OBSOLETE METRICS PLUGIN

user guide

No Magic, Inc.
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GETTING STARTED

Introduction

Obsolete Metrics Plugin adds to MagicDraw the deprecated metrics feature.

The deprecated metrics feature allows you to measure your project from three different viewpoints:

- UML model metrics
- System metrics
- Requirements metrics

Using UML model metrics, you can measure your project using package, class, and diagram measurements (for example, measuring the number of classes, inheritance tree depth, and so on).

System metrics analyze models using the most popular object oriented project metrics: Halstead, McCabe, Chidamber, and Kemerer defined metrics (for example, cyclomatic complexity and weighted methods per class).

Requirement metrics consist of function points and use case metrics. These two metrics groups are so structurally similar that use case metrics are regarded as a subset of function point metrics. Use case metrics measure both the number of use cases in a project and the user case analysis through selected tagged values (priority, for example).

The results of these analyses are displayed in a table, where you can select which metric you would like displayed. You can also export the metrics to a separate file.

A metric is a numeric value that measures a model or is counted according to model measuring. Each metric has both a lowest and highest limit specified. Metrics that fall outside of this range are marked:

- Values that are too low are displayed in a blue font.
- Values that are too high are displayed in a red font.

If the highest limit equals zero, the metric is never marked as too high.

To start using the plugin, you must enable it.

Enabling Plugin

Obsolete Metrics Plugin is compatible with MagicDraw **Architect** and **Enterprise** editions.

To enable Obsolete Metrics plugin for MagicDraw

1. From the **Options** menu, select **Environment**. The **Environment Options** dialog opens.
2. Click **Plugins** on the left side of the dialog. The list of plugins available for MagicDraw opens on the right side of the dialog.
3. Type “me” to select **Metrics (Obsolete)** in the list.
4. Click the **Enable** button. The value in the **Enabled** column changes to *true*.

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5. Click **OK** on the **Environment Options** dialog.
6. Click **OK** on the **Message** dialog box, which prompts to restart MagicDraw to make the plugin available.
7. Restart MagicDraw.

The plugin is enabled.

