A call processing for number portability between VoIP and wired line by using NPSS

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NP

I. Introduction

Electronics and Telecommunications Research Institute

I-1. Introduction of number portability

- **NP(Number Portability)**
  - Guarantee same number when we change telephone operator
  - Stimulate fair competition between telephone operators
  - For the profit of user

- **LNP(Local Number Portability)**
  - Number Portability between local line
  - Implemented at January 1 2004 by RCF in Korea
  - Call Processing of NP of SMS(short message service) is started at January 1 2007 by QoR in Korea

- **MNP (Mobile Number Portability)**
  - Number Portability between cellular phone
  - Implemented at January 1 2004

- **NP between VoIP and wired line**
  - Implementation date: January 1 2008(planned by government)

- **Special feature of standard for NP in Korea**
  - Dual standard of ACQ and QoR
  - Hybrid standard of RCF and QoR for data and voice call

Ⅰ-2. Introduction of number portability

■ Criterion of realization of Number portability

  ○ Guarantee used communication service

  ○ don't change exsiting dialing method of caller

  ○ don't change the established scheme of telephone number

  ○ No more use of telephone number

  ○ Guarantee of communication quality and credibility

  ○ No approval of monopoly profit of NP realization scheme

  ○ Area and service portability

  ○ Minimize the set-up cost of NP system

II. Number Portability related technology

II-1. Technical consideration of NP

- **Addressing method**
 - ○ **Separated Addressing : Routing No. and Subscriber No.**
  - ○ **Concatenating Addressing : RN-prefix+SN**
  - ○ **Routing Number of Korea**
    - **2G RN format: 01Y-9000-0000(11digit)**
    - **3G RN format: 010-2Y00-0000(11digit),**
    - **Frephone service RN format: freephone service number+operator's identifying number (3digit)+0000**
    - **VoIP RN format: 070-NYYY-0000(11digit)**
    - **Local phone RN format: area code(3digit, In case of Seoul 002) + operator's identifying number(NYYY: 4digit)+0000**
    - **※ Y:0~9, X: 1~9, N:2~9**
- **LNP technical scheme**
  - ○ **ACQ(All Call Query)**
  - ○ **QoR(Query on Release)**

