
**NPAC SMS
INTEROPERABLE INTERFACE SPECIFICATION**

*NANC Version for National Number Pooling
based upon NANC Version 1.10*

Prepared for:
The North American Numbering Council (NANC)

December 4~~November 16~~, 1998

- ***IIS Chapter 2-4 Updates per 12/04/98***

- [2.4 Bullet 1, Remove “download”.](#)
- [2.4.1 Add reference to deletes to first sentence.](#)
- [4.1.1 Exhibit 7, Network Data Update Reference Objects s/b InpNetwork and servProvNetwork.](#)
- [4.1.1 Exhibit 7 NPB Query “get a single numberPoolBlockNPAC”.](#)
- [4.1.3 Exhibit 9 npbDisconnectCompleteTS... firm up set time and correct “NAPC”.](#)
- [4.1.3 Exhibit 9 numberPoolBlockFailed-SP-List Change to “and/or” from “or”. Make version plural.](#)
- [4.1.3 Exhibit 9 serviceProvNPA-NXX-X EffectiveTS Move sentence fromNPA-NXXEffTS.](#)
- [4.1.3 Exhibit 9 svFailedSP-List Change to “failed to one Local SMS”.](#)

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- **IIS Chapter 2-4 Updates per 11/23~~16~~/98**

- 2.3.3 Add “and object creations”.
- 2.4.1 Add “number pool block” to title.
- 2.4.1 Remove “new switches”.
- 2.4.1 Add “If the LSMS EDR Indicator” is set in the service provider profile, no subscription versions. with the LNP type set to ‘pool’ will be sent.
- 2.4.1 Add “has set in their service provider profile...NPA-NXX-X Indicator”.
- 3.1.2 Add number pool block log record.
- 4.1.1 Exhibit 7 number pool block Create from SOA – s/b InpSubscriptions.
- 4.1.1 Exhibit 7 number pool block Create to LSMS – s/b numberPoolBlock.
- 4.1.1 Exhibit 7 number pool block Modify to LSMS - s/b InpSubscriptions or numberPoolBlock.
- 4.1.1 Exhibit 7 number pool block Modify to LSMS – or NPA-NXX-X range for mass update.
- 4.1.1 Exhibit 7 Remove number pool block from subscription version status attribute value change.
- 4.1.1 Exhibit 7 Add number pool block attribute value change.
- 4.1.2 Exhibit 8 number pool block subscriptionAudit Add “if pool type...number pool block audited, too”.
- 4.1.2 Exhibit 8 Add log record for number pool block status change.
- 4.1.3 Exhibit 9 number pool block disconnectCompleteTS – Add “1st successful response or end of retries.
- 4.1.3 Exhibit 9 number pool block Origination Flag – “to be sent to their SOA”.
- 4.1.3 Exhibit 9 number pool block Eff TS – Time is 00:00:00.
- 4.1.3 Exhibit 9 Add number pool block failed SP list.
- 4.1.5 Exhibit 11 Add number pool block notification.
- 4.1.5 Exhibit 11 Remove number pool block from subscription version notification.
- 4.2.1 Add “or numberPoolBlocks”.
- 4.2.1 Remove “on the base object (level 0).
- 4.2.2 Exhibit 13 Add “single request deletes are sent to the number pool block”.
- 4.2.3 Add “and number pool block”.

IIS Chapter 2-5 Updates per 11/09/98

- 2.3.3 Add number pool blocks to paragraph about Notifications.
- 2.4.1 Insert “data”. Remove “and optional local number portability type”.
- 4.1.1 Exhibit 7 Number Pool Block Create – Change referenced object to numberPoolBlock.
- 4.1.1 Exhibit 7 Number Pool Block Query/LSMS – Change to numberPoolBlockNPAC
- 4.1.2 Exhibit 8 numberPoolBlock – Add “interface”. Add EDR Flag.
- 4.1.2 Exhibit 8 serviceProvNPA-NXX-X – Change update information to NPAC SMS only. Specify flag name.
- 4.1.3 Exhibit 9 numberPoolBlockHolderSPID - Change to “service provider ID of the block holder”.
- 4.1.3 Exhibit 9 numberPoolBlockSOA-Origination – Added “created the object”.
- 4.1.3 Exhibit 9 serviceProvNPA-NXX-X-EffectiveTimeStamp – Remove “is available for LNP”. Add “the date the block holder service provider assumes responsibility of the block TN-Range.
- 4.1.5 Exhibit 11 subscriptionVersionNew-NPA-NXX – Add “creation of NPA-NXX-X”.
- 4.1.5 Exhibit 11 subscriptionVersionStatusAttributeValueChange – Add “and”.
- 4.2.2 Add to 3rd bullet: No query will be supported that requests both object types at the same time.
- 4.2.2 Exhibit 12 – Break into 2 exhibits. Add NPA-NXX-X Range to number pool block exhibit. Fix “modify” s/b “query” and “delete”
- 5.2.1.8 Add number pool blocks to association function table.

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1.....	Introduction
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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.

1.2 How To Use This Document

The NPAC SMS Interoperable Interface Specification contains the following chapters:

Chapter 1 **Introduction** -- This chapter describes the conventions and organization of this document. It also lists related documentation.

Chapter 2 **Interface Overview** -- This chapter contains an overview of protocol requirements and a brief description of the functionality provided in each interface.

Chapter 3 **Hierarchy Diagrams** -- This chapter contains the class hierarchy diagrams for all managed objects defined in the interoperable interface.

Chapter 4 **Interface Functionality to CMOP Definition Mapping** -- This chapter contains the mapping of the interface functionality to the managed objects, attributes, actions, and notifications.

Chapter 5 **Secure Association Establishment**-- This chapter contains information on secure association establishment.

Chapter 6 **Message Flow Diagrams** -- This chapter contains the message flow diagrams.

Chapter 7 **GDMO Definitions** -- This chapter contains the GDMO interface definitions supporting the SOA to NPAC SMS interface and the NPAC SMS to Local SMS interface

Chapter 8 **General ASN.1 Definitions** -- This chapter contains the ASN.1 definitions that support the GDMO definitions in Chapter 7.

Chapter 9 **Managed Object Conformance Statements** -- This chapter contains the Managed Object Conformance tables.

Chapter 10 **Subscription Version Status** -- This chapter contains a Subscription Version Status diagram, which illustrates the transition from one subscription version state to another.

Appendix A **Errors** -- This appendix contains the valid errors associated with CMISE confirmed primitives used in the interoperable interface definitions.

1.3 Document Version History

NANC Version 1.0, released on 04/07/97, contains changes from the ICC Subcommittee IIS Version 1.1.5.

NANC Version 1.1, released on 05/08/97, contains changes from the NANC IIS Version 1.0.

NANC Version 1.2, released on 05/25/97, contains changes from the NANC IIS Version 1.1.

NANC Version 1.3, released on 07/09/97, contains changes from the NANC IIS Version 1.2.

NANC Version 1.4, released on 08/08/97, contains changes from the NANC IIS Version 1.3.

NANC Version 1.5, released on 09/09/97, contains changes from the NANC IIS Version 1.4.

NANC Version 1.6, released on 11/12/97, contains changes from the NANC IIS Version 1.5.

NANC Version 1.7, released on 12/12/97, contains changes from the NANC IIS Version 1.6.

NANC Version 1.8, released on 2/11/98, contains changes from the NANC IIS Version 1.7.

NANC Version 1.9, released on 5/13/98, contains changes from the NANC IIS Version 1.8.

NANC Version 1.10, released on 7/8/98, contains the following changes from the NANC IIS Version 1.9:

- **Change Order** NANC 133 – Audit Object Definition
- **Change Order** NANC 197 – IIS Clarification for Congestion Handling
- **Change Order** NANC 211 – Flow Modification for Failed SP List Updates
- **Change Order** NANC 215 – Immediate Disconnects – Section 6.5.4 of IIS

[NANC Version in support of National Number Pooling based upon NANC Version 1.10.](#)

1.4 References

1.4.1 Standards

ANSI T1.224-1992, *Operations, Administration, Maintenance, and Provisioning (OAM&P) - Protocols for Interfaces between Operations Systems in Different Jurisdictions.*

ANSI T1.243-1995, *Telecommunications, Operations, Administration, Maintenance and Provisioning (OAM&P) - Baseline Security Requirements for the Telecommunications Management Network (TMN).*

ANSI T1.246, *Operations, Administration, Maintenance and Provisioning (OAM&P) - Information Model and Services for Interfaces between Operations Systems across Jurisdictional Boundaries to Support Configuration Management - Customer Account Record Exchange (CARE).*

Bellcore TA- 1253, *Generic Requirements for Operations Interfaces Using OSI Tools: Network Element Security Administration.*

Committee T1 Technical Report No, 40, *Security Requirements for Electronic Bonding Between Two TMNs.*

ISO/IEC 11183-1:1992, *Information Technology - International Standardized Profiles AOM In OSI Management - Management Communications - Part 1 Specification of ACSE, Presentation and Session Protocols for the use by ROSE and CMISE.*

ISO/IEC 11183-2:1992, *Information Technology - International Standardized Profiles AOM In OSI Management - Management Communications - Part 2: CMISE/ROSE for AOM12 - Enhanced Management Communications.*

- ISO/IEC 11183-3:1992, *Information Technology - International Standardized Profiles AOM In OSI Management - Management Communications - Part 3: CMISE/ROSE for AOM12 - Basic Management Communications.*
- ITU X.509, *Information Technology - Open Systems Interconnection - The Directory Authentication Framework.*
- ITU X.690/ISO IS 8825-1 Annex D, *ASN1/BER Encoding of Digital Signatures and Encrypted Cyphertext.*
- ITU X.741, *OSI Systems Management, Objects and Attributes for Access Control*
- ITU X.803, *Upper Layers Security Model.*
- NMF Forum 016, Issue 1.0, 1992, *OMNIPoint 1 Specifications and Technical Reports, Application Services Security of Management.*
- OIW Stable Implementation Agreement, Part 12, 1995.*
- Rec. M.3100:1992 & 1995 draft, *Generic Network Information Model.*
- Rec. X.701 | ISO/IEC 10040:1992, *Information Technology - Open System Interconnection - Common Management Overview.*
- Rec. X.710 | ISO/IEC 9595:1990, *Information Technology - Open System Interconnection - Common Management Information Service Definitions.*
- Rec. X.711 | ISO/IEC 9596-1:1991, *Information Technology - Open System Interconnection - Common Management Information Protocol - Part 1: Specification.*
- Rec. X.720 | ISO/IEC 10165-1:1991, *Information Technology - Open System Interconnection - Structure of Management Information - Part 1 Management Information Model.*
- Rec. X.721 | ISO/IEC 10165-2:1992, *Information Technology - Open System Interconnection - Structure of Management Information: Guidelines for the Definition of Managed Objects.*
- Rec. X.722 | ISO/IEC 10165-4:1992, *Information Technology - Open System Interconnection - Structure of Management Information: Guidelines for the Definition of Managed Objects.*
- Rec. X.730 | ISO/10164-1:1992, *Information Technology - Open System Interconnection - System Management - Part 1: Object Management Function.*
- Rec. X.734 | ISO/10164-5:1992, *Information Technology - Open System Interconnection - System Management - Part 5: Event Report Management Function.*
- Rec. X.735 | ISO/10164-6:1992, *Information Technology - Open System Interconnection - System Management - Part 6: Log Control Function.*
- Rec. X.209: 1988, *Specification for Basic Encoding Rules for Abstract Syntax Notation One (ANS.1).*
- Rec. X.690: 1994, *ASN.1 Encoding Rules: Specification of Basic Encoding Rules (BER), Canonical Encoding Rules (CER), and Distinguished Encoding Rules (DER).*
- Rec. X.208: 1988, *Specification of Abstract Syntax Notation One (ASN.1).*
- Rec. X.680 | ISO/IEC 8824-1: 1994, *Information Technology - Abstract Syntax Notation One (ASN.1) - Specification of Basic Notation.*
- Rec. X.680 Amd.1 | ISO/IEC 8824-1 Amd.1, *Information Technology - Abstract Syntax Notation One (ASN.1) - Specification of Basic Notation 1 Amendment 1: Rules of Extensibility.*
- ITU-T Recommendations are available from the US Department of Commerce, National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161. ISO

standard are available from the American National Standards Institute, 11 West 42nd Street, New York, NY 10036.

1.4.2 Related Publications

Illinois Commerce Commission Number Portability Administration Center and Service Management System Request for Proposal (ICC NPAC/SMS RFP), February 6, 1996.