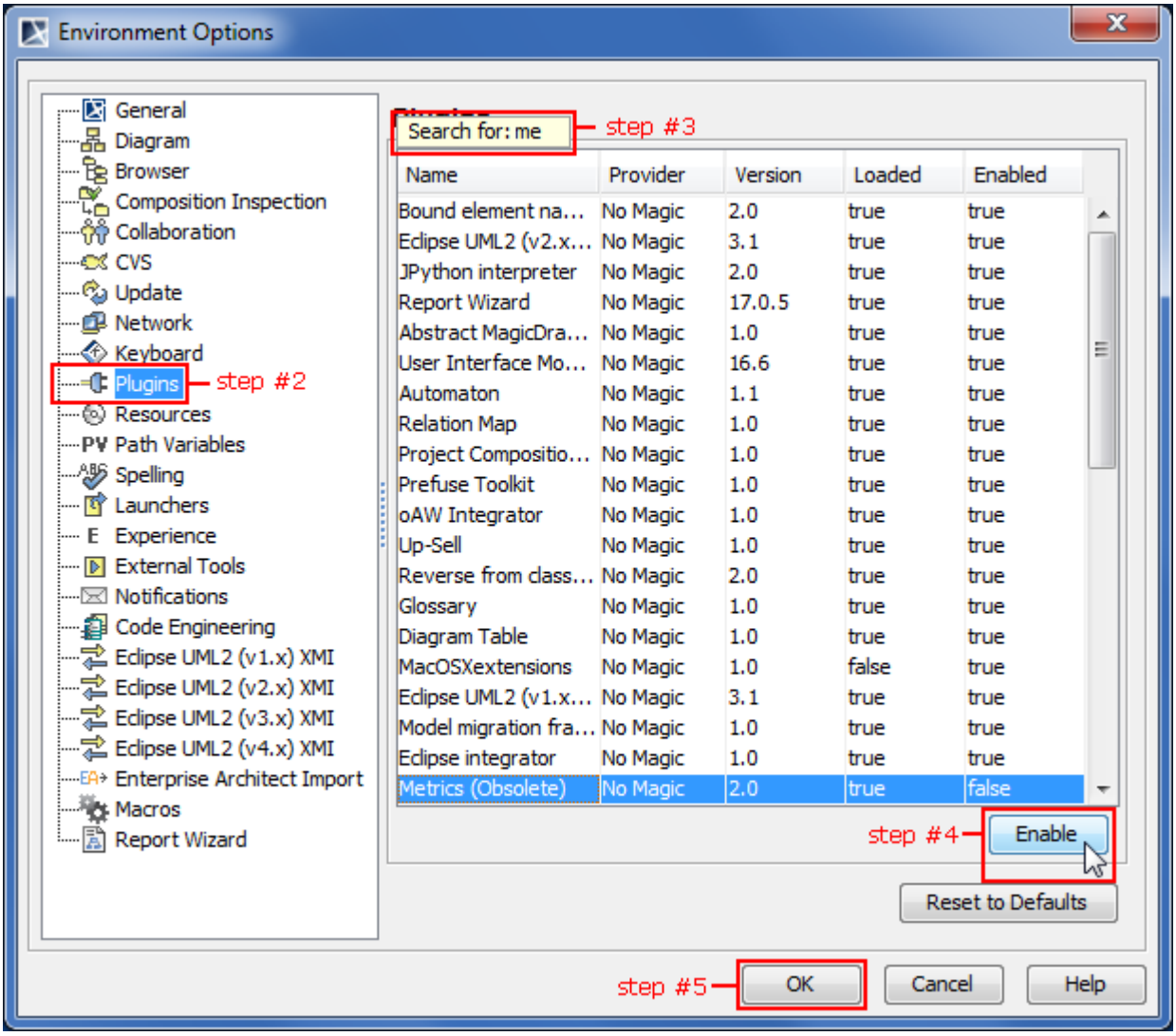

Figure 1 -- Enabling Obsolete Metrics Plugin

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USING OBSOLETE METRICS PLUGIN

Creating Metric Suites

You can create your own metric suites or use one of the three predefined metric suites: *System Metrics*, *UML Model Metrics*, or *Requirements Metrics*.

The metric suite contains a list of metrics that will be counted and the properties specified for each selected metric.

To create your own metric suites, clone an existing suite and specify the suite properties. You can edit the predefined metrics suites, and all metric suites can be imported or exported, facilitating the exchange of ideas with other users.

Displaying Metrics

Metrics are counted according to properties defined in a selected metric suite and can be counted for an entire project or just the selected packages, classes, interfaces, or diagrams. The results are displayed in the Metrics panel, which opens at the bottom of the application window.

Metrics tables display packages, classes, interfaces, and diagrams. Additionally, elements that contain packages, classes, interfaces, and diagrams, which are displayed using a tree structure, are not counted for these elements.

The following is an example of a metrics table structure:

Model Element	Metric1	Metric2	Metric3	…	….	MetricN
PackageA	value	value	value	value	value	value
Inner class1	value	value	value	value	value	value
Inner class2	value	value	value	value	value	value

If a value is not counted for a class, interface, package, or diagram, the cell is left empty.

You can apply the following filters to the metrics table:

- All
- Packages
- Classes (classes and interfaces are displayed)
- Diagrams
- Package Violations (only rows that contain package violations are displayed)
- Class Violations (only rows that contain class or interface violations are displayed)

When the Classes, Diagrams, or Class Violations filters are selected, the owner is displayed next to the following element: c1 (Classes::Package1)

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Starting Metrics

To open the **Metrics** dialog

Do one of the following:

- On the **Analyze** menu, click **Metrics (Obsolete)** > **Metrics**.
- On the selected element's (class, package, interface, or diagram) shortcut menu, point to **Tools** and then click **Metrics (Obsolete)**.

