



Chunghwa Telecom

Mobile Service Provisioning Interface Specification

CHT Mobile Business Group - Billing Department

Document version: Draft 0.16

Last modified: Aug 2, 2013

**Revision history**

Rev.	Date	Name	Reason for revision
Draft 0.01	October 26, 2007	Ying-Da Wu	Initial version that introduce the specification of XML interface for Service Activation.
Draft 0.02	October 30, 2007	Chun-Yen Wang	Add more specification details in Chapter 2 and Chapter 4.
Draft 0.03	October 31, 2007	Ying-Da Wu	Add more detail information and adjust XML schema.
Draft 0.04	January 2, 2008	Pei-Tang Huang	Update the Request XML Schema. Add some authentication related error codes.
Draft 0.05	March 18, 2008	Chun-Yen Wang Hsun-Cheng Wu Ying-Da Wu Pei-Tang Huang	Add more detailed information about provisioning parameters in Chapter 4. Update XML schemas and error codes.
Draft 0.06	March 27, 2008	Chun-Yen Wang Ying-Da Wu Pei-Tang Huang	Add Partial MNP information including procedure and interface in Chapter 5. The session “Operation Information Management” in Chapter 4 is extracted as Chapter 6. Change key word ‘CTT’ to ‘TTT’.
Draft 0.07	April 10, 2008	Chun-Yen Wang Ying-Da Wu	Modify information about provisioning parameters in Chapter 4. Modify Partial MNP information including procedure and interface in Chapter 5.
Draft 0.08	April 22, 2008	Ying-Da Wu Chun-Yen Wang Pei-Tang Huang	Modify description in section 2.3, 3.2, 5.2 and appendix A. Modify description in chapter 4 and add section 4.3 to describe parameters in section 4.1 and 4.2.
Draft 0.09	May 8 ~ 26, 2008	Chun-Yen Wang Ying-Da Wu	Chapter 5, Error Acknowledgement Message for Exception Session 5.3.1, Interface in Every Procedure
Draft 0.10	Dec. 1 ~ 25, 2008	Chun-Yen Wang	Chapter 6, Special MNP Specification
Draft 0.11	Apr. 23~30, 2009	Cheng-Wei Yu Chun-Yen Wang Ying-Da Wu	Chapter 6, Special MNP Specification Chapter 7, Add System Architecture
Draft 0.12	May 4, 2009	Chun-Yen Wang	To retouch statement and to revise grammar.
Draft 0.13	September 2, 2009	Pei-Tang Huang Chun-Yen Wang	Corrections : Chapter 4 about the parameter “ISMNP”
Draft 0.14	December 21, 2009	Chun-Yen Wang	Additions : Chapter 6.6.2 Procedure Exception Issues 5 and 6.
	July 14, 2010	Chun-Yen Wang	Additions : Chapter 7.2 Interoperability Diagram about Fulfillment.
Draft 0.15	January 21, 2011	Chun-Yen Wang Pei-Chi Chen	Additions : Change chapter 4.2 to 4.2.1 and add chapter 4.2.2, create new item type



			“ValueAddedService”.
March 21, 2011	Chun-Yen Wang		Modify : Change chapter 3.4.1 Data Element of Provisioning Request, change text size of SIMCardNO from 19 to 19~20.
May 18, 2011	Pei-Chi Chen		Modify: Change chapter 4.1.1 Create Subscriber, add the parameter ‘VOICE’ at category 4.
Draft 0.16	Aug 02, 2013	Pei-Chi Chen	Modify: Change chapter 4.1.1 Create Subscriber, add the category 5.



TABLE OF CONTENTS

1 About This Document	5
1.1 Purpose	5
1.2 Scope	5
1.3 How This Document Is Organized	5
2 Provisioning System Overview	6
2.1 Architecture Overview	6
2.2 Functional Overview	6
2.3 Protocol Overview	6
3 Provisioning Interface Information	8
3.1 Description	8
3.2 Interface Design Goals	8
3.3 XML Schema	9
3.4 Data Elements	15
4 Message and Parameter Definitions for Provisioning	21
4.1 Subscriber Management	21
4.2 Service Management	24
4.3 Parameter Definition	27
4.4 Resource Inventory Mechanism	28
5 Message Exchange procedures for Mobile Number Portability (MNP)	29
5.1 Overview of Mobile Number Portability in Taiwan	30
5.2 CHT MNP Procedures for MVNO partner	33
5.3 Interface of CHT MNP Procedures for MVNO partner	41
5.4 Data Item Definition	43
6 Service of MNP between MVNO partner and CHT	57
6.1 Overview of MVNO Homogeneous Special NP in Chunghwa Telecom	57
6.2 Procedures of MVNO Homogeneous Special NP	57
6.3 Interfaces of MVNO Homogeneous Special NP	64
6.4 Data Item Definition	65
6.5 Exception Handling Process for MVNO Homogeneous Special NP	67
7 Operation Information Management	70
7.1 Interoperability Architecture of Operation Support System	70
7.2 Interoperability Diagram about Fulfillment	71
8 Glossary	72
Appendix A.	74
A.1 Error Code and Status Code Definition for Provisioning	74
A.2 Error Code and Status Code Definition for MNP	75



Appendix B.	76
B.1 MVNO partner ID assigned List	76



1 About This Document

1.1 Purpose

This document introduces the Chunghwa Telecom (CHT) Mobile Service Interface adapts to CHT Mobile Service Agent System. The CHT Mobile Service Provisioning Interface provides the means for actors to provision subscribers whose services are based on CHT network.

1.2 Scope

This document specifies the XML schema of CHT Mobile Service Provisioning Interface, and lists supported services.

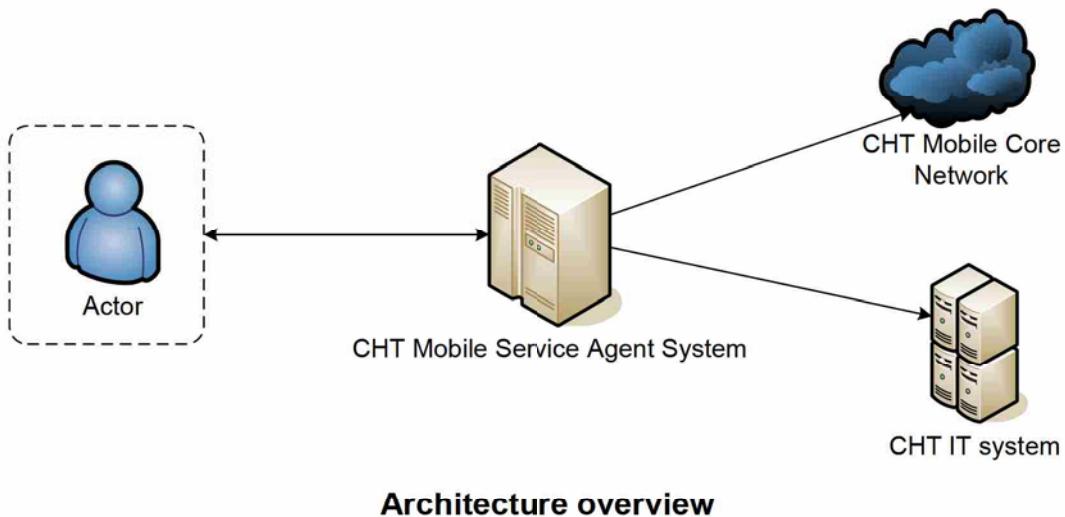
1.3 How This Document Is Organized

Section	Heading	Description
1.	About this document	Describes the document purpose and organization.
2.	System overview	Describes the business processes of the interface.
3.	Provisioning Interface information	Describes the technical details of the interface.
4.	Message and parameter definitions	Provides parameter definitions for message exchange of the interface.
5.	Message Exchange Procedure for Mobile Number Portability (MNP)	Describes the Mobile Number Portability procedure between the operator (MVNO) partners and other operators. It also shows “Normal MNP”.
6.	Service of MNP between MVNO partner and CHT	Describes the Mobile Number Portability procedure between the operator (MVNO) partners and CHT operators. It also shows “Special MNP”.
7.	Operation Information Management	Describes the operation information exchange procedure and interface.
8.	Glossary	Defines terminologies used in this document.
A.	Appendix A	Details of the error and status codes returned by the interface.

2 Provisioning System Overview

2.1 Architecture Overview

The CHT Mobile Service Agent System works as an adapter system implementing CHT Mobile Service Provisioning Interface and bridges external systems of actors and the infrastructure of CHT. Actors must implement their requests with CHT Mobile Service Provisioning Interface and send the requests to CHT Mobile Service Agent System. The following graph illustrates the simplified architecture mentioned above.



2.2 Functional Overview

The CHT Mobile Service Provisioning Interface is designed to:

- Provides a mechanism for external systems outside of CHT network to deliver provisioning requests to CHT Mobile Service Agent System.
- Provides a mechanism for CHT Mobile Service Agent System to deliver provisioning responses to external systems.

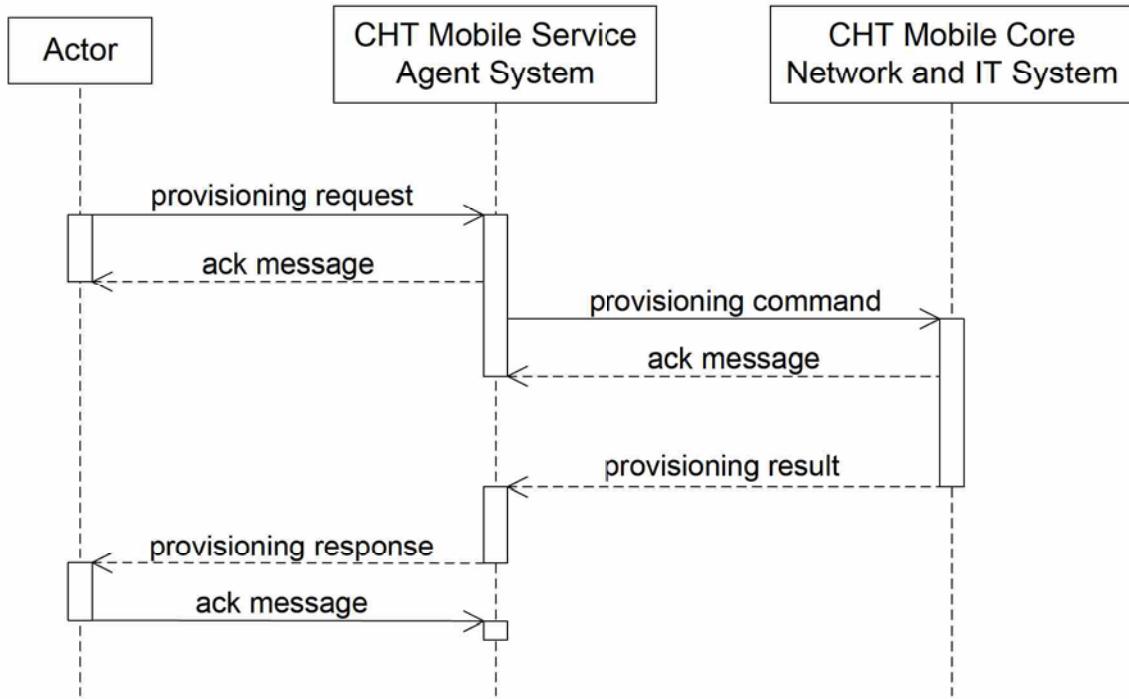
2.3 Protocol Overview

The provisioning requests and responses implementing CHT Mobile Service Provisioning Interface could be delivered by HTTPS. Message exchanging uses acknowledgement message to guarantee the correctness of message exchange.

The features of provisioning message exchanges are listed as below:

- Provisioning requests and responses are XML over HTTPs.
- Use asynchronous provisioning message exchange.
- No transaction, no rollback, and stateless.

- ♦ There should be at most one subscriber and one service item in single provisioning request.
 - ♦ Authentication functionality of HTTPs header is unused.
 - ♦ Usually, the Actor will receive acknowledgement in 3 minutes after provisioning request is sent.
- Actually, using HTTP in VPN environment has took the place of simple HTTPs.



Asynchronous message exchange overview



3 Provisioning Interface Information

3.1 Description

The CHT Mobile Service Provisioning Interface provides a general data structure to store provisioning information. This interface includes 3 parts: provisioning request, provisioning response, and provisioning acknowledgement.

Provisioning request is sent from actors to CHT Mobile Service Agent System, including sender information, subscriber information, and service information. Sender information is used to authenticate the message sender of MVNO partner. Subscriber information is used to identify the target of provisioning operation. Service information is used to describe which service should be provisioned.

Provisioning response is sent from CHT Mobile Service Agent System to actors, including sender information and provisioning result of corresponding provisioning request. Sender information in response indicates the sender of CHT, and MVNO should use this information to authenticate the sender. If the provisioning response indicates an error, actors are responsible for interpreting the error message and sending an appropriate response, such as resubmit, bug report, etc.

Provisioning acknowledgement is used in asynchronous message exchange mode as a message receipt. This message could be sent from CHT Mobile Service Agent System to actors or from actors to CHT Mobile Service Agent System.

If provisioning acknowledgement and response return a code indicating error, actors should analyze the error code and error message, and do proper operation. If no acknowledgement replied to actors, actors could resend the same request. In other circumstances which resending request is needed, actors must generate a new serial number of order(OrderNO) for the resent request and send it.

※ Current interface only supports single subscriber and single service in one provisioning request.

3.2 Interface Design Goals

Key requirements driving the design of the CHT Mobile Service Provisioning Interface include:

- ♦ Create subscriber and Activate services.
- ♦ Cancel subscriber and Cancel services.
- ♦ Suspend/Resume services.
- ♦ Modify subscriber information and service attributes.



- Display subscriber information and service attributes.

3.3 XML Schema

The XML schemas describes in this section following the standard of W3C XML Schema (XSDL).

