

**Full Name:** Y Giridhar Appaji Nag

**Current Professional Status:** Member of Technical Staff

**Organization:** Network Appliance (India) Pvt. Ltd. ([www.netapp.com](http://www.netapp.com)), 6th Floor, The Estate, No 121, Dickenson Road, Bangalore 560042, INDIA.

**Web:** [www.appaji.net](http://www.appaji.net)

### **Education:**

- Bachelor of Technology, Department of Computer Science and Engineering, Indian Institute of Technology, Guwahati, Assam, India. CPI: 8.10\*. May 2000.
- Higher Secondary, Board of Intermediate Education, Hyderabad, Andhra Pradesh, India. With Math, Physics, Chemistry, English and French. Percentage: 88.9%. April 1996.
- Secondary School Certificate, Board of Secondary Education, Hyderabad, Andhra Pradesh, India. Percentage: 82.0%. April 1994.

\*On a scale of 10

### **Professional and Research Experience:**

- Currently employed as a Member of Technical Staff at Network Appliance (India) Pvt. Ltd. ([www.netapp.com](http://www.netapp.com)).
- Senior engineer at UbiNetics Limited ([www.ubinetics.co.in](http://www.ubinetics.co.in)) (Aug 2001 to Jan 2004). Involved in the full life cycle of incremental releases of GSM/GPRS Access Stratum software for a Multi-Mode (GSM/GPRS + UMTS) mobile station.
- Software engineer at Hughes Software Systems ([www.hssworld.com](http://www.hssworld.com)) (June 2000 to Aug 2001). Involved in the design, implementation, testing and integration of (a) Bluetooth profiles (b) GPRS data stack.
- Summer Research Fellow of JNCASR ([www.jncasr.ac.in](http://www.jncasr.ac.in)) (May 1999 to July 1999) at the Indian Institute of Technology, Kanpur ([www.cse.iitk.ac.in](http://www.cse.iitk.ac.in)). Was responsible for the re-engineering of an ext2 based file system with support for on the fly compression for the Linux kernel.

### **Publications and Reports:**

- *O(1) Parallel Lookups for High Speed Layer Four Switching* The Sixth International Conference of Information Technology - CIT2003 ([www.citconference.org](http://www.citconference.org)). Bhubaneshwar, India, Dec 22-25, 2003.
- *Re-engineering of a File System with Support for On-The-Fly Compression* Report submitted to the Jawaharlal Nehru Center for Advanced Scientific Research, Bangalore. Under the Summer Research Fellowship program ([www.jncasr.ac.in/summer\\_research.html](http://www.jncasr.ac.in/summer_research.html)). July 1999.

### **Academic Distinctions:**

- Received the 1999 Summer Research Fellowship ([www.jncasr.ac.in/summer\\_research.html](http://www.jncasr.ac.in/summer_research.html)) of Jawaharlal Nehru Center for Advanced Scientific Research (JNCASR), Bangalore, India. In association with Department of Science and Technology (DST), Government of India and Rajiv Gandhi Foundation, India.
- Recipient of Council for Scientific and Industrial Research (CSIR) studentship ([csirhrdg.res.in/cpyls\\_main.htm](http://csirhrdg.res.in/cpyls_main.htm)) partially covering tuition for the period of four years (Aug 1996 to Apr 2000).
- Appeared in the 1995 Indian National Mathematical Olympiad ([www.nbhm.dae.gov.in/olympiad.html](http://www.nbhm.dae.gov.in/olympiad.html)), the qualifying test for the International Mathematical Olympiad.
- Ranked among the Top 1% of students in the national level physics test (conducted annually by the Indian Association for Physics Teachers) in 1996.

### **Areas of Interest:**

Systems Software, Mobile Communications & Computer Networks and Software Engineering.

### **Current Work:**

## CURRENT POSITION

**Member of Technical Staff:** Network Appliance (India) Pvt. Ltd., Bangalore, Karnataka, INDIA.

**Compiler and Co-Editor:** The Linux Documentation Project Weekly News ([www.tldp.org/ldpwn](http://www.tldp.org/ldpwn)) since April 2003. Also working on a GNU Build System HOWTO.

## Past Work Experience:

**Senior Engineer:** (Aug 2001 to Jan 2004) UbiNetics India Pvt. Ltd., Bangalore, Karnataka, INDIA. With the Core Technology Division of UbiNetics, I was involved in the Multi-Mode (GSM/GPRS+UMTS) Mobile Terminal software project. My work responsibilities included:

- Requirements Specification and Architecture: Having been involved with the project since its inception, I was involved in preparing the requirements specification and building the architecture of the GSM/GPRS Access Stratum part of the project.
- GSM/GPRS Cell Selection and Re-selection: Detailed design and implementation of the cell selection and re-selection algorithms for GSM/GPRS. This was to provide for the mobile station with mobility in GSM/GPRS networks. Functionality was based on the 3GPP Release 99 specifications. SDL and C Language were used for this. Also responsible for the integration of the cell selection and re-selection module with the other Mobile Station modules involved for Idle Mode operation.
- Software Quality Representative: I was aiding the quality group of the Organization in UK with the quality assurance activities. Was an active participant in defining various processes in the software development life cycle. Participated in two external ISO certification audits. Consultant on various issues like configuration management, code reviews, change & bug reporting processes, build & release procedures and software engineering issues.
- Was involved in the design of network controlled cell re-selection and study for providing Inter-RAT (Radio Access Technology) mobility features in the Mobile Station software.

