ZABBIX SUMMIT 2024

Browser monitoring workshop

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There are three key elements (information boxes) in the workshop slides:

- Linux virtual machine CLI (command-line interface)
  - You need to enter the commands specified here in your Linux SSH terminal or using the web interface http://student-XX-zbxtr-YYYY.zabbix.training:9090, without the # symbol:

```
# systemctl enable zabbix-server --now
```

- Text on the screen after a command execution (output may differ slightly)

```
Created symlink /etc/systemd/system/multi-user.target.wants/zabbix-server.service
```

- Linux editor screen – here, change the specified parameters to get required functionality

```
### Option: DBPassword
#       Database password.
#       Comment this line if no password is used.
DBPassword=P455w0RD
```

Browser monitoring

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Browser monitoring or **Browser Synthetic Monitoring**

A way to constantly checks website or application performance by simulating user actions, ensuring the production site runs smoothly regardless of user activity.

- Early issue detection during development or in a live environment
- Simulates user interactions with scripted tests
- Ensures a proactive check on application health
- Long-term and relevant health statistics
- Constant quality control

Types of browser monitoring

- **Single-URL Monitors**
  - Simulate a user visiting a specific URL and provide information such as availability and performance metrics.
- **Browser Clickpaths**
  - Simulated user navigation through a site, automatically testing availability and performance at scheduled intervals. This approach can be used to detect and report UI bugs or unexpected functionality.
- **Mobile Simulation**
  - Simulates mobile interactions to assess the availability and performance of mobile versions of websites.
- **HTTP(S) monitors**
  - Simple HTTP requests. You can use them to monitor the availability of your API endpoints or perform simple HTTP checks for single-resource availability

Website monitoring setup

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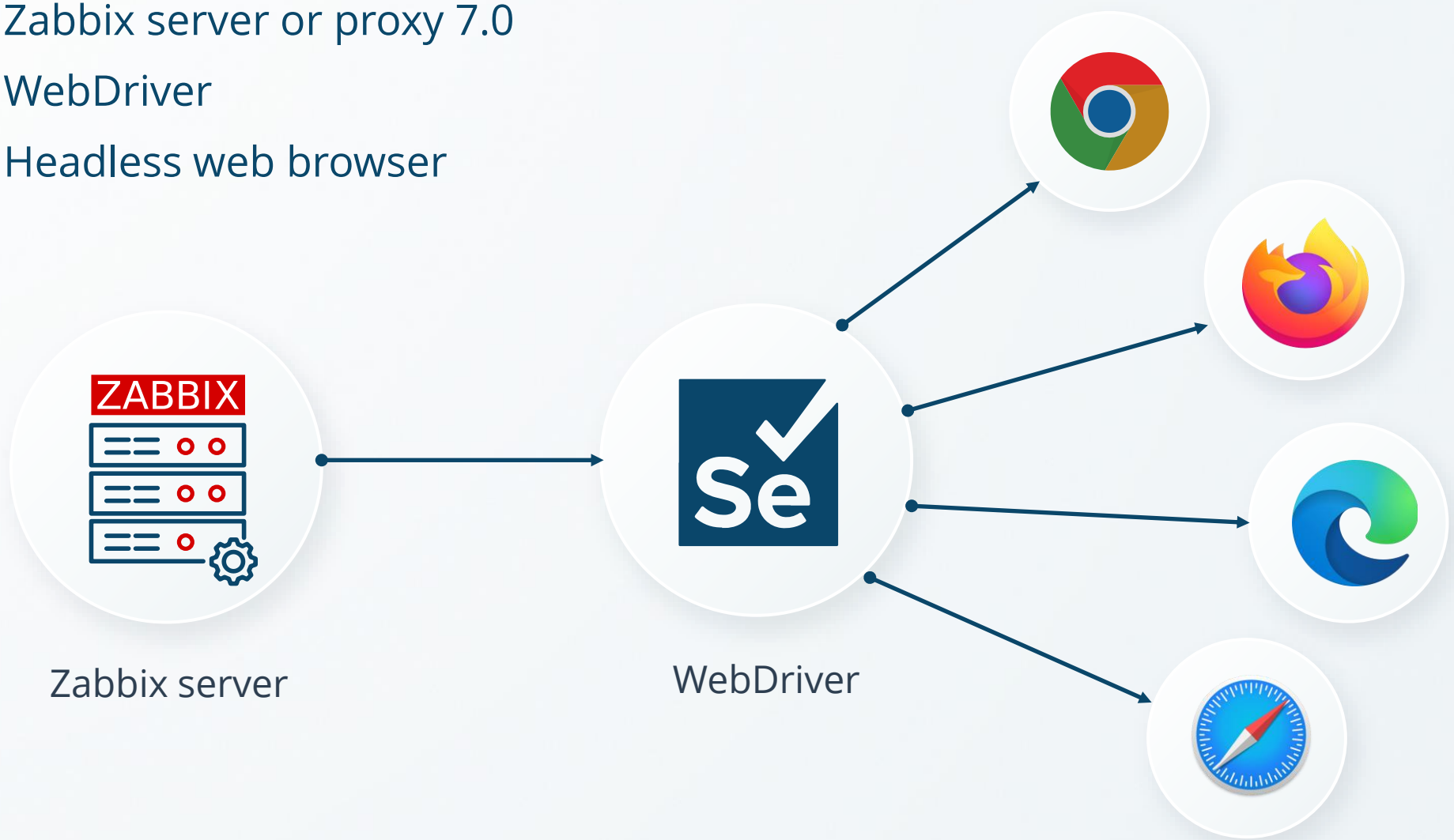
There are several components required for browser monitoring:

- Zabbix server or proxy 7.0
- WebDriver
- Headless web browser



The most convinient way, to get the webdrivers is to use containers:

- To install the containers, login via SSH and execute this command on you VM

```
# podman run --name webdriver -d \
-p 4444:4444 \
-p 7900:7900 \
--shm-size="2g" \
--restart=always -d docker.io/selenium/standalone-chrome:latest
```

- Check if the container is now running

```
# podman ps
```

```
e4e...  docker.io/selenium/standalone-chrome:latest :4444->4444/tcp, :7900->7900/tcp, 4444/tcp, 5900/tcp  webdriver
```

The installed container includes:

- Latest version of Standalone Chrome (for Browser item type)
- noVNC (to inspect visually container activity with browser)

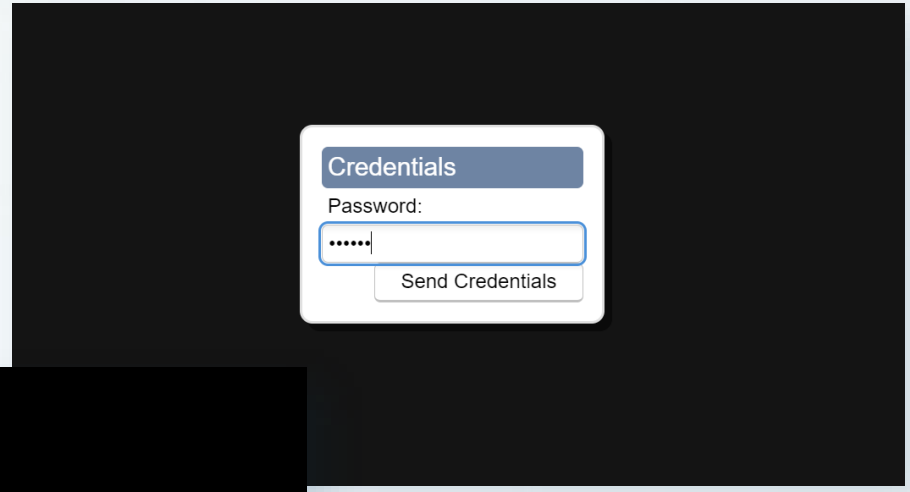
NOVNC CONFIRMATION

- Open the address http://<your-ip-address>:7900 using browser
- Check that noVNC page is accesible

- Press connect

NOVNC CONFIRMATION

- After pressing connect, there will be a prompt for password
- Password is "secret"
- After entering password, press Send Credentials
- You will see the Selenium Grid
- This can be later used to confirm browser behaviour



CONFIGURE ZABBIX SERVER

- Now edit the Zabbix server configuration file /etc/zabbix/zabbix_server.conf
  - change as shown below

```
# nano /etc/zabbix/zabbix_server.conf
```

```
### Option: WebDriverURL
#       WebDriver interface HTTP[S] URL. For example http://localhost:4444 used with
#       Selenium WebDriver standalone server.
#
# WebDriverURL=
WebDriverURL=http://localhost:4444

### Option: StartBrowserPollers
#       Number of pre-forked instances of browser item pollers.
#
# Range: 0-1000
# StartBrowserPollers=1
StartBrowserPollers=5
```

- Save the changes and restart Zabbix server to apply them

```
# systemctl restart zabbix-server
```

- Now we can use Browser items

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Browser item

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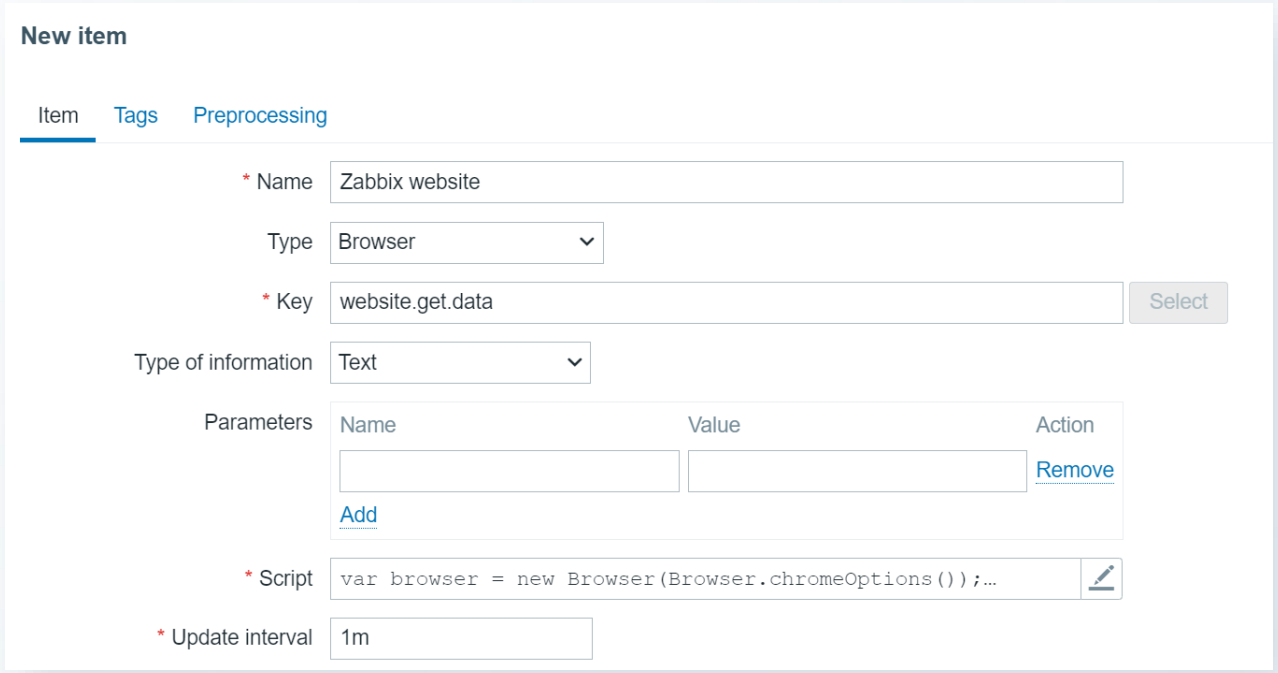
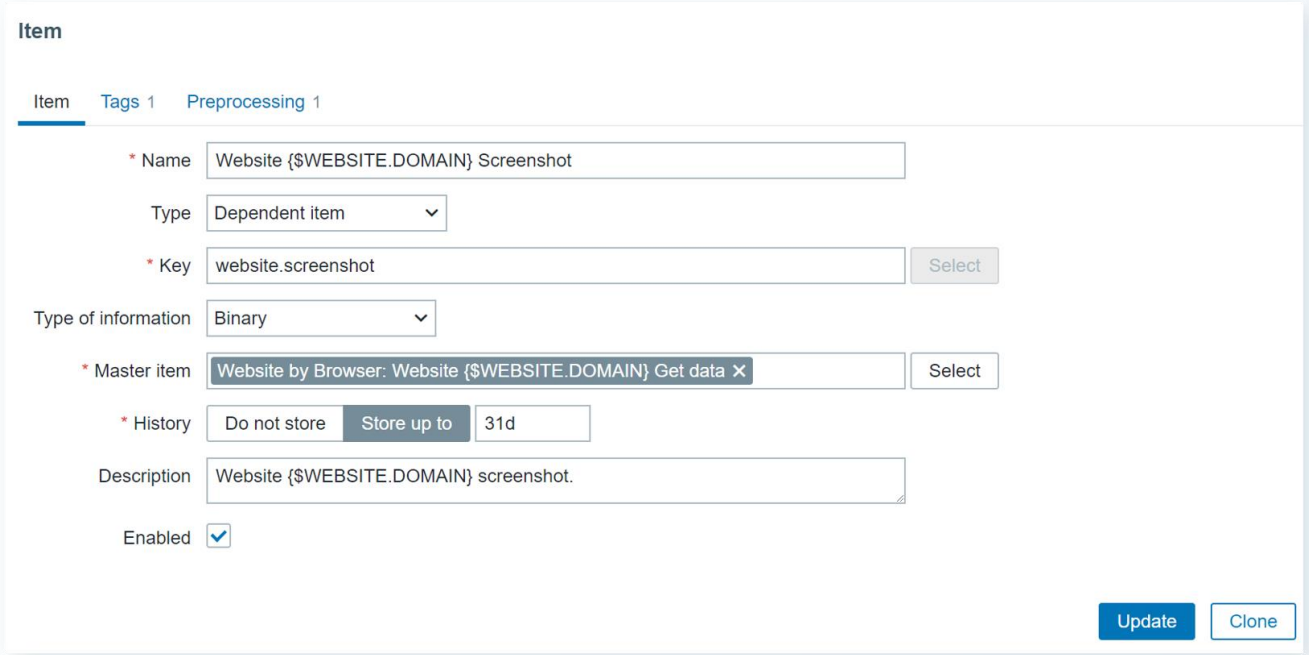
In Zabbix 7.0, a new item type is introduced: Browser

- Based on JavaScript
- Supports the browser class
- Support various new methods to work with pages



The browser item can take screenshots of the monitored pages:



- To take a screenshot of the page – use the ***getScreenshot()*** method
- Screenshot is included in the JSON object in base64 format
- It is extracted into a binary dependent item
- Can be viewed on the dashboards or sent via media type

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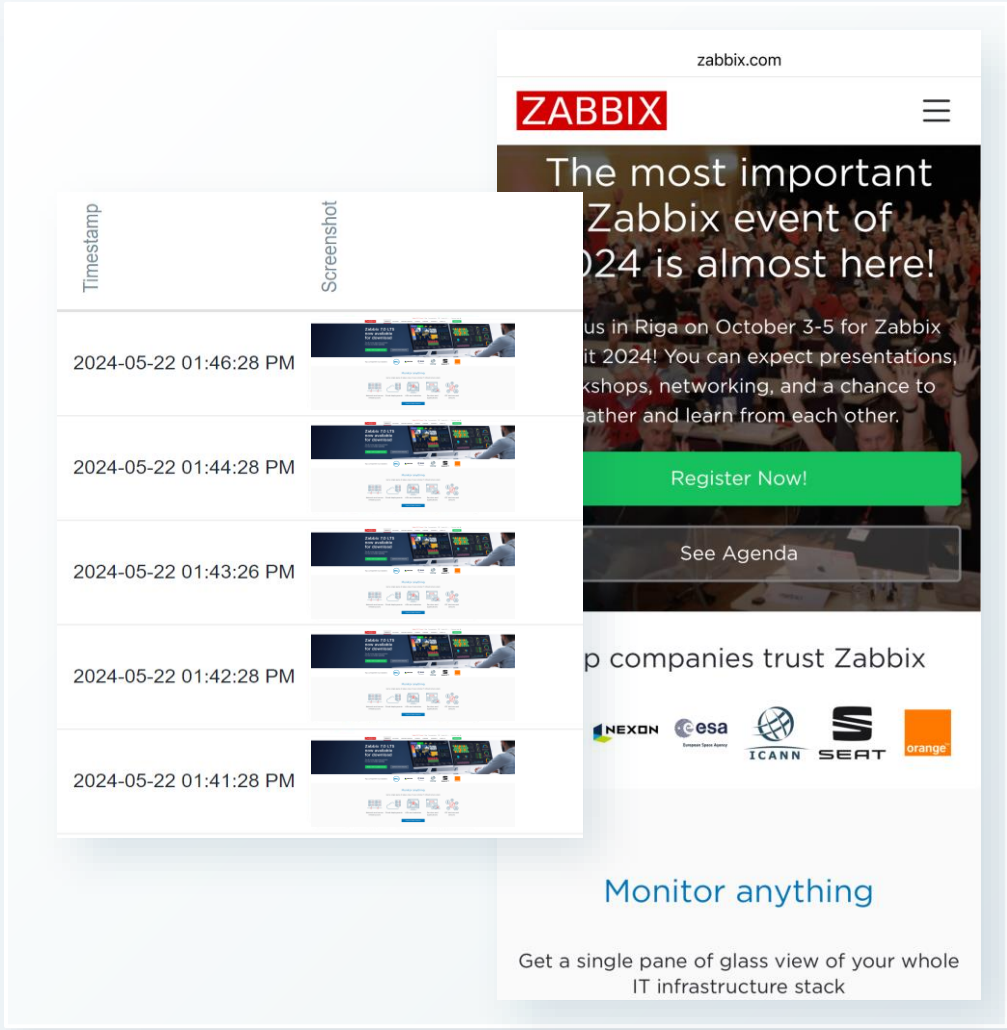
Screenshot size: up to 8K.

