SECURE ONLINE BANKING WITH BIOMETRIC FINGERPRINT RECOGNITION

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ABSTRACT

Business Process as a Service (BPaaS) is an emerging type of cloud service that offers configurable and executable business processes to clients over the Internet. As BPaaS is still in early years of research, many open issues remain. Managing the configuration of BPaaS builds on areas such as software product lines and configurable business processes. The problem has concerns to consider from several perspectives, such as the different types of variable features, constraints between configuration options, and satisfying the requirements provided by the client. In our approach, we use temporal logic templates to elicit transactional requirements from clients that the configured service must adhere to. For formalizing constraints over configuration, feature models are used. To manage all these concerns during BPaaS configuration, we develop a structured process that applies formal methods while directing clients through specifying transactional requirements and selecting configurable features. The Binary Decision Diagram (BDD) analysis is then used to verify that the selected configurable features do not violate any constraints. Finally, model checking is applied to verify the configured service against the transactional requirement set. We demonstrate the feasibility of our approach with several validation scenarios and performance evaluations.

Keyword: - *Business Process as a Service, executable business processes, temporal logic templates, Binary Decision Diagram, transactional requirement set, model checking.*

1. INTRODUCTION

In recent years, cloud services have had dramatic impacts in both the research and industry landscapes of service-oriented computing. Cloud computing has become a popular paradigm for delivering a wide range of services, such as software applications, computing capacity, storage, and virtual platforms. Cloud service providers can offer these utilities to clients over the Internet in a pay-by- use manner. The distinctive properties of cloud services include: On-demand availability through public or private network access, most commonly the Internet. Utilization of pooled resources such as servers applications, CPU time, or storage. Dynamic response to workload by elastically provisioning and releasing resources. Configurability of service behavior of properties to meet individual client requirements .The traditional hierarchy of cloud service types is comprised of three layers, where each layer can provide the base (infrastructure or platform) for running services within the layer above. Infrastructure as a Service (IaaS) is the bottom service layer, providing access to virtualized physical resources, such as storage and computation capacity. Computing capacity offered by Amazon EC21 or IBM SmartCloud Enterprise+2 are examples of IaaS offerings. Platform as a Service PaaS) provides access to utilities such as software development and hosting frameworks. For example, Google App Engine3 and Microsoft Azure4 both contain PaaS features for web application development and hosting.

Finally, Software as a Service (SaaS) are software applications deployed in a way that is Internet accessible, automatically scaling, and multi-tenant. SaaS enables clients to remotely use software complex systems, such as customer relationship management through Salseforce5. A proposed fourth layer of the cloud service architecture residing above SaaS has been in the form of Business Process as a Service (BPaaS), which has had increasing research interest in recent years . The driving idea behind BPaaS is to mash-up services from numerous providers into a business process structure, which can then be offered to clients as its own service. BPaaS providers will naturally target common or proven business processes that apply to a large potential market, or require management of several complex components. This is appealing to clients as it provides a low-cost, low-risk outsource option for integral business operations. An abstract example that demonstrates the structure and variety of services and resources that a BPaaS can utilize. In this example, the BPaaS is composed of heterogeneous component services from the service provider and third parties.

Two SaaS services (i.e., SaaS 1 and SaaS 2) used by the BPaaS are hosted and managed by the same provider. Private internal software exclusive to the BpaaS is also required. Two of the SaaS services are from external sources - SaaS 3 is from a third party, while SaaS 4 is another service of the BPaaS provider, but hosted on an external PaaS. Configurability is a key property for BPaaS, similar to all services in the cloud hierarchy.

We propose a three-step configuration and verification process which relies on a modeling paradigm. Such paradigm allows us to capture transactional requirements and subsequently verify them. Our approach is expressive and relatively easy to use by stakeholders, while at the same time being sufficiently rigorous to allow us to apply formal methods for verification.

1.1 LITERATURE SURVEY

In this paper we survey existing work in these areas and identify gaps in existing cloud technology in terms of the verification tools provided to users. We also discuss challenges and new research directions that can help bridge these gaps.

A. Ghalsasi et al., [1] proposed work on strengths, weaknesses, opportunities and threats for the cloud computing industry. In this system the business perspective of cloud computing is described.

M. Kapurugeet.al., [2] proposed an approach to evolve service-based SIMT SaaS applications that are developed based on Dynamic Software Product Lines (DSPL) with runtime sharing. The different kinds of changes to a service-based SaaS application is identified. Then the management of each change and its impacts in DSPL is discussed.

