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SUMMARY

- Working with IBM India Pvt Ltd as Software Architect.
- Worked with Calsoft Inc as Senior Principal Development Engineer.
- Worked with Wipro Technologies as Technical Consultant.
- Total Experience 19 years 4 month.
- Worked on FCIP (Fiber channel over IP), Linux device driver, Linux file system, GPFS file system, AFS (Andrew File System), Stackable file system wrapfs, DCE (Distributed Computing Environment), Openssl, Non Stop Kernel Security , Safeguard (application which provide advanced security on Nonstop Kernel), Static code analysis tool, Web Server Programming using Python, Mysql, Tornado, Jquery, PHP, Javascript, Ajax, developed MVC application using turbogears, AST (Abstract Syntax Tree) of C/C++ source code.
- Worked on various data structures like Link list, trees, Hash tables etc, various algorithms like search algorithm, sorting algorithms etc, Multithreading environment, various synchronization techniques in multithreading.
- Self motivated, team player and hard-working.

Technical Expertise / Competencies

Programming languages:	C++, C, TAL (Tandem access language), Python, Perl.
Web Technologies:	HTML, XML, JavaScript, AJAX, CSS, HTML5, PHP, Json.
Web Authoring tools:	Turbogears.
Database:	MYSQL, OURSQL, MYSQLDB, SQLAlchemy
IDE:	MS Visual Studio 2008, Eclipse.
Versions Controls:	CVS, VCSCOM.
Technologies:	Network security, Operating system security, Distributed Computing Environment, Linux Device Driver, Linux file system, FCIP, C/C++ parser, Abstract Syntax tree manipulation, MVC, Web services.
Operating Systems:	Non Stop Kernel (Tandem), Linux, UNIX, Solaris, Windows.
Web/App. Servers	Apache web server.

Trainings & Certifications

- Campus recruitment certification course.
- Trained on Linux Device Drivers.
- Trained on Requirement gathering.

Educational Qualification

- Bachelor of Technology (Electrical Engineering), National Institute of Technology Hamirpur in 2001.
- Post Graduate Diploma in VLSI Design from Semiconductor Complex Limited Mohali Punjab.

Achievements

- IBM client award for porting OpenAFS on Power8 little endian.
- Awarded Ten feather in my cap awards for various enhancements in Wipro Technologies
- First prize for Whitepaper on Certificate Access Control List in ODC.
- Awarded Best Performer in ODC for 3 times.
- Awarded “Customer centric” award in entire Central Engineering Group in Wipro Technologies.
- Got prize in ITUG (International Tandem User Group) conference for tool which converts ipv4 code to ipv6.

Current Work Experience

IBM India Ltd

Senior Software Engineering
(10/12/2013 – Till Date)

Working on IBM GPFS filesystem handling kernel component of a filesystem. Mainly supporting filesystem on latest kernels, bug fixes and enhancement. Having good experience on analyzing crash dump, used various debugging tools like crash, dynamic tracers (kprobe/kretprobe), BPF, KASAN etc. Also working on Cluster Manager component which deals with maintaining nodes in a cluster.

Worked on creating CSI (Container storage interface) for GPFS and AFS filesystem. Have good knowledge on golang, containers, K8s, OpenShift. Also working on Storage as a Service model in cloud env.

I am working as L3 Specialist in OpenAFS File system which is a distributed file system. I have handled multiple defects in OpenAFS. One the fix which I gave for one of the defect related to Write Error, has been checked in OpenAFS main branch and OpenAFS developers have appreciated the analysis which I did for that defect. OpenAFS developer has also mentioned to put my name in the fix committed for that defect. I am handling entire OpenAFS L3 support alone. I have also worked in creating a DKMS and KMOD rpms for OpenAFS which will take care of automatically building/installing a module when kernel gets updated. I have ported OpenAFS Linux on Power8 platform, for this I have created a debian packages for Ubuntu. I have worked on multiple bug fixes/analysis for OpenAFS kernel module.

Calsoft Inc

Senior Principal Development Engineer
(20/02/2013 - 06/12/2013)

In this project I am handling a responsibilities of Tech lead handling team size of 4 engineers. I am responsible for doing requirement gathering, preparation of High Level design(HLD) document, discussing HLD with onsite architects and taking signoff. Once HLD is ready, we prepare LLD (low level design) and implement new enhancement. I also participate in coding of complex modules. Once all design documents are ready I discuss new designs with testing team so that they can prepare test cases. Below are the details of some of the components on which I have worked.

- Worked on stackable file system wrapfs. Our product is mainly a replication product where we intercept all file system I/O. We used Stackable file system which provides pre and post callback, we hook to these callbacks and intercept the I/O and send entries to application layer for doing a replication. I also dealt with various race condition involved during registration and un-registration of Plugin from wrapfs. Implemented various hooks to pre and post callbacks of wrapfs.
- Worked on interception & replication of symbolic links & chattr related ioctls.
- Worked on interception & replication of various file related operation like setattr, write, open, fsync, fdatsync etc.
- Handled various open flags during replication for example O_DIRECT, O_SYNC etc.
- Worked on implementing a mmap interface for a Plugin so that kernel memory is mapped to user space for performance reasons.
- Implemented various ioctl calls for various controls of a driver.

