

# Automatically Managing Undo

## Purpose

This module describes how Oracle Database 10 g automates the management of undo.

## Topics

This module discusses the following:

- ☒ [Overview](#)
- ☒ [Prerequisites](#)
- ☒ [Creating an Undo Tablespace](#)
- ☒ [Enabling Automatic Undo Retention Tuning](#)
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- ☒ [Reviewing Undo Advisor Recommendations](#)

## Overview

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To simplify management of rollback segments, the Oracle9 i database introduced Automatic Undo Management (AUM) where the database automatically manages allocation and management of undo (rollback) space among various active sessions. In a database using AUM, all transactions share a single undo tablespace. Any executing transaction can consume free space in this tablespace. Undo space is dynamically transferred from committed transactions to executing transactions in the event of space scarcity in the undo tablespace. The AUM feature also provides a way for administrators to exert control on undo retention. You can specify the amount of undo to be retained in terms of wall clock time (number of seconds). With retention control, you can configure your systems to allow long running queries to execute successfully without encountering ORA-1555 (Snapshot too old) errors. The undo retention time is specified using a new persistent initialization parameter, UNDO\_RETENTION. This parameter is dynamic and hence can be changed anytime during database operation using the ALTER SYSTEM command.

The AUM feature is further enhanced in Oracle Database 10 g by providing Automatic Undo Retention Tuning. This feature is used by default, and it automatically determines the optimal undo retention time depending on the size of the undo tablespace. Without your intervention, the Oracle Database 10 g dynamically adjusts to the change in undo requirements depending on the system activity. This maximizes the usage of the available space in the undo tablespace and allows long running queries to complete without encountering any “Snapshot Too Old” errors provide your undo tablespace is big enough.

In this lesson, you will intentionally switch to a small undo tbs, and although you use automatic undo retention tuning, you will encounter 1555 because the undo tbs is too small. In which case you need the undo advisor to compute the right size that depends on the workload.

## Prerequisites

Before starting this module, you should have:

1. Completed the [Configuring Linux for the Installation of Oracle Database 10g](#) lesson
2. Completed the [Installing the Oracle Database 10g on Linux](#) lesson
3. Download and unzip [undoadv.zip](#) into your working directory (i.e. /home/oracle/wkdir)

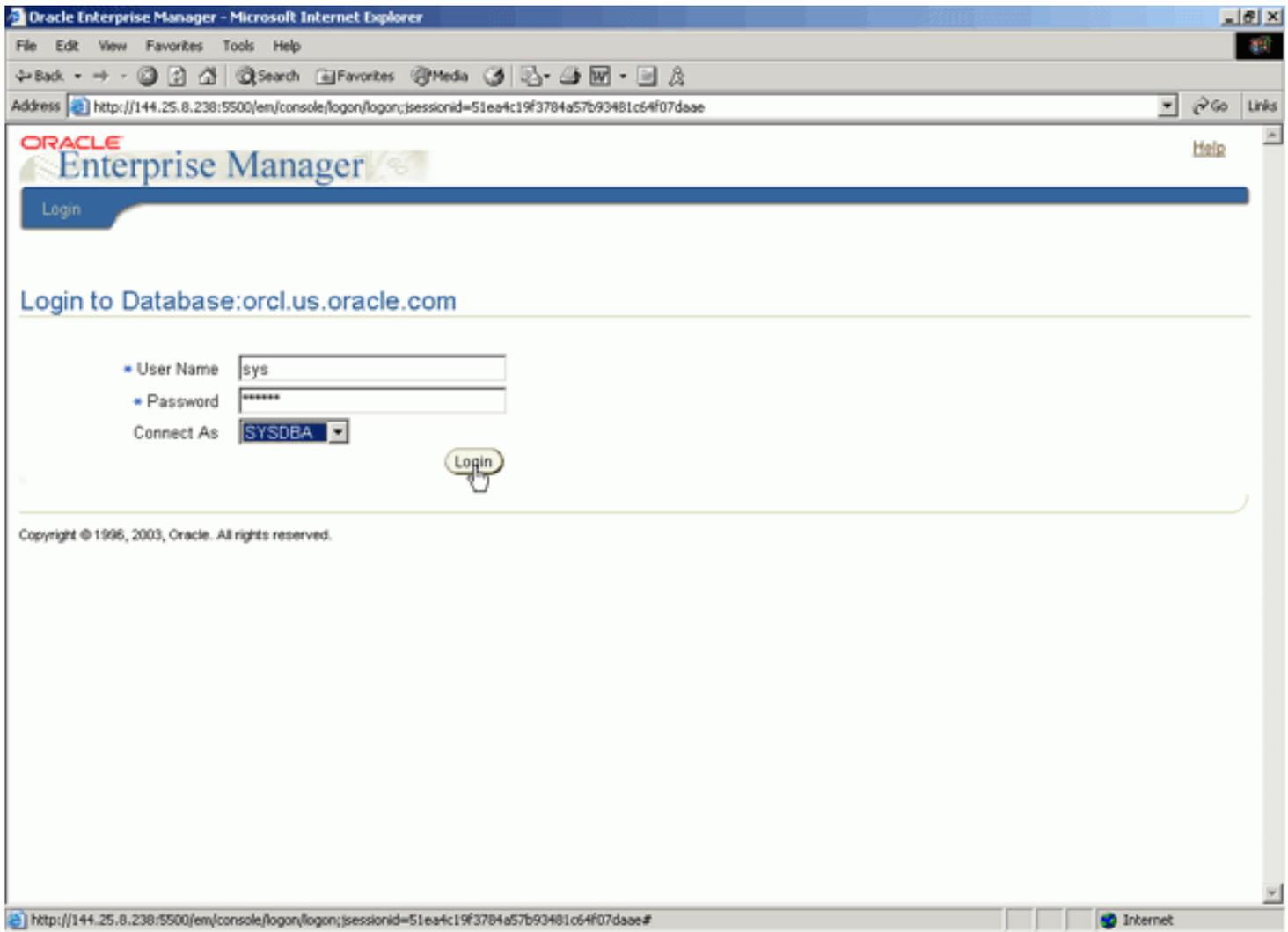
## Creating an Undo Tablespace

To create an undo tablespace in Enterprise Manager, perform the following

1. Open your browser and enter the following URL:

`http://localhost:5500/em`

Enter **sys/oracle** and specify **SYSDBA** then click **Login** .



2. Click on the **Administration** tab.

Oracle Enterprise Manager (SYS) - Database: orcl.us.oracle.com - Microsoft Internet Explorer

Address: http://144.25.8.238:5500/em/console/database/instance/sitemap?event=doLoad&target=orcl.us.oracle.com&type=oracle\_database

Oracle Enterprise Manager Database

Logged in As SYS

Database: orcl.us.oracle.com

Home Performance Administration Maintenance

Latest Data Collected From Target Aug 12, 2003 8:24:01 PM Refresh

View Data Real Time: Manual Refresh

### General

Status **Up** [Shutdown](#)

Up Since **Aug 12, 2003 3:41:19 PM**

Time Zone **PDT**

Availability (%) **100**  
(Last 24 hours)

Instance Name **orcl**

Version **10.1.0.1.0**

Host **EDCDR38P1**

Listener **LISTENER\_EDCDR38P1**

Oracle Home **/oracle/10g\_Beta2\_SH5**

Alert Log **No ORA- errors**

### Host CPU

Run Queue **Unavailable**

Paging (pages per second) **Unavailable**

### Active Sessions

Active Sessions **5**

SQL Response Time (%) **97.14**  
(compared to baseline)

Using CPU (0.2%)

Waiting I/O (0%)

Waiting Other (99.8%)

### Space Usage

Problem **0**

Tablespaces **0**

Fragmentation **Not Configured**

Issues **Configured**

Dump Area Used (%) **Unavailable**

### Advice

ADDM Findings **0**

Policy Violations **27**

### High Availability

Instance Recovery Time (seconds) **10**

Last Backup Archiving **n/a**

Archive Area Used (%) **n/a**

Flashback Logging **Disabled**

### Job Activity

Scheduled Executions **0**

Running Executions **0**

Suspended Executions **0**

Problem Executions **0**  
(Last 7 days)

- Click on the **Tablespaces** link.

Oracle Enterprise Manager (SYS) - Database: orcl.us.oracle.com - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address [http://144.25.8.238:5500/em/console/database/instance/sitemap?event=doLoad&target=orcl.us.oracle.com&type=oracle\\_database&pageNum=3](http://144.25.8.238:5500/em/console/database/instance/sitemap?event=doLoad&target=orcl.us.oracle.com&type=oracle_database&pageNum=3)

ORACLE Enterprise Manager Database

Setup Preferences Help Logout

Logged in As SYS

Database: orcl.us.oracle.com

Home Performance Administration Maintenance

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Home Performance Administration Maintenance

<http://144.25.8.238:5500/em/console/database/databaseObjectsSearch?event=search&otype=tablespace&target=orcl.us.oracle.com&type> Internet

4. Click **Create** .

Oracle Enterprise Manager Database

Database: orcl.us.oracle.com > Tablespaces Logged in As SYS

**Tablespaces**

**Search**

Name

Example: Entering Test will return all items beginning with upper case TEST, i.e. TEST\_A, except for Java Source and Java Class which use case sensitive searches. Use double quotes to preserve case and embed wildcards(%).

