment Procedures, Procedure Completion Status, and Deployment and Provisioning Software Library).

Step 2 : To Replay Captured Workload, Click on [Go to Task](#) against the Task Name [Replay Workload](#) as shown in RED below.

ORACLE Enterprise Manager 11g Database Control

Database Instance: orcl >

Database Replay

The Database Replay feature allows database workload to be captured on one system and replayed later on a different system. Replaying a captured workload can be useful to compare two different systems.

| Task | Task Name | Description | Go to Task |
|------|------------------------------|--|------------|
| 1 | Capture Workload | Choose this option to capture workload on this database. | |
| 2 | Preprocess Captured Workload | Preprocessing will prepare a captured workload for replay. This must be done once for every captured workload. | |
| 3 | Replay Workload | Choose this option to replay a preprocessed workload on this database. | |

Step 3 : Select the Database directory from the drop-down menu that contains the Captured Workload files on Target Database server and are already been processed.

ORACLE Enterprise Manager 11g Database Control

Setup Preferences Help Logout Database

Database Instance: orcl > Database Replay >

Logged in As SYS

Replay Workload

The captured workload must have been preprocessed and copied to the replay system. A directory object for the directory with the copied workload must exist in the replay system.

Directory

Select a directory object that contains a preprocessed workload.

* Directory Object Create Directory Object

- AUDIT_DIR
- DATA_FILE_DIR
- DATA_PUMP_DIR
- IDR_DIR
- LOG_FILE_DIR
- MEDIA_DIR
- ORACLE_OCM_CONFIG_DIR
- SUBDIR
- XMLDIR
- captdir

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atabase | Setup | Preferences | Help | Logout

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Step 4 : When You select the Directory object as shown above, it will automatically provide the summary of Capture and Preprocess information as shown below.

Click on **Set up Replay** to start the Replay process

ORACLE Enterprise Manager 11g Database Control [Setup](#) [Preferences](#) [Help](#) [Logout](#)

Database Instance: orcl > Database Replay > Logged in As SYS

Replay Workload

The captured workload must have been preprocessed and copied to the replay system. A directory object for the directory with the copied workload must exist in the replay system.

Directory
Select a directory object that contains a preprocessed workload.

* Directory Object

▼ Capture Summary

| | | | |
|--------------------------|------------------------------------|-------------------------------|------------------------------------|
| Name | CAPTURE-orcl-20070719133228 | Captured Data Size (MB) | 0.03 |
| Status | Completed | Duration (hh:mm:ss) | 00:25:51 |
| Directory Object | captdir | Start Time | Jul 19, 2007 1:49:15 PM EDT |
| Database Name | ORCL | End Time | Jul 19, 2007 2:15:06 PM EDT |
| Capture Database Version | 11.1.0.6.0 | Start SCN | 6771511559 |
| DBID | 1155348838 | End SCN | 6771515021 |
| Capture Error Code | 0 | Preprocessed Database Version | 11.1.0.6.0 |
| Capture Error Message | None | | |

► Capture Details

Replay History

| Select Name | Status | Duration (hh:mm:ss) | Start Time | End Time | AWR Data Exported |
|----------------|--------|---------------------|------------|----------|-------------------|
| No items found | | | | | |

[Database](#) | [Setup](#) | [Preferences](#) | [Help](#) | [Logout](#)

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Step 5 : Review the prerequisites information provided on the screen and click **Continue** to go to next screen

ORACLE Enterprise Manager 11g Database Control

Setup Preferences Help Logout Database

Database Instance: orcl > Database Replay > Replay Workload > Logged in As SYS

Replay Workload: Prerequisites

The following items should be completed before setting up a replay:

Restore Database

Restore the replay database to match the capture database at the start of the workload capture. A successful workload replay depends on application transactions accessing application data identical to that on the capture system. Common ways to restore application data state include point-in-time recovery, flashback, and import/export.

Perform System Changes

You should make any desired changes to the replay system, including any database or system upgrade, prior to replay. The primary purpose of Database Replay is to test the effect of system changes on a real captured application workload. Therefore, the changes you make, combined with the captured workload, define the test you are conducting.

