

Microsoft Exchange + AWS EC2 + WireGuard + Brevo SMTP Relay

Complete Project Documentation

Project Goal

Build a home lab Microsoft Exchange environment despite ISP blocking outbound TCP/25 by using an AWS EC2 Ubuntu server connected via WireGuard VPN. AWS Postfix acts as an SMTP relay. Incoming Internet mail is forwarded to Exchange through the VPN and outgoing Exchange mail is relayed to Brevo SMTP.

Final Architecture

Internet → AWS EC2 (Ubuntu + Postfix) ↔ WireGuard VPN ↔ OPNsense ↔ Exchange Server (192.168.1.20). Outbound: Exchange → AWS Postfix → Brevo SMTP → Internet.

Infrastructure

Exchange Server: 192.168.1.20
Domain Controller: 192.168.1.10
WireGuard VPN network: 10.20.20.0/24
AWS WG IP: 10.20.20.1
Exchange reachable via VPN: 10.20.20.2

Major Steps Completed

1. Created AWS EC2 Ubuntu instance.
2. Installed WireGuard on AWS and OPNsense.
3. Built WireGuard tunnel between home lab and AWS.
4. Verified VPN connectivity with ping and TCP port 25 tests.
5. Installed and configured Postfix on AWS.
6. Configured transport map to relay inbound mail for quantumitservices.co.in to Exchange over WireGuard.
7. Installed TLS certificates for mail.quantumitservices.co.in.
8. Configured OPNsense firewall rule permitting Exchange (192.168.1.20) to reach 10.20.20.2 over WireGuard.
9. Verified Exchange could connect to AWS on TCP/25.
10. Created Exchange Send Connector pointing to Smart Host 10.20.20.2.
11. Configured Postfix relayhost to smtp-relay.brevo.com:587.
12. Enabled SMTP AUTH with Brevo credentials.
13. Corrected Postfix relay permissions (mynetworks and smtpd_relay_restrictions / smtpd_recipient_restrictions).
14. Restarted Postfix and verified successful mail relay.

Important Configuration

Postfix trusted Exchange IP using mynetworks=127.0.0.0/8,192.168.1.20/32. Exchange uses Smart Host 10.20.20.2. Brevo relayhost: [smtp-relay.brevo.com]:587.

Troubleshooting

Resolved WireGuard routing, OPNsense firewall rules, Exchange send connector, Postfix 'Relay access denied' by permitting mynetworks, verified with postconf and mail logs.

Final Verification

Inbound mail: Internet → AWS → Exchange works. Outbound mail: Exchange → AWS → Brevo accepted with 'status=sent (250 2.0.0 OK)' in /var/log/mail.log.

Future Work

When Amazon SES production access is approved, replace Brevo relayhost with SES SMTP credentials. SPF, DKIM and DMARC should be finalized for best deliverability.