



Oracle Secure Backup

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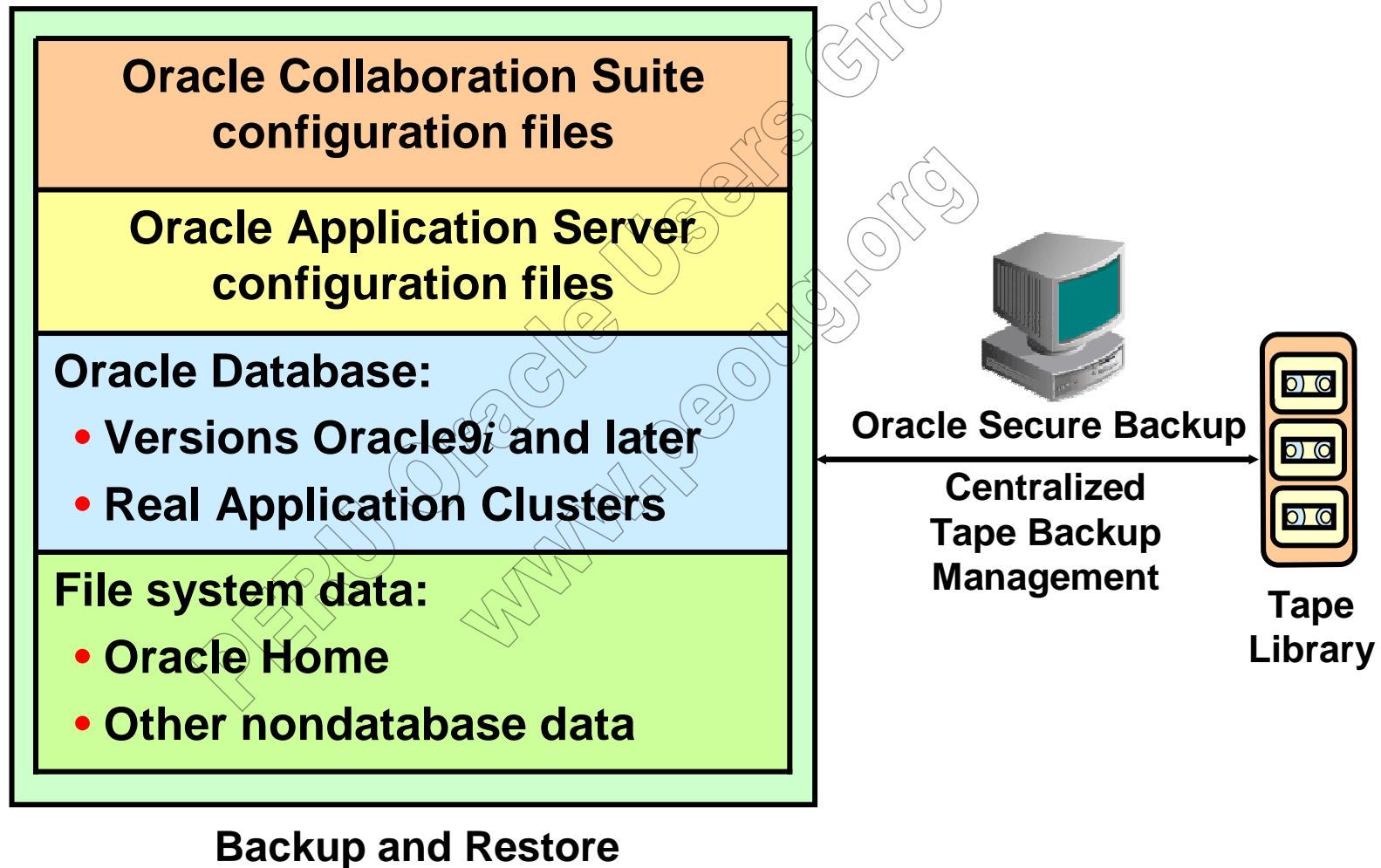
PERU Oracle Users Group

Mayo 2007

Objectives

- **Describe the Oracle Secure Backup architecture and how it benefits your environment**
- **Discuss the basic Oracle Secure Backup media management concepts**
- **Install and configure Oracle Secure Backup**
- **Use RMAN and Oracle Secure Backup to back up and restore the Oracle database**
- **Use Oracle Secure Backup to back up and restore file-system files**