Lockheed Martin Team Response to the Illinois Commerce Commission Number Portability Administration Center and Management System Request for Proposal, March 18, 1996.

Scoggins, Sophia and Tang, Adrian 1992. *Open networking with OSI*. Englewood Cliffs, NJ, Prentice-Hall.

Stallings, William 1993. *SNMP, SNMPv2, and CMIP, The Practical Guide to Network-Management Standards*, Reading Massachusetts, Addison-Wesley.

North American Number Council (NANC) Functional Requirements Specification, Number Portability Administration Center (NPAC), Service Management System (SMS), Version 1.10, July 8, 1998.

1.5 Abbreviations/Definitions

A-PDU	Application Protocol Data Unit
ASN.1	Abstract Syntax Notation 1
BER	Basic Encoding Rules
CARE	Customer Account Record Exchange
CER	Canonical Encoding Rules
CLASS	Custom Local Area Signaling Services
CME	Conformance Management Entity
CMIP	Common Management Information Protocol
CMISE	Common Management Information Service Element
CNAM	Caller Id with Name
GDMO	Generalized Definitions of Managed Objects
DER	Distinguished Encoding Rules
DES	Data Encryption Standard
FR	Frame Relay
IEC	International Electrotechnical Commission
ISO	International Organization of Standardization
ISVM	Inter-Switch Voice Mail
LIDB	Line Information Database
LNP	Local Number Portability
LRN	Location Routing Number
LSMS	Local Service Management System
LSPP	Local Service Provider Portability
MAC	Media Access Control
MD5	Message Digest (Version 5)
NE	Network Element
NMF	Network Management Forum
NPAC SMS	Number Portability Administration Center and Service Management System
NPA	Numbering Plan Area
NXX	Exchange
OCN	Operating Company Number
OSI	Open Systems Interconnect
PPP	Point-To-Point Protocol
RFP	Request for Proposal
RSA	Encryption Scheme

SOA	Service Order Activation
TMN	Telecommunications Management Network
SMS	Service Management System
TN	Telephone Number

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 respectively. CMISE M-CREATE, M-DELETE, M-SET, M-GET, M-EVENT-REPORT, and M-ACTION primitives are fully supported in a confirmed mode. The relationship from the SOA to the NPAC SMS is a manager to agent relationship. The relationship between the Local SMS to NPAC SMS is a manager to agent or an agent to manager relationship depending on the function being performed. The SOA and Local SMS interfaces are defined by Association Functions. These functions allow each association to define the services it supports. Association establishment from the SOAs and Local SMSs to the NPAC SMS, Association Function and security for each of these interfaces is discussed in Chapter 5, *Error: Reference source not found*.

Note: The M-CANCEL-GET primitive may not be supported in some NPAC SMS implementations due to the fact that this functionality was not determined necessary for the interface defined.

The sections that follow provide an overview of protocol requirements and a brief description of the functionality provided in each interface. Complete functional descriptions for the interfaces are provided in the process flow diagrams in Chapter 6, *Message Flow Diagrams*, as well as the behavior for the managed objects.

2.2 OSI Protocol Support

The SOA to NPAC SMS and NPAC SMS to Local SMS interfaces must be implemented over the protocol stack shown in Exhibit 1.

Exhibit 1. NPAC/SMS Primary Network Protocol Stacks

Layer	Mechanized Interface	Function
	CMIP Agent Server	User
7	CMISE, ACSE, ROSE	Application
6	ANSI T1.224	Presentation
5	ANSI T1.224	Session
4	TCP, RFC1006, TPO	Transport
3	IP	Network
2	PPP, MAC, FRAME Relay, ATM (IEEE 802.3)	Link
1	DS-1, DS-0 x n, ISDN, V.34	Physical

Multiple associations per service provider to the NPAC SMS can be supported. The secure association establishment is described in *Chapter Error: Reference source not found*.

2.3 SOA to NPAC SMS Interface

The SOA to NPAC SMS interface, which allows communication between a service provider's Service Provisioning Operating Systems and/or Gateway systems and the NPAC SMS, supports the retrieval and update of subscription, service provider, and network information. The following transactions occur to support local number portability functionality:

- SOA requests for subscription administration to the NPAC SMS and responses from the NPAC SMS to the SOA.
- Audit requests from the SOA to the NPAC SMS and responses from the NPAC SMS to the SOA.
- Notifications from the NPAC SMS to the SOA of subscription version [and number pool block](#) data changes, need for concurrence or authorization for number porting, conflict-resolution, cancellation, outage information, or customer disconnect dates.
- Service provider data administration from the SOA to the NPAC SMS.
- [SOA requests for number pool block administration \(creation and modification\) to the NPAC SMS and responses from the NPAC SMS to the SOA.](#)
- [SOA requests for number pool block administration \(creation and modification\) to the NPAC SMS and responses from the NPAC SMS to the SOA.](#)

Mapping of this functionality into the CMIP Definitions is provided in *Chapter Error: Reference source not found (see Exhibit 7.)*

2.3.1 Subscription Administration

Service provider subscription administration functionality includes the capability to:

- Create a subscription version
- Cancel a subscription version
- Acknowledge cancellation of a subscription version
- Modify a subscription version or range of versions
- Retrieve a specific subscription version or range of versions
- Activate a version or range of versions
- Disconnect a subscription version or range of versions
- Remove a subscription version from conflict

2.3.2 Audit Requests

Audit functionality allows the SOAs to request audits for a subscription version or group of subscription versions based on a Telephone Number (TN) for a specified service provider or all service provider networks. The action SOA receives discrepancy reports as they are found in the network. Upon audit completion it receives a notification of the success or failure of the audit and the total number of discrepancies found.

2.3.3 Notifications

SOAs are sent notifications to ensure that they are fully informed of relevant events for their subscriptions. Notification of creation, deletion, or data value changes for

subscription versions will be sent to the SOA as they occur. Notification will be sent to the SOA if the service provider has not authorized transfer of service for a TN in the amount of time specified in the “Service Provider Concurrence Interval” defined on the NPAC. This notification will indicate to the service provider that authorization is needed for the pending subscription version. If the service provider has not acknowledged version cancellation within a timeframe specified by the NPAC SMS, notifications will be sent requesting cancellation acknowledgment. The donor service provider SOA is notified of the customer’s disconnect date. SOA systems are also sent notifications to insure they are aware of planned down time in the NPAC SMS. [Notification of data value changes and object creations are sent for number pool block objects.](#)

2.3.4 Service Provider Data Administration

Service providers can use, read, and update their own service provider information on the NPAC SMS using the SOA to NPAC SMS interface. Service providers can update information in their service provider profile as well as add and delete their own network data. Changes to network data that result in mass updates are prevented by the NPAC SMS to SOA interface. Mass changes must be initiated by the service provider contacting the NPAC personnel directly.

2.3.5 [Number Pool Block Administration](#)

2.3.6 [Number Pool Block Administration](#)

~~Number pool blocks are a set of 1000 TNs represented by a 7 digit NPA-NXX-X (i.e. 555-333-1 represents 555-333-1000 through 1999). Service providers can create and modify the number pool blocks for which they are the block holder. Service providers can query all number pool block objects. Only the NPAC SMS can remove a number pool block objects.~~
 Number pool blocks are a set of 1000 TNs represented by a 7 digit NPA-NXX-X (i.e. 555-333-1 represents 555-333-1000 through 1999). Service providers can create and modify the number pool blocks for which they are the block holder. Service providers can query all number pool block objects. Only the NPAC SMS can remove a number pool block objects.

2.4 NPAC SMS to Local SMS Interface

The NPAC SMS to Local SMS interface is used for communications between a service provider’s Local SMS and the NPAC SMS for support of LNP network element provisioning. The following transactions occur to support Local Number Portability:

- Subscription version, ~~number pool block~~, [number pool block](#) and network data ~~download~~ from the NPAC SMS to the Local SMS.
- Service provider data administration from the Local SMS to the NPAC SMS.
- Notifications from the NPAC SMS to the Local SMS of planned NPAC SMS outages and the first use of a new NPA-NXX.

Mapping of this functionality into the CMIP Definitions is provided in *Chapter Error: Reference source not found (see Exhibit 7.)*

2.4.1 Subscription Version, [Number Pool Block](#) and Network Data Download

When new network [data](#) (~~new switches~~, NPA-NXX, ~~NPA-NXX-X~~ NPA-NXX-X or LRN data for service providers), ~~or~~ subscription data ~~or number pool block data or number~~

~~pool block data~~ is created or existing network, ~~or~~ subscription data ~~or number pool block data or number pool block data~~ is modified ~~or removed~~ on the NPAC SMS, the ~~updated~~ data is automatically downloaded from the NPAC SMS to the Local SMS. The Local SMS may request that data be downloaded using a download request that is sent from the Local SMS to the NPAC SMS. The Local SMS then receives the data to be downloaded in the request response. Subscriber data to be downloaded can be requested based on time range, a TN, or a TN range ~~and an optional local number portability type~~. ~~If the “NPAC Customer LSMS EDR Indicator” is set in the service provider’s profile on the NPAC SMS, no subscription versions with the LNP type set to ‘pool’ will be sent.~~ ~~Number pool block data to be downloaded can be requested by time-range, NPA-NXX-X or NPA-NXX-X range.~~ ~~Number pool block data to be downloaded can be requested by time-range, NPA-NXX-X or NPA-NXX-X range.~~ Network data to be downloaded can be requested based on a time range, service provider or all service providers, an NPA-NXX range or all NPA-NXX data, ~~an NPA-NXX-X range or all NPA-NXX-X data,~~ ~~an NPA-NXX-X range or all NPA-NXX-X data,~~ an LRN range or all LRN data, or all network data can be requested. ~~If all network data is specified and the “NPAC Customer LSMS NPA-NXX-X Indicator” has been set in the service provider’s profile on the NPAC SMS, then NPA-NXX-X object data will be included.~~

Service providers can also directly read data they wish to download from the NPAC SMS MIB.

2.4.2 Service Provider Data Administration

Service providers can use, read, and update their own service provider information on the NPAC SMS using the Local SMS to NPAC SMS interface. Service providers can update information in their service provider profile as well as add and delete their own network data. Changes to network data that result in mass updates are prevented by the NPAC SMS to Local SMS interface. Mass changes must be initiated by the service provider contacting the NPAC personnel directly.

2.4.3 Notifications

Local SMS are sent notifications to insure they are aware of planned down time in the NPAC SMS. Local SMS are also sent notifications when a new NPA-NXX is to be used for the first time in a subscription version ~~or number pool block or by a serviceProvNPA-NXX-X creator or a number pool block.~~

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.

3.1.1 Managed Object Model Inheritance Hierarchy

The Managed Object Model Inheritance Hierarchy shows the inheritance hierarchy used for object definitions in the NPAC SMS to Local SMS and the SOA to NPAC SMS interfaces.

