Optimizing the Oracle® Solaris 11 Desktop for a Multiuser Environment

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This article helps Oracle Solaris 11 system administrators to understand how to optimize the Oracle Solaris 11 desktop for a multiuser environment.

This article provides the following information:

Overview of Desktop Optimizations

In a multiuser environment, you can setup a server such that it provides desktop environments to multiple clients, such as Sun Ray clients or VNC viewers. The desktop environment provided to clients can be optimized for better performance and usability. The optimizations for the desktop environment are available in the group/feature/multi-user-desktop image packaging system (IPS) package. You must install this IPS package on the server to enable optimizations for the desktop.

When you install the IPS package, the values of some of the desktop preferences are modified. The modified values override the default desktop preference values. To know about desktop preferences that are modified, see "Desktop Preferences" on page 9. The following example describes the benefit of overriding the default value of the /apps/nautilus/preferences/show_image_thumbnails desktop preference.

Desktop Preference	Overridden Value	Default Value	Benefit
/apps/nautilus/preferences/show_image_thumbnails	NEVER	local_only	If the value is NEVER, the thumbnail of an image file is not displayed. As a result, performance is improved because the I/O operations are reduced that are otherwise required to display a thumbnail.

To enable desktop optimizations, you must install the group/feature/multi-user-desktop IPS package and enable the application/gconf/multi-user-desktop SMF (Service Management Facility) service. For information on how to install the IPS package and enable optimizations, see "Installing Desktop Optimization Packages" on page 3.

After the optimizations are enabled, any user who logs in to the server is provided with the optimized desktop environment. The login process for a user takes less time because of the following reasons:

- Several administrative applications that are not useful to a standard user are not loaded.
- Several graphic and CPU-intensive applications are not loaded.

The following optimizations are provided by the group/feature/multi-user-desktop IPS package:

- GConf based optimizations – These optimizations are managed by using the GConf framework.
- Optimizations for the Mozilla Firefox – These optimizations are specific to the Mozilla Firefox web browser.

For information about customizing desktop optimizations, see "Customizing Desktop Preferences" on page 5.

Note – In this document, the terms "standard user" and "user" are used interchangeably and they refer to a user who is not a system administrator.

Installing Desktop Optimization Packages

The `group/feature/multi-user-desktop` IPS package contains the optimization packages for the desktop environment. To install this package, it is recommended that you use a text-based installation of the Oracle Solaris 11 operating system.

You can install the IPS package in any one of the following boot environments:

- Active boot environment
- New boot environment

▼ How to Install the group/feature/multi-user-desktop IPS Package in the Active Boot Environment

When you install the IPS package in the active boot environment, the active boot environment is modified and a backup boot environment is created.

1   Log in as a privileged user.

2   Install the `group/feature/multi-user-desktop` package.

```
$ pkg install group/feature/multi-user-desktop
```

3   Reboot the system.

```
$ reboot
```

After the package is installed, the desktop optimizations are available in the active boot environment. Now you must enable optimizations. To enable optimizations, see "Enabling Desktop Optimizations" on page 4.

▼ How to Install the group/feature/multi-user-desktop IPS Package in a New Boot Environment

When you install the IPS package in a new boot environment, the active boot environment is not modified and the package is installed in a new boot environment.

1   Log in as a privileged user.

2   Create a new boot environment by using the `beadm` command.

```
$ beadm create beName
```

3   Mount the newly created boot environment to a temporary location.

```
$ beadm mount beName /tmp/beName
```

4   Install the `group/feature/multi-user-desktop` package.

```
$ pkg -R /tmp/beName install group/feature/multi-user-desktop
```

5   Activate the new boot environment.

```
$ beadm activate beName
```

6   Reboot the system.

```
$ reboot
```

After the package is installed, the desktop optimizations are available in the new boot environment. Now you must enable optimizations. To enable optimizations, see "Enabling Desktop Optimizations" on page 4.

Enabling Desktop Optimizations

To enable optimizations, enable the `application/gconf/multi-user-desktop` SMF service.

▼ How to Enable Desktop Optimizations

1   Log in as a privileged user.

2   Enable the SMF service.

```
$ svcadm enable application/gconf/multi-user-desktop
```

The SMF service is enabled.

After the SMF service is enabled, any user who connects to the server is provided with the optimized desktop environment. To know more about the SMF service, see "`application/gconf/multi-user-desktop` SMF Service" on page 5

group/feature/multi-user-desktop IPS Package

The `group/feature/multi-user-desktop` IPS package contains the optimization packages for the desktop. When you install this package, the following packages are installed on the system:

- `web/browser/firefox/multi-user-desktop`
- `gnome/config/gconf/multi-user-desktop`

The following table describes the optimization packages.

