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Short Messaging Service (SMS) as Fallback for Seamless E-commerce Messaging

ABSTRACT

Slow and unreliable internet connectivity can affect the user experience of shopping via e-commerce applications, e.g., due to lack of reliable message exchange capabilities for buyers and sellers. This disclosure describes techniques that seamlessly combine internet and SMS based text messaging functionality within e-commerce solutions used by sellers and buyers to communicate for shopping-related purposes. If the seller or the buyer is in an area where internet connectivity is unavailable or unreliable, the message is automatically sent and received via SMS. With permission, messages received via SMS are automatically relayed to the appropriate e-commerce application on the receiving device and are displayed within the user interface (UI) similar to other messages in the communication. Implementation of the techniques with user permission can enhance the seamlessness of the communication between sellers and buyers, especially in regions that lack reliable high-speed internet connectivity.

KEYWORDS

- e-commerce
- Online shopping
- Message exchange
- Buyer seller communication
- Bot
- Unreliable internet
- Low-speed internet
- Short Messaging Service (SMS)

BACKGROUND

In some regions of the world, there is a lack of requisite infrastructure for reliable high-speed internet and/or phone networks. In these regions, connectivity can be slow and costs for data access high. As a result, those who do business in and/or with customers residing in such regions cannot rely on feature-rich internet connections for shopping-related communication.

While they lack reliable high-speed internet connectivity, people in such regions usually have access to a device with affordable text messaging via Short Messaging Service (SMS). However, current e-commerce messaging applications and services do not provide the ability for sellers and buyers to exchange messages using SMS.

While many telephone carriers route calls and text messages seamlessly over the internet or the phone network based on the quality of the available internet connection, the feature is managed by the carrier external to the user device and is limited only to phone calls and text messaging applications native to the device.

DESCRIPTION

This disclosure describes techniques that seamlessly combine internet and SMS based text messaging functionality within e-commerce solutions used by sellers and buyers to communicate with each other for shopping-related purposes. If the seller or the buyer is in an area where internet connectivity is unavailable or unreliable, the message is automatically sent and received via SMS. With permission, messages received via SMS are automatically relayed to the appropriate e-commerce application on the receiving device and are displayed within the user interface (UI) similar to other messages in the communication.

The application can be configured to check for reliable internet connectivity prior to sending a message. If sufficiently reliable internet connection is unavailable, the message is relayed via SMS. For instance, a buyer residing in a region with poor internet connectivity might use a device to communicate with a local vendor by sending a message with an order for groceries. If the buyer is unable to send the message or the vendor is unable to receive it because of a lack of requisite internet connectivity at either end, the message is automatically and seamlessly relayed via SMS, with permission from the buyer and the seller. The buyer and the

seller can communicate using the e-commerce application UI as usual, since the SMS-based communication is performed without requiring them to take any action or have any knowledge of whether message transmission occurred via SMS or via the internet.

With user permission, the above functionality can be achieved by employing appropriate middleware, such as a bot, to interface between the e-commerce application and the device. The bot is used at both ends for sending and receiving messages regardless of whether SMS or the internet is used for message transmission. At either end, outgoing messages can be relayed to the bot. The bot can be configured to transmit messages to the receiver over the internet if the sender and the receiver both have adequate internet connectivity and via SMS otherwise. Further, the bot can be used to receive messages via the internet or SMS and relay those to the e-commerce application for display within the messaging UI.