3.3.1 Provisioning Request

Both synchronous and asynchronous message exchange mode use the same Schema of provisioning request. Provisioning request and response should be one-to-one mapping.

```
<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema xmlns:xsd="http://www.w3.org/2001/XMLSchema">
<xsd:element name="ProvisioningRequest">
    <xsd:complexType>
        <xsd:sequence>
            <xsd:element name="OrderNO" minOccurs="1" maxOccurs="1">
                <xsd:simpleType>
                    <xsd:restriction base="xsd:string">
                        <xsd:length value="13"/>
                    </xsd:restriction>
                </xsd:simpleType>
            </xsd:element>
            <xsd:element ref="Sender" minOccurs="1" maxOccurs="1"/>
            <xsd:element name="TimeStamp" type="xsd:string" minOccurs="1" maxOccurs="1"/>
            <xsd:element ref="Subscribers" minOccurs="1" maxOccurs="1"/>
        </xsd:sequence>
    </xsd:complexType>
</xsd:element>
<xsd:element name="Sender">
    <xsd:complexType>
        <xsd:sequence>
            <xsd:element name="Login" minOccurs="1" maxOccurs="1">
                <xsd:simpleType>
                    <xsd:restriction base="xsd:string">
                        <xsd:minLength value="5"/>
                        <xsd:maxLength value="32"/>
                    </xsd:restriction>
                </xsd:simpleType>
            </xsd:element>
            <xsd:element name="Password" minOccurs="1" maxOccurs="1">
                <xsd:simpleType>
                    <xsd:restriction base="xsd:string">
                        <xsd:minLength value="5"/>
                        <xsd:maxLength value="255"/>
                    </xsd:restriction>
                </xsd:simpleType>
            </xsd:element>
        </xsd:sequence>
        <xsd:attribute name="Group" use="required">
            <xsd:simpleType>
                <xsd:restriction base="xsd:string">
                    <xsd:minLength value="5"/>
                    <xsd:maxLength value="32"/>
                </xsd:restriction>
            </xsd:simpleType>
        </xsd:attribute>
    </xsd:complexType>
</xsd:element>
<xsd:element name="Subscribers">
    <xsd:complexType>
        <xsd:sequence>
```



```
        <xsd:element ref="Subscriber" minOccurs="1" maxOccurs="1"/>
    </xsd:sequence>
</xsd:complexType>
</xsd:element>
<xsd:element name="Subscriber">
    <xsd:complexType>
        <xsd:sequence>
            <xsd:element name="MSISDN" minOccurs="1" maxOccurs="1">
                <xsd:simpleType>
                    <xsd:restriction base="xsd:string">
                        <xsd:length value="10"/>
                    </xsd:restriction>
                </xsd:simpleType>
            </xsd:element>
            <xsd:element name="IMSI" minOccurs="1" maxOccurs="1">
                <xsd:simpleType>
                    <xsd:restriction base="xsd:string">
                        <xsd:length value="15"/>
                    </xsd:restriction>
                </xsd:simpleType>
            </xsd:element>
            <xsd:element name="SIMCardNO">
                <xsd:simpleType>
                    <xsd:restriction base="xsd:string">
                        <xsd:minLength value="19"/>
                        <xsd:maxLength value="20"/>
                    </xsd:restriction>
                </xsd:simpleType>
            </xsd:element>
            <xsd:element name="NetworkType">
                <xsd:simpleType>
                    <xsd:restriction base="xsd:string">
                        <xsd:enumeration value="2G"/>
                        <xsd:enumeration value="3G"/>
                    </xsd:restriction>
                </xsd:simpleType>
            </xsd:element>
            <xsd:element name="BillingType">
                <xsd:simpleType>
                    <xsd:restriction base="xsd:string">
                        <xsd:enumeration value="Prepaid"/>
                        <xsd:enumeration value="Postpaid"/>
                    </xsd:restriction>
                </xsd:simpleType>
            </xsd:element>
            <xsd:element ref="Items" minOccurs="1" maxOccurs="1"/>
            <xsd:element ref="SubscriberInfo" minOccurs="0" maxOccurs="1"/>
        </xsd:sequence>
    </xsd:complexType>
</xsd:element>
<xsd:element name="Items">
    <xsd:complexType>
        <xsd:sequence>
            <xsd:element ref="Item" minOccurs="1" maxOccurs="1"/>
        </xsd:sequence>
        <xsd:attribute name="Number" use="required">
            <xsd:simpleType>
                <xsd:restriction base="xsd:positiveInteger">
                    <xsd:maxInclusive value="1"/>
                </xsd:restriction>
            </xsd:simpleType>
        </xsd:attribute>
    </xsd:complexType>
</xsd:element>
<xsd:element name="Item">
    <xsd:complexType>
        <xsd:sequence>
```



```
<xsd:element name="Sequence" minOccurs="1" maxOccurs="1">
    <xsd:simpleType>
        <xsd:restriction base="xsd:positiveInteger">
            <xsd:maxExclusive value="100"/>
        </xsd:restriction>
    </xsd:simpleType>
</xsd:element>
<xsd:element name="Action" minOccurs="1" maxOccurs="1">
    <xsd:simpleType>
        <xsd:restriction base="xsd:string">
            <xsd:enumeration value="A"/>
            <xsd:enumeration value="C"/>
            <xsd:enumeration value="D"/>
            <xsd:enumeration value="M"/>
            <xsd:enumeration value="R"/>
            <xsd:enumeration value="S"/>
        </xsd:restriction>
    </xsd:simpleType>
</xsd:element>
<xsd:element name="ServiceID" minOccurs="1" maxOccurs="1">
    <xsd:simpleType>
        <xsd:restriction base="xsd:string">
            <xsd:length value="3"/>
        </xsd:restriction>
    </xsd:simpleType>
</xsd:element>
<xsd:element name="FeatureID" minOccurs="1" maxOccurs="1">
    <xsd:simpleType>
        <xsd:restriction base="xsd:string">
            <xsd:length value="3"/>
        </xsd:restriction>
    </xsd:simpleType>
</xsd:element>
<xsd:element ref="Parameters" minOccurs="0" maxOccurs="1"/>
</xsd:sequence>
<xsd:attribute name="Type" use="required">
    <xsd:simpleType>
        <xsd:restriction base="xsd:string">
            <xsd:enumeration value="Subscriber"/>
            <xsd:enumeration value="Service"/>
            <xsd:enumeration value="ValueAddedService"/>
        </xsd:restriction>
    </xsd:simpleType>
</xsd:attribute>
</xsd:complexType>
</xsd:element>
<xsd:element name="Parameters">
    <xsd:complexType>
        <xsd:sequence>
            <xsd:element ref="Parameter" maxOccurs="unbounded"/>
        </xsd:sequence>
    </xsd:complexType>
</xsd:element>
<xsd:element name="Parameter">
    <xsd:complexType>
        <xsd:attribute name="Name" use="required">
            <xsd:simpleType>
                <xsd:restriction base="xsd:string">
                    <xsd:minLength value="3"/>
                </xsd:restriction>
            </xsd:simpleType>
        </xsd:attribute>
        <xsd:attribute name="Value" type="xsd:string" use="required"/>
    </xsd:complexType>
</xsd:element>
<xsd:element name="SubscriberInfo">
    <xsd:complexType>
```



```
<xsd:sequence>
    <xsd:element ref="Info" maxOccurs="unbounded"/>
</xsd:sequence>
</xsd:complexType>
</xsd:element>
<xsd:element name="Info">
    <xsd:complexType>
        <xsd:attribute name="Name" use="required">
            <xsd:simpleType>
                <xsd:restriction base="xsd:string">
                    <xsd:minLength value="3"/>
                </xsd:restriction>
            </xsd:simpleType>
        </xsd:attribute>
        <xsd:attribute name="Value" type="xsd:string" use="required"/>
    </xsd:complexType>
</xsd:element>
</xsd:schema>
```

3.3.2 Provisioning Response

Both synchronous and asynchronous message exchange mode use the same Schema of provisioning response. Provisioning request and response should be one-to-one mapping.

```
<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema xmlns:xsd="http://www.w3.org/2001/XMLSchema">
<xsd:element name="ProvisioningResponse">
    <xsd:complexType>
        <xsd:sequence>
            <xsd:element name="OrderNO" minOccurs="1" maxOccurs="1">
                <xsd:simpleType>
                    <xsd:restriction base="xsd:string">
                        <xsd:length value="13"/>
                    </xsd:restriction>
                </xsd:simpleType>
            </xsd:element>
            <xsd:element ref="Sender" minOccurs="1" maxOccurs="1"/>
            <xsd:element name="TimeStamp" type="xsd:string" minOccurs="1" maxOccurs="1"/>
            <xsd:element ref="Subscribers" minOccurs="1" maxOccurs="1"/>
        </xsd:sequence>
    </xsd:complexType>
</xsd:element>
<xsd:element name="Sender">
    <xsd:complexType>
        <xsd:sequence>
            <xsd:element name="Login" minOccurs="1" maxOccurs="1">
                <xsd:simpleType>
                    <xsd:restriction base="xsd:string">
                        <xsd:minLength value="5"/>
                        <xsd:maxLength value="32"/>
                    </xsd:restriction>
                </xsd:simpleType>
            </xsd:element>
            <xsd:element name="Password" minOccurs="1" maxOccurs="1">
                <xsd:simpleType>
                    <xsd:restriction base="xsd:string">
                        <xsd:minLength value="5"/>
                        <xsd:maxLength value="255"/>
                    </xsd:restriction>
                </xsd:simpleType>
            </xsd:element>
        </xsd:sequence>
        <xsd:attribute name="Group" use="required">
            <xsd:simpleType>
                <xsd:restriction base="xsd:string">
                    <xsd:minLength value="5"/>
                </xsd:restriction>
            </xsd:simpleType>
        </xsd:attribute>
    </xsd:complexType>
</xsd:element>
```



```
        <xsd:maxLength value="32"/>
    </xsd:restriction>
</xsd:simpleType>
</xsd:attribute>
</xsd:complexType>
</xsd:element>
<xsd:element name="Subscribers">
    <xsd:complexType>
        <xsd:sequence>
            <xsd:element ref="Subscriber" minOccurs="1" maxOccurs="1"/>
        </xsd:sequence>
    </xsd:complexType>
</xsd:element>
<xsd:element name="Subscriber">
    <xsd:complexType>
        <xsd:sequence>
            <xsd:element name="MSISDN" minOccurs="1" maxOccurs="1">
                <xsd:simpleType>
                    <xsd:restriction base="xsd:string">
                        <xsd:length value="10"/>
                    </xsd:restriction>
                </xsd:simpleType>
            </xsd:element>
            <xsd:element name="IMSI" minOccurs="1" maxOccurs="1">
                <xsd:simpleType>
                    <xsd:restriction base="xsd:string">
                        <xsd:length value="15"/>
                    </xsd:restriction>
                </xsd:simpleType>
            </xsd:element>
            <xsd:element name="SIMCardNO">
                <xsd:simpleType>
                    <xsd:restriction base="xsd:string">
                        <xsd:minLength value="19"/>
                        <xsd:maxLength value="20"/>
                    </xsd:restriction>
                </xsd:simpleType>
            </xsd:element>
            <xsd:element name="NetworkType">
                <xsd:simpleType>
                    <xsd:restriction base="xsd:string">
                        <xsd:enumeration value="2G"/>
                        <xsd:enumeration value="3G"/>
                    </xsd:restriction>
                </xsd:simpleType>
            </xsd:element>
            <xsd:element name="BillingType">
                <xsd:simpleType>
                    <xsd:restriction base="xsd:string">
                        <xsd:enumeration value="Prepaid"/>
                        <xsd:enumeration value="Postpaid"/>
                    </xsd:restriction>
                </xsd:simpleType>
            </xsd:element>
            <xsd:element ref="Items" minOccurs="1" maxOccurs="1"/>
        </xsd:sequence>
    </xsd:complexType>
</xsd:element>
<xsd:element name="Items">
    <xsd:complexType>
        <xsd:sequence>
            <xsd:element ref="Item" minOccurs="1" maxOccurs="1"/>
        </xsd:sequence>
        <xsd:attribute name="Number" use="required">
            <xsd:simpleType>
                <xsd:restriction base="xsd:positiveInteger">
                    <xsd:maxInclusive value="1"/>
                </xsd:restriction>
            </xsd:simpleType>
        </xsd:attribute>
    </xsd:complexType>

```



```
</xsd:restriction>
</xsd:simpleType>
</xsd:attribute>
</xsd:complexType>
</xsd:element>
<xsd:element name="Item">
  <xsd:complexType>
    <xsd:sequence>
      <xsd:element name="Sequence" minOccurs="1" maxOccurs="1">
        <xsd:simpleType>
          <xsd:restriction base="xsd:positiveInteger">
            <xsd:maxExclusive value="100"/>
          </xsd:restriction>
        </xsd:simpleType>
      </xsd:element>
      <xsd:element name="Action" minOccurs="1" maxOccurs="1">
        <xsd:simpleType>
          <xsd:restriction base="xsd:string">
            <xsd:enumeration value="A"/>
            <xsd:enumeration value="C"/>
            <xsd:enumeration value="D"/>
            <xsd:enumeration value="M"/>
            <xsd:enumeration value="R"/>
            <xsd:enumeration value="S"/>
          </xsd:restriction>
        </xsd:simpleType>
      </xsd:element>
      <xsd:element name="ServiceID" minOccurs="1" maxOccurs="1">
        <xsd:simpleType>
          <xsd:restriction base="xsd:string">
            <xsd:length value="3"/>
          </xsd:restriction>
        </xsd:simpleType>
      </xsd:element>
      <xsd:element name="FeatureID" minOccurs="1" maxOccurs="1">
        <xsd:simpleType>
          <xsd:restriction base="xsd:string">
            <xsd:length value="3"/>
          </xsd:restriction>
        </xsd:simpleType>
      </xsd:element>
      <xsd:element name="resultCode" minOccurs="1" maxOccurs="1">
        <xsd:simpleType>
          <xsd:restriction base="xsd:nonNegativeInteger">
            <xsd:maxExclusive value="65536"/>
          </xsd:restriction>
        </xsd:simpleType>
      </xsd:element>
      <xsd:element name="ResultMsg" minOccurs="1" maxOccurs="1">
        <xsd:simpleType>
          <xsd:restriction base="xsd:string">
            <xsd:maxLength value="1024"/>
          </xsd:restriction>
        </xsd:simpleType>
      </xsd:element>
    </xsd:sequence>
    <xsd:attribute name="Type" use="required">
      <xsd:simpleType>
        <xsd:restriction base="xsd:string">
          <xsd:enumeration value="Subscriber"/>
          <xsd:enumeration value="Service"/>
          <xsd:enumeration value="ValueAddedService"/>
        </xsd:restriction>
      </xsd:simpleType>
    </xsd:attribute>
  </xsd:complexType>
</xsd:element>
```



```
</xsd:schema>
```

3.3.3 Acknowledgement Message

The Schema describes in this section is only used in asynchronous message exchange mode. The acknowledgement message sent by receiver notifies the sender that the message is successfully sent.

```
<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema xmlns:xsd="http://www.w3.org/2001/XMLSchema">
<xsd:element name="ProvisioningAck">
    <xsd:complexType>
        <xsd:sequence>
            <xsd:element name="OrderNO" minOccurs="1" maxOccurs="1">
                <xsd:simpleType>
                    <xsd:restriction base="xsd:string">
                        <xsd:length value="13"/>
                    </xsd:restriction>
                </xsd:simpleType>
            </xsd:element>
            <xsd:element name="TimeStamp" type="xsd:dateTime" minOccurs="1" maxOccurs="1"/>
            <xsd:element name="AckCode" minOccurs="1" maxOccurs="1">
                <xsd:simpleType>
                    <xsd:restriction base="xsd:positiveInteger">
                        <xsd:maxExclusive value="65536"/>
                    </xsd:restriction>
                </xsd:simpleType>
            </xsd:element>
            <xsd:element name="AckMsg" type="xsd:string" minOccurs="0" maxOccurs="1"/>
        </xsd:sequence>
    </xsd:complexType>
</xsd:element>
</xsd:schema>
```

3.4 Data Elements

The data elements are separated into tables for every format of message.

