SMS & NOTIFICATION ENGINE

OVERVIEW

The Logicom Solutions **SMS & Notification Engine** enables organizations to send notifications from their systems or services to target audiences through different mediums and channels (such as email, SMS, Fax, printed mail, secure envelopes) in a fast, flexible, and resilient way.

BUSINESS NEED

Currently, the different notification mediums and channels that exist in the IT industry for sending notifications are non-uniform. Furthermore, for some protocols (e.g. SMS) each provider may have variations over the standard. This creates a recurring development overhead and adds complexity to the client applications (e.g. e-Commerce, Financial, Portal sites, etc.) that want to provide multiple notification channels. Each notification method implementation is different and must be separately developed, tested, and configured by the client application. This causes recurring development costs and lengthier times to market.

SOLUTION

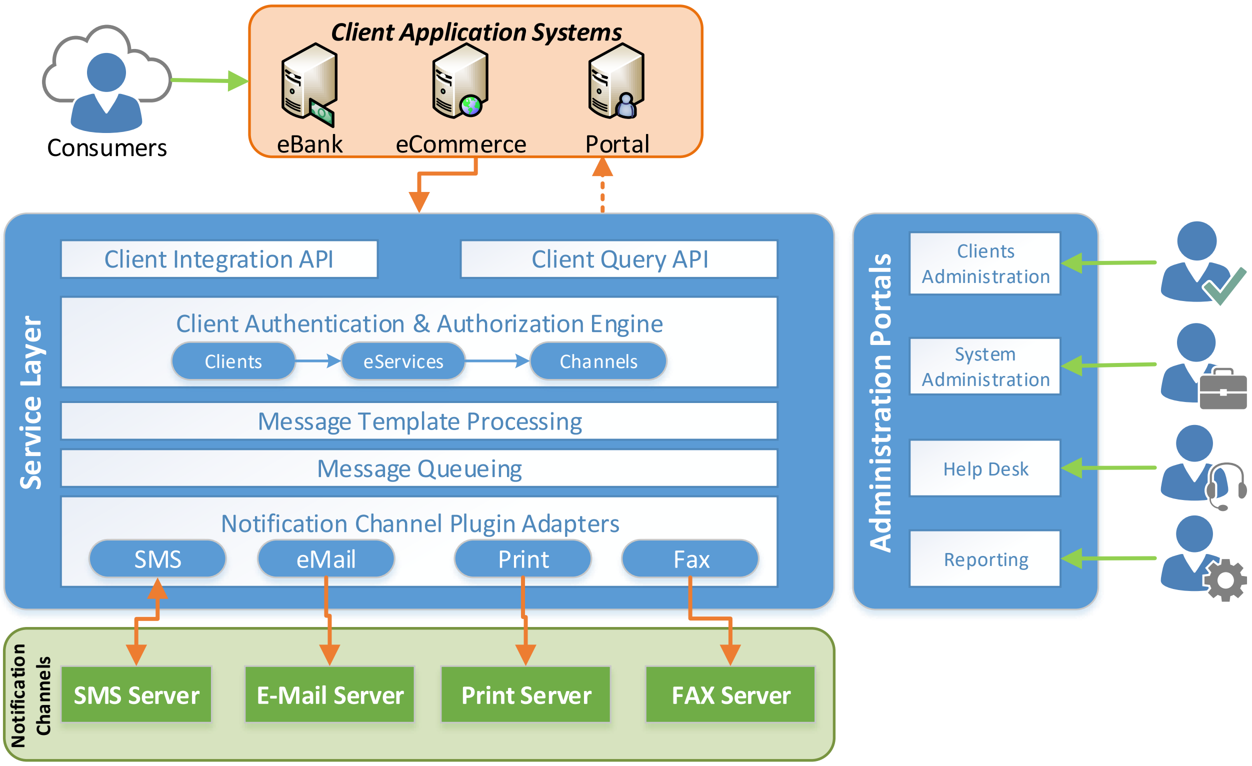
The Logicom Solutions **SMS & Notification Engine** is a middleware platform that serves as a single channel, integrating client applications with various notification providers over different mediums and channels. The SMS & Notification Engine provides one universal integration protocol to the client applications for sending notifications. For any additional notification mediums and channels, the SMS & Notification Engine absorbs the complexity of integrating with various channels, thus abstracting that complexity from the client applications. The SMS & Notification Engine also handles message queuing and retries sending in case of service disruption, thus ensuring that messages are always delivered. Moreover, the SMS & Notification Engine architecture is pluggable and can be expanded with mediums and channels offered by providers thus making it future proof as a platform, while ensuring that client applications are able to take advantage of potential new notification methods in a seamless manner.

