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Solution Architect | Cloud & Data Center Networking Expert

BRIEF

5 years of customer-facing experience in designing scalable cloud and data center networks. Expertise in AWS/Azure Cloud DataCenter Networking, OpenStack, Kubernetes, and SD-WAN. Strong background in networking, automation, and open-source development. Strong communication, collaboration, and problem-solving skills, with a proven ability to coordinate across teams and deliver high-performance solutions.

SKILL SET

Primary Languages	Golang Python Shell (Bash) C/C++ X86/ARM Assembly
Notable Libraries	Libtorrent gRPC
Containers/Virt	OpenStack Kubernetes VMware vSphere Proxmox VE Docker KVM
Networking	Network Configuration and Troubleshooting VyOS Cumulus Linux Linux Networking Multi-tenant IPSEC/Wireguard VPN BGP Routing BGP-EVPN SONiC FRRouting MPLS
Cloud	Amazon Web Service Azure Google Cloud Compute
Storage	ZFS LVM MD RAID HW RAID NFS
CI/CD	GitLab CI Github Actions
Various	Nginx Ansible Git Vim Security Auto Scripting Kernel Most Linux Distro Hosted Service Infrastructure as Code

WORK EXPERIENCE

Sep 2023 - Dec 2024, Solution Architect - VyOS Networks

Develop solution architecture of data center and cloud networking for customers. Work with the Development and Support team to create solutions and communicate with customers for better solutions for every different scenario. Familiar with BGP-EVPN and Network Hardware devices.

VyOS is an open-source network operating system that functions as a router and firewall. It offers features like VPN/EVPN/MPLS, dynamic routing, and NAT, with a highly customizable CLI. VyOS can be installed on public clouds, private clouds, virtual machines, and bare-metal hardware, making it a versatile solution for a wide range of environments. It is widely used in cloud environments and data centers for its flexibility and cost-effectiveness.

Achievement:

- **Develop Hardware Validation Plan:** Design the whole process to validate VyOS on specific vendor hardware. Help partners to test the hardware with VyOS and refine the hardware setup for better support and performance.
- **Support Taiwan customer:** Help them to upgrade the legacy AWS network topology to modern network connectivities.
- **Support Australia customer:** Help the Australia customer to evaluate BGP-EVPN with Arista switches, deal with interoperability issues with different vendors for the network connectivities.
- **OSC Nagoya VyOS Experience sharing:** Sharing VyOS experience and usage in the cloud and on-prem data center.
- **Implement VyOS on Kubernetes:** Implement VyOS on Kubernetes solution to provide Cloud Native App style VyOS. Have a speech in Kubernetes Community Day 2024 Taipei to share the experiences. Develop VyOS as IaC or Network-as-Code style deployment in Kubernetes.
- **Develop hardware partner agreement:** Help Legal team to develop hardware partner agreement with various hardware partners. Design the hardware partner program to encourage partners to resell VyOS as a bundle with their own hardware model.
- **Support and Communicate with all hardware partners:** Support partners with hardware

certification issues, marketing demo. Design the VyOS and Lanner demo in MWC 2024.

- **Support Development and Support team with latest tech trend:** Support development and support team to understand more about the latest tech trend, and the user feedback to decide the roadmap. Help Support team to debug the modem related issues, and fix for several VyOS internal bugs for the Development team.
- **Prepare and Demo a BGP-EVPN use case with VMware vCenter in VMUG Australia:** Prepare BGP-EVPN usage in VMware vCenter to demo how to use VyOS to create overlay tenant network and Data Center Interconnect (DCI) across different region or public cloud.
- **Create AWS/Azure/GCP VPN connection with on-prem data center with VyOS example:** Create examples for customers to refer. It describes how to use VyOS to connect between various public clouds with or without HA and connect to on-prem data centers with different hardware vendors' network gateway.
- **Create SD-WAN solution with Mobile network:** Create an integrated solution with VyOS and STUNMESH-go to provide Wireguard VPN connection without any need of public IPs with auto healing. It can easily connect your backup networks or your distributed networks with each other and provide HA. It even connects your IoT mobile network to each other as backup and connects to HQ with auto healing.
- **Implement Kubernetes Network Controllers:** Implement OpenStack Neutron-like Network Mechanism into Kubernetes to provide KubeVirt with VM networks. Kvnnet provides full L2/L3 overlay networks functions with VXLAN and VPC to split the tenant networks to make KubeVirt as OpenStack or AWS. Kvnnet implements all network features with native Linux network components without external or additional modules.
<https://github.com/tjjh89017/kvnnet>
- **One of Taichung School:** Support and debug network switch in school's server room and help to re-configure network devices to avoid failure issues.
- **Contribute Kubernetes CNI Community Bridge Plugin:** Add VLAN trunk support for the community bridge CNI plugin. <https://github.com/containernetworking/plugins/pull/829>

