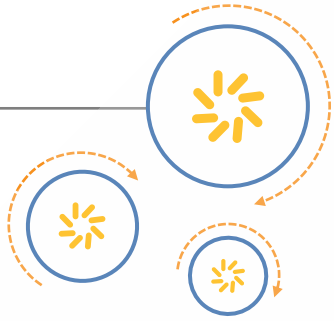
Qualcomm Atheros, Inc.



SPI NOR Device Support

Configuration Guide

80-Y8950-26 Rev. A

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For additional information or to submit technical questions go to https://createpoint.qti.qualcomm.com/

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Revision history

Revision	Date	Description
A	September 2015	Initial release

Contents

1 Introduction

The document describes the procedure to add support for the new SPI NOR devices. The new SPI NOR device is added by editing an XML file for the required flash configuration, without any code changes.

1.1 Prerequisites

- Any new SPI NOR device support requires two parameters — block size and density. These parameters can be obtained by referring to the devices' data sheet. In addition, page size, pages per block, and number of blocks specific to the device can also be obtained from the data sheet.
- Linux host machine that has Python installed.

2 SPI NOR Device Support

This chapter gives explains the procedure to add support for the new SPI NOR device.

2.1 Add support for new SPI NOR device

1. Build the image according to the instructions in the release notes.
2. Go to the **common/build/ipq** folder in the host machine.
3. Edit **nor-partition.xml** for the NOR board and **nor-plus-nand-partition.xml** for the NOR+NAND board as in section 2.2.
4. Edit boardconfig as in section 2.3.
5. Use the `genimg` command to regenerate **nor-system-partition-ipq40xx.bin** for the NOR board and **norplusnand-system-partition-ipq40xx.bin** for the NOR + NAND board as in section 2.4
6. Create a single image with the files generated as in section 2.5.

2.2 Edit nor-partition.xml

NOR file path	**<Local_meta_path>/ipq/ tools/config/nor-partition.xml**
NOR + NAND file path	**<Local_meta_path>/ipq/tools/config/nor-plus-nand-partition.xml**
Entries to be updated	▪ Flash block size in KBytes ▪ Flash density in MBytes

Example 1

In this example, SPI NOR flash has a block size of 64 K and density 32 MB.

```
<partition>
          <name length="16" type="string">0:MIBIB</name>
          <size_kb length="4">128</size_kb>
          <pad_kb length="4">0</pad_kb>
          <which_flash>0</which_flash>
          <attr>0xFF</attr>
          <!-- Specify flash block size in KB -->
          <attr>64</attr>
          <!-- Specify flash density in MB -->
```

```
            <attr>32</attr>
            <attr>0xFF</attr>
           <img_name type="string">nor-user-partition-
           ipq40xx.bin</img_name>
    </partition>
```

Example 2

In this example, SPI NOR flash has a block size of 4 K and density 2 MB.

```
    <partition>
            <name length="16" type="string">0:MIBIB</name>
            <size_kb length="4">128</size_kb>
            <pad_kb length="4">0</pad_kb>
            <which_flash>0</which_flash>
            <attr>0xFF</attr>
            <!-- Specify flash block size in KB -->
            <attr>4</attr>
            <!-- Specify flash density in MB -->
            <attr>2</attr>
            <attr>0xFF</attr>
           <img_name type="string">nor-user-  partition-
           ipq40xx.bin</img_name>
    </partition>
```

2.3 Edit boardconfig

File path	**<Local_meta_path>/ipq/tools/config/boardconfig**
Entries to be updated	▪ nor_pagesize ▪ nor_pages_per_block ▪ nor_total_blocks

Example 1

In this example, SPI NOR flash has a block size of 64 K and density 32 MB.

```
nor_pagesize=256
nor_pages_per_block=256
nor_total_blocks=512
```

Example 2

In this example, SPI NOR flash has a block size of 4 K and density 2 MB.

```
nor_pagesize=256
nor_pages_per_block=16
nor_total_blocks=512
```

The entries need to be updated under the respective board type in addition to ipq40xx.

2.4 Generating system partition

After editing the required boardconfig and **nor-partition.xml** for the required flash device, the system partition needs to be regenerated from the Linux host machine.

1. Run the following from the command prompt.
   ```
   cd <Local_meta_path/ipq/tools>
   ```
2. Regenerate system partition.

Description	NOR board	NOR + NAND board
Command to regenerate system partition	`python genimg.py --partition_tool=partition_tool --mbn_gen=nand_mbn_generator.py --skip_export --image_name=NOR_IMAGES`	`python genimg.py --partition_tool=partition_tool --mbn_gen=nand_mbn_generator.py --skip_export --image_name=NOR_PLUS_NAND_IMAGES`
Output File	`<Local_meta_path/ipq/tools/out/nor-system-partition-ipq40xx.bin>`	`<Local_meta_path/ipq/tools/out/norplusnand-system-partition-ipq40xx.bin>`

3. Copy the regenerated system partition binary.

NOR board	NOR + NAND board
`cp <Local_meta_path/ipq/tools/out/nor-system-partition-ipq40xx.bin <Local_meta_path/ipq>`	`cp <Local_meta_path/ipq/tools/out/norplusnand-system-partition-ipq40xx.bin <Local_meta_path/ipq>`

2.5 Creating single image

- Use the following commands to create a new single image using pack, with the **nor-system-parition-ipq40xx.bin** or **norplusnand-system-partition-ipq40xx.bin** file.

NOR board	NOR + NAND board
`python pack.py -t nor -B -o ipq40xx-nor.img .`	`python pack.py -t norplusnand -B -o ipq40xx-nornand.img .`

- Flash the single image on the board.

2.6 Limitations

- For flash sizes greater than 16 MB which fall back to default configuration, if the special commands are not supported by the new flash device added, flash operations might fail.
- Non-Jedec flash devices are not supported for fall back.