1

1 Introduction

1.1   Document Overview

The NPAC SMS Interoperable Interface Specification contains the information model for the Number Portability Administration Center and Service Management System (NPAC SMS) mechanized interfaces. Both Service Order Activation (SOA) and Local Service Management System (LSMS or Local SMS) interfaces to the NPAC SMS are described in this document.

IIS Updates for NANC 179 (range notifications). Change bars have been turned ON. Chapters 1 through 5 (first paragraph) have been included, so that the Message Flows in Chapter 6 contain the same sub-section numbers as the most recent IIS (Version 1.8).

1

2

2 Interface Overview

2.1   Overview

This specification defines the interfaces between the NPAC SMS and the service providers'
Service Order Entry System and Local SMS. The interfaces, defined using the CMIP protocol, are
referred to as the SOA to NPAC SMS interface and the NPAC SMS to Local SMS interface

3

3 Hierarchy Diagrams

3.1 Overview

The following five exhibits show the class hierarchy diagram for all managed objects (*Exhibit 2*), Log Record Objects (*Exhibit 3*), the Local SMS (*Exhibit 4*), the NPAC SMS naming hierarchies for the Local SMS (*Exhibit 5*) and the SOA (*Exhibit 6.*) These exhibits will help the user gain a better understanding of the structure of the interface definitions provided.

4

4 Interface Functionality to CMIP Definition Mapping

4.1 Overview

The following tables, Exhibits 7-11, contain the mapping of the interface functionality to managed objects, attributes, actions, and notifications.

5

5 Secure Association Establishment

5.1   Overview

This chapter describes the security, the association management and recovery procedures for the service provider SOAs and Local SMSs to follow, and how error information will be passed between interfaces.

6

6 Message Flow Diagrams

6.1   Overview

This chapter defines the message flow scenarios for the SOA to NPAC and the NPAC SMS to Local SMS interfaces. Each of these definitions consists of a message flow diagram and a textual description of the diagram.

6.2   Audit Scenarios

6.2.1   SOA Initiated Audit

In this scenario, the SOA initiates an audit to the NPAC SMS due to suspected subscription version discrepancies.

6.3   Service Provider Scenarios

6.3.1   Service Provider Creation by the NPAC

In this scenario, the NPAC SMS creates data for a new LNP service provider. The addition of NPA-NXX and LRN data for a new service provider will be shown in flows that follow.

6.4   Service Provider Network Data Scenarios

6.4.1   NPA-NXX Scenarios

6.4.1.1   NPA-NXX Creation by the NPAC

In this scenario, NPAC SMS creates new NPA-NXX data for an LNP service provider.

**6.5   SubscriptionVersion Flow Scenarios**

Note: All actions for subscription versions in the flows that follow are atomic. If the operation fails for one TN in a range it fails for all TNs in the range.

6.5.1   SubscriptionVersion Create Scenarios

The subscriptionVersionNPAC object is created by either the new or old service provider SOA issuing their M-ACTION to create the subscription version. If the new

6.5.1.1   SubscriptionVersion Create by the Initial SOA (Old Service Provider)

In this scenario, the old service provider is the first to send the M-ACTION to create the subscriptionVersion object.
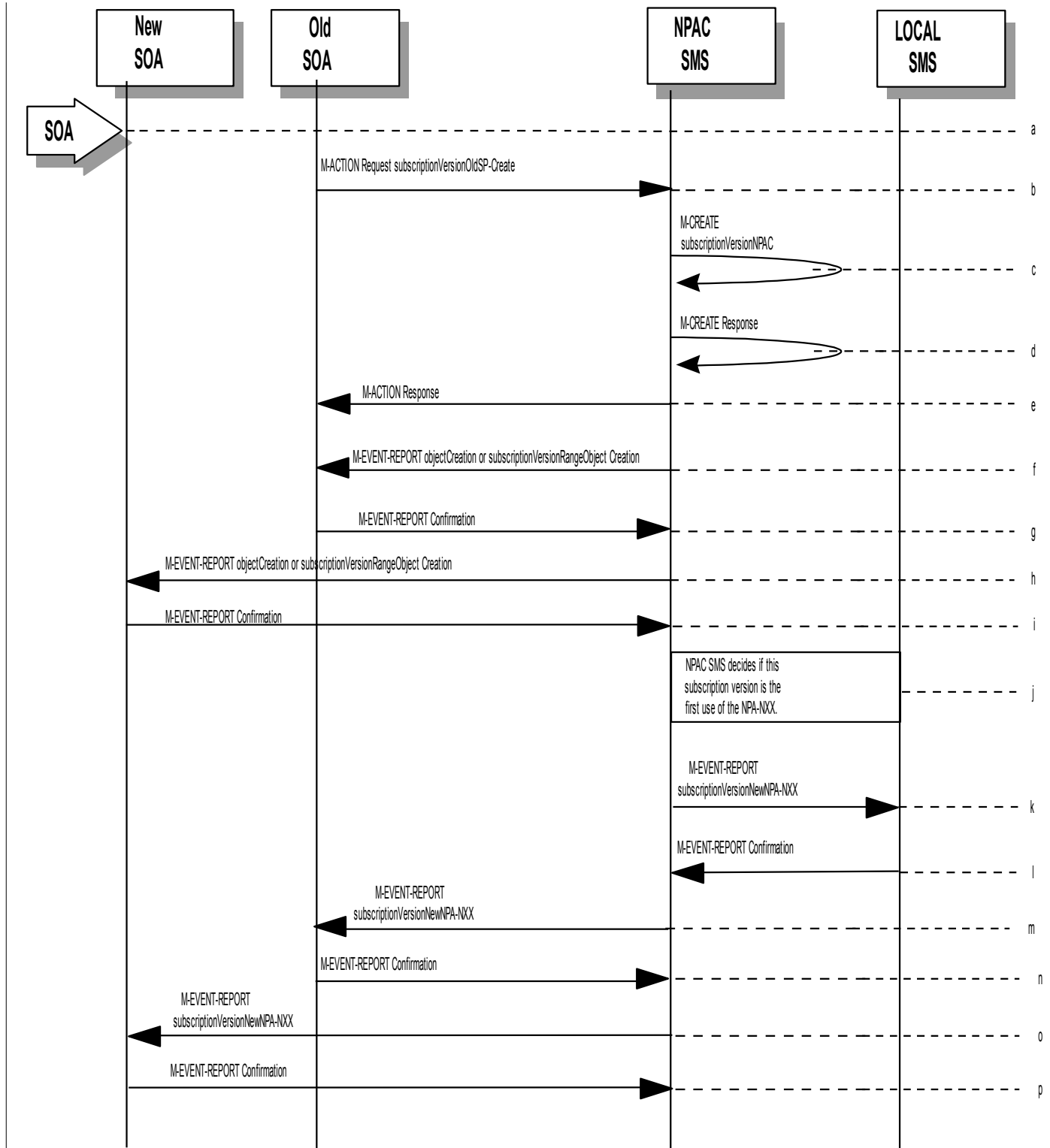
a.   Action is taken by the old service provider SOA to create a new version of a subscriber.

b.   Old service provider SOA sends M-ACTION subscriptionVersionOldSP-Create to the NPAC SMS lnpSubscriptions object to create a new subscriptionVersionNPAC. The old service provider SOA must specify the following valid attributes:

> subscriptionTN or a valid subscriptionVersionTN-Range
> subscriptionNewCurrentSP
> subscriptionOldSP
> subscriptionOldSP-DueDate
> subscriptionOldSP-Authorization
> subscriptionLNPType

If the service provider were to give a range of TNs, this would result in an M-CREATE and M-EVENT-REPORT for each TN.

If an attribute value is invalid, an invalidArgumentValue will be returned, indicating invalid data values. Other appropriate errors will also be returned.

c.   If the request is valid, the NPAC SMS will create the subscriptionVersionNPAC object. The status will be set to "pending" and the subscriptionOldSP-AuthorizationTimeStamp and subscriptionModifiedTimeStamp will be set.

d.   NPAC SMS responds to M-CREATE.

e.   NPAC SMS sends action reply with success or failure and reasons for failure.

f.   If the M-ACTION was successful, the NPAC SMS issues an M-EVENT-REPORT containing the following attributes to old service provider SOA of subscriptionVersionNPAC creation (objectCreation or subscriptionVersionRangeObjectCreation).

g.   subscriptionTN or a valid subscriptionVersionTN-Range
h.   subscriptionOldSP
i.   subscriptionNewCurrentSP
j.   subscriptionOldSp-DueDate
k.   subscriptionOldSP-Authorization
l.   subscriptionOldSP-AuthorizationTimeStamp
m.   subscriptionStatusChangeCauseCode

n.   (if subscriptionOldSP-Authorization set to false)

o.   subscriptionVersionStatus

p.   Old service provider SOA responds by sending an M-EVENT-REPORT confirmation back to the NPAC SMS.

q.   If the M-ACTION was successful, the NPAC SMS issues an M-EVENT-REPORT to new service provider SOA of subscriptionVersionNPAC creation (objectCreation or subscriptionVersionRangeObjectCreation).

r.   New service provider SOA issues an M-EVENT-REPORT confirmation to NPAC SMS.

s.   NPAC SMS decides if this subscription version is the first use or the NPA-NXX.

t.   If this is the first use of the NPA-NXX, the NPAC SMS sends the subscriptionVersionNewNPA-NXX M-EVENT-REPORT to inform the accepting Local SMSs.

u.   The Local SMS confirms the M-EVENT-REPORT.

v.   The NPAC SMS sends the subscriptionVersionNew NPA-NXX M-EVENT-REPORT to inform the Old SOA.

w.   The Old SOA confirms the M-EVENT-REPORT.

x.   The NPAC SMS sends the subscriptionVersionNew NPA-NXX M-EVENT-REPORT to inform the New SOA.

y.   The New SOA confirms the M-EVENT-REPORT.

0The next scenario would be "SubscriptionVersion Create by the Second SOA (New Service Provider)."

6.5.1.2

SubscriptionVersion Create by the Initial SOA (New Service Provider)

In this scenario, the new service provider is the first to send the M-ACTION to create the subscriptionVersion object.
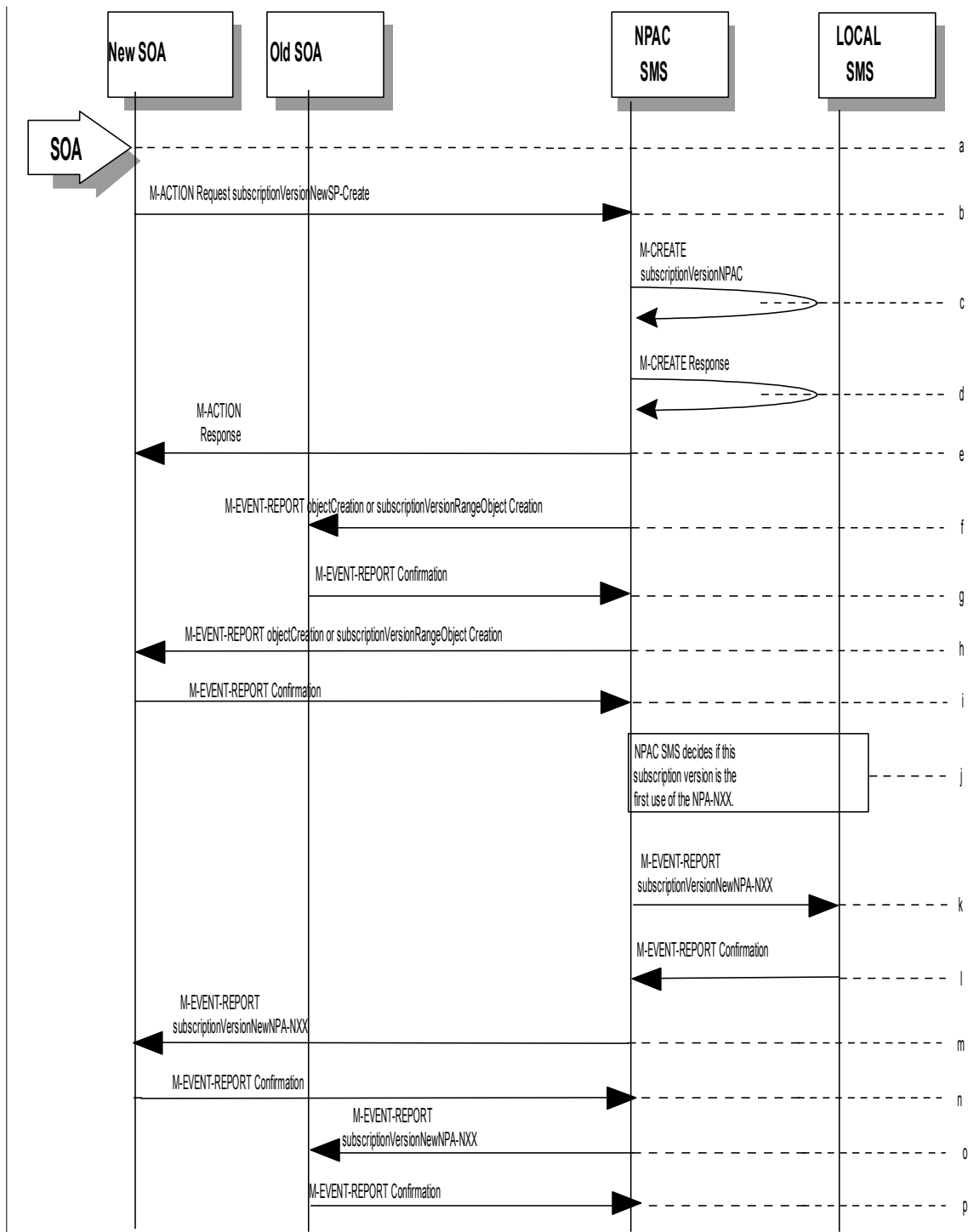
z. Action is taken by the new service provider SOA to create a new version of a subscriber.

aa. New service provider SOA sends M-ACTION subscriptionVersionNewSP-Create to the NPAC SMS lnpSubscriptions object to create a new subscriptionVersionNPAC. The new service provider SOA must specify the following valid attributes:

> subscriptionTN or a valid subscriptionVersionTN-Range
> subscriptionNewCurrentSP
> subscriptionOldSP
> subscriptionNewSP-DueDate
> subscriptionLNPType
> subscriptionPortingToOriginal-SP Switch

The following items must be provided unless subscriptionPortingToOriginal-SP is true:

> subscriptionLRN
> subscriptionCLASS-DPC
> subscriptionCLASS-SSN
> subscriptionLIDB-DPC
> subscriptionLIDB-SSN
> subscriptionCNAM-DPC
> subscriptionCNAM-SSN
> subscriptionISVM-DPC
> subscriptionISVM-SSN

The following attributes are optional:

> subscriptionEndUserLocationValue
> subscriptionEndUserLocationType
> subscriptionBillingId

If the service provider were to give a range of TNs, this would result in an M-CREATE and M-EVENT-REPORT for ~~each TN~~ the entire TN Range.

If any attribute is invalid, an action failure will be returned, indicating invalidArgumentValue. Other appropriate errors will also be returned.

bb. If the request is valid, the NPAC SMS will create the subscriptionVersionNPAC object. The status will be set to "pending" and the subscriptionModifiedTimeStamp and subscriptionCreationTimeStamp will be set.

cc. NPAC SMS responds to M-CREATE.

dd. NPAC SMS sends action reply with success or failure and reasons for failure.

ee. If the M-ACTION was successful, NPAC SMS issues an M-EVENT-REPORT containing the following attributes to old service provider SOA of subscriptionVersionNPAC creation (objectCreation or subscriptionVersionRangeObjectCreation).

ff. subscriptionTN or a valid subscriptionVersionTN-Range

gg. subscriptionOldSP

hh. subscriptionNewCurrentSP

ii.   subscriptionNewSP-CreationTimeStamp

jj.   subscriptionVersionStatus

kk. subscriptionNewSP-DueDate

ll.   Old service provider SOA responds by sending an M-EVENT-REPORT confirmation back to the NPAC SMS.

mm.If the M-ACTION was successful, NPAC SMS issues an M-EVENT-REPORT to new service provider SOA of subscriptionVersionNPAC creation (objectCreation or subscriptionVersionRangeObjectCreation).

nn. New service provider SOA issues an M-EVENT-REPORT confirmation to NPAC SMS.

oo. NPAC SMS decides if this subscription version is the first use or the NPA-NXX.

pp. If this is the first use of the NPA-NXX, the NPAC SMS sends the subscriptionVersionNewNPA-NXX M-EVENT-REPORT to inform the accepting Local SMSs.

qq. The Local SMS confirms the M-EVENT-REPORT.

rr.   The NPAC SMS sends the subscriptionVersionNew NPA-NXX M-EVENT-REPORT to inform the Old SOA.

ss.   The Old SOA confirms the M-EVENT-REPORT.

tt.   The NPAC SMS sends the subscriptionVersionNew NPA-NXX M-EVENT-REPORT to inform the New SOA.

uu. The New SOA confirms the M-EVENT-REPORT.

1The next scenario is either "SubscriptionVersion Create by the Second SOA (Old Service Provider)." or "SubscriptionVersion Activated by New Service Provider SOA".

6.5.1.3

SubscriptionVersion Create by Second SOA (New Service Provider)

In this scenario, the old service provider has already issued its request causing the subscriptionVersionNPAC to be created. The new service provider is now following with its own create action.

vv.
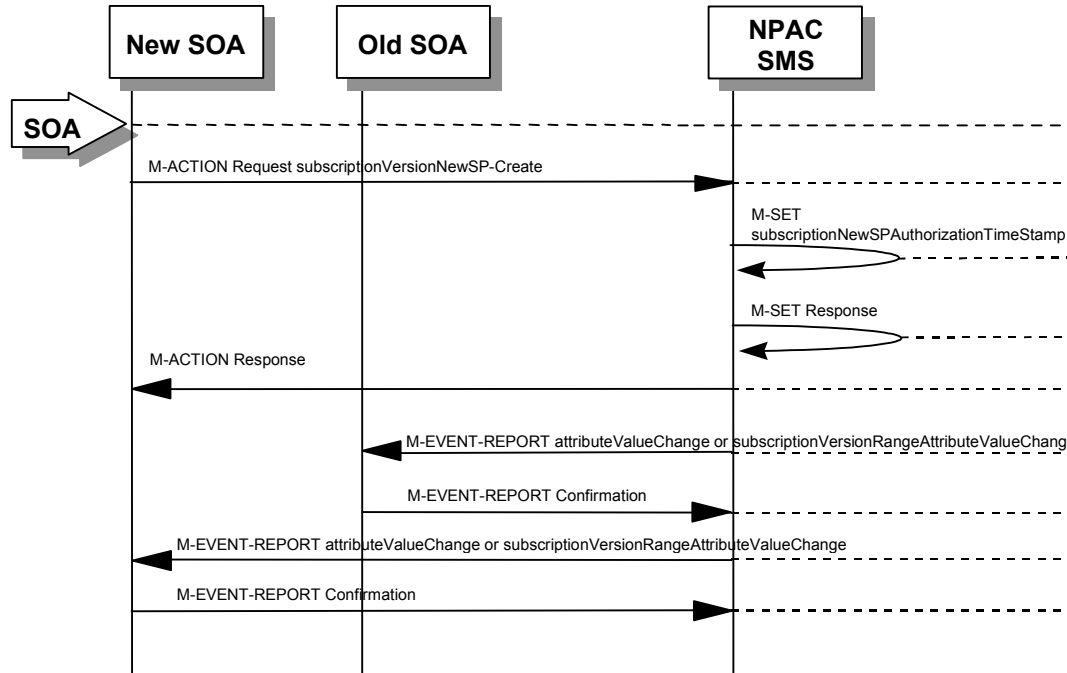
New service provider SOA personnel take action to create a new subscription version.

ww. New service provider SOA sends M-ACTION subscriptionVersionNewSP-Create to NPAC SMS lnpSubscriptions object to create a new subscriptionVersionNPAC. The new service provider SOA must specify the following valid attributes:

> subscriptionTN or a valid subscriptionVersionTN-Range
> subscriptionNewCurrentSP
> subscriptionOldSP
> subscriptionNewSP-DueDate
> subscriptionLNPType
> subscriptionPortingToOriginal-SP Switch

The following items must be provided unless subscriptionPortingToOriginal-SP is true:

> subscriptionLRN
> subscriptionCLASS-DPC
> subscriptionCLASS-SSN
> subscriptionLIDB-DPC
> subscriptionLIDB-SSN
> subscriptionCNAM-DPC
> subscriptionCNAM-SSN
> subscriptionISVM-DPC
> subscriptionISVM-SSN

The following attributes are optional:

> subscriptionEndUserLocationValue
> subscriptionEndUserLocationType
> subscriptionBillingId

If a TN range is specified in the request, it would result in an M-SET request and M-EVENT-REPORT for the entire TN Rangeeach TN.

If the new service provider is not the new service provider specified in the initial create by the old service provider, an accessDenied error will be returned.

If any attribute is invalid, an action failure will be returned, indicating invalidArgumentValue. Other appropriate errors will be returned.

xx. If successful, the NPAC SMS sets the subscriptionModifiedTimeStamp, subscriptionCreationTimeStamp, and all data specified in the M-ACTION.

yy. NPAC SMS responds to M-SET.

zz. NPAC SMS sends M-ACTION reply with success or failure and reasons for failure.

aaa. NPAC SMS issues the M-EVENT-REPORT (attributeValueChange or subscriptionVersionRangeAttributeValueChange).with the following attributes to the old service provider when the subscriptionNewSP-DueDate changes value.

bbb. subscriptionNewSP-DueDate
ccc. subscriptionNewSP-CreationTimeStamp

ddd. Old service provider SOA issues M-EVENT-REPORT confirmation.

eee. If the M-ACTION was successful, the NPAC SMS issues M-EVENT-REPORT (attributeValueChange or subscriptionVersionRangeAttributeValueChange) to the new service provider for all attributes updated from the preceding list of modifiable attributes in addition to the following:

fff. subscriptionNewSP-DueDate
ggg. subscriptionNewSP-CreationTimeStamp

hhh. New service provider SOA issues M-EVENT-REPORT confirmation.

6.5.1.4

SubscriptionVersion Create by Second SOA (Old Service Provider)

2In this scenario, the new service provider has already issued its request causing the subscriptionVersionNPAC to be created. The old service provider is now following with its own create action.

Note: This is an optional step.

iii.
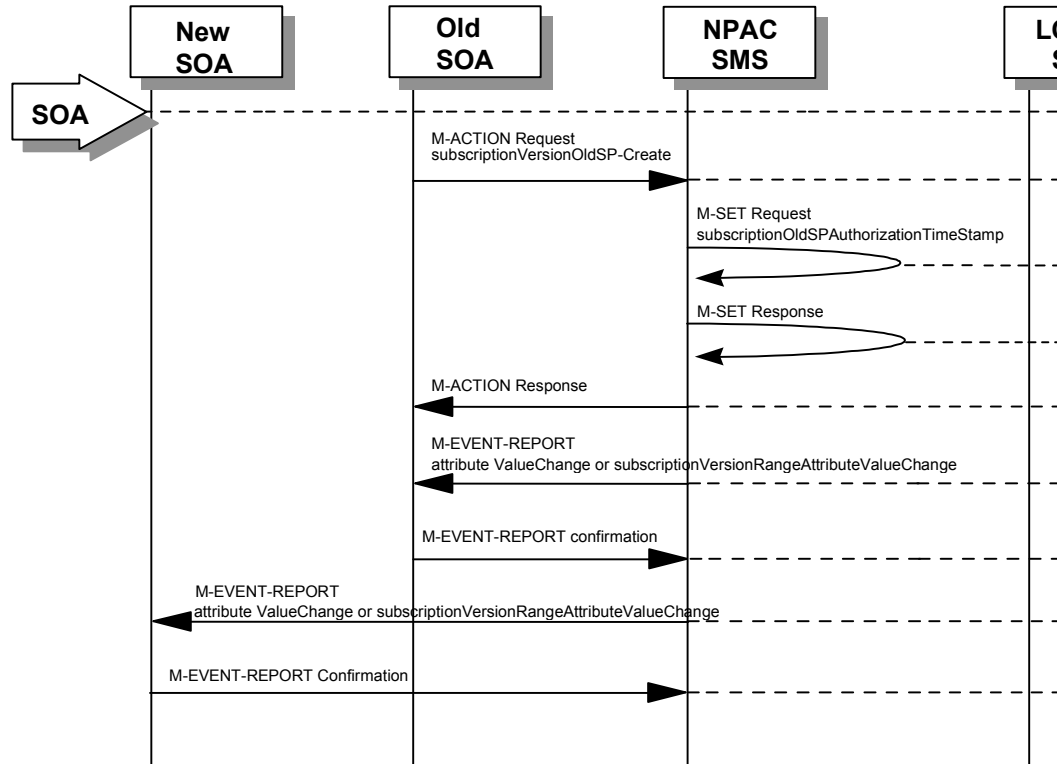
Old service provider SOA personnel take action to create a old subscription version.

jjj. Old service provider SOA sends M-ACTION subscriptionVersionOldSP-Create to NPAC SMS lnpSubscriptions object to create an old subscriptionVersionNPAC. The old service provider SOA must specify the following valid attributes:

> subscriptionTN or a valid subscriptionVersionTN-Range
> subscriptionNewCurrentSP
> subscriptionOldSP
> subscriptionOldSP-Authorization
> subscriptionOldSP-DueDate
> subscriptionLNPType

If a TN range is specified in the request, it would result in an M-SET request and M-EVENT-REPORT for the entire TN Rangeeach TN.

If the old service provider is not the old service provider specified in the initial create request by the new service provider, an accessDenied error will be returned.

If any attribute is invalid, an invalidArgumentValue will be returned, indicating invalid data values. Other appropriate errors will also be returned.

kkk. If the data is valid, the NPAC SMS sets the subscriptionOldSP-AuthorizationTimeStamp, subscriptionModifiedTimeStamp and all data specified in the M-ACTION.

lll. NPAC SMS responds to M-SET.

mmm. NPAC SMS sends M-ACTION reply with success or failure and reasons for failure.

nnn. If the M-ACTION was successful, the NPAC SMS issues M-EVENT-REPORT (attributeValueChange or subscriptionVersionRangeAttributeValueChange)~~attribute value change~~ to the old service provider for all attributes updated from the following list:

> subscriptionOldSP-DueDate
> subscriptionOldSP-Authorization

ooo. subscriptionOldSP-AuthoriztionTimeStamp

ppp. Old service provider SOA issues M-EVENT-REPORT confirmation.

qqq. If the M-ACTION was successful, the NPAC SMS issues M-EVENT-REPORT (attributeValueChange or subscriptionVersionRangeAttributeValueChange)~~attribute value change~~ to the new service provider for all attributes updated from the preceding list. The following attributes are sent in the attributeValueChangeNotification:

rrr. subscriptionOldSP-DueDate
sss. subscriptionOldSP-Authorization
ttt. subscriptionOldSP-AuthoriztionTimeStamp

uuu. New service provider issues M-EVENT-REPORT confirmation.

3The next scenario would be "SubscriptionVersion Activated by New Service Provider SOA."

