

## 2.1 Supported trigger functions

All functions supported in [trigger expressions](#) are listed here:

FUNCTION		
Description	Parameters	Comments
<b>abschange</b>		
The amount of absolute difference between last and previous values.		Supported value types: float, int, str, text, log  For example: (previous value;last value=abschange) 1;5=4 3;1=2 0;-2.5=2.5  For strings returns: 0 - values are equal 1 - values differ
<b>avg</b> (sec #num,<time_shift>)		
Average value of an item within the defined evaluation period.	<b>sec</b> or <b>#num</b> - maximum evaluation period <sup>1</sup> in seconds or in latest collected values (preceded by a hash mark) <b>time_shift</b> (optional) - evaluation point is moved the number of seconds back in time	Supported value types: float, int  Examples: ⇒ avg(#5) → average value for the five latest values ⇒ avg(3600) → average value for an hour ⇒ avg(3600,86400) → average value for an hour one day ago.  The <code>time_shift</code> parameter is supported since Zabbix 1.8.2. It is useful when there is a need to compare the current average value with the average value <code>time_shift</code> seconds back.
<b>band</b> (<sec #num>,mask,<time_shift>)		
Value of “bitwise AND” of an item value and mask.	<b>sec</b> (ignored, equals #1) or <b>#num</b> (optional) - the Nth most recent value <b>mask</b> (mandatory) - 64-bit unsigned integer (0 - 18446744073709551615) <b>time_shift</b> (optional) - see avg()	Supported value types: int  Take note that <code>#num</code> works differently here than with many other functions (see last()).  Although the comparison is done in a bitwise manner, all the values must be supplied and are returned in decimal. For example, checking for the 3rd bit is done by comparing to 4, not 100.  Examples: ⇒ band(,12)=8 or band(,12)=4 → 3rd or 4th bit set, but not both at the same time ⇒ band(,20)=16 → 3rd bit not set and 5th bit set.  This function is supported since Zabbix 2.2.0.
<b>change</b>		

<b>FUNCTION</b>		
<b>Description</b>	<b>Parameters</b>	<b>Comments</b>
<b>abschange</b>		
The amount of difference between last and previous values.		Supported value types: float, int, str, text, log  For example: (previous value;last value=change) 1;5=+4 3;1=-2 0;-2.5=-2.5  For strings returns: 0 - values are equal 1 - values differ
<b>count</b> (sec #num,<pattern>,<operator>,<time_shift>)		

FUNCTION		
Description	Parameters	Comments
<b>abschange</b>		
Number of values within the defined evaluation period.	<p><b>sec</b> or <b>#num</b> - maximum evaluation period<sup>1</sup> in seconds or in latest collected values (preceded by a hash mark)</p> <p><b>pattern</b> (optional) - required pattern</p> <p><b>operator</b> (optional)</p> <p>Supported operators:  <i>eq</i> - equal  <i>ne</i> - not equal  <i>gt</i> - greater  <i>ge</i> - greater or equal  <i>lt</i> - less  <i>le</i> - less or equal  <i>like</i> - matches if contains pattern (case-sensitive)  <i>band</i> - bitwise AND (supported since Zabbix 2.2.0).</p> <p>Note that:  <i>eq</i> (default), <i>ne</i>, <i>gt</i>, <i>ge</i>, <i>lt</i>, <i>le</i>, <i>band</i> are supported for integer items  <i>eq</i> (default), <i>ne</i>, <i>gt</i>, <i>ge</i>, <i>lt</i>, <i>le</i> are supported for float items  <i>like</i> (default), <i>eq</i>, <i>ne</i> are supported for string, text and log items</p> <p><b>time_shift</b> (optional) - see avg()</p>	<p>Supported value types: float, integer, string, text, log                      Float items match with the precision of 0.000001.</p> <p>With <i>band</i> as third parameter, the second parameter can be specified as two numbers, separated by '/':  <b>number_to_compare_with/mask</b>. count() calculates “bitwise AND” from the value and the <i>mask</i> and compares the result to <i>number_to_compare_with</i>. If the result of “bitwise AND” is equal to <i>number_to_compare_with</i>, the value is counted.                      If <i>number_to_compare_with</i> and <i>mask</i> are equal, only the <i>mask</i> need be specified (without '/').</p> <p>Examples:                      ⇒ count(600) → number of values for last 10 minutes                      ⇒ count(10m,"error",eq) → number of values for last 10 minutes that equal 'error'                      ⇒ count(600,12) → number of values for last 10 minutes that equal '12'                      ⇒ count(600,12,gt) → number of values for last 10 minutes that are over '12'                      ⇒ count(#10,12,gt) → number of values within last 10 values that are over '12'                      ⇒ count(600,12,gt,86400) → number of values for preceding 10 minutes up to 24 hours ago that were over '12'                      ⇒ count(600,6/7,band) → number of values for last 10 minutes having '110' (in binary) in the 3 least significant bits.                      ⇒ count(600,,,86400) → number of values for preceding 10 minutes up to 24 hours ago</p> <p>The #num parameter is supported since Zabbix 1.6.1.                      The time_shift parameter and string operators are supported since Zabbix 1.8.2.</p>
<b>date</b>		
Current date in YYYYMMDD format.		Supported value types: any Example of returned value: 20150731
<b>dayofmonth</b>		
Day of month in range of 1 to 31.		Supported value types: any This function is supported since Zabbix 1.8.5.