3.4.1 Data Element of Provisioning Request

XML Element	Required	Text Size	Business Rule	Comment
ProvisioningRequest	required	X	This element is the root element of the XML.	



ProvisioningRequest. OrderNO	required	13	<p>This is a unique ID to identify each provisioning request.</p> <p>FORMAT:</p> <p>'M'+<yy>+<MVNO ID>+<aSerial></p> <ul style="list-style-type: none"> ● <yy> last two digits of A.D. year, e.g. 08. ● <MVNO ID> three digits of MVNO partner ID assigned by CHT. e.g. "TTT". ● <aSerial> exact 7 characters long and can contain any combination of digits and uppercase letters, e.g. 0CHTP8T. 	
ProvisioningRequest. Sender	required	X	<p>The sender authentication information.</p> <p>Group – The group of login user.</p>	
ProvisioningRequest. Sender. Login	required	5 ~ 32	Login username.	
ProvisioningRequest. Sender. Password	required	5 ~ 255	Login password.	
ProvisioningRequest. TimeStamp	required	X	<p>This element indicates when the request has been sent, and should not be used to specify the priority of provisioning.</p> <p>The time pattern is yyyy-MM-ddThh:mm:ss+08:00</p>	
ProvisioningRequest. Subscribers	required	X	This element lists the subscribers of this provisioning request.	
ProvisioningRequest. Subscribers. Subscriber	required	X	This element includes the information needed for provisioning one subscriber.	
ProvisioningRequest. Subscribers. Subscriber. MSISDN	required	10	This element includes the mobile phone number of the subscriber.	
ProvisioningRequest. Subscribers. Subscriber. IMSI	required	15	This element includes the IMSI number of the subscriber.	
ProvisioningRequest. Subscribers. Subscriber. SIMCardNO	required	19~20	This element includes the SIM card number of the subscriber.	
ProvisioningRequest. Subscribers. Subscriber. NetworkType	required	X	<p>This element includes the network type of the subscriber.</p> <p>Can be either "2G" or "3G".</p>	
ProvisioningRequest. Subscribers. Subscriber. BillingType	required	X	<p>This element includes the billing type of the subscriber.</p> <p>Can be either "Prepaid" or "Postpaid".</p>	



ProvisioningRequest. Subscribers. Subscriber. Items	required	X	This element lists the services needed to be provisioned of this subscriber. This element has 1 attribute: Number – The number of Item elements under this element.	
ProvisioningRequest. Subscribers. Subscriber. Items. Item	required	X	This element includes the information needed for provisioning one service. One “Item” element is corresponding to one provisioning operation.	
ProvisioningRequest. Subscribers. Subscriber. Items. Item. Sequence	required	2	This element indicates the provisioning sequence of this provisioning operation. (Not available)	
ProvisioningRequest. Subscribers. Subscriber. Items. Item. ServiceID	required	3	Each service is assigned the unique ID.	
ProvisioningRequest. Subscribers. Subscriber. Items. Item. Action	required	1	There are 6 type of actions: A – activate C – cancel D – display M – modify R – resume S – suspend	
ProvisioningRequest. Subscribers. Subscriber. Items. Item. FeatureID	required	3	000 – For normal.	
ProvisioningRequest. Subscribers. Subscriber. Items. Item. Parameters	optional	X	There may be some additional parameters required for specific services.	
ProvisioningRequest. Subscribers. Subscriber. Items. Item. Parameters. Parameter	optional	X	Specifies a parameter for the corresponding service. Which will be defined per service (if necessary) in the rest of this document. Name – parameter name. Value – parameter value	
ProvisioningRequest. Subscribers. Subscriber. SubscriberInfo	optional	X	Additional subscriber information.	



ProvisioningRequest. Subscribers. Subscriber. SubscriberInfo. Info	Optional	X	Which will be defined per service (if necessary) in the rest of this document. Name – information name. Value – information value	
--	----------	---	---	--

3.4.2 Data Element of Provisioning Response

XML Element	Required	Text Size	Business Rule	Comment
ProvisioningResponse	required	X	This element is the root element of the XML.	
ProvisioningResponse. OrderNO	required	13	This is the unique ID send by provisioning request. The value of this element should be equal to the corresponding provisioning request.	
ProvisioningResponse. Sender	required	X	The sender authentication information. Group – The group of login user.	
ProvisioningResponse. Sender. Login	required	5 ~ 32	Login username.	
ProvisioningResponse. Sender. Password	required	5 ~ 255	Login password.	
ProvisioningResponse. TimeStamp	required	X	This element indicates when the response has been sent. The time pattern is yyyy-MM-ddThh:mm:ss+08:00	
ProvisioningResponse. Subscribers	required	X	This element lists the subscribers of this provisioning response.	
ProvisioningResponse. Subscribers. Subscriber	required	X	This element includes the information of subscribers provisioned.	
ProvisioningResponse. Subscribers. Subscriber. MSISDN	required	10	This element includes the mobile phone number of the subscriber.	
ProvisioningResponse. Subscribers. Subscriber. IMSI	required	15	This element includes the IMSI number of the subscriber.	
ProvisioningResponse. Subscribers. Subscriber. SIMCardNO	required	19	This element includes the SIM card number of the subscriber.	
ProvisioningResponse. Subscribers. Subscriber. NetworkType	required	X	This element includes the network type of the subscriber. Can be either “2G” or “3G”.	
ProvisioningResponse. Subscribers. Subscriber. BillingType	required	X	This element includes the billing type of the subscriber. Can be either “Prepaid” or “Postpaid”.	



ProvisioningResponse. Subscribers. Subscriber. Items	required	X	This element lists the services provisioned of this subscriber. This element has 1 attribute: Number – The number of Item elements under this element.	
ProvisioningResponse. Subscribers. Subscriber. Items. Item	required	X	This element includes the information of one provisioned service.	
ProvisioningResponse. Subscribers. Subscriber. Items. Item. Sequence	required	2	This element indicates the provisioning sequence of this service. (Not available)	
ProvisioningResponse. Subscribers. Subscriber. Items. Item. ServiceID	required	3	Each service is assigned the unique ID.	
ProvisioningResponse. Subscribers. Subscriber. Items. Item. Action	required	1	There are 6 type of actions: A – activate C – cancel D – display M – modify R – resume S – suspend	
ProvisioningResponse. Subscribers. Subscriber. Items. Item. FeatureID	required	3	000 – For normal.	
ProvisioningResponse. Subscribers. Subscriber. Items. Item. resultCode	required	5	The result code returned by Service Activation System. The value should be ranged from 1 to 65535.	
ProvisioningResponse. Subscribers. Subscriber. Items. Item. ResultMsg	required	1 ~ 1024	The result message returned by Service Activation System. The message briefly describes the result of the service provisioning request.	

3.4.2 Data Element of Provisioning Acknowledgement

XML Element	Required	Text Size	Business Rule	Comment
ProvisioningAck	required	X	This element is the root element of the XML.	



ProvisioningAck. OrderNO	required	13	The value of this data item equals to the OrderNO data item in provisioning message received.	
ProvisioningAck. TimeStamp	required	X	The time when the message received. The time pattern is yyyy-MM-ddThh:mm:ss+08:00	
ProvisioningAck. AckCode	required	5	This code indicates the status of received provisioning message.	
ProvisioningAck. AckMsg	optional	1 ~ 999	Briefly describe the status of received message.	



4 Message and Parameter Definitions for Provisioning

This section describes the following information:

- The operations supported by specific service or specific category of subscriber.
- The special data items needed for every operation of any specific service or specific category of subscriber.

All the operations could be divided into two levels: subscriber and service. The subscriber operations have wider effect over service operations.

Some operation subsets, such as Number Portability, with unique properties are listed in distinct sections.

4.1 Subscriber Management

The operations that manage subscribers are usually independent from services, and usually have global effect over services. For example, if a subscriber is suspended, all the services activated on this subscriber would be suspended, too.

As mentioned in Session 3.3, some basic subscriber information must be provided for each provisioning request, including 1.MSISDN; 2.IMSI; 3.SIMCardNO; 4.NetworkType and 5.BillingType. We term the information which explicitly described in the XML Schema as “**Basic Subscriber Information**”. Besides the basic information set, there may be some additional “SubscriberInfo” required for provisioning specified service. These additional data are mandatory and will be described in detail later.

4.1.1 Create Subscriber

This operation adds a subscriber’s information into subscriber database, and only default services would be activated for this subscriber. What services are defaults should be defined in advance.

- ※ If new subscriber wants to disable any default service, he must send a request to create subscriber first, then send another request to disable the specific service.
- ※ If one subscriber wants to provision any service before creating subscriber, the provisioning response would indicate an error.

XML Value of Argument Field :

Function	Item.Type	Action	ServiceID	FeatureID	Parameters	SubscriberInfo
Category1	Subscriber	A	000	001	VOICE, SCPNO,	ISMNP
Category2	Subscriber	A	000	002	T.B.D.	T.B.D.



Category3	Subscriber	A	000	003	NONE	NONE
Category4	Subscriber	A	000	004	VOICE	ISMNP
Category5	Subscriber	A	000	005	VOICE, SCPNO,	ISMNP

Category 1 : 2G Prepaid for voice only and default service package.

Service Name	ServiceID	FeatureID	Comment
Short Message	002	000	ON
Limit Roaming	004	000	ON
Call Forwarding	005	000	ON
Call Waiting	006	000	ON
Conference call	007	000	ON
Caller ID Identification	008	000	ON
<i>Other Services</i>	-----	-----	OFF

Category 2 : 2G Prepaid for voice only and default service package.

Service Name	ServiceID	FeatureID	Comment
T.B.D.	T.B.D.	T.B.D.	T.B.D.

Category 3 : CHT Prepaid Service Pre-factory.

Service Name	ServiceID	FeatureID	Comment
NONE	NONE	NONE	For CHT Only

4.1.2 Cancel Subscriber

XML Value of Argument Field :

Function	Item.Type	Action	ServiceID	FeatureID	Parameters	SubscriberInfo
Cancel Subscriber	Subscriber	C	000	000	NONE	ISMNP
Cancle Resource Assignment (For CHT Only)	Subscriber	C	000	001	NONE	NONE

4.1.3 Modify Subscriber Information

XML Value of Argument Field :

Function	Item.Type	Action	ServiceID	FeatureID	Parameters	SubscriberInfo
Suspend Subscriber	Subscriber	S	000	000	NONE	NONE



Resume Subscriber	Subscriber	R	000	000	NONE	NONE
Change IMSI	Subscriber	M	001	000	newIMSI	NONE
Change MSISDN	Subscriber	M	002	000	newMSISDN newVOICE VOICE	NONE
Change Category	Subscriber	M	003	000	T.B.D.	NONE

※ “Change Category” is not available.

※ **“Change IMSI” and “Change MSISDN” are not allowed to be appeared together in single request.** “Change IMSI” should be prior to “Change MSISDN” in two separate provisioning requests when both operation are needed.

4.1.4 Display Subscriber Information (Not Available)

XML Value of Argument Field :

Function	Item.Type	Action	ServiceID	FeatureID	Parameters	SubscriberInfo
Display Profile	Subscriber	D	001	000	T.B.D.	NONE
Provision Status Report	Subscriber	D	002	000	T.B.D.	NONE

※ “Display Profile” and “Provision Status Report” is not available.



4.2 Service Management

Every operation in service level only takes effect on single service. One service has many corresponding operations. The relation between service and operation is one-to-many. If multiple services need to be activated, those need to be send in several requests.

4.2.1 Basic Services

Service Name	Item.Type	ServiceID	Action	FeatureID	Description	Parameters	Additional Subscriber Info.
Limit Voice Call	Service	001	A	001	Limit call-out.	NONE	NONE
			A	002	Limit incoming-call.	NONE	NONE
			A	003	Limit international call.	NONE	NONE
			C	001	Remove limit call-out.	NONE	NONE
			C	002	Remove limit incoming-call.	NONE	NONE
			C	003	Remove limit international call.	NONE	NONE
			After limit call-out, it can't do any "Action" about "Limit International Call". After limit international call, it can do limit call-out. If removing limit call-out then remove limit international call at the same time.				
Short Message	Service	002	A	000	Activate service by normal method.	NONE	NONE
			C	000	Cancel service by normal method.	NONE	NONE
			A	001	Activate service that receiving only. (Not Available)	NONE	NONE
			C	001	Cancel service that receiving only. (Not Available)	NONE	NONE

		A	002	Activate service that sending only. (Not Available)	NONE	NONE						
		C	002	Cancel service that sending only. (Not Available)	NONE	NONE						
		A	000	Activate service by normal method.	APN Information	NONE						
		C	000	Cancel service by normal method.	APN Information	NONE						
Data Service	Service	003		Using CHT 2G services, if activate "Limit Call-Out", then this service will be suspend. Using CHT 2G services, if remove "Limit Call-Out", then this service will be resume. APN Information : "internet", "emome", "pscsb" and so on.								
The action of service cannot be executed singly.												
Note : APN is a abbreviation for Access Point Name.												
Limit Roaming (For Voice)	Service	004	A	000	Activate service by normal method.	NONE						
			C	000	Cancel service by normal method.	NONE						
Using CHT 2G services, if activate "Limit Roaming", then this service will be suspend.												
Call Forwarding	Service	005	A	000	Activate service by normal method.	NONE						
			C	000	Cancel service by normal method.	NONE						
Call Waiting	Service	006	A	000	Activate service by normal method.	NONE						
			C	000	Cancel service by normal method.	NONE						
Conference Call	Service	007	A	000	Activate service by normal method.	NONE						
			C	000	Cancel service by normal method.	NONE						
Caller ID Identification	Service	008	A	000	Activate service by normal method.	NONE						
			C	000	Cancel service by normal method.	NONE						
Caller ID Restriction	Service	009	A	000	Activate service by normal method.	NONE						
			C	000	Cancel service by normal method.	NONE						

Limit 0204 (Not Available)	Service	010	A C	000 000	Activate service by normal method. Cancel service by normal method.	NONE NONE	NONE NONE
Limit Entertainment (Not Available)	Service	011	A C	000 000	Activate service by normal method. Cancel service by normal method.	NONE NONE	NONE NONE
Voice Mail Box	Service	012	A C	000 000	Activate service by normal method. Cancel service by normal method.	VOICE NONE	NONE NONE
Limit Roaming (Data Services)	Service (3G Only)	013	A C	000 000	Activate service by normal method. Cancel service by normal method.	NONE NONE	NONE NONE

4.2.2 Value-Added Services (Not Available)

Not Available.