6.5.1.5

SubscriptionVersion Activated by New Service Provider SOA
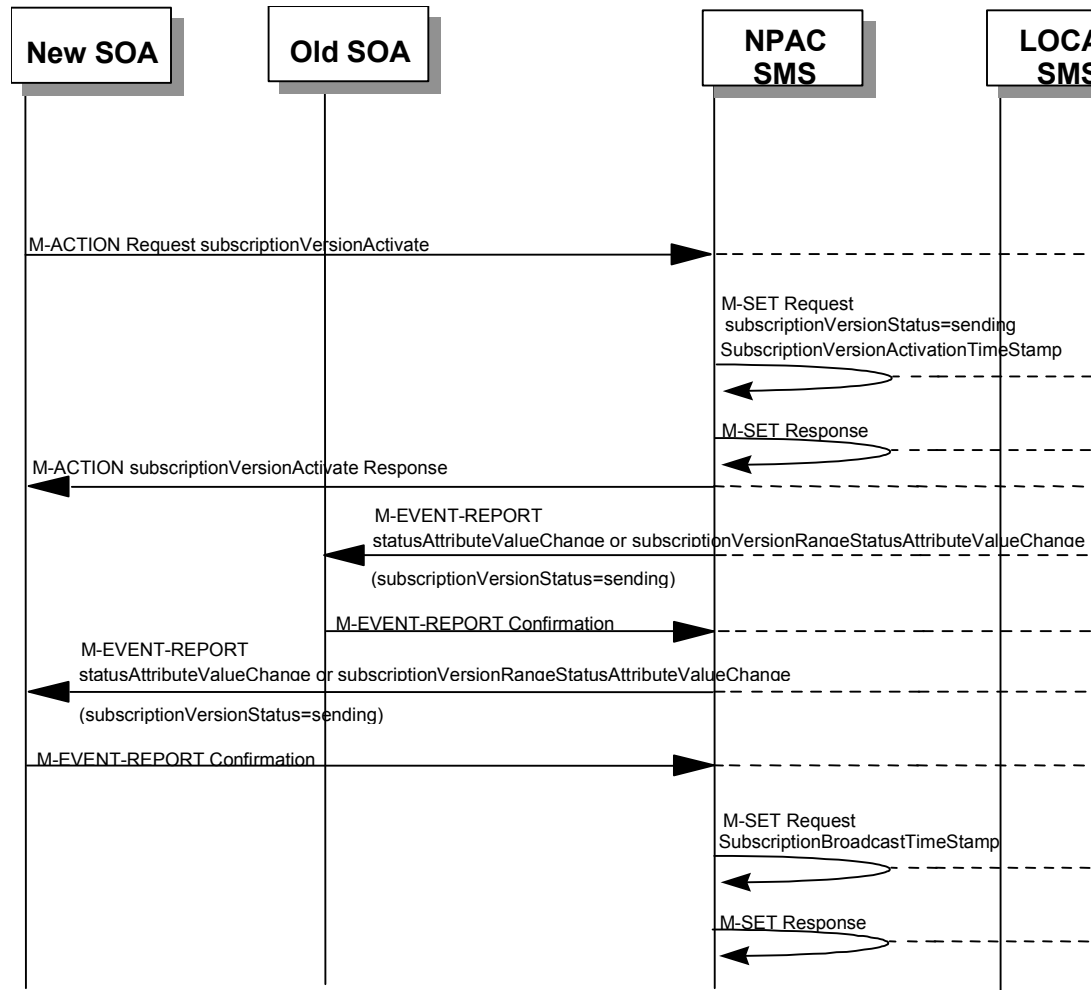
In this scenario, either both service providers have sent their create data updates for a new subscription version to the NPAC SMS or the concurrence window has expired for receiving the subscriptionVersionOldSP-Create action. The new service provider can now activate the subscription version.

vvv. The new service provider SOA issues a subscriptionVersionActivate M-ACTION to the NPAC SMS lnpSubscriptions object to activate the pending subscription version by specifying the subscription version ID, subscription version TN, or a range of subscription version TNs.

> If a TN range is specified in the request, it would result in an M-SET request and M-EVENT-REPORT for the entire TN Range.

www. NPAC SMS issues an M-SET request setting the subscriptionVersionStatus to "sending," subscriptionVersionActivationTimeStamp and subscriptionModifiedTimeStamp on the subscriptionVersionNPAC object.

xxx. NPAC SMS responds to the M-SET.

yyy. The NPAC SMS responds with the M-ACTION response. An error will be returned if the service provider is not the new service provider (accessDenied) or if there is no version to be activated (invalidArgumentValue) or if any other failures occur.

zzz. If the M-ACTION was successful, the NPAC SMS sends to the old SOA a notification (statusAttributeValueChange or subscriptionVersionRangeStatusAttributeValueChange)~~subscriptionVersionStatusAttributeValueChange~~ for the subscriptionVersionStatus being set to "sending".

aaaa. The old service provider SOA returns an M-EVENT-REPORT confirmation to the NPAC SMS.

bbbb. If the M-ACTION was successful, the NPAC SMS sends to the new service provider SOA a notification (statusAttributeValueChange or subscriptionVersionRangeStatusAttributeValueChange) ~~subscriptionVersionStatusAttributeValueChange~~ for the subscriptionVersionStatus being set to "sending."

cccc. The new service provider SOA returns an M-EVENT-REPORT confirmation to the NPAC SMS.

dddd. NPAC SMS issues an M-SET request setting the subscriptionVersionStatus to "sending," subscriptionBroadcastTimeStamp on the subscriptionVersionNPAC object.

eeee. NPAC SMS responds to the M-SET.

4 For subscription versions that are not being ported to the original service provider's switch, processing continues in the "Active SubscriptionVersion Create on Local SMSs" flow.

5 For ports to the original service provider's switch, the flow follows an immediate disconnect scenario. The NPAC SMS sets the broadcast timestamp, notifies the service provider SOA of the status change and proceeds to issue M-DELETEs for the subscriptionVersion to the Local SMS.

6.5.1.6

Active SubscriptionVersion Create on Local SMS
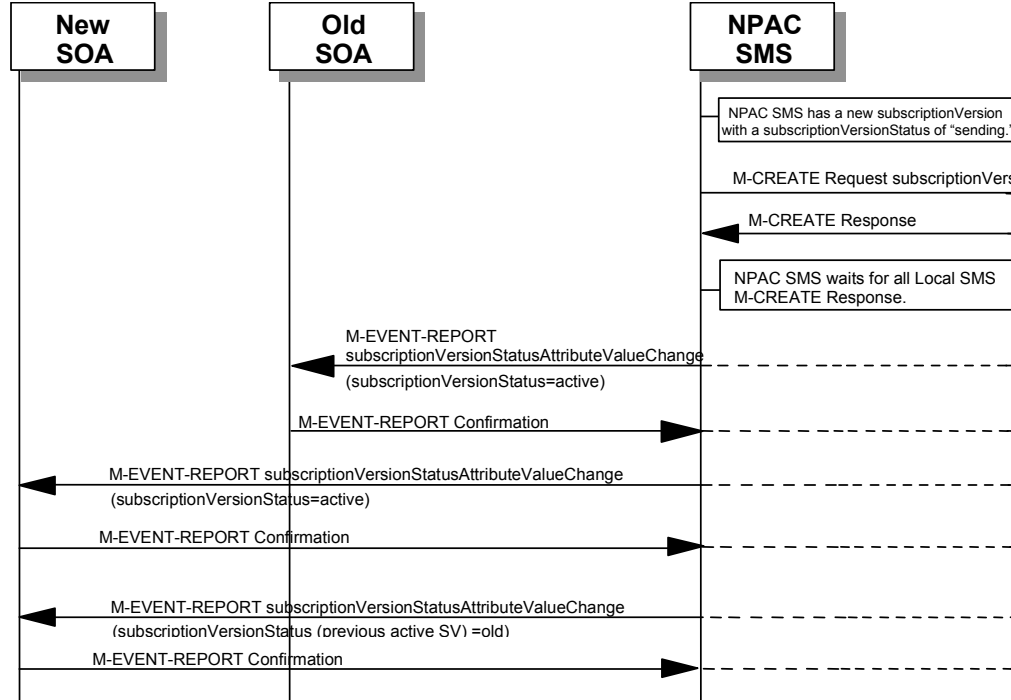
This scenario and associated error scenarios reflect the message flow for all new object create requests from the NPAC SMS to the Local SMSs.

ffff. NPAC SMS has a new subscriptionVersion with a status of "sending."

gggg. The NPAC SMS issues an M-CREATE for the subscriptionVersion to each of the Local SMSs, that is accepting downloads for the NPA-NXX of the subscriptionVersion.

hhhh. Each Local SMS will reply to the M-CREATE.

iiii. NPAC SMS waits for Local SMSs to report successful objectCreation.

jjjj. If the subscriptionVersion NPAC object was modified, the NPAC SMS will issue M-EVENT-REPORT notifications to the old service provider SOA of the status change using an M-EVENT-REPORT subscriptionVersionStatusAttributeValueChange.

kkkk. The old service provider SOA returns an M-EVENT-REPORT confirmation to the NPAC SMS.

llll. If the subscriptionVersion NPAC object was modified, the NPAC SMS will issue M-EVENT-REPORT notifications to the new service provider SOA of the status change using an M-EVENT-REPORT subscriptionVersionStatusAttributeValueChange.

mmmm. The new service provider SOA returns an M-EVENT-REPORT confirmation to the NPAC SMS.

nnnn.If this TN has been previously ported (i.e., a previously active subscriptionVersion NPAC object exists), the NPAC SMS will issue an M-EVENT-REPORT notification to the current service provider SOA for the previously active subscriptionVersion NPAC object of the status change using an M-EVENT-REPORT subscriptionVersionStatusAttributeValueChange.

oooo.The current service provider SOA for the previously active subscriptionVersion NPAC object returns an M-EVENT-REPORT confirmation to the NPAC SMS.

6.5.1.6.1

Active Subscription Version Create on Local SMS Using Create Action

This scenario reflects the message flow for all new object create requests from the NPAC SMS to the Local SMS Using Create Action. This action is used to create a group of subscription versions with the same routing information.
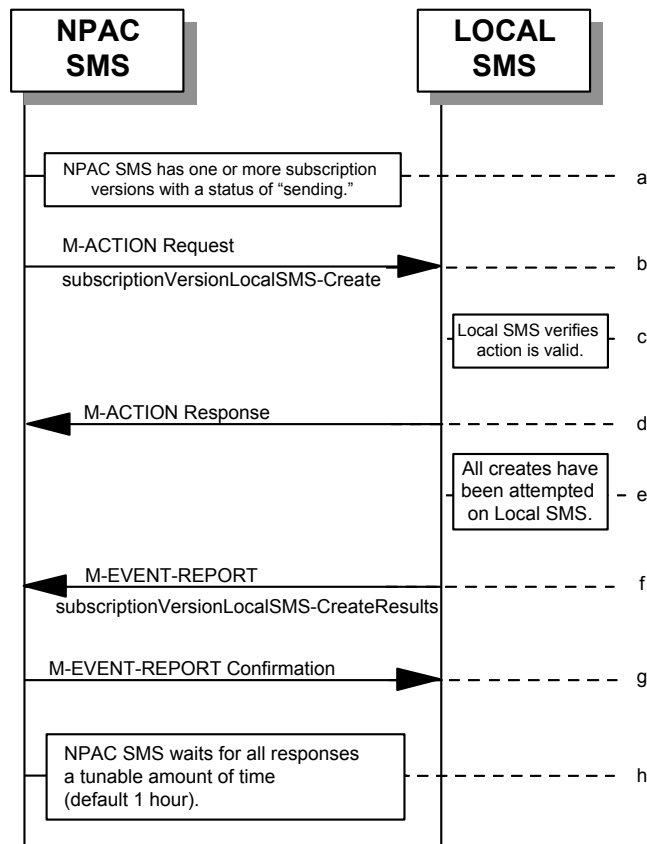
pppp. NPAC SMS has one or more subscription versions with a status of "sending" that have been activated by the new service provider.

qqqq. NPAC SMS issues the subscriptionVersionLocalSMS-Create action to the Local SMS, if it is accepting downloads for the NPA-NXX of the subscriptionVersion. This action contains all data necessary to create the subscription version.

rrrr. The Local SMS verifies the action is valid, but does not attempt to create the subscription version(s).

ssss. The Local SMS responds to the M-ACTION.

tttt. The Local SMS proceeds to execute all the creates specified by the action.

uuuu. The Local SMS sends to the NPAC SMS the M-EVENT-REPORT specifying the success or failure of the creates.

vvvv. NPAC SMS confirms the M-EVENT-REPORT.

wwww. NPAC SMS waits for all responses a tunable amount of time. The default is 1 hour.

6.5.1.6.2

SubscriptionVersion Create: No Create Action from the Old Service Provider SOA After Concurrence Window

This scenario shows no response within "Service Provider Concurrence Window" by the old service provider SOA.

In this case, the new service provider SOA issued the create request. The NPAC SMS has issued the ObjectCreation M-EVENT-REPORT back to both the old and new service provider SOAs. No response has yet been received by the old service provider SOA.

Participants: New SOA, Old SOA, NPAC SMS, LOCAL SMS

No response from old SOA in "Service Provider Concurrence Window" tunable. — a

M-EVENT REPORT subscriptionVersionOldSP-ConcurrenceRequest — b

M-EVENT REPORT Confirmation — c

NPAC SMS waits for M-ACTION from old SOA within "Service Provider Concurrence Failure Window." — d
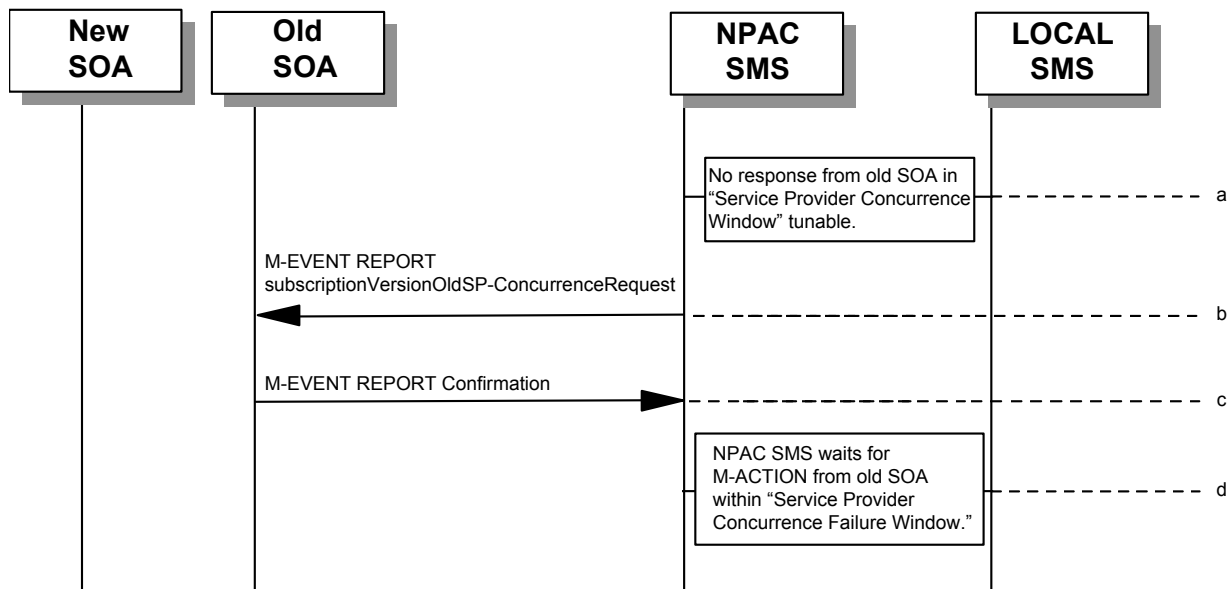
xxxx. NPAC SMS does not receive a response from the old service provider SOA within "Service Provider Concurrence Window" for the pending subscriptionVersionNPAC created by the new service provider SOA.

yyyy. NPAC SMS sends the old service provider an M-EVENT-REPORT subscriptionVersionOldSP-ConcurrenceRequest.

zzzz. The old service provider SOA returns an M-EVENT-REPORT confirmation to the NPAC SMS.

aaaaa. Old service provider has up to "Service Provider Concurrence Failure Window" to respond to the request.

6 If the old service provider SOA responds with a valid M-ACTION or M-SET, processing resumes as a successful create.

6.5.1.6.3

SubscriptionVersion Create: No Create Action from the Old Service Provider SOA After Final Concurrence
Window

This scenario shows no response within "Service Provider Final Concurrence Window" by the old service provider SOA.

In this case, the new service provider SOA issued the create request. The NPAC SMS has issued the ObjectCreation M-EVENT-REPORT back to both the old and new service provider SOAs as well as a subsciptionVersionOldSP-ConcurrenceRequest M-EVENT-REPORT to the old service provider SOA. No response has yet been received by the old service provider SOA.

```
┌─────────┐   ┌─────────┐              ┌─────────┐         ┌─────────┐
│   New   │   │   Old   │              │  NPAC   │         │ LOCAL   │
│   SOA   │   │   SOA   │              │  SMS    │         │  SMS    │
└────┬────┘   └────┬────┘              └────┬────┘         └────┬────┘
     │             │                        │                   │
     │             │    ┌───────────────────────────┐          │
     │             │    │ No response from old SOA in│          │
     │             │    │ "Service Provider Final    │ ─ ─ ─ ─ ─│─ ─  a
     │             │    │ Concurrence Window" tunable.│          │
     │             │    └───────────────────────────┘          │
     │             │                        │                   │
     │   M-EVENT REPORT                     │                   │
     │   subscriptionVersionOldSP-FinalConcurrenceWindowExpiration
     │             │◄───────────────────────│─ ─ ─ ─ ─ ─ ─ ─ ─ ─│─ ─  b
     │             │                        │                   │
     │   M-EVENT REPORT Confirmation        │                   │
     │             │───────────────────────►│─ ─ ─ ─ ─ ─ ─ ─ ─ ─│─ ─  c
     │             │                        │                   │
```
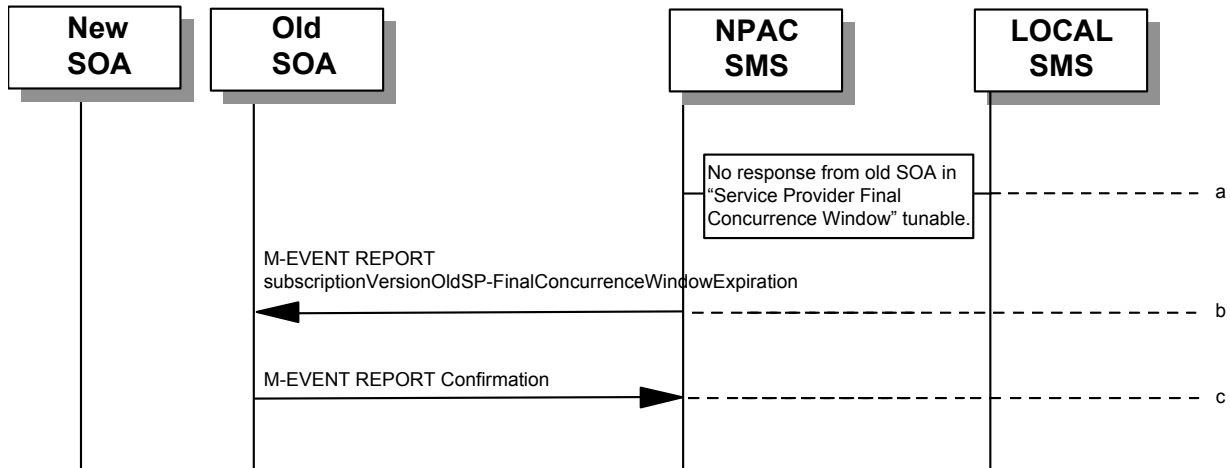
bbbbb.NPAC SMS does not receive a response from the old service provider SOA within "Service Provider Final Concurrence Window" for the pending subscriptionVersionNPAC created by the new service provider SOA.

ccccc.NPAC SMS sends the old service provider an M-EVENT-REPORT subscriptionVersionOldSP-Final ConcurrenceWindowExpiration.

ddddd.The old service provider SOA returns an M-EVENT-REPORT confirmation to the NPAC SMS.

7If the old service provider SOA responds with a valid M-ACTION or M-SET prior to activation by the new service provider, the subscription version will be updated.

6.5.1.6.4

Subscription Version Create: Failure to Receive Response from New SOA

```
┌──────────┐   ┌──────────┐   ┌──────────┐   ┌──────────┐
│   New    │   │   Old    │   │   NPAC   │   │  LOCAL   │
│   SOA    │   │   SOA    │   │   SMS    │   │   SMS    │
└──────────┘   └──────────┘   └──────────┘   └──────────┘
```

┌─────────────────────────────┐
│ No response from new SOA in │
│ "Service Provider Concurrence│ ─ ─ ─ ─ ─ a
│ Failure Window."   │
└─────────────────────────────┘

M-SET Request
subscriptionVersionStatus=cancel
                                    ◄─────── ─ ─ ─ ─ ─ b

M-SET Response
                                    ◄─────── ─ ─ ─ ─ ─ c

M-EVENT-REPORT
statusAttributeValueChange or subscriptionVersionRangeStatusAttributeValueChange
                            ◄──────────── ─ ─ ─ ─ ─ d
(subscriptionVersionStatus=cancel)

M-EVENT-REPORT Confirmation
                            ──────────────► ─ ─ ─ ─ ─ e

M-EVENT-REPORT
statusAttributeValueChange or subscriptionVersionRangeStatusAttributeValueChange
◄──────────────────────────────────── ─ ─ ─ ─ ─ f
(subscriptionVersionStatus=cancel)

M-EVENT-REPORT Confirmation
──────────────────────────────► ─ ─ ─ ─ ─ g

This scenario shows action taken by the NPAC SMS after not
receiving any concurrence from the new service provider after the
"Service Provider Concurrence Failure Window."

eeeee.NPAC SMS receives no concurrence from the new service
provider SOA in "Service Provider Concurrence Failure
Window" for the pending subscriptionVersionNPAC
created by the old service provider SOA.

If a TN range is specified in the request, it would result in
an M-SET request and M-EVENT-REPORT for the entire
TN Range.

fffff.NPAC SMS issues M-SET for subscriptionVersionStatus to
set it to "cancel" and the
subscriptionModifiedTimeStamp in the
subscriptionVersionNPAC object.

ggggg.NPAC SMS responds to M-SET.

hhhhh.If the subscriptionVersionNPAC object was modified, the
NPAC SMS notifies the old service provider of the status
change (statusAttributeValueChange or
subscriptionVersionRangeStatusAttributeValueChange).

iiiii. The old service provider SOA returns an M-EVENT-REPORT
confirmation to the NPAC SMS.

jjjjj. If the subscriptionVersionNPAC object was modified, the
NPAC SMS notifies new service provider SOA of the
status change (statusAttributeValueChange or
subscriptionVersionRangeStatusAttributeValueChange).

kkkkk.The new service provider SOA returns an M-EVENT-
REPORT confirmation to the NPAC SMS.

6.5.1.7

SubscriptionVersionCreate M-CREATE Failure to Local SMS

This scenario shows a failure to all of the Local SMS on M-CREATE.

New SOA	Old SOA	NPAC SMS	LOCAL SMS

The new service provider SOA has activated the pending subscription. — a

M-CREATE Request subscriptionVersion — b

NPAC SMS waits for responses from local SMS. — c

NPAC SMS retries each local SMS. — d

No responses occur. — e

M-SET Request subscriptionVersionStatus=failed — f

M-SET Response — g

M-EVENT-REPORT subscriptionVersionStatusAttributeValueChange — h
(subscriptionVersionStatus=failed)

M-EVENT-REPORT Confirmation — i

M-EVENT-REPORT subscriptionVersionStatusAttributeValueChange — j
(subscriptionVersionStatus=failed)

M-EVENT-REPORT Confirmation — k

lllll. The new service provider SOA has activated the pending subscription.

mmmmm.The NPAC SMS issues an M-CREATE for the subscriptionVersion to each of the Local SMSs, that is accepting downloads for the NPA-NXX of the subscriptionVersion.

nnnnn.NPAC SMS waits for responses from each Local SMS.

ooooo.NPAC SMS resends to each Local SMS up to a tunable number of retries at a tunable interval.

ppppp.No responses occur from any Local SMS or all Local SMSs report a failure response to the M-CREATE.

qqqqq.NPAC SMS issues M-SET to update the subscriptionVersionStatus to "failed" in the subscriptionVersionNPAC object, the subscriptionFailed-SP-List, and the subscriptionModifiedTimeStamp.

rrrrr.NPAC SMS issues M-SET response.

sssss.If the subscriptionVersionNPAC was modified, the NPAC SMS will send M-EVENT-REPORT to the old service provider SOA of the subscriptionVersionStatus change.

ttttt. The old service provider SOA returns an M-EVENT-REPORT confirmation to the NPAC SMS.

uuuuu.If the subscriptionVersionNPAC was modified, the NPAC SMS will send M-EVENT-REPORT to the new service provider SOA of the subscriptionVersionStatus change.

vvvvv.The new service provider SOA returns an M-EVENT-REPORT confirmation to the NPAC SMS.

6.5.1.8

SubscriptionVersion M-CREATE: Partial Failure to Local SMS

This scenario shows a partial failure to a Local SMS on an M-CREATE.
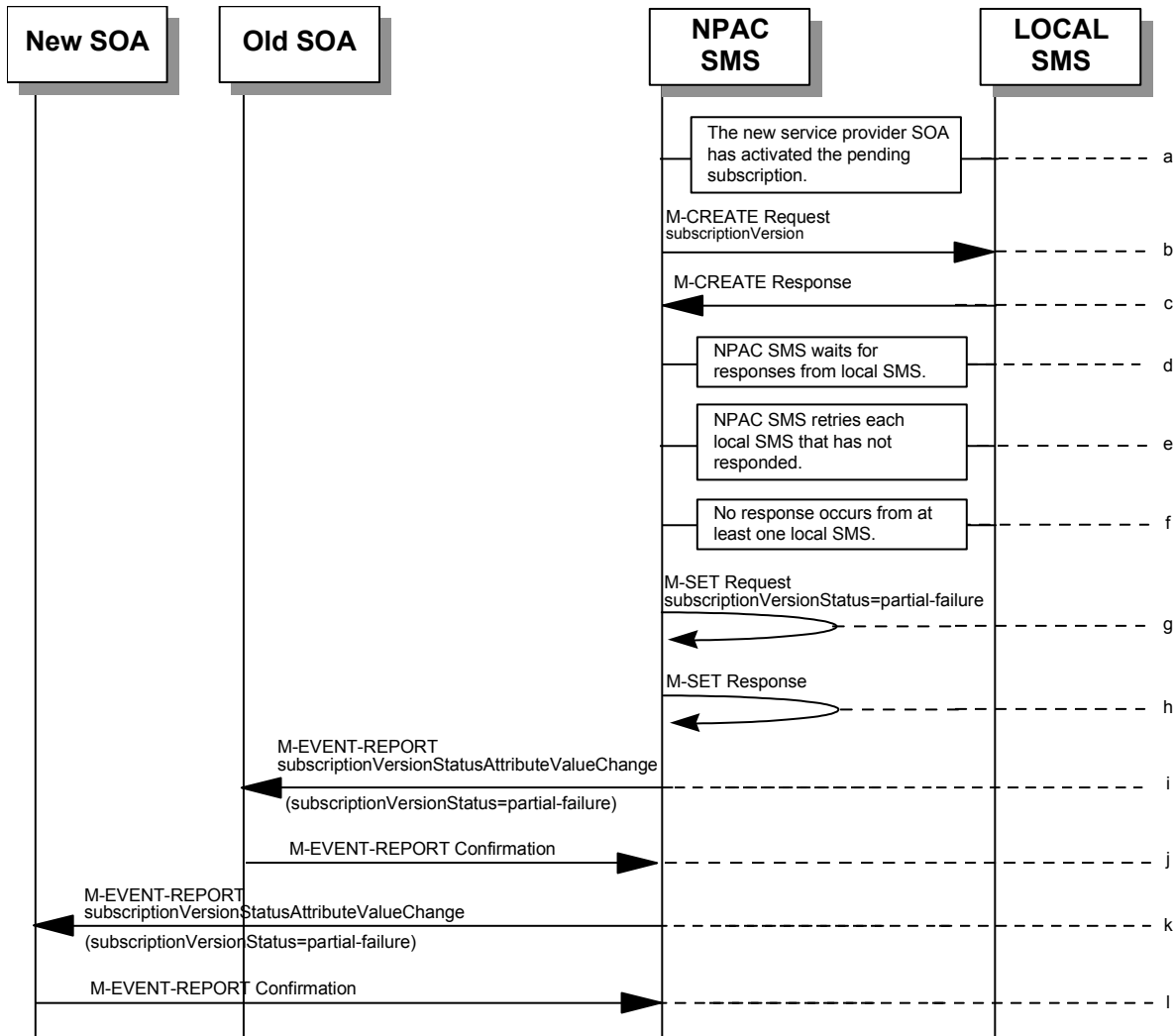
wwwww.The new service provider SOA has activated the pending
subscription.

xxxxx.The NPAC SMS issues an M-CREATE for the subscriptionVersion to
each of the Local SMSs, that is accepting downloads for the NPA-
NXX of the subscriptionVersion.

yyyyy.One or more Local SMSs respond to the M-CREATE.

zzzzz.NPAC SMS waits for responses from each Local SMS.

aaaaaa.NPAC SMS resends, to each unresponsive Local SMS, up to a tunable
number of retries at a tunable interval.

bbbbbb.No responses occur from at least one Local SMS, or a Local SMS
returns an M-CREATE failure.

cccccc.NPAC SMS issues M-SET to the subscriptionVersionStatus to "partial-failure" in the subscriptionVersionNPAC object, subscriptionFailed-SP-List, and the subscriptionModifiedTimeStamp.

dddddd.NPAC SMS issues M-SET response.

eeeeee.If the subscriptionVersionNPAC was modified, the NPAC SMS will send M-EVENT-REPORT to the old service provider SOA of the subscriptionVersionStatus change and a list of failed Local SMSs.

ffffff.The old service provider SOA returns an M-EVENT-REPORT confirmation to the NPAC SMS.
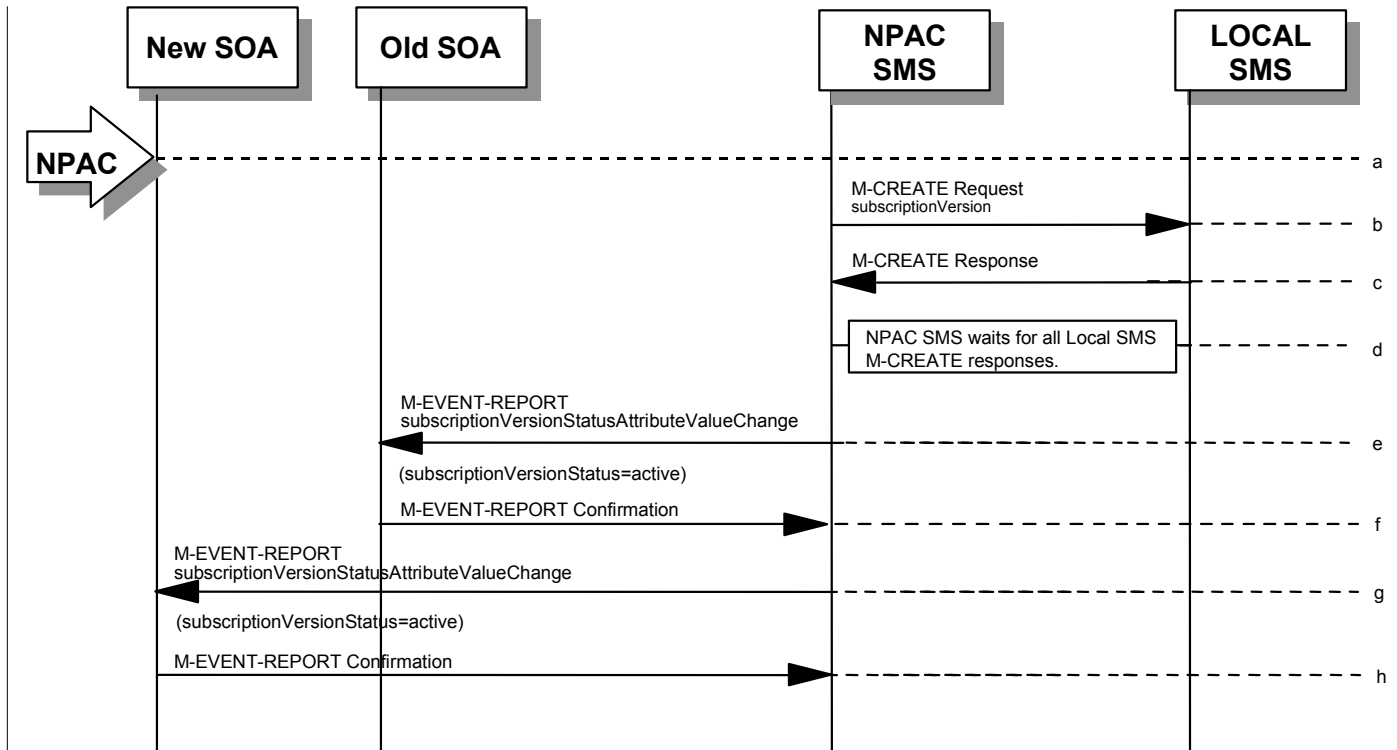
gggggg.If the subscriptionVersionNPAC was modified, the NPAC SMS will send M-EVENT-REPORT to the new service provider SOA of the subscriptionVersionStatus change and a list of failed Local SMSs.

hhhhhh.The new service provider SOA returns an M-EVENT-REPORT confirmation to the NPAC SMS.

