Managing User Accounts and User Environments in Oracle® Solaris 11.4

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Using This Documentation

- **Overview** – Describes how to manage user accounts and user environments in Oracle Solaris 11.4.
- **Audience** – System administrators using the Oracle Solaris 11.4 release.
- **Required knowledge** – Experience administering UNIX systems.

Product Documentation Library

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♦ ♦ ♦ CHAPTER 1

About User Accounts and User Environments

This chapter contains these main topics:

For task-related information about managing user accounts and user environments, see Chapter 2, "Managing User Accounts by Using the Command-Line Interface".

What's New in Managing User Accounts in Oracle Solaris 11.4

The following features are in this release:

- New application to set up and manage user accounts – The `useradm` application replaces the Visual Panels User Manager for setting up and managing user accounts. This application is a menu-driven interactive interface that also supports command line options.
- Oracle Solaris Account Management BUI – The browser-based Oracle Solaris Account Management application is another tool for managing user accounts.
- Default account name for LDAP accounts – The new `default@` account name enables you to assign default user attributes to accounts in the Lightweight Directory Access Protocol (LDAP) directory.
- Clearance attribute for restricting user access Through the `clearance` attribute, you can assign labels to users to restrict access to certain confidential process information.
- Increased user name length – User names greater than 8 bytes are supported.

About User Accounts and Groups

A user account includes the information a user needs to log in and use a system. The following sections describe components of user accounts.

A *role* is a special type of user account that grants special rights to specific users. For more information, see Chapter 1, “About Using Rights to Control Users and Processes” in *Securing Users and Processes in Oracle Solaris 11.4*.

All security policy configurations for user account attributes are provided by the SMF service `account-policy`. In previous Oracle Solaris releases, these were defined in individual configuration files such as `/etc/default/login` or `/etc/security/policy.conf`. For information about configuring security policies through the `account-policy` SMF service, see “Modifying Rights System-Wide As SMF Properties” in *Securing Users and Processes in Oracle Solaris 11.4* as well as the `account-policy`(8S) man page.

User Account Components

The following sections describe components of a user account.

User Names

Users access local or remote systems through their user or *login* names. The extent of access depends on the user's rights.

Before you create accounts, plan on a standard way of assigning user names that facilitates tracking them and associating them with actual persons. With the standard as foundation, you only need to make slight adjustments for contingencies. For example, if your standard is based on users' first initials and surnames, you can easily adjust if two users share the same first initial and last names.

User ID Numbers

Each user name is associated with a unique user identification number (UID). A UID can be any whole number up to 2147483647.

Systems use the UIDs to identify users who are logging in as well as owners of files and directories. For ease of management, an individual with accounts on different systems should

use the same user name and UID. UIDs are required for both regular user accounts and special system accounts.

UNIX™ Groups

A *group*, also known as a UNIX group, is a collection of users who can share files and other system resources, such as users who are working on the same project.

Users are added to groups. Permissions granted to groups control the types of access that members have to files or directories.

Each group must have a name and a group identification (GID) number. The GID identifies the group internally to the system.

A user can belong to two types of groups:

- Primary group – automatically created by the operating system. The group is given access rights to specific files, including those that are created by the user. Each user must belong to a primary group. By default, a new user is added to the `staff` group (GID 10).
- Secondary group – manually created to which users are added as members. Users can belong to up to 1024 supplemental groups.

The priority of secondary groups vary. For example, file ownership requires membership in a primary group. But other applications might rely on a user's belonging to a secondary group regardless of the user's primary group.

Groups can be local to a system or managed through a name service. To simplify group administration, use the LDAP directory service to centrally manage group memberships.

User Passwords

You can specify the password for a new user or force the user to specify a unique password at the user's initial login.

By default, the minimum password length is set to 8 bytes by the `PASSLENGTH` parameter of the `/etc/default/passwd` file. This file includes other configurable parameters that together form the password policy that is enforced at your site.

Policies surrounding password creation and changes must implement the strictest security standards possible such as use of special characters, restricting the reuse of old passwords, case sensitivity, allowing longer passwords, and so on. These practices help prevent password theft and consequent security breaches.

For additional password attributes, see the passwd(1) man page.

Oracle Solaris has other security features other than passwords. Refer to the *Securing the Oracle Solaris Operating System* shelf in https://docs.oracle.com/cd/E37838_01/.

Home Directories

The home directory is the portion of a file system that is allocated to a user for storing private files. You determine the amount of space to allocate for home directories.

A home directory can be either on the local system or on a remote file system. By convention the home directory should be created as /export/home/*username*. For a large site, you should store home directories on a server.

Regardless of the home directory location, users usually access their home directories through a mount point named /home/*username*.

If AutoFS is used to mount home directories, the home mount point acquires a special status. Thus, you cannot create any directories on that mountpoint on any system. For more information about auto-mounting home directories, see "Autofs Administration" in *Managing Network File Systems in Oracle Solaris 11.4*.

Directory Services

Oracle Solaris 11.4 uses LDAP as its directory service. The directory service enables you to store user account information in a centralized manner. The service provides ease of connections to different systems and also ensures consistent user account information.

Guidelines for Assigning User Names, UIDs, and GIDs

Keep the following guidelines in mind when creating user or role names, UIDs, and GIDs:

- **User names –** Should be unique within your organization. For acceptable formats of user names, refer to passwd(5).
- **System accounts –** Observe the restrictions on the use of certain UIDs and GIDs regardless of their being in actual use. For guidance, refer to Table 1, "Reserved UID Numbers," on page 13.

Never use the `nobody` and `nobody4` accounts for running processes. These accounts are reserved for use by NFS. Use of these accounts for running processes can lead to unexpected security risks. Processes that need to run as non-root should use the `daemon` or `noaccess` accounts.

