

# INFRASTRUCTURE & OPEN SOURCE ENTERPRISE ARCHITECT

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## SECTORS OF ACTIVITIES:

- European institutions
- Banks
- United Nations
- Engineering companies
- Datacenters
- Start-ups
- Security companies
- Environment
- Construction

## COMPUTER RELATED SKILLS:

<i>Programming languages</i>	SQL, C, C++, ExtJS, PHP, Java (basics), Java Script (basics), shell scripts, PERL
<i>Hardware</i>	PC, industrial PC, Intel based servers, HP c7000 enclosures and server blades, HP StoreServ 3PAR 8440, StorageTek storage robots, Cisco switches, F5 Load balancers, Radguard and Nokia VPN, Checkpoint and Gauntlet firewalls
<i>Operating Systems</i>	Linux (RedHat with certification, Fedora, Suse, Mandriva, CentOS, ...), Sun Solaris, Windows. SpaceWalk, RedHat Satellite.
<i>Groupware</i>	X-Ittools, Horde / IMP, Zimbra, Oracle Content Services, SUN JES 4, 5
<i>Network &amp; Monitoring</i>	Heterogeneous network, wireless network, LAN, WAN, ISP networks, bank networks, network security, firewalls, Netcool monitoring, Nagios with MKlivestatus / Nagvis / Cacti / RRDtool / SNMP monitoring
<i>Messaging systems</i>	MS Exchange, "webmail" based, Sendmail, Postfix, ClamAV, Amavis, Qmail, Hylafax, Zimbra, Horde/IMP, Messaging infrastructures
<i>Internet - Intranet</i>	HTML, ExtJS, Javascript, Java, CGI, Apache, Tomcat, Liferay, Cocoon, Dreamweaver, Fireworks
<i>Databases &amp; LDAP</i>	PostgreSQL, Barman, EnterpriseDB products, PgPool-II, PgBouncer, HAProxy, MySQL, MS Access, MS SQL, Oracle SDK, Sun One Directory Server, OpenLDAP
<i>Security</i>	Vertical and horizontal segregation, IPS, IDS, anti-malwares, WAF, Firewalls (Iptables, Checkpoint, Cisco PIX, ...), OS Hardening, training of the users, security policies, signature systems (Samhain), VPNs, Snort, SpamAssassin, ClamAV, Amavis, ..., ISO 27001, SCRUM, OWASP, ...
<i>Virtualization Remote control</i>	Libvirt, VmWare, Oracle VirtualBox, VNC server and client, OpenStack, HyperV
<i>Cloud</i>	OpenShift Origin v3.6, Docker, Kubernetes, GlusterFS, Rancher
<i>Backup</i>	Arkeia backup solutions, Netbackup

## MISSIONS AND RESULTS:

### ERIOS Conseil Swiss / ERIOS Conseil France :

**Founder of ERIOS Conseil in Switzerland (now closed) and France (still up). As a freelance:**

- ❖ Implementation of new features in the Open Source project : X-Ittools ELSE. Coding of the GreyLSE daemon, implementation of SPF and RTAAM engine (Real Time Action and Alerting Module) to monitor email flows in

- real time, to detect threats and to stop them according defined security policies. Technical environment : Linux RHEL 6.x and CentOS 6.x/7.x, Open LDAP, Apache web server, ExtJS 4.x framework, Postfix, Postgrey, PostgreSQL 9.x, NoSQL, PHP, JSON, Rsyslog 7.x + RELP, SNMP, C/C++, HTML
- ❖ Installation of SpaceWalk server (community version of RedHat Satellite) to control deployments of Linux Fedora Core 19/20 and CentOS 5/6
  - ❖ Has been a member of the OpenStack project as an english to french translator
  - ❖ RHCSA certification
  - ❖ For LCD Consulting, and Thales : migration of old SFTP Linux servers to new RedHat Enterprise Linux 6, for ANCV (Association Nationale des Chèques Vacances)
  - ❖ For Gartner, requested by Montreal Associates : audit of web architecture security for Ethias (main Belgium insurance company)
  - ❖ For The Graduate Institute, Geneva, requested by Smartwave SA in july 2016: migration from SAMBA3 to SAMBA4
  - ❖ For the city of Berne in Switzerland on the request of Smartwave SA in march 2017 : mission aiming to audit a PostgreSQL BDR database with multi-master replication, provided fixes and advices to enhance the PostgreSQL service, Postgres and Linux kernel tuning, installation/configuration of Barman, the PostgreSQL backup solution from 2ndQuadrant.
  - ❖ For « Aux Coquelicots » Bed & Breakfast, installation of a network of AXIS high definition cameras to secure the buildings.