- Default screenshot size 1920x1080px.
- Screenshot can be displayed using the "Item history" widget.
- Screenshot size is specified by the ***setScreenSize(x,y)*** method.



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BROWSER OBJECTS AND METHODS

Browser object - manages WebDriver session through out the whole item execution.

- (initialize session => execute all actions in script => close session).

Element - an element that is found on the opened webpage.

Cookie - a cookie returned by the ***getCookies()*** method.

Alert - a webpage alert returned by the ***getAlert()*** method.

Result - represents the collected statistics data gathered by ***getResult()*** method. Contains the following:

- Session statistics (in example total session duration)
- Error information (if such occurred)
- Performance data (if such collected)
- Any collected data that is written directly to the result object

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Browser object methods:

Retrieving predefined browser options	chromeOptions() firefoxOptions() edgeOptions() safariOptions()	Error related operations	getError() setError(message) discardError()
Timeout management	setScriptTimeout(timeout) setSessionTimeout(timeout) setElementWaitTimeout(timeout)	URL and page related operations	navigate(url) getUrl() getPageSource() getAlert() getCookies() addCookie(cookie)
Collecting data	collectPerfEntries(mark) getRawPerfEntries() getResult() getScreenshot()	Locating elements on page	findElement(strategy, selector) findElements(strategy, selector)

Element object methods:

getAttribute(name)	Return the value of the given attribute of the object, for example: class, id, style, display e.t.c.	click()	Click on element.
getProperty(name)	Return the value of the given property of the object, for example: className, baseURIe.t.c.	sendKeys(keys)	Send keys to element. Method is used for filling data into editable elements.
getText()	Return element text.	clear()	Remove the content of editable element

[Browser Monitoring Objects and Methods]

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Out-of-the-box approach

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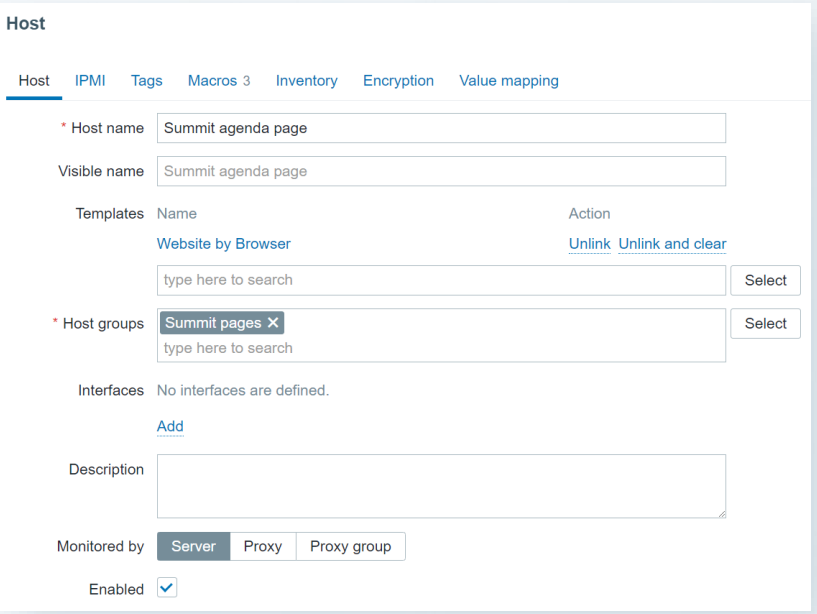
- Open Zabbix user interface in your web browser
  - Address: http://<your-ip-address>/zabbix
  - Login: Admin
  - Password: zabbix (you should change the password, but don't lose it)
  - Press 'Sign in'

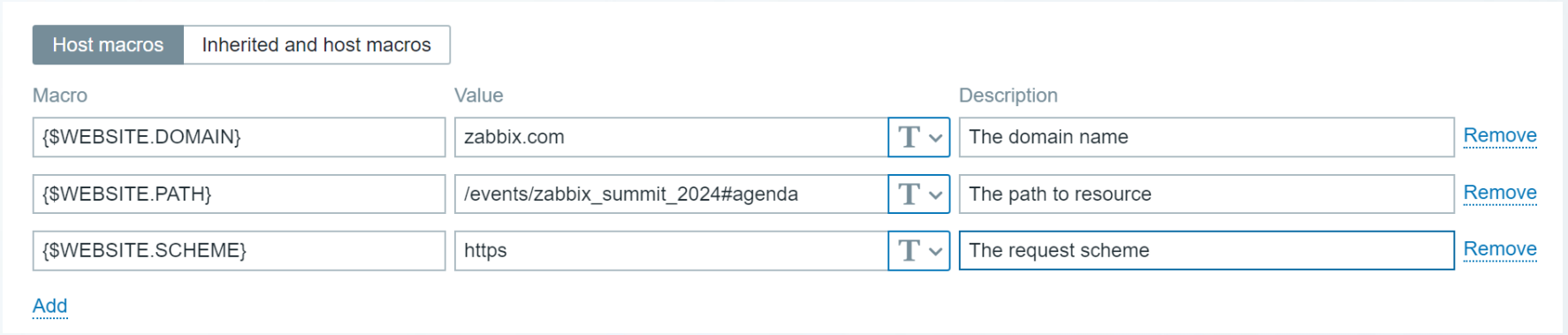
Create a new host:

- Name: Summit agenda page
- Templates Website by Browser
- Host groups: Summit pages (new)



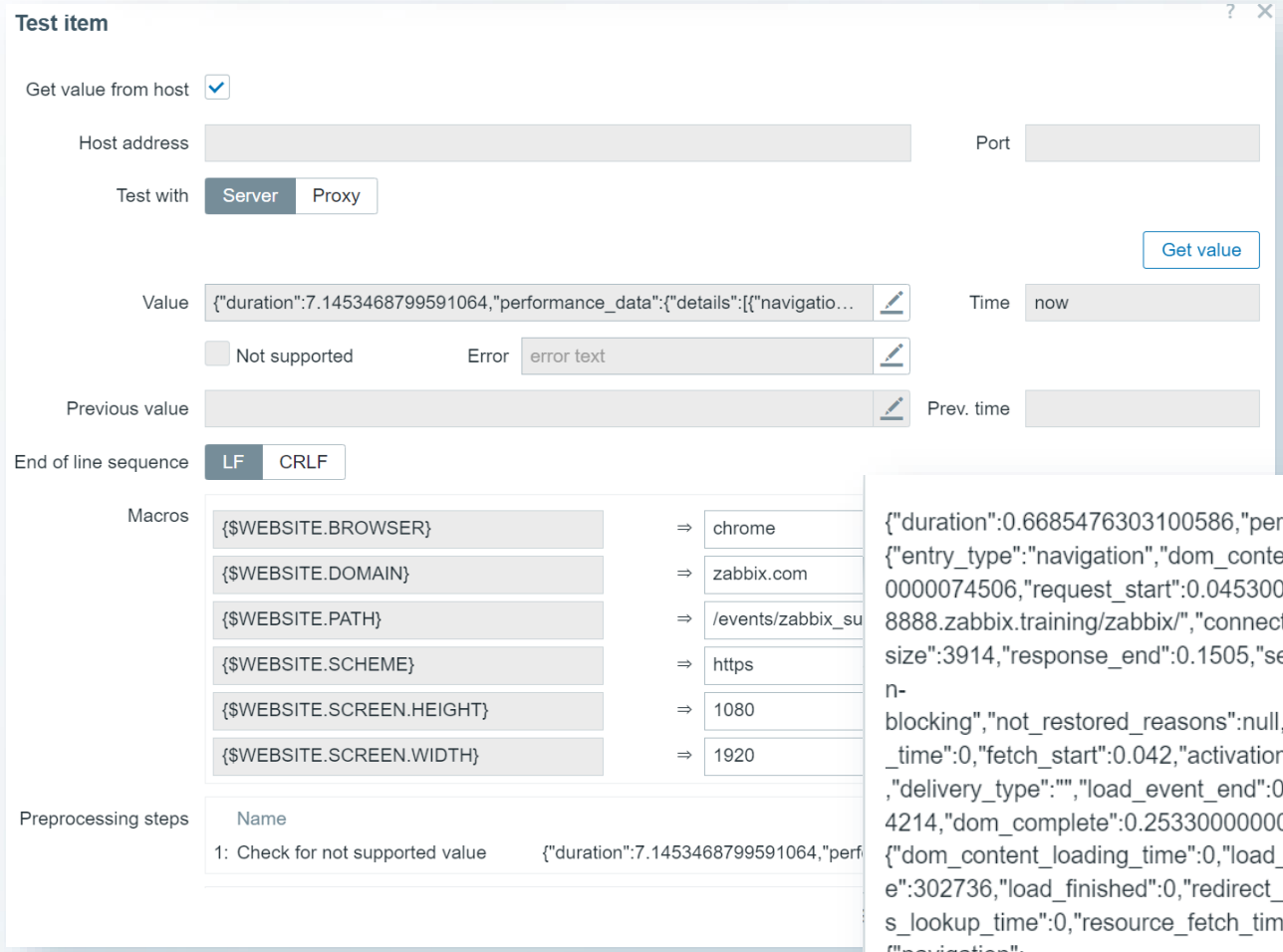
Adjust user macros ('Inherited and host macros'):

- {$WEBSITE.DOMAIN} zabbix.com
- {$WEBSITE.PATH} /events/zabbix_summit_2024#agenda
- {$WEBSITE.SCHEME} https



Go to configuration of items on the Summit agenda page host:

- Test the Website {$WEBSITE.DOMAIN} Get data item:



{"duration":0.6685476303100586,"performance_data":{"details":[{"navigation":{"entry_type":"navigation","dom_content_loaded_event_start":0.23880000000074506,"domain_lookup_start":0.042,"tls_negotiation_time":0.045300000000074506,"request_start":0.04530000000074506,"redirect_start":0,"load_event_start":0.25330000000074504,"name":"http://student-01-zbxtr-8888.zabbix.training/zabbix/","connect_end":0.042,"dom_content_loaded_event_end":0.23880000000074506,"critical_ch_restart":0,"decoded_body_size":3914,"response_end":0.1505,"secure_connection_start":0,"initiator_type":"navigation","encoded_body_size":3914,"render_blocking_status":"non-blocking","not_restored_reasons":null,"worker_start":0,"unload_event_start":0,"response_status":200,"dom_interactive":0.23860000000149012,"start_time":0,"fetch_start":0.042,"activation_start":0,"redirect_end":0,"unload_event_end":0,"first_interim_response_start":0,"next_hop_protocol":"http/1.1","delivery_type":"","load_event_end":0.25330000000074504,"response_start":0.1485,"domain_lookup_end":0.042,"redirect_count":0,"transfer_size":4214,"dom_complete":0.25330000000074504,"connect_start":0.042,"duration":0.25330000000074504,"type":"navigate"},"resource":{"dom_content_loading_time":0,"load_event_handler_time":0,"unload_event_handler_time":0,"response_time":0.01909999999776482,"encoded_size":302736,"load_finished":0,"redirect_count":0,"redirect_time":0,"total_size":302736,"tcp_handshake_time":0,"count":3,"transferred_size":303636,"dns_lookup_time":0,"resource_fetch_time":0.027799999997019764,"request_time":0.004600000001490134,"min_protocol":"http/1.1"}}],"summary":{"navigation":

Go to the Latest data view for the host Summit agenda page:

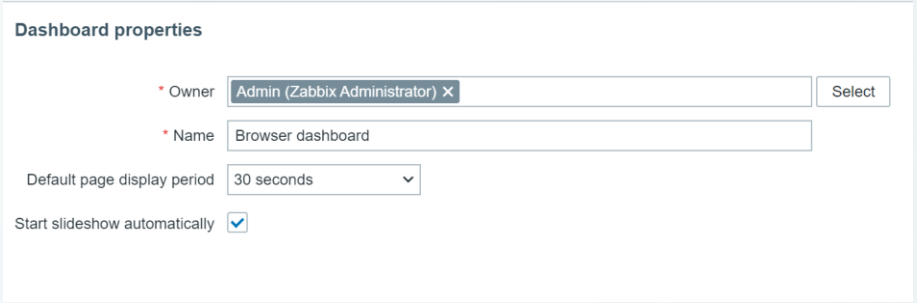
- If the page is empty, select any item and press Execute now
- By executing any of the dependent items, the master item is executed

Host	Name ▲	Last check	Last value	Change	Tags	Info
Summit agenda page	get item id	20s	iVBORw0KGgoAAAA…			History
Summit agenda page	Get metrics check	8m 53s			component: status	History
Summit agenda page	Get screenshot	15s	iVBORw0KGgoAAAA…			History
Summit agenda page	Website zabbix.com Get data				component: raw	
Summit agenda page	Website zabbix.com Navigation decodedBody size	8m 53s	389.4 KB		component: application performance: navigat…	Graph
Summit agenda page	Website zabbix.com Navigation DNS lookup time	8m 53s	0		component: application performance: navigat…	Graph
Summit agenda page	Website zabbix.com Navigation domContentLoaded time	8m 53s	0.069ms	-0.088ms	component: application performance: navigat…	Graph
Summit agenda page	Website zabbix.com Navigation encodedBody size	8m 53s	38.76 KB	-20 B	component: application performance: navigat…	Graph
Summit agenda page	Website zabbix.com Navigation load event time	8m 53s	6.19ms	-3.94ms	component: application performance: navigat…	Graph
Summit agenda page	Website zabbix.com Navigation request time	8m 53s	0.2ms	-0.12ms	component: application performance: navigat…	Graph
Summit agenda page	Website zabbix.com Navigation resource fetch time	8m 53s	0.26ms	-0.16ms	component: application performance: navigat…	Graph
Summit agenda page	Website zabbix.com Navigation response time	8m 53s	0.048ms	-0.037ms	component: application performance: navigat…	Graph
Summit agenda page	Website zabbix.com Navigation service worker processing time				component: application performance: navigat…	Graph
Summit agenda page	Website zabbix.com Navigation TCP handshake time	8m 53s	0		component: application performance: navigat…	Graph
Summit agenda page	Website zabbix.com Navigation TLS negotiation time	8m 53s	0.0093ms	-0.0038ms	component: application performance: navigat…	Graph
Summit agenda page	Website zabbix.com Navigation transfer size	8m 53s	39.05 KB	-20 B	component: application performance: navigat…	Graph
Summit agenda page	Website zabbix.com Resource decodedBody size	8m 53s	853.81 KB		component: application performance: resource	Graph
Summit agenda page	Website zabbix.com Resource DNS lookup time	8m 53s	0.02ms	+0.0063ms	component: application performance: resource	Graph
Summit agenda page	Website zabbix.com Resource domContentLoaded time	8m 53s	0		component: application performance: resource	Graph
Summit agenda page	Website zabbix.com Resource encodedBody size	8m 53s	243.8 KB		component: application performance: resource	Graph
Summit agenda page	Website zabbix.com Resource fetch time	8m 53s	203.19ms	-147.64ms	component: application performance: resource	Graph

Debug

Go to Dashboards:

- Press Create dashboard and fill in the required fields:
  - Name: Browser dashboard
  - Default page display period: 30 seconds
  - Start slideshow automatically: checked
- Press 'Apply'

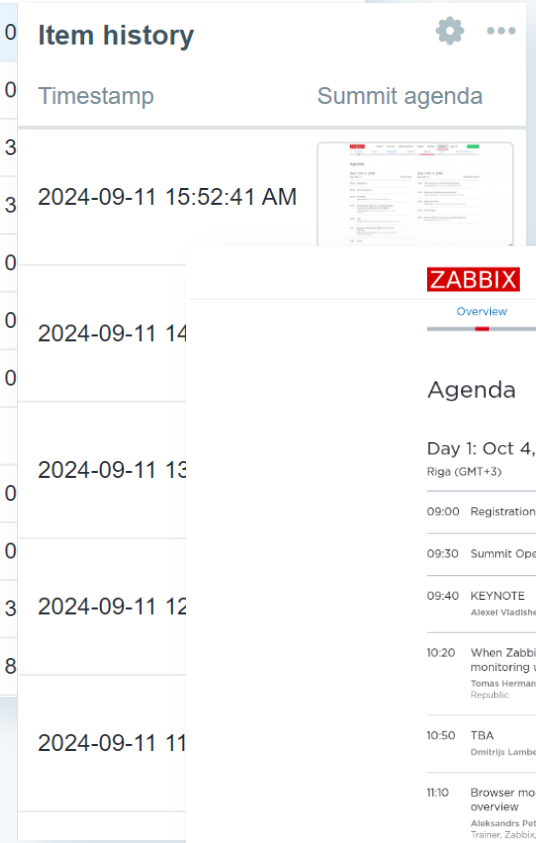


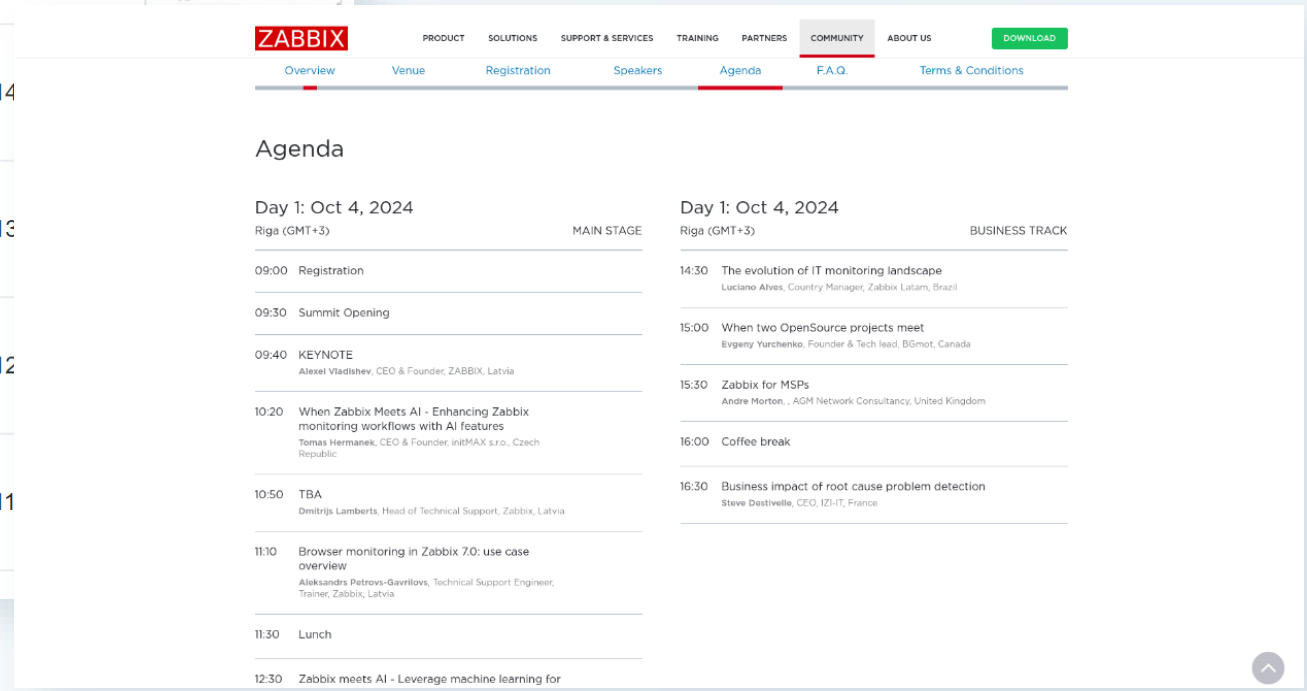
Add item history widget:

- This is the only way how to display screenshots from the browser item
  - Type: Item history
  - Name: Training frontend
  - Layout: Horizontal
  - Columns
    - Name: Screenshot
    - Item: Website zabbix.com screenshot
    - Show thumbnail: Checked
- Advanced configuration:
  - Show timestamp

Results

Website zabbix.com Get data		
Website zabbix.com Navigation decodedBody size	2m 2s	331.62 KB
Website zabbix.com Navigation DNS lookup time	2m 2s	0
Website zabbix.com Navigation domContentLoaded time	2m 2s	0
Website zabbix.com Navigation encodedBody size	2m 2s	3
Website zabbix.com Navigation load event time	2m 2s	3
Website zabbix.com Navigation request time	2m 2s	0
Website zabbix.com Navigation resource fetch time	2m 2s	0
Website zabbix.com Navigation response time	2m 2s	0
Website zabbix.com Navigation service worker processin…		
Website zabbix.com Navigation TCP handshake time	2m 2s	0
Website zabbix.com Navigation TLS negotiation time	2m 2s	0
Website zabbix.com Navigation transfer size	2m 2s	3
Website zabbix.com Resource decodedBody size	2m 2s	8





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Authenticate and screenshot

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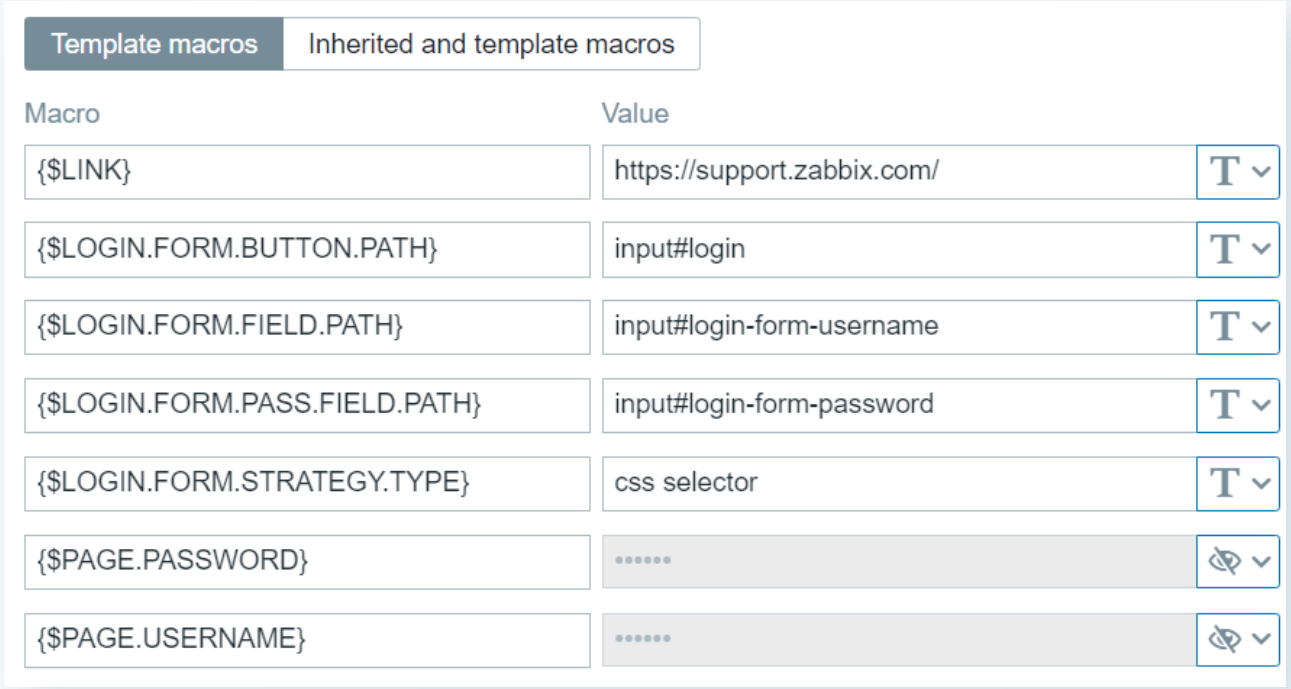
Potential variables - user macros

- You may need to monitore multiple pages
- Credential (hopefully) will be diferrent
- Various strategies may need to be applied
  - CSS selector
  - Link text
  - Partial link text
  - Tag name
  - Xpath



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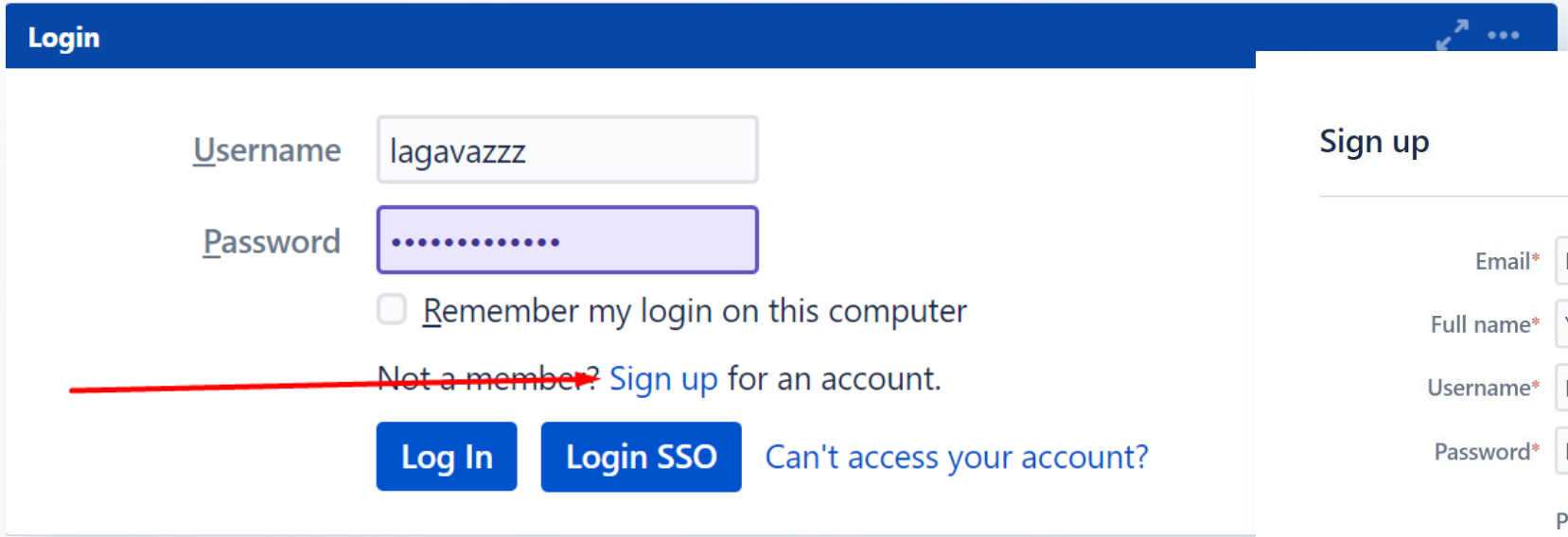
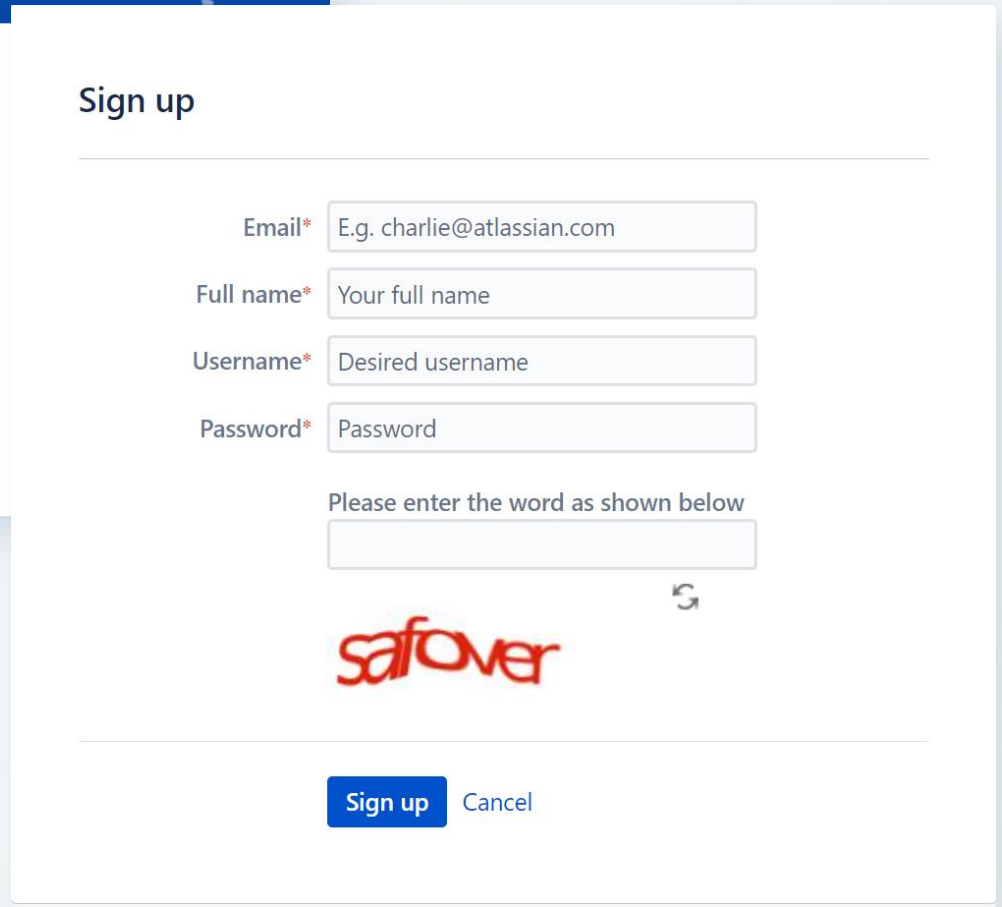
Create an account on Zabbix support portal, if you don't have one yet:

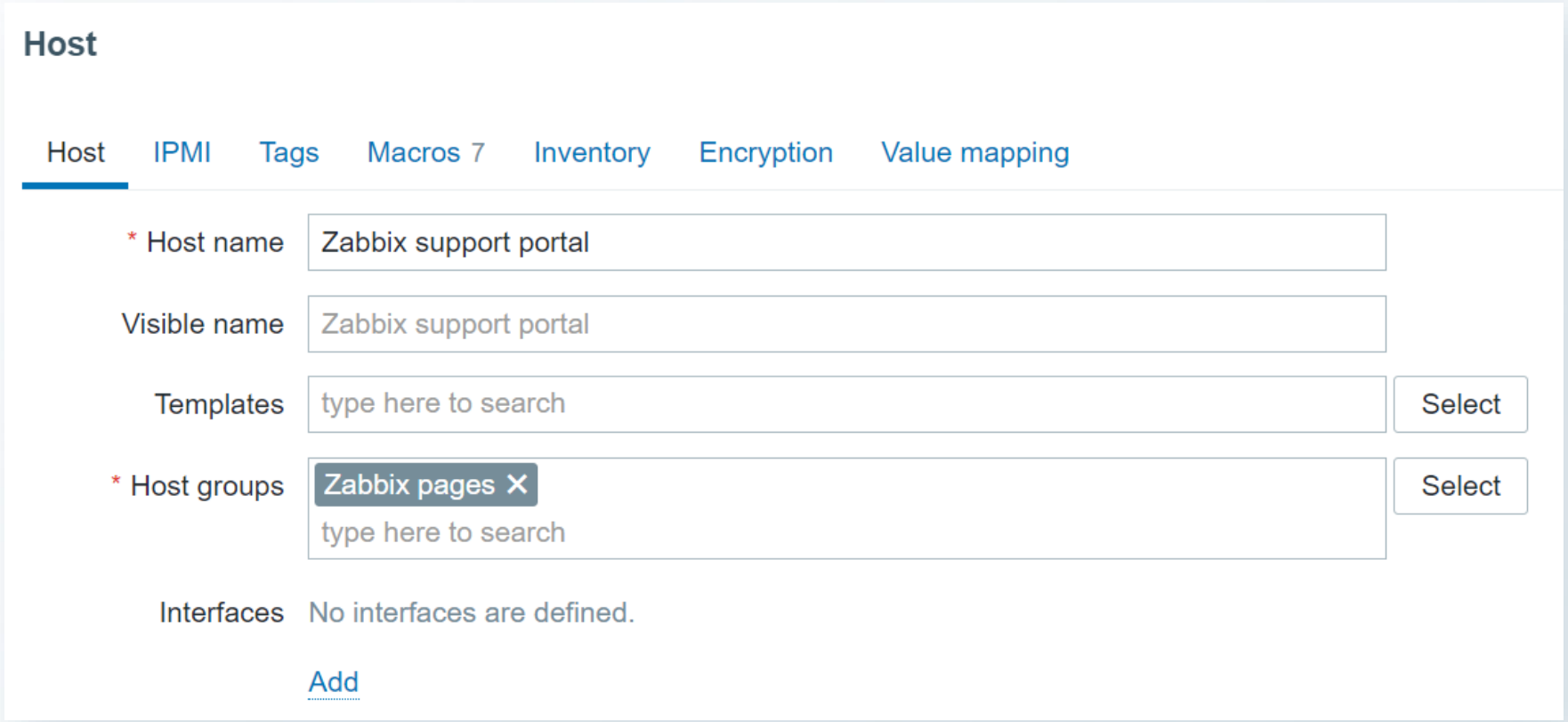
- if you have one, skip this step ☺





Create a new host:

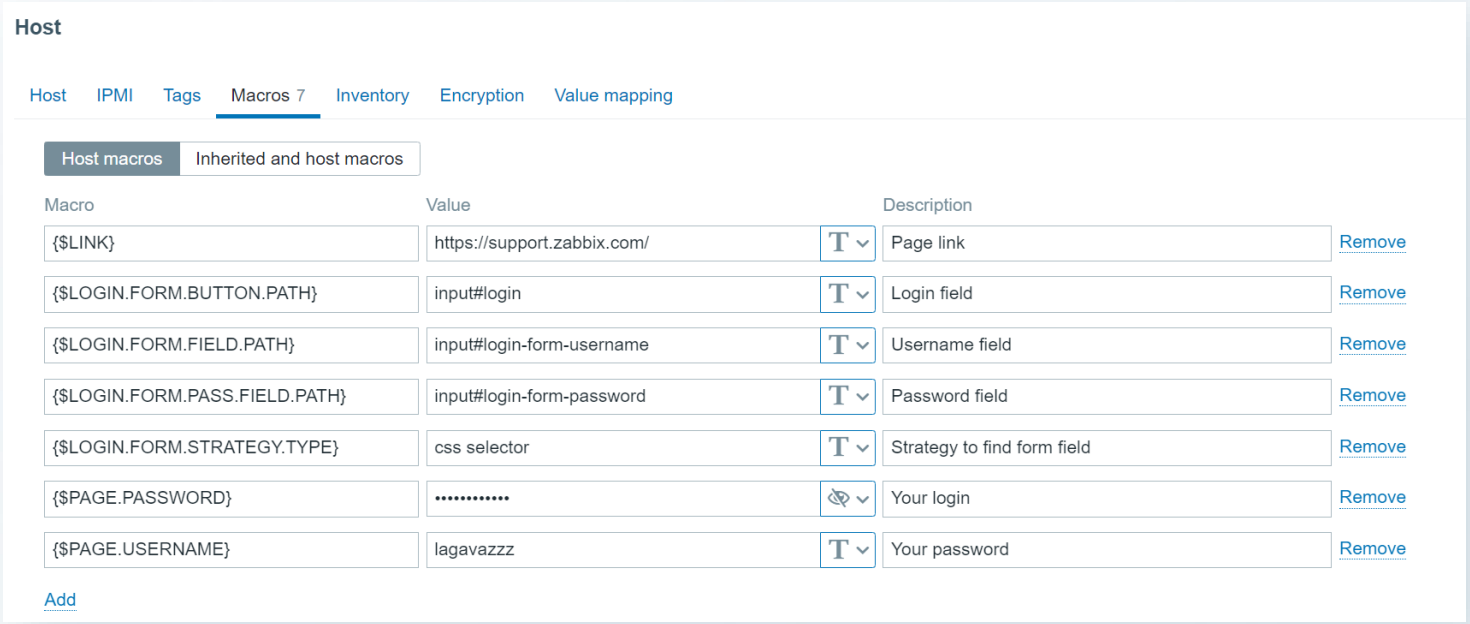
- Name: Zabbix support portal
- Host groups: Zabbix pages (new)



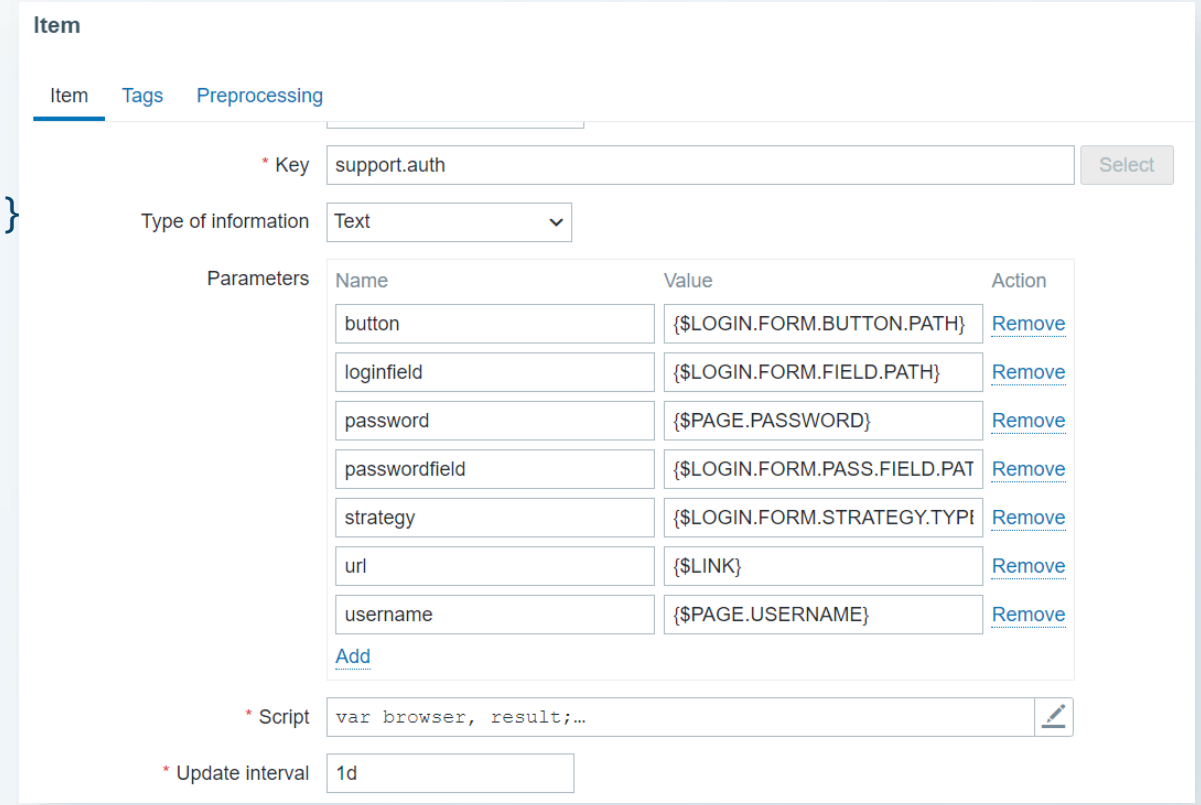
Switch to Macros tab and create macros:

- {$LINK} https://support.zabbix.com/
- {$LOGIN.FORM.BUTTON.PATH} input#login
- {$LOGIN.FORM.FIELD.PATH} input#login-form-username
- {$LOGIN.FORM.PASS.FIELD.PATH} input#login-form-password
- {$LOGIN.FORM.STRATEGY.TYPE} css selector
- {$PAGE.PASSWORD} <your password>
- {$PAGE.USERNAME} <your username>

Add the host



- Create a new item on
  - Name Storage: Support portal authentication
  - Type: Browser
  - Key: support.auth
  - Type of information: Text
  - Parameters
    - button: {$LOGIN.FORM.BUTTON.PATH}
    - loginfield: {$LOGIN.FORM.FIELD.PATH}
    - password: {$PAGE.PASSWORD}
    - passwordfield: {$LOGIN.FORM.PASS.FIELD.PATH}
    - strategy: {$LOGIN.FORM.STRATEGY.TYPE}
    - url: {$LINK}
    - username: {$PAGE.USERNAME}
  - Update interval: 5m
  - History: 1d

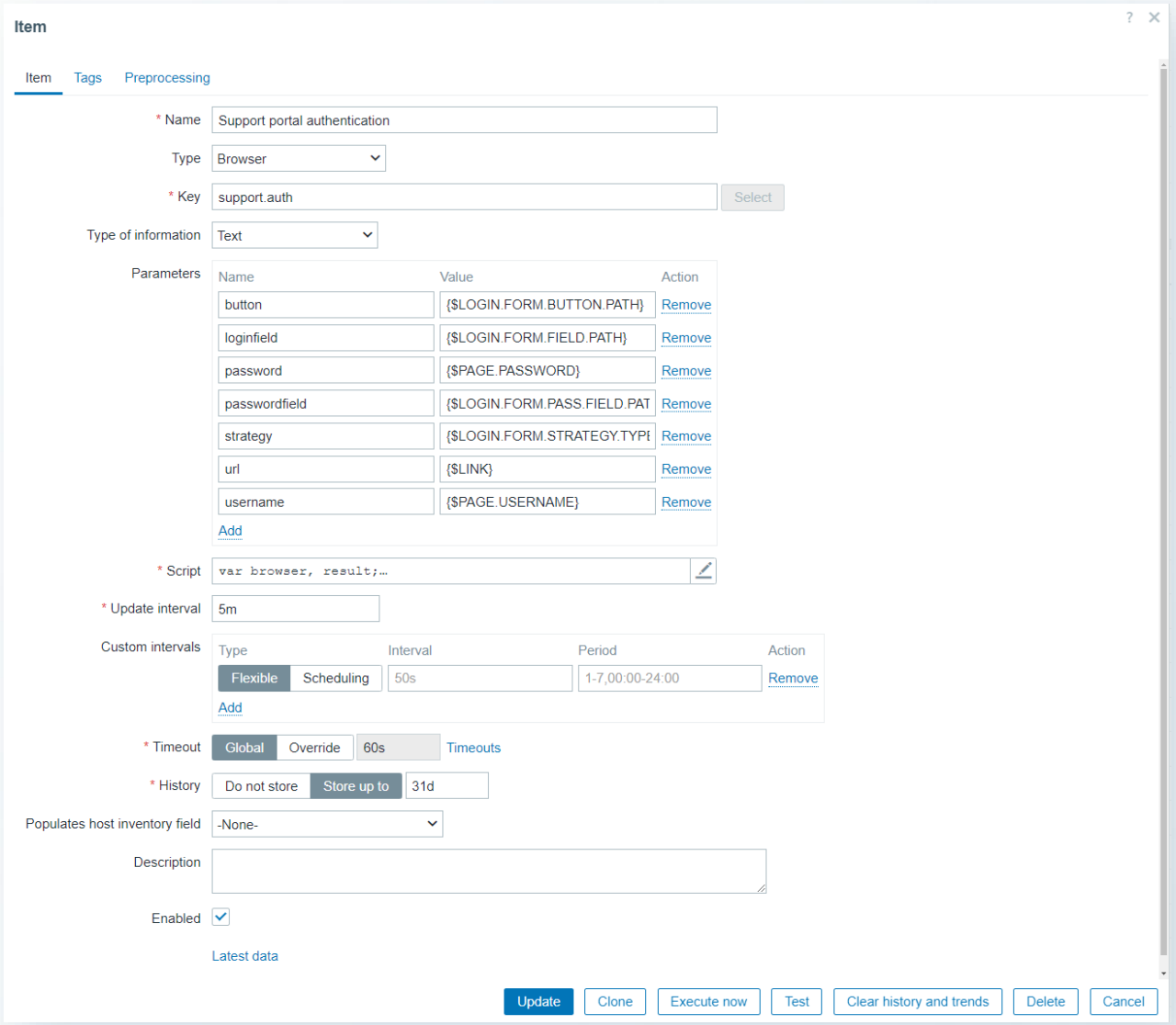


- Continue to the next slide

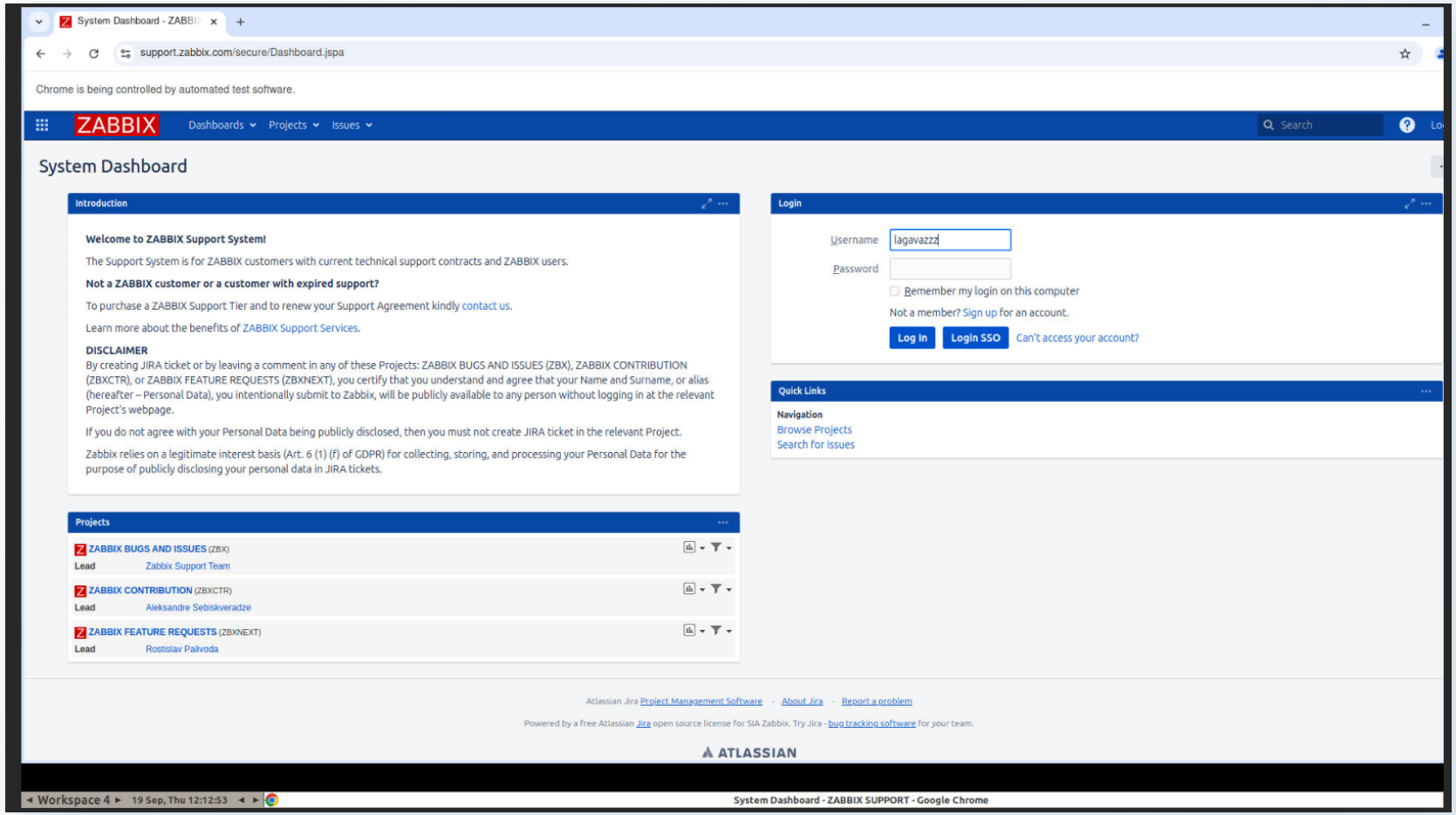
- In the item script field paste the script and save the item:

```
var browser, result;
var opts = Browser.chromeOptions();
opts.capabilities.alwaysMatch['goog:chromeOptions'].args = []
browser = new Browser(opts);
browser.setScreenSize(Number(1980), Number(1020));
screens = [];
const screenshot = '';
try {

var params = JSON.parse(value); // Parse the JSON string containing parameters passed from Zabbix.

browser.navigate(params.url);
screens.push(browser.getScreenshot());


// enter username
var el = browser.findElement(params.strategy, params.loginfield);
if (el === null) {throw Error("cannot find name input field");}
el.sendKeys(params.username);
screens.push(browser.getScreenshot());

// enter password
el = browser.findElement(params.strategy, params.passwordfield);
if (el === null) { throw Error("cannot find password input field"); }
el.sendKeys(params.password);
screens.push(browser.getScreenshot());

// login
el = browser.findElement(params.strategy, params.button);
if (el === null) { throw Error("cannot find login button"); }
el.click();
screens.push(browser.getScreenshot());
browser.collectPerfEntries("login");

result = browser.getResult();

}
catch (err) {
    if (!(err instanceof BrowserError)) {
        browser.setError(err.message);
    }
    result = browser.getResult();
    result.error.screenshot = browser.getScreenshot();
}
finally {
    return JSON.stringify(result);
}
```

