Úpravy clusteru

Update verze

Upgrade plan

```
kubeadm upgrade plan
```

Upgrade

```
kubeadm upgrade apply v1.26.6
```

Změna konfigurace

Konfiguraci lze upravovat pro Control Plane (ClusterConfiguration) a poté pro kubelet běžící na jednotlivých nódech přes KubeletConfiguration. Obecně je doporučeno se těmto úpravám pokud možno vyhnout a při nutnosti jejich aplikace zálohovat celý cluster.

Cluster Configuration

Standardní konfigurace clusteru ukládána ve formě ConfigMapy kubeadm-config v namespace kube-system v sekci ClusterConfiguration.

```
[root@tvlakub11:/home/exdmachacek]# kubectl get cm -n kube-system kubeadm-config -o yaml
apiVersion: v1
data:
  ClusterConfiguration: |
    apiServer:
      extraArgs:
        authorization-mode: Node,RBAC
      timeoutForControlPlane: 4m0s
    apiVersion: kubeadm.k8s.io/v1beta3
    certificatesDir: /etc/kubernetes/pki
    clusterName: tvla-cluster
    controlPlaneEndpoint: 172.18.204.196:5000
    controllerManager: {}
    dns:
      imageRepository: nexus.pmb.cz:5511/coredns
    etcd:
      local:
        dataDir: /var/lib/etcd
    imageRepository: nexus.pmb.cz:5511
    kind: ClusterConfiguration
    kubernetesVersion: v1.27.3
    networking:
      dnsDomain: cluster.local
      podSubnet: 172.17.0.0/16
      serviceSubnet: 10.96.0.0/12
kind: ConfigMap
metadata:
  name: kubeadm-config
  namespace: kube-system
```

Případné změny musí být uloženy zpět do ConfigMapy a také uložena do separátního config souboru <config-file>, např. takto (měněn atribut clusterName)

```
apiServer:
  extraArgs:
    authorization-mode: Node,RBAC
  timeoutForControlPlane: 4m0s
apiVersion: kubeadm.k8s.io/v1beta3
certificatesDir: /etc/kubernetes/pki
clusterName: new-name-tvla-cluster
controlPlaneEndpoint: 172.18.204.196:5000
controllerManager: {}
dns:
  imageRepository: nexus.pmb.cz:5511/coredns
etcd:
  local:
    dataDir: /var/lib/etcd
imageRepository: nexus.pmb.cz:5511
kind: ClusterConfiguration
kubernetesVersion: v1.27.3
networking:
  dnsDomain: cluster.local
  podSubnet: 172.17.0.0/16
  serviceSubnet: 10.96.0.0/12
```

Následně může být nasazena přes příkaz

```
kubeadm init phase control-plane all --config <config-file>
```

Důvod

Důvodem "dvojjité" aplikace změn je, že pro jejich propsání musí být změněny manifesty podů Control Planu, což nelze triggerovat automaticky. Tyto manifesty jsou na masterech standardně uloženy v **/etc/kuberentes**. Je proto doporučeno alespoň tuto složky před jakoukoliv změnou zálohovat (ideálně však celý cluster).