R. Boutaba et al., [3] this project concentrates a better understanding of the design challenges of cloud computing and identify important research directions in this increasingly important area.

B. Zhang et al., [4] this paper concentrates on modeling the evolving SaaS based on Reflective Petri Nets, define the base-level and meta-level model

2. PROPOSED SYSTEM

The architecture comprises of five modules, which serve the following purposes:

Client Interface: This provides an interface for BPaaS clients to configure services according to our configuration process.

Configuration Controller: This controls the steps of the configuration process as shown. It also handles configuration of BPMN models and feature model interpretation.

Verification Controller: The steps to implement temporal logic templates and reduce the BPaaS model to a minimal Kripke structure are handled by this module.

BDD Analysis: The JDD library is used by an interface in this module to verify that a selection of features does not violate the domain constraints.

Model Checking: This is a wrapper for the NuSMV model checker that handles input parsing, invocation, and output interpretation.

RGB Finger print Matching Algorithm used to match the user's finger print for checking whether the user belongs to his/her account.

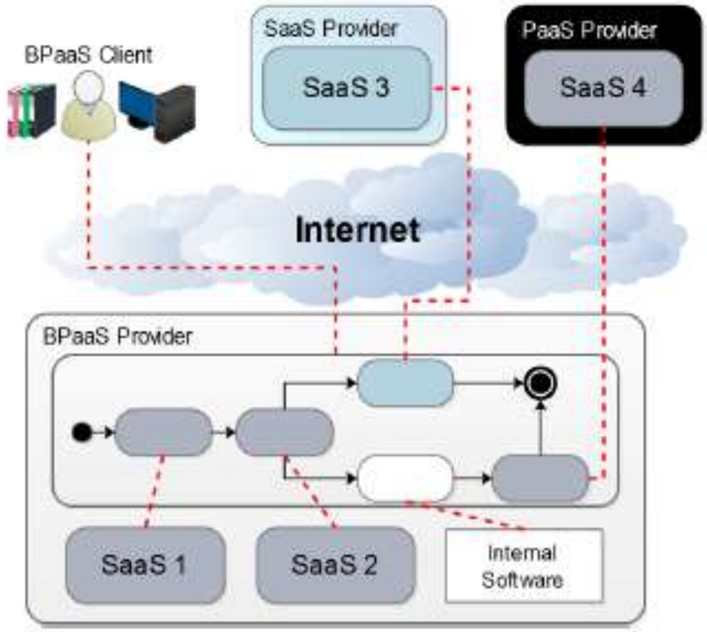


Fig -1:system architecure

3. IMPLEMENTATION

Admin:

1. Create a New Account for customer or users
2. Upload products
3. View all uploaded products
4. View all users report
5. View users details

Admin needs to login with username and password. After login he has to create account for customers. All the products are uploaded by admin. And he can view all uploaded products. He can maintain the all user reports.

User:

1. Login
   1.1. Fingerprint verifications
   1.2. OTP Verification
   1.3. User Name and Password Verifications
2. Create New Bank Account
3. Do Deposit
4. Do Withdraw
5. Mobile Bill (Mobile Recharge)
6. Get Balance (Check Balance)
7. Transfer Amount
8. View Report
9. View Products
10. Logout

User firstly register before login, after login following steps should be done,

1. Fingerprint verification
2. OTP Verifications
3. User Name and Password Verifications

User needs to create bank account, he can able to deposit and withdraw money. And he can do Mobile recharge as well. Check his/her account balance. Transfer money from one account to another account. By using this application, user can view all products which was uploaded by admin. Buy the products by using his/her bank account. After that amount will reduce automatically from user account.