**Software Engineer:** (June 2000 to Aug 2001) Hughes Software Systems, Gurgaon, Haryana, INDIA. I was a part of the Access Terminals division of Mobile Satellite Communication group. My work responsibilities included system level and low level design, implementation, testing and integration. Hughes Software Systems is a SEI-CMM level 4 and ISO 9001 company. The activities that I have been involved with were:

- GPRS Mobile User Terminal Stack (Oct 2000 to Aug 2001): Design and development of the SNDCP and LLC layers. Stack based on the Release 97 specification of GSM Phase 2+. SDL 98 and C Language were used for design and implementation.
- WAP Man Machine Interface Simulator Prototype and Microbrowser, MMI Interface (Aug 2000 to Oct 2000): WAP Phone MMI Simulator capable of displaying WML pages and WBMP images. Implemented using Xt and Motif libraries.
- Profiles for Bluetooth Stack (June 2000 to Aug 2000): Development of Service Discover Application Profile, Serial Port Profile and the Cordless Telephony Profile for a Bluetooth stack. Based on the Bluetooth SIG specification of Bluetooth profiles and Core stack. X-window based Bluetooth device simulator was also built to demonstrate the stack capabilities using these profiles with wireless chat and a printing application.

**Summer Research Fellow:** of JNCASR Bangalore (May 1999 to Jul 1999). At the Indian Institute of Technology-Kanpur, Kanpur, Uttar Pradesh, INDIA

- Re-engineering of a File System with Support for On-The-Fly Compression. This project involved the analysis of the design and implementation of a file system for the Linux 2.0 Kernel with on-the-fly Compression support. I was responsible for the re-engineering of the file system. Gained a fair amount of knowledge of file systems and software re-engineering. Analyzed the design of the file system and made changes taking speed and compression factors into consideration. Certain subtle problems in the existing implementation were also fixed.

## Important Academic Projects:

B. Tech Project (Aug 1999 to Apr 2000) High Speed Lookups for Fast Layer Four Switching.

- The project deals with the problem of design of a router from an algorithmic stand point so that packet

filtering at high speed, based on the higher layer (above L3) packet headers can be done. Fast lookup on these fields and deciding the least cost filter for taking a routing decision using parallel hardware was the main problem of interest. I had come up with constant and logarithmic time algorithms for this and also investigated randomized approaches (like Karp-Rabin fingerprinting) for possible solutions.

Independent Study (Seminar) Work (Jan 1999 to Apr 1999) Real-time Operating System Kernels.

- In this work, various paradigms in the design of Operating Systems that provide Real-time support. Aspects like the architectural requirements, Interrupt handling, multi-threading, scheduling, resource allocation, IPC, formal design and verification methods (VDM) etc have been studied. SunOS and MiThOS were taken up as case studies.

Design and Implementation of a 4 bit CPU (Jan 1998 to Apr 1998)

- In this project, programmable CPU with a cut-down CPU instruction set, the bus and the required hardwired controller along with the I/O (by means of DIP switches and segmented displays), memory (RAM chips) were designed and implemented. This work was done as a part of the Computer Architecture and Organization laboratory project work.

### **Conferences, Workshops And Training Attended:**

- International Conference of Information Technology (CIT), Dec 2003. Presenting the paper *O(1) Parallel Lookups For High Speed Layer Four Switching*.
- International conference on Foundations of Software Technology and Theoretical Computer Science (FSTTCS) ([www.fsttcs.org](http://www.fsttcs.org)) and the associated workshops (Dec 1998 and Dec 1999).
- Five day training program on GSM/GPRS radio interface and the protocol stack.
- Three days training on WCDMA and the UMTS wireless system.
- Two day participative workshop on "Team Building" at the Management development program of Indian Institute of Management, Lucknow, to handle others style of working and work in a co-operative environment.

### **Skills:**

- **Programming Languages and Libraries:** C/C++, Perl, SDL (ITU-T, Specification and Description Language), X-Window (XLib, Xt, Motif) system, Shell programming and Shell scripting tools like sed etc.
- **Design and Development Tools:** Telelogic Tau suite (for design and implementation of real-time communicating systems. The code generators, Tau public and postmaster interface). Clearcase for configuration management, X-designer, software development tools like gcc, flex, bison, cvs, gmake, automake, autoconf, gdb, gprof, gcov etc.
- **Operating Systems:** Programmed for Linux, VxWorks, SunOS and Windows (Basic Win32 programming).
- **Languages Known:** English (Read/Write/Speak), Telugu (R/W/S), Hindi (R/W/S) and basic French.
- **Additional Computing Skills:** Documentation tools like DocBook SGML/XML & Latex. Power user of GNU/Linux. Knowledge of Internet technologies. Academic experience on working with Oracle 8.0, Developer/2000, Visual Prolog, Sun-PHIGS, Matlab, MSAccess and 80x86 Assembly Language. Software development processes.