6.5.1.9

Create Subscription Version: Resend Successful to Local SMS Action

This scenario shows the successful resend of a subscription version create. The resend of a failed subscription version create can only be performed by authorized NPAC personnel.

```
        New SOA      Old SOA              NPAC              LOCAL
                                          SMS               SMS
```

NPAC .... a

                                    M-CREATE Request
                                    subscriptionVersion
                                    ─────────────────────────▶ - - - - - - - b

                                    M-CREATE Response
                                    ◀───────────────────────── - - - - - - - c

                                    ┌────────────────────────────┐
                                    │ NPAC SMS waits for all Local SMS │ - - - - d
                                    │ M-CREATE responses.   │
                                    └────────────────────────────┘

        M-EVENT-REPORT
        subscriptionVersionStatusAttributeValueChange
              ◀───────────────────────────────────── - - - - - - - - - - - - e

        (subscriptionVersionStatus=active)

        M-EVENT-REPORT Confirmation
              ─────────────────────────────────────▶ - - - - - - - - - - - - f

    M-EVENT-REPORT
    subscriptionVersionStatusAttributeValueChange
        ◀─── - - - - - - - - - - - - g

    (subscriptionVersionStatus=active)

    M-EVENT-REPORT Confirmation
        ───▶ - - - - - - - - - - - h

iiiiii. NPAC personnel take action to resend a failed subscriptionVersion create.

jjjjjj. The NPAC SMS issues an M-CREATE for the subscriptionVersion to each of the Local SMSs that previously failed, and is accepting downloads for the NPA-NXX of the subscriptionVersion.

kkkkkk. Each Local SMS will reply to the M-CREATE.

llllll. NPAC SMS waits for all Local SMSs to report successful subscription version creation.

mmmmmm. If the subscriptionVersion NPAC object was modified, the NPAC SMS will issue M-EVENT-REPORT notifications to the old service provider SOA of the status change using an M-EVENT-REPORT subscriptionVersionStatusAttributeValueChange.

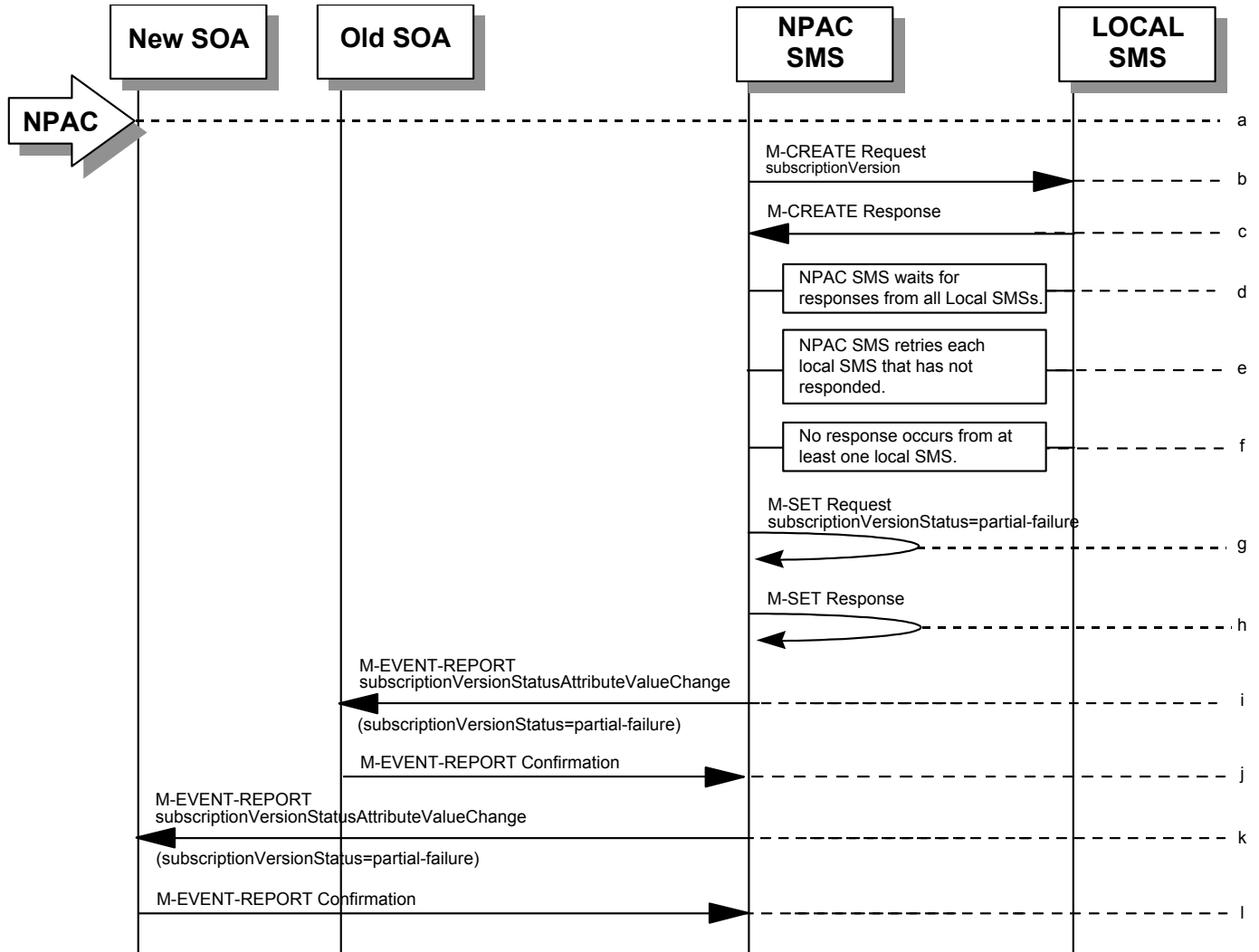nnnnnn. The old service provider SOA returns an M-EVENT-REPORT confirmation to the NPAC SMS.

oooooo. If the subscriptionVersion NPAC object was modified, the NPAC SMS will issue M-EVENT-REPORT notifications to the new service provider SOA of the status change using an M-EVENT-REPORT subscriptionVersionStatusAttributeValueChange.

pppppp.The new service provider SOA returns an M-EVENT-REPORT
confirmation to the NPAC SMS.

6.5.1.10

Subscription Version: Resend Failure to Local SMS

This scenario shows a failure on a resend of a Subscription Version M-CREATE a Local SMS. The resend of a failed modified active version can only be performed by authorized NPAC SMS personnel.

| New SOA | Old SOA | NPAC SMS | LOCAL SMS |

NPAC

a

M-CREATE Request
subscriptionVersion — b

M-CREATE Response — c

NPAC SMS waits for
responses from all Local SMSs. — d

NPAC SMS retries each
local SMS that has not
responded. — e

No response occurs from at
least one local SMS. — f

M-SET Request
subscriptionVersionStatus=partial-failure — g

M-SET Response — h

M-EVENT-REPORT
subscriptionVersionStatusAttributeValueChange — i

(subscriptionVersionStatus=partial-failure)

M-EVENT-REPORT Confirmation — j

M-EVENT-REPORT
subscriptionVersionStatusAttributeValueChange — k

(subscriptionVersionStatus=partial-failure)

M-EVENT-REPORT Confirmation — l

qqqqqq. The NPAC personnel issues a resend for the failed or partially failed subscriptionVersion.

rrrrrr. The NPAC SMS issues an M-CREATE for the subscriptionVersion to each of the Local SMSs for which the M-CREATE previously failed, and is accepting downloads for the NPA-NXX of the subscriptionVersion.

ssssss. One or more Local SMSs respond to the M-CREATE.

tttttt. NPAC SMS waits for responses from each Local SMS.

uuuuuu. NPAC SMS resends, to each unresponsive Local SMS, up to a tunable number of retries at a tunable interval.

vvvvvv. No responses occur from at least one or all Local SMSs, or one or all Local SMSs return an M-CREATE failure.

wwwwww.NPAC SMS issues M-SET to the subscriptionVersionStatus to "partial-failure" or "failed" in the subscriptionVersionNPAC object, subscriptionFailed-SP-List, and the subscriptionModifiedTimeStamp.

xxxxxx.NPAC SMS issues M-SET response.

yyyyyy.If the subscriptionVersionNPAC was modified, the NPAC SMS will send M-EVENT-REPORT to the old service provider SOA of the subscriptionVersionStatus change and a list of failed Local SMSs.

zzzzzz.The old service provider SOA returns an M-EVENT-REPORT confirmation to the NPAC SMS.

aaaaaaa.If the subscriptionVersionNPAC was modified, the NPAC SMS will send M-EVENT-REPORT to the new service provider SOA of the subscriptionVersionStatus change and a list of failed Local SMSs.

bbbbbbb.The new service provider SOA returns an M-EVENT-REPORT confirmation to the NPAC SMS.

6.5.1.11

SubscriptionVersion Create for Intra-Service Provider Port

This scenario shows how an intra-service port is processed.
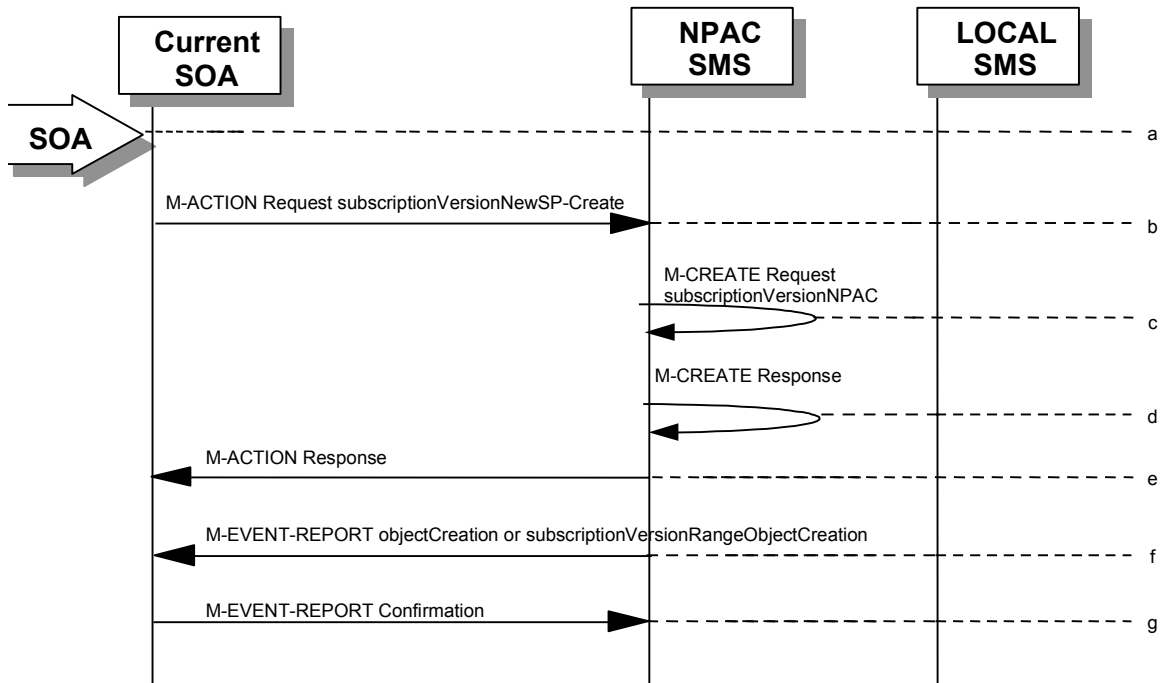
ccccccc. Action is taken by the current provider SOA to create a new version of a subscriber.

ddddddd. Current provider SOA sends M-ACTION subscriptionVersionNewSP-Create to the NPAC SMS lnpSubscriptions object to create a new subscriptionVersionNPAC. The SOA must specify the following valid attributes:

       subscriptionTN or a valid subscriptionVersionTN-Range
       subscriptionNewCurrentSP
       subscriptionOldSP
       subscriptionNewSP-DueDate
       subscriptionPortingToOriginal-SPSwitch
       subscriptionLRN
       subscriptionCLASS-DPC
       subscriptionCLASS-SSN
       subscriptionLIDB-DPC
       subscriptionLIDB-SSN
       subscriptionCNAM-DPC
       subscriptionCNAM-SSN
       subscriptionISVM-DPC
       subscriptionISVM-SSN
       subscriptionLNPType

The subscriptionNewCurrentServiceProv must be equal to the subscriptionOldServiceProv.

The following attributes are optional:

       subscriptionEndUserLocationValue

subscriptionEndUserLocationType
subscriptionBillingId

If a TN range is specified in the request, it would result in an M-CREATE request and M-EVENT-REPORT for the entire TN Range.

eeeeeee.If the request is valid, the NPAC SMS will M-CREATE the subscriptionVersionNPAC object. The status will be set to "pending." Also the subscriptionCreationTimeStamp, the subscriptionNewSP-AuthorizationTimeStamp, subscriptionOldSP-AuthorizationTimeStamp, and the subscriptionModifiedTimeStamp will be set.

fffffff.NPAC SMS responds to M-CREATE.

ggggggg.NPAC SMS sends an action reply with success or failure and reasons for failure. If the action fails, no modifications are applied and processing stops for this scenario.

hhhhhhh.NPAC SMS notifies intra-service provider SOA of subscriptionVersionNPAC creation (objectCreation or subscriptionVersionRangeObjectCreation).

iiiiiii.Service provider SOA sends M-EVENT-REPORT confirmation to NPAC SMS.

8The intra-service subscriptionVersion now follows the same flow as an inter-service subscriptionVersionCreation to activate the subscriptionVersion on the NPAC SMS and create the subscriptionVersion on the Local SMSs.

9The only difference is the M-EVENT-REPORT for the subscriptionVersionStatusAttributeValueChange is only sent to the new provider.

10

6.5.1.12

SubscriptionVersion Port-to-Original: Successful

This scenario shows how a port-to-original (successful) port is processed.

New SOA	**Old SOA**		**NPAC SMS**	**LOCAL SMS**

M-ACTION request subscriptionVersionActivate → a

Activate SV2 Port-to-Original

M-SET Request
(subscriptionVersionStatus=sending on SV2 → b

subscriptionBroadcastTimeStamp
subscriptionModifiedTimeStamp

M-SET Response → c

← M-ACTION subscriptionVersionActivate response   d

M-EVENT-REPORT
statusAttributeValueChange or subscriptionVersionRangeStatusAttributeValueChange
← (subscriptionVersionStatus=sending on SV2   e

M-EVENT-REPORT Confirmation → f

M-EVENT-REPORT
← statusAttributeValueChange or subscriptionVersionRangeStatusAttributeValueChange
(subscriptionVersionStatus=sending on SV2   g

M-EVENT-REPORT Confirmation → h

M-SET Request
(subscriptionVersionStatus=sending on SV1 → i

subscriptionBroadcastTimeStamp
subscriptionModifiedTimeStamp

M-SET Response → j

M-EVENT-REPORT
← statusAttributeValueChange or subscriptionVersionRangeStatusAttributeValueChange
(subscriptionVersionStatus=sending on SV1   k

M-EVENT-REPORT Confirmation → l

M-DELETE request → m
(subscriptionVersion

← M-DELETE response   n

All Local SMSs have responded
successfully.   o

(continued on next page)

SV 1 is the currently active Subscription Version.

SV 2 is the current pending Subscription Version.

jjjjjjjj. The new service provider SOA issues a subscriptionVersionActivate M-ACTION to the NPAC SMS lnpSubscriptions object to activate the pending subscription version SV2 by specifying the subscription version ID, subscription version TN, or a range of subscription version TNs.

If a TN range is specified in the request, it would result in an M-SET request and M-EVENT-REPORT for the entire TN Range.

kkkkkkk.The NPAC SMS issues an M-SET request setting the subscriptionVersionStatus to "sending", subscriptionBroadcastTimeStamp and subscriptionModifiedTimeStamp on the subscriptionVersionNPAC on SV2.

lllllll.NPAC SMS response to the M-SET.

mmmmmmm.The NPAC SMS responds with the M-ACTION response. An error will be returned if the service provider is not the new service provider (accessDenied) or if there is no version to be activated (invalidArgumentValue) or if any other failures occur.

nnnnnnn.If the M-ACTION was successful, the NPAC SMS sends to the old service provider SOA a notification (statusAttributeValueChange or subscriptionVersionRangeStatusAttributeValueChange) for the subscriptionVersionStatus being set to sending on SV2.

ooooooo.The old service provider SOA returns an M-EVENT-REPORT confirmation to the NPAC SMS.

ppppppp.If the M-ACTION was successful, the NPAC SMS sends to the new service provider SOA a notification (statusAttributeValueChange or subscriptionVersionRangeStatusAttributeValueChange)~~subscriptionVersionStatusAttributeValueChange~~ for the subscriptionVersionStatus being set to sending on SV2.

qqqqqqq.The new service provider SOA returns an M-EVENT-REPORT confirmation to the NPAC SMS.

rrrrrrr.The NPAC SMS sets the subscriptionVersionStatus to sending and sets the subscriptionBroadcastTimeStamp and subscriptionModifiedTimeStamp on the subscriptionVersionNPAC on SV1.

sssssss.NPAC SMS response to the M-SET.

ttttttt.The NPAC SMS sends to the current/new service provider SOA a notification (statusAttributeValueChange or subscriptionVersionRangeStatusAttributeValueChange)~~subscriptionVersionStatusAttributeValueChange~~ for the subscriptionVersionStatus being set to sending on SV1.

uuuuuuu.The current/new service provider SOA returns an M-EVENT-REPORT confirmation to the NPAC SMS.

vvvvvvv.NPAC SMS sends out an M-DELETE on the subscription Version SV1 to all Local SMSs, that are accepting downloads for the NPA-NXX of subscription Version SV1. If the M-DELETE is for multiple subscription versions, a scoped and filtered operation will be sent.

wwwwwww.Each Local SMS responds with a successful M-DELETE reply.

xxxxxxx.All Local SMSs respond successfully.

yyyyyyy.NPAC SMS issues an M-SET updating the subscriptionVersionStatus of SV1 to old. It also sets the subscriptionModifiedTimeStamp and subscriptionDisconnectCompleteTimeStamp.

zzzzzzz.NPAC SMS responds to the M-SET.

aaaaaaaa.The NPAC SMS sends to the current/new service provider SOA a notification (statusAttributeValueChange or subscriptionVersionRangeStatusAttributeValueChange)~~subscriptionVersionStatusAttributeValueChange~~ for the subscriptionVersionStatus being set to old on SV1.

bbbbbbbb.The current/new service provider SOA returns an M-EVENT-REPORT confirmation to the NPAC SMS.

cccccccc.NPAC SMS issues an M-SET updating the subscriptionVersionStatus of SV2 to old. It also sets the subscriptionModifiedTimeStamp.

dddddddd.NPAC SMS responds to the M-SET.

eeeeeeee.The NPAC SMS sends to the old service provider SOA a notification (statusAttributeValueChange or subscriptionVersionRangeStatusAttributeValueChange)~~subscriptionVersionStatusAttributeValueChange~~ for the subscriptionVersionStatus being set to old on SV2.

ffffffff.The old service provider SOA returns an M-EVENT-REPORT confirmation to the NPAC SMS.

gggggggg.The NPAC SMS sends to the new service provider SOA a notification (statusAttributeValueChange or subscriptionVersionRangeStatusAttributeValueChange)~~subscriptionVersionStatusAttributeValueChange~~ for the subscriptionVersionStatus being set to old on SV2.

hhhhhhhh.The new service provider SOA returns an M-EVENT-REPORT confirmation to the NPAC SMS.
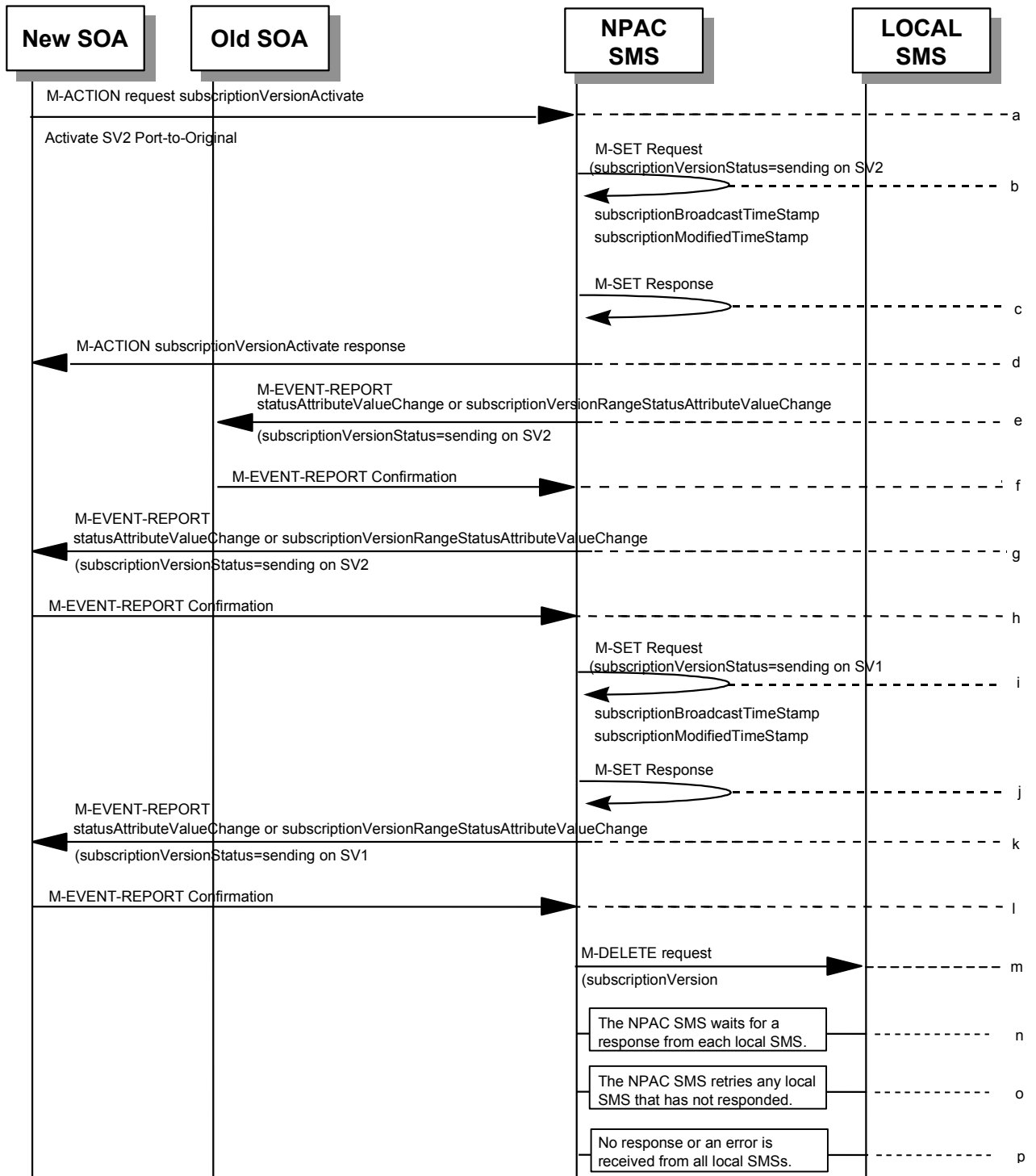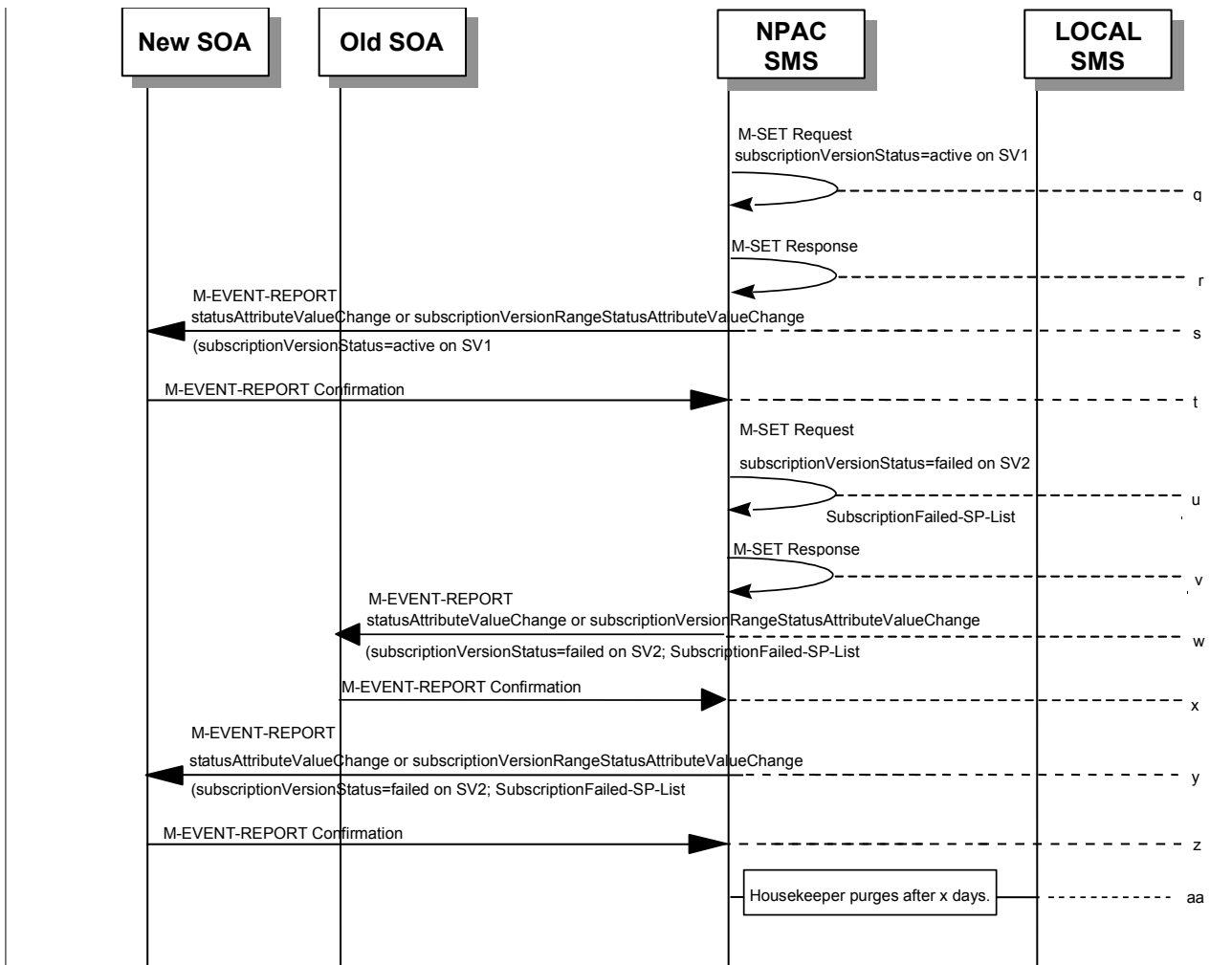
iiiiiiii.After a tunable amount of days, the subscription versions SV1 and SV2 are purged by the NPAC SMS housekeeping process.