Resolve References to External Systems

A captured workload may contain references to external systems that may only be meaningful in the capture environment. For example, database links in a captured production environment may reference external production databases that should not be referenced during replay. In such a case, you should modify any external references that could jeopardize the production environment during replay.

Set Up Replay Clients

The Replay Client is a multithreaded program (an executable named wrc) where each thread submits a captured session's workload. This program is made available as part of the standard Oracle Client as well as the Oracle Instant Client. You should install one or more Replay Clients preferably on systems other than the database host. In addition, each Replay Client must be able to access the directory that holds the preprocessed workload. Refer to system documentation for more information.

[Database](#) | [Setup](#) | [Preferences](#) | [Help](#) | [Logout](#)

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[About Oracle Enterprise Manager](#)

Step 6 : Review more information and click **Continue** again to go to next screen

The screenshot shows the Oracle Enterprise Manager 11g Database Control interface. The breadcrumb trail is: Database Instance: orcl > Database Replay > Replay Workload > Replay Workload: Prerequisites >. The user is logged in as SYS. A warning message states: 'ATTENTION: Replay should be performed in a COMPLETELY ISOLATED test environment'. The main heading is 'Replay Workload: References to External Systems'. Below this, it says 'References to external systems may cause problems during the replay.' and provides 'Cancel' and 'Continue' buttons. The 'Continue' button is highlighted with a red box. Below this, it says 'Use the links below to verify potential references to external systems and modify those that are invalid.' and lists three links: 'Database Links', 'Directory Objects', and 'Streams'. A tip states: 'TIP There may be more references to external systems than those found via the above links.' At the bottom of the main content area, there are 'Cancel' and 'Continue' buttons. The footer contains copyright information and a link to 'About Oracle Enterprise Manager'.

Step 7 : Replay Workload Wizard : Choose Initial Options
Accept Default [Replay Process Name](#) and click **NEXT to continue**

The screenshot shows the Oracle Enterprise Manager 11g Database Control interface. At the top, there are navigation links for Setup, Preferences, Help, and Logout. Below this is a progress bar with five steps: Choose Initial Options (selected), Customize Options, Prepare Replay Clients, Wait for Client Connections, and Review. The main title is "Replay Workload: Choose Initial Options".

Database: **orcl** (Cancel) Step 1 of 5 **Next**

Capture Name: **CAPTURE-orcl-20070719133228**

Logged In As: **SYS**

* Replay Name:

Initial Options

Choose the initial replay options.

- Use the default replay options
- Use replay options from a previous replay

Replay Name:

(Cancel) Step 1 of 5 (Next)

Database | [Setup](#) | [Preferences](#) | [Help](#) | [Logout](#)

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Step 8 : Replay Workload Wizard : Customize Options

This page will show you the TNS setting used for Database connections. Click **Next** to Continue with the Replay setup

ORACLE Enterprise Manager 11g Database Control

Setup Preferences Help Logout Database

Choose Initial Options **Customize Options** Prepare Replay Clients Wait for Client Connections Review

Replay Workload: Customize Options

Database **orcl** Cancel Back Step 2 of 5 **Next**

Capture Name **CAPTURE-orcl-20070719133228**

Logged In As **SYS**

Connection Mappings [Replay Parameters](#)

Replay Clients must establish connections to the replay database. Specify connection details to the replay database using either a single connect descriptor or net service name. Optionally, you can map every captured connect descriptor to a separate connect descriptor or net service name for the replay database.

TIP Connections must point to the replay database for a successful replay.

Use a single connect descriptor for all client connections. Test Connection

```
(DESCRIPTION=(ADDRESS_LIST=(ADDRESS=(PROTOCOL=TCP)(HOST=db02pn)(PORT=1521)))
(CONNECT_DATA=(SID=orcl)))
```

Use a single TNS net service name for all client connections.

TIP All Replay Clients must be able to resolve the net service name (for example through a local tnsnames.ora file).

Use a separate connect descriptor or net service name for each client connect descriptor captured in the workload.

