



SMS 365, operator service SMS Messaging Error Codes

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Revision History

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1 Introduction

While SMS messages are, for the most part, delivered to their destination subscriber over 99% of the time, there are times when the message is interrupted during its transit. This can be caused by a variety of reasons – from issues in the radio link between the handset or originating device and the operator, between the originating operator and an inter-carrier messaging hub, with the content or format of the message, between the inter-carrier messaging hub and the destination operator, and so forth.

This is a complex ecosystem, so errors do occur. The purpose of this document is to outline frequent and not so frequent errors that are commonly seen for SMS and from the point of view of the Digital Interconnect's Inter-Carrier Messaging Hubs.

Error messages are visualized in the various reporting and analytics products that Digital Interconnect provides to its customers. Messages that are rejected by Digital Interconnect will also have various error codes as part of the rejection response.



2 SMS Error Codes

Digital Interconnect's SMS interoperability solution, SMS 365 provides a wide variety of error codes to cover almost any conceivable situation. In many cases, error codes are passed from the destination SMSC or SMS gateway back to the originator, as many of these occur on the far-end destination.

Some error codes are transient or temporary. SMS 365 identifies these as such and will usually attempt to retry delivery of the message.

Using the SMS 365 reporting tools, such as Report Manager, error codes for a customer or even individual routes can be summarized.

In this sample, a list of common error codes that may appear for any carrier are shown. This is a live example of the number of errors that occurred when delivering several million messages over a period of time.

| Error Code | Protocol | Category | Error Description | Error Messages | Percent of |
|------------|----------|--------------------|------------------------------|----------------|------------|
| Total | | | | 58,536 | 100.00% |
| 1103 | Internal | CAT_Other_Error | Content invalid | 33,699 | 57.57% |
| 1100 | Internal | CAT_Other_Error | NPA/NXX not found | 16,116 | 27.53% |
| 1106 | Internal | CAT_Other_Error | No route to carrier | 6,505 | 11.11% |
| 00000045 | SMPP | CAT_Delivery_Error | submit_sm or submit_multi | 1,129 | 1.93% |
| 0000000A | SMPP | CAT_Delivery_Error | Invalid Source Address | 549 | 0.94% |
| 00000043 | SMPP | CAT_Delivery_Error | Invalid esm_class field data | 285 | 0.49% |
| 00000014 | SMPP | CAT_Delivery_Error | Message Queue Full | 107 | 0.18% |
| 1002 | Internal | CAT_Other_Error | Unknown error | 36 | 0.06% |
| 00000008 | SMPP | CAT_Other_Error | System Error | 35 | 0.06% |
| 000000FF | SMPP | CAT_Delivery_Error | Unknown Error | 31 | 0.05% |
| 1101 | Internal | CAT_Other_Error | Destination address invalid | 26 | 0.04% |
| 1130 | Internal | CAT_Delivery_Error | Blank Message | 17 | 0.03% |
| 00000058 | SMPP | CAT_Other_Error | Throttling error (ESME has | 1 | 0.00% |

At first glance, several of these look to be quite self-explanatory. Messages such as **Message Queue Full**, **Invalid Source Address** (for SMPP), **Content Invalid** or **Blank Message**, while not common, are rather self-explanatory.

Each message received by SMS 365 is queried in our NRS database, which is fed by a variety of authoritative sources from around the world.



As you can see the errors are categorized. Delivery Errors are common, so let's review what they mean in more detail:

- 1100 NPA/NXX not found** -- Typically occurs when a subscriber tries to send a message to the USA or Canada. NPA = Area Code and NXX=Exchange. So in the North American Numbering plan, we have +1 NPA NXX YYYY. NPA NXX sequences are very specific. If a subscriber mistypes the destination number -- especially the NPA NXX, the message will fail. Additionally, this may occur if our hub thinks an invalid country code is part of a +1 NPA.
- 1106 No Route to Carrier** -- This would occur when we can resolve the number to a particular operator, but we have no way of reaching that operator. For example, we looked up a route to +503 77 123456. +503 is El Salvador and mobile carrier was identified in our NRS database as Millicom/Tigo. In this case, we can reach Millicom/Tigo El Salvador, but NOT for traffic from the originating carrier country -- only the specific carriers or countries could reach this destination. These types of exceptions are always noted in our Global Operator List.
- 1101 Destination address invalid** -- This means that the destination phone number was incomplete or probably had a bad or unrecognized country code. Again, this is typically the result of a subscriber mistyping the destination address. As you can see from the table, these are generally rare.
- 1103 Content Invalid** -- SMS 365 typically limits P2P SMS traffic to non-binary messages -- meaning we filter out and reject these messages. This is usually built into our contracts with a variety of mobile operators for us to provide this. It may be noted as the types of character encoding that a particular operator will accept.

In the table above, if you look at Protocol column and note the "SMPP" entries.

These generally occur at the far end SMSC, when we try to deliver the message.

This is the standard **SMPP response codes** that we passed back to the originating operator.

