VPC Gateway to Cloudflare Tunnel - Complete Setup Guide

This document contains the complete step-by-step process followed to create a low-power VPC Gateway VM and connect it securely to Cloudflare using a Tunnel. All commands used during the setup are included.

1. 1. Create Gateway VM on Vultr: - OS: Ubuntu 22.04 - Plan: 1 vCPU / 1GB RAM / 25GB Disk - Attach to existing VPC (172.31.0.0/24) - Hostname: vpc-gateway
2. 2. Confirm VPC IP: Command: ip a Ensure IP like 172.31.0.x is present.
3. 3. Update the System: Command: sudo apt update && sudo apt upgrade -y
4. 4. Install cloudflared: Commands: sudo apt install curl -y sudo mkdir -p --mode=0755 /usr/share/keyrings curl -fsSL https://pkg.cloudflare.com/cloudflare-public-v2.gpg | sudo tee /usr/share/keyrings/cloudflare-public-v2.gpg echo 'deb [signed-by=/usr/share/keyrings/cloudflare-public-v2.gpg] https://pkg.cloudflare.com/cloudflared any main' | sudo tee /etc/apt/sources.list.d/cloudflared.list sudo apt update sudo apt install cloudflared -y cloudflared --version
5. 5. Create Tunnel in Cloudflare Zero Trust: Dashboard → Networks → Connectors → Create Connector → Cloudflare Tunnel Name: vpc-gateway Select OS: Debian, Architecture: 64-bit
6. 6. Run Tunnel Command: Command format: sudo cloudflared service install
7. 7. Verify tunnel status: Command: sudo systemctl status cloudflared Ensure status shows Active (running)
8. 8. Add Cloudflare Route: Dashboard → Networks → Routes CIDR: 172.31.0.0/24 Connector: vpc-gateway
9. 9. Enable IP Forwarding: Commands: echo 'net.ipv4.ip_forward = 1' | sudo tee -a /etc/sysctl.conf sudo sysctl -p
10. 10. Add NAT Rule: Command: sudo iptables -t nat -A POSTROUTING -s 172.31.0.0/24 -o enp1s0 -j MASQUERADE
11. 11. Make NAT Persistent: Command: sudo apt install iptables-persistent -y Choose YES to save IPv4 rules.
12. 12. Verify NAT Rule: Command: sudo iptables -t nat -L POSTROUTING -v
13. 13. Test Connectivity: Ping test: ping 172.31.0.x SSH: ssh root@172.31.0.3
14. 14. HTTP Test: Commands: mkdir /root/http-test cd /root/http-test echo 'HTTP TEST SUCCESS' > index.html python3 -m http.server 80
15. 15. HTTPS Test: Commands: sudo apt install openssl -y openssl req -x509 -newkey rsa:2048 -keyout key.pem -out cert.pem -days 1 -nodes -subj '/CN=172.31.0.3' openssl s_server -accept 443 -cert cert.pem -key key.pem -www