- **System account configuration** – Never change the configuration of the default system accounts, including the login shell of a system account that is currently locked. The only exception to this rule is the setting of a password and password aging parameters for the `root` account.

  Changing a password for a locked user account changes the password but no longer unlocks the account at the same time. A second step to unlock the account by using the `passwd -u` command is now required.

The next sections further describe limitations to observe when assigning UIDs and GIDs.

Reserved UIDs

The following table lists the UID ranges that are assigned to user and system accounts.

TABLE 1 Reserved UID Numbers

UID Numbers	User or Login Accounts	Description
0–99	`root`, `daemon`, `bin`, `sys`, and so on	Reserved for use by the operating system
100–2147483647	Regular users	General purpose accounts
60001 and 65534	`nobody` and `nobody4`	Network File System (NFS) Anonymous users
60002	`noaccess`	Reserved for operating system (OS)

Of the UIDs reserved for the OS, `root` typically has 0, `daemon` 1, and pseudo-user `bin` 2.

As with user names, adopt a scheme for assigning unique UID numbers. For example, some companies assign unique employee numbers. Then, administrators add a number to the employee number to create a unique UID for each employee.

To minimize security risks, avoid reusing UIDs from deleted accounts. If you must reuse a UID, remove the account information completely so that the new user is not affected by attributes set for a previous user.

User ID and Group ID Maximum Values

The following table describes UID and GID limitations.

TABLE 2 Large UID and GID Limitation Summary

UID or GID	Limitations
262144 or greater	Users who use the `cpio` command with the default archive format to copy a file see an error message for each file. The UIDs and GIDs are set to `nobody` in the archive.
2097152 or greater	Users who use the `cpio -H odc` or the `pax -x cpio` commands to copy files see an error message returned for each file. The UIDs and GIDs are set to `nobody` in the archive.
1000000 or greater	Users who use the `ar` command have their UIDs and GIDs set to `nobody` in the archive.
2097152 or greater	Users who use the `tar`, the `cpio -H ustar` command, or the `pax -x tar` commands have their UIDs and GIDs set to `nobody`.

Where User Account and Group Information Is Stored

Depending on your site policy, user account and group information can be stored on the local system's `/etc` files or in the LDAP database file.

Most user account information is stored in the `passwd` file. Password information is stored as follows:

- In the `/etc/passwd` and `/etc/shadow` files when you are using `/etc` files
- In the `people` container when you are using LDAP

Group information is stored in LDAP's `group` container. LDAP also supports password aging.

The `/etc/passwd` File

Password information is stored in `/etc/passwd`. After installation, the file is automatically filled with information about standard daemons and processes. These daemons are started at boot time to perform system-wide tasks such as printing, network administration, or port monitoring. The file also contains the initial user that is created during installation.

As you add or remove packages from the system, additional users and groups are created or removed in the file. You do not perform any administrative tasks on this file.

The fields in the `passwd` file are separated by colons and contain the following information:

username:*password*:*UID*:*GID*:*comment*:*home-directory*:*login-shell*

For example:

```
kryten:x:101:100:Kryten Series 4000 Mechanoid:/export/home/kryten:/bin/csh
```

For a complete description of the fields in the `passwd` file, see the `passwd(1)` man page.

The `/etc/shadow` File

This file stores encrypted user passwords and related information. Typically, you do not manually administer this file.

For the regular user, the fields in the `shadow` file are separated by colons and contain the following information:

username:*password*:*lastchg*:*min*:*max*:*warn*:*inactive*:*expire*

In this file, the password is represented by a hash, such as `$5$cgQk2iUy$AhHtVGx5Qd0.W3NCKjikb8.KhOiA4DpxsW55sP0UnYD`.

For a complete description of the fields in the `shadow` file, see the `shadow(5)` man page.

The `/etc/group` File

This file is a local source of group information. After installation, groups are created by default that support some system-wide tasks such as printing, network administration, or electronic mail. Most of these groups have corresponding entries in the `/etc/passwd` file.

The fields in the `group` file are separated by colons and contain the following information:

group-name:*group-password*:*GID*:*user-list*

For example:

```
bin::2:root,bin,daemon
```

For a complete description of the fields in the `group` file, see the `group(5)` man page.

User and Group Commands

Different commands for users and groups are supported in Oracle Solaris.

The commands described in the following table are used for managing users, roles, and groups.

TABLE 3 Commands Used to Manage Users, Roles, and Groups

Man Page for Command	Description	For Additional Information
useradd(8)	Creates users locally or in an LDAP repository.	"How to Add a User" on page 25
usermod(8)	Changes user properties locally or in an LDAP repository. If the user properties are security-relevant, such as role assignment, this task might be restricted to your security administrator or to the root role.	"How to Modify a User Account" on page 27 "Creating a Role" in *Securing Users and Processes in Oracle Solaris 11.4*
userdel(8)	Deletes a user from the system or from the LDAP repository. Can involve additional cleanup, such as cron job removal.	"How to Delete a User" on page 28
roleadd(8) rolemod(8) roledel(8)	Manages roles locally or in an LDAP repository. Roles cannot log in. Users assume an assigned role to perform administrative tasks.	"Assigning Rights to Users" in *Securing Users and Processes in Oracle Solaris 11.4*
groupadd(8) groupmod(8) groupdel(8)	Manages groups locally or in an LDAP repository.	"How to Add a Group" on page 29

The following table describes the commands that system administrators can use to obtain information about user accounts. This information is stored in various files within the /etc directory.

