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This version (14 Feb 2019 23:06) was *approved* by rgetz.
The Previously approved version (25 Nov 2018 19:23) is available.

Customizing the Pluto configuration

If you are already on a 192.168.2.* network

In RFC 1918 [<https://tools.ietf.org/html/rfc1918>] the Internet Engineering Task Force [<http://ietf.org/>] has directed the Internet Assigned Numbers Authority [<https://www.iana.org/>] to reserve the IPv4 address range the **192.168.*.*** (and others) for private networks [https://en.wikipedia.org/wiki/Private_network]. Analog Devices picked the **192.168.2.*** subnet for it's private network for host to PlutoSDR devices, but there isn't anything stopping other people (including yourself) to be running a real network on the **192.168.2.*** subnet.

It's a quick update to change the PlutoSDR network settings, which is described below.

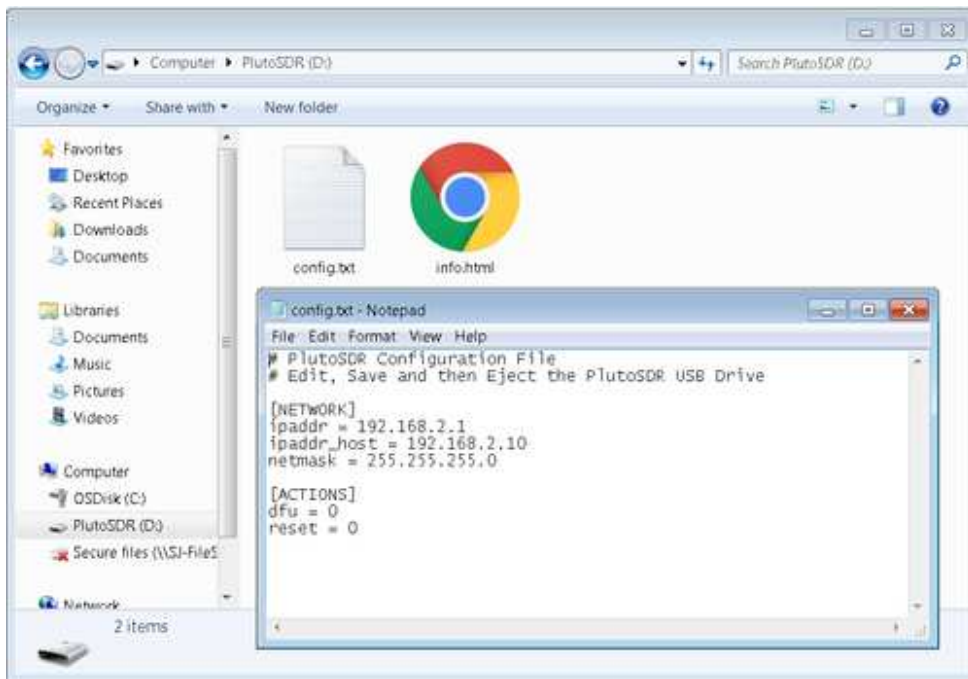
Multiple devices

When using multiple PlutoSDR devices on the same host, there are a few options:

- usb mode via libio, no changes are required, and things will work out of the box
- network mode, where changes to the network settings are required (more below).

In network mode, the default configuration is to have an IP address [https://en.wikipedia.org/wiki/IP_address] for the host (**192.168.2.10**), and the actual PlutoSDR device (**192.168.2.1**). As one can expect - IP addresses are expected to be unique, and the default configuration works well when you have one device, but not as well when you have multiple.

In order to use multiple devices, you must change their IP address. This is managed by updating the **config.txt** file on the PlutoSDR mass storage device.



```
# Device Configuration File
# Edit, Save and then Eject the USB Drive

[NETWORK]
hostname = pluto
ipaddr = 192.168.2.1
ipaddr_host = 192.168.2.10
netmask = 255.255.255.0
```

It's a simple matter of updating the `[NETWORK]` settings of the PlutoSDR `ipaddr` (default is `192.168.2.1`), and your host PC settings `ipaddr_host` (default of `192.168.2.10`). `ip_addr` and `ipaddr_host` must be unique, and must be on the same subnet. Separate Plutos on the same machine must be assigned different subnets. It's not recommended to use the real internet subnet. After saving the file back to the PlutoSDR mass storage device, simply eject (not unplug) the PlutoSDR mass storage device from your host.

