

## ZBXNEXT-4446: Change the severity of a problem

### Summary

Zabbix must allow users to change event (problem) severity. To achieve this a severity field will be added to events and copied from triggers at event creation time. User will be able to change event severity from event acknowledge page. In problem (and similar views) the actual event severity will be used instead of trigger severity.

The event acknowledge page will be renamed to 'update problem' and will allow user to do the following actions:

- acknowledge problem (enabled only if the problem haven't been already acknowledged)
- add comment
- close problem (enabled only if trigger has manual\_close flag)
- change severity

Users must be able to do any combination of the enabled actions with single update (for example acknowledge problem and add comment).

Acknowledge, comment and change severity actions will be done by frontend (API), while close problem action will be done by server through tasks.

### Detailed changes

Old/new severity fields will be added to acknowledges table. Those fields will be set if problem severity change was requested by user.

New flags will be added to acknowledges table action field, the new list of acknowledge actions will be:

- **0x01**, ZBX\_PROBLEM\_UPDATE\_CLOSE
- **0x02**, ZBX\_PROBLEM\_UPDATE\_ACKNOWLEDGE
- **0x04**, ZBX\_PROBLEM\_UPDATE\_MESSAGE
- **0x08**, ZBX\_PROBLEM\_UPDATE\_SEVERITY

### Macro changes

The following macros will be aliased and deprecated:

Deprecated name	New name
{ACK.DATE}	{EVENT.UPDATE.DATE}
{ACK.TIME}	{EVENT.UPDATE.TIME}
{ACK.MESSAGE}	{EVENT.UPDATE.MESSAGE}
{EVENT.ACK.HISTORY}	{EVENT.UPDATE.HISTORY}

The following macros will be added and supported by acknowledgment notifications:

Macro	Comments
<pre>{EVENT.UPDATE.ACTION}</pre>	<p>Human readable actions performed during event update:</p> <ul style="list-style-type: none"> <li>• acknowledged - acknowledge action</li> <li>• commented - add message action</li> <li>• changed severity from xx to yy - change severity action</li> <li>• closed - close problem action</li> </ul> <p>So with all actions done  <pre>{EVENT.UPDATE.ACTION}</pre> macro would expand to  <i>acknowledged,</i>  <i>commented, changed</i>  <i>severity from xx to yy and</i>  <i>closed.</i></p>

### Initial event severity value

When creating events (problems) severity will be copied from trigger severity for trigger problem events and set to 0 (TRIGGER\_SEVERITY\_NOT\_CLASSIFIED) for other events.

### Acceptance criteria

#### Customers Acceptance

The core functionality is to be able to change the severity of a problem.

The problem acknowledgement form must be extended to support:

1. Ability to change existing problem severity to a new one
  1. No special user permissions will be required for this operation

2. History of acknowledgements must be extended to display this operation so that old severity and new severity are clearly visible

API must support change of severity and getting last problem severity.

New set of macros for retrieval of problem severity must be supported.

Change of severity will impact visualization only. Other functions such as notifications, trigger, macros, IT Services, etc will not be affected.

## Zabbix Acceptance

The problem acknowledge form must be renamed to "Update problem" (*feel free to propose a better naming*) and extended to support:

1. ability to select none or a set of operations: **acknowledge**, **close problem** and **change severity**
2. optional message. Note that message is also considered as an operation
3. **acknowledge** operation will be allowed only for unacknowledged problems
4. **close problem** operation will be allowed only if it is allowed on trigger level (as it is implemented currently)
5. history of problem updates must clearly display what operation was performed

All occurrences of displaying of the Ack flag (list of problems, dashboard widgets, etc) will be modified to display just **Yes** (no number) or **No** in the "Ack" column.