# II-2. Concept of Number Portability-ACQ

○ **Make a query on all number blocks that can port out.**

○ **Not dependent on any other network to acquire routing information**
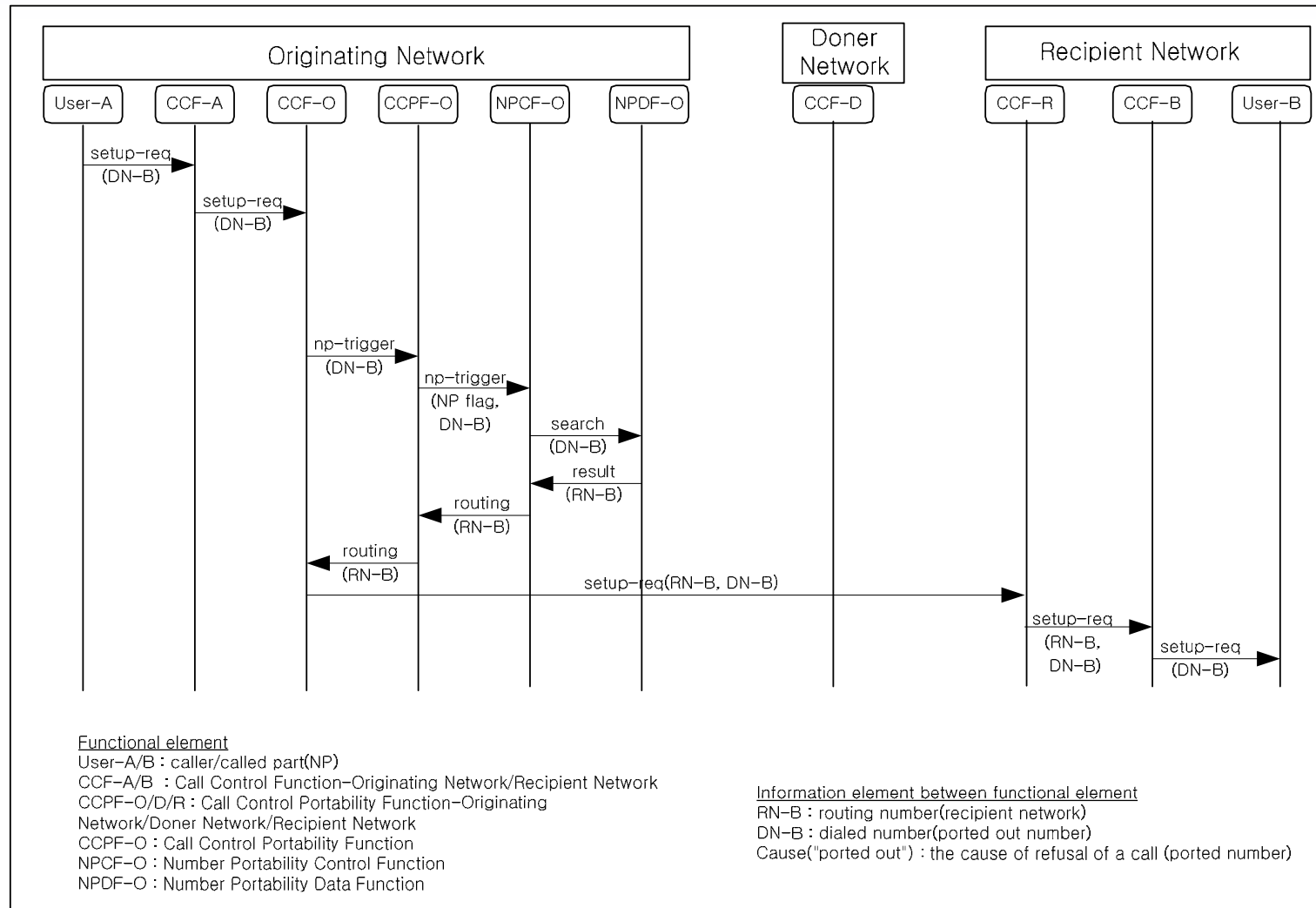
○ **Originating network control routing**
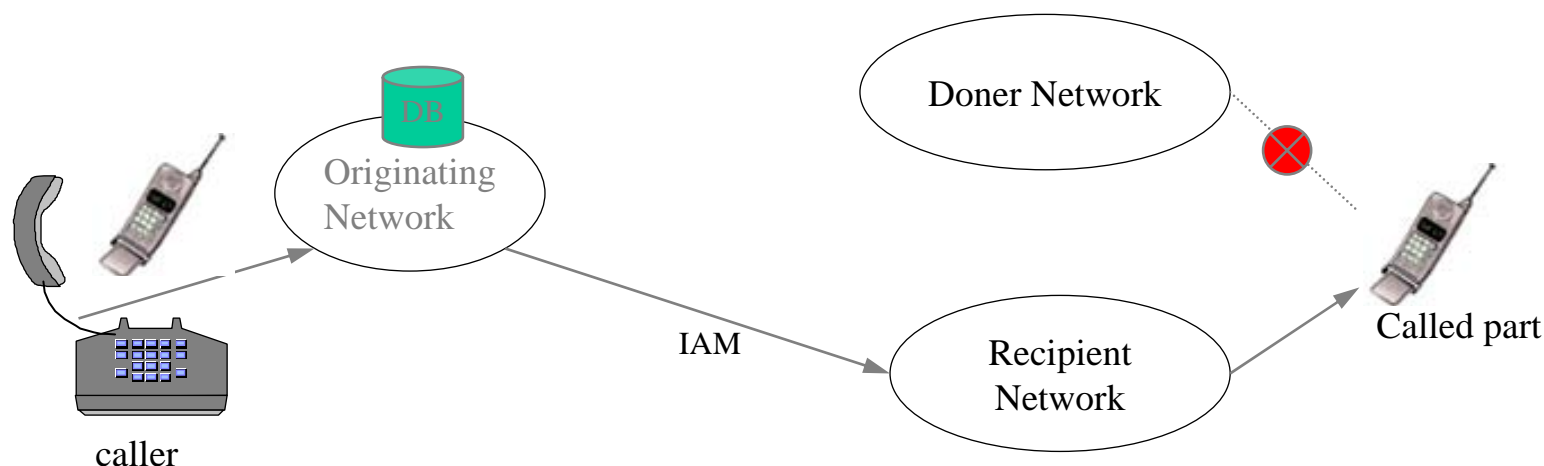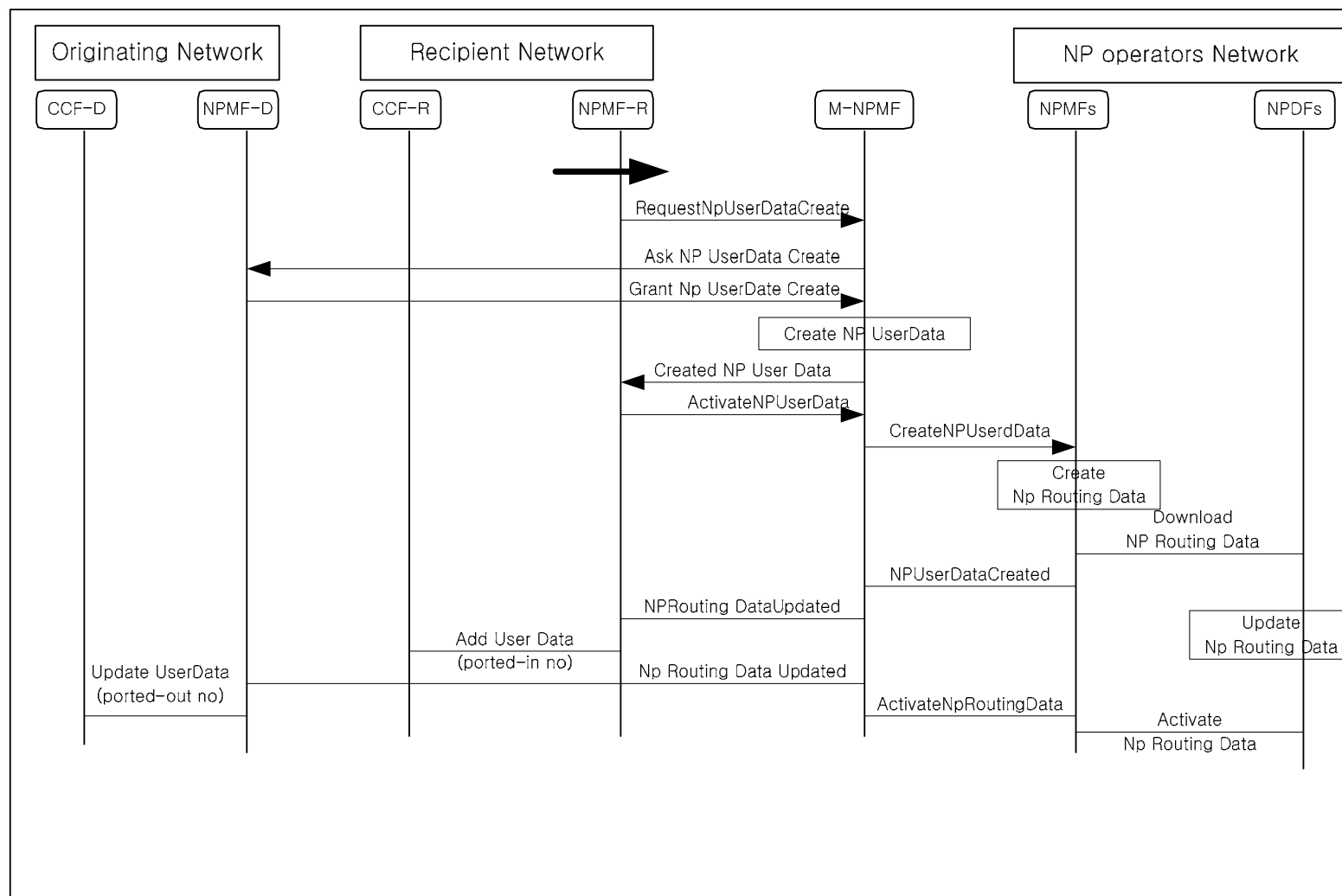
II-3. concepts of Number portability -QoR