Connection Mappings [Replay Parameters](#)

Cancel Back Step 2 of 5 Next

[Database](#) | [Setup](#) | [Preferences](#) | [Help](#) | [Logout](#)

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Step 9 : Replay Workload Wizard : Prepare Replay Clients

This page displays the message that you need to run Client(s) to submit the Capture workload. In the coming screen, you have to start the client(s) so that Replay can be started. Click **Next** to Continue

The screenshot shows the Oracle Enterprise Manager 11g Database Control interface. At the top, there is a navigation bar with 'Setup', 'Preferences', 'Help', and 'Logout' links. Below this is a progress indicator with five steps: 'Choose Initial Options', 'Customize Options', 'Prepare Replay Clients' (the current step, highlighted with a blue circle), 'Wait for Client Connections', and 'Review'. The main content area is titled 'Replay Workload: Prepare Replay Clients'. It displays the following information: Database: orcl, Capture Name: CAPTURE-orcl-20070719133228, and Logged In As: SYS. There are 'Cancel', 'Back', and 'Next' buttons. The 'Next' button is highlighted with a red box. Below this information, there is a paragraph explaining the Replay Client: 'The Replay Client is a multithreaded program (an executable named wrc) where each thread submits a captured session's workload. This program is made available as part of the standard Oracle Client as well as the Oracle Instant Client. Refer to system documentation on how to set up and start the Replay Clients.' This is followed by the instruction: 'When you are ready to start the Replay Clients, continue to the next step and then start the Replay Clients.' At the bottom of the main content area, there are 'Cancel', 'Back', and 'Next' buttons. The footer contains the text: 'Database | Setup | Preferences | Help | Logout', 'Copyright © 1996, 2007, Oracle. All rights reserved.', and 'About Oracle Enterprise Manager'.

Step 10 : Replay Workload Wizard : Wait for Client Connections

Now we have to go to database server and create Replay Client. This page will be refreshed to show all available client as soon as they are available. Don't click Next until the Client(s) are started as show in next step

Currently the screen shows that there is no Client Connections available as shown in RED

ORACLE Enterprise Manager 11g Database Control

Setup Preferences Help Logout Database

Choose Initial Options Customize Options Prepare Replay Clients **Wait for Client Connections** Review

Replay Workload: Wait for Client Connections

Database **orcl** Cancel Back Step 4 of 5 Next

Capture Name **CAPTURE-orcl-20070719133228**

Logged In As **SYS**

The database is waiting for connections from the Replay Clients. Start the Replay Clients now.

When all the Replay Clients have connected, proceed to the next step to continue the replay setup.

The database is waiting for connections from Replay Clients.

⚠ This operation may take some time to complete. If you close this browser window or navigate to a different page, your place in the replay process will not be saved.

| Client Connections | | | | |
|--------------------|------|---------------|--------------|---------|
| SID | Host | OS Process ID | OS User Name | Program |
| No items found | | | | |

Cancel Back Step 4 of 5 Next

Database | Setup | Preferences | Help | Logout

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Step 11 : Start the Replay Client

You need a Database user to start the Replay client who must have the BECOME USER privilege

One Window

```
[oracle@db01pn capture_dir]$ wrc REPLAYDIR=/home/oracle/capture_dir USERID=system  
PASSWORD=welcome1
```

Workload Replay Client: Release 11.1.0.6.0 - Beta on Fri Jul 20 11:01:12 2007
Copyright (c) 1982, 2007, Oracle. All rights reserved.

Wait for the replay to start (16:00:21)

Second Window

```
[oracle@db01pn capture_dir]$ wrc REPLAYDIR=/home/oracle/capture_dir USERID=system  
PASSWORD=welcome1
```

Workload Replay Client: Release 11.1.0.6.0 - Beta on Thu Jul 19 14:18:23 2007
Copyright (c) 1982, 2007, Oracle. All rights reserved.

Wait for the replay to start (16:01:11)

Above Two windows shows that Replay Client are now waiting. Now Return to the Enterprise Manager Database control to see if two Clients are visible on the screen

Step 12 : Now we can see two Clients are visible from the specified Host. Click Next to start the Replay process

ORACLE Enterprise Manager 11g Database Control

Setup Preferences Help Logout Database

Choose Initial Options Customize Options Prepare Replay Clients **Wait for Client Connections** Review

Replay Workload: Wait for Client Connections

Database **orcl** Cancel Back **Step 4 of 5** Next

Capture Name **CAPTURE-orcl-20070719133228**

Logged In As **SYS**

The database is waiting for connections from the Replay Clients. Start the Replay Clients now.

