Anantha Prakash T

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PROFESSIONAL EXPERIENCE SUMMARY

Senior Technical Engineering Leader at Dell Telecom Systems Business group with 20+ years of experience driving end-to-end Dell Technologies Infrastructure Block (DTIB) for Telco CORE & RAN workload applications on RedHat OpenShift and Wind River cloud platforms. Highly passionate and motivated building diverse teams, leading and delivering complex projects with business groups spread across India and abroad. Recent focus area has been on designing optimized blueprints of platform architectures with CI/CD deployment automation and validations of cloud native disaggregated enterprise Telco systems.

- Solution validation & DTIB Program Execution of fully engineered integrated hardware and software stack for Cloud Native Telco 5G Core & RAN automated deployment architectures - Dell Technologies Infrastructure Blocks with Wind River and Red Hat OpenShift viz. **DTIB WR, DTIB RH OCP**
- Presented a demo **@AWS Re-Invent on Zero Trust Autonomous Telematics data transfer & analytics at the cloud,** a project done in collaboration with ARM PARSEC & NetFoundry teams**.**
- Significantly contributed to development and leading a team for **4G/5G Telco Edge Infra-structure development & Application use-case demonstration** on Container Based Distributed Edge Cluster Acceleration of storage, network and AI/ML processing through CPU, GPU, Smart NIC and FPGA**, Innovation group @Altran**
- FC Storage Driver Development for **Cisco ACI Switch and UCS Adapter group**
- Linux Device Driver Development of **Storage NIC (sNIC),** a virtual PCIe CNA firmware and host driver for Hybrid-Blade Servers
- **Linux RAID PCIe Drivers** for LSI MegaRAID, Intel AHCI & Intel SCU controllers.
- **2+ years @Canon, JPN** – been a part of the team for a ground up PCIe Root complex and Endpoint SOC development as a collaborative project with Tata Elxsi

KEY ACCOMPLISHMENTS

- **Team Excellence Award** @Altran R&I for guiding the team to deliver & win multi-client projects on Accelerated Edge & Automotive Telematics solutions.
- **CAP Award** for contribution on SCSI NIC aka sNIC a new product development for New Jersey, Density Optimized Servers
- **CAP Award** for outstanding contribution on fNIC Solaris data-path support.
- **BRAVO AWARD** for leadership role and key contribution towards the successful accomplishment of Host Software RAID Clayton Program
- **BRAVO AWARD** for leadership role and key contribution towards the successful accomplishment of StorelibIR-2 Library development for Caspian Program

- **Paper selected for Invention Disclosure** – "Firmware Assisted Quality of Service in Storage Controller."
- **Paper selected for** Invention Disclosure – "A system and method for improving the Rebuild performance in a RAID system."
- **White paper** published at Dell – "Chaos Engineering for Resilient Systems."

EXPERIENCE HISTORY

Company	Duration	Group	Position
Dell Technologies	Aug 2022 – Till Date	Telecom System Business Group	Senior Engineering Manager
ALTRAN/CAPGEMINI	Sept 2017 – Aug,2022	Edge Computing, Innovation Group	Director Technology
CISCO SYSTEMS Ltd	June 2011 – Sept,2017	ACI Switch, CNA Firmware & Kernel Drivers	Technical Lead
LSI Technologies Ltd.	June 2008 – June, 2011	Kernel Drivers	Senior Software Engineer
Tata Elxsi Limited	Jan 2004 – June, 2008	Firmware	Specialist
Raman Research Institute	Aug 2001- Jan, 2004	Radio Astronomy	Research Fellow