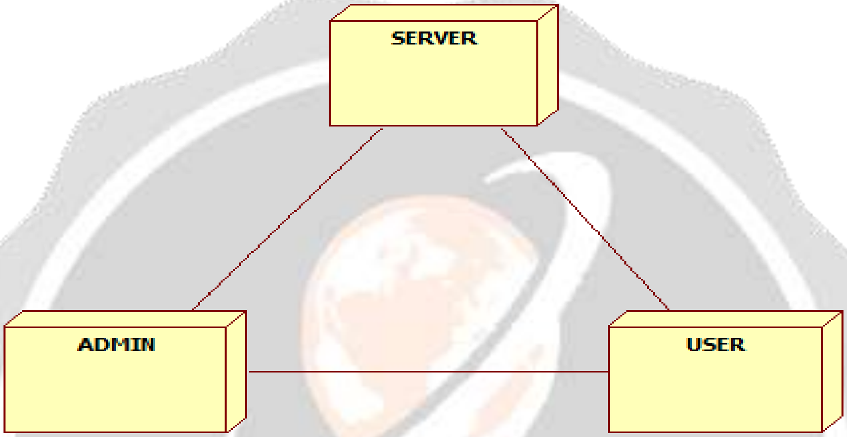
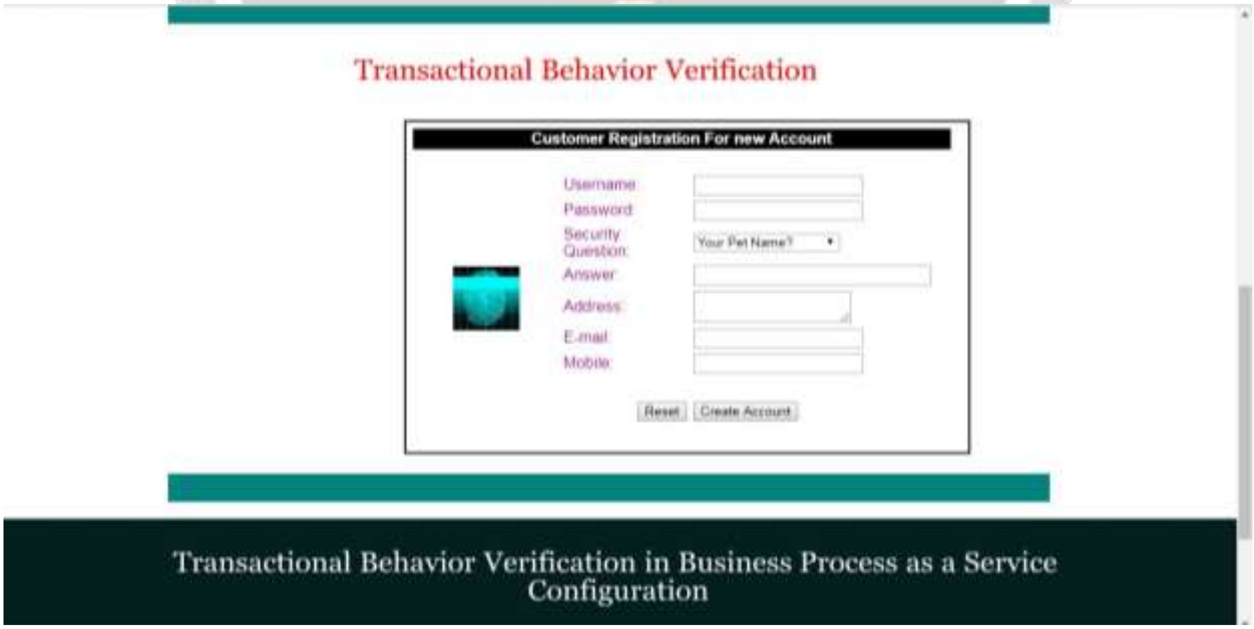


Fig -3:module description



Transactional Behavior Verification

Customer Registration For new Account

Username

Password

Security Question: Your Pet Name?