Package	Description
`gnome/config/gconf/multi-user-desktop`	Contains optimal values for desktop preferences.
	When this package is installed, the `application/gconf/multi-user-desktop` SMF service is created. Apart from the SMF service, the following files are also created:
	■ `/usr/share/multi-user-desktop/gconf-optimizations.xml`
	■ `/usr/share/multi-user-desktop/gconf-mandatory-optimizations.xml`
`web/browser/firefox/multi-user-desktop`	Contains optimal values for the Mozilla Firefox web browser. These optimal values improve the performance of the Firefox web browser. The optimal values are enabled for all users including administrators.
	When this package is installed, the `/usr/lib/firefox/greprefs/all-multi-user-desktop.js` file is created. This file contains settings for Mozilla Firefox preferences. To view the contents of this file, see "Customizing Mozilla Firefox Optimizations" on page 8.
	Also, a symbolic link to the `all-multi-user-desktop.js` file is created in the `/usr/lib/firefox/defaults/pref/` directory.
	Note – The preferences of the Mozilla Firefox web browser cannot be managed by using the `GConf` framework. Hence, there is a separate optimization package for the Mozilla Firefox web browser.

application/gconf/multi-user-desktop SMF Service

The `application/gconf/multi-user-desktop` SMF service is created when you install the `group/feature/multi-user-desktop` IPS package. When this SMF service is enabled, the optimal values for the `GConf` keys (desktop preferences) are installed in the following paths:

- `/etc/gconf/gconf.xml.multi.user.desktop.defaults`
- `/etc/gconf/gconf.xml.multi.user.desktop.mandatory`

When the SMF service is disabled, the optimal values (overridden values) for the desktop preferences are uninstalled from the previously mentioned paths and the values of the desktop preferences are reset to the default values.

Note –

- A pointer to the `/etc/gconf/gconf.xml.multi.user.desktop.defaults` path is present in the `/etc/gconf/2/local-multi-user-desktop-defaults.path` file.

- A pointer to the `/etc/gconf/gconf.xml.multi.user.desktop.mandatory` path is present in the `/etc/gconf/2/local-multi-user-desktop-mandatory.path` file.

Customizing Desktop Preferences

Only a system administrator can customize both mandatory and default desktop preferences. However, a standard user can customize only the default desktop preferences. For information about default and mandatory desktop preferences, see "Desktop Preferences" on page 9.

The following types of optimizations can be customized:

- `GConf` based optimizations – For information about customizing `GConf` based optimizations, see "Customizing `GConf` Based Optimizations" on page 5.
- Optimizations for the Mozilla Firefox – For information about customizing Mozilla Firefox, see "Customizing Mozilla Firefox Optimizations" on page 8.

Customizing GConf Based Optimizations

Desktop preferences are managed by using `GConf`. The value of the desktop preferences that are used by the Oracle Solaris 11 Desktop is priority—based. The following table shows the preference value that is used by the desktop.

Priority	Type of Desktop Preference	Owner
1	Mandatory	Set by the system administrator
2	Mandatory	Set by the `application/gconf/multi-user-desktop` SMF service
3	Default	Set by the user
4	Default	Set by the system administrator
5	Default	Set by the `application/gconf/multi-user-desktop` SMF service

For example, if the `application/gconf/multi-user-desktop` SMF service sets the value of the `/desktop/gnome/background/draw_background` preference to `false` and the user overrides the same setting and sets the value to `true`, the effective value of the setting that is used by the desktop is `true`. This value is used because the value that is set by the user for the default setting has a higher priority than the value that is set by the SMF service.

Similarly, in the case of mandatory settings, if a system administrator has modified a setting before enabling the SMF service, the effective value of the setting that is used by the desktop is the one that is set by the system administrator and not the SMF service.

Modifying GConf Settings as a Standard User

A standard user can modify any of the default settings. The settings can be customized by using GUI tools such as "Appearance Preferences" that is available in the desktop. For settings that cannot be accessed by using the GUI tools, use the `gconftool-2` command line utility to modify the settings.

Using the gconftool-2 Command-Line Utility

The following examples show the usage of the `gconftool-2` command-line utility.

- To read the current value of a desktop preference, type:

```
$ gconftool-2 --get /desktop/gnome/lockdown/allowed_applications
```

- To set the value of a desktop preference, type:

```
$ gconftool-2 --type string --set /desktop/gnome/font_rendering/hinting "full"
```

- To unset the value of a desktop preference, type:

```
$ gconftool-2 --unset /desktop/gnome/font_rendering/hinting
```

Using the gconftool-2 Utility With XML Files

You can save the `GConf` settings in an XML file and provide this file as an input to the `gconftool-2` utility. The `gconftool-2` configures settings based on the information present in the XML file.

