Image building for the internal STB software MAG-200/250

Attention!!! Beginning from **0.2.14-r8** version the changes in security were implemented. For image making based on 0.2.14-r8 and further it is necessaru to use **new operators utilities and manuals**. **It is recommended** to remake your customized image version based on 0.2.14-r8 for improving security level.

Documentation & Utilities

Before you build the image, we recommend you to read the following documentation:
JavaScript API
Operator's Guide

Required Utilities:
Operator Utils MAG-200
Operator Utils MAG-250

Requirements of OS

*nix OS i386

Recommended OS: Linux Ubuntu i386

Required packets

For example: For Ubuntu 11.04 i386 it is enough to install:

```
mtd-utils
```

Image preparing

Recommendation:
You need to run all commands with **“root”** permission;

For unpack files use console program **“tar”** or **“unzip”**.

It is neccessary to set the operator key by default before image using.

For the default key using it is neccessary to run the following commands:

```
gpg --import stb_secbin.key
export MAG200_OP_KEY=STB_PUBLIC
```

Preparing of uImage, uImzlib_null.img, uImzlib.img

For preparing the **uImage**, **uImzlib_null.img**, **uImzlib.img** to use the file **`./images/vmlinux.bin`** (For MAG-200) or **`./images/vmlinux.bin.mag250`** (For MAG-250).

vmlinux.bin or **vmlinux.bin.mag250** which is taken from the release (MAG-200, MAG-250) and place it to the directory **`./images`**

The **Command Shell** which is in the scripts and system shell can be different from each other!

Run the command:

```
./kernel_sign.sh
```

Imageupdate preparing

The operator can make changes based on your needs. For example, a set of utilities to expand or add commands, and implement new algorithms for the interaction with the STB.

In the utilities operator from January 28, 2011 it became possible to ***imageupdate*** additionally add the following section is not required:

- second image of the **bootloader**;
- logo;
- section to set the variables of bootloader;
- image of the local **bootstrap**;
- image of a **userfs**.

The image with additional sections can be make such as:

```
./img_make.sh 212 "Test_test" ../rootfs MAG200 ./img_make.profile.mag200
```

where:

212	version of the image, must be a number. After successfully upgrading the standard **Bootstrap** variable of bootloader **“Image_Version”** takes this value. Strongly recommended: use number of “image version” the same as it is number in release
“Test_test”	brief description (!Attention! Spaces are not allowed!). After successfully upgrading the standard **Bootstrap** variable of bootloader **“Image_Desc”** takes this value
../rootfs	the location of the root file system STB. An example of the root file system **rootfs-….tar.gz** you can get from release (MAG-200, MAG-250)
MAG200	Model STB for which the assembled image. For STB MAG250 must be MAG250
./img_make.profile.mag200	file in which you can configure additional sections

A sample configuration file img_make.profile.mag200

```
# Profile for imageupdate
# Kernel's file system
export KERNEL_PATH=./uImzlib.img
# Image Version (digit)
#export IMAGE_VERSION=66
# Image Description
#export IMAGE_DESCRIPTION="Test create New Imageupdate"
# Directory where locate rootfs
#export ROOTFS_PATH=/srv/stb/sg/stm/0.1.60
# File name for enviroment variable
export ENV_VARIABLE_PATH=./images/env.txt
# Bootstrap
#export BOOTSTRAP_VERSION=1
#export BOOTSTRAP_PATH=./images/Bootstrap.img
# Userfs
export USERFS_VERSION=1
export USERFS_PATH=./images/userfs.img
# File name for SecondBoot
export SECONDBOOT_PATH=./images/SbootIm
# File name for Logotype
export LOGOTYPE_PATH=./images/logo.bmp.gz
export MAG200_OP_KEY=STB_PUBLIC
```

The operator can initiate the addition of the necessary sections in ***imageupdate*** setting the following variables:

Name	Description
KERNEL_PATH	The location of the image file system that contains the core. If the variable is not assignment, then use the ***./UImzlib.img***.
IMAGE_VERSION	The version number of the image must be a number. Similarly, the first parameter when calling ***./img_make.sh***
IMAGE_DESCRIPTION	brief description. Similarly, the first parameter when calling ***./img_make.sh***
ROOTFS_PATH	the location of the root file system STB. Similarly, the third parameter when calling ***./img_make.sh***

Name	Description
ENV_VARIABLE_PATH	This variable should contain the path to the file, which contains the bootloader variables and their meaning. An example of such a file, see ***env.txt***, He shows how to set variables of bootloader, in particular, font color and background color. “$” Symbol should be screened.
BOOTSTRAP_VERSION	The version number of the image, which must be located in the **NAND** section titled **“Bootstrap”**. If number of current image and new one are the same, update will not work.
BOOTSTRAP_PATH	The location of the image file system containing ***Bootstrap*** . The image is prepared using the ***bootstrap_img.sh***.
USERFS_VERSION	Number of image version,which should be present in **NAND** partition named **“Userfs”**. If number of current image and new one are the same, update will not work.
USERFS_PATH	The location of the image user file system (image to be recorded in the section **“NAND”** with the title **“Userfs”**). The image is prepared using the ***userfs_img.sh***. Previously the operator must put the necessary files to it in a subdirectory named ***/userfs***.
SECONDBOOT_PATH	The path to the **second image bootloader**.
LOGOTYPE_PATH	The path to the file logo, prepared by the operator.

Example file env.txt

```
bg_color=0x00006498
fg_color=0x00FFFFFF
portal1=http://10.1.0.1/stalker_portal/c/index.html
language=ru
update_url=http://10.1.0.1/imageupdate
ntpurl=10.1.0.1
timezone_conf=Europe/Kiev
```

Most used variables