Saurabh Barjatiya – Resume

Summary

- Experienced Linux system administrator with Programming, DevOps, Cloud, Security and Networking skill sets
- Over 10 years of experience in managing end-to-end IT infrastructure for different verticals - Education, Hospitals, Pharma, Government, Manufacturing, etc.
- Experience in working on multiple projects in parallel and guiding team members to achieve desired objectives
- Experience in end-to-end customer interaction including requirements, proposal, pricing, implementation and post-implementation support phases.
- Experience in running own private limited company while meeting required government compliances and norms for more than 5 years.

Employment History

2014 onwards	Managing Director, Rekall Software Pvt. Ltd. Technical Lead, Gowra Bits and Bytes Pvt. Ltd.
2013	SDE, Clipcard Technologies Pvt. Ltd.
2012-2013	Technical Architect, VLEAD
2009-2012	Lecturer, IIIT Hyderabad
2008-2009	Student System Administrator, IIIT Hyderabad

Work experience

- **(Present)** I started 'Rekall Software Pvt. Ltd.' company for providing IT infrastructure services in 2014. Since its inception, most of the Rekall's work is being done as part of larger associated company 'Gowra Bits and Bytes' (GBB). GBB is much older company and has larger customer & partner base.

  With GBB I am working on technologies such as Virtualization (VMWare vSphere, vCenter, SRM, vSphere replication, NSX, VSAN, vRealize automation, etc.; Nutanix), Public Cloud (AWS, Azure, etc.), Open Source (Zimbra, Containers, DevOps, Clustering, etc.), Network (Switches, Firewalls, ADC, Wireless, etc.).

  Most of the projects being executed with GBB are turn-key. We take end-to-end responsibility of entire project from IT infrastructure point of view. Only domain specific applications or software development is out of our scope.

  At GBB I participate in various management decisions such as hiring, appraisals, costing for large projects, presenting about company to customers / OEMs, preparing long-term road-map for company etc.

- I had joined ClipCard Technologies Pvt. Ltd. (A OneOcean company) at its IDC in Hyderabad as SDE in July, 2013. My responsibilities at ClipCard included managing IT infrastructure located at ClipCard India office and online infrastructure hosted on AWS cloud. I also provided DevOps support for developers at both sites (Hyderabad and Seattle).

- I have worked at VLEAD (Virtual Labs Engineering and Architecture Division), Virtual labs project, IIIT Hyderabad as Technical Architect during October, 2012 to July, 2013. As a engineer at project I was responsible for designing and implementing a cloud infrastructure for hosting all virtual labs from central location. The project at the minimum required support for 300+ VMs for development of various labs.

  Hence as part of the project I was responsible for setting up something close to a private cloud. This included implementation of storage networks and virtualization stack which used both VMs (kvm) and containers (openVZ).

- I had joined IIIT Hyderabad, India as lecturer in July, 2009. I served as lecturer till October, 2012. As lecturer I taught courses like IT Workshop I, Software Technologies, Scripting and Computer Environment and offered labs for courses like System and Resource Virtualization and Advanced Computer Networks.

- I help in IT infrastructure management at IIIT Hyderabad. I coordinate configuration and maintenance of servers, network and security devices. I have managed high-end security devices, network devices (switches, routers, etc.) and servers.

  I have designed the current IP addressing scheme of IIIT Hyderabad. I have configured and provided support for virtualization, storage networks, VPN, Wake On LAN, centralized DHCP, DNS, apache virtual hosting, etc. I take part in many important meetings related to staff recruitment and decision making related to IT infrastructure.

  I also helped in various investigations and forensic analysis of security incidents which often involved recovering deleted files, determining point-of-entry for compromised systems based on command history or logs, etc.

- I volunteered as system and server administrator of VLSI lab during UG (2007-2008) and performed installation, configuration, administration and maintenance of Operating System and services on VLSI lab PCs. I was the only student of university who helped in managing labs.