TECHNICAL SKILL SET

Protocols	• Telco - 4G LTE, 5G RAN, EPC • Storage - FC & FCOE, SAS, SATA • NFS, CEPH, GlusterFS, Object Storage • PCIe, NVMe, RDMA
Tools	• Spirent Landslide, Spirent Cloudsure • Keysight simulated RU & 5G Core
Programming	• C, C++, OpenCV, Python, Ansible
Technologies	• AI/ML Platforms, Kafka, Redis, MQTT, ROS2 • Networking – OVS, DPDK, eBPF • Security – Parsec, PKCS11
Cloud Technologies	• RedHat OpenShift, Wind River Cloud Platform • AWS, OpenStack
Kernel Internals	• Linux Device Driver Framework • SCSI miniport driver development

PROJECTS HANDLED AT Dell Technologies

• 5G Telco Cloud Infrastructure - DTIB WR and DTIB RH OCP

The Dell Telecom Infrastructure Blocks for Wind River and Red Hat OpenShift are a part of the Dell Technologies Multi-Cloud Foundation, a telecom cloud designed specifically to assist CSPs in providing network services on a large scale by lowering the cost, time, complexity. It's an engineered solution that's pre-integrated, pre-validated with purpose-built packages of software stacks and hardware that are Telco Core & RAN workload-ready and aligned with workload requirements. DTIB enables the zero-touch deployment of a Multi-Cloud Core & RAN disaggregated workload clusters with a single pane of orchestration and lifecycle management.

Contributions:

- Execution Lead Manager for the DTIB WR and DTIB RH OCP programs
- Participate in High Level Solution Architecture Design with key stake holders.
- Resource, timeline, and supported feature list planning with the product and program management teams.
- Align partners and engineering teams for timely execution of deliverables of software and Hardware components along with coverage of all the validation scenarios.

Ref:

- https://infohub.delltechnologies.com/en-us/p/accelerate-telecom-cloud-deployments-with-dell-telecom-infrastructure-blocks/
- https://www.dell.com/en-in/blog/orchestrating-success-dell-telecom-infrastructure-blocks-as-the-maestro/

• CaaS Resiliency and Performance Benchmarking for Telco workloads on 15G and 16G Dell Servers

Containers-as-a-Service for Telco workloads requires a very high resilient system. DTIB-RedHat aims to provide telco grade robust, configurable customized platforms on dell hardware. CaaS Resiliency suite developed considered aspects of control plane resiliency, recovery, high-availability and fault tolerance across failure domains such as compute, network & storage on cloud platforms. Along with the CaaS Resiliency Suite, Performance benchmarking for power consumption and baseband processing gains across *Dell 15G & Dell 16G R760, R660 & XR5610 PowerEdge servers*. The scope covered Open RAN Full Stack testing, which includes DU (L1-HighPhy + L2-Schedular) and CU (L3) along with E2E 3GPP compliant test tools from vendors like Keysight and Viavi. Typical test tools used for UE Traffic Generator, Emulated 5G Core, and O-RAN 7.2 compliant Radio Unit (RU).

Contributions:

- Participated in High Level Architecture Design for CaaS Automation Suite and Test profile design.
- Collaborate with key stake holders to validate on the Key KPIs to be captured and documentation for publication.

PROJECTS HANDLED AT ALTRAN/Capgemini

• Project Adrenaline – In collaboration with CableLabs

Automated Deployment and Lifecycle Management of MSOs 4G & 5G NFV Application Services on container and microservices model - SNAPS Boot and SNAPS Kubernetes Platforms on COTS HCI as Telco Edge clusters. Adrenaline is an extension of the SNAPS™ Program to support compute accelerators, which includes KubeOVN, OVS-DPDK, plugins for SmartNIC, GPU and FPGA cards, codebase shared to the community as an open-source platform. Also incorporates features for Logging and Resource utilization using Prometheus, Grafana modules and Istio service mesh in the pipeline.

Contributions:

- Participate in High Level Architecture Design with key stake holders.
- Plan & Lead the Team in execution of the Project Adrenaline
- Containerization and K8s Deployment of 4GLTE Stack on 2 Node HCI server cluster with B210 board as Radio Unit, Phluido L1 4G LTE vRAN integrated with Altran L2, L3 RAN Stack
- Demonstrate the working of end-to-end data transfer through a 4G LTE mobile connected to above deployed Edge cluster.

