Kubernetes II - Installation, Configuration and Administration

Course code: KUBERNETES_ADMIN

The course is intended for administrators who want to get acquainted in detail with the installation, configuration and operation of Kubernetes clusters. We will use a real multi-node cluster in the course, which we will configure ourselves during the exercise. We will deal with all the details that are needed to manage a stable production cluster. Last but not least, this course can be considered as preparation for the Certified Kubernetes Administrator (CKA) certification.

Affiliate	Duration	Course price	ITB
Praha	5	47 500 Kč	50
Brno	5	47 500 Kč	50
Bratislava	5	1 900 €	50

The prices are without VAT.

Course terms

Date	Duration	Course price	Type	Course language	Location
18.01.2027	5	1 900 €	Online	CZ/SK	Online
18.01.2027	5	47 500 Kč	Online	CZ/SK	Online
08.02.2027	5	1 900 €	Presence	CZ/SK	GOPAS Bratislava CBC II.
08.03.2027	5	47 500 Kč	Presence	CZ/SK	GOPAS Brno
05.04.2027	5	47 500 Kč	Presence	CZ/SK	GOPAS Praha
31.05.2027	5	47 500 Kč	Online	CZ/SK	Online
31.05.2027	5	1 900 €	Online	CZ/SK	Online
21.06.2027	5	1 900 €	Presence	CZ/SK	GOPAS Bratislava CBC II.
12.07.2027	5	47 500 Kč	Presence	CZ/SK	GOPAS Brno
23.08.2027	5	47 500 Kč	Presence	CZ/SK	GOPAS Praha
11.10.2027	5	47 500 Kč	Online	CZ/SK	Online
11.10.2027	5	1 900 €	Online	CZ/SK	Online
25.10.2027	5	1 900 €	Presence	CZ/SK	GOPAS Bratislava CBC II.
08.11.2027	5	47 500 Kč	Presence	CZ/SK	GOPAS Brno
29.11.2027	5	47 500 Kč	Presence	CZ/SK	GOPAS Praha

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Required input knowledge

- Basics of knowledge of infrastructure technologies (networking, data storage)
- Basic knowledge of Docker or another container runtime
- Linux command line operation

Teaching methods

- Expert explanation with practical examples, exercises on computers.
- During the course we will use a real K8s cluster, installed in on-premise mode

Studying materials

- Printed presentations of the subject matter.

Course syllabus

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Kubernetes II - Installation, Configuration and Administration

Kubernetes - Basic information
- Principles and philosophy
- CRI, CNI, CSI standards
- Cluster structure and roles of individual components
- Orientation in the cluster API

Cluster installation
- Control plane initialization
- Initialization of worker nodes
- High availability and redundancy control plane
- Work with tokens and certificates
- Virtual clusters (namespaces)

Cluster node administration
- Node operations (add, remove, cordon / uncordon, drain)
- Working with static control plane (enable / disable / modify)
- Configuration service etcd (data backup, high availability, time snapshots)
- Taints and labels at the node level

Networking in Kubernetes
- CNI network plugins
- Plugin configuration and selection of a suitable plugin
- Overview of the most used plugins, features, advantages / disadvantages

Data storage in Kubernetes
- Overview of options
- Objects PV, PVC, SC and others
- Practical examples of deployment (database databases)

Safety
- Security aspects of the cluster
- PKI in Kubernetes (certificates, authorities, certificate renewal, ...)
- Control user access to cluster environments, RBAC
- Configuration files for kubectl and work with them

Application operation
- Pod and its structure
- Multipod deployment and when to use it (advantages / disadvantages)
- Higher level controllers (ReplicaSet, Deployment, StatefulSet, DaemonSet)
- Service objects
- Ensuring high application availability
- Zero-downtime upgrade / downgrade applications
- Application scaling
- Scheduling pod in a cluster
- Floor monitoring (readiness / startup / liveness functionality tests)

Best practices
- Kubernetes native application
- Cluster application requirements
- Load balancing

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