When executing functions of “Subscriber Management” at the session 4.1, The Value-Added Services need to joint for provisioning.

4.3 Parameter Definition

This section lists the definition of all possible subscriber and service parameters appeared in section 4.1 and 4.2.

The name of parameter is unique over all possible messages. If one parameter with identical name is required in different services, the meaning and definition of this parameter is also identical.

Name	Full Name	Format	Description
ISMNP	Is MNP Number	Single character with value ‘Y’ or ‘N’,	‘Y’ indicates that the MSISDN is a ported-in or ported-out number by MNP procedure, while ‘N’ indicates the other (including Special NP procedures).
newIMSI	New IMSI	15 numerals	If one subscriber wants to replace old IMSI with new one, this parameter keeps the new IMSI.
newMSISDN	New MSISDN	10 numerals	If one subscriber wants to replace old MSISDN with new one, this parameter keeps the new MSISDN.
newVOICE	New Voice Mail Number	12 numerals	If one subscriber wants to replace old voice mail number with new one, this parameter keeps the new voice mail number.
SCPNO	Service Control Pointer Number	String	T.B.D.
VOICE	Voice Mail Number	12 numerals	Voice mail number for subscriber.

4.4 Resource Inventory Mechanism

This section is introducing an inventory system to manage all IMSIs and MSISDNs. As a consequence, the rules listed below must be followed by MVNO partner's systems. If any of the rules is violated, a ProvisioningResponse with code 4204 and message "Invalid data" would be send.

Rule 1. Every activated MSISDN must be exactly associated with one activated IMSI at any given time, and vice versa. This relation must be started with "Create Subscriber" provisioning-operation, and will be terminated while "Cancel Subscriber" operation is performed.

Rule 2. The relation between associated MSISDN and IMSI should be in either "In Use" or "Suspending" state.

- i. After "Create Subscriber" operation, the relation will be in "In Use" state.
- ii. "Resume Subscriber" operation could ONLY be taken while the relation is in "Suspending" state.
- iii. "Suspend Subscriber" operation could ONLY be taken while the relation is in "In Use" state.
- iv. "Create/Cancel Service", "Change IMSI", "Change MSISDN" and "Cancel Subscriber" could be taken in EITHER state.
- v. The service of "Limit Voice Call" has restrictions from HLR Network Element.

Rule 3. After "Cancel Subscriber", the involved IMSI should be abolished, and cannot be assigned again. However, the MSISDN can be assigned to another unused IMSI.

Rule 4. Once "Cancel Subscriber" is performed successfully, no further operation on this relation is allowed.

5 Message Exchange procedures for Mobile Number Portability (MNP)

ATTENTION! Message exchange procedures listed in this chapter are *NOT* applied to the MNP between CHT and Mobile Virtual Network Operator (MVNO) partners.

The MNP procedures in Taiwan are defined by **Number Portability Administration Center** (NPAC). The details are defined in the specification “*NP Provision Procedure and Interface Specification, Version 1.2.2, April, 2007(Republic of China 96)*” published by NPAC. The specification is originally written in traditional Chinese; therefore this chapter keeps key nouns for further reference.

CHT MNP procedures for MVNO partner are based on the MNP specification of NPAC, and reform to fit the situation of CHT with MVNO partners. This reformation simplifies the message exchange procedures, therefore some unnecessary messages would not be delivered to MVNO partners.

The code of NPAC Transaction ID (Ticket) about MVNO partner as follow :

- (1) <MVNO ID> + ‘M’ or <MVNO ID> + ‘3’
<MVNO ID> three digits of MVNO partner ID assigned by CHT. e.g. “TTT”
The character ‘M’ is mean 2G for 2G MVNO partner. The character ‘3’ is mean 3G for 3G MVNO partner.
e.g. TTT 2G will use **TTTM**, TTT 3G will use **TTT3** as department code.
- (2) **Ticket coding example of porting into TTT from TW3 : M-CHM-TTMM-TW3-0000-FFGGHH-IJJ.**
- (3) Ticket coding example of porting into TW3 from TTT : M-CHM-TTMM-CHM-0000-FFGGHH-IJJ.
- (4) Ticket coding example of porting into CHT from TTT : M-CHM-TTMM-CHM-0000-FFGGHH-IJJ.



5.1 Overview of Mobile Number Portability in Taiwan

There are six main procedures in MNP:

- ◆ Portable Balance Query Procedure (總量管制查詢程序)
- ◆ MNP Application Procedure (攜碼服務申請程序)
 - Negotiation (正常協商階段)
 - Cancel (取消階段)
 - Activation (執行/改接階段)
 - Modify (修改申請)
 - Consultation (人工協商階段)
- ◆ Disconnect Procedure (攜碼服務之門號退租程序)

The procedure that returns the ported MSISDN to original number range holder.

- ◆ Update Procedure (更新資料程序)
- ◆ Audit Procedure (資料庫查核程序)
 - Other operators inquire information check. (合約業者要求資料庫查核)
 - NPAC inquires information check. (NPAC 主動進行資料庫查核)
- ◆ Recovery Procedure (資料庫修復程序)

Based on the network type and each operator, MNP situations can be classified in 3 types:

1. MVNO Normal NP : Normal NP between CHT MVNO partners and other operators.
2. MVNO Homogeneous Special NP : Special NP between CHT MVO and CHT (2G to 2G/3G to 3G)
3. MVNO Heterogeneous Normal NP: Normal NP between CHT MVNO partners and CHT (2G to 3G)



Table : MNP items for CHT MVNO partners

Situations Script of each situation identification please see Chapter 5 and 6.		Portable Balance Query Procedure (100)	MNP Application Procedure (200)				Disconnect Procedure (300)	Update Procedure (400)	Audit Procedure (500)		Recovery Procedure (600)	
			Negotiation (210)	Cancel (220)	Activation (230)	Modify (240)			Operator (500)	NPAC (520)		
MVNO Normal NP	MVNO port into other operators	Currently this function is not available.	Need	Need	Need	To be abolished, do Cancel and do new Negotiation.	Need	※ Currently it will be done manually.	※			
	Other operators port into MVNO		Need	Need	Need		Need		※			
MVNO Homogeneous Special NP (2G to 2G) (3G to 3G)	Porting in from MVNO to CHT	Currently this function is not available.	Need	Need	Need	N/A	Need	※ Currently this function is not available. It will be maintained manually.	※			
	Porting in from CHT to MVNO		Need	Need	Need		Need		※			
	Porting in among CHT MVNO partners.	In case it happens, it will be managed by following the rules of supervision.										
MVNO Heterogeneous Normal NP (2G to 3G) (3G to 2G)	Porting in from MVNO to CHT	Currently this function is not available.	Need	Need	Need	First, cancel the request manually and then negotiate.	Need	※ Currently this function is not available. It will be maintained manually.	※			
	Porting in from CHT to MVNO		Need	Need	Need		Need		※			
	Porting in among CHT MVNO partners.	In case it happens, it will be managed by following the rules of supervision. Currently we don't take it in consideration and development.										

The functions that marked in red are the standard requirements.

Blocks marked with ※ are the functions that can be discussed and developed in the future.

The definitions of codes from 100 to 600 on the table were given by CHT for the usages of discussion and writing internal specification.



Currently there are three types MNP provisioning standard Specification :

1. NPAC Standard Specification

Please reference “*NP Provision Procedure and Interface Specification, Version 1.2.2, April, 2007(Republic of China 96)*”

2. MVNO Normal NP & Heterogeneous Normal NP (Chapter 5)

Using on MNP between MVNO 2G and other operators

Using on MNP between MVNO 2G and CHT 3G

Using on MNP between MVNO 3G and CHT 2G (If this service could be provided in the future)

Attend File : CHTMNPMsg.xsd

3. Homogeneous Special NP (Chapter 6)

Attend File : CHTMNPMsg_rv5.4.xsd

Attend File : CHTMNPMsgSample_NS_rv5.4.xml

Using on MNP between MVNO 2G and CHT 2G

Using on MNP between MVNO 3G and 3G (If this service could be provided in the future)



CHTMNPMsg.xsd



5.2 CHT MNP Procedures for MVNO partner

The charts in this section are based on the NPAC MNP procedure, and modified to fit CHT MNP procedure for MVNO partner.

Some characteristics must be adverted:

- MVNO partner may have different roles in single procedure, like recipient or donor operator in negotiation.
- All messages are XML over HTTPS.
- Every message send (including request, response, and notification) in a HTTPS connection must get a returned acknowledgement to complete a transmission. These acknowledgement messages are not illustrated in following charts.

5.2.1 Portable Balance Query Procedure

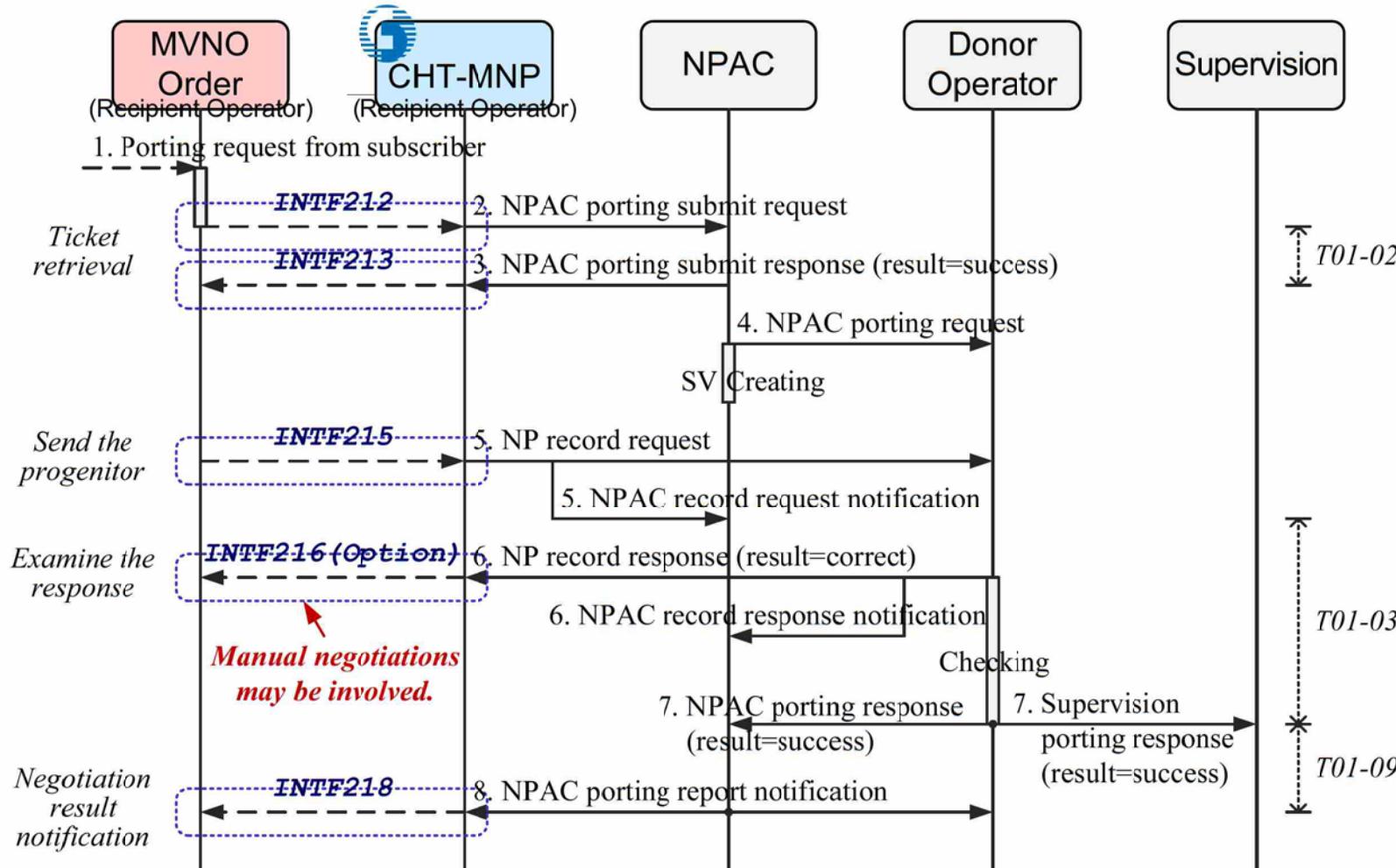
Not available.