Data Protection to Tape for the Oracle Stack

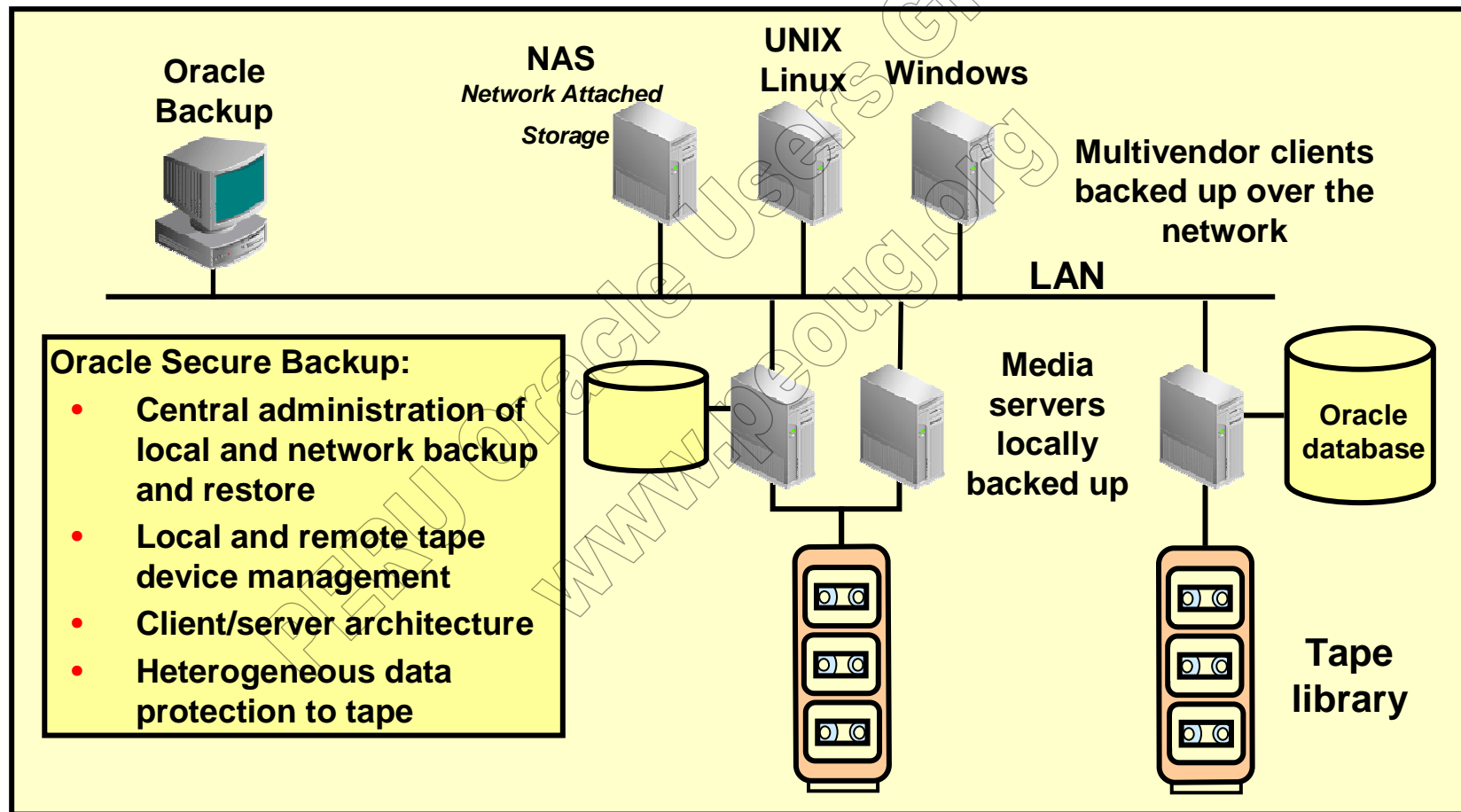


The Customer Advantage

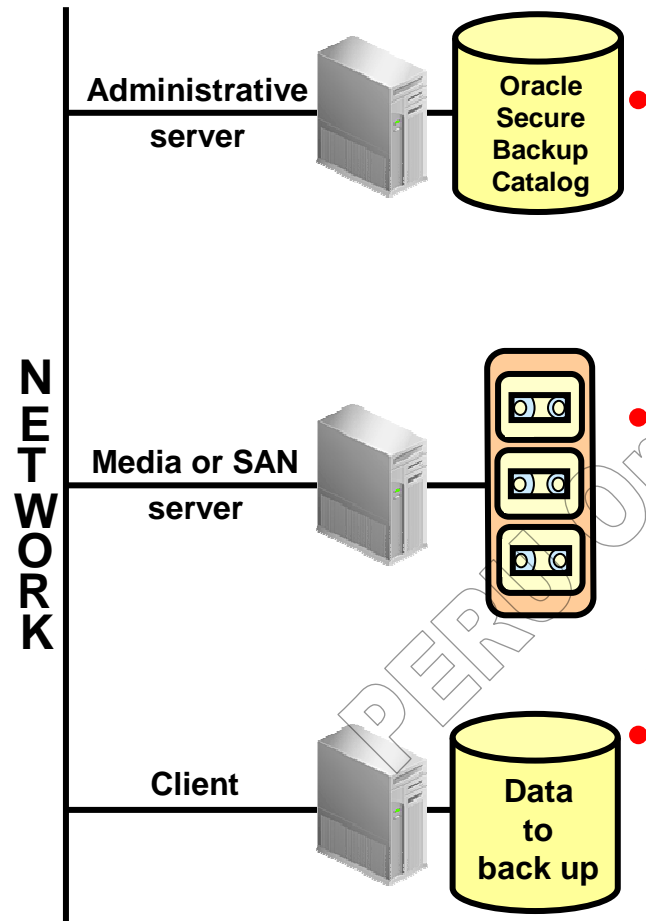
Complete Oracle Solution

- **Oracle Secure Backup and RMAN provide an end-to-end backup solution for Oracle environments:**
 - **Centralized backup management to tape for file system data and the Oracle database**
 - **Provides most well-integrated media management layer for RMAN backups**
 - **Backup of any data anywhere on the network**
- **A single technical support resource for the entire backup solution expedites problem resolution.**
- **This ensures reliable data protection at lower cost and complexity.**

Oracle Secure Backup for Centralized Tape Backup Management



Oracle Secure Backup Administrative Domain



Administrative server:

- Maintains Oracle Secure Backup catalog files containing configuration settings and backup history
- Has standard access mode only

Media or SAN server:

- Transfers data to or from attached devices
- Has standard (OB) or NDMP access modes

Client:

- Is a server backed up by Oracle Secure Backup
- Has standard (OB) or NDMP access modes

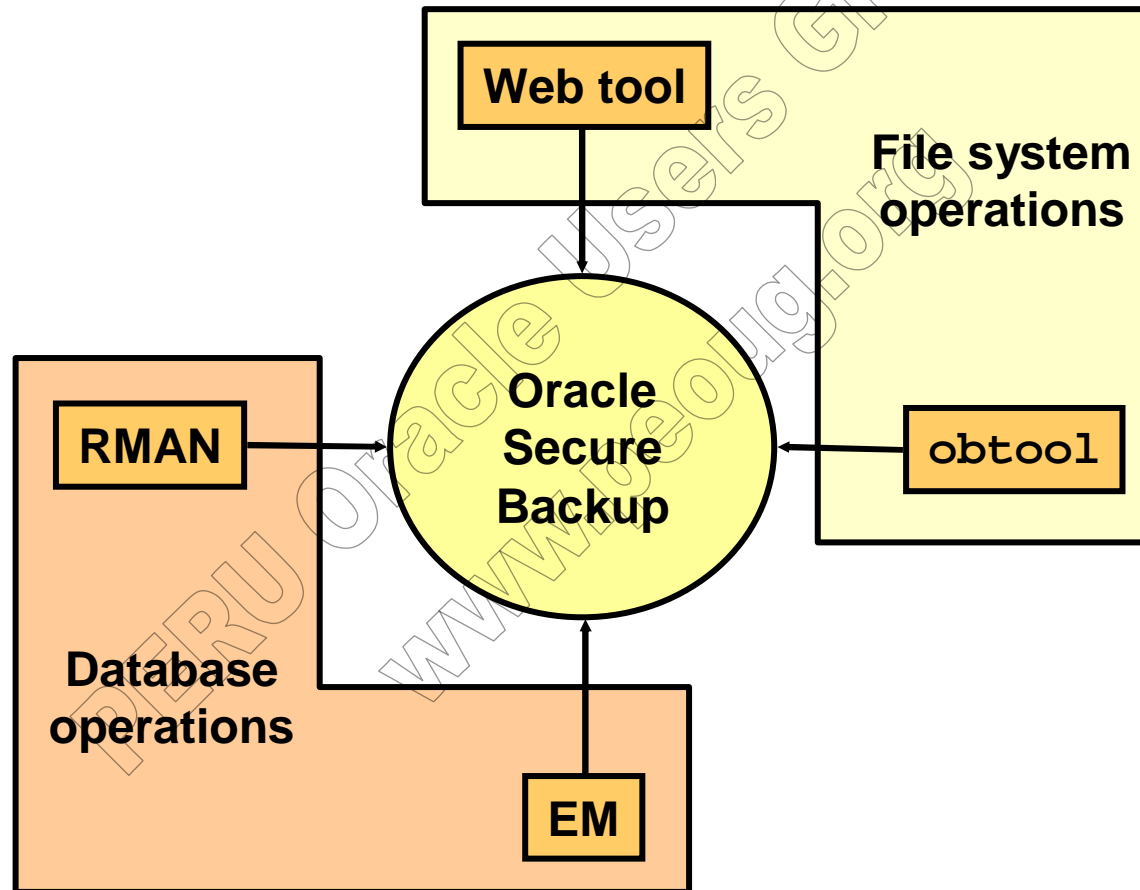
Oracle Secure Backup: Backup Management Overview

