Device Manager

For

Solaris

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Revision History

Version Number	Revision Date	Written By	Reviewed By	Description of Changes
1.0	01-July-2008	Narendra Pant Thiagarajan Chandrasekaran	Vijay Upreti	Initial Document
1.1	26-Sep-2008	Narendra Pant Thiagarajan Chandrasekaran	Vijay Upreti	Included DFD and modified the Functional Requirements

Overview

Device Manager provides the list of all the devices attached to the System. It also provides information regarding each device. It provides a complete control of the devices attached to the System. It provides the user a facility to add and remove devices. It also allows enable/disable devices. Basically

Design Functionalities

Below are the design functionalities that the Device Manager should address.

1. Device Listing

   The Device Manager should contact the HAL(Hardware Abstraction Layer) Database and display the list of devices attached to the system in a tree format. The devices displayed can be in enabled or disabled mode based on the status of the device. This status information should be stored and retrieved every time machine is rebooted. No Access restrictions needs to put for listing the devices attached. All the users will be able to get the device listing.

   Device Status

   Enabled State: The device will be working properly in this state.

   Disabled State: The device will not be working in this state. It will not respond to any actions done on the device.

Invalid Driver: Devices for whom the drivers are not installed or the installed driver is not matching the device will be listed in this state. 

Device Information

Below is the device information which should be displayed in the Device Manager

Device Name	:	Name of the device
Device Type	:	Type of the device(Disk Drive,PCI Device etc)
Device Location	:	Location of the device
Driver Provider	:	Name of the Vendor providing the device driver
Driver Date	:	Driver Installation Date
Driver Version	:	Device Driver Version

2. Auto-Detection of status of the attached devices

   Device Manager should automatically detect the newly attached/detached devices and should provide alerts to the user.

   When a device is detected, Device manager can do any of the below

   a. Device manager can add the device driver and pop-up a notification alert.

   b. Device manager can prompt the user to provide the driver along with a notification alert.

3. Adding a new Device Driver

   Device Manager should provide an option for adding new drivers for the device attached. It should allow driver files to be provided as a tar/zip format or in package format. The User can provide the driver file location and the driver will be installed from the file provided. Adding a new device driver should be done based on the privileges the user has. For Example, only root users should be able to add drivers.

4. Update an existing Device Driver

   An existing device might have a new version of driver released. To add the newly available driver, updating the existing driver should be provided. Information regarding the existing driver should be stored in a local database (as File system/ database) for rollback purposes. Providing the driver file for update is same as that of adding a new driver. Updating a device driver should be done based on the privileges the user has. For Example, only root users should be able to update drivers.

5. Rollback a Device Driver

   While roll backing a driver, an entry for the previous driver for the device should be queried in the local database maintained. If an entry is found, the newly added drivers should be removed and the old drivers should be loaded. Roll backing a new device driver should be done based on the privileges the user has. For Example, only root users should be able to rollback drivers.

6. Enable/Disable a Device Driver

   Device Manager should provide the user the facility to enable/disable a device. Disabling a driver will make the device not to function and an alert should be displayed to the user. Device Manager should mark the device in the driver with a different icon.

7. Removing a Device Driver

   Device Manager should have an option for removing an existing device driver making the device to stop functioning. Alerts should be displayed to the user

and the Device Manager Tree should be updated with the new device status. A warning should be displayed before the user attempts to remove the driver. Only users with root privileges should be allowed to remove the drivers.

8. Diagnostic functionality to query the working of the Device

   Device Manager should provide the user a mechanism for checking whether the device is functioning properly or not.

9. Displaying alerts on a occurrence of particular events

   Certain Updates that are done by the device manager should be displayed as an alert to the user at the bottom-right of the desktop.

   Notifications can be for the below

   Device Enabled : Whenever user enables a device, an alert should appear.

   Device Disabled : Whenever user disables a device, an alert should appear.

   Device Added : Whenever user adds a new driver, an alert should appear.

   Device Removed : Whenever user removes a driver, an alert should appear.

   Device Not Installed : Whenever a new device is detected but the driver is not Available, an alert prompting the user to install should appear.

   Notification alert is provided based upon the event notification from devfsadm.

10. Device Manager Service will have a daemon process running that will notify the user regarding the occurrence of various changes in device statuses and will also alert Device Manager main thread to update the device tree with the modified device list from HAL Database.

Software Requirement Specification

Main purpose of this tool (Device Manager) is to provide user the flexibility of device management.

Functional Requirements

Functional or behavioral requirements are the subset of the overall system requirements. Below are the functional modules parts of the Device Manager.

Module 0: Query HAL Database

Inputs : None

Processing :

Output : List of all the devices connected to the system.

Module 1: Display list of devices

Inputs : List to all devices in HAL

Processing : Displaying the devices in tree format.

Output : None

Module 2: Disable a device

Inputs : Device Name, Device Location

Processing : Add an entry for the device status in the local database and disable the device.

Output : The device will be marked as disabled with a different graphical icon in the Device Manager

Module 3: Enable a device

Inputs : Device Name, Device Location

Processing : Add an entry for the device status in the local database and disable the device.

