

Service Description - Boomerang Plug-in v3.3.8.1 for MS Dynamics

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Definitions / Acronyms

Acronym / Item	Explanation
A2P	Application to Person
API	Application Programming Interface
CDMA	Code Division Multiple Access
COTS	Common Off The Shelf
CSV	Comma Separated Value
GSM	Global System of Mobile Communications
MMS	Multi Media Messaging
PGP	Pretty Good Privacy – Public / private key encryption system
Primary VN	A virtual number which is used as the originating Id for all outbound messages, unless that number is already 'active' as the originating Id for a message previously sent to the message recipient
SMS	Short Messaging Service
SMTP	Simple Mail Transfer Protocol
TLS	Transport Layer Security
Virtual Number	A Virtual Number is a telephone number without a directly-associated phone line. A Virtual number can be either a short or long number
VN	Virtual Number

boomerang™
intelligent messaging

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1 Purpose of Document

This document is intended to describe the functionality provided by Boomerang's 'plug-in' for Microsoft Dynamics CRM 2011, 2013, 2015 and 2016

All representations made in this document are considered accurate and have been provided by Boomerang in good faith.

1.1 Document Scope

This document applies to versions 2.0 onwards of the Boomerang plug-in and covers the following:

- An overview of the Boomerang service within the context of business process automation
- The key benefits of the Boomerang service
- An overview of the solution architecture and the message delivery service
- Core service: A description of the capabilities / functionality of the Boomerang core service features within MS Dynamics CRM
- Accessing message data outside of CRM

These components are applicable to both the Online and On-Premises instances of MS Dynamics CRM 2011 and 2013, 2015 and 2016

2 Boomerang Value Proposition

Boomerang™ is the patented technology layer that enables any mobile device to be integrated into business processes globally using SMS – Boomerang automates Application to Person (A2P) and Person to Application (P2A) communications.

This is achieved through a unique and patented process and supporting technology that allows multiple concurrent outbound messages to be matched to their associated inbound responses, irrespective of quantity and order - without the need for identifiers being embedded into the body of the message.

Boomerang automates the management and complexity of linking inbound and outbound messages to allow business to easily harness the mass medium of SMS to complete everyday business transactions, as an extension of their automated workflow.

2.1 The Problem

SMS messages are unable to carry unique identifiers outside of the message text itself, thus making it impossible to match multiple outbound messages with their specific responses.

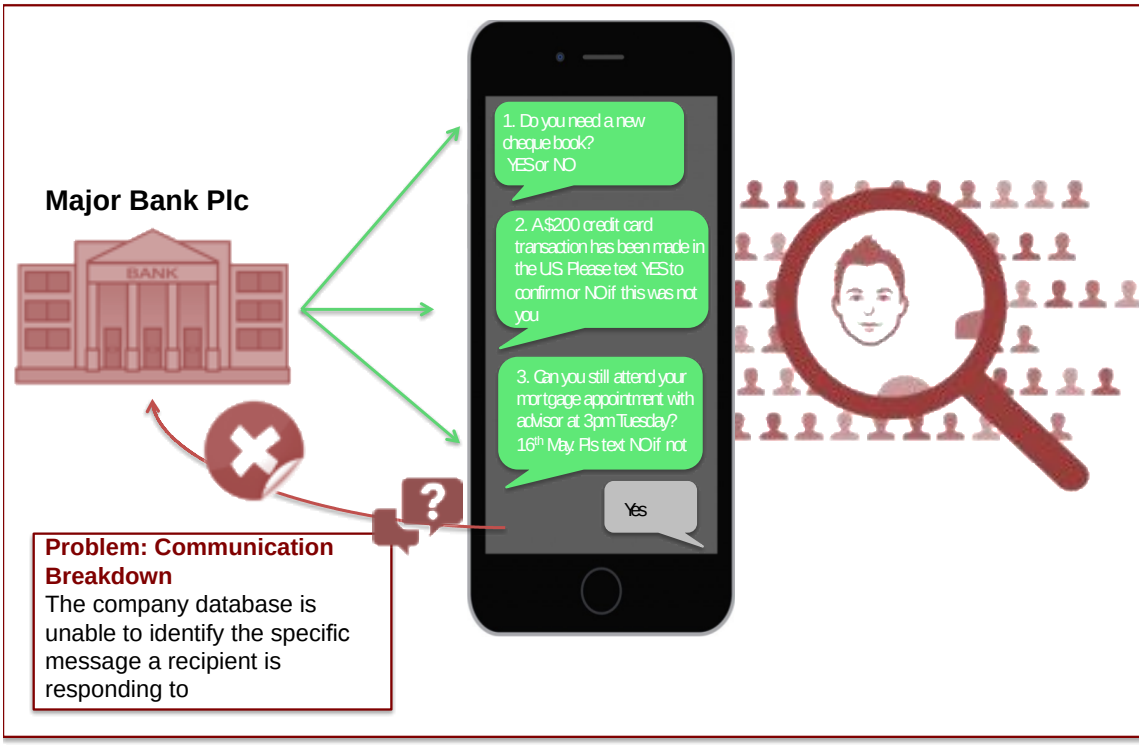


Figure 1 - The problem with SMS communication today

This problem has prevented SMS being fully adopted as a communication approach within business processes, consequently businesses today:

- Resort to basic 1-way SMS systems
- Operate high cost call centres
- Initiate complex application development

Despite the availability of existing 2-way messaging solutions, these solutions rely on a one-in-one-out methodology. This places the onus on the message recipient to respond to one message before the next can be sent – making the process susceptible to failure at any point.

