Title

Hybrid cloud architecture for financial technology application

1. Description: "Hybrid cloud architecture for financial technology application"

1.1 Technical Field

The invention relates to hybrid cloud architecture for financial technology (FinTech) application. More particularly the invention relates to hybrid cloud architecture for financial technology application between the user, merchant, financial institutions and payment service providers.

1.2 Background of the Invention

In the art cloud based architecture facilitates financial applications between the user, merchant portal, payment service provider and the financial institutions. Most of the financial institutions have been storing their financial information at the data centers located at their institutions. The information includes basic information and confidential information. Confidential information are information required to do financial transactions such as /not limited to Permanent Account Number (PAN), Card Verification Value (CVV), Transaction Authorization Records and Account Balance. Basic information is the non-transactional data such as / not limited to Name, Address, Mobile Number and Log-In information.

Financial institutions incur huge costs when maintaining a large data center to securely host its applications and data. Financial institutions also avoid in storing their sensitive information in cloud. One of the reasons being the cloud is being controlled and maintained by certain companies/corporations and there is possibility that security of the data can be compromised and information being leaked to unknown persons. There is always a concern about information stored in cloud through the existing cloud architecture by the financial institutions.

Therefore there is a need for cloud architecture which provides high security in maintaining data in the cloud and gives the confidence to the financial institutions that security is not breached, information not leaked and any non-performance/poor performance of certain operations will be detected and rectified accordingly without affecting the entire financial operations. Further there is a need of cloud architecture that also facilitates the performance of payment transactions between the user, merchant portal, payment service provider and the financial institutions.

1.3 Summary of Invention

The present invention discloses hybrid cloud architecture for financial transaction achieved by separating the front-end architecture and processing architecture which allows the classifying and protecting the information through cloud based platform.

1.4 Objects of Invention

It is the primary object of this invention to provide hybrid cloud architecture for financial technology application which can protect and maintain data through cloud of financial institution.

Another object of this invention is to provide hybrid cloud architecture for financial technology application that provides high levels of security in maintaining data in the cloud and on premise during online transactions.

Another object of this invention is to provide hybrid cloud architecture for financial technology application which can detect and alert the financial institutions and payment service provider any non-performance/poor performance of certain operations in cloud during online transactions.

Another object of this invention is to provide hybrid cloud architecture for financial technology application which is scalable according to operational requirements.

Another object of this invention is to provide hybrid cloud architecture for financial technology application that has Architecture which is loosely coupled for setup flexibility according to the requirements of the financial institutions and payment service providers.

Another object of this invention is to provide hybrid cloud architecture for financial technology application that has components which perform specified functions to ensure reliability.

Another object of this invention is to provide hybrid cloud architecture for financial technology application that has limited point of failure.

Another object of this invention is to provide hybrid cloud architecture for financial technology application that facilitates the performance of virtual transactions between the user, merchant portal, payment service provider and the financial institutions.

1.5 Brief Description of Accompanied Drawings

The present invention will be described in more detail hereinafter with the aid of the description which relates to preferred embodiments of the invention explained with reference to the accompanying schematic drawings, in which:

Figure 1 explains the hybrid cloud architecture for financial technology application.

In Figure 1 the user is connected to hybrid cloud architecture for financial technology application consists of demilitarized zone (DMZ) Within Public Cloud (12), On Premise Network (14), Private Network Within Public Cloud (13) making virtual payment transactions with merchant portals, payment service providers and financial institutions. The user will access the application through the Web Browser (1). The Web Browser (1) connects with Load Balancer Exposed to Public (2) of DMZ Within Public Cloud (12). The Load Balancer (2) manages the traffic from web browsers (1) and external Application Programming Interface (API) users and is the interface between internal and external networks. The DMZ Within Public Cloud (12) consists of Load Balancer (2) and Proxy Server (5) which interfaces between private cloud components and external messaging services. Private Network Within Public Cloud (13) consists of Cloud Web Server (3) controls the processes according to user request, Cloud Based Database and Cache (4) stores basic information of the user, Cloud Based Storage for logs and settings (6) contains web server logs, load Balancer logs and cloud web server settings. Private Network Within Public Cloud (13) operates independently with secured Internet access. The Cloud Web Server (3) connects with On Premise Network (14) through Secure Virtual Private Network (VPN) Tunnel (7). On Premise Network (14) consists of On Premise Applications (8) contains API's which perform the commands of Cloud Web Server (3) and On Premise Database (10) contains the confidential information. On Premise Applications (8) communicates with Financial Networks (9) for tasks such as authorization, reversal and charge-backs. Financial Networks (9) are infrastructure, systems and servers of financial institutions such as card companies, issuers, acquirers, banks. The Third Party Systems (15) is outside the main infrastructure consist of Financial Networks (9) and Short Messaging Service (SMS)/Email Providers (11) sends Short Messaging Service ($MS)/messages to users for verification and reminders.

