

How to make rules for the devices on the AtlasCar

Miguel Oliveira May 2010

We use the command `udevadm` and will create a new rules file on `/etc/udev/rules.d/`
We should name it `91-atlascar1a.rules`

After inserting a Aten serial to usb converter, it will be normally mapped to `/dev/ttyUSB0`
by doing:

```
#udevadm info -a -p $(udevadm info -q path -n /dev/ttyUSB0)
```

you get a lot of information. We can use the attributes to create rules for creating the devices. A simple rule for an ATEN usb2serial converter (chipset prolific technologies)

```
KERNEL=="4-2" , SUBSYSTEMS=="usb" , ATTRS{busnum}=="4" ,  
ATTRS{manufacturer}=="Prolific Technology Inc. " , NAME="atlascar_usb_0"
```

Hence, whenever such equipment is plugged into the usb busnum 4 kernel 4-2, it is mapped to `/dev/atlascar_usb_0`

In the atlascar computers, the USB entries are like the following drawing:

```
bus 4-2*          bus 4-1*  
bus 5-2*          bus 5-1*
```

And the cable that comes outside is

```
bus 8-2*          bus 8-1*
```

We use the following rules for aten converters:

```
KERNEL=="4-2" , SUBSYSTEMS=="usb" , ATTRS{busnum}=="4" ,  
ATTRS{manufacturer}=="Prolific Technology Inc. " , NAME="atlascar_usb_0"
```

```
KERNEL=="4-1" , SUBSYSTEMS=="usb" , ATTRS{busnum}=="4" ,  
ATTRS{manufacturer}=="Prolific Technology Inc. " , NAME="atlascar_usb_1"
```

```
KERNEL=="5-1" , SUBSYSTEMS=="usb" , ATTRS{busnum}=="5" ,  
ATTRS{manufacturer}=="Prolific Technology Inc. " , NAME="atlascar_usb_3"
```

```
KERNEL=="5-2" , SUBSYSTEMS=="usb" , ATTRS{busnum}=="5" ,  
ATTRS{manufacturer}=="Prolific Technology Inc. " , NAME="atlascar_usb_2"
```

```
KERNEL=="8-2" , SUBSYSTEMS=="usb" , ATTRS{busnum}=="8" ,  
ATTRS{manufacturer}=="Prolific Technology Inc. " , NAME="atlascar_usb_5"
```

```
KERNEL=="8-1" , SUBSYSTEMS=="usb", ATTRS{busnum}=="8",  
ATTRS{manufacturer}=="Prolific Technology Inc. " , NAME="atlascar_usb_4"
```

Hence, the ATEN converters plugged onto the atlascar usb entries will be mapped by position, like:

```
/dev/atlascar_usb_0*           /dev/atlascar_usb_1*  
/dev/atlascar_usb_2*           /dev/atlascar_usb_3*
```

And the cable that comes outside is

```
/dev/atlascar_usb_4*           /dev/atlascar_usb_5*
```

By convention, all mapped devices by our rules should start with “atlascar”.

Using the equipments serial number in the attributes for comparison, some other specific device rules have been created for other equipments on-board the atlascar. Namely:

1. 3dlaser sick mounted on top RS422/485 Adapter using rule (connected to any usb entry):
SUBSYSTEMS=="usb", ATTRS{serial}=="FTBR7FFF", NAME="atlascar_laser_0"

2. Hokuyo laser mounted on the hood. This rule does not have a serial number so if other hokuyos are purchased we won't be able to do this (connected to any usb entry).
SUBSYSTEMS=="usb" , ATTRS{manufacturer}=="Hokuyo Data Flex for USB" ,
ATTRS{product}=="URG-Series USB Driver" , NAME="atlascar_laser_1"

3. Inertial measurement unit from xsens (connected to any usb entry).
SUBSYSTEMS=="usb" , ATTRS{manufacturer}=="Xsens" , ATTRS{product}=="Xsens USB-serial
converter" , ATTRS{serial}=="XSSH43UA" , NAME="atlascar_imu_0"

How to write the file /etc/udev/rules.d/91-atlascar1a.rules

Use the command

```
#udevadm info -a -p $(udevadm info -q path -n /dev/ttyUSB*)
```

To find out the device attributes . You can use any attribute as a comparison for a rule.

After saving the rules file do a reload:

```
#udevadm control --reload-rules
```

To test your rules file you may do a:

```
#udevadm monitor
```

And then use an event like this " /devices/pci0000:00/0000:00:1d.2/usb8/8-2/8-2:1.0/ttyUSB0/tty/ttyUSB0 " to do a
#udevadm test /devices/pci0000:00/0000:00:1d.2/usb8/8-2/8-2:1.0/ttyUSB0/tty/ttyUSB0

Some debug info will be printed.

References:

1. http://wiki.archlinux.org/index.php/Map_Custom_Device_Entries_with_udev
2. <http://blog.mypapit.net/2008/05/how-to-use-usb-serial-port-converter-in-ubuntu.html>
3. <http://manpages.ubuntu.com/manpages/hardy/man4/uplcom.4.html>
4. <http://ubuntu-ky.ubuntuforums.org/showthread.php?t=322759&page=3>
5. http://www.reactivated.net/writing_udev_rules.html
6. <http://linux.derkeiler.com/Mailing-Lists/Debian/2008-11/msg01267.html>
7. <http://debian.pastebin.com/Bft7phBw>