- **Centralized management of the administrative domain:**
 - Consolidated catalog
 - Users and privileges
- **Ease of administration with multiple interface options, backup policies, and much more**
- **Backing up and restoring data**
 - File system and Oracle database
 - Management through policies
- **Media management (tapes)**
- **Automated tape device management**
- **Flexible configuration options**

Predefined Classes

Rights	ADMIN	OPERATOR	USER	ORACLE	READER
Browse backup catalogs with this access	privileged	not denied	permitted	permitted	named
Display administrative domain's configuration	✓	✓	✓	✓	
Modify own user name and password	✓	✓	✓	✓	✓
Modify administrative domain's configuration	✓				
Perform backups as self	✓	✓		✓	
Perform backups as privileged user	✓	✓			
List any jobs, owned by user	✓	✓	✓	✓	
Modify any jobs, owned by user	✓	✓	✓	✓	
Perform restores as self	✓	✓	✓	✓	
Perform restores as privileged user	✓	✓			
Receive e-mail requesting operator assistance	✓	✓		✓	
Receive e-mail describing internal errors	✓	✓		✓	
Query and display information about devices	✓	✓	✓	✓	
Manage devices and change device state	✓	✓		✓	
List any job, regardless of its owner	✓	✓			
Modify any job, regardless of its owner	✓	✓			
Access Oracle Secure Backups (database)	all	owner	owner	owner	none
User can perform Oracle database backups and restores	✓			✓	

