Next Generation Microservices-based Data and Analytics Solution

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Agenda

- Business Problem
- Our Solution
- Benefits & Features
- Technology Landscape & Architecture
- Demo
Impact of Big Data & Analytics

40% of companies worldwide analyze big data.

8% Increase in revenues.

10% Reduction in costs.

50% Applications used by Fortune 500 organizations are already on the cloud.

10% Healthcare professionals use advanced data analytics tools.

The biggest impact areas of big data was in customer relationship management.

Research by Forrester.

Survey by BARC.

Survey by KPMG.

Survey by IDG.

There will be a rise in demand for analytics tools that are simple, flexible, and capable of handling a variety of data sources.

A large American bank is using sophisticated predictive models to analyze historical transactions and 115 variables to forecast customer churn. The company believes it can now accurately identify 24% of accounts within its Australian branch that will close within the next four months and can take required steps to prevent them from churning.

A large local bank by market capitalization in Singapore that operates in 15 countries worldwide was able to achieve higher customer engagement and increase customer satisfaction by 20% compared to a control group. The bank was able to benefit by responding to the customer actions, personal lifetime events, and demographic profiles.

Analyzing big data helped a large printer manufacturer to cut the attrition rate at their call centers by over 20% – a significant and tangible financial saving.
Business Problem

Different marketing units working in silos and unavailability of social media profile of a customer created a half-matured marketing engine, unsatisfactory customer experience and loss of business opportunities.

Roadblocks for business were:
- Unfocussed marketing efforts
- Disparate Business Intelligence units
- Unconsolidated data & inaccurate insights
- Extended cycle time to process data
- Lack of coordination between big data teams
- Dependency on legacy systems to process data
- Non-standard governance process for data

Reasons for unsatisfactory customer experience were:
- Unsolicited promotions/offers
- Spam emails/multiple communication
- Brand loyalty benefits not streamlined
- Slow complaint resolution
Our Solution

A **Microservices-based** Big Data and Analytics solution that will help you to understand your customer better. It is based on the **Hybrid Cloud** and **Container Framework**. It will provide a unified view about your customers by blending their transactional and digital profile. You can gain **deep insights** about your customer, through a single platform.

✓ Blends customer’s digital and transactional persona
✓ Shows real-time dashboard view
✓ Tracks customer’s digital foot prints and identifies hotspots for cross/up sell
✓ Forecasts future trends, sends alerts, notifications, and initiates call for actions
✓ Captures customer information through Clickstream, survey, email content and social media analytics
✓ Determines Next Best Offers (NBO), Next Best Actions (NBA) and Next Product to Buy (NPTB) models
Benefits

✓ Creating better customer experience
✓ Improved lead generation & customer service
✓ Reduced marketing & service cost
✓ Increased ROI by data driven offerings & targeted marketing
✓ Better and informed decisions
Benefits

✓ Powered by **Red Hat OpenShift Container Platform**, it provides consistent application development and deployment platform for **hybrid cloud**.

✓ Enterprises can leverage **Agile** and **DevOps** methodologies and technologies leading to **accelerated time-to-market** for new applications and services.

✓ It is a **Microservices-based** application architecture. Enables dynamic scaling requirement of the enterprises.

✓ Improved Agility & Scalability—through **pay-as-you-go cloud based model**.

✓ Increased profitability by leveraging data-driven insights to **expedite decision-making**, increase focus on **customer-centric business processes**, and maximize **customer lifetime value**.

✓ The solution harnesses an Open Source centric and continuous innovation led architecture around **Cloud and Machine Learning** and is **relevant for all industries** across both horizontal as well as industry micro-vertical specific use cases.
Features

**Machine Learning, Advanced Predictive Analytics & Recommendation System**

Allow organizations to analyze and correlate data generated at every stop of the customer’s journey. The collected information can be accessed and analyzed at any given time, to gain systematic understanding of the customer’s sentiments. It will help to streamline operations by predicting consumer behavior and reduce churn through Advanced Predictive Analytics and Recommendation Systems.

**Advanced Dashboard**

A single dashboard will provide all business KPI’s. It will be able to send alerts, notifications and initiate call for action.

**Ready framework for Data Ingestion & Management**

All the data from core applications and social media channels will be collected automatically. Data will be governed by automated and mandatory metadata management system.

**Security & Controlled Access in real-time**

The solution will offer role based user access to the applications. It will provide secured remote login and encrypted communication between the client and the applications.

