

Reporting and Analytics Solution for Next-Gen Mobile PaaS Company



Client Background

The SoftServe SAG (Software Architecture Group) is one of the largest, most experienced, and battle tested teams in Eastern Europe. In early 2013, a fast growing company approached SoftServe with a serious set of architecture and development challenges. An internal effort to refactor and port their server technology to a cloud platform had been stalled, and customer adoption for trials and platform usage was slowing down due to complexities with the existing on-premises model.

SoftServe engaged with the Client company using an experienced team of two architects; one for cloud systems and one for data warehousing. This team met the initial deadline for a proof-of-concept in just thirty days, and gained the confidence of the ISV client to proceed at full speed with a general implementation.

TIBCO SOFTWARE AND AMAZON WEB SERVICES: UNIQUELY QUALIFIED FOR THE PROJECT'S CLOUD, HIGH PERFORMANCE, AND TIME TO MARKET REQUIREMENTS

To ensure the new Business Intelligence (BI) solution for the next-generation Mobile PaaS is cost effective, high performing and scalable, the SoftServe Architecture team considered several options for a new architecture and technology stack. A number of factors led the team to select TIBCO and AWS to meet the new PaaS platform reporting requirements:

Cost Effectiveness

Web services and **Multi-tenancy** maximize savings in terms of infrastructure development and operational support. Tandem of JasperReports Server and Amazon Redshift have allowed building an extremely effective solution within shared-schema shared-db multi-tenancy scenario.

- **Capital Expenses.** Fortunately, when the team started designing the solution, TIBCO announced full support of Amazon Redshift. The combination of TIBCO and Amazon Redshift provided a number of benefits:
 - Amazon Redshift is an inexpensive data warehouse engine when compared to similar offerings in the Cloud market. Pricing consists of \$0.25 per hour with no commitments or upfront costs, or \$1,000 per terabyte of compressed data per year for a 3 Year Reserved cluster. As data compression is up to 90% for the column

oriented storages, it allowed the team to host a larger set of data for an excellent price.

- TIBCO licensing does not limit the number of tenants, number of end users, or data size. Charging for a physical server only, it is very cost-effective, and even more so with multi-tenancy by not requiring a separate server instance for each tenant.
- **Operational Expenses.** TIBCO's multiple customer support options provide an opportunity to find the optimal price/value balance. Amazon Redshift is offered as a service, with Amazon covering a significant portion of operational support efforts to keep your software up and running.

High Performance and Scalability

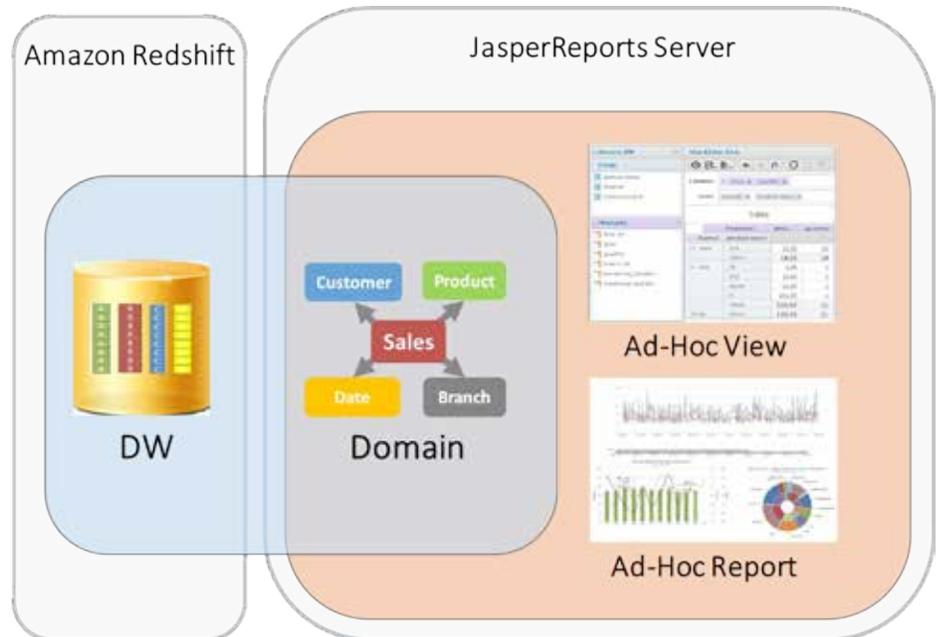
The target system criteria required a response time of less than 5 seconds per report. Amazon Redshift's column-oriented analysis and TIBCO's reporting and analytics platform exceeded these performance expectations.

Redshift demonstrates excellent performance in a multi-tenancy scenario, due to Redshift data distribution and sorting features. JasperReports Server's multi-tenancy out-of-the-box feature requires minimal implementation efforts.

In addition, Redshift multi-node architecture allows scaling up to 1.6 petabytes of storage, far beyond most typical use cases.

Self-Service Reporting

The term 'Self-Service' covers several aspects that are mainly associated with providing the end-user the ability to drag and drop business items to build custom metrics or custom reports. Such functionality was achieved primarily with the help of JasperReport Server's Domain, a metadata layer, which abstracts business items from the underlying physical data structure:



- Ad-hoc Reporting is an intuitive drag and drop report designer for non-technical users. Such functionality allows users to create custom data slices and reports and share them across other users within the same organization (tenant).
- Custom Metrics. JasperReports Server’s Domain REST API enables automatic creation and management of a metadata layer for each tenant.