TABLE 4 Commands Used to Obtain Information About Users

Command Man Page Reference	Description
auths(1)	Lists and manages authorizations.
getent(8)	Displays a list of entries from the administrative database. The information generally comes from one or more of the sources that are specified for the /etc/nsswitch.conf database.
logins(8)	Displays information about users, roles, and system logins. The output is controlled by the command options that are specified and can include user, role, system login, UID, passwd account field value, primary group, primary group ID, multiple group names, multiple group IDs, home directory, login shell, and password-aging parameters.
profiles(1)	Lists and manages rights profiles.
roles(1)	Displays the roles that are assigned to a user.
userattr(1)	Displays the first value that is found for attribute_name. If a user is not specified, the user is taken from the real user ID of the process. Attribute names are defined in the man pages.

Command Man Page Reference	Description
prof_attr(5)	

The groups command lists the groups to which a user belongs. A user can have only one primary group at a time. However, through the newgrp command, users can temporarily change their primary group.

About the User Work Environment

Users need a work environment where they can access not only their home directories but other tools and resources to perform their tasks. This environment is provided by shells.

Supported Shells in Oracle Solaris

Oracle Solaris supports the following UNIX shells:

- GNU Bourne-Again Shell (bash) (/usr/bin/bash)

  Bash is the default shell for users in Oracle Solaris.
- Korn Shell (ksh93) (/usr/bin/ksh)
- C Shell and enhanced C Shell (/usr/bin/csh and /usr/bin/tcsh)
- POSIX-compliant Shell (/usr/xpg4/bin/sh)
- Z Shell (/usr/bin/zsh)

Note - This guide does not provide a comprehensive information about shells. For details, refer to the shells' corresponding man pages. For bash, the default shell for Oracle Solaris users, see the following:

- https://www.gnu.org/software/bash/manual/

  This page provides links to the same documentation in different file formats.
- http://www.tldp.org/LDP/Bash-Beginners-Guide/html/

Oracle Solaris uses user rights management to implement security and provides an alternative to using the superuser model. Based on this implementation, users are assigned profile shells so they can also run privileged applications. Thus, when you display shell information, you might see output similar to the following:

```
$ echo $SHELL
/usr/bin/pfbash
$ which bash
/usr/bin/bash
```

Other supported shells have corresponding profile shells, such as `pfksh`, `pfcsh`, and so on.

For more information about rights, profiles, and roles, see Chapter 1, "About Using Rights to Control Users and Processes" in *Securing Users and Processes in Oracle Solaris 11.4*.

About Initialization Files

Initialization files, also called startup files, are files that the shell uses to create the work environment in which to operate. They also set different variables for user access to directories, resources, and tools.

You can use two types of initialization files:

- User initialization files – a shell script that sets up a work environment for a user after the user logs in to a system. The file defines the characteristics of user work environment, such as search paths and several environment variables. The user initialization file is stored in the user's home directory.
- Site initialization file – initialization file that typically resides on a server or a set of servers. Because of its central location, this file enables administrators to introduce new functionality to the user's work environment while maintaining the user's ability to customize the user's own initialization file. The site initialization file is referenced through a line that is added at the beginning of user initialization file in the following format:

  `. /net/`*machine-name/export/site-files/site-init-file*

Bash has the following initialization files:

- `$HOME/.bash_profile`
- `$HOME/.bash_login`
- `$HOME/.profile`

The `/etc/profile` and `/etc/.login` files can be used to perform global definitions that would apply to all users of a system, in addition to any user specific definitions in user initialization files. However, these files still reside locally on the system, and therefore not centrally administered. The global definitions would not apply if the user goes to another system. Thus, for example, if AutoFS is used to mount the home directory from any system on the network, you would have to modify the system initialization files on each system to ensure a consistent

environment whenever a user moved from system to system. As best practice, do not use these files.

Default File Permissions (umask)

When you create a file or directory, the default file permissions assigned to the file or directory are controlled by the *user mask*. The user mask is set by the `umask` command in a user initialization file. You can display the current value of the user mask by typing `umask` and pressing Return.

The user mask contains the following octal values:

- The first digit sets permissions for the user
- The second digit sets permissions for group
- The third digit sets permissions for other, also referred to as `world`

To determine the `umask` value that you want to set, subtract the value of the permissions you want from 666 (for a file) or 777 (for a directory). The remainder is the value to use with the `umask` command. Suppose that you want to change the default mode for files to 644 (`rw-r--r--`). The difference between 666 and 644 is 022, which is the value you would use as an argument to the `umask` command.

The following table provides `umask` values. It shows the file and directory permissions that are created for each of the octal values of `umask`.

TABLE 5 Permissions for `umask` Values

`umask` Octal Value	File Permissions	Directory Permissions
0	rw-	rwx
1	rw-	rw-
2	r--	r-x
3	r--	r--
4	-w-	-wx
5	-w-	-w-
6	--x	--x
7	--- (none)	--- (none)

The following line in a user initialization file sets the default file permissions to `rw-rw-rw-`.

```
umask 000
```

Managing Users by Using Oracle Enterprise Manager Ops Center

If you are managing physical and virtual operating systems, servers, and storage devices within a large deployment, rather than just managing individual systems, you can use the management solutions available in the Oracle Enterprise Manager Ops Center.

With the Enterprise Manager Ops Center you can manage users and roles for the overall data center. You can add existing local users from your individual systems as users in the Ops Center, and you can control what assets and features these users are authorized to use.

For information, see the appropriate documentation at https://docs.oracle.com/en/enterprise-manager/.

♦ ♦ ♦ CHAPTER 2

Managing User Accounts by Using the Command-Line Interface

This chapter provides basic information for setting up and managing user accounts by using the command-line interface (CLI). It covers the following topics:

Setting Up and Managing User Accounts (Task Map)

The following tasks describe how to set up and manage user accounts by using the command-line interface (CLI).