  The work involved configuration and maintenance of NIS, NFS, HTTP, DNS and various other servers and clients. It also included maintenance of license servers for tools like Mentor Graphics and Cadence on both Sun Solaris and GNU/Linux systems.

Skills

Programming Languages

Proficient :	Erlang
Rusty:	C, PHP, Shell Script (bash), Java, Python, Javascript, Lisp, C++

Operating Systems

Expert:	Linux (Cent OS, RHEL, Fedora), Windows 7-10,
Familiar:	Windows server 2016, Linux (Ubuntu, Suse), Windows Server, Open Solaris, Free DOS

Tools

Advanced:	Emacs (Org-mode), Kile (LaTeX), OpenOffice.org (Document, Presentation), Microsoft Office (Word, Powerpoint), nmap, Wireshark, tcpdump, vim
Intermediate:	Dia, Image-Magick tools, nessus, Cisco packet tracer, GNS3
Novice:	Dr Geo, Audio & Video editing (Cinelerra)

Network / Security Devices
Cisco ASA series, Fortinet, Sonicwall, Cyberoam or Sophps, Ironport Web Security, Cisco catalyst switches, Cisco router, Cisco Nexus switches, Wrieless controllers, Dell network or SAN switches, Brocade SAN switch, Juniper switches, Cisco MDS SAN switches

Server Administration

Expert:	Cloud (AWS), Virtualization (Kvm, Xen, qemu, VMWare, Oracle VirtualBox), Containers (openVZ, lxc, podman, docker), HTTP (apache), DNS (BIND), Database (MySQL, PostgreSQL), Firewall (iptables), Web Proxy (squid), DHCP, Mediawiki(wikis), IDS (Tripwire, AIDE), Auditing (auditd), VPN (openvpn)
Intermediate:	Virtualization (Hyper-V, bochs), Software Raid, LVM, Monitoring (nagios, zabbix), FTP (vsftpd), SSH (openssh), File sharing (Owncloud, samba, NFS), NIS, RPM Repository Server, tftpboot/pxeboot, Issues (Redmine), LDAP (openldap, 389-DS), SMTP (postfix)
Novice:	Software switch (OpenvSwitch), Web mail (Squirrel mail), Peer Web DC++ (opendchub, dbhub), Database (Oracle 10g), Intranet search(htdig), Logging (syslog), SMTP (Sendmail), VMWare ESX server, Collaborative suites (Zimbra), IPS (Snort), Software Routing(Quagga), Logwatch

Erlang modules
OTP(gen_server, supervisor, application), Database(mnesia, odbc), Socket programming (gen_tcp, gen_udp), Distribution (global, rpc), Secure communication (ssh, ssh_sftp, ssl), Debugging (debugger), Hashing (crypto), Ports, Web server (yaws), GUI (WxWidgets), Testing (eunit), Type checking (typer, dialyzer), Documentation (edoc), Profiling (fproc, percept)

C Libraries
IPC (Shared Memory, Message Queue, pipes), Socket (TCP IPv4 and IPv6 / UDP / Unix), MySQL, PostgreSQL, SQLite, ndbm, GTK-2, Synchronization (Semaphores), ncurses, mmap, proc(Oracle), ccgi, lipcap, libnet, libpthread

Infrastructure Projects

- **Websites** (AWS) - I am managing multiple public facing websites on AWS such as:
  - https://www.gbb.co.in - Wordpress
  - https://mail.gbb.co.in - Zimbra
  - https://www.sbarjatiya.com/notes_wiki - Mediawiki

  since more than 4-5 years with necessary security hardening required for public facing sites.
- **Virtualization** (vRealize Suite) - I have deployed VMWare stack including vSphere, vCenter, SRM, vSphere replication, vRealize Automation, Log Insight and vRealize Operations for a state datacenter. The project also includes use of Trend Micro Deep Security Manager for all production workloads. After deployment I am supporting this critical state data-center since many years.
- **HCI** (vSAN and VxRail) - I have deployed ESXi and enabled vSAN on cluster. Necessary optimization such as enabling jumbo frames, use distributed switches, enable LACP at network switch end,

enabling HA, enabling DRS, etc. were also completed. I have also deployed new VxRail cluster by building it and then further optimizing various parameters.