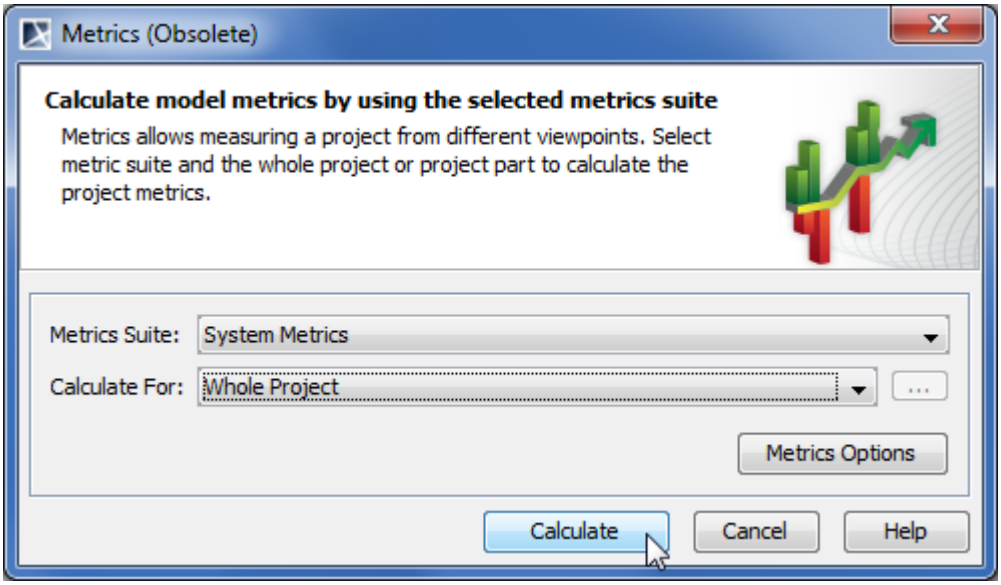

Figure 2 -- Metrics dialog

Item Name	Item Type	Description
Metrics Suite	Drop-down list	Lists all the available metrics suites.
Calculate For	Drop-down list	Lists two values: • **Whole Project** – calculates metrics for the entire project. • **Selection** – calculates metrics for selected items only. Click the **...** button to open the **Select Elements** dialog (see the following figure).
Metrics Options	Button	Opens the **Metrics Options** dialog.
Calculate	Button	Opens the **Metrics** window.

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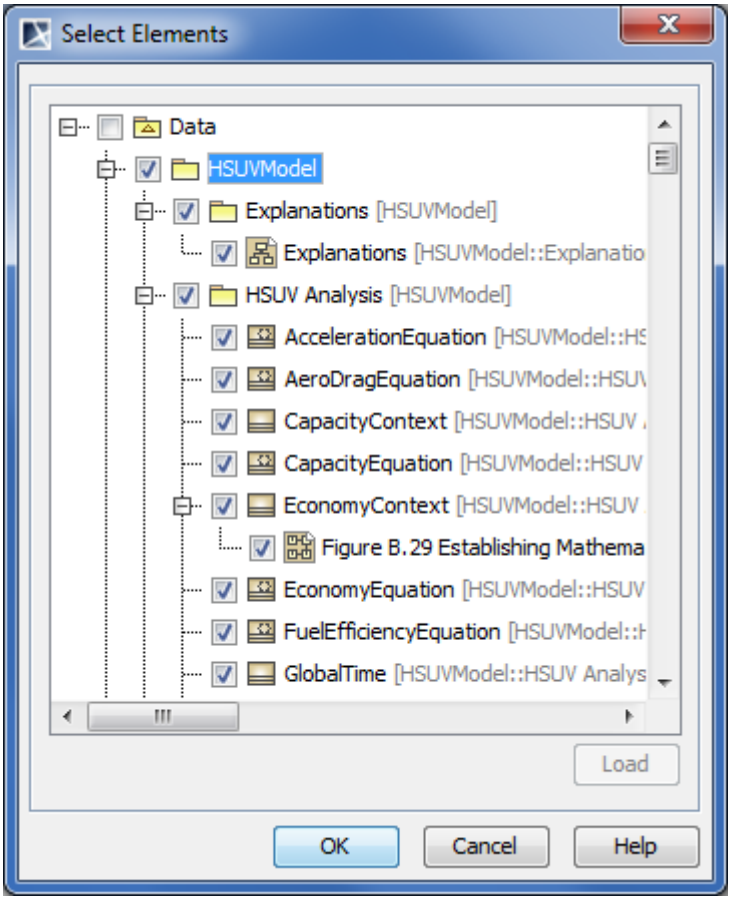