Task	Description	For Instructions
Gather user information	Use a standard form to gather user information to help you keep user information organized.	"Gathering User Information" on page 23
Customize user initialization files	Set up user initialization files to provide new users with consistent environments.	"How to Customize User Initialization Files" on page 23
Change account defaults for all roles	Change the default home directory and skeleton directory for all roles.	"How to Change Account Defaults for All Roles" on page 24
Create a user account	Create a local user by using the `useradd` command with the account defaults that you have set up.	"How to Add a User" on page 25
Modify a user account	Modify the login information of a user on the system.	"How to Modify a User Account" on page 27
Delete a user account	Delete a user account by using the `userdel` command.	"How to Delete a User" on page 28

Task	Description	For Instructions
Unlock a User Account	Unlock a user account by using the `passwd -u` command.	"How to Unlock a User Account" on page 27
Create, then assign a role to perform an administrative task	Create a local role to enable the user to perform specific administrative commands or tasks with the account defaults that you have set up.	"Creating a Role" in *Securing Users and Processes in Oracle Solaris 11.4*
Create a group	Create a new group by using the `groupadd` command.	"How to Add a Group" on page 29
Create home directories for users without creating a ZFS dataset	Create the home directory for users without creating a ZFS dataset for each user.	"How to Create the Home Directory for a User Without Creating a ZFS Dataset" on page 30
Add qualified user attributes to user accounts in the LDAP directory	Use the `default@` account name to assign qualified user attributes to user accounts in the LDAP directory.	"How to Assign Default User Attributes for LDAP Accounts" on page 31
Add security attributes to a user account	Add the required security attributes after setting up the local user accounts.	"Creating a Role" in *Securing Users and Processes in Oracle Solaris 11.4*
Share a user's home directory	Share the home directory of the user in order to remotely mount the directory from the system of the user.	"How to Share Home Directories That Are Created as ZFS File Systems" on page 32
Manually mount a user's home directory	Manually mount the home directory of the user. Typically, you do not need to manually mount user home directories that are created as a ZFS file system. The home directory is mounted automatically when it is created and also at boot time from the SMF local file system service.	"Manually Mounting a User's Home Directory" on page 34

Setting Up User Accounts by Using the CLI

This section discusses ways of preparing for the creation of user accounts.

About Setting Up User Accounts

Oracle Solaris typically creates a user account home directory as an *individual* ZFS file system and a ZFS dataset that are mounted under the `/export/home` file system. As a result, you can back up each home directory, create a ZFS snapshot of it, and replace its contents from a snapshot.

To administer a user account, you must have the appropriate rights profile such as the User Management rights profile. The tasks in this guide assumes that you have these rights. For

more information, see "Using Your Assigned Administrative Rights" in *Securing Users and Processes in Oracle Solaris 11.4*.

If you are setting up user accounts by using LDAP, you would need to specify LDAP as the repository for user information. Then you can assign user attributes to the user accounts. For more information, see "How to Assign Default User Attributes for LDAP Accounts" on page 31.

For security, you can label processes and files that would control user access to sensitive files. See Chapter 6, "Labeling Processes for Data Loss Protection" in *Securing Users and Processes in Oracle Solaris 11.4*.

Gathering User Information

When setting up user accounts, you would need to gather the following information about each user.

User Name
Role Name
Profiles or Authorization
UID
Primary Group
Secondary Groups
Default Shell
Password Status and Aging
Home Directory Path Name
Mounting Method
Permissions on Home Directory
Mail Server
Add to These Email Aliases
Desktop System Name

Identifying Users by Packages

To find all the users that were delivered by a package (do not represent humans) on this system, you must specify the `--l` option. Note that this search excludes user packages created manually by the `useradd` command.

```
:$ pkg search -lo username, pkg.name user::
```

Caution - Do not try to change the users' output with the `pkg search` command.

How to Customize User Initialization Files

The following task describes how to set up customized initialization files for the users on your system.

1. **Become an administrator or a user with the User Management rights profile.**

   ```
   $ su -
   Password:
   #
   ```

   For more information, see "Using Your Assigned Administrative Rights" in *Securing Users and Processes in Oracle Solaris 11.4*.

2. **Create a skeleton directory for each type of user.**

   ```
   # mkdir /shared-dir/skel/user-type
   ```

shared-dir	The name of a directory that is available to other systems on the network
user-type	The name of a directory to store initialization files for a type of user

3. **Copy the default user initialization files into the directories that you created for different types of users.**

4. **Customize the user initialization files for each user type.**

   For an overview, see "About the User Work Environment" on page 17.

5. **Set the permissions for the user initialization files.**

   ```
   # chmod 744 /shared-dir/skel/user-type/.*
   ```

6. **Verify that the permissions for the user initialization files are correct.**

   ```
   # ls -la /shared-dir/skel/*
   ```

How to Change Account Defaults for All Roles

In the following procedure, the administrator customizes a `roles` directory . The administrator then changes the default home directory and skeleton directory for all roles.

1. **Become an administrator or a user with the User Management rights profile.**

   See "Using Your Assigned Administrative Rights" in *Securing Users and Processes in Oracle Solaris 11.4*.

2. **Create a custom roles directory.**

For example:

```
# roleadd -D
group=other,1  project=default,3  basedir=/home
skel=/etc/skel  shell=/bin/pfsh  inactive=0
expire=  auths=  profiles=All  limitpriv=
defaultpriv=  lock_after_retries=
```

3. **Change the default home directory and skeleton directory for all roles.**

   For example:

```
# roleadd -D -b /export/home -k /etc/skel/roles
# roleadd -D
group=staff,10  project=default,3  basedir=/export/home
skel=/etc/skel/roles  shell=/bin/sh  inactive=0
expire=  auths=  profiles=  roles=  limitpriv=
defaultpriv=  lock_after_retries=
```

   Further use of the `roleadd` command will now create home directories in the `/export/home` directory and will populate the roles' environment from the `/etc/skel/roles` directory.

