Mohammed Shafeeque K N

C/C++ Developer with 10 years of experience in Linux platform

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Profile Summery

- Expertise in C/C++ with proficiency in Python.
- Extensive experience in networking including host table, net table, and L2 protocols (MAC, VLAN).
- Proficient in customizing open-source packages.
- Strong command of Linux platform, including proficient skills in user space and a solid understanding in kernel space.
- Deep understanding of VoIP protocols such as SIP, SDP, SRTP, and RTP.
- Skilled in socket programming using UDP/TCP and TLS.
- Recognized as a star performer with client appreciation on two occasions.

Major Skills

C/C++

Git

Linux OS

VoIP

Work Experience

Alstom Transport India Ltd.   2023 Sep – Present
Software Designer

- Full time C++ developer in Linux platform
- Worked as part of an extended team, collaborating closely with counterparts based in US.
- Performed code reviews and documentation tasks with precision and thoroughness.

Thinkpalm Technologies Pvt. Ltd.   2014 Dec – 2023 Aug
Technical Lead

- Full time C/C++/Python developer.
- Implement the design provided by the customers.
- Bug fixing and improving the performance of the product.
- Work directly with client and extended team both on-site and off-site.
- Monitor and assign tasks for junior engineer.
- Good experience in Git VCS
- Set up a review board (open source) and Logzy (built by myself).

Education

University of Calicut   2009-2013
B.Tech in Electronics and Communications Engineering
Govt. Engineering College, Palakkad.

Projects

iVPI – Broadcast Storm Mitigation
Alstom Transports India Ltd.

The Integrated Vital Processor Interface (iVPI) is a crucial device in railway signaling, facilitating communication with other iVPIs and nodes such as axial controllers and zone controllers. However, being network-connected, the iVPI is vulnerable to broadcast storms caused by misconfigured routers or malicious attacks. During such storms, the iVPI may reset due to excessive CPU usage in handling the flood of packets.

To mitigate the impact of broadcast storms and prevent unnecessary resets, a broadcast storm mitigation mechanism has been implemented. This mechanism involves disabling the physical layer (PHY) of the affected interface when a broadcast storm occurs, allowing the iVPI to remain operational through its redundant Ethernet interfaces.

Roles and Responsibilities

- Modify Linux kernel to measure the frame gap, detect and mitigate the Broadcast storm.
- Modify the other modules to convey the broadcast storm mitigation information to the user.

Skills Used: C++ and Linux Kernel(Core), IPC, Wireshark, Git.

Edgemarc Sustenance
Ribbon Communications

Edgemarc is a series of SBCS (Session Border Controllers) that belong to Ribbon Communications. They were formerly owned by Edgewater Networks before Ribbon Technologies acquired the company. The hardware specifications and capacity of each Edgemarc device can vary, including features like analog phone support, number of supported calls, SFP, LAN and WAN ports, and WAN failover mechanisms.

Roles and Responsibilities

- Address the issues reported by the customer or QA team in the various area like SIP signaling, GUI.
- Collaborate with the QA team to address complex issues, such as performance problems.
- Fix the issue in the open-source library after porting.
- The task involves scoping the effort and implementing new features based on customer requirements.

Skills Used: C/C++, Shell/Bash scripting, Wireshark, SIPP, Git, CGI, Spectra, Asterisk

WAN VLAN Support on the Edgemarc
Ribbon Communications

The Edgemarc now supports VLANs on the WAN interface, enabling multiple VLANs for voice, data, or both, which is crucial for WAN Link Redundancy. This allows the device to switch from one interface to another if the active interface goes down. The NAT and Firewall functionalities have also been modified accordingly.

Roles and Responsibilities:

- Add VLAN support on the WAN interface of Edgemarc.
- Modify WLR module, scripts associated with network settings, firewall, NAT, etc.

Skills Used: C/C++ (Fedora), Shell/Bash script, Wireshark, SIPP, Git

Media Bypass support on the Edgemarc
Ribbon Communications

To obtain certification from Microsoft Teams, the Edgemarc must pass a series of test cases provided by Microsoft. These tests involve various VoIP call scenarios using the ICE (Interactive Connectivity Establishment) protocol. This project entails porting the PJNATH library to the Edgemarc and modifying it to support ICE Lite. It also involves making code changes to address any design gaps in the existing code.

Roles and Responsibilities:

- Port the PJNATH library.
- Fix the SIP signaling issues found during the test case execution in the media bypass setup.
- Fix issue in the kernel to while redirecting the media.

Skills Used: C/C++ (Fedora), Wireshark, SIPp, Git, Linux Kernel (Netfilter hooks)

MiTOP Feature Enhancement

RAD Israel

MiTOP, a smart SFP device, is utilized for the conversion of TDM packets transmitted over E1/T1 lines into Ethernet packets. Given that TDM packets utilize multiple time slots, the creation of multiple bundles is feasible by distributing each time slot. Initially, MiTOP only supported a single bundle. The project's objective is to enhance MiTOP's functionality by enabling the support of multiple bundles. This enhancement involves modifications at both the GUI and embedded levels. Additionally, the project entails the implementation of a licensing mechanism and the display of statistics at regular intervals.

Roles and Responsibilities:

- Implement GUI configure the pseudo wires in the MiTOP
- Add licensing mechanism to configure maximum supported pseudo wires.
- Add statistics of received and transmitted packets

Skills Used: C, RTOS (CMX) Application, SVN.

Link Aggregation

Ribbon Communications

Link aggregation driver provides a method for aggregating multiple network interfaces into a single bonded interface. It provides band width improvement or fault tolerance. This project includes modification of legacy Linux kernel drive to meet some requirement.

Roles and Responsibilities:

- Added new algorithm in the kernel to send voice traffic through same interface and data packets by sharing both the interfaces.

Skills Used: C, Linux Kernel (LAG), SIPp, iPerf, wireshark, Git.

Test Suit Development

Edgecore Networks

Edgecore networks, a leading provider of traditional and open network solutions, delivers wired and wireless networking products and solutions. The test suit is developed for L2/L3 switches to ensure the functionality by calling the driver gateway layer APIs and fix the any issue happened during porting the chipset.

Roles and Responsibilities:

- Modify the build script to remove the unwanted applications.
- Communicate with the switch with external python application via serial port.
- Handle the requests coming from test suite and call the driver API accordingly and verify the results.

Skills Used: C, Python, IXIA, L2/L3 concepts, Git.

Declaration

I hereby declare that the information and facts stated above are true and correct to the best of my knowledge.

Bangalore   Mohammed Shafeeque
17 November 2024