The following examples show the usage of the `gconftool-2` utility with XML files.

- To read the current value of a setting, type:

```
$ gconftool-2 --dump /desktop/gnome/lockdown > /tmp/settings.xml
```

Note – To save the value of a preference in an XML file, you must specify one level up in the preference hierarchy for the `--dump` option. For example, if you want the value of the `/desktop/gnome/lockdown/allowed_applications` preference, you must specify `/desktop/gnome/lockdown` for the `--dump` option.

- To set the value of a setting, type:

```
$ gconftool-2 --load /tmp/settings.xml
```

- To unset the value of a setting, type:

```
$ gconftool-2 --unload /tmp/settings.xml
```

The following sample XML file shows the values that are set by using the `gconftool-2` utility.

```
<?xml version="1.0"?>
<gconfentryfile>
<entrylist base="/desktop/gnome/background">
<entry>
          <key>draw_background</key>
          <value>
              <bool>true</bool>
          </value>
      </entry>
      <entry>
          <key>picture_options</key>
          <value>
              <string>zoom</string>
          </value>
      </entry>
    </entrylist>
</gconfentryfile>
```

Modifying GConf Settings as a System Administrator

A system administrator can modify any of the default and mandatory desktop preferences. The changes made by a system administrator affects all users.

▼ How to Modify GConf Settings as a System Administrator

1   Create the following directories in the `/etc/gconf` directory.

- `gconf.xml.admin.defaults`
- `gconf.xml.admin.mandatory`

2   Create the following files in the `/etc/gconf/2` directory.

- `local-defaults.path`
- `local-mandatory.path`

3   Add the following line in the `local-defaults.path` file.

`xml:readonly:/etc/gconf/gconf.xml.admin.defaults`

4   Add the following line in the `local-mandatory.path` file.

`xml:readonly:/etc/gconf/gconf.xml.admin.mandatory`

5   Save the settings in the default and mandatory directories created in Step 1.

For example:

```
$ gconftool-2 --direct
--config-source xml:readwrite:/etc/gconf/gconf.xml.admin.defaults
--load /tmp/default-settings.xml

$ gconftool-2 --direct
--config-source xml:readwrite:/etc/gconf/gconf.xml.admin.mandatory
--load /tmp/mandatory-settings.xml
```

6   Provide read permissions to all users who can use the settings.

For example:

```
$ chmod -R 755 /etc/gconf/gconf.xml.admin.defaults
$ chmod -R 755 /etc/gconf/gconf.xml.admin.mandatory
```

Restricting Applications

As a system administrator you can restrict the type of applications that users can start by modifying the value of the `/desktop/gnome/lockdown/allowed_applications` preference. This preference specifies the list of applications that users are allowed to start. Based on your requirements, you can add or remove applications from this list.

The following example show how to add a new application to the list of allowed applications.

EXAMPLE 1   Adding a New Application to the List of Allowed Applications

Consider that you have installed a new application /usr/bin/*new_app*. To make this new application available to users, you must add this application to the list of allowed applications by updating the value of the `/desktop/gnome/lockdown/allowed_applications` preference. The following example shows how to update the value of the preference.

1. Copy the existing value of the `/desktop/gnome/lockdown/allowed_applications` preference to an XML file.

   `$ gconftool-2 --dump /desktop/gnome/lockdown > /tmp/new-settings.xml`

2. In the /tmp/new-settings.xml file, add the new application to the list of `allowed_applications`.

   ```
   <value>
   <string>/usr/bin/new_app</string>
   </value>
   ```

   Note – In the `/tmp/new-settings.xml` file, you can remove settings other than the `allowed_applications` setting.

   ---

3. Create the `gconf.xml.admin.mandatory` directory in the `/etc/gconf` directory.

4. Create the `local-mandatory.path` file in the `/etc/gconf/2` directory.

5. Add the following line in the `local-mandatory.path` file.

   ```
   xml:readonly:/etc/gconf/gconf.xml.admin.mandatory
   ```

6. Save the new settings in the mandatory directory created in Step 3.

   For example:

   ```
   $ gconftool-2 --direct
   --config-source xml:readwrite:/etc/gconf/gconf.xml.admin.mandatory
   --load /tmp/new-settings.xml
   ```

7. Provide read permissions to users who can use the setting.

   For example:

   ```
   chmod -R 755 /etc/gconf/gconf.xml.admin.mandatory
   ```

Similarly, to remove an application from the list of "allowed applications" you must remove the entry of the application from the XML file and load the new settings.

Note – Applications that are not present in the list of allowed applications do not start automatically and are not shown in the desktop, menus, or the file browser.