All occurrences of displaying list of performed actions for a problem (column "Actions" in the list of problems, dashboard widgets, etc) will be extended so that the column will display relevant icons for different operations:

1.
  1. messages + number of messages (if any), on mouseover we must see timeline of these messages with corresponding actions
  2. change of severity (if any), on mouseover we must see who and when changed severity, also display old and new severity
  3. close problem (if closed manually), on mouseover we must see who and when closed it
  4. actions + number of actions (if there are at least one action), red icon → there are failed actions; on mouseover we must see timeline of all actions: automatic + manual

Global configuration setting for enabling/disabling acknowledges must be removed, the functionality will always be available.

A database patch must be created to ensure that we have only one **acknowledge** operation (first one) in the list of acknowledges for each problem.

## Things to consider during implementation

Similarly to events, table "problem" should probably be extended to contain "ack" flag in order to speed up displaying of problems. The flag should be updated by front-end. A database patch is needed in order to populate this field.

Exact visual design of the Action column must be agreed during design phase.

We should not split existing table "acknowledges", let's keep things simple for now.

## Use cases

### Case 1: Problem acknowledgement.

1. Navigate to Monitoring -> Problems section;
2. Observe that in problem list, there are problems with green colored label 'Yes' or red colored label 'No' in the column 'Ack';
3. Pick a problem that is not acknowledged so far (red colored label 'No' in column 'Ack'). Click on this label. Update problem form appears;
4. Select option 'Only selected problem' in form's 'Acknowledge' row and optionally, enter some message;
5. Press 'Update' button at the bottom of form;
6. Observe that previously selected problem is now acknowledged (there is green colored 'Yes' label) in 'Ack' column.

### Case 2: Change problem severity.

1. Navigate to Monitoring -> Problems section;
2. Select a problem from the list and click on Yes/No label in 'Ack' column. Update problem form appears;
3. Check checkbox next to "Acknowledge" label. The list of severity options appears;
4. Change the severity to more appropriate and optionally type a comment in message box, why changes are made;
5. Click on update button. You will be redirected back to Problems list;
6. Observe that problem's severity has changed and you can clearly see what changes was made in 'Actions' column;

### Case 3: Manually close the problem without acknowledging it.

1. Navigate to Monitoring -> Problems section;
2. Select some problem that is not acknowledged and is still in 'problem' state. Problem must be created from trigger which has manual problem closing allowed;
3. Click on red colored 'No' label in 'Ack' column. Wait the Update problem form to be loaded;
4. Click the checkbox right after label 'Close problem'. Optionally type some message to leave a comment about reasons of your action;

5. Press update button at the bottom of form and see that browser is navigated back to Problems list;
6. Observe that problem is closed.

**Case 4: Review the history of operations performed for particular problem.**

1. Navigate to Monitoring -> Problems section;
2. Observe that few of listed problems has one or more icons in 'Actions' column;
3. Move mouse over icons to see what changes has been made for particular problem;
4. Now, click on Yes/No label in 'Ack' column. See that Update problem form is opened;
5. Observe that problem history table contains same actions that has been done for particular problem;
6. Observe trigger severity changes, problem manual closing and acknowledge records in history table. Some of them might be commented, others don't;
7. Observe that records listed in history are sorted in hierarchical order, starting from the newest.

**Case 5: Change Acknowledge and change severity to multiple problems.**

1. Navigate to Monitoring → Problems section;
2. Select 2 problems, one of which is acknowledged and one is not;
3. Select checkboxes for both problems and click "Bulk acknowledge" button;
4. Wait until the Problem update form opens. Check "Acknowledge" and "Change severity" checkboxes and specify some severity;
5. Press "Update" button;
6. Observe that both problems has new severity;
7. Check Actions table for both problems to make sure that only previously unacknowledged problem has action icon that indicates that problem has just acknowledged. See that for problem that previously was acknowledged, only severity change action was performed.