Various day-to-day support activities on vSAN including maintenance for adding new nodes has also been performed.

- **OpenSource** (Owncloud, Redmine, Rsnapshot, proxmox) - I am managing multiple open-source production deployments for software such as owncloud (file sharing), redmine (ticketing), rsnapshot (Backup), proxmox (Virtualization), etc. for multiple customers
- **Email** (Zimbra or postfix with dovecot) - I am managing multiple production Zimbra instances since last many years for many customers.
- **Network** (Firewalls, Switches) - I am helping with management of firewalls (Sonicwall, Fortinet, Sophos, etc.) and Switches (Nexus, Catalyst, MDS, Brocade, Dell, etc.) for multiple customers among multiple deployments since past many years.

Programming Projects

- **(Ongoing) Server Manager** (Erlang) - I am building a server manager application for managing large number of Linux servers. The idea is to automate current knowledge so that manual steps are not required for day-to-day server operations where steps or process is already well known. Manual implementation should be required only for new RND or troubleshooting.
- **On-line Erlang interpreter** (Erlang) - An advanced on-line Erlang interpreter which is capable of remembering bindings and handling anonymous functions, recursion and error handling. The interpreter is hosted at http://www.erlangcentral.com/
- **Shoutcast server** (Erlang) - An shoutcast server capable of streaming songs using shoutcast protocol was developed. The server takes list of files to serve in various formats (list of files, parent folder name, etc) as message, so that server can be configured dynamically without stopping. The program is capable of reading various types of MP3 tags to supply correct tag line for receivers.
- **Tic-tac-toe and Tic-tac-drop** (Erlang) - Tic-tac-toe and tic-tac-drop programs where user plays against computer are developed. Programs accept difficulty level as argument and think number of steps ahead based on given difficulty. If difficulty level is high enough (>=3 in case of 3×3 tic-tac-toe), then computer plays such that it never looses and game can at the most be drawn.

  There is no hard-wired logic anywhere in program that causes computer should play at given position based on a given board. The complete decision is based on available positions to play and whether computer or other player can win by playing at given position. Hence both tic-tac-toe and tic-tac-drop programs have identical decision making logic, only specifications of when user wins and what are allowed locations to play are different.
- **Operating System** (C, x86 Assembly) - A very basic operating system was made. After starting from small start up code we learned how to boot using Bochs and added keyboard support for Shift and Caps lock keys. We added hard disk support and learned how to install our OS on hard disk and live CD. The final OS supported many virtual terminals running different processes using cooperative scheduling. The project was done in team of two and I worked on booting from live CD and hard disk support.
- **Two player on-line chess** (ASP.NET, VB.NET) - Two player on-line chess was made on which many chess games could run simultaneously. This was designed for chess club of University so that chess competitions could be organized on-line in labs. It had all the features required by chess club

to organize chess competition including team management, user management, result page, admin interface and timers. It was used by chess club for organizing various competitions very easily and efficiently.

- **Book Forum** (PHP, Java Script, PostgreSQL) - A very large forum for book lovers was made as part of Software Engineering course. The project was made following all the good design principles and agile methodology of Software Development. The admin interface for the forum was very advanced allowing administrators to add / delete / modify any part of forum very easily. It had features including but not limited to management of users, books, topics, posts, book review, rating of books or users or reviews, blocked words.

- **Shutdown / Hibernate Service** (C#) - Made a service in C# which could shutdown PC when left on for more than specified minute and no body is logged on. It could also hibernate PC if somebody is logged on and has not done anything in past 15 minutes. It was used in lab to save power as the old BIOS of lab PCs did not support Microsoft Windows 2000 power saving options.

- **Chat sniffer** (C, libpcap / winpcap) - A chat sniffer which can sniff chat messages of people chatting on local LAN using common messengers like Yahoo. This was made as part of B. Tech project for companies that might want to allow its employees to use messengers provided they can ensure that employees are not passing on companies confidential information using messengers.