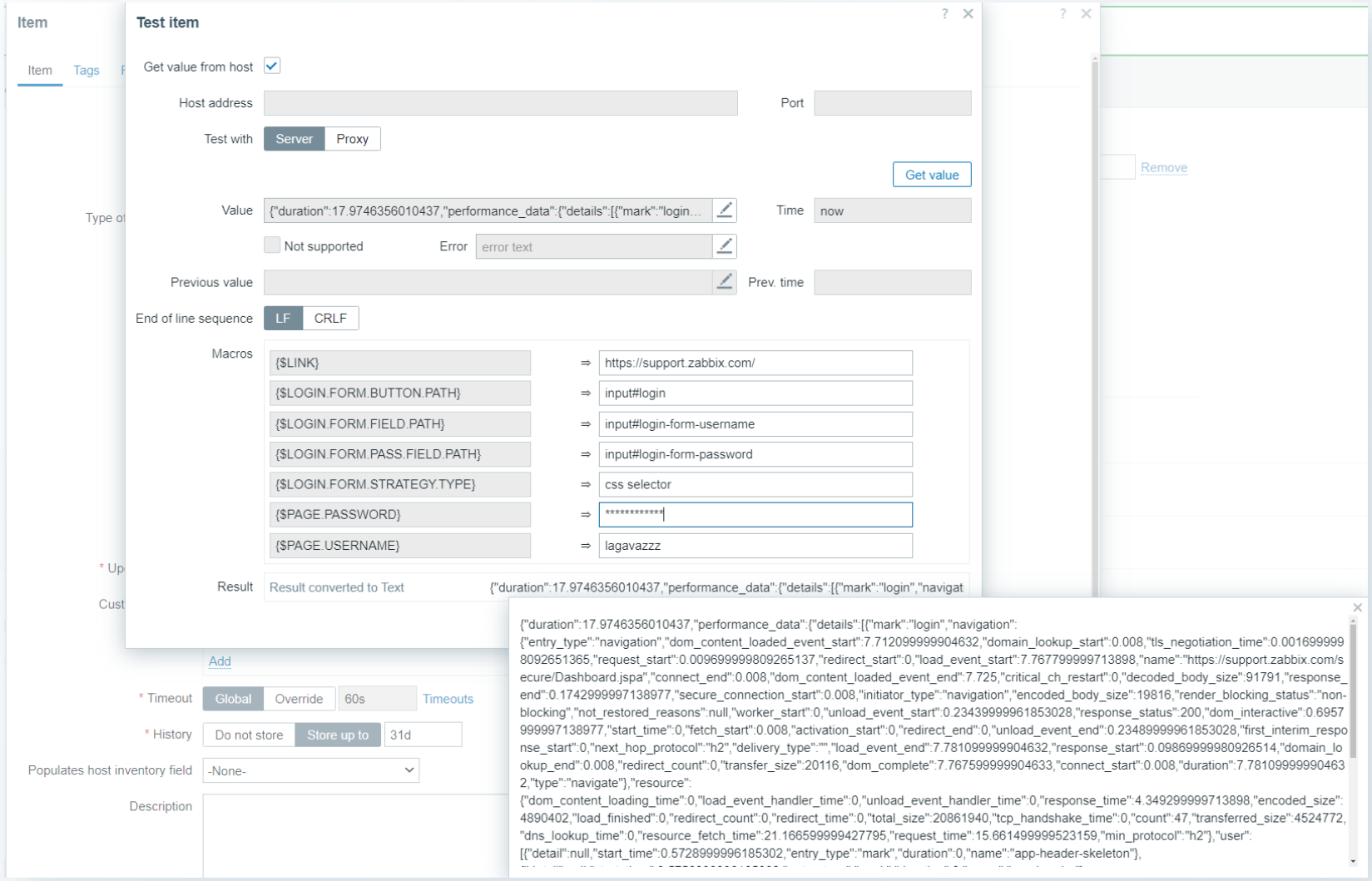
- The item screenshot



- If you wish, you can open noVNC tab (https://<your-IP-address>:7900)
- Press test in the item and observe the visualisation in noVNC

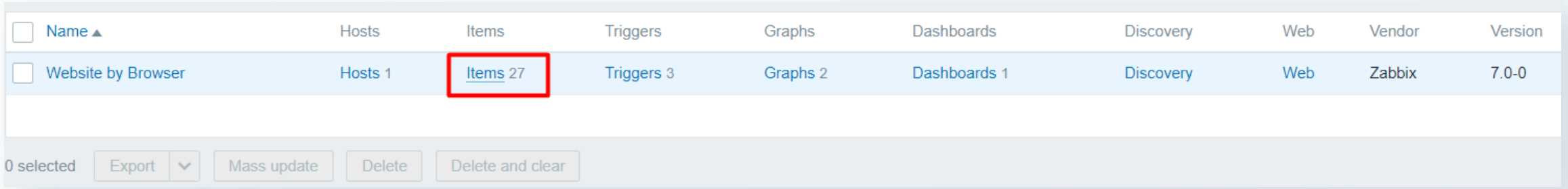


- Confirm in the frontend, that test was succesful

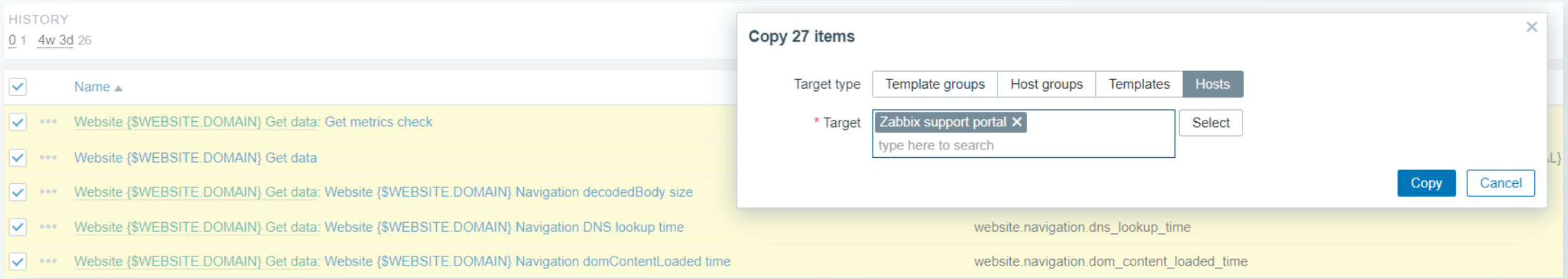


Now there is a host with exactly one potential master item, what's next?

- Go to Data collection > Templates
- Find template Website by Browser and click on items

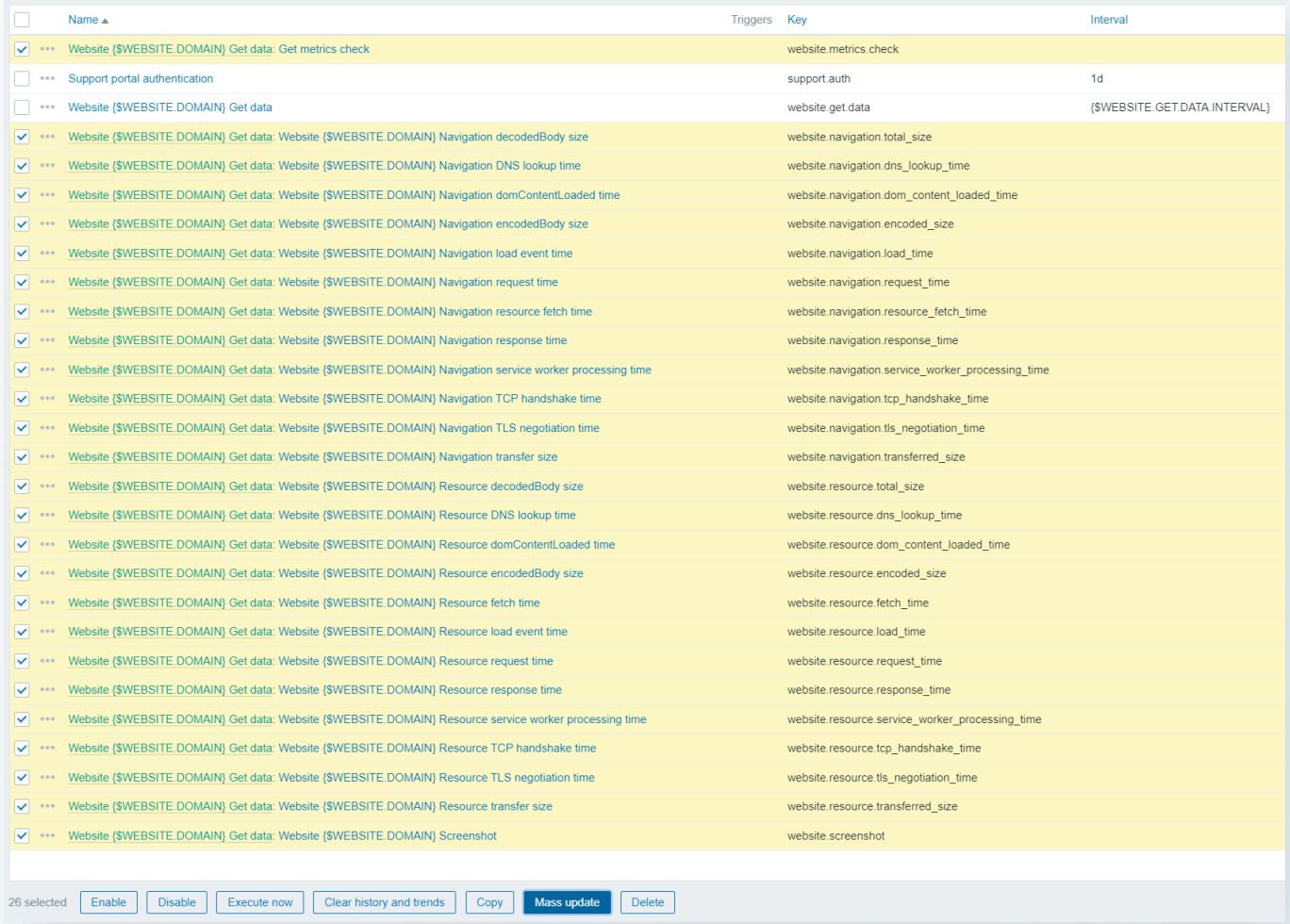


- Select all the item, press copy at the bottom of the page copy them to the Zabbix support portal host



Now, back at the Zabbix support portal host

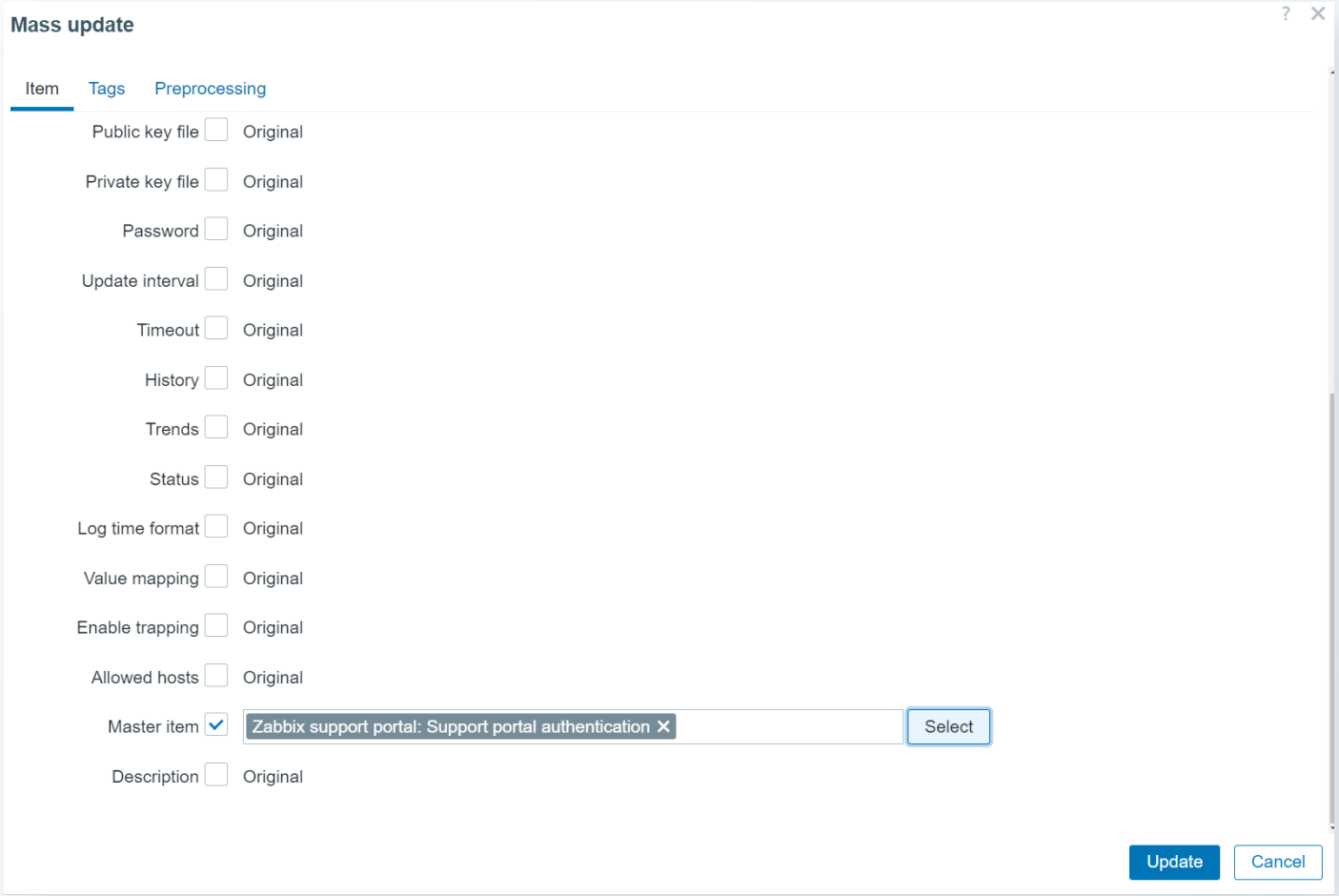
- Select all dependent items and click mass update



