



OpenSource ICT Solutions

Zabbix training course – Certified Specialist

Syllabus



Overview

This five day training course is designed for engineers that are using Zabbix or should be using Zabbix in the nearby future.

This training covers everything starting with the process of installation, configuration of hosts, items, triggers, templates, etc etc. It is aimed to lay a solid base on using and configuring Zabbix. For the experienced users there are always new insights on how things work and how they can be configured.

This course consists of lectures and hands-on exercises performed in a virtual lab environment provided to you by our team. The exercises teach you to perform configuration and operational tasks by following along with procedures laid out in provided lab guides, to exercise the features in focus throughout the training. Throughout the duration of the course you will have unrestricted access to your lab environment which will continue to be available for additional practice for 24 hours after the class ends. Comprehensive course materials containing theory and practical exercises will be provided during the course. Copies of the slide decks will also be provided at the end of the training.

Intended audience

- It administrators
- Security engineers
- DevOps engineers

Duration: 5 days

Software versions:

- Zabbix 6.0.X
- RHEL (derivate) 8
- MySQL 8

Prerequisites:

- Basic understanding of IT systems
- Basic understanding of Linux

Course Objectives:

At the end of the course you should be able to:

- Install Zabbix.
- Configure Zabbix frontend.
- Create your own hosts
- Create your own items
- Create your own triggers
- Create your own templates
- Create your own Actions
- Create your own reports
- Create your own dashboards
- Set up permissions
- Create users and User groups
- Find data effectively
- Find and navigate through problems
- Understand how Zabbix gets it data
- Know the potential of the product

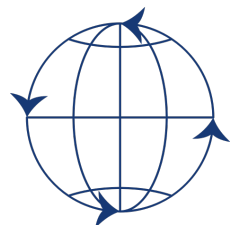


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Day 1



Day 1

Introduction

The course introduction gives students a general overview of the product Zabbix and its history. You will learn what Zabbix is and why company use it.

Zabbix releases

This module describes the release policy of Zabbix and the differences between major, minor and LTS releases.

Zabbix Proxies

This module will give an overview of what Zabbix proxies are, how they can be used and their benefits in various environments.

Zabbix installation

This module will cover how to prepare the Operating system before installation of the Zabbix components followed all various methods of installing Zabbix.

Next we will explain how to install the three main components (Server, Database and Frontend) on a linux machine with a lot of tips, tricks and things to keep in mind during this process.

This module includes the following lab exercises:

- Install Zabbix server
- Install Database
- Install Zabbix frontend
- Configure all components to become a working Zabbix environment.

Zabbix interface

This module covers the various menu's of the Zabbix frontend, what they do and how permissions are used to make menu's visible or invisible.

After this module, students are available to use the global search, and have a basic understanding of the various filtering options in the frontend.

User profile

This module covers the options in the user profile, how to change your password, set time zones, notifications and frontend message.

This module includes the following lab exercises:

- Login to Zabbix
- Change your user profile password
- Change your user profile time zone
- Change the frontend refresh interval to 1 minute.



Zabbix data flow

This module covers all various data flows within Zabbix, and how the various stages work from getting data up to alerting on problems.

Macros

This module covers the various syntaxes of Macros/variables within Zabbix, how they are used, why they are essential when managing an environment and how to make them secure.

Host groups

This module covers the concept of Host groups within Zabbix, which are used for logical grouping of hosts, but more important also for permissions.

We will go over this concept, including how to make nested host groups and template linkage.

Hosts

This module will cover the concept of hosts, what they are and how to use them, what their entities are and all configuration options.

This module includes the following lab exercises:

- Create a host group
- Create some filters
- Create a new host
- Configure tags

Interfaces

This module will cover “interfaces” which are used to talk, from the Zabbix server, to remote machines. We will cover the 4 different interfaces, their characteristics, how they are used, their presentation and configuration options to optimize some processes.