Managing User Accounts by Using CLI

This section describes different procedures for managing user accounts.

▼ How to Add a User

1. **Become an administrator or a user with the User Management rights profile.**

   See "Using Your Assigned Administrative Rights" in *Securing Users and Processes in Oracle Solaris 11.4*.

2. **Create a local user.**

```
# useradd -d dir -m [-S ldap] username -z no|yes|nodelegation
```

   -d*dir* — Specifies the location of the home directory of the user. An optional server name can be added to the directory path, such as `system1:/home/export/jdoe`. The host information is written to `auto_home` and used by the automounter to mount the home directory.

`-m`
: Creates a local home directory on the system for the user if the directory does not yet exist. However, if the `-d` option specifies a host that is remote, then the home directory is not created.

  If the directory does not yet exist, the home directory is created under the parent directory which is assumed as the the mount point of a ZFS dataset, such as `export/home`. The newly created directory is created as a multilevel dataset.

`-S` ldap
: This option indicates that you are using LDAP and its repository for the account information. If you use LDAP, you can also assign default attributes by to the `default@` user name which are applied to all users. For example:

  ```
  $ useradd -S -K user-attributes default@
  ```

  Multiple values can be specified for *user-attributes* and use the format *key=value*. These attributes are detailed in the `user_attr`(5) man page.

  For more information, see "How to Assign Default User Attributes for LDAP Accounts" on page 31.

`-z yes|no|nodelegation`
: Specifies the default behavior of the `useradd` command when using the `-z` option.

  no
  : Specifies that a new user account has a home directory that is a directory rather than a ZFS file system

  yes
  : Specifies that a new user account has a home directory that is a ZFS file system with delegations specified by the `zfs allow snapshot,mount, create` command

  nodelegation
  : Specifies that a new user account has a home directory that is a ZFS file system with no delegations

See Also After creating a user, you might need to perform some additional tasks, including adding and assigning roles to a user, and displaying or changing the rights profiles of a user. For more information, see "Creating a Role" in *Securing Users and Processes in Oracle Solaris 11.4*.

How to Modify a User Account

The `usermod` command is used to change the definition of a user's login and make appropriate login-related file system changes for the user.

1. **Become an administrator or a user with the User Management rights profile.**
   See "Using Your Assigned Administrative Rights" in *Securing Users and Processes in Oracle Solaris 11.4*.

2. **Modify the user account, as required.**
   For example, to add a role to a user, you would type:

   ```
   # usermod -R role username
   ```

   See the `usermod`(8) man page for details about the arguments and options that you can specify with the `usermod` command.

Example 1 Setting Per-User PAM Policy by Modifying a User's Account

This example shows how to modify a user to set PAM policy. This particular modification specifies that user `jdoe` should only be authenticated with the Kerberos V5 protocol for all PAM services. For more information, see the `pam_user_policy`(7) man page.

```
# usermod -K pam_policy=krb5_only jdoe
```

See Also For additional information, see "Creating a Role" in *Securing Users and Processes in Oracle Solaris 11.4*.

How to Unlock a User Account

1. **Become an administrator or a user with the User Security rights profile.**
   See "Using Your Assigned Administrative Rights" in *Securing Users and Processes in Oracle Solaris 11.4*.

2. **Check the status of the user account that you need to unlock.**

   ```
   $ passwd -s username
   username LK
   ```

3. **Unlock the user account.**

   ```
   $ passwd -u username
   ```

```
passwd: password information changed for username
```

4. **Check if the desired user account has been unlocked.**

```
$ passwd -s username PS
```

Note - For more information about unlocking a user account, see "Guidelines for Assigning User Names, UIDs, and GIDs" on page 12 and the `passwd(1)` man page.

How to Delete a User

1. **Become an administrator.**

```
$ su -
Password:
#
```

Note - This method works whether `root` is a user account or a role.

2. **Archive the home directory of the user.**

3. **Delete the user.**

Use one of the following commands:

- **Use the `useradm` command.**

```
$ useradm delete [-S [files | ldap]] username
```

- **Use the `userdel` command.**

```
$ userdel -r username
```

The `-r` option removes the account from the system.

The preferred method for removing a local home directory for a deleted user is to specify the `-r` option with the `userdel` command. This method is preferred because user home directories are now ZFS datasets. If the user's home directory is on a remote server, manually delete it:

```
$ userdel username
```

For a full list of command options, see the `userdel(8)` man page.

4. **Confirm if the user account has been deleted.**

   ```
   $ useradm list [-S [files | ldap]] username
   ```

Next Steps Additional cleanup might be required if the user that you deleted had administrative responsibilities, for example creating `cron` jobs, or if the user had additional accounts in non-global zones.

How to Add a Group

When an administrator creates a group, the system assigns the `solaris.group.assign/`*groupname* to that administrator, giving the administrator complete control over that group. If another administrator who has the same authorization creates a group, that administrator has the control over that group. An administrator who has control of one group cannot administer the group of the other administrator. For more information, see the `groupadd`(8) and `groupmod`(8) man pages.

1. **Become an administrator with the `root` role or an administrator who has the `solaris.group.manage` authorization.**
   See "Using Your Assigned Administrative Rights" in *Securing Users and Processes in Oracle Solaris 11.4*.

2. **List the existing groups.**

   ```
   # cat /etc/group
   ```

3. **Create a new group.**

   ```
   $ groupadd -g group-ID group-name
   ```

   `-g` Assigns the group ID for the new group

   For more information, see the `groupadd`(8) man page.

Example 2 Setting Up a Group and User With the `groupadd` and `useradd` Commands

This example shows how to use the `groupadd` and `useradd` commands to add the group `scutters` and the user `scutter1` to files on the local system.

```
# groupadd -g 102 scutters
# useradd -u 1003 -g 102 -d /export/home/scutter1 -s /bin/csh \
-c "Scutter 1" -m -k /etc/skel scutter1
64 blocks
```

For more information, see the `groupadd`(8) and `useradd`(8) man pages.

