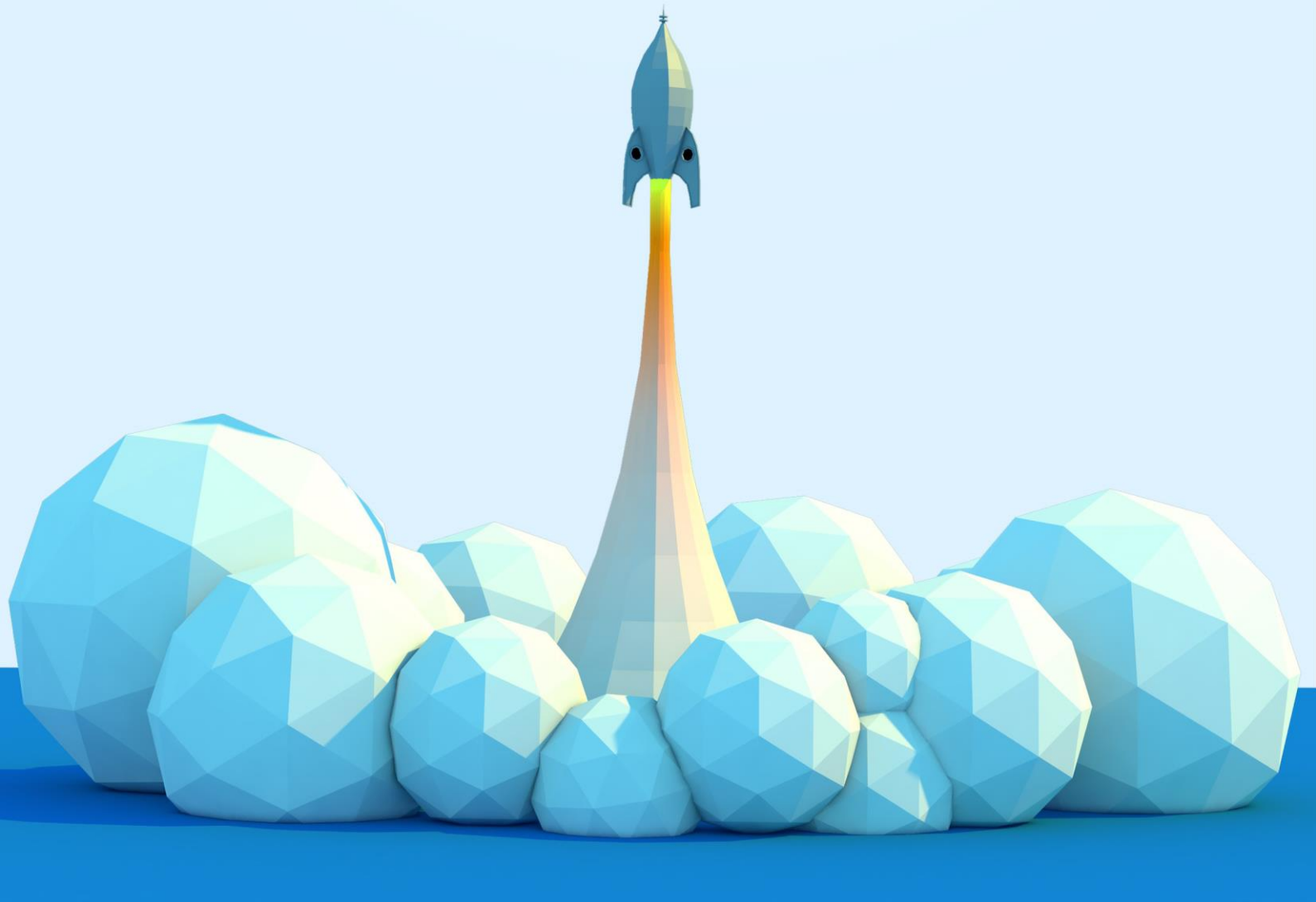
Scope of Work & Proposal
for
Consolidated Mass Notification Platform

Go Beyond The Parameters

V1.0.3



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1 Company Profile

Zincat was found in 2010 offers diversified IT Business solutions from its initial stage up to now, such as Web design, Mobile application, Enterprise Resource Planning development, IT Security. With end-to-end, integrated, cloud-based platform that enables enterprises to quickly design, build, test, deploy and manage multi-channel app experience. Thanks to competent business practices, professional management, and creative and technical teams, in a short time, Zincat successfully acquired many projects.

Not only for IT solutions, we have extended our services for resource outsourcing for third party companies also. Our professional staff is utilized to explore the projects of the partner companies with the quality and success of the projects.