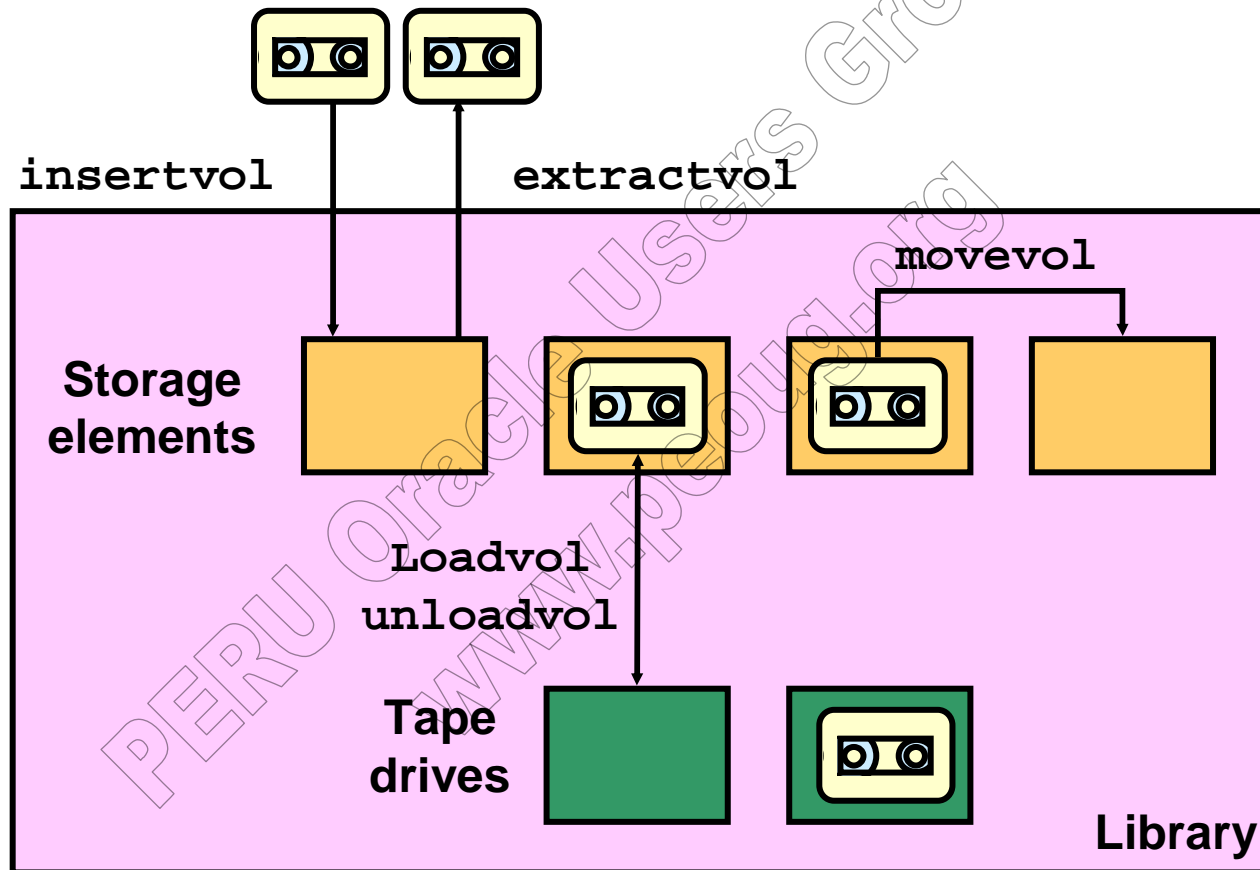
Oracle Secure Backup Interface Options



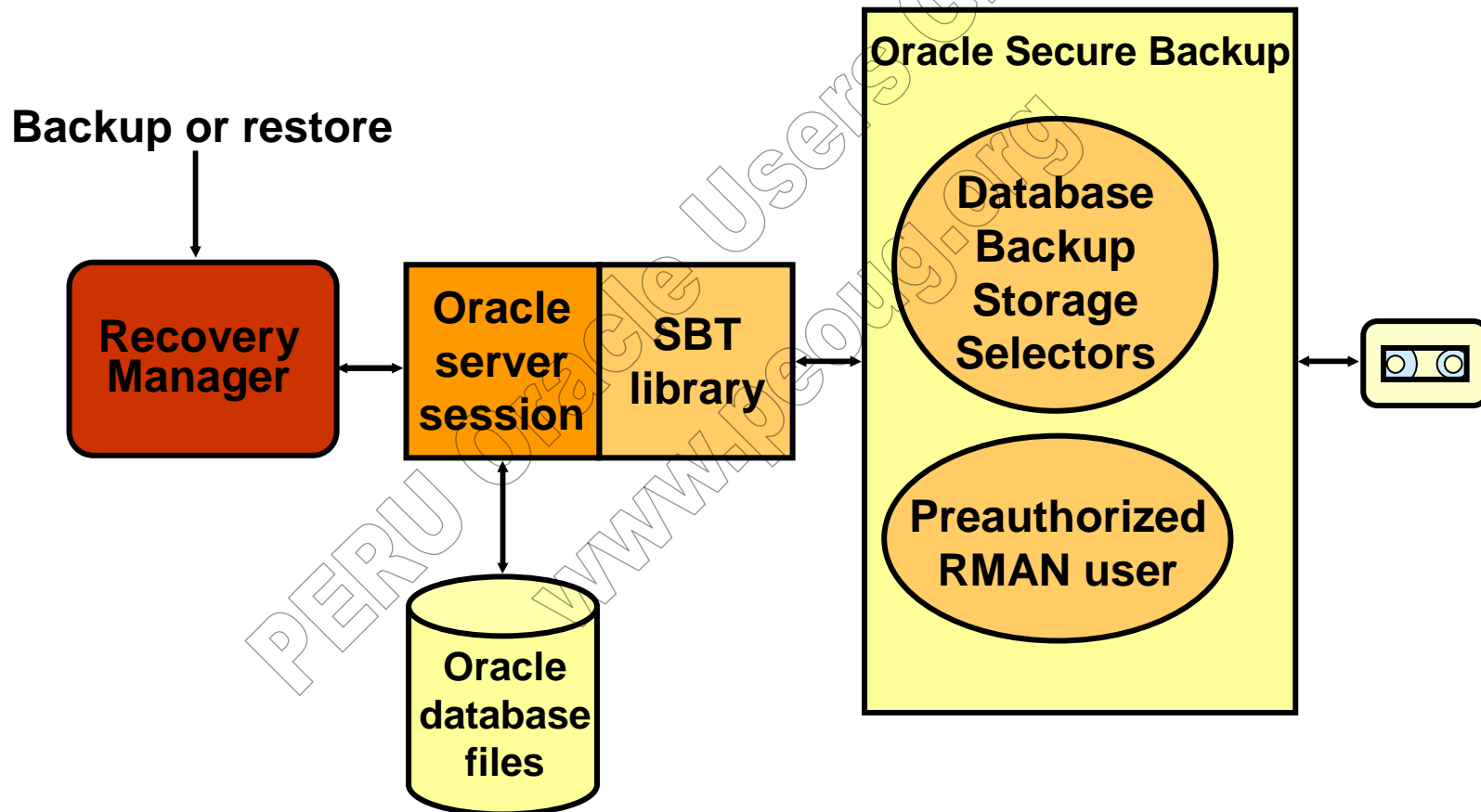
Managing Data to Be Protected

	Oracle Database	File System Data
Defining what data to backup	RMAN backup sets	Oracle Secure Backup data sets: User defined
Backup options	Use RMAN backup levels: Full and incremental	Multilevel backups: Full, incremental, or off-site
Frequency of backups	Intuitive Enterprise Manager scheduling interface	Flexible date/time calendar-based scheduling
		On-demand backups

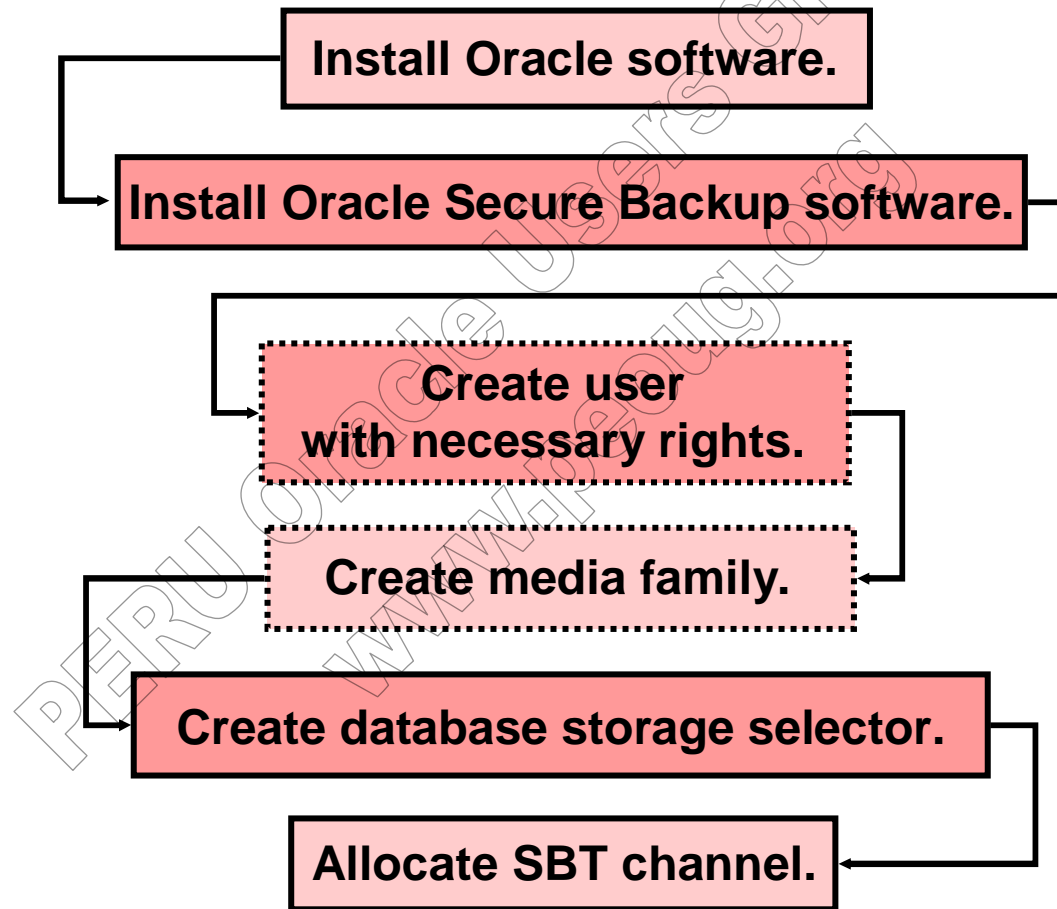
Library Management Operations



Accessing Oracle Secure Backup from RMAN



RMAN and Oracle Secure Backup Usage Model



Administrative Server Installation: Example

```
[root@EDRSR14P1 stage]# mkdir -p /usr/local/oracle/backup
[root@EDRSR14P1 stage]# cd /usr/local/oracle/backup
[root@EDRSR14P1 backup]# /stage/ob-4.lcdrom040914/setup
Welcome to Oracle's setup program for Oracle Secure Backup. This
program loads Oracle Secure Backup software from the CD-ROM to a
filesystem directory of your choosing.
This CD-ROM contains Oracle Secure Backup version 10.2.
Please wait a moment while I learn about this host... done.
- - - - -
You may load any of the following Oracle Secure Backup packages:
1. solaris (Solaris 32, SPARC) administrative server, media
server, client
2. linux32 (RH 2.1, RHEL 3, RHEL 4, SuSE 8, SuSE 9)
administrative server, media server, client
3. solaris64 (Solaris 2.8 and later, SPARC) administrative
server, media server, client

Enter a space-separated list of packages you'd like to load. To
load all packages, enter 'all' [2]: 2
```

Defining Your Administrative Server in EM

The image shows two overlapping screenshots from the Oracle Enterprise Manager 10g Database Control interface. The top screenshot displays the 'Maintenance' tab for a database instance named 'orcl'. Under the 'High Availability' section, the 'Oracle Secure Backup' link is highlighted with a red box. The bottom screenshot shows the 'Add Administrative Server' dialog box, where the 'Administrative Server' is set to 'edrsr14p1.us.oracle.com', the 'Oracle Secure Backup Home' is '/usr/local/oracle/backup', and the 'Username' is 'admin'. The 'OK' button is also highlighted with a red box.

