Building Genivi 10.0 Leviathan for the Renesas R-Car SoCs

This page describes building Genivi 10.0 Leviathan platforms using Renesas R-Car SoC BSPs.

Specifically the page was written for the R-Car Gen 2 SoCs: H2, M2 and E2 and the R-Car Gen 3 SoCs: H3, M3 and E3.
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General

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

Compatibility

The standard Renesas customer Yocto BSP meets the functional and version requirements of Genivi 10.0 compliance. The kernel simply needs to be configured for the requirements of the Genivi 10.0 platform.

At a minimum the following kernel config options are enabled:

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

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 and Genivi Development Platform already integrated. It is supported on a best effort basis. Here are the details:

<table>
<thead>
<tr>
<th>R-Car Generation</th>
<th>Repository Location</th>
<th>Branch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gen 2 (H2/M2/E2)</td>
<td><a href="https://github.com/slawr/meta-renesas.git">https://github.com/slawr/meta-renesas.git</a></td>
<td>genivi-10-bsp-1.10.0</td>
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<tr>
<td>Gen 3 (H3/M3) Salvator-X</td>
<td><a href="https://github.com/slawr/renesas-rcar-gen3.git">https://github.com/slawr/renesas-rcar-gen3.git</a></td>
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<tr>
<td>Gen 3 M3 Starter Kit</td>
<td><a href="https://github.com/slawr/meta-rcar.git">https://github.com/slawr/meta-rcar.git</a></td>
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You may be wondering why there are two different repositories for Gen 3 Yocto BSP. This is a temporary situation. The M3 Starter Kit Yocto BSP currently resides in a separate working tree that is planned to be merged into the standard YBSP in the next release.

Specific Genivi Platforms

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

Genivi Development Platform

R-Car Generation 2

Genivi selected the Renesas R-Car M2 Koelsch Evaluation board as the h/w target for the first release of the Genivi Development Platform (GDP). Since then support for the M2 Porter and E2 Silk low cost boards has been added as official targets. You can therefore find full information on how to build GDP and use the associated SDK in the wiki page for that project here

Support for Renesas R-Car Gen 2 SoCs are developed in parallel within the same BSP. To switch from M2 Koelsch to H2 Lager or E2 Alt is typically therefore a simple case of switching the Yocto machine.

R-Car Generation 3

To build GDP-10 for Salvador-X please follow the following steps:

1) Clone and initialise the Genivi Development Platform source reps
   
   ```
   git clone https://github.com/slawr/genivi-dev-platform.git -b gen3-salvador-x-gdp-10
   cd genivi-dev-platform/
   source init.sh <salvador-x-m3|m3-starter-kit> == use the appropriate board name
   ```
   
   Now make any local.conf changes you would like to make, e.g. point to your shared download folder.

2) Obtain and install the Renesas R-Car Graphics and Multimedia packages
   
   If you have the Salvador-X board:
   ```
   cd ../renesas-rcar-gen3
   ```
   
   If you have the M3 Starter Kit board:
cd ..;/meta-rcar

If you have the click-through packages (no NDA):

sh meta-rcar-gen3/docs/sample/copyscript/copy_evaproprietary_softwares.sh <path to the folder containing the packages>

If you have the Evaluation packages (with NDA):

sh meta-rcar-gen3/docs/sample/copyscript/copy_proprietary_softwares.sh <path to the folder containing the packages>

3) Build Genivi Development platform

cd ..
source poky/oe-init-build-env gdp-src-build/
bitbake genivi-dev-platform

Genivi Yocto Baseline

For those familiar with Yocto and the GYB you can find the Leviathan Renesas Yocto BSP details for Gen 2 and Gen 3 in the table below. At the time of writing it has been successfully tested with meta-ivi 10.0.0 (L-1.1).

Steps:

1) Clone and checkout Genivi Yocto Baseline repositories

See the meta-ivi Readme.md for details.

2) Clone and checkout Renesas Genivi Yocto BSP

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3) Obtain and install the Renesas R-Car Graphics and Multimedia packages

For R-Car Gen 2 this process is described in the Genivi GDP build instructions here.

For R-Car Gen 3 instructions for installing the click-through packages can be found on elinux.org.

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

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

   4b) Run the following command:

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

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

For R-Car Gen 2 add the following to bblayers.conf:

```
BBLAYERS += " \
${TOPDIR}/../meta-renesas \
${TOPDIR}/../meta-renesas/meta-rcar-gen2 \
${TOPDIR}/../meta-openembedded/meta-multimedia \
" 
```

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

```
BBLAYERS += " \
${TOPDIR}/../renesas-rcar-gen3/meta-rcar-gen3 \
${TOPDIR}/../meta-openembedded/meta-oe \
```


Examples of the additions to add to your Yocto local.conf:

<table>
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<tr>
<th></th>
<th>M2 Porter</th>
<th>E2 Silk</th>
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<td>Local.conf</td>
<td>link</td>
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4d) Build leviathan-image including GENIVI 10.0 (Leviathan) components

   > $ bitbake leviathan-image