<b>FUNCTION</b>		
<b>Description</b>	<b>Parameters</b>	<b>Comments</b>
<b>abschange</b>		
<b>dayofweek</b>		
Day of week in range of 1 to 7 (Mon - 1, Sun - 7).		Supported value types: <i>any</i>
<b>delta</b> (sec #num,<time_shift>)		
Difference between the maximum and minimum values within the defined evaluation period ('max()' minus 'min()').	<b>sec</b> or <b>#num</b> - maximum evaluation period <sup>1</sup> in seconds or in latest collected values specified (preceded by a hash mark) <b>time_shift</b> (optional) - see avg()	Supported value types: float, int  The <code>time_shift</code> parameter is supported since Zabbix 1.8.2.
<b>diff</b>		
Checking if last and previous values differ.		Supported value types: float, int, str, text, log  Returns: 1 - last and previous values differ 0 - otherwise
<b>fuzzytime</b> (sec)		
Checking how much an item timestamp value differs from the Zabbix server time.	<b>sec</b> - seconds	Supported value types: float, int  Returns: 0 - if difference between item timestamp value and Zabbix server timestamp is over T seconds 1 - otherwise.  Usually used with <code>system.localtime</code> to check that local time is in sync with local time of Zabbix server. Can be used also with <code>vfs.file.time[/path/file,modify]</code> key to check that file didn't get updates for long time.  Example: ⇒ <code>fuzzytime(60)=0</code> → detect a problem if time difference is over 60 seconds
<b>iregexp</b> (<pattern>,<sec #num>)		
This function is a non case-sensitive analogue of <code>regexp()</code> .	see <code>regexp()</code>	Supported value types: str, log, text
<b>last</b> (<sec #num>,<time_shift>)		

FUNCTION		
Description	Parameters	Comments
<b>abschange</b>		
The most recent value.	<b>sec</b> (ignored, equals #1) or <b>#num</b> (optional) - the Nth most recent value <b>time_shift</b> (optional) - see avg()	Supported value types: float, int, str, text, log  Take note that #num works differently here than with many other functions. For example: last() is always equal to last(#1) last(#3) - third most recent value ( <i>not</i> three latest values)  Zabbix does not guarantee exact order of values if more than two values exist within one second in history.  The #num parameter is supported since Zabbix 1.6.2. The time_shift parameter is supported since Zabbix 1.8.2.
<b>logeventid</b> (<pattern>)		
Check if event ID of the last log entry matches a regular expression.	<b>pattern</b> (optional) - regular expression describing the required pattern, <a href="#">POSIX extended</a> style.	Supported value types: log  Returns: 0 - does not match 1 - matches  This function is supported since Zabbix 1.8.5.
<b>logseverity</b>		
Log severity of the last log entry.		Supported value types: log  Returns: 0 - default severity N - severity (integer, useful for Windows event logs: 1 - Information, 2 - Warning, 4 - Error, 7 - Failure Audit, 8 - Success Audit, 9 - Critical, 10 - Verbose). Zabbix takes log severity from <b>Information</b> field of Windows event log.
<b>logsource</b> (<pattern>)		
Checking if log source of the last log entry matches parameter.	<b>pattern</b> (optional) - required string	Supported value types: log  Returns: 0 - does not match 1 - matches Normally used for Windows event logs. For example, logsource("VMware Server").
<b>max</b> (sec #num,<time_shift>)		
Highest value of an item within the defined evaluation period.	<b>sec</b> or <b>#num</b> - maximum evaluation period <sup>1</sup> in seconds or in latest collected values (preceded by a hash mark) <b>time_shift</b> (optional) - see avg()	Supported value types: float, int  The time_shift parameter is supported since Zabbix 1.8.2.