Managed Object Model Inheritance

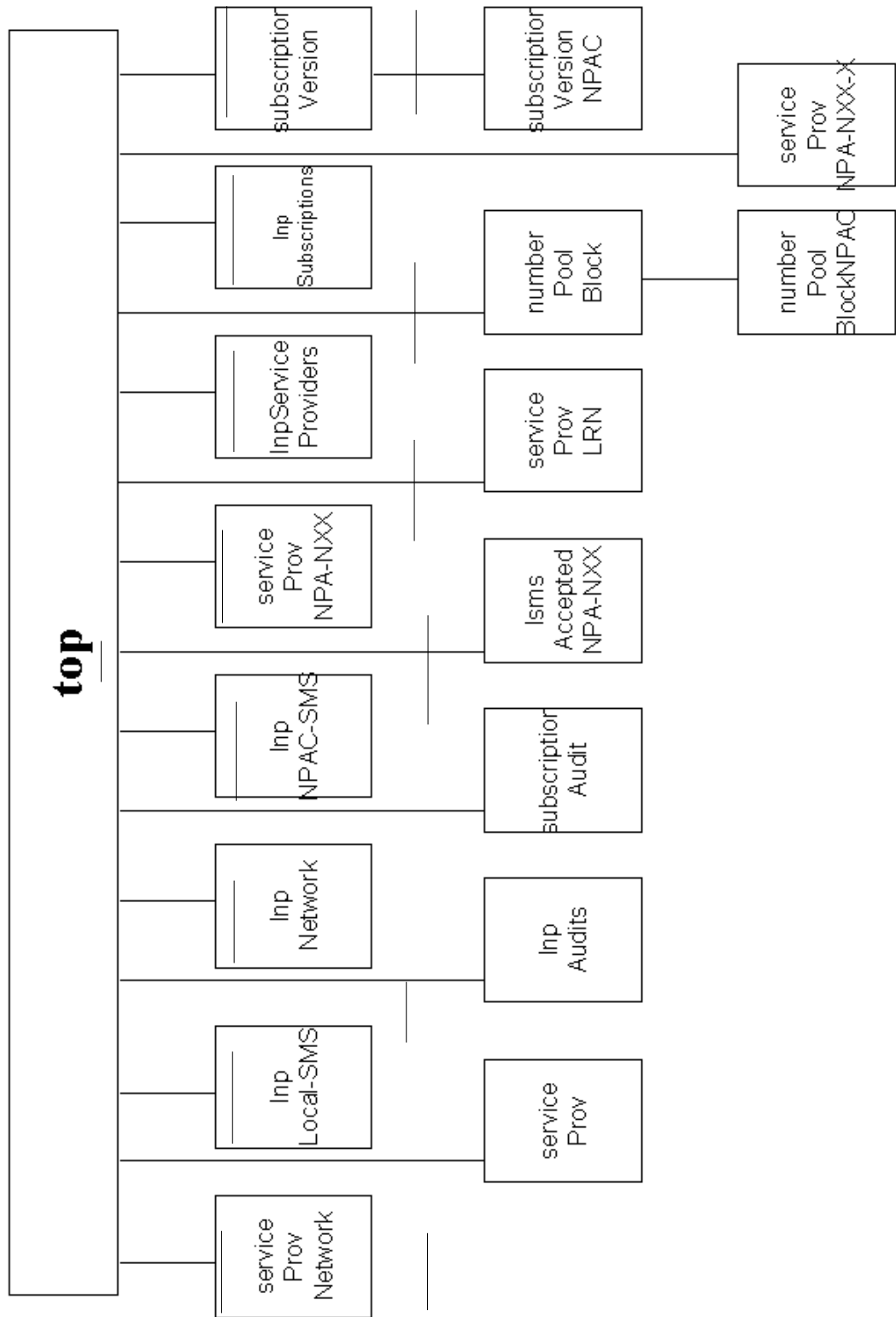


Exhibit 2. The Managed Object Model Inheritance Hierarchy

Exhibit 2. The Managed Object Model Inheritance Hierarchy

3.1.2

Log Record Managed Object Hierarchy

The Log Record Managed Object Hierarchy shows the inheritance hierarchy of the log records used in the NPAC SMS to Local SMS and SOA to NPAC SMS interfaces.

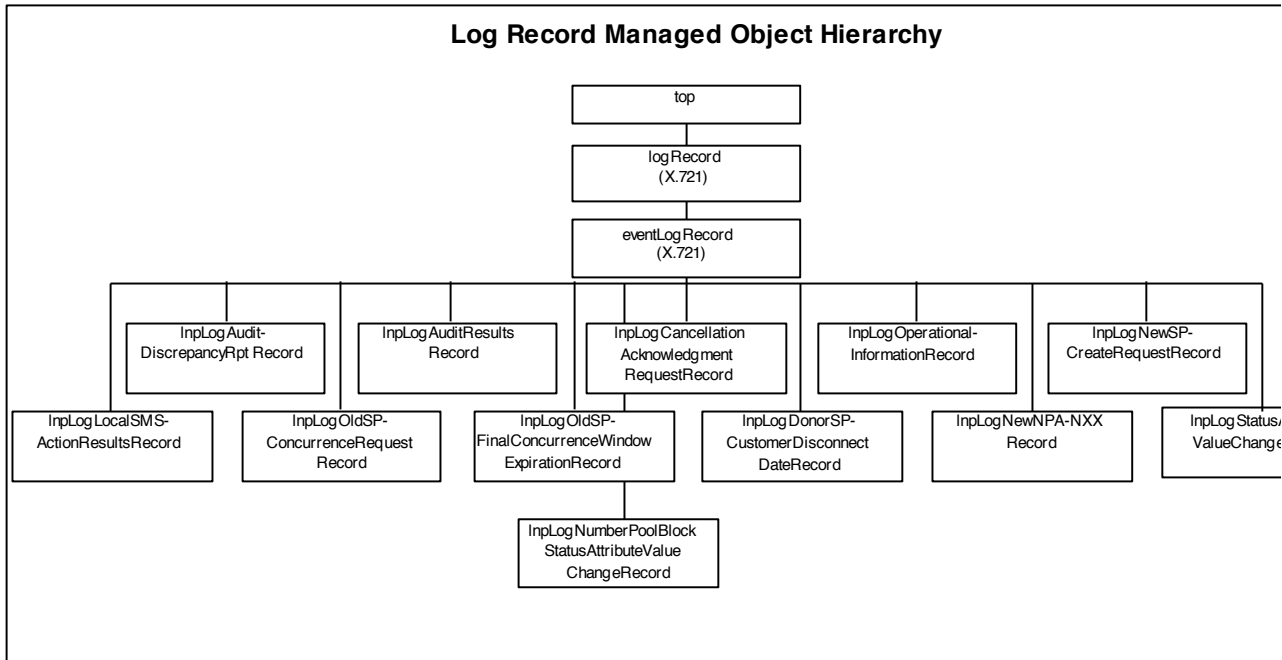


Exhibit 3 . Log Record Managed Object Hierarchy

3.1.3

3.1.4 NPAC SMS to Local SMS Naming Hierarchy for the Local SMS

The NPAC SMS to Local SMS Naming Hierarchy for Local SMS shows the naming hierarchy used in the Local SMS to instantiate objects defined in the NPAC SMS to Local SMS interface.

Shaded objects are instantiated at Local SMS start-up and are not created via M-CREATE or M-DELETE requests. All other objects are created at start-up from a persistent object store on the Local SMS or from actions taken while the Local SMS is running.

Each object class belongs to one or more Association Functions.

Refer to *Section Error: Reference source not found, Error: Reference source not found.*

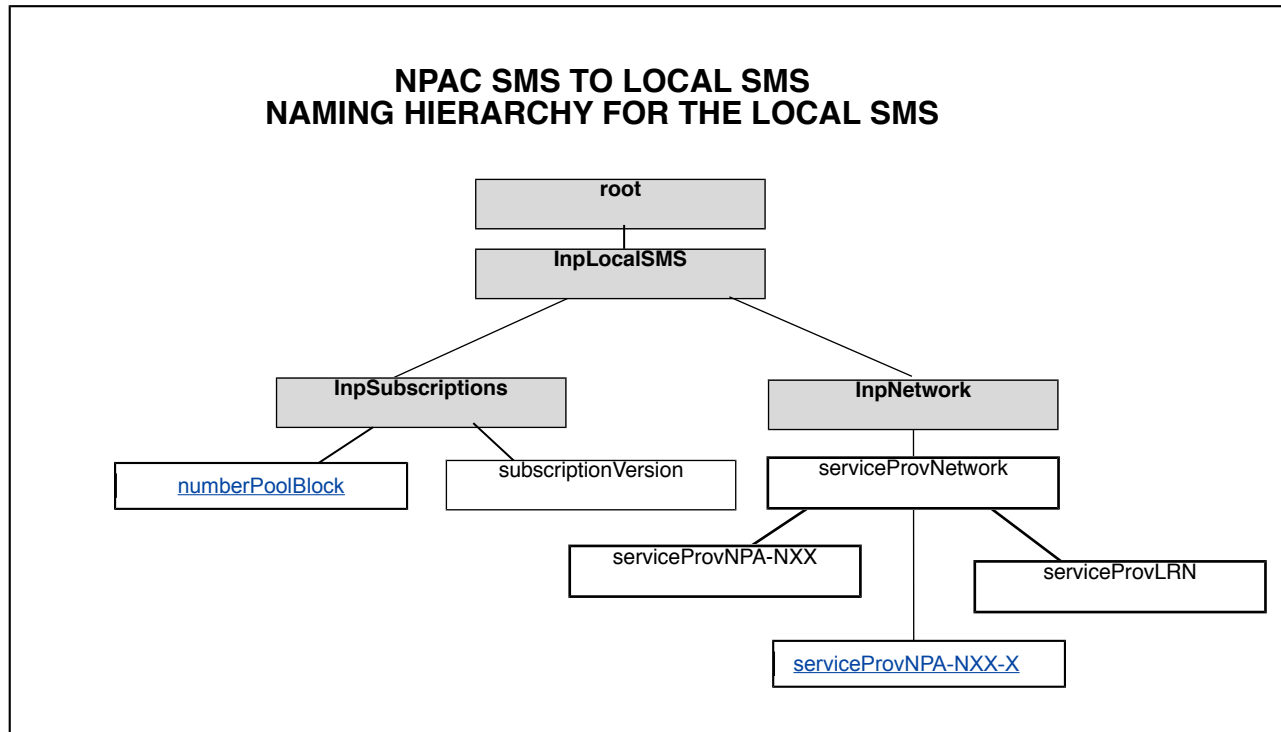


Exhibit 5. The NPAC SMS to Local SMS Naming Hierarchy for the Local SMS.

3.1.5

SOA to NPAC SMS Naming Hierarchy for the NPAC SMS

The SOA to NPAC SMS Naming Hierarchy for the NPAC SMS shows the naming hierarchy used in the NPAC SMS to instantiate objects defined in the SOA to NPAC SMS interface.

Shaded objects are instantiated at NPAC SMS start-up and are not created via M-CREATE or M-DELETE requests. All other objects are created at start-up from a persistent object store on the NPAC SMS or from actions taken while the NPAC SMS is running.

Each object class belongs to one or more Association Functions.

Refer to *Section Error: Reference source not found*, *Error: Reference source not found*.

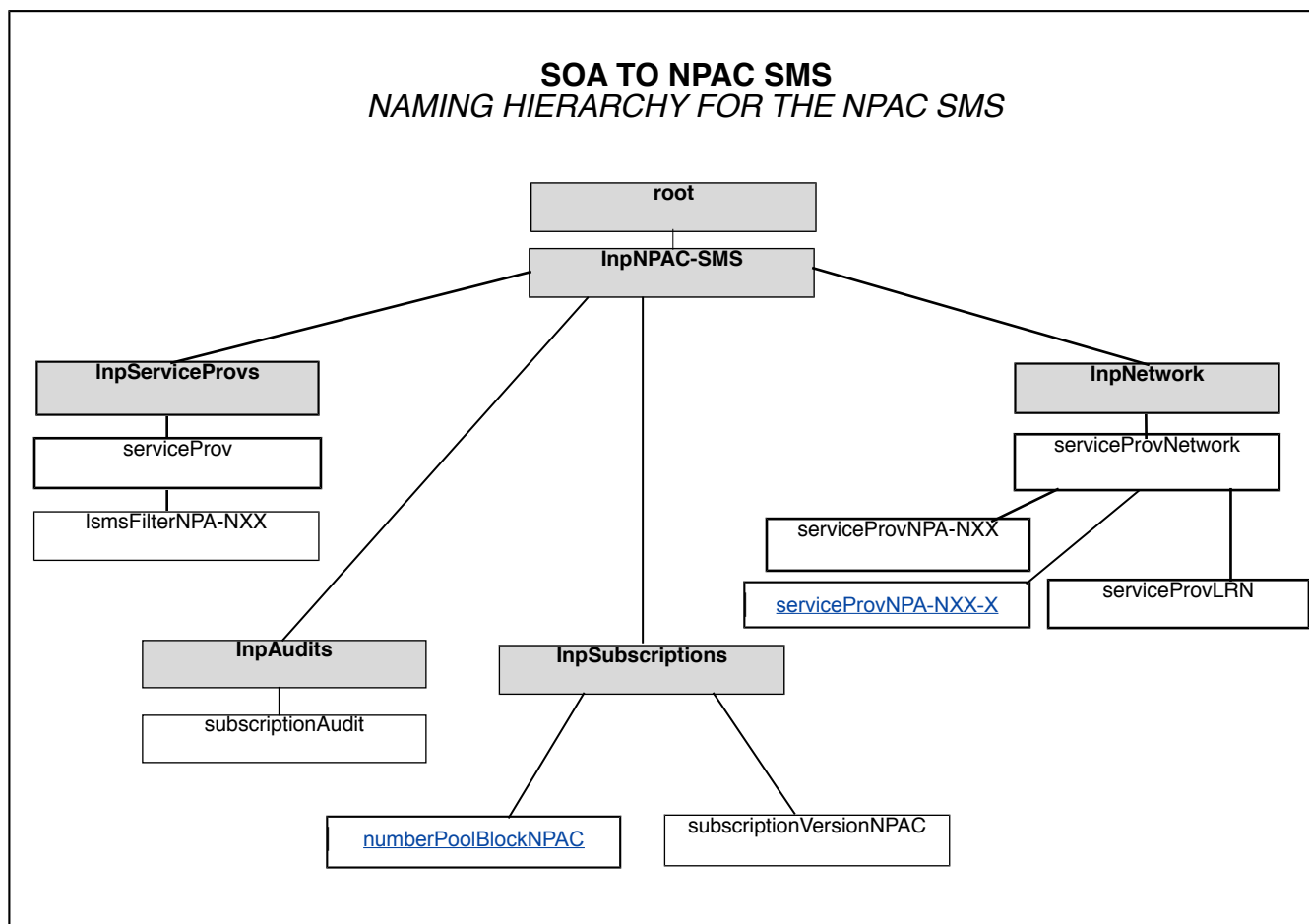


Exhibit 6. The SOA to NPAC SMS Naming Hierarchy for the NPAC SMS.