○ **Query on NPDB to acquire RN after received Release message from doner network**

○ **Dependent on any other network to acquire routing information**
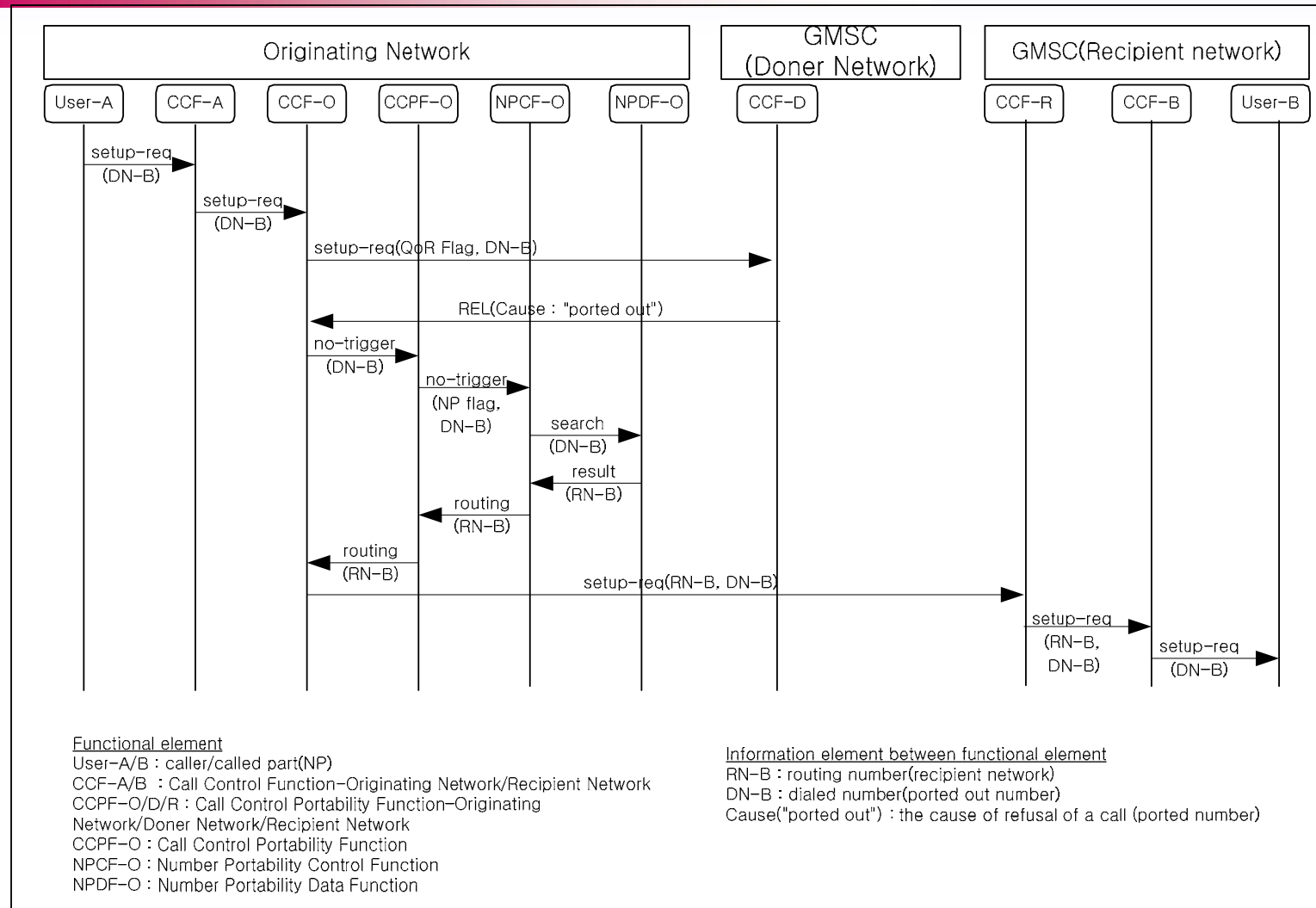
○ **Originating network and doner network control routing**
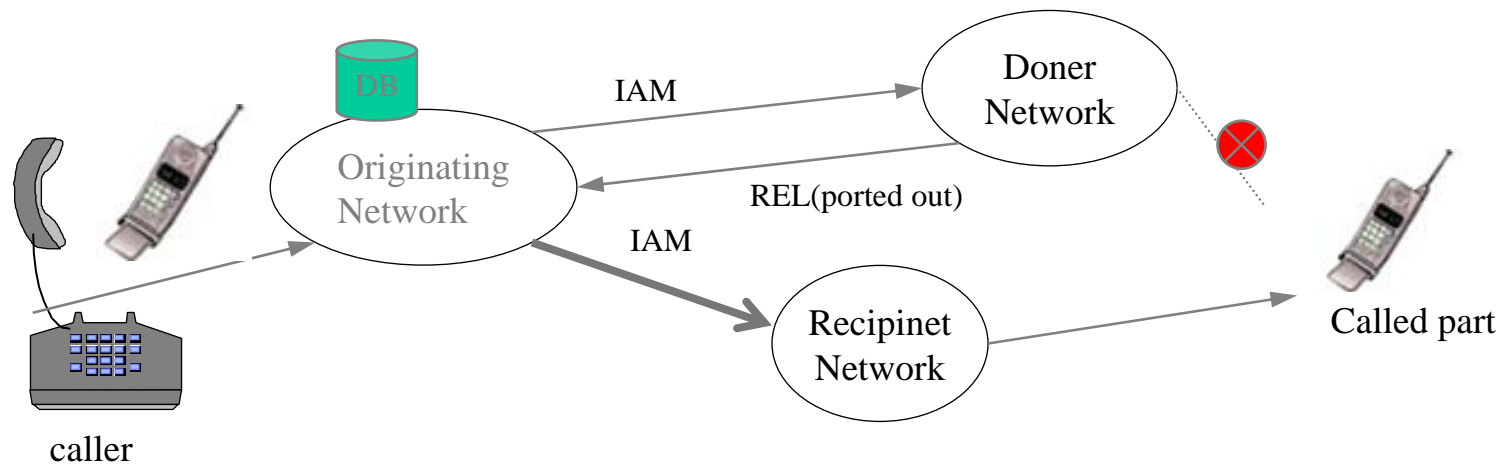
II-4. call processing information flow of MNP-ACQ

