System

Linux system tools, administration and tips

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ArchLinux Upgrade Issues

Error: key "ABCDE1282828181" could not be looked up remotely

Upgrade archlinux-keyring: `pacman -S archlinux-keyring`

Unable to get past login window after upgrading

This is caused by Nvidia driver being upgraded

nvidia-dkms: `pacman -S nvidia-libgl`

Failed to start load kernel modules after upgrade:

Possible causes:

- `broadcom-wl` module
- Solved by re-"makepkg" `broadcom-wl` from **AUR**
- Find error message in `systemctl status systemd-modules-load.service`

CentOS Installation Issues

HP Microserver Gen 7

Kernel Panic on Boot (Both Live USB and New Installation)

Add the following lines to the kernel boot parameters: `nolapic clocksource=hpet`

Blank Screen on Startup

Append `nomodeset` to kernel param

Changing Default S2RAM to USWSUSP Suspend Module

If you have any issues to suspend your laptop e.g. `suspend` command doesn't work on your laptop, try changing the default sleep module to `uswsusp`:

1. Edit `/etc/pm/config.d/module` and add the following line: `SLEEP_MODULE=uswsusp`
2. Edit `/etc/pm/config.d/defaults` and add the following line: `S2RAM_OPTS="-f"`
3. Reboot and try to let her sleep.

References

- OpenSuse Documentation on Suspending
- AskUbuntu Thread

Fixing Incorrect Lid State by Hacking DSDT

When I install a Linux distro to my VAIO notebook, I found that there is an annoying bug with the lid switch. It does not get updated whenever I suspend on lid close, it means `cat /proc/acpi/button/lid/LID/state` will output `state: close`. When I close the lid again, it won't suspend, instead, it will change the state to open. So in order for it to suspend again on lid close after the first suspend, I have to close it, reopen the lid and close it again.

I have tried installing Linux Mint, Fedora, Fuduntu and Xubuntu, but it is not fixed in any of the distros. So, I don't think it is distro problems. While researching this issues (which I spent two full days), I found that Linux got an amazing feature that enable users to dynamically loading DSDT at boot time, there is no need to update the BIOS. So here's the instuctions:

1. Install `iasl` using `yum`, `apt-get` or whatever package management you are using.
2. Extract DSDT:

   ```
   $ sudo cat/sys/firmware/acpi/tables/DSDT > dsdt.aml
   ```

3. Disassemble `dsdt.aml` using the following command, this should create a new file `dsdt.dsl`:

   ```
   $ iasl -d dsdt.aml
   ```

4. Compile it using:

   ```
   $ iasl -tc dsdt.dsl
   ```

5. Fix any compiler errors, warnings and remarks. On my machine, the output is:

   ```
   dsdt.dsl  1352:                          And (CTRL, 0x1E)
   Warning  1106 -                                  ^ Result is not used, operator has no
   effect

   dsdt.dsl  1584:                      0x00000000,         // Length
   Error    4122 -                              ^ Invalid combination of Length and
   Min/Max fixed flags

   dsdt.dsl  2443:                                  Name (_T_0, 0x00)
   ```

```
Remark   5111 -            Use of compiler reserved name ^  (_T_0)


dsdt.dsl  2521:                                  Name (_T_0, 0x00)
Remark   5111 -            Use of compiler reserved name ^  (_T_0)
```

a. The first one is on line 1352 can be fixed simply by changing `And (CTRL, 0x1E)` to `And (CTRL, 0x1E, CTRL)`.
b. The second one is on line 1584, the length should be `Range Maximum` - `Range Minimum` + 1, on my machine, so fire up a hex calculator and start subtracting. On my machine, it's `0xE0000000` (`0xDFFFFFFF` - `0x00000000` + `0x00000001`).
c. The third and fourth line is on line 2443 and 2521, because it uses a reserved name, simply replacing all instances of `_T_0` to `T_0` will stop the complaints. In vim, it is as simple as issuing `:%s/_T_0/T_0/g` in command mode.

6. Once everything is fixed (no errors, warning or remarks), add the following line to `_WAK` method, simply search for `_WAK` in `dsdt.dsl`:

```
If (LNotEqual (0x00, LIDS))
{
Store (0x00, LIDS)
Notify (\_SB.LID, 0x80)
}
```

NOTE 1: You might need to change `\_SB.LID` to match your path to `LID` method or on some machine `LID0`. Method name is preceded by an `_` (underscore), so you can search for `_LID` in `dsdt.dsl`. After you found it, you have to determine the scope, scroll up until you found `Scope` keyword that your `LID` or `LID0` method belongs to, inside the bracket is the scope name. It may be in more than one scope, so, it might be `\_PCI0.SB.LID`. If you specify an incorrect path to `LID` method, you will receive the following error:

```
dsdt.dsl 300:  Notify (LID, 0x80)
Error 4068 - ^ Object is not accessible from this scope (LID_)
```

NOTE 2: What this function does is just to update the lid state once it is resumed from sleep. According to the ACPICA documentation, `_WAK` method is called by `AcpiLeaveSleepState()` function of ACPI. If the lid is open, the `LIDS` variable is `0x00`, or `0x01` otherwise. So these few lines translate to "if lid state is not open (closed), change lid state to open and call `LID` method".

