OPENSTACK BOOTCAMP

Kategoria	Czas trwania	Termin	Cena
Cloud	28h / 4 dni	ustalamy indywidualnie	ustalamy indywidualnie

Program szkolenia:

Poniżej przedstawiamy przykładowy program szkolenia, który może zostać zmodyfikowany zgodnie z oczekiwaniami oraz poziomem grupy szkoleniowej. Przed przygotowaniem docelowego programu szkolenia, przeprowadzamy rozmowę techniczną, w której bierze udział trener oraz osoba techniczna lub cały zespół developerów reprezentujący klienta, w celu ustalenia szczegółów szkolenia.

Training plan

Introduction to OpenStack

- History of the cloud and OpenStack
- Cloud features
- Cloud models
    - *private, public, hybrid*
    - *on-premise, IaaS, PaaS, SaaS*

- Public and private cloud deployments based on OpenStack
- Open source and commercial OpenStack distributions
- OpenStack deployment models
- OpenStack ecosystem
    - *Modules*
    - *Underlying tools*
    - *Integrations*
- OpenStack lifecycle
- OpenStack certification
- OpenStack lab (VM) for this course

Training plan c.d.

Hands-on OpenStack administration workshop

- Getting to know OpenStack
    - *OpenStack components (Keystone, Glance, Nova, Neutron, Cinder, Swift, Heat)*
    - *Interaction with OpenStack cloud*
    - *OpenStack daemons and API communication flow*

- Keystone - Identity management service
    - *Keystone architecture*
    - *Authentication and available backends*
    - *Token types and token management*
    - *Authorization in OpenStack - roles and oslo.policy*
    - *Keystone resources - domains, projects, users*
    - *Openrc and clouds.yaml - CLI clients configuration*
    - *OpenStack service catalog*
    - *Adding new OpenStack service*
    - *Quota system in OpenStack*

- Glance - Image service
    - *Images adjusted to the cloud*
    - *Image features (properties, metadata, format, container)*
    - *Uploading and downloading image*
    - *Sharing images*
    - *Glance image stores*
    - *Protected images*
    - *Manage quotas for image service*
    - *Verification of Glance services*

- Neutron - Networking
    - *Architecture and Neutron services*
    - *The ML2 plugin*
    - *Networking in compute node - analysis*
    - *Networking concepts and tools used by Neutron*
    - *Basic Neutron network resource types*
    - *Manage tenant networks, subnets,*
    - *Manage security groups and rules*
    - *East-West routing*

Training plan c.d.

- *Network namespaces*
- *Manage external/provider networks*
- *North-South routing*
- *Floating IPs management*
- *Manage network quotas*
- *Basic network troubleshooting (namespaces, tcpdump, etc.)*
- *Networking quotas*
- *Verification of Neutron services*

- Nova - Compute service
  - *Interfaces to hypervisors*
  - *Keypair management*
  - *Flavour management*
  - *Flavors and CPU topology*
  - *Instance parameters*
  - *Creating an instance*
  - *Verification of spawned instances*
  - *Snapshotting*
  - *Instance management*
  - *Resizing instances*
  - *Assigning floating IPs*
  - *Interactive console and console log*
  - *Security groups assignment*
  - *Internals of security groups and port-security features (iptables)*
  - *Internals of L3 routers*
  - *Compute quotas*
  - *Getting statistics from Nova*
  - *Placement API and Nova Cells v2*
  - *Placement API and instance scheduling*
  - *Placement API client commands*
  - *Verification of Nova services*

Training plan c.d.

- Cinder - Block Storage
    - *Volume parameters*
    - *Creating volume*
    - *Manage volume*
    - *Attaching volume to Nova instance*
    - *Managing volume snapshots*
    - *Managing volume backups*
    - *Internals of snapshots and backups in Cinder*
    - *Transferring volumes between projects*
    - *Restoring backups*
    - *Managing volume quotas*
    - *Adding new storage backend*
    - *QoS in Cinder*
    - *LVM, storage array and Ceph storage backends*
    - *Ceph in OpenStack*
    - *Integrating Ceph and Cinder*
    - *Good practices for Ceph deployments*
    - *Verification of Cinder services*

- Barbican - Key Management Service
    - *Barbican architecture*
    - *Storing passphrases*
    - *Generating and storing symmetric encryption keys*
    - *Volume encryption mechanisms*
    - *Configuring Cinder storage type for volume encryption*
    - *Limitations of volume encryption*
    - *Storing X.509 certificate bundles*

- Swift - Object Storage
    - *Swift components and processes*
    - *Managing containers and objects*
    - *Managing access control lists*
    - *Setting up object expiration*
    - *The Ring and storage policies*
    - *Monitoring available storage space*
    - *Setting up quotas*
    - *Verification of Swift services*

Training plan c.d.

- Heat - Orchestration
    - *Heat Orchestration Template and its components*
    - *Creating Heat stack*
    - *Verification of Heat stack*
    - *Updating Heat stack*
    - *Verification of Heat services*

- Basic troubleshooting
    - *Analyzing log files*
    - *Centralized logging*
    - *Debugging OpenStack client queries*
    - *Managing OpenStack database*
    - *Backing up OpenStack*
    - *Analyzing compute node status*
    - *Analyzing instance status*
    - *Analyzing AMQP broker (RabbitMQ)*
    - *Metadata services*
    - *General way of diagnosing OpenStack issues*
    - *Troubleshooting network problems*
    - *Troubleshooting network performance*
    - *Instance backup and recovery*

Advanced Topics

- Octavia - Load Balancing-as-a-service
    - *Architecture*
    - *Objects and request flow*
    - *Octavia flavors*
    - *Octavia Availability Zones*
    - *Creating the HTTP load balancer*
    - *Creating the TCP load balancer*
    - *Creating HTTPS passthrough load balancer*
    - *Listeners, Pools and Health Monitors*
    - *Layer 7 load balancing in Octavia*
    - *Building Amphora image*
    - *LB Failover*
    - *Networking and Monitoring details*
    - *Troubleshooting Octavia*

Training plan c.d.

- Hardware considerations and capacity planning
    - *Compute hardware*
    - *Network design*
    - *Storage design*
    - *Flavour sizing*
    - *Resource overcommitment*

- Highly Available control plane
    - *HA in OpenStack services*
    - *HA database*
    - *HA message queue*

- Cloud partitioning and scheduler filters
    - *Why and how implement cloud partitions (host-aggregates)*
    - *Nova scheduler filters*

- Workload migration
    - *Cold and live migration*
    - *Live migration tweaking*
    - *Watcher project*

- In-depth OpenStack networking (SDN) (2-3h)
    - *Types of network (local, flat, vlan, vxlan, gre)*
    - *Neutron plugins*
        - *Linux Bridge*
        - *Open vSwitch*
    - *Distributed Virtual Routers*
    - *LBaaS + Octavia project*
    - *VPNaaS*

- OpenStack monitoring and telemetry
    - *Ceilometer service*
    - *External monitoring*

- Advances cloud/hypervisor features
    - *CPU pinning / NUMA architecture*
    - *SR-IOV*

Training plan c.d.

- Cloud-init and image customization
    - *Metadata Service*
- Block storage backends
    - *LVM*
    - *Ceph RBD*
    - *Physical appliances*
    - *Storage network considerations*
- Upgrading OpenStack
    - *Upgrade strategies and procedures*
    - *Zero-downtime upgrade*
- Bare-metal provisioning with OpenStack
    - *Ironic module*
    - *Undercloud and overcloud concepts*
- Future of OpenStack

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Skontaktuj się z Przemkiem!

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