

# Swamy D K V

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## Professional Summary

Senior Principal Engineer with 15+ years of experience in distributed systems, networking, and cloud-native platforms.

Architect of networking across both hypervisor (infrastructure layer) and Kubernetes (orchestration layer), enabling secure and scalable edge deployments.

Expert in multi-network Kubernetes architectures, cross-cluster networking, and secure-by-default (default-deny) network design.

Filed 5 patents across networking, infrastructure diagnostics, and system access mechanisms.

## Key Highlights

- Architected networking for hypervisor-based edge platform supporting VMs, containers, and Kubernetes workloads
- Designed multi-network Kubernetes architecture with in-band and out-of-band traffic separation
- Built cross-cluster networking enabling VM migration and distributed storage (CEPH, iSCSI)
- Implemented secure-by-default (default-deny) network security model with fine-grained traffic control
- Filed 5 patents across networking, diagnostics, and infrastructure access mechanisms

## Core Competencies

- Cloud-Native and Container Orchestration: Kubernetes, Docker, Podman, microservices architecture
- Networking and Infrastructure: SDN, NFV, network virtualization, VLAN (trunk/access), PBR, IPAM, MAC lifecycle management
- Kubernetes Networking: multi-network architecture, ingress, traffic routing
- Security and Isolation: default-deny networking, firewall policies, workload isolation
- 5G and Mobile Core Technologies: SMF, cnBNG, PGW, SGW, SAEGW

- Software Engineering: Go, Python, C, REST API design, OpenAPI specifications
- Leadership: architecture ownership, mentoring, cross-team collaboration

## Professional Experience

### Software Senior Principal Engineer

#### **Dell Technologies, Bengaluru | Aug 2022 – Present**

- Own networking architecture across hypervisor and Kubernetes layers for distributed edge platform
- Design IPAM, MAC lifecycle management, and VLAN-based segmentation
- Build cross-cluster networking enabling VM migration and storage synchronization
- Implement policy-based routing and default-deny security model

#### *Hypervisor Networking & Infrastructure Layer*

- Architect networking layer of a hypervisor-based platform supporting VMs and containers
- Design IP address management (IPAM) across clusters with conflict resolution
- Manage MAC lifecycle and implement VLAN segmentation (trunk/access)
- Support distributed storage traffic (CEPH, iSCSI)
- Enable networking across Ethernet, Wi-Fi, and cellular
- Integrate TLS-based secure communication

#### *Kubernetes & Orchestrator Networking*

- Design multi-network architecture in Kubernetes integrated with NativeEdge Orchestrator
- Enable in-band and out-of-band traffic separation
- Implement source-sensitive routing across multiple networks
- Build ingress using MetalLB and NGINX

#### *Platform, Diagnostics & APIs*

- Design REST APIs and OpenAPI specifications for platform services
- Build diagnostic protocols and service console
- Filed 5 patents across networking, diagnostics, and system access mechanisms

#### *Engineering Leadership*

- Lead Spec-Driven Development (SDD) adoption across 26-member team
- Enable automated code and test generation from specifications
- Mentor engineers on networking architecture

## Senior Software Engineer

**Cisco Systems, Bengaluru | Jan 2015 – Aug 2022**

### *5G Core & Distributed Systems (2019 – 2022)*

- Design and implement Session Management Function (SMF)
- Improve throughput (~1K → ~3K TPS) and reduce memory usage by 50%
- Build scalable state machines for telecom workflows
- Implement policy control and handover mechanisms
- Ensure high availability in distributed control plane

### *Cloud-Native & RAN Systems (2016 – 2019)*

- Design REST APIs and optimize MongoDB performance
- Build multi-vendor RAN optimization solutions

### *LTE Core Systems (2015 – 2016)*

- Develop EPC components (SGW, PGW, SAEGW)
- Implement failover and session recovery
- Build traffic analytics and overcharging protection

## Senior Analyst – Software Engineer

**Accenture Services Pvt Ltd, Bengaluru | Aug 2014 – Jan 2015**

- Telecom software development, integration, and testing

## Engineer – Software

**Sasken, Bengaluru | Oct 2010 – Aug 2014**

- Built dynamic spectrum allocation systems
- Developed automation frameworks for LTE testing
- Created telecom test platforms and API frameworks

## Engineer

**TelecomOne Teleservices Pvt Ltd | Dec 2009 – Oct 2010**

- Conducted network benchmarking across regions
- Delivered technical reports and led optimization efforts

## Education

- MCA – IGNOU, 2024

- PGDCA – IGNOU, 2020
- BE (Electronics & Communication Engineering) – VTU, 2010

## Certifications and Awards

- Dell GenAI Foundations Certification (2024)
- Dell Game Changer Award (2x)
- Cisco MBG Excellence Award
- Ignite Data Science Competition Finalist
- Dell TechEDGE Leadership Program (with IIM Bangalore & NIIT StackRoute)
- Cisco Aspiring Leadership Program

## Patents

- Filed 5 patents across infrastructure diagnostics, networking, and system access mechanisms

## Technical Skills

- Programming: C, Python, Go
- Cloud & Containers: Kubernetes, Docker, Podman
- Networking: SDN, NFV, VLAN, PBR, IPAM, network virtualization
- Security: iptables, ebtables, nftables
- Databases: MongoDB, SQL, SQLite
- Tools: Git, Jira, CI/CD, REST APIs