1 PKS CheatSheet VMware

- PDF Link: cheatsheet-pks-A4.pdf, Category: tools
- Blog URL: `https://cheatsheet.dennyzhang.com/cheatsheet-pks-A4`
- Related posts: Bosh CheatSheet, Tile CheatSheet

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1.1 PKS Reference

Name	Command
YouTube	YouTube: PKS overview, YouTube: Pivotal Container Service (PKS) Demos and Webcasts
Reference	PKS Documentation, PKS Concepts, PKS 1.2 Release Notes, Managing PKS 1.2
Reference	Bosh CheatSheet, Tile CheatSheet, UAA CheatSheet, PKS CheatSheet

`https://raw.githubusercontent.com/dennyzhang/cheatsheet-pks-A4/master/pks-highlevel.png`

1.2 Key Components

Name	Command
Computing virtualization	VMware vSphere Documentation
NCP: CNI for Vmware NSX-T	Help to create pod networks in PKS k8s clusters
CFCR/Kubo	CFCR aims to deploy/manage fleets of k8s clusters. Kubo is the old name.
Bosh: VM lifecycle management	Link: BOSH CHEATSHEET, Github: Bosh
Packaging: tile, ops manager	Link: CheatSheet: Cloudfoundry Tile & OpsManager
CSI for persistent volume	GitHub: hatchway

1.3 PKS Scenarios

Name	Summary
How PKS supports k8s master HA	GitHub: kubo-release, GitHub: cfcr-etcd-release
PKS admin login to bosh for additional operations	Get bosh crediential from Ops Manager, ssh to opsmanager, and run bosh c
Workflow of how PKS creates a k8s cluster	Link: Create a Kubernetes Cluster
Deployment for env without internet	Enforce air-gapped deployments

1.4 PKS cli

Name	Command
List all pks clusters	`pks clusters`
Create cluster	`pks create-cluster cluster1 --external-hostname cluster1.pks.com --plan "$plan" -`
Check cluster status	`pks cluster cluster1`
Get cluster kubectl credential	`pks get-credentials <cluster_name>`
Set kubectl context	`kubectl config use-context <cluster_name>`
List all available plans	`pks plans`
pks login	`pks login -a <api.test.com> -u <username> -p <passwd> -k`
pks login	`pks login --skip-ssl-validation --username <username> --password <password> --api`
Default roles in pks UAA	`pks.clusters.manage`, `pks.clusters.admin`, Link: Manage Users in UAA

1.5 Deployment Diagram

Name	Summary
Bosh director vm	VM manager
Ops manager vm	Package manager
PKS API server vm	See below
Build-in process in k8s master vm	See below
Build-in process in k8s worker vm	See below

`https://raw.githubusercontent.com/dennyzhang/cheatsheet-pks-A4/master/pks-deployment.png`

1.6 PKS footprint: in control panel

Name	Summary
Get process list in pks 1.2.0	ssh to the pks api vm, then `sudo monit summary`
`pks-api`	
`uaa`	
`broker`	
`pks-nsx-t-osb-proxy`	
`mariadb_ctrl`	
`galera-healthcheck`	
`gra-log-purger-executable`	
`cluster_health_logger`	
`telemetry`	
`event-emitter`	
`bosh-dns`	
`bosh-dns-resolvconf`	
`bosh-dns-healthcheck`	

1.7 PKS footprint: in k8s master vms

Name	Summary
Get process list in pks 1.2.0	ssh to k8s master vm, then `sudo monit summary`
`kube-apiserver`	
`kube-controller-manager`	
`kube-scheduler`	
`etcd`	
`blackbox`	
`ncp`	
`bosh-dns`	
`bosh-dns-resolvconf`	
`bosh-dns-healthcheck`	
`pks-helpers-bosh-dns-resolvconf`	

1.8 PKS footprint: in k8s worker vms

Name	Summary
Get process list in pks 1.2.0	ssh to the k8s worker vm, then `sudo monit summary`
`docker`	
`kubelet`	
`kube-proxy`	
`blackbox`	
`nsx-node-agent`	
`ovsdb-server`	
`ovs-vswitchd`	
`nsx-kube-proxy`	
`bosh-dns`	
`bosh-dns-resolvconf`	
`bosh-dns-healthcheck`	
`pks-helpers-bosh-dns-resolvconf`	

1.9 PKS errands & tasks

Name	Command
kubeconfig	Github: kubo-deployment/bin/set$_{\text{kubeconfig}}$
apply-specs	`bosh -d cfcr run-errand apply-specs`

1.10 PKS Challenges

Name	Command
Tile & OpsManager is not agile	It slows down everything. The development, testing and deployment.
UX of PKS CLI	The usage of pks cli could be more intuitive
Extend PKS API layer	Easy to add more functionalities for PKS admins
Improve PKS control panel HA	Online rolling upgrade for opsmanager, uaa, pks api, etc
Faster for typical use cases	Create k8s clusters, resize k8s cluster, create pods, etc
Better storage support of PV	HA for PV, and support more CSI providers
Cleanup for stale resources	When operations have failed, need to do the cleanup in a safe way
More built-in security supports	PKS supports most common security enhancements, but it doesn't provides them

1.11 PKS Troubleshooting

Name	Command
Log files in pks vms	`/var/vcap/sys/log`
Reference	Link: PKS Troubleshoot

1.12 Online Help Usage

```
[ec2-user@ip-172-31-33-176 ~]$ pks --help

The Pivotal Container Service (PKS) CLI is used to create, manage, and delete Kubernetes clusters.
To deploy workloads to a Kubernetes cluster created using the PKS CLI, use the Kubernetes CLI, kubectl.

Version: 1.1.1-build.8

Usage:
  pks [command]

Available Commands:
  cluster         View the details of the cluster
  clusters        Show all clusters created with PKS
  create-cluster  Creates a kubernetes cluster, requires cluster name, an external host name, and plan
  delete-cluster  Deletes a kubernetes cluster, requires cluster name
  get-credentials Allows you to connect to a cluster and use kubectl
  help            Help about any command
  login           Log in to PKS
  logout          Log out of PKS
  plans           View the preconfigured plans available
  resize          Increases the number of worker nodes for a cluster

Flags:
  -h, --help      help for pks
      --version   version for pks

Use "pks [command] --help" for more information about a command.
```

1.13 More Resources

```
https://docs.pivotal.io/runtimes/pks/1-2/index.html
```