Here's another selection of errors:

| Error Code | Protocol | Category | Error Description | Error Messages | Percent of |
|------------|----------|--------------------|------------------------------|----------------|------------|
| 00000008 | SMPP | CAT_Other_Error | System Error | 19 | 6.25% |
| 00000014 | SMPP | CAT_Delivery_Error | Message Queue Full | 11 | 3.62% |
| 00000043 | SMPP | CAT_Delivery_Error | Invalid esm_class field data | 268 | 88.16% |
| 00000045 | SMPP | CAT_Delivery_Error | submit_sm or submit_multi | 6 | 1.97% |
| Total | | | | 304 | 100.00% |

As you can see the biggest was an **Invalid esm_class field data**. The error was generated by the destination carrier's SMSC. The esm_class is an SMPP parameter that is used to indicate special messaging attributes.



Normally, this is set to "default SMSC mode [Store & Forward], normal message. But there are ways that handsets or originating entities could specify other messaging options - such as reply path and such. In this case, the far-end SMSC will reject some of these constructs -- usually as a matter of policy.

Message Queue Full and **System Error** are also noted, but in much smaller numbers -- **System Error** usually relating to some problem with the destination SMSC in general. Generally, the **System Error** message either follows or precedes some "outage" event; otherwise, it would be transient in nature.



The next image contains a more comprehensive list of errors that may occur:

| Error Code | Message Category | Error Message & Description |
|------------|------------------|---|
| 00000001 | SMPP | CAT_Delivery_Error - Message Length is invalid |
| 00000008 | SMPP | CAT_Other_Error - System Error |
| 0000000A | SMPP | CAT_Delivery_Error - Invalid Source Address |
| 0000000B | SMPP | CAT_Delivery_Error - Invalid Destination Address |
| 00000014 | SMPP | CAT_Delivery_Error - Message Queue Full Invalid |
| 00000015 | SMPP | CAT_Delivery_Error – Service type |
| 00000043 | SMPP | CAT_Delivery_Error - Invalid esm_class field data |
| 00000045 | SMPP | CAT_Delivery_Error - submit_sm or submit_multi failed |
| 00000058 | SMPP | CAT_Other_Error - Throttling error (ESME has exceeded allowed message limits) |
| 00000064 | SMPP | CAT_Other_Error - ESME Receiver Temporary App Error Code |
| 00000065 | SMPP | CAT_Other_Error - - ESME Receiver Permanent App Error Code |
| 000000FE | SMPP | CAT_Other_Error - Delivery Failure (used for data_sm_resp) |
| 000000FF | SMPP | CAT_Delivery_Error - Unknown Error |
| 00000447 | SMPP | CAT_Other_Error - Reserved for SMSC vendor specific errors |
| 002 | Internal | CAT_Other_Error - Delivery Failed |
| 02 | UCP | CAT_Other_Error - Syntax Error Operation |
| 04 | UCP | CAT_Other_Error - not allowed Call |
| 05 | UCP | CAT_Other_Error - barring active |
| 1002 | Internal | CAT_Other_Error- Unknown error |
| 1060 | Unknown | CAT_Other_Error - Unknown |
| 1100 | Internal | CAT_Other_Error - NPA/NXX not found |



| | | |
|-------------|----------|---|
| 1101 | Internal | CAT_Other_Error - Destination address invalid |
| 1103 | Internal | CAT_Other_Error - Content invalid |
| 1105 | Internal | CAT_Other_Error - Validity period expired |
| 1106 | Internal | CAT_Other_Error - No route to carrier |
| 1108 | Internal | CAT_Other_Error - Loop |
| 1130 | Internal | CAT_Delivery_Error - Blank Message |
| 1300 | Internal | CAT_Other_Error - NACK |
| 1711 | Internal | Network Errors – No ACK Received |
| 1713 | Internal | CAT_Other_Error - Socket Timeout |
| 24 | UCP | CAT_Other_Error - Message too long |
| 302 | WCTP | Protocol Violation Error Codes - XML validation error |
| 9 | UCP | UCP - GA not valid |

As you can see, messages are categorized by SMPP, Internal (within SMS 365 messaging hubs) as well as other specific protocols such as UCP and WCTP. In general, these would come from the far end destination and be returned back to SMS 365.



2.1 SPAM Control Error Codes

SMS 365 provides a number of capabilities to scrutinize SMS messages for spam and/or unacceptable traffic as they traverse the hubbing environment. The error codes are designed to provide some views as to why a particular message was blocked.

| Error Code | Description for Reporting |
|------------|---|
| 1120 | Blocked SPAM – Originating Address (OA) Statistical |
| 1121 | Blocked SPAM – Keyword |
| 1122 | Blocked SPAM – Content or Keyword |
| 1123 | Blocked SPAM – Alphanumeric Originating Address (OA) |
| 1124 | Blocked SPAM – Repeated Content |
| 1125 | <p>Blocked SPAM – Cloudmark Mobile Platform</p> <p>Messages cited by the Cloudmark Mobile Platform can further be researched by Digital Interconnect personnel to further determine why particular messages may have been blocked (within 30 days of the blocked message).</p> <p>This will be the most common error in terms of spam blocking.</p> |



2.2 SS7 Originated Error Codes

In an effort to provide additional transparency and visibility, in 2013, we added a number of new error codes that will further diagnose conditions at the far end. In the past, we used a catch-all error code (1300) that covered a variety of GSM SS7-specific conditions. The new codes will detail the individual conditions that caused the 1300 code and provide further details into an SMS's final disposition.

