

Curriculum Vitae

Personal information

First name(s) / Surname(s)

Address(es)

Mobile

E-mail

Nationality

Date of birth

Gender

Parwinder Singh

Current: BE-40/5, 2F, Hari Nagar, New Delhi-110064, India

Permanent: Same as current address

+91-9818822554 (India)

parwinderet@gmail.com

Indian

17.12.1985

Male

Profile Summary

- Experience in building system solution architectures for cloud, NFV, MANO, VNF, SDN & IoT related applications and also plays lead role in their design, development and delivery support for more than 9.5 years.
- Expertise in software designing, development & solution engineering along with the system QA scope using various technologies & Platforms like Spring Cloud, Spring Boot, Spring Security, Python, MySQL, NoSQL under Linux/Windows environment.
- Research level experience in TCP/IP protocol stack development that includes Multipath TCP, OSPF routing extensions.
- Experience in designing and development of Fast Path (using hardware acceleration APIs) and Slow Path based Telecom/IP Datacom software.
- Experience in developing & design FIWARE IoT based platform product solutions.
- Lead the first worldwide implementation of NGSI-LD/FIWARE specs.
- Experience of working, planning & executing project development under agile environment.
- Experience in designing, developing, implementing ETSI specifications compliant MANO/FIWARE software that requires cloud infrastructures for its deployment.
- Experience in engineering and implementing solution around IaaS, PaaS, SaaS for public/private/hybrid cloud models like Openstack Cloud environment.
- Experience in designing and implementing Microservices architecture oriented applications using container infrastructure that includes VM, Docker, Kubernetes, Docker Swarm, and Spring Cloud.
- Experience in building Smart City applications & platforms to build around FIWARE technologies and Open APIs specification.
- Experience in designing & developing solution around production cloud and edge computing (using FogFlow) domains.
- Experience in implementing Identity Access Management (OAUTH2.0), IP Security domain using strongswan PKI/X.509 infrastructure
- Experience in implementing designing & implementing non-functional feature aspects for any given application that requires high availability, load balance, scalability(horizontal/vertical), monitoring, security and fault tolerant behaviours.
- Experience in implementing modern software defined networking features like SDN, DPDK, SRIOV within Openstack infra .
- Experience in requirement/specification drafting, gap analysis, code review, bug fixing, test plan, test automation & test case execution.

Work experience

Dates	April 2019 – till Date
Occupation or position held	Technical Specialist
Name and address of employer	NEC Technologies India Pvt Ltd. http://in.nec.com
Working Domain	Cloud, SDN, MANO, NFV, VNF, IoT Platform, FIWARE, Security
Dates	August 2017 – March 2019
Occupation or position held	Senior Technical Lead
Name and address of employer	NEC Technologies India Pvt Ltd. http://in.nec.com
Working Domain	Cloud, SDN, NFV, MANO, IoT Platform, FIWARE, Security
Dates	May 2012 – August 2017
Occupation or position held	Technical Leader Engineering
Name and address of employer	Aricent Technologies, Gurgaon, India . http://www.aricent.com/
Working Domain	Datacom, LTE Transport, IP Security, Telecom, NFV MANO & Cloud
Dates	Jan 2011 – December 2011
Occupation or position held	Student Research Assistant
Name and address of employer	Institute of Communication Networks at University of Bremen, Germany. http://www.comnets.uni-bremen.de/typo3site/
Working Domain	R&D, Future Internet Protocol, TCP/IP protocols like MPTCP, MCTCP, OSPF extensions
Dates	July 2007 to October 2008
Occupation or position held	Lab-Coordinator
Name and address of employer	Genius Informatics, New Delhi, India.
Working Domain	IT Support, System & Network Administration for remote learning centres connectivity.

Platform and Tools

Openstack, Redhat OSP, OVS, Linux bridge, UML, FI-Lab, Kolla openstack, OOO, snaps-openstack, devstack, packstack, kubernetes, docker, docker swarm, Java, Spring boot, Spring Cloud, Spring security, FIWARE toolings, Strongswan (Ipsec Open source implementation), C, C++, Shell Scripting, Linux, Cisco routers, switches, Test Center, Spirent/IXIA Networks, Openstack, Python, Cloud computing, SVN, Eclipse, Wireshark, Tcpcdump, Jira, Github, Gitlab, Devops tooling, SVN.