Ref:

- https://capgemini-engineering.com/us/en/insight/compute-acceleration-on-network-edge-project-adrenaline/
- https://openadrenaline.com/docs/guides/getting-started/

• 5G RAN Edge Cluster Integration with Intel FlexRAN

Automated Deployment and Lifecycle Management of container based microservices of Altran 5G gNB L2-L3 Integrated with 5G Intel FlexRAN L1 and Intel OpenNESS Edge framework on COTS HCI Edge Cluster, an extension of Project Adrenaline.

Contributions:

- Collaborate with Engineering groups in integration of the Intel FlexRAN with Altran L2-L3 layers.
- Lead the infrastructure team to setup & orchestrate the K8s Deployment of 5G RAN containers on a 2 Node HCI server cluster with Baicell as Radio Unit, Intel FlexRAN (N3000 FGPA) L1 solution integrated with Altran gNB L2- L3 RAN Stack
- Demonstrate the working of end-to-end data transfer through a 5G mobile connected on to above deployed Edge cluster.

• Intel RSU for Pedestrian zebra crossing Alerts to Vehicles through V2X on 5G gNB Edge Cluster

Roadside Unit (RSU) Platform has camera connected to the visual compute application that uses Intel OpenVINO SDK for offloading pedestrian/object detection at the zebra crossing onto Intel HDDL-R Accelerator card. V2X stack running as a service on the nearest connected Edge cluster receives the notification on detection on any object on the RSU unit and sends alert messages to all the Vehicles near-by with V2X message receive capability.

Contributions:

- Participate in High Level Design discussion with Automotive & 5G Engineering teams to realize the defined use-case.
- Collaborate with Engineering groups to integration V2X stack as container managed on the Edge cluster connected to a RSU and Automotive V2X supported devices.

- **Secure software defined Automotive Telematics through Cellular-V2X to Cloud**

POC Demo presented at **AWS Re-Invent** Nov 29th - Dec 3rd, 2021.

A zero-trust blueprint developed by Capgemini, Arm, and NetFoundry that provides a trusted secure solution for vehicle telematics data to cloud. The Architecture solution incorporates ARM trust zone and ARM Parsec framework for secure key generation, telematics application data aggregation and forwarding using NetFoundry zero-trust SD-WAN solution as a resilient network connectivity to cloud for enhance data analytics at the cloud.

Contributions:

- Participate in High Level Architecture Design with key stake holders.
- Plan & Lead the Team in execution of K3S managed docker telematics applications integrated with arm parsec and NF ziti modules running on RPi-3 ARM board to AWS IoT Core cloud using SD-WAN configuration.

Ref:

- https://capgemini-engineering.com/us/en/insight/converging-on-a-zero-trust-blueprint/

PROJECTS EXECUTED AT CISCO

- **ACI Switch FCoE Development**

Application Centric Infrastructure (ACI) is a holistic architecture with centralized automation and policy-driven application profiles. It is a Spine – Leaf Architecture where the ACI fabric appears as a single switch to the outside world, capable of bridging and routing.

Contribution: Porting FCoE code base to leaf switches on NXOS platform for 40G supported Homewood ASIC

- **CISCO SNIC Kernel Driver**

SNIC is a UCS VIC adapter that provides mechanism to abstract and virtualize storage. It supports local storage consolidation and sharing across multiple hosts' on UCS Density Optimized Servers, product New Jersey. The solution is supported in Linux platforms for now.

Contribution: Design & Development of SNIC firmware driver on CRUZ ASIC to discover LUNs.

- **CSICO FNIC Kernel Driver**

FNIC is a UCS VIC adapter that supports Fiber Channel for storage management on UCS Blade and rack servers. FNIC driver attaches itself to FC/FCOE kernel LIB and block storage stack in the Kernel Driver Space. All major OSes are supported - Windows, Linux, and VMware.

Contribution: Adding new features and maintain the driver across OS releases.