## **ANTAES Consulting, Geneva, from october 2016 :**

**As an Enterprise Architect expert in IT, Open Source and databases, delegated full time to work for the Swiss Confederation until August 2018, for the « Centrale de Compensation » :**

- ❖ Involved on rehosting projects including migration of all DB2 databases to PostgreSQL, migration of all WebSphere applications to Tomcat, as well as designing the new IT infrastructure of the datacenters.
- ❖ Developing synergies with other teams.
- ❖ Managing studies using HERMES methodology, evaluation and recommendations of designs and solutions.
- ❖ Design of overall converged infrastructure in order to support bare metal, virtualized (VmWare) and containerized (docker, kubernetes, rancher, OpenShift) environments running under RedHat Linux flavors. Drive negotiations with HP for quoting. Installation & configuration of the infrastructure and of the first stage containing DEV/TEST environment of a two nodes PostgreSQL BDR with Multi-Master Replication support, loadbalancing and connection pooling. Also containing core services like HTTP Proxy, DNS services, DHCP services, small GlusterFS volumes, SMTP services, Spacewalk server with CentOS deployments. Installed temporary monitoring using Nagios, Nagvis, Cacti and SNMPv3 waiting for integration with official monitoring system.
- ❖ Definition of SLAs for the services provided by the infrastructure.
- ❖ Design of PostgreSQL services (HAProxy, PgBouncer, pgBarman, PostgreSQL-BDR from 2ndQuadrant, 4 nodes multi-master). Configuration, installation, tuning of PostgreSQL databases and Linux servers.
- ❖ PostgreSQL, OpenShift and migration POCs based on real customer applications.
- ❖ Documentation for the POCs. Powerpoint presentations to developers teams, architects, management. Documentation of PostgreSQL benchmarking campaigns.
- ❖ The new infrastructure as well as the articulation of the various service architectures I've designed allow a drastic reduction of the costs compared to the offers from OFIT, evaluated to savings of several tens of millions Swiss francs over a 10 years projection period. It saves the resources of the Swiss first pillar.
- ❖ Technical environment: Centos 7.x, RHEL 7.x, SpaceWalk 2.7, RedHat Satellite, OpenShift Origin, OpenShift Container Platform, PostgreSQL BDR, pgBarman, PgBouncer, HAProxy, Keepalived, IBM DB2, Mainframe zOs, Tomcat, kubernetes, docker, ManageIQ, Tomcat, BIND DNS, ISC DHCP, Squid proxy, Postfix SMTP, Nagios, Cacti, Nagvis, SNMP. IBM mainframe, HP c7000 and Synergy enclosures with Gen9 and Gen10 servers, HP 3PAR 8440 StoreServ.

## **European Parliament, Luxembourg, from November 2015 to September 2016 :**

### **As IT Architect and Database Architect :**

- ❖ In the context of the creation of an alternative in matter of database solutions, potentially to replace Oracle, management of all studies related to database architectures based on PostgreSQL hosted on RHEL 7 servers. My role needs an interaction with all IT teams of the European Parliament (Provisioning, Backup, Storage, Security, Network, ...).
- ❖ Evaluation of all existing PostgreSQL solutions (Community Edition, 2ndquadrant, EnterpriseDB, ...) via the implementation of several POCs (Virtualization and bare metal, PostgreSQL Multi Master Replication, encryption of communications and data inside the databases, HAProxy, PGBouncer, ...).
- ❖ Conception of the PostgreSQL MegaPOC, distributed over two data-centers in two countries with 4 nodes in multi-master replication, load balancing and connection pooling, including real time Backup in multi-master replication using Barman.
- ❖ Tuning in all the layers of Linux OS and Linux kernel, SELinux configuration.
- ❖ PostgreSQL bench-marking on OpenStack solutions from external hosting companies.
- ❖ Bench-marking campaigns over several months and with various hardware configurations and architectures.
- ❖ Development of monitoring needs (creation/development of Nagios monitoring scripts, Cacti templates, Nagvis real time dashboards, using SNMPv3) and identification of potential issues and bottlenecks in the overall European Parliament infrastructure that can impact the PostgreSQL architecture.
- ❖ Delivery of the technical studies, recommendations and solutions to implement. Discussions around final customer needs.
- ❖ Management of PostgreSQL projects and related teams. Training of the DBAs. Acting as the main architect for PostgreSQL architectures.
- ❖ **Technical environment:** bare metal Linux RHEL 7 servers and virtualized ones under VmWare, PostgreSQL Community edition, PostgreSQL BDR 2ndQuadrant, PostgreSQL + Advanced Server from EnterpriseDB, PgPool-II, PGBouncer, HAProxy, Barman, Nagios, Nagvis, Cacti