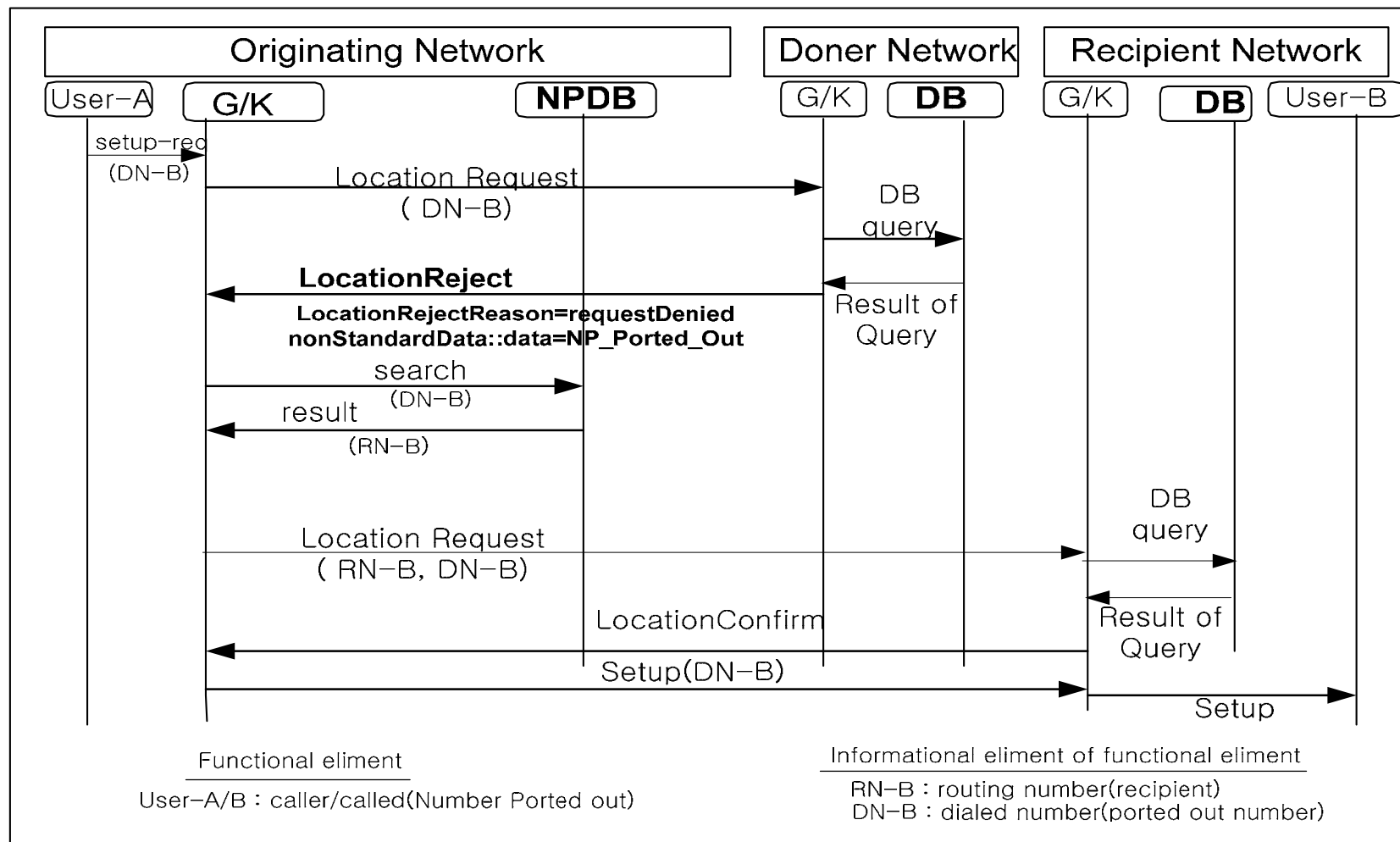# II-5. management information flow of NP