FUNCTION		
Description	Parameters	Comments
<b>abschange</b>		
<b>min</b> (sec #num,<time_shift>)		
Lowest value of an item within the defined evaluation period.	<b>sec</b> or <b>#num</b> - maximum evaluation period <sup>1</sup> in seconds or in latest collected values (preceded by a hash mark) <b>time_shift</b> (optional) - see avg()	Supported value types: float, int  The <code>time_shift</code> parameter is supported since Zabbix 1.8.2.
<b>nodata</b> (sec)		
Checking for no data received.	<b>sec</b> - evaluation period in seconds. The period should not be less than 30 seconds.	Supported value types: <i>any</i>  Returns: 1 - if no data received during the defined period of time 0 - otherwise  Note that this function will display an error if, within the period of the 1st parameter: - there's no data and Zabbix server was restarted - there's no data and maintenance was completed - there's no data and the item was added or re-enabled Errors are displayed in the <i>Info</i> column in trigger <a href="#">configuration</a> .
<b>now</b>		
Number of seconds since the Epoch (00:00:00 UTC, January 1, 1970).		Supported value types: <i>any</i>
<b>prev</b>		
Previous value.		Supported value types: float, int, str, text, log  Returns the same as last(#2).
<b>regexp</b> (<pattern>,<sec #num>)		
Checking if the latest (most recent) value matches regular expression.	<b>pattern</b> (optional) - regular expression, <a href="#">POSIX extended</a> style. <b>sec</b> or <b>#num</b> (optional) - maximum evaluation period <sup>1</sup> in seconds or in latest collected values (preceded by a hash mark). In this case, more than one value may be processed.	Supported value types: str, text, log  Returns: 1 - found 0 - otherwise  If more than one value is processed, '1' is returned if there is at least one matching value.  This function is case-sensitive.
<b>str</b> (<pattern>,<sec #num>)		

FUNCTION		
Description	Parameters	Comments
<b>abschange</b>		
Finding a string in the latest (most recent) value.	<b>pattern</b> (optional) - required string <b>sec</b> or <b>#num</b> (optional) - maximum evaluation period <sup>1</sup> in seconds or in latest collected values (preceded by a hash mark). In this case, more than one value may be processed.	Supported value types: str, text, log  Returns: 1 - found 0 - otherwise  If more than one value is processed, '1' is returned if there is at least one matching value.  This function is case-sensitive.
<b>strlen</b> (<sec #num>,<time_shift>)		
Length of the latest (most recent) value in characters (not bytes).	<b>sec</b> (ignored, equals #1) or <b>#num</b> (optional) - the Nth most recent value <b>time_shift</b> (optional) - see avg()	Supported value types: str, text, log  Take note that #num works differently here than with many other functions.  Examples: ⇒ strlen()(is equal to strlen(#1)) → length of the latest value ⇒ strlen(#3) → length of the third most recent value ⇒ strlen(,86400) → length of the most recent value one day ago.  This function is supported since Zabbix 1.8.4.
<b>sum</b> (sec #num,<time_shift>)		
Sum of collected values within the defined evaluation period.	<b>sec</b> or <b>#num</b> - maximum evaluation period <sup>1</sup> in seconds or in latest collected values (preceded by a hash mark) <b>time_shift</b> (optional) - see avg()	Supported value types: float, int  The function is evaluated starting with the first received value.  The time_shift parameter is supported since Zabbix 1.8.2.
<b>time</b>		
Current time in HHMMSS format.		Supported value types: any  Example of returned value: 123055

Important notes:

- 1) All functions return numeric values only. Comparison to strings is not supported.
- 2) Some of the functions cannot be used for non-numeric values!
- 3) String arguments should be double quoted. Otherwise, they might get misinterpreted.
- 4) For all trigger functions **sec** and **time\_shift** must be an integer with an optional [time unit suffix](#) and has absolutely nothing to do with the item's data type.

Footnotes

<sup>1</sup> The function is evaluated starting with the first received value (unless the timeshift parameter is used).

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