When all the Replay Clients have connected, proceed to the next step to continue the replay setup.

⌚

✓ At least one Replay Client is connected. You may start more connections or continue to the next step.

⚠ This operation may take some time to complete. If you close this browser window or navigate to a different page, your place in the replay process will not be saved.

| Client Connections | | | | |
|--------------------|--------|---------------|--------------|------------------------|
| SID | Host | OS Process ID | OS User Name | Program |
| 102 | db01pn | 12089 | oracle | wrc@db01pn (TNS V1-V3) |
| 121 | db01pn | 12169 | oracle | wrc@db01pn.(TNS V1-V3) |

Cancel Back **Step 4 of 5** Next

Database | Setup | Preferences | Help | Logout

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Step 13 : Replay is started as been shown by Replay Client in Terminal Window and shown in Bold below

One Window

```
[oracle@db01pn capture_dir]$ wrc REPLAYDIR=/home/oracle/capture_dir USERID=system
PASSWORD=welcome1

Workload Replay Client: Release 11.1.0.6.0 - Beta on Fri Jul 20 11:01:12 2007
Copyright (c) 1982, 2007, Oracle. All rights reserved.

Wait for the replay to start (16:00:21)
Replay started (16:02:49)
```

Second Window

```
[oracle@db01pn capture_dir]$ wrc REPLAYDIR=/home/oracle/capture_dir USERID=system
PASSWORD=welcome1

Workload Replay Client: Release 11.1.0.6.0 - Beta on Thu Jul 19 14:18:23 2007
Copyright (c) 1982, 2007, Oracle. All rights reserved.

Wait for the replay to start (16:01:11)
Replay started (16:03:19)
```


Step 14 : Workload Replay has started and you can refresh the page to monitor the progress

ORACLE Enterprise Manager 11g Database Control Setup Preferences Help Logout Database

Database Instance: orcl > Database Replay > Logged in As SYS

Confirmation
The workload replay has started.

View Data Real Time: 60 Second Refresh

View Workload Replay: REPLAY-orcl-20070719155329 Page Refreshed Jul 19, 2007 4:02:52 PM EDT Refresh OK

Status **In Progress** [Stop Replay](#)

Summary

| | | | |
|----------------------|-----------------------------------|---------------------|------------------------------------|
| Replay Name | REPLAY-orcl-20070719155329 | Capture Name | CAPTURE-orcl-20070719133228 |
| Directory Object | captdir | Duration (hh:mm:ss) | 00:00:01 |
| Database Name | ORCL | Prepare Time | Jul 19, 2007 3:58:38 PM EDT |
| DBID | 1155348838 | Start Time | Jul 19, 2007 4:02:48 PM EDT |
| Replay Error Code | N/A | End Time | N/A |
| Replay Error Message | None | | |

Workload Profile [Connection Mappings](#) [Replay Parameters](#) [Report](#)

Network Time (hh:mm:ss) **N/A** Clients **1**
Think Time (hh:mm:ss) **N/A** Clients Finished **0**

Elapsed Time Comparison

Divergence

| | Number of Calls | Percentage of Total Calls |
|---|-----------------|---------------------------|
| Error Divergence: | | |
| Session Failures Seen During Replay | 0 | N/A |
| Errors No Longer Seen During Replay | 0 | N/A |
| Errors Mutated During Replay | 0 | N/A |
| New Errors Seen During Replay | 0 | N/A |
| Data Divergence: | | |
| SQLs with Different Number of Rows Modified | 0 | N/A |

Assessing the Replay

The Elapsed Time Comparison chart shows how much time the replayed workload has taken to accomplish the same amount of work as captured.

When the Replay bar is shorter than the Capture bar then the replay environment is processing the workload faster than the capture environment.

The divergence table gives information about both the data and error discrepancies between the replay and capture environments, which can be used as a measure of the replay quality.

[View Workload Replay Report](#)

Step 15: You can see that Replay process is in progress and Graph show the elapsed time as shown in RED.