We are a healthy company due to attention to work efficiency, training of employees and our modern service software, choice of business activities, sales, pricing etc.

As an independent organization we possess the know-how for all ICT and Consumer Electronic products. Our knowledgeable employees, our advanced service methods and the direct availability of a whole range of components form the solid basis on which we operate.

Zincat today is,

- 150+ Highly professional technical experts;
- Experienced management team- four specialists that have a extensive experience both in IT and business;
- Back office providing successful support of the main company operations;
- Thorough development process with internal quality standards;
- Extensive knowledge base of developed solutions and methods and;
- Acquired more than 500+ projects for more than 120 clients.

2 Main Goal

The goal of this proposal is to convert the tables belongs to the module of SMS & SMTP in Oracle database format to PostgreSQL database format & bring all the Distributed Communication Medias to a Single Manageable Messaging Platform.

3 High-level Business Functionalities

The high-level functionalities identified at the initial stage or requirement gathering are as follows:

The communication channels considering when providing the overall solution are;

1. SMS
2. Email – SMTP (One way)
3. USSD Notifications - Unstructured Supplementary Service Data
4. Flash SMS
5. DTV (Dialog Television) – Tele Text and Tele Mails
6. Push Notifications (Dialog Self Care Mobile App & Etc.)

3.1 SMS

Two types of Short Messaging Services (SMS) recognized as to handle via the system.

1. High Priority SMS which need to deliver as soon as possible based on the queue & demand
2. Low Priority SMS which need to deliver during 7 AM and 6 PM on each day (Do not Disturb SMS)

Both Individual SMS and Bulk SMS are manages by adhering the abovementioned SMS types.

Regarding the requirement SMS are further classified as;

1. Static SMS - which sends the message content as per the triggered request straightly
2. Dynamic SMS - which sends the message by ~~(replacement flags)~~ substituting values to the parameters in a Dynamic Message Template.

   E.g.: Set Parameterized Data (Bulk Data)
   X = Rs. 100.00
   Y = 20/3/2020

   Pass the set Bulk Data via a Dynamic Message Template to individual receivers.
   Your balance is Rs. 100.00 as at 20/3/2020 date.

For SMS destination Blacklist will be arranged based on maintaining the data with the system. The numbers which are in the Blacklist are not receiving SMSs send via any communication channel.

Development and implementation of the suggested component supports the following functionalities of One CRM.

1. To create SMS Templates for Dynamic Messages
2. To create Blacklisted Number Lists
3. To push an Individual SMS
4. To push a Bulk SMS (Upload via a CSV format with given fields & templates)

3.2 Email – SMTP (One way)

Emailing service is handle by the system so that the system users can push emails using all the provided communications methods including frontend & backend.

The emails will be send through a provided Individual Email SMTP server by the Client.

A frontend option provide in One CRM to cater Individual & Bulk Emails service.

Users are able to add the emails in a list,

As coma separated emails or else

Line by line as one email at a time.

- NOTE: No any CSV file uploading facility provide for the purpose of sending Emails other than the One CRM frontend.

3.3 USSD Notifications - Unstructured Supplementary Service Data

USSD messages are also handle by the module provides; such that all the messages will be push to the relevant customer party based on the passed request.

System develops no any Frontend to cater the USSD communication channel; only Backend Services are calling for the API directly along with the all relevant validation criteria.

3.4 Flash SMS / Push Up notifications

The above contents also will handled by the common platform for communication.

4 Communication Channels & Data Management

Communication

The component to be developed, is going to communicate with the users and the related systems via following communication approaches;

1. Frontend UIs in One CRM
2. Backend APIs for direct app calls

Data Management

The history of all transactions will be kept in the system for 90 days, from the day which the original transaction occurred. After that the data will be flushed from the main tables after archiving based on the rule that is requesting.

Other

- The application develop as to support Unicode which is capable of handling, sending SMS in main three languages (Sinhala, English & Tamil) & most of other languages.
- Email Attachments are not store in the server after completing a successful send/receive cycle (successful email receive).
- No any re-try option develop; since the re-tries are handle under most of endpoints

5 Reporting & Monitoring

A reporting & monitoring frontend provide along with the application as to monitor all the services while previewing failed or success details.

User will be able to filter data retrieved from the backend by Date Range, Mobile Number, Success or Failed Status & Delivery Time.