## Manual test plan















1. Check entering points to Update problem Page (Problems widget, Problem by Severity widget, Trigger overview, Problems page, Event details, Overview page, Maps, Screens).
2. Check Update problem page:
  - a. Save without any changes.
  - b. Make one or several of possible changes:
    - i. Acknowledge,
    - ii. close problem,
    - iii. change severity,
    - iv. add message.
  - c. Make all possible changes.
  - d. Make changes to multiple problems.
3. Check History table of Problem update.
4. Check the possibility of repeated acknowledge - one problem can be acknowledged only one time.
5. Check the possibility of repeated closing - one problem can be closed only one time.
6. Check the problem severity change:
  - . From the start Problem has severity the same as trigger
  - a. Change to higher severity - check icon, check history.
  - b. Change to lower severity - check icon, check history.
  - c. Change severity back to the first value.
  - d. Problem severity is changed and new severity is reflected everywhere problem is mentioned (Problems page, Widgets, Overview(Data), Maps, Screens).
  - e. Trigger severity is not changed.
7. Check HC themes:
  0. light,
  1. dark.
8. Check permissions:
  0. for acknowledging
  1. for closing
  2. for changing severity
  3. for message
9. Check Configuration -> Actions -> New Action (Source: Trigger, Discovery, Autoregistration, Internal) -> Default message for for Operations, Recovery operations, Acknowledgement.
10. Check Reports -> Audit - according to spec, no update problem activity is reflected in audit.
11. Check Reports -> Action log.
12. Check Action widget.
13. Check Administration → General → GUI that the option 'Enable event acknowledgement' is removed.

## What's affected

- UI
- API
- Server

## Icon map

To describe necessary UI changes, following action icons will be used.

-  Automatic action - Remote command
-  Problem closed manually
-  Comment added
-  Number of comments added. Used in Monitoring -> Problems list
-  Problem severity increased
-  Problem severity decreased
-  Problem severity changed, but returned to the original level. Used in Monitoring -> Problems list only.
-  Automatic action - remote message sending
-  Problem acknowledged
-  Problem generated
-  Problem recovery
-  Number of actions. Used in Monitoring -> Problems list
-  Number of actions (with some action in progress state). Used in Monitoring -> Problems list
-  Number of actions (with some failed action). Used in Monitoring -> Problems list

## UI

- All occurrences of displaying of the Ack flag will be modified, removing a number of acknowledges. Hint-box that appears moving a mouse over the **Yes/No** acknowledge label also will be removed. Label **Yes** or **No** as currently indicates that problem has acknowledged or not.
- In all frontend places where currently is displayed 'Action' column, it must be extended in following way:

- Action column contains special icon (see icon map above) with number of messages submitted for each problem. Moving a mouse over it, the timeline appears, showing all messages (full) and corresponding actions for particular problem.

Time	User	Action	Message
2018-04-24 08:50:14	Admin (Zabbix Administrator)		Lorem ipsum dolor sit amet, consectetur...
2018-04-24 08:49:13	Admin (Zabbix Administrator)		Lorem ipsum dolor sit amet, consectetur...
2018-04-24 08:48:41	Admin (Zabbix Administrator)		Lorem ipsum dolor sit amet, consectetur...
2018-04-24 08:47:55	Admin (Zabbix Administrator)		Lorem ipsum dolor sit amet, consectetur...
2018-04-24 08:47:36	Admin (Zabbix Administrator)		Lorem ipsum dolor sit amet, consectetur...

- Action column contains a special red, green or gray icon, indicating that severity has changed (green for decreasing severity and red if severity was increased comparing to the original one, gray if severity has changed, but returned to the original state). Moving a mouse over it, hintbox appears showing when and who made latest severity changes, as well as severity level before and after changes.

Time	User	Severity changes
2018-04-24 08:48:41	Admin (Zabbix Administrator)	Disaster → High
2018-04-24 08:47:36	Admin (Zabbix Administrator)	High → Disaster

- Action column contains special icon, indicating that one or more actions are made. The number of actions will be displayed over the icon. If there will be at least one failed action, icon will be colored in red, or if at least one action is in progress, icon will be colored in yellow. Moving a mouse over it shows a timeline of all actions (both automatically and manually performed). Action timeline will be described in details later.