2.2 The Solution with Boomerang

Boomerang integrates seamlessly with Microsoft Dynamics CRM 2011 (CRM), allowing businesses to communicate intelligently through SMS. For the very first time, every inbound message can be automatically matched to outbound messages accurately and reliably using Boomerang's patented technology.

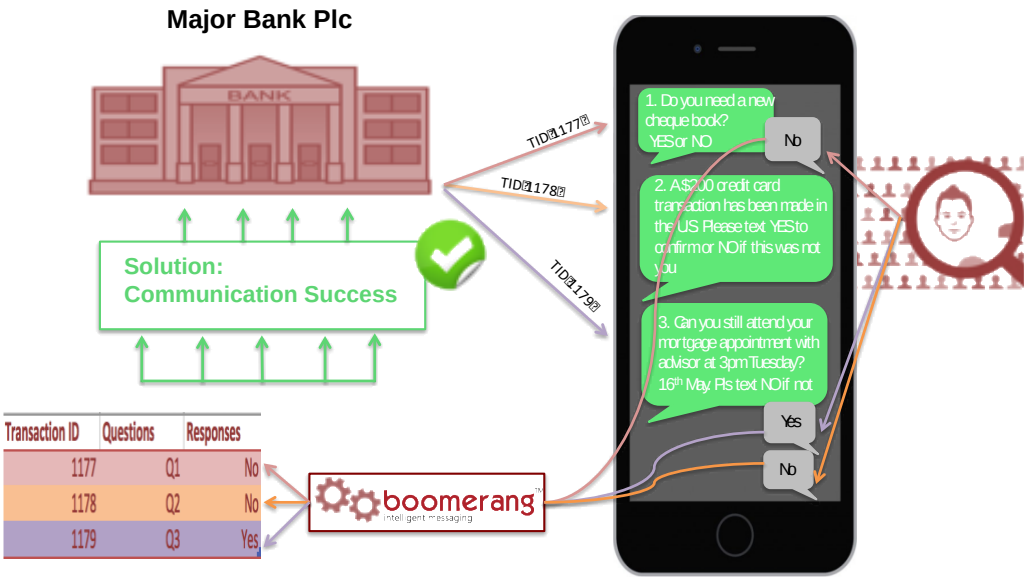


Figure 2 - The solution with Boomerang Intelligent SMS

The example above demonstrates that, although the bank sends a third message to the customer without the customer having responded to the second message; when the customer eventually responds to both messages (2 and 3), each response is matched to the appropriate originating message. **This 'matching' capability is not possible using conventional 2-way messaging solutions**.

CRM can make use of the Boomerang functionality by embedding the technology within a workflow process. This workflow process can then initiate procedure calls to the cloud based Boomerang service to communicate with staff or customers via SMS messaging.



Figure 3 – Where the Boomerang solution fits in

2.3 How is Boomerang used

The Boomerang technology is utilised within existing or bespoke workflow environments. Typical applications of Boomerang are as follows:

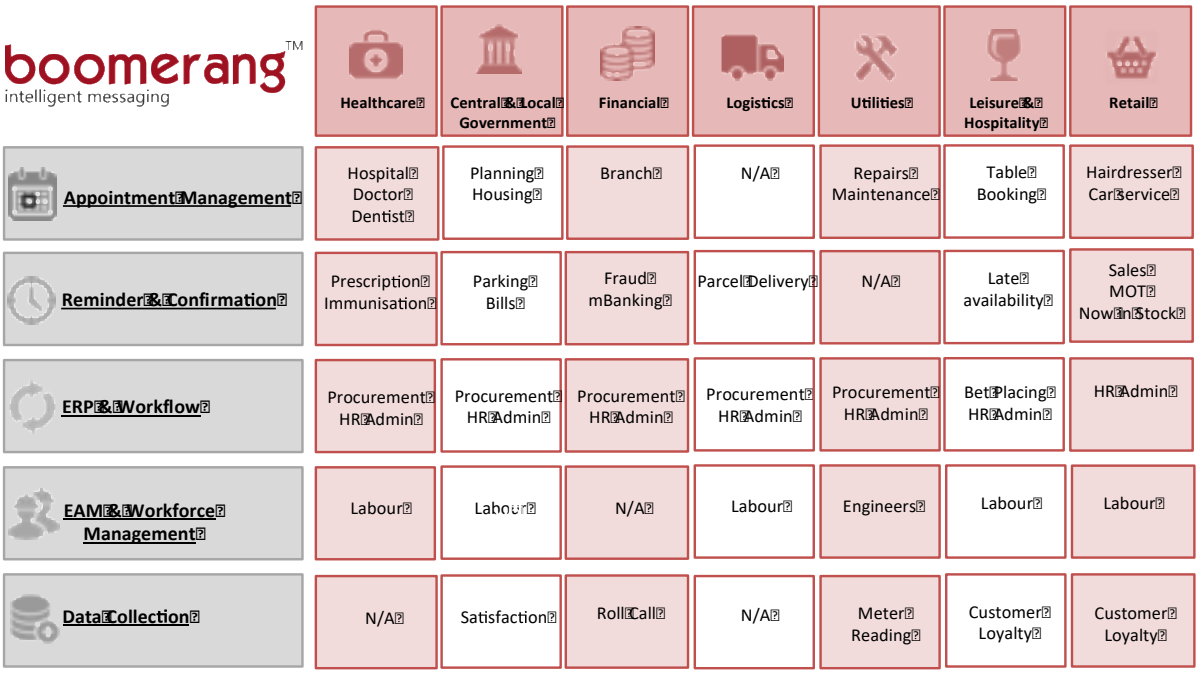
Workflow Enabler - Send appointment and booking confirmations, delivery schedules etc. and generate workflows based on the response. This allows for any type of service-oriented company, such as hospitality, healthcare, retail, local and central government to confirm appointments bookings or deliveries without any human interaction, and to only trigger follow-on calls based on either no response or a specific response value. Boomerang enables the extension of CRM into Mobile for ALL mobile devices.

