Proxmox Virtual Machine (VM) Configuration and OS Installation Guide

Proxmox VE (Virtual Environment) is a powerful open-source virtualization platform that allows you to run multiple virtual machines (VMs) on a single server. It supports both KVM (Kernel-based Virtual Machine) and LXC (Linux Containers).

Step 1: Install Proxmox VE

If you haven't installed Proxmox VE yet, follow these steps:

1. **Download Proxmox ISO**
    - Go to the Proxmox official website and download the latest ISO.
2. **Create a Bootable USB**
    - Use Rufus (Windows) or dd (Linux) to create a bootable USB.

bash

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sudo dd if=proxmox-ve.iso of=/dev/sdX bs=4M status=progress

3. **Boot from the USB & Install**
    - Boot your server from the USB and follow the installation wizard.
4. **Login to the Web Interface**
    - After installation, access Proxmox Web UI:

cpp

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https://<your-server-ip>:8006

    - Login using the root credentials.

Step 2: Upload an ISO Image to Proxmox

Before creating a VM, upload an operating system ISO file.

Using Proxmox Web UI:

1. Navigate to **Datacenter** → **Your Node** → **Local (storage)** → **ISO Images**.
2. Click **Upload**, select your OS ISO file, and upload.

Using Command Line:

Alternatively, upload an ISO via SSH:

bash

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scp /path/to/your.iso root@<your-proxmox-ip>:/var/lib/vz/template/iso/

Step 3: Create a Virtual Machine (VM)

Using Proxmox Web UI:

1. Go to **Datacenter → Your Node → Create VM**.
2. Enter the **VM ID and Name**.
3. Select **OS Type** and choose the uploaded ISO file.
4. Configure **System & Disk Size** (Recommended: 20GB+ for OS).
5. Assign **CPU & RAM** (e.g., 2 vCPUs, 4GB RAM).
6. Configure **Network (Bridge to vmbr0 for internet access)**.
7. Click **Finish** to create the VM.

Using Command Line (CLI):

Create a VM with 2 CPUs, 4GB RAM, and 20GB disk:

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qm create 100 --name "UbuntuVM" --memory 4096 --cores 2 --net0 virtio,bridge=vmbr0

qm set 100 --scsihw virtio-scsi-pci --scsi0 local-lvm:20

qm set 100 --boot order=scsi0

qm set 100 --ide2 local:iso/ubuntu-22.04.iso,media=cdrom

qm set 100 --ostype l26

qm set 100 --agent 1

qm start 100

This will create a VM with ID 100, attach an Ubuntu ISO, and start the installation.

Step 4: Install the OS on the VM

1. Start the VM and **Open Console** from the Proxmox Web UI.

2. Follow the OS installation steps (for Ubuntu, CentOS, Windows, etc.).
3. Once installed, remove the ISO:

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qm set 100 --ide2 none

4. Restart the VM and access it via SSH or Console.

Step 5: Install Proxmox Guest Agent (for better performance)

After installing the OS, install qemu-guest-agent for enhanced functionality.

For Ubuntu/Debian:

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sudo apt update && sudo apt install -y qemu-guest-agent

sudo systemctl enable --now qemu-guest-agent

For CentOS/RHEL:

bash

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sudo yum install -y qemu-guest-agent

sudo systemctl enable --now qemu-guest-agent

For Windows:

1. Download **VirtIO Drivers** from Fedora VirtIO
2. Mount the ISO and install the **qemu-guest-agent** from the installer.
3. Enable it in Proxmox:

bash

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qm set 100 --agent enabled=1

Step 6: Network Configuration (Optional)

By default, VMs use the vmbr0 bridge for network access. To configure static IP:

For Ubuntu:

Edit the Netplan file:

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sudo nano /etc/netplan/50-cloud-init.yaml
```

Example static IP config:

yaml

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```
network:
  ethernets:
    ens18:
      dhcp4: no
      addresses: [192.168.1.100/24]
      gateway4: 192.168.1.1
      nameservers:
        addresses: [8.8.8.8, 8.8.4.4]
  version: 2
```

Apply changes:

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```
sudo netplan apply
```

Step 7: Accessing the VM

- **Via Web Console:** Proxmox UI → **Datacenter → Your VM → Console**
- **Via SSH:**

bash

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```
ssh user@<vm-ip>
```

Step 8: Snapshot and Backup (Optional)

Take a Snapshot:

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qm snapshot 100 "before-update"

Create a Backup:

bash

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vzdump 100 --storage local --mode snapshot --compress gzip

Conclusion

You've successfully installed and configured a virtual machine in Proxmox VE! 🚀 You can now install applications or use it as a server. Let me know if you need further assistance! 😊