5.2.2 MNP Application Procedure

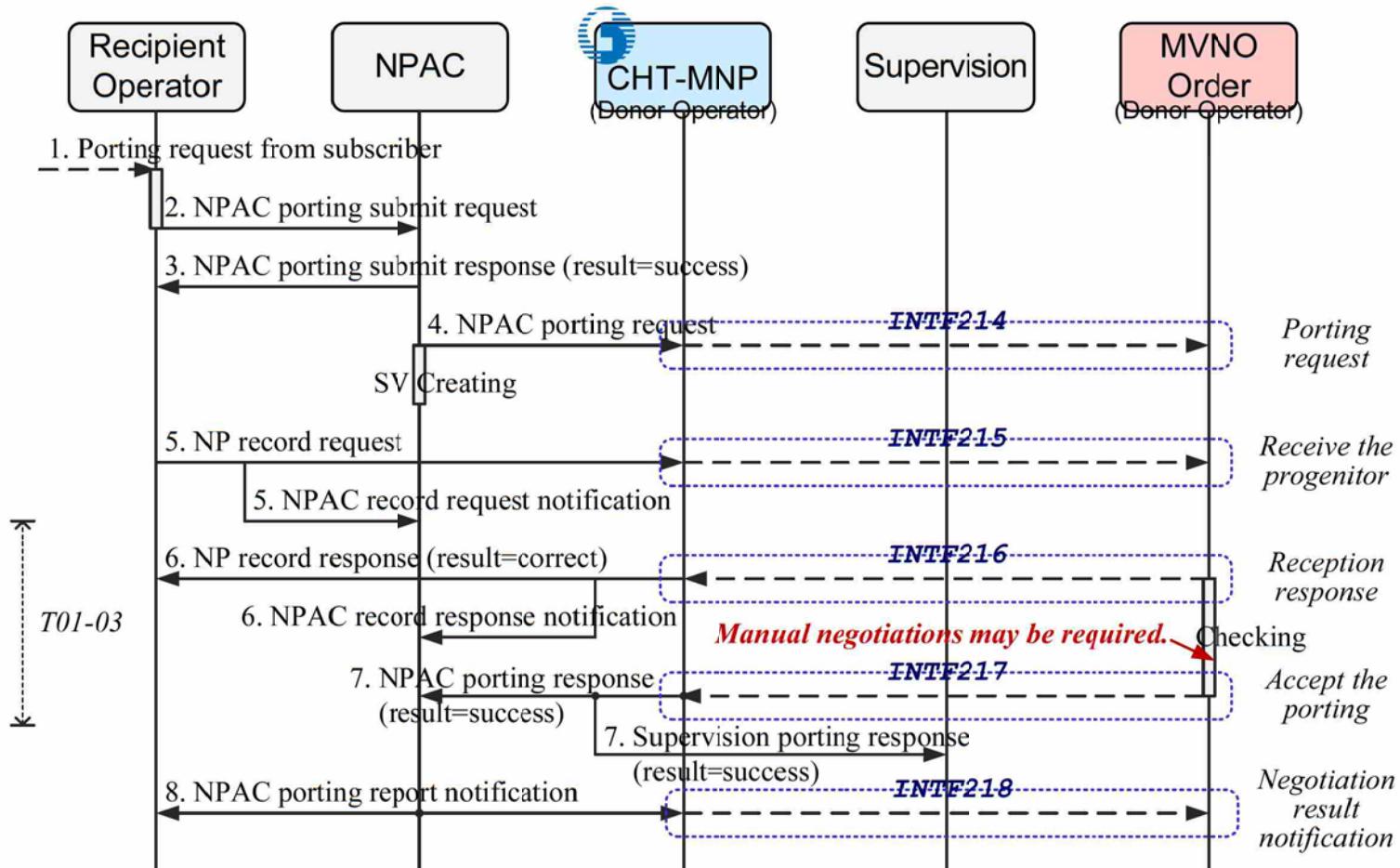
MNP Application Procedure is named “Provision Procedure” in the specification “*NP Provision Procedure and Interface Specification, Version 1.2.2, April, 2007(Republic of China 96)*” published by NPAC.

5.2.2.1 Negotiation

- MVNO partner is **Recipient Operator** receiving ported-in number from other operator.



- MVNO partner is **Donor Operator** with number ported-out to other operator.

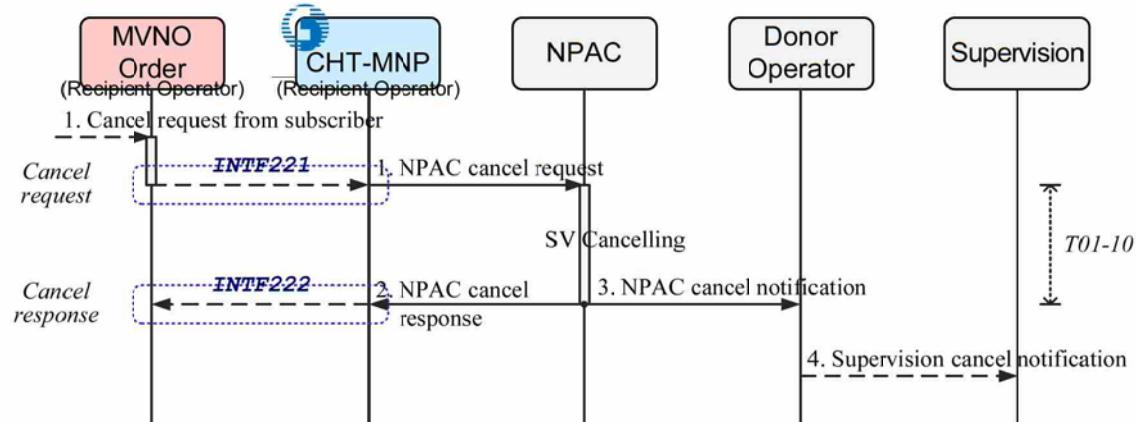


* When MVNO received the progenitor, MVNO should accept or reject the request before 6:00pm on the next working day.

* MVNO 接收到正本後，必須在下個工作日的 18:00 前回覆攜碼申請。

5.2.2.2 Cancel

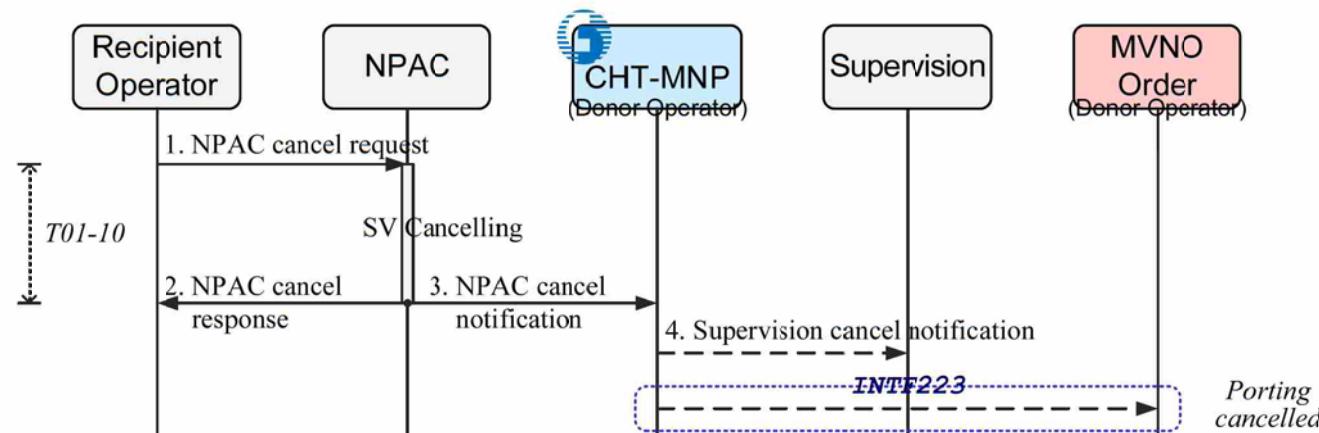
- MVNO partner is **Recipient Operator** receiving ported-in number from other operator.



* “*INTF221*” must be invoked prior to 10:00pm on the day before the activation.

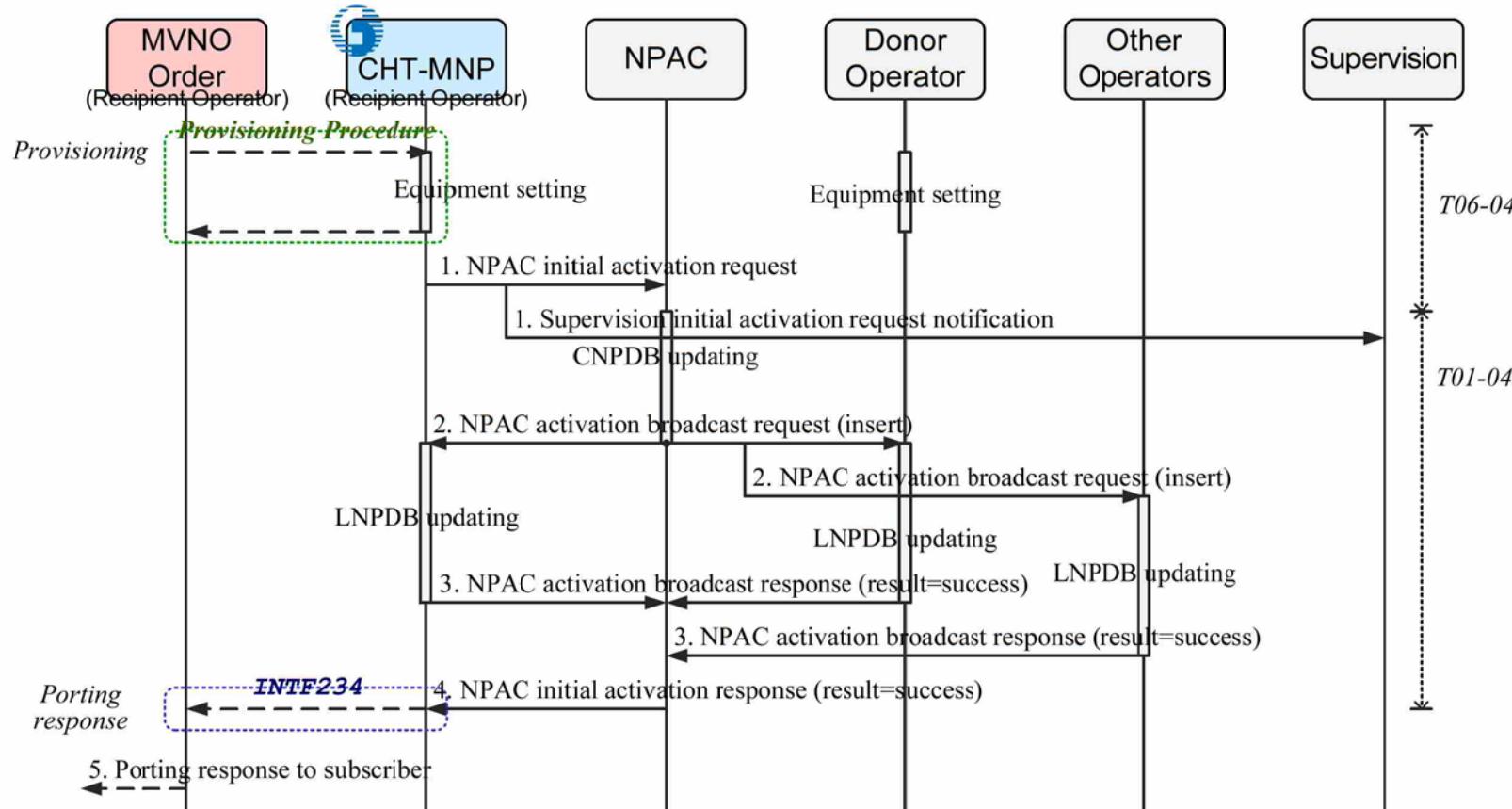
* 「*INTF221*」必須要在執行日前一天的22:00 前執行。

- MVNO partner is **Donor Operator** with number ported-out to other operator.



5.2.2.3 Activation

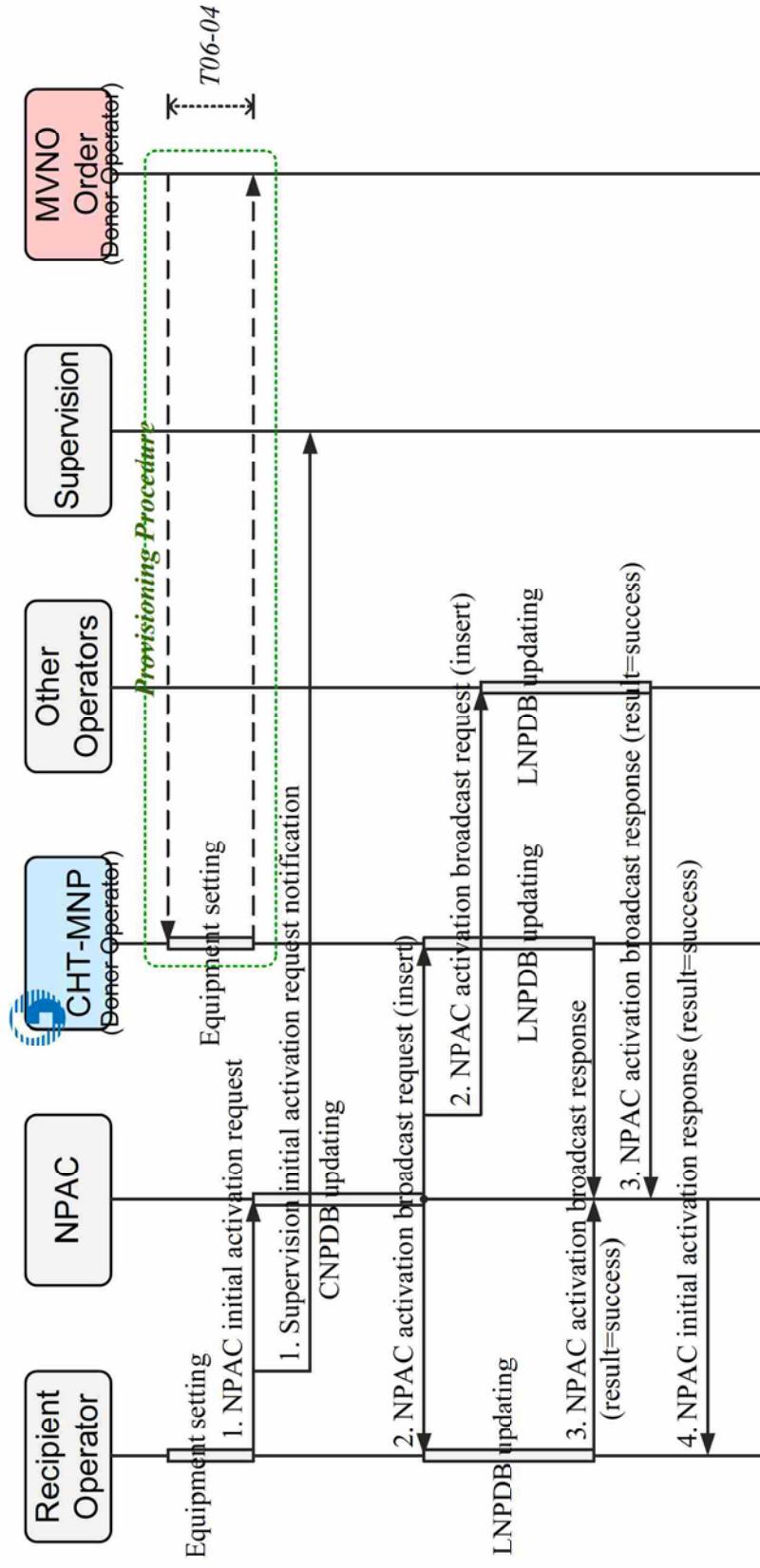
- MVNO partner is **Recipient Operator** receiving ported-in number from other operator.



* “Provisioning” must be completed between midnight (12:00am) to 01:59am on the scheduled activation day.