Key Features

- **Standard** Integration Protocol for clients
- Integration with multiple notification **channels** (SMS / Email / Fax / Printed Mail / Secure Envelopes)
- **Real-Time** Notifications on a Personalized or Batch event
- **Scheduled** Notifications at a set time
- **Batch** Notifications
- Customized and Personalized Messages through Predefined **Templates**
- Resilient Message Delivery through **Queuing** Mechanisms
- **Quiet hours** (Messaged collected are queued during quiet hours and dispatched on business hours)
- **Reporting**
- Separate accounts for clients (Clients are not aware of channel provider's credentials and settings)
- Service Oriented Architecture
- **Modular** Architecture (Plugin adapters for notification channels)
- Offered as "On Premise Installation" and as "Cloud Service"
- 2-way SMS Messaging

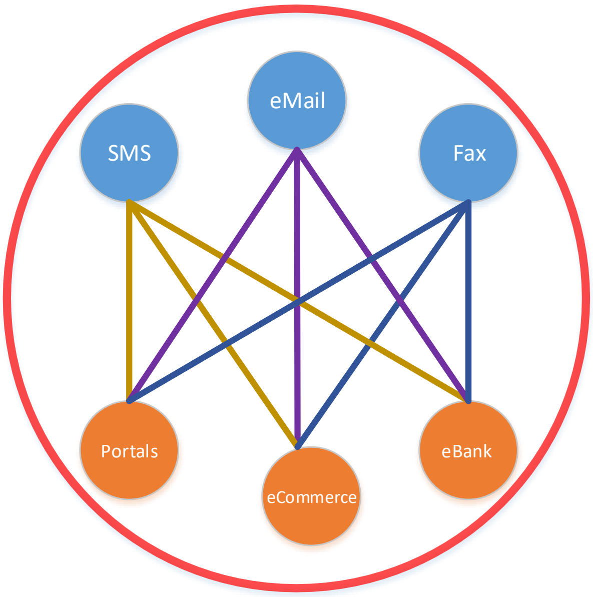
FUNCTIONALITY

- **Multiple Notification Channels:** SMS & Notification Engine integrates with multiple notification channels such as SMS, Email, Fax, Printed mail, Secure Envelopes. Additional channels can be added when needed in the form of plugins.
- **Real-Time Notifications:** Notifications triggered by a personalized event in the client system are delivered in real time.
- **Scheduled Notifications:** Notifications can be queued in order to be delivered at a predefined time.
- **Message Templates:** Customized and Personalized Messages through Predefined Templates.
- **Reporting:** The Notification Engine generates detailed reports about all notification activities for consumption, reconciliation and management purposes.
- **Resilient Message Delivery:** Requests to deliver messages are always queued in the SMS & Notification Engine, which ensures that the messages will always be delivered regardless of any service disruption (e.g. network failure or notification provider downtime).
- **Quiet Hours:** Rules regarding quiet hours can be defined per client. Messages collected are queued during quiet hours and despatched later. This ensures that client systems can sent messages at any time, but messages are delivered only on a predefined time window (e.g. deliver SMS messages only during business hours) thus ensuring that consumers will not receive messages during inappropriate hours.
- **Send Notifications through the administration interface:** System operators can send notifications on behalf of a client through the administration interface.
- **Standard Integration Protocol for Clients:** SMS & Notification Engine provides a universal integration protocol to client applications for sending notifications. Protocol is based on XML/SOAP Web Services for cross-platform compatibility.
- **Multiplexing Engine:** Client applications can be configured to use any of the available notification methods and channels. Merchant agreements with providers (e.g. SMS) can also be reused for multiple clients.
- **2-way SMS Messaging:** SMS & Notification Engine supports 2 way SMS Messaging thus enabling consumers to respond to SMS messages, or even initiate ad-hoc SMS messages. Consumer SMS Messages will be routed back to the client application over standard protocol (Web Service/HTTP Post) enabling client systems to react on consumer requests.



