Jean-Marc Saffroy

Email: <saffroy@gmail.com>
Mail: 37 rue Saint Fargeau – 75020 PARIS – FRANCE
Phone: (+33) 6 37 56 60 39

SENIOR SOFTWARE ENGINEER
Kernel and system software development on Linux/Unix

Education

Masters degree in Computer Science (French *diplôme d'ingénieur*), with final year focused on **Networking and Distributed Systems**. ENSEIRB, 2000.

Skills

Unix/Linux operating systems (mainly Linux):

- **Linux kernel internals**: architecture-specific aspects of x86 and IA64 ports, VFS and file systems, multithreaded and multiprocessor synchronization mechanisms, System V STREAMS, networking, firewall;
- other kernels: BSD (PPP layer), **eCos** (file system, network layer), architecture of Unix kernels;
- **Unix/POSIX system APIs**: files, processes, threads, IPCs, networking (BSD sockets), etc.

Other software skills:

- **GCC backend internals** and related topics: GNU toolchain, ELF format, relocations;
- **debugging** in difficult environments (Linux kernel crash dump analysis on large Bull NUMA systems);
- **performance analysis** of large and complex distributed systems (**Lustre** distributed filesystem, Voltaire **Infiniband** networks, DataDirect Networks disk arrays);
- network protocols: IP, TCP, PPP, Infiniband;
- **C, assembler** (x86 and IA64), **shell/awk/sed** scripts, basic python/Java/C++;
- advanced user of: GCC, gdb, kdb, lcrash, gprof, oprofile, GNU make, CVS, Mercurial.

Languages:

- Fluent oral and written English;
- Native French speaker;
- Basic German (used to be fluent).

ITIL Foundation certificate (2008).

Experience

Scality (since 2011): Software Engineer

- Designed and wrote a module implementing **high performance POSIX file storage** on top of a distributed object store, with parallel accesses and asynchronous writes. Integrated this module in two filesystems (Gluster, Scality SOFS).
- Contributed a Cinder driver (block storage on SOFS) to the **OpenStack** project.
- Turned an **NFSv3** server prototype into a product.
- Designed and wrote a module implementing filesystem quotas for the Scality SOFS filesystem.

Joguin SAS (2009-2011): R&D Engineer

- Ported the **GNU toolchain** (**GCC**, binutils, simulator) to target a new processor ISA.
- As a demonstrator of the toolchain, ported VICE (a C64 emulator) and SDL to the simulator.

Sun Microsystems (2008): Software Engineer

Silicomp Ingénierie, then **Orange Business Services** (2004-2008): Expert Software Engineer

- Developed and integrated a software maintenance system for the Airbus A380, based on embedded Linux and FreeBSD servers.
- Designed and wrote an extension to the GNU debugger **gdb**, to add support for user-level **cooperative threads** (coroutines) inside single- and multithreaded applications.
- Worked for Bull on the Lustre **parallel file system** for **high performance clusters** (2004-2007)
  - . Performed Lustre integration to the Bull Linux kernel, bug fixes, tests, RPM packaging.
  - . Investigated CPU, memory, network and storage performance issues with Lustre on large NUMA multiprocessor systems for the [TERA10](#) and [CCRT/Platine](#) clusters.
  - . Defined a team process and wrote tools to streamline integration of new Lustre releases into CVS.
  - . Contributed kernel bug fixes ([IA64 module relocations](#), [VMM](#)).
- Conducted preliminary study and developed a compatibility library providing file I/O and threading APIs to port a set of Windows multithreaded applications (services) to Linux. Wrote an efficient and easy to use build system. Initiated the use of CVS in the company.

Silicomp Research Institute (2000-2003): Research Engineer

- Worked on **LiS**, a STREAMS stack for Linux
  - . Audited the code, improved its stability and performance.
  - . Wrote a test environment using DejaGnu.
  - . Added assertions to LiS and to the Linux kernel's interprocessor locking primitives.
- Ported several components to eCos on embedded targets (ARM boards, 64-128KB RAM):
  - . The OpenSSH daemon
  - . A **PPP** layer (BSD kernel code and pppd daemon)
  - . The Linux JFFS2 **file system** for flash memory devices
- Contributed to the design, and wrote extensions to the kernel driver of the Netwall firewall, enabling fast switching between preloaded configurations. Integrated application-level proxy programs.
- Wrote internal notices on **Bluetooth** security and BlueZ (Linux Bluetooth stack). Designed and wrote an RFCOMM connection server in Java using BlueZ. Produced RPM packages.
- For the port of a « real-time » backup system from Windows to Linux, showed feasibility, co-designed and wrote the Linux kernel modules that intercept **VFS** operations (ie. file system methods) in live inodes of an unmodified **Linux kernel**, in order to perform data replication on a remote server. Contributed a patch to boot Linux 2.4 on XXPRESS host.

ENSEIRB (1997-2000): Student

- 3 month **final student project**. Designed and wrote the [IP Personality](#) kernel extension to the **Linux** firewall, a versatile network stack fingerprint emulation engine, so as to counter fingerprinting tools such as **nmap.**
- 5 month **internship** at **Matra Marconi Space** (now EADS Astrium) in Toulouse. Wrote tools and drivers to control the measurement instruments used in validation and tests of satellite avionics. Ported a test language interpreter from Solaris to Linux.

Hobbies

Computers and [free software](#), music (former bass singer in a gospel/jazz/world music choir), photography, skiing, hiking, astronomy.