



Comparison of WAP Push and Short Message Service (SMS)

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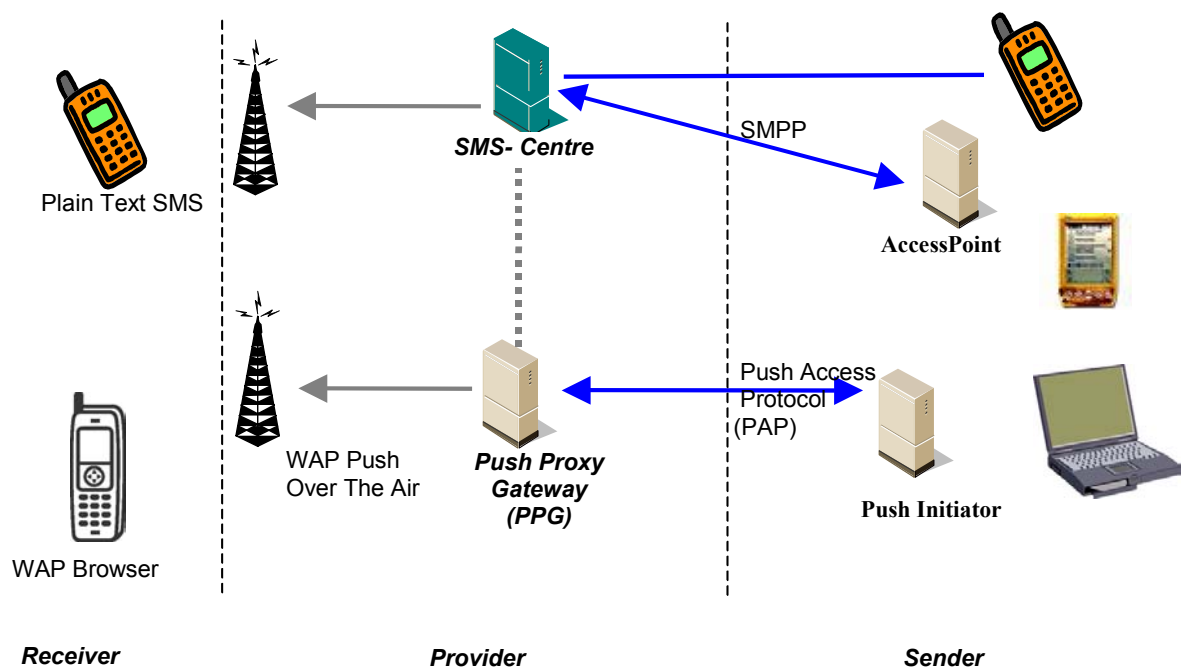
Comparison of WAP Push and Short Message Service (SMS)

Introduction

This paper compares WAP push technology with Short Messaging Service (SMS). Depending on your perspective, these technologies have facets of both application development and data transportation. Indeed, push technology (specifically WAP push) may be considered a user of SMS as a transportation medium.

The Openwave™ Push Proxy Gateway (PPG) and Openwave™ WAP Push Library / SDK allow the application developer to send messages using the Push Access Protocol (PAP) interface to a wide variety of recipients.

In order to frame a discussion, it is useful to present a high level architecture:



This diagram illustrates the essential elements of WAP push . There are several ways that messages can be sent to mobile terminals: via PPG using PAP, via a provided access point to the SMSC using a protocol such as SMPP, or via the SMS-enabled terminal using the Mobile Application Part. In WAP push terminology, the sender of the message is called the *push initiator*.

In terms of the infrastructure provided, the mechanism used by the sender may cause the message to be routed to an SMSC or a push proxy for onward delivery. The PPG is capable of communicating directly to the recipient or using SMS as a delivery mechanism (either as plain text or as WAP push content).

The recipient is either a push-capable terminal or a terminal with short messaging capability.