<a href="#">zalex_ua has unanswered issues [FRQ-82]</a>	39m 18s	No	
<a href="#">dmitrijs.borisenko has unanswered issues [ICT-37]</a>	39m 18s	Yes	
<a href="#">edmunds.vesmanis has missed issues [CSA-1]</a>	1h 44m 18s	No	
<a href="#">edmunds.vesmanis has unanswered issues [CSA-1]</a>	2h 9m 18s	No	
<a href="#">Zabbix agent has not been started on Solaris 11 i386</a>	2h 41m 3s	No	

- Popups should be maximum 800px wide.
- In Administration → General → GUI the option 'Enable event acknowledgement' will be removed;



- In all places where frontend uses 'event\_ack\_enable' config value, it will be removed, leaving only functionality that was for enabled event acknowledge (event\_ack\_enable = 1);
- "Event acknowledgements" page will be renamed to "Update problem". There will be following changes:
  - "Acknowledge" label will be renamed to "Scope". Selected scope will be used for all actions performed by user;
  - Page will be extended with option to change severity of problems in specified scope. User will have possibility to select "Change severity" checkbox and specify new severity for problem(s). Initially "Change severity" checkbox will be unchecked and the list of modernized radio buttons are disabled. Selecting it, the list of modernized radio buttons are then enabled. Initially none of severity levels will be selected. Which means unselected checkbox will leave severity unchanged. Selecting the checkbox, but leaving severity unspecified, leads to error message: "No severity specified." Severity changes will be done using ZBX\_PROBLEM\_UPDATE\_SEVERITY action flag;
  - The History table in "Update problem" page will be changed, extending "User action" column to show what operations are performed in each update operation. Only manual actions will be shown. Message actions will have full message;
  - If at least one of problems will be unacknowledged, there will be checkbox "Acknowledge" available. Checking it and submitting problem update form, unacknowledged problems will be acknowledged using ZBX\_PROBLEM\_UPDATE\_ACKNOWLEDGE action flag. If there will be acknowledged problems only, ckeckbox "Acknowledge" will be disabled.
  - Message field will be optional. Specified message will be considered as ZBX\_PROBLEM\_UPDATE\_MESSAGE action.

Update problem

Message

History	Time	User	User action	Message
	2018-05-31 11:39:28	Admin (Zabbix Administrator)	✓	Working on it.

Scope

Only selected problem

Selected and all other problems of related triggers 67 events

Change severity  Not classified Information Warning Average High Disaster

Acknowledge

Close problem

\* At least one update operation or message must exist

To update problem, at least one operation must be specified, otherwise error message "At least one update operation is mandatory" will be shown.

- In Event details page "Acknowledgements", "Message actions" and "Command actions" tables will be replaced by one "Actions" table. New table contains following information:
  - Step column shows which step of automatic action performed particular action;
  - Time column shows at what time action was done;
  - User/Recipient column shows user which performed manual action or recipient and sendto (in cursive) of automatic message sending actions;
  - Action column contains one or more icons that indicates what type of action was done. Moving a mouse over severity change icon, the hintbox appears, showing what the old and new severity levels. Other icons will have tooltips with icon names;
  - Message/Command column shows:
    - media full length subject and message for automatically sent message actions;
    - executed command for automatically made remote command actions;
    - full length message for manually made ZBX\_PROBLEM\_UPDATE\_MESSAGE actions.
  - Status, similarly as now shows the state of automatic action;
  - Icon in info column, similarly as now shows additional details about automatic actions. For message sending actions in progress state, the yellow icon shows what number of retries are left for particular action.