ORACLE Enterprise Manager 11g Database Control Setup Preferences Help Logout Database

Database Instance: orcl > Database Replay > Logged in As SYS

View Workload Replay: **REPLAY-orcl-20070719155329** View Data Real Time: 60 Second Refresh

Page Refreshed Jul 19, 2007 4:12:28 PM EDT

Status **In Progress**

Summary

| | | | |
|----------------------|-----------------------------------|---------------------|------------------------------------|
| Replay Name | REPLAY-orcl-20070719155329 | Capture Name | CAPTURE-orcl-20070719133228 |
| Directory Object | captdir | Duration (hh:mm:ss) | 00:09:39 |
| Database Name | ORCL | Prepare Time | Jul 19, 2007 3:58:38 PM EDT |
| DBID | 1155348838 | Start Time | Jul 19, 2007 4:02:48 PM EDT |
| Replay Error Code | N/A | End Time | N/A |
| Replay Error Message | None | | |

Workload Profile

Network Time (hh:mm:ss) **00:00:00** Clients **1**
 Think Time (hh:mm:ss) **00:00:00** Clients Finished **0**

Elapsed Time Comparison

| Category | Elapsed Time (Minutes) |
|------------------|------------------------|
| Capture | ~15 |
| Replay | ~10 |
| Not Yet Replayed | ~10 |

Divergence

| | Number of Calls | Percentage of Total Calls |
|---|-----------------|---------------------------|
| Error Divergence: | | |
| Session Failures Seen During Replay | 0 | 0.00 |
| Errors No Longer Seen During Replay | 0 | 0.00 |
| Errors Mutated During Replay | 0 | 0.00 |
| New Errors Seen During Replay | 0 | 0.00 |
| Data Divergence: | | |
| DMLs with Different Number of Rows Modified | 0 | 0.00 |
| SELECTs with Different Number of Rows Fetched | 0 | 0.00 |

Assessing the Replay

The Elapsed Time Comparison chart shows how much time the replayed workload has taken to accomplish the same amount of work as captured.

When the Replay bar is shorter than the Capture bar then the replay environment is processing the workload faster than the capture environment.

The divergence table gives information about both the data and error discrepancies between the replay and capture environments, which can be used as a measure of the replay quality.

Step 16 : When the Replay process is finished, you can see the Status been changed to **Completed** as shown below in RED

ORACLE Enterprise Manager 11g Database Control

Database Instance: orcl > Database Replay > **View Workload Replay: REPLAY-orcl-20070719155329** Logged in As SYS

Status **Completed** (OK)

Summary

| | | | |
|----------------------|-----------------------------------|---------------------|------------------------------------|
| Replay Name | REPLAY-orcl-20070719155329 | Capture Name | CAPTURE-orcl-20070719133228 |
| Directory Object | capt_dir | Duration (hh:mm:ss) | 00:23:52 |
| Database Name | ORCL | Prepare Time | Jul 19, 2007 3:58:38 PM EDT |
| DBID | 1155348838 | Start Time | Jul 19, 2007 4:02:48 PM EDT |
| Replay Error Code | N/A | End Time | Jul 19, 2007 4:26:40 PM EDT |
| Replay Error Message | None | | |

Workload Profile | Connection Mappings | Replay Parameters | Report

Network Time (hh:mm:ss) **00:00:00** Clients **1**
 Think Time (hh:mm:ss) **00:00:00** Clients Finished **1**

Elapsed Time Comparison

Divergence

| | Number of Calls | Percentage of Total Calls |
|---|-----------------|---------------------------|
| Error Divergence: | | |
| Session Failures Seen During Replay | 0 | 0.00 |
| Errors No Longer Seen During Replay | 0 | 0.00 |
| Errors Mutated During Replay | 0 | 0.00 |
| New Errors Seen During Replay | 0 | 0.00 |
| Data Divergence: | | |
| DMLs with Different Number of Rows Modified | 0 | 0.00 |
| SELECTs with Different Number of Rows Fetched | 0 | 0.00 |

Assessing the Replay

The Elapsed Time Comparison chart shows how much time the replayed workload has taken to accomplish the same amount of work as captured.

When the Replay bar is shorter than the Capture bar then the replay environment is processing the workload faster than the capture environment.

The divergence table gives information about both the data and error discrepancies between the replay and capture environments, which can be used as a measure of the replay quality.