Customizing Mozilla Firefox Optimizations

Only a system administrator can override the optimized values that are set for the Mozilla Firefox web browser. The optimized values are present in the `/usr/lib/firefox/defaults/pref/all-multi-user-desktop.js` file.

The following code shows the values in the `all-multi-user-desktop.js` file.

```
// Disable "safe browsing" feature that hogs CPU, HDD, etc.
pref("browser.safebrowsing.enabled", false);
pref("browser.safebrowsing.malware.enabled", false);
//  Limit the "location-bar suggestions"
pref("browser.urlbar.maxRichResults", 3);
// Disable offline/disk caching of web pages
pref("browser.cache.offline.enable", false);
pref("browser.cache.disk.enable", false);
// Change the default cache:
pref("browser.cache.memory.enable",true);
pref("browser.cache.memory.capacity", 1024);
```

To override the optimized values present in the `all-multi-user-desktop.js` file, create a new file in the `/usr/lib/firefox/defaults/pref/` directory with new values. The file name should be alphabetically higher than the `all-multi-user-desktop.js` file. For example, you can name the file as `all-admin.js`.

Removing Optimization Packages

To remove the optimization packages, perform the following steps:

1. Log in as a privileged user.

2. Uninstall the packages.

   ```
   $ pkg uninstall group/feature/multi-user-desktop
   $ pkg uninstall gnome/config/gconf/multi-user-desktop
   $ pkg uninstall web/browser/firefox/multi-user-desktop
   ```

Note – To remove all the components installed by the optimization packages, revert to the boot environment that was created before installing the `group/feature/multi-user-desktop` package.

Desktop Preferences

The following desktop preferences are modified by the `gnome/config/gconf/multi-user-desktop` package.

- Default preferences
- Mandatory preferences

Note – You can modify the value of desktop preferences by using the `gconftool-2` utility. For more information about the `gconftool-2` utility, see the *gconftool-2(1)* man page.

Default Preferences

Any user can modify the preference value. You need not be a system administrator to modify the preference value. The following table lists the default preferences.

TABLE 1   Default Preferences

GConf Key	Key Type	Optimized Value	Default value
/desktop/gnome/background/color_shading_type	string	solid	solid
/desktop/gnome/background/picture_options	string	none	zoom
/desktop/gnome/background/primary_color	string	#000000	#76848F
/desktop/gnome/background/draw_background	bool	false	true
/desktop/gnome/font_rendering/hinting	string	none	full
/desktop/gnome/sound/event_sounds	bool	false	N/A

Mandatory Preferences

A standard user cannot modify the value of the preference. Only the system administrator can modify the preference value. The following table lists the mandatory preferences.

TABLE 2   Mandatory Preferences

GConf Key	Key Type	Optimized Value	Default value
/desktop/gnome/multi-user-desktop/version	int	1	N/A
/desktop/gnome/interface/enable_animations	bool	false	true
/desktop/gnome/interface/menus_have_icons	bool	true	true
/apps/gnome-session/options/logout_effect	string	black	N/A
/apps/metacity/general/reduced_resources	bool	true	false
/apps/metacity/global_keybindings/panel_run_dialog	string	disabled	[Alt]F2
/apps/metacity/global_keybindings/panel_run_dialog_list	string	disabled	[Mod4]r
/apps/nautilus/preferences/show_directory_item_counts	string	never	local_only
/apps/nautilus/preferences/show_icon_text	string	never	local_only
/apps/nautilus/preferences/show_image_thumbnails	string	never	local_only
/apps/nautilus/preferences/preview_sound	string	never	local_only

TABLE 2 Mandatory Preferences *(Continued)*

GConf Key	Key Type	Optimized Value	Default value
/apps/nautilus/preferences/background_fade	bool	false	true
/apps/panel/global/enable_animations	bool	false	true
/desktop/gnome/session/required_components/windowmanager	string	metacity	N/A
/desktop/gnome/session/required_components/filemanager	string	nautilus	N/A
/desktop/gnome/session/required_components/panel	string	gnome-panel	gnome-panel
/apps/panel/global/locked_down	bool	true	false
/desktop/gnome/lockdown/restrict_application_launching	bool	true	false

Note –

- The following mandatory preferences do not affect system administrators:
  - /apps/panel/global/locked_down
  - /desktop/gnome/lockdown/restrict_application_launching
- The /desktop/gnome/lockdown/allowed_applications preference is required for optimization. However, this preference is delivered as a part of the library/gnome/gnome-libs package and is not modified by the group/feature/multi-user-desktop package.

  To understand how to modify the /desktop/gnome/lockdown/allowed_applications preference, see .

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