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.

4.1.1 Primary NPAC Mechanized Interface Operations

The primary interface functions in support of the NPAC requirements are described in the table below, as well as their corresponding Common Management Information Exchange (CMISE) operation and referenced object type for that operation. This table does not include miscellaneous operations, such as service provider network data querying or downloading, etc. These functions are described in the object behaviors in the GDMO source below.

Exhibit 7. Primary NPAC Mechanized Interface Operations Table

Function	Direction (To/From)	CMIP Operation	Referenced Object Type
Abort/Cancel Audit Request	from SOA	M-DELETE	subscriptionAudit
Audit Complete	to SOA	M-EVENT-REPORT: subscriptionAuditResults	subscriptionAudit
Audit Discrepancy	to SOA	M-EVENT-REPORT: subscriptionAuditDiscrepancyRpt	subscriptionAudit
Audit Query	from SOA	M-GET	subscriptionAudit
Audit Request SOA	from SOA	M-CREATE	subscriptionAudit
Cancellation Acknowledgment	from SOA (new service provider)	M-ACTION: subscriptionVersionNewSP-CancellationAcknowledge	InpSubscriptions
Cancellation Acknowledgment	from SOA (old service provider)	M-ACTION: subscriptionVersionOldSP-CancellationAcknowledge	InpSubscriptions
Conflict Removal	from SOA (new service provider)	M-ACTION: subscriptionVersionRemoveFromConflict	InpSubscriptions
Customer Disconnect Date	to SOA	M-EVENT-REPORT: subscriptionVersionDonorSP-CustomerDisconnectDate	subscriptionVersionNPAC
Final Request for Version Create	to SOA (old service provider)	M-EVENT-REPORT: subscriptionVersionOldSP-	subscriptionVersionNPAC

Function	Direction (To/From)	CMIP Operation	Referenced Object Type
		FinalConcurrenceWindowExpiration	
LSMS Filter NPA-NXX Create	from LOCAL SMS	M-CREATE	lsmsFilterNPA-NXX
LSMS Filter NPA-NXX Delete	from LOCAL SMS	M-DELETE	lsmsFilterNPA-NXX
LSMS Filter NPA-NXX Query	from LOCAL SMS	M-GET	lsmsFilterNPA-NXX
Network Data Download	from LOCAL SMS	M-ACTION: InpDownload or M-GET: scoped and filtered for intended serviceProvLRN, serviceProvNPA-NXX serviceProvNPA-NXX-X , serviceProvNPA-NXX-X , service provider attributes	InpNetwork
Network Data Update	from LOCAL SMS or from SOA	M-CREATE: or M-SET: on relevant serviceProvLRN , serviceProvNPA-NXX serviceProvNPA-NXX-X , serviceProvNPA-NXX-X , service provider attributes	InpNetwork servProvNetworkserviceProvLRN , serviceProvNPA-NXX serviceProvNPA-NXX-X serviceProvNPA-NXX-X
NPA-NXX-X Create	to Local SMS	M-CREATE	serviceProvNPA-NXX-X
NPA-NXX-X Modify	to Local SMS	M-SET	serviceProvNPA-NXX-X
NPA-NXX-X Delete	to Local SMS	M-DELETE	serviceProvNPA-NXX-X
New NPA-NXX	to LOCAL SMS	M-EVENT-REPORT: subscriptionVersionNewNPA-NXX	subscriptionVersionNPAC
Number Pool Block Change Notification	to SOA	M-EVENT-REPORT: attributeValueChangeNotification or numberPoolBlockStatusAttributeValueChange	numberPoolBlockNPAC
Number Pool Block Create	from SOA	M-ACTION: InpNumberPoolBlock-Create	InpSubscriptions
Number Pool Block Create	to LOCAL SMS	M-CRECREATE: for a single numberPoolBlock	numberPoolBlock
Number Pool Block Modify	from SOA	M-SET: to a single numberPoolBlock	numberPoolBlockNPAC or InpSubscriptions
Number Pool Block Modify	to LOCAL SMS	M-SET: to a single numberPoolBlock or	numberPoolBlock or InpSubscriptions

Function	Direction (To/From)	CMIP Operation	Referenced Object Type
		scoped and filtered by NPA-NXX-X range for mass update	
Number Pool Block Delete	to LOCAL SMS	M-DELETE: for a single numberPoolBlock	numberPoolBlock
Number Pool Block Query	from Local SMS or SOA	M-GET to a single numberPoolBlockNPAC or scoped and filtered for intended numberPoolBlocks	InpSubscriptions numberPoolBlockNPAC
Number Pool Block Query	to Local SMS	M-GET scoped and filtered for intended numberPoolBlock	InpSubscriptions
Recovery Complete	from LOCAL SMS	M-ACTION: InpRecoveryComplete	InpNPAC-SMS
Request for Cancellation Acknowledgment	to SOA	M-EVENT-REPORT: subscriptionVersionCancellationAcknowledgmentRequest	subscriptionVersionNPAC
Request for Version Create	to SOA (new service provider)	M-EVENT-REPORT: subscriptionVersionNewSPCreateRequest	subscriptionVersionNPAC
Request for Version Create	to SOA (old service provider)	M-EVENT-REPORT: subscriptionVersionOldSPConcurrenceRequest	subscriptionVersionNPAC
Service Provider Network Creation	to LOCAL SMS	M-CREATE	serviceProvNetwork
Service Provider Network Deletion	to LOCAL SMS	M-DELETE	serviceProvNetwork
Service Provider Network Service Provider Name Change	to LOCAL SMS	M-SET: serviceProvName	serviceProvNetwork
Subscription Version Activate	from SOA	M-ACTION: subscriptionVersionActivate	InpSubscriptions
Subscription Version Cancel	from SOA	M-ACTION subscriptionVersionCancel	InpSubscriptions
Subscription Version Change Notification	to SOA	M-EVENT-REPORT: attributeValueChangeNotification or subscriptionVersionStatusAttributeValueChange	subscriptionVersionNPAC numberPoolBlockNPAC
Subscription Version Conflict	from SOA (old service provider)	M-ACTION: subscriptionVersionOldSP-Create setting subscriptionOldSP-Authorization = FALSE Note: This is an enhancement based on the current IIS, superseding RFP narrative	subscriptionVersion

Function	Direction (To/From)	CMIP Operation	Referenced Object Type
		5.1.2.2 for manual-only conflict on/off	
Subscription Version Create	to LOCAL SMS	M-ACTION: subscriptionVersionLocalSMS-Create for multiple creates (<i>i.e.</i> , range operations) where the data in the subscription versions is the same M-CREATE: for an individual subscriptionVersion	InpSubscriptions subscriptionVersion
Subscription Version Create	from SOA	M-ACTION: subscriptionVersionOldSP-Create or subscriptionVersionNewSP-Create	InpSubscriptions
Subscription Version Delete	to LOCAL SMS	M-DELETE: scoped and filtered for intended subscriptionVersion criteria	subscriptionVersion
Subscription Version Disconnect	from SOA	M-ACTION: subscriptionVersionDisconnect	InpSubscriptions
Subscription Version Download	to LOCAL SMS	M-ACTION: subscriptionVersionLocalSMS-Create or M-CREATE: for an individual subscriptionVersion	InpSubscriptions
Subscription Version Download Request	from LOCAL SMS	M-ACTION: InpDownload or M-GET: scoped and filtered for intended subscriptionVersionNPAC criteria	InpSubscriptions
Subscription Version Modify	from SOA	M-ACTION: subscriptionVersion Modify or M-SET: on relevant subscriptionVersionNPAC attributes for pending, active, and conflict versions	InpSubscriptions
Subscription Version Modify	to LOCAL SMS	M-SET: scoped and filtered for intended subscriptionVersion criteria setting relevant attributes	InpSubscriptions
Subscription Version Query	from SOA from LOCAL SMS	M-GET: scoped and filtered for intended subscriptionVersionNPAC criteria setting relevant attributes	InpSubscriptions
Subscription Version Query	to LOCAL SMS	M-GET: scoped and filtered for intended subscriptionVersion criteria	InpSubscriptions

4.1.2 Managed Object Interface Functionality

The table below contains the mapping of the SOA to NPAC SMS and the Local SMS to NPAC SMS managed objects to the interface functionality described in the RFP.

Exhibit 8. Managed Object Interface Functionality Table

Managed Object Name	Interface Functionality Mapping
InpAudits	Container object used to contain all subscription audit objects on the NPAC SMS and the Local SMS. It is used in the SOA to NPAC SMS interface to support audit functionality.
InpLocal SMS	Container object used to contain all objects on a Local SMS. It is used in the NPAC SMS to Local SMS interface to support NPAC SMS communication to the service provider Local SMS system.
InpLogAudit-DiscrepancyRptRecord	Object used to log information from a subscriptionAudit-DiscrepancyRpt notification.
InpLogAuditResultsRecord	Object used to log information from a subscriptionAuditResults notification.
InpLogCancellationAcknowledgeRequestRecord	Object used to log information from a subscriptionVersionCancellationAcknowledgeRequest notification.
InpLogDonorSP-CustomerDisconnectDateRecord	Object used to log information from a subscriptionVersionDonorSP-CustomerDisconnectDate notification.
InpLogLocalSMS-ActionResultsRecord	Object used to log information from a subscriptionVersionLocalSMS-ActionResults notification.
InpLogNewNPA-NXXRecord	Object used to log information from a subscriptionVersionNewNPA-NXX notification.
InpLogNewSP-CreateRequestRecord	Object used to log information from a subscriptionVersionNewSP-CreateRequest notification.
InpLogNumberPoolBlockStatusAttributeValueChangeRecord	Object used to log information from a numberPoolBlockStatusAttributeValueChange notification.
InpLogOldSP-ConcurrenceRequestRecord	Object used to log information from a subscriptionVersionOldSP-ConcurrenceRequest notification.
InpLogOldSP-FinalConcurrenceWindowExpiration	Object used to log information from a subscriptionVersionOldSP-FinalConcurrenceWindowExpiration notification
InpLogOperational-InformationRecord	Object used to log information from a InpNPAC-SMS-Operational-Information notification.
InpLogStatusAttributeValueChangeRecord	Object used to log information from a subscriptionVersionStatusAttributeValueChange notification.
InpNetwork	Container object used to contain all service provider network data on the NPAC SMS and the Local SMS. It is used in the NPAC SMS to Local SMS interface to support downloading of network data to the Local SMS and the functionality that allows service providers to create/delete their network data on the NPAC SMS.
InpNPAC-SMS	Container object used to contain all objects on a NPAC SMS. It is used in the NPAC SMS to Local SMS interface to support NPAC SMS communication from the service