**Easily integrated system, on the cloud**

Now you will be able to schedule jobs, provision and manage data with an easily integrated system. It will allow you to make choices about Private vs Public Cloud in terms of Data Residency and still have consistent developer and business user experience.
Business Drivers

Data Sources
- Structured Data
  - CRM Data
  - Core Banking
  - Operational Data Store
- Unstructured Data

Solution Capabilities
- Multidimensional view of the customer
- Social Media Channel Analytics
- Metrics, Dashboards, Root Cause Analysis
- Predictive Marketing Models

Business Drivers
- Improve Data Driven Approach
- Improve Customer Retention
- Drive Customer Satisfaction
- Drive Customer loyalty
Technology Landscape

**Red Hat Suite of Products**
- OpenShift Container Platform
- JBoss Data Virtualization
- JBoss AMQ
- Cloud Mgmt. & Automation
- Red Hat Operations Network
- Ansible Tower
- 3-Scale AMP
- GlusterFS

**Other Tools / Software**
- PostgreSQL
- MongoDB
- Python
- Apache Spark
Architecture

Data Ingestion Layer
- Clickstream
- Social Media
- RAW
- Files
- Surveys
- Emails
- RDBMS

Data Processing /Storage Layer
- Red Hat JBoss A-MQ
- Real-time Processing
- S3 API
- Batch Processing
- Red Hat JBoss Data Grid
- Red Hat JDV
- 3 Scale
- External BI Tools
- JDV BI Interface
- Applications
- Postgres SQL
- Scheduler

Batch Mode
- OpenShift CLI

Real-Time
- Streaming Mode

Batch Mode
- Red Hat JBoss DV

RDBMS
- Clickstream
- Internal BI Tools
- External BI Tools
- Applications
- Postgres SQL
- Scheduler

Social Media
- Emails
- Files
- Surveys

Red Hat
- JBoss
- A-MQ
- DV

Red Hat
- JBoss
- Data Grid
- JDV

Spark
- Streaming
- SQL
- MLLib

DevOps Tools
- Ansible
- Tower
- CloudForms

Scheduler

#redhat #rhsummit
Use Case
Can I get information across all the Customer touch points?

Is it possible to get better insight from introducing Customer feedback along with Operational data?

Will it be possible to provide futuristic view for some key business indicators?
Aaron is a long-term customer of the bank, with multiple accounts. He likes the convenience of online services but becomes frustrated when things don't work as easily or as quickly as he'd like. In such cases, he browses through other Bank’s site to get better option. He doesn’t hesitate to drop a mail to the customer service or write comment on Bank’s social handler/ page when he has a problem and has done so on a couple of occasions in the last month.
Can I get information across all the Customer touch points?

Is it possible to get better insight from introducing Customer feedback along with Operational data?

Will it be possible to provide futuristic view for some key business indicators?
After 2 attempts to complete his bank's online Personal Loan application, Aaron gives up and drop mails to Customer service and write comment on Bank’s social handler/ page. Through his segmentation analysis, the Portfolio Manager finds out Aaron's demographic, transactional, social, clickstreams and other behavioral data points and able to see his failed attempts to submit his Personal loan application; he also sees that:

• Aaron recently dropped mail to Customer service as well as lodge complaint through social media about difficulty with other online services

• Browsed on web platform on Personal loan of other Banks' and compared the rates
The combined issues alerts the Portfolio Manager that Aaron's satisfaction score has declined as well as Churn Propensity has increased which gives an alert that Aaron may be a high Churn risk. At the same time, Portfolio Manager also sees that Aaron is a high-value Customer and is prompted on-screen to escalate Aaron's complaint to accelerate issue resolution.
Next Best Offering

i. Connect Aaron via video chat to one of Bank's Personal Loan officers to complete his Loan application without any further difficulty

ii. Uncovers new customer insight by analyzing web behaviors, which helped guide development of more personalized offers and marketing outreach
Demo - How we achieved this?
Sentiment Analytics – Twitter

Twitter API

User Details

GlusterFS

Sentiment Calculation

Read Properties From GlusterFS

Write Twitter Sentiments and Details in GlusterFS

mongoDB

PostgreSQL

ANSIBLE TOWER by Red Hat
Sentiment Analytics – Email

Email API

Sentiment Calculation
- Natural Language Analyses with NLTK
- Write Email Text data into GlusterFS
- Read Properties and Email Text data from Gluster
- Write Email Sentiments and Details in Gluster

GlusterFS

PostgreSQL
Sentiment Analytics – Customer Surveys

- PDF to Text
  - Read PDF file from GlusterFS
  - Write Text to GlusterFS

- Sentiment Calculation
  - Read Properties and PDF Text data from GlusterFS
  - Write Email Sentiments and Details in GlusterFS

- GlusterFS

- Landing Zone (PDF Files)
Data Integration

- Customer Profile
- Customer Transactions
- Email Sentiment
- Survey Sentiment
- Twitter Sentiment

Red Hat JBoss Data Virtualization

OData
Q&A
THANK YOU

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