**Results**

| Select                           | Name     | Type      | Extent Management | Size (MB) | Used (MB) | Used (%) |
|----------------------------------|----------|-----------|-------------------|-----------|-----------|----------|
| <input checked="" type="radio"/> | EXAMPLE  | PERMANENT | LOCAL             | 151.875   | 151.438   | 99.71    |
| <input type="radio"/>            | SYSAUX   | PERMANENT | LOCAL             | 290.000   | 285.063   | 98.30    |
| <input type="radio"/>            | SYSTEM   | PERMANENT | LOCAL             | 460.000   | 446.813   | 97.13    |
| <input type="radio"/>            | TEMP     | TEMPORARY | LOCAL             | 227.000   | 102.000   | 44.93    |
| <input type="radio"/>            | UNDOTBS1 | UNDO      | LOCAL             | 335.000   | 110.313   | 32.93    |
| <input type="radio"/>            | USERS    | PERMANENT | LOCAL             | 5.000     | 2.750     | 55.00    |

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

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[About Oracle Enterprise Manager Database Control](#)

5. Enter **UT1** for the name, click on the Type **Undo** and click **Add** to add a datafile.

Oracle Enterprise Manager - Create Tablespace - Microsoft Internet Explorer

Database: orcl.us.oracle.com > Tablespaces > Create Tablespace

## Create Tablespace

General Storage Thresholds

Name:

**Extent Management**

- Locally Managed
- Dictionary Managed

**Type**

- Permanent
  - Set as default permanent tablespace
- Temporary
  - Set as default temporary tablespace
- Undo

**Status**

- Read Write
- Read Only
- Offline

**Datafiles**

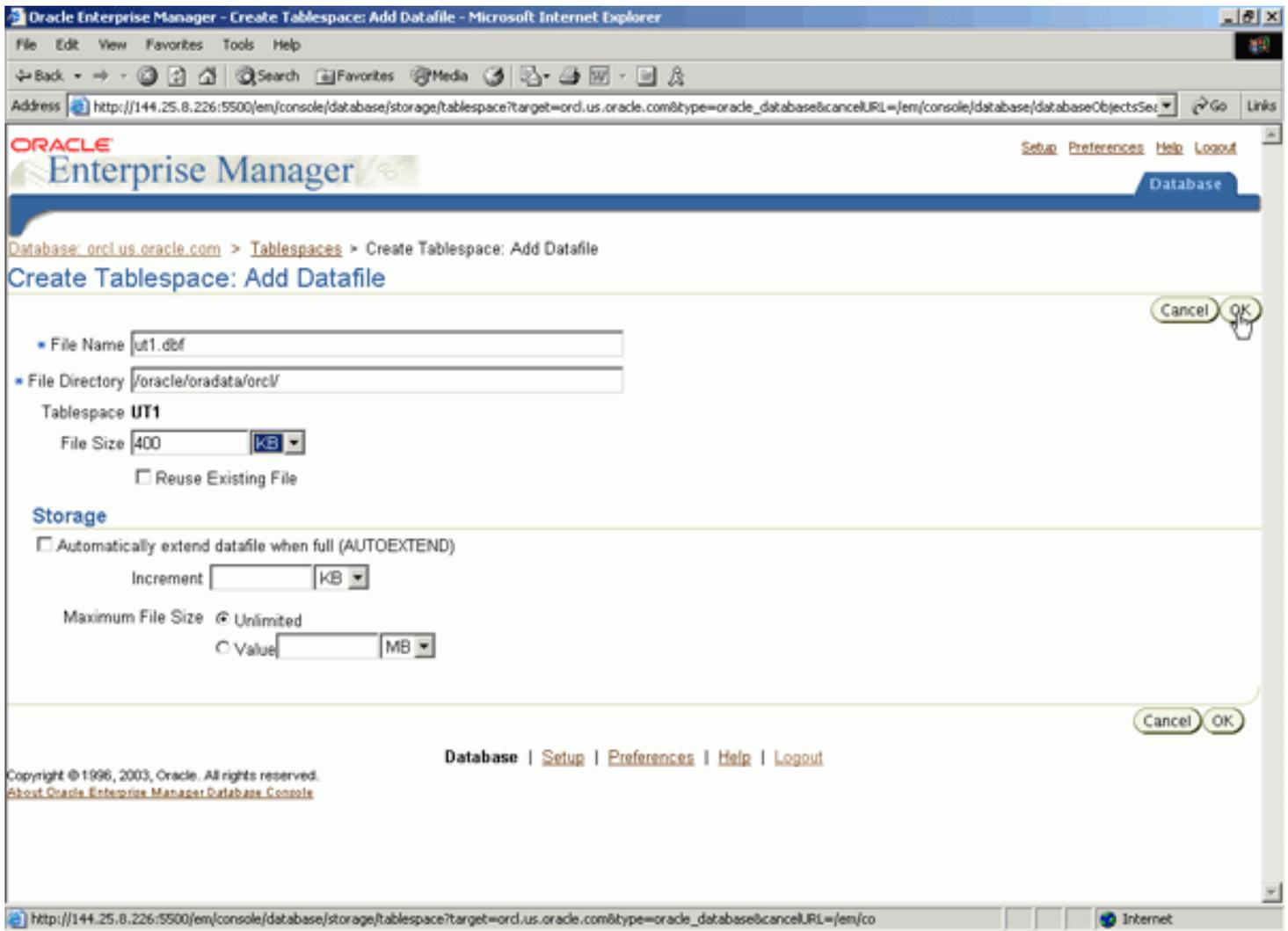
Use bigfile tablespace  
Tablespace can have only one datafile with no practical size limit.

| Select Name    | Directory | Size (KB) |
|----------------|-----------|-----------|
| No items found |           |           |

General Storage Thresholds

Show SQL Cancel OK

6. Enter **ut1.dbf** for the filename and make sure **/oracle/oradata/orcl** is set for the file directory. Enter **400KB** for the file size and click **OK**.



7. Click **OK** .

Oracle Enterprise Manager - Create Tablespace - Microsoft Internet Explorer

Address: http://144.25.8.226:5500/em/console/database/storage/tablespace?target=orcl.us.oracle.com&type=oracle\_database&cancelURL=/em/console/database/databaseObjectsSe...

ORACLE Enterprise Manager Database

Database: orcl.us.oracle.com > Tablespaces > Create Tablespace

### Create Tablespace

Show SQL Cancel OK

General Storage Thresholds

Name: UT1

**Extent Management**

- Locally Managed
- Dictionary Managed

**Type**

- Permanent
  - Set as default permanent tablespace
- Temporary
  - Set as default temporary tablespace
- Undo

**Status**

- Read Write
- Read Only
- Offline

**Datafiles**

Use bigfile tablespace  
Tablespace can have only one datafile with no practical size limit.

| Select Name | Directory             | Size (MB) |
|-------------|-----------------------|-----------|
| ut1_dbf     | /oracle/oradata/orcl/ | 0.39      |

General Storage Thresholds

http://144.25.8.226:5500/em/console/database/storage/tablespace?target=orcl.us.oracle.com&type=oracle\_database&cancelURL=/em/co

8. Your undo tablespace was created. Now you can enable undo retention tuning. Click your **Database** breadcrumb.

Oracle Enterprise Manager  
Database: orcl.us.oracle.com > Tablespaces  
Logged in As SYS

**Update Message**  
The object has been created successfully

### Tablespaces

Search  
Name

Example: Entering Test will return all items beginning with upper case TEST, i.e. TEST\_A, except for Java Source and Java Class which use case sensitive searches. Use double quotes to preserve case and embed wildcards(%).

Results

| Select                           | Name     | Type      | Extent Management | Size (MB) | Used (MB) | Used (%) |
|----------------------------------|----------|-----------|-------------------|-----------|-----------|----------|
| <input checked="" type="radio"/> | EXAMPLE  | PERMANENT | LOCAL             | 150.000   | 129.438   | 86.29    |
| <input type="radio"/>            | SYSAUX   | PERMANENT | LOCAL             | 370.000   | 276.625   | 74.76    |
| <input type="radio"/>            | SYSTEM   | PERMANENT | LOCAL             | 490.000   | 468.063   | 99.60    |
| <input type="radio"/>            | TEMP     | TEMPORARY | LOCAL             | 227.000   | 49.000    | 21.59    |
| <input type="radio"/>            | UNDOTBS1 | UNDO      | LOCAL             | 345.000   | 110.938   | 32.16    |
| <input type="radio"/>            | USERS    | PERMANENT | LOCAL             | 76.250    | 75.188    | 98.61    |
| <input type="radio"/>            | UT1      | UNDO      | LOCAL             | 0.391     | .328      | 84.00    |

## Enabling Automatic Undo Retention

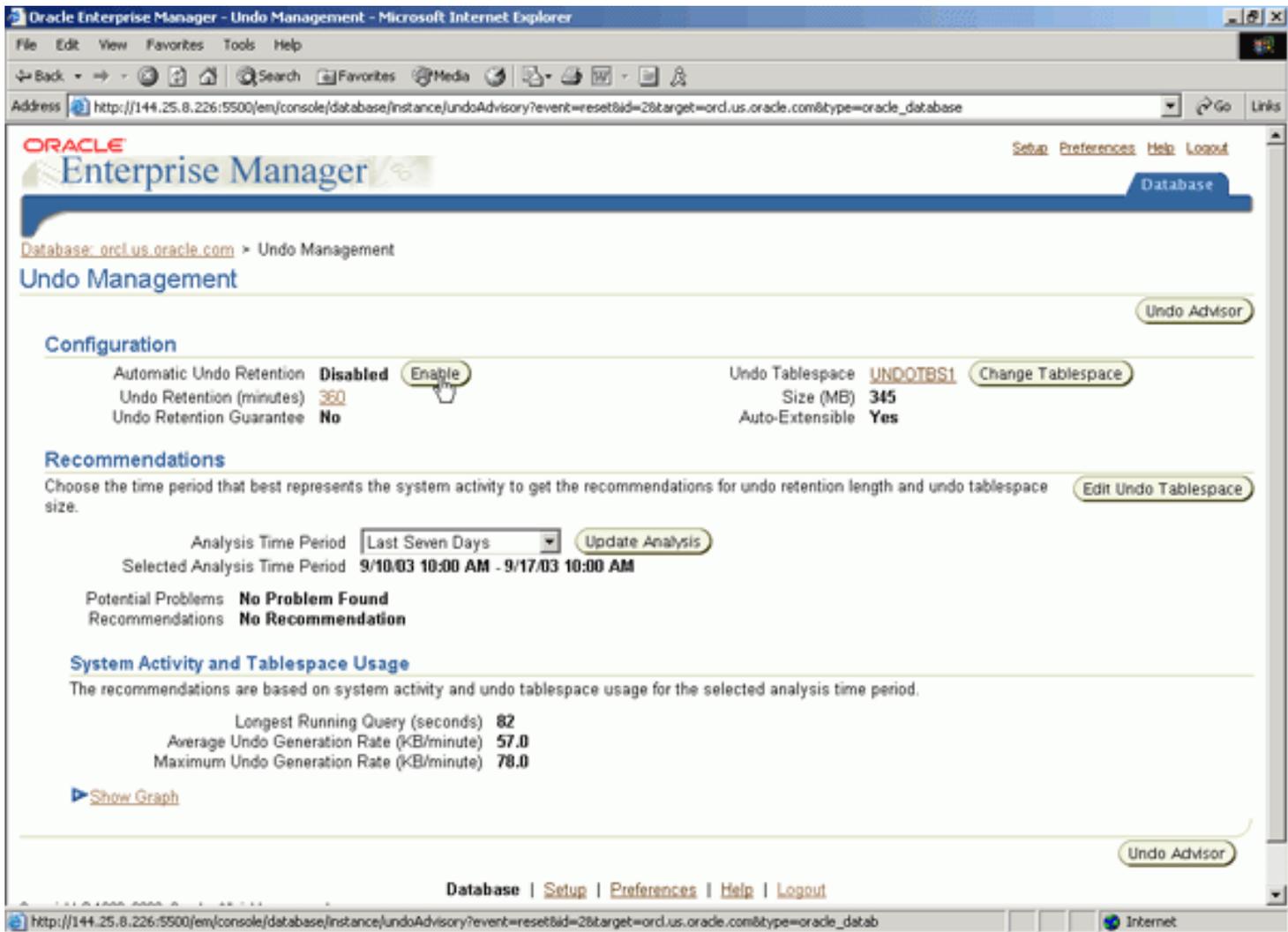
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Now you can enable Automatic Undo Retention and use the tablespace you just created. Perform the following:

1. Click on **Undo Management** .

The screenshot shows the Oracle Enterprise Manager (EM) console interface in a Microsoft Internet Explorer browser. The browser's address bar displays the URL: `http://144.25.8.238:5500/em/console/database/instance/sitemap?event=doLoad&target=orcl.us.oracle.com&type=oracle_database&pageNum=3`. The Oracle logo and 'Enterprise Manager' text are visible at the top left, with 'Database' and 'Logged in As SYS' on the right. A navigation bar below the header contains tabs for 'Home', 'Performance', 'Administration', and 'Maintenance'. The 'Administration' tab is selected. The main content area is divided into several sections: 'Instance' (with links for Memory Parameters, Undo Management, and All Initialization Parameters), 'Storage' (with links for Controlfiles, Tablespaces, Datafiles, Rollback Segments, Redo Log Groups, Archive Logs, and Temporary Tablespace Groups), 'Security' (with links for Users, Roles, and Profiles), 'Resource Manager' (with links for Resource Monitors, Resource Consumer Group Mappings, Resource Consumer Groups, and Resource Plans), 'Scheduler' (with links for Jobs, Schedules, Programs, Job Classes, Windows, and Window Groups), 'Schema' (with links for Tables, Indexes, Views, Synonyms, Sequences, and Database Links), 'Source Types' (with links for Packages, Package Bodies, Procedures, Functions, Triggers, Java Sources, and Java Classes), 'User Types' (with links for Array Types, Object Types, and Table Types), 'Warehouse' (with links for OLAP, OLAP Dimensions, Measure Folders, and Summary Management), 'Configuration Management' (with links for Last Collected Configuration and Database Usage Statistics), and 'Workload' (with links for Workload Repository and SQL Tuning Sets). At the bottom, another navigation bar is visible, and the browser's status bar shows the URL: `http://144.25.8.238:5500/em/console/database/instance/UndoAdvisory?event=reset&id=28&target=orcl.us.oracle.com&type=oracle_datab`.

2. Click **Enable** for Automatic Undo Retention.



The screenshot shows the Oracle Enterprise Manager interface for the Undo Management page. The browser window title is "Oracle Enterprise Manager - Undo Management - Microsoft Internet Explorer". The address bar shows the URL: [http://144.25.8.226:5500/em/console/database/instance/undoAdvisor?event=reset&id=2&target=orcl.us.oracle.com&type=oracle\\_database](http://144.25.8.226:5500/em/console/database/instance/undoAdvisor?event=reset&id=2&target=orcl.us.oracle.com&type=oracle_database). The page header includes the Oracle logo and "Enterprise Manager" text, with navigation links for "Setup", "Preferences", "Help", and "Logout". The main content area is titled "Undo Management" and includes a "Configuration" section with the following settings:

|                          |          |                        |                 |          |                                   |
|--------------------------|----------|------------------------|-----------------|----------|-----------------------------------|
| Automatic Undo Retention | Disabled | <a href="#">Enable</a> | Undo Tablespace | UNDOTBS1 | <a href="#">Change Tablespace</a> |
| Undo Retention (minutes) | 360      |                        | Size (MB)       | 345      |                                   |
| Undo Retention Guarantee | No       |                        | Auto-Extensible | Yes      |                                   |

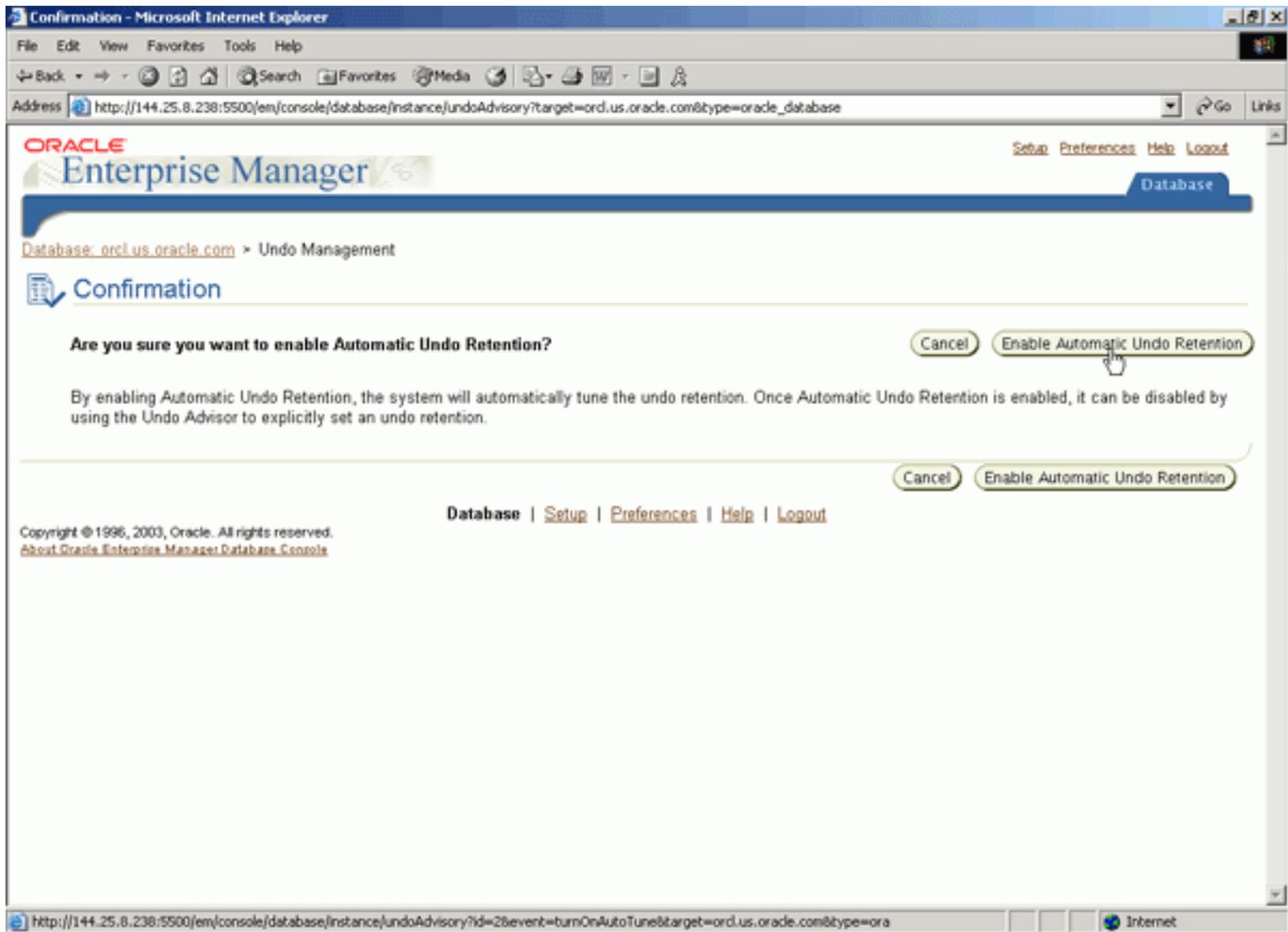
Below the configuration is a "Recommendations" section with a "Recommendations" button. The text reads: "Choose the time period that best represents the system activity to get the recommendations for undo retention length and undo tablespace size." The "Analysis Time Period" is set to "Last Seven Days" and the "Selected Analysis Time Period" is "9/10/03 10:00 AM - 9/17/03 10:00 AM". The "Update Analysis" button is highlighted. The "Potential Problems" section shows "No Problem Found" and the "Recommendations" section shows "No Recommendation".

The "System Activity and Tablespace Usage" section provides the following data:

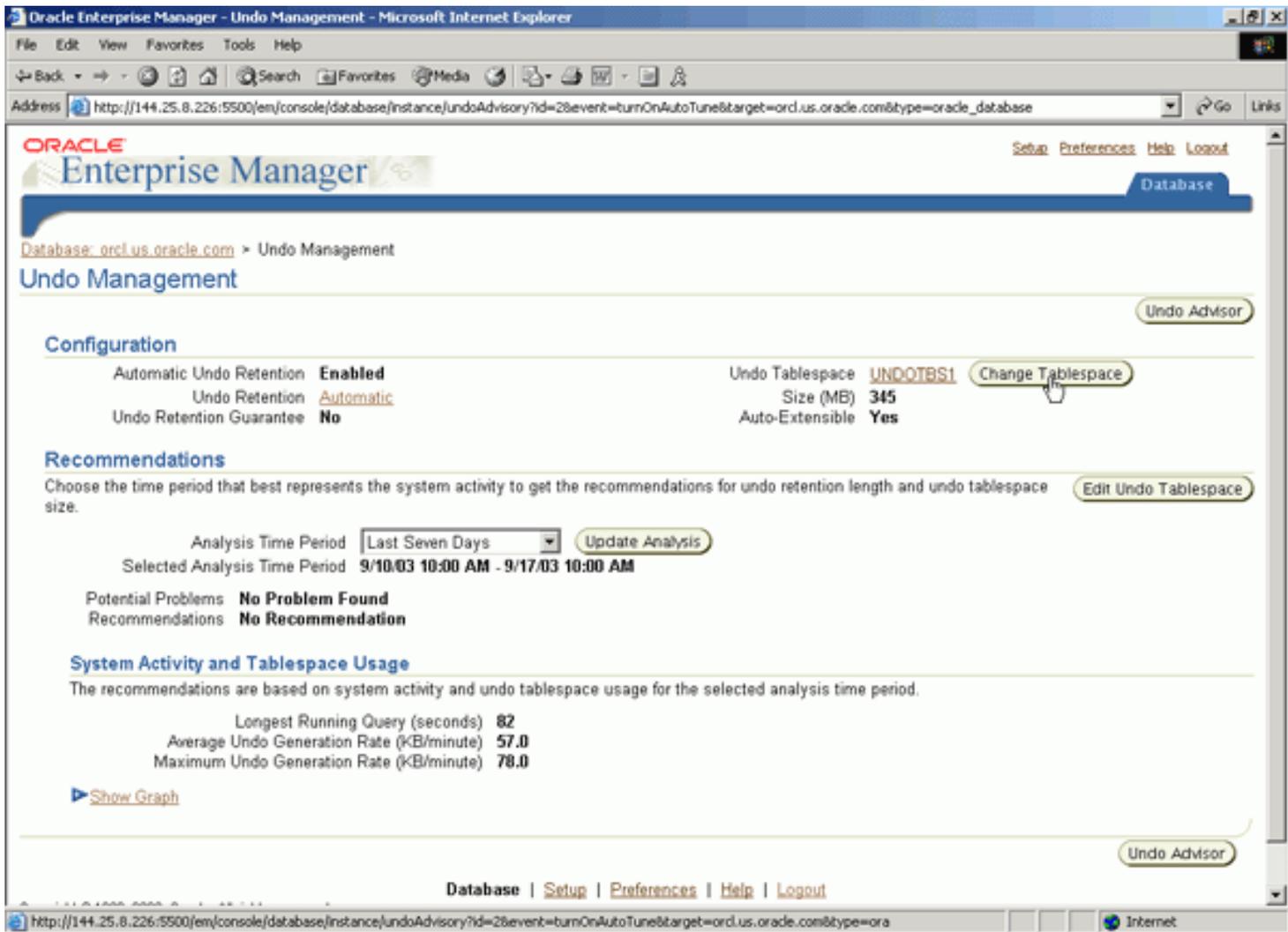
|  |      |
|--|------|
| Longest Running Query (seconds)          | 82   |
| Average Undo Generation Rate (kB/minute) | 57.0 |
| Maximum Undo Generation Rate (kB/minute) | 78.0 |

A "Show Graph" link is available below the data. The page footer includes "Database | Setup | Preferences | Help | Logout" and "Undo Advisor" buttons.