Workforce Communicator - For a company with distributed sales or workforce, the Boomerang technology allows for distributing guidance, instructions, scheduled activities with automated processes based on the recipient's response. Boomerang provides huge cost savings in terms of avoiding missed opportunities, realigning resources based on a response, etc.

Promotion, Polling and time critical offers – For companies wishing to offer products and services to customers, such as reservations in restaurants or hotels with vacancies, offering bets to be accepted during a live sports event or ahead of sports fixture; or for companies looking to send client analyst information or collect customer experience survey data from their customers.

2.4 Where is Boomerang used

The Boomerang technology benefits businesses across multiple market sectors, typical end users have distributed; customer, staff or remote assets in one of the following sectors*:



boomerang™ intelligent messaging	Healthcare	Central & Local Government	Financial	Logistics	Utilities	Leisure & Hospitality	Retail
Appointment Management	Hospital Doctor Dentist	Planning Housing	Branch	N/A	Repairs Maintenance	Table Booking	Hairdresser Car service
Reminder & Confirmation	Prescription Immunisation	Parking Bills	Fraud mBanking	Parcel Delivery	N/A	Late availability	Sales MOT Now in Stock
ERP & Workflow	Procurement HR Admin	Procurement HR Admin	Procurement HR Admin	Procurement HR Admin	Procurement HR Admin	Bet Placing HR Admin	HR Admin
EAM & Workforce Management	Labour	Labour	N/A	Labour	Engineers	Labour	Labour
Data Collection	N/A	Satisfaction	Roll Call	N/A	Meter Reading	Customer Loyalty	Customer Loyalty

Figure 4 - Sample Boomerang applicable vertical sectors

*This sector list is not exhaustive.

3 Key Benefits

The Boomerang service delivers the following benefits for an organisation:

- **Cost savings** – by automating communications and processes, clients will see substantial savings in contact centre and administrations costs
- **Automate and improve workflow** – reducing costs and streamlining process
- **Immediate communications with customers** – huge improvements in efficiencies enabled across a vast set of geographies and languages
- **Improve staff communications** – the easy and convenient use of SMS ensures a more efficient method of communication
- **Extends CRM to any mobile device globally** – huge reach to mobile users world wide
- **Improved customer service and experience** – no intrusive calls, customers will be highly contactable due to the ubiquity of the mobile phone. 97.5% of text messages are read within 5 seconds*
- **Improved revenues** – from using Boomerang as a sales and marketing tool and improved customer satisfaction

*OFCOM May 2010.

4 Boomerang integration with CRM

4.1 Compatibility

The plug-in version history is provided below:

	Release	2011	2013	2015	2016	365
Version 1.0*	Jan-12	X				
Version 2.0.0.0*	Jan-14	X	X			
Version 2.1.0.0	Jan-14	X	X			
Version 3.1.0.0	Mar-16			Y		
Version 3.1.1.0	Mar-16			Y		
Version 3.1.2.0	Apr-16			Y	Y	
Version 3.2.2.0	Jun-16			Y	Y	
Version 3.2.3.0	Jun-16			Y	Y	
Version 3.2.4.0	Jun-16			Y	Y	
Version 3.2.5.0	Aug-16			Y	Y	
Version 3.2.6.0	Mar-17			Y	Y	
Version 3.2.6.1	May-17			Y	Y	
Version 3.3.6.1	Oct-17			Y	Y	Y
Version 3.3.7.1	Apr-18			Y	Y	Y
Version 3.3.8.1	Aug-18			Y	Y	Y

*Not supported

4.2 Installation and upgrades

For versions 2.1 and prior, separate solutions are provided for Online and On-Premises. A single solution is provided for all subsequent versions.

4.3 Plug-in Architecture

To ensure an organisation's security is not breached, the software has been architected to use a 'pull' rather than 'push' mechanism to retrieve data. It uses CRM workflows that call Boomerang's web services to send outbound messages and to retrieve recipient responses and end user initiated inbound messages.