* 「供裝程序」必須在預定執行日的 00:00 到 01:59 之間執行完畢。

- MVNO partner is **Donor Operator** with number ported-out to other operator.



* *The “Provisioning Procedure” must be completed between midnight (12:00am) to 01:59am on the day of the activation.*

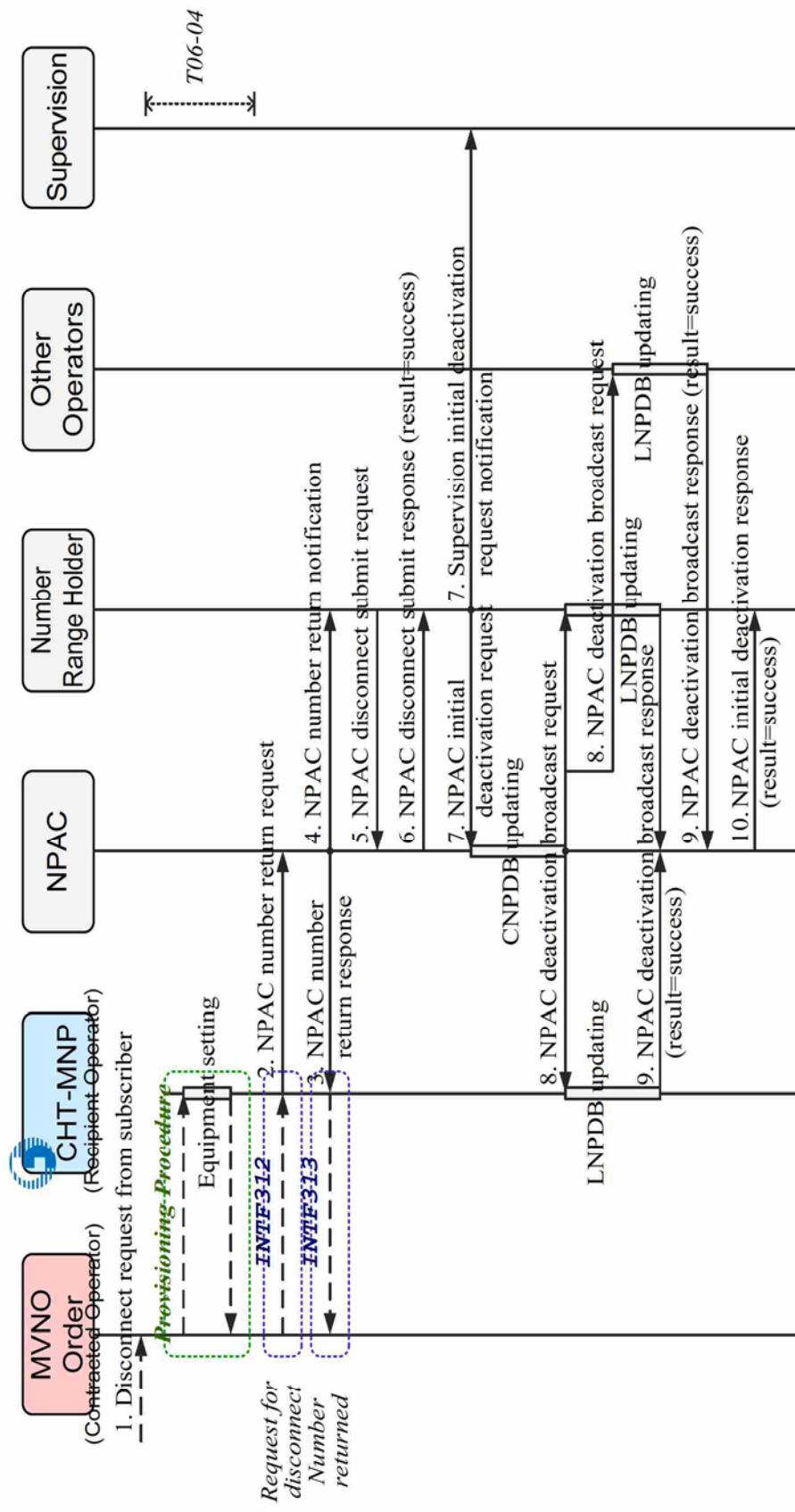
* 「供裝程序」必須在執行日當天的 00:00 到 01:59 間執行完畢。

5.2.2.4 Modify

To be abolished by NPAC, do Cancel and do new Negotiation.

5.2.3 Disconnect Procedure

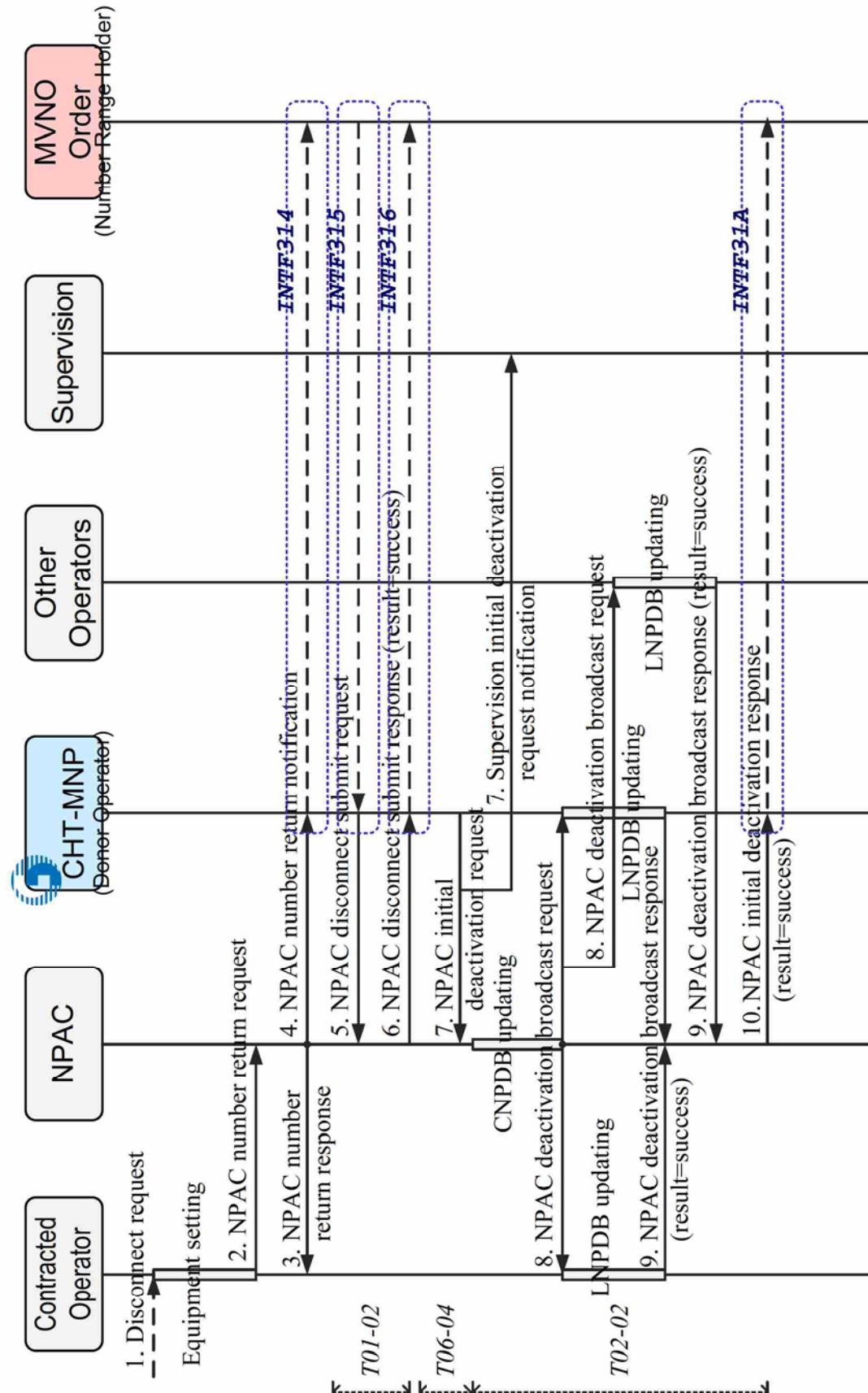
- MVNO partner is Contracted Operator that hold numbers ported-in from other operator.



* “INTF313” must be complete within seven days since the disconnect request is completed.

* 「INTF313」必須在退租完成後七日內執行完成。

- MVNO partner is **Number Range Holder** that has numbers ported-out to other operator.





5.2.4 Update Procedure

(Incomplete)

5.2.5 Audit Procedure

(Incomplete)

5.2.6 Recovery Procedure

(Incomplete)

5.3 Interface of CHT MNP Procedures for MVNO partner

5.3.1 Interface in Every Procedure

Procedure	Interface ID	Message Name	Message Type in XML Schema	Role of MVNO partner	MVNO Availability
Query Procedure	Not available.				
MNP Application Procedure	INTF212	NPAC porting submit request	NPACPrtSbmReq	Sender	Yes
	INTF213	NPAC porting submit response	NPACPrtSbmRsp	Receiver	Yes
	INTF214	NPAC porting request	NPACPrtReq	Receiver	Yes
	INTF215	NP record request	NPRecReq	Sender & Receiver	Yes
	INTF216	NP record response	NPRecRsp	Sender & Receiver	Yes
	INTF217	NPAC porting response	NPACPrtRsp	Sender	Yes



		INTF218	NPAC porting report notification	NPACPrtRptNtf	Receiver	Yes
Cancel	INTF221	NPAC cancel request	NPACCcancelReq	Sender	Yes	Yes
	INTF222	NPAC cancel response	NPACCcancelRsp	Receiver	Yes	Yes
	INTF223	NPAC cancel notification	NPACCcancelNtf	Receiver	Yes	Yes
	INTF232	NPAC activation broadcast request	NPACActBctReq	Receiver	No	
Activation	INTF234	NPAC initial activation response	NPACInitActRsp	Receiver	Yes	Yes
		To be abolish by NPAC.				
Modify	Consultation	No standard procedure and interface.				
	INTF312	NPAC number return request	NPACNumRetReq	Sender	Yes	Yes
	INTF313	NPAC number return response	NPACNumRetRsp	Receiver	Yes	Yes
	INTF314	NPAC number return notification	NPACNumRetNtf	Receiver	Yes	Yes
	INTF315	NPAC disconnect submit request	NPACDcnSbmReq	Sender	Yes	Yes
	INTF316	NPAC disconnect submit response	NPACDcnSbmRsp	Receiver	Yes	Yes
	INTF318	NPAC deactivation broadcast request	NPACDeactBctReq	Sender	No	
	INTF31A	NPAC initial deactivation response	NPACInitDeactRsp	Receiver	Yes	Yes
	Update Procedure	(Incomplete) The frequency of using is less.				
Audit Procedure		(Incomplete) The frequency of using is less.				
	Recovery Procedure	(Incomplete) The frequency of using is less.				

5.3.2 XML Schema of Interface

See appendix file on Session 5.1.

5.4 Data Item Definition

This section describes all data item in interfaces. Section 5.4.1 lists all possible data items, and other sections list every data item in every interface. All interfaces listed in section 5.3 use identical definition of data items, that is, if data items with identical name appeared in different interfaces, the meaning and definition of these data items are exactly the same.

<MVNO ID> is three digits of MVNO partner ID assigned by CHT. e.g. “TTT”. As the convention between all NP participants, the store id is just use default “0000” for most cases. (refer to spec. page 182) The <MVNO ID> M store id is used to identify the existence of MVNO (under CHM), All MVNO Partner generated MNP TID(Transaction ID)s should use “CHM-<MVNO ID>M” (e.x. “CHM-TTTM) as identity, and fill in “0000” as store id for other operators. Other operators may or may not have the knowledge of “CHM-<MVNO ID>M” (e.x. “CHM-TTTM). The TIDs they generated may contain “CHM-0000” instead of “CHM-<MVNO ID>M”.

5.4.1 Common Data Items

The following table lists all data items appearing in interfaces. Most of the data items follow the specification of NPAC, but few of them are reformed to fit the needs of CHT. These reformed date items would be marked in bold characters.

Element	Name	Data type	Pattern	Description
V	Version	String	Fixed	Reference the specification of NPAC (Version 1.2.2).
SID	Source ID	String	Fixed	<MVNO ID>+100. Indicate the message is send by whom.
DTID	Destination ID	String	5 Alpha Characters	Indicate the message is send to whom.
RID	Recipient ID	String	3 uppercase characters	The ID of operator assigned by NPAC.
DID	Donor ID	String	3 uppercase characters	The ID of operator assigned by NPAC.
OID	Operator ID	String	3 uppercase characters	The ID of operator assigned by NPAC.
SN	Sequence Number	Positive Integer	1~9999999	Reference the specification of NPAC (Version 1.2.2).
RSN	Reference of	Positive Integer	1~9999999	Reference the specification of NPAC (Version 1.2.2).



	Sequence Number		YYYY-MM-DDTHH: mmssZ	
TS	Transmitting Timestamp	Datetime	YYYY-MM-DDTHH: mmssZ	The time when this message is transmitted by sender.
RTS	Reference of Transmitting Timestamp	Datetime	YYYY-MM-DDTHH: mm:ssZ	Appears in response message, equals the transmitting timestamp in corresponding request.
DATE	Date	String	YYMMDD-3	Date when MNP activation is taken place.
NOP	Number of Payload Element	Positive Integer	1~1000	Number of data package in message.
PE	Payload Element	Complex	By message	One contains one set of data items for application. The content of PE depends on message.
TID	Transaction ID	String	31 Alpha Characters	Reference the specification of NPAC, and set BBB="CHM" and CCCC=<MVNO ID>+"M" (Version 1.2.2).
RTID	Reference of Transaction ID	String	31 Alpha Characters	Appears in response message, equals the transaction ID in corresponding request.
PN	Phone Number	String	10 digits.	MSISDN to be porting.
TB	Total Balance	Positive Integer	Positive Integer	Avail balance for MNP application in specific date. This value is for reference only.
OB	Operator Balance	Positive Integer	Positive Integer	Avail balance for MNP application for specific operator in specific date. This value is for reference only.
UQ	Used Quantity	Positive Integer	Positive Integer	Used quantity for MNP application for specific operator in specific date.
CW	Conflict Warning	Positive Integer	1~13	Reference the specification of NPAC (Version 1.2.2).
CL	Conflict Operator	Complex	XML Node	A list of conflict operators for specific number.