How to Create the Home Directory for a User Without Creating a ZFS Dataset

1. **Become an administrator.**
   See "Using Your Assigned Administrative Rights" in *Securing Users and Processes in Oracle Solaris 11.4*.

2. **Add a new user account and specify the base directory for the same.**

   ```
   # useradd -z no -m username
   80 blocks
   ```

3. **Assign a password to the new user account.**

   ```
   # passwd username
   New Password:
   Re-enter new Password:
   passwd: password successfully changed for username
   ```

   Note - Make sure you have the User Security rights profile assigned in order to assign passwords.

4. **The home directory of the user account is created in the `/export/home` directory.**

   ```
   # cat /etc/passwd
   root:x:0:0:Super-User:/root:/usr/bin/bash
   daemon:x:1:1::/:/bin/sh
   bin:x:2:2::/:/bin/sh
   sys:x:3:3::/:/bin/sh
   adm:x:4:4:Admin:/var/adm:/bin/sh
   dladm:x:15:65:Datalink Admin:/:
   netadm:x:16:65:Network Admin:/:
   netcfg:x:17:65:Network Configuration Admin:/:
   sshd:x:22:22:sshd privsep:/var/empty:/bin/false
   smmsp:x:25:25:SendMail Message Submission Program:/:
   username:x:167:10::/export/home/username:/usr/bin/bash
   ```

Example 3 Creating a User Account With a Home Directory That Is a Directory

Use the following command to create a user account with a home directory that is a directory rather than a ZFS file system:

```
# useradd -D -z no
```

Example 4 Creating a User Account With a Home Directory That Is a ZFS File System With Delegations

Use the following command to create a user account with a home directory that is a ZFS file system with the `mount`, `create`, and `snapshot` delegations:

```
# useradd -D -z yes
```

Example 5 Creating a User Account With a Home Directory That Is a ZFS File System Without Delegations

Use the following command to create a user account with a home directory that is a ZFS file system without delegations:

```
# useradd -D -z nodelegation
```

How to Assign Default User Attributes for LDAP Accounts

For LDAP accounts, an administrator can assign qualified user attributes to users by using the default account name `default@`. The `useradd`, `usermod`, and `userdel` commands have been modified to support this account name. The following example shows how to create a default account and assign default user attributes to users based on their `netgroup` membership.

1. **Become an administrator.**

   See "Using Your Assigned Administrative Rights" in *Securing Users and Processes in Oracle Solaris 11.4*.

2. **Create the default and test accounts in the LDAP name service.**

```
# useradd -S ldap default@
# useradd -S ldap -m admin1
# useradd -S ldap -m admin2
# useradd -S ldap -m admin3
```

3. **Create two netgroups.**

```
# cat netgroups
dba (,admin1,) (,admin2,)
web (,admin3)

# ldapaddent -D cn=admin,ou=profile,dc=gfaden,dc=com -f netgroups netgroup
```

4. **Assign the netgroups as qualifiers to the `default` account.**

```
# usermod -q @dba -K profiles="Oracle DBA" default@
# usermod -q @web -K profiles="Web Admin" default@
```

5. **Assign the `user_attr` entries.**

```
# ldapaddent -d user_attr |grep ^default@
default@:@dba:::profiles=Oracle DBA
default@:@web:::profiles=Web Admin
```

6. **List the effective `user_attr` for each user.**

```
# getent user_attr admin1
default@:@dba:::profiles=Oracle DBA

# getent user_attr admin2
default@:@dba:::profiles=Oracle DBA

# getent user_attr admin3
default@:@web:::profiles=Web Admin
```

Sharing ZFS File Systems

You can share a ZFS file system by setting the `share.nfs` property or the `share.smb` property. Or, you can create a file system share by using the `zfs share` command. By default, all file systems are unshared.

You can assign a `clearance` label to each user, which restricts users' access to confidential process information. You set the value for `clearance` label in the encodings file. When you assign a specific `clearance` to a user you should also assign the user a multilevel home directory as shown in the next procedure.

About sharing and unsharing file systems, see also "Autofs Administration" in *Managing Network File Systems in Oracle Solaris 11.4*.

▼ How to Share Home Directories That Are Created as ZFS File Systems

1. **Become an administrator.**

See "Using Your Assigned Administrative Rights" in *Securing Users and Processes in Oracle Solaris 11.4*.

2. **Create a separate pool for the user home directories.**

   ```
   # zpool create pool mirror disk 1 disk 2 mirror disk 3 disk 4
   ```

   For example:

   ```
   # zpool create users mirror c1t1d0 c1t2d0 mirror c2t1d0 c2t2d0
   ```

3. **Create a container for the home directories.**

   ```
   # zfs create filesystem
   ```

   For example:

   ```
   # zfs create users/home
   ```

4. **(Optional) Assign a multilevel home directory to users who have been assigned a specific `clearance`.**

   ```
   zfs create -o multilevel=on filesystem
   ```

   For more information, see the `clearance`(7) man page.

5. **Set the `share` properties for the home directory.**

   For example, to create an NFS share and set the `share.nfs` property for `users/home`, you would type:

   ```
   # zfs set share.nfs=on users/home
   ```

   When using this new syntax, each file system contains an "auto share" that is created as soon as the `share.nfs` property (or the `share.smb` property) is set to `on` for that file system. The previous command shares a file system named `users/home` and all of its children.

6. **(Optional) Enable labeled sharing when sharing the file system.**

   If you assign a multilevel home directory to a user, then you must enable labeled sharing while sharing file systems.