Managed Object Name	Interface Functionality Mapping
	provider Local SMS and the SOA systems.
InpServiceProvs	Container object used to contain all service provider data on the NPAC SMS. It is used in the NPAC SMS to Local SMS interface to support retrieving of service provider data from the Local SMS and the functionality that allows service providers to update their service provider data on the NPAC SMS. Service providers can only retrieve their own service provider data.
InpSubscriptions	Container object used to contain all subscription versions and number pool block objects on the NPAC SMS and the Local SMS. It is used in the NPAC SMS to Local SMS interface to support query of subscription and number pool block data on the NPAC SMS and downloading of subscription and number pool block data to the Local SMS.
lsmsFilterNPA-NXX	Object used to represent the NPA-NXX values for which a service provider does not want to be informed of subscription version broadcasts.
numberPoolBlock	Object used to represent a number pool block on the Local SMS. These objects are used to support number pool block download from the NPAC SMS to the EDR Local SMS using the NPAC SMS to Local SMS interface. Local SMS may support this object by setting the “NPAC Customer LSMS EDR Indicator” in their service provider profile on the NPAC SMS.
numberPoolBlockNPAC	Object used to represent a number pool block on the NPAC SMS. These objects are used to support number pool block administration from the SOA using the SOA to NPAC SMS interface. Capability is provided to the SOA for creation and modification. The NPAC SMS can create, modify and delete.
serviceProv	Object used to represent a service provider and its associated data on the NPAC SMS. These objects are used in the NPAC SMS to Local SMS interface to support retrieving of service provider data from the Local SMS and the functionality that allows service providers to update their service provider data on the NPAC SMS except serviceProvId and serviceProvType. Service providers can only retrieve their own service provider data.
serviceProvLRN	Object used to represent an LRN associated with a service provider on the NPAC SMS or the Local SMS. These objects are used to support downloading of network LRN data to the Local SMS and the functionality that allows service providers to create/delete their own network LRN data. The service provider will have to add a new object and delete the old one to modify the data.
serviceProvNetwork	Container object used to contain network data for a service provider on the NPAC SMS and the Local SMS. It is used in the NPAC SMS to Local SMS interface to support downloading of network data to the Local SMS and the functionality that allows service providers to update their network data on the NPAC SMS.
serviceProvNPA-NXX	Object used to represent an NPA-NXX associated with a service provider on the NPAC SMS or the Local SMS. These objects are used to support downloading of network NPA-NXX data to the Local SMS and the functionality that allows service providers to create/delete their own network NPA-NXX data. NPA splits are supported only through direct contact with NPAC personnel.
serviceProvNPA-NXX-X	Object used to represent an NPA-NXX-X associated with a service provider on the NPAC SMS or the Local SMS. These objects are used in number pooling to support downloading of network NPA-NXX-X- data to the Local SMS. Only the NPAC SMS is allowed to create, delete and modify a service provider’s NPA-NXX-X data. Local SMS may support this object by setting the “NPAC Customer LSMS NPA-NXX-X Indicator” in their service provider profile on the NPAC SMS.

Managed Object Name	Interface Functionality Mapping
subscriptionAudit	Object used to represent a subscription audit request on the NPAC SMS. These objects are used to support subscription audit requests from the SOA to the NPAC SMS using the SOA to NPAC SMS interface. The object supports notifications for audit discrepancies found and audit completion results. If the subscription version LNP type is equal to 'pool', the appropriate number pool block will also be audited.
subscriptionVersion	Object used to represent a subscription version on the Local SMS. These objects are used to support subscription version download from the NPAC SMS to the Local SMS using the NPAC SMS to Local SMS interface
subscriptionVersionNPAC	Object used to represent a subscription version on the NPAC SMS. These objects are used to support subscription administration from the SOA using the SOA to NPAC SMS interface. Capability is provided for version creation, activation, modification, cancellation, and disconnect.

4.1.3 Attribute Interface Functionality

The table below contains the mapping of the SOA to NPAC SMS and the Local SMS to NPAC SMS attributes to the interface functionality described in the RFP.

Exhibit 9. Attribute Interface Functionality Table

Attribute Name	Interface Requirements Mapping
accessControl	This attribute is used to define access control information for security. It is used in the NPAC SMS to Local SMS and SOA to NPAC SMS interfaces.
actionResultsStatus	This attribute is used to store the status of an action that sends back an asynchronous notification with the results.
additionalDownTimeInformation	This attribute is used to provide additional information about a planned NPAC SMS outage. It is used to support the notification of operational outages to the service provider SOA and Local SMS systems using the SOA to NPAC SMS interface and the NPAC SMS to Local SMS interface.
auditDiscrepancyFailureReason	This attribute is used to specify the failure reason for a discrepancy in the InpLogAudit-DiscrepancyRptRecord.
auditDiscrepancyLSMS-SP-Id	This attribute is used to specify the service provider Id of the Local SMS on which a discrepancy was found in the InpLogAudit-DiscrepancyRptRecord.
auditDiscrepancyTn	This attribute is used to specify the TN for which a discrepancy was found in the InpLogAudit-DiscrepancyRptRecord.
auditDiscrepancyVersionId	This attribute is used to specify the version Id for which a discrepancy was found in the InpLogAudit-DiscrepancyRptRecord.
auditResultCompletionTime	This attribute is used to specify the completion time of an audit in the InpLogAuditResultsRecord.
auditResultFailed-SP-List	This attribute is used to specify the list of failed service provider Local SMSs for a failed audit. It is used to support the audit functionality from the service provider SOA using the SOA to NPAC SMS interface.
auditResultNumberDiscrepancies	This attribute is used to specify the number of discrepancies

Attribute Name	Interface Requirements Mapping
	found in an audit in the InpLogAuditResultsRecord.
auditResultStatus	This attribute is used to specify the final status of an audit in the InpLogAuditResultsRecord.
downTime	This attribute is used to specify the down time in the InpLogOperational-InformationRecord.
failedTN-List	This attribute is used to indicate the TN(s) and errors for a failed action in the return asynchronous notification.
InpAuditsName	This attribute is used to specify the name of the audit container. It is used to support audit functionality in the NPAC SMS using the SOA to NPAC SMS interface.
InpLocal-SMS-Name	This attribute is used to specify the name of the Local SMS data container. It is used to support the NPAC SMS to Local SMS interface.
InpNetworkName	This attribute is used to specify the name of the network data container. It is used to support download functionality to the Local SMS in the NPAC SMS to Local SMS interface.
InpNPAC-SMS-Name	This attribute is used to specify the name of the NPAC SMS data container. It is used to support the NPAC SMS to Local SMS interface.
InpServiceProvsName	This attribute is used to specify the name of the service provider data container. It is used to support service provider data query and the Lockheed Martin functionality for service provider data update in the NPAC SMS using the Local SMS to NPAC SMS or SOA to NPAC SMS interface.
InpSpecificInfo	This attribute is used to pass specific error information in the case of a cmip processing failure error.
InpSubscriptionsName	This attribute is used to specify the name of the subscription container. It is used to support subscription download functionality to the service provider Local SMS systems and subscription administration functionality for the SOA systems using the SOA to NPAC SMS and Local SMS to NPAC SMS interfaces.
lsmsFilterNPA-NXX-Id	This attribute is used to specify the LSMS Filter NPA-NXX unique identifier. It supports the broadcast of subscription versions.
lsmsFilterNPA-NXX-Value	This attribute is used to specify the service provider NPA-NXX value. It supports the broadcast of subscription versions.
npacContactNumber	This attribute is used to indicate the NPAC contact number to be called concerning an NPAC SMS outage. It is used to support the notification of operational outages to the service provider SOA and Local SMS systems using the SOA to NPAC SMS interface and the NPAC SMS to Local SMS interface.
npacCustomerAllowableFunctions	This attribute is used to specify what functions a service provider can perform on the SOA to NPAC SMS and NPAC SMS to Local SMS interfaces.
numberPoolBlockActivationTimeStamp	This attribute is used to specify the date and time at the start of

Attribute Name	Interface Requirements Mapping
	<p><u>the number pool block broadcast for activation only. It is used to support service provider data administration in NPAC SMS using the SOA to NPAC SMS interface and number pool block download from the NPAC SMS to the Local SMS using the Local SMS to NPAC SMS interface.</u></p>
<p><u>numberPoolBlockBroadcastTimeStamp</u></p>	<p><u>This attribute is used to specify the date and time at the start of the number pool block's broadcast from the NPAC SMS to the Local SMS systems. It is used to support service provider data administration in the NPAC SMS using the SOA to NPAC SMS interface and number pool block download from the NPAC SMS to the Local SMS using the Local SMS to NPAC SMS interface.</u></p>
<p><u>numberPoolBlockCLASS-DPC</u></p>	<p><u>This attribute is used to specify the number pool block CLASS DPC Type. It is used to support service provider data administration in the NPAC SMS using the SOA to NPAC SMS interface and number pool block download from the NPAC SMS to the Local SMS using the Local SMS to NPAC SMS interface.</u></p>
<p><u>numberPoolBlockCLASS-SSN</u></p>	<p><u>This attribute is used to specify the number pool block CLASS SSN. It is used to support service provider data administration in the NPAC SMS using the SOA to NPAC SMS interface and number pool block download from the NPAC SMS to the Local SMS using the Local SMS to NPAC SMS interface.</u></p>
<p><u>numberPoolBlockCNAM-DPC</u></p>	<p><u>This attribute is used to specify the number pool block CNAM DPC Type. It is used to support service provider data administration in the NPAC SMS using the SOA to NPAC SMS interface and number pool block download from the NPAC SMS to the Local SMS using the Local SMS to NPAC SMS interface.</u></p>
<p><u>numberPoolBlockCNAM-SSN</u></p>	<p><u>This attribute is used to specify the number pool block CNAM SSN. It is used to support service provider data administration in the NPAC SMS using the SOA to NPAC SMS interface and number pool block download from the NPAC SMS to the Local SMS using the Local SMS to NPAC SMS interface.</u></p>
<p><u>numberPoolBlockCreationTimeStamp</u></p>	<p><u>This attribute is used to specify the date and time the number pool block object is created on the NPAC SMS. It is used to support service provider data administration in the NPAC SMS using the SOA to NPAC SMS interface and number pool block download from the NPAC SMS to the Local SMS using the Local SMS to NPAC SMS interface.</u></p>
<p><u>numberPoolBlockDisconnectCompleteTimeStamp</u></p>	<p><u>This attribute is used to specify the date and time of when the NPAAPC SMS received the first successful response to a disconnect broadcast. It is used to support service provider data administration in the NPAC SMS using the SOA to NPAC SMS interface and number pool block download from the NPAC SMS to the Local SMS using the Local SMS to the NPAC SMS interface.</u></p>
<p><u>numberPoolBlockDownloadReason</u></p>	<p><u>This attribute is used to specify the reason for download in the number pool block objects. It is used in the NPAC SMS to Local SMS Interface.</u></p>

Attribute Name	Interface Requirements Mapping
numberPoolBlockFailed-SP-List	<u>This attribute is used to store the failed service providers after a subscription version or number pool block broadcast results in a failed or partially-failed subscription version or number pool block status. This attribute on the number pool block object is used to store the failed service providers after the broadcast of a number pool block and/or subscription versions with LNP type equal to 'pool' fails to at least one Local SMS. results in a failed or partially-failed status.</u>
numberPoolBlockHolderSPID	<u>This attribute is used to specify the service provider ID of the block holder for the number pool block. It is used to support service provider data administration in the NPAC SMS using the SOA to NPAC SMS interface and number pool block download from the NPAC SMS to the Local SMS using the Local SMS to NPAC SMS interface.</u>
numberPoolBlockId	<u>This attribute is used to specify the unique version id for the number pool block in the NPAC SMS. It is used to support service provider data administration in the NPAC SMS using the SOA to NPAC SMS interface and number pool block download from the NPAC SMS to the Local SMS using the Local SMS to NPAC SMS interface.</u>
numberPoolBlockISVM-DPC	<u>This attribute is used to specify the number pool block ISVM DPC Type. It is used to support service provider data administration in the NPAC SMS using the SOA to NPAC SMS interface and number pool block download from the NPAC SMS to the Local SMS using the Local SMS to NPAC SMS interface.</u>
numberPoolBlockISVM-SSN	<u>This attribute is used to specify the number pool block ISVM SSN. It is used to support service provider data administration in the NPAC SMS using the SOA to NPAC SMS interface and number pool block download from the NPAC SMS to the Local SMS using the Local SMS to NPAC SMS interface.</u>
numberPoolBlockLIDB-DPC	<u>This attribute is used to specify the number pool block LIDB DPC Type. It is used to support service provider data administration in the NPAC SMS using the SOA to NPAC SMS interface and number pool block download from the NPAC SMS to the Local SMS using the Local SMS to NPAC SMS interface.</u>
numberPoolBlockLIDB-SSN	<u>This attribute is used to specify the number pool block LIDB SSN. It is used to support service provider data administration in the NPAC SMS using the SOA to NPAC SMS interface and number pool block download from the NPAC SMS to the Local SMS using the Local SMS to NPAC SMS interface.</u>
numberPoolBlockLRN	<u>This attribute is used to specify the LRN data for the number pool block. It is used to support service provider data administration in the NPAC SMS using the SOA to NPAC SMS interface and number pool block download from the NPAC SMS to the Local SMS using the Local SMS to NPAC SMS interface.</u>
numberPoolBlockModifiedTimeStamp	<u>This attribute is used to specify the date and time of any modifications to the number pool block. It is used to support</u>

