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[linux-sunxi] Announcing Fedora 19 ARM remix for Allwinner SOCs release 1, now with A20 support

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Hi All,

I'm very happy to announce the first release (r1) of my Fedora 19 ARM
remix images for Allwinner A10, A10s, A13 and A20 based devices. This
release is based on the official Fedora 19 Final for ARM images,
with u-boot and kernel(s) from the linux-sunxi project:
http://linux-sunxi.org/

Besides all the goodies from Fedora-19, this release also contains
the following new items on the Allwinner / sunxi front:

-Support for the new dual core A20 soc (tested with cubieboard2),
 this is based on forward porting the core machine code + various
 drivers from allwinners 3.3 kernel source dump to the sunxi-3.4
 sources. The following has been ported / is supported:
 -uarts
 -mmc controllers
 -ehci and ohci usb controllers (usb controllers 1 and 2, controller
  0 is an otg controller and is not supported yet.
 -video output block (hdmi, vga, lcd, composite out)
 -i2c controllers
 -axp pmic including cpu voltage scaling
 -rtc
 -sound: analog in/out, hdmi audio, spdif out (spdif untested)
 -ethernet controller (emac)
 -sata controller
 Note any functional blocks in the SOC which are not explictly
 listed as supported above are not supported atm
-Support for a couple of new boards (38 boards in total now)

 You can download it here:
 http://scotland.proximity.on.ca/contrib-images/hansg/Fedora-19-a10-armhfp-r1.img.xz

 sha1sum: a179afafd77c26c7022392d2fa72e3fd221dd33a

It is important to read the README, the image standard comes without
u-boot pre-loaded since u-boot is board specific. The image includes
a user-friendly simple script to install the right u-boot for
your board, but if you simply xzcat the image to an sdcard, and then
boot your device with the sdcard, things will *not* work.

See the README for a list of currently supported boards.

Known Issues:
-Many boards don't have an rtc (A10 and A20 have a builtin one),
 or at least no battery backup for it, resulting in the date

+ time being wrong.
-If the date is of by more then a couple of months, "yum update"
 won't work because certificate validation fails for the https
 connection yum tries to make. So if yum fails to get its repodata
 first check (and fix) your date
-The regular (host not otg) usb-port on A10s based boards can be a
 bit quirky. It is best to plug in a hub even when using only one
 device, otherwise the device may not be recognized. If this happens,
 after adding a hub, often a power-cycle is needed too.
-The wifi chip on the Auxtek-T004 hdmi-stick is unsupported atm

Enjoy,

Hans

And to make sure everyone reads the README, let me print it here
in full:

Fedora 19 ARM for Allwinner A10, A10s, A13 and A20 devices README

Quickstart guide
----

1) Insert an sdcard, note any data on the card will be destroyed!
2) Make sure the card is not mounted, run "mount" and if the card shows
   up in the output umount its partitions
3) Write the img file to the card, ie as root do:
   xzcat Fedora-19-a10-armhfp-r1.img.xz > /dev/mmcblk0
   sync
4) The card is not yet ready for use! Since the A10 u-boot is board
   specific, the image comes without any uboot install, follow the next
   steps to install the right u-boot for your board
5) Remove the card, and re-insert it. The uboot partition should get
   automatically mounted, if not mount it manually,
6) As root (or through sudo) run: <uboot-part-mount>/select-board.sh, ie:
   sudo /run/media/hans/uboot/select-board.sh

   If you've dialog installed the select-board.sh script will prompt for
   your board. If you don't have dialog installed, it will print the list
   of supported boards. Lookup your board and re-run the script with the
   shortname for your board as argument, ie:
   sudo /run/media/hans/uboot/select-board.sh mk802
7) umount the uboot and rootfs partitions, ie:
   umount /run/media/hans/uboot
   umount /run/media/hans/rootfs
8) Your sdcard is now ready for use
9) *Before* powering up your A10 device connect it to an hdmi or dvi monitor
10) When first booting from the sdcard inserted Fedora will automatically
    reboot once, this is part of the process to resize the root partition to
    fill the entire sdcard and is normal behavior.
11) After the automatic reboot Fedora will start with the initial-setup wizard:
    11a) Configure networking, note:
        * If you've an A10 board with wired ethernet and you want to use dhcp
          you don't need to do anything.
        * If you've an A20 board, your ethernet will have a random mac-address,
          so if you want to configure a static ip-address and want it to stick
          across reboots, go to the ethernet-tab, select the mac-address field
          and delete its contents, so that the static ip address you're
          configuring does not get tied to the random mac-address.

