

Initial Setup and Invocation

Calibre® RealTime integrates Calibre nmDRC with the Synopsys Laker layout editor; Laker³ 2014.9.SP-1 and Laker DB 2015.12 are supported. Follow these steps to start Laker with the RealTime integration:

1. Edit `$HOME/.lakerenv` as described in “Enabling the Calibre RealTime Integration in Synopsys Laker”.

2. Start Synopsys Laker with:

```
$LAKER_HOME/bin/laker
```

Synopsys Laker opens with a view similar to the one shown at right.

The integrated toolbar is loaded automatically in the Synopsys Laker window. The **Verify > Calibre > RealTime** menu is added in Synopsys Laker³; the **DRC** menu is added in the other versions.

If desired, you can disable the Calibre RealTime integration by setting `MGC_REALTIME_DISABLE` to 1.

Running Calibre nmDRC

Loading a Rule File



Click the  button to specify and load a rule file.

Check Selection

The check recipe determines which checks are executed.

Running Calibre nmDRC

Do one of the following to start a run:

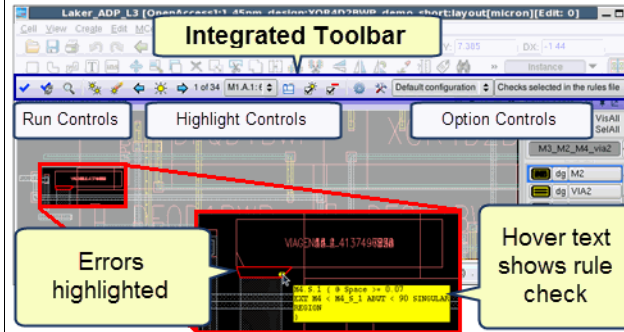
-  (from integrated toolbar) or the **F12** hotkey — Runs Calibre nmDRC on the geometries visible in the Laker window, plus a halo region around the area.
- To run DRC automatically after any design edit (OA version only):
 - a. Enable the  button in the integrated toolbar to enable the “Run DRC on Edit” mode.
 - b. Make any design edit — DRC is run on the area of the edit plus a halo region around the edit area.

All Calibre RealTime DRC runs are done in flat mode.

The run is controlled by the settings in the Run Configuration. If the Run Mode is “Serial,” a DRC run is executed for each of the configurations selected in the “Configuration Run Control” dialog box.

Session Window

The Synopsys Laker session window appears as shown below when integrated with Calibre RealTime.



Terms and Definitions

All Calibre RealTime DRC runs are done in flat mode.

Run DRC in Window — Calibre nmDRC runs on the geometries visible in the Laker window plus a halo region around the area.

Run DRC on Edit — (OA version only) Calibre nmDRC runs automatically after any design edit; DRC is run on the area of the edit plus a halo region around the edit area.

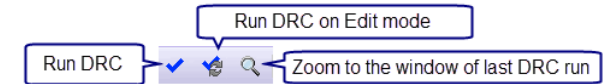
Run Configuration — The set of options and input files for a run. You can define multiple run configurations with different options (such as the rule file, check recipe and other options), then quickly switch between different run configurations.


Check Recipe — A set of rules for selecting the checks to execute for a Calibre nmDRC run. See “Calibre RealTime Options Dialog Box”, “Check Selection”, and “Edit Recipe Dialog Box” on the next page.



Halo — Halos are used to ensure that new errors caused by changes in the geometry get reported, and false errors caused by edge effects are not reported. A halo expands the area around a region selected for a DRC check so that surrounding geometries are included. A halo size of 1 user unit (the default) is usually appropriate for 45 nm technology; smaller nodes may require smaller halos. Halos are used for all Calibre RealTime DRC runs.


Integrated Toolbar

Run Controls

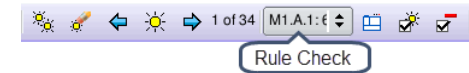


-  **Run DRC** - Runs flat DRC on the geometries visible in the Laker window, plus a halo region.


Run DRC on Edit Mode - On:  Off: 
Run Calibre flat nmDRC automatically after any design edit. (OA only, also in option dialog box)

-  — Zoom to window for most recent run.

Highlight Controls





-  — Highlight all
-  — Clear highlights

-  1 of 34 — Highlight previous, current, or next result, and result <n> of <total> results.

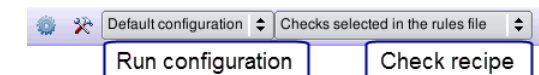
Rule check — Indicates the rule check which produced the displayed error when using the highlight previous, current, and next buttons.

-  — Open the Calibre RealTime Results window.

-  — Highlight all results in the rule check.

-  — Remove the current check from check recipe.

Option Controls



-  — Open Calibre RealTime Options dialog box.


-  — Open Customization GUI (requires runset).

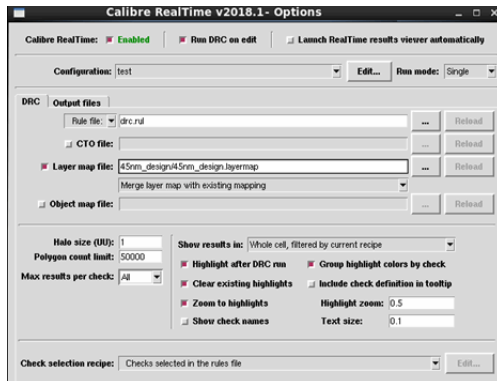
Run configuration — Select the run configuration. See Terms and Definitions.