11

6.5.1.13

SubscriptionVersion Port-to-Original: All LSMSs Fail

This scenario shows how a port-to-original (all fail) port is processed.

			NPAC SMS		LOCAL SMS
New SOA	**Old SOA**				

M-ACTION request subscriptionVersionActivate   a

Activate SV2 Port-to-Original

    M-SET Request
    (subscriptionVersionStatus=sending on SV2   b

    subscriptionBroadcastTimeStamp
    subscriptionModifiedTimeStamp

    M-SET Response   c

    M-ACTION subscriptionVersionActivate response   d

M-EVENT-REPORT
statusAttributeValueChange or subscriptionVersionRangeStatusAttributeValueChange   e
(subscriptionVersionStatus=sending on SV2

M-EVENT-REPORT Confirmation   f

M-EVENT-REPORT
statusAttributeValueChange or subscriptionVersionRangeStatusAttributeValueChange   g
(subscriptionVersionStatus=sending on SV2

M-EVENT-REPORT Confirmation   h

    M-SET Request
    (subscriptionVersionStatus=sending on SV1   i

    subscriptionBroadcastTimeStamp
    subscriptionModifiedTimeStamp

    M-SET Response   j

M-EVENT-REPORT
statusAttributeValueChange or subscriptionVersionRangeStatusAttributeValueChange   k
(subscriptionVersionStatus=sending on SV1

M-EVENT-REPORT Confirmation   l

    M-DELETE request   m
    (subscriptionVersion

The NPAC SMS waits for a response from each local SMS.	n
The NPAC SMS retries any local SMS that has not responded.	o
No response or an error is received from all local SMSs.	p

(continued on next page)

SV 1 is the currently active Subscription Version.

SV 2 is the current pending Subscription Version.

jjjjjjjjj. The new service provider SOA issues a subscriptionVersionActivate M-ACTION to the NPAC SMS lnpSubscriptions object to activate the pending subscription version SV2 by specifying the subscription version ID, subscription version TN, or a range of subscription version TNs.

If a TN range is specified in the request, it would result in an M-SET request and M-EVENT-REPORT for the entire TN Range.

kkkkkkkk. The NPAC SMS issues an M-SET request setting the subscriptionVersionStatus to "sending", subscriptionBroadcastTimeStamp and subscriptionModifiedTimeStamp on the subscriptionVersionNPAC on SV2.

llllllll. NPAC SMS response to the M-SET.

mmmmmmmm.The NPAC SMS responds with the M-ACTION response. An error will be returned if the service provider is not the new service provider (accessDenied) or if there is no version to be activated (invalidArgumentValue) or if any other failures occur.

nnnnnnnn.If the M-ACTION was successful, the NPAC SMS sends to the old service provider SOA a notification (statusAttributeValueChange or subscriptionVersionRangeStatusAttributeValueChange)subscriptionVersionStatusAttributeValueChange for the subscriptionVersionStatus being set to sending on SV2.

oooooooo.The old service provider SOA returns an M-EVENT-REPORT confirmation to the NPAC SMS.

pppppppp.If the M-ACTION was successful, the NPAC SMS sends to the new service provider SOA a notification (statusAttributeValueChange or subscriptionVersionRangeStatusAttributeValueChange)subscriptionVersionStatusAttributeValueChange for the subscriptionVersionStatus being set to sending on SV2.

qqqqqqqq.The new service provider SOA returns an M-EVENT-REPORT confirmation to the NPAC SMS.

rrrrrrrr.The NPAC SMS sets the subscriptionVersionStatus to sending and sets the subscriptionBroadcastTimeStamp and subscriptionModifiedTimeStamp on the subscriptionVersionNPAC on SV1.

ssssssss.NPAC SMS response to the M-SET.

tttttttt.The NPAC SMS sends to the current/new service provider SOA a notification (statusAttributeValueChange or subscriptionVersionRangeStatusAttributeValueChange)subscriptionVersionStatusAttributeValueChange for the subscriptionVersionStatus being set to sending on SV1.

uuuuuuuu.The current/new service provider SOA returns an M-EVENT-REPORT confirmation to the NPAC SMS.

vvvvvvvv.NPAC SMS sends out an M-DELETE on the subscription Version SV1 to all Local SMSs, that are accepting downloads for the NPA-NXX of subscription Version SV1. If the M-DELETE is for multiple subscription versions, a scoped and filtered operation will be sent.

wwwwwwww.NPAC SMS waits for a response from each Local SMS.

xxxxxxxx.NPAC SMS retries any Local SMS that has not responded.

yyyyyyyy.No response or an error is received from all Local SMSs.

zzzzzzzz.NPAC SMS issues an M-SET updating the subscriptionVersionStatus of SV1 to active.

aaaaaaaaa.NPAC SMS responds to the M-SET.

bbbbbbbbb.The NPAC SMS sends to the current/new service provider SOA a notification (statusAttributeValueChange or subscriptionVersionRangeStatusAttributeValueChange)subscriptionVersionStatusAttributeValueChange for the subscriptionVersionStatus being set to active on SV1.

cccccccc.The current/new service provider SOA returns an M-EVENT-REPORT confirmation to the NPAC SMS.

dddddddd.NPAC SMS issues an M-SET updating the subscriptionVersionStatus of SV2 to failed. It also sets the subscriptionFailed-SP-List.

eeeeeeee.NPAC SMS responds to the M-SET.

ffffffff.The NPAC SMS sends to the old service provider SOA a <u>notification (statusAttributeValueChange or subscriptionVersionRangeStatusAttributeValueChange)</u>~~subscriptionVersionStatusAttributeValueChange~~ for the subscriptionVersionStatus being set to failed on SV2, along with the subscriptionFailed-SP-List.

gggggggg.The old service provider SOA returns an M-EVENT-REPORT confirmation to the NPAC SMS.

hhhhhhhh.The NPAC SMS sends to the new service provider SOA a <u>notification (statusAttributeValueChange or subscriptionVersionRangeStatusAttributeValueChange)</u>~~subscriptionVersionStatusAttributeValueChange~~ for the subscriptionVersionStatus being set to failed on SV2, along with the subscriptionFailed-SP-List.

iiiiiiii.The new service provider SOA returns an M-EVENT-REPORT confirmation to the NPAC SMS.

jjjjjjjj.After a tunable amount of days, the subscription versions SV1 and SV2 are purged by the NPAC SMS housekeeping process.

kkkkkkkk.NOTE: SV1 may exist as an old SV that may be associated with SV2 that is in a "partially failed" state for a port to original port. In this case, the housekeeping process should not purge SV1 unless SV2 is also being purged.

llllllll.NOTE: SV1 and SV2 should be updated to the NPA-NXX for a NPA Split if SV2 is in a "failed" or "partially failed" state.

6.5.1.14

SubscriptionVersion Port-to-Original: Partial Failure

This scenario shows how a port-to-original (partial fail) port is processed.

| **New SOA** | **Old SOA** | **NPAC SMS** | **LOCAL SMS** |

M-ACTION request subscriptionVersionActivate — a

Activate SV2 Port-to-Original

M-SET Request
(subscriptionVersionStatus=sending on SV2 — b

subscriptionBroadcastTimeStamp
subscriptionModifiedTimeStamp

M-SET Response — c

M-ACTION subscriptionVersionActivate response — d

M-EVENT-REPORT
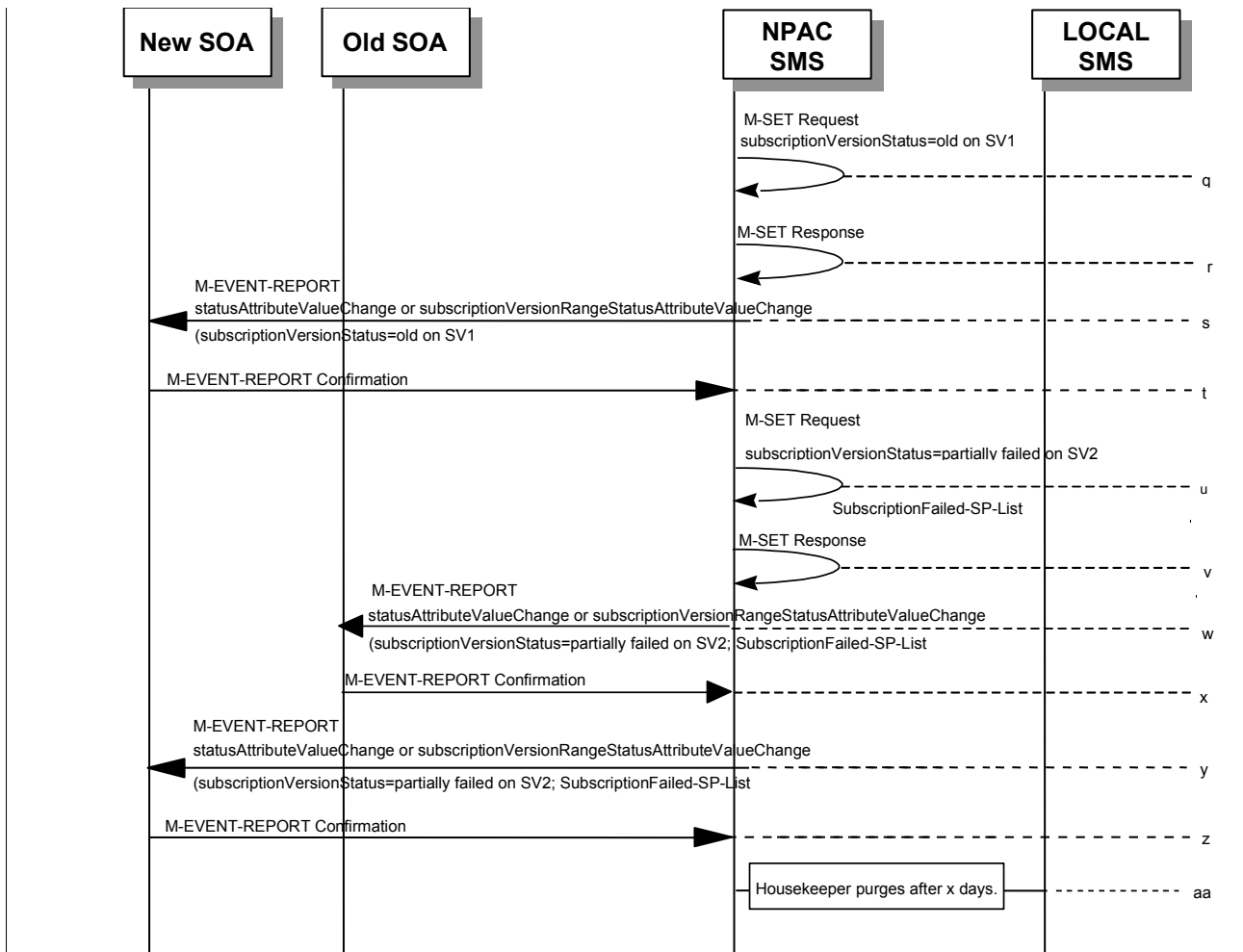statusAttributeValueChange or subscriptionVersionRangeStatusAttributeValueChange — e
(subscriptionVersionStatus=sending on SV2

M-EVENT-REPORT Confirmation — f

M-EVENT-REPORT
statusAttributeValueChange or subscriptionVersionRangeStatusAttributeValueChange — g
(subscriptionVersionStatus=sending on SV2

M-EVENT-REPORT Confirmation — h

M-SET Request
(subscriptionVersionStatus=sending on SV1 — i

subscriptionBroadcastTimeStamp
subscriptionModifiedTimeStamp

M-SET Response — j

M-EVENT-REPORT
statusAttributeValueChange or subscriptionVersionRangeStatusAttributeValueChange — k
(subscriptionVersionStatus=sending on SV1

M-EVENT-REPORT Confirmation — l

M-DELETE request — m
(subscriptionVersion

The NPAC SMS waits for a response from each local SMS.	— n
The NPAC SMS retries any local SMS that has not responded.	— o
No response or an error is received from at least one, but not each, local SMS.	— p

(continued on next page)

SV 1 is the currently active Subscription Version.

SV 2 is the current pending Subscription Version.

mmmmmmmmm.The new service provider SOA issues a
subscriptionVersionActivate M-ACTION to the NPAC SMS
lnpSubscriptions object to activate the pending subscription version
SV2 by specifying the subscription version ID, subscription version
TN, or a range of subscription version TNs.

If a TN range is specified in the request, it would result in an M-SET
request and M-EVENT-REPORT for the entire TN Range.

nnnnnnnnn.The NPAC SMS issues an M-SET request setting the
subscriptionVersionStatus to "sending",
subscriptionBroadcastTimeStamp and
subscriptionModifiedTimeStamp on the subscriptionVersionNPAC
on SV2.

ooooooooo.NPAC SMS response to the M-SET.

ppppppppp.The NPAC SMS responds with the M-ACTION response. An error will be returned if the service provider is not the new service provider (accessDenied) or if there is no version to be activated (invalidArgumentValue) or if any other failures occur.

qqqqqqqqq.If the M-ACTION was successful, the NPAC SMS sends to the old service provider SOA a notification (statusAttributeValueChange or subscriptionVersionRangeStatusAttributeValueChange)subscriptionVersionStatusAttributeValueChange for the subscriptionVersionStatus being set to sending on SV2.

rrrrrrrrr.The old service provider SOA returns an M-EVENT-REPORT confirmation to the NPAC SMS.

sssssssss.If the M-ACTION was successful, the NPAC SMS sends to the new service provider SOA a notification (statusAttributeValueChange or subscriptionVersionRangeStatusAttributeValueChange)subscriptionVersionStatusAttributeValueChange for the subscriptionVersionStatus being set to sending on SV2.

ttttttttt.The new service provider SOA returns an M-EVENT-REPORT confirmation to the NPAC SMS.

uuuuuuuuu.The NPAC SMS sets the subscriptionVersionStatus to sending and sets the subscriptionBroadcastTimeStamp and subscriptionModifiedTimeStamp on the subscriptionVersionNPAC on SV1.

vvvvvvvvv.NPAC SMS response to the M-SET.

wwwwwwwww.The NPAC SMS sends to the current/new service provider SOA a notification (statusAttributeValueChange or subscriptionVersionRangeStatusAttributeValueChange)subscriptionVersionStatusAttributeValueChange for the subscriptionVersionStatus being set to sending on SV1.

xxxxxxxxx.The current/new service provider SOA returns an M-EVENT-REPORT confirmation to the NPAC SMS.

yyyyyyyyy.NPAC SMS sends out an M-DELETE on the subscription Version SV1 to all Local SMSs, that are accepting downloads for the NPA-NXX of subscription Version SV1. If the M-DELETE is for multiple subscription versions, a scoped and filtered operation will be sent.

zzzzzzzzz.NPAC SMS waits for a response from each Local SMS.

aaaaaaaaaa.NPAC SMS retries any Local SMS that has not responded.

bbbbbbbbbb.No response or an error is received from at least one, but not each, Local SMS.

cccccccccc.NPAC SMS issues an M-SET updating the subscriptionVersionStatus of SV1 to old.

dddddddddd.NPAC SMS responds to the M-SET.

eeeeeeeeee.The NPAC SMS sends to the current/new service provider SOA a notification (statusAttributeValueChange or subscriptionVersionRangeStatusAttributeValueChange)subscriptionV

ersionStatusAttributeValueChange for the subscriptionVersionStatus being set to old on SV1.

ffffffffff.The current/new service provider SOA returns an M-EVENT-REPORT confirmation to the NPAC SMS.

gggggggggg.NPAC SMS issues an M-SET updating the subscriptionVersionStatus of SV2 to partially failed. It also sets the subscriptionFailed-SP-List.

hhhhhhhhhh.NPAC SMS responds to the M-SET.

iiiiiiiiii.The NPAC SMS sends to the old service provider SOA a notification (statusAttributeValueChange or subscriptionVersionRangeStatusAttributeValueChange)subscriptionVersionStatusAttributeValueChange for the subscriptionVersionStatus being set to partially failed on SV2, along with the subscriptionFailed-SP-List.

jjjjjjjjjj.The old service provider SOA returns an M-EVENT-REPORT confirmation to the NPAC SMS.

kkkkkkkkkk.The NPAC SMS sends to the new service provider SOA a notification (statusAttributeValueChange or subscriptionVersionRangeStatusAttributeValueChange)subscriptionVersionStatusAttributeValueChange for the subscriptionVersionStatus being set to partially failed on SV2, along with the subscriptionFailed-SP-List.

llllllllll.The new service provider SOA returns an M-EVENT-REPORT confirmation to the NPAC SMS.

mmmmmmmmmm.After a tunable amount of days, the subscription versions SV1 and SV2 are purged by the NPAC SMS housekeeping process.

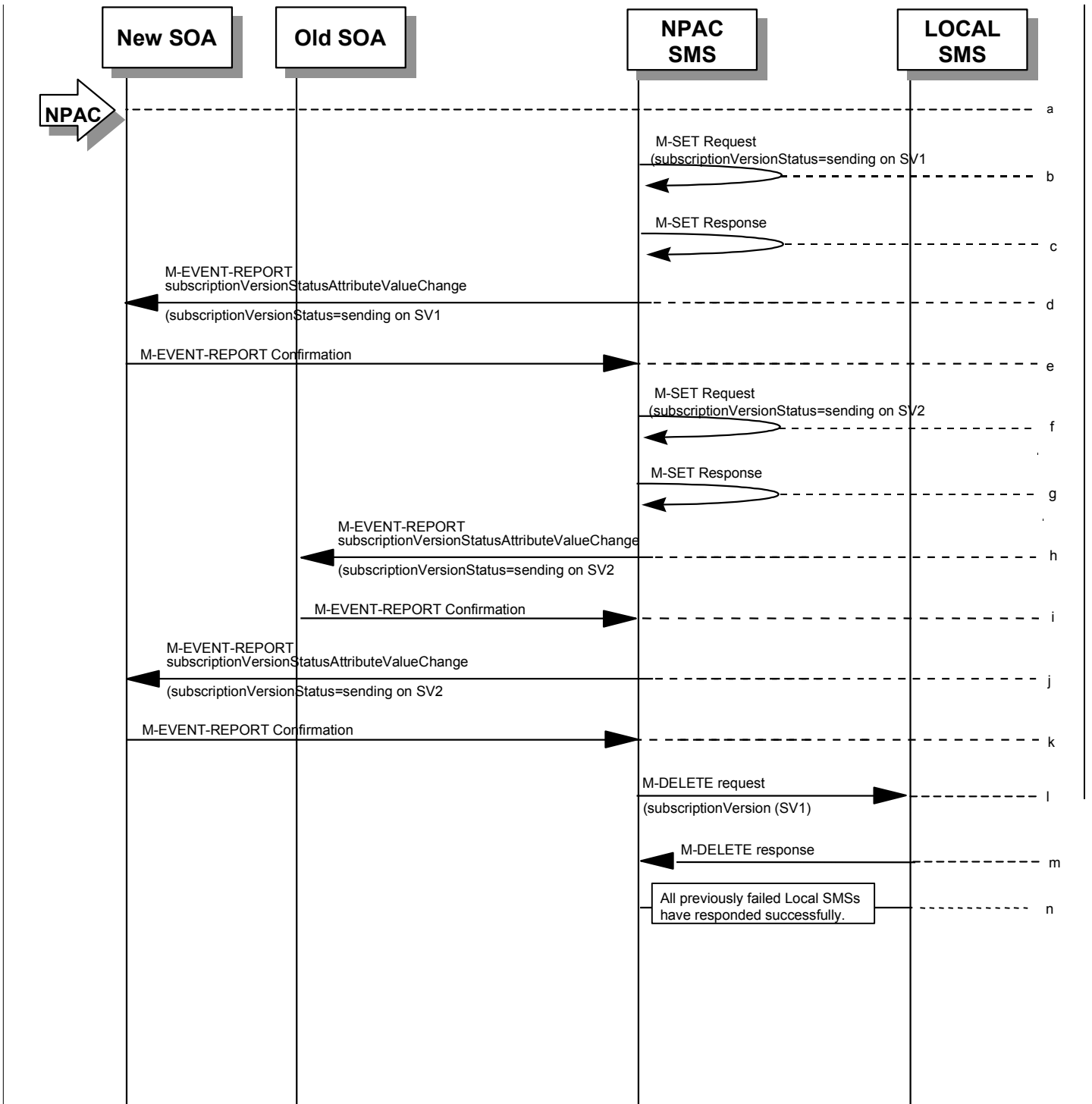nnnnnnnnnn.NOTE: SV1 may exist as an old SV that may be associated with SV2 that is in a "partially failed" state for a port to original port. In this case, the housekeeping process should not purge SV1 unless SV2 is also being purged.

oooooooooo.NOTE: SV1 and SV2 should be updated to the NPA-NXX for a NPA Split if SV2 is in a "failed" or "partially failed" state.

pppppppppp.

6.5.1.15

SubscriptionVersion Port-to-Original: Resend

This scenario shows how a port-to-original (resend) port is processed.

| New SOA | Old SOA | NPAC SMS | LOCAL SMS |

NPAC

a

M-SET Request
(subscriptionVersionStatus=sending on SV1

b

M-SET Response

c

M-EVENT-REPORT
subscriptionVersionStatusAttributeValueChange

(subscriptionVersionStatus=sending on SV1

d

M-EVENT-REPORT Confirmation

e

M-SET Request
(subscriptionVersionStatus=sending on SV2

f

M-SET Response

g

M-EVENT-REPORT
subscriptionVersionStatusAttributeValueChange

(subscriptionVersionStatus=sending on SV2

h

M-EVENT-REPORT Confirmation

i

M-EVENT-REPORT
subscriptionVersionStatusAttributeValueChange

(subscriptionVersionStatus=sending on SV2

j

M-EVENT-REPORT Confirmation

k

M-DELETE request

(subscriptionVersion (SV1)

l

M-DELETE response

m

All previously failed Local SMSs
have responded successfully.

n

(continued on next page)

SV 1 is the currently active Subscription Version.

SV 2 is the current pending Subscription Version.

qqqqqqqqqq.NPAC personnel take action to resend a failed port-to-original for
a subscription version.

rrrrrrrrrr.The NPAC SMS issues an M-SET request setting the
subscriptionVersionStatus to "sending",
subscriptionBroadcastTimeStamp and
subscriptionModifiedTimeStamp on the subscriptionVersionNPAC
on SV1.

ssssssssss.NPAC SMS response to the M-SET.

tttttttttt.The NPAC SMS sends to the new/current service provider SOA a subscriptionVersionStatusAttributeValueChange for the subscriptionVersionStatus being set to sending on SV1.

uuuuuuuuuu.The new/current service provider SOA returns an M-EVENT-REPORT confirmation to the NPAC SMS.

vvvvvvvvvv.The NPAC SMS sets the subscriptionVersionStatus to sending on the subscriptionVersionNPAC on SV2.

wwwwwwwwww.NPAC SMS response to the M-SET.

xxxxxxxxxx.The NPAC SMS sends to the old service provider SOA a subscriptionVersionStatusAttributeValueChange for the subscriptionVersionStatus being set to sending on SV2.

yyyyyyyyyy.The old service provider SOA returns an M-EVENT-REPORT confirmation to the NPAC SMS.

zzzzzzzzzz.The NPAC SMS sends to the new service provider SOA a subscriptionVersionStatusAttributeValueChange for the subscriptionVersionStatus being set to sending on SV2.

aaaaaaaaaaa.The new service provider SOA returns an M-EVENT-REPORT confirmation to the NPAC SMS.

bbbbbbbbbbb.NPAC SMS sends out an M-DELETE on the subscription Version SV1 to all Local SMSs that previously failed, that are accepting downloads for the NPA-NXX of the subscription Version SV1. If the M-DELETE is for multiple subscription versions, a scoped and filtered operation may be sent.

ccccccccccc.Each previously failed Local SMS responds with a successful M-DELETE reply.

ddddddddddd.All previously failed Local SMSs respond successfully.

eeeeeeeeeee.NPAC SMS issues an M-SET updating the subscriptionVersionStatus of SV1 to old. It also sets the subscriptionModifiedTimeStamp and subscriptionDisconnectCompleteTimeStamp.

fffffffffff.NPAC SMS responds to the M-SET.

ggggggggggg.The NPAC SMS sends to the current/new service provider SOA a subscriptionVersionStatusAttributeValueChange for the subscriptionVersionStatus being set to old on SV1.

hhhhhhhhhhh.The current/new service provider SOA returns an M-EVENT-REPORT confirmation to the NPAC SMS.

iiiiiiiiiii.NPAC SMS issues an M-SET updating the subscriptionVersionStatus of SV2 to old. It also sets the subscriptionModifiedTimeStamp.

jjjjjjjjjjj.NPAC SMS responds to the M-SET.

kkkkkkkkkkk.The NPAC SMS sends to the old service provider SOA a subscriptionVersionStatusAttributeValueChange for the subscriptionVersionStatus being set to old on SV2.

lllllllllll.The old service provider SOA returns an M-EVENT-REPORT confirmation to the NPAC SMS.

mmmmmmmmmmmm.The NPAC SMS sends to the new service provider SOA a subscriptionVersionStatusAttributeValueChange for the subscriptionVersionStatus being set to old on SV2.