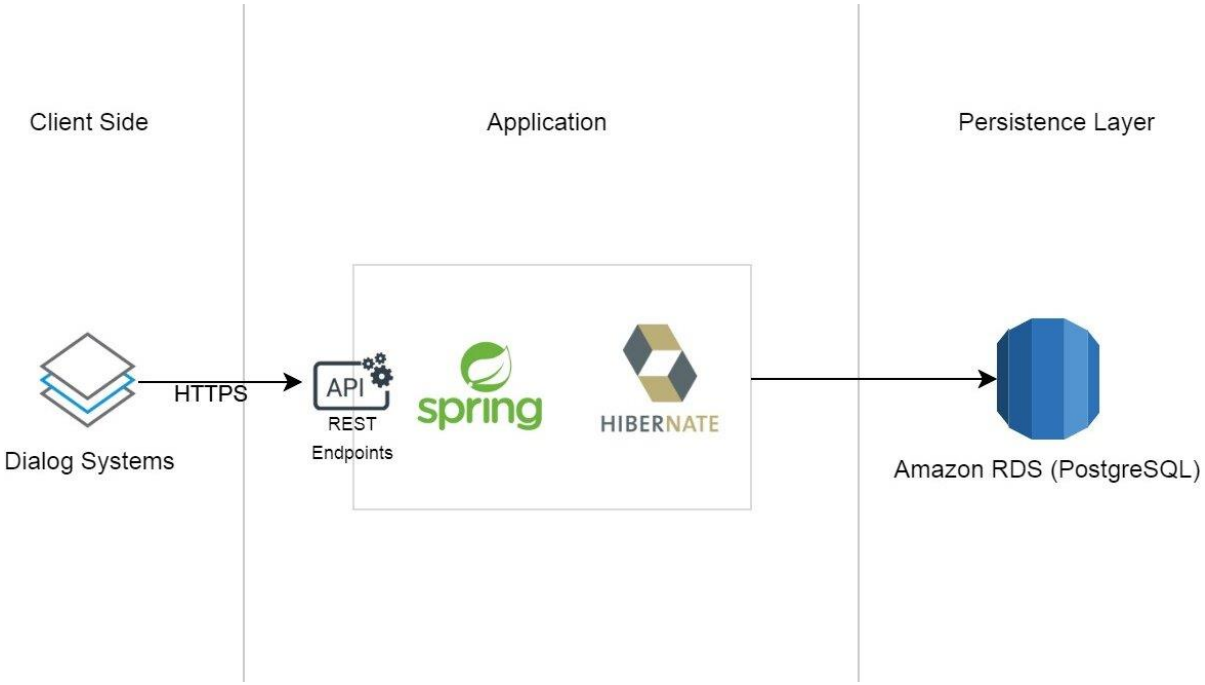
Report Types

1. SMS Report
2. Email – SMTP Report
3. USSD Notifications - Report
4. Flash SMS Report
5. DTV Report
6. Push Notifications Report

6 Existing Architecture

Current messaging functions are handled by the individual systems calling given gateway endpoints directly. The proposed system will unify messaging in a centralized location.

7 Proposed Architecture



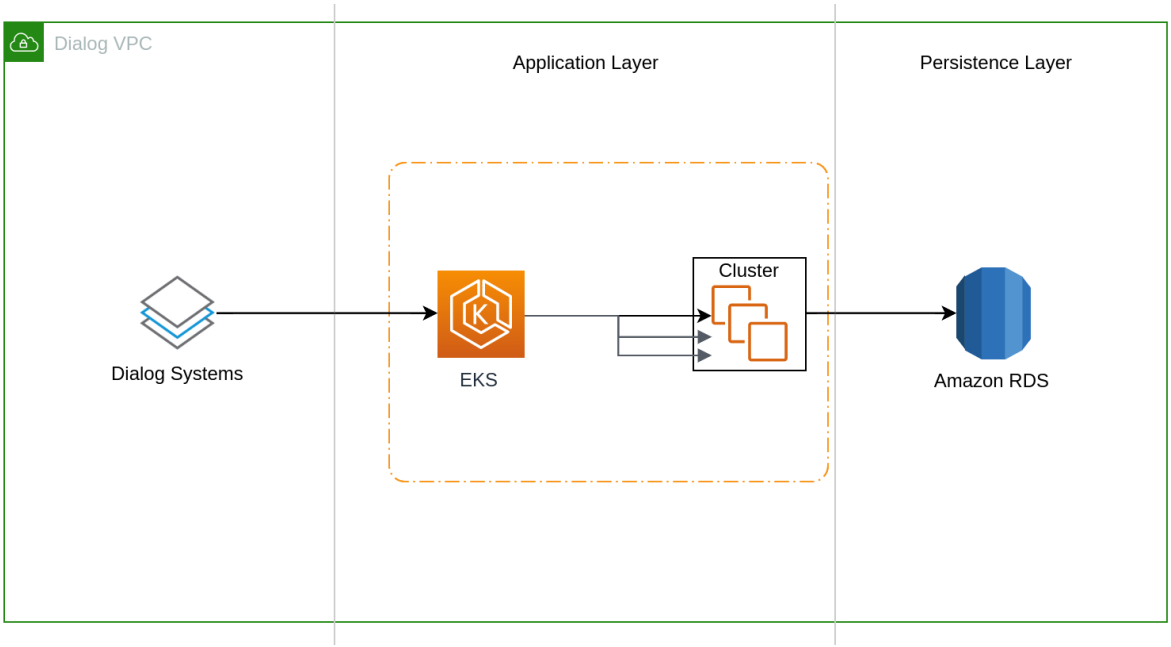
The Backend develops in Java Spring Boot. While all the related data stores in a PostgreSQL database.