This module includes the following lab exercises:

- Setting up Zabbix agent interface on a host.
- Linking a template
- Checking the status

Data collection

This module will cover everything about how Zabbix is able to collect data using the concept of Items and all of their configuration parameters, examples and types.

This will be combined with all types of information, update intervals, history and trend settings and timeouts.



Simple checks

This module will cover various ways of getting data from remote targets in order to make your monitoring valuable, even without a Zabbix agent installed.

This module includes the following lab exercises:

- Create multiple Simple check items
- Configure their presentation
- Check if they work



Day 2



Day 2

Zabbix agent

This module is the introduction of Zabbix agents as concept and will provide a general overview of the supported Operating Systems, various working modes, installation options, agent generations and their differences and command line utilities.

This module includes the following lab exercises:

- Install an Zabbix agent on your lab environment
- Use command line utilities and the frontend to display the version
- Test command line options
- Test item in the frontend

Zabbix agent on Windows

This module covers the options of an Zabbix agent on a windows machine. We will cover the installation, specific item keys, event log monitoring, performance counters and WMI monitoring.

Zabbix agent in Passive mode

This module covers the Zabbix agent in Passive mode, where we will discuss the communication, frontend settings and Server settings. Of course we will take a look at the Agent configuration and the timeouts that are applied.

This module includes the following lab exercises:

- Create a new host
- Configure some items
- Test frontend options
- Use Zabbix_get to get metrics

Zabbix agent in Active mode

This module covers the Zabbix agent in Active mode, where we will discuss the communication, frontend settings and Server settings. Of course we will take a look at the Agent configuration and the timeouts that are applied.

This module includes the following lab exercises:

- Create a new host
- Configure some items

Zabbix agent troubleshooting

This module is all about troubleshooting your Zabbix agent. What if it stopped working? Or doesn't want to start after a configuration change? No data coming in, or just not working in Active mode. After this module the student should be able to quickly troubleshoot your Zabbix agents.



Monitoring

Within module 'Monitoring' a lot of different topics will be covered regarding user parameters, item units, update intervals and all various ways of processing data before doing anything else with it.

After this module the student should be able to build his items in a efficient way.

User Parameters

This module covers extending the Zabbix agent in such a way that it's able to gather other metrics than out of the box supported, without recompiling or rebuilding the agent.

Human readable data

This module will teach the student how to make the received metrics readable within Zabbix, as the 0 and 1 on it's own doesn't make any sense.
After this module student understands the use of Valuemaps and how they work in conjunction of hosts and templates.

This module includes the following lab exercises:

- Add units to the previous created items
- Create your own value maps

Update intervals

This module covers everything regarding item update intervals. It will explain the various options, time suffixes and limitations, combined with the "Execute now" frontend option.

It will also cover "Scheduled" and "Flexible" intervals and how to use them correctly.

This module includes the following lab exercises:

- Define flexible update intervals on an existing item
- Create a new item with a scheduled update interval.

Preprocessing

This module will teach the student various ways of transforming data before further processing and storing it in the database.

Within the topic of preprocessing there are various subtopics like 'custom on fail', the internals, the steps and their options etc. It will also explain how to work with data that is not accepted by Zabbix and the ways to correct this.

This module includes the following lab exercises:

- Create new items and apply multiple preprocessing steps to these items to make them more efficient.



Problems

This module will be the introduction to working with problems.

What are triggers, how does a trigger relate to a problem and what kind of functions can we utilize are a few of the questions that will be answered in this module.

Triggers

This module will cover how a trigger is built, what the states are and the miscellaneous options within the trigger configuration will be discussed.

After this module the student should have a basic understanding what a trigger is and how to configure one.

This module includes the following lab exercises:

- Create some new triggers, generate problems and make the triggers more useful

Problems

This module covers the various filtering options, presentations within the Problems view of Zabbix. It will also cover how to work with those problems and tailor them to the company needs.

This module includes the following lab exercises:

- Generate a new problem and work with it to understand the capabilities of Zabbix

Trigger functions

Within this module we will cover the basics of trigger functions. As Zabbix supports around 100 different functions it is important to understand how a function is used and it's working.