   ```
   zfs set share.nfs=on share.nfs.labeled=on filesystem
   ```

7. **Confirm that the descendent file system shares are also published.**

   For example:

   ```
   # zfs get -r share.nfs users/home
   ```

The `-r` option displays all of the descendent file systems.

Manually Mounting a User's Home Directory

With ZFS, file systems that are newly created are automatically mounted at boot time from the SMF local file system service.

When creating user accounts, make sure home directories are set up as they are in the name service, at `/home/`*username*. Then, make sure that the `auto_home` map indicates the NFS path to the user's home directory. For task-related information, see "Autofs Administration" in *Managing Network File Systems in Oracle Solaris 11.4*.

If you need to manually mount a user's home directory, use the `zfs mount` command. For example:

```
# zfs mount users/home/jdoe
```

Note - Make sure that the user's home directory is shared. For more information, see "How to Share Home Directories That Are Created as ZFS File Systems" on page 32.

♦ ♦ ♦ CHAPTER 3

Managing User Accounts Interactively

This chapter describes how to set up and manage user accounts by using two new applications which provide menu-based user management. It covers the following topics:

- "Security Considerations"
- "About the `useradm` Application"
- "About the Oracle Solaris Account Management BUI"

Security Considerations

The Oracle Solaris Account Manager BUI and the `useradm` application have the same security policy. Neither application requires any special privileges. The authorizations associated with the account that is used for the RAD connection determines the attributes that can be viewed or modified. A user account with the User Security rights profile can assign any of its user attributes (roles, profiles, labels, privileges, and authorizations) to other users. An account with all authorizations such as the `root` role can create new accounts and assign any attribute to them.

In order to assign user attributes which are not currently assigned to you, the corresponding `solaris.*.assign` authorization needs to be added to your user attributes. For example, to assign additional profiles to a user, the user who invokes the `useradm` application must have the `solaris.profile.assign` authorization. For more information, see "User Rights Management" in *Securing Users and Processes in Oracle Solaris 11.4*.

About the `useradm` Application

The `useradm` tool can be used as a command line or interactively. This section focuses on the interactive mode of that tool.

The interative useradm application replaces the Visual Panels User Manager. This application is a remote administration daemon (RAD) client which provides a menu-driven interface for setting up and managing user accounts. Though the application connects to local RAD servers by default, it can connect to remote RAD servers too. The application provides easier user management, password management, and role management options. Any terminal emulator like putty or the Secure Shell (ssh) service can be used to start this application locally or remotely.

Whether in command line mode or interactive mode, use of useradm requires that you must be an administrator or assume a role which has been assigned the User Security rights profile. See "Using Your Assigned Administrative Rights" in *Securing Users and Processes in Oracle Solaris 11.4*.

For more details about the useradm command, see the useradm(8) man page.

How to Install the useradm Application

The useradm application is not included in a regular Oracle Solaris installation. To use the application, install the package first.

1. **Become the administrator or assume the role that has been assigned the appropriate installation rights.**

2. **Install the useradm package.**

   ```
   $ pkg install useradm
   ```

3. **Set the TERM environment variable to xterm-256color.**

   ```
   $ export TERM=xterm-256color
   ```

4. **If using the application remotely, enable the rad:remote SMF service on the remote system.**

   ```
   $ svcadm enable rad:remote
   ```

Using the Interactive useradm Command

The interactive mode of useradm is activated only by using the add or modify subcommand and with only the -S, -q, or -R options, used singly or in combination.

-S specifies the naming service repository to use. The choices are files to store account information locally or ldap to have the information managed by LDAP.

-q specifies the hostname or netgroup to use for the attributes maintained in the user_attr LDAP container. This option applies only to existing accounts that are maintained by the LDAP name service.

-R specifies the URI to connect to a remote RAD server.

All the following sample commands open the useradm interactive window.

- Creating a new user account jdoe. The information is stored locally.

```
$ useradm add -S files jdoe
```

- Modifying user jsmith's attribute settings stored in LDAP.

```
$ useradm modify -S ldap jsmith
```

- Modifying user jack's account information in LDAP so that the attributes are applicable only when the user is using the system with the host name system1.

```
$ usermod modify -S ldap -q system1 jack
```

Likewise, the following commands connect to a remote server and run useradm interactively. Ensure that the rad:remote SMF service is enabled.

- Starting the useradm application locally while specifying a remote RAD server.

```
$ useradm modify -S ldap -R ssh://login-name@server johnsmith@example.com
```

- Starting the useradm application directly on the remote server.

```
$ ssh joe@server -t useradm modify jane
```

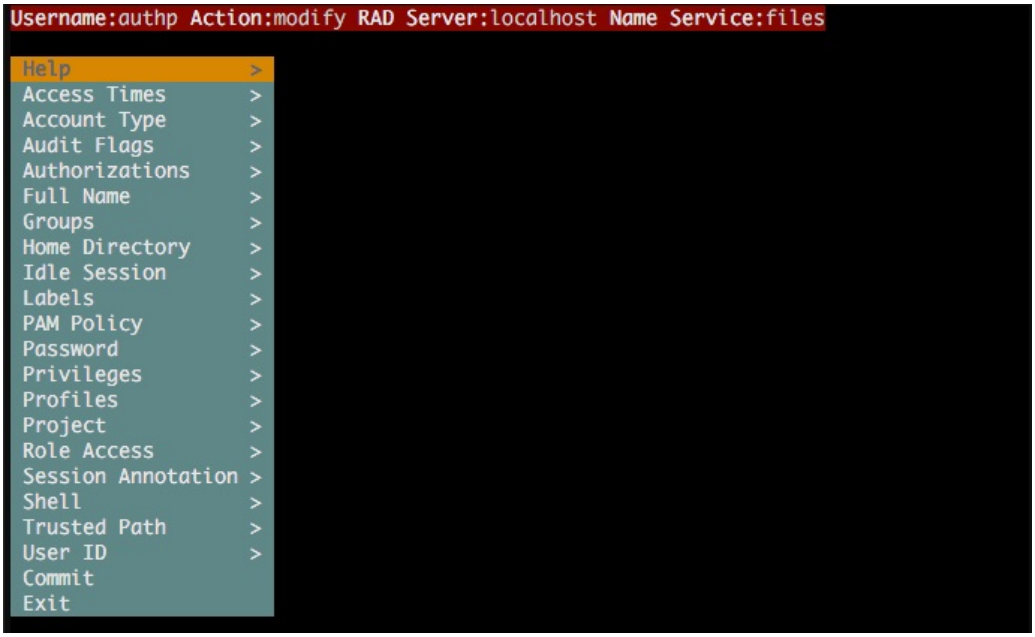
- Using two systems to manage user accounts remotely.

```
$ ssh -t jane@server1 useradm modify -R rads://jean@server2?auth=pam mary
```