5 Solution Architecture

The service is logically divided into three layers:

- The CRM plug-in layer
- The Boomerang layer
- The Network layer

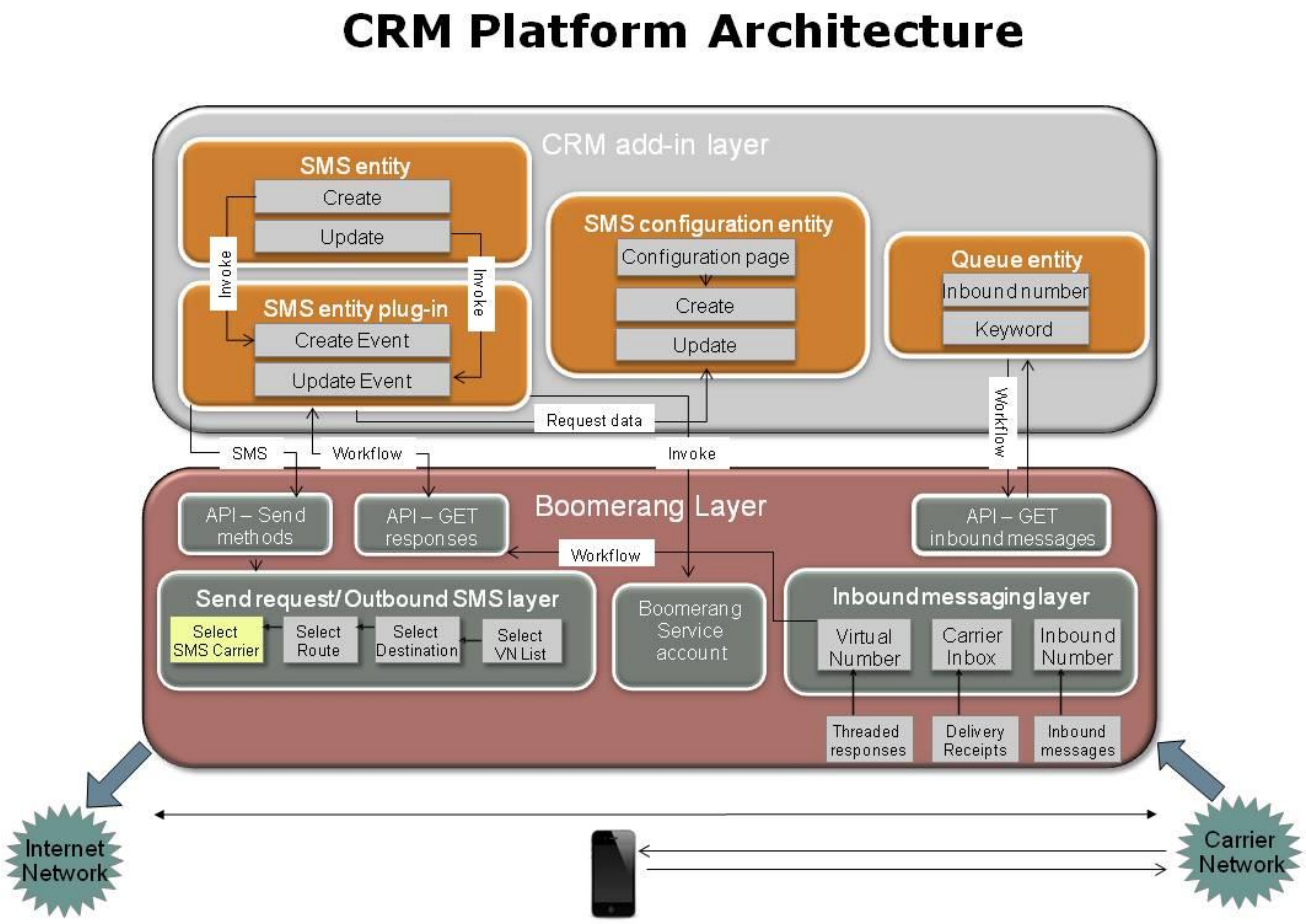


Figure 5 - CRM Plug-in architecture

5.1 CRM plug-in layer

The CRM plug-in layer contains the Boomerang plug-in which consists of different entities; these entities manage connectivity to the Boomerang layer and are listed below:

SMS configuration entity

The configuration entity manages the authentication of credentials (Username, password and license key) against the Boomerang platform.

The SMS entity

The SMS entity manages the creation of new SMS transaction records and updates to existing SMS transaction records within CRM.

The SMS entity plug-in

The entity plug-in is used to create the CRM Event which invokes the SMS entity to submit trigger SMS message and to retrieve and match a response to an originating outbound message.

5.2 Boomerang Layer

Interfaces

The interfaces manage the communication exchange (or handshake) between Boomerang's web services and the CRM plug-in. A unique message Id is instantly returned by Boomerang for each separate outbound transaction request.

Outbound messaging

The outbound messaging layer provides the core Boomerang patented functionality that allows multiple parallel outbound messages to be matched with their associated responses. Routing of messages to the selected carrier is also performed within the outbound messaging layer, based on the delivery destination.

Inbound messaging

The inbound messaging layer manages all activity arriving into the Boomerang platform from both message carriers and end users, processing threaded responses, mobile originated inbound messages (to a fixed inbound number) and delivery status updates. The plug-in retrieves this inbound data from Boomerang and updates the relevant records within CRM. Mobile Originated (MO) Inbound messages submitted can be managed against the Queue entity within CRM.

Routing manager

Boomerang integrates with SMS carriers to send and receive messages anywhere in the world. The Outbound messaging layer interfaces with the Carrier/Network Layer to perform this activity.