After this module the student should have an understanding of some of the most used functions, their parameters and general configuration principles.

This module includes the following lab exercises:

- Replace some existing trigger functions to make them more efficient
- Create new triggers with other trigger functions
- Utilize time based trigger functions to alter the workings of triggers in general



Day 3



Day 3

Templates

Within this module will be covered why templates are essential, which entities are within them, how tags should be used, how to create templates, how to assign them to hosts or cloning them

This module includes the following lab exercises:

- Create your own template
- Copy the previous made items and triggers to the template
- Link the templates

After this module the student should have a good understanding of how templates work and their role within Zabbix.

Zabbix sender

This module covers the functionality of Zabbix Sender as utility or protocol and explain the student how to send data from a custom application towards a Zabbix server or proxy.

It will cover all command line options, item creation, security implications and configuration parameters.

This module includes the following lab exercises:

- Install Zabbix sender
- Update an existing template with a new item
- Apply preprocessing
- Create a trigger

After this module the student is able to use Zabbix sender for various tasks.

SSH checks

This module covers the functionality of Zabbix to use SSH protocol to login to a remote machine and execute commands in order to get values. It contains information on how to create items, test those and prevent security issues as much as possible.

This module includes the following lab exercises:

- Create new SSH type items and start using them to monitor metrics

Dependent items

This modules covers the topic “Master and Dependent items’ which are used to minimalize the load for a remote machine and get as efficient as possible information in your Zabbix server parsed.

It covers the configuration, workflow and data extraction of those items.



This module includes the following lab exercises:

- Create your own dependent item and extract only the data that is useful
- Built a trigger on these dependent items(s)

SNMP and IPMI monitoring

This module covers the introduction of SNMP and IPMI monitoring which are used for network and hardware monitoring.

It will explain the options, configuration settings and some basics about the protocols, along with the concept of 'SNMP traps' and how to make them work on a Zabbix server.

This module includes the following lab exercises:

- Start monitoring a device using SNMP

Calculated checks and aggregated checks

This module covers the option to make calculations from item values within Zabbix already so that multiple items can be taken in account to make the right decisions. It will explain the functionality configuration and options. Along with the calculations it will cover aggregated checks as well.

This module includes the following lab exercises:

- Build your own Aggregated and Calculated items

Log file monitoring

Within this module we will cover the option to monitor logfiles with use of Zabbix agents. It will explain how it works, how to create the items and make sure the correct information comes in along with the various trigger options, time and data parsing.

This module includes the following lab exercises:

- Configure your Zabbix agent so it will be able to monitor log files
- Create the items accordingly
- Setup triggers for those items

HTTP agent

This module goes over the function within Zabbix to talk to remote APIs or status pages for data gathering using a different item type, natively from Zabbix without any external scripts

This module includes the following lab exercises:

- Define a new HTTP agent item and start monitoring a Apache Health page
- With the use of Dependent items, extract only the valuable information
- With use of Preprocessing make the valuable information readable.



Web monitoring

This module covers the ability of Zabbix to monitor websites in depth, from the Zabbix server or proxy.

It will explain how to create the scenarios and respective steps along with all variables that can be utilized in order to make it as flexible as possible.



Day 4



Day 4

Inventory

This module covers to Zabbix feature to create a CMDB within Zabbix, while making use of data that was gathered already, or specifically for the CMDB function. It explains all the options and how to use the CMDB data as useful as possible.

This module includes the following lab exercises:

- Change the default inventory mode, and update all hosts
- Create a new template specifically for the CMDB function
- Enable and use the inventory functions

Notifications and Mediatypes

This module covers the way how Zabbix can send notifications upon problem detection and the default integrations that are available. It will also cover how to create your own integrations, customize messages and setup the media for specific users

This module includes the following lab exercises:

- Create a new media type
- Customize messages
- Update users
- Test
- Create your own script, customize messages and test.