Actions						
Step	Time	User/Recipient	Action	Message/Command	Status	Info
1	2018-05-31 15:17:16	Admin (Zabbix Administrator) <i>admin@zabbix.com</i>	✉	Resolved: ValueItemTrigger25	In progress	ⓘ
				Problem has been resolved at 15:17:15 on 2018.05.31 Problem name: ValueItemTrigger25 Host: ValueHost Severity: High  Original problem ID: 237		
				2018-05-31 15:17:15		📅
				2018-05-31 15:17:11	Admin (Zabbix Administrator)	✓
1	2018-05-31 15:16:48	Admin2 <i>admin2@zabbix.com</i> <i>admin2_work@zabbix.com</i>	✉	Updated problem: ValueItemTrigger25	Success	
				Zabbix Administrator (Admin) severity changed from Average to High problem at 2018.05.31 15:16:45.  Current problem status is PROBLEM		
				2018-05-31 15:16:45	Admin (Zabbix Administrator)	⚠
				2018-05-31 15:16:25	Admin (Zabbix Administrator)	⚠
				Average = High	rs are unable to work.	
1	2018-05-31 15:16:07	Admin2 <i>admin2@zabbix.com</i> <i>admin2_work@zabbix.com</i>	✉	Updated problem: ValueItemTrigger25	Failed	ⓘ
				Zabbix Administrator (Admin) acknowledged problem at 2018.05.31 15:16:05. I am working on it.  Current problem status is PROBLEM		
				2018-05-31 15:16:05	Admin (Zabbix Administrator)	✓
				2018-05-31 15:15:49		➤
1	2018-05-31 15:15:49	Admin2 <i>admin2@zabbix.com</i> <i>admin2_work@zabbix.com</i>	➤	ping 127.0.0.1	Executed	
1	2018-05-31 15:15:49	Admin2 <i>admin2@zabbix.com</i> <i>admin2_work@zabbix.com</i>	✉	Problem: ValueItemTrigger25	Success	
				Problem started at 15:15:36 on 2018.05.31 Problem name: ValueItemTrigger25 Host: ValueHost Severity: Average  Original problem ID: 237		
				2018-05-31 15:15:36		📅

Each timeline begins with special problem event icon and time at which problem occurred (the last row in print screen). For problems that are recovered, there will be one more action row with special problem recovery icon and time at which that happened (2nd action row in print screen).

- Action timeline that appears when user moves mouse over the action icon in problems view, contains following columns:
  - Time shows time when action occurred;

- User/Recipient shows which user made manual action or recipients of automatic message sending action;
- One or more icons, indicating the type of actions (see icon map). Moving a mouse over severity change icon, a hintbox appears, showing the old and new severity level. Other icons will have tooltips with icon name;
- Message (full) typed by user when performed particular action, or media type for automatic messages;
- Status and information columns for automatic actions (works equally as current);

Time	User/Recipient	Action	Message/Command	Status	Info
2018-05-31 15:17:16	Admin2		Email	In progress	
2018-05-31 15:17:15					
2018-05-31 15:17:11	Admin (Zabbix Administrator)		Fixed		
2018-05-31 15:16:48	Admin2		Email	Success	
2018-05-31 15:16:45	Admin (Zabbix Administrator)				
2018-05-31 15:16:25	Admin (Zabbix Administrator)		Average = High users are u...		
2018-05-31 15:16:07	Admin2		Email	Failed	
2018-05-31 15:16:05	Admin (Zabbix Administrator)		I am working on it.		
2018-05-31 15:15:49			Remote command	Executed	
2018-05-31 15:15:49	Admin2		Email	Success	
2018-05-31 15:15:36					

Each timeline begins with special problem event icon and time at which problem occurred (the last row in print screen). For problems that are recovered, there will be one more action row with special problem recovery icon and time at which that happened (2nd action row in print screen).

- In Configuration → Actions → Create action "Acknowledgement operations" tab will be renamed to "Update operations". That will lead to several additional change:
  - "At least one operation, recovery operation or acknowledge operation must exist." will be changed to "At least one operation, recovery operation or update operation must exist."

- Default acknowledgement subject and message also will be updated, with exact change specified in database template changes.

Recovery operations
Update operations

Default subject

Default message 

```
{USER.FULLNAME} {EVENT.UPDATE.ACTION} problem at
{EVENT.UPDATE.DATE} {EVENT.UPDATE.TIME}.
{EVENT.UPDATE.MESSAGE}

Current problem status is {EVENT.STATUS}, acknowledged:
{EVENT.ACK.STATUS}.
```

Operations	Details	Action
	<a href="#" style="color: #0070c0; text-decoration: underline;">New</a>	

\* At least one operation, recovery operation or update operation must exist.