Admin manager – Service Account configuration

A Service Account is provisioned by Boomerang for each instance of CRM using the plug-on. The credentials added to the SMS Configuration entity within the plug-in are generated when creating a Service Account. The Service Account also manages a number of configuration selections relating to both messaging attributes and data security.

5.3 Network Layer

Boomerang integrates to a set of Tier 1 message carriers in order to send and receive messages anywhere in the world. The Boomerang messaging layer integrates to the Network Layer to perform this activity.

6 Plug-in functionality

This section describes the functions performed by each component of the plug-in and how these components interact with the Boomerang messaging layer.

6.1 SMS configuration entity

The SMS configuration entity is used to add or update Boomerang service account credentials within CRM; these credentials are validated by Boomerang during the installation process and also when a message request is submitted to Boomerang's web services, by the SMS entity plug-in.

6.2 The SMS entity and activity entity

The SMS entity and activity entity are directly associated to the Contacts entity within CRM and are used to access Boomerang's messaging functionality. They provide the ability to create new messages and invoke a plug-in to submit outbound message requests to Boomerang's web services. All responses are returned to CRM using workflows that poll Boomerang's web services and each response is paired with its originating outbound message. In summary, the SMS entity and activity entity provide the ability to:

- Initiate user generated, manual SMS requests
- Utilise SMS when creating new workflows or updating existing workflows
- Access any responses associated to an outbound message
- Access end user originated messages associated to the Queue entity

6.3 Messaging solutions

There are a number of ways by which an organisation can interact with its stakeholders. This is determined by the originating Id used when sending a message and dictates whether a recipient can reply, and how that reply will be processed and tracked. Each messaging solution provided by Boomerang is described below

Both entities provided in the plug-in allow access to the different messaging solutions offered by Boomerang. These message solutions determine the 'mode' of communication to be initiated with a recipient. A summary is provided below:

Message solution	Outbound messaging	Reply path available / Response tracked
Intelligent 2-way	Y	Y
2-way broadcast	Y	Partial
1-way broadcast	Y	N

Table 1 - Boomerang messaging solutions

Intelligent 2-way messaging

2-way threaded communication enables multiple concurrent outbound messages to be matched with their associated inbound responses, irrespective of quantity and order. Each

message will be sent using a Primary Virtual Number selected by Boomerang (where available) as the originating Id. There are also additional messaging features that can be applied to Boomerang's Intelligent 2-way messaging solution. These features will determine virtual number or range of numbers selected:

- **Boomlocal:** Boomerang provides a range of numbers that are used as the default originating numbers for all outbound messages. The default number range used, is based on the customer's preference and the availability of the number ranges provided by Boomerang*. It is also possible for a customer to purchase additional 'Boomlocal' number ranges which enables Boomerang to automatically deliver a message using a virtual number local to the destination of the recipient. This removes the cost and complexity of managing multiple delivery destinations for the customer and guarantees that an organisation benefits from Boomerang's competitive global outbound rates whilst removing costly international SMS charges for a customer or staff member replying to the message. Boomlocal also enables messaging to always appear "local" to a recipient.

  *See Appendix A for a list of Boomerang number ranges

- **Exclusive numbers:** A range of exclusive virtual numbers may be used solely by the organisation to which they are associated. It is not possible for any other Boomerang customers to use these numbers.

2-way broadcast messaging

2-way broadcast messaging allows an organisation to engage in:

- **Campaign based messaging**: A single SMS number (VN) is used as the originator for a broadcast message. Any responses returned by recipients of the broadcast are directed to an SMS 'inbox' and may be retrieved as a report across the API or as a Report

- **One-In-One-Out exchanges**: A fixed SMS number is used as the originator for conversation based messaging with recipients. In context of a business process, this method of communication relies on a recipient having responded to one message, before the next can be sent. In any scenario where a recipient has two or more messages on their device originating from this fixed number, any subsequent response from the recipient will not be matched to its originating message.

A 'custom number' is used as the originator for the message. This can be external to the Boomerang solution (e.g. a user's mobile number) and in this instance responses are not stored in the Boomerang solution or where an fixed SMS number (associated to the Queue entity in CRM) is used, responses are stored in both the Boomerang solution and in CRM (within the relevant SMS queue configured for that inbound number). However, as responses cannot be tracked against the original outbound message, multiple messages to the same recipient are not 'threaded'. As such, there is no validity period associated to messages sent using a custom number.

1-way broadcast messaging

1-way broadcast messaging allows an organisation to engage with its customers in simple notification-based communications using a 'dynamic header'. A dynamic header is an alphanumeric value (such as a company name); and on receipt of a dynamic header message, the recipient will not be able to respond (the response is rejected on the mobile device).