Actions and Escalations

This module covers all options to create Actions upon events and the escalations that can be built within Zabbix. It will explain all functionality, configuration options and escalation steps, including the correct way to execute custom scripts or remote commands after an event.

This module includes the following lab exercises:

- Create your own actions for triggers and internal events
- Customize it as much as possible
- Generate problems to test.

Business level monitoring

This module covers “Service monitoring” or “Business level monitoring” and how the structure within Zabbix is, what it looks like and how to filter on the various BSM rules.

After this module, student should be able to find the root cause of Service degradation and how to see the current SLA level.



Maintenance

This module covers the 'Maintenance' configuration of Zabbix in order to prevent notifications. It will explain how to see maintenance is applied, filter in such a way that suppressed problems become visible.

This module includes the following lab exercises:

- Create your own maintenance period and test it

Low Level Discovery

This module covers the ultimate way to automate configuration within Zabbix. It will explain how Low Level Discovery works and go over the basic settings.

This module includes the following lab exercises:

- Link an template with a LLD rule
- Create and delete entities
- Confirm LLD does what it should do: automating configuration

Users, User groups and roles

This module covers Users, User groups and roles which are working in conjunction to provide users access to Zabbix, but also to set up the correct permissions so that users only can see what they are allowed to see and configure.

After this module the student understands the cohesion between the 3 components, how to configure it and best practices to configure this security.

This module includes the following lab exercises:

- Create a new user group
- Create a new user role
- Assign limited permissions
- Check access

Configuration import and export

This module covers how to export various Zabbix configuration settings and all the configuration options to import them correctly in another instance and how to see the differences

This module includes the following lab exercises:

- Export an template
- Make adjustments
- Import it back and check the change logs



Audit logs

This module covers the way Zabbix is making it's audit logs, how to read them and apply the correct filters.

This module includes the following lab exercises:

- Make configuration adjustments
- Make them visible in the audit logs



Day 5



Day 5

Real time data export

This module covers how Zabbix is able to export it's data to a json file ready to be used in other systems, including the configuration settings and limitations.

This module includes the following lab exercises:

- Enable real time data export and check what is written to the files.

Graphs

This module will explain the potential of predefined graphs, their benefits from the ad-hoc graphs and how to access them.

Next to that the student will learn how to configure them and change the presentation of the graphs.

This module includes the following lab exercises:

- Create your own custom graphs

Network Maps

This module will cover everything about Network maps, how to configure them and how to use them, including the permission settings that are included with this feature within Zabbix.

After this module, students are able to configure (easy) Zabbix maps, upload their icons and make dynamic labels within Maps.

This module includes the following lab exercises:

- Create your own Map
- Add hosts to the Map
- Clone/delete Map elements
- Configure dynamic labels
- Configure links between elements

Dashboards

This module covers the global concept of Dashboards and their functionality, including permissions, pages, and widgets.

During this module we will cover the available widgets, their potential and functions.

This module includes the following lab exercises:

- Create your dashboard with several widgets and pages in it
- Configure permissions of dashboards
- Set up a slideshow
- Make your dashboard the default page after login



Reporting services

This module covers the menu 'Reports' and all of its options, including the 'Scheduled Reports' feature and how it works in the backend, how to configure it and make the most out of the feature.

This module includes the following lab exercises:

- Install all additional components for reports
- Generate your own reports

Administrative settings

This module covers all administrative settings that can be changed in the Zabbix frontend, to make the best out of the product.

It covers roughly 25 different pages, packed with all kinds of settings.

Zabbix Performance

This module covers how to see the Zabbix performance, how to analyze problems and make configuration changes accordingly to keep the server as healthy as possible.

Zabbix releases and upgrades

This module covers the Zabbix release policy and upgrade/backups procedures for all Zabbix components.

Exam

As this is an official Zabbix training, it will include always a certificate of Attendance, issued by Zabbix.

We will conclude the week with the official (online) Zabbix exam, which will provide you the Certificate of Completion upon passing the exam.

The exam consists out of 50 multiple choice questions regarding the topics that are covered throughout the course.