DevOps Tools in the Finance Industry

金融行业的DevOps工具

DevOps is about changing culture and improving collaboration

between development and operations. But it is also about automating

as many of the common jobs in delivering software and maintaining

operating systems as possible: testing, compliance and security

checks, software packaging and configuration management, and

deployment. This strong basis in automation and tooling explains

why so many vendors are so excited about DevOps.

DevOps是关于改变文化和改善开发和运营之间的协作。但它也强调在交付软件和维护系统时尽可能地将日常工作自动化：测试、合规和安全性检查、软件打包和配置管理，以及

部署。强调以自动化和工具为基础解释了为什么这么多供应商对DevOps如此兴奋。

A common DevOps toolchain1 includes:

• Version control and artifact repositories

• Continuous Integration/Continuous Delivery servers like Jenkins,

Bamboo, TeamCity, and Go

• Automated testing tools (including static analysis checkers and

automated test frameworks)

• Automated release/deployment tools

• Infrastructure as Code: software-defined configuration management

tools like Ansible, Chef, CFEngine, and Puppet

• Virtualization and containerization technologies such as Docker

and Vagrant

常见的DevOps工具链1包括：

•版本控制和制品库

•持续集成/持续交付服务器，如Jenkins，Bamboo, TeamCity和Go

•自动化测试工具（包括静态分析检查工具和自动化测试框架）

•自动发布/部署工具

•基础设施即代码：软件定义的配置管理工具，如Ansible、Chef、Cfengine和Puppet

•虚拟化和容器化技术，如Docker和Vagrant

Build management tools like Maven and Continuous Integration

servers like Jenkins are already well established across the industry

through Agile development programs. Using static analysis tools to

test for security vulnerabilities and common coding bugs and implementing

automated system testing are common practices in developing

financial systems. But as we’ll see, popular test frameworks

like JUnit and Selenium aren’t a lot of help in solving some of the

hard test automation problems for financial systems: integration

testing, security testing, and performance testing.

通过敏捷开发地推广，像Maven这样地构建管理工具以及以Jenkins为代表的持续集成服务器像已经在整个行业内广泛使用。使用静态分析工具测试安全漏洞和常见的编码错误并实施自动化系统测试是开发金融系统时地常见实践。但正如我们将看到的，流行的测试框架像Junit和Selenium并不能解决金融系统的测试自动化难题：集成测试、安全测试和性能测试。

Log management and analysis tools such as Splunk are being used

effectively at financial services organizations like BNP Paribas,

Credit Suisse, ING, and the Financial Industry Regulatory Authority

(FINRA) for operational and security event monitoring, fraud analxysis and surveillance, transaction monitoring, and compliance reporting.

日志管理和分析工具，如Splunk，正被广泛使用在法国巴黎银行瑞士信贷、荷兰国际集团等金融服务机构，和金融业监管局（FINRA），用于运营和安全事件监控、欺诈分析和监控、交易监控和合规报告。

Automated configuration management and provisioning systems

and automated release management tools are becoming more widely

adopted. CFEngine, the earliest of these tools, is used by 5 of the 10

largest banks on Wall Street, including JP Morgan Chase. Puppet is

being used extensively at the International Securities Exchange,

NYSE and ICE, E\*Trade, and Bank of America. Bloomberg, the

Standard Bank of South Africa (the largest bank in Africa), and

many others are using Chef, while Capital One and Societe Generale

are using Ansible to automatically provision their systems. Electric

Cloud’s automated build and deployment solutions are being used

by global investment banks and other financial services firms like

E\*Trade.

自动化的配置管理和部署系统以及自动化发布管理工具正变得越来越广泛使用。CFEngine是这些工具中最早的一个，华尔街最大的10个银行中的5个正在使用它，包括摩根大通在内。Puppet在国际证券交易所（ISE）、纽约证交所（NYSE）和ICE、E\*Trade和美国银行等机构使用。彭博社、南非标准银行（非洲最大的银行），以及其他许多机构在使用Chef，而Capital One和Societe Generale正在使用Ansible来自动部署其系统。Electric

Cloud公司的自动构建和部署解决方案在被全球投资银行和E\*Trade等其他金融服务公司所使用。

While most front office trading systems still run on bare metal in

order to meet low latency requirements, Docker and other containerization

and virtualization technologies are being used to create

highly scalable public/private clouds for development, testing, data

analytics, and back office functions in large financial institutions

like ING, Societe Generale, HSBC, Capital One, Bank of America,

and Goldman Sachs.

Financial players are truly becoming part of the broader DevOps

community by also giving back and participating in open source

projects. Like Facebook, ING, Capital One, Societe Generale, and

several others are now open source–first engineering organizations,

where engineers are encouraged to reuse and extend existing open

source projects instead of building everything internally, and to contribute

back to the community. Capital One has open sourced its

Continuous Delivery and cloud management tools. Intuit’s DevSecOps

security team freely shares its templates, patterns and tools for

secure cloud operations, and Societe Generale open sources its cyber

security incident response platform. LMAX, who we will look at in

more detail later, has open sourced its automated tooling and even

some of its core infrastructure technology, such as the popular lowlatency

Disruptor inter-thread messaging library.