7. Compile it using `iasl -tc dsdt.dsl`.
8. If no errors, warnings or remarks, add the following lines to `/etc/grub.d/01_acpi`:

```
# Uncomment to load custom ACPI table
GRUB_CUSTOM_ACPI="/boot/dsdt.aml"


# DON'T MODIFY ANYTHING BELOW THIS LINE!
```

```
prefix=/usr
exec_prefix=${prefix}
libdir=${exec_prefix}/lib

. /usr/share/grub/grub-mkconfig_lib
#. ${libdir}/grub/grub-mkconfig_lib

# Load custom ACPI table
if [ x${GRUB_CUSTOM_ACPI} != x ] && [ -f ${GRUB_CUSTOM_ACPI} ] \
   && is_path_readable_by_grub ${GRUB_CUSTOM_ACPI}; then
   echo "Found custom ACPI table: ${GRUB_CUSTOM_ACPI}" >&2
   prepare_grub_to_access_device `${grub_probe} --target=device
${GRUB_CUSTOM_ACPI}` | sed -e "s/^/  /"
   cat << EOF
acpi (\$root)`make_system_path_relative_to_its_root
${GRUB_CUSTOM_ACPI}`
EOF
fi
```

9. Add executable bit to it:

```
$ sudo chmod +x /etc/grub.d/01_acpi
```

10. Copy the new `dsdt.aml` to `/boot`:

```
$ sudo cp dsdt.aml /boot
```

11. Regenerate `grub.cfg`:

```
$ sudo grub2-mkconfig -o /boot/grub2/grub.cfg
```

12. Reboot

References

- Archwiki on DSDT
- Redhat's Bug Report
- Ubuntu's Bug Report 1
- Ubuntu's Bug Report 2
- Somebody's blog on fixing DSDT errors, remarks and warnings

- ACPICA Documentation

JournalD Administration

Optimizing JournalD Disk Space Usage

Edit `/etc/systemd/journald.conf` and change the following line:

```
SystemMaxUse=200M
```

To check disk space used by journald: `journalctl --disk-usage`

Linux on Macbook Administration

Blessing the Linux Kernel

1. Boot into Mac Recovery
2. Start terminal and enter:
3. `bless --folder /Volumes/ARCH_EFI/EFI/arch/grub/ --file /Volumes/ARCH_EFI/EFI/arch/grub/grub`

Changing Apple keyboards (Macbook or USB) fnmode in Linux

Changing it temporarily, as root:

```
echo 2 > /sys/module/hid_apple/parameters/fnmode
```

Changing it Permanently:

Edit `/etc/modprobe.d/hid_apple.conf` and add the following line:

```
options hid_apple fnmode=2
```

SELinux - Services Blocked by SELinux

SELinux Blocked Apache Access to Files

```
setsebool -P httpd_unified 1
sudo /sbin/restorecon -R /var/www/html
```

VSFTPD OOPS Error

Issue the following command: `setsebool -P ftp_home_dir 1`

SSH bind port error permission denied

Issue the following command: `semanage port –a –t ssh_port_t –p tcp 1234`

Permission denied HTTP Error 403

Issue the following command: `chcon -R --reference=/var/www /path/to/webroot`

SELinux Denied HTTPD Access to MYSQLD on 127.0.0.1

1. `grep mysqld /var/log/audit/audit.log | audit2allow -M mysqld`
2. `semodule -i mysqld.pp`

SELinux Denied FTP Access to SMB Share

1. Try to login with ncftp first and you will see the error "`OOPS: cannot change directory: /path/to/samba_share`"
2. Execute command: `su -c "grep ftpd_t /var/log/audit/audit.log | allow2audit -M ftpd_smb && semodule -i ftpd_smb"`
3. Try to login again with ncftp and ls command will return empty list a although it isn't
4. Execute command: `su -c "grep ftpd_t /var/log/audit/audit.log | allow2audit -M ftpd_smb && semodule -i ftpd_smb"`
5. Execute command => `sudo setsebool -P allow_ftpd_full_access on`
6. Execute command => `sudo setsebool -P ftp_home_dir on`

Owncloud Custom Data Directory Denied

Assume owncloud data directory: `/var/data`

```
Install policycoreutils-python
/etc/init.d/restorecond start
chkconfig restorecond on
semanage fcontext -a -t httpd_sys_content_t '/var/data(/.*)?'
restorecon -Rv /var/data
```

Standard CentOS Workstation Setup

Install GUI (MATE Desktop)

1. `sudo yum install epel-release`
2. `sudo yum groupinstall 'X Window System'`
3. `sudo yum groupinstall 'MATE Desktop'`
4. `sudo systemctl isolate graphical.target`
5. `sudo systemctl set-default graphical.target`

Install Printer

1. `sudo yum install cups`
2. `sudo yum groupinstall "Development Tools"`
3. `sudo systemctl enable cups`
4. `sudo systemctl start cups`
5. `sudo yum install foomatic`

Install drivers for the printer available at Open Printing

Optional - GUI WiFi Support

1. `sudo yum install NetworkManager-wifi`