Certification/Training

	<ul style="list-style-type: none">• Cisco Certified Network Associate Engineer:<ul style="list-style-type: none">✓ Fundamentals of networking - OSI model, TCP / IP protocols, IP addressing.
Name of Institute	Cisco Network Academy at University of Applied Sciences Bremen, Germany.
	<ul style="list-style-type: none">• Six months training on Cloud Computing<ul style="list-style-type: none">✓ Fundamentals of Cloud computing✓ Introduction and Installation of Openstack environment.✓ Development of PoCs based on Openstack.
Name of Institute	Aricent Technologies, Gurgaon, India.

Education

	Master of Science – Electronics Engineering (specialization Communication System Engineering) (Grade: 1.8 (84%)) (European Education Standards)
Dates	September 2009 to November 2011
Name of Institute	University of Applied Sciences Bremen, Germany. http://www.hs-bremen.de/

Main activities and responsibilities

Master Thesis

Design, Implementation and Evaluation of an OSPF-Based Routing Protocol for Multipath Transfer and Multipath TCP in the Future Internet to develop a solution for the network Optimization in order to improve the Quality of Service of the Internet traffic. Key Objectives were to design and implement multipath routing protocol operational architecture to support network congestion management within the network to provide multipath routing solutions to the incoming traffic of TCP/IP connections. Tools used: **NS-2 (Network Simulator), Linux, C++, Tcl, Otcl, and Xmgrace.**

Name of Institute

Institute of Communication Networks at University of Bremen, Germany. <http://www.comnets.uni-bremen.de/typo3site/>

Dates

Bachelor of Electronics & Telecommunication Engineering

June 2002 – June 2007

Name of Institute

IETE (The Institution Of Electronics & Telecom. Engineers), New Delhi, India. <http://www.iete.org/>

Dates

Advance Diploma in Computer Applications

July 2003 – January 2008

Name of Institute

DOEACC Society, New Delhi, India .

http://www.doeacc.info/course_a_level.php

Personal skills

English

German

Hindi

Understanding

Proficient

Basic

Proficient

Speaking

Proficient

Basic

Proficient

Writing

Proficient

Basic

Proficient

Publications/Affiliations

- My Master thesis work has been published under the title **Load Sensitive Flow Management Extensions to QoS Routing Based on OSPF** in the PerCom 2012, 8th IEEE PerCom Workshop on Pervasive Wireless Networking, at Lugano Switzerland.
- Associated Member of Institution of Electronics and Telecommunication Engineers, New Delhi, India
- FIWARE Evangelist & Community Contributor
- Talk on ONAP in Open Networking Days, Linux Foundation Summit, New Delhi, India, January 2018
- Speaker on IoT Sandbox Platform in FIWARE Malaga Summit Nov 2018
- Talk on FogFlow Computing in IoT M2M Forum Technology Show.

Interests and hobbies

Group Discussions, Travelling and Cooking.

References

Mr. Karunakant Rai (Current supervisor)
Senior Project Engineering Manager, NEC Technologies, Noida, India
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List of Projects Handled:

Title	Common Services FIWARE Enabled Platform (for Logistics domain)
Client	NEC Corporation, Japan
Duration	May 2019 to till date
Description	CSP is envisioned to provide common service platform for building of new/common services by combining/linking of data/services from multiple business domains/ontologies (e.g., parking information from various smart city locations, home etc.) such that applications can utilize all relevant information to take more intelligent business decisions. This platform addresses common custom business use case requirements & environment which cannot be catered with FIWARE based ecosystem. Additionally, it enables customer to have quick development & delivery of their IoT smart solutions that will be readily available in the target market of FIWARE ecosystem. Some of the highlights of this platform is that it enables customer/operator with the complete control over all platform services layers. And provides few clicks based solution/service provisioning within the lowest possible turnaround time and offers integration & customization to align 3rd party IoT smart services requirements.
Tools & Technologies	FIWARE, JSON, IoT Agent, Postgres, Kafka, Spring boot Security, Keyrock, Wilma, OAUTH2.0.
Title	FIWARE (IoT) Enabled Account Based Ticketing Platform
Client	NEC Lab Europe & Fiware Foundation
Duration	Jan 2019 to May 2019.
Description	Mobile ticketing can leverage both as a traditional proof of payment style ticket (data on the ticket - suitable for last minute tickets) and also enable Account Based ticketing (static token & data primarily in the back office), allowing traveler/operator to feed in and experiment with account based products as ones move to full Account Based Ticketing (ABT). ABT Platform is FIWARE enabled Platform which is used here to realize the ABT platform context realization to offers standard API services to be consumed by the external world to get the intended platform services (like Data retrieval, validation, transaction, transformation, creation/record/update etc.). ABT platform leverages FIWARE standards underneath to boost lesser time to market ABT product solutions with required robustness, scalability and ABT system/user requirements fulfillment.
Tools & Technologies	Advanced Java, FIWARE, JSON, ABT data, Postgres, Kafka, Spring boot Security,Keyrock, Wilma, PEP.
Title	Next Generation Broker (NGSI-LD) – IoT Platform
Client	NEC Lab Europe & Fiware Foundation
Duration	Jan 2018 till date
Description	Next Generation Broker (NGB) is a reference implementation of NGSI-LD standard specifications that are compliant to ETSI standards. Basically NGB is a core component of FiWARE/IoT platform where in IoT data driven by dynamic context is collected, processed, notified & stored/ingested with different application usage perspectives. NGB also provides implementation of REST API endpoints for various data context operations that conforms to NGSI-LD API specification. NGB component has been implemented based on modular, Microservices oriented, scalable, secure by design, easy to monitor/debug, fault tolerant, and highly available architecture. NGB based on NGSI-LD offers unique feature of Link data context that provides self-contained (or referenced) dynamic schema definition (i.e. the context) for contained data in each message/entity. Thus allows the NGB core processing to be still remain unified even it gets dynamic context driven data as its input from different types of data sources coupled (or designed for) with different schemas. I am the solution architect for this platform & responsible for its feature development & releases roll out.
Tools & Technologies	Advanced Java, FIWARE, NGSI-LD, Json-ld, Spring boot, Spring Cloud, Postgres, Go, Kafka, Spring boot Security, Keycloak, Keyrock.
Title	Pan India Cloud Platform- NICS I RFP Evaluation
Client	NICS I Govt. of India
Duration	Aug 2017 to Jan 2018
Description	Under NIC SI RFP, there was a need to build PAN India Cloud for over 1000 Nodes that can be distributed & managed over different states across India. As System Integrator from NEC side we evaluate the planning, operations & large scaling of resources over Openstack to validate if this could