The image below details the typical message flow associated with each of the methods for sending and receiving messages:

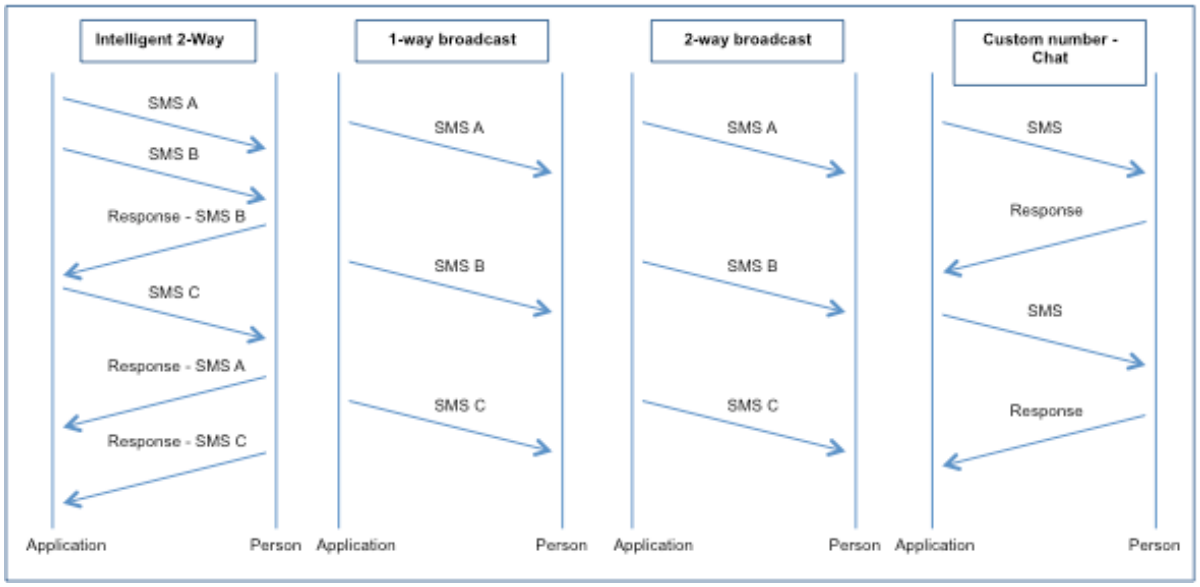


Figure 6 - Available messaging solutions

6.4 Message tickets

There are two different types of messaging ticket relating to 2-way messaging; these determine how responses are processed:

Single ticket: A single ticket / message is the default selection for all Boomerang messages and is automatically closed on receipt of the single requested response message from a recipient.

Open ticket: An open ticket / message is issued to a recipient and allows a recipient to return multiple response messages to the same outbound message request.

A workflow may use a combination of single and open ticket messages as the ticket type is set on a per message basis

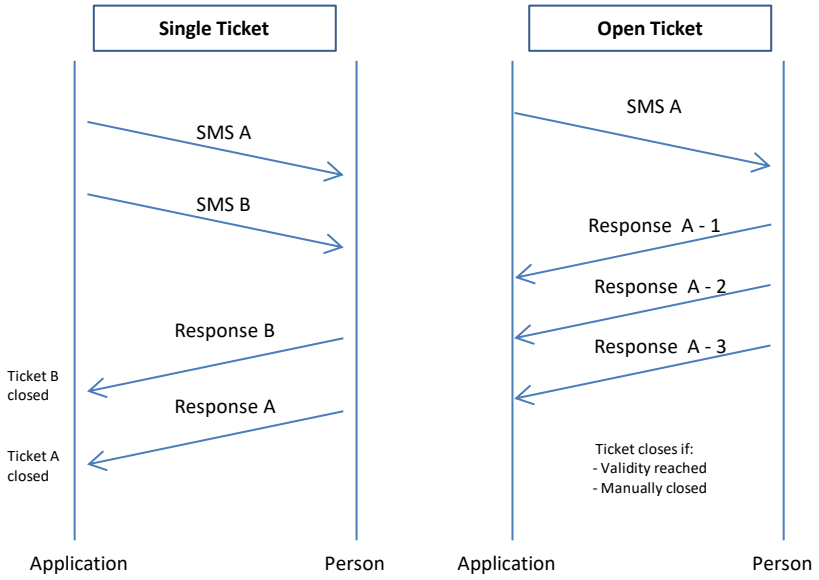


Figure 7 - Single and Open message tickets

6.5 Message ticket validity

All messages sent through Boomerang using 2-way Intelligent SMS must have a validity period associated to them. Message validity governs the lifespan of a message ticket, i.e. the message validity is calculated from the point that Boomerang sends the message and will automatically expire upon reaching the validity period associated to it.

When selecting the validity period required, this should take into account the period over which a recipient is required to respond to a message or the period after which a response will no longer be relevant.

Rules governing message ticket validity

Where the validity value passed exceeds the maximum associated to an account, the maximum validity period associated to the account will be passed with that request.

Message validity with single and open tickets

A single ticket will close on receipt of a response from a recipient or on the expiry of the validity period – whichever occurs first. An open ticket will close on expiry of the validity period.

1-way and 2-way broadcast messages do not have a validity period associated to them.

6.6 Optional message parameters

A number of optional message parameters may be assigned to a new message. These are used to either reference a message (or batch of messages) or to trigger automated actions based on a recipient's response. Parameters are made available according to the message originator selected when creating a message.

Reference parameters

The reference parameters available are as follows:

- **Campaign name**: A ‘Campaign’ reference may be assigned to a message or group of messages and provides a method of building reports against these specific messages
- **Conversation Id***: A conversation Id may be used to reference an exchange of messages and responses between CRM and the recipient, based on a common ‘thread’ or subject
- **Source**: A source may be used to identify messages originating from a specific user group or department.

Security based parameters

- **Is Sensitive:**

Response based parameters

The trigger parameters available are as follows:

- **Auto Response Message***: An SMS message that is automatically returned to any recipient responding to the originating outbound message
- **Email Responses To***: An email address to which any recipient responses are automatically pushed.

