Proxmox Bare Metal Setup Guide with Trunk Interface and Management VLAN

Prerequisites

1. **Hardware Requirements:**
   - A server that meets Proxmox VE minimum hardware requirements.
   - Two or more network interfaces (preferred, but one NIC can work with VLAN tagging).
2. **Software Requirements:**
   - Download the latest Proxmox VE ISO from the Proxmox website.
   - Create a bootable USB using tools like Rufus or Balena Etcher.
3. **Network Configuration Details:**
   - Trunk interface capable of handling multiple VLANs.
   - Management VLAN ID (e.g., VLAN 10).
   - IP address for the Proxmox management interface.

Step 1: Install Proxmox VE

1. **Boot from Proxmox ISO:**
   - Insert the bootable USB into the server and boot into the Proxmox installer.
   - Follow the on-screen instructions to install Proxmox VE on the desired disk.
2. **Configure the Basics:**
   - Set a hostname for your Proxmox server (e.g., `proxmox.example.com`).
   - Configure the initial network settings. For now, use a static IP for the management VLAN or assign one temporarily.
3. **Reboot:**
   - Once the installation is complete, reboot the server. Access the Proxmox web GUI using the IP address configured earlier.

Step 2: Configure Networking for VLANs

1. **Login to Proxmox Shell:**
   - Access the shell directly or via SSH after initial setup.
2. **Edit the Network Configuration File:**
   - Open the network configuration file:
     `nano /etc/network/interfaces`
   - Configure the physical network interface as a trunk port and add the management VLAN interface. Replace `enp0s31f6` with your actual network interface name (check with `ip link`).
     Example configuration:
     ```
     auto lo
     iface lo inet loopback

     auto enp0s31f6
     iface enp0s31f6 inet manual

     auto vmbr0
     iface vmbr0 inet static
         address 192.168.10.2/24
         gateway 192.168.10.1
         bridge-ports enp0s31f6
         bridge-stp off
         bridge-fd 0
         vlan-raw-device enp0s31f6
     ```
   - Add the management VLAN configuration (VLAN ID 10 in this example):
     ```
     auto vmbr0.10
     iface vmbr0.10 inet static
         address 192.168.10.2/24
         vlan-raw-device vmbr0
     ```
3. **Apply the Configuration:**
   - Restart networking:
     `systemctl restart networking`
   - Ensure the Proxmox web GUI is accessible via the management VLAN's IP.

Step 3: Configure Proxmox for VMs Using VLANs

1. **Create a Bridge for Each VLAN (Optional):**
   - If you want VMs to communicate over specific VLANs, create additional bridges for those VLANs in the `/etc/network/interfaces` file. Example:

```
auto vmbr10
iface vmbr10 inet manual
    bridge-ports enp0s31f6.10
    bridge-stp off
    bridge-fd 0
```

2. **Assign VLANs in VM Settings:**
   - When creating or editing a VM, go to the **Network** section and:
     - Select the appropriate bridge (e.g., `vmbr10` for VLAN 10).
     - Configure the VLAN tag directly in the VM's network interface settings if using a trunk bridge (e.g., `vmbr0`).

Step 4: Verify Configuration

1. **Test Connectivity:**
   - Verify that Proxmox is reachable via the management VLAN.
   - Ping from a device on the same VLAN to confirm connectivity.
2. **Test VLAN Trunking:**
   - Deploy a test VM and assign it to a specific VLAN. Ensure the VM gets an IP address from the correct VLAN and can communicate with other devices.
3. **Validate Trunking:**
   - Use `tcpdump` or similar tools to verify tagged packets on the trunk interface: `tcpdump -i enp0s31f6 vlan`

Final Notes

- **Firewall:** Ensure your Proxmox firewall rules allow access to the web GUI and SSH on the management VLAN.
- **VLAN-Specific Switch Configuration:** On your network switch, configure the server's switch port as a trunk and allow the necessary VLANs.
- **Backup:** Always back up the `interfaces` file before making changes.

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