
NetPilot™-STP Interface for Administration of STP-Based Local Number Portability (LNP) Translations

User Program Layer (UPL) Application Message Descriptions and Functional Requirements

Contents

1.	Introduction.....	1-1
1.1	Purpose and Scope	1-1
1.2	Target Audience	1-1
1.3	Related Documents	1-1
1.4	Structure and Use of This Document.....	1-2
1.5	Requirements Terminology.....	1-3
1.6	Requirement Labeling Conventions.....	1-3
1.6.1	Numbering of Requirements and Related Objects.....	1-3
1.6.2	Requirement, Conditional Requirement, and Objective Object Identification	1-4
2.	Background, Motivation and General Information.....	2-1
2.1	Local Number Portability (LNP)	2-1
2.1.1	General	2-1
2.1.2	Background - Regulatory Environment and Numbering Plan.....	2-1
2.1.3	LNP Terminology	2-2
2.1.4	LNP Architecture Assumptions	2-3
2.1.5	LNP Network Elements	2-4
2.1.6	LNP Processing for Call Completion.....	2-5
2.1.7	LNP Message Relay Processing To Support Vertical Service Operation.....	2-6
2.1.7.1	The Need for MR Processing	2-6
2.1.7.2	LNP MR Functionality	2-7
2.1.7.3	MR Network Architecture and STP Implementation Alternatives.....	2-10
2.1.7.3.1	Centralized Dedicated MRP STPs.....	2-10
2.1.7.3.2	Centralized (But Not Dedicated) MRP STPs	2-12
2.1.7.3.3	Fully Distributed MR Function Collocated With Conventional GTTs.....	2-13
2.2	STP-Based Translations for LNP.....	2-14
2.2.1	Motivation and Rationale for New LNP Translations at STPs.....	2-14
2.2.1.1	Lack of Industry Requirements for LNP Translations Data.....	2-14

2.2.1.2	Working Assumptions Regarding the MR Translations..	2-15
2.2.1.3	Working Assumptions Regarding the LRN Database Function	2-21
2.2.2	Overview of LNP Translation Data Tables.....	2-22
2.2.2.1	LNP Message Relay Translation Types/Capability Codes	2-23
2.2.2.2	LNP Message Relay 10-Digit Translations	2-24
2.2.2.3	Mated/Replicated SCCP Applications.....	2-25
2.2.2.4	LNP Message Relay 6-Digit Default Translations	2-27
2.2.2.5	LNP Message Relay Default Translation Type Mapping (TTM)	2-29
2.2.2.6	LNP LRN Call Routing Translations	2-32
2.2.3	Relationships and Process Flows for STP Translations.....	2-33
2.2.3.1	GTT and MR Process Flows.....	2-33
2.2.3.2	LRN Process Flows	2-38
2.3	Proposed Operations Architecture	2-39
3.	User View of STP-Based LNP Translations.....	3-1
3.1	General	3-1
3.2	NetPilot RC&V Data Model for LNP	3-1
3.2.1	Data Description Conventions	3-1
3.2.2	LNP Data Entity Set Specifications	3-2
3.2.2.1	T. LNP MR TT/CAPC.....	3-2
3.2.2.2	U. LNP MR 10-DIGIT TRANSLATIONS	3-4
3.2.2.3	V. MATED/REPLICATED SCCP APPLICATION.....	3-10
3.2.2.4	W. LNP MR 6-DIGIT DEFAULT TRANSLATIONS ...	3-12
3.2.2.5	X. LNP MR DEFAULT TRANSLATION TYPE MAPPING (TTM)	3-16
3.2.2.6	Y. LNP LRN CALL ROUTING TRANSLATION	3-19
3.2.3	Data Operations Descriptions	3-21
3.3	Requirements for STP Support of RC&V Data Entity Sets.....	3-22
4.	RC&V Message Specifications.....	4-1
4.1	Recent Change Messages	4-1
4.1.1	Add LNP Message Relay Translation Type/Capability Code	4-7
4.1.2	Delete LNP Message Relay Translation Type/Capability Code.....	4-12
4.1.3	Change LNP Message Relay Capability Code	4-16
4.1.4	Update LNP 10-Digit MR (and LRN) Translations.....	4-21
4.1.5	Delete LNP 10-Digit MR (and LRN) Translations.....	4-37
4.1.6	Add SCCP Mated/Replicated Application.....	4-47
4.1.7	Delete SCCP Mated/Replicated Applications.....	4-48
4.1.8	Change SCCP Mated/Replicated Application Attributes	4-49
4.1.9	Add LNP Message Relay 6-Digit Default Translations.....	4-50
4.1.10	Delete LNP Message Relay 6-Digit Default Translations	4-51
4.1.11	Change LNP Message Relay 6-Digit Default Translations	4-52