	List			
CD	Contract Date	String	YYMMDD-3	Indicate when the contract between applicant and recipient operator is applied.
RCD	Recommend Contract Date	String	YYMMDD-3	Recommend contract date by donor operator.
UCD	Update Contract Date	String	YYMMDD-3	Reference the specification of NPAC (Version 1.2.2).
CN	Customer Name	String	Max. 50 characters.	The name of applicant.
CID	Customer ID	String	Max. 10 characters.	Reference the specification of NPAC (Version 1.2.2).
DCP	Day Telephone	String	Max. 15 characters.	Available telephone number in day time to contract applicant.
NCP	Night Telephone	String	Max. 15 characters.	Available telephone number in night time to contract applicant.
AD	Apply Date	Datetime	YYYY-MM-DDTHH:mm:ssZ	When the application is applied.
CA	Customer Address	String	Max. 50 characters.	The address of applicant.
SM	Setup Method	String	10 Alpha characters.	Reference the specification of NPAC (Version 1.2.2).
SRN	SS7 RN	Digits	Fixed to 1419	SS7 RN for operators.
SDN	SS7 DN	String	Not defined yet.	SS7 DN for operators.
SMRI	SM Routing Information	Digits	Not defined yet.	Reference the specification of NPAC (Version 1.2.2).
MRI	MMS Routing Information	String	Not defined yet.	Reference the specification of NPAC (Version 1.2.2).
VRI	VoIP Routing Information	String	Not defined yet.	Reference the specification of NPAC (Version 1.2.2).
NT	Note	String	Max. 40 characters.	Comment.



				Reference the specification of NPAC (Version 1.2.2).
STR	Status Result	Enumeration	0~99	
VR	Verify Result	Positive Integer	0~99	Indicate the number is portable or not by donor operator.
CR	Cancel Reason	Enumeration	1~99	Indicate the cancel reason of MNP application. Detail definition is in NPAC's specification.
UR	Update Result	Enumeration	0~999	Reference the specification of NPAC (Version 1.2.2).
SR	Submit Result	Enumeration	0~99	Indicate the application of MNP is available or not by NPAC. Detail definition is in NPAC's specification.
UL	Update Result List	Complex	XML Node	Update result list for every operator.
NB	Number Belong	Enumeration	1~9	Indicate the relation between number and operator. Detail definition is in NPAC's specification.
EC	Error Code	Enumeration	0~999	Indicate the result of send message. Detail definition is in NPAC's specification.



5.4.2 Data Items in Every Interface

The presence of every data item in an interface could be **mandatory**, **conditional**, or **optional**, and the value could be **operative**, **inoperative**, or **reference only**. The presence rules follow the specification of NPAC, and the value rules are defined by CHT.

An **operative** data item means that MVNO partner must generate the value for this data item when MVNO partner is message sender, or process the value of this data item when MVNO partner is message receiver.

An **inoperative** data item means that the value in this data item is useless or fixed, and MVNO partner could just ignore this one. Keeping this kind of data item in message is in order to follow the specification of NPAC. If MVNO partner is required to generate this data item, the vale should be fixed or empty.

A **reference only** data item means that the value in this data item could be reference materials, but ignorable.

Following tables list all possible data items in every possible message, and indicate the properties of every data item by MVNO partner's role (message sender or receiver).

NOTICE!! The XML element “PE” usually has multiple child elements. In order to display this hierarchy relationship, the XML element name of child element would be appended a prefix of “PE.”. For example, if “PE” has a child element “PN”, the XML element name of “PN” would be “PE.PN”.

- Generic Acknowledgement Message for Normal Procedure

XML Element	Presence	Sender	Receiver	Comment
V	Mandatory	Inoperative	Inoperative	Fixed value.
SID	Mandatory	Operative	Operative	Repealed
SN	Mandatory	Operative	Operative	Repealed
TS	Mandatory	Operative	Operative	Repealed
EC	Mandatory	Operative	Operative	

- Error Acknowledgement Message for Exception

XML Element	Presence	Sender	Receiver	Comment
EC	Mandatory	Operative	Operative	

- INTF212 NPAC porting submit request

XML Element	Presence	Sender	Receiver	Comment
V	Mandatory	Inoperative	Not Available	Fixed value.



SID	Mandatory	Operative		Repealed
DTID	Mandatory	Operative		Repealed
SN	Mandatory	Operative		Repealed
TS	Mandatory	Operative		Repealed
NOP	Mandatory	Operative		
PE	Mandatory	Operative		XML node.
PE.TID	Mandatory	Operative		
PE.PN	Mandatory	Operative		
PE.CD	Mandatory	Operative		

- INTF213 NPAC porting submit response

XML Element	Presence	Sender	Receiver	Comment
V	Mandatory	Not Available	Inoperative	Fixed value.
SID	Mandatory		Operative	Repealed
DTID	Mandatory		Operative	Repealed
SN	Mandatory		Operative	Repealed
TS	Mandatory		Operative	Repealed
RSN	Mandatory		Operative	Repealed
RTS	Mandatory		Operative	Repealed
NOP	Mandatory		Operative	
PE	Mandatory		Operative	XML node.
PE.TID	Mandatory		Operative	
PE.PN	Mandatory		Operative	
PE.SR	Mandatory		Operative	
PE.DATE	Mandatory		Operative	
PE.TB	Mandatory		Reference Only	
PE.OB	Mandatory		Reference Only	Repealed
PE.UQ	Mandatory		Reference Only	Repealed
PE.CW	Optional		Operative	Repealed
PE.CL	Conditional		Operative	Repealed
PE.CL OID	Mandatory		Operative	Repealed

- INTF214 NPAC porting request

XML Element	Presence	Sender	Receiver	Comment
V	Mandatory	Not Available	Inoperative	Fixed value.
SID	Mandatory		Operative	Repealed
DTID	Mandatory		Operative	Repealed



SN	Mandatory		Operative	Repealed
TS	Mandatory		Operative	Repealed
NOP	Mandatory		Operative	
PE	Mandatory		Operative	XML node.
PE.TID	Mandatory		Operative	
PE.PN	Mandatory		Operative	
PE.CD	Mandatory		Operative	

- INTF215 NP record request

XML Element	Presence	Sender	Receiver	Comment
V	Mandatory	Inoperative	Inoperative	Fixed value.
SID	Mandatory	Operative	Operative	Repealed
DTID	Mandatory	Operative	Operative	Repealed
SN	Mandatory	Operative	Operative	Repealed
TS	Mandatory	Operative	Operative	Repealed
NOP	Mandatory	Operative	Operative	
PE	Mandatory	Operative	Operative	XML node.
PE.TID	Mandatory	Operative	Operative	
PE.RTID	Conditional	Inoperative	Inoperative	Repealed*
PE.CN	Mandatory	Operative	Operative	
PE.CID	Mandatory	Operative	Operative	
PE.DCP	Optional	Operative	Operative	Repealed*
PE.NCP	Optional	Operative	Operative	Repealed*
PE.AD	Mandatory	Operative	Operative	
PE.PN	Mandatory	Operative	Operative	
PE.CA	Conditional	Operative	Operative	Repealed*
PE.RID	Mandatory	Operative	Operative	Repealed
PE.DID	Mandatory	Operative	Operative	Repealed
PE.CD	Mandatory	Operative	Operative	Repealed
PE.SM	Conditional	Inoperative	Inoperative	Repealed
PE.SRN	Mandatory	Inoperative	Inoperative	Repealed
PE.SDN	Optional	Inoperative	Inoperative	Repealed
PE.SMRI	Optional	Inoperative	Inoperative	Repealed
PE.MRI	Optional	Inoperative	Inoperative	Repealed
PE.VRI	Optional	Inoperative	Inoperative	Repealed
PE.NT	Optional	Reference Only	Reference Only	



- INTF216 NP record response

XML Element	Presence	Sender	Receiver	Comment
V	Mandatory	Inoperative	Inoperative	Fixed value.
SID	Mandatory	Operative	Operative	Repealed
DTID	Mandatory	Operative	Operative	Repealed
SN	Mandatory	Operative	Operative	Repealed
TS	Mandatory	Operative	Operative	Repealed
RSN	Mandatory	Operative	Operative	Repealed
RTS	Mandatory	Operative	Operative	Repealed
NOP	Mandatory	Operative	Operative	
PE	Mandatory	Operative	Operative	XML node.
PE.TID	Mandatory	Operative	Operative	
PE.PN	Mandatory	Operative	Operative	
PE.CD	Mandatory	Operative	Operative	
PE.STR	Mandatory	Operative	Operative	

- INTF217 NPAC porting response

XML Element	Presence	Sender	Receiver	Comment
V	Mandatory	Inoperative		Fixed value.
SID	Mandatory	Operative		Repealed
DTID	Mandatory	Operative		Repealed
SN	Mandatory	Operative		Repealed
TS	Mandatory	Operative		Repealed
RSN	Mandatory	Operative		Repealed
RTS	Mandatory	Operative		Repealed
NOP	Mandatory	Operative		
PE	Mandatory	Operative		XML node.
PE.TID	Mandatory	Operative		
PE.PN	Mandatory	Operative		
PE.VR	Mandatory	Operative		
PE.RCD	Conditional	Operative		
PE.NT	Optional	Reference Only		

- INTF218 NPAC porting report notification

XML Element	Presence	Sender	Receiver	Comment
V	Mandatory		Inoperative	Fixed value.
SID	Mandatory	Not Available	Operative	Repealed



DTID	Mandatory		Operative	Repealed
SN	Mandatory		Operative	Repealed
TS	Mandatory		Operative	Repealed
RSN	Mandatory		Operative	Repealed
RTS	Mandatory		Operative	Repealed
NOP	Mandatory		Operative	
PE	Mandatory		Operative	XML node.
PE.TID	Mandatory		Operative	
PE.PN	Mandatory		Operative	
PE.VR	Mandatory		Operative	
PE.RCD	Conditional		Operative	
PE.DATE	Mandatory		Operative	
PE.TB	Mandatory		Reference Only	Repealed
PE.OB	Mandatory		Reference Only	Repealed
PE.UQ	Mandatory		Reference Only	Repealed
PE.NT	Optional		Reference Only	

- INTF221 NPAC cancel request

XML Element	Presence	Sender	Receiver	Comment
V	Mandatory	Inoperative	Not Available	Fixed value.
SID	Mandatory	Operative		Repealed
DTID	Mandatory	Operative		Repealed
SN	Mandatory	Operative		Repealed
TS	Mandatory	Operative		Repealed
NOP	Mandatory	Operative		
PE	Mandatory	Operative		XML node.
PE.TID	Mandatory	Operative		
PE.PN	Mandatory	Operative		
PE.CR	Optional	Operative		
PE.NT	Optional	Reference Only		

- INTF222 NPAC cancel response

XML Element	Presence	Sender	Receiver	Comment
V	Mandatory	Not Available	Inoperative	Fixed value.
SID	Mandatory		Operative	Repealed
DTID	Mandatory		Operative	Repealed
SN	Mandatory		Operative	Repealed



TS	Mandatory		Operative	Repealed
RSN	Mandatory		Operative	Repealed
RTS	Mandatory		Operative	Repealed
NOP	Mandatory		Operative	
PE	Mandatory		Operative	XML node.
PE.TID	Mandatory		Operative	
PE.PN	Mandatory		Operative	
PE.SR	Mandatory		Operative	
PE.DATE	Mandatory		Operative	
PE.TB	Mandatory		Reference Only	
PE.OB	Mandatory		Reference Only	Repealed
PE.UQ	Mandatory		Reference Only	Repealed

- INTF223 NPAC cancel notification

XML Element	Presence	Sender	Receiver	Comment
V	Mandatory	Not Available	Inoperative	Fixed value.
SID	Mandatory		Operative	Repealed
DTID	Mandatory		Operative	Repealed
SN	Mandatory		Operative	Repealed
TS	Mandatory		Operative	Repealed
NOP	Mandatory		Operative	
PE	Mandatory		Operative	XML node.
PE.TID	Mandatory		Operative	
PE.PN	Mandatory		Operative	
PE.CR	Optional		Operative	
PE.NT	Optional		Reference Only	

- INTF232 NPAC activation broadcast request (For CHT only.)

XML Element	Presence	Sender	Receiver	Comment
V	Mandatory	Not Available	Inoperative	Fixed value.
SID	Mandatory		Operative	Repealed
DTID	Mandatory		Operative	Repealed
SN	Mandatory		Operative	Repealed
TS	Mandatory		Operative	Repealed
NOP	Mandatory		Operative	
PE	Mandatory		Operative	XML node.
PE.TID	Mandatory		Operative	



PE.PN	Mandatory		Operative	
PE.NB	Mandatory		Operative	
PE.DC	Mandatory		Operative	
PE.SRN	Mandatory		Inoperative	
PE.SDN	Optional		Inoperative	Repealed
PE.SMRI	Optional		Inoperative	Repealed
PE.MRI	Optional		Inoperative	Repealed
PE.VRI	Optional		Inoperative	Repealed

- INTF234 NPAC initial activation response

XML Element	Presence	Sender	Receiver	Comment
V	Mandatory	Not Available	Inoperative	Fixed value.
SID	Mandatory		Operative	Repealed
DTID	Mandatory		Operative	Repealed
SN	Mandatory		Operative	Repealed
TS	Mandatory		Operative	Repealed
RSN	Mandatory		Operative	Repealed
RTS	Mandatory		Operative	Repealed
NOP	Mandatory		Operative	
PE	Mandatory		Operative	XML node.
PE.TID	Mandatory		Operative	
PE.PN	Mandatory		Operative	
PE.NOP	Mandatory		Operative	
PE.UL	Mandatory		Operative	XML node.
PE.UL.OID	Mandatory		Operative	
PE.UL.UR	Mandatory		Operative	

- INTF312 NPAC number return request

XML Element	Presence	Sender	Receiver	Comment
V	Mandatory	Inoperative	Not Available	Fixed value.
SID	Mandatory	Operative		Repealed
DTID	Mandatory	Operative		Repealed
SN	Mandatory	Operative		Repealed
TS	Mandatory	Operative		Repealed
NOP	Mandatory	Operative		
PE	Mandatory	Operative		XML node.
PE.PN	Mandatory	Operative		



- INTF313 NPAC number return response

XML Element	Presence	Sender	Receiver	Comment
V	Mandatory	Not Available	Inoperative	Fixed value.
SID	Mandatory		Operative	Repealed
DTID	Mandatory		Operative	Repealed
SN	Mandatory		Operative	Repealed
TS	Mandatory		Operative	Repealed
RSN	Mandatory		Operative	Repealed
RTS	Mandatory		Operative	Repealed
NOP	Mandatory		Operative	
PE	Mandatory		Operative	XML node.
PE.PN	Mandatory		Operative	
PE.SR	Mandatory		Operative	