What Push Adds to SMS

It is assumed that the reader is familiar with the capability of SMS. The benefits and complementary aspects of using WAP push over plain text SMS include the following.

Active Content

A major advantage of WAP push is the ability for the developer to send “active” content. In other words, depending on the type of content being sent and the application being addressed in the mobile terminal, the content will be presented to the recipient and can be automatically viewed. Even more powerful, the user may “take action” by using a developer-defined soft-key to immediately activate an application to accomplish a specific task, such as downloading a picture, making a purchase, or responding to a marketing offer. Indeed, WAP push may also be used to initiate activity without user intervention.

A primary concern from a developer perspective is the end-user experience. When sending a push message, the sender must have a high degree of confidence of how the message will be processed and presented to the recipient. This is the basis of the WAP-defined content types, *Service Indication* and *Service Load*.

The Service Indication content type is deceptively simple in that it allows the sender to attach the following identifiers:

- text string
- unique identifier
- Hypertext reference (URL)
- An action parameter

The text string is presented to the user, interrupting their current activity depending on the action parameter. If the user selects the text string, the hypertext reference is fetched. In the case where multiple messages are sent, using the same identifier and/or HREF ensures that only the most recent is presented, thus avoiding duplicate messages.

In the case where the user defers processing of a push, an indicator is activated on the mobile terminal’s display, highlighting that there is content available for presentation. The exact nature of this indication is dependent on the particular handset vendor but an example of this may take the form of an ‘@’ sign on the

terminal. The push inbox, where the push message is stored, is separate from the SMS inbox on the mobile terminal. The user can view the push message later by finding it in the push inbox.

Initiator Protocol

The means to initiate the message to be sent is via the Push Access Protocol (PAP), an open standard defined by the WAP Forum™ and is available at <http://www.wapforum.org>. The protocol is XML based and uses HTTP as its transport to the PPG.

Because it is an open standard, the development community is freely able to create their own push initiators. As part of its commitment to the WAP Forum, Openwave conducts interoperability tests and ensures that its products are certified with the WAP compliant class mark. Therefore, developers are assured that they can take advantage of the benefits of WAP push using the open WAP standards.

To quickly take advantage of WAP push, developers can use one of the freely available developer toolkits for initiation of these push messages. One can be found at:

<http://developer.openwave.com/download/index.html#wappush>.

A truly open developer protocol is not available in the SMS world. There are a number of different SMS protocols and there is no common developer standard. In addition, these protocols present an interface that is defined at a lower level than HTTP. These factors increase development complexity and costs.

Feature Set

The push access protocol provides a rich set of features not available in SMS, including:

- Multi-recipient addressing: the ability to address multiple intended recipients with the same message.
- Alternate addressing: the ability to address a recipient using a phone number or a user defined identifier.
- The ability to target specific applications on the Push enabled handset.
- The control of user intrusion: whether the user's current activity is interrupted or not
- Message delivery confirmation.
- The ability to query the terminal capabilities of the intended recipient (if available) and tailor the push message accordingly.
- The ability to ask the Openwave PPG to filter push delivery based on terminal type (e.g., target only Openwave browsers).
- The ability to push MIME content type (including plain text).
- Developer control of delivery timestamp and choice of underlying transport.
- Developer control of priority of delivery.
- Message replacement on the server prior to delivery.

Cache Control

A significant benefit is the ability to control the cache storage area in the push capable terminal. This allows for the developer to invalidate a previously retrieved HREF and thus force the user to retrieve the

latest content. This is useful for applications that provide end-user content that can become outdated quickly, and thus, the developer must ensure that the user always has the latest information.

If the MIME content being pushed is a mixture of content types (e.g., a Service Indication + WML) then only the Service Indication will be presented to the user and the remaining parts will be stored in the cache.

This is a significant feature enhancement over and above plain SMS messages in which it is not possible to subdivide the content, to dictate if it is cached, or to reference the cache in any way.