  In this example, the application is started on one server to modify a user on another server. The user account to log in to the server specified with -R option – jean in this example – is used to manage mary's account settings. Ensure that jean is assigned either the User Security rights profile or has the solaris.auth.delegate authorization on *server2*.

Attributes in the useradm Window

When you use the useradm command as previously explained, the following window appears:



The following list explains the different options or attributes you can set for users:

Access Times
: Specify the days and times at which specific services can be accessed.

Account Type
: Specify whether the account you are working with is a normal user account or a role.

Audit Flags
: Specify the audit preselection flags of the user.

Annotation
: Specify whether the user must provide an explanation if they are assuming a role or using an authenticated rights profile

Authorizations
: Assign authorizations to user accounts from a list of available options. The names of granted authorizations are listed under the Assigned Groups list

Groups
: Assign a primary group and secondary group to user accounts. Available choices in the Group list depends on your system's configuration. When you specify `-S files`, the list of groups that is displayed is the local list. Otherwise, the list of groups is a combination of local and LDAP groups

Home Directory
: (Optional) If you do not provide any information, the system automatically assigns a default home directory

Idle Session	Specify the timeout for a user account in case the user is inactive for a certain amount of time. You can also specify the action to be taken at timeout
Labels	Assign a minimum label and clearances to each user account to restrict their access to confidential process information
PAM Policy	Specify the PAM policy for the user. For more information, see the `pam_user_policy(7)` man page
Privileges	Specify default privileges that are assigned to the user's initial login shell
Profiles	Assign the rights profile to a user from a list of available profiles. You can also specify if they need re authentication when used
Project	Displays a list of available projects that can be assigned as the user's default
Role Access	Assign a role to a user from a list of available choices
Shell	Assign the user's login shell
Trusted Path	Specify whether the user can remotely access the Trusted Path to manage the RAD services running in immutable zones

▼ How to Manage Users and Roles Interactively

After the interactive window appears, perform the following steps to configure user attributes.

1. **Select the attributes you want to configure for the user.**

   For a description of the attributes, see "Attributes in the `useradm` Window" on page 37.

   Tip - To quickly go to the attribute of your choice, type the first few letters of the attribute.

   Each attribute you select opens additional submenu options.

2. **From the attribute's submenu, select the setting for that attribute.**

   Configure as many attributes as you want.

3. **To save your changes, select Commit from the main menu and press Enter.**

4. **Select Exit to return to the command line interface.**

5. **(Optional) Confirm that all the modifications have been saved.**

   ```
   $ useradm list [-S [files | ldap]] username
   ```

About the Oracle Solaris Account Management BUI

The Oracle Solaris Account Management browser user interface (BUI) provides a browser-based account manager which has the same functionality as the `useradm` application. You can access this BUI using the Oracle Solaris Dashboard. This BUI supports all the functionalities of `useradd`, `usermod`, `userdel`, `roleadd`, `rolemod`, `passwd`, and `login` commands through its interactive menu. It is included in the `system/management/webui/webui-usermgr` package.

▼ How to Access the Oracle Solaris Account Management BUI

Before You Begin Make sure that you have the appropriate authorizations to install the package to access the BUI.

See "Using Your Assigned Administrative Rights" in *Securing Users and Processes in Oracle Solaris 11.4*.

1. **Install the `system/management/webui/webui-usermgr` package.**

   ```
   $ pkg install webui-usermgr
   ```

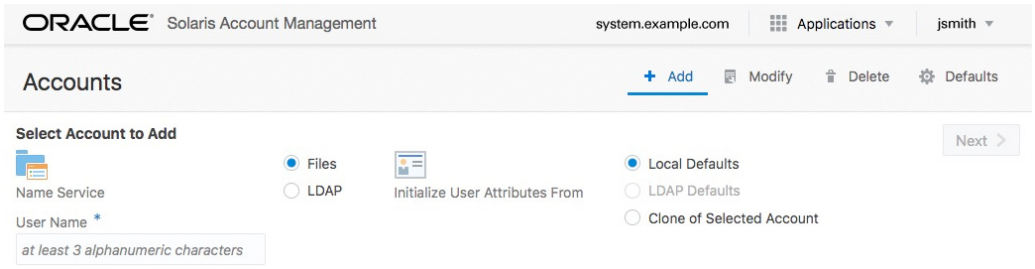
2. **On your browser, go to the following location:**

   `https://`*hostname*`:6787/solaris`

3. **Log in to the Oracle Solaris Dashboard.**

4. **From the "Applications" menu, select "Solaris Account Management".**

The following screen is displayed:



Note - The initial display of either of the two labeling dialogs (Minimum Label or Clearance) might be rendered incorrectly. As a workaround, select the other labeling menu item, and then reselect the previous item.

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