Tools & Technologies	fulfill the given requirements. I was the main lead for the Architecture designing & evaluator for this RFP. Kolla, OOO, CentOS, Ubuntu, Rally, Cinder, Iperf3, DPDK, SRIO
Title	Snaps-Openstack
Client	CableLabs USA
Duration	May 2017 to August 2017
Description	SNAPS-Openstack is the automated tool to install kola based cloud on the provisioned cluster of server that offers IaaS to end users. It also builds the user specific networks and provision the same VMs on the fly. This tool install Openstack in server clusters very fast within few hours and abstract the complex automation steps of Openstack installation in very simple & flexible manner. It is very helpful in building & preparing infrastructure as a service, Software Defined Networks (SDN), Network Function Virtualization (NFV) or building private cloud based on openstack. I was the lead architect for this project and lead the implementation for most of its modules. This tool is now open source and available under https://github.com/cablelabs/snaps-openstack
Tools & Technologies	Kolla, YAML, JSON, Ansible, PXE, DHCP, IPMI, Python, Dell AMD x86_64 infra, Ubuntu, snaps-boot
Title	Snaps-Boot
Client	CableLabs USA
Duration	Feb 2017 to May 2017
Description	SNAPS-Boot is the automated tool to provision bare metal Data center server cluster infrastructure with the OS and related networking automation tasks. It is very helpful in building & preparing infrastructure for working with Software Defined Networks (SDN), Network Function Virtualization (NFV) or building private cloud based on openstack. I was the lead architect for this project and lead the implementation for most of its modules. This tool is now open source and available under https://github.com/cablelabs/snaps-boot
Tools/Technologies	Ansible, PXE, DHCP, IPMI, Python, Dell AMD x86_64 infra, Ubuntu,
Title	NFV/VNF MANO
Client	Mitel, Canada
Duration	Sep 2015 to March 2017
Description	With the evolution of cloud infrastructure the market vendors wants to host their Virtualized Network functions (VNF) on virtual infrastructure to leverage the scaling capability of cloud environment and also lower the capex and opex factors for the end business. In this project, we are responsible to design, develop and implement components of network function virtualization. The components included VNF life cycle manager, NFV orchestrator, Virtual resource manager over the given multivendor cloud environment. I have worked in the prototype phase, designing phase and now working in the development phase of these components.
Tools/Technologies	Openstack Mitaka, Tacker, Linux-Ubuntu, Java, Hibernate, Spring, Apache, REST, Network protocols and services.
Title	Deployment and Automation of LTH controller on Openstack Cloud
Client	Nokia Solutions & Networks
Duration	June 2014 to Sep 2015 date
Description	The telecom provider Nokia was planning in the market to extend the scope of LTE usage to end customer using CPE (Customer premise equipment) and CPEC (CPE controller) using various TR-X interfaces. Millions of CPEs simultaneously is expected to be handled by CPEC (over TR-69 interface) for the configuration and maintenance operations. Therefore CPEC should be such that which should be able to scale-up/scale-down its processing capacity as per the requirement. To achieve the same Openstack cloud components (1 Controller + Network node + Multiple Compute nodes) are being used to host CPEC. Besides that Load-balancing of traffic coming from CPEs to different VMs launched has also been developed / configured. In order to check the entire scenarios an automation framework was developed that consists VM launch, VM migration and highly availability scenarios for cloud cluster infrastructure.
Tools/Technologies	Openstack-Juno release, Python, Shellsript, Linux, TCP/IP stack.

Title	Development of Openstack based Object/file/block storage applications
Client	Aricent
Duration	November 2013 to June 2015
Description	As per the requirement it is required to provide a implementation of different types of cloud storage applications using cloud implemented platform such as openstack and its component like SWIFT as the backend storage. In addition, the same application should also allow end user to use the other open source 3 rd party cloud storage frameworks such as CEPH. The application should provide secure access to different cloud storage types using the available services like KEYSTONE(provide authorization services).
Tools/Technologies	Linux, Python, Shell script, Openstack, CEPH
Title	Mobile Edge Computing framework
Client	Deutsche Telecom
Duration	August 2016 to Nov2016
Description	For every RAN the central cloud hosted applications was needed to be deployed in local cloud environment. Doing so it would enhance the overall api response time of the application running on the UE at the customer end. MEC framework is designed in order to have run time edge cloud environment infra provisioning for requested application using Openstack, Docker and kubernetes orchestration interfaces. The whole framework is then planned to provide the end to end devops chain for the operator/developer to onboard applications to use the services provided by this software.
Tools/Technologies	Openstack, YAML, Python, Cassandra, JSON, API and payment gateway, Linux, Github, Heroku and AWS..
Title	LTE Transport Flexi Platform
Client	Nokia Solutions & Networks
Duration	August 2012 to Aug 2015
Description	Under LTE, WCDMA, GSM architecture NSN offers its eNB device to the worldwide customers such as DOCOMO, Telefonica, O2, Deutsche Telecom etc. eNB software comprises of different software modules which runs on different cores under same system hardware. Out of various modules, the Transport Software module is responsible to transport traffic to/from core network over IP and radio access air interface under the given eNB architecture. Transport module handles different plane(U/M/C/S) traffic according to TCP/IP layer stacking and performs all layer functions. e.g. it classifies the user, control, management and supervisory plane related traffic and accordingly perform L4(TCP, UDP) classification of packets to identify corresponding planes, L3(routing, IP security, firewall) routing, security & QoS functions, and in the end L2 switching (Vlan, QoS mapping, shaping, policy based filtering, rate limiting) functions. It does involve packet processing in slow(based on Linux environment) and fast path (based on Simple executive). I was involved in related development & testing activities for this project.