Figure 3 -- Selecting elements for calculating metrics

Packages, classes and diagrams are displayed in the **Select Elements** dialog box. If you select the box next to a parent element (for example, the *Data* check box in the image above), all its related child elements are automatically selected. Conversely, clearing the box next to a parent element clears all its related child elements.

If you clear the box next to a child element, the parent box is also cleared. For example, if the *Data* box is selected, all its related child elements are selected. If you then clear the *Package View* box, its child elements are also cleared, as is the box next to *Data*, but all the other boxes remain selected.

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Metrics panel

The **Metrics** panel is implemented as a JIDE GUI panel. Like the **Messages** panel, it is available at the bottom of the application window.

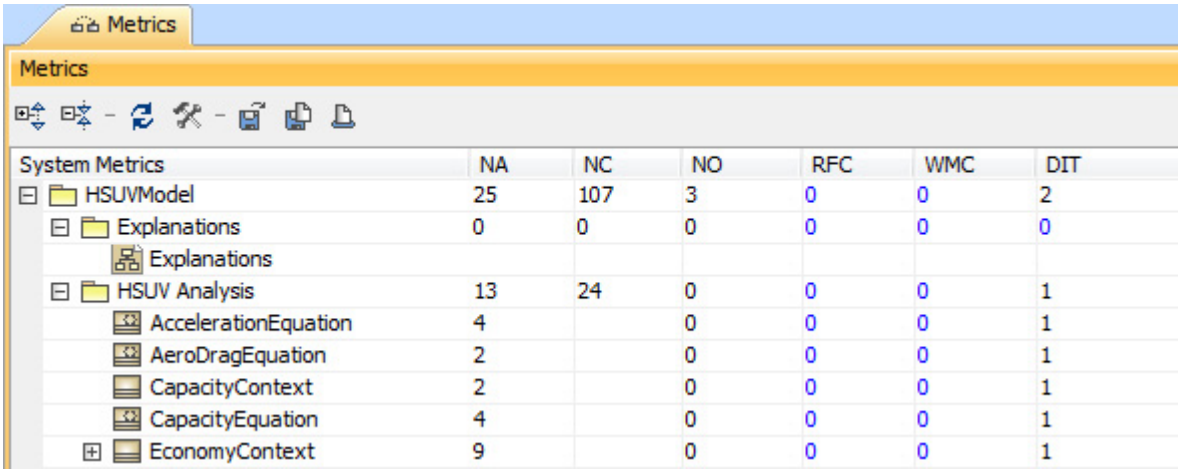

Figure 4 -- Fragment of Metrics panel

The following table describes the buttons of the toolbar on the **Metrics** panel.