11b) Setup the time zone
11c) Set a root password
11d) Create a user
12) Log in as the just created user
13) Enjoy Fedora on your A10 device

Supported Devices:

Fedora 19 ARM for Allwinner A10 has been tested with the following devices:
* A13-OLinuXino-MICRO (Olimex)
* Auxtek T003 hdmi tv stick
* Auxtek T004 hdmi tv stick
* BA10 TV Box
* Cubieboard development board 1024 MB RAM
* Cubieboard2 (A20) development board
* Gooseberry development board
* Mele A1000G/A2000G 1024 MB RAM
* Mini-X 1024 MB RAM
* mk802 (with female mini hdmi) 512 MB RAM
* mk802 with A10s (s with a circle around it on the barcode label)
* mk802ii (with male normal hdmi) 1024 MB RAM
* r7 hdmi tv stick
* UHost U1A hdmi tv stick
* Wobo i5 TV Box

Fedora 19 ARM should also work on the following devices:
* A10 tablet sold under various names (whitelabel)
* A13 tablet sold under various names (whitelabel)
* A10s-OLinuXino-MICRO (Olimex)
* A13-OLinuXino (Olimex)
* A20-OLinuXino-MICRO (Olimex)
* Coby MID7042 tablet
* Coby MID8042 tablet
* Coby MID9742 tablet
* Cubieboard development board 512 MB RAM
* DNS AirTab M82 tablet
* EOMA68 A10 CPU card
* H6 netbook
* Hackberry development board
* Hyundai a7hd tablet
* iNet-97F Rev.2 (and clones) tablet
* Mele A1000/A2000 512 MB RAM
* Mele A3700
* Mini-X 512 MB RAM
* mk802 (with female mini hdmi) 1024 MB RAM
* pcDuino development board
* Point of View ProTab 2 IPS 9" tablet
* Point of View ProTab 2 IPS tablet with 3g
* XZPAD700 7" tablet

Configuring the display output

Multiple video outputs at the same time are not supported. By default
hdmi output with EDID is used for all devices, except for tablets/netbooks
where the default output is the lcd.

The default hdmi output with EDID will get the native resolution of your
TV / monitor and use that. Note that in order for this to work your TV /

monitor must be connected *and turned on*, before booting your device.

The output resolution can be configured with the disp.screen0_output_mode
kernel cmdline value, which can be found in the extrargs part of uEnv.txt in
the uboot partition. The default uEnv.txt contains the following value:
disp.screen0_output_mode=EDID:1280x720p60

This means try to use EDID and if no valid EDID info is found fallback to
1280x720p60.

The used output can be changed by adding disp.screen0_output_type=X to the
extraargs in uEnv.txt. With X being one of: 0:none; 1:lcd; 2:tv; 3:hdmi; 4:vga

Some per display type notes:
-lcd outputs: Hardcoded to the native mode, disp.screen0_output_mode is ignored
-tv: For the cvbs output disp.screen0_output_mode must be set to one of the
 following: pal, pal-svideo, ntsc, ntsc-svideo, pal-m, pal-m-svideo, pal-nc,
 pal-nc-svideo. Note the -svideo variants should only be used on boards with
 an svideo connector, for composite out use the regular variants, ie:
 disp.screen0_output_type=2 disp.screen0_output_mode=pal
-hdmi: To override the EDID detected mode, drop the "EDID:" from the
 disp.screen0_output_mode value and set it to the desired mode, ie:
 disp.screen0_output_type=3 disp.screen0_output_mode=1360x768p60
-vga: Does not support EDID, "EDID:" must be removed from the
 disp.screen0_output_mode value otherwise it will be ignored. interlaced
 progressive and refreshrate settings specified are ignored, each resolution
 has hardcoded values for these. Example usage:
 disp.screen0_output_type=4 disp.screen0_output_mode=1024x768

USB controller caveats

The OTG USB controller in host mode only supports a limited number of
devices, plugging in a hub + mouse + keyboard typically will make either
the mouse or keyboard not work. This is a hardware limitation which we
will likely not be able to work around.