Answer

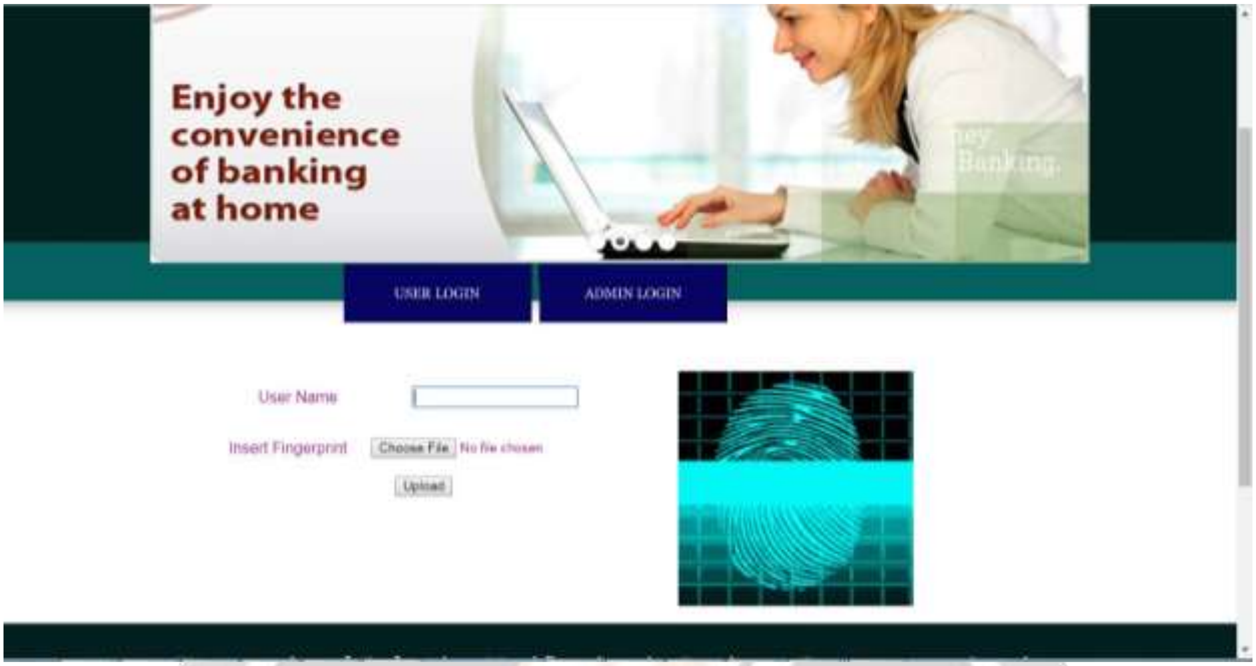
Address

E-mail

Mobile

Transactional Behavior Verification in Business Process as a Service Configuration

