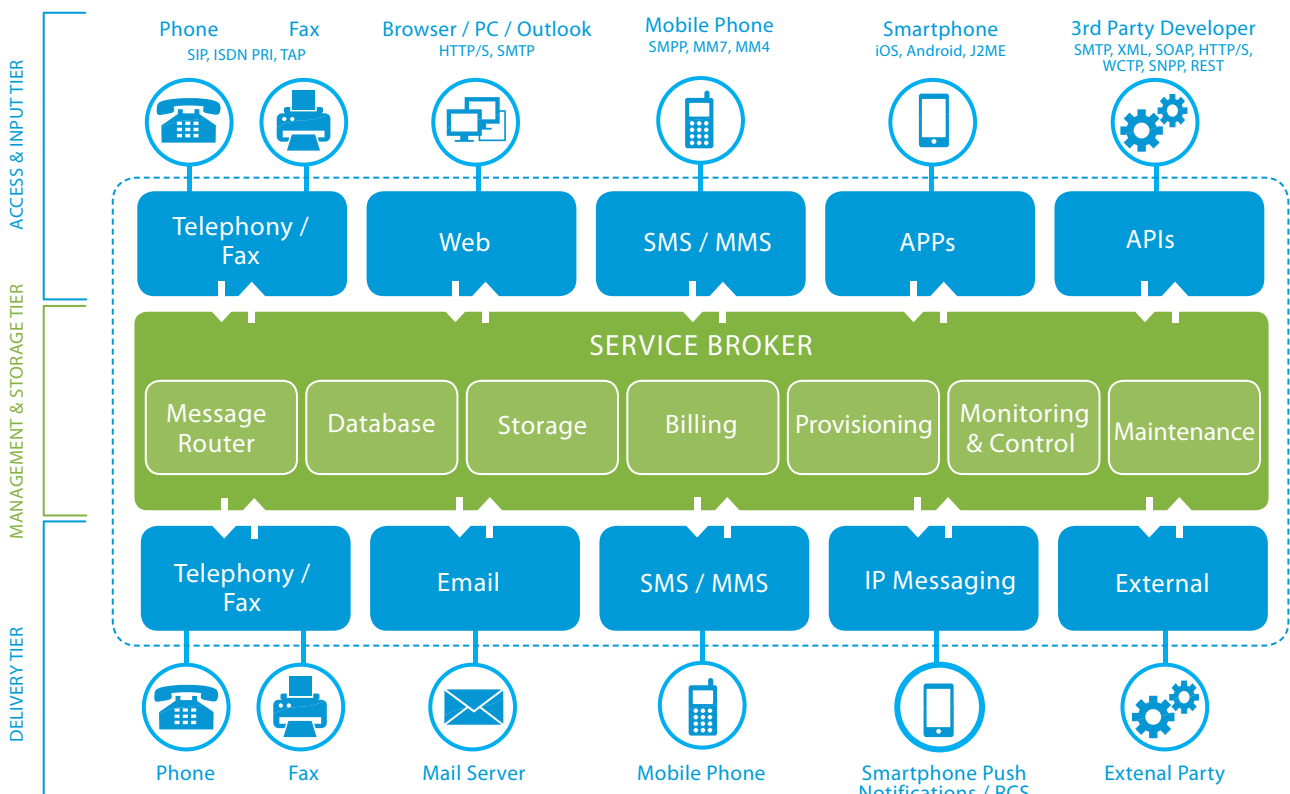# TeleMessage

TECHNICAL OVERVIEW

TeleMessage offers an innovative messaging system that integrates the full range of media from both the Internet and Telecom domains. Users can send, receive, reply to and forward any type of message to and from every existing communications media without worrying about standards, formats and protocols. The messages can include voice, text, image, video and documents. It enables the sending of multimedia messages from a Microsoft Outlook e-mail client, web interface, mobile or landline phones, Android/iOS phones, XML and other APIs to any device, including: IP messaging via Smartphone push notifications or RCS, SMS, MMS, e-mail, fax, mobile or landline phones and applications.

Dynamic and Future-proof Architecture

The TeleMessage architecture ensures a truly open and scalable messaging platform. Its components and services are mainly Java based and interact through strictly defined interfaces. All internal component and service interaction is achieved through dedicated objects. By employing this type of architecture, TeleMessage is able to:

1. Provide the same level of service to small enterprises as well as to tier 1 global telecommunications operators with a reliable and robust architecture that is fully scaleable & redundant.