On tv-sticks and top-set boxes, simply avoid the otg connector, instead
use a hub in a regular host usb connector. Note on the mini-x the otg / host
marking is not always correct. If things don't work try using the OTG
connector instead!

On tablets and the gooseberry unfortunately only the otg connector is
available. One solution there is using a single usb-device which is
both a keyboard and a mouse at the same time. IE the receiver for logitech
wireless desktop sets.

Supported hardware components / features:

Fedora 19 ARM for Allwinner A10 supports the following components:
* CPU + PMU + RAM
* Serial ports
* MMC cards
* Internal NAND storage (*)
* Framebuffer on lcd / vga / hdmi / composite video
* Sound both analog out and over hdmi
* OTG USB controller (*)
* Both standard USB host controllers
* Wifi

* Wired Ethernet
* SATA
* IR (untested at this time) (*)

*) Not supported on A20, the A20 support in the Fedora 19 A10 images is new,
and as such the driver code for these has not been forward-ported from the
Allwinner source dump to the sunxi-3.4 kernel the Fedora 19 A10 images use yet.

Unsupported hardware components:

The following components require various proprietary blobs to be used, and
as such are not supported in the Fedora images. The kernel drivers for them
are present (usually as modules) (*), so if you add the necessary blobs you
might get these to work:
* Mali 400 GPU
* Cedar hardware video & audio decoding and encoding engine
* G2D 2d engine

*) Except for the A20

Differences from stock Fedora
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* Since the A10 is not a very powerful soc some services which are enabled by
  default on Fedora are disabled in the image, see build-image.sh for a list.
* No plymouth: we log to a serial console for debugging so no pretty splash.
  Also we don't use an initrd, so removing the console=ttyS0,115200 from
  the extraargs in uEnv.txt will give plymouth, but so late it hardly matters.

Rebuilding the Fedora 19 ARM for Allwinner A10 disk image

Building the Fedora 19 ARM for Allwinner A10 disk image consists of 2 steps
1) Building a uboot.tar.gz and rootfs.tar.gz "overlays", this is done
   bu the build-boot-root-sh script
2) Combining uboot.tar.gz and rootfs.tar.gz with an official Fedora 19 arm img,
   this combining is done by the build-image.sh script
   The a10 image you downloaded is based on Fedora-XFCE-armhfp-19-1-sda.raw

These scripts are hosted here:
https://github.com/jwrdegoede/sunxi-fedora-scripts.git

A copy of the exact versions of these scripts used to build this Fedora A10
image can be found in the scripts directory of the uboot partition, the
kernel config used during the build can be found here too.

If you want to exactly reproduce this image it is important to use the
scripts from the scripts dir of the uboot partition, as the scripts contain
GIT tags used during the build to checkout the exact versions to build.

The pre-conditions these scripts expect to be met, and the exact usage of
them is documented in comments in the top of each script.

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I've not yet had a chance to try out 19 r1 but I had a chance to try out 18 R2 on my AL-A13-RT713 based Tablet and I found the following problems:

1) After having done the postconfig stuff and user creation I cannot login into the device (ither X or text login) ... I think I get authenticated but then something crashes and I get chucked out
and prompted for login   again. I had a stripped down 18 r2 to fit inside a 512Mb uSD and that did not present the login issue so I'm sure it's something that it's trying to do after authentication.

2) I can't get the touchscreen to work and need usb mouse and keyboard to do anything on my tablet when running custom distribution.

Anyone have any idea how to address these 2 issues ?

Regards
David

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wonderful!
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