Opensource ICT Solutions

Zabbix training course – Certified Professional

Syllabus

Overview

This three day training course is designed for engineers that are using Zabbix for some time, and are ready to take the next step.

This training brings more insight to the product and some topics covered in the Specialist are explained in more detail, while more advanced topics are introduced and explained.

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: 3 days

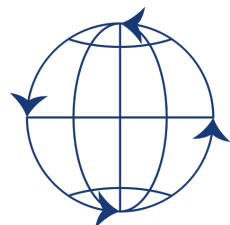**Software versions**:
- Zabbix 6.0.X
- RHEL (derivate) 8
- MySQL 8

Prerequisites:
- Basic understanding of IT systems
- Basic understanding of Linux
- Possesion of Zabbix 6.0 Certified Specialist certificate

Course Objectives:

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

- Install Zabbix with NginX.
- Work with encrypted connections
- Utilize Active Agent Autoregistration
- Utilize Network Discovery
- Monitor databases
- Configure Low Level Discovery efficiently
- Monitor VMware, JMX
- Utilize more advanced trigger functions
- Understand Zabbix Proxies
- Understand Zabbix internals/ performance

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Introduction

The course introduction gives students a quick refresher of the ZCS course.

Advanced frontend installation

This module will cover the installation of Zabbix frontend with NginX instead of Apache. Along with some improved security(HTTPS) and performance of the installation process.

The module includes the following lab exercises:
- Full installation of Zabbix server, including separation of the DB connections.
- Configure HTTPS for the frontend

Docker / Podman images

This module covers the availability and options of running Zabbix in docker containers, along with the configuration options.

High Availability

In Zabbix 6, native HA was introduced and this feature will be covered in this module. It will be explained how to configure it, tune it, how it works and the limitiations that might be present.

The module includes the following lab exercises:
- Convert the Zabbix server to HA
- Install additional Zabbix servers via containers and add them to the HA cluster

Proxies

This module will cover the benefits of Zabbix proxies, how they work and their functionality including the various modes, configuration, communication, installation and monitoring.

This module includes the following lab exercises:
- Install Zabbix proxy via containers
- Configure the frontend to enable the proxy
- Enable internal monitoring of the proxy statistics

Zabbix agent2

This module covers the new Zabbix agent generation ranging from the benefits, differences, architecture, installation and configuration till the monitoring(status view) of the agent and it's plugins.

The module includes the following lab exercises:
- Installation of Zabbix agent 2
- Using plugins with the agent in order to monitor databases.

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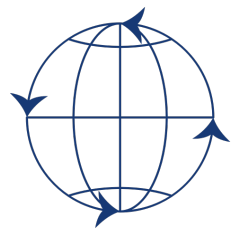
Restricting agent checks

This module covers the new options to improve agent security and prevent malicious things to happen, restricting the agent functionality.

The module includes the following lab exercises:
- Limit the functionality of the Zabbix agent so that it becomes more secure.

Zabbix agent remote commands

Another nice option is to allow the agent to execute remote commands. But how to do that while keeping it as save as possible? That's what is covered in this module.

Encryption

This module covers how to encrypt communication between the various Zabbix components, such as Zabbix server, agent, proxy and Database, natively.

The module includes the following lab exercises:
- Reconfigure the Zabbix agent2 in such way that all communication is encrypted.
- Utilize Zabbix Sender and Get with secure communication as well.

Day 2

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Day 2

ODBC Monitoring

This modules covers how to utilize Open Database Connectivity in conjunction with Zabbix to monitoring databases just from the frontend of Zabbix.

The module includes the following lab exercises:
- Modify the database to prepare it for ODBC monitoring
- Install ODBC
- Create new templates that are using ODBC to monitor DB statistics

Preprocessing

This module will teach the student various ways of transforming data before further processing and storing it in the database. This topic was covered in ZCS on a high level overview, but within the Professional course we will dive into it!

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:
- Setup new item(s) to monitor Prometheus data
- Use Preprocessing to get out the most useful information

Low Level Discovery

This module covers everything you might want to know about Low Level discovery, as of today one of the most powerful features of Zabbix!

Basics

This module will explain how Low Level Discovery works and why it is such a powerful feature, along with some configuration options and considerations.

The module includes the following lab exercises:
- Create new LLD template
- Create LLD rule with prototypes
- Test the working of LLD

Internal workings

This module covers the internal working of LLD, how the communication goes, the marcos used and some features to parse data that is not immediately useful to LLD.

Problems

This module will show how to configure prototypes within Low Level Discovery rules, their properties and additional attributes

Filters

This module will cover how to build filtering options into your Low Level Discovery rules to prevent monitoring(and alerting) on metrics that are not relevant.