2. Offer a platform capable of evolving to suit operator needs and market trends that can seamlessly integrate with existing infrastructures to deliver "plug & play" functionality.

ACCESS & INPUT TIER

Phone	Fax	Browser / PC / Outlook	Mobile Phone	Smartphone	3rd Party Developer
SIP, ISDN PRI, TAP		HTTP/S, SMTP	SMPP, MM7, MM4	iOS, Android, J2ME	SMTP, XML, SOAP, HTTP/S, WCTP, SNPP, REST

Telephony / Fax	Web	SMS / MMS	APPs	APIs

MANAGEMENT & STORAGE TIER

SERVICE BROKER

Message Router	Database	Storage	Billing	Provisioning	Monitoring & Control	Maintenance

DELIVERY TIER

Telephony / Fax	Email	SMS / MMS	IP Messaging	External

Phone	Fax	Mail Server	Mobile Phone	Smartphone Push Notifications / RCS	Extenal Party

In order to maintain simple centralized management, TeleMessage utilizes a three tiered architecture for handling how messages are received, stored and delivered to the different end-points.

1. ACCESS AND INPUT TIER

The Access and Input tier is the entry point of the system. Integration with third party systems – partial or complete – is done through interfaces defined in this tier (SMPP, MM7, SMTP, SNPP/WCTP, XML or other APIs). All servers are fully monitored and load balanced using a central Service Broker mechanism for fail safe delivery.

2. MANAGEMENT AND STORAGE TIER

The Storage and Management tier is the heart and brains of the system. It incorporates an Oracle database and a storage vault where all messages are stored and locked away before being forwarded to the Delivery tier. Functions handled in this tier include message queue management and deployment, maintenance & administration, as well as provisioning and billing. The whole tier is well protected and can be monitored 24x7.

3. DELIVERY TIER

The Delivery tier ensures that all messages leaving the system are processed by different dispatchers before being delivered to the end users/devices. This is handled by Message Servers that poll messages from the database and pass them to the applicable dispatchers. Each dispatcher is responsible for transforming the generic multimedia message into the specific format of the recipient device, delivering the message, handling local re-send and retry logic, and reporting the exact status of delivery back to the database.

Handling load balancing and redundancy

TeleMessage uses a Service Broker registry mechanism, where each component is a service that implements a certain interface. The Service Broker module orchestrates the utilization of all the modules within the system by monitoring the availability and failure status of the various services and performing load balancing between the available modules. Each module provides a specialized service and can be accessed by other modules. The Service Broker module provides a look up table, or registry, of all running modules so that the modules can locate and utilize one another. As each module (service) is initiated, it registers with the central Service Broker module by reporting several types of parameters such as module URL and type of service. These parameters enable the system to inventory its capacity and optimize message delivery time and cost. All requests for services are driven via the Service Broker.

Store and Forward - How messages are sent

Messages arrive from the Access and Input tier and are stored in the databases' message queue, which is continuously polled by the message servers. The message server then requests the best available dispatcher from the Service Broker. The Service Broker takes various characteristics into account to determine the best dispatcher and the message is forwarded.
The Dispatcher is responsible for the translation of the original message into the format required by the specific recieving device as well as the successful delivery of the message. The message server handles queue management.

Technology Highlights

- Open, multi-layered, fully available architecture
- Integrated Monitoring and Control, load balancing and recovery
- Database – Oracle using multi-threaded SQLJ and JDBC queries
- IP-Based Remote Method Invocation (RMI CORBA hierarchy) for location independence enables distributed global server roll-out
- JSP – for Web interfaces for active page content as well as SSL access
- Java Mail Enterprise Server (James) for robust E-mail messaging (SMTP, POP3, IMAP4)
- Direct integration into major SMSC's, MMSC's, billing and Provisioning systems, and Open APIs for Integration (SMPP, MM7, MM4, SMTP, HTTP, XML, SOAP, SNPP, WCTP, REST, OneAPI, SNMP)
- Dialogic Telephony/Fax boards allow PRI ISDN or SIP protocols
- Speech API and Nuance interfaces for text-to-speech engines
- US Patent (# 7,103,348) One Click reply and message retrieval technology
- Available both as on-premises or hosted SaaS solution that is fully owned by TeleMessage. Two fully geo-redundant hosting centers with multiple carrier and Internet connnectivity