Attribute Name	Interface Requirements Mapping
	service provider data administration in the NPAC SMS using the SOA to NPAC SMS interface and number pool block download from the NPAC SMS to the Local SMS using the Local SMS to NPAC SMS interface.
numberPoolBlockSOA-Origination	This attribute is used to specify whether the block holder SOA created the number pool block or now desires the notifications associated with a number pool block to be sent to their SOA. It is used to support service provider data administration in the NPAC SMS using the SOA to NPAC SMS interface and number pool block download from the NPAC SMS to the Local SMS using the Local SMS to NPAC SMS interface.
numberPoolBlockNPA-NXX-X	This attribute is used to specify NPA-NXX-X value for the number pool block. It is used to support service provider data administration in the NPAC SMS using the SOA to NPAC SMS interface and number pool block download from the NPAC SMS to the Local SMS using the Local SMS to NPAC SMS interface.
numberPoolBlockStatus	This attribute is used to specify the number pool block status. - It is used to support service provider data administration in the NPAC SMS using the SOA to NPAC SMS interface and number pool block download from the NPAC SMS to the Local SMS using the Local SMS to NPAC SMS interface.
resultsCompletionTime	This attribute is used to store the completion time of the action in the action results notification.
serviceProvAddress	This attribute is used to specify the service provider address data. It is used to support service provider data query and the Lockheed Martin functionality for service provider data update in the NPAC SMS using the Local SMS to NPAC SMS or SOA to NPAC SMS interface.
serviceProvBillingAddress	This attribute is used to specify the service provider billing address data. It is used to support service provider data query and the Lockheed Martin functionality for service provider data update in the NPAC SMS using the Local SMS to NPAC SMS or SOA to NPAC SMS interface.
serviceProvConflictAddress	This attribute is used to specify the service provider conflict address data. It is used to support service provider data query and the Lockheed Martin functionality for service provider data update in the NPAC SMS using the Local SMS to NPAC SMS or SOA to NPAC SMS interface.
serviceProvDownloadReason	This attribute is used to specify the reason for download in the serviceProvLRN and serviceProvNPA-NXX objects. It is used in the NPAC SMS to Local SMS Interface.
serviceProvID	This attribute is used to specify the service provider Id to uniquely identify a service provider object. It is used to support service provider data query and the Lockheed Martin functionality for service provider data update in the NPAC SMS using the Local SMS to NPAC SMS or SOA to NPAC SMS interface.
serviceProvLRN-ID	This attribute is used to specify the service provider LRN

Attribute Name	Interface Requirements Mapping
	unique identifier. It is used to support downloading of network LRN data to the Local SMS and the functionality that allows service providers to update their own network LRN data.
serviceProvLRN-CreationTimeStamp	This attribute is used to specify the last date and time the serviceProvLRN object was created on the NPAC SMS. It is used in the NPAC SMS to Local SMS Interface.
serviceProvLRN-Value	This attribute is used to specify the value for a service provider LRN associated with an NPA-NXX.
serviceProvLSMS-Address	This attribute is used to specify the service provider Local SMS contact address data. It is used to support service provider data query and the Lockheed Martin functionality for service provider data update in the NPAC SMS using the Local SMS to NPAC SMS or SOA to NPAC SMS interface.
serviceProvName	This attribute is used to specify the service provider English name. It is used to support service provider data query and the Lockheed Martin functionality for service provider data update in the NPAC SMS using the Local SMS to NPAC SMS or SOA to NPAC SMS interface.
serviceProvNetAddress	This attribute is used to specify the service provider Network operations contact address data. It is used to support service provider data query and the Lockheed Martin functionality for service provider data update in the NPAC SMS using the Local SMS to NPAC SMS or SOA to NPAC SMS interface.
serviceProvNPA-NXX-EffectiveTimeStamp	This attribute is used to specify the effective date on which the service provider NPA-NXX is available for LNP. The time portion of the timestamp is set to 00:00:00. It is used in the NPAC SMS to Local SMS interface.
serviceProvNPA-NXX-ID	This attribute is used to specify the service provider NPA-NXX unique identifier. It is used to support downloading of network NPA-NXX data to the Local SMS and the functionality that allows service providers to update their own network NPA-NXX data.
serviceProvNPA-NXX-CreationTimeStamp	This attribute is used to specify the date and time the serviceProvNPA-NXX object was created. It is used in the NPAC SMS to Local SMS Interface.
serviceProvNPA-NXX-Value	This attribute is used to specify the service provider NPA-NXX value. It is used to support downloading of network NPA-NXX data to the Local SMS.
serviceProvNPA-NXX-X-CreationTimeStamp	This attribute is used to specify the date and time the serviceProvNPA-NXX-X object was created. It is used in the NPAC SMS to Local SMS interface.
serviceProvNPA-NXX-X-DownloadReason	This attribute is used to specify the reason for download in the serviceProvNPA-NXX-X objects. It is used in the NPAC SMS to Local SMS Interface.
serviceProvNPA-NXX-X-EffectiveTimeStamp	This attribute is used to specify the date the block holder service provider assumes responsibility of the block TN-Range. The time portion of the timestamp is set to 00:00:00. It is used in the NPAC SMS to Local SMS interface

Attribute Name	Interface Requirements Mapping
serviceProvNPA-NXX-X-Id	This attribute is used to specify the service provider NPA-NXX-X unique identifier. It is used to support downloading of network NPA-NXX-X data to the Local SMS.
serviceProvNPA-NXX-X-ModifiedTimeStamp	This attribute is used to specify the date and time the serviceProvNPA-NXX-X object was last modified. It is used in the NPAC SMS to Local SMS interface
serviceProvNPA-NXX-X-Value	This attribute is used to specify the service provider NPA-NXX-X value. It is used to support downloading of network NPA-NXX-X data to the Local SMS.
serviceProvOperationsAddress	This attribute is used to specify the service provider operations contact address data. It is used to support service provider data query and the Lockheed Martin functionality for service provider data update in the NPAC SMS using the Local SMS to NPAC SMS or SOA to NPAC SMS interface.
serviceProvRepairCenterInfo	This attribute is used to specify the repair center information for a service provider.
serviceProvSOA-Address	This attribute is used to specify the service provider SOA contact address data. It is used to support service provider data query and the Lockheed Martin functionality for service provider data update in the NPAC SMS using the Local SMS to NPAC SMS or SOA to NPAC SMS interface.
serviceProvSysLinkInfo	This attribute is used to specify the service provider network address connectivity data. It is used to support service provider data query and the Lockheed Martin functionality for service provider data update in the NPAC SMS using the Local SMS to NPAC SMS interface and the SOA to NPAC SMS interface.
ServiceProvUserAdminAddress	This attribute is used to specify the service provider user administration contact address data. It is used to support service provider data query and the Lockheed Martin functionality for service provider data update in the NPAC SMS using the Local SMS to NPAC SMS or SOA to NPAC SMS interface.
ServiceProvWebAddress	This attribute is used to specify the service provider web contact address data. It is used to support service provider data query and the Lockheed Martin functionality for service provider data update in the NPAC SMS using the Local SMS to NPAC SMS or SOA to NPAC SMS interface.
SubscriptionActivationTimeStamp	This attribute is used to specify the date and time that the new service provider activation request was received by the NPAC SMS. It is used to support service provider data administration in NPAC SMS using the SOA to NPAC SMS interface and subscription version download from the NPAC SMS to the Local SMS using the Local SMS to NPAC SMS interface.
SubscriptionAuditAttributeList	This attribute is used to specify a list of attributes in a subscription version that are to be audited. It is used to support audit functionality from the SOA to the NPAC SMS using the SOA to NPAC SMS interface.
SubscriptionAuditId	This attribute is used to uniquely identify an audit request. It is used to support audit functionality from the SOA to the NPAC

Attribute Name	Interface Requirements Mapping
	SMS using the SOA to NPAC SMS interface.
subscriptionAuditName	This attribute is used to give an English name to an audit request. It is used to support audit functionality from the SOA to the NPAC SMS using the SOA to NPAC SMS.
subscriptionAuditNonPortedTNs	This attribute is used to specify if non-porting TNs should be audited in an audit request. It is used to support audit functionality from the SOA to the NPAC SMS using the SOA to NPAC SMS interface.
subscriptionAuditNumberOfTNs	This attribute is used to specify the number of TNs being audited in an audit request. It is used to support audit functionality from the SOA to the NPAC SMS using the SOA to NPAC SMS interface.
subscriptionAuditNumberOfTNsComplete	This attribute is used to specify the number of TNs that have been successfully audited in a complete or in progress audit request. It is used to support audit functionality from the SOA to the NPAC SMS using the SOA to NPAC SMS interface.
subscriptionAuditRequestingSP	This attribute is used to specify the service provider Id that requested the audit.
subscriptionAuditServiceProvIdRange	This attribute is used to identify a specific service provider or if all service providers should be audited in an audit request. It is used to support audit functionality from the SOA to the NPAC SMS using the SOA to NPAC SMS interface.
subscriptionAuditStatus	This attribute is used to specify the status of an audit request. It is used to support audit functionality from the SOA to the NPAC SMS using the SOA to NPAC SMS interface.
subscriptionAuditTN-ActivationRange	This attribute is used to specify the activation date and time range for TNs to be audited in an audit request. It is used to support audit functionality from the SOA to the NPAC SMS using the SOA to NPAC SMS interface.
subscriptionAuditTN-AtSuspend	This attribute is used to specify the last TN that was audited when an audit request was suspended in the network. It is used to support audit functionality from the SOA to the NPAC SMS using the SOA to NPAC SMS interface.
subscriptionAuditTN-NotificationNumber	This attribute is used to specify the number of TNs that have completed audit before the number of subscriptionAuditNumberOfTNsComplete gets incremented in an audit request. It is used to support audit functionality from the SOA to the NPAC SMS using the SOA to NPAC SMS interface.
subscriptionAuditTN-Range	This attribute is used specify the range of TNs to be audited in an audit request. It is used to support audit functionality from the SOA to the NPAC SMS using the SOA to NPAC SMS interface.
subscriptionBillingId	This attribute is used to specify the subscription version service provider billing Id. It is used to support service provider data administration in the NPAC SMS using the SOA to NPAC SMS interface and subscription version download from the NPAC SMS to the Local SMS using the Local SMS to NPAC SMS

Attribute Name	Interface Requirements Mapping
	interface.
subscriptionBroadcastTimeStamp	This attribute is used to specify the subscription version's broadcast from the NPAC SMS to the Local SMS systems time stamp. It is used to support service provider data administration in the NPAC SMS using the SOA to NPAC SMS interface and subscription version download from the NPAC SMS to the Local SMS using the Local SMS to NPAC SMS interface.
subscriptionCancellationTimeStamp	This attribute is used to specify the subscription version cancellation time stamp. It is used to support service provider data administration in the NPAC SMS using the SOA to NPAC SMS interface and subscription version download from the NPAC SMS to the Local SMS using the Local SMS to NPAC SMS interface.
subscriptionCLASS-DPC	This attribute is used to specify the subscription version CLASS DPC Type. It is used to support service provider data administration in the NPAC SMS using the SOA to NPAC SMS interface and subscription version download from the NPAC SMS to the Local SMS using the Local SMS to NPAC SMS interface.
subscriptionCLASS-SSN	This attribute is used to specify the subscription version CLASS SSN. It is used to support service provider data administration in the NPAC SMS using the SOA to NPAC SMS interface and subscription version download from the NPAC SMS to the Local SMS using the Local SMS to NPAC SMS interface.
subscriptionCNAM-DPC	This attribute is used to specify the CNAM DPC in the subscriptionVersion object. It is used in the both the NPAC SMS to Local SMS Interface and the SOA to NPAC SMS Interface.
subscriptionCNAM-SSN	This attribute is used to specify the CNAM SSN in the subscriptionVersion object. It is used in the both the NPAC SMS to Local SMS Interface and the SOA to NPAC SMS Interface.
subscriptionConflictTimeStamp	This attribute is used to specify the subscription conflict time stamp. It is used to support service provider data administration in the NPAC SMS using the SOA to NPAC SMS interface and subscription version download from the NPAC SMS to the Local SMS using the Local SMS to NPAC SMS interface.
subscriptionCreationTimeStamp	This attribute is used to specify the subscription version creation time stamp. It is used to support service provider data administration in the NPAC SMS using the SOA to NPAC SMS interface and subscription version download from the NPAC SMS to the Local SMS using the Local SMS to NPAC SMS interface.
subscriptionCustomerDisconnectDate	This attribute is used to specify the timestamp of when the customer was disconnected.
subscriptionDisconnectCompleteTimestamp	This attribute is used to specify the timestamp of when the subscription version was disconnect. It is used to support service provider data administration in the NPAC SMS using the SOA to NPAC SMS interface and subscription version