## **European Commission, Luxembourg, from April 2015 to November 2015:**

### **As Linux Architect:**

- ❖ Administration of the cloud infrastructure composed of 1000+ virtualized LAMP/LAMT Linux servers. Member of a team of 3 persons providing application level support.
- ❖ Consulting on NAGIOS monitoring architecture.
- ❖ The European Commission creates a lot of web applications running over Tomcat or Apache/PHP, and the team install, configure and manage Linux based servers and IDOL and Liferay as well.
- ❖ Acting as a DevOps, to manage wide range of issues, softwares and servers.
- ❖ Installation and configuration of LAMP / LAMT Linux servers
- ❖ Administration and support of Linux RHEL/Apache/MySQL/PHP/Tomcat provided to application developers and users
- ❖ **Technical environment:** 1000 virtualized servers under VmWare running Linux RHEL 5 & 6, Solaris 10, Apache HTTPD 2.x, Tomcat 5.x to 7.x, Weblogic, MySQL, PHP, ProFTPD, IDOL, Liferay, Nagios

## **United Nations International Computing Center, Geneva, from December 2011 to April 2014:**

### **As SMTP Relays / RDBMS / Open Source Architect:**

- ❖ Design SMTP relays architecture and infrastructure. Recreated from scratch, using Open Source solutions, and integration to commercial and proprietary messaging solutions (Microsoft Exchange 2010/2013, Lotus

Domino), integration with Active Directory LDAP. The solution is designed with Active/Active mode on 3 data-centers, to support 3 millions emails per day.

- ❖ Migration of United Nations internal customer organizations from Sendmail to the new Postfix infrastructure (UNDP, WIPO, WTO, OHCHR, UNHCR, ITU, ITC, IFAD, UNICEF, WFP, ...)
- ❖ Management of 70000+ Google Postini user accounts for anti-spam and anti-virus. Implementation of SPF.
- ❖ Design the messaging monitoring solution, based on Open Source technologies (Nagios, Nagvis, Cacti, X-Ittools ELSE), including real time attacks detection, real time parsing of Postfix and Microsoft Exchange Server logs, correlation, reactions against attacks, generation of customer reports, real time statistics.
- ❖ As expert about internal or external attacks against messaging systems, pro-active detection and advisor for the different United Nations organizations.
- ❖ **As PostgreSQL 9.x architect:** design, install and manage PostgreSQL (1.2 Tbytes for the ELSE). OS, Storage, Database tuning. SQL stored procedures coding. Interfaced with JSON (Big data, NoSQL), via PHP, EtxJS.
- ❖ Train the ELSE users with labs on attacks scenarios against messaging systems.
- ❖ Drastically increased the quality of service, and consequently the level of satisfaction for internal staff and customers, after the first 6 months. Number of tickets drastically decreased from several tens a day, to one or two a week, over two years effort.
- ❖ **Technical environment:** 3 data-centers (Geneva, New York), 30+ Linux RHEL 5.x and 6.x servers virtualized under HyperV and VmWare Infrastructure, Load balancers BigIP F5, firewalls CheckPoint, Microsoft Exchange Server 2010/2013, Lotus Domino, Sendmail + SmSwitch, Postfix 2.8+, LDAP Active Directory, Google Postini, Linux RHEL 6.x for the ELSE, Net-SNMP Read/Write, PostgreSQL 9.2, NoSQL, SAN, Nagios, Nagvis, Cacti, X-Ittools ELSE (<http://sourceforge.net/p/x-itools/wiki/Home/>), HTML, PHP, JSON, ExtJS 4.x, C/C++, shell scripting, Rsyslog 7.x with compression and RELP module.

