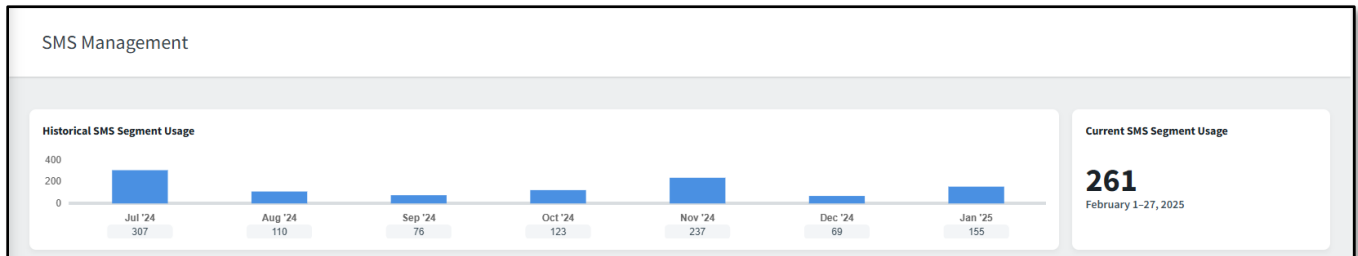# SMS Segments

SMS Management in Total Expert

For organizations using the Engage SMS feature in Total Expert, administrator users can view SMS usage statistics at the top of the SMS Management page (**Organization Admin → SMS Management**).

These numbers are meant to provide visibility about the volume of messaging going out from your organization. However, note that these statistics are in terms of "SMS segments" as opposed to "SMS messages". Since Total Expert's SMS provider, Twilio, charges in terms of segments, it is important to understand how segments differ from messages.

> **Note**
> This document partially summarizes this resource from Twilio, which includes more complete details and links for further reading on the topic of message segments.

Background

Limitations

Due to limitations of early SMS technology, it was only possible to send messages that consisted of plain text characters.

> **Note**
> In this context, "plain text characters" means GSM 7-bit encoding, which includes English letters, numerals 0–9, common punctuation marks, an ordinary space, a carriage return (line break), and a small number of special characters, such as ñ.

In addition to this, any message that exceeded 140 bytes (160 plain text characters) had to be broken into multiple parts or *segments* that would be sent separately. Depending on compatibility, they could be stitched back together, or concatenated, on the recipient end using segment headers.

This means that a short message would consist of a single segment, whereas a long message would be broken into multiple segments, even though the sender (and possibly the recipient) would see only a single uninterrupted message. In the situation where service providers charge for each text, senders are billed for each segment.

Segment Headers

Whenever a message is broken into segments, each segment is allocated 6 of the 140 bytes for a User Data Header. These headers, now standardized, ensure that segments are concatenated correctly by most services and devices. However, it means that fewer than160 characters of your message can be included in a segment.

> **Example**
> A message with 318 characters would require 3 segments, not 2. The first segment would include the 6-byte header and the first 153 characters, the second segment would have its own 6-byte header and the next 153 characters, and the third segment would have its 6-byte header and the remaining 12 characters.

Current Behavior

While many things about texting have changed over time, the 140-byte limit per segment is still used. This means that if you use only plain text characters, a message of 160 characters or fewer still uses only 1 segment.

However, current technology makes it not only possible, but quite easy, to include a wider variety of characters than described above. Emojis are a notable example. Using word processing tools to pre-compose messages may also introduce things like "smart" quotation marks and apostrophes (", ", and ' as opposed to " and ') and whitespace characters other than a simple space.

Modern texting systems support these characters, but messages that include them must be encoded using a different character set (UCS-2, 16-bit). Because this character set requires more space per character (16 bits versus 7 bits), a segment using this encoding can include only 70 characters (and just 67 when a header is needed).

> **Note**
> A message uses only 1 character set. This means that using even a single character outside the plain text character set causes the entire message to be converted to the UCS-2 encoding and broken into segments accordingly.
>
> Emoji and other advanced characters use multiple 16-bit codes, further reducing the number of characters per segment. For example, an emoji that requires 2 sets of 16 bits (essentially 2 characters) could only be used 35 times before requiring another segment.

> **Tip**
> Use Twilio's Messaging Segment Calculator to pre-measure how many segments a message requires. Tinker with different character options to learn how segments are created from a given message.

> **Example**
> Here are 2 similar versions of the same message. The first uses 208 plain text characters. It is broken into 2 segments (indicated by color highlighting).
> Hey Sam - this is Alec from Expert Mortgage. Hope Spring isn't killing you with yard work! I'm reaching back out to see if you've picked back up your home search. Would love to connect and see how I can help.
>
> The second version also uses 208 characters, but the exclamation point has been replaced by an emoji. This requires UCS-2 encoding for the entire message, causing it to be broken into 4 segments.
> Hey Sam - this is Alec from Expert Mortgage. Hope Spring isn't killing you with yard work😊 I'm reaching back out to see if you've picked back up your home search. Would love to connect and see how I can help.