Check recipe — Select check recipe for DRC run.

Calibre RealTime Options Dialog Box

Specifies the rule file, optional layer map, halo size, check selection recipe for the run, and other options.

Open with the  button.



Most entries are self-explanatory, or see Terms and Definitions.

- **Layer map file** — (Optional) Layer map entries in the file override the automatic mapping for the same layer found in the technology file.
- **CTO file** — The CTO file is not supported with Synopsys Laker.
- **Show results in** — Select which results to view: whole cell (including results from previous runs) or results from current window only, and results from all checks or only from current check recipe.
- **Edit** — Open the Edit Recipe dialog box to configure a custom check recipe.

Check Selection

All checks present in the rule file except those excluded by preprocessor directives are loaded into the Calibre RealTime server. Check recipes control the checks that are executed. DRC [Un]Select statements are only obeyed when the built-in recipe "Checks selected in the rule file" is used.


See these sections in the *Calibre RealTime Custom User's Manual* for details on Calibre RealTime operation:

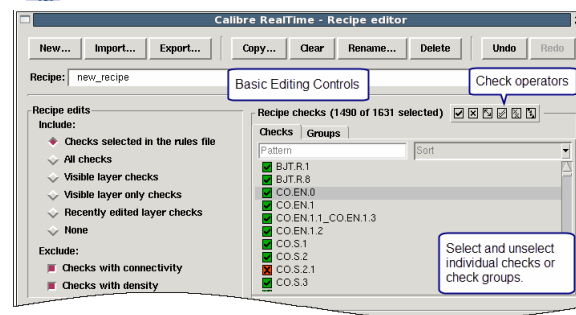
["Differences Between Calibre nmDRC and Calibre RealTime Custom"](#)

["Density Checks in Calibre RealTime Custom"](#)

Edit Recipe Dialog Box

The Edit Recipe dialog box allows you to configure custom check recipes.

Click the **Edit** button in the Calibre Options dialog box ( button) to open the Edit Recipe dialog box.



Several standard recipes are included with the tool, but these cannot be edited.

Do one of the following to open a recipe for editing:

- Click **New** to open a new recipe.
- Select a user recipe in the Recipe dropdown box.
- Click **Import** to open an existing custom recipe.
- Select a standard recipe and click **Copy**.

Dialog box fields

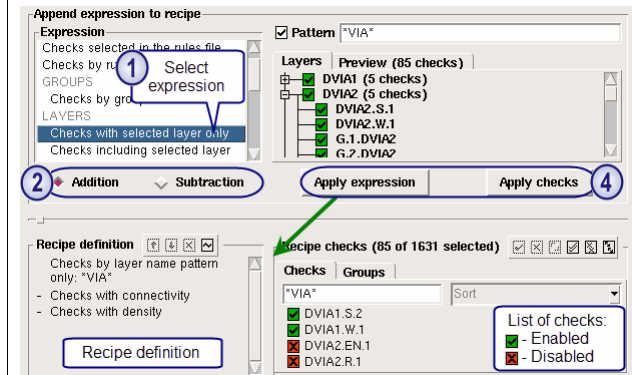
- **Recipe** — Select the recipe in the dropdown box.
- **Include** — Specify checks to include:
 - Checks selected in the rules file — Checks that are selected by DRC [Un]Select statements.
 - All checks — As described.
 - Visible layer (only) checks — Include checks that include (only) visible layers.
 - Recently edited layer checks — As described. (OA version only)
 - None — Unselect all checks.
- **Exclude** — Specify checks to exclude:
 - Checks with connectivity.
 - Checks with density.
- **Advanced** — Toggle between advanced and basic editing controls.

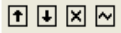
Recipes are automatically saved to the configuration file. You can click **Export** to save a recipe to a file with a .rcp file extension; this file can be imported by another user.

Advanced Check Recipe Controls

The advanced check recipe controls allow you to individually select and unselect checks for the recipe.

Open the advanced controls by clicking the **Advanced** button in the Edit Recipe Dialog Box.



Repeat steps 1-4 to add expressions to the recipe, then modify the recipe definition using the toolbar operators, , if desired.

The Advanced controls are useful when you need to exclude a specific check. This may happen if a particular check gives false errors when run on a limited area.

Keyboard Shortcuts (Hotkeys)

A set of standard keyboard shortcuts are available with the Calibre installation but are not loaded by default. Enable the standard shortcuts with this procedure:

1. Copy the following Tcl file to a local file for keyboard shortcut definitions:

```
cp $CALIBRE_HOME/shared/pkgs/icv/tools/realtime/laker/calibre.key ~/my_calibre.key
```

2. Edit the local shortcut definitions as desired. You can enable a shortcut by un-commenting the definition.
3. Load the new shortcut definitions into Synopsys Laker with the following command:

```
gtSetBindKey -windowType LakerDsgWnd  
-file ~/my_calibre.key
```