	Name ▲	Triggers	Key	Interval
☑	Website {$WEBSITE.DOMAIN} Get data: Get metrics check		website.metrics.check	
☐	Support portal authentication		support.auth	1d
☐	Website {$WEBSITE.DOMAIN} Get data		website.get.data	{$WEBSITE.GET.DATA.INTERVAL}
☑	Website {$WEBSITE.DOMAIN} Get data: Website {$WEBSITE.DOMAIN} Navigation decodedBody size		website.navigation.total_size	
☑	Website {$WEBSITE.DOMAIN} Get data: Website {$WEBSITE.DOMAIN} Navigation DNS lookup time		website.navigation.dns_lookup_time	
☑	Website {$WEBSITE.DOMAIN} Get data: Website {$WEBSITE.DOMAIN} Navigation domContentLoaded time		website.navigation.dom_content_loaded_time	
☑	Website {$WEBSITE.DOMAIN} Get data: Website {$WEBSITE.DOMAIN} Navigation encodedBody size		website.navigation.encoded_size	
☑	Website {$WEBSITE.DOMAIN} Get data: Website {$WEBSITE.DOMAIN} Navigation load event time		website.navigation.load_time	
☑	Website {$WEBSITE.DOMAIN} Get data: Website {$WEBSITE.DOMAIN} Navigation request time		website.navigation.request_time	
☑	Website {$WEBSITE.DOMAIN} Get data: Website {$WEBSITE.DOMAIN} Navigation resource fetch time		website.navigation.resource_fetch_time	
☑	Website {$WEBSITE.DOMAIN} Get data: Website {$WEBSITE.DOMAIN} Navigation response time		website.navigation.response_time	
☑	Website {$WEBSITE.DOMAIN} Get data: Website {$WEBSITE.DOMAIN} Navigation service worker processing time		website.navigation.service_worker_processing_time	
☑	Website {$WEBSITE.DOMAIN} Get data: Website {$WEBSITE.DOMAIN} Navigation TCP handshake time		website.navigation.tcp_handshake_time	
☑	Website {$WEBSITE.DOMAIN} Get data: Website {$WEBSITE.DOMAIN} Navigation TLS negotiation time		website.navigation.tls_negotiation_time	
☑	Website {$WEBSITE.DOMAIN} Get data: Website {$WEBSITE.DOMAIN} Navigation transfer size		website.navigation.transferred_size	
☑	Website {$WEBSITE.DOMAIN} Get data: Website {$WEBSITE.DOMAIN} Resource decodedBody size		website.resource.total_size	
☑	Website {$WEBSITE.DOMAIN} Get data: Website {$WEBSITE.DOMAIN} Resource DNS lookup time		website.resource.dns_lookup_time	
☑	Website {$WEBSITE.DOMAIN} Get data: Website {$WEBSITE.DOMAIN} Resource domContentLoaded time		website.resource.dom_content_loaded_time	
☑	Website {$WEBSITE.DOMAIN} Get data: Website {$WEBSITE.DOMAIN} Resource encodedBody size		website.resource.encoded_size	
☑	Website {$WEBSITE.DOMAIN} Get data: Website {$WEBSITE.DOMAIN} Resource fetch time		website.resource.fetch_time	
☑	Website {$WEBSITE.DOMAIN} Get data: Website {$WEBSITE.DOMAIN} Resource load event time		website.resource.load_time	
☑	Website {$WEBSITE.DOMAIN} Get data: Website {$WEBSITE.DOMAIN} Resource request time		website.resource.request_time	
☑	Website {$WEBSITE.DOMAIN} Get data: Website {$WEBSITE.DOMAIN} Resource response time		website.resource.response_time	
☑	Website {$WEBSITE.DOMAIN} Get data: Website {$WEBSITE.DOMAIN} Resource service worker processing time		website.resource.service_worker_processing_time	
☑	Website {$WEBSITE.DOMAIN} Get data: Website {$WEBSITE.DOMAIN} Resource TCP handshake time		website.resource.tcp_handshake_time	
☑	Website {$WEBSITE.DOMAIN} Get data: Website {$WEBSITE.DOMAIN} Resource TLS negotiation time		website.resource.tls_negotiation_time	
☑	Website {$WEBSITE.DOMAIN} Get data: Website {$WEBSITE.DOMAIN} Resource transfer size		website.resource.transferred_size	
☑	Website {$WEBSITE.DOMAIN} Get data: Website {$WEBSITE.DOMAIN} Screenshot		website.screenshot	

26 selected | Enable | Disable | Execute now | Clear history and trends | Copy | Mass update | Delete

- Change master item for all the items to Support portal authentication
- Delete the Website {$WEBSITE.DOMAIN} Get data item

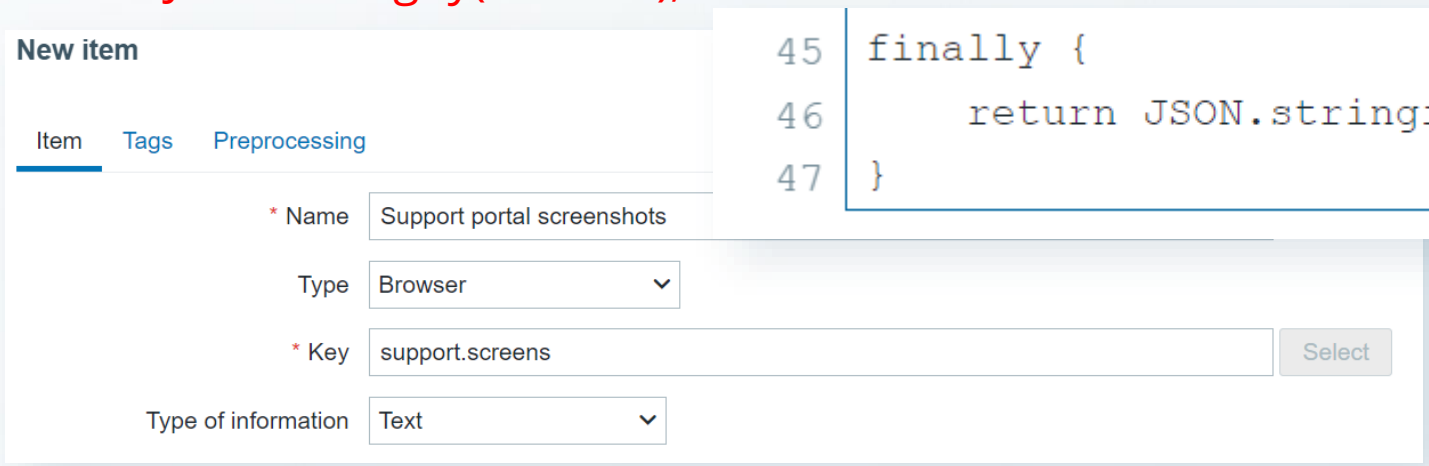


- Execute now the any of the items on the host
- Confirm on the latest Monitoring > Latest data page, that data is collected

Host	Name ▲	Last check	Last value	Change	Tags	Info
Zabbix support portal	Get metrics check	2m 3s			component: status	History
Zabbix support portal	Support portal authentication	2m 3s	{"duration":24.649171…			History
Zabbix support portal	Website {$WEBSITE.DOMAIN} Navigation decodedBody size	2m 3s	89.9 KB		component: application performance: navigat…	Graph
Zabbix support portal	Website {$WEBSITE.DOMAIN} Navigation DNS lookup time	2m 3s	0		component: application performance: navigat…	Graph
Zabbix support portal	Website {$WEBSITE.DOMAIN} Navigation domContentLoaded …	2m 3s	0.016ms		component: application performance: navigat…	Graph
Zabbix support portal	Website {$WEBSITE.DOMAIN} Navigation encodedBody size	2m 3s	19.37 KB		component: application performance: navigat…	Graph
Zabbix support portal	Website {$WEBSITE.DOMAIN} Navigation load event time	2m 3s	10.48ms		component: application performance: navigat…	Graph
Zabbix support portal	Website {$WEBSITE.DOMAIN} Navigation request time	2m 3s	0.11ms		component: application performance: navigat…	Graph
Zabbix support portal	Website {$WEBSITE.DOMAIN} Navigation resource fetch time	2m 3s	0.25ms		component: application performance: navigat…	Graph
Zabbix support portal	Website {$WEBSITE.DOMAIN} Navigation response time	2m 3s	0.12ms		component: application performance: navigat…	Graph
Zabbix support portal	Website {$WEBSITE.DOMAIN} Navigation service worker proc…	2024-09-19 12:41:42 PM			component: application performance: navigat…	Graph
Zabbix support portal	Website {$WEBSITE.DOMAIN} Navigation TCP handshake time	2m 3s	0		component: application performance: navigat…	Graph
Zabbix support portal	Website {$WEBSITE.DOMAIN} Navigation TLS negotiation time	2m 3s	0.022ms		component: application performance: navigat…	Graph
Zabbix support portal	Website {$WEBSITE.DOMAIN} Navigation transfer size	2m 3s	19.66 KB		component: application performance: navigat…	Graph
Zabbix support portal	Website {$WEBSITE.DOMAIN} Resource decodedBody size	2m 3s	19.9 MB		component: application performance: resource	Graph
Zabbix support portal	Website {$WEBSITE.DOMAIN} Resource DNS lookup time	2m 3s	0		component: application performance: resource	Graph

Now, back again at the Zabbix support portal host

- Open and clone the Support portal authentication item
  - Item name Support portal screenshots
  - Key support.screens
  - Script Modify the line 46, by replacing:
    return JSON.stringify(result); with
    return JSON.stringify(screens);




```
45  finally {
46      return JSON.stringify(screens);
47  }
```

- Apply, Test and Add the item
- Note how the output now contains only screenshots

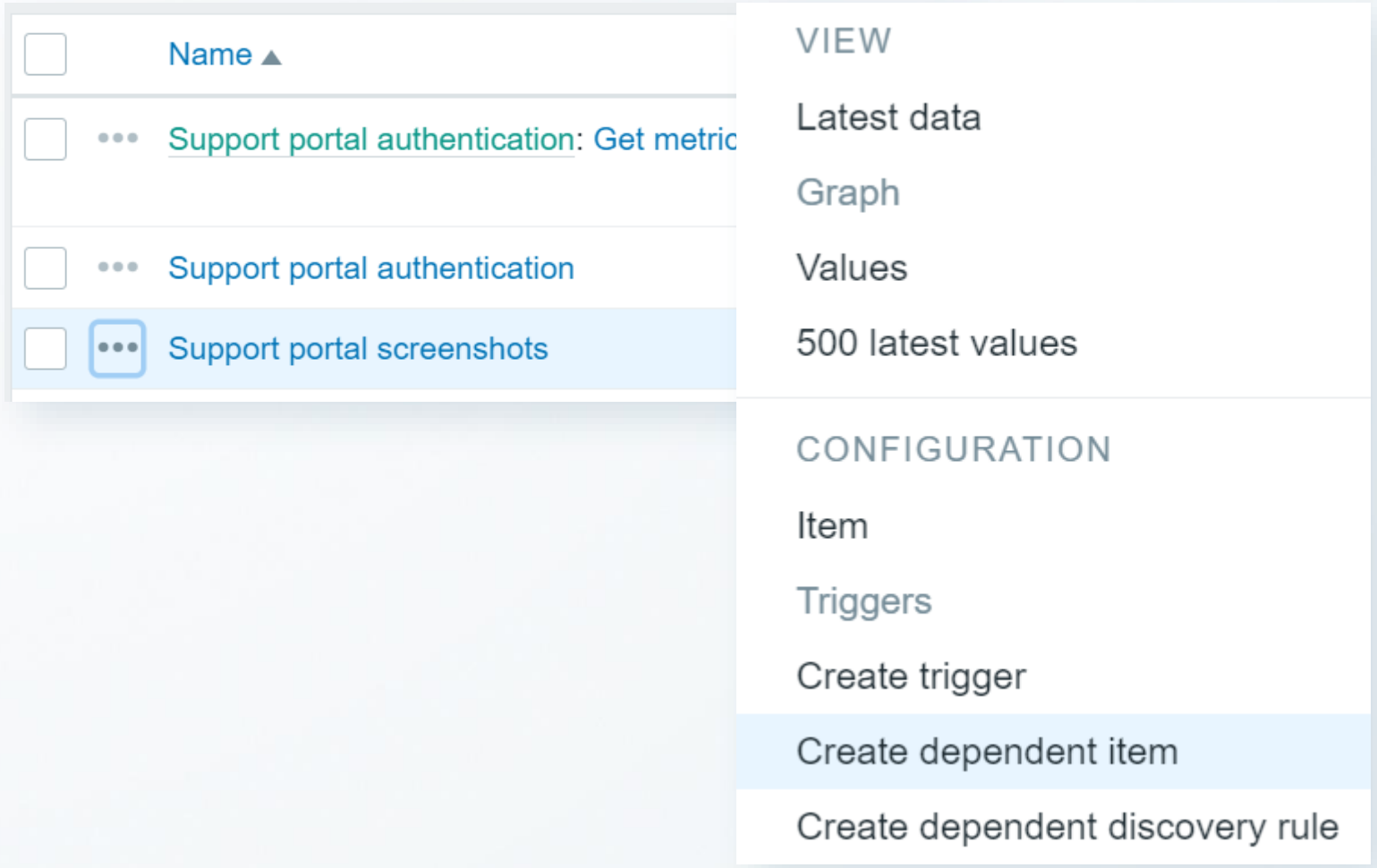
Screenshot is created for each step as can be seen in the script:

- Using that information we will create dependant items

```
15
16 // enter username
17 var el = browser.findElement(params.strategy, params.loginfield);
18 if (el === null) {throw Error("cannot find name input field");}
19 el.sendKeys(params.username);
20 screens.push(browser.getScreenshot());
21
22 // enter password
23 el = browser.findElement(params.strategy, params.passwordfield);
24 if (el === null) { throw Error("cannot find password input field"); }
25 el.sendKeys(params.password);
26 screens.push(browser.getScreenshot());
```

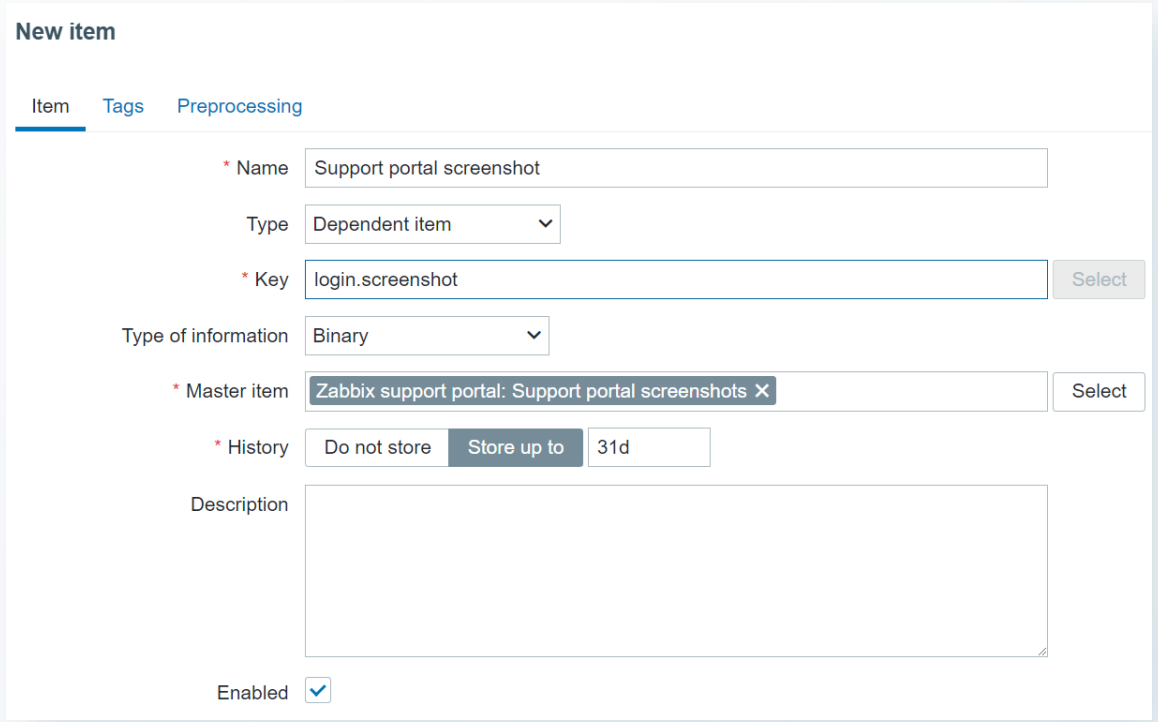
Click on the three dots, near the new Support portal screenshots item

- Select create dependent item



First screenshot will be

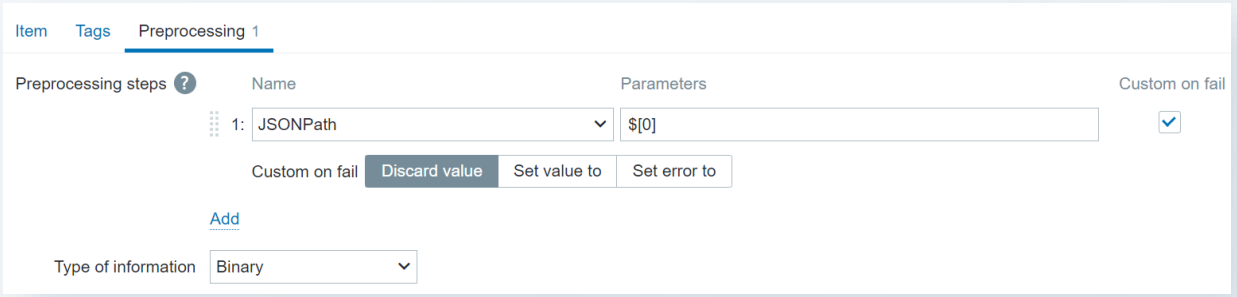
- Name — Support portal screenshot
- Key — login.screenshot
- Type of information — Binary (allowed only for dependent item)