Wipro Technologies

Technical Consultant

(30/06/2003 – 20/12/2012)

Deepcheck (Static Code Analysis Tool)

In this project I was a Technical Consultant for Presim (I.e pre-simulator) & SAAS module. I was handling a team of 8 engineers. I was responsible for creating a HLD & LLD documents for new enhancements and participated in coding of modules. Below are some of the enhancements & features on which I have worked.

- Worked on parser module of Deepcheck. In Deepcheck we used third party parser which generates an AST from a source file. Once we get AST we simplify it.
- Developed SAAS infrastructure for Deepcheck tool using Html, Python, Php, Sqlalchemy, Mysql, Javascript, Ajax, Ldap. Developed a server side architecture with defect administration features. User upload the code and get report in HTML format, these reports are stored in Mysql database. Using Sqlalchemy as an interface to Mysql user can do defect administration, search and modify operation.
- Developed duplication avoidance features for Deepcheck. Defects which were structurally similar were marked as duplicate and were visible in HTML report as duplicate errors.
- Worked on build integration features for Deepcheck. Developed a utility which will hook with the build and trap the compilation steps and for each compilation step generates a preprocessed file. Developed this utility for Windows from scratch using python and windows programming.

- Developed Incremental analysis feature for Deepcheck where user can get incremental results for a upload.
- Worked on third party bug tracking tool called Mantis. Wrote scripts which can get data from mantis database for project management purposes for example how many high priority defects are pending for a release, defects assigned to users etc.
- Worked on turbogears for developing an application in MVC format.

FCIP :

In this project I worked as an individual contributor for FCIP module. I worked on porting of a FCIP driver for x86 multicore platform. Previously driver was working on Power PC. During porting I resolved issues relating to endianness. Power PC is big endian and all data which flows on network is also in big endian format, so sender, communication channel and receiver were all big endian, hence there were no endianness issues. However x86 platform was little endian, hence we need to take care of endianness scenarios. For this we made sure that before data is transferred on network it is converted to network format (i.e. big endian) and when data is received we convert it back to the receiver platform which may be big-endian or little-endian. For this we made use the api's which convert the data from host byte order to network byte order and vice-versa.

Due to porting on multicore platform there were issues relating to deadlocks because of wrong locking. On non-preemptive uniprocessor system spin lock will be optimized to do nothing. So even if we have wrong locking mechanism this would not have created a issue. However on multicore system this resulted into deadlocks. I found out various places where wrong locking was there and rectified those issues.

While porting we found that there were some changes done in FC frame for new platform like SOF and EOF was no longer part of frame. I identified such issues and resolved it.


Non-Stop Kernel Security:


Worked on Non-Stop kernel security for 3.5 years. Below are the areas in which I worked.

- α) Core Kernel level security.
- β) Security application called "Safeguard" which provides extra security features other than Kernel security.
- c) Openssl.

Core Kernel level security :

For Kernel level security I have worked on features like Authentication and Authorization. Below are the details

 Initially Non-Stop Kernel used DES encryption for storing the passwords, I worked on the feature where we used HMAC256 message digest for storing the password.

 I have worked on a feature providing Access Control List on Non-Stop Servers, for this feature I worked closely with other modules of kernel like File System, OSS. This feature was driven as a program since multiple modules were involved in it.

Initially the password length accepted by the Non-Stop Kernel was 8 bytes and it used to accept only alpha numeric characters. I worked on the feature where we made Non-Stop kernel to accept passwords of length 64 characters along with special characters.

- 4) Worked on feature for providing password quality like password should meet certain quality standards, for example user can configure the password quality such that password should be of certain length, it should contain certain special characters etc.

Safeguard (Security application on Non-Stop Kernel):

In Safeguard product I have worked on below features.

- 1) Worked on feature which provides multiple owners for a user and group record.
- 2) Feature for providing text description and binary description for user records. Here binary description record was used to store the encrypted certificates.
- 3) Feature for providing password quality.
- 4) Feature for excluding certain audit records to be printed in the audit files.
- 5) Feature for providing a text description for objects like files and directories.
- 6) Feature for providing Access Control List for an executable such that any process which is launched from that executable will inherit access control list from an executable.

Openssl :

I was responsible for porting openssl source to Non-Stop kernel. Openssl library was used by various non-stop products like Non-Stop Corba. I used to port latest openssl source from open source repository and did testing for it. I had developed various test suites for testing openssl library on Non-Stop Kernel.

Non-Stop Distributed Computing Environment (NSDCE):

Worked on Non-Stop Distributed Computing Environment project (NSDCE) for 1.5 years. In this project I worked on fixing the defects reported by the customer. Since DCE is multithreaded in nature so I am familiar with multithreading and debugging the multi-threaded application. I have done multiple fixes which included the memory corruption issues.

I worked on the issue which was pending for around 6 months and multiple developers were unable to simulate the issue, I was able to simulate the issue and resolved it within one month of time. For resolving this issue I was awarded "Feather in my cap" award". In DCE I learned about portmapper, directory services, Kerberos security protocol, Non-Stop SQL. I also participated in test suite development for the product.

IPV4toIPV6 tool:

I have developed the tool for converting IP4 application to IPV6. For this I used Lex and Yacc. This tool was showcased in "International Tandem User Group" conference and Wipro won HP IPV6 ready partner award for this.

Place: Bangalore - 560100, India

Date: 01 Dec 2014

(Yadavendra Yadav)