Jan 2022 - Jan 2023, Software Engineer – SUSE Rancher

Contribute Open Source Project Harvester HCI which is based on Kubernetes in SUSE Rancher team. Develop on OS, Installer, Networking of a HCI solution.
<https://harvesterhci.io/>

Achievement:

- **Linux Networking for different scenarios:** Familiar with Linux Networking and could fit Linux Network component to the different scenarios. E.g Kubernetes CNI, Kubernetes Network Controllers
- **Internal Network Training:** Provide internal trainings from basic to advance network. Introduce current common datacenter network and the basis guideline to design and choose protocol between servers and network devices. Share experiences from Network Devices users to provide better interoperability product.
- **Develop Network Mechanism:** Design new VLAN and VXLAN Network implementation for flexibility to extend further network features.
- **Develop Storage Network Mechanism:** Design new Storage Network for the HCI to isolate storage network traffic with other service traffic to ensure storage network have enough and proper bandwidth to synchronize with other nodes in the cluster.
- **Support Europe Cloud Provider:** Support customers to configure their Cisco switches in the datacenter to fit Harvester network requirement.

May 2019 - Dec 2021, Senior Presales Engineer - Edgecore Networks

Develop solution architecture of data center networking. Work with Product team, RD team to create solution and communicate with customers for better solution for every different scenario. Familiar with Cumulus Linux and SONiC deployment in the datacenter

Achievement:

- **One of US Storage Manufacturer:** Design and configure high availability and robust storage

network to emulate users' side scenarios.

- **One of US Datacenter Manufacturer:** Design special out-of-band management network solution. Provide server side and software development experiences to design proper hardware and software. And also provide some new idea to develop new generation architecture.
- **One of Australia Telecom:** Design and configure datacenter network and datacenter interconnect.
- **One of Korean Automobile Manufacturer:** Help customers to configure router, switch, and Linux Servers for BGP-EVPN across different data centers.
- **One of Taiwanese Bank:** Design and configure the high availability MLAG network solution for the bank's data center.
- **One of Taiwanese Government:** Design and configure high availability network for the server farm. Help customers to trouble shoot interoperability issue with the different vendors and functions equipment.
- **One of Taiwanese Government:** Design and configure BGP-EVPN high availability network for the government's HPC. Provide high bandwidth for the east-west traffic which is critical for the HPC. Trouble shoot for contiguous traffic disconnection and the network connectivity.
- **One of Taiwanese Telecom:** Help customers to design and configure data center interconnect (DCI) to multiple private cloud in the different datacenter of multiple regions.
- **One of Taiwanese Telecom:** Design and configure BGP-EVPN high availability network for the telecom private cloud, OpenStack and Ceph network.
- **One of Taiwanese Server Manufacturer:** Design and configure BGP-EVPN high availability network for Kubernetes and Ceph Storage Networks.

OPEN SOURCE PROJECTS

kvnet - VXLAN Overlay network for Kubernetes and KubeVirt Network Controller

Provide OpenStack Neutron-like VXLAN overlay network for Kubernetes and KubeVirt. Common CNI in Kubernetes usually provide L3-only networks, but KubeVirt VM will require L2/L3 networks. Kvnet provide full L2/L3 overlay networks functions with VXLAN and VPC to split the tenant networks to make KubeVirt as OpenStack or AWS. Kvnet implement all network features with native Linux network component without external or additional modules.
<https://github.com/tjjh89017/kvnet>

STUNMESH-go - Full Mesh Wireguard VPN Helper in SD-WAN solution for Mobile Networks

Provide SD-WAN VPN solution that differs from traditional IPsec tunnel and bring more flexibility improvements in Mobile networks for Cloud, Office, IDC interconnect usage. STUNMESH-go could help and provide rich redundant, full mesh VPN topology in mobile networks without fixed public IPs needs. Native cross-architecture in X86_64 and MIPS. Simple to use in embedded system or network device.

<https://coscup.org/2021/zh-TW/session/XV3NGT>

<https://github.com/tjjh89017/stunmesh-go>

EZIO - BitTorrent-based Bare-Metal Operating System Provisioning

Cooperate with National Center for High-performance Computing. Develop a brand new mechanism to deploy massive operating system to HPC. EZIO Project has integrated in CloneZilla Live to provide Peer-to-Peer system provisioning. It has much performance, reliability and flexibility improvements than Multicast deployment which is slow and unstable. The time of deployment via EZIO is more expectable that almost provides constant time complexity. And now, CloneZilla provides Direct Disk Deployment via EZIO. Don't need to create and store an image before deployment, just start to transfer disks to all the targets.

EZIO Project has published in MDPI Applied Sciences Journal, ISC High Performance 2018, TANET Conference 2018.