3. Click **Enable Automatic Undo Retention** .



4. Notice that Automatic Undo Retention is now enabled. Click **Change Tablespace** .



The screenshot shows the Oracle Enterprise Manager interface for Undo Management. The browser window title is "Oracle Enterprise Manager - Undo Management - Microsoft Internet Explorer". The address bar shows the URL: [http://144.25.8.226:5500/em/console/database/instance/undoAdvisor?id=28event=turnOnAutoTune&target=orcl.us.oracle.com&type=oracle\\_database](http://144.25.8.226:5500/em/console/database/instance/undoAdvisor?id=28event=turnOnAutoTune&target=orcl.us.oracle.com&type=oracle_database). The page header includes "ORACLE Enterprise Manager" and navigation links: "Setup", "Preferences", "Help", "Logout". The main content area is titled "Undo Management" and includes a "Database" tab. Below the title, there is a "Configuration" section with the following settings:

|                          |                  |                 |                 |                                   |
|--------------------------|------------------|-----------------|-----------------|-----------------------------------|
| Automatic Undo Retention | <b>Enabled</b>   | Undo Tablespace | <b>UNDOTBS1</b> | <a href="#">Change Tablespace</a> |
| Undo Retention           | <b>Automatic</b> | Size (MB)       | <b>345</b>      |                                   |
| Undo Retention Guarantee | <b>No</b>        | Auto-Extensible | <b>Yes</b>      |                                   |

Below the configuration, there is a "Recommendations" section with the text: "Choose the time period that best represents the system activity to get the recommendations for undo retention length and undo tablespace size." It includes an "Analysis Time Period" dropdown set to "Last Seven Days" and an "Update Analysis" button. The "Selected Analysis Time Period" is "9/10/03 10:00 AM - 9/17/03 10:00 AM". The "Potential Problems" section shows "No Problem Found" and "Recommendations" shows "No Recommendation". There is also an "Edit Undo Tablespace" button.

The "System Activity and Tablespace Usage" section provides the following data:

|  |             |
|--|-------------|
| Longest Running Query (seconds)          | <b>82</b>   |
| Average Undo Generation Rate (kB/minute) | <b>57.0</b> |
| Maximum Undo Generation Rate (kB/minute) | <b>78.0</b> |

There is a "Show Graph" link below the system activity data. The footer of the page includes "Database | Setup | Preferences | Help | Logout" and "Undo Advisor". The browser status bar shows "Internet".

5. Select the radio button next to **UT1** and click **OK** .

Oracle Enterprise Manager - Undo Management - Microsoft Internet Explorer

Address: [http://144.25.8.226:5500/em/console/database/instance/undoAdvisory?target=orcl.us.oracle.com&type=oracle\\_database](http://144.25.8.226:5500/em/console/database/instance/undoAdvisory?target=orcl.us.oracle.com&type=oracle_database)

Database

Database: [orcl.us.oracle.com](#) > [Undo Management](#) > Change Undo Tablespace

### Change Undo Tablespace

Current Undo Tablespace **UNDOTBS1**      Tablespace Size (MB) **345**     

To find a particular undo tablespace, enter a word in the text field, then click the "Go" button. To see a list of all undo tablespaces, clear the search field and click the "Go" button.

Search Undo Tablespace

| Select                           | Undo Tablespace | Status | Extent Management | Size (MB) |
|----------------------------------|-----------------|--------|-------------------|-----------|
| <input type="radio"/>            | UNDOTBS1        | ONLINE | LOCAL             | 345       |
| <input checked="" type="radio"/> | UT1             | ONLINE | LOCAL             | 390625    |

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

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[About Oracle Enterprise Manager Database Console](#)

Address: [http://144.25.8.226:5500/em/console/database/instance/undoAdvisory?target=orcl.us.oracle.com&type=oracle\\_database#](http://144.25.8.226:5500/em/console/database/instance/undoAdvisory?target=orcl.us.oracle.com&type=oracle_database#)      Internet

6. The undo tablespace has been changed to the one you just created. Now you are ready to see how it works.

Oracle Enterprise Manager - Undo Management - Microsoft Internet Explorer

Address: http://144.25.8.226:15500/em/console/database/instance/undoAdvisor?target=orcl.us.oracle.com&type=oracle\_database

Database: orcl.us.oracle.com > Undo Management

## Undo Management

Undo Advisor

### Information

Undo Tablespace has been changed from 'UNDOTBS1' to 'UT1'.

### Configuration

|                          |                  |                 |            |                                   |
|--------------------------|------------------|-----------------|------------|-----------------------------------|
| Automatic Undo Retention | <b>Enabled</b>   | Undo Tablespace | <b>UT1</b> | <a href="#">Change Tablespace</a> |
| Undo Retention           | <b>Automatic</b> | Size (MB)       | <b>0</b>   |                                   |
| Undo Retention Guarantee | <b>No</b>        | Auto-Extensible | <b>Yes</b> |                                   |

### Recommendations

Choose the time period that best represents the system activity to get the recommendations for undo retention length and undo tablespace size. [Edit Undo Tablespace](#)

Analysis Time Period:  [Update Analysis](#)

Selected Analysis Time Period: 9/10/03 12:00 PM - 9/17/03 12:00 PM

Potential Problems: **Undo tablespace cannot support required undo retention**

Recommendations: **Size undo tablespace to 61 MB**

Rationale: **Increase undo tablespace size so that long running queries will not fail**

### System Activity and Tablespace Usage

The recommendations are based on system activity and undo tablespace usage for the selected analysis time period.

|  |               |
|--|---------------|
| Longest Running Query (seconds)          | <b>408</b>    |
| Average Undo Generation Rate (KB/minute) | <b>699.0</b>  |
| Maximum Undo Generation Rate (KB/minute) | <b>3602.0</b> |

## Generating Some Activity

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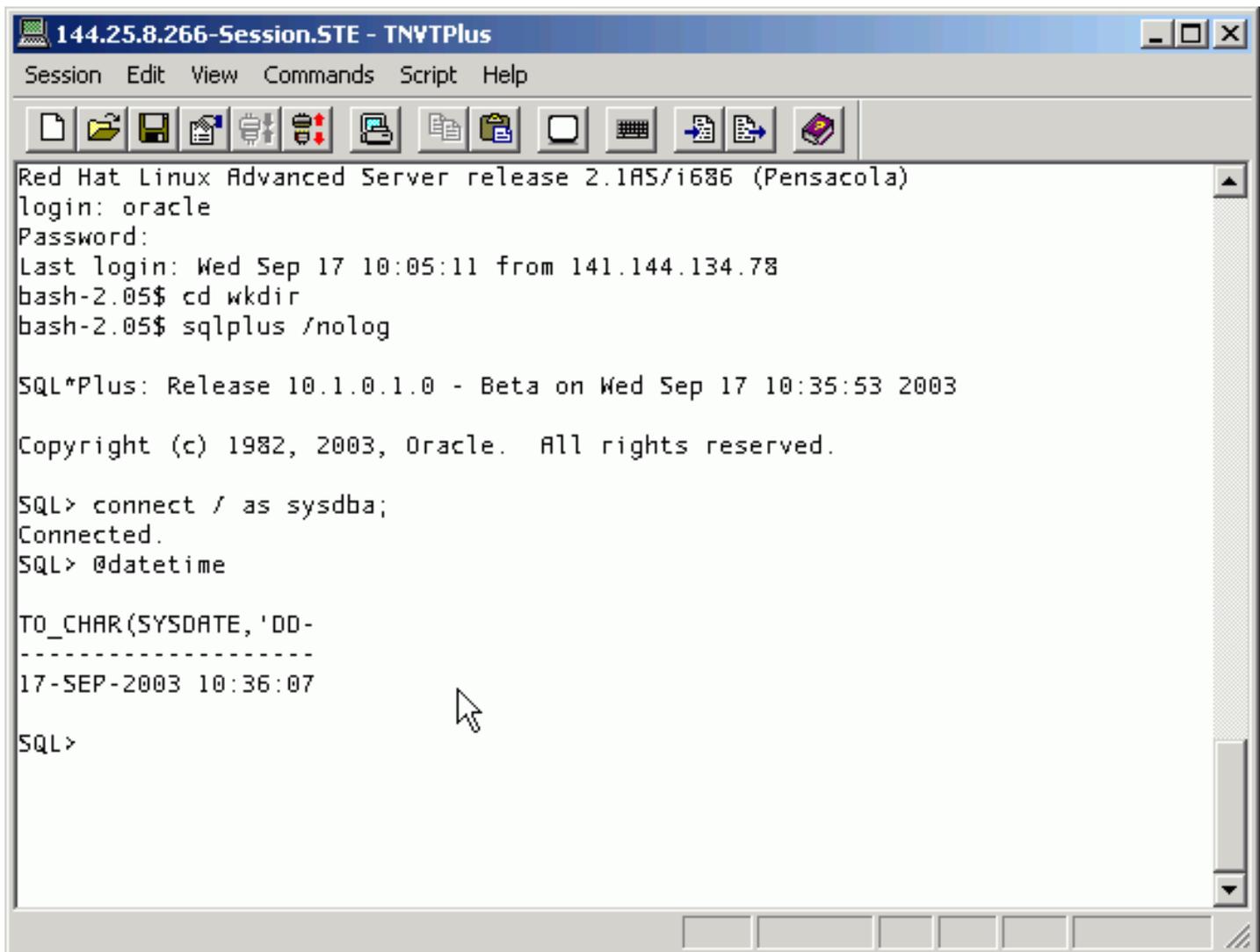
To see how undo management is handled, you need to generate some activity. Perform the following:

1. You will first need to determine the date and time of your database. Open a terminal window and enter the following commands:

```
cd wkdir
sqlplus /nolog
connect / as sysdba;
@datetime
```

The `datetime.sql` script looks as follows:

```
select to_char(sysdate,'DD-MON-YYYY HH24:MI:SS')
from dual;
```



The screenshot shows a terminal window titled "144.25.8.266-Session.STE - TNVTPlus". The window contains the following text:

```
Red Hat Linux Advanced Server release 2.1AS/i686 (Pensacola)
login: oracle
Password:
Last login: Wed Sep 17 10:05:11 from 141.144.134.78
bash-2.05$ cd wkdir
bash-2.05$ sqlplus /nolog

SQL*Plus: Release 10.1.0.1.0 - Beta on Wed Sep 17 10:35:53 2003

Copyright (c) 1982, 2003, Oracle. All rights reserved.

SQL> connect / as sysdba;
Connected.
SQL> @datetime

TO_CHAR(SYSDATE,'DD-
-----
17-SEP-2003 10:36:07

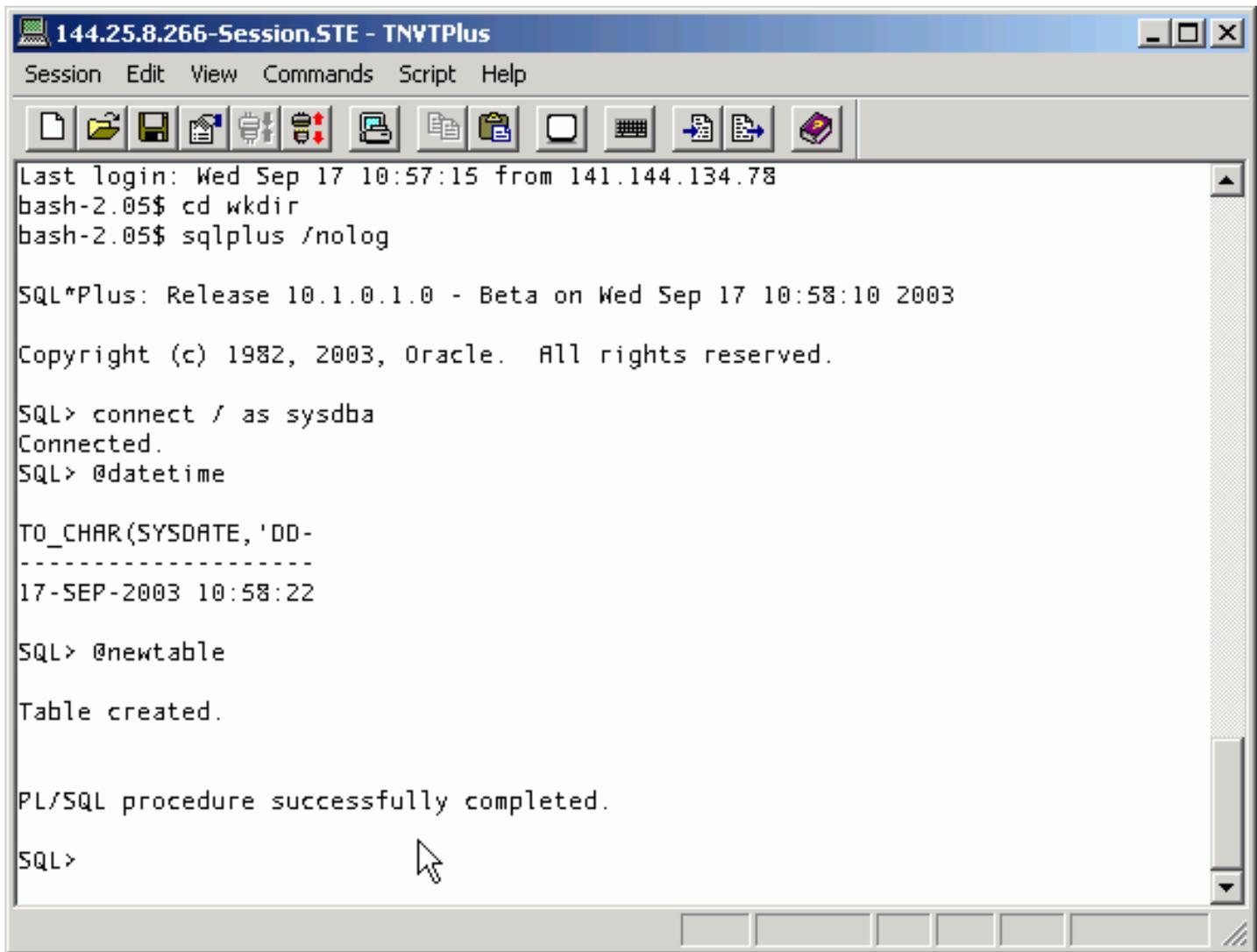
SQL>
```

2. From the same session, execute the following command:

```
@newtable
```

The `newtable.sql` script looks as follows:

```
create table newtable(b int, s varchar2(100));  
  
begin  
  
  for i in 1..100 loop  
  
    insert into newtable values(i, rpad('s', 100));  
  
  end loop;  
  
  commit;  
  
end;  
  
/
```



```
144.25.8.266-Session.STE - TNSVTPPlus
Session Edit View Commands Script Help

Last login: Wed Sep 17 10:57:15 from 141.144.134.78
bash-2.05$ cd wkdir
bash-2.05$ sqlplus /nolog

SQL*Plus: Release 10.1.0.1.0 - Beta on Wed Sep 17 10:58:10 2003

Copyright (c) 1982, 2003, Oracle. All rights reserved.

SQL> connect / as sysdba
Connected.
SQL> @datetime

TO_CHAR(SYSDATE,'DD-
-----
17-SEP-2003 10:58:22

SQL> @newtable

Table created.

PL/SQL procedure successfully completed.

SQL>
```

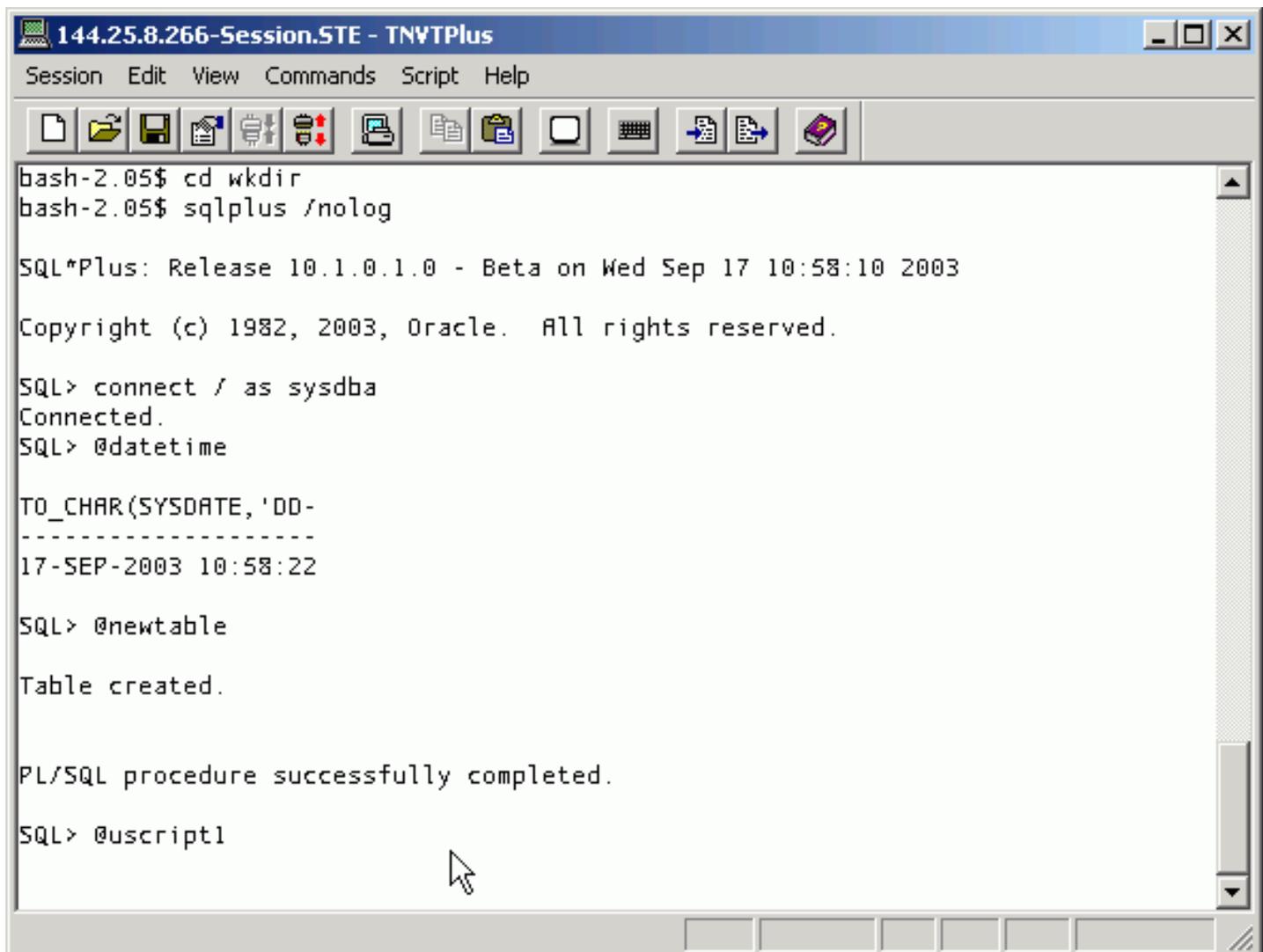
3. From the first session, execute the following:

```
@uscript1
```

The `uscript1.sql` script looks as follows:

```
declare
b number;
cursor c1 is select b from newtable;
begin
```

```
open c1;  
  
loop  
  
  fetch c1 into b;  
  
  dbms_lock.sleep(6);  
  
  exit when c1%notfound;  
  
end loop;  
  
close c1;  
  
commit;  
  
end;  
  
/
```



The screenshot shows a terminal window titled "144.25.8.266-Session.STE - TNVTPlus". The window has a menu bar with "Session", "Edit", "View", "Commands", "Script", and "Help". Below the menu bar is a toolbar with various icons for file operations and execution. The terminal content is as follows:

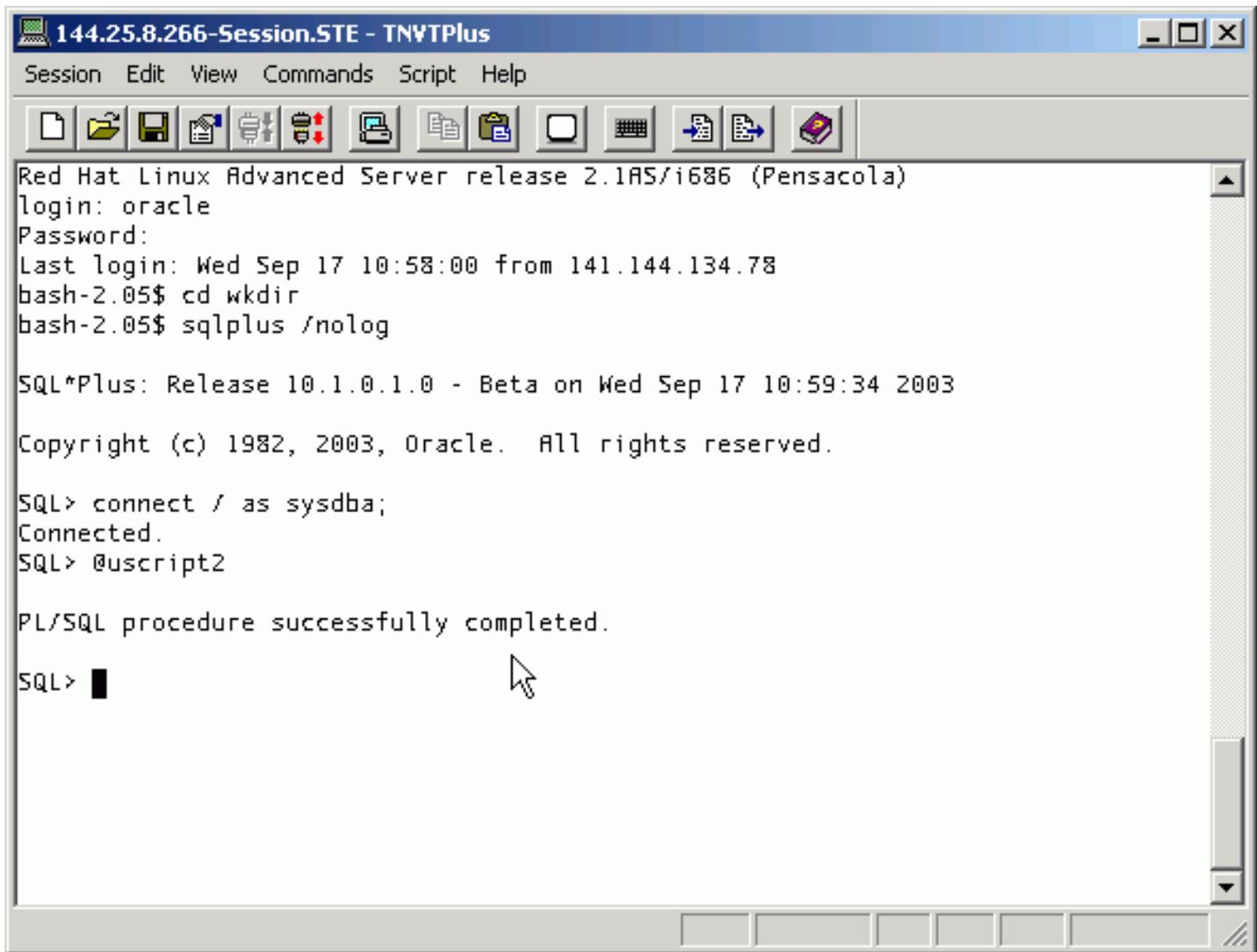
```
bash-2.05$ cd wkdir  
bash-2.05$ sqlplus /nolog  
  
SQL*Plus: Release 10.1.0.1.0 - Beta on Wed Sep 17 10:58:10 2003  
  
Copyright (c) 1982, 2003, Oracle. All rights reserved.  
  
SQL> connect / as sysdba  
Connected.  
SQL> @datetime  
  
TO_CHAR(SYSDATE,'DD-  
-----  
17-SEP-2003 10:58:22  
  
SQL> @newtable  
  
Table created.  
  
PL/SQL procedure successfully completed.  
  
SQL> @uscript1
```

4. Open another terminal window and execute the following commands:

```
cd wkdir
sqlplus /nolog
connect / as sysdba
@uscript2
```

The `uscript2.sql` script looks as follows:

```
begin
  for i in 1..1000 loop
    update newtable set b=b+1, s=rpad('t', 100);
    commit;
  end loop;
end;
/
```



```
144.25.8.266-Session.STE - TNVTPlus
Session Edit View Commands Script Help
Red Hat Linux Advanced Server release 2.1AS/i686 (Pensacola)
login: oracle
Password:
Last login: Wed Sep 17 10:58:00 from 141.144.134.78
bash-2.05$ cd wkdir
bash-2.05$ sqlplus /nolog

SQL*Plus: Release 10.1.0.1.0 - Beta on Wed Sep 17 10:59:34 2003

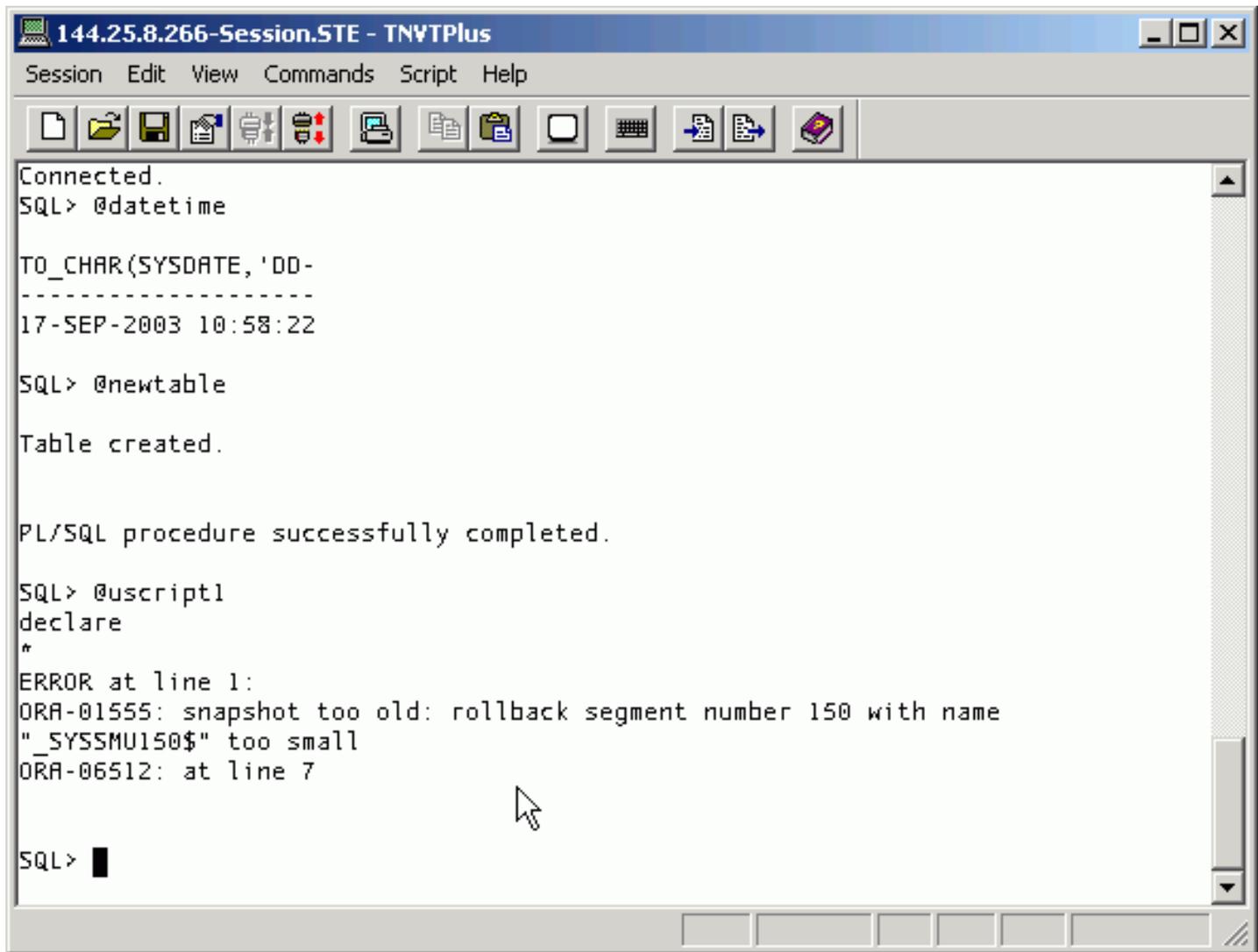
Copyright (c) 1982, 2003, Oracle. All rights reserved.

SQL> connect / as sysdba;
Connected.
SQL> @uscript2

PL/SQL procedure successfully completed.

SQL> █
```

5. Switch back to the first SQL\*Plus session. Soon, you get a "Snapshot too old" error. Although you are using Automatic Undo Retention tuning, your undo tablespace is too small to accommodate the update script.



The screenshot shows a terminal window titled "144.25.8.266-Session.STE - TNSPlus". The window has a menu bar with "Session", "Edit", "View", "Commands", "Script", and "Help". Below the menu bar is a toolbar with various icons for file operations and execution. The main text area contains the following SQL commands and their output:

```
Connected.
SQL> @datetime

TO_CHAR(SYSDATE,'DD-
-----
17-SEP-2003 10:58:22

SQL> @newtable

Table created.

PL/SQL procedure successfully completed.

SQL> @uscript1
declare
*
ERROR at line 1:
ORA-01555: snapshot too old: rollback segment number 150 with name
"_SYSSMU150$" too small
ORA-06512: at line 7

SQL> █
```

## Reviewing Undo Advisor Recommendations

[Back to Topic List](#)

To review the recommendations that the undo advisor made, perform the following:

1. Switch back to Enterprise Manager and look at the Undo Management page. Notice that the current recommendation (61MB) is because the default analysis is for the past seven days. Since you want to analyze a particular workload, and not what had happened before you will need to customize the time period. Select the **Customized Time Period** for the Analysis Time Period and click **Update Analysis**.

The screenshot shows the Oracle Enterprise Manager interface for the Undo Management page. The browser title is "Oracle Enterprise Manager - Undo Management - Microsoft Internet Explorer". The address bar shows the URL: `http://144.25.8.226:5500/em/console/database/instance/undoAdvisor?target=ord.us.oracle.com&type=oracle_database`.

The page header includes the Oracle logo and "Enterprise Manager" with a "Database" tab. Below the header, the breadcrumb "Database: ord.us.oracle.com > Undo Management" is visible. The main heading is "Undo Management" with an "Undo Advisor" button.