## **Infitex SA, SUN, Luxembourg, from December 2008 to September 2011:**

**As UNIX / LDAP / Monitoring / Open Source Architect, in delegation to SUN Microsystems/Oracle:**

### **European Investment Bank – SUN JES and Open Source Expert:**

**As Open Source Monitoring Solutions Architect (more than 2 years):**

- ❖ Study to merge existing monitoring softwares (Centauri, SUNMC, Patrol, Vantage, Omnivision, Nagios, “home-made” monitoring tools, ...) in only one using latest clustered Open Source like Nagios / Cacti with their plug ins. Project presented to the Direction Committee. Implementation and migration of all existing monitoring solutions on the new Nagios/Cacti based one. Large-scale money savings.
- ❖ Specific monitoring scripts for Nagios, and creation of new templates for Cacti.
- ❖ Monitoring of EIB data-centers, of the EIB remote offices across the world. 1000+ servers and various devices, more than 13000 monitored services and increasing permanently (Clock-in/out devices, printers with their ink levels, logical Solaris and Linux servers, virtualized servers, security devices, VOIP devices and peripherals (Alcatel), Blackberry infrastructure, Windows 2003/2008 servers, global network infrastructure, electricity management devices from Raritan, IPTRADE devices of the trading room, ...). Monitoring of hardware, OS and of all EIB bespoke applications by the creation and coding of many specific monitoring scripts. Monitoring all Oracle, Sybase, MySQL databases. Specific monitoring for all the special clustered applications made by the bank, as well as for SWIFT.
- ❖ Creation of interactive dashboards at the destination of the different departments of EIB (network maps with real time status, real time SLA statistics dashboards, even made dashboards showing a deeper and deeper view of smaller and smaller elements: from the earth seen from space until any single monitored device in EIB, with the inside details of what is monitored), management of monitoring user profiles with their associated permissions.
- ❖ Documentation, and quarterly validation of the goals and achievements in EIB Direction Committee.

- ❖ **Technical environment:** Solaris 8 to 10 Sparc and x86\_64, Solaris zones, JES 4, SUN Directory Server 5.2p4 and 6.3, Linux Redhat Enterprise 5.x, Windows server 2003/2008, virtualization, CUPS, SAMBA, Nagios, Nagvis, Cacti, mklivestatus, SNMP, SNMPtrapd, SNMPtt, NSClient++, MySQL, Oracle, Raritan Dominion, VOIP Alcatel, Blackberry, Checkpoint FW, juniper FW, IPTRADE, SWIFT.

**As JES expert, SAMBA, CUPS and Open Source Expert (9 months):**

- ❖ Level 3 maintenance and support for SUN JES products (messaging server, calendar server, ...)
- ❖ Management of all EIB printers (350+ printers), made a CUPS/SAMBA POC, use of CUPS universal drivers, contribution to CUPS source code. Implement all in production following the POC.
- ❖ **Technical environment:** Solaris 8 to 10 Sparc and x86\_64, JES 4, SUN Directory Server 5.2p4 and 6.3, Linux Redhat Enterprise 5.x, virtualization, CUPS, SAMBA.

**Crédit Suisse Luxembourg – Monitoring Expert:**

**As Open Source Monitoring Solutions Expert:**

- ❖ Short mission to update their NAGIOS monitoring solution and add SNMP support

**ADS-Click, Geneva, from October 2007 to November 2008:**

**As head of UNIX, systems and networks department, in a 40 employees Startup context:**

- ❖ Manage a team of two people for a company in the field of on-line advertising.
- ❖ Manage corporate infrastructure. Provide support. Study, configuration and installation.
- ❖ Manage DEV, STAGE, PREPROD and PROD Linux servers and infrastructures. Manage security aspects and iptables based Linux Firewalls. Manage Apache and Tomcat servers. Implemented monitoring.
- ❖ Implemented identity management system, and LDAP based access to all servers.
- ❖ **Technical environment:** DELL servers, IBM blades with storage on EMC SAN, MAC OS X, Windows XP and Vista on SAMBA servers, Linux CentOS 3.x to 5.x, CISCO PIX firewall, iptables under Linux, Tomcat 5.0 to 5.5, Load balancer ZEUS and LVS under Linux, DNS Bind, Apache HTTP, Jabber on LDAP with MSN gateway, MySQL, Postfix, Sun Directory Server 5.2 with Multi-Master Replication, OpenVPN, Racoon, Xen Virtualisation, Nagios, Cacti + plugins, JIRA, Postfix + Amavis + ClamAV + SpamAssassin + Cyrus-imapd + Horde/IMP