- **Squid log analyzer** (C, PHP, Oracle 10g) - A squid log analyzer was made to analyze web logs of university web proxy servers. Freely available log analyzers were not fast enough to analyze web log of university which grew to about 350 MB on any normal day. Hence a very fast, efficient log analyzer using C (sockets, proc), PHP(sockets) and Oracle10g was created so that log of up to 30 days could be analyzed at a time very fast. This was made during research internship under Server Administrator, DA-IICT to facilitate policy development related to web usage. (Later on more efficient version was created using C, PHP and PostgreSQL combination).

- **Scoring System** (C) - A scoring system was created which could poll HTTP, FTP, etc servers after every predefined interval and based on their availability assign points to each team. The scoring system was fully automated and could run without any manual intervention. It was used to organize fortress (a hacking competition) during our annual festival.

- **Search client** (C) - The code is used to Index Wikipedia semi-structured XML dump (around 20 GB). The search client allows using title, category, section, etc. as parameters. The results are displayed under 0.2 seconds even in worst case.

Networking or Forensic Tools / Modules

- **VPN** (C, PHP) - VPN services based on openVPN are deployed and are being used extensively by all Institute members. Custom authentication modules for VPN are developed using C. VPN information website is developed using PHP. http://vpn.iiit.ac.in/

- **Wake On LAN** (Erlang / C, PHP) - Wake On LAN is a website based service which allows users to power on their machine using Wake feature supported by modern LAN cards. This leads to considerable power saving as machines which are going to be used remotely, need not be left powered on 24x7. Users can power on machines when required from any location and power it off when work is over.

- **utmp record viewer** (C) - Scans image of hard-disk or partition for utmp (successful ssh login log) records. This is useful to retrieve login records, if attacker deletes login record file after a break-in.

- **Tunneling web proxy** (C, PHP) - Enables anonymous access to Internet bypassing all firewall rules based on HTTP URL or IP address.
- **ARP correction** (C) - A tool to continuously send hardware address of proxy server to gateway. It was created to solve ARP communication problem between servers with multiple interfaces on same VLAN and gateway.
- **Squid authentication module** (C) - Allows basic authentication on squid using pop3 server. Supports multiple mail servers at same time. Same was extended later to provide VPN authentication.
- **Email notifier** (C, GTK2) - Periodically logs in web mail using HTTP protocol and checks whether a new unread mail is present. This was used when IMAP and POP3 access to mailbox was not allowed by institute policy.

Education

Education	University / School	Year	Percentage / CPI
MS CSE	IIIT Hyderabad	2015	8.0
B. Tech(ICT)	DA-IICT	2008	77.6%
AISSCE	D.A.V. Public School	2004	70.2%
AISSE	Agarwal Public School	2002	84.8%

Publications

Nov 2012 - Paper, Patent: BlueShield: A Layer 2 Appliance for Enhanced Isolation and Security Hardening among Multi-tenant Cloud Workloads (IEEE Link, Personal copy)

Internships

Research Internship - IBM
Organization : IBM India Research Labs (IRL)
Description : Internship on network and security of data centers and cloud
Duration : March-May, 2011

Research Internship - DA-IICT, Gandhinagar
Organization : DA-IICT, Gandhinagar
Description : Internship on server configuration issues under Server Administrator, DA-IICT.
Duration : April-June, 2007

Guest Lectures

In past a few years I have delivered following guest lectures:

- 2019 - Dodla Diary - Zimbra
- 2018 - NRSC, Shadnagar - Containers
- 2017 - CFSL, Hyderabad - FAT, EXT3 and NTFS Filesystems
- 2017 - CFSL, Hyderabad - iSCSI protocol and configuring iSCSI target on Linux and Windows
- 2016 - SOIS, Manipal - Virtualization, Cloud computing and Big Data Analysis

Work Aspiration

- Cloud and virtualization
- Parallel and distributed application development
- Linux Server and network administration
- Intranet and Internet security

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