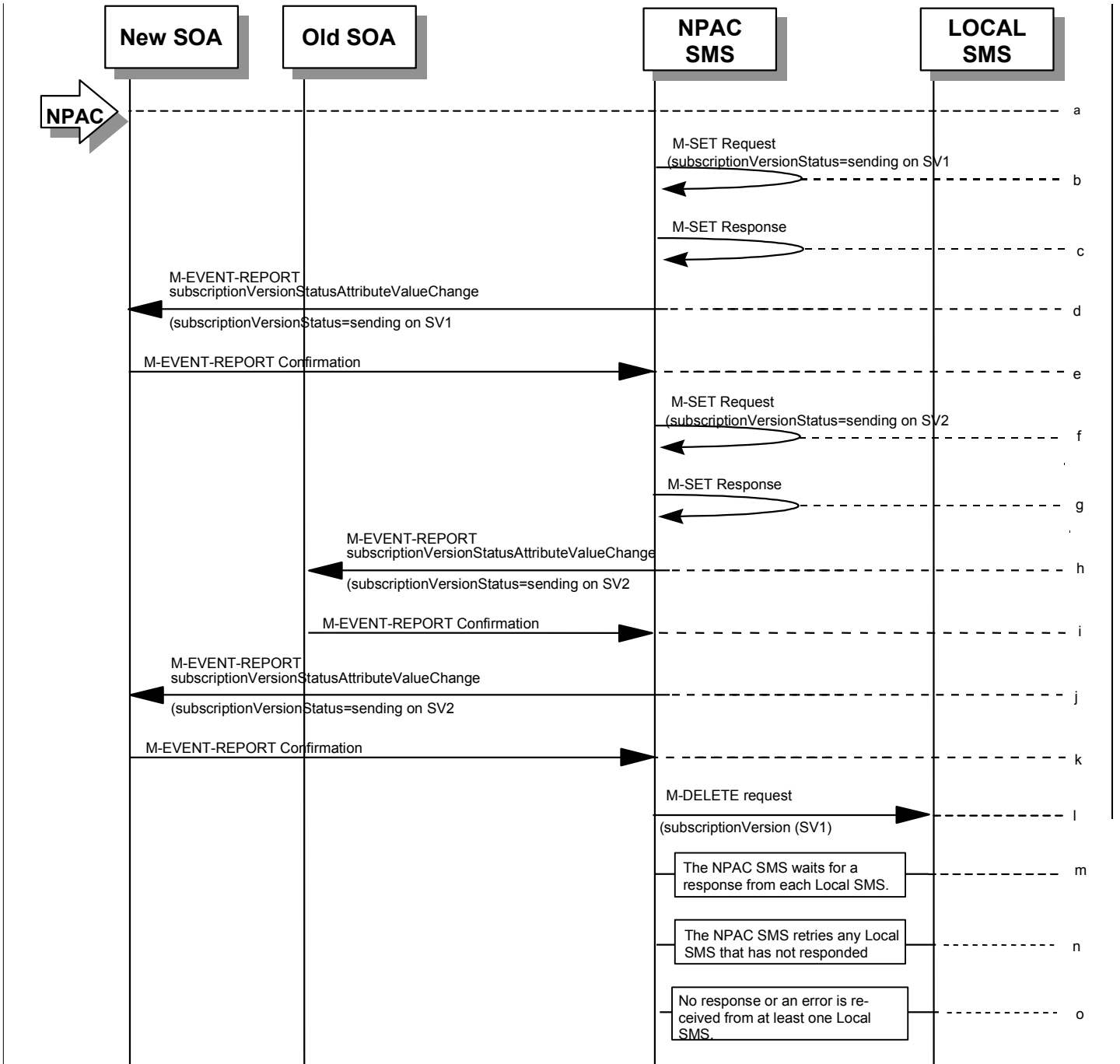nnnnnnnnnn.The new service provider SOA returns an M-EVENT-REPORT confirmation to the NPAC SMS.

oooooooooo.After a tunable amount of days, the subscription versions SV1 and SV2 are purged by the NPAC SMS housekeeping process.
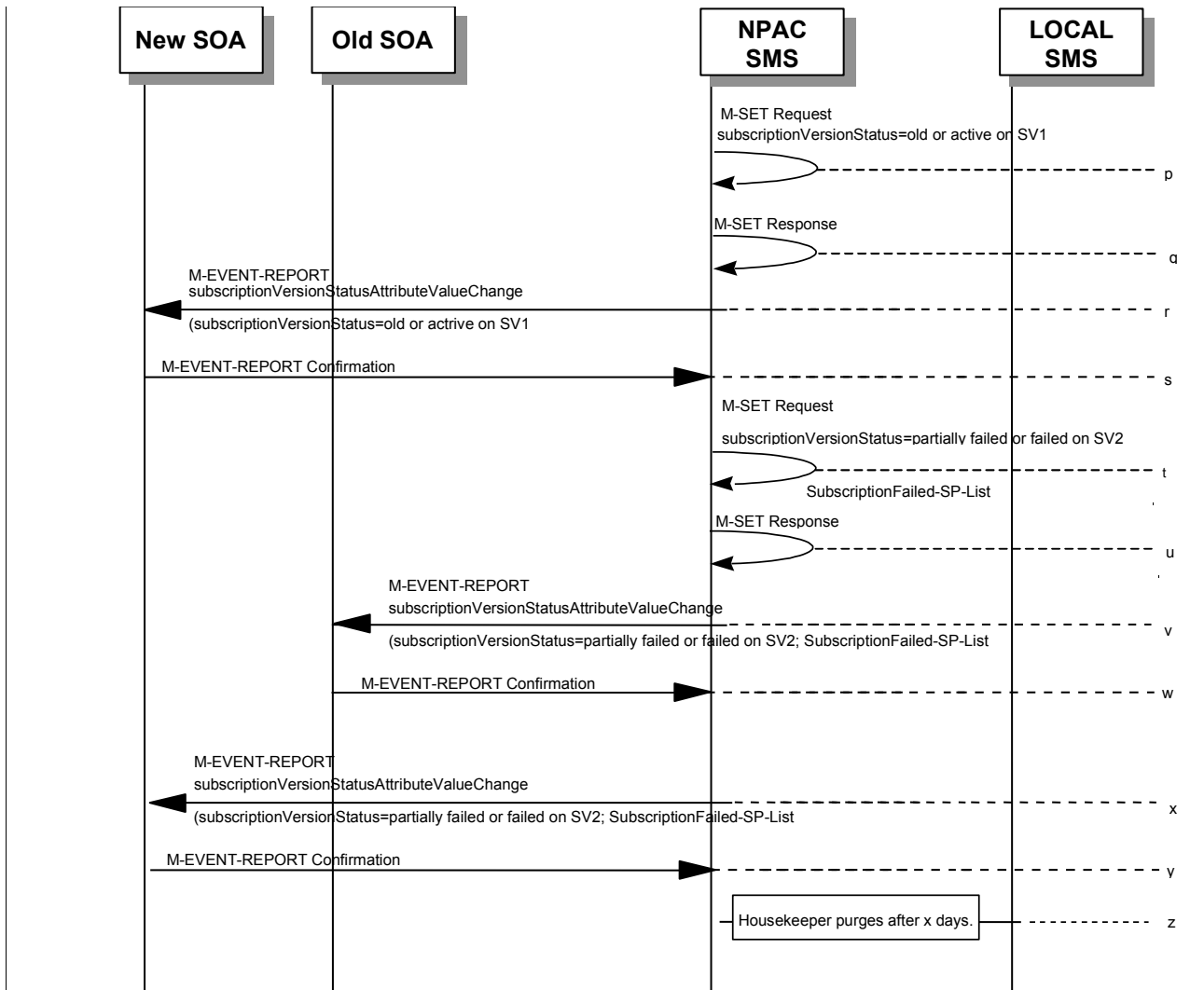
12

6.5.1.16

SubscriptionVersion Port-to-Original: Resend Failure to Local SMS

This scenario shows a failure on a resend of a subscription port-to-original that failed previously to one or more of the Local SMSs. The resend of a failed port-to-original for a subscription can only be performed by authorized NPAC personnel.

New SOA	Old SOA	NPAC SMS	LOCAL SMS

NPAC — a

M-SET Request
(subscriptionVersionStatus=sending on SV1 — — — — — b

M-SET Response — — — — — c

M-EVENT-REPORT
subscriptionVersionStatusAttributeValueChange
(subscriptionVersionStatus=sending on SV1 — — — — — d

M-EVENT-REPORT Confirmation — — — — — e

M-SET Request
(subscriptionVersionStatus=sending on SV2 — — — — — f

M-SET Response — — — — — g

M-EVENT-REPORT
subscriptionVersionStatusAttributeValueChange
(subscriptionVersionStatus=sending on SV2 — — — — — h

M-EVENT-REPORT Confirmation — — — — — i

M-EVENT-REPORT
subscriptionVersionStatusAttributeValueChange
(subscriptionVersionStatus=sending on SV2 — — — — — j

M-EVENT-REPORT Confirmation — — — — — k

M-DELETE request
(subscriptionVersion (SV1) — — — — — l

The NPAC SMS waits for a response from each Local SMS.	— — — — — m

The NPAC SMS retries any Local SMS that has not responded	— — — — — n

No response or an error is received from at least one Local SMS.	— — — — — o

(continued on next page)

SV 1 is the currently active Subscription Version.

SV 2 is the current pending Subscription Version.

pppppppppppp.NPAC personnel take action to resend a failed port-to-original for a subscription version.

qqqqqqqqqqq.The NPAC SMS issues an M-SET request setting the subscriptionVersionStatus to "sending", subscriptionBroadcastTimeStamp and subscriptionModifiedTimeStamp on the subscriptionVersionNPAC on SV1.

rrrrrrrrrrr.NPAC SMS response to the M-SET.

sssssssssss.The NPAC SMS sends to the new/current service provider SOA a subscriptionVersionStatusAttributeValueChange for the subscriptionVersionStatus being set to sending on SV1.

ttttttttttt.The new/current service provider SOA returns an M-EVENT-REPORT confirmation to the NPAC SMS.

uuuuuuuuuuu.The NPAC SMS sets the subscriptionVersionStatus to sending on the subscriptionVersionNPAC on SV2.

vvvvvvvvvvv.NPAC SMS response to the M-SET.

wwwwwwwwwwww.The NPAC SMS sends to the old service provider SOA a subscriptionVersionStatusAttributeValueChange for the subscriptionVersionStatus being set to sending on SV2.

xxxxxxxxxxx.The old service provider SOA returns an M-EVENT-REPORT confirmation to the NPAC SMS.

yyyyyyyyyyy.The NPAC SMS sends to the new service provider SOA a subscriptionVersionStatusAttributeValueChange for the subscriptionVersionStatus being set to sending on SV2.

zzzzzzzzzzz.The new service provider SOA returns an M-EVENT-REPORT confirmation to the NPAC SMS.

aaaaaaaaaaaa.NPAC SMS sends out an M-DELETE on the subscription Version SV1 to all Local SMSs that previously failed, that are accepting downloads for the NPA-NXX of the subscription Version SV1. If the M-DELETE is for multiple subscription versions, a scoped and filtered operation may be sent.

bbbbbbbbbbbb.NPAC SMS waits for a response from each Local SMS.

cccccccccccc.NPAC SMS retries any Local SMS that has not responded.

dddddddddddd.No response or an error is received from at least one Local SMS.

eeeeeeeeeeee.NPAC SMS issues an M-SET updating the subscriptionVersionStatus of SV1 to "old" or "active" (if all Local SMSs accepting download for the NPA-NXX failed) from "sending". It will also update the subscriptionFailed-SP-List with the service provider ID and name of the Local SMSs that failed to successfully receive the broadcast.

ffffffffffff.NPAC SMS responds to the M-SET.

gggggggggggg.The NPAC SMS sends to the current/new service provider SOA a subscriptionVersionStatusAttributeValueChange for the subscriptionVersionStatus being set to "old" or "active" on SV1.

hhhhhhhhhhhh.The current/new service provider SOA returns an M-EVENT-REPORT confirmation to the NPAC SMS.

iiiiiiiiiiii.NPAC SMS issues an M-SET updating the subscriptionVersionStatus of SV2 to partially failed. It also sets the subscriptionFailed-SP-List.

jjjjjjjjjjjj.NPAC SMS responds to the M-SET.

kkkkkkkkkkkk.The NPAC SMS sends to the old service provider SOA a subscriptionVersionStatusAttributeValueChange for the subscriptionVersionStatus being set to "partially failed" or "failed" on SV2, along with the subscriptionFailed-SP-List.

lllllllllllll.The old service provider SOA returns an M-EVENT-REPORT
confirmation to the NPAC SMS.

mmmmmmmmmmmm.The NPAC SMS sends to the current/new service
provider SOA a subscriptionVersionStatusAttributeValueChange for
the subscriptionVersionStatus being set to "partially failed" or
"failed" on SV2, along with the subscriptionFailed-SP-List.

nnnnnnnnnnnn.The current/new service provider SOA returns an M-EVENT-
REPORT confirmation to the NPAC SMS.

oooooooooooo.After a tunable amount of days, the subscription versions SV1
and SV2 are purged by the NPAC SMS housekeeping process.

pppppppppppp.NOTE: SV1 may exist as an old SV that may be associated
with SV2 that is in a "partially failed" state for a port to original port.
In this case, the housekeeping process should not purge SV1 unless
SV2 is also being purged.

qqqqqqqqqqqq.NOTE: SV1 and SV2 should be updated to the NPA-NXX for
a NPA Split if SV2 is in a "failed" or "partially failed" state.

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6.5.2

Modify Scenarios

6.5.2.1 SubscriptionVersion Modify Active Version Using M-ACTION by a Service Provider SOA

> This scenario shows the modification of an active subscription. The modification of an active subscription version can only be performed by the current service provider SOA using M-ACTION.
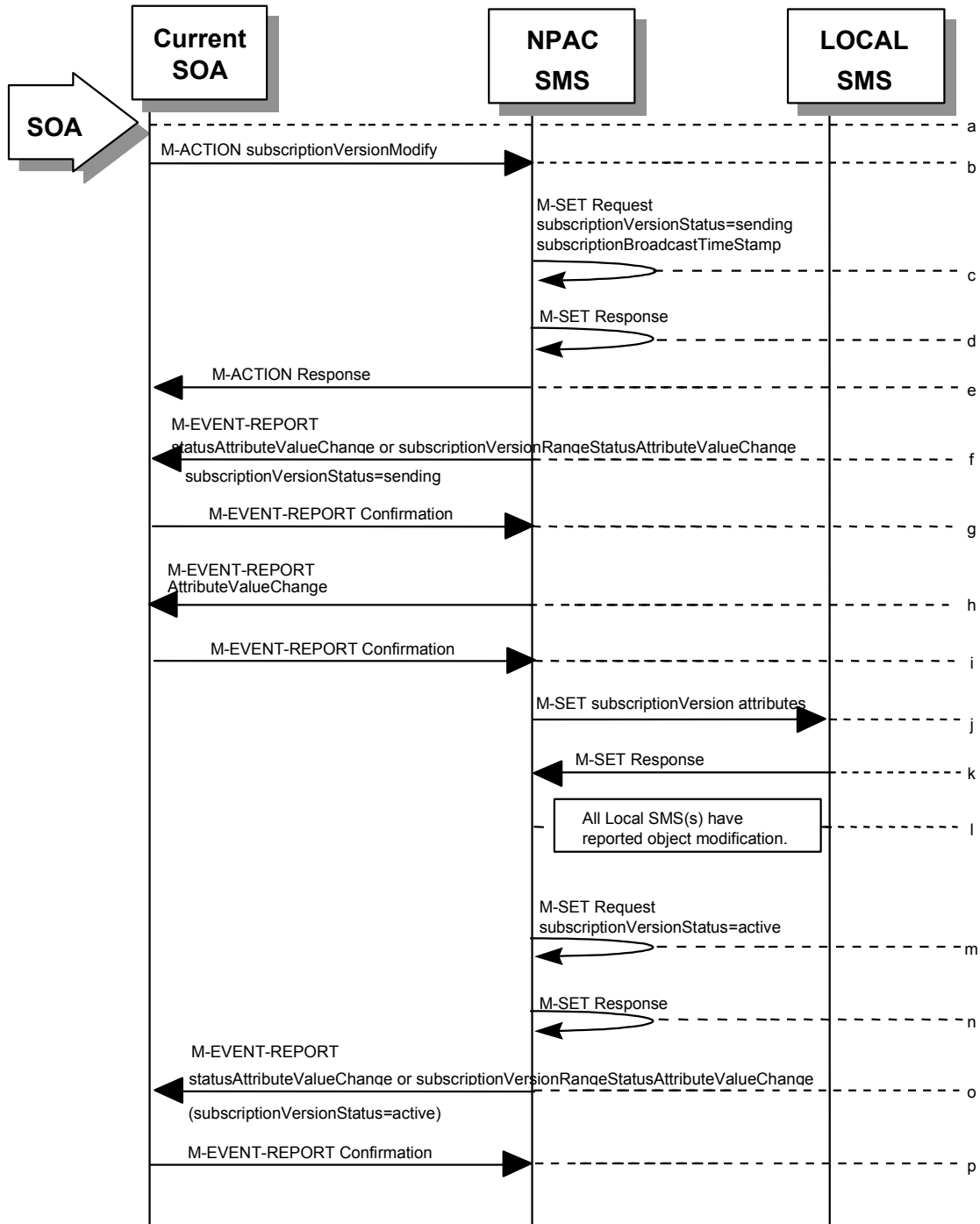
rrrrrrrrrrr.Action is taken by current service provider to modify an active subscription version by specifying the TN, TN range, and the version status, or by specifying the version ID of the subscription version to be modified; and the data to be modified.

The current service provider can only modify the following attributes:

> subscriptionLRN
> subscriptionCLASS-DPC
> subscriptionCLASS-SSN
> subscriptionLIDB-DPC
> subscriptionLIDB-SSN
> subscriptionCNAM-DPC
> subscriptionCNAM-SSN
> subscriptionISVM-DPC
> subscriptionISVM-SSN
> subscriptionEndUserLocationValue
> subscriptionEndUserLocationType
> subscriptionBillingId

ssssssssssss.Current service provider SOA issues M-ACTION ModifySubscriptionVersion to the NPAC SMS lnpSubscriptions object to update the active version. The NPAC SMS validates the data.

If a TN range is specified in the request, it would result in an M-SET request and M-EVENT-REPORT for the entire TN Range.

tttttttttttt.If the M-ACTION data validates, NPAC SMS issues M-SET to the subscriptionVersionNPAC. The subscriptionVersionStatus is updated to "sending," the subscriptionBroadcastTimeStamp and subscriptionModifiedTimeStamp are set, and any other modified attributes are updated.

uuuuuuuuuuuu.NPAC SMS issues M-SET response indicating success or failure.

vvvvvvvvvvvv.NPAC SMS replies to the M-ACTION with success or failure and reasons for failure to the service provider SOA. If the action fails, no modifications are applied and processing stops. Failure reasons include accessDenied (not the current service provider) and invalidArgumentValue (validation problems).

wwwwwwwwwwww.NPAC SMS issues M-EVENT- REPORT notification (statusAttributeValueChange or subscriptionVersionRangeStatusAttributeValueChange)subscriptionVersionStatusAttributeValueChange for the status change to "sending."

xxxxxxxxxxxx.Current service provider SOA responds with M-EVENT-REPORT confirmation.

yyyyyyyyyyyy.NPAC SMS issues M-EVENT-REPORT for the rest of the modified attributes.

zzzzzzzzzzzz.Current service provider SOA responds with M-EVENT-REPORT confirmation.

aaaaaaaaaaaaaa.NPAC SMS issues M-SET to all Local SMSs for the updated attributes, that are accepting downloads for the NPA-NXX of the subscriptionVersion. If the update involves multiple subscription version objects, a scoped and filtered request will be sent.

bbbbbbbbbbbbbb.Local SMSs reply to M-SET.

cccccccccccccc.All Local SMSs have reported the object modification.

Failure scenarios for this modification follow the same rules for an objectCreation failure to the Local SMS. However, upon failure the version status is updated to "active" and the subscriptionFailedSP-List is updated to contain the name of the service providers for which the download fails.

dddddddddddddd.NPAC SMS issues M-SET to update the current subscriptionVersionNPAC object subscriptionVersionStatus to "active."

eeeeeeeeeeeeee.NPAC SMS responds to M-SET.

ffffffffffffff.NPAC SMS sends M-EVENT-REPORT to the current provider of the subscriptionVersionStatus update (statusAttributeValueChange or subscriptionVersionRangeStatusAttributeValueChange).

gggggggggggggg.Service provider SOA issues M-EVENT-REPORT confirmation.

6.5.2.2

SubscriptionVersion Modify Active: Failure to Local SMS

This scenario shows the broadcast of a modified active subscription that fails to one or more of the Local SMSs.
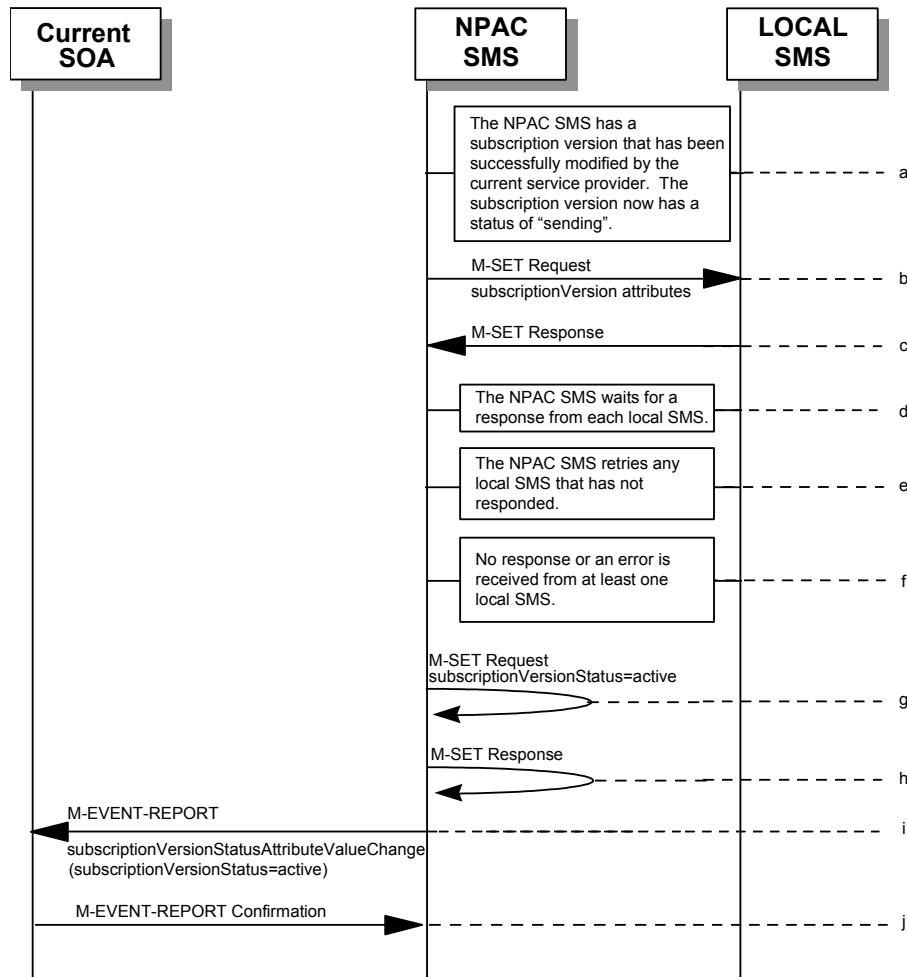
hhhhhhhhhhhhhh.The NPAC SMS has an active subscription version that has been successfully modified by the current service provider. The subscription version now has a status of "sending".

iiiiiiiiiiii.The NPAC SMS issues M-SET to all Local SMSs for the updated attributes, that are accepting downloads for the NPA-NXX of the subscriptionVersion.

jjjjjjjjjjjjjj.Local SMSs should respond successfully to the M-SET.

kkkkkkkkkkkkk.NPAC SMS waits for responses from each Local SMS.

lllllllllllll.NPAC SMS retries any Local SMS that has not responded.

mmmmmmmmmmmmm.No response or an error is received from at least one Local SMS.

nnnnnnnnnnnnn.NPAC SMS issues the M-SET to update the current subscriptionVersionNPAC object's subscriptionVersionStatus to "active" from "sending". It will also update the subscriptionFailed-SP-List with the service provider ID and name of the Local SMS that failed to successfully receive the broadcast.

ooooooooooooo.NPAC SMS responds to the M-SET.

ppppppppppppp.NPAC SMS sends the
subscriptionVersionStatusAttributeValueChange M-EVENT-
REPORT to the current service provider SOA with the current status
and failedSP-List.

qqqqqqqqqqqqq.The current service provider SOA issues the M-EVENT-
REPORT confirmation.

6.5.2.3

SubscriptionVersion Modify Prior to Activate Using M-ACTION

This scenario can only be performed when the subscriptionVersionStatus is conflict or pending.

	Old SOA	New SOA	NPAC SMS	LOCAL SMS	

SOA .... a

M-ACTION Request subscriptionVersionModify → b

M-SET Request ← c

subscriptionVersionNPAC

M-SET Response ← d

M-ACTION Response ← e

← M-EVENT-REPORT AttributeValueChange or subscriptionVersionRangeAttributeValueChange f

M-EVENT-REPORT Confirmation → g

← M-EVENT-REPORT AttributeValueChange or subscriptionVersionRangeAttributeValueChange h

M-EVENT-REPORT Confirmation → i
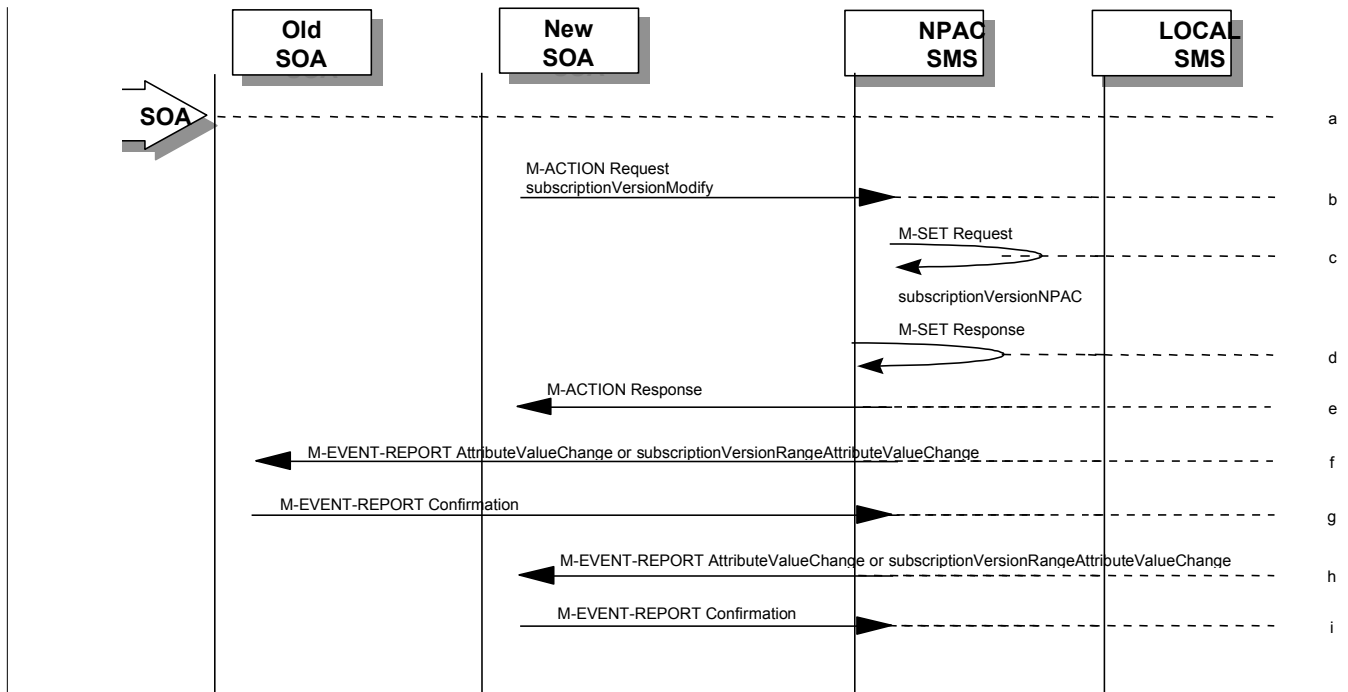
rrrrrrrrrrrrrr.Action is taken by a service provider to modify a subscriptionVersion by specifying the TN, TN range, and the version status, or by specifying the version ID of the subscription version to be modified; and the data to be modified.

The old service provider can only update the following attributes:

> subscriptionOldSP-DueDate
> subscriptionOldSP-Authorization
> subscriptionStatusChangeCauseCode

NOTE: The subscriptionStatusChangeCauseCode can only be modified when the subscriptionOldSP-Authorization is set to FALSE

The new service provider can only update the attributes:

> subscriptionLRN
> subscriptionNewSP-DueDate
> subscriptionCLASS-DPC
> subscriptionCLASS-SSN
> subscriptionLIDB-DPC
> subscriptionLIDB-SSN
> subscriptionCNAM-DPC
> subscriptionCNAM-SSN
> subscriptionISVM-DPC
> subscriptionISVM-SSN
> subscriptionEndUserLocationValue

subscriptionEndUserLocationType
subscriptionBillingId

sssssssssssss.Service provider SOA issues M-ACTION subscriptionVersionModify to the NPAC SMS lnpSubscriptions object to update the version. The NPAC SMS validates the data.

If a TN range is specified in the request, it would result in an M-SET request and M-EVENT-REPORT for the entire TN Range.

tttttttttttttt.If validation is successful, NPAC SMS will M-SET the attributes modified in the subscriptionVersionNPAC object and set the subscriptionModifiedTimeStamp.

uuuuuuuuuuuuu.The NPAC SMS will issue an M-SET response.

vvvvvvvvvvvvvv.NPAC SMS replies to the M-ACTION with success or failure and reasons for failure.

Note: If the old service provider was the initiator of the M-ACTION that caused the subscription version status to change, the NPAC SMS would issue a subscriptionVersionStatusAttributeValueChange M-EVENT-REPORT to the old and new service provider SOAs.

wwwwwwwwwwwww.NPAC SMS issues M-EVENT-REPORT notification (attributeValueChange or subscriptionVersionRangeattributeValueChange)~~attributeValueChange~~ to the old service provider SOA.

xxxxxxxxxxxxx.The old service provider SOA returns M-EVENT-REPORT confirmation to the NPAC SMS.

yyyyyyyyyyyyy.NPAC SMS issues M-EVENT-REPORT notification (attributeValueChange or subscriptionVersionRangeattributeValueChange)~~attributeValueChange~~ to the new service provider SOA.

zzzzzzzzzzzzz.The new service provider SOA returns M-EVENT-REPORT confirmation to the NPAC SMS.