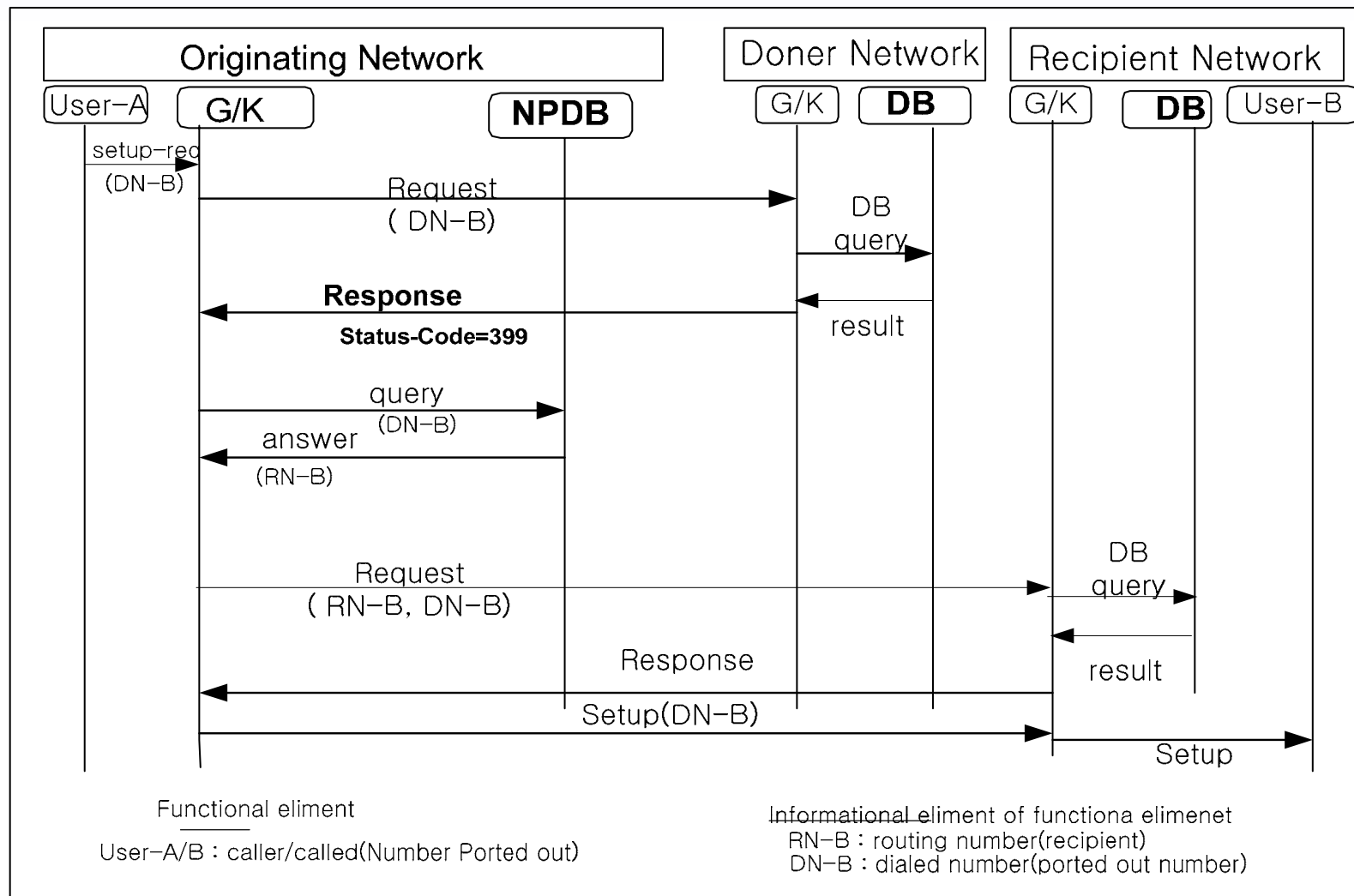
II-6. NP call processing information flow of QoR

