Building Genivi 12 (Nostromo) for the Renesas R-Car SoCs

This page describes building Genivi 12 (Nostromo) platforms using Renesas R-Car SoC BSPs.

Specifically the page was written for the R-Car Gen 3 SoCs: H3, M3 and E3
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General (read first)

This section provides information that applies to all platforms. Information for specific platforms is covered in the following section. Please read this section first.

Yocto BSP Compatibility

The standard Renesas customer Yocto BSP meets the functional and version requirements of Genivi 12 compliance. The kernel simply needs to be configured for the requirements of the Genivi 12 platform.

At a minimum the following kernel config options are enabled:

- FHANDLE
- EXPERIMENTAL
- ECRYPT_FS
- QUOTA
- BT
- CGROUPS

The Genivi 12 specification does not specify a build system and instead allows the implementer the freedom to choose what fits their needs best. The Genivi implementations of the specification in the shape of the Genivi Yocto Baseline and Genivi Development Platform both use Yocto Project 2.2 (Morty). At the time of writing the standard Yocto BSP v2.19 uses Yocto Project 2.1 (Krogoth). As a service to the community Renesas maintains a git repository containing a Yocto BSP with the changes required for the standard Yocto BSP to work with the Genivi Yocto Baseline (GYB) and Genivi Development Platform (GDP) already integrated. It is supported on a best effort basis. Here are the details:

<table>
<thead>
<tr>
<th>R-Car Generation</th>
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<tbody>
<tr>
<td>R-Car Gen 3 (H3/M3/E3 SoCs)</td>
<td><a href="https://github.com/slawr/renesas-rcar-gen3.git">https://github.com/slawr/renesas-rcar-gen3.git</a></td>
<td>genivi-12</td>
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Specific Genivi Platforms

This section provides information for specific Genivi platforms such as the Genivi Baselines.

Genivi Development Platform (GDP)

R-Car Generation 3

Instructions for building and deploying GDP on the R-Car H3/M3 Starter Kit and H/3M3 Salvador-X boards are maintained in the GDP-12 and GDP Master wiki pages.

Issues are maintained in the Genivi JIRA GDP project.

Genivi Yocto Baseline (GYB)

For those familiar with Yocto and the GYB you can find the Nostromo Renesas Yocto BSP details for Gen 3 in the table below. At the time of writing they have been successfully tested with meta-ivi 12.0.0 (N-1.0).

Steps:

1) Clone and checkout Genivi Yocto Baseline repositories

See the meta-ivi Readme.md for details.

2) Clone and checkout the Renesas Genivi Yocto BSP and meta-linaro toolchain layers.

Note: It should be possible to use the Yocto Project, rather than Linaro, gcc toolchain if you prefer but that has not been tested.

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<td><a href="https://git.linaro.org/openembedded/meta-linaro.git">https://git.linaro.org/openembedded/meta-linaro.git</a></td>
<td>morty</td>
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</table>

3) Obtain and install the Renesas R-Car Graphics and Multimedia packages
For R-Car Gen 3 instructions for installing the click-through packages can be found on [elinux.org](http://elinux.org).

Download the R-Car Gen 3 Linux Drivers and Gfx/MMP packages for YBSP v2.19 from [here](http://example.com).

4) You can now follow the build instructions in the meta-ivi Readme.md.

   4a) Export TEMPLATECONF to pick up correct configuration for the build

   ```bash
   export TEMPLATECONF=/full/path/to/meta-ivi/meta-ivi/conf
   ```

   4b) Run the following command:

   ```bash
   > $ source poky/oe-init-build-env
   ```

   4c) Setup your Yocto local.conf and bblayers.conf

   For R-Car Gen 3 add the following to bblayers.conf:

   ```
   BBLAYERS +=" \\
   ${TOPDIR}/../renesas-rcar-gen3/meta-rcar-gen3 \\
   ${TOPDIR}/../meta-openembedded/meta-oe \\
   ${TOPDIR}/../meta-openembedded/meta-filesystems \\
   ${TOPDIR}/../meta-linaro/meta-linaro-toolchain \\
   ${TOPDIR}/../meta-linaro/meta-optee \\
   
   
   Examples of the additions to add to your Yocto local.conf:
   ```

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<th>M3 Starter Kit</th>
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   4d) Build nostromo-image including GENIVI 12 (Nostromo) components

   ```bash
   > $ bitbake nostromo-image
   ```