4.1.12	Add LNP Message Relay Default Translation Type Mapping	4-53
4.1.13	Delete LNP Message Relay Default Translation Type Mapping	4-54
4.1.14	Change LNP Message Relay Default Translation Type Mapping ...	4-55
4.1.15	Update LNP Call Routing (LRN) Translations.....	4-56
4.1.16	Delete LNP Call Routing (LRN) Translations.....	4-64
4.2	Verify Messages	4-73
4.2.1	Verify LNP Message Relay Translation Types/Capability Codes...	4-75
4.2.2	Verify LNP 10-Digit Message Relay (and LRN) Translations.....	4-79
4.2.3	Verify SCCP Mated/Replicated Applications.....	4-95
4.2.4	Verify LNP Message Relay 6-Digit Default Translations	4-96
4.2.5	Verify LNP Message Relay (MR) Default Translation Type Mapping	4-97
4.2.6	Verify LNP Call Routing (LRN) Translations.....	4-98
4.3	Modifications to Existing GTT Validations.....	4-109
5.	On-Occurrence Autonomous Messages.....	5-1
6.	Data Communications and Lower-Layer Interface Support	6-1
7.	Performance and Capacity	7-1
7.1	Definitions	7-1
7.2	Performance Requirements and Objectives	7-2
7.3	Additional Interface Performance Considerations	7-3
8.	Phased Implementation Plans	8-1
8.1	Release 2.0 Candidate Message Subset	8-1
8.2	Future-Releases Candidate Message Subset	8-1
	Requirements Object List	ROL-1
	Requirements Object Index	ROI-1
	References	References-1

List of Figures

Figure 2-1.	LNP Call Completion Example - SCP LRN Data Base	2-6
Figure 2-2.	LNP Message Relay Processing - CLASS Example	2-9
Figure 2-3.	Example of a Pure Centralized Message Relay Architecture With 2 Dedicated Regional MRP STP Pairs	2-11
Figure 2-4.	Example of MR Functions Centralized at Regional STP Pairs Collocated With Regional GTT Processing	2-12
Figure 2-5.	Example of Fully Distributed Message Relay Architecture: MR Function Collocated With Conventional GTTs at Regional and Local STPs	2-13
Figure 2-6.	Assumed STP Process Flow for GTTs and LNP Message Relay Translations Under the NetPilot Data Model	2-34
Figure 2-7.	Assumed STP/SCP Combined Node Process Flow for GTTs and LRN Call Routing Data Base Translations Under the NetPilot Data Model	2-39
Figure 2-8.	Operations Architecture for Updates of Subscription-Based LNP Translations at STPs	2-40
Figure 4-1.	Validation of TN-Range Inputs for the UPD-LNP-10DT Command	4-32
Figure 4-2.	Validation of TN-Range Inputs for the DLT-LNP-10DT Command With Range Treatment E (Exact Match)	4-42
Figure 4-3.	Validation of TN-Range Inputs for the DLT-LNP-10DT Command With Range Treatment A (Any/All In Range)	4-43
Figure 4-4.	Validation of TN-Range Inputs for the UPD-LNP-LRN Command	4-60
Figure 4-5.	Validation of TN-Range Inputs for the DLT-LNP-LRN Command With Range Treatment E (Exact Match)	4-68
Figure 4-6.	Validation of TN-Range Inputs for the DLT-LNP-LRN Command With Range Treatment A (Any/All In Range)	4-69
Figure 4-7.	Treatment of TN-Range Inputs for the VFY-LNP-10DT Command With Range Treatment E (Exact Match)	4-84
Figure 4-8.	Treatment of TN-Range Inputs for the VFY-LNP-10DT Command With Range Treatment A (Any/All)	4-85
Figure 4-9.	Treatment of TN-Range Inputs for the VFY-LNP-LRN Command With Range Treatment E (Exact Match)	4-101
Figure 4-10.	Treatment of TN-Range Inputs for the VFY-LNP-LRN Command With Range Treatment A (Any/All)	4-102

List of Tables

Table 2-1.	LNP Message Relay Translation Types/Capability Codes (Conceptual View).....	2-23
Table 2-2.	LNP Message Relay 10-Digit Translations (Conceptual View)	2-24
Table 2-3.	Mated/Replicated SCCP Applications (Conceptual View).....	2-25
Table 2-4.	LNP Message Relay 6-Digit Default Translations (Conceptual View).....	2-27
Table 2-5.	LNP Message Relay Default Translation Type Mapping (TTM) (Conceptual View).....	2-29
Table 2-6.	LNP LRN Call Routing Translations (Conceptual View).....	2-32
Table 4-1.	Summary of LNP RC Messages	4-1
Table 4-2.	Allowable Input Combinations for the DLT-LNP-10DT Command	4-40
Table 4-3.	Allowable Input Combinations for the DLT-LNP-LRN Command	4-66
Table 4-4.	Summary of LNP Verify Messages.....	4-73
Table 7-1.	Performance Comparison of Data Link Speeds and STP Digestion Time for a Five-Minute 25-tps Burst (7500 Offered Transactions)	7-4