Babu Parthasarathy

Senior Firmware QA Lead | QA Architect | QA Lead- Platform Thermal & Power

San Jose, CA • connect2psbabu@gmail.com • +1 434-329-8542

Professional Summary

Software QA Test architect/Leader with 25 years of experience driving product development, validation and release of Servers, Storage Initiators and target devices, IoT platform firmware integration with mobile applications and backend services. Deep expertise in low-level firmware validation, power measurement, silicon/FPGA bring-up, automation frameworks, and CI/CD infrastructure. Proven track record leading cross-functional engineering teams, delivering complex embedded products, and ensuring compliance with CMMI/ISO processes. Experienced across Server platforms, storage, networking, IoT and consumer electronics domains.

Core Competencies

- Embedded Validation: HBA/HDD/SSD Firmware, Server Platform BIOS/UEFI
- Test Strategy, Test Planning & Reporting, Automation, CI/CD triage and fix automation failures.
- Protocol compliance for SCSI/SAS/SATA/NVMe for Initiators and target drives
- JEDEC endurance and reliability qualification tests on SSDs
- Driver validation across Windows (Storport/MPIO) and Linux storage stacks for RAID HBAs
- End-to-end product validation ownership including functional, system, stress, performance, connectivity, I/O integrity, power, and thermal testing
- Thermal, Power and Performance testing of SSDs, Servers, Storage arrays, HBAs, IOT devices
- Validation DMTF, CIM, WBEM standards-based Server and Datacenter Management software and IPMI support (BMC FW) on Server platforms
- Strong experience in Test Automation (Python, pytest, Gazoo), Test Development and contribute to code review in Python
- New Product Introduction, Dogfooding/Beta Testing, Production/Field issues recreation
- Assisted FW developers in debugging using Logic Analyzers and firmware debugging tools viz Dstream, GHS, Ulink-DriveMaster, UART, JTAG, Keysight oscilloscopes
- Team Leadership, Program Management (Agile/Scrum), Stakeholder/Vendor Management, Offshoring of Eng-prod sustenance activities, CMMI/ISO Compliance
- Platform & Tools: Platforms: Linux, Windows, ESX, Android, IOS, Gerrit, critique git, piper, Fig, cider, VS Code, Eclipse, PyCharm, JIRA, HPQC, TestRail

Professional Experience

Lead QA Engineer Jan 2023 – till date

(Client: Google Mountainview CA, through Periscope Technologies Inc)

- Hands on Lead for end-to-end software validation of Google Thermostat platform software (RTOS/embedded Linux) integration with backend services and mobile app.
- Develop test designs and test suites for functional and feature validation across Thermostat platform including Secure boot, cert rekeying, Power, Thermal states, Temperature compensation, Humidity compensation, Product performance (KPI) validation, Battery discharge characteristics
- Evaluate product architecture for "Design for Testability" and automation readiness.
- Build tools and processes for firmware power measurement and low-power performance analysis integrating with COTS measuring tools to predict Battery life.
- Develop automated functional tests with Python and perform code reviews.
- Validate Firmware design logic for Rechargeable Battery charging and features throttling in low battery states
- Thermal Test design, Temperature Compensation, CPU throttling under various power states design validation and automate thermal tests.

Platform QA Architect (Client: Google Inc.)

HCL Technologies Ltd., Bangalore (2020- 22), HCL Americas Inc., Mountainview, CA (2018-2020)

- Managed a 10-engineer team delivering embedded firmware validation under Agile methodology for New Product Introduction
- Performed platform security validation including Secure Boot, certificate expiry and rekeying, vulnerability assessment, user data protection/obfuscation, and end-to-end privacy and security testing
- Validated bootloader and Secure Boot protections against unauthorized OTA updates and malicious firmware sideloading, and verified robustness of firmware recovery and rollback mechanisms
- Developed intelligent test plans to validate on device or Cloud based algorithms and automated them in Python framework.
- Publish weekly/monthly/quarterly reports, reviews and RCAs.

Storage Firmware/Software QA Lead (Client: Micron/Intel)

HCL Americas Inc., San Jose/Folsom, CA (Sep 2013 – Mar 2018)

- Senior QA Engineer validating Firmware releases for NVMe Solid State Drives (SSD's).
- Coordinate feature requirements, design reviews, defect fixes, and release planning across firmware, BIOS/UEFI, driver
- SSD- FW validation: Ensure I/O integrity, reliability and performance wear leveling behavior, garbage collection, Read Disturb, Die offline, Die missing, Intermittent Power Loss, Thermal

throttling, Defrag, Background data refresh, Context, Error handling features like ECC, MRR (Move Read Reference) and XOR

- long-duration stress, fault injection, and recovery behavior
- Test Drive security features viz Pre-boot authentication, hardware-based drive encryption (AES) with TCG security standards for Self-Encryption Drives (SED) support, SMART telemetry
- Trace capturing for boot failures, PCIe link failures
- Provide field support, Beta Testing support for NPI SSD's and End to End integration with servers or storage arrays
- SSD Performance Testing with various workloads, Isolate I/O performance bottlenecks across SSD firmware, host driver, and PCIe transport layers

Technical QA Lead –
PCIe RAID controllers/ SAS/SATA HDD Firmware, (client: Adaptec- IBM ServerRAID/PMC-Sierra)

HCL Technologies, Chennai, India (Feb 2007 – Sep 2013)

- Perform technical activities related to PCIe-based storage controller, Backplane, FPGA/Silicon bring up, debug and validate firmware issues on FPGA/pre-post silicon development phases
- Storage Performance Testing, IO throttling and IO quiescence under various power states design validation
- Validated web-based storage and server management applications.
- Led requirement analysis, design, development, and defect resolution, Reviewed fixes, test plans, and automation efforts and coordinated release planning and client communication. (SPOC/SME)
- Conducted performance qualification of SATA SSDs

Product Group Engineer – Open Manage Server/ Dell RAID controllers/Dell storage Arrays & Tape Libraries - Dell Services Ltd., Bangalore, India **(**Oct 2002 – Feb 2007)

- Performed Linux-based platform validation for Dell Backup storage product line integration with Server/PERC RAID controllers.
- Server and Backup devices Performance Testing with third party Backup and Disaster Recovery applications.
- Developed test design documents and automation SDS, Server Platform validation, L3 Technical support
- BMC FW validation of server boards for management and monitoring of server racks for various failure including thermal shutdown.

Educational Details: Bachelors of Technology in Electrical & Electronics Engineering, Pondicherry Engineering College (1997-2001)