Zeroconf

There is a [Avahi](http://avahi.org/) [<http://avahi.org/>] daemon running on the PlutoSDR. Avahi is a free [Zero-configuration networking](https://en.wikipedia.org/wiki/Zero-configuration_networking) [https://en.wikipedia.org/wiki/Zero-configuration_networking] (zeroconf) implementation, including a system for multicast [DNS/DNS-SD](#) service discovery. If your `hostname` is unique and your host is zeroconf enabled, you can simply connect to your PlutoSDR using `hostname.local`.

```
michael@mhenneri-D04:~$ iio_info -n pluto.local
Library version: 0.9 (git tag: f7cde8f)
Compiled with backends: local xml ip usb
IIO context created with network backend.
Backend version: 0.9 (git tag: v0.9 )
Backend description string: 192.168.2.1 Linux (none) 4.6.0-25369-g51ebbb9 #120 SMP PRE
EMPT Thu Apr 6 09:04:26 CEST 2017 armv7l
IIO context has 2 attributes:
    local,kernel: 4.6.0-25369-g51ebbb9
    ip,ip-addr: 192.168.2.1
```

```
IIO context has 5 devices:
```

```
[--snip--]
```

Config File ACTIONS

```
[ACTIONS]
diagnostic_report = 0
dfu = 0
reset = 0
```

This section allows the user to perform certain **[ACTIONS]**. The procedure is always the same. The **config.txt** file is edited using your favorite editor. Then the file is saved, finally the drive is ejected. (Not unplugged) After 2-3 seconds the drive reappears and may have some new file indicating some status.

Diagnostic Report

Setting this to **1** will generate a file called **diagnostic_report**, which contains various status information about the system and the Hardware.

The information contained in this report can be used to assess and debug system problems or failures. In order to guarantee fast and precise support it is recommended to always include a diagnostic when reporting a problem.

DFU

Setting this to **1** will put the system into **DFU** [https://en.wikipedia.org/wiki/Device_Firmware_Upgrade] mode. Device Firmware Upgrade (DFU) is a vendor- and device-independent mechanism for upgrading the firmware of **USB** devices.

Reset

Setting this to **1** simply resets and reboots the device.

Updating to the AD9364

RF Transceiver	LO tuning range	Bandwidth
AD9363 [http://www.analog.com/AD9363] (Default ADALM-PLUTO)	325 - 3800 <u>MHz</u>	20 <u>MHz</u>
AD9364 [http://www.analog.com/AD9364]	70 - 6000 <u>MHz</u>	56 <u>MHz</u>

There were some early PlutoSDR devices which use the **AD9364** [<http://www.analog.com/AD9364>], which is nearly identical to the **AD9363** [<http://www.analog.com/AD9363>] used in the production builds. If you have one of the **AD9364** based PlutoSDR devices, it's a quick matter of using the U-Boot's **fw_printenv** [[http://man.cx/fw_printenv\(8\)](http://man.cx/fw_printenv(8))] and **fw_setenv** [[http://man.cx/fw_setenv\(8\)](http://man.cx/fw_setenv(8))] commands to get that device's larger tuning range (70-6000 MHz) and larger bandwidth (56MHz).

From your favorite serial application, just open a serial connection (or ssh to 192.168.2.1) to the PlutoSDR. The username is **root** and the password is **analog**.

This will be the default (based on the AD9363):

```
# fw_printenv attr_name
```

```
## Error: "attr_name" not defined
# fw_printenv attr_val
## Error: "attr_val" not defined
#
```

To change things to the AD9364 configuration:

```
# fw_setenv attr_name compatible
# fw_setenv attr_val ad9364
# reboot
```

To learn more about resetting, check out the [developer documentation](#).

After rebooting the device, this is what the AD9364 configuration looks like:

```
Welcome to Pluto
pluto login: root
Password:
# fw_printenv attr_name
attr_name=compatible
# fw_printenv attr_val
attr_val=ad9364
#
```

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