## API

API methods to be changed:

- `event.acknowledge:`
  - `new action` property to indicate, what changes should be made. Contains following flags:
    - `0x01 - ZBX_PROBLEM_UPDATE_CLOSE` - request to close problems
    - `0x02 - ZBX_PROBLEM_UPDATE_ACKNOWLEDGE` - request to acknowledge problems
    - `0x04 - ZBX_PROBLEM_UPDATE_MESSAGE` - request to write message to problem
    - `0x08 - ZBX_PROBLEM_UPDATE_SEVERITY` - request to change problem severity
  - method should be able to change severity of event and related problem (if such has been found) if provided severity differs from existing one and `ZBX_PROBLEM_UPDATE_SEVERITY` action flag is passed. New severity will be passed in `severity` property;
  - method should be able to check multiple action flags combined in single property;
  - check that at least one action is given.
  - Validation rules:
    - General
      - If no eventids - API fail (Incorrect arguments passed to function)
      - If no action - API fail (Incorrect arguments passed to function)
      - If user has no R rights for any given event - API fail. (No permissions)

- If OK event is passed to API - API fail. (No permissions)
  - Close action (ZBX\_PROBLEM\_UPDATE\_CLOSE)
    - If user has no RW rights to any given event trigger - API fail. (No permissions)
    - If trigger does not allow manual close for any event - API fail (Cannot close problem: trigger does not allow manual closing)
    - If event is already closed, or manual close is pending - action for specific event is not performed.
    - If all problems are already closed - no API error (no close actions will be performed as well)
  - Acknowledge action (ZBX\_PROBLEM\_UPDATE\_ACKNOWLEDGE)
    - Acknowledge on closed problem is allowed.
    - If event is already acknowledged - action for specific event is not performed.
    - If all problems are already acknowledged - no API error (no acknowledge actions will be performed as well)
  - Message action (ZBX\_PROBLEM\_UPDATE\_MESSAGE)
    - If empty message - API fail (empty message)
  - Severity change action (ZBX\_PROBLEM\_UPDATE\_SEVERITY)
    - If user has no RW rights any given event trigger - API fail. (No permissions)
    - If nonexistent severity passed - API fail (Incorrect field, unexpected value)
- `event.get`:
  - using `select_acknowledges`, the `acknowledges` property should contain new and old severity values as well as should show newly added actions;
  - using property `severities`, API `event.get` method should search for appropriate rows using newly created `severity` field (currently joins `triggers` table).
- `problem.get`:
  - API method should use newly created `acknowledged` field to select acknowledged problems (currently it uses `subselect` to search for problem which are linked to events with related `acknowledges`);
  - using property `severities`, API `problem.get` method should search for appropriate rows using newly created `severity` field (currently joins `triggers` table);
  - using `selectAcknowledges`, the `acknowledges` property should contain new and old severity values as well as should show newly added actions.

Example of usage of `problem.get` method to show how `acknowledges` object has changed.  
Response looks equal requesting `acknowledges` using `event.get` method.

Request:

```
{
  "jsonrpc": "2.0",
  "method": "problem.get",
  "params": {
    "output": [],
    "selectAcknowledges": "extend"
  },
  "auth": "xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx",
  "id": 1
}
```

### Response:

```
{
  "jsonrpc": "2.0",
  "result": [{
    "acknowledges": [{
      "acknowledgeid": "14443",
      "userid": "1",
      "eventid": "1245463",
      "clock": "1472457281",
      "message": "",
      "old_severity": "2",
      "new_severity": "4",
      "action": "8"
    }
  ]
},
  "id": 1
}
```

Example of `event.acknowledge` call. In given example, all possible operations are used. Action will be calculated in frontend and API will only validate if all needed parameters are passed to perform specified action.