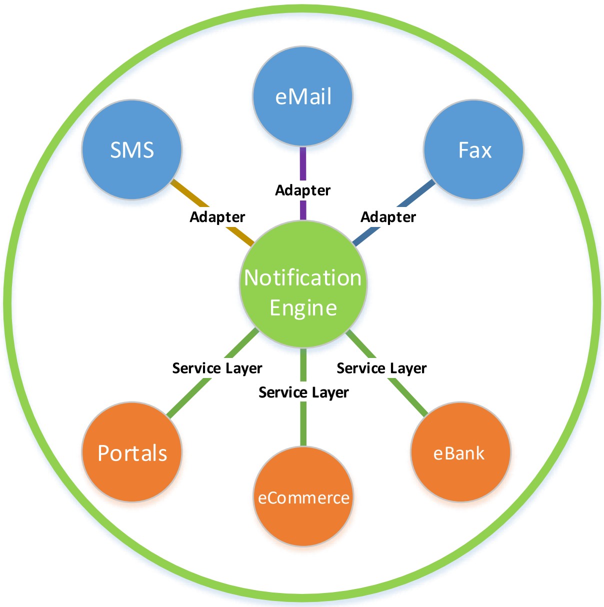
KEY ADVANTAGES

- **Pluggable Architecture:** Notification Channel adapters can be plugged in or out of the platform making it future proof. Plugins do not affect the client applications as they are still communicating with the SMS & Notification Engine over a standard protocol.
- **Multi-layered architecture:** A well-known principle, dictating that autonomous and clearly bounded layers should be introduced in an architecture scheme. Each layer defines its boundaries via well-defined and secured interfaces. Typically layers are functionally depended on "lower" levels for most of their services. However, this does not prevent a function to be fully implemented in an "upper" layer.
- **Scalability:** Each layer can scale out autonomously.
- **Service Orientation:** Service orientation is a dominant trend in modern architecture designs. Service-orientation is a design paradigm intended for the creation of logic units that are individually shaped so that they can be collectively and repeatedly utilized.
- **Modularity:** This principle is a more fine-grained "layered" principle. According to this principle, each layer is built on modular components. The sum of modules in a layer comprises the functional set of the layer. Modularity has a pivotal role during the design and implementation phase, modules are also autonomous and interact with other modules with code interfaces.
- **Location transparency:** Notification Channels are hidden from the top layers. Client applications use services without knowing where the Notification Channels are. Bottom line is that client applications are not aware –and should not care- about the Notification Channels. The only communication point that client applications are aware of is the set of endpoints provided by the service layer.
- **Multi-Level Security:** There are strict security rules and mechanisms for the communications, message transmission and sensitive information storage.
- **SMS:** The SMS Module of the SMS & Notification Engine undertakes the sending/receiving of notifications over a wide range of SMS Centres including PrimeTel, MTN, and CYTA.
- **Hub and Spoke Architecture:** Provides a flexible architectural pattern: The hub-and-spoke concept is easy to understand and work with, yet it can be expressed in infinite variations.
    - **Fosters reuse:** One typically develops an interface—called a spoke—from the hub to a given system and then reuses that interface as more systems need to communicate with the first one.
    - **Reduces the number of interfaces:** The practice of spoke reuse fostered by hub-and-spoke architectures dramatically reduces the number of interfaces one needs to build and maintain.



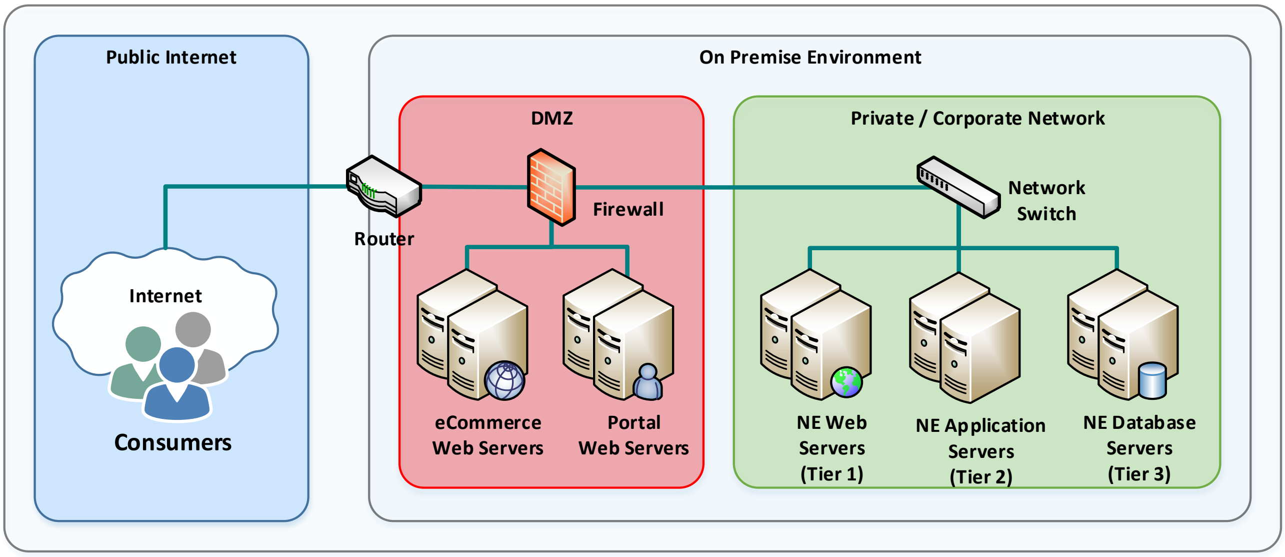
Point to Point Integration Architecture

VS



Hub and Spoke Integration Architecture

TECHNOLOGY



On-Premise Installation Topology

***Note**: The diagram does not reflect the real sizing of the solution. It defines the different security zones where each layer should be placed. It should not be considered as a complete physical diagram as it only illustrates the minimum requirements. e-Commerce and Portal Web Servers are not part of the solution, as they depict existing web applications for the purposes of illustrating the overall solution.*

Technologies

- Microsoft .NET Framework 4.5
- Windows Communication Foundation 4.5
- Microsoft ASP.NET 4.5

Server Products

- Microsoft Windows Server 2012 R2
- Microsoft SQL Server 2014
- Microsoft Windows IIS Server