Additionally, where possible, some conditions were moved from Error Code 1002 (Unknown Error) to one or more of the new codes to provide further visibility.

The following table outlines the new error codes that are deployed within SMS 365.

The **Retry** column indicates if the original occurrence of that error would have triggered a retry process. If, after the retries have been exhausted and the condition persists, then the final disposition will be the code indicated.

| Error Code | Description | Retry |
|------------|--|-------|
| 3300 | Unknown User Error | Yes |
| 3301 | Destination Handset Number does not exist in the Numbering Plan. | No |
| 3302 | Reception status of SMS is unknown and no acknowledgement of delivery. | No |
| 3303 | External Operator specific error code. | No |
| 3305 | The Origin Number does not exist in the Numbering Plan OR On a FWD_SM_MT, the subscriber (identified by the IMSI) is not in the visited MSC. | No |
| 3306 | Absent Subscriber | Yes |
| 3308 | The delivering node has not received a response. The HLR may not be reachable or the subscriber may be roaming in a country where the delivering node does not have a roaming agreement. | No |
| 3309 | Invalid subscriber. | No |



| Error Code | Description | Retry |
|------------|---|-------|
| 3311 | No SMS Service for this reachable Operator or this Handset | No |
| 3312 | Invalid Terminal | No |
| 3313 | Invalid Terminal. | No |
| 3314 | No routing exists to destination. | No |
| 3315 | Destination is not reachable and SMS service is not available. | No |
| 3316 | No roaming route. | No |
| 3317 | The destination handset is roaming on a network that Sybase 365 has no reach. | No |
| 3318 | The requesting ISP is not registered for the localization feature service. | No |
| 3319 | The requesting ISP is not registered for the localization feature service. | No |
| 3320 | Origin address is not recognized | No |
| 3321 | No response. | No |
| 3322 | External Operator specific error code. | No |
| 3327 | The subscriber has turned off his handset. | Yes |
| 3328 | The destination is unreachable or barred. | No |
| 3331 | The GSM subscriber is busy for MT-SMS. | Yes |
| 3332 | SIM card is full. | Yes |
| 3333 | Voicemail is full. | No |
| 3335 | MSC Congestion | Yes |
| 3336 | Unacceptable data value. | No |



| Error Code | Description | Retry |
|------------|---|-------|
| 3337 | Network congestion. | Yes |
| 3338 | The receiving SMSC or SME does not accept messages with more than 160 characters. | No |
| 3339 | The maximum number of http or SMPP sessions has been reached. | No |
| 3340 | No SS7 Route | Yes |
| 3362 | Localization specific mode | No |
| 3363 | Cannot reach the destination handset, and has stored the message for retry in its « Store & Forward » function. | No |
| 3364 | Validity period has been reached and abandons. | No |
| 3365 | A CLOSE_IND has been received without CNF to a request that was sent. | No |
| 3368 | The "Home SMSC" has accepted the SMS. No known status. | No |
| 3500 | End-user sending messages when it is not authorized to do so. | No |
| 3501 | Duplicated invoke ID | No |
| 3502 | Not supported service | No |
| 3503 | Bad parameter sent to destination network | No |
| 3504 | Resource limitation or incompatible versions | No |
| 3505 | Initiating release | No |
| 3506 | Unexpected response from peer | No |
| 3507 | Service completion failure | No |
| 3508 | No response from peer | No |
| 3509 | Invalid response received | No |



| Error Code | Description | Retry |
|------------|---|-------|
| 3510 | Memory capacity exceeded | No |
| 3511 | Equipment protocol error | No |
| 3512 | Equipment protocol error | No |
| 3513 | Unknown service center | No |
| 3514 | SC congestion - The number of SMS waiting in the destination SMSC exceeds the maximum number for the destination subscriber which has been unreachable for some time. (max=8 is a typical value). | No |
| 3515 | Invalid SME address - Destination Address Error. This occurs with SMSCs, which restricts the possibility of SMS submission toward existing real subscribers. The SMS was sent to the SMSC with a Destination Address which does not correspond to an existing subscriber. | No |
| 3516 | Subscriber not SC subscriber - Origin Address Error. This occurs with SMSCs which allow only their own subscribers to submit an MO SMS to the SMSC. Another reason is that the SMS was sent to the SMSC with an Origin Address which is not recognized as a subscriber of this network. | No |
| 3520 | PLMN Problem | No |
| 3521 | HLR Problem | No |
| 3522 | VLR Problem | No |
| 3523 | Controlling MSC Problem | No |
| 3524 | VMSC Problem | No |
| 3525 | EIR Problem | No |
| 3526 | RSS Problem | No |

Many of these error codes are quite rare and may not occur during a given reporting period; however, these all but eliminate the usage of the generic Error Code 1300.



However, there could still be instances where we find a condition that might get mapped to the “catch-all” code 1300.