PROJECTS EXECUTED AT LSI

- **Host Software RAID Driver**

  Host Software RAID alias SWR driver is a RAID stack implemented in the Driver Space. This solution is supported for both Windows and Linux platforms. This product sits in a SCSI miniport driver space, discovers & controls all the SATA and SAS drives connected to the system through AHCI and MPT controllers. It detects claims, initializes & controls these controllers as well as manages the RAID.

  Contribution: Leading the team with new feature development, releases, and OEM customers management.

- **IR RAID Configuration Management Library Development**

  StorelibIR-2 is an LSI Library for any Application to use the LSI Gen2 Falcon RAID controller to configure and Manage RAID Volumes in Windows & Linux OS. This Library configures and maintains the state of the controller and notifies the application with appropriate events.
  Contribution: Leading the team with MPI-2 Specification Feature set implementations & OEM integration support.

- **MegaRAID DAS Firmware defects Resolution**

  MegaRAID is a RAID Firmware product that controls Gen-2 Liberator card.

  Contribution: Development of features & bug-fixing reported issues.

- **EFI WebBIOS Feature Development**

  Extensible Firmware Interface is a next generation BIOS Architecture. EFI WebBIOS is a Pre-boot GUI based Utility for RAID Configuration and Management on EFI BOOT BIOS Supported Servers or workstation.

  Contribution: Development of features & bug-fixing reported issues.

PROJECTS EXECUTED AT TATA ELXSI

- **Universal Disc Format File System Driver**

  Universal Disc Format file system is used for storing files of large volume, mainly used for storing video files. UDF file system driver was designed for PVR subsystem.

  Contribution: Development of features & bug-fixing reported issues.

- **Gigabit Ethernet Controller IP Development**

  Design and Development of Gigabit Ethernet MAC Controller Firmware Driver and integration with the TCP/IP stack. The controller hardware was designed, developed, and tested with the Firmware and test stubs. GEMAC IP was integrated with the IP stack and tested for the system level functionality. SOC was developed and tested.

  Contribution: Design, development of features & bug-fixing on reported issues.

- **PCI Express IP Development**

  Design and Development of PCIe Root Complex and Endpoint Firmware driver and integration with DryOS for PCIe Hardware IP.

  Contribution: Development of PCIe ASIC IP hardware & software.

PROJECTS EXECUTED AT RAMAN RESEARCH INSTITUTE

- **Antenna Control Unit**

The research project Doppler ranging required Antenna to be tracking the target satellite. Hence a micro-controller-based antenna control unit was designed, and C programs written to drive the Siemens motor driver to rotate the antenna along its longitude and latitude based on the signal power strength.

- **Data Acquisition System**

Lunar Occultation observation required a low-speed data acquisition of the signal from the moon. The multi-channel AD812 microcontroller Program was written for capture the lunar signal power data for further processing.

ACADEMIC DETAILS

Course	Institute Name	Period	Marks
Diploma in Advanced Computing	C-DAC Course @ Amrita Institute of Technology	Feb 2001- July 2001	68%
MSc Physics (Photonics & Fiber Optics)	Sathya Sai Institute of Higher Learning, Puttaparthi	March 2000	87%
BSc Physics Hons.	Sathya Sai Institute of Higher Learning, Puttaparthi	March 1998	74%
12th	Sathya Sai Loka Seva PU College, Alike	March 1995	86%
10th	Sathya Sai Loka Seva Vidhya Kendra, Alike	March 1993	78%

PERSONAL PROFILE

Name	Anantha Prakash T		
Sex	Male	**Date of Birth**	2nd August 1977
Father's Name	Lt. T Krishna Murthy	**Marital Status**	Married
Permanent Address	"Pravidha", #1076, 15th Cross, 1st Stage, 1st Phase, Chandra Layout, Bangalore – 560072		
Email	ananthaprakash@gmail.com	**Contact No**	+91 9902188922
Languages	English, Hindi, Kannada		