ORACLE Enterprise Manager 10g Database Control

Setup Preferences Help Logout Database

Logged in As SYS

Database Instance: orcl

Home Performance Administration Maintenance

The Administration tab displays links that allow you to administer database objects and initiate database operations inside an Oracle database. The Maintenance tab displays links that provide functions that control the flow of data between or outside Oracle databases.

High Availability

Backup/Recovery Backup/Recovery Settings Oracle Secure Backup

Schedule Backup Backup Settings Oracle Secure Backup Device and Media

Perform Recovery Recovery Settings File System Backup and Restore

Manage Current Backups Recovery Catalog Settings

ORACLE Enterprise Manager 10g Database Control

Setup Preferences Help Logout Database

Administrative Server: edrsr14p1.us.oracle.com > Add Administrative Server

Add Administrative Server

Specify the Oracle Secure Backup server's settings.

Administrative Server edrsr14p1.us.oracle.com

Oracle Secure Backup Home /usr/local/oracle/backup

Path to find Oracle Secure Backup Installation (example: /usr/local/oracle/backup)

Username admin

Enter the Oracle Secure Backup username that will be used on all remote operations.

Password

Cancel OK

The Oracle Secure Backup Device and Media Page

ORACLE Enterprise Manager 10g Database Control

Setup Preferences Help Logout Database

Administrative Server: edrsr14p1.us.oracle.com > Edit Administrative Server Settings

Oracle Secure Backup Device and Media: Administrative Server: edrsr14p1.us.oracle.com

Oracle Secure Backup provides device and media management capabilities for database and file system backup and restore operations. Use the Administrative Server home page to view information about managed resources and to perform various actions.

Page Refreshed Jul 7, 2005 5:27:12 AM

General

Status In Service
Host edrsr14p1.us.oracle.com
Settings [Edit](#)

Resources

Media Servers	✓ 1
Media Families	1
Volumes	Details
Devices	Manage

Devices

View [Problem Devices](#) Problem Dev

[Expand All](#) | [Collapse All](#)

Name	Type	Slot Number
▼ Devices		

Related Links

[File System Backup and Restore](#)

Edit Administrative Server Settings

Modify the Oracle Secure Backup administrative server settings.

Administrative Server edrsr14p1.us.oracle.com

Oracle Secure Backup Home
Path to find Oracle Secure Backup Installation (example: /usr/local/oracle/backup)

Username
Enter the Oracle Secure Backup username that will be used on all remote operations.

Password

Act as Media Server.

[Cancel](#) [OK](#)

Defining Database Storage Selector

Tape Settings

Tape drives must be mounted before performing a backup. You should verify that the tape settings are valid by clicking on 'Test Tape Backup', before saving them. Test Tape Backup

Tape Drives

Concurrent streams to tape drives

Tape Backup Type Backup Set
An Oracle backup file format that allows for more efficient backups by interleaving multiple backup files into one output file.

Compressed Backup Set
An Oracle backup set in which the data is compressed to reduce its size.

Oracle Secure Backup

Version on Database Server **10.2.0.0**

Administrative Server **Not Defined**

Backup Storage Selectors Configure

At least one backup storage selector is required to backup this database.

Host Credentials

To save the backup settings, su

Database Instance: orcl > Backup Settings > Backup Storage Selectors

Backup Storage Selectors

Backup Storage Selectors are a means to specify default storage policies between Recovery Manager (RMAN) and Oracle Secure Backup. Given the database backup types and copy numbers, the Backup Storage Selectors enable Oracle Secure Backup to utilize a specific media family and devices. If there are no devices specified, Oracle Secure Backup will choose any device in the administrative domain.

Page Refreshed Jul 7, 2005 5:58:10 AM

Select Database Backup Types	Copy Number	Media Family	Resource Wait Time	Devices	Backup Storage Selector name
[all]	[any]	RMAN-DEFAULT	forever	vt	sel-1090103455-949

TRP Resource Wait Time specifies how long to wait for the availability of resources required by backups. If resources do not become available within this time, the backup will fail.

Related Links

[Oracle Secure Backup Device and Media](#)

Add Remove Edit

Return

Testing Your Tape Drives

Tape Settings

Tape drives must be mounted before performing a backup. You should verify that the tape settings are valid, by clicking on 'Test Tape Backup', before saving them.

Tape Drives

Concurrent streams to tape drives

Tape Backup Type Backup Set
An Oracle format which has to be restored before use.

Compressed Backup Set
A compressed Oracle format which has to be restored before use.

Test Tape Backup

ORACLE Enterprise Manager 10g Database Control

Database: orcl > Configure Backup Settings

Configure Backup Settings

Device [Backup Set](#) [Policy](#)

Tape Backup Test Successful!

Disk Settings

Setup Preferences Help Logout

Summary of Job: 2005-07-08T00:08:08

The data is retrieved from the database control file.

General

Status **COMPLETED** Output Devices **SBT_TAPE**
 Type **CONTROLFILE** Input Size **6.72M**
 Start Time **Jul 8, 2005 12:08:12 AM** Output Size **7.00M**
 Time Taken **00:00:09** Output Rate Per Sec **796.44K**

Output Log

```
run {
allocate channel oem_sbt_backup type 'sbt_tape' format '%U

channel oem_sbt_backup: sid=131 devtype=SBT_TAPE
allocated channel: oem_sbt_backup
channel oem_sbt_backup: Oracle Secure Backup

Starting backup at 08-JUL-05
channel oem_sbt_backup: specifying datafile(s) in backupset
channel oem_sbt_backup: starting full datafile backupset
including current control file in backupset
channel oem_sbt_backup: starting piece 1 at 08-JUL-05
```

Database Instance: orcl > Backup Reports

Backup Reports

The following backup jobs are known to the database. The data is retrieved from the database.

Filter By

Start Time Type Status

Result

Total 6 (Completed 6)

Backup Name	Start Time	Time Taken	Status	Type	Output Devices
2005-07-08T00:08:08	Jul 8, 2005 12:08:12 AM	00:00:09	COMPLETED	CONTROLFILE	SBT_TAPE

Scheduling Backups by Using EM Database Control

The screenshot shows the Oracle Enterprise Manager Database Control interface. On the left, a navigation pane under 'Maintenance' has 'Backup/Recovery' expanded, with 'Schedule Backup' highlighted in a red box. A red arrow points from this box to the main content area. The main content area is titled 'Schedule Backup' for database 'EDRSR14P1_orcl.us.oracle.com'. It features a 'Current Database Information' section with 'ARCHIVELOG Mode - ARCHIVELOG' and 'Current Status - OPEN'. Below this, the 'Oracle-Suggested Backup' section is highlighted with a red box, containing a 'Schedule Oracle-Suggested Backup' button also highlighted in red. The 'Customized Backup' section below it has a 'Schedule Customized Backup' button and radio button options for 'Whole Database', 'Tablespaces', 'Datafiles', 'ArchiveLogs', and 'All Recovery Files on Disk'.