Functional element
User-A/B : caller/called part(NP)
CCF-A/B : Call Control Function-Originating Network/Recipient Network
CCPF-O/D/R : Call Control Portability Function-Originating
Network/Doner Network/Recipient Network
CCPF-O : Call Control Portability Function
NPCF-O : Number Portability Control Function
NPDF-O : Number Portability Data Function

Information element between functional element
RN-B : routing number(recipient network)
DN-B : dialed number(ported out number)
Cause("ported out") : the cause of refusal of a call (ported number)

III. VoIP Number Portability

IV. NP call procsssing by using NPSS

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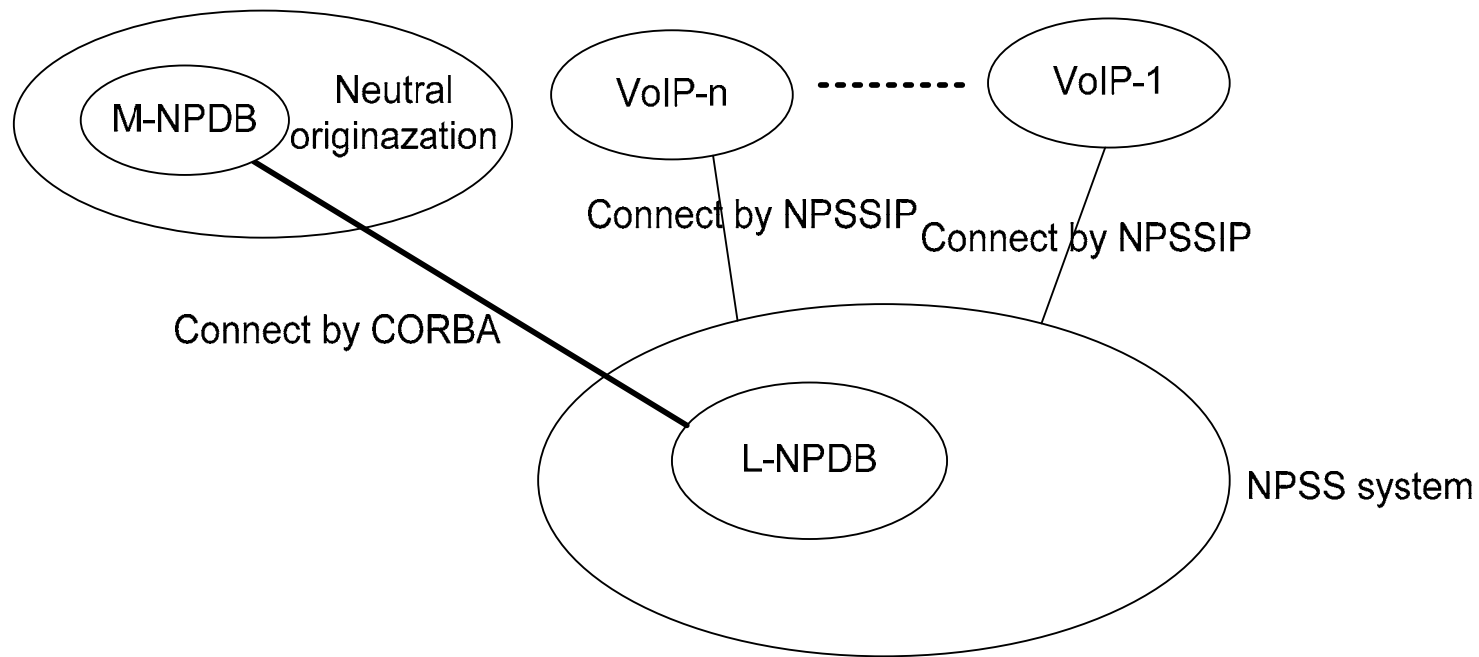
IV-2. NPSS Interface Packet(NPSSIP)