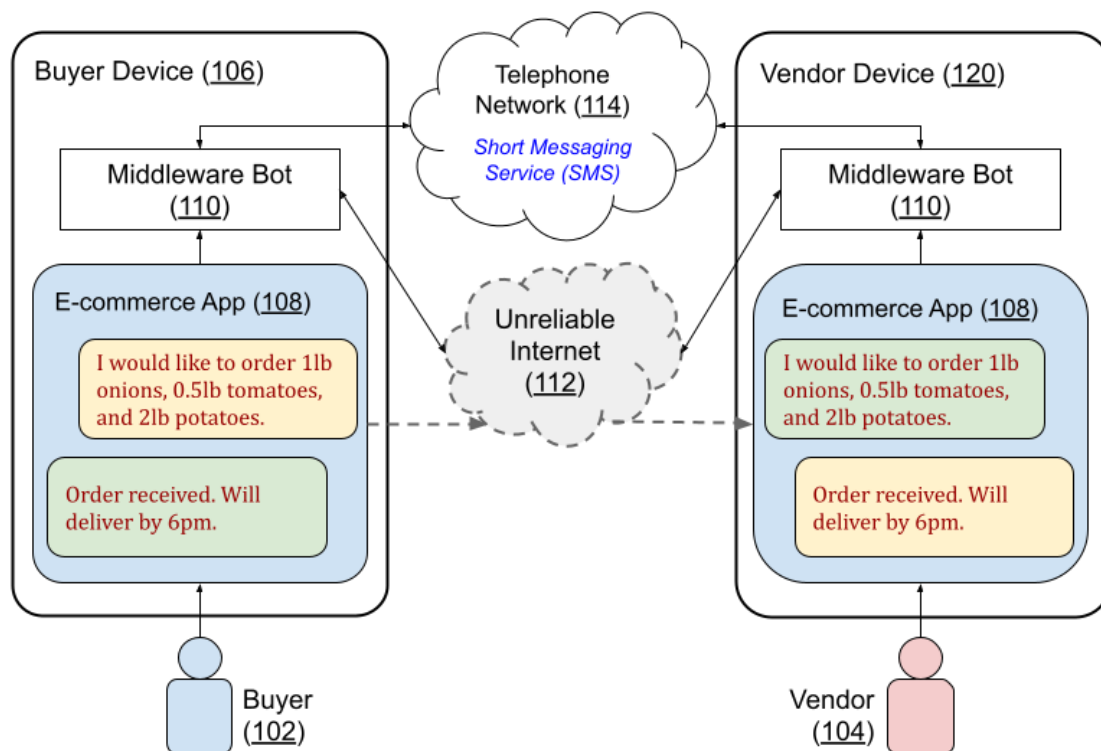


Fig. 1: Using SMS as a fallback for providing seamless shopping-related messaging

Fig. 1 shows an example of operational implementation of the techniques described in this disclosure. A buyer (102) and a vendor (104) in a region with unreliable internet connectivity (112) wish to exchange messages about a grocery order using an e-commerce app (108) on their respective devices (buyer device 106 and vendor device 120). In case direct message transmission using the internet connection between the app on the two devices fails, the message is passed to a middleware bot (110). As needed, the bot can relay outgoing messages via SMS using the telephone network (114). The bot at the receiving end can pass along any messages received via SMS to the e-commerce app (108). Messages are displayed within the UI of the e-commerce app in the same way regardless of whether they were transmitted via the internet or SMS, thus ensuring a seamless user experience (UX) for the buyer and the vendor.

Alternatively, or in addition, message delivery can be attempted simultaneously via the internet and SMS. In such cases, both transmission modes can be handled by the middleware bot or separated such that the message is sent over the internet directly from the e-commerce application and via SMS by middleware bot. The user is shown the message in the UI as soon as either of the two transmissions is successfully received. If the other transmission is received later, it is discarded without duplicating the display of the same message within the UI.

With user permission, the middleware bot can be implemented on the user device and/or hosted externally in conjunction with relevant services such as providers of proxy numbers or Application Programming Interfaces (APIs) for SMS delivery.

The techniques described in this disclosure can be implemented to support messaging features within any e-commerce application, service, or platform. Implementation of the techniques can enable seamless communication between sellers and buyers, even in regions that lack reliable high-speed internet connectivity. If users permit, the techniques can additionally

support text-based communication within any application, such as customer support, government services, interpersonal messaging, etc.

Further to the descriptions above, a user may be provided with controls allowing the user to make an election as to both if and when systems, programs or features described herein may enable collection of user information (e.g., information about a user's e-commerce application, messages via the e-commerce application, network quality and status, a user's preferences, or a user's current location), and if the user is sent content or communications from a server. In addition, certain data may be treated in one or more ways before it is stored or used, so that personally identifiable information is removed. For example, a user's identity may be treated so that no personally identifiable information can be determined for the user, or a user's geographic location may be generalized where location information is obtained (such as to a city, ZIP code, or state level), so that a particular location of a user cannot be determined. Thus, the user may have control over what information is collected about the user, how that information is used, and what information is provided to the user.

CONCLUSION

This disclosure describes techniques that seamlessly combine internet and SMS based text messaging functionality within e-commerce solutions used by sellers and buyers to communicate for shopping-related purposes. If the seller or the buyer is in an area where internet connectivity is unavailable or unreliable, the message is automatically sent and received via SMS. With permission, messages received via SMS are automatically relayed to the appropriate e-commerce application on the receiving device and are displayed within the user interface (UI) similar to other messages in the communication.