- Add the item

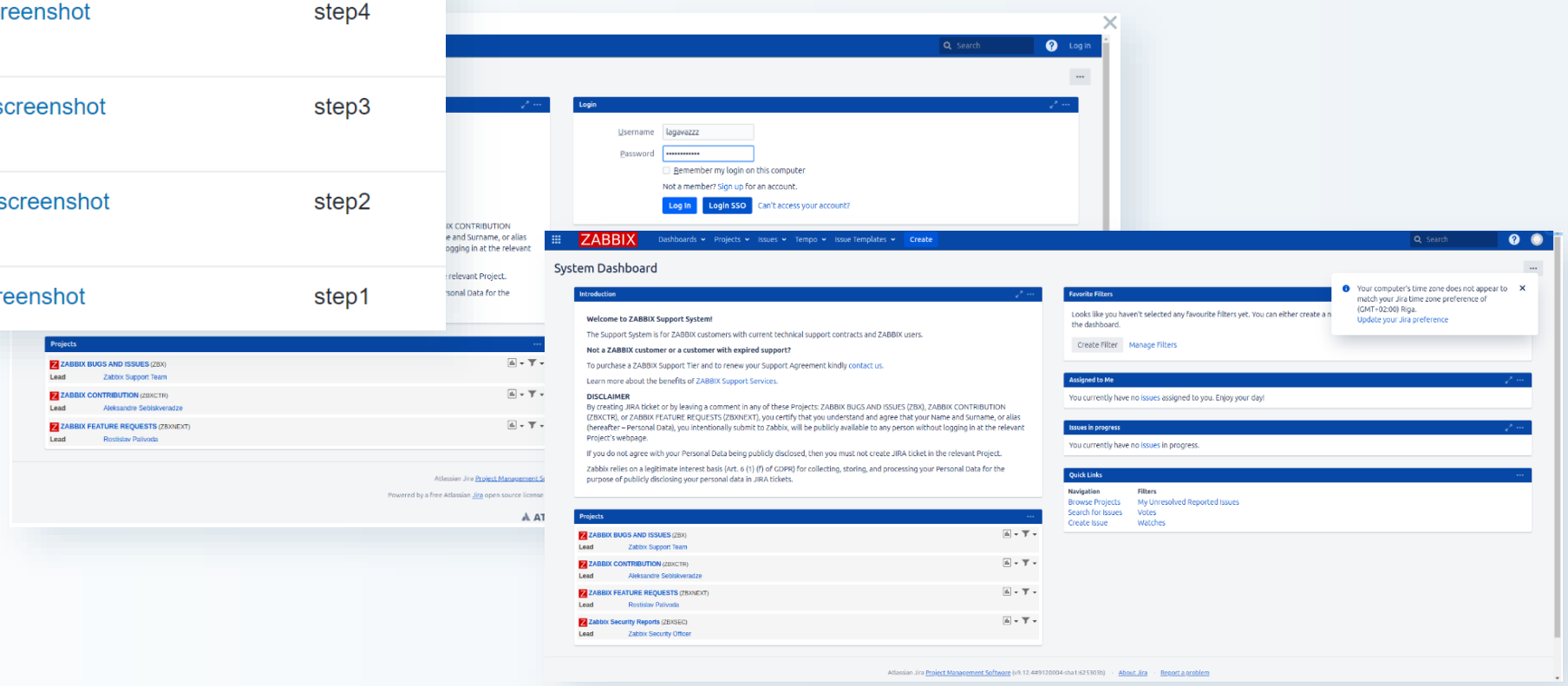
Add preprocessing step

- JSONPath — $[0]



Make screenshots for each step

Name ▲	Triggers	Key
Authenticate to Jira		authenticate
Authenticate to Jira: Authentication screenshot		step4
Authenticate to Jira: Enter password screenshot		step3
Authenticate to Jira: Enter username screenshot		step2
Authenticate to Jira: Landing page screenshot		step1



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Navigate and fill in any form

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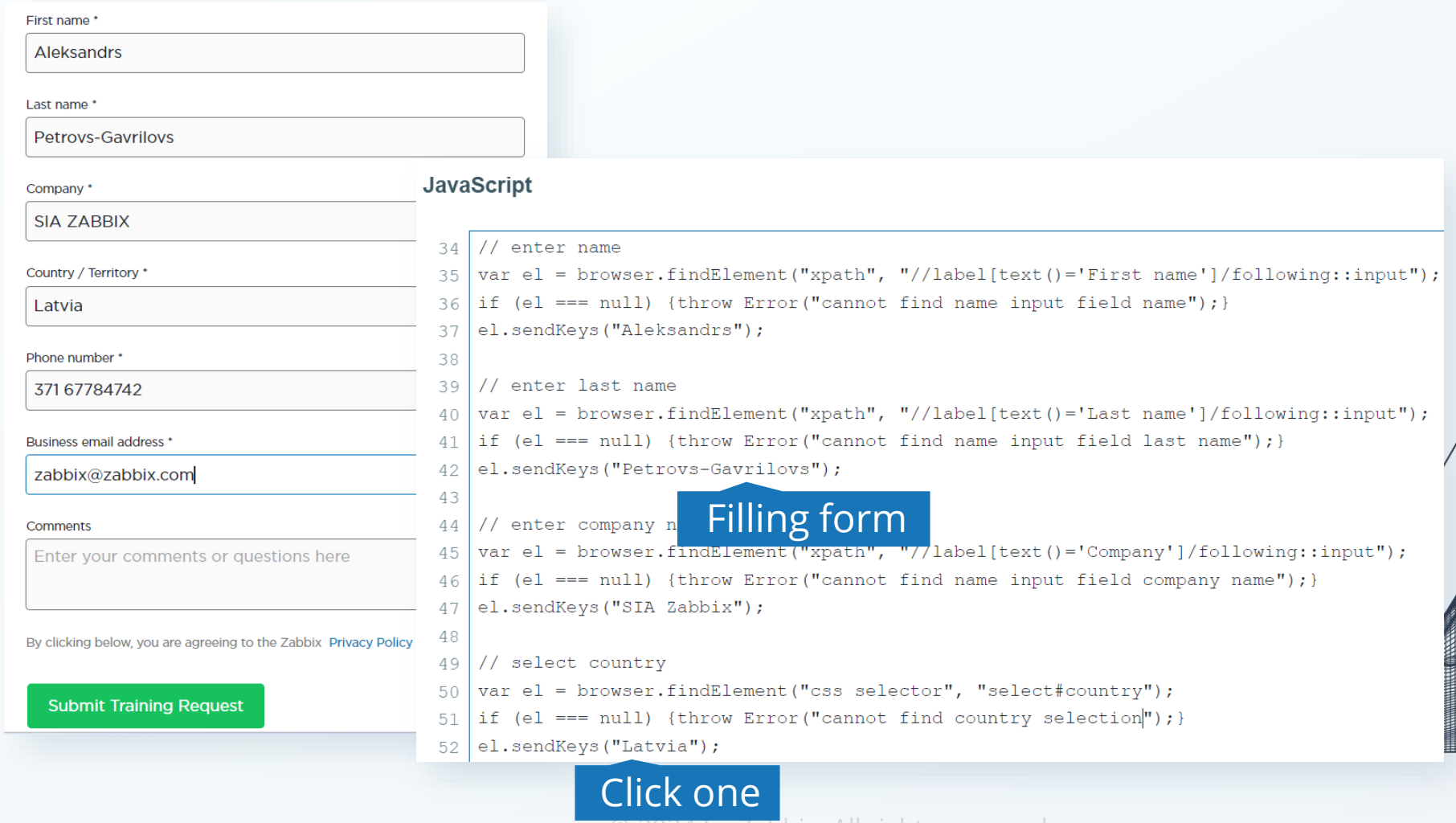
Download .yaml file from here

- Import as a host
- Check out the explanation



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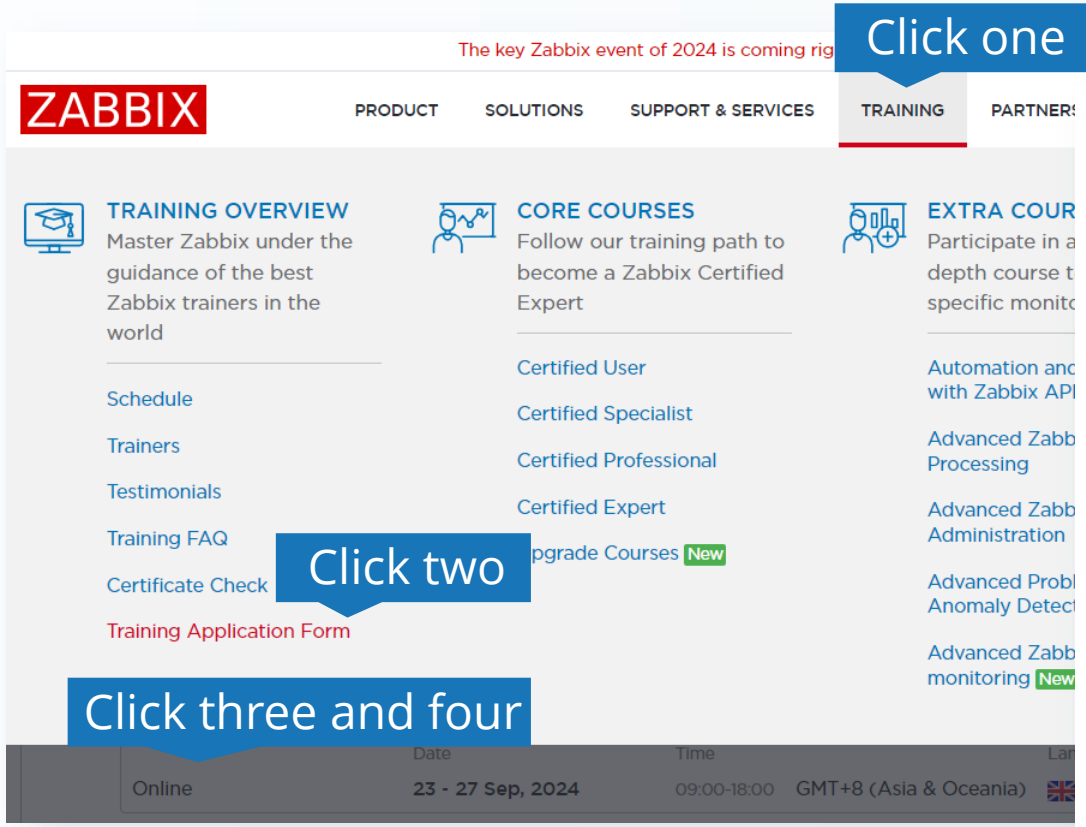
Navigate




```
11    //var el = browser.findElement("xpath", "//a[@href='/training']//span");
12    if (el === null) {
13        throw Error("cannot find traininglink");
14    }
15    el.click();
16
17    el = browser.findElement("link text", "Training Application Form");
18    if (el === null) {
19        throw Error("cannot find application link");
20    }
21    el.click();
22
23    el = browser.findElement("xpath", "//span[text()='Certified Specialist']");
24    if (el === null) {
25        throw Error("cannot select training");
26    }
27    el.click();
28
29    el = browser.findElement("xpath", "//td[text()='GMT+9 (Asia & Oceania)']");
30    if (el === null) {
31        throw Error("cannot find specific training");
32    }
33    el.click();
```

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Home / Training / Certificate Check /

Zabbix certificate granted

We hereby certify that **Aleksandrs Petrovs-Gavrilovs** has passed **Zabbix Certified Trainers course 7.0** exam on **2024-04-21** and received a certificate **CT-2404-003**.

Download certificate | Download badge | Perform

JavaScript

```
// enter name
var el = browser.findElement("xpath", "//label[text()='First Name']/following::input");
if (el === null) {throw Error("cannot find name input field");}
el.sendKeys("Aleksandrs");

// enter last name
var el = browser.findElement("xpath", "//label[text()='Last name']/following::input");
if (el === null) {throw Error("cannot find name input field");}
el.sendKeys("Petrovs-Gavrilovs");

// enter cert number
var el = browser.findElement("xpath", "//label[text()='Certificate number']/following::input");
if (el === null) {throw Error("cannot find name input field");}
el.sendKeys("CT-2404-003");

// select vers
var el = brows                                                    ificate_validation>fieldset>div:nth-of-type(5)>select");
if (el === null) {throw Error("cannot find name input field");}
el.sendKeys("7.0");

// check certificate
var el = browser.findElement("xpath", "//button[text()='Check Certificate']");
if (el === null) {throw Error("cannot find name input field");}
el.click();

    result = browser.getResult();
    screenshot = browser.getScreenshot();
    result.screenshot = browser.getScreenshot();
}
```

Filling diferrent form

Selecting version

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Get data - detect problems

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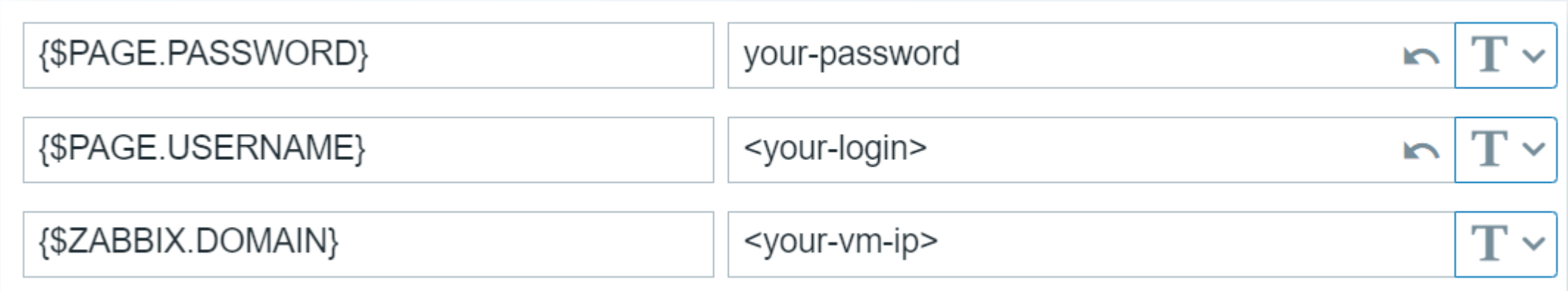
Discover the elements

Download .yaml file from here

- Import as a host
- Update the macro values
- Check the host ID and write it down
- Create yourself an API token and save it somewhere



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Discover the elements

Trainer will explain the script

Discover latest ZBXNEXT: Get ZBXNEXT-9413	Get.data[ZBXNEXT-9413]
Discover latest ZBXNEXT: Get ZBXNEXT-9414	Get.data[ZBXNEXT-9414]
Discover latest ZBXNEXT: Get ZBXNEXT-9415	Get.data[ZBXNEXT-9415]
Discover latest ZBXNEXT: Get ZBXNEXT-9417	Get.data[ZBXNEXT-9417]
Discover latest ZBXNEXT: Get ZBXNEXT-9419	Get.data[ZBXNEXT-9419]
Discover latest ZBXNEXT: Get ZBXNEXT-9420	Get.data[ZBXNEXT-9420]
Discover latest ZBXNEXT: Get ZBXNEXT-9421	Get.data[ZBXNEXT-9421]
Discover latest ZBXNEXT: Get ZBXNEXT-9422	Get.data[ZBXNEXT-9422]
Discover latest ZBXNEXT: Get ZBXNEXT-9423	Get.data[ZBXNEXT-9423]
Discover latest ZBXNEXT: Get ZBXNEXT-9424	Get.data[ZBXNEXT-9424]
Discover latest ZBXNEXT: Get ZBXNEXT-9425	Get.data[ZBXNEXT-9425]
Discover latest ZBXNEXT: Get ZBXNEXT-9426	Get.data[ZBXNEXT-9426]
Discover latest ZBXNEXT: Get ZBXNEXT-9427	Get.data[ZBXNEXT-9427]
Discover latest ZBXNEXT: Get ZBXNEXT-9428	Get.data[ZBXNEXT-9428]
Discover latest ZBXNEXT: Get ZBXNEXT-9431	Get.data[ZBXNEXT-9431]
Discover latest ZBXNEXT: Get ZBXNEXT-9432	Get.data[ZBXNEXT-9432]
Discover latest ZBXNEXT: Get ZBXNEXT-9433	Get.data[ZBXNEXT-9433]
Discover latest ZBXNEXT: Get ZBXNEXT-9434	Get.data[ZBXNEXT-9434]