No	ITEM	Type	length	offset	VoIP사업자	NPSS	비 고
1	NPSSIP length	Num	2	0	○		NPSSIP length except this field
2	Originator of this NPSSIP	Char	3	2	○		VoIP operator name given by NPSS
3	Password of originator of this NPSSIP	Char	10	5	○		
4	Date of query	Num	8	15	○		YYYYMMDD
5	Time of query	Num	6	23	○		HHMMSS
6	Dialed number	NUM	11	29	○		Dialed number which is queried on NPSS by VoIP operator
7	Serial number	Num	8	40	○		daily Unique number
8	Business classification	Char	4	48	○	O	0000: NPDB query, 0001: NPSS response, For later use
9	Routing number	NUM	11	52		O	If dn does not exist, set as 00000000000
10	Response code	Char	4	63		O	000000: missing number, 000001: general response
11	Reserved	Char	10	67			Reserved for future
-	Total	-	77	77	-	-	-
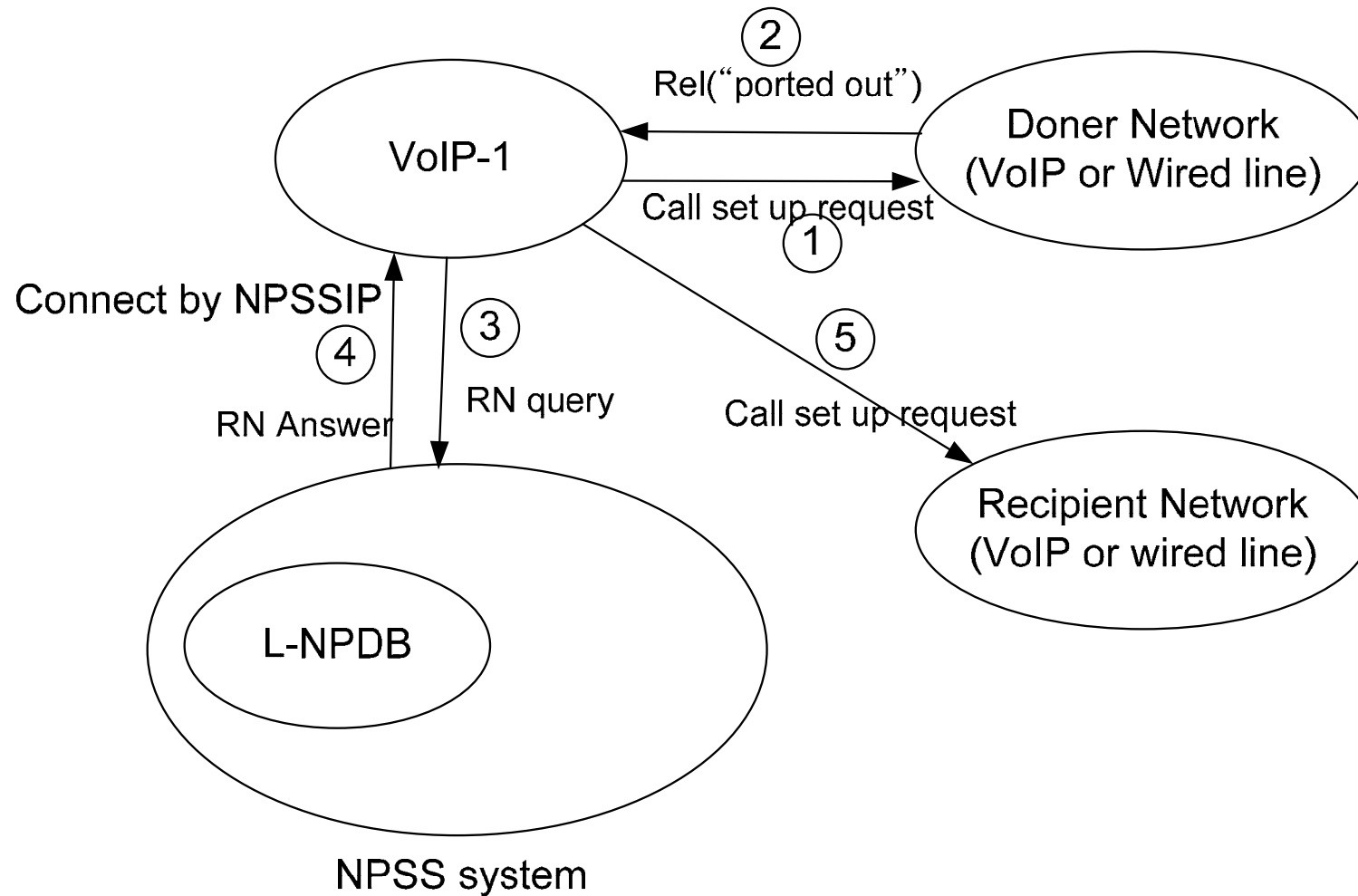
IV-4. signal flow of call processing by using NPSS

Functional element
User-A/B : caller/called part(NP)
CCF-A/B : Call Control Function-Originating Network/Recipient Network
CCPF-O/D/R : Call Control Portability Function-Originating Network/Doner Network/Recipient Network
CCPF-O : Call Control Portability Function
NPCF-O : Number Portability Control Function
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Information element between functional element
RN-B : routing number(recipient network)
DN-B : dialed number(ported out number)
Cause("ported out") : the cause of refusal of a call (ported number)

V. Remained Issue which is related to VoIP NP

- the object of NP
- Scheme of NP
  - L->V, V->V, V->M
- Technical method of NP
  - RCF
  - QoR
  - RCF + QoR