Managing Tape Backups

ORACLE Enterprise Manager 10g Database Control

Setup Preferences Help Logout Database

Database: orcl > Manage Current Backups Logged in As SYS

Manage Current Backups

Catalog Additional Files Crosscheck All Delete All Obsolete Delete All Expired

This backup data was retrieved from the database control file.

Backup Sets [Image Copies](#)

Search

Status: Available

Contents: Datafile Archived Redo Log SPFILE Control File

Completion Time: Within a month

Go

Results

Crosscheck Change to Unavailable Delete Validate

Select All | Select None

Select	Key Tag	Completion Time	Contents	Device Type	Status	Keep	Pieces
<input type="checkbox"/>	2 TAG20050405T134016	Apr 5, 2005 1:40:20 PM	DATAFILE	SBT_TAPE	AVAILABLE	NO	1
<input type="checkbox"/>	1 TAG20050324T101352	Mar 24, 2005 10:18:10 AM	SPFILE	DISK	AVAILABLE	NO	1

Performing Database Recovery by Using Tape Backups

ORACLE Enterprise Manager 10g Database Control

Database: orcl.oracle.com > Perform Recovery

Perform Recovery

Information

1. Datafiles Need to be Restored
2. Current Status

Whole Database Recovery

- Recover to the current time
Datafiles will be restored from the latest backup.
- Restore all datafiles
Need to specify Time, SCN or log sequence number prior to that time will be used. No redo operation.
- Recover from previously restored backup

Object Level Recovery

Object Type: **Datafiles**

Operation: Recover to current time
Type: **Datafile will be restored**

- Restore datafiles
Need to specify Time, SCN or log sequence number prior to that time will be used. No redo operation.
- Recover from previously restored backup
- Block Recovery

Perform Recovery: Result

Operation Succeeded

The output of the operation is shown below:

```
ORA-27037: unable to obtain file status
Linux Error: 2: No such file or directory
Additional information: 3
ORA-19600: input file is datafile copy 4 (/u01/app/oracle/flash_recovery_area/ORCL/datafile/o1_mf_example_14mm1/my_.dbf)
ORA-19601: output file is datafile 5 (/u01/app/oracle/oradata/orcl/example01.dbf)
failover to previous backup

channel ORA_SBT_TAPE_1: starting datafile backupset restore
channel ORA_SBT_TAPE_1: specifying datafile(s) to restore from backup set
restoring datafile 00005 to /u01/app/oracle/oradata/orcl/example01.dbf
channel ORA_SBT_TAPE_1: reading from backup piece 09gghe5j_1_1
channel ORA_SBT_TAPE_1: restored backup piece 1
piece handle=09gghe5j_1_1 tag=NULL
channel ORA_SBT_TAPE_1: restore complete, elapsed time: 00:00:46
Finished restore at 30-MAR-05
```

OK

Oracle Secure Backup Web Tool

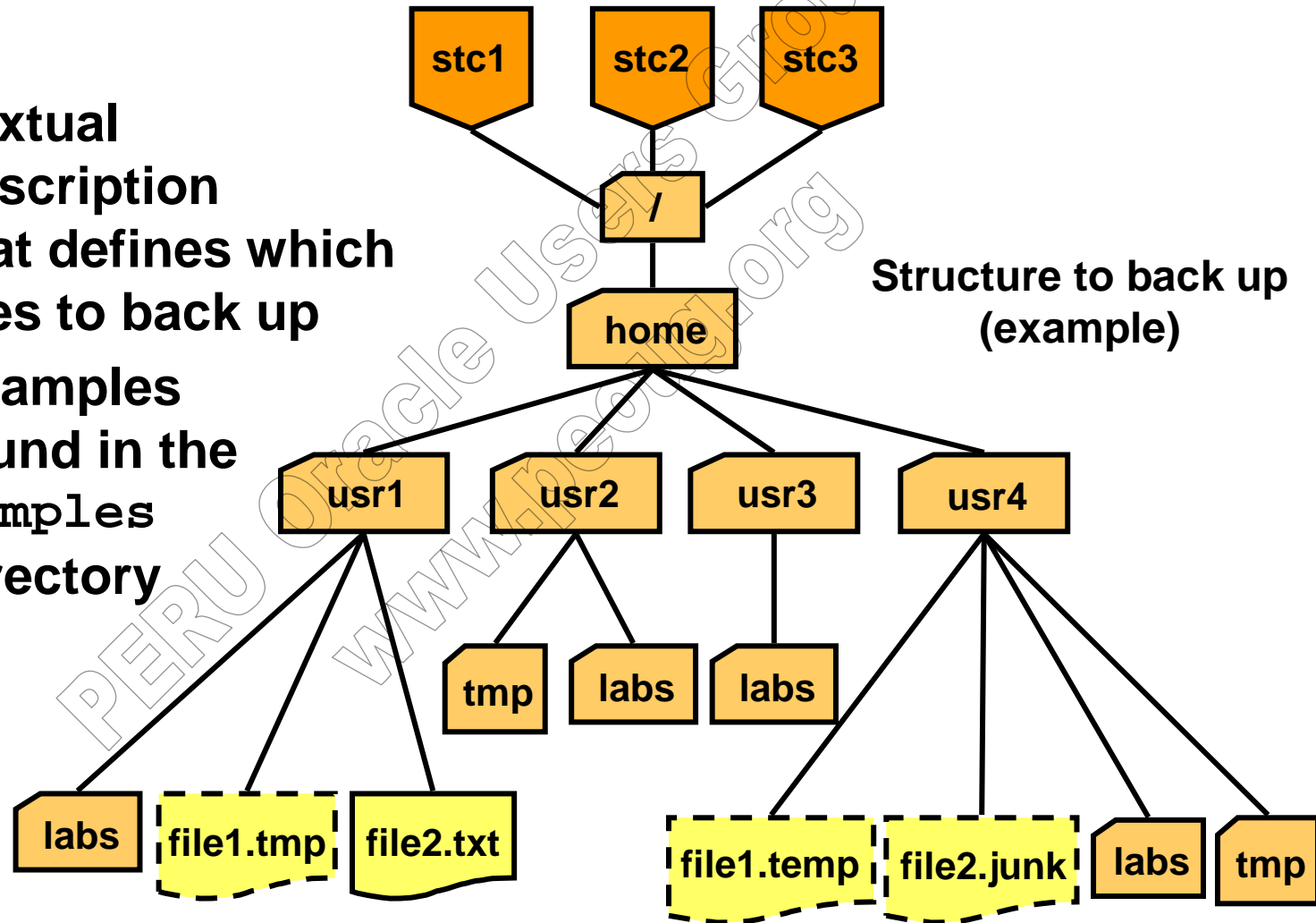
The screenshot illustrates the Oracle Secure Backup Web Tool interface. At the top, a browser address bar shows the URL `https://139.185.35.114`. A navigation menu includes **Oracle Secure Backup**, **Oracle Secure Backup Device and Media**, and **File System Backup and Restore**. A **Security Alert** dialog box is displayed, warning that the site's security certificate is not trusted. The dialog contains the following text: "Information you exchange with this site cannot be viewed or changed by others. However, there is a problem with the site's security certificate." It lists three issues: the certificate issuer is not trusted, the date is valid, and the name does not match the site. It asks "Do you want to proceed?" with **Yes**, **No**, and **View Certificate** buttons. The **Yes** button is highlighted with a red box. The main login page, titled **Oracle Secure Backup Login**, features the Oracle logo and fields for **User Name** (admin) and **Password**. A **Login** button is highlighted with a red box. Below the login form, a navigation bar includes **Home**, **Configure**, **Manage**, **Backup**, and **Restore**. The main content area shows the **Recent job status as of 2005/07/06.06:50:17 PDT** with sections for **Failed Jobs**, **Active Jobs**, **Pending Jobs**, and **Completed Jobs** (12 recent jobs). A **Devices** table is also present:

Type (DTE)	Name	State
library	vtlib	device not in use
drive (1)	vt	device not in use

A **Refresh** button is located at the bottom right of the main content area.

Oracle Secure Backup Data Set Scripts

- Textual description that defines which files to back up
- Examples found in the samples directory



Data Set Script: Examples

```
# Dataset "common-exclusions":  
exclude name tmp  
exclude name *.tmp  
exclude name *.temp
```

```
exclude name *~  
include path /home/usr1  
include path /home/usr2  
include host stc1  
include host stc2  
include host stc3 {  
  include dataset common-exclusions  
  include path /home/usr3  
  before backup optional "/etc/local/nfy '/usr3 begin'"  
  after backup optional "/etc/local/nfy '/usr3 end'"  
  include path /home/usr4 {  
    exclude name *.junk  
  }  
}
```


Creating Data Sets Using the Web Interface

The image shows a sequence of three screenshots from a web interface, illustrating the process of creating a dataset. Red arrows indicate the flow of the process.

Screenshot 1: Backup: Datasets
The interface shows a navigation menu with "Home", "Configure", "Manage", "Backup", and "Restore". Under "Backup", there are "Operations" (with "Backup Now" below it) and "Settings" (with "Datasets" and "Schedules" below it). The "Datasets" link is highlighted with a red box. Below the menu, there are buttons for "Open", "Add", "Remove", "Rename", and "Check Dataset". The "Add" button is highlighted with a red box. The main content area shows "Path: /" and "Entries Found: 1", with a list containing "NEW_CLIENTS/".

Screenshot 2: Backup: Datasets > New Datasets
The interface shows a "Save" button and a "Cancel" button. The "Save" button is highlighted with a red box. Below the buttons is a "Dataset" form with the following fields:
- Dataset type: File (dropdown menu)
- Name: labs (text input field)
- A text area containing the following configuration:

```
exclude name *.backup
exclude name *~
include host EDRSR14P1 {
include path /home/oracle/labs
}
```

Screenshot 3: Backup: Datasets
The interface shows a "Success: dataset /labs saved" message. Below the message, the main content area shows "Path: /" and "Entries Found: 2", with a list containing "NEW_CLIENTS/" and "labs".

Creating On-Demand Backup Requests

The screenshot illustrates the steps to create an on-demand backup request in the Oracle backup utility. It is divided into three main sections:

- Top Section:** Shows the main navigation menu with 'Home', 'Configure', 'Manage', 'Backup', and 'Restore'. Under 'Backup', there are sub-menus for 'Operations' and 'Settings'. 'Backup Now' is highlighted in the 'Operations' menu. A red box is around 'Backup Now', and a red arrow points to the 'Add' button in the next section.
- Middle Section:** Titled 'Backup: Backup Now', it shows a table with columns 'Number' and 'Dataset'. The table is currently empty. A red box is around the 'Add' button, and a red arrow points to the 'Options' section below.
- Bottom Section:** Titled 'Backup: Backup Now > Options', it shows configuration options for the backup. A red box is around the 'OK' button. The options include:
 - Datasets:** A list box containing 'NEW_CLIENTS/' and 'labs'.
 - Restrictions:** A list box containing 'v1', 'v1@EDRSR14P1', and '@EDRSR14P1'.
 - Backup date:** 09 / 23 / 2004
 - Backup time:** 04 hours 53 minutes
 - Expire after:** disabled
 - Priority:** 100
 - Backup level:** full
 - Media family:** null
 - Privileges:** Privileged Unprivileged

Sending Backup Requests to the Scheduler

[Backup:](#) Backup Now

Add Remove **Go**

Number	Dataset
1	labs

Info: backup request 1 (dataset labs) submitted; job id is admin/1.

[Backup:](#) Backup Now

Add Remove Go

Number	Dataset
(Empty)	

[Manage:](#) Jobs

Apply Remove Run Cancel
Show Properties Show Transcript

ID	Type	Time	State
admin/1	dataset labs	09/23.05:21	completed successfully
admin/1.1	backup EDRSR14P1	09/23.05:21	completed successfully

Creating Backup Schedules

The screenshot illustrates the process of creating a backup schedule in the Oracle backup utility. It shows a navigation menu with 'Backup' selected, leading to a 'Schedules' sub-menu. The 'Schedules' page features an 'Add' button, which is highlighted with a red box. Clicking 'Add' opens a 'New Schedules' dialog box. This dialog box contains several fields: 'Schedule' (set to 'sched1'), 'Priority' (set to '100'), 'Datasets' (a list containing 'NEW_CLIENTS/' and 'labs'), 'Restrictions' (a list containing 'vt1', 'vt1@EDRSR14P1', and '@EDRSR14P1'), and 'Comments' (containing 'Just a test'). The 'OK' button in the dialog is also highlighted with a red box.

Creating Backup Triggers

The image shows two overlapping screenshots of the Oracle Backup Schedules configuration interface. The top screenshot shows the 'Backup: Schedules' window with a table of schedules. The 'Edit' button is highlighted with a red box, and a red arrow points from it to the 'Triggers' button in the bottom screenshot. The bottom screenshot shows the 'Backup: Schedules > sched1 > Triggers' window, where the 'Add' button is highlighted with a red box. The 'Triggers' button in the top right corner is also highlighted with a red box.