JavaScript

```
43 // search for ZBXNEXT
44 el = browser.findElement("css selector", "textarea#advanced-search");
45 if (el === null) { throw Error("cannot find login button"); }
46 el.clear();
   l.sendKeys("project = ZBXNEXT AND resolution = Unresolved ORDER BY created DESC");

   / click search
   l = browser.findEle                    Search']");
   f (el === null) { throw Error("cannot find login button"); }
   l.click();

   / wait for page to load
   abbix.sleep(1000);

   /get the ZBXNEXT
   l = browser.findElements("xpath", "//*[contains(text(), '')]");
   ar links = [];
   or (var n = 0; n <
      links.push(el[n].getAttribute('href'));

   inks = uniq(links);
   ar lld = [];
   or (i = 0; i < links.length; i++) {
      if (links[i].match(/.ZBXNEXT.*/)) {
         var row = {};
         // Remove the '/browse/' string from the link
         var modifiedLink = links[i].replace('/browse/', '');
         row["{#ZBXNEXT}"] = modifiedLink;
         lld.push(row);
```

JIRA search query

Looking for elements

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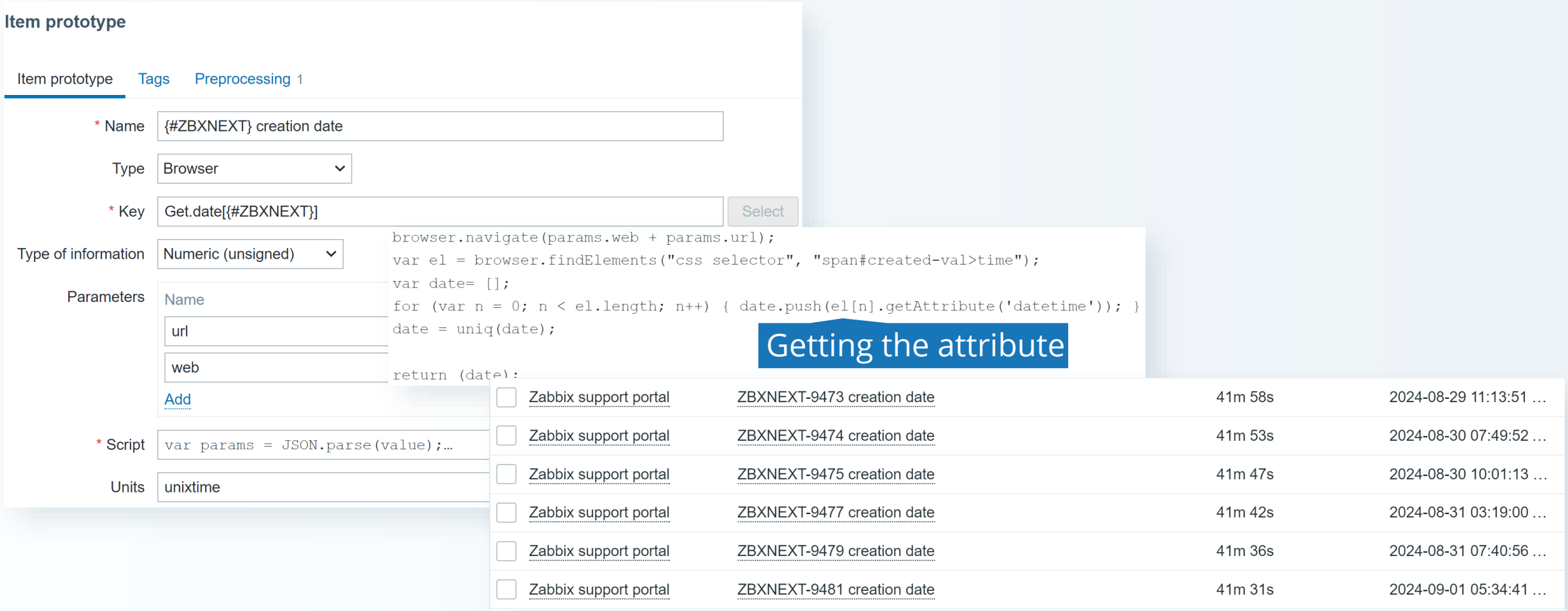
Getting the info about elements



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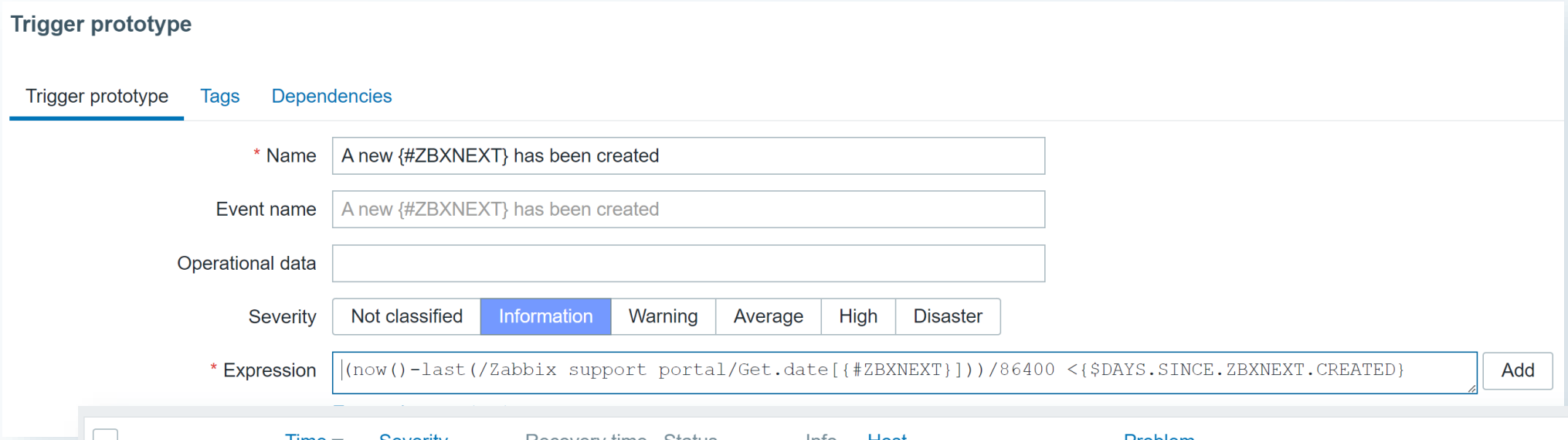
Creating the trigger



Time	Severity	Recovery time	Status	Info	Host	Problem	Operational data
09:43:00 AM	Information		PROBLEM		Zabbix support portal	A new ZBXNEXT-9487 has been created	2024-09-17 12:33:03 PM
09:42:32 AM	Information		PROBLEM		Zabbix support portal	A new ZBXNEXT-9486 has been created	2024-09-17 04:28:44 AM

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Send screenshots

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Get the screenshots

- Host id must be updated to correct one

Name ▲	Triggers	Key	Interval	History	Trends	Type	Status
Discover latest ZBXNEXT: Most recent ZBXNEXT-9484 screenshot	Triggers 1	extract.screen[ZBXNEXT-9484]	12h	31d		HTTP agent	Enabled
Discover latest ZBXNEXT: Most recent ZBXNEXT-9485 screenshot	Triggers 1	extract.screen[ZBXNEXT-9485]	12h	31d		HTTP agent	Enabled
Discover latest ZBXNEX		36]	12h	31d		HTTP agent	Enabled
Discover latest ZBXNEX		37]	12h	31d		HTTP agent	Enabled
Discover latest ZBXNEX							
Discover latest ZBXNEX							
Discover latest ZBXNEX							

Request body type: Raw data | JSON data | XML data

Request body

```
{
   "jsonrpc": "2.0",
   "method": "item.get",
   "params": {
      "output": ["itemid"],
      "hostids": "10651",
      "search": {
         "key_": "screenshot[{#ZBXNEXT}]"
      }
   },
   "auth":
"f2b116aec1e9a5262ec9244f0ee36df63f0de369f16c0761ee4e42
   "id": 1
}
```

JavaScript

function (value) {

```
1  var test = (value)
2
3  // Create a new HttpRequest object
4      var req = new HttpRequest();
5
6      // Define the data to be sent in the request
7      var requestData = {
8          "jsonrpc": "2.0",
9          "method": "history.get",
10         "params": {
11             "output": "extend",
12             "history": 5,
13             "itemids": test,
14             "sortfield": "clock",
15             "sortorder": "DESC",
16             "limit": 1
17         },
18         "auth": "f2b116aec1e9a5262ec9244f0ee36df63f0de369f16c0761ee4e422d0e68927c",
19         "id": 1
20     };
```

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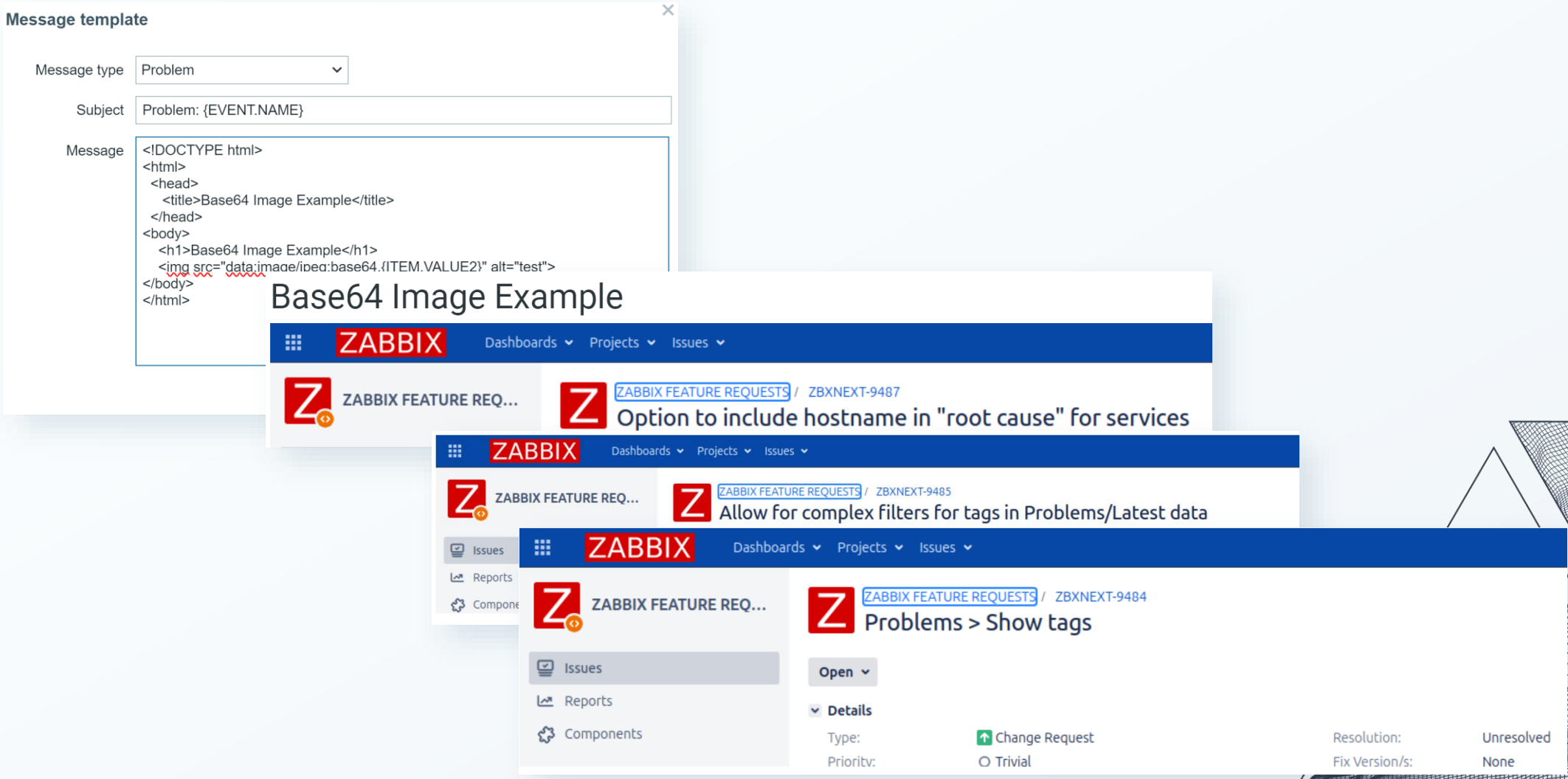
Send them using email media type



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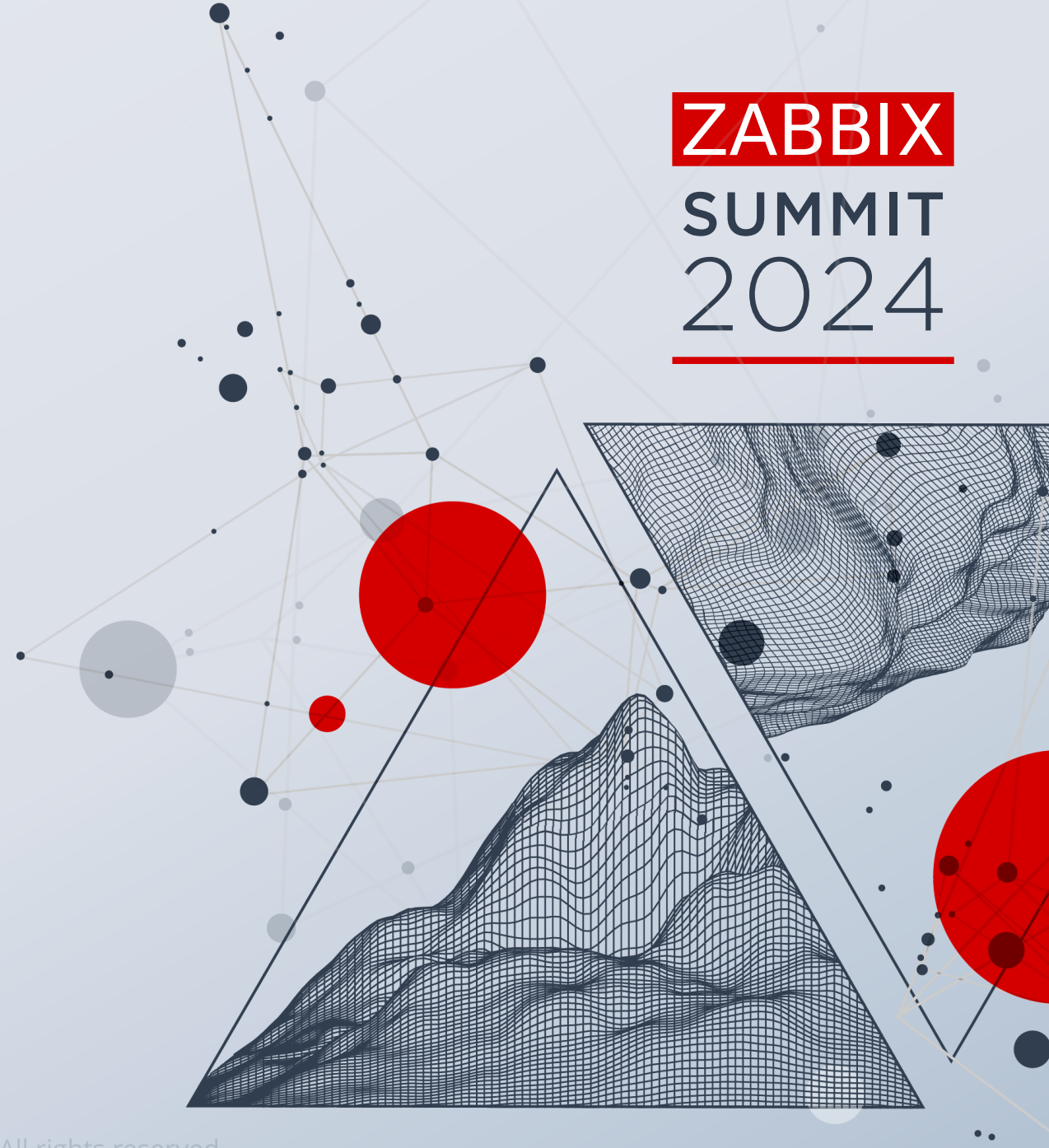
Thank you

Aleksandrs Petrovs-Gavrilovs

Training Technical Administrator



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