Proxmox VE Virtualization platform CLI

CONCEPTS

qm manages QEMU/KVM VMs, pct manages LXC containers. Both share one ID space: every guest has a unique numeric VMID (100 and up) across the cluster.

Cluster pvecm, /etc/pve shared
- **Node** one PVE host
  - **Guest** VM (qm) or CT (pct), by VMID
    - **Volume** <storage>:<volume> on a storage

Disks, ISOs, templates and backups are addressed by volume ID, storage:name, e.g. local-lvm:vm-100-disk-0 or local:iso/<file>.iso.

VM LIFECYCLE

`qm list`
List VMs with status, memory, PID

`qm start <vmid>`
Start a VM

`qm shutdown <vmid>`
Ask the guest to shut down

`qm stop <vmid>`
Hard stop, like pulling the plug

`qm reboot <vmid>`
Clean reboot

`qm status <vmid>`
Running or stopped

`qm unlock <vmid>`
Clear a stale lock

`qm destroy <vmid> --purge`
Delete the VM and its disks

VM CONSOLE & GUEST AGENT

`qm terminal <vmid>`
Attach to the serial console

`qm set <vmid> --agent enabled=1`
Enable the QEMU guest agent

`qm guest cmd <vmid> network-get-interfaces`
Guest IP addresses via the agent

VM CONFIGURATION

`qm config <vmid>`
Show the VM's settings

`qm set <vmid> --memory <MiB>`
Set RAM

`qm set <vmid> --cores <n>`
Set CPU cores

`qm set <vmid> --onboot 1`
Start with the node

`qm set <vmid> --net0 virtio,bridge=vmbr0`
Add or change a NIC

`qm create <vmid> --name <name> --memory 2048`
Create an empty VM

`qm disk resize <vmid> scsi0 +10G`
Grow a disk

TEMPLATES, CLONES & SNAPSHOTS

`qm snapshot <vmid> <name>`
Take a snapshot

`qm rollback <vmid> <name>`
Revert to a snapshot

`qm template <vmid>`
Turn a VM into a template

`qm clone <vmid> <newid> --name <name>`
Clone a VM or template

CONTAINERS (PCT)

`pct list`
List containers

`pct create <vmid> <template> --rootfs <storage>:<GiB>`
Create a container

`pct start <vmid>`
Start a container

`pct enter <vmid>`
Root shell inside

`pct shutdown <vmid>`
Clean shutdown

`pct exec <vmid> -- <cmd>`
Run one command inside

`pct config <vmid>`
Show the container's settings

`pct set <vmid> --memory <MiB> --cores <n>`
Change resources

CONTAINER TEMPLATES (PVEAM)

`pveam update`
Refresh the template index

`pveam available --section system`
List downloadable OS templates

`pveam download <storage> <template>`
Download a template

STORAGE (PVESM)

`pvesm status`
Storages with type and usage

`pvesm list <storage>`
Volumes on a storage

BACKUP & RESTORE

`vzdump <vmid> --storage <storage>`
Back up a VM or container

`vzdump <vmid> --mode stop --compress zstd`
Consistent backup, stops the guest

`pvesm list <storage> --content backup`
List backup archives

`qmrestore <archive> <vmid> --storage <storage>`
Restore a VM backup

`pct restore <vmid> <archive> --storage <storage>`
Restore a container backup

MIGRATION

`qm migrate <vmid> <node>`
Move a stopped VM to another node

`qm migrate <vmid> <node> --online`
Live-migrate a running VM

CLUSTER & API

`pvecm status`
Quorum and membership

`pvecm nodes`
Cluster nodes and votes

`pvesh get /cluster/resources --type vm`
Every guest in the cluster