[View Workload Replay Report](#)

Workload Profile | Connection Mappings | Replay Parameters | Report (OK)

On the Terminal Window, you will see the Replay clients are also finished as shown in Bold below

```
[oracle@db02pn capture_dir]$ wrc REPLAYDIR=/home/oracle/capture_dir USERID=system PASSWORD=welcome1
```

```
Workload Replay Client: Release 11.1.0.6.0 - Beta on Thu Jul 19 16:00:21 2007
```

```
Copyright (c) 1982, 2007, Oracle. All rights reserved.
```

```
Wait for the replay to start (16:00:21)
```

```
Replay started (16:02:49)
```

```
Replay finished (16:26:40)
```

```
[oracle@db02pn capture_dir]$
```


Also See the new files created on Target Database server capture direcotory

```

172.30 - F-Secure SSH - [Defaults.ssh]
File Edit View Tools Help
[oracle@capture_dir]$ ls -ltr
total 13552
-rw-r----- 1 oracle oinstall      0 Jul 19 13:49 wcr_rec_00001.start
-rw-r----- 1 oracle oinstall    1348 Jul 19 13:49 wcr_4d7x440002mup.rec
-rw-r----- 1 oracle oinstall     928 Jul 19 13:49 wcr_4d7x440002jx0.rec
-rw-r----- 1 oracle oinstall    1140 Jul 19 13:49 wcr_4d7x444002mqs.rec
-rw-r----- 1 oracle oinstall     928 Jul 19 13:49 wcr_4d7x448002jy8.rec
-rw-r----- 1 oracle oinstall    1127 Jul 19 13:49 wcr_4d7x448002k49.rec
-rw-r----- 1 oracle oinstall    1128 Jul 19 13:49 wcr_4d7x44h002k2m.rec
-rw-r----- 1 oracle oinstall    1126 Jul 19 13:49 wcr_4d7x45s002k84.rec
-rw-r----- 1 oracle oinstall     913 Jul 19 13:49 wcr_4d7x460002ksw.rec
-rw-r----- 1 oracle oinstall    1128 Jul 19 13:49 wcr_4d7x460002kma.rec
-rw-r----- 1 oracle oinstall    1124 Jul 19 13:49 wcr_4d7x460002km8.rec
-rw-r----- 1 oracle oinstall    1128 Jul 19 13:49 wcr_4d7x46n002k4c.rec
-rw-r----- 1 oracle oinstall    1140 Jul 19 13:49 wcr_4d7x46w002k4g.rec
-rw-r----- 1 oracle oinstall    2604 Jul 19 13:50 wcr_4d7x49n002mxxp.rec
-rw-r----- 1 oracle oinstall    2402 Jul 19 13:50 wcr_4d7x49s002mxt.rec
-rw-r----- 1 oracle oinstall    1128 Jul 19 13:50 wcr_4d7x4ah002k9p.rec
-rw-r----- 1 oracle oinstall    1128 Jul 19 13:50 wcr_4d7x4ah002k47.rec
-rw-r----- 1 oracle oinstall    1835 Jul 19 13:53 wcr_4d7x54c002n60.rec
-rw-r----- 1 oracle oinstall    2501 Jul 19 13:58 wcr_4d7x65h002nb7.rec
-rw-r----- 1 oracle oinstall    2925 Jul 19 13:58 wcr_4d7x65h002nba.rec
-rw-r----- 1 oracle oinstall    1836 Jul 19 13:58 wcr_4d7x69s002nd3.rec
-rw-r----- 1 oracle oinstall    1751 Jul 19 13:58 wcr_4d7x6an002nf9.rec
-rw-r----- 1 oracle oinstall    1833 Jul 19 14:03 wcr_4d7x7gc002np1.rec
-rw-r----- 1 oracle oinstall    1836 Jul 19 14:08 wcr_4d7x8ns002nzz.rec
-rw-r----- 1 oracle oinstall    1836 Jul 19 14:13 wcr_4d7x9u8002p6x.rec
-rw-r----- 1 oracle oinstall    1751 Jul 19 14:13 wcr_4d7x9v4002p83.rec
-rw-r----- 1 oracle oinstall    4120 Jul 19 14:15 wcr_cr.text
-rw-r----- 1 oracle oinstall   12172 Jul 19 14:15 wcr_cr.html
-rw-r----- 1 oracle oinstall     400 Jul 19 14:15 wcr_capture.wmd
-rw-r----- 1 oracle oinstall   24723 Jul 19 14:21 wcr_ca.log
-rw-r----- 1 oracle oinstall 13639680 Jul 19 14:21 wcr_ca.dmp
-rw-r----- 1 oracle oinstall   16384 Jul 19 15:40 wcr_seq_data.extb
-rw-r----- 1 oracle oinstall   12288 Jul 19 15:40 wcr_scn_order.extb
-rw-r----- 1 oracle oinstall     35 Jul 19 15:40 wcr_process.wmd
-rw-r----- 1 oracle oinstall     681 Jul 19 15:40 wcr_login.pp
-rw-r----- 1 oracle oinstall   12288 Jul 19 15:40 wcr_conn_data.extb
-rw-r--r-- 1 oracle oinstall    8192 Jul 19 16:26 wcr_rr_7683381153.xml
-rw-r----- 1 oracle oinstall     560 Jul 19 16:26 wcr_replay.wmd

