

# Syntax Summary

The table below shows some common condition expressions, grouped into categories. The complete condition syntax is in the Reference Guide in the RippleDown Help pages.

Category	Expression	Description
arithmetic	<b>absolute value of</b>	Takes the absolute value of a number.
	<b>as integer</b>	Rounds a calculation to the nearest whole number.
	<b>+, -, *, /</b>	Sum, difference, product and ratio of two numbers.
	<b>to the power of</b>	Raises one number to the power of another.
	<b>ln</b>	Calculates the natural (base e) logarithm of a number.
	<b>log</b>	Calculates the logarithm (base 10) of a number.
	<b>exp</b>	Calculates e (euler's number) to the power of a number.
	<b>sum across episodes of</b>	The total value, across all episodes, of an attribute.
comparison	<b>&lt;, &lt;=, &gt;, &gt;=</b>	Compares two numerical values.
	<b>__ &lt; __ &lt; __ (between)</b>	Compares a value with two values at once.
statistical analysis	<b>max, min</b>	The maximum and minimum values for an attribute, amongst all episodes.
	<b>mean</b>	Average of the numerical values.
	<b>baseline mean of first ... values beginning ... days ago</b>	Average of a "window" of values beginning sometime in the past.
	<b>standard deviation</b>	Standard deviation of the numerical values.
text analysis and manipulation	<b>is, is not, are, are not</b>	Compares text values, ignoring case. also compares numeric values for equality.
	<b>are all the same</b>	Identifies sample sequences that all have the same value.
	<b>has changed since last episode</b>	Identifies sample sequences in which there is a change between the current and second-last values.
	<b>contains, does not contain</b>	Analyses text strings for presence or absence of substrings (case insensitive).
	<b>starts with, ends with</b>	Identifies samples that start or end with a particular text fragment (case insensitive).
	<b>append</b>	Appends the text value of one attribute to another.
	<b>distinct values of</b>	Appends together the distinct text values across episodes of a single attribute to produce a comma separated, alphabetically ordered list.
	<b>list of ... values</b>	Appends together the text values across episodes of a single attribute to produce a list separated by new lines.
	<b>text after</b>	Extracts the phrase after a matching phrase.
	<b>text before</b>	Extracts the phrase before a matching phrase.
	<b>part ... of ... split by</b>	For extracting elements from a list in which elements are separated by a fixed token.

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	<b>text between</b>	Extracts the phrase between two phrases.
	<b>text of ... between ... and ...</b>	Extracts the phrase (substring, in IT terms) bounded by two positions in some text.
	<b>character of ... at position</b>	Extracts the symbol at a given position in a string of text.
	<b>first match in... of ...</b>	Extracts a phrase defined by a regular expression from some text.
	<b>first match in... of ... calculated per-episode</b>	Extracts a phrase defined by a regular expression from some text, with the regular expression itself a calculation.
	<b>matches</b>	Detects samples in which text matching a regular expression is found.
	<b>matches ... with case</b>	Same as <b>matches</b> , but case sensitive.
	<b>exactly matches</b>	Detects samples that exactly match a regular expression.
	<b>exactly matches ... with case</b>	Same as <b>exactly matches</b> , but case sensitive.
	<b>to upper case</b>	Re-writes some text in capitals so that it stands out in conclusions.
	<b>as word</b>	Converts small integers to the equivalent words. for use in comments.
	<b>as set</b>	Converts comma separated values of an attribute set.
reference range	<b>high, normal, low</b>	Compares sample values with their reference ranges from the external information system.
	<b>upper reference value of</b>	Refers to the upper value in a reference range provided by the external information system.
	<b>lower reference value of</b>	Refers to the lower value in a reference range provided by the external information system.
change since last result	<b>has increased by more than</b>	Identifies cases in which there has been an increase (absolute or percentage) for an attribute from the previously available value to the current value.
	<b>has decreased by more than</b>	Identifies cases in which there has been a decrease (absolute or percentage) for an attribute from the previously available value to the current value.
	<b>has changed by more than</b>	Identifies cases in which there has been an increase or decrease (absolute or percentage) for an attribute from the previously available value to the current value.
	<b>has not changed by more than</b>	Identifies cases in which the current value for an attribute is within some limit (absolute or percentage) of the previously available value for that attribute.
	<b>percent increase from previous</b>	Relative change between current and previous sample.
	<b>percent decrease from previous</b>	Relative change between current and previous sample.
trend	<b>has increased by more than x from each result to next</b>	For detection of cases in which the values for an attribute show a rising trend, over all results or over all results in a given time period.
	<b>has increased by more than x between each of last n results</b>	For detection of cases in which the values for an attribute show a rising trend over a certain number of results.
	<b>has decreased by more than x from each result to next</b>	For detection of cases in which the values for an attribute show a falling trend, over all results or over all results in a given time period.
	<b>has decreased by more than x</b>	For detection of cases in which the values for an attribute show a falling trend over a