### Request:

```
{
  "jsonrpc": "2.0",
  "method": "event.acknowledge",
  "params": {
    "eventids": "20427",
    "message": "Problem resolved.",
    "severity": 3,
    "action": 15
  },
  "auth": "xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx",
  "id": 1
}
```

## Server

Add support of new `{EVENT.SEVERITY}`, `{EVENT.NSEVERITY}` macros in notifications.

Extend `{EVENT.ACK.HISTORY}` macro to list acknowledge actions.

Add new macro `{EVENT.UPDATE}` to list acknowledge actions when sending acknowledge notifications.

## Translation strings

New translation strings:

- Update problem
- Scope [context: "selected problems"]
- Selected and all other problems of related triggers
- Change severity
- Cannot update event
- Cannot update events
- Event updated
- Events updated
- User/Recipient
- Message/Command
- Severity changes
- Changed severity
- %1\$s retries left
- Update operations
- At least one operation, recovery operation or update operation must exist.
- At least one update operation is mandatory
- Mass update
- At least one update operation or message must exist.
- Trigger details
- Problem created
- Problem resolved
- Manually closed
- Message action

Translation strings to remove:

- Enable event acknowledgement
- Event acknowledges "%1\$s".
- Only trigger events can be acknowledged.
- Cannot acknowledge problem: %1\$s.
- Event acknowledgements
- Selected and all other unacknowledged problems of related triggers
- Cannot acknowledge event

- Cannot acknowledge events
- Event acknowledged
- Events acknowledged
- Acknowledgement operations
- At least one operation, recovery operation or acknowledge operation must exist.
- Bulk acknowledge
- event is not in PROBLEM state
- Acknowledgements
- Message actions
- Event source details

## Database changes

New fields must be added to the following tables:

### *events*

```
FIELD |severity |t_integer |'0' |NOT NULL |0
```

### *problem*

```
FIELD |severity          |t_integer |'0' |NOT NULL |0
```

```
FIELD |acknowledged      |t_integer |'0' |NOT NULL |0
```

### *acknowledges*

```
FIELD |old_severity        |t_integer |'0' |NOT NULL |0
```

```
FIELD |new_severity         |t_integer |'0' |NOT NULL |0
```

The *config* table *event\_ack\_enable* field must be dropped.

## Database migration

Additional patches must be created to:

- copy acknowledged flag from corresponding events into problem table
- copy severity from corresponding triggers into events and problem tables
- add 0x02, ZBX\_PROBLEM\_UPDATE\_ACKNOWLEDGE flag to the action field of the first acknowledge for each event
- add 0x04, ZBX\_PROBLEM\_UPDATE\_MESSAGE flag to the action field of all acknowledges

## Database template changes

The default acknowledgment operation message must be changed:

Subject	Updated problem: {EVENT.NAME}
---------	-------------------------------



Message	{USER.FULLNAME} {EVENT.UPDATE.ACTION} problem at {EVENT.UPDATE.DATE} {EVENT.UPDATE.TIME}. {EVENT.UPDATE.MESSAGE}
	Current problem status is {EVENT.STATUS}, acknowledged: {EVENT.ACK.STATUS}.

*Note that in the case of no update messages the notification message will contain an extra empty line.*

The default operation message must be changed:

Message	Problem started at {EVENT.TIME} on {EVENT.DATE}  Problem name: {TRIGGER.NAME}  Host: {HOST.NAME}  Severity: <b>{EVENT.SEVERITY}</b>  Original problem ID: {EVENT.ID}  {TRIGGER.URL}
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The default recovery operation message must be changed:

Message	<p>Problem has been resolved at {EVENT.RECOVERY.TIME} on {EVENT.RECOVERY.DATE}</p> <p>Problem name: {TRIGGER.NAME}</p> <p>Host: {HOST.NAME}</p> <p>Severity: {EVENT.SEVERITY}</p> <p>Original problem ID: {EVENT.ID}</p> <p>{TRIGGER.URL}</p>
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## Documentation changes

- What's new in 4.0
- Zabbix Manual
- Upgrade notes
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