Backup: Schedules

Schedule Name	dataset	Restrict	Priority
sched1	labs	vt1	100

Backup: Schedules > sched1 > Triggers

Buttons: Add, Edit, Remove, Cancel, OK, Cancel, Triggers, Preview

ID **Level** **Time** **Day and Date**

(Empty)

Backup level: full Media family: full

Backup at: 06 hours 00 minutes Expire after: disabled

Trigger type: Day

Select daily

Select weekdays

- Monday
- Tuesday
- Wednesday
- Thursday
- Friday

Select weekend

- Sunday
- Saturday

Week in month:

- All
- Selected
- First
- Second
- Third
- Fourth
- Fifth
- Last

Weekday exceptions:

Except: none Time: none Specify day: none none

Restoring File-System Files with Oracle Secure Backup

Two ways for restoring data:

- **Catalog-based restore: Based on catalog backups history**
- **Raw restore: Based on your memory**

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Creating a Catalog-Based Restore Request

The screenshots illustrate the following steps:

- Operations Menu:** The 'Backup Catalog' option is highlighted in the 'Operations' menu.
- Browse Restore Catalog:** The 'Browse Host' button is highlighted. The window shows a table with columns: Host Name (EDRSR14P1), Data Selector (latest, earliest, all, backup ID, as of date, date range), and Options (View mode: Inclusive/Exact, Backup ID, As of date: 2004/09/27, Date range: 2004/09/27-2004/09/27).
- Browse Host EDRSR14P1:** The 'Add' button is highlighted. The window shows a file 'test.txt' selected, with a path of '/home/oracle/labs/'.
- New Recovery:** The 'OK' button is highlighted. The dialog shows 'Device' set to 'vt1' and 'Options' including 'Privileged restore' (No), 'Obtar option(s)', 'Replace existing files', and 'To host: EDRSR14P1'.

File Properties (from the 'Browse Host EDRSR14P1' window):

File Properties	
Path	test.txt
Backup ID	0
Backup ID	0
Backup date & time	2004/09/27 02:57:09
Volume ID	VOL000001
Volume tag	6d26f0d0f2c31028b5500065ba63cc7
File number	1
File position	1

Creating a Catalog-Based Restore Request

The screenshot illustrates the process of creating a catalog-based restore request in Oracle Enterprise Manager. It shows the 'New Recovery' dialog box and the main 'Restore: Backup Catalog > EDRSR14P1' window.

New Recovery Dialog Box:

- Device:** Auto device select, Device: vt1
- Options:**
 - Privileged restore: Yes, No
 - Obtar option(s):
 - No high speed positioning
 - NDMP incremental restore
 - Replace existing files, Keep existing files
 - Replace in use files, Keep in use files
 - To host: EDRSR14P1
- Path:** /home/oracle/labs/test.txt

Main Window (Restore: Backup Catalog > EDRSR14P1):

- Buttons:** Add, Remove, Go, Apply, Browse Host, List Host Backups
- Path:** EDRSR14P1:/home/oracle/labs/
- Restore items:** A table showing the file being added.
- Data selector:** latest, earliest, all, backup ID, as of date, date range
- Browse options:** View mode: Inclusive, Exact; Backup ID; As of date: 2004/09/27; Date range: 2004/09/27-2004/09/27

The 'Add' button in the main window is highlighted with a red box, and a red arrow points from it to the 'OK' button in the 'New Recovery' dialog box. Another red arrow points from the 'OK' button to the 'Restore items' table in the main window, which now contains the file being added.

Host	Path
EDRSR14P1	/home/oracle/labs/test.txt

Listing All Backups of a Client

The screenshot illustrates the Oracle Backup Catalog interface. It shows a sequence of steps to list backups for a specific client:

- Step 1:** In the "Restore: Browse Restore Catalog" window, the "Browse Host" button is highlighted with a red box. A red arrow points to the "Host Name" field in the table below, which contains the value "EDRSR14P1".
- Step 2:** In the "Restore: Backup Catalog > EDRSR14P1" window, the "List Host Backups" button is highlighted with a red box. A red arrow points to the "Browse Host EDRSR14P1" section, which shows a file list including "test.txt" and a path field containing "EDRSR14P1:/home/oracle/labs/".
- Step 3:** A third window displays the "Host Backups" table. The "Close" button in the top right corner is highlighted with a red box. A red arrow points from the "List Host Backups" button in the previous window to this table.

Host Backups	
Backup ID	0
Backup date & time	2004/09/27.02:57:09
Volume ID	VOL000001
Volume tag	6d26f0d0f2c31028b5500065ba63cc7
File number	1
File section	1
Requested level	0
Client	EDRSR14P1
Device	vt1
Program version	4.1.Develop
Volume creation	2004/09/27.02:57:09
Path	/home/oracle/labs
Actual level	0

Secure Backup Express vs Secure Backup

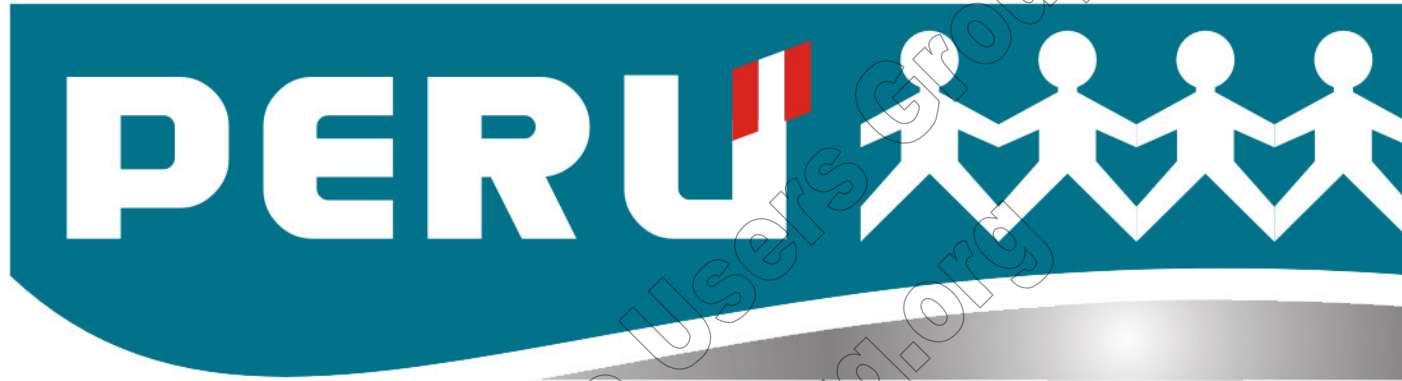
Feature	Oracle Secure Backup Express (*)	Oracle Secure Backup
• Integrated with RMAN for online tape backup and restore of Oracle Database.	Yes	Yes
• Backup and restore of non-database file system data.	Yes	Yes
• Integrated with Oracle Enterprise Manager starting with Oracle Database 10g Release 2.	Yes	Yes
• Integrated with Oracle Enterprise Manager Grid Control starting with Oracle Database 10g Release 2.	No	Yes
• Multiple tape drive support.	No	Yes
• Virtual tape device support.	No	Yes
• Fibre Channel support.	No	Yes
• Database backup encryption to tape (starting with Oracle Database 10g Release 2). (**)	No	Yes
• Networked backups.	No	Yes
• License	FREE	US\$ 3,000 per Tape Drive (***)

(*) Oracle Secure Backup Express is the replacement product for Legato Storage Manager (LSM) and Legato Single Server Version (LSSV). Secure Backup Express is limited to a single host with one direct-attached tape drive.

(**) Writing encrypted backups to DISK requires a license of the Oracle Database Advanced Security Option (ASO).

(***) No incluye IGV ni Soporte.

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