**SmartWave S.A., Geneva, from January 2005 to September 2007:**

**As IT & Open Source architect and database, identity management, security expert:**

**Smartwave internal infrastructure (from 2001, as a freelance)**

- ❖ Design of the company network, security, and services, using Open Source technologies
- ❖ Installation, configuration and management of core infrastructure services (DNS, DHCP, SAMBA, LDAP, MYSQL, PostgreSQL, Messaging services, ...)

**EFG Bank – LDAP expertise**

- ❖ Installation and configuration of LDAP servers with Multi-Master Replication in DEV and PROD environments
- ❖ Implementation of SSL LDAP based authentication for Solaris servers
- ❖ **Technical environment:** Solaris 10 Sparc and Solaris 10 zones, SUN Directory Server 6.1, DNS

**European Investment Bank (Luxembourg) – SAMBA expertise**

- ❖ POC with SAMBA: compilation, configuration and installation of SAMBA in a PDC / BDC configuration with LDAP backend, sized for 2000+ worldwide users.
- ❖ Installation and configuration of DNS & DHCP in a master-slave configuration, with dynamic DNS automatic updates
- ❖ Implementation of LDAP based authentication for Solaris servers
- ❖ **Technical environment:** Linux RHEL 5.x, Solaris 10 Sparc, ISC DHCPD, ISC BIND, SAMBA, NAS, NT4, LDAP Sun One Directory Server 5.2.

### **BROLLIET – Oracle Content Services**

- ❖ Consulting and analysis on Linux systems and servers with Oracle Content Services 10g.

### **SUISSE ATLANTIQUE – NIS to LDAP migration, SAMBA expertise**

- ❖ Audit to prepare the migration of user accounts and related information in a LDAP server
- ❖ Installation and configuration SAMBA with LDAP Sun Directory Server 5.2
- ❖ Migration from the entire NIS environment to LDAP
- ❖ Migration of Active Directory user accounts and windows shares to PCLink to SAMBA.
- ❖ Other: network and security expertise, Firewall Checkpoint NG AI expertise, DNS service and messaging systems expertise. Plan migration from Microsoft Office Suite to OpenOffice.
- ❖ **Technical environment:** Active Directory, Windows, SUN Solaris 8, 9, 10, Sun Directory Server 5.2, PCLink, NFS, NIS, SAMBA, DNS, messaging services, OpenOffice

### **REUTERS – LDAP directory monitoring**

- ❖ Design and coding an advanced LDAP monitoring application with MySQL backend, interface with existing monitoring applications. Written in KSH, then in C++. Skills transfer to the REUTERS development and support team in Bangkok
- ❖ LDAP expertise on Sun One Directory Server, and DBA with MySQL / PostgreSQL
- ❖ **Technical environment:** LDAP, OpenLDAP SDK, Sun Solaris 9 and 10, MySQL, PostgreSQL, Oracle 10g, Oracle 10g SDK, Bash scripting, NFS, Reuters internal monitoring systems

### **EIF – POC Authentication of Solaris servers on LDAP, Open Source expertise, Ipv6**

Implement UNIX authentication on Sun One Directory Server 5.2 LDAP server and IPV4 and IPV6 DNS zones on BIND DNS.

### **ORANGE – POC Authentication of Solaris and HP-UX servers on LDAP, NIS2LDAP**

POC about NIS authentication on LDAP directory across a NIS2LDAP gateway. Implement authentication of a set of Open Source products as well as UNIX authentication on Sun One Directory Server 5.2 LDAP server. Implement LDAPS and CA with certificate management.

### **Swiss Federal Court of Justice – LDAP and Open Source architecture expertise**

Implement PostgreSQL and MySQL clustered databases for IDM projects, Nagios monitoring, DNS and DHCP with dynamic DNS updates, authentication of UNIX and Windows users on SAMBA via LDAP Directory and NIS2LDAP gateway. Audit to centralize all the authentications of different environments on LDAP.