Item Name	Item Type	Description
Expand all	Button	Expands all the branches in the metrics results tree.
Collapse All	Button	Collapses all the branches in the metrics results tree.
Refresh	Button	Recalculates metrics results according to the current model.
Metrics Options	Button	Opens the **Metrics Options** dialog.
Export Metrics	Button	Opens the **Export Metrics** dialog. Learn more in "Exporting Metrics" on page 10.
Compare Metrics	Button	Opens the **Open** dialog, where you can select a text file to compare with the currently open metric set. Learn more in "Comparing metrics" on page 11.
Print	Button	Prints the metrics table. The **Print** dialog opens.
Filter	Drop-down list	Contains these values: • All • Packages • Classes • Diagrams • Package Violations • Class Violations

The selected metrics rows or cells can be copied to the clipboard by clicking **Copy** on the shortcut menu or by Ctrl+C on your keyboard.

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Exporting Metrics

You can export the selected metrics rows and columns, or the entire metrics table, to a metrics results file. Metrics results can be exported using *.txt and *.html formats.

TIP!

*.html format is best suited for viewing metrics. If you want to copy the metrics table to another program, use of the *.txt format.

EXAMPLE

Metrics are presented in *.txt format and are separated by tabs.

Element	Metric1	Metric2	Metric3	….	MetricN
Package Package1	value	value	value	….	Value
Class class1 (Package1::class1)	value	value	value	….	Value
Class class2 (Package2::class2)	value	value	value	….	Value

Here *Metric1 .. MetricN* – the metric name abbreviation.

Technical information is displayed at the bottom of the file. Text “Element IDs” are added after the metrics of an element and are also printed. This information is needed for metrics comparison

EXAMPLE

Information is presented in *.html format.

Metrics Report

Element	**Metric1**	**Metric2**	**Metric3**	**….**	**MetricN**
Package Package1	value	value	value	….	Value
Class class1 (Package1::class1)	value	value	value	….	Value

Here *Metric1 .. MetricN* – the metric name abbreviation.

Each metric name is hyperlinked with its metric description. Metric descriptions can be opened in a separate window after clicking the hyperlink.

To export Metrics

- Click the Export Metrics button in the toolbar of the **Metrics** panel. The **Export Metrics** dialog opens.

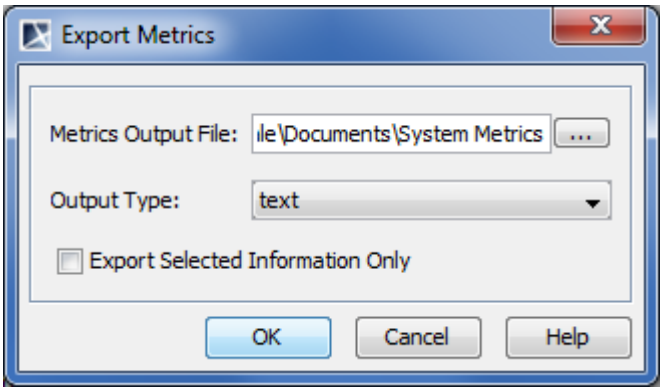

Figure 5 -- Export Metrics dialog

Item Name	Item Type	Description
Metrics Output File	Text box	Displays the path and file names of the metrics results output file. Click the **...** button to select the location and file.

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Item Name	Item Type	Description
Output Type	Drop-down list	Contains these values: • Text (*.txt) • HTML (*.html)
Export Selected Rows Only	Check box	When selected, only the selected table rows and the header row are exported. When cleared, the entire metrics table is exported.

Comparing metrics

Counted metrics can be compared with metrics that are saved in a *.txt file. Metrics can be compared only when the metrics panel is open.

Comparison results are displayed in the same metrics table. If a cell contains a metric that has increased, it has a red fill color. If the metric has decreased, a blue fill color is used. Metrics that are not found in other file cells have a grey fill color.

The metrics comparison can be canceled using the ESC key.

Metrics Options

Metrics suites are managed in the **Metrics Options** dialog.

To open the **Metrics Options** dialog

Do one of the following:

- From the **Analyze** menu, select **Metrics (Obsolete)** > **Metrics Options**.
- In the **Metrics (Obsolete)** dialog, click **Metrics Options**.