Attribute Name	Interface Requirements Mapping
	download from the NPAC SMS to the Local SMS using the Local SMS to the NPAC SMS interface.
subscriptionDownloadReason	This attribute is used to specify the reason for download in the subscriptionVersion objects. It is used in the NPAC SMS to Local SMS Interface.
subscriptionEffectiveReleaseDate	This attribute is used to specify the subscription version disconnect date. It is used to support service provider data administration in the NPAC SMS using the SOA to NPAC SMS interface and subscription version download from the NPAC SMS to the Local SMS using the Local SMS to NPAC SMS interface.
subscriptionEndUserLocationType	This attribute is used to specify the subscription version end user location type. It is used to support service provider data administration in the NPAC SMS using the SOA to NPAC SMS interface and subscription version download from the NPAC SMS to the Local SMS using the Local SMS to NPAC SMS interface.
subscriptionEndUserLocationValue	This attribute is used to specify the subscription version end user location value. It is used to support service provider data administration in the NPAC SMS using the SOA to NPAC SMS interface and subscription version download from the NPAC SMS to the Local SMS using the Local SMS to NPAC SMS interface.
subscriptionFailed -SP-List	This attribute is used to store the failed service providers after a subscription version and number pool block broadcasts that or number pool block broadcast results in a failed or partially-failed subscription version of block of block status: fails to at least one Local SMS.
subscriptionISVM-DPC	This attribute is used to specify the ISVM DPC in the subscriptionVersion object. It is used in both the NPAC SMS to Local SMS Interface and the SOA to NPAC SMS Interface.
subscriptionISVM-SSN	This attribute is used to specify the ISVM SSN in the subscriptionVersion object. It is used in both the NPAC SMS to Local SMS Interface and the SOA to NPAC SMS Interface.
subscriptionLIDB-DPC	This attribute is used to specify the subscription version LIDB DPC. It is used to support service provider data administration in the NPAC SMS using the SOA to NPAC SMS interface and subscription version download from the NPAC SMS to the Local SMS using the Local SMS to NPAC SMS interface.
subscriptionLIDB-SSN	This attribute is used to specify the LIDB SSN in the subscriptionVersion object. It is used in both the NPAC SMS to Local SMS Interface and the SOA to NPAC SMS Interface.
subscriptionLNPTType	This attribute is used to specify the subscription version LNP Type. It is used to support service provider data administration in the NPAC SMS using the SOA to NPAC SMS interface and subscription version download from the NPAC SMS to the Local SMS using the Local SMS to NPAC SMS interface.
subscriptionLRN	This attribute is used to specify the LRN data for the

Attribute Name	Interface Requirements Mapping
	subscription version. It is used to support service provider data administration in the NPAC SMS using the SOA to NPAC SMS interface and subscription version download from the NPAC SMS to the Local SMS using the Local SMS to NPAC SMS interface.
subscriptionModifiedTimeStamp	This attribute is used to specify the timestamp of any modifications to the subscription version. It is used to support service provider data administration in the NPAC SMS using the SOA to NPAC SMS interface and subscription version download from the NPAC SMS to the Local SMS using the Local SMS to NPAC SMS interface.
subscriptionNewCurrentSP	This attribute is used to specify the current or new service provider for the subscription version. It is used to support service provider data administration in the NPAC SMS using the SOA to NPAC SMS interface and subscription version download from the NPAC SMS to the Local SMS using the Local SMS to NPAC SMS interface.
subscriptionNewSP-CreationTimeStamp	This attribute is used to specify the subscription version new service provider creation time stamp. It is used to support service provider data administration in the NPAC SMS using the SOA to NPAC SMS interface and subscription version download from the NPAC SMS to the Local SMS using the Local SMS to NPAC SMS interface.
subscriptionNewSP-CancellationTimeStamp	This attribute is used to specify the time stamp of the subscription version cancellation pending acknowledgment by the new service provider. It is used to support service provider data administration in the NPAC SMS using the SOA to NPAC SMS interface and subscription version download from the NPAC SMS to the Local SMS using the Local SMS to the NPAC SMS interface.
subscriptionNewSP-ConflictResolutionTimeStamp	This attribute is used to specify the time stamp of when the subscription version was removed from conflict by the new service provider. It is used to support service provider data administration in the NPAC SMS using the SOA to NPAC SMS interface and subscription version download from the NPAC SMS to the Local SMS using the Local SMS to the NPAC SMS interface.
subscriptionNewSP-DueDate	This attribute is used to specify the new service provider activation date and time for the subscription version. It is used to support service provider data administration in the NPAC SMS using the SOA to NPAC SMS interface and subscription version download from the NPAC SMS to the Local SMS using the Local SMS to NPAC SMS interface.
subscriptionOldSP	This attribute is used to specify the old SP for the subscription version. It is used to support service provider data administration in the NPAC SMS using the SOA to NPAC SMS interface and subscription version download from the NPAC SMS to the Local SMS using the Local SMS to NPAC SMS interface.
subscriptionOldSP-Authorization	This attribute is used to specify the subscription version old service provider authorization indication. It is used to support

Attribute Name	Interface Requirements Mapping
	service provider data administration in the NPAC SMS using the SOA to NPAC SMS interface and subscription version download from the NPAC SMS to the Local SMS using the Local SMS to NPAC SMS interface.
subscriptionOldSP-AuthorizationTimeStamp	This attribute is used to specify the subscription version old service provider authorization time stamp. It is used to support service provider data administration in the NPAC SMS using the SOA to NPAC SMS interface and subscription version download from the NPAC SMS to the Local SMS using the Local SMS to NPAC SMS interface.
subscriptionOldSP-CancellationTimeStamp	This attribute is used to specify the time stamp of the subscription version cancellation pending acknowledgment by the old service provider. It is used to support service provider data administration in the NPAC SMS using the SOA to NPAC SMS interface and subscription version download from the NPAC SMS to the Local SMS using the Local SMS to the NPAC SMS interface.
subscriptionOldSP-ConflictResolutionTimeStamp	This attribute is used to specify the time stamp of when the subscription version was removed from conflict by the old service provider. It is used to support service provider data administration in the NPAC SMS using the SOA to NPAC SMS interface and subscription version download from the NPAC SMS to the Local SMS using the Local SMS to the NPAC SMS interface.
subscriptionOldSP-DueDate	This attribute is used to specify the subscription version cutover time stamp to the new service provider. It is used to support service provider data administration in NPAC SMS using the SOA to NPAC SMS interface and subscription version download from the NPAC SMS to the Local SMS using the Local SMS to NPAC SMS interface.
subscriptionOldTimeStamp	This attribute is used to specify the subscription version time stamp when the version became old. It is used to support service provider data administration in the NPAC SMS using the SOA to NPAC SMS interface and subscription version download from the NPAC SMS to the Local SMS using the Local SMS to NPAC SMS interface.
subscriptionPortingToOriginal-SPSwitch	This attribute is used to specify that subscription version is being ported back to the original service provider. It is used to support service provider data administration in the NPAC SMS using the SOA to NPAC SMS interface and subscription version download from the NPAC SMS to the Local SMS using the Local SMS to the NPAC SMS interface.
subscriptionPreCancellationStatus	This attribute is used to specify the previous status of a cancel-pending subscription version. Valid values are pending, conflict, sending, active, failed, failed partial, and disconnect-pending.
subscriptionStatusChangeCauseCode	This attribute is used to specify the reason a subscription version went into conflict.
subscriptionTN	This attribute is used to specify the subscription version TN for

Attribute Name	Interface Requirements Mapping
	a subscription version. It is used to support service provider data administration using the SOA to NPAC SMS interface and the NPAC SMS to Local SMS interface.
subscriptionVersionAttributeValueChangedInfo	This attribute is used to specify the attribute value change information in the InpLogVersionAttributeValueChangedRecord.
subscriptionVersionId	This attribute is used to specify the unique version id for the subscription version in the NPAC SMS. It is used to support service provider data administration in the NPAC SMS using the SOA to NPAC SMS interface and subscription version download from the NPAC SMS to the Local SMS using the Local SMS to NPAC SMS interface.
subscriptionVersionStatus	This attribute is used to specify the subscription version status. It is used to support service provider data administration in the NPAC SMS using the SOA to NPAC SMS interface and subscription version download from the NPAC SMS to the Local SMS using the Local SMS to NPAC SMS interface.

4.1.4 Action Interface Functionality

The table below contains the mapping of the SOA to NPAC SMS and the Local SMS to NPAC SMS actions to the interface functionality described in the RFP.

Exhibit 10. The Action Interface Functionality Table

Action Name	Interface Requirements Mapping
LnpDownload	This action is used to support the downloading of subscription, number pool block and network data to the Local SMS from the NPAC via the NPAC SMS to Local SMS interface.
LnpRecoveryComplete	This action is used to specify the system has recovered from down time and the transactions performed since the association establishment can now be sent to the Local SMS from the NPAC SMS using the Local SMS to NPAC SMS interface.
NumberPoolBlock-Create	This action is used to support creation of the number pool block object by the block holder service provider from the SOA to the NPAC SMS using the SOA to NPAC SMS interface.
SubscriptionVersionActivate	This action is used to support subscription version activation by the new service provider from the SOA to the NPAC SMS using the SOA to NPAC SMS interface.
SubscriptionVersionCancel	This action is used to support subscription version cancellation by a service provider from the SOA to the NPAC SMS using the SOA to NPAC SMS interface.
SubscriptionVersionDisconnect	This action is used to support subscription version disconnection by the current service provider from the SOA to the NPAC SMS using the SOA to NPAC SMS interface.
SubscriptionVersionLocalSMS-Create	This action can be used by the NPAC SMS to create multiple subscription

Action Name	Interface Requirements Mapping
	versions via the Local SMS to NPAC SMS interface.
SubscriptionVersionModify	This action is used to support subscription version modification by a service provider from the SOA to the NPAC SMS using the SOA to NPAC SMS interface.
SubscriptionVersionNewSP-CancellationAcknowledge	This action is used to support the acknowledgment of subscription versions with a status of cancel-pending by the old service from the SOA to the NPAC SMS using the SOA to NPAC SMS interface.
SubscriptionVersionNewSP-Create	This action is used to support subscription version creation by the new service provider from the SOA to the NPAC SMS using the SOA to NPAC SMS interface.
SubscriptionVersionOldSP-CancellationAcknowledge	This action is used to support the acknowledgment of subscription versions with a status of cancel-pending by the old service from the SOA to the NPAC SMS using the SOA to NPAC SMS interface.
SubscriptionVersionOldSP-Create	This action is used to support subscription version creation by the old service provider from the SOA to the NPAC SMS using the SOA to NPAC SMS interface.
SubscriptionVersionRemoveFromConflict	This action is used on the NPAC SMS via the SOA to NPAC SMS interface to set the subscription version status from conflict to pending.

4.1.5 Notification Interface Functionality

The table below contains the mapping of the SOA to NPAC SMS and the Local SMS to NPAC SMS notifications to the interface functionality described in the RFP.