Embedded Reporting

For integrating reports with the other systems, the development team relied on TIBCO application programming interfaces (APIs). TIBCO APIs are designed for easy access, rapid implementation, and application-specific customization, providing the team significant flexibility for integration with the SoftServe-developed PaaS platform.

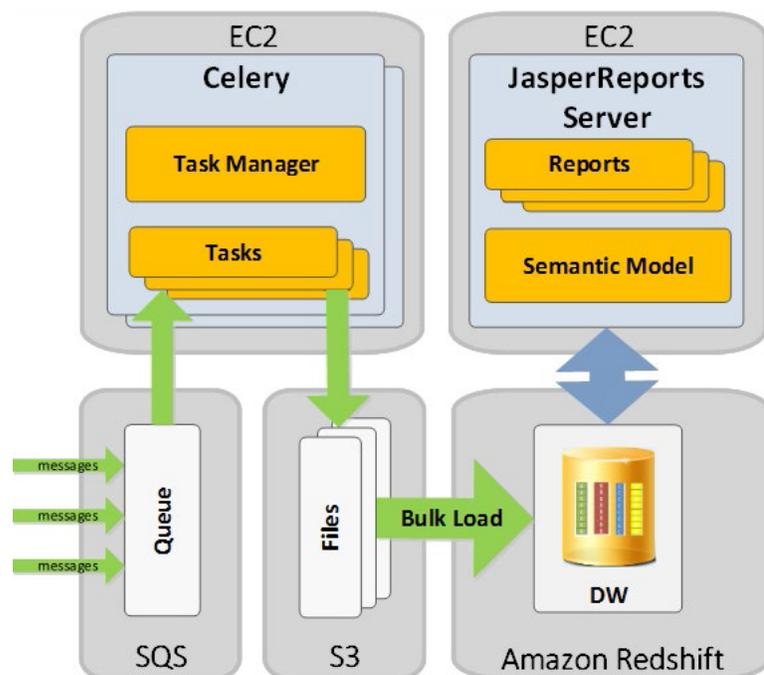
The SoftServe development team also took maximum advantage of the out-of-the-box features to meet the demanding six-month time-to-market goal. “TIBCO APIs, particularly RESTful services, allowed us to quickly and easily integrate reporting with the other services running in the system, also we leveraged multiple features of TIBCO to accelerate our efforts, including built-in configuration

capabilities, the import/export of repository, tools and components for ad-hoc reporting”, said Taras Bachynskyy, SoftServe Data Architect.

SOLUTION ARCHITECTURE: BLENDING AWS PLATFORM SERVICES WITH TIBCO AND THIRD-PARTY FRAMEWORKS TO BUILD A BEST-OF-BREED SOLUTION

Using the deep set of middleware and third-party tools, the SoftServe architecture team was able to create an extremely cost-effective, high-performance, cloud-based reporting and analytics solution for the next-generation PaaS by blending AWS and third-party services. The architecture highlights include:

- High-volume intra-platform messaging using Amazon SQS
- Celery and Redis for distributed tasks management and multiprocessing
- Amazon Redshift and TIBCO Reporting Platform for data warehousing and reporting
- Integration with other SaaS based systems.



End-user devices and back-end services send millions of messages into Amazon SQS Queues. Celery workers – a group of EC2 instances that asynchronously execute validation, transformation and data loading tasks – processes these messages and loads them into Amazon Redshift through Amazon S3. The processing flow is organized into a chain of distributed tasks managed by Celery workers and stored in Redis. Such architecture has great scalability and high availability. Celery workers group continuously processes messages into Redshift, so a user can analyze data in near real-time using JasperReports Server reports and ad-hoc views exposed through web portal UI.

Ultimately, the development team from SoftServe, led by two full time architects, delivered the next-generation solution in an incredibly short period of time, through dedicated efforts, effective collaboration, and great ingenuity and innovation with the very latest tools and techniques in cloud-based software development.

“SoftServe has been TIBCO’s partner since 2013 and has profound knowledge of TIBCO’s offerings as well as our multiple customer support options. That makes SoftServe an ideal partner able to recommend the optimal price/value balance to enhance system performance and fine tune any TIBCO configuration that a company might use,” said Paul Kochanski, Global Channels Director **TIBCO Jaspersoft**.

ABOUT SOFTSERVE Inc.

SoftServe, Inc. is a leading global software application development and consulting company. We immerse ourselves in our client's business and relentlessly focus on providing technology solutions that create tangible business value. Our robust competencies include business and technology consulting, software optimization, SaaS/cloud, Mobile, UI/UX and BI/Analytics for vertical markets such as healthcare, retail and high tech.

SoftServe developed Abiliton, a set of adaptive best practices and processes for software development optimization comprised of people, processes and technology. Abiliton ensures predictable, repeatable results and faster time to market, positioning businesses for scalable growth.

With over 20 years of industry excellence, SoftServe delivers rich user experiences, intuitive products and solutions providing our clients with a strong competitive advantage. Our offices are located in North America, Europe and Russia.

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