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set_operating_conditions

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NAME

set_operating_conditions

Defines the operating conditions for the current design.

SYNTAX

```
status set_operating_conditions
  [-analysis_type bc_wc | on_chip_variation]
  [-min min_condition]
  [-max max_condition]
  [-min_library min_lib]
  [-max_library max_lib]
  [-min_phys min_proc]
  [-max_phys max_proc]
  [-library lib]
  [-object_list objects]
  [condition]
```

Data Types

| | |
|----------------------|------|
| <i>min_condition</i> | list |
| <i>max_condition</i> | list |
| <i>objects</i> | list |
| <i>condition</i> | list |

ARGUMENTS

-analysis_type bc_wc | on_chip_variation

Specifies how to use the operating conditions. The **bc_wc** and **on_chip_variation** options are mutually exclusive; use only one per command.

Specifying either **bc_wc** or **on_chip_variation** switches the design to min_max mode. The **bc_wc** value specifies that the min and max operating conditions are two extreme operating conditions. In the **bc_wc** analysis, setup violations are checked only for the maximum operating condition, and the hold violations are checked only for the minimum operating condition.

The **on_chip_variation** value specifies that the minimum and maximum operating conditions represent, respectively, the lower and upper bounds of the maximum variation of operating conditions on the chip. All maximum path delays use the maximum operating condition, and all minimum path delays use the minimum operating condition.

-min min_condition

Specifies the operating condition to use for minimum delay analysis. If you do not specify an operating condition for minimum delay analysis, the tool uses the maximum operating condition. The **-min** option

must be used with the **-max** option.

-max *max_condition*

Specifies the operating condition to use for maximum delay analysis.

-min_library *min_lib*

Specifies the library containing definitions of the operating conditions for minimum delay analysis. This is either a library name or a collection. The tool selects the first library in the collection containing the definitions.

-max_library *max_lib*

Specifies the library containing definitions of the operating conditions for maximum delay analysis. This is either a library name or a collection. The tool selects the first library in the collection containing the definitions.

-min_phys *min_proc*

Specifies the name of the process resource to search for the resistance and capacitance values for minimum delay analysis. This option must be used in with the **-max_phys** option.

-max_phys *max_proc*

Specifies the name of the process resource to search for the resistance and capacitance values for maximum delay analysis. This argument must be used with the **-min_phys** option.

-library *lib*

Specifies the library containing definitions of the operating conditions for both maximum and minimum delay analysis. This is either a library name or a collection. The tool selects the first library in the collection containing the definitions.

-object_list *objects*

Specifies the cells or ports on which to set operating conditions. If you do not use this option, operating conditions are set on the design. This option accepts both leaf cells and hierarchical blocks. This option is only available for multivoltage features and requires the appropriate license.

condition

Specifies conditions that define environmental characteristics to use during maximum and minimum delay analysis.

DESCRIPTION

This command defines the operating conditions (or environmental characteristics) under which to time or optimize the current design. The operating conditions specified must be defined in *lib* or in one of the libraries in the **link_library**. A **local_link_library** set on the current design is added to the beginning of the **link_library**, before the **link_library** is searched. The order for a library search is as follows:

1. *lib*
2. **local_link_library**
3. **link_library**

If you do not specify any operating conditions for a design, the **compile** command searches in the first library of the link library for default operating conditions. If the library does not have default operating conditions, no operating conditions are used.

Operating conditions set by using the **-object_list** option override the operating conditions set on design or higher levels of hierarchy.

To see the operating conditions that are defined for the current design, and to see which libraries the current design is linked to, use the **report_design** command. To see the operating conditions defined in the specified

library, use the **report_lib** command.

To remove operating conditions from the current design, use **set_operating_conditions** without specifying any operating conditions, or use the **reset_design** command.

Multicorner-Multimode Support

This command applies to the current scenario only.

You must use the **set_operating_conditions** command to define the operating conditions for each scenario.

EXAMPLES

The following example shows an operating condition definition, as it appears in the source text of a library:

```
operating_conditions("BCCOM") {
    process : 0.6 ;
    temperature : 20 ;
    voltage : 5.25 ;
    tree_type : "best_case_tree" ;
}
```

The name of this set of operating conditions is *BCCOM*. The parameters are defined as follows:

process

A floating-point number that represents the characteristics of a semiconductor manufacturing process.

temperature

A floating-point number that represents the temperature of the defined environment.

voltage

A floating-point number that defines the upper boundary of the voltage range in which the defined environment operates. The lower boundary is always 0.0.

tree_type

The interconnect model for the environment. The **compile** command uses the interconnect model to select a formula for calculating interconnect delays. Three models are available:

- *best_case_tree*, which assumes the net delay to be 0
- *worst_case_tree*, which uses the lumped RC model
- *balanced_tree*, in which all loads share the wire resistance evenly.

When process factor, operating temperature, and operating voltage deviate from their nominal values, **compile** uses a linear model to compensate for the effect of deviations on such values as cell delays, input loads, and output drives. The nominal values used are defined in the same library that contains the definitions of the set of operating conditions.

The following example sets the operating conditions to *WCIND* if the link_library is *my_lib.db*, and the design does not have a local_link_library set. The library name for *my_lib.db* is *my_lib_core*.

```
prompt> set_operating_conditions WCIND
```

```
Using operating condition 'WCIND' found in library "my_lib_core".
```

In the following example, the *BCIND* values found in *other_lib.db* are used for minimum delay analysis, and *WCIND* values are used for maximum delay analysis. The library name for *other_lib.db* is *other_lib_core*.

```
prompt> set_operating_conditions -min BCIND -max WCIND \
        -library other_lib_core
```

```
Using operating condition 'BCIND' found in library 'other_lib_core'.
Using operating condition 'WCIND' found in library 'other_lib_core'.
```

The following example shows how to remove operating conditions defined for the current design:

```
prompt> set_operating_conditions
```

SEE ALSO

```
compile(2)  
report_lib(2)  
reset_design(2)  
set_local_link_library(2)  
link_library(3)
```