Očekávaný výstup

```
[root@tvlakub11:/home/exdmachacek]# [root@tvlakub11:/home/exdmachacek]# kubeadm init phase control-plane all --
config new-config.yaml  --v=5
I0801 15:48:27.828147 1879321 initconfiguration.go:255] loading configuration from "new-config.yaml"
I0801 15:48:27.829457 1879321 initconfiguration.go:117] detected and using CRI socket: unix:///var/run
/containerd/containerd.sock
I0801 15:48:27.829653 1879321 interface.go:432] Looking for default routes with IPv4 addresses
I0801 15:48:27.829664 1879321 interface.go:437] Default route transits interface "ens192"
I0801 15:48:27.830201 1879321 interface.go:209] Interface ens192 is up
I0801 15:48:27.830237 1879321 interface.go:257] Interface "ens192" has 1 addresses :[172.18.204.190/22].
I0801 15:48:27.830246 1879321 interface.go:224] Checking addr  172.18.204.190/22.
I0801 15:48:27.830254 1879321 interface.go:231] IP found 172.18.204.190
I0801 15:48:27.830267 1879321 interface.go:263] Found valid IPv4 address 172.18.204.190 for interface "ens192".
I0801 15:48:27.830272 1879321 interface.go:443] Found active IP 172.18.204.190
I0801 15:48:27.830287 1879321 kubelet.go:196] the value of KubeletConfiguration.cgroupDriver is empty; setting
it to "systemd"
I0801 15:48:27.889421 1879321 certs.go:519] validating certificate period for CA certificate
I0801 15:48:27.889873 1879321 certs.go:519] validating certificate period for front-proxy CA certificate
[control-plane] Using manifest folder "/etc/kubernetes/manifests"
[control-plane] Creating static Pod manifest for "kube-apiserver"
I0801 15:48:27.889959 1879321 manifests.go:99] [control-plane] getting StaticPodSpecs
I0801 15:48:27.890285 1879321 manifests.go:125] [control-plane] adding volume "ca-certs" for component "kube-
apiserver"
I0801 15:48:27.890293 1879321 manifests.go:125] [control-plane] adding volume "etc-pki" for component "kube-
apiserver"
I0801 15:48:27.890298 1879321 manifests.go:125] [control-plane] adding volume "k8s-certs" for component "kube-
apiserver"
I0801 15:48:27.894736 1879321 manifests.go:154] [control-plane] wrote static Pod manifest for component "kube-
apiserver" to "/etc/kubernetes/manifests/kube-apiserver.yaml"
[control-plane] Creating static Pod manifest for "kube-controller-manager"
I0801 15:48:27.894760 1879321 manifests.go:99] [control-plane] getting StaticPodSpecs
I0801 15:48:27.895020 1879321 manifests.go:125] [control-plane] adding volume "ca-certs" for component "kube-
controller-manager"
I0801 15:48:27.895029 1879321 manifests.go:125] [control-plane] adding volume "etc-pki" for component "kube-
controller-manager"
I0801 15:48:27.895034 1879321 manifests.go:125] [control-plane] adding volume "flexvolume-dir" for component
"kube-controller-manager"
I0801 15:48:27.895038 1879321 manifests.go:125] [control-plane] adding volume "k8s-certs" for component "kube-
controller-manager"
I0801 15:48:27.895043 1879321 manifests.go:125] [control-plane] adding volume "kubeconfig" for component "kube-
controller-manager"
I0801 15:48:27.896300 1879321 manifests.go:154] [control-plane] wrote static Pod manifest for component "kube-
controller-manager" to "/etc/kubernetes/manifests/kube-controller-manager.yaml"
[control-plane] Creating static Pod manifest for "kube-scheduler"
I0801 15:48:27.896323 1879321 manifests.go:99] [control-plane] getting StaticPodSpecs
I0801 15:48:27.896478 1879321 manifests.go:125] [control-plane] adding volume "kubeconfig" for component "kube-
scheduler"
I0801 15:48:27.899291 1879321 manifests.go:154] [control-plane] wrote static Pod manifest for component "kube-
scheduler" to "/etc/kubernetes/manifests/kube-scheduler.yaml"
```

Kubelet Configuration

Získání ConfigMapy s nastavením kubelet

```
kubectl edit cm -n kube-system kubelet-config
```

Parametry k možné změně jsou vidět v uvedené ConfigMapě.

```
[root@tvlakub11:/home/exdmachacek]# k get cm -n kube-system kubelet-config -o yaml
apiVersion: v1
data:
  kubelet: |
    apiVersion: kubelet.config.k8s.io/v1beta1
    authentication:
      anonymous:
        enabled: false
      webhook:
        cacheTTL: 0s
        enabled: true
      x509:
        clientCAFile: /etc/kubernetes/pki/ca.crt
    authorization:
      mode: Webhook
      webhook:
        cacheAuthorizedTTL: 0s
        cacheUnauthorizedTTL: 0s
    cgroupDriver: systemd
    clusterDNS:
    - 10.96.0.10
    clusterDomain: cluster.local
    containerRuntimeEndpoint: ""
    cpuManagerReconcilePeriod: 0s
    evictionPressureTransitionPeriod: 0s
    fileCheckFrequency: 0s
    healthzBindAddress: 127.0.0.1
    healthzPort: 10248
    httpCheckFrequency: 0s
    imageMinimumGCAge: 0s
    kind: KubeletConfiguration
    logging:
      flushFrequency: 0
      options:
        json:
          infoBufferSize: "0"
      verbosity: 0
    memorySwap: {}
    nodeStatusReportFrequency: 0s
    nodeStatusUpdateFrequency: 0s
    rotateCertificates: true
    runtimeRequestTimeout: 0s
    shutdownGracePeriod: 0s
    shutdownGracePeriodCriticalPods: 0s
    staticPodPath: /etc/kubernetes/manifests
    streamingConnectionIdleTimeout: 0s
    syncFrequency: 0s
    volumeStatsAggPeriod: 0s
kind: ConfigMap
metadata:
  annotations:
    kubeadm.kubernetes.io/component-config.hash: sha256:
1a57e3f87b04a6bde4ecbbdc2a102ed31a3de10425da3154f44eaf02012235cc
  creationTimestamp: "2023-07-25T15:06:28Z"
  name: kubelet-config
  namespace: kube-system
  resourceVersion: "243"
  uid: 79ea3b0f-0d6b-4219-afbc-534547945dbc
```