

# High Availability

High Availability (HA) ensures that critical VMs are automatically restarted on another node if the node they are running on fails.

Prerequisites:

- A working cluster with at least 3 nodes
- Shared storage accessible by all nodes (so the VM disk can be accessed after failover)
- The HA manager service must be running on all nodes

**Note:** HA requires a quorum (majority of nodes must be online). With 3 nodes, you can tolerate 1 node failure. With 2 nodes, there is no quorum and HA will not function.

## Enabling HA for a VM

1. Go to Datacenter > HA
2. Click Add under Resources
3. Select the VM ID you want to protect
4. Set the HA State:
  - Started — HA will always try to keep this VM running
  - Stopped — HA will manage the VM but leave it stopped
  - Disabled — HA does not manage this VM
5. Set Max Restart — how many times to try restarting on the same node before migrating
6. Set Max Relocate — how many nodes to try before giving up
7. Click Add

## HA Groups

HA groups define which nodes are preferred or required for specific VMs.

1. Datacenter > HA > Groups > Add
2. Name the group and select nodes
3. Set priority (higher = preferred) for each node
4. Assign a VM to the group in HA Resources

## Testing High Availability

1. Start an HA-protected VM on one node
2. Simulate a node failure by powering off that node or running:

```
systemctl stop pve-cluster corosync
```

Watch the Proxmox web console — the VM should automatically start on another node

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