### **NOVARTIS PHARMA – Global authentication & authorization Services**

Implement UNIX authentication on Sun One Directory Server 5.2 LDAP server, in GAAS project.

### **GIVAUDAN – AIX users Authentication on LDAP enterprise Directory**

POC for AIX users Authentication on LDAP enterprise Directory. Authentication via pass through plug-in from Microsoft (Kerberos).

### **HEI – SAMBA Authencation on LDAP directory**

Implement Samba users (Windows XP and Solaris users Unix) authentication on LDAP.

### **Dimension Data, Lausanne (from February 2003 to end of 2004) :**

**As SOC (Security Operating Center) engineer, in a company of 40+ employees:**

- ❖ Work 24/7 in a security operating center, to manage security devices (firewalls, VPNs).
- ❖ **Technical environment:** Nokia Ip series, Sun Solaris, Linux, Checkpoint 4.1 to NG AI R55, Netcool, Cisco PIX and routers, Ticketing systems (Siebel), X-Tools

### **PSINet Datacenter Switzerland, Geneva (from October 2000 to end January 2003):**

**As UNIX engineer, Linux expert for a worldwide chain of data centers, more than 800 employees:**

- ❖ Design, manage and maintain UNIX/Linux based ISP infrastructures and security projects. Train datacenter employees. Design solutions for customers.
- ❖ **Technical environment:** Solaris, Veritas file systems and volumes, Big Ip F5 and Radware load balancers, Linux (Intel / Alpha based), Radguard / Nokia VPN, Checkpoint / Gauntlet firewalls, RealSecure IDS, Bind DNS all versions, Apache, Snort, Iptables, Ipchains, Tripwire, Sendmail, Qmail, Postfix, Mailman, Web technologies, C/C++, Javascript..., Micromuse, Remedy products

### **ACDM Concept, Nancy (France) (From 1999 to September 2000):**

**As Linux / Security expert in a small company of 20 employees:**

Follow-up on the development of Hyperviseur EDF project (renamed Cyberviseur), based on web technologies under Linux. Project manager. Design corporate network infrastructure, security and services, introduced X-Tools, training of the employees.

### **DECAN, Grenoble (France) (From September 1997 to end of 1998):**

Involved on various missions, mainly on Hyperviseur EDF project as main C/C++ developer, and system / network / messaging administrator of the Grenoble premises information systems.

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### **PERSONAL PROJECT FOR OPEN SOURCE COMMUNITY SINCE 1998:**

**X-Tools:** <https://sourceforge.net/p/x-itools/wiki/Home/>

This project started end of 1998 aimed to provide a set of collaborative tools to the Community, under GNU GPL license. In 2004, the new X-Tools E-mail management module aimed to provide strong log analysis of e-mail flows. In 2011, this module has been widely extended for the needs of UNICC. It's now based on web 2.0 technologies (ExtJS 4) and is renamed "X-Tools ELSE", for "**X-Tools E-mail Log Search Engine**". Some features: Log analysis and correlation of Postfix and Exchange servers, statistics, policy manager, in-deep analysis, automated network graphs for e-mail tracing, CSV export...

**Technical environment:** Linux RHEL 6.x / CentoOS 6.x, LDAP (Open LDAP), Apache, ExtJS 4.x, Postfix, Postgrey, PostgreSQL 9.x, NoSQL, PHP, JSON, Rsyslog 7.x + RELP, GCC

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## **EDUCATION AND TRAININGS:**

<i>Education</i>	2000: IFG (French Management Institute) training: project management 1996: Brevet de Technicien Supérieur en informatique industrielle
<i>Trainings</i>	<b>10/2014 : RedHat Training RH200</b> <b>02/2014 : Advanced PostgreSQL Administration 9.3</b> <b>12/2013 : Introduction to PostgreSQL Administration 9.3</b> 02/2009: ITIL v2/v3 foundation BigIp, RadGuard VPNs, Solaris SA-238 and SA-288, Checkpoint NG FP3
<i>Certifications</i>	<b>17/10/2014 : « RedHat Certified System Administrator » (RHCSA)</b> <b>10/02/2014 : « Postgres Plus 9 Associate »</b>

## **LANGUAGES:**

<i>French</i>	Mother tongue
<i>English</i>	Working language