

# Recording Verification status of runtime values


On this page

- [Instance Table with simulation results](#)
- [Remember Failure Status option](#)



## Instance Table with simulation results

Magic Model Analyst allows you to record the verification status of runtime values. The cells in the Variables pane and in Instance tables are highlighted in green if runtime values meet the constraints during the simulation, and in red - if they do not. You can do the normal recording verification status of runtime values by using the **resultLocation** tag in a [Simulation Configuration](#). The instances with recorded values in slots are created at the end of the simulation.

To export the simulation results to an Instance Specification

- After running the simulation, do one of the following:
  - In the **Variables** pane of the **Simulation** window, click .
  - In the **Variables** pane of the **Simulation** window, right-click the simulated element and select **Export Value To > Instance**.
  - Specify the **resultLocation** tag in a [Simulation Configuration](#). The instances with recorded values in slots are created at the end of the simulation.

The variables are evaluated and colored in red and/or green depending on whether there are any constraint failures in the Instance Table.

 For variables to be highlighted in an Instance Table as shown below, the **Verification Status** legend must be applied to an Instance Table. To do that, click  , select **Display Legends**, select the **Verification Status** legend, and click **Display**.

**Instance Table**

Verification Status: ☐ Pass ☐ Fail

| # | Name       | ma     | me    | mr    | margin |
|---|------------|--------|-------|-------|--------|
| 1 | spacecraft | 130 kg | 95 kg | 15 kg | 35 kg  |
| 2 | propulsion | 80 kg  | 68 kg | 7 kg  | 12 kg  |
| 3 | tank       | 44 kg  | 38 kg | 44 kg | 6 kg   |
| 4 | thruster   | 29 kg  | 30 kg | 29 kg | -1 kg  |
| 5 | telecom    | 35 kg  | 27 kg | 5 kg  | 8 kg   |
| 6 | antenna    | 20 kg  | 19 kg | 20 kg | 1 kg   |
| 7 | amplifier  | 10 kg  | 8 kg  | 10 kg | 2 kg   |

Filter is not applied. 7 rows are displayed in the table. [Show Description](#)

**Simulation**

Simulation

Trigger:  Animation speed:

Variables Breakpoints Sessions Console

| Name                     | Value                            |
|--------------------------|----------------------------------|
| spacecraft               | spacecraft : spacecraft@6dfea6b8 |
| ma : mass[kilogram]      | 130.0000                         |
| margin : mass[kilogram]  | 35.0000                          |
| me : mass[kilogram]      | 95.0000                          |
| mr : mass[kilogram]      | 15.0000                          |
| telecom {subsets sub}    | telecom : telecom@7945c539       |
| propulsion {subsets sub} | propulsion : propulsion@19ee2def |

The instance table with highlighted passed and failed values.

The verification status and instances for constraints are recorded using the **VerificationStatus** stereotype that is applied to the **Value** specification of the properties you are working on. You can also see the details of the constraint failure in the tooltip when hovering the mouse over any highlighted values in the **Variables** tab of the Simulation window as shown in the following figure.

**Simulation**

Simulation

Trigger:  Animation speed:

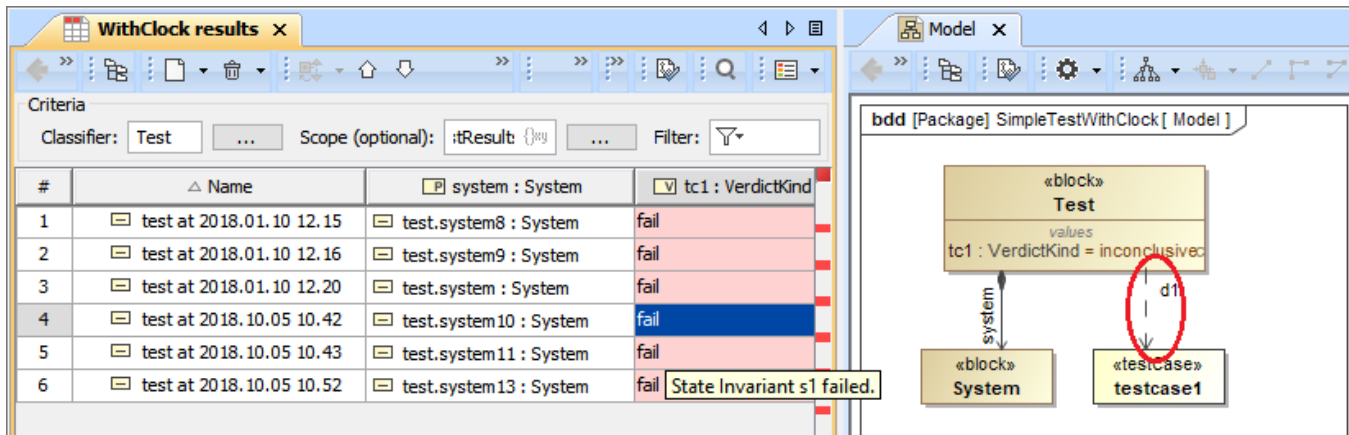
Variables Breakpoints Sessions Console

| Name                    | Value                        |
|-------------------------|------------------------------|
| tank {subsets sub}      | tank : tank@26524bbf         |
| thruster {subsets sub}  | thruster : thruster@26ae66a1 |
| ma : mass[kilogram]     | 29.0000                      |
| margin : mass[kilogram] | -1.0000                      |
| me : mass[kilogram]     | 30.0000                      |
| mr : mass[kilogram]     | 29.0000                      |
| sum (.b = sum(sub.ma))  | sum@7a66a3                   |
| sum (me = sum(sub.me))  | sum@1d6d29b                  |

Requirement 1 - "Estimated mass shall be less than allocated mass" is not satisfied.

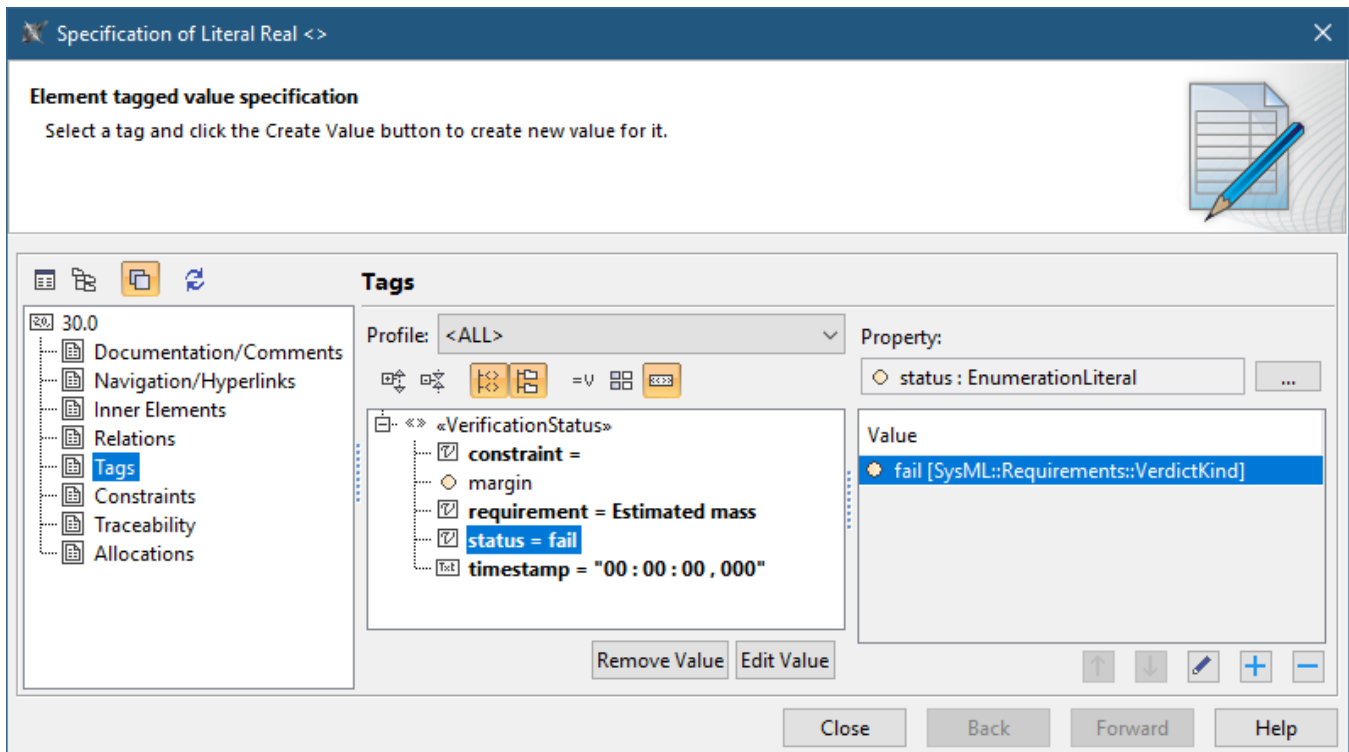
The Variables pane displaying values with verification status.