An information box states: "Undo Tablespace has been changed from 'UNDOTBS1' to 'UT1'".

The "Configuration" section shows the following settings:

|                          |           |                 |     |                   |
|--------------------------|-----------|-----------------|-----|-------------------|
| Automatic Undo Retention | Enabled   | Undo Tablespace | UT1 | Change Tablespace |
| Undo Retention           | Automatic | Size (MB)       | 0   |                   |
| Undo Retention Guarantee | No        | Auto-Extensible | Yes |                   |

The "Recommendations" section includes an "Edit Undo Tablespace" button and a form for selecting the analysis time period:

Choose the time period that best represents the system activity to get the recommendations for undo retention length and undo tablespace size.

Analysis Time Period: **Customize Time Period** (selected) **Update Analysis** (button)

Selected Analysis Time Period: 9/10/03 12:00 PM - 9/17/03 12:00 PM

Potential Problems: **Undo tablespace cannot support required undo retention**

Recommendations: **Size undo tablespace to 61 MB**

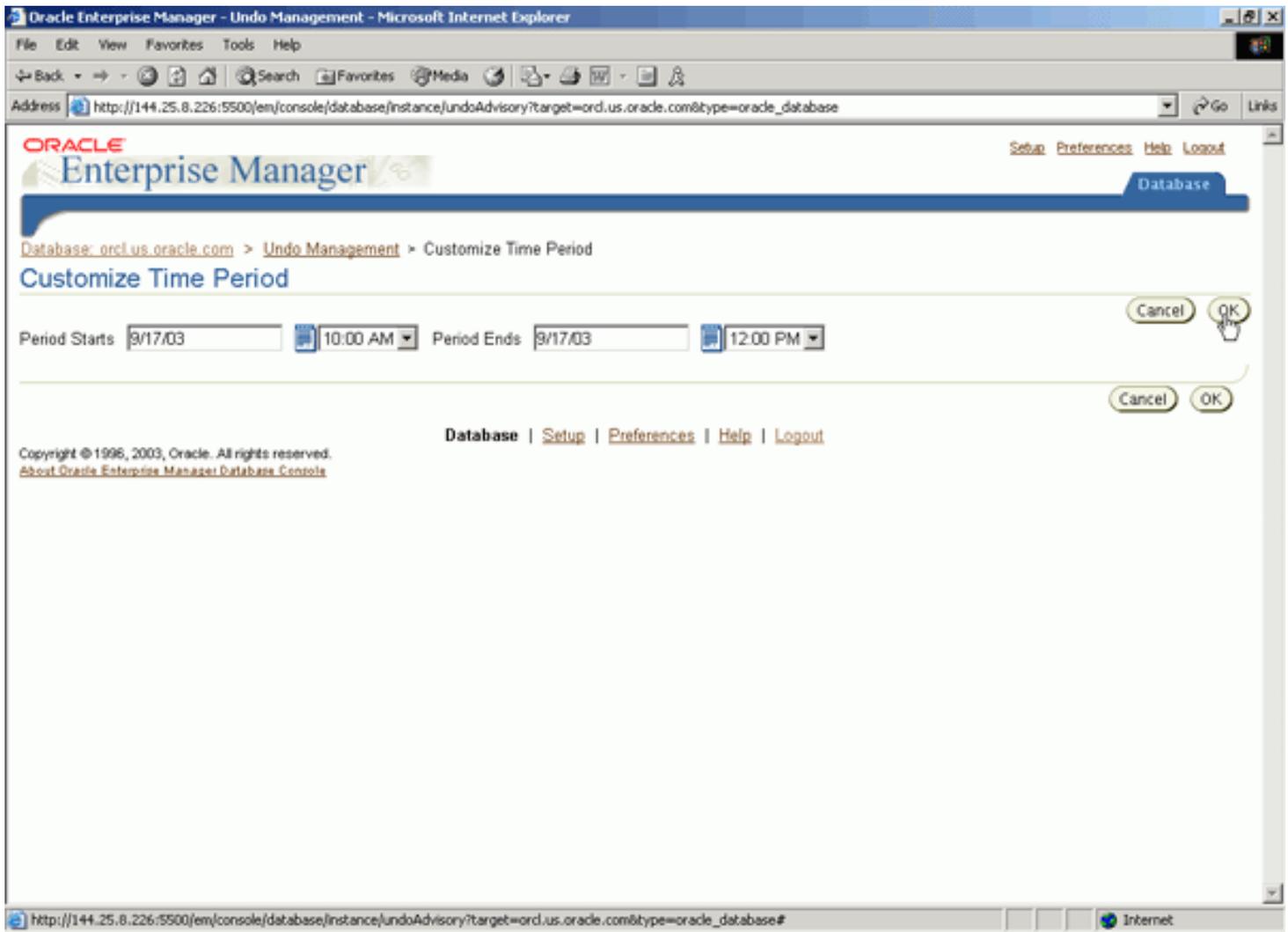
Rationale: **Increase undo tablespace size so that long running queries will not fail**

The "System Activity and Tablespace Usage" section provides the following data:

|  |        |
|--|--------|
| Longest Running Query (seconds)          | 408    |
| Average Undo Generation Rate (KB/minute) | 699.0  |
| Maximum Undo Generation Rate (KB/minute) | 3602.0 |

The footer of the browser window shows the URL: `http://144.25.8.226:5500/em/console/database/instance/undoAdvisor?target=ord.us.oracle.com&type=oracle_database#` and the Internet Explorer logo.

2. Use the date and time you determined previously for the Period Starts field. For the Period Ends field, use the same value plus two hours. Once done, press the **OK** button.



3. You want perform the recommendation and raise the size of your undo tablespace. Click **Edit Undo Tablespace** .

Oracle Enterprise Manager - Undo Management - Microsoft Internet Explorer

Address: [http://144.25.8.226:5500/em/console/database/instance/undoAdvisor?target=orcl.us.oracle.com&type=oracle\\_database](http://144.25.8.226:5500/em/console/database/instance/undoAdvisor?target=orcl.us.oracle.com&type=oracle_database)

Database: [orcl.us.oracle.com](#) > Undo Management

## Undo Management

[Undo Advisor](#)

### Configuration

|                          |                  |                 |            |                                   |
|--------------------------|------------------|-----------------|------------|-----------------------------------|
| Automatic Undo Retention | <b>Enabled</b>   | Undo Tablespace | <b>UT1</b> | <a href="#">Change Tablespace</a> |
| Undo Retention           | <b>Automatic</b> | Size (MB)       | <b>0</b>   |                                   |
| Undo Retention Guarantee | <b>No</b>        | Auto-Extensible | <b>Yes</b> |                                   |

### Recommendations

Choose the time period that best represents the system activity to get the recommendations for undo retention length and undo tablespace size.

Analysis Time Period:  [Update Analysis](#)

Selected Analysis Time Period: **9/17/03 10:00 AM - 9/17/03 12:00 PM**

Potential Problems: **Undo tablespace cannot support required undo retention**

Recommendations: **Size undo tablespace to 66 MB**

Rationale: **Increase undo tablespace size so that long running queries will not fail**

[Edit Undo Tablespace](#)

### System Activity and Tablespace Usage

The recommendations are based on system activity and undo tablespace usage for the selected analysis time period.

|  |               |
|--|---------------|
| Longest Running Query (seconds)          | <b>408</b>    |
| Average Undo Generation Rate (KB/minute) | <b>1449.0</b> |
| Maximum Undo Generation Rate (KB/minute) | <b>3602.0</b> |

[Show Graph](#)

[Undo Advisor](#)

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

Address: [http://144.25.8.226:5500/em/console/database/storage/tablespace?event=edit&target=orcl.us.oracle.com&type=oracle\\_database&name](http://144.25.8.226:5500/em/console/database/storage/tablespace?event=edit&target=orcl.us.oracle.com&type=oracle_database&name)

- Click **Add** to add a datafile.

Oracle Enterprise Manager - Edit Tablespace: UT1 - Microsoft Internet Explorer

Address: http://144.25.8.226:5500/em/console/database/storage/tablespace?event=edit&target=orcl.us.oracle.com&type=oracle\_database&name=UT1&otype=TABLESPACE

Database: orcl.us.oracle.com > Tablespaces > Edit Tablespace: UT1

### Edit Tablespace: UT1

Buttons: Show SQL, Revert, Apply

Tabs: General, Storage Thresholds

Name: UT1

Bigfile tablespace: No

**Extent Management**

- Locally Managed
- Dictionary Managed

**Type**

- Permanent
  - Set as default permanent tablespace
- Temporary
  - Set as default temporary tablespace
- Undo