1.6 Detailed Description of the Preferred Embodiment

The user using a Personal Computer, Mobile Devices, Televisions or Internet Activated Devices (IAD) through web browser (1) makes a secure connection to merchant portal, financial institution and payment service provider through the financial technology application of hybrid cloud architecture. The online user traffic is managed by a Cloud Load Balancer Exposed to Public (2) of DMZ Within Public Cloud (12) manages the online user traffic and connects to the Cloud Web Server (3) of Private Network Within Public Cloud (13) to make requests. Upon receiving the requests Cloud Web Server (3) makes requests to a

Cloud Based Storage for logs and Settings (6) and Cloud Based Database and Cache (4) to verify the basic information of the user. The Cloud Web Server (3) sends requests to external parties such as SMS messaging gateways, Email Hosting Providers via a Proxy (5) to authenticate the information requested. Cloud Web Server (3) sends transaction information like logs and requests configurations to Cloud Based Storage for logs and Settings (6). After due verification of the basic information the request is sent through Secured VPN Tunnel (7) from the Cloud Web Server (3) to the On Premise Application (8) of On Premise Network (14). On Premise Application (8) connects securely to Financial networks (9) requesting the confidential information of the user stored in the financial institutions. The On Premise Application (8) and Financial Networks (9) communicate and correspond to each other. Depending on the request after verification, authorization, reversal and chargebacks the transaction is performed accordingly between the user and financial institution. The Cloud Web Servers (3) communicates with the user through SMS/emails. The processing of user's request is communicated by the Cloud Web Servers (3) through SMS/emails. The alerts are also sent to the On Premise Network (14) and Finance Networks (9). The Cloud Web Servers (3) of the hybrid cloud architecture balances the web traffic during financial transactions and addresses the problems when arise. The non performance/delayed performance of certain components of Private Network Within Public Cloud (13) are monitored and alerts are sent to the On Premise Network (14) and Finance Networks (9).

While the present invention has been described in connection with the preferred embodiments of the various figures, it is to be understood that other similar embodiments may be used or modifications or additions may be made to the described embodiment for performing the same function of the present invention without deviating there from. Therefore, the present invention should not be limited to any single embodiment, but rather construed in breadth and scope in accordance with the recitation of the appended claims.

2. Claims

We claim:

2.1. A system based on hybrid cloud architecture for financial technology application comprising of public cloud integrated with On Premise Network which communicates with Third party systems wherein the architecture performs the following:

- Public cloud comprising of DMZ Within Public Cloud which receives request from the user request for financial transaction through web browser and Private Network Within Public Cloud verifies basic information of the user;
- On Premise Network upon request from Cloud Web Server of Public Cloud requests information and communicates with financial network of Third party systems of the financial institutions;
- Thereby upon authentication of user information allows virtual payment transactions between the user and merchant portal via payment service provider or financial institution.

2.2. The DMZ Within Public Cloud of the hybrid cloud architecture for financial technology application as claimed in Claim 2.1 comprising of Load Balancer and Proxy Server wherein the Load Balancer manages the traffic from web browsers, external API users, interfaces between internal and external networks; and Proxy Server interfaces between private cloud components and external messaging services.

2.3. The Private Network Within Public Cloud of the hybrid cloud architecture for financial technology application as claimed in Claim 2.1 comprising of Cloud Web Server, Cloud Based Database and Cache, Cloud Based Storage for logs and settings wherein Cloud Based Database and Cache stores basic information of the user; and

Cloud Based Storage for logs and settings stores information of web server logs, load balancer logs and cloud web server settings.

2.4. The Cloud Web Server of the hybrid cloud architecture for financial technology application as claimed in Claim 2.1 and 2.3 wherein Cloud Web Server sends requests to external parties such as SMS messaging gateways, Email Hosting Providers via a Proxy, sends transaction information like logs and requests configurations to Cloud Based Storage for logs and Settings and sends request through Secured VPN Tunnel to the On Premise Application of On Premise Network.

2.5. The Private Network Within Public Cloud of the hybrid cloud architecture for financial technology application as claimed in Claim 2.1 and Claim 2.3 operates independently of the hybrid cloud architecture with secured internet access.

2.6. The On Premise Network of the hybrid cloud architecture for financial technology application as claimed in Claim 2.1 comprising of On Premise Applications consisting APIs which performs the commands of Cloud Web Server and communicates with Financial Networks, and On Premise Database which contains the confidential information.

2.7. The Third Party Systems of the hybrid cloud architecture for financial technology application as claimed in Claim 2.1 comprising of Financial Networks consisting of infrastructure, systems and servers of financial institutions such as card companies, issuers, acquirers, banks; and SMS/Email Providers which sends messages to users for verification and reminders.