The module includes the following lab exercises:
- Reconfigure the existing template in order to filter useless entities out of the discovery process.

Overrides

This module covers the new exciting option to make overrides within Low Level Discovery in conjunction with filters. Quite complex, but extremely rewarding as it brings the flexibility to the next level!

The module includes the following lab exercises:
- Alter the filtering options
- Create new trigger prototypes
- Build overrides to influence the behavior
- Confirm everything works as expected

Dependent items

Within this module we will use the concepts of Master and Dependent items (covered in ZCS already) to build the most efficient Low Level Discovery rules that you can imagine!

This module includes the following lab exercises:
- Create a new Master item
- Create a new (dependent) discovery rule with it's prototypes
- Include some filters to make it more useful.

Context support with User Macros

One of the problems with Low Level Discovery is that it's hard to make adjustments per host/item. There is a solution for this, called context support in user macros which is exactly what is covered in this module.

It adds an layer of flexibility to LLD that is totally hidden if you are not aware of the possibility!

The module includes the following lab exercises:
- Adjust the existing LLD rule to that it uses UserMarcos
- Add context support to the macros
- Start changing thresholds on triggers coming from LLD rules

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Specific LLD keys

Within Zabbix we have a few itemkeys that are supported with a sole purpose: enable easy LLD configuration.
Within this module we will cover those item keys and their properties!

SQL

One of the toughest topics, especially if you are not an DBA. Low Level Discovery of SQL entities via Zabbix. Within this module we will discover the 2 ways of building those LLD rules and their benefits.

The module includes the following lab exercises:
- Build a full blown LLD template in order to monitor your database via ODBC

SNMP

If you are a network engineer you will absolutely love this module. We go over the various options to discovery entities in a single rule of your network equipement.

The module includes the following lab exercises:
- Create a new host for SNMP LLD
- Create a new template for SNMP LLD and add the discovery rule with its prototype.
- Link the two together and see the magic happen!

Day 3

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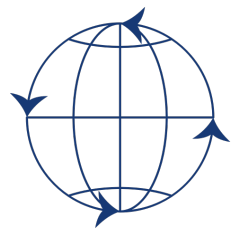
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Autoregistration

Within this module we will cover the "Active Agent Autoregistration" feature which allows to include new hosts efficiently with no manual configuration and making sure the correct templates are linked to those hosts.

The module includes the following lab exercises:
- Reconfigure the encryption options
- Create new Auto registration actions
- Reconfigure the Zabbix agent

Network Discovery

This module covers the functionality of Network discovery in order to add new hosts without manual configuration.

We will cover the configuration, workings and best practices of this feature.

The module includes the following lab exercises:
- Create a new discovery rule
- Create a new discovery action
- Confirm hosts are added

Java monitoring

This module covers the options to monitor Java applications natively from Zabbix with use of the Zabbix Java Gateway. Along we will touch on some of the configuration options within the Java application, the benefits and of course limitations.

This module includes the following lab exercises:
- Install a Zabbix Java Gateway
- Reconfigure the Zabbix server
- Start monitoring a remote host it's Java application

VMWare monitoring

This modules covers on how to enable VMware monitoring and the communication between the Zabbix server and Vcenter or esxi.

Out of the box Zabbix provides a few templates that are perfectly fine to use. We will see how those work along with some common problems and best practices.

Advanced problem detection

This module covers some of the more complicated topics within problem detection like the various timeshifting options, macros, formatting, event names and new trigger functions that are available within

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This module includes the following lab exercises:
* Adjust an existing template to work with macros only
* Build advanced calculated items and trigger prototypes to enable prediction.

Event Correlation

Within Zabbix it's possible to correlate events and only see the root cause of problems. How? That's what we will explain in this module! We will cover both Trigger based and Global Event correlation, each with their own benefits and limitations.

Zabbix internals

Zabbix is a monitoring tool and it makes sense it is monitoring it's own internal metrics as well. But how do you know where to look at? What to change? How to improve things and what all variables mean and do? That's what this module is about. We'll cover the caches, processes and internal diagram data flows.

This module includes the following lab exercises:
* Adjust internal parameters in order to see how the environment will be influenced by it.

Database tuning

When we are talking about performance, almost immediately we're also talking about the database. Let us give some guidance on the easiest performance tuning possible with regards to databases, but also best practices and Database partitioning!

Troubleshooting and recommendations

This module will explain some of the generic troubleshooting steps, the approach to start troubleshooting and some general recommendations in regards to resources and such.

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 70 multiple choice questions regarding the topics that are covered throughout the course.