Delivery Mechanisms

Push delivery mechanisms may use SMS as a transport channel or may communicate directly with the push capable terminal. In the case where SMS is used, the PPG is capable of segmenting a large message into several SMS messages (if it is a long message) for delivery over SMS, and upon delivery, the messages are reassembled and processed. This is WAP Forum-defined and is independent, but similar to other mechanisms such as enhanced SMS which utilizes something called the User Data Header of an SMS message.

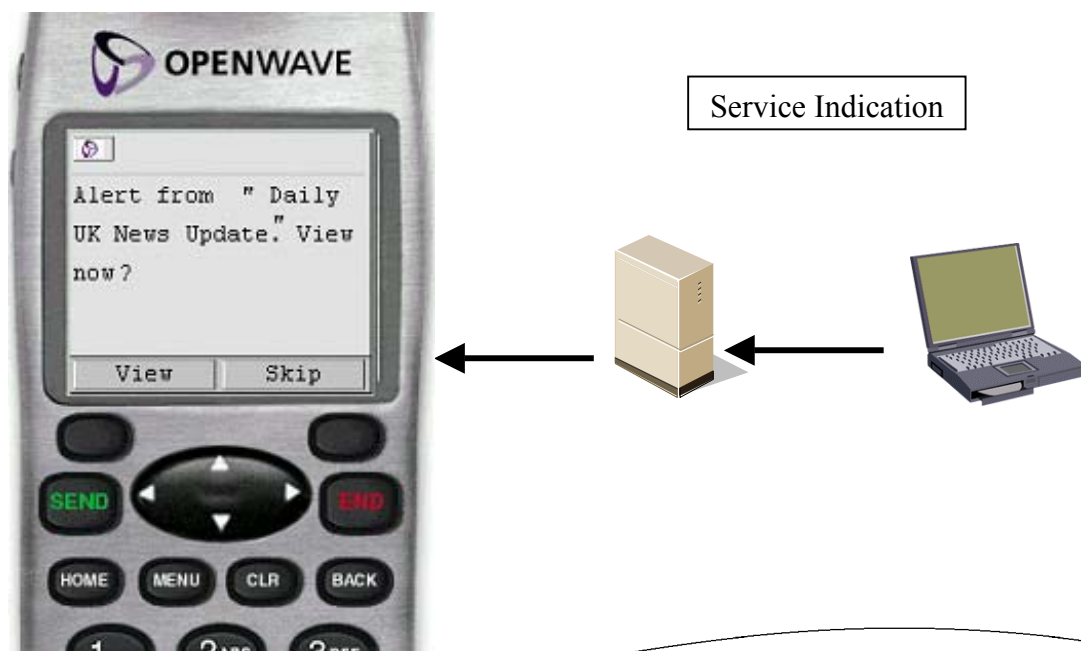
The PPG allows for :

- authentication of the receiver.
- confirmation of delivery.
- pushing large messages over constrained transports such as SMS.
- pushing over a secure channel.

Example Comparison

The following are examples of push services that use the content types discussed earlier.

The following is a simple example of a Service Indication from a news service indicating the arrival of a news alert to the user.



The PAP Push submission used to create this looks like:

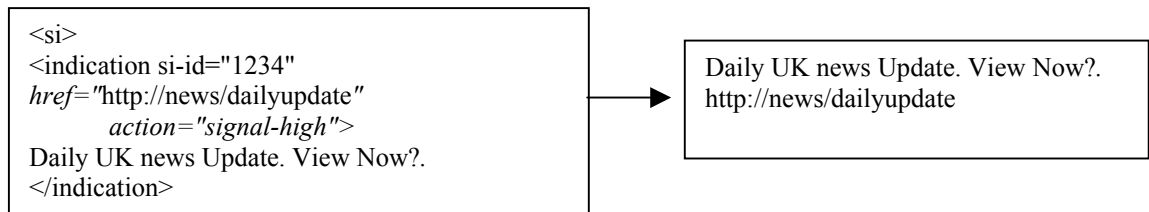
```
--asdlfkjiurwghasf
Content-Type: application/xml; charset=UTF-8
<?xml version="1.0"?>
    <!DOCTYPE pap PUBLIC "-//WAPFORUM//DTD PAP 1.0//EN"
        "http://www.wapforum.org/DTD/pap_1.0.dtd">

    <pap product-name="PI Push Submission Service Indication">
    <push-message push-id="PushSI"      source-reference="Push Team">
    <address address-value="WAPPUSH="+123456/TYPE=PLMN@ppg.openwave.com"/>
    </push-message>
    </pap>
--asdlfkjiurwghasf
Content-type: text/vnd.wap.si; charset=UTF-8

<?xml version="1.0"?>
<!DOCTYPE si PUBLIC "-//WAPFORUM//DTD SI 1.0//EN"
    "http://www.wapforum.org/DTD/si.dtd">

<si>
<indication href = "http://news/dailyupdate" si-id=1234>
Daily UK news Update. View Now?
</indication>
</si>
--asdlfkjiurwghasf
```

If this message were to be sent to a handset without WAP Push or UP.Notify capability, the following translation would be done automatically by the Openwave PPG. An example of this is:



NOTE: The HREF is optional. It will not appear if the sender does not specify it. In certain cases, on certain new handset, the HREF, if present, would be an active link. In the case of Openwave Wireless Messaging Service (or other enhanced text environments), text keywords in the message can also be active links, dependent on the provider configuration.

Using the content type, *text/plain*, would cause the content to be translated to a plain text SMS if the phone is not a push-capable handset (above example).

The PPG is also capable of translating the WAP push Service Indication to the older Openwave UP.Notify “Alert” format, providing a WAP push user-experience to the millions of existing handsets on the market. This combination of translation and delivery options allows the Openwave PPG to target the maximum number of users as recipients.

Service Indication using SMS provides a simple, effective, and universally applicable starting point for the development of push services.

SMS Comparison Summary

In terms of service, push is sometimes compared to SMS. In fact there are a number of significant differences. The PPG may use SMS as an underlying bearer, if required by the push initiator. In terms of comparison the push system offers:

Active content

Active content can be used to stimulate user access and usage, and because WAP push is an open standard, the content is compatible across different terminal vendors. Additional enhanced features, such as the ability to include WML and content replacement using HREF or unique identifiers, offer the ability to create an enhanced user experience.

Push Access Protocol

An open standard access protocol allowing the service provider to build a scalable development community with sophisticated developer toolkits available.

Rich Feature Set

The Openwave Push system offers a rich feature set, including application level control of intrusion, application level receipt confirmation, delivery notification to the push initiator, multi-recipient addressing, and device capability discovery and utilization, all based on the open WAP Forum standard for push.

In addition, the Openwave PPG offers automatic translation to pre-existing Openwave implementations of push, which is described in the developer white paper on backward compatibility.

Cache control

Cache control offers the ability to affect the dynamic storage of data on the terminal.

Over The Air

In terms of the air interface, the PPG offers access to a number of bearers and the ability for the push initiator to specify, in terms of Quality of Service, the preferred bearer. Additionally, authentication and secure push are available to ensure privacy.

PPG Control

The PPG offers the service provider and application developer a number of sophisticated mechanisms to tailor service for particular push initiators and to offer differing degrees of access to a wide user community of WAP-capable and pre-existing Openwave browsers.

Conclusion

The Push system provides a superior level of service and features that build upon the experience of SMS. It provides for active content that can be used, in its simplest form, as a novel way of introducing new services, and in its more sophisticated form, to deliver the service itself. Push via the Openwave Push Proxy Gateway provides all the capabilities necessary to communicate to the widest possible group of users, while facilitating the development of applications by providing a single, open-standard push access point.

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