Output : The device will be marked as enabled with a different graphical icon in the Device Manager

Module 4: Update Driver

Inputs : Device Name, Device Location, New Driver File, Old Driver Provider, Old Driver Version, Old Driver File

Processing :

- Make a copy of the old driver. Overwrite the existing copy with the current old driver
- Add the new driver from the file provided as the new driver.
- Verify the driver by using the diagnostic functionality of the device manager to check the functioning of the device.

Output : None

Module 5: Rollback a Driver

Inputs : Device Name, Device Location

Processing :

- Check the local database for the existence of the driver matching the device.
- Overwrite the existing driver with the old driver.
- Verify the driver by using the diagnostic functionality of the device manager to check the functioning of the device.

Output : None

Module 6: Uninstall a Driver

Inputs : Device Name, Device Location

Processing :

- Remove the driver attached with this device.

Output : None

Module 7: Notification Daemon

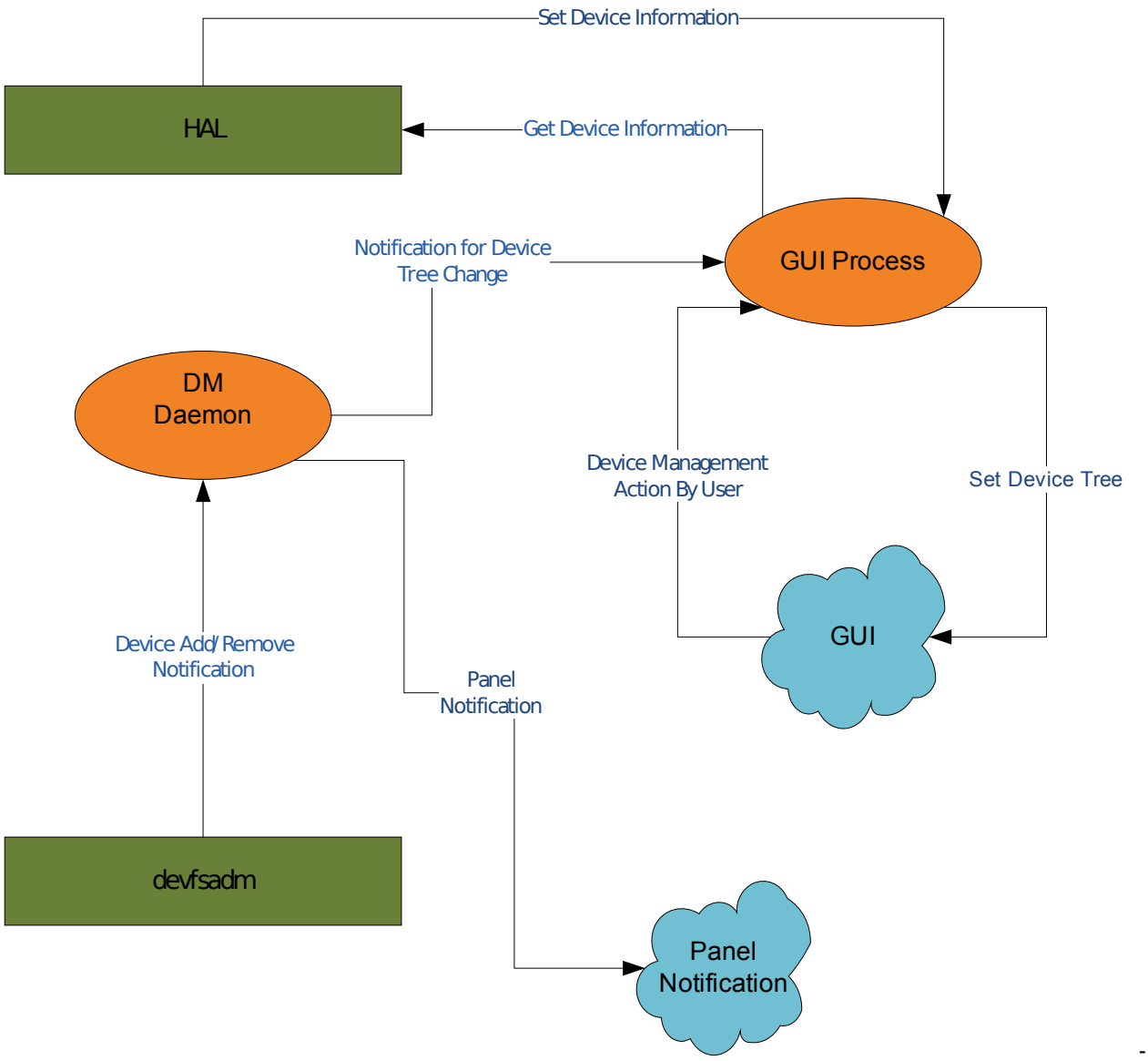
Inputs : Device Name, Device Type, Matched Driver

Processing :

- This daemon will receive the inputs from devfsadm.
- Display alert notification in the panel notification area of the system tray regarding the change in the device status.
- Send an alert signal to Device Manager prompting it to update its device tree list from the HAL.

Output : None

Data Flow Diagram



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