

Title
Financial Technology Application on Hybrid cloud architecture

1. Description: “Financial Technology Application on Hybrid cloud architecture”

1.1 Technical Field

The invention relates to financial technology (FinTech) application on hybrid cloud architecture. More particularly the invention relates to financial technology application on hybrid cloud architecture 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 centres 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 centre 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 financial technology application on hybrid 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 financial technology application on hybrid cloud architecture which can protect and maintain data through cloud of financial institution.

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

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

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

Another object of this invention is to provide financial technology application on hybrid cloud architecture 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 financial technology application on hybrid cloud architecture.

In Figure 1 the user is connected to financial technology application on hybrid cloud architecture 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 (SMS)/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:

1. A system based on financial technology application on hybrid cloud architecture comprising of DMZ Within Public Cloud, Private Network Within Public Cloud and On Premise Network, wherein the hybrid cloud architecture of DMZ Within Public Cloud, Private Network Within Public Cloud and On Premise Network communicates with Third party systems, wherein:

- Public cloud comprising of DMZ Within Public Cloud receives request from the user for financial transaction through web browser and verifies basic information of the user, wherein after verification DMZ Within Public Cloud forwards user's request to Cloud Web Server of Private Network Within Public Cloud,
- On Premise Network upon request from Cloud Web Server of Private Network Within Public Cloud, wherein Cloud Web Server of Private Network Within Public Cloud forwards request through secured VPN tunnel to On Premise Application of On Premise Network, wherein On Premise Application sends and receives information from financial network of financial institutions and
- Thereby upon authentication of user's information allows virtual payment transactions between the user and merchant portal via payment service provider or financial institution.

2. The system for financial technology application as claimed in Claim 1, wherein the DMZ Within Public Cloud 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 Cloud Web Server of Private Network Within Public Cloud and external messaging services.

3. The system for financial technology application on hybrid cloud architecture as claimed in Claim 1, wherein the Private Network Within Public Cloud 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.

4. The system for financial technology application on hybrid cloud architecture as claimed in Claim 1 and 3, wherein the Cloud Web Server

- receives user request from DMZ Within Public Cloud,

- sends user's information to Cloud Based Database and Cache and Cloud Based Storage for logs and settings;
- forwards user's request through Secured VPN Tunnel to On Premise Application of On Premise Network,
- upon receiving authentication and information from financial institution, sends information to external parties such as SMS messaging gateways, Email Hosting Providers via Proxy.

5. The system for financial technology application on hybrid cloud architecture as claimed in Claim 1 and Claim 3, wherein the Private Network within Public Cloud operates independently of the hybrid cloud architecture with secured internet access.

6. The system for financial technology application as claimed in Claim 1, wherein the On Premise Network comprising of On Premise Application consisting APIs which processes the user's request forwarded by Cloud Web Server through secured VPN tunnel and communicates with Financial Network, and On Premise Database which contains the confidential information.

7. The system for financial technology application on hybrid cloud architecture as claimed in Claim 1, wherein the Third Party Systems 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.

8. A method for financial technology application on hybrid cloud architecture comprising of DMZ Within Public Cloud, Private Network Within Public Cloud and On Premise Network, wherein the hybrid cloud architecture of DMZ Within Public Cloud and On Premise Network communicates with the Third party systems, wherein DMZ Within Public Cloud receives request from the user for financial information/transaction through web browser and verifies basic information of the user, wherein after verification DMZ Within Public Cloud forwards user's request to Cloud Web Server of Private Network Within Public Cloud, wherein Cloud Web Server of Private Network Within Public Cloud forwards request through secured VPN tunnel to On Premise Application of On Premise Network, wherein On Premise Application sends and receives information from financial network of financial institutions and thereby upon authentication of user's confidential information allows virtual payment transactions between the user and merchant portal via payment service provider or financial institution.

3. Drawing

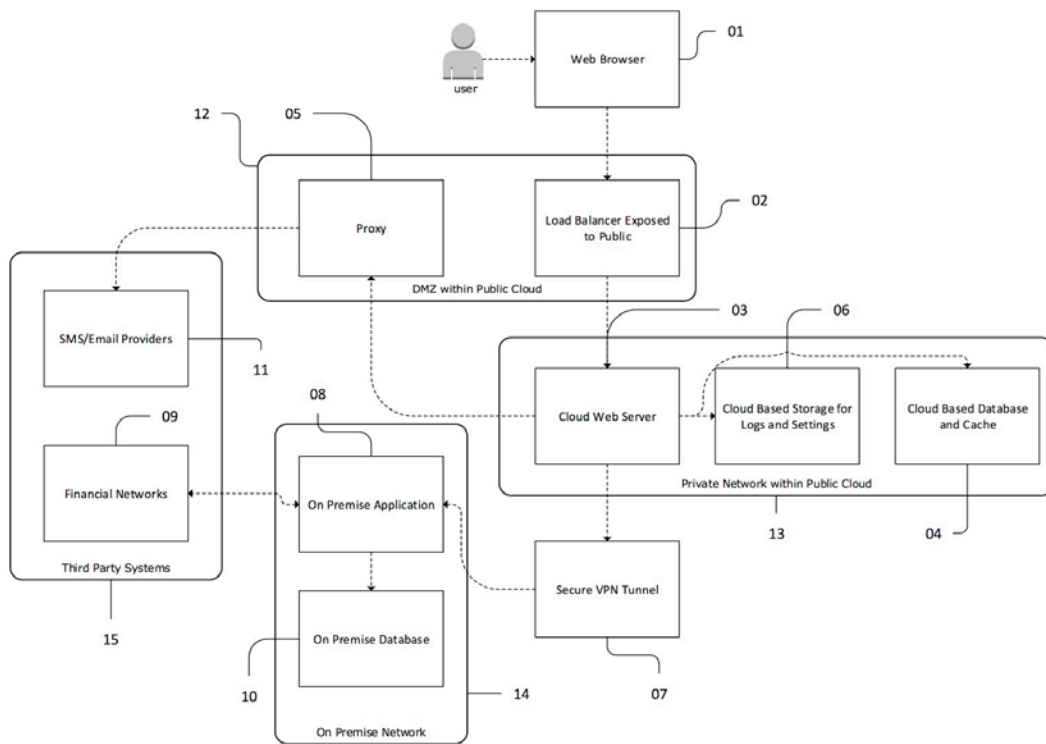


Figure 1

4. Abstract

A flexible and reliable hybrid cloud architecture which integrates between public cloud and On premise networks for financial applications between the user, merchant, financial institutions and payment service providers. The architecture segregates the basic and confidential information and the appropriate information is stored in public cloud and data centres. The architecture sends alerts via SMS or emails to the users. The architecture updates the financial institutions and payment service providers on the performance / non-performance of applications based in the cloud.