Exhibit 11. The Notification Interface Functionality Table

Notification Name	Interface Requirements Mapping
lnpNPAC-SMS-Operational-Information	This notification is used to support the reporting of NPAC SMS scheduled down time. This notification can be issued from the lnpNPAC-SMS object on the NPAC SMS to a SOA via the SOA to NPAC SMS interface or from the NPAC SMS to the Local SMS via the NPAC SMS to Local SMS interface.
numberPoolBlockStatusAttributeValueChange	This notification is issued when the number pool block status is modified and contains the number pool block status and failed service provider list. This notification is issued over the NPAC SMS to SOA interface from the numberPoolBlockNPAC object. This notification is issued when the number pool block status is modified and can contain the number pool block status and failed service provider list. This notification is issued over the NPAC SMS to SOA interface from the numberPoolBlockNPAC object.
subscriptionAudit-DiscrepancyRpt	This notification is used to support the reporting of audit discrepancies found during audit processing. This

Notification Name	Interface Requirements Mapping
	notification can be issued from an audit object on the NPAC SMS to a SOA via the SOA to NPAC SMS interface.
subscriptionAudit-Results	This notification is used to support the reporting of audit processing results. This notification can be issued from an audit object on the NPAC SMS to a SOA via the SOA to NPAC SMS interface.
subscriptionVersionCancellationAcknowledgeRequest	This notification is issued to new and old service providers to request that a cancellation acknowledgment be sent for a subscriber version in a cancel-pending state. This notification is issued via the SOA to NPAC SMS interface from the NPAC subscription version object if the service provider fails to acknowledge the cancellation after a tunable amount of time specified in the NPAC SMS service data table.
subscriptionVersionDonorSP-CustomerDisconnectDate	This notification informs the donor service provider SOA that a subscription version is being disconnected. This notification is issued from a subscription version object on the NPAC SMS to a SOA via the SOA to NPAC SMS interface.
subscriptionVersionLocalSMS-ActionResults	This notification contains the results of a subscriptionVersionLocalSMS-Create action once all the create requests have been attempted. It is issued from the Local SMS to the NPAC SMS via the NPAC SMS to Local SMS interface.
subscriptionVersionNew-NPA-NXX	This notification informs the Local SMS of a pending subscription version or new new-number pool block involving the first use of ana-new NPA-NXX.
SubscriptionVersionNewSP-CreateRequest	This notification is issued to the new service provider to request that a create request be sent for the subscriber version created by the old service provider to provide authorization and/or porting information. This notification is issued via the SOA to NPAC SMS interface from the NPAC subscription version object if the new service provider failed to authorize porting of a number after a tunable amount of time specified in the NPAC SMS service data table.
SubscriptionVersionOldSP-ConcurrenceRequest	This notification is issued to the old service provider to request that a create request be sent for the subscriber version created by the new service provider to provide concurrence for porting. This notification is issued via the SOA to NPAC SMS interface from the NPAC subscription version object if the old service provider failed to authorize porting of a number after a tunable amount of time specified in the NPAC SMS service data table.
subscriptionVersionStatusAttributeValueChange	This notification is issued when the subscription version or number pool block status is modified. This notification is issued over from both the NPAC SMS to Local SMS interface and the SOA to NPAC SMS interface from the subscriptionVersionNPAC numberPoolBlockNPAC

Notification Name	Interface Requirements Mapping
	objects.

4.2

Scoping and Filtering Support

The following section defines the scoping and filtering support for both the SOA to NPAC SMS interface and LSMS to NPAC SMS interface.

4.2.1 Scoping

The LSMS to NPAC SMS interface does not support scoping of CMIP operations of any type by the LSMS for the following objects:

- root
- InpLocal-SMS
- InpNetwork
- any object with an “empty” filter

NPAC SMS is not required to support Scope other than baseObject Scope for CMIP operations that specify baseManagedObjectClass of one of the following:

- InpNPAC-SMS
- InpServiceProvs

Scoped operations for subscriptionVersions [or numberPool Blocks](#) to the LSMS must be supported ~~on the baseObject (level 0) or~~ from the InpSubscriptions object with a non-empty filter.

The limit in scoping and functionality prevents both the NPAC and the LSMS systems from having to implement functionality or respond to large requests that are not necessary to support LNP over the mechanized interfaces.

4.2.2 Filtering

Filtering on the NPAC SMS is supported as defined in the GDMO. The NPAC SMS requires the Local SMS to support at a minimum the filter criterias specified below.

Limitations:

- OR and NOT filter support is not required for the Local SMS.
- NOT filter support is not required for the NPAC SMS.
- Filtering requests with a scope will not be issued to the Local SMS by the NPAC SMS for any object other than the subscriptionVersion [and number pool block](#) objects. ~~No query will be supported~~ [that requests both subscription versions and number pool blocks at the same time.](#)
- All authorization rules apply to scoped and filtered operations. For example, a query for data that a service provider is not authorized to view will be failed with a reason of access denied.
- CMISync is not supported for any scoped/filtered CMIP operation.

The following table shows the CMISE primitive filtering support required of the Local SMS by the NPAC SMS for the subscriptionVersion object.

Exhibit 12 - CMISE Primitive Filtering Support for the Subscription Version Object

CMISE Primitives	Filter Supported	Notes
M-ACTION	N	No actions are defined for the subscriptionVersion object.
M-GET	Y	TN Range with greatOrEqual, lessOrEqual, equality must be supported for auditing. LNPTYPE with equality must be supported for TN range modifyquery - requests.
M-SET	Y	TN Range with greatOrEqual, lessOrEqual, equality must be supported for Mass Update or TN range modify requests. LNPTYPE with equality must be supported for TN range modify requests.
M-DELETE	Y	TN Range with greatOrEqual, lessOrEqual, equality will be supported for range disconnect or port to original requests. LNPTYPE with equality must be supported for TN range delete requests.

4.2.3 — Action Scoping and Filtering Support

Exhibit 13 - CMISE Primitive Filtering Support for the Number Pool Block Object

CMISE Primitives	Filter Supported	Notes
M-ACTION	N	No actions are defined for the number pool block object.
M-GET	Y	NPA-NXX-X Range with greatOrEqual, lessOrEqual, equality must be supported for auditing.
M-SET	Y	NPA-NXX-XTN Range with greatOrEqual, lessOrEqual, equality must be supported for Mass Update modify requests.
M-DELETE	N	Single request deletes are sent to the number pool block.

4.2.3 Action Scoping and Filtering Support

For messages sent to any object, the scope and filter will be checked to insure it is appropriate for that object class.

- All M-Actions that relate to subscriptions [and number pool blocks](#) are targeted to [InpSubscriptions](#).
- The ONLY filters allowed by the GDMO for [InpSubscriptions](#) are "equality" and "present" for the single attribute [InpSubscriptionsName](#).
- If any one of the above M-Actions is sent to a [subscriptionVersionNPAC](#) [or numberPoolBlockNPAC](#) object you will get a "no such action" error response from that object.
- If you send a scoped/filters M-Action that whose scope includes objects of class [subscriptionVersionNPAC](#) [or numberPoolBlockNPAC](#), you will receive an error "no

such action" from each object specified by the filter. This could mean 1 for EVERY subscriptionVersion or numberPoolBlock in the NPAC.

4.3 InpLocal-SMS-Name and InpNPAC-SMS-Name Values

The following table (Exhibit 13) shows the values to be used for all currently identified NPAC regions for InpNPAC-SMS-Name in the InpNPAC-SMS object. The InpLocal-SMS-Name for the InpLocal-SMS object will be the service provider ID followed by a dash and the InpNPA-SMS Name (*e.g.*, 9999-Midwest Regional NPAC SMS).

Exhibit 14 - Defined InpLocal-SMS-Name and InpNPAC-SMS-Name Values

NPAC SMS Region	InpNPAC-SMS-Name	NPAC Customer IDs
Mid-Atlantic	Mid-Atlantic Regional NPAC SMS	0001
Midwest	Midwest Regional NPAC SMS	0000
Northeast	Northeast Regional NPAC SMS	0002
Southeast	Southeast Regional NPAC SMS	0003
Southwest	Southwest Regional NPAC SMS	0004
Western	West Regional NPAC SMS	0005
West Coast	West Coast Regional NPAC SMS	0006

4.4 OID Usage Information

4.4.1 OIDs Used for Bind Requests

Value	OID
CMIPUserInfo	2:1:1 (per standards and pp.49 IIS1.5)
CMIPAbortInfo	2:1:1 (per standards and pp.51 IIS1.5)
InpAccessControl	{Inp-attribute 1} = 1:3:6:1:4:1:103:7:0:0:2:1
UserInfo (NpacAssociationInfo)	1:3:6:1:4:1:103:7:0:0:2:105
Application context	2:9:0:0:2 (per standards)

4.4.2 Other OIDs of Interest

Value	OID
AccessControl OID as part of a SMI notification	1:3:6:1:4:1:103:7:0:0:8:1
AccessControl as part of LNP notifications	{Inp-attribute 1} = 1:3:6:1:4:1:103:7:0:0:2:1

4.5 Naming Attributes

Non-zero values are not supported in the auto-instance naming attributes for Local Number Portability objects defined in the IIS.

4.6 Subscription Version M_DELETE Messages

M_DELETE commands are not sent for subscription versions set to old as a result of subsequent porting activity. M_DELETEs for subscription versions are only sent as a result of disconnect or port to original processing. Local SMS systems are responsible for deletion of the subscription versions in their Local SMS database due to the fact that some LSMS implementations may choose to retain old subscription versions in their database.

5.2.1.8 Association Functions

The Association Function(s) must be specified on the initial association request (AARQ PDU). The following table lists the possible Association Functions that can be specified for each of the Association Request Initiators:

Exhibit 16 Association Functions

Association Request Initiator	SOA	Local SMS
Association Function		
SOA Management (Audit and Subscription Version) Classes: <u>InpSubscriptions</u> <u>numberPoolBlock</u> <u>numberPoolBlockNPAC</u> <u>numberPoolBlock</u> <u>numberPoolBlockNPAC</u> <u>subscriptionAudit</u> <u>subscriptionVersion</u> <u>subscriptionVersionNPAC</u>	X	
Service Provider and Network Data Management Classes: <u>InpNetwork</u> <u>InpNPAC-SMS</u> <u>InpServiceProvs</u> <u>IsmsFilterNPA-NXX</u> <u>serviceProv</u> <u>serviceProvLRN</u> <u>serviceProvNetwork</u> <u>serviceProv-NPA-NXX</u> <u>serviceProvNPA-NXX-X</u> <u>serviceProvNPA-NXX-X</u>	X	X
Network and Subscription Data Download Classes: <u>InpNetwork</u> <u>InpSubscriptions</u>		X
Query Classes: All		X

The association functions specified upon association are stored. Then all subsequent operations performed by that associations are then validated against that data to verify that they are 'legal'. All outbound messages from the NPAC are also validated against the association functions and if a service provider does not have the correct masking set, they will not receive the transmission. Note that the multiple Association Functions can be specified for an association. For example, a Local SMS can establish an association for both the process audit and network and subscription data download association functions.

5.3.4 Resynchronization

The SOA and Local SMS associations are viewed to be permanent connections by the NPAC SMS. Thus when the association is broken for any reason, the system connecting to the NPAC SMS must assume responsibility to resynchronize themselves with the NPAC SMS. One association should be established for recovery and no other associations should be established in normal mode until recovery is complete.

5.3.4.1 Local SMS Resynchronization

To resynchronize itself, the Local SMS starts by setting the recoveryMode flag of the access control parameter. This flag signals the NPAC SMS to hold all data updates to this Local SMS. The Local SMS should then request the downloads it needs. Once this is complete, the Local SMS should issue the InpRecoveryComplete action to turn off the recoveryMode flag and receive back any other updates that have occurred since the association was established.

HS Chapter 2-5 Updates per 11/09/98

- 2.3.3 Add number pool blocks to paragraph about Notifications.
- 2.4.1 Insert “data”. Remove “and optional local number portability type”.
- 4.1.1 Exhibit 7 Number Pool Block Create – Change referenced object to numberPoolBlock.
- 4.1.1 Exhibit 7 Number Pool Block Query/LSMS – Change to numberPoolBlockNPAC
- 4.1.2 Exhibit 8 numberPoolBlock – Add “interface”. Add EDR Flag.
- 4.1.2 Exhibit 8 serviceProvNPA-NXX-X – Change update information to NPAC SMS only. Specify flag name.
- 4.1.3 Exhibit 9 numberPoolBlockHolderSPID – Change to “service provider ID of the block holder”.
- 4.1.3 Exhibit 9 numberPoolBlockSOA-Origination – Added “created the object”.
- 4.1.3 Exhibit 9 serviceProvNPA-NXX-X-EffectiveTimeStamp – Remove “is available for LNP”. Add “the date the block holder service provider assumes responsibility of the block TN-Range.
- 4.1.5 Exhibit 11 subscriptionVersionNew-NPA-NXX – Add “creation of NPA-NXX-X”.
- 4.1.5 Exhibit 11 subscriptionVersionStatusAttributeValueChange – Add “and”.
- 4.2.2 Add to 3rd bullet: No query will be supported that requests both object types at the same time.
- 4.2.2 Exhibit 12 – Break into 2 exhibits. Add NPA-NXX-X Range to number pool block exhibit. Fix “modify” s/b “query” and “delete”
- 5.2.1.8 Add number pool blocks to association function table.