

## Solution Architect Challenge

Ocean Bank is a small regional bank based in the Gulf States of UAE and Oman. Although the bank offers services for private clients and small businesses, it specializes in financial services for Oil & Gas cooperatives.

The Federation has recently passed a legislation to lower barriers for entrance to its financial sector, in order to decrease prices of banking services for its citizens, and improve protection of consumers paying online. This creates pressure on the banks to adjust their banking systems to be compliant with the new laws.

The Bank has relied on an external vendor to provide and operate their banking systems for current and savings accounts since the 1990s. The maintenance cost of the current systems is already very high, and when the vendor was asked for a cost estimate for the required changes to the systems, the presented quotation was staggeringly high.

The management of the Bank decided to seek a new vendor. After several months of search and selection, chose us, the creator of digital bank platform, a customized banking solution to fit clients' needs, to replace their dated systems.

### Status Quo and Background

After a successful inception phase, Ocean Bank has signed a contract with us. You, the Solution Architect (SA), are joining the project team. The analysts have done a very good job in mapping the client's IT environment and the Technical Project Manager (TPM) is pushing to start the development as soon as possible.

As the SA you are in charge of design and documentation of the overall solution. The TPM has asked you to prepare an initial design of the integration with the client.

There are basic facts you know from the discussion with the analysts on the project and from the contract.

1. We will host the solution for the client in its own datacenters, the connection between the Bank and our datacenters is done over an unsecure leased fiber line. The latency is below 5 milliseconds, which will suffice to satisfy all SLAs. The client has placed a firewall on their side to control incoming connections and is asking to use streamlined interfaces to ensure easy maintainability.
2. The Bank insists on using their Customer Relationship Management (CRM) system. They are not interested in the CRM and on-boarding features provided by us. Every time a new customer is created or information about an existing one is changed in the CRM tool, the information should appear in our platform instantaneously. The Bank would like to use an existing interface, CRM interface 1, to feed our platform the information about their clients. CRM interface 1 is expected to call webservices in our platform. When a banker completes a customer's profile in the CRM system, it is expected to log in to the our platform back-office, which is the administration module provided by us, and check the latest profile information got transported correctly.
3. In the our platform back-office, the banker is also able to open new bank accounts, issue cards, close bank accounts and cancel cards. Each such event has to be communicated back to Ocean Bank via CRM interface 2, which is simply an IBM WebSphere MQ.
4. The CRM system is the primary system used by the bankers of Ocean Bank. It is also the system used to assess a customer's overall financial situation. This means it needs to contain account balances. You have learnt that you can use the CRM interface 2 to report this information. The client is willing to accept information that is not updated in real-time, but no older than 15 minutes. From experience, you know you cannot "subscribe" to any events of the our platform core banking systems. However, it does provide powerful APIs that can for instance be used to query account information, including balances.

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3. After a new customer has their bank accounts set up, the banker needs to issue access credentials to pass authentication (i.e. for logging in). This operation is done in back-office. Because the Bank wants to stay in charge of authentication, all new users need to be reported back to the CAM interface. The interface is a simple web service.
4. Similarly to authentication, The Bank wants to remain the provider of a secure connection for mobile applications. They have built their infrastructure on a powerful solution. That system handles device registration and customer authentication for the app. You will need to identify the ideal point on the our platform side that they can forward all requests to.
5. Lastly, Ocean Bank would like to keep its existing Swift server. They use it to exchange ISO 20022 messages with their payments clearer and other registered financial institutions using Swift FileAct. The client does not want our platform to connect to the Swift server directly, but is asking for an interface to exchange files. The client does not want to host the file exchange, but does not mind developing a file handler that would download files from our platform and upload them to the Swift server, and vice versa.

### The Task

Complete the solution to integrate with the client according to the requirements, adding another digital channel to streamline the new modernized channels such as e-Services Mobile App, Chatbot, and/or any channel.

During the exercise, please keep in mind topics like security, introduce new components where required, connect interfaces, and find a sensible and lean solution to fulfill the outlined requirements. You may take the following for granted:

- The core banking systems are productized and you cannot change them. They comprise services and microservices that expose powerful webservice APIs. The only way to retrieve information from these systems is by querying the APIs. The core does not provide any push notifications nor can you “subscribe” to events. Everything else within the our platform boundary you are free to change and adjust, including creating new satellite services.
- The client is flexible on what shape the solution will take, and expects you to take the lead in designing it. If you see a need for a component or interfaces on the client’s side, they welcome any suggestions.

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