In addition, the failed verdict values of **State Invariant** are highlighted in red, and the passed values are highlighted in green. However, you must create a Dependency relationship between the test case and a value property as shown in the following figure.



Failed State Invariant with highlighted red values and the tooltip.

If the **VerificationStatus** state on the **Value** specification fails, the active validation will be marked for notification with the **fail** status tag as shown in the following figure



The Specification window showing verification status with the fail status tag.

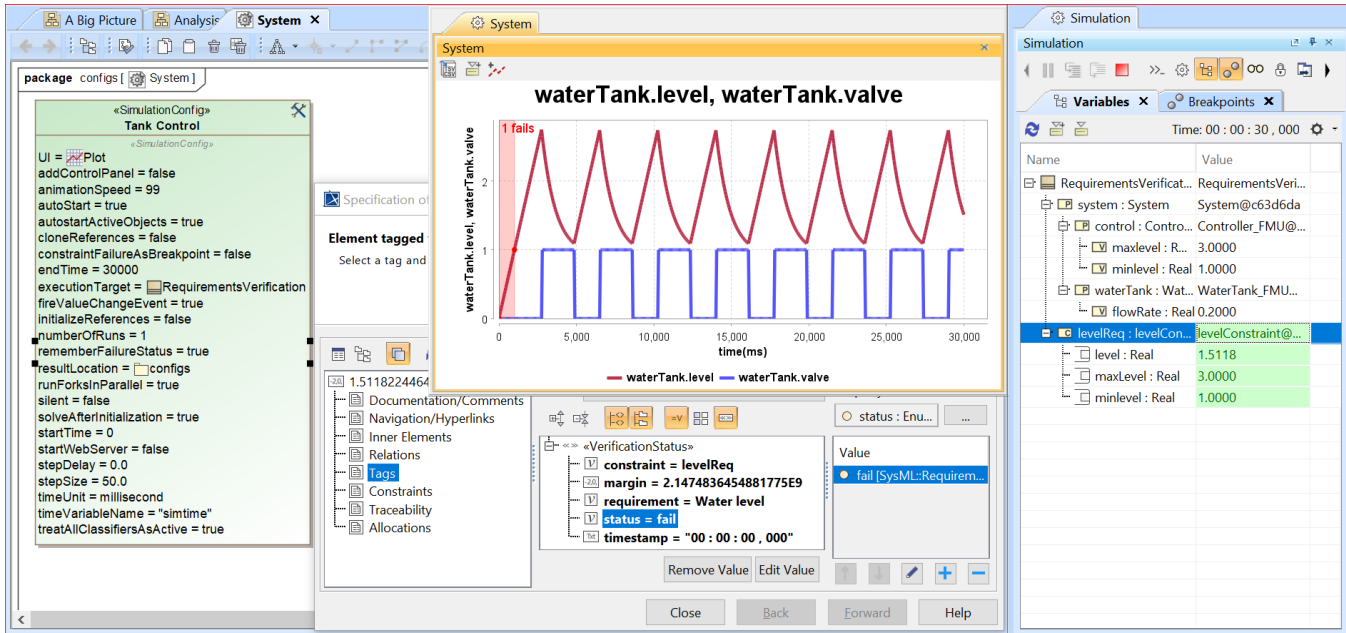
The **VerificationStatus** stereotype, as shown in the figure above, has the tags as follows

| Tag                | Description  |
|--------------------|--|
| <b>constraint</b>  | The name of the failure constraint.  |
| <b>margin</b>      | The Requirement margin value calculated from value properties and the Requirement boundary (a satisfy Relation). |
| <b>requirement</b> | The name of the failure Requirement.   |
| <b>status</b>      | The result of the verification, either pass or fail.   |

|           |  |
|-----------|--|
| timestamp | The timestamp of the first failure recorded. |
|-----------|--|

## Remember Failure Status option

During the evaluation of particular configurations and scenarios, some Requirements/constraints can fail, and those values are marked in red. However, they may pass later and are marked in green again, but the failure is not recorded by default. To solve this problem, Simulation Toolkit provides the **Remember Failure Status** option in «SimulationConfig» to remember any failure status until the termination and record it as fail, even though it passes at the end. If the **Remember Failure Status** option is set true, and there are constraint failures during the simulation, the first fail status will be recorded in the status of «VerificationStatus» of new/recorded instance, and the time of the first failure will also be recorded in the **timestamp** tag as shown in the figure below.



Setting the Remember Failure Status tag of a SimulationConfig to record the fail status and timestamp if available.

## Related pages

- [Requirement Table](#)
- [Variables pane](#)