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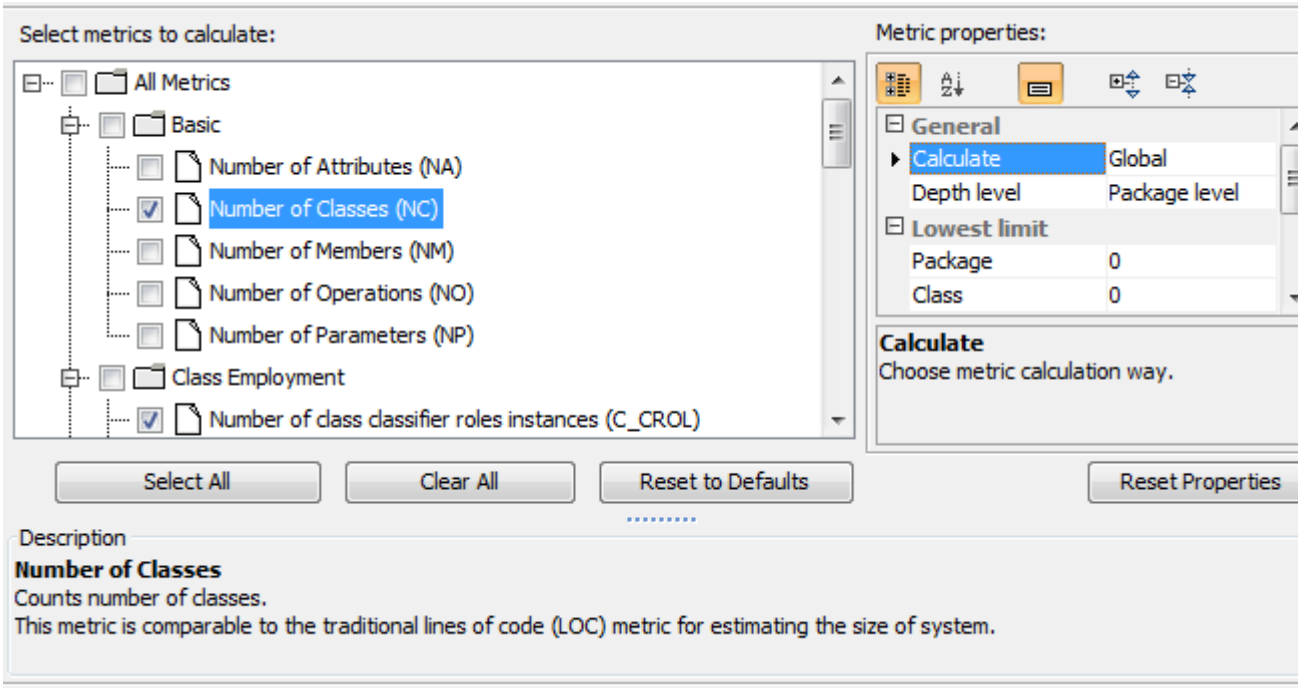

Figure 6 -- Fragment of Metrics Options dialog

The left pane of the **Metrics Options** dialog displays the defined metrics suites. Using the buttons or shortcut menu, metrics suites can be cloned, renamed, removed, exported, and imported. Predefined metrics sets cannot be renamed or removed.

The suite properties are displayed on the right pane.

Metrics suite pane

The following table describes the items of the left pane of the **Metrics Options** dialog.

Item Name	Item Type	Description
Metrics suite	List	Displays all created metrics suites in a list.
Clone **Rename** **Remove** **Import** **Export**	Buttons for managing items of the **Metrics suite** list	• **Clone** – clone the selected suite. • **Rename** – rename the selected suite. • **Remove** – remove the selected suite. • **Import** – import a new suite. The **Open** dialog opens. • **Export** – export the selected suite. The **Save** dialog opens. All these commands are available from each metric suite shortcut menu.
Select metrics to calculate	Tree	Use this tree to select the metrics you want to include in your metrics suite. All metrics are displayed in the metrics tree.
Select All	Button	Selects all metrics in the tree.
Clear All	Button	Clears all metrics in the tree.