6.5.2.4

SubscriptionVersion Modify Prior to Activate Using M-SET

This scenario shows a modify using an M-SET. The M-SET can only be performed when the subscriptionVersionStatus is conflict or pending.

```
        ┌──────┐    ┌──────┐         ┌──────┐      ┌──────┐
        │ Old  │    │ New  │         │ NPAC │      │LOCAL │
        │ SOA  │    │ SOA  │         │ SMS  │      │ SMS  │
        └──────┘    └──────┘         └──────┘      └──────┘
```

SOA ── a

           M-SET Request
           ────────────────────────▶ ─────────────────── b

           M-SET Response
           ◀──────────────────────── ─────────────────── c

     M-EVENT-REPORT attributeValueChange
     ◀────────────────────────────────── ─────────────── d

     M-EVENT-REPORT Confirmation
     ──────────────────────────────────▶ ─────────────── e

              M-EVENT-REPORT attributeValueChange
           ◀──────────────────────────── ─────────────── f

              M-EVENT-REPORT Confirmation
           ──────────────────────────▶ ─────────────────── g
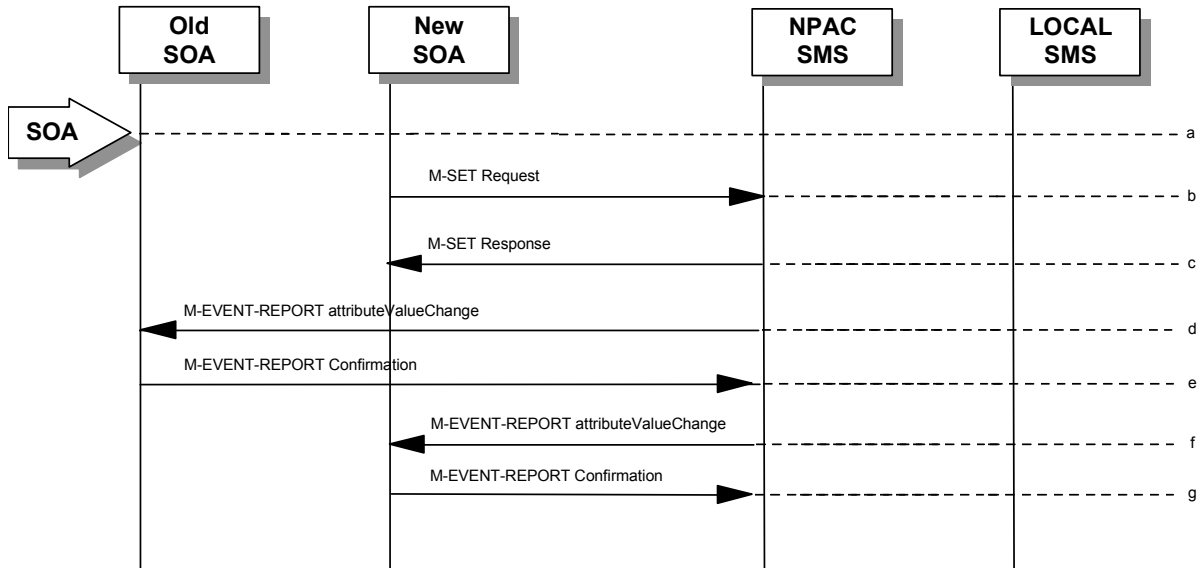
aaaaaaaaaaaaaaa.Action is taken by a service provider to modify the subscriptionVersion. The old service provider can only update the following attributes:

> subscriptionOldSP-DueDate
> subscriptionOldSP-Authorization
> subscriptionStatusChangeCauseCode

NOTE: The subscriptionStatusChangeCauseCode can only be modified when the subscriptionOldSP-Authorization is set to FALSE

The new service provider can only update the attributes:

> subscriptionLRN
> subscriptionNewSP-DueDate
> subscriptionCLASS-DPC
> subscriptionCLASS-SSN
> subscriptionLIDB-DPC
> subscriptionLIDB-SSN
> subscriptionCNAM-DPC
> subscriptionCNAM-SSN
> subscriptionISVM-DPC
> subscriptionISVM-SSN
> subscriptionEndUserLocationValue
> subscriptionEndUserLocationType
> subscriptionBillingId

bbbbbbbbbbbbbbb.The new or old service provider SOA will issue an M-SET request for the attributes to be updated in the subscriptionVersionNPAC object. The request will be validated for an authorized service provider and validation of the attributes and values.

cccccccccccccc.The NPAC SMS will issue an M-SET response indicating success or failure and reasons for failure.

Note: If the old service provider was the initiator of the M-SET that caused the subscription version status to change, the NPAC SMS would issue a subscriptionVersionStatusAttributeValueChange M-EVENT-REPORT to the old and new service provider SOAs

dddddddddddddd.NPAC SMS issues M-EVENT-REPORT attributeValueChange to the old service provider SOA.

eeeeeeeeeeeeee.The old service provider SOA returns M-EVENT-REPORT confirmation to the NPAC SMS.

ffffffffffffff.NPAC SMS issues M-EVENT-REPORT attributeValueChange to the new service provider SOA.

gggggggggggggg.The new service provider SOA returns M-EVENT-REPORT confirmation to the NPAC SMS.

6.5.2.5

Subscription Version Modify Active: Resend Successful to Local SMS

This scenario shows the successful resend of a modification of an active subscription. The resend of a failed modified active version can only be performed by authorized NPAC personnel.
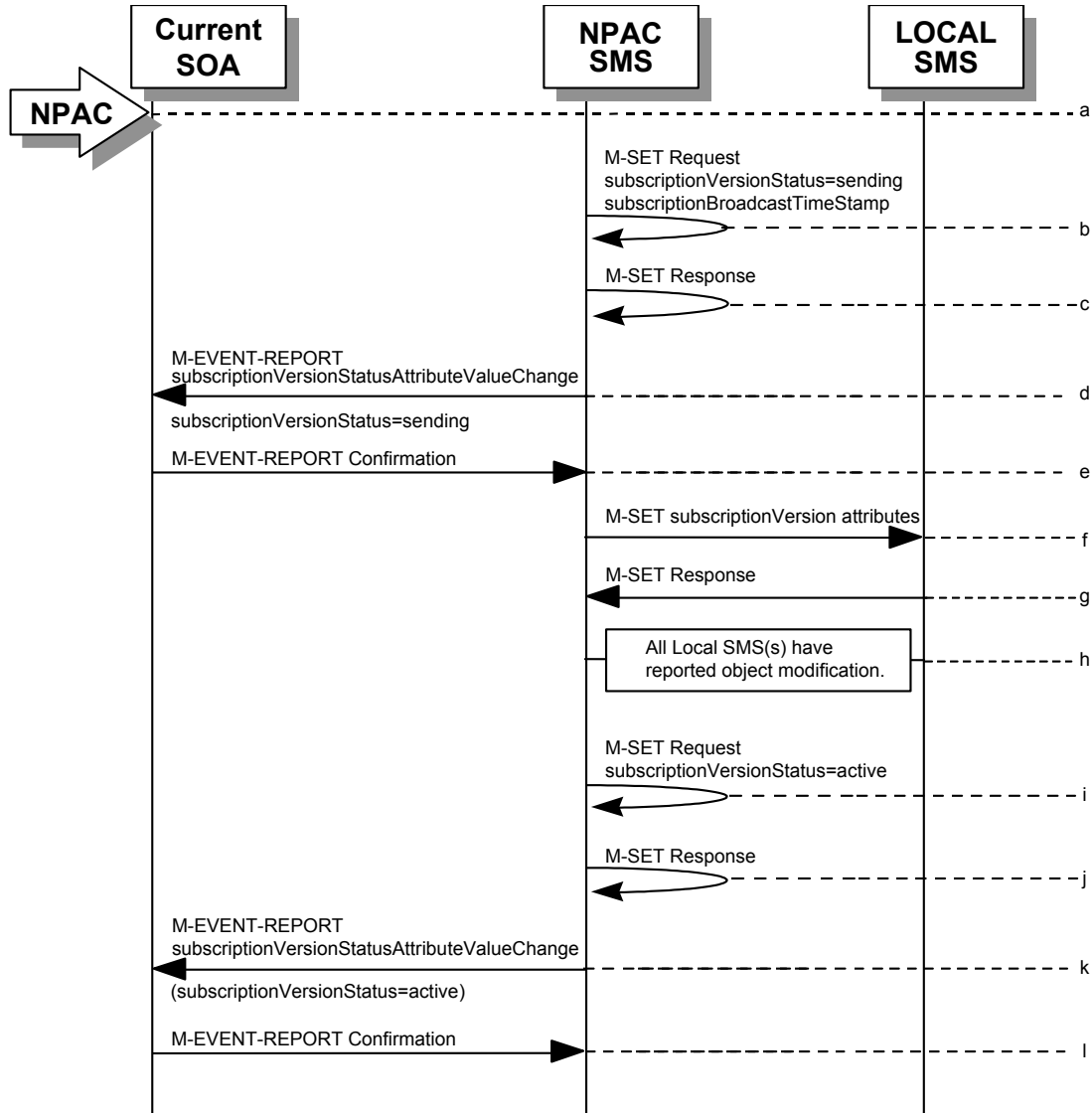
hhhhhhhhhhhhhh. Action is taken by NPAC personnel to resend the failed modified active version.

iiiiiiiiiiiiii. NPAC SMS issues M-SET to the subscriptionVersionNPAC. The subscriptionVersionStatus is updated to "sending".

jjjjjjjjjjjjjj. NPAC SMS issues M-SET response indicating success or failure.

kkkkkkkkkkkkkk. NPAC SMS issues M-EVENT- REPORT subscriptionVersionStatusAttributeValueChange for the status change to "sending."

llllllllllllll. Current service provider SOA responds with M-EVENT-REPORT confirmation.

mmmmmmmmmmmmmmm.NPAC SMS issues M-SET to all Local SMSs that previously failed for the updated attributes, and are accepting downloads for the NPA-NXX of the subscriptionVersion.

nnnnnnnnnnnnnn.Local SMSs reply to M-SET.

ooooooooooooooo.All Local SMSs have reported the object modification.

ppppppppppppppp.NPAC SMS issues M-SET to update the current subscriptionVersionNPAC object subscriptionVersionStatus to "active."

qqqqqqqqqqqqqq.NPAC SMS responds to M-SET.

rrrrrrrrrrrrrr.NPAC SMS sends M-EVENT-REPORT to the current provider of the subscriptionVersionStatus update.

sssssssssssssss.Service provider SOA issues M-EVENT-REPORT confirmation.

6.5.2.6

Subscription Version Modify Active: Resend Failure to Local SMS

This scenario shows a failure on a resend of a modified active subscription that failed previously to one or more of the Local SMSs. The resend of a failed modified active version can only be performed by authorized NPAC personnel.
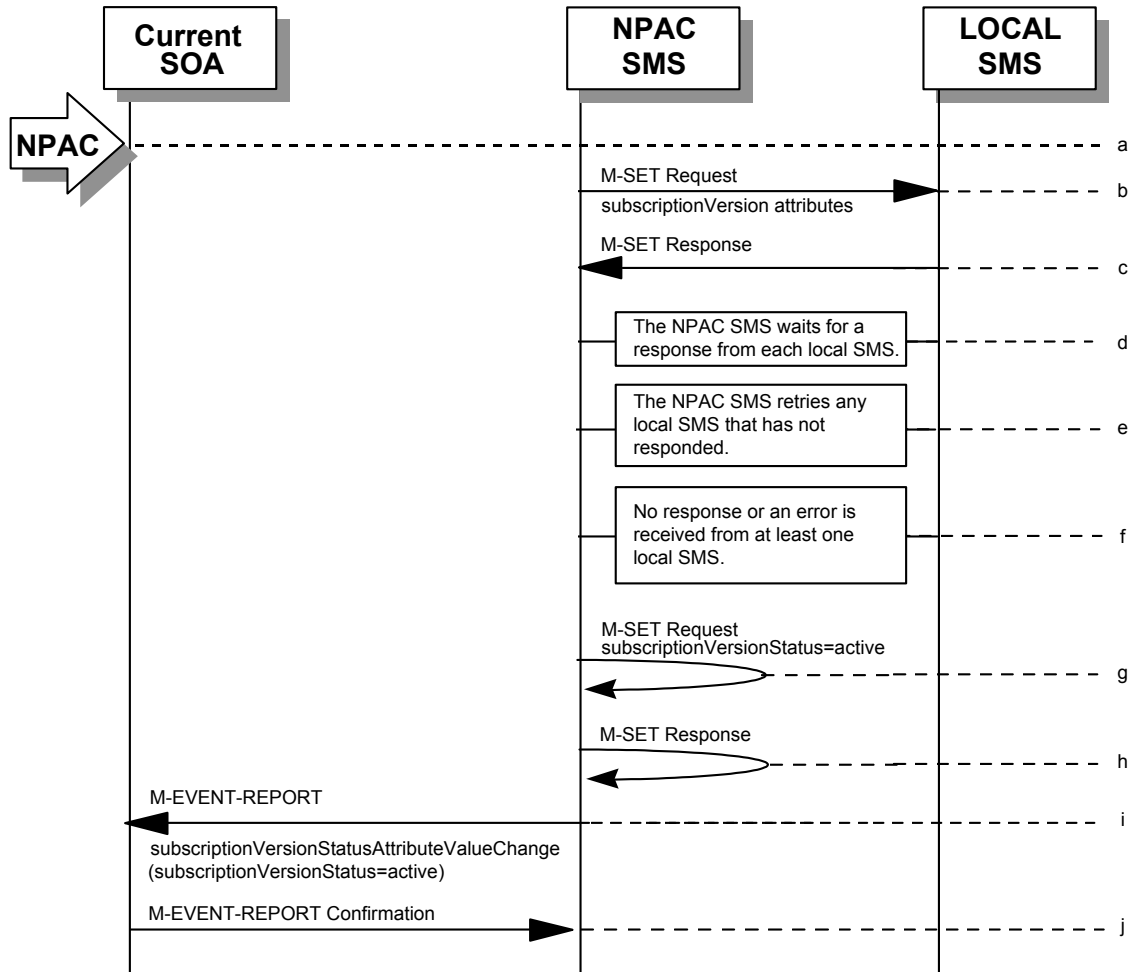
tttttttttttttt.The NPAC SMS has an active subscription version that has been unsuccessfully modified by the current service provider. The NPAC personnel issues a resend for the failed modified version and the subscription version now has a status of "sending".

uuuuuuuuuuuuuuu.The NPAC SMS issues M-SET to all Local SMSs that previously failed for the updated attributes, and are accepting downloads for the NPA-NXX of the subscriptionVersion.

vvvvvvvvvvvvvvv.Local SMSs should respond successfully to the M-SET.

wwwwwwwwwwwwwww.NPAC SMS waits for responses from each Local SMS.

xxxxxxxxxxxxxx.NPAC SMS retries any Local SMS that has not responded.

yyyyyyyyyyyyyy.No response or an error is received from at least one or all Local SMSs.

zzzzzzzzzzzzzzz.NPAC SMS issues the M-SET to update the current subscriptionVersionNPAC object's subscriptionVersionStatus to "active" from "sending". It will also update the subscriptionFailed-SP-List with the service provider ID and name of the Local SMSs that failed to successfully receive the broadcast.

aaaaaaaaaaaaaaa.NPAC SMS responds to the M-SET.

bbbbbbbbbbbbbbb.NPAC SMS sends the subscriptionVersionStatusAttributeValueChange M-EVENT-REPORT to the current service provider SOA with the current status and failedSP-List.

ccccccccccccccc.The current service provider SOA issues the M-EVENT-REPORT confirmation.

6.5.3

Cancel Scenarios

6.5.3.1   SubscriptionVersion Cancel by Service Provider SOA After Both Service Provider SOAs Have
           Concurred

A subscription version can be canceled when the current status is conflict,
disconnect-pending, or pending.

In this scenario, the old service provider initiates the cancel after both the old
and new service provider SOAs have issued their create actions. Once the
new service provider SOA's cancellation acknowledgment is received, the
version status is set to "canceled". Since the old service provider SOA
initiated the cancel, its cancellation acknowledgment is optional.
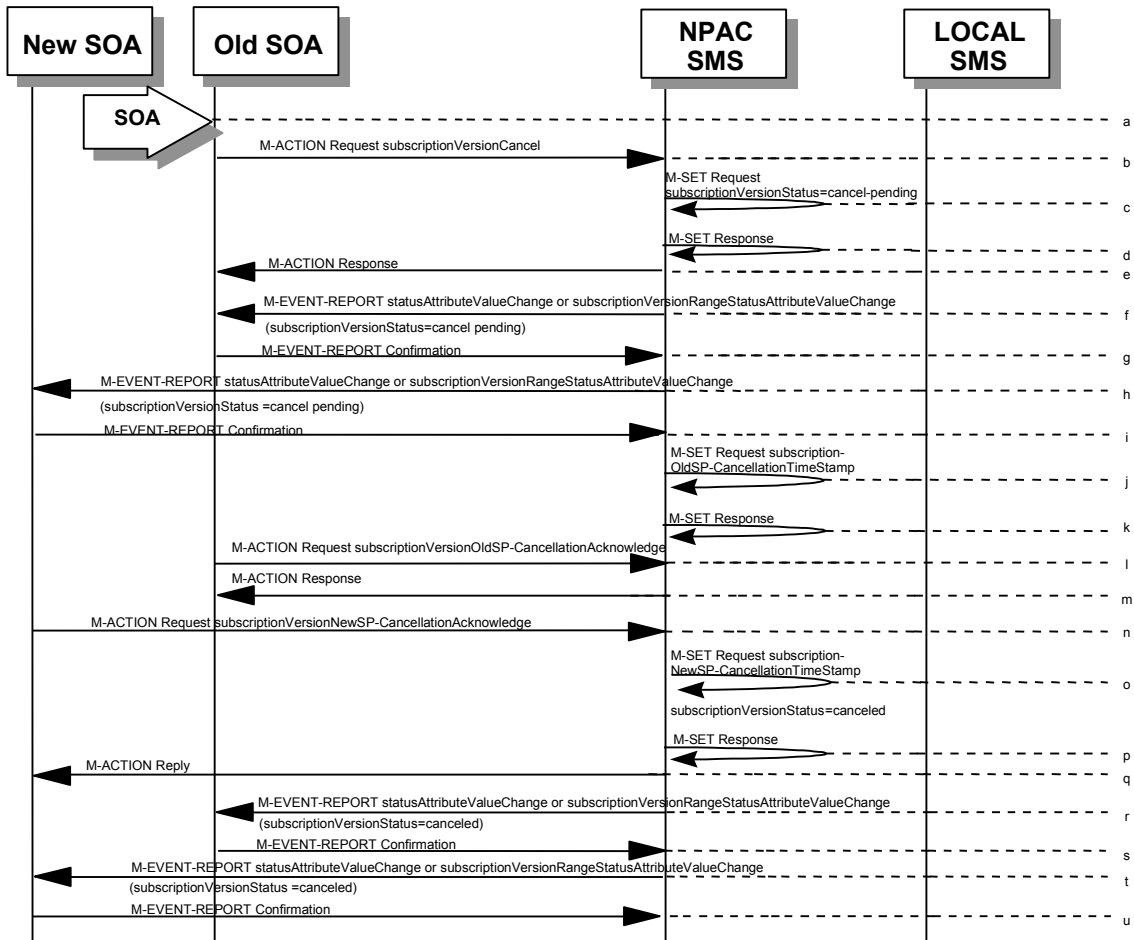
dddddddddddddddd.Action is initiated by the old or new service provider SOA
to cancel a subscription version by specifying the TN, TN range, or
version ID of the subscription version to be canceled.

If a TN range is specified in the request, it would result in an M-SET
request and M-EVENT-REPORT for the entire TN Range.

eeeeeeeeeeeeeeee.Service provider SOA issues an M-ACTION subscriptionVersionCancel to the NPAC SMS to the lnpSubscriptions object.

ffffffffffffffff.NPAC SMS issues M-SET to update subscriptionVersionStatus to "cancel-pending" in the subscriptionVersionNPAC object and the subscriptionModifiedTimeStamp.

gggggggggggggggg.NPAC SMS issues M-SET response.

hhhhhhhhhhhhhhhh.NPAC SMS returns the M-ACTION reply. This either reflects a success or failure. Failure reasons are version in wrong state, no version to cancel, and authorization service provider. If successful, the subscriptionPre-CancellationStatus is set to the current subscriptionVersionStatus and then the subscriptionVersionStatus is set to "cancel-pending." If the action fails, no modifications are applied and processing stops.

iiiiiiiiiiiiiii.An M-EVENT-REPORT for the subscriptionVersionStatus change (statusAttributeValueChange or subscriptionVersionRangeStatusAttributeValueChange) is sent from the NPAC SMS to the old service provider SOA.

jjjjjjjjjjjjjjjj.The old service provider SOA returns an M-EVENT-REPORT confirmation to the NPAC SMS.

kkkkkkkkkkkkkkkk.An M-EVENT-REPORT for the subscriptionVersionStatus change (statusAttributeValueChange or subscriptionVersionRangeStatusAttributeValueChange) is sent from the NPAC SMS to the new service provider SOA.

llllllllllllllll.The new service provider SOA returns an M-EVENT-REPORT confirmation to the NPAC SMS.

mmmmmmmmmmmmmmmm.The NPAC SMS issues M-SET for the subscriptionOldSP-CancellationTimeStamp in the subscriptionVersionNPAC object and subscriptionModifiedTimeStamp.

nnnnnnnnnnnnnnnn.NPAC SMS issues an M-SET response.

oooooooooooooooo.The old service provider SOA sends an M-ACTION subscriptionVersionOldSP-CancellationAcknowledge to the NPAC SMS lnpSubscription object. This acknowledges the cancellation of the subscriptionVersionNPAC with a status of cancel-pending.

pppppppppppppppp.NPAC SMS responds to the M-ACTION with either a success or failure and failure reasons. If the action fails, no modifications are applied.

qqqqqqqqqqqqqqqq.The new service provider SOA sends an M-ACTION subscriptionVersionNewSP-CancellationAcknowledge to the NPAC SMS lnpSubscriptions object.

rrrrrrrrrrrrrrrr.The NPAC SMS issues M-SET for the subscriptionNewSP-CancellationTimeStamp, subscriptionModifiedTimeStamp, subscriptionCancellationTimeStamp, and subscriptionVersionStatus to "canceled."

ssssssssssssssss.NPAC SMS issues M-SET response.

tttttttttttttttt.NPAC SMS replies to M-ACTION with success or failure and reasons for failure. If the action fails, no modifications are applied.

uuuuuuuuuuuuuuuu.If the last M-ACTION was successful, the NPAC SMS sends the M-EVENT-REPORT for the subscriptionVersionStatus update (statusAttributeValueChange or

subscriptionVersionRangeStatusAttributeValueChange) to canceled to the old service provider SOA.

vvvvvvvvvvvvvvvv.If the last M-ACTION was successful, the old service provider SOA returns an M-EVENT-REPORT confirmation to the NPAC SMS.

wwwwwwwwwwwwwww.NPAC SMS sends the M-EVENT-REPORT for the subscriptionVersionStatus update (statusAttributeValueChange or subscriptionVersionRangeStatusAttributeValueChange) to canceled to the new service provider SOA.

xxxxxxxxxxxxxxx.The new service provider SOA returns an M-EVENT-REPORT confirmation to the NPAC SMS.

6.5.3.2

SubscriptionVersionCancel: No Acknowledgment from a SOA

The NPAC SMS has set the status of the subscription version to "cancel-pending" upon request of the old SOA. It is now waiting for the acknowledgments from both service provider SOAs. Acknowledgment from the old SOA is optional. In this scenario the new service provider does not respond.

yyyyyyyyyyyyyyy.NPAC SMS is waiting for the cancellation acknowledgments from both service provider SOAs.

zzzzzzzzzzzzzzzz.The old service provider SOA sends a subscriptionVersionOldSP-CancellationAcknowledge M-ACTION to the NPAC SMS lnpSubscriptions object. This acknowledges the cancellation of the subscriptionVersionNPAC with a status of cancel-pending.

aaaaaaaaaaaaaaaa.NPAC SMS issues M-SET for the subscriptionOldSP-CancellationTimeStamp and subscriptionModifiedTimeStamp in the subscriptionVersionNPAC object.

bbbbbbbbbbbbbbbbb.NPAC SMS responds to M-SET.

cccccccccccccccc.NPAC SMS replies to the M-ACTION with either a success or failure and failure reasons. If the action fails, no modifications are applied and processing stops.

ddddddddddddddddd.The NPAC SMS waits for the cancellation acknowledgment from the new service provider SOA. No reply is received after a tunable period.

eeeeeeeeeeeeeeee.NPAC SMS issues M-EVENT-REPORT subscriptionVersionCancellationAcknowledgeRequest to the unresponsive new service provider SOA.

ffffffffffffffff.The new service provider SOA returns an M-EVENT-REPORT confirmation to the NPAC SMS.

gggggggggggggggg.The "Service Provider Concurrence Cancellation Window" has expired and still no cancellation acknowledgment is received from the new service provider.

hhhhhhhhhhhhhhhh.NPAC SMS issues M-SET to update the subscriptionVersionStatus to conflict and the subscriptionConflictTimeStamp and subscriptionModifiedTimeStamp are set.

iiiiiiiiiiiiiiii.NPAC SMS issues M-SET response.

jjjjjjjjjjjjjjjj.The NPAC SMS issues M-EVENT-REPORT, subscriptionVersionStatusAttributeValueChange, to the old service provider SOA.

kkkkkkkkkkkkkkkk.The old service provider SOA returns an M-EVENT-REPORT confirmation to the NPAC SMS.

llllllllllllllll.The NPAC SMS issues M-EVENT-REPORT, subscriptionVersionStatusAttributeValueChange, to the new service provider SOA.

mmmmmmmmmmmmmmmm.The new service provider SOA returns an M-EVENT-REPORT confirmation to the NPAC SMS.

14At this point, the flow follows the conflict resolution scenarios.

6.5.3.3

Subscription Version Cancels With Only One Create Action Received

Once one of the subscriptionVersionNewSP-Create or subscriptionVersionOldSP-Create actions has been received, the subscription version can be canceled by the same service provider who created the subscription version. In this case, the subscription version status is set to "canceled", **not** "cancel-pending", and no further acknowledgments are necessary by either the old or new service provider.

If the new service provider SOA creates the pending subscription version and the old service provider attempts to cancel it (or vice-versa), an error is returned to the service provider who requested the cancel.