*These parameters are not available with 1-way and 2-way message broadcasts.

6.7 Processing a message request

Boomerang has access to all almost all network operators across the globe and partners with several Tier 1 message carriers to optimise delivery success into all destinations.

Each destination has its own dedicated ‘Route’ (sequence of carriers used based on priority) to ensure that the messaging service is fully redundant. When processing a request, the primary carrier set in the route associated to the delivery destination is selected. In the event that Boomerang is unable to connect to a carrier after repeated attempts, the system will automatically attempt to deliver the message using the next preferred carrier.

Processing capacity is optimised by ensuring that available throughput is sufficient with each carrier, to readily accommodate required message volumes (with ample headroom for expansion). Capacity is further increased by Boomerang’s ability to ‘load balance’ messaging activity across multiple carriers simultaneously.

Connectivity to each message carrier is monitored at regular (2 minute) intervals and notifications regarding connectivity problems are issued to the Technical Support and Operations teams at Boomerang.

Social hours

Boomerang can accept messages from the plug-in which are then ‘parked’ until pre-defined delivery criteria are met. The times between which messages are eligible for delivery can be specified for both weekdays and weekends; outside of those times, messages are held in the Boomerang platform to prevent messages being issued during anti-social hours.

Priority overrides

Associating a 'Priority' status to a message allows the Social Hours configuration to be overridden, ensuring that a priority message is always sent.

6.8 Delivery of SMS messages across different network technologies

The Boomerang service is technology agnostic and is capable of sending and receiving SMS message content across multiple mobile network technologies.

A single standard SMS message conforms to the following:

Technology	Number of characters
GSM: 7-Bit encoded character set	160*
CDMA: 8-Bit encoded character set	140*
Unicode:16-Bit encoded character set	70*

*Message carrier dependent

Table 2 - SMS character sets

If a Boomerang message is sent with more characters than specified above, the underlying carrier network will concatenate the messages together and deliver the full message to the recipient – providing the underlying carrier network supports concatenation (Unicode concatenation is not supported by all carrier networks).

Concatenation over GSM

Where GSM is used, each concatenated text message is limited to 153 characters rather than 160 due to the inclusion of user-data header (UDH) information. Mobile phones use UDH information to enable them to link long messages together so that they appear as single SMS messages in a recipient's device inbox.

Examples of this are provided below:

Number of SMS*	Number of characters in the linked message
1	160 characters
2	306 characters (2x153)
3	459 characters (3x153)
4	612 characters (4x153)
Etc	153 x Number of individual concatenated SMS messages

*Boomerang currently supports concatenation of messages containing over 2000 characters over GSM.

Table 3 - SMS concatenation using GSM 7-bit encoding

Concatenation over CDMA

Where CDMA is used each concatenated text message is limited to 134 characters rather than 140 due to the inclusion of user-data (UDH) information. Mobile phones use UDH information to enable them to link long messages together so that they appear as single SMS messages in a recipient's device inbox.

Examples of this are provided below:

Number of SMS*	Number of characters in the linked message

1	134 characters
2	268 characters (2x134)
3	402 characters (3x134)
4	536 characters (4x134)
Etc	134xNumber of individual concatenated SMS messages

*Message concatenation is dependent on both the network operators and the recipient's device.

Table 4 - SMS concatenation using 8-bit encoding

Concatenation over Unicode

Unicode is a technology used when delivering non-standard (non-GSM encoded) characters within an SMS message. This could include for example Chinese, Russian or Arabic characters. Concatenated Unicode messages adhere to the following structure:

Number of SMS*	Number of characters in the linked Unicode message
1	70 characters
2	134 characters (2x67)
3	201 characters (3x67)
4	268 characters (4x67)
Etc	67xNumber of individual concatenated SMS messages

*The maximum number of characters contained in a concatenated Unicode message is dependent on the carrier networks and the recipient's device.

Table 5 - SMS concatenation using Unicode

6.9 Message attributes

The plug-in provides a high-level status summary for each message, consisting of:

- **Date processed**: The date and time that the message request was submitted by the SMS entity plug-in
- **Boomerang reference Id**: The unique Id associated to the message which is generated by Boomerang and retrieved and stored by the SMS entity
- **Response result**: Where a recipient has responded to the outbound message, a link to the response details is provided. Where multiple responses have been returned to the message (Open ticket only), the latest response is provided in the SMS entity.

Overview of message delivery statuses

All outbound messages processed by Boomerang have a delivery status associated to them. In order to retrieve this delivery status from the Boomerang messaging layer, CRM invokes a workflow. This workflow is repeated in cycles until an updated status is returned or until the message ticket expires. The delivery status displayed in CRM is based on the Delivery Receipt (DR) received into the Boomerang messaging layer, from the message carriers and network operators. CRM classifies the delivery status of a message as follows:

Sent: The message has been successfully submitted to and processed by Boomerang but no further status updated has been received. This could be due to for example:

- The recipient's handset is switched off at the time delivery was initially attempted
- The recipient's handset is not registered on the network the time delivery was initially attempted.

- The recipient's network operator could have been experiencing congestion or coverage issues at the attempted time of delivery.