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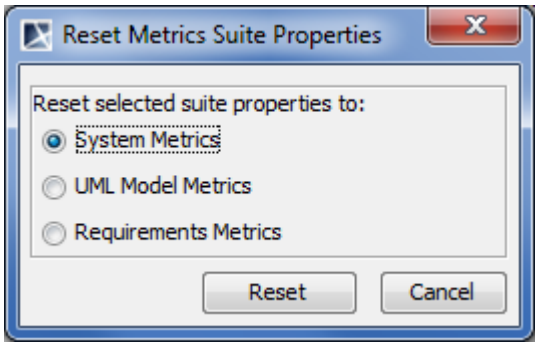
Item Name	Item Type	Description
Reset to Default	Button	Predefined metrics are reset to the default metrics suite. User-created metrics suites are reset to the selected predefined metrics suite. The **Reset Metrics Suite Properties** dialog opens. 

Metric properties pane

The following table describes the metric properties.

Property Group	Property	Description
General	Calculate	Defines what will be counted: • **Local** – inside package (class). • **Global** - inside package (class) recursively. • **Average** – metrics will be counted from the lowest level of the elements tree. Each upper level metric will be counted as an average of the current object metric and all lower level metrics: Average_element_metric = (Element_metric_value (if counted separately) + sum (inner_elements_metrics_values)) / (1 (if element_metric_value was counted) + count_of_inner_elements_that_have_metrics_counted) Average metric value should be rounded down to the lower value (for example, 1.5 = 1, 1.6 =2) • **Min** – lowest level metrics will be counted. Each upper level metric will be set to the minimum of the current object metric and all lower level metrics (except the metrics that are equal 0). Min_element_metric = min (Element_metric_value, min (inner_elements_metrics_values)) Here metric_value > 0 • **Max** – lowest level metrics will be counted. Each upper level metric will be set to the maximum of the current object metric and all lower level metrics. Max_element_metric = max (Element_metric_value, max (inner_elements_metrics_values)) Here metric_value > 0
Lowest limit	Package	Recommended lowest metric value for the package. Editable.
	Class	Recommended lowest metric value for class and interface. Editable.
	Diagram	Recommended lowest metric value for the diagram. Editable.
Highest limit	Package	Recommended highest metric value for package. Editable. If the highest limit is equal to 0, the metric is never marked as too high (in red font color).

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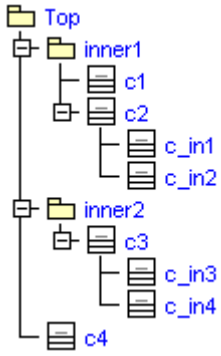
Property Group	Property	Description
	Class	Recommended highest metric value for class and interface. Editable. If the highest limit is equal to 0, the metric is never marked as too high (in red font color).
	Diagram	Recommended highest metric value for diagram. Editable. If the highest limit is equal to 0, the metric is never marked as too high (in red font color).
Include		This properties group specifies whether the information is included when counting metrics.
Weight		This properties group specifies whether the information is included when counting metrics.

The following is an example of a metrics calculation used for calculating the number of classes (NC) in this tree:



Calculated metric values with a different aggregation:

Element	Local	Global	Average	Min	Max
Top	1	8	1	1	2
Inner1	2	4	1	2	2
C1	0	0	0	0	0
C2	2	2	1	2	2
c_in1	0	0	0	0	0
c_in2	0	0	0	0	0
Inner2	1	3	1	1	2
C3	2	2	1	2	2
c_in3	0	0	0	0	0
c_in4	0	0	0	0	0
C4	0	0	0	0	0

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