In this scenario, the new service provider SOA has already successfully issued the subscriptionVersionNewSP-Create action. The old service provider has not issued it's subscriptionVersionOldSP-Create action. Now, the new service provider needs to cancel the pending subscription version.
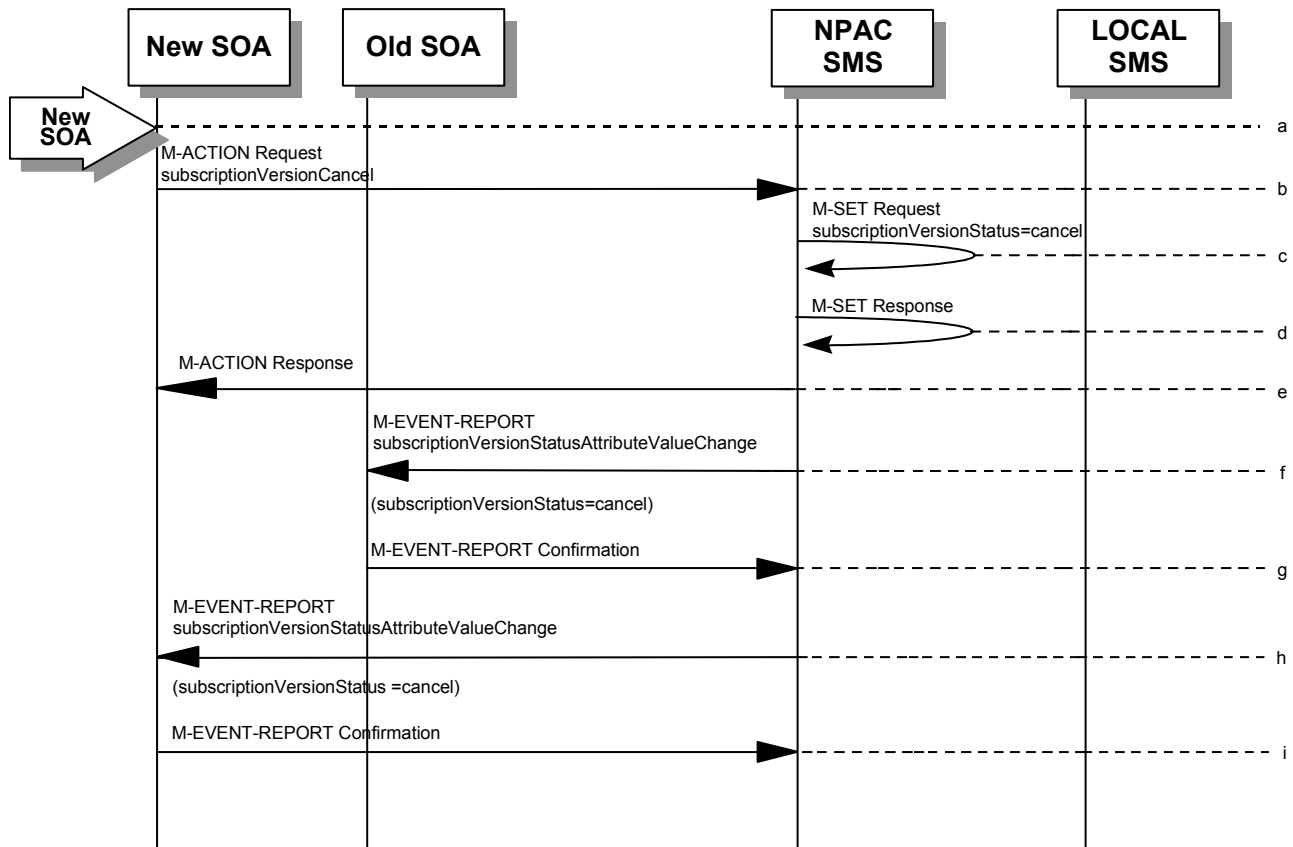
nnnnnnnnnnnnnnnnn.Action is taken by the new service provider to cancel a subscription version they created.

oooooooooooooooo.The new service provider SOA sends M-ACTION subscriptionVersionCancel to the NPAC SMS lnpSubscriptions object to cancel a pending subscriptionVersionNPAC.

ppppppppppppppppp.NPAC SMS issues M-SET to update the subscriptionVersionStatus to "canceled" and update the subscriptionModifiedTimeStamp in the subscriptionVersionNPAC object.

qqqqqqqqqqqqqqqq.NPAC SMS issues M-SET response.

rrrrrrrrrrrrrrrr.NPAC SMS returns the M-ACTION reply. This either reflects a success or failure. Failure reasons are version in wrong state, no version to cancel, and service provider not authorized.

If successful, the subscriptionPreCancellationStatus is set to the current subscriptionVersionStatus, and then the subscriptionVersionStatus is set to "canceled". If the action fails, no modifications are applied and processing stops.

ssssssssssssssss.The subscriptionVersionStatusAttributeValueChange M-EVENT-REPORT is sent to the old service provider SOA.

tttttttttttttttt.The old service provider confirms the M-EVENT-REPORT.

uuuuuuuuuuuuuuuu.The subscriptionVersionStatusAttributeValueChange M-EVENT-REPORT is sent to the new service provider SOA.

vvvvvvvvvvvvvvvv.The new service provider confirms the M-EVENT-REPORT.

6.5.4

Disconnect Scenarios

6.5.4.1   SubscriptionVersion Immediate Disconnect

The current service provider can disconnect an active subscription version. In this scenario, the disconnect is immediate.

wwwwwwwwwwwwwwww.Current service provider SOA personnel take action to disconnect a subscription version.

xxxxxxxxxxxxxxxx.Service provider SOA issues an M-ACTION request to disconnect to the lnpSubscriptions object. The M-ACTION specifies either the subscriptionVersionId, or subscriptionTN or range of TNs, and also has future dated the subscriptionEffectiveReleaseDate and the subscriptionCustomerDisconnectDate. The subscription version

status must be active and no pending, failed, conflict or cancel-pending versions can exist.

If a TN range is specified in the request, it would result in an M-SET request and M-EVENT-REPORT for the entire TN Range.

yyyyyyyyyyyyyyyyyy.NPAC SMS issues an M-SET to set the subscriptionCustomerDisconnectDate according to the disconnect action. The subscriptionVersionStatus goes to "sending " and the subscriptionModifiedTimeStamp and the subscriptionBroadcastTimeStamp are both set accordingly.

zzzzzzzzzzzzzzzz.NPAC SMS responds to whether M-SET was successful.

aaaaaaaaaaaaaaaaaa.NPAC SMS responds to the M-ACTION. If the action failed, an error will be returned and processing will stop on this flow.

bbbbbbbbbbbbbbbbbb.NPAC SMS notifies service provider SOA (statusAttributeValueChange or subscriptionVersionRangeStatusAttributeValueChange) of status change to "sending."

cccccccccccccccccc.Service provider SOA confirms event report.

dddddddddddddddddd.NPAC SMS sends the donor service provider SOA notification that the subscription version is being disconnected with the customer disconnect date.

eeeeeeeeeeeeeeeee.The donor service provider SOA confirms the M-EVENT-REPORT.

ffffffffffffffffff.NPAC SMS sends out an M-DELETE on the subscriptionVersion to all Local SMSs, that are accepting downloads for the NPA-NXX of the subscriptionVersion. If the M-DELETE is for multiple subscription versions, a scoped and filtered operation will be sent.

ggggggggggggggggg.Each Local SMS responds with a successful M-DELETE reply.

hhhhhhhhhhhhhhhhhh.All Local SMSs respond successfully.

iiiiiiiiiiiiiiiiii.NPAC SMS issues M-SET updating the subscriptionVersionStatus to old for subscriptionVersionNPAC objects. It also sets the subscriptionModifiedTimeStamp and subscriptionDisconnectCompleteTimeStamp.

jjjjjjjjjjjjjjjjjj.NPAC SMS responds to M-SET.

kkkkkkkkkkkkkkkkkk.NPAC SMS issues an M-EVENT-REPORT (statusAttributeValueChange or subscriptionVersionRangeStatusAttributeValueChange) for the subscriptionVersionStatus equal to "old."

llllllllllllllllll.Service provider SOA responds to M-EVENT-REPORT.

mmmmmmmmmmmmmmmmmm.After a tunable amount of days, the subscription version is purged by the NPAC SMS housekeeping process.

6.5.4.2

SubscriptionVersion Disconnect With Effective Release Date

In this scenario, a future dated request is submitted to disconnect an active subscriptionVersion.
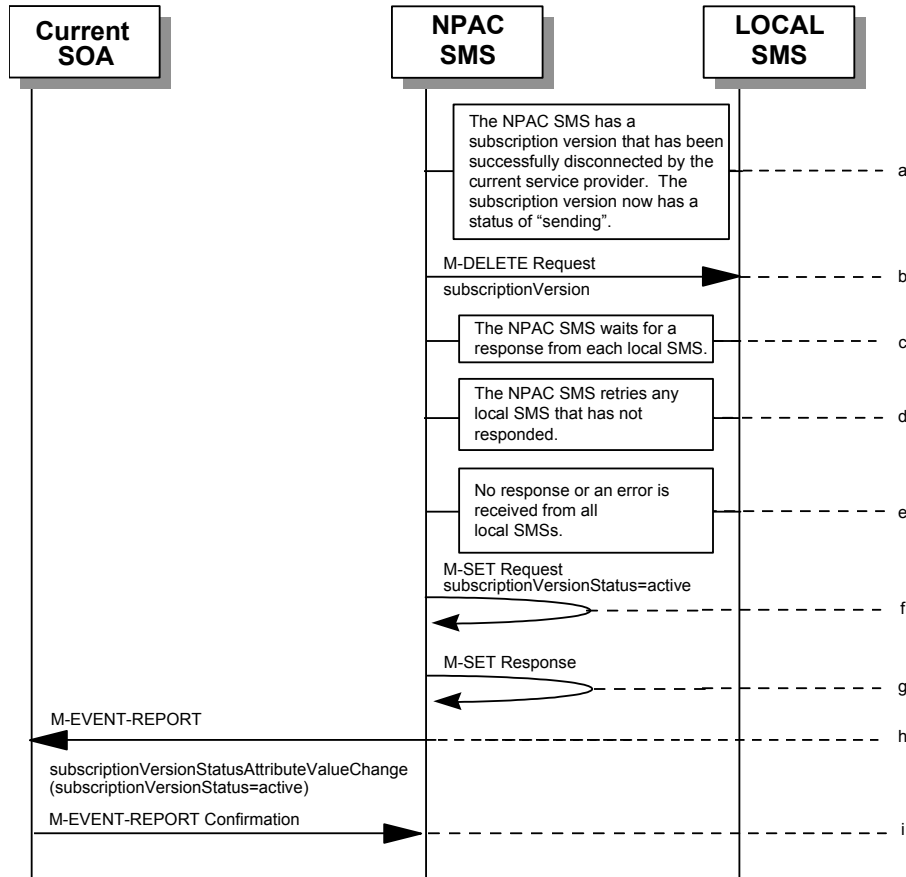

nnnnnnnnnnnnnnnnnn.Service provider SOA personnel take action to disconnect a subscription version.

ooooooooooooooooo.Service provider SOA issues an M-ACTION request to disconnect to the lnpSubscriptions object. The M-ACTION specifies either the subscriptionVersionId, or subscriptionTN or range of TNs, and also has future dated the subscriptionEffectiveReleaseDate and the subscriptionCustomerDisconnectDate. The subscription version status must be active and no pending, failed, conflict, conflict-pending, cancel or cancel-pending versions can exist.

If a TN range is specified in the request, it would result in an M-SET request and M-EVENT-REPORT for the entire TN Range.

ppppppppppppppppppp.NPAC SMS M-SETs the status to disconnect-pending, and sets the subscriptionEffectiveReleaseDate of the existing subscriptionVersionNPAC and also the subscriptionModifiedTimeStamp.

qqqqqqqqqqqqqqqqq.NPAC SMS responds to M-SET.

rrrrrrrrrrrrrrrrr.NPAC SMS responds to M-ACTION. If the action fails, no modifications are applied and the processing stops.

sssssssssssssssss.NPAC SMS sends a notification (statusAttributeValueChange or subscriptionVersionRangeStatusAttributeValueChange) ~~the subscriptionVersionStatusAttributeValueChange~~ M-EVENT-REPORT to the current service provider SOA.

ttttttttttttttttt.The current service provider SOA issues the M-EVENT-REPORT confirmation.

uuuuuuuuuuuuuuuuuu.The NPAC SMS waits for the subscriptionEffectiveReleaseDate date to arrive.

15At this point, the flow follows an immediate disconnect scenario. First the donor service provider's Local SMS is notified of the impending disconnect. The NPAC SMS sets the subscriptionVersionStatus to sending the broadcast timestamp, notifies the service provider SOA of the status change, and proceeds to issue M-DELETEs for the subscriptionVersion to the Local SMS.

6.5.4.3

SubscriptionVersion Disconnect: Failure to Local SMS

This scenario shows the broadcast of a disconnected subscription that fails to all of the Local SMSs.

vvvvvvvvvvvvvvvvvvvv.The NPAC SMS has an active subscription version that has been successfully disconnected by the current service provider using the subscriptionVersionDisconnect action. The subscription version now has a status of "sending".

wwwwwwwwwwwwwwwwww.NPAC SMS issues the M-DELETE to all Local SMSs for the subscriptionVersion, that are accepting downloads for the NPA-NXX of the subscriptionVersion.

xxxxxxxxxxxxxxxxxx.NPAC SMS waits for a response from each Local SMS.

yyyyyyyyyyyyyyyyyy.NPAC SMS retries any Local SMS that has not responded.

zzzzzzzzzzzzzzzzzz.No response or an error is received from all Local SMSs.

aaaaaaaaaaaaaaaaaaa.NPAC SMS issues the M-SET to update the current subscriptionVersionNPAC object's subscriptionVersionStatus to "active" from "sending". It will also update the subscriptionFailed-SP-List with the service provider ID and name of all the Local SMSs.

bbbbbbbbbbbbbbbbbb.NPAC SMS responds to the M-SET.

cccccccccccccccccc.NPAC SMS sends the subscriptionVersionStatusAttributeValueChange M-EVENT-REPORT to the current service provider SOA with the current status and failedSP-List.

dddddddddddddddddd.Current service provider SOA issues the M-EVENT-
REPORT confirmation.

6.5.4.4

SubscriptionVersion Disconnect: Partial Failure to Local SMS

This scenario shows the broadcast of a disconnected subscription that fails to one or more, but not all, of the Local SMSs.
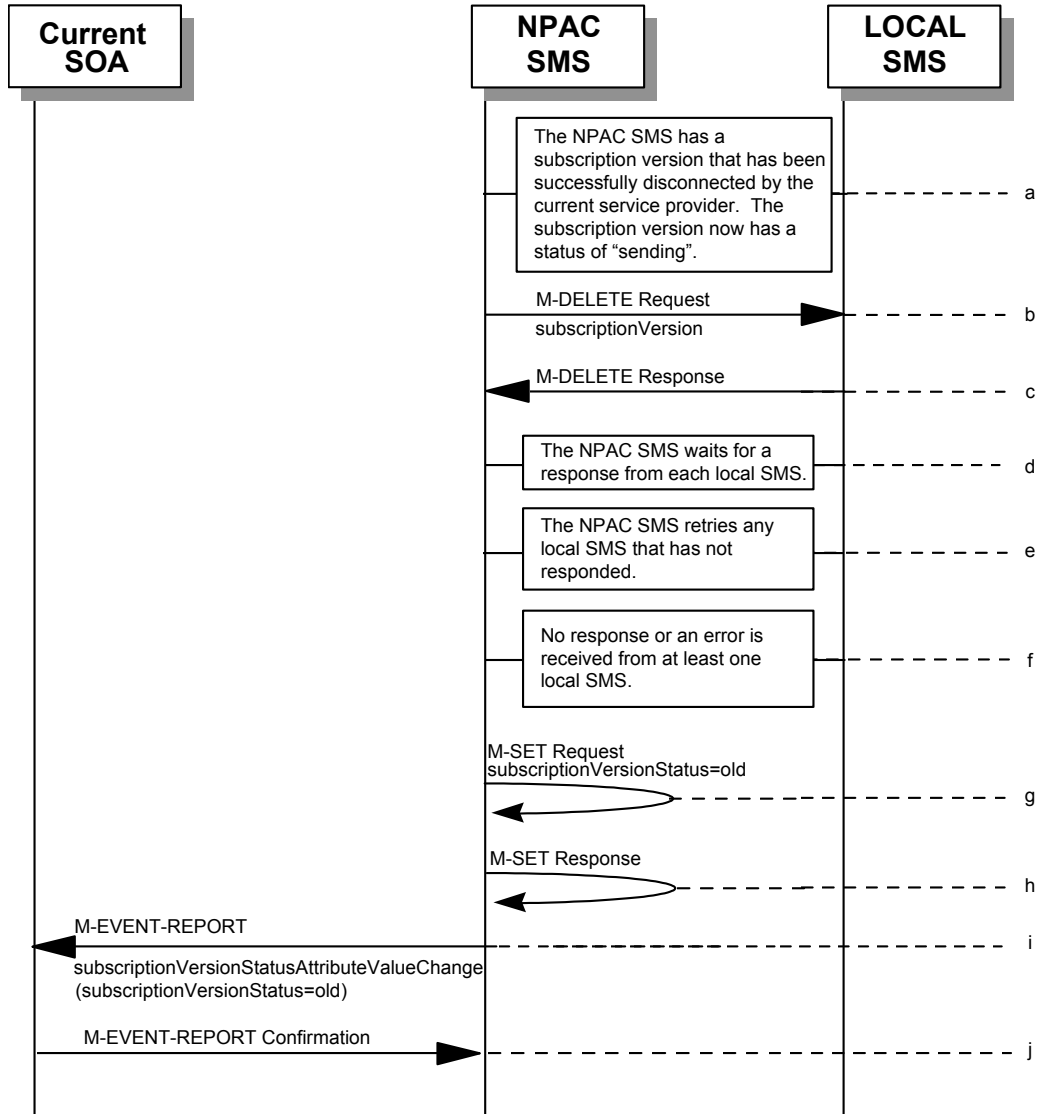
eeeeeeeeeeeeeeeeeee.The NPAC SMS has an active subscription version that has been successfully disconnected by the current service provider using the subscriptionVersionDisconnect action. The subscription version now has a status of "sending".

fffffffffffffffff.NPAC SMS issues the M-DELETE to all Local SMSs for the subscriptionVersion, that are accepting downloads for the NPA-NXX of the subscriptionVersion.

gggggggggggggggggg.Local SMSs should respond successfully to the M-DELETE.

hhhhhhhhhhhhhhhhhhh.NPAC SMS waits for a response from each Local SMS.

iiiiiiiiiiiiiiiii.NPAC SMS retries any Local SMS that has not responded.

jjjjjjjjjjjjjjjjjjjjj.No response or an error is received from at least one Local SMS.

kkkkkkkkkkkkkkkkkkk.NPAC SMS issues the M-SET to update the current subscriptionVersionNPAC object's subscriptionVersionStatus to "old" from "sending". It will also update the subscriptionFailed-SP-List with the service provider ID and name of the Local SMSs that failed to successfully receive the broadcast.

lllllllllllllllllll.NPAC SMS responds to the M-SET.

mmmmmmmmmmmmmmmmmm.NPAC SMS sends the subscriptionVersionStatusAttributeValueChange M-EVENT-REPORT to the current service provider SOA with the current status and failedSP-List.

nnnnnnnnnnnnnnnnnn.Current service provider SOA issues the M-EVENT-REPORT confirmation.

6.5.4.5

Subscription Version Disconnect: Resend Successful to Local SMS

> This scenario shows a successful resend of a disconnect for a subscription that fails to one or more of the Local SMSs. The resend of a failed disconnect can only be performed by authorized NPAC personnel.
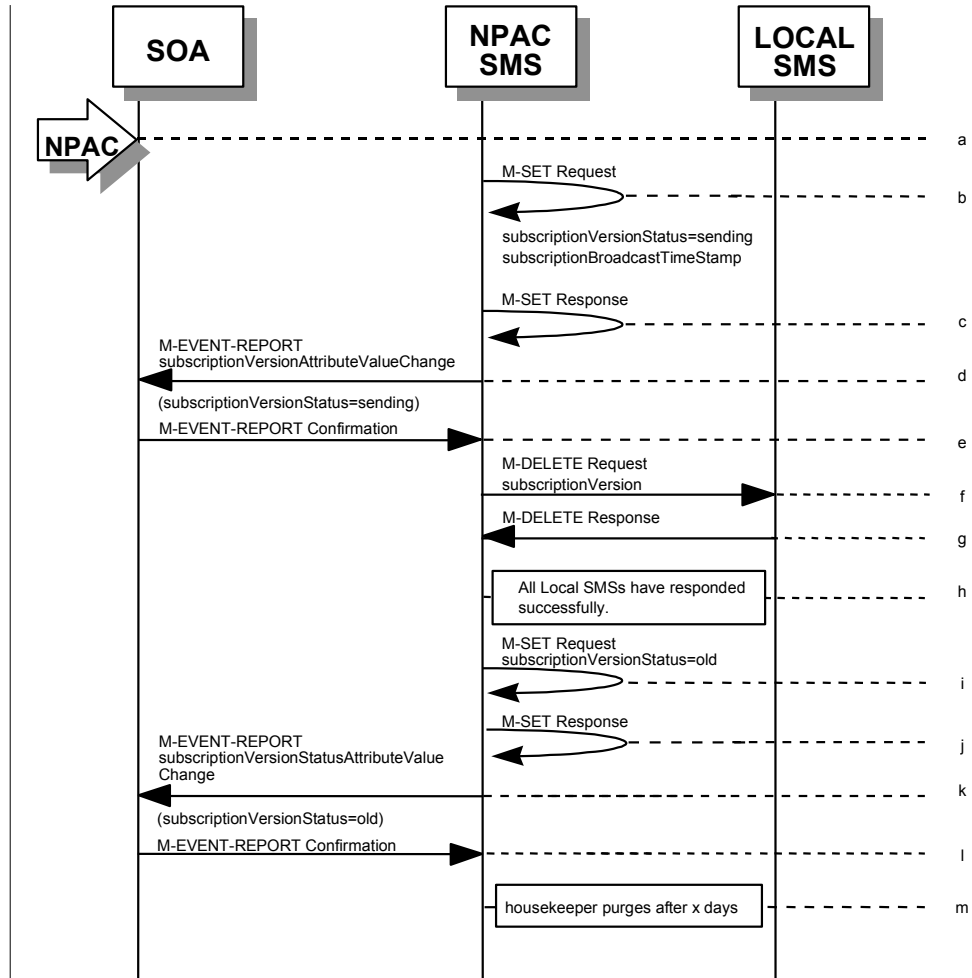
ooooooooooooooooooo.NPAC personnel take action to resend a failed disconnect for a subscription version.

ppppppppppppppppppp.NPAC SMS issues an M-SET to the existing subscriptionVersionNPAC object to set the status to "sending".

qqqqqqqqqqqqqqqqqq.NPAC SMS responds to whether M-SET was successful.

rrrrrrrrrrrrrrrrrr.NPAC SMS notifies service provider SOA of status change to "sending."

ssssssssssssssssss.Service provider SOA confirms event report.

tttttttttttttttttt.NPAC SMS sends out an M-DELETE on the subscriptionVersion to all previously failed Local SMSs, that are accepting downloads for the NPA-NXX of the subscriptionVersion.

uuuuuuuuuuuuuuuuuu.Each Local SMS responds with a successful M-DELETE reply.

vvvvvvvvvvvvvvvvvvvv.All Local SMSs respond successfully.

wwwwwwwwwwwwwwwwww.NPAC SMS issues M-SET updating the subscriptionVersionStatus to old for subscriptionVersionNPAC objects. It also sets the subscriptionModifiedTimeStamp and subscriptionDisconnectCompleteTimeStamp.

xxxxxxxxxxxxxxxxxxx.NPAC SMS responds to M-SET.

yyyyyyyyyyyyyyyyyyy.NPAC SMS issues an M-EVENT-REPORT for the subscriptionVersionStatus equal to "old."

zzzzzzzzzzzzzzzzzz.Service provider SOA responds to M-EVENT-REPORT.

aaaaaaaaaaaaaaaaaaaa.After a tunable amount of days, the subscription version is purged by the NPAC SMS housekeeping process.

6.5.4.6

Subscription Version Disconnect: Resend Failure to Local SMS

This scenario shows a failure on a resend of a subscription disconnect that failed previously to one or more of the Local SMSs. The resend of a failed disconnect for a subscription can only be performed by authorized NPAC personnel.
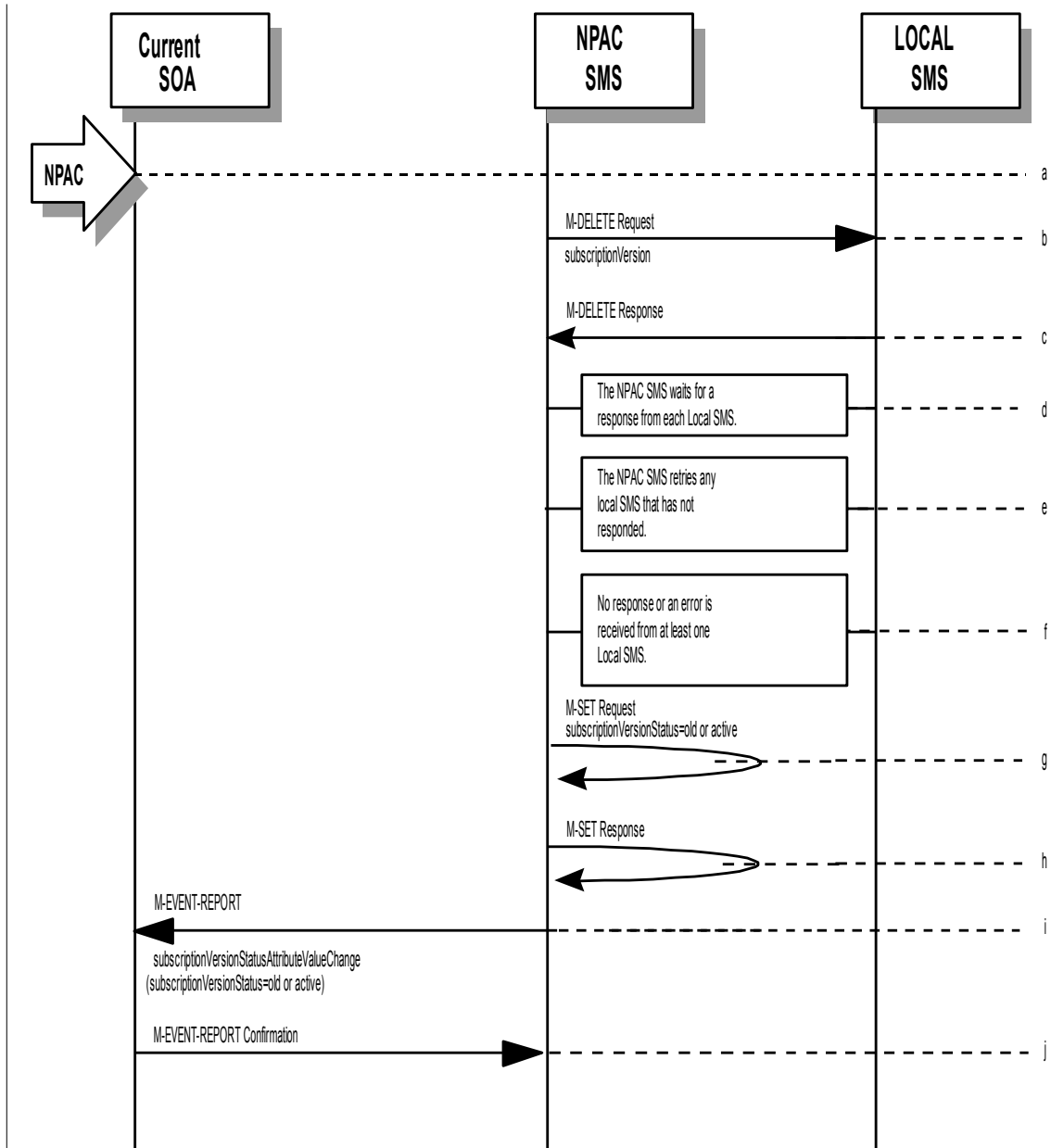
bbbbbbbbbbbbbbbbbbbb.NPAC personnel take action to resend a failed disconnect for a subscription version.

cccccccccccccccccccc.NPAC SMS issues the M-DELETE to all Local SMSs for which the disconnect previously failed for the subscriptionVersion, and are accepting downloads for the NPA-NXX of the subscriptionVersion.

ddddddddddddddddddd.Local SMSs should respond successfully to the M-DELETE.

eeeeeeeeeeeeeeeeeee.NPAC SMS waits for a response from each Local SMS.

fffffffffffffffffff.NPAC SMS retries any Local SMS that has not responded.

ggggggggggggggggggg.No response or an error is received from at least one or all Local SMSs.

hhhhhhhhhhhhhhhhhhh.NPAC SMS issues the M-SET to update the current subscriptionVersionNPAC object's subscriptionVersionStatus to "old" or "active" (if all Local SMSs failed) from "sending". It will also update the subscriptionFailed-SP-List with the service provider ID and name of the Local SMSs that failed to successfully receive the broadcast.

iiiiiiiiiiiiiiiiii.NPAC SMS responds to the M-SET.

jjjjjjjjjjjjjjjjjjj.NPAC SMS sends the subscriptionVersionStatusAttributeValueChange M-EVENT-REPORT to the current service provider SOA with the current status and failedSP-List.

kkkkkkkkkkkkkkkkkk.Current service provider SOA issues the M-EVENT-REPORT confirmation.

6.5.5

Conflict Scenarios

A situation has arisen which causes the NPAC SMS or NPAC personnel to place the subscriptionVersion into conflict.

A subscription version can be removed from conflict by the NPAC personnel or the new service provider SOA.