Where messages are not delivered at the first attempt, the network operator will continue to re-attempt delivery for a period of up to 48 hours. The intervals between which attempts to re-deliver the message, occur vary according to the status of the message. For example, where a recipient is overseas and cannot be reached the retry policy will differ from that where a recipient that is out of network coverage in the UK. Where the recipient's network operator does not support delivery notifications a status of 'Sent' may be associated to a message even though it is successfully delivered.

Failed / Undeliverable: The message was not delivered, as the network operator could not reach the recipient's handset. There could be a number of reasons for this, although the most common are:

- The number is no longer active on the network
- The network operator has blocked the inbound message service
- The recipient's handset inbox is full

Expired: The message could not be delivered within the message expiration period which is applied by the message carriers / network operators (usually up to 48 hours although this varies by destination).

Error: The message was not accepted by Boomerang due to a problem:

- The Boomerang credentials are missing from the Configuration entity
- The Boomerang service account has no credit
- The Boomerang service account is disabled
- Dynamics could not connect to Boomerang when submitting the request
- The format of the number is invalid (does not meet the requirements for the minimum or maximum digits allowed). This only applies to messages triggered by a **Process**

Managing responses to outbound messages

CRM uses a workflow to retrieve responses to outbound messages from the Boomerang messaging layer. These are initiated regular intervals after a message has been processed.

For 'Single ticket' messages, this workflow is repeated in cycles until either a response is received or the message expires due to Boomerang's message validity limit being reached. This workflow will not be initiated where a message is set as an 'Open ticket' or if the status of the message is not set to 'Sent' or 'Delivered'.

All responses are matched to their relevant originating outbound message and this association is displayed in CRM. If a message has been sent using 'Open ticket' and multiple responses have been returned by the recipient, each individual response is directly associated to the originating outbound message.

Unmatched responses

An unmatched response is one that cannot be paired with an originating outbound message due to the message ticket having closed. This would occur if:

- A single ticket message has closed due to receipt of an earlier response or the message validity period has elapsed
- The message validity period for an 'Open ticket' message elapsed

In either instance, the unmatched response can forwarded to an email address where requested by the customer.

Data security

It is possible for Boomerang to partially or fully overwrite the recipient's mobile number and / or the message content. Where applied, this data is not visible across any of Boomerang's systems. Selected data can be overwritten immediately after processing a message or after a specified time.

6.10 SMS Queue entity – Managing end user initiated messages

Using the Queue entity, the plug-in provides an inbound communication channel via SMS, using either a long or short SMS number (with an optional keyword). This allows an end user to:

- Initiate communication with an organisation by sending a message to the inbound number
- Respond to a non-threaded communication initiated by an organisation which uses the inbound number as the originating Id for that message.

Inbound SMS numbers

A description of the different inbound SMS number options is provided below:

Inbound number type	Description
Exclusive long number (keyword is optional)	A telephone number used to receive SMS messages normally comprising of eight digits or more which is assigned to a customer on an exclusive basis e.g. +447860111222
Exclusive short number (keyword is optional)	A telephone number used to receive SMS messages normally comprising of no more than six digits* which is assigned to a customer on an exclusive basis e.g. 60555. Short numbers operate within national boundaries

Table 6– Types of inbound identifier

The SMS Queue entity allows a standard CRM queue to be configured to receive inbound SMS messages. The inbound SMS number (and SMS keyword where required) are configured in the Boomerang messaging layer and CRM invokes a workflow to retrieve any inbound messages. This workflow is regularly invoked, from the point that the SMS queue is enabled within CRM: Any end user initiated inbound messages that are sent into the inbound SMS number will then populate the relevant queue as 'queue items'.

Optional functionality available with inbound SMS numbers

Each inbound number and / or keyword can be configured individually with the following attributes:

- An auto-response message: An pre-defined response which is automatically returned to the end user that has sent a message to the inbound number
- An auto-response message Id: The originating Id for the auto-response message which can be set to any of the following:
    - The number to which the inbound message was sent
    - The keyword to which the inbound message was sent
    - A bespoke alpha numeric Id containing up to 11 characters (e.g. a company name)

6.11 Accessing message data outside of CRM

Requesting bulk data from Boomerang

Boomerang provides the capability to access all transactional message data stored in the Boomerang system in .CSV format, by sending an Email request to an SMTP reporting service. A .CSV file containing the following data is returned to the sender's email address:

- Message Id
- Originating Id (Virtual number, Custom number or Dynamic header)
- Recipient's number
- Message content
- Region / Country
- Validity period
- Delivery status
- Date / Time created
- Date / Time sent
- Date / Time delivered
- No of replies and reply content

Any requests that cannot be successfully validated will return an error message to the initiator.

Automated notification of inbound messages from Boomerang

Boomerang's 'push' service allows end user initiated inbound messages to be forwarded to either an Email address or a URL.

Push content

The following data is provided in the notification:

- Inbound message Id
- Date and time of the inbound message
- Content of the inbound message
- End user's mobile number
- Inbound number
- Keyword

The URL and the Email address are configured manually by Boomerang and any notifications failing to reach the destination URL are placed in an automated re-try service.

7 Appendix A – Boomerang number ranges

Boomerang currently has active number ranges in the following destinations:

- Australia
- Belgium

- Canada
- Czech Republic
- Finland
- Germany
- Hong Kong
- Israel
- Latvia
- Netherlands
- Spain
- UK
- USA

Boomerang can provide information regarding the availability of additional number ranges on request.