**Status**

- Read Write
- Read Only
- Offline
  - Offline Mode: Normal

**Datafiles**

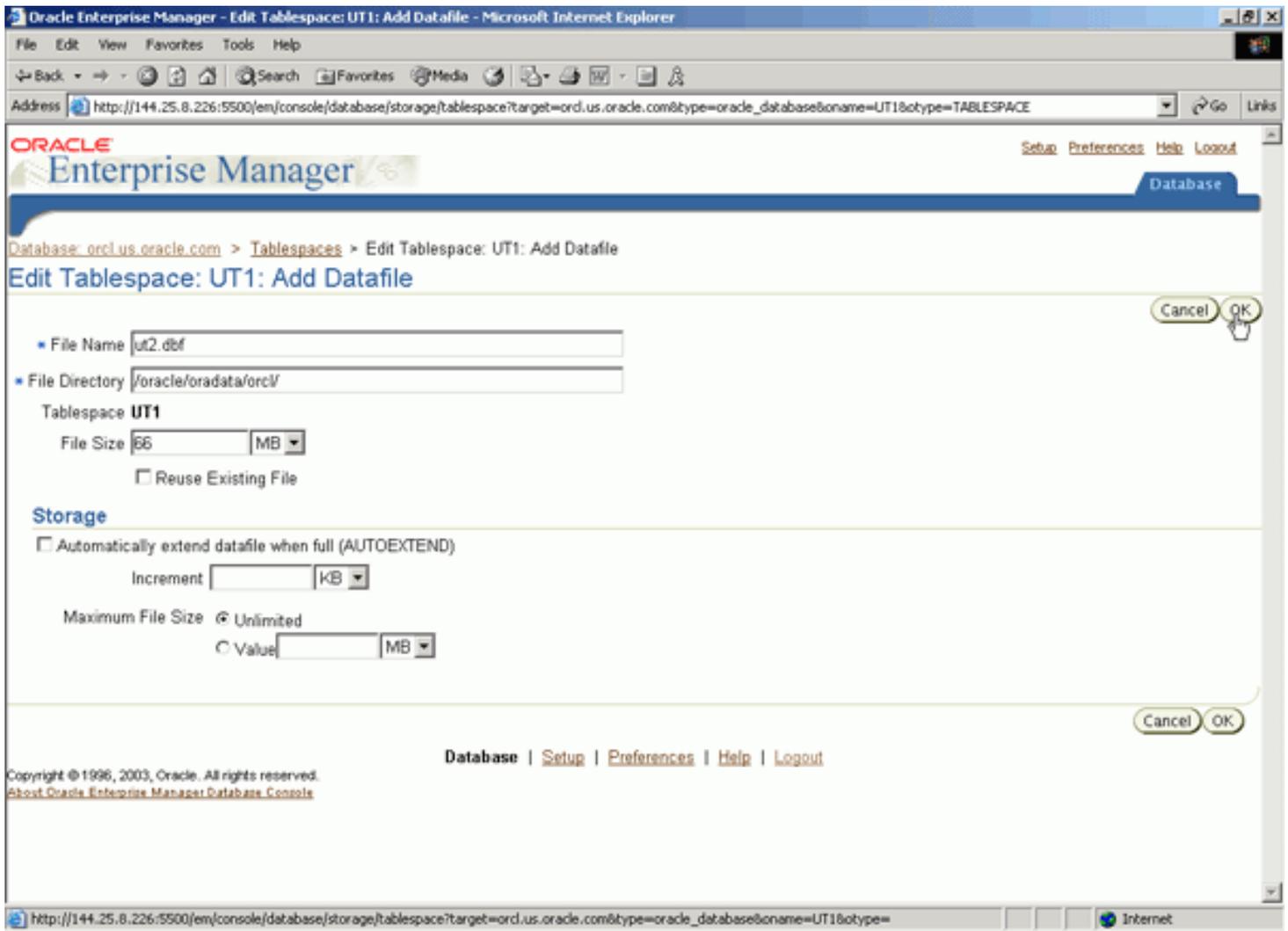
Buttons: Add, Edit, Remove

| Select                           | Name    | Directory             | Size (MB) | Used (MB) |
|----------------------------------|---------|-----------------------|-----------|-----------|
| <input checked="" type="radio"/> | ut1.dbf | /oracle/oradata/orcl/ | 0.39      | 0.39      |

Tabs: General, Storage Thresholds

Address: http://144.25.8.226:5500/em/console/database/storage/tablespace?event=edit&target=orcl.us.oracle.com&type=oracle\_database&name=UT1

- Enter **ut2.dbf** as the filename and specify whatever the recommendation should be. Then click **OK**.



6. Click **Apply** .

Oracle Enterprise Manager - Edit Tablespace: UT1 - Microsoft Internet Explorer

Address: http://144.25.8.226:5500/em/console/database/storage/tablespace?target=orcl.us.oracle.com&type=oracle\_database&name=UT1&otype=TABLESPACE

Database: orcl.us.oracle.com > Tablespaces > Edit Tablespace: UT1

### Edit Tablespace: UT1

Buttons: Show SQL, Revert, Apply

General | Storage Thresholds

Name:

Bigfile tablespace: **No**

| Extent Management  | Type   | Status   |
|--|--|--|
| <input checked="" type="radio"/> Locally Managed<br><input type="radio"/> Dictionary Managed | <input checked="" type="radio"/> Permanent<br><input type="checkbox"/> Set as default permanent tablespace<br><input type="radio"/> Temporary<br><input type="checkbox"/> Set as default temporary tablespace<br><input checked="" type="radio"/> Undo | <input checked="" type="radio"/> Read Write<br><input type="radio"/> Read Only<br><input type="radio"/> Offline<br>Offline Mode: <input type="text" value="Normal"/> |

Datafiles

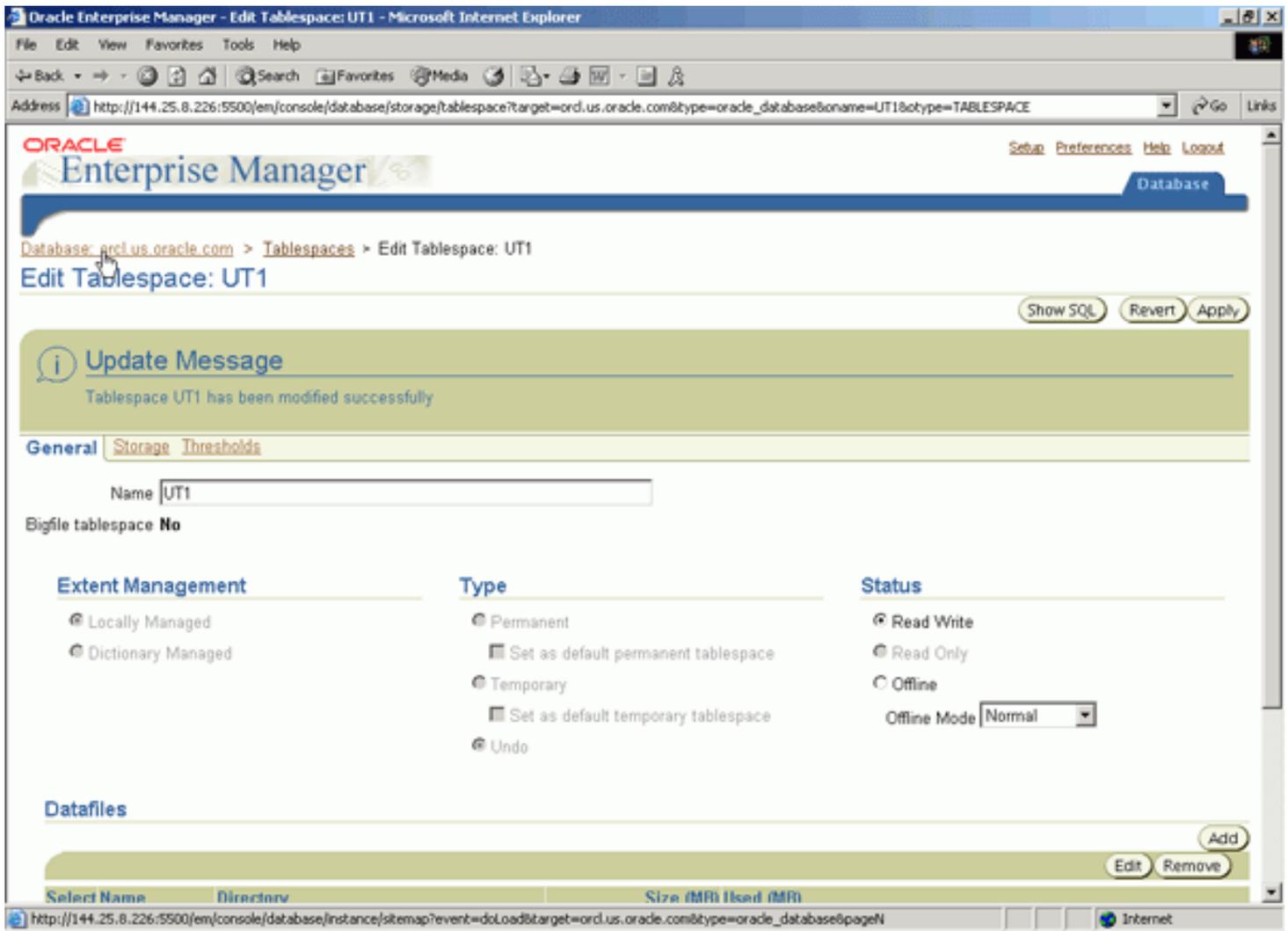
Buttons: Add, Edit, Remove

| Select                           | Name    | Directory             | Size (MB) | Used (MB) |
|----------------------------------|---------|-----------------------|-----------|-----------|
| <input checked="" type="radio"/> | ut1.dbf | /oracle/oradata/orcl/ | 0.39      | 0.39      |
| <input type="radio"/>            | ut2.dbf | /oracle/oradata/orcl/ | 66.00     | 0.00      |

General | Storage Thresholds

Address: http://144.25.8.226:5500/em/console/database/storage/tablespace?target=orcl.us.oracle.com&type=oracle\_database&name=UT1&otype=

7. Select your **Database** breadcrumb.



8. Select **Undo Management** .

Oracle Enterprise Manager (SYS) - Database: orcl.us.oracle.com - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Search Favorites Media Print

Address [http://144.25.8.226:5500/em/console/database/instance/sitemap?event=doLoad&target=orcl.us.oracle.com&type=oracle\\_database&pageNum=3](http://144.25.8.226:5500/em/console/database/instance/sitemap?event=doLoad&target=orcl.us.oracle.com&type=oracle_database&pageNum=3) Go Links

**ORACLE** Enterprise Manager Setup Preferences Help Logout

Database

Logged in As SYS

Database: orcl.us.oracle.com

Home Performance Administration Maintenance

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- [Undo Management](#)
- [All Initialization Parameters](#)

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[http://144.25.8.226:5500/em/console/database/instance/undoAdvisory?event=reset&id=26&target=orcl.us.oracle.com&type=oracle\\_datab](http://144.25.8.226:5500/em/console/database/instance/undoAdvisory?event=reset&id=26&target=orcl.us.oracle.com&type=oracle_datab) Internet

9. Notice that there are no problems or recommendations any longer. You may try running the uscript1 and uscript2 again to make sure the size of your tablespace is appropriate.

Oracle Enterprise Manager - Undo Management - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address http://144.25.8.226:5500/em/console/database/instance/undoAdvisor?event=reset&id=2&target=orc.us.oracle.com&type=oracle\_database

---

**ORACLE** Enterprise Manager Setup Preferences Help Logout

Database

Database: [orc.us.oracle.com](#) > Undo Management

## Undo Management

Undo Advisor

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### Configuration

|  |   |
|--|---|
| Automatic Undo Retention <b>Enabled</b>  | Undo Tablespace <a href="#">UT1</a> <a href="#">Change Tablespace</a> |
| Undo Retention <a href="#">Automatic</a> | Size (MB) <b>66</b>   |
| Undo Retention Guarantee <b>No</b>       | Auto-Extensible <b>No</b>   |

---

### Recommendations

Choose the time period that best represents the system activity to get the recommendations for undo retention length and undo tablespace size. [Edit Undo Tablespace](#)

Analysis Time Period [Last Seven Days](#) [Update Analysis](#)

Selected Analysis Time Period **9/10/03 12:00 PM - 9/17/03 12:00 PM**

Potential Problems **No Problem Found**

Recommendations **No Recommendation**

---

### System Activity and Tablespace Usage

The recommendations are based on system activity and undo tablespace usage for the selected analysis time period.

|  |               |
|--|---------------|
| Longest Running Query (seconds)          | <b>408</b>    |
| Average Undo Generation Rate (KB/minute) | <b>820.0</b>  |
| Maximum Undo Generation Rate (KB/minute) | <b>3602.0</b> |

[Show Graph](#)

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Undo Advisor

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

Done Internet