6.5.5.1 SubscriptionVersion Conflict and Conflict Resolution by the NPAC SMS

This scenario shows a version being placed into conflict and removed from conflict by the NPAC personnel.
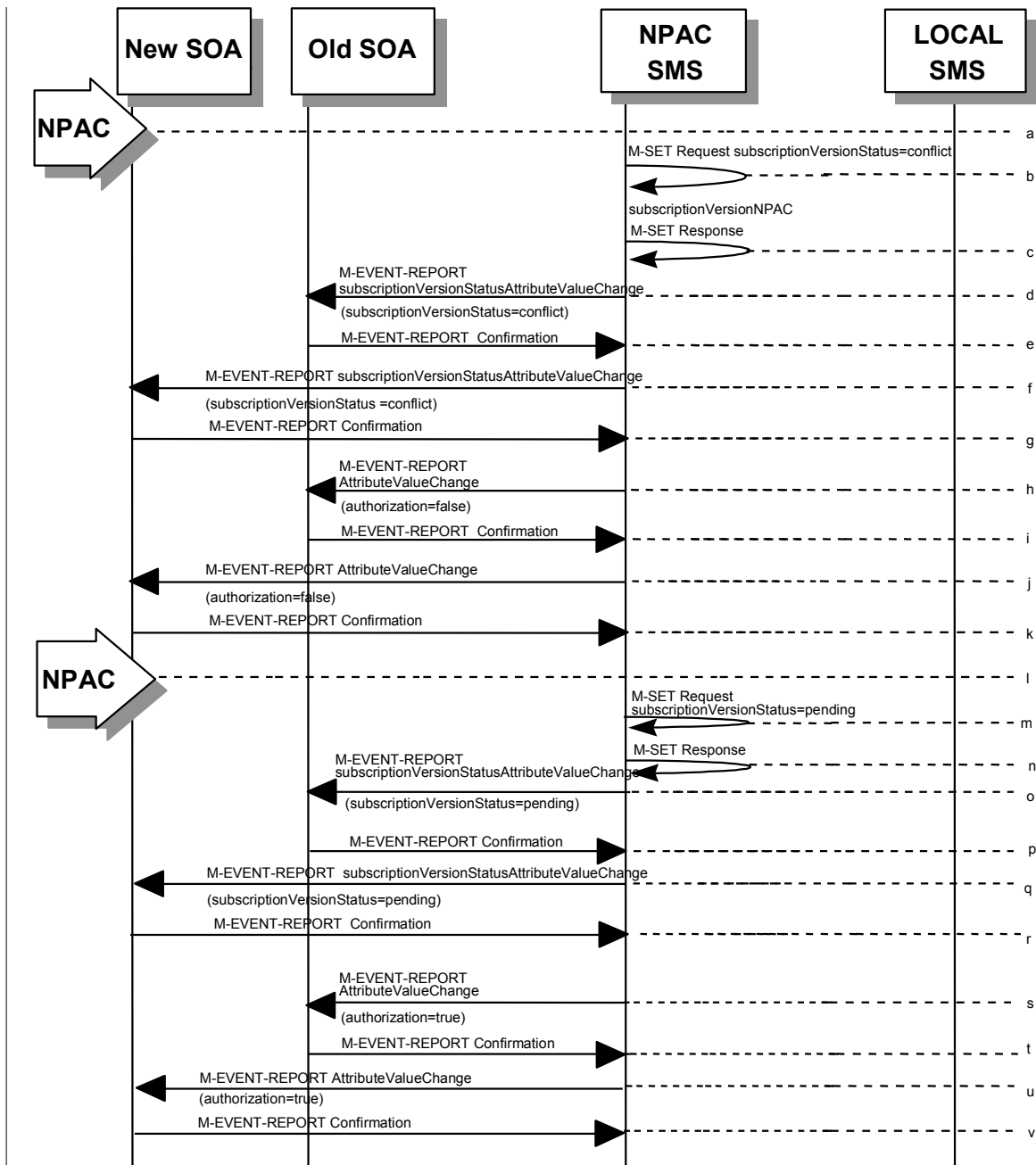
llllllllllllllllll.NPAC personnel or NPAC SMS take action to set the status of a subscription to "conflict."

mmmmmmmmmmmmmmmmmmmm.NPAC SMS issues M-SET request to update subscriptionVersionStatus to "conflict," subscriptionConflictTimeStamp, and subscriptionModifiedTimeStamp in the subscriptionVersionNPAC object.

nnnnnnnnnnnnnnnnnnnn.NPAC SMS issues an M-SET response. If the M-SET fails, processing for this scenario stops.

oooooooooooooooooooo.NPAC SMS issues an M-EVENT-REPORT subscriptionVersionStatusAttributeValueChange to old service provider SOA.

pppppppppppppppppppp.The old service provider SOA returns an M-EVENT-REPORT confirmation to the NPAC SMS.

qqqqqqqqqqqqqqqqqqqq.NPAC SMS issues subscriptionVersionStatusAttributeValueChange for status to new service provider SOA.

rrrrrrrrrrrrrrrrrrrr.The new service provider SOA returns an M-EVENT-REPORT confirmation to the NPAC SMS.

ssssssssssssssssssss.NPAC SMS sends a subscriptionVersionStatusAttributeValueChange to set the old service provider's authorization to "FALSE".

tttttttttttttttttttt.The old service provider SOA returns an M-EVENT-REPORT confirmation to the NPAC SMS.

uuuuuuuuuuuuuuuuuuuu.NPAC SMS sends an AttributeValueChange to set the new service provider authorization to "FALSE".

vvvvvvvvvvvvvvvvvvvv.The new service provider SOA returns an M-EVENT-REPORT confirmation to the NPAC SMS.

wwwwwwwwwwwwwwwwwwww.Once the conflict is resolved, NPAC personnel take action to remove the subscriptionVersion from conflict.

xxxxxxxxxxxxxxxxxxxx.NPAC SMS issues an M-SET request to update the subscriptionModifiedTimeStamp and the subscriptionVersionStatus to "pending."

yyyyyyyyyyyyyyyyyyyy.NPAC SMS issues an M-SET response. If the M-SET fails, processing for this scenario stops.

zzzzzzzzzzzzzzzzzzzz.NPAC SMS issues subscriptionVersionStatusAttributeValueChange for the new status to the old service provider SOA.

aaaaaaaaaaaaaaaaaaaa.The old service provider SOA returns an M-EVENT-REPORT confirmation to the NPAC SMS.

bbbbbbbbbbbbbbbbbbbb.NPAC SMS issues subscriptionVersionStatusAttributeValueChange for the new status to the new service provider SOA.

ccccccccccccccccccccc.The new service provider SOA returns an M-EVENT-REPORT confirmation to the NPAC SMS.

ddddddddddddddddddd.NPAC SMS sends a subscriptionVersionStatusAttributeValueChange to set the old service provider's authorization to "TRUE".

eeeeeeeeeeeeeeeeeee.The old service provider SOA returns an M-EVENT-REPORT confirmation to the NPAC SMS.

fffffffffffffffffff.NPAC SMS sends an AttributeValueChange to set the new service provider authorization to "TRUE".

ggggggggggggggggggg.The new service provider SOA returns an M-EVENT-REPORT confirmation to the NPAC SMS.

6.5.5.2

Subscription Version Conflict Removal by the New Service Provider SOA

In this scenario, the new service provider elects to remove the subscription version from conflict.
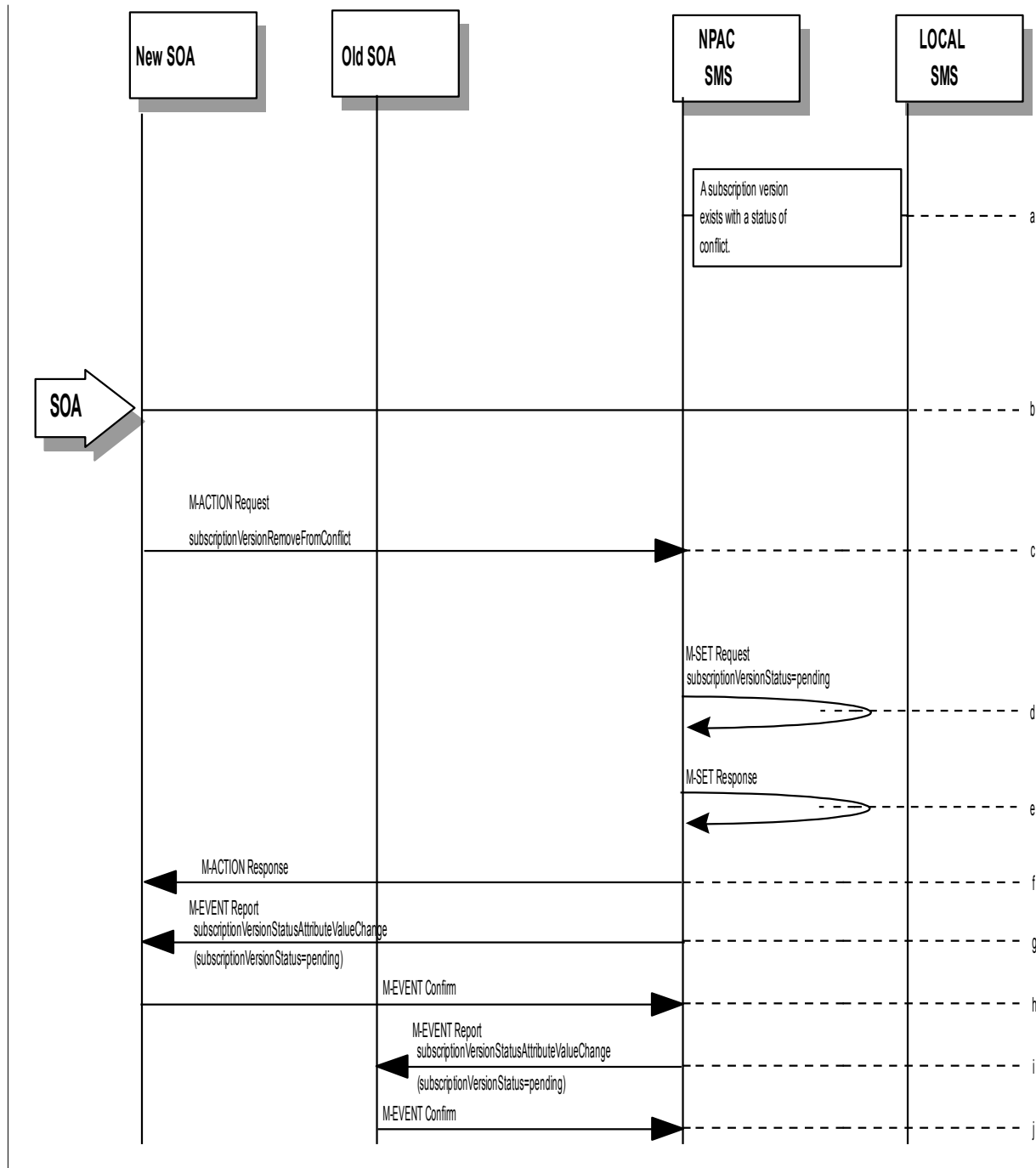
hhhhhhhhhhhhhhhhhhhhh.A subscription version exists on the NPAC SMS with a status of conflict.

iiiiiiiiiiiiiiiiiiii.The new service provider SOA personnel take action to remove the subscription version from conflict.

jjjjjjjjjjjjjjjjjjjjjj.The new service provider SOA sends the M-ACTION
subscriptionVersionNewSP-RemoveFromConflict specifying the
subscription version TN or subscription version ID of the
subscription version in conflict.

kkkkkkkkkkkkkkkkkkkkk.If the request is valid, the NPAC SMS will set the
status to "pending".
The request will be denied and an error returned if the
subscriptionOldSP-Authorization was set to conflict by the old
service provider and the conflict restriction window has not expired.

lllllllllllllllllll.The NPAC SMS responds to its own M-SET.

mmmmmmmmmmmmmmmmmmmmm.The NPAC SMS responds to the M-
ACTION with success or failure and reason for failure.

nnnnnnnnnnnnnnnnnnnnn.The NPAC SMS sends the M-EVENT-REPORT
subscriptionVersionStatusAttributeValueChange to the New SOA.

ooooooooooooooooooooo.The New SOA sends the M-EVENT-REPORT
confirmation.

ppppppppppppppppppppp.The NPAC SMS sends the M-EVENT-REPORT
subscriptionVersionStatusAttributeValueChange to the Old SOA.

qqqqqqqqqqqqqqqqqqqqq.The Old SOA sends the M-EVENT-REPORT
confirmation.

6.5.5.3

SubscriptionVersion Conflict: No Conflict Resolution

This scenario shows the action taken at the NPAC SMS when service providers do not reach a conflict resolution.
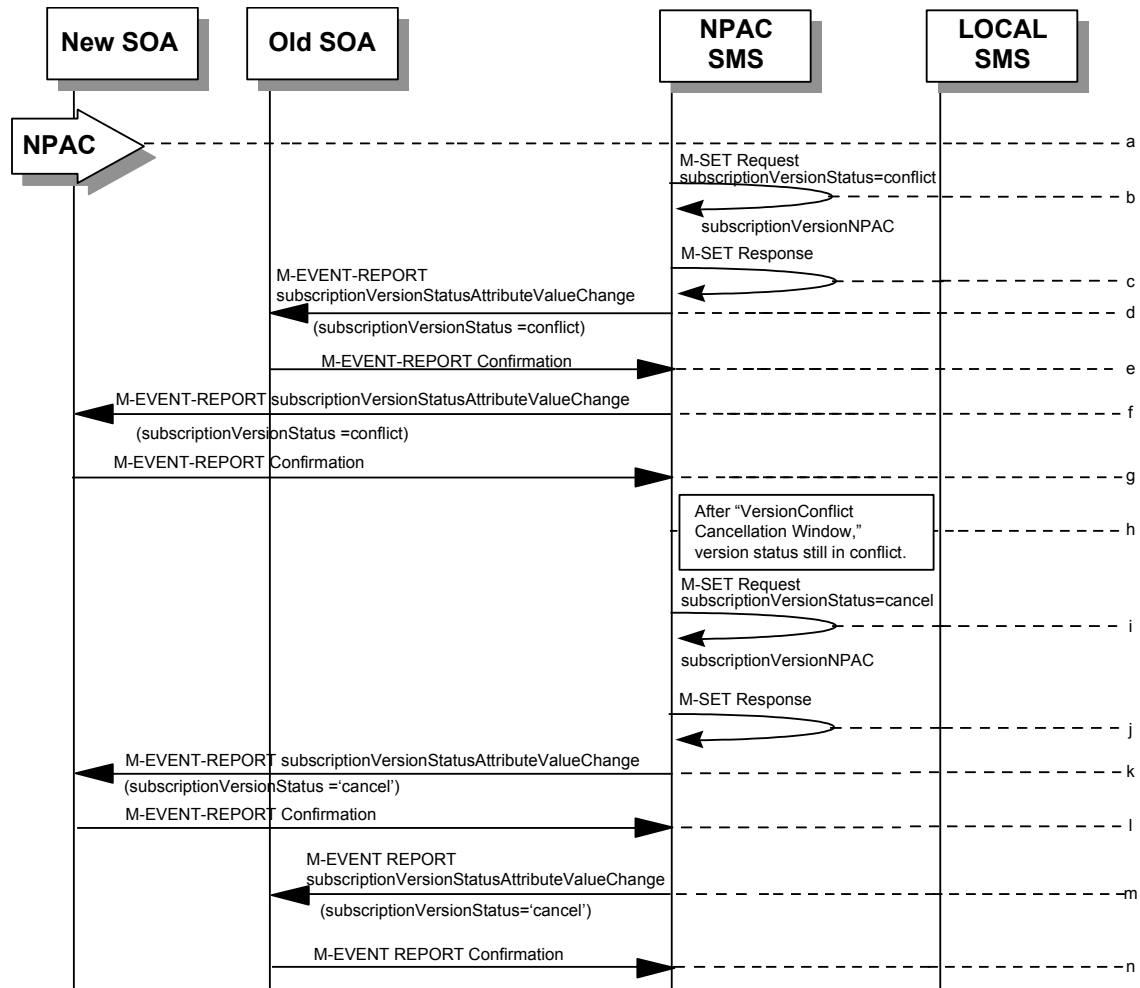
rrrrrrrrrrrrrrrrrrrrr.NPAC personnel or NPAC SMS take action to set a subscriptionVersionStatus to "conflict."

ssssssssssssssssssss.NPAC SMS issues an M-SET request to set the subscriptionVersionStatus to "conflict," the subscriptionConflictTimeStamp, and the subscriptionModifiedTimeStamp in the subscriptionVersionNPAC object.

tttttttttttttttttttt.NPAC SMS responds to M-SET. If the M-SET fails, processing stops for this scenario until the M-SET completes successfully.

uuuuuuuuuuuuuuuuuuuu.NPAC SMS issues subscriptionVersionStatusAttributeValueChange to old service provider SOA for the new "conflict" status.

vvvvvvvvvvvvvvvvvvvv.The old service provider SOA returns an M-EVENT-REPORT confirmation to the NPAC SMS.

wwwwwwwwwwwwwwwwwwww.NPAC SMS issues subscriptionVersionStatusAttributeValueChange to new service provider SOA for the "conflict" status.

xxxxxxxxxxxxxxxxxxxxx.The new service provider SOA returns an M-EVENT-REPORT confirmation to the NPAC SMS.

yyyyyyyyyyyyyyyyyyyyy."Version Conflict Cancellation Window" expires without conflict resolution.

zzzzzzzzzzzzzzzzzzzzz.NPAC SMS issues an M-SET request to set the subscriptionVersionStatus to "cancel" in the subscriptionVersionNPAC object and sets the subscriptionCancellationTimeStamp and subscriptionModifiedTimeStamp.

aaaaaaaaaaaaaaaaaaaaaa.NPAC SMS responds to M-SET. If the M-SET fails, processing stops for this scenario until the M-SET is successfully completed.

bbbbbbbbbbbbbbbbbbbbb.NPAC SMS issues attribute value change for status to new service provider SOA for the "cancel" status.

ccccccccccccccccccccc.The new service provider SOA returns an M-EVENT-REPORT confirmation to the NPAC SMS.

ddddddddddddddddddddd.NPAC SMS issues attribute value change for status to old service provider SOA for the "cancel" status.

eeeeeeeeeeeeeeeeeeeee.The old service provider SOA returns an M-EVENT-REPORT confirmation to the NPAC SMS.

6.5.5.4

Subscription Version Conflict by Old Service Provider Explicitly Not Authorizing (First Create)

The old service provider SOA can put a pending subscription version into conflict by setting its authorization flag to **off**. This can be done on the subscriptionVersionOldSP-Create action, subscriptionVersionModify action, or M-SET of the attribute on the subscription version object.

This scenario shows the old service provider putting a new pending subscription version into conflict by turning the authorization flag off on the subscriptionVersionOldSP-Create. In this case, the old service provider's create action is the first sent to the NPAC SMS.
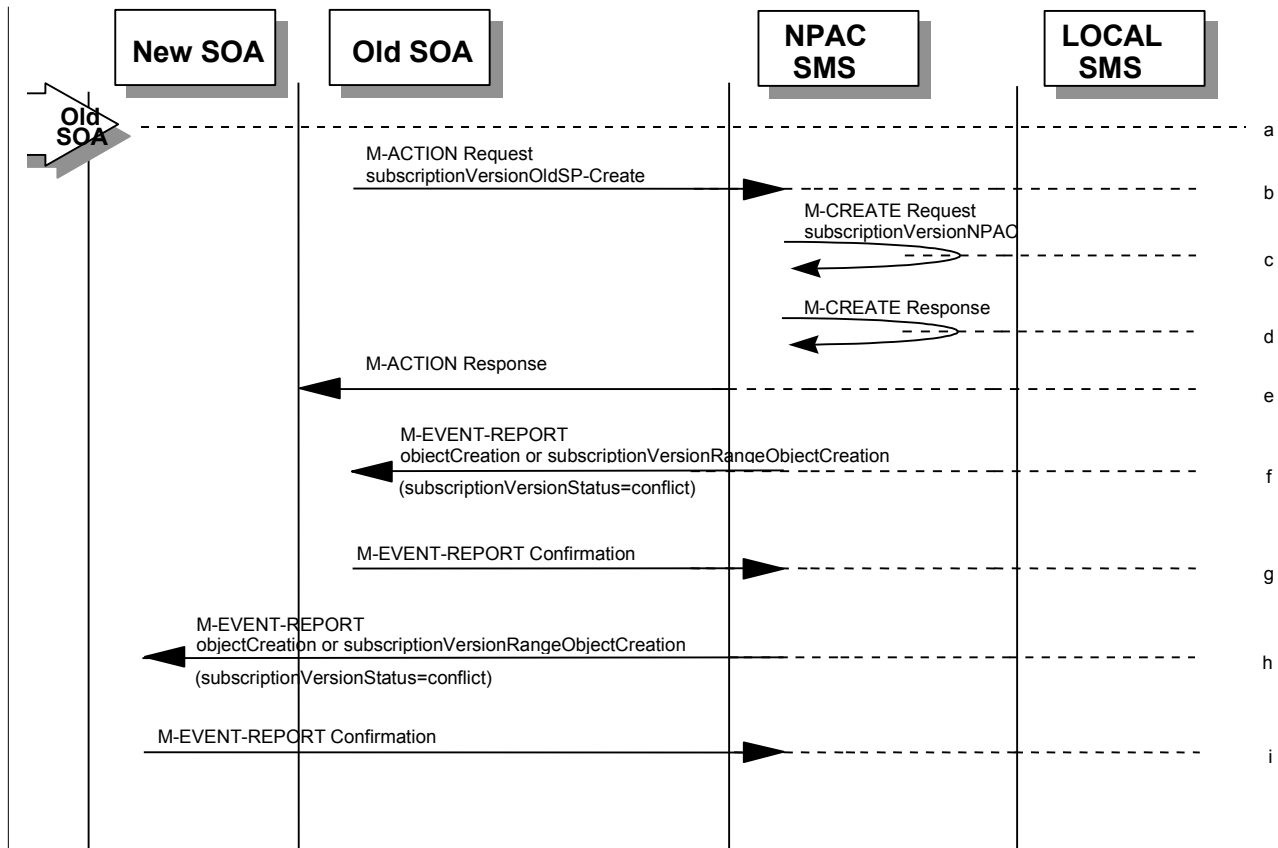
fffffffffffffffffffffff.Action is taken by the old service provider to set a subscription version to conflict using the subscriptionVersionOldSP-Create action.

ggggggggggggggggggggggg.The old service provider SOA sends M-ACTION subscriptionVersionOldSP-Create to the NPAC SMS lnpSubscriptions object to create a new subscriptionVersionNPAC with the status of "conflict".

The old service provider SOA specifies the following valid attributes:

subscriptionTN or valid subscriptionVersionTN-Range
subscriptionNewCurrentSP
subscriptionOldSP
subscriptionOldSP-DueDate
subscriptionOldSP-Authorization

subscriptionLNPType

In this case, the subscriptionOldSP-Authorization is set to **NO**.

If a TN range is specified in the request, it would result in an M-CREATE request and M-EVENT-REPORT for the entire TN Range.

hhhhhhhhhhhhhhhhhhhhhh.NPAC SMS issues M-CREATE to create the subscriptionVersionNPAC with a status of "conflict" and sets all the other attribute values from the subscriptionVersionOldSP-Create action.

iiiiiiiiiiiiiiiiiiiii.NPAC SMS issues M-CREATE response.

jjjjjjjjjjjjjjjjjjjjjjj.NPAC SMS returns M-ACTION reply. This either reflects a success or failure and reasons for the failure.

kkkkkkkkkkkkkkkkkkkkkk.If the action was successful, the NPAC SMS issues the M-EVENT-REPORT to the old service provider SOA notifying them of the object creation (objectCreation or subscriptionVersionRangeObjectCreation).

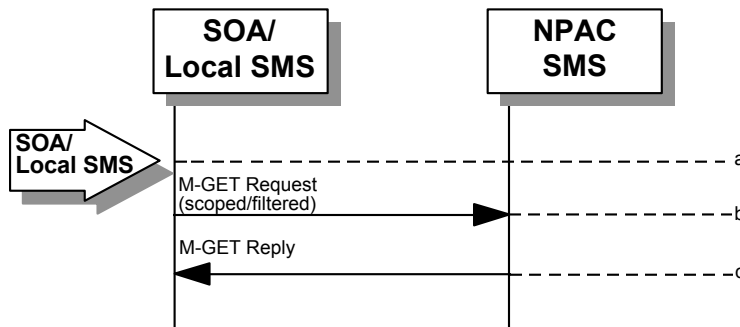llllllllllllllllllll.The old service provider SOA confirms the M-EVENT-REPORT.

mmmmmmmmmmmmmmmmmmmmmmm.If the action was successful, the NPAC SMS issues the M-EVENT-REPORT to the new service provider SOA notifying them of the object creation (objectCreation or subscriptionVersionRangeObjectCreation).

nnnnnnnnnnnnnnnnnnnnnn.The new service provider SOA confirms the M-EVENT-REPORT.

6.5.6

SubscriptionVersion Query

This scenario shows subscriptionVersion query from service provider systems to the NPAC SMS.

```
      ┌──────────┐              ┌──────────┐
      │  SOA/    │              │   NPAC   │
      │ Local SMS│              │   SMS    │
      └────┬─────┘              └────┬─────┘
 ┌─────┐   │                         │
 │SOA/ │   │- - - - - - - - - - - - -│- - - - - -  a
 │Local│   │                         │
 │SMS  ╱   │ M-GET Request           │
 └────╱    │ (scoped/filtered)       │
          │─────────────────────────▶- - - - - -  b
          │                         │
          │ M-GET Reply             │
          │◀─────────────────────────- - - - - -  c
          │                         │
```

oooooooooooooooooooooo.Action is taken by either a service provider SOA or Local SMS for retrieving one or more versions of a subscription.

ppppppppppppppppppppppp.The service provider SOA or Local SMS issues a scoped filtered M-GET from the lnpSubscriptions object to retrieve a specific version for a subscription version TN or can request all subscription versions. However, the service provider SOA is limited by a scope and filter in their search capabilities. The filter will currently support all the attributes on the subscriptionVersionNPAC.

qqqqqqqqqqqqqqqqqqqqq.The NPAC SMS replies with the requested subscriptionVersion data if the requested number of records is less than or equal to "Max SubscriberQuery" specified in the NPAC SMS. Otherwise a complexityLimitation error will be returned.

16The query return data includes:

subscriptionTN
subscriptionLRN
subscriptionNewCurrentSP
subscriptionOldSP
subscriptionNewSP-DueDate
subscriptionNewSP-CreationTimeStamp
subscriptionOldSP-DueDate
subscriptionOldSP-Authorization
subscriptionOldSP-AuthorizationTimeStamp
subscriptionActivationTimeStamp
subscriptionBroadcastTimeStamp
subscriptionConflictTimeStamp
subscriptionCustomerDisconnectDate
subscriptionDisconnectCompleteTimeStamp
subscriptionEffectiveReleaseDate
subscriptionVersionStatus
subscriptionCLASS-DPC
subscriptionCLASS-SSN
subscriptionLIDB-DPC
subscriptionLIDB-SSN
subscriptionCNAM-DPC
subscriptionCNAM-SSN
subscriptionISVM-DPC
subscriptionISVM-SSN

subscriptionEndUserLocationValue
subscriptionEndUserLocationType
subscriptionBillingId
subscriptionLNPType
subscriptionPreCancellationStatus
subscriptionCancellationTimeStamp
subscriptionOldTimeStamp
subscriptionModifiedTimeStamp
subscriptionCreationTimeStamp
subscriptionOldSP-CancellationTimeStamp
subscriptionNewSP-CancellationTimeStamp
subscriptionOldSP-ConflictResolutionTimeStamp
subscriptionNewSP-ConflictResolutionTimeStamp
subscriptionPortingToOriginal-SPSwitch
subscriptionFailedSP-List
subscriptionDownloadReason

6.5.6.1

Subscription Data Download

This scenario shows a Local SMS request for subscription data download in order to update their view of this data.

```
   NPAC              LOCAL
   SMS                SMS
    |                  |
    |                  |
    |                  | <-- Local SMS -------- a
    |                  |
    | M-ACTION Request |
    | <--------------- | -------------------- b
    |   lnpDownload    |
    |                  |
  +-------------------+|
  | The NPAC SMS looks up the | ------- c
  | specified subscription data in the |
  | subscription tables.     |
  +-------------------+|
    |                  |
    | M-ACTION Response|
    | ---------------> | -------------------- d
    |   lnpDownload    |
    |                  |
    |                 +------------------+
    | -------------   | The Local SMS updates their | -- e
    |                 | subscription view according to the |
    |                 | data received in the download. |
    |                 +------------------+
    |                  |
```

rrrrrrrrrrrrrrrrrrrrrr.Action is taken by the Local SMS personnel to request a subscription data download. The criteria to decide which subscription data is to be downloaded is specified by the Local SMS personnel.

sssssssssssssssssssss.The Local SMS sends an M-ACTION request to the NPAC SMS lnpSubscription object requesting a subscription data download.

tttttttttttttttttttt.The NPAC SMS looks up the subscription data in the subscription database as specified by the criteria in the M-ACTION request.

uuuuuuuuuuuuuuuuuuuu.The NPAC SMS responds by sending an M-ACTION response to the Local SMS that initiated the request. The response includes the success/failure of the request along with the requested subscription data.

vvvvvvvvvvvvvvvvvvvvv.The Local SMS must take appropriate action to update their view of the data.

6.6

LSMS Filter NPA-NXX Scenarios

6.6.1   lsmsFilterNPA-NXX Creation by the Local SMS