



Building a SONiC/PINS Image

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Introduction

The document presents the steps to set up a test bed, where one can test the functionality of the SONiC. For this purpose, the 202205 release of SONiC has been used. It has all the latest features.

Environment

OS= Ubuntu 22.04

Device= Dell Latitude E5470

RAM= 16GB

Storage= 300GB+ SSD

CPU Core= 4x CPU cores

NOTE: If you are using an external drive (USB) then make sure the drive is Ext4 formatted.

Dependencies

1. To install maven and jdk

sudo apt update

sudo apt install maven

sudo apt install openjdk-11-jdk-headless

Check for the version use

java --version

mvn -version

2. Install curl using

sudo apt install curl

To check for the version use

curl --version

3. Install zip and unzip using

sudo apt install zip

sudo apt install unzip

To check for the version use

zip -v
unzip -v

4. Install python using

sudo apt update
sudo apt install software-properties-common
sudo add-apt-repository ppa:deadsnakes/ppa
sudo apt install python3

To check for the version use

python3 --version

5. Install pip

sudo apt install python3-pip

To check for the version use

pip --version

6. Install enum34

pip install enum34

7. Install jinja2 and j2cli using

pip3 install jinja2
pip install j2cli

To check for the version and details

pip3 show jinja2
pip3 show j2cli

8. Install Docker and configure your system to allow running the 'docker' command without 'sudo':

I- Check for the docker version if installed before using **docker --version**

pip3 II- Add current user to the docker group: **sudo gpasswd -a \${USER} docker**

III- Log out and log back in so that your group membership is re-evaluated

9. To clone the code repository recursively, assuming git version 1.9 or newer:

git clone <https://github.com/sonic-net/sonic-buildimage.git>

10. export path= "/var/\$username/.local/bin:\$PATH"
/var/\$username/

var/dvm/.local/bin:\$PATH

Building the Image

To build SONiC installer image and docker images, run the following commands:

I- Ensure the 'overlay' module is loaded on your development system

sudo modprobe overlay

II- Enter the source directory

cd sonic-buildimage

III- (Optional) Check out a specific branch. By default, it uses the master branch. I'm using the 202205 version due to its availability and its stability. Also, It has the full support of SAI (Software Abstraction Interface). For all the releases you can check them on this <https://github.com/Azure/SONiC/wiki/Sonic-Roadmap-Planning>

git checkout 202205

IV- Execute make init once after cloning the repo, or after fetching the remote repo with submodule updates

make init

V- Configure your build variables (\$BUILD_VARS) on the command line or in the rules/config file. Here are some examples:

- Debian Buster is the currently supported version so edit in the rules/config file
NOJESSIE=1
NOSTRETCH=1
- The default password for the admin user, **YourPaSsWoRd**, should be overridden with a local value.
- Setting the cache method, **SONIC_DPKG_CACHE_METHOD=rwcache**, speeds up the build process (after the first time) by caching non-SONiC specific build products such as the Linux kernel.
- INCLUDE_P4RT is the name in rules/config *(Use this only if you want to enable PINS else leave it on "n")*

SONIC_INCLUDE_P4RT=y

- Confirm by looking at the INCLUDE_P4RT line in the build config when starting any build]

VI- Execute make configure once to configure ASIC

make configure PLATFORM= (write your own)

For reference there are different PLATFORMS available

The supported ASIC vendors are:

- PLATFORM=broadcom
- PLATFORM=marvell
- PLATFORM=mellanox=4
- PLATFORM=cavium
- PLATFORM=centec
- PLATFORM=nephos
- PLATFORM=innovium
- PLATFORM=vs

VII- Build SONiC image

make SONIC_BUILD_JOBS=1 all

NOTE: If you are building on a VM then keep SONIC_BUILD_JOBS count to 1. If the build process stops in the middle, please run the same command again it works in most of the cases. You can follow all the same steps described above to compile images for other platforms.

Conclusion

These steps will help you successfully build sonic/pins image version 202205. You can make sonic images for different ASIC vendors by just changing the field.