Fig -4:registeration page

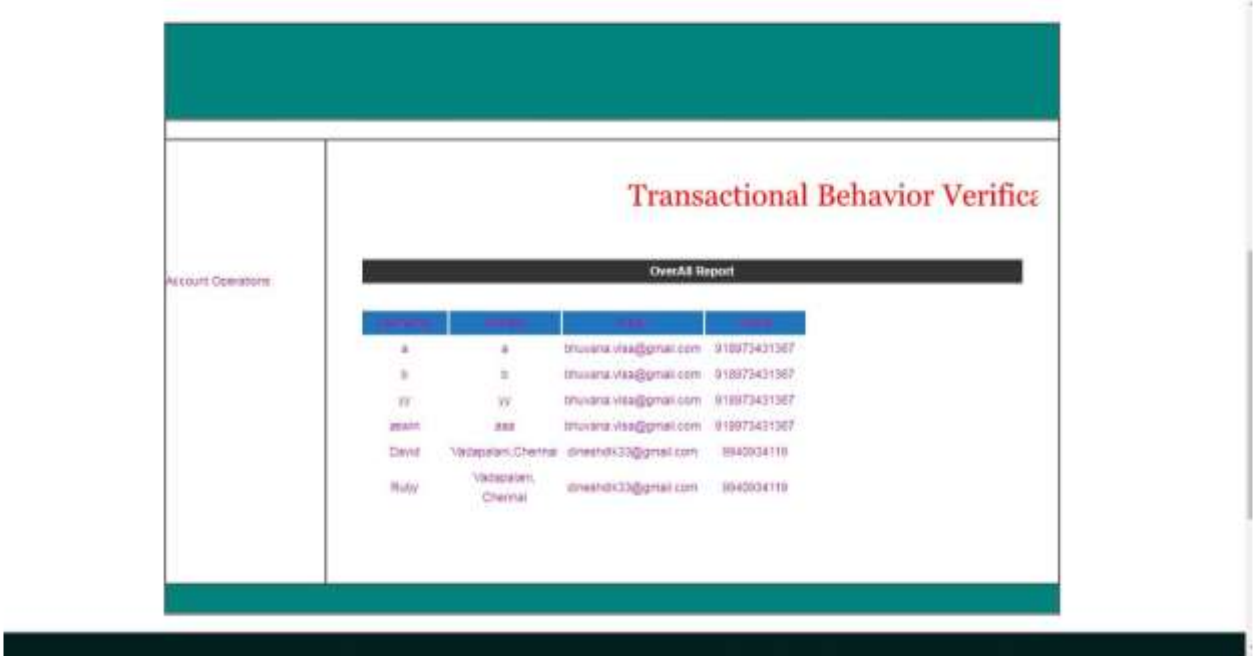


User Name

Insert Fingerprint Choose File No file chosen

Upload

Fig -5:login page

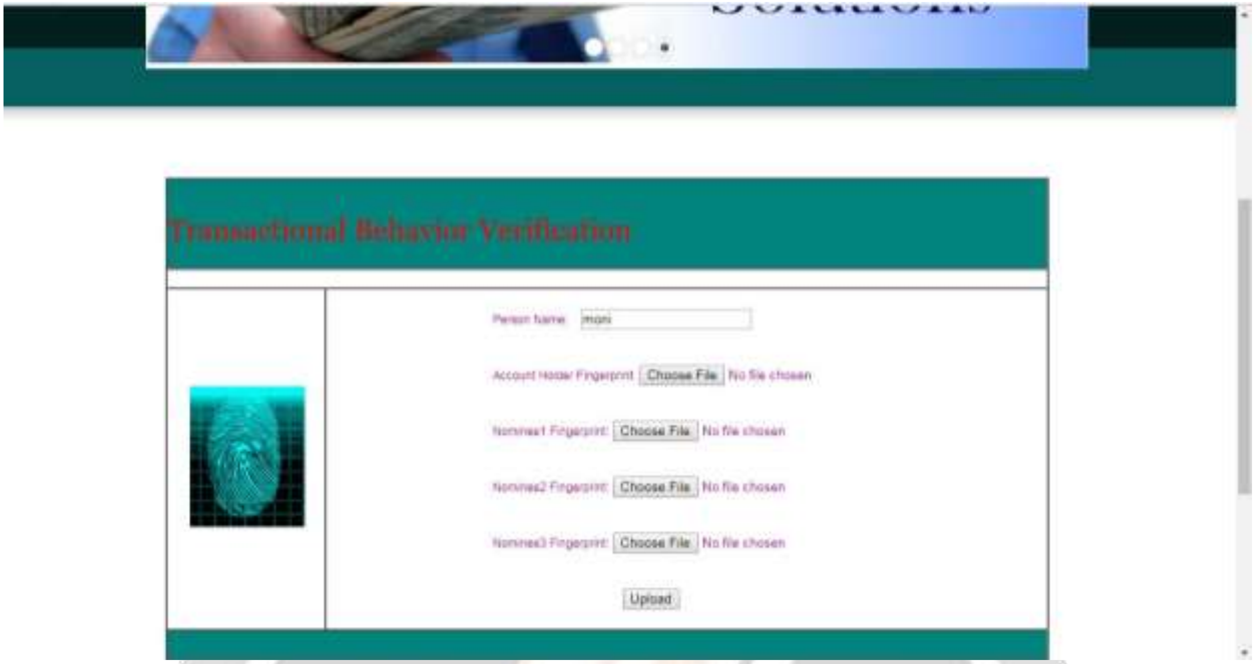

Transactional Behavior Verifica

Account Operations

OverAll Report

[illegible]	[illegible]	[illegible]	[illegible]
a	a	bhuvana.visa@gmail.com	918973431367
b	b	bhuvana.visa@gmail.com	918973431367
yy	yy	bhuvana.visa@gmail.com	918973431367
aaaa	aaa	bhuvana.visa@gmail.com	918973431367
David	Vadapalani,Chennai	dineshdk33@gmail.com	9940934118
Ruby	Vadapalani, Chennai	dineshdk33@gmail.com	9940934118

Fig -6:person details


Transactional Behavior Verification

Person Name: moni

Account Holder Fingerprint: No file chosen

Nominee1 Fingerprint: No file chosen

Nominee2 Fingerprint: No file chosen

Nominee3 Fingerprint: No file chosen

Fig -7:fingerprint input

4. CONCLUSIONS

The increase in cloud computing adaptations in recent years has produced the concept of Business Process as a Service (BPaaS), whereby service providers are able to offer common or proven business processes to clients looking to automate and/or outsource parts of their operations.We address the problem of managing BPaaS configuration in a way to ensure that the resulting service i) is valid with respect to configuration constraints of the provider, and ii) satisfies transactional requirements drawn from the business rules of the client. Our approach utilizes several modelling techniques, including BPMN for business process structure, statecharts for transactional state, feature models for configuration constraints. Using these models, we develop a BPaaS configuration process that applies Binary Decision Diagram (BDD) analysis and model checking. BDD analysis ensures that BPaaS features selected during configuration do not violate the domain constraints of the service provider, while model checking verifies the configured BPaaS against transactional requirements provided by the client. To reduce the impact of state-space explosion, we employ a state-space reduction algorithm and split the model checking into two phases. These phases verify different configuration perspectives separately, and allow for the state space and temporal logic properties to be reduced further. Our performance analysis shows that the proposed configuration method is capable of verifying models with hundreds of activities, resources, data objects, and requirement sets within seconds.

5. REFERENCES

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