The system develop as to support Docker Containers and Cloud Hosting such as AWS, Azure, etc. HTTPS will be used for all API calls with JWT tokens for API authentication. To make sure high availability Amazon RDS Multi-AZ deployments are used to create a standby instance as backup in case of a failure to maintain the availability of the databases.
Cloudwatch is to be used for monitoring AWS services along with logz.io or goaccess.io for application monitoring. If another monitoring tool that is already used in Dialog needs to be integrated we are able to do that as well.

Any generated files which need to be retained will be stored securely in a S3 bucket and removed based on the given purging policy.

The final APIS will be deployed in MIFE platform. The system will be developed under the guidance of below security aspects & guidelines,
1 - NIST Cybersecurity Framework - Secure SDLC
2 - NIST Cybersecurity Framework

8 Proposed Cloud Deployment Architecture



Above diagram is a illustration for the cloud deployment architecture.

The approximate cost for Cloudwatch, RDS PostgreSQL, EKS with 2 nodes is $516.45 / month.

For EKS with 1 node the approximate cost is $426.20. This cost estimation may vary depending on usage and future changes to the components.

For further calculation please refer below link,

https://calculator.aws/#/estimate?id=16c953599c0c0de4fe06ba9b421e26c43c904281

EC2 hardware specs for the suggested "t3a.xlarge" instance,

- CPU: AMD EPYC 7000 series, 2.5 GHz
- vCPU: 4 cores
- RAM: 16 GiB
- Network burst bandwidth: 5 Gbps
- Attached Elastic Block Storage volume: 30GB

9 Deliverables for the Development & Copyright

Below list of deliverables in the development life cycle.

- Source code
- SRS
- Architecture/Design documents (include security & other all nonfunctional related details)
- API specification (Swagger)
- Deployment guide
- System operation manual
- AWS cloud estimate

Test Deliverables:

- Test Queries
- Test Cases
- Test Summary Report
- Automation Scripts
- Load Test Reports

All Intellectual Property (IP) Rights of the Software Solution will be with Dialog Axiata PLC.

10 Technologies and Tools

Following are the technologies and tools use for the Oracle to PostgreSQL database conversion.

- PostgreSQL
- Java Spring Boot
- PostgreSQL
- GIT
- IntelliJ IDEA
- SonarQube

QA Tools:

- Postman
- SoapUI
- SQL Developer
- JMeter
- Selenium
- TestLink
- Mantis Bug Tracker

11 QA Plan

Categories to be tested:

Categories to Test	Test Description
API Functional Test	Check whether the API functionalities work properly or not (Postman/SoapUI)
Performance Test	Test the throughput, response time and load handling of the APIs
Regression Test	Check existing system's affected areas for stability
Database Test	Test the database for performance and responsiveness
System Integration Test	Test the module against other connected systems for stability

Test Approach/es:

- Database migration integrity testing – (Speed of database operations, access to database records, elimination of redundant and unneeded record)
- Validation of Database migration
- Size test (duplicate data in any table, excessive field width in any table)
- Speed test (run the queries individually purpose of checking the speed)
- Manual testing based on test cases
- Automated testing based on test cases
- Performance testing
- User acceptance test
- Final sign off

NOTE: Validation of the data migration is not included in the scope of work to be performed by the QA team of Zincat.

12 Time Plan

The time plan allocated for the initial iteration of the project is follows:

Development Starts on :	4th May 2020
Development Ends on :	26th June 2020

13 Roles and Responsibilities

Below mentioned number of resources will be allocated for the project.

Role	Count
Project Manager/s	1
Business Analyst/s	1
Senior Software Engineer/s	2
Software Engineer/s	2
Senior Quality Assurance Engineer/s	1
Quality Assurance Engineer/s	1