<https://github.com/tjjh89017/ezio>

<https://www.mdpi.com/2076-3417/9/2/296>

DozenCloud Project - OpenStack on ARM64

Provide an ARM64 Native Environment to debug for academic purposes. The DozenCloud Project, based on OpenStack, proposes a reasonably efficient model to construct low power virtual private cloud computing systems based on the customization of open source software technologies and cost-efficient ARM servers, such as GIGABYTE R150-T60. DozenCloud has been developing these simplified blade server chassis that offer density, low power, and lower cost, in the form of open source.

DozenCloud Project has published in Open Source Summit North America 2017 and OpenStack Day Taiwan 2016.

<http://dozencloud.org>

<https://beta.dozen.cloud>

<https://ossna2017.sched.com/event/BDqU>

EXPERIENCES - OPEN SOURCE PROJECT CONTRIBUTION

VyOS Project Contributor

Open Source Software Router on X86_64

<https://vyos.io/>

<https://github.com/vyos/vyos-1x>

flash-kernel Project Contributor

flash-kernel is a script which will put the kernel and initramfs in the boot location of embedded devices.

<https://salsa.debian.org/installer-team/flash-kernel>

fish-shell Project Contributor

fish is a smart and user-friendly command line shell for macOS, Linux, and the rest of the family.

<https://github.com/fish-shell/fish-shell>

Cockpit Project Contributor

The easy-to-use, integrated, glanceable, and open web-based interface for your servers

<https://cockpit-project.org/>

Partclone Project Contributor

Partclone provides utilities to backup a partition smartly and it is designed for higher compatibility of the file system by using existing library.

<https://github.com/Thomas-Tsai/partclone>

Clonezilla Project Contributor

Clonezilla is a partition and disk imaging/cloning program similar to True Image® or Norton Ghost®.

<https://clonezilla.org/>

EXPERIENCES - CONFERENCE TALKS, PUBLIC SPEAKING

Aug 2024 - Conference for Open Source Coders, Users, and Promoters 2024 Speaker

Rapidly Deploy NFV with VyOS on Kubernetes

Aug 2024 - Conference for Open Source Coders, Users, and Promoters 2024 Speaker

從大學到出社會, 這十年的參與和維護的開源專案

Aug 2024 - Conference for Open Source Coders, Users, and Promoters 2024 Speaker

開源專案的商業困境

May 2024 - OSC Nagoya 2024 Speaker

Enterprise Networking with VyOS, an Open Source Router

Aug 2023 - Conference for Open Source Coders, Users, and Promoters 2023 Speaker

設計Kubernetes Controller與CRD的實踐 - 以網路為例

Aug 2021 - Conference for Open Source Coders, Users, and Promoters 2021 Speaker

Cloud Infrastructure Interconnect with Wireguard and OSPF

Dec 2019 - Taiwan Network Operators Group Conference 4.0

Next Generation IDC Network Solution Overview

Nov 2019 - Open Source Conference Tokyo Fall 2019 Speaker

WireguardとBGPを使って信頼的なゲーミングネットワークを構築しました

Nov 2019 - China Open Source Conference 2019 Speaker

Build Redundant Gaming Network with Wireguard and BGP

Nov 2019 - OpenInfra Day Taiwan 2019 Speaker

Massive Bare-Metal Operating System Provisioning Improvement

Jun 2019 - Hong Kong Open Source Conference 2019 Speaker

Decentralized Bare-Metal Operating System Provisioning

Jun 2018 - ISC High Performance 2018 Project Poster Demo

The Design and Implementation of Bare Metal Cluster Deployment Using BitTorrent

Sep 2017 - Open Source Summit North America 2017 co-Speaker

Build Cloud Infrastructure with Cheap ARM Boards

Aug 2017 - OpenStack Day Taiwan 2017 Speaker

Combine Continuous Integration (CI) with OpenStack

Aug 2016 - OpenStack Day Taiwan 2016 Invited Speaker

OpenStack on ARM64

Feb 2016 - Students' Information Technology Conference SITCON Speaker

ARM Cloud Project

EXPERIENCES — PUBLICATION

Feb 2021 - IEEE Access

A BitTorrent Mechanism-Based Solution for Massive System Deployment

Jan 2019 - MDPI Applied Sciences - Open Access Journal

A Novel Massive Deployment Solution Based on the Peer-to-Peer Protocol

Dec 2017 – Master Thesis: Decentralized Image Deployment in Datacenter

EXPERIENCES — COMPETITION

Dec 2017 - Gold Shield Cybersecurity Skill Competition Third Place Award

SQLab_RETURN

Dec 2015 - Gold Shield Cybersecurity Skill Competition Third Place Award

bamboofox_DozenCloud

Jun 2015 – Taiwan Student Cluster Competition Honorable Mention

EDUCATION

National Chiao Tung University – Master Degree

Institute of Computer Science and Engineering - Software Quality Lab 2016 - 2018

National Central University – Bachelor Degree

Department of Computer Science and Information Engineering 2012 - 2016