```

REPLAYING A DATABASE WORKLOAD USING APIS

Replaying a database workload using the DBMS_WORKLOAD_REPLAY package is a multi-step process that involves:

1. Initializing Replay Data
2. Setting Workload Replay Options
3. Starting a Workload Replay
4. Stopping a Workload Replay

INITIALIZING REPLAY DATA

To initialize replay data, use the INITIALIZE_REPLAY procedure:

```
SQL> BEGIN
  2 DBMS_WORKLOAD_REPLAY.INITIALIZE_REPLAY (replay_name => 'REPLAY07',
  3 replay_dir => 'API_DIR');
  4 END;
  5 /
PL/SQL procedure successfully completed
```

SETTING WORKLOAD REPLAY OPTIONS

After the replay data is initialized, you need to prepare the workload replay on the replay system.

```
SQL> BEGIN
  2 DBMS_WORKLOAD_REPLAY.PREPARE_REPLAY (replay_name => 'REPLAY07',
  3 replay_dir => 'API_DIR',
  4 synchronization => TRUE);
  5 END;
  6 /
PL/SQL procedure successfully completed
```

```
SQL>select id,name,directory,status,prepare_time,start_time,end_time,dir_path from
dba_workload_replays where id=22 ;
```

| ID | NAME | DIRECTORY | STATUS | PREPARE_TIME | START_TIME | END_TIME | DIR_PATH |
|----|----------|-----------|---------|---------------------|------------|----------|----------------------|
| 22 | REPLAY07 | API_DIR | PREPARE | 26/07/2007 22:46:58 | | | /home/oracle/api_dir |

START THE AGENT

[db01pn]\$ wrc REPLAYDIR=/home/oracle/api_dir USERID=system PASSWORD=welcome1

Workload Replay Client: Release 11.1.0.6.0 - Beta on Thu Jul 26 22:48:36 2007
Copyright (c) 1982, 2007, Oracle. All rights reserved.

Wait for the replay to start (22:48:36)

```
SQL> select  sid,          logon_user,
             Logon_time, event,
             program
           from V$WORKLOAD_REPLAY_THREAD
```

| SID | LOGON_USER | LOGON_TIME | EVENT | PROGRAM |
|-----|------------|---------------------|---------------------------|-----------------------|
| 124 | SYSTEM | 26/07/2007 22:48:36 | WRR: replay client notify | wrc@db01pn(TNS V1-V3) |

STARTING A WORKLOAD REPLAY

```
SQL>BEGIN
  2 DBMS_WORKLOAD_REPLAY.START_REPLAY ();
  3 END;
  4 /
```

```
SQL>select id,name,directory,status,prepare_time,start_time,end_time,dir_path from
dba_workload_replays where id=22 ;
```

| ID | NAME | DIRECTORY | STATUS | PREPARE_TIME | START_TIME | END_TIME | DIR_PATH |
|----|----------|-----------|-------------|-------------------|-------------------|----------|----------------------|
| 22 | REPLAY07 | API_DIR | IN PROGRESS | 26/07/07 22:46:58 | 26/07/07 23:00:15 | | /home/oracle/api_dir |

STOPPING A WORKLOAD REPLAY

```
SQL>BEGIN
  2 DBMS_WORKLOAD_REPLAY.CANCEL ();
  3 END;
  4 /
```