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	<b>between each of last n results</b>	certain number of results.
	<b>net change in</b>	Calculates the difference between the first and last samples for an attribute.
	<b>percent increase from min</b>	Relative change between current and minimum value.
	<b>percent decrease from max</b>	Relative change between current and maximum value.
	<b>differences between</b>	Differences between successive numerical episodes.
	<b>differences from first</b>	Differences between the numerical episodes and the first numerical episode.
	<b>differences from average</b>	Differences between the numerical episodes and the average of the numerical episodes.
	<b>differences from max</b>	Differences between the numerical episodes and the maximum value amongst the numerical episodes.
	<b>difference from min</b>	Differences between the numerical episodes and the minimum value amongst the numerical episodes.
	<b>as percentages</b>	Modifies the differences functions to give results as percentages.
	<b>rate of change</b>	Absolute or point-to-point daily or annual rate of change between selected episodes.
	<b>yearly rate of change by linear regression</b>	Annual linear rate of change according to the least-squares line of best fit.
	counting	<b>all, each</b>
<b>some</b>		Identifies cases in which at least one episode satisfies a constraint.
<b>at least, more than</b>		Identifies cases in which the number of episodes that satisfy a constraint is greater than some given number.
<b>exactly</b>		Identifies cases in which the number of episodes that satisfy a constraint is equal to some given number.
<b>at most, fewer than</b>		Identifies cases in which the number of episodes that satisfy a constraint is less than or equal to some given number.
<b>no, none</b>		Identifies cases in which no episodes satisfy a constraint.
identifying a particular episode	<b>at</b>	Identifies a particular episode based on the values of an attribute.
	<b>first</b>	Refers to the first non-blank sample.
	<b>most recent</b>	Refers to the most recent non-blank sample.
	<b>second most recent</b>	Refers to the second most recent non-blank sample.
	<b>next</b>	Refers to the sample after the indicated one.
	<b>previous</b>	Refers to the latest non-blank sample before the indicated one.
	<b>nearest</b>	Refers to the sample closest in time to the indicated one.
	<b>current</b>	Used to refer to the current episode in complex conditions.
time since an incident	<b>days since (weeks, months, years too)</b>	Identify cases in which no episodes satisfying a constraint have occurred recently.

Category	Expression	Description
	<b>days between (also minutes between, hours between, weeks between, years between)</b>	Compare the times of two significant events.
	<b>days between episodes</b>	Calculates the number of days between successive episodes.
	<b>has value of more recently than</b>	Compare the times at which two attributes have attained a particular value (e.g. "true").
calendar calculations	<b>date at</b>	Determines the date of a particular sample and presents it in the form "21/Apr/05".
	<b>long date at</b>	Determines the date of a particular sample and presents it in the form "21 April, 2005".
	<b>day of</b>	Determines the day in the week of a particular sample.
	<b>minutes at</b>	Evaluates a sample as the number of minutes in the day after midnight.
	<b>days from now, months from now</b>	Calculates the date some days/months after the date of the most recent episode.
	<b>is after date</b>	Compares an attribute value with a fixed date in one of the two formats "21/apr/05" or "21 apr 05".
	<b>as days</b>	Used for finding the number of days between two sample values
	<b>minutes after epoch using format</b>	Used for finding the time between any two case values, in any format.
	<b>minutes difference between ... and ...</b>	Time in minutes between the values of two attributes.
	<b>days between episodes</b>	Calculates the days between each successive episode in the case
	<b>fractional days (years) between episodes</b>	Calculates the time between selected episodes.
	<b>fractional days (years) between first and subsequent episodes</b>	Calculates the time between the first episode and subsequent episodes.
	<b>today</b>	Today's date and time
date and time formatting	<b>as date</b>	Display the sample value as a readable date in the format dd mmm yy
	<b>as time</b>	Display the sample value as a readable time in the format hh:mm
	<b>as datetime</b>	Display the sample value as a readable time using a flexible date and time format
	<b>in format</b>	Display the date and time using a flexible date and time format
restriction clauses	<b>of latest ... values</b>	Restricts attention to the most recent episodes.
	<b>previous</b>	Restricts attention to the episodes before the current episode.
	<b>where</b>	Restricts attention to those episodes satisfying a constraint.
	<b>within last</b>	Restrict attention to recent episodes.
	<b>older than</b>	Restrict attention to older episodes.

Category	Expression	Description
	<b>after</b>	Restrict attention to episodes after some specified episode.
	<b>before</b>	Restrict attention to episodes before some specified episode.
logical operators	<b>and</b>	For combining conditions. evaluates to true if both conditions are true
	<b>or</b>	For combining conditions. evaluates to true if either condition is true
	<b>if...else</b>	For choosing which attribute's values to use, depending on some true or false condition.
	<b>whenever...otherwise</b>	For choosing between the samples of two attributes, on a per-episode basis.
sets	<b>{attributes}</b>	Returns all of the primary attributes in a case.
	<b>in range</b>	Defines a set as those attributes whose values are within a specified range
	<b>except</b>	Defines a set as those attributes in the first set but not in the second set (i.e. set difference)
	<b>intersect</b>	Defines a set as those attributes that are in both the first set and the second set (i.e.set intersection)
	<b>union</b>	Combines two sets into single set containing all elements from both sets (i.e. set union)
	<b>not in</b>	Same as 'except'
	<b>for</b>	Selects a set subject to some condition.
	<b>for which</b>	Selects the attributes from a set that satisfy a predicate that uses variable attributes.
	<b>in range ... for</b>	Defines a set with the 'in range' syntax, subject to some condition.
	<b>number of</b>	The number elements in a set.
	<b>sum of</b>	The sum of the values of the elements in a set.
	<b>includes, does not include</b>	Whether or not a set contains a particular attribute.
	<b>is empty, is not empty</b>	Whether or not a set contains any elements.
	<b>with some abnormal value</b>	Collects together those attributes that have had an abnormal value.
	<b>as groups from</b>	Displays a group name for each attribute in the set, rather than the attribute name.
<b>as names</b>	Displays just the names of the attributes in a set, rather than the names and values	
miscellaneous	<b>cardiovascular event risk</b>	Calculates the probability of a patient having a heart attack.
	<b>flag</b>	Returns the flag field from a sample.
	<b>circular right shift of</b>	Re-arranges a sample sequence.
	<b>distance between ... and ...</b>	Calculates the distance between two points, given their latitude and longitude.
	<b>fill from</b>	Sets all episodes with the value from an attribute or constant.