- INTF314 NPAC number return notification

XML Element	Presence	Sender	Receiver	Comment
V	Mandatory	Not Available	Inoperative	Fixed value.
SID	Mandatory		Operative	Repealed
DTID	Mandatory		Operative	Repealed
SN	Mandatory		Operative	Repealed
TS	Mandatory		Operative	Repealed
NOP	Mandatory		Operative	
PE	Mandatory		Operative	XML node.
PE.PN	Mandatory		Operative	

- INTF315 NPAC disconnect submit request

XML Element	Presence	Sender	Receiver	Comment
V	Mandatory	Inoperative	Not Available	Fixed value.
SID	Mandatory	Operative		Repealed
DTID	Mandatory	Operative		Repealed
SN	Mandatory	Operative		Repealed
TS	Mandatory	Operative		Repealed
NOP	Mandatory	Operative		
PE	Mandatory	Operative		XML node.
PE.PN	Mandatory	Operative		
PE.UCD	Mandatory	Operative		



- INTF316 NPAC disconnect submit response

XML Element	Presence	Sender	Receiver	Comment
V	Mandatory	Not Available	Inoperative	Fixed value.
SID	Mandatory		Operative	Repealed
DTID	Mandatory		Operative	Repealed
SN	Mandatory		Operative	Repealed
TS	Mandatory		Operative	Repealed
RSN	Mandatory		Operative	Repealed
RTS	Mandatory		Operative	Repealed
NOP	Mandatory		Operative	
PE	Mandatory		Operative	XML node.
PE.PN	Mandatory		Operative	
PE.SR	Mandatory		Operative	
PE.DATE	Mandatory		Operative	
PE.TB	Mandatory		Reference Only	Repealed
PE.OB	Mandatory		Reference Only	Repealed
PE.UQ	Mandatory		Reference Only	Repealed

- INTF318 NPAC deactivation broadcast request

XML Element	Presence	Sender	Receiver	Comment
V	Mandatory	Not Available	Inoperative	Fixed value.
SID	Mandatory		Operative	Repealed
DTID	Mandatory		Operative	Repealed
SN	Mandatory		Operative	Repealed
TS	Mandatory		Operative	Repealed
NOP	Mandatory		Operative	
PE	Mandatory		Operative	XML node.
PE.PN	Mandatory		Operative	
PE.NB	Mandatory		Operative	

- INTF31A NPAC initial deactivation response

XML Element	Presence	Sender	Receiver	Comment
V	Mandatory	Not Available	Inoperative	Fixed value.
SID	Mandatory		Operative	Repealed
DTID	Mandatory		Operative	Repealed
SN	Mandatory		Operative	Repealed



TS	Mandatory		Operative	Repealed
RSN	Mandatory		Operative	Repealed
RTS	Mandatory		Operative	Repealed
NOP	Mandatory		Operative	
PE	Mandatory		Operative	XML node.
PE.PN	Mandatory		Operative	
PE.NOP	Mandatory		Operative	
PE.UL	Mandatory		Operative	XML node.
PE.UL OID	Mandatory		Operative	
PE.UL UR	Mandatory		Operative	

6 Service of MNP between MVNO partner and CHT

This session are applied to the MNP between Mobile Virtual Network Operator (MVNO) partners and CHT. But it is only limited on “2G to 2G” or “3G to 3G” at so on. This service can also be named “MVNO Homogeneous Special NP”. The definition could see the Chapter 5.

6.1 Overview of MVNO Homogeneous Special NP in Chunghwa Telecom

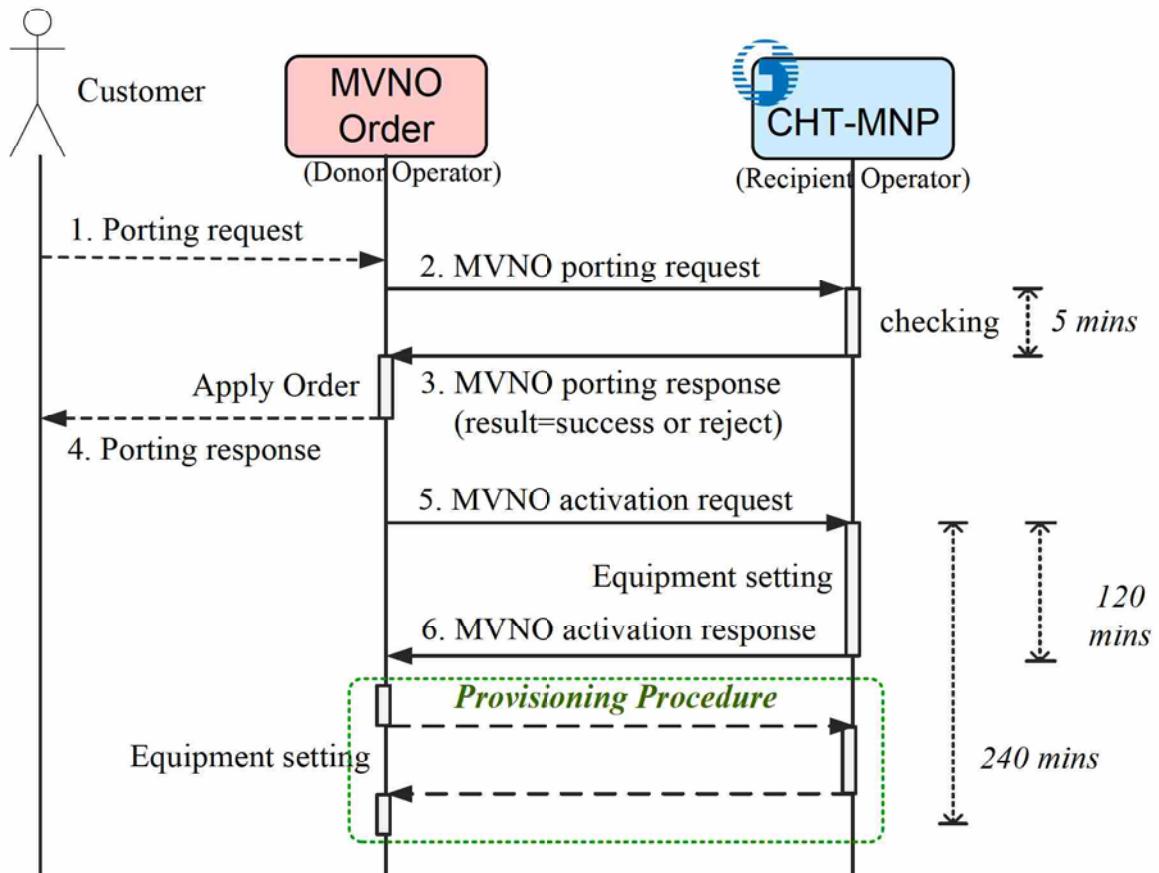
6.1.1 Introduction

Please reference to see the Session 5.1.

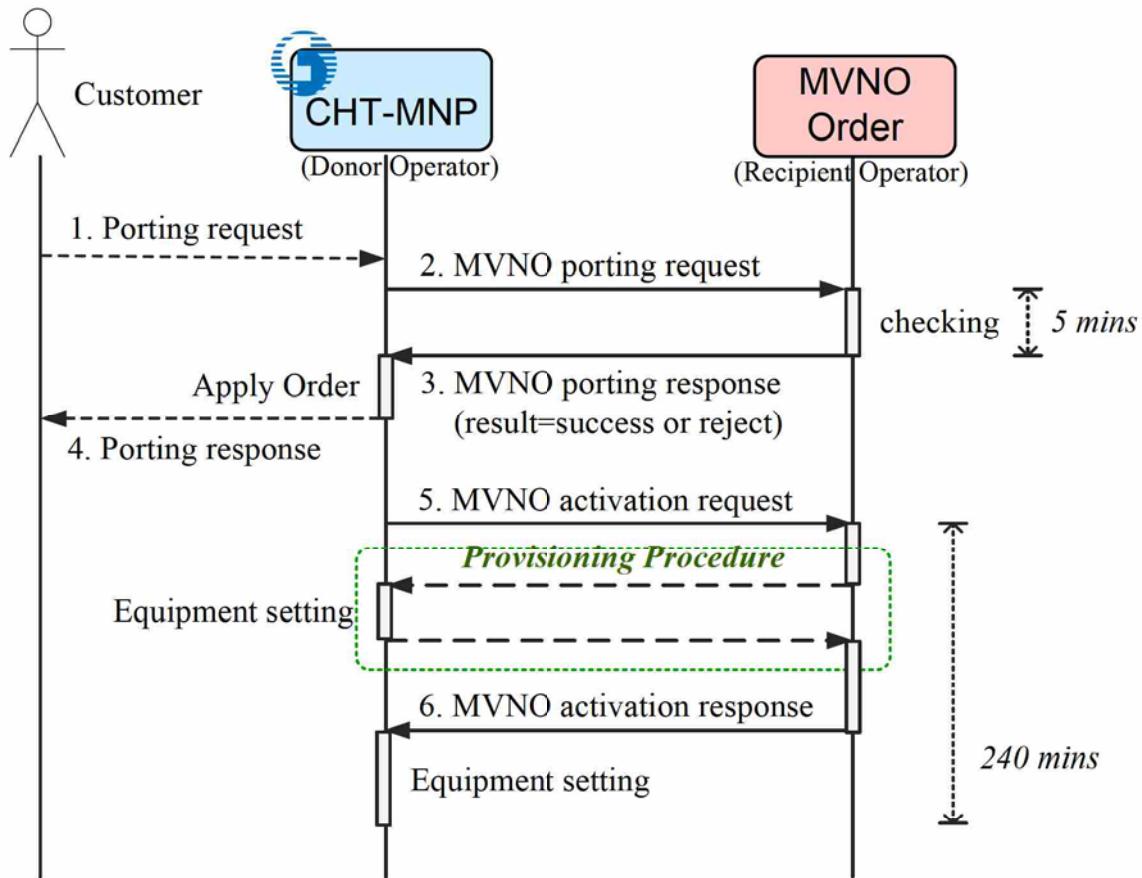
6.2 Procedures of MVNO Homogeneous Special NP

6.2.1 MNP Application Procedure

- MVNO partner is **Recipient Operator** receiving ported-in number from CHT



- MVNO partner is **Donor Operator** with number ported-out to CHT



The result of NP record response follow section 6.34 of “*NP Provision Procedure and Interface Specification, Version 1.2.2, April, 2007(Republic of China 96)*” published by NPAC.
If result of NP record response is reject then stop the procedure.

[Descriptions]

Procedure 1&2 and Message (MVNO porting request):

A customer comes to a recipient operator’s store and asks for NP provision request, and the recipient operator sends the customer’s profile with MSISDN to the donor operator for identification/verification check.

客戶至營業窗口申請攜碼服務，移入業者送出門號及客戶資料至移出業者審核。

Procedure 3&4 and Message (MVNO porting response):

- The reply result from the donor operator includes the result of identification check (SR, Submit Result) and the result of verification check (VR, Verify Result). The only qualified status for the request to have the NP provision is to receive the response sent from the



donor operator with code 0 on both SR and VR (SR=0 and VR=0).

回覆結果包含該門號申請號碼攜碼服務的核准結果(SR, Submit Result)以及是否同意客戶移轉的審核結果(VR, Verify Result)。只有在 SR 及 VR 皆為 0 才視為可進行號碼攜碼服務。

- B. The request is failed if the recipient operator does not receive the “MVNO porting response” message from the donor operator within **five minutes**. In this case, the recipient operator has to resend the “MVNO porting request” message again with a new Transaction ID (TID) to the donor operator. There is no artificial negotiation process.
- 移出業者未在 **5 分鐘**內回覆結果視為申請失敗，移入業者需再取新的 TID 重送申請要求之訊息；無人工協商。
- C. If the status result in the “MVNO porting response” message indicates “not approved for NP provision” then different process will be chosen based on the status code of SR and VR. 若回覆結果為不同意，視 SR 及 VR 代碼進行處理。
- D. If the status result in the “MVNO porting response” message indicates “approved for NP provision” then the customer could leave at this stage. The recipient operator and the donor operator will do the rest of backend process for this customer to have the NP provision done.
- 若回覆結果為同意，客戶始可離櫃。移入業者及移出業者進行後續改接作業。

Procedure 5 and Message (MVNO activation request):

Once the request has been sent to the donor operator, the request can not be canceled for any reason, and the NP provision procedure will keep doing until the rest of processes are completely done.

移入業者送出改接要求後，此號碼可攜服務作業便**不可取消**，一定要完後續程序。

Procedure 6 and Message (MVNO activation response):

- A. If the recipient operator has not received the “MVNO activation response” message within **two hours** after the “MVNO activation request” message is sent then an artificial barrier handling process should be raised out.
- 移出業者未在 **2 小時**內回覆改接結果時不重送訊息，進行人工障礙處理。
- B. If the result in “MVNO activation response” message is indicated as not succeeded (UP, Update Result) then an artificial barrier handling process should be raised out.
- 若回覆的更新結果(UR, Update Result)為不成功，則進行人工障礙處理。

[Examples for Message Format]

The example message about “MVNO porting request”

```
<?xml version="1.0" encoding="UTF-8"?>
<MVNOPrtReq xmlns="CHTMNPMMsg">
```



```
<V>01.03</V>
<NOP>1</NOP>
<PE>
  <TID>M-CHM-0000-CHM-TTTM-090909-A001</TID>
  <PN>0912345678</PN>
  <CN>Customer full name</CN>
  <CID>F123456789</CID>
  <AD>2009-09-09T09:09:09</AD>
</PE>
</MVNOPrtReq>
```

The example message about “MVNO porting response”

```
<?xml version="1.0" encoding="UTF-8"?>
<MVNOPrtRsp xmlns="CHTMNPMMsg">
  <V>01.03</V>
  <NOP>1</NOP>
  <PE>
    <TID>M-CHM-0000-CHM-TTTM-090909-A001</TID>
    <PN>0912345678</PN>
    <SR>0</SR> <!-- 0 means the request is verified, the code value is the same as the one defined in NPAC specification. -->
    <VR>0</VR> <!-- 0 means the request is qualified for ported-out, the code value is the same as the one defined in NPAC specification. -->
  </PE>
</MVNOPrtRsp>
```

The example message about “MVNO activation request”

```
<?xml version="1.0" encoding="UTF-8"?>
<MVNOActReq xmlns="CHTMNPMMsg">
  <V>01.03</V>
  <NOP>1</NOP>
  <PE>
    <TID>M-CHM-0000-CHM-TTTM-090909-A001</TID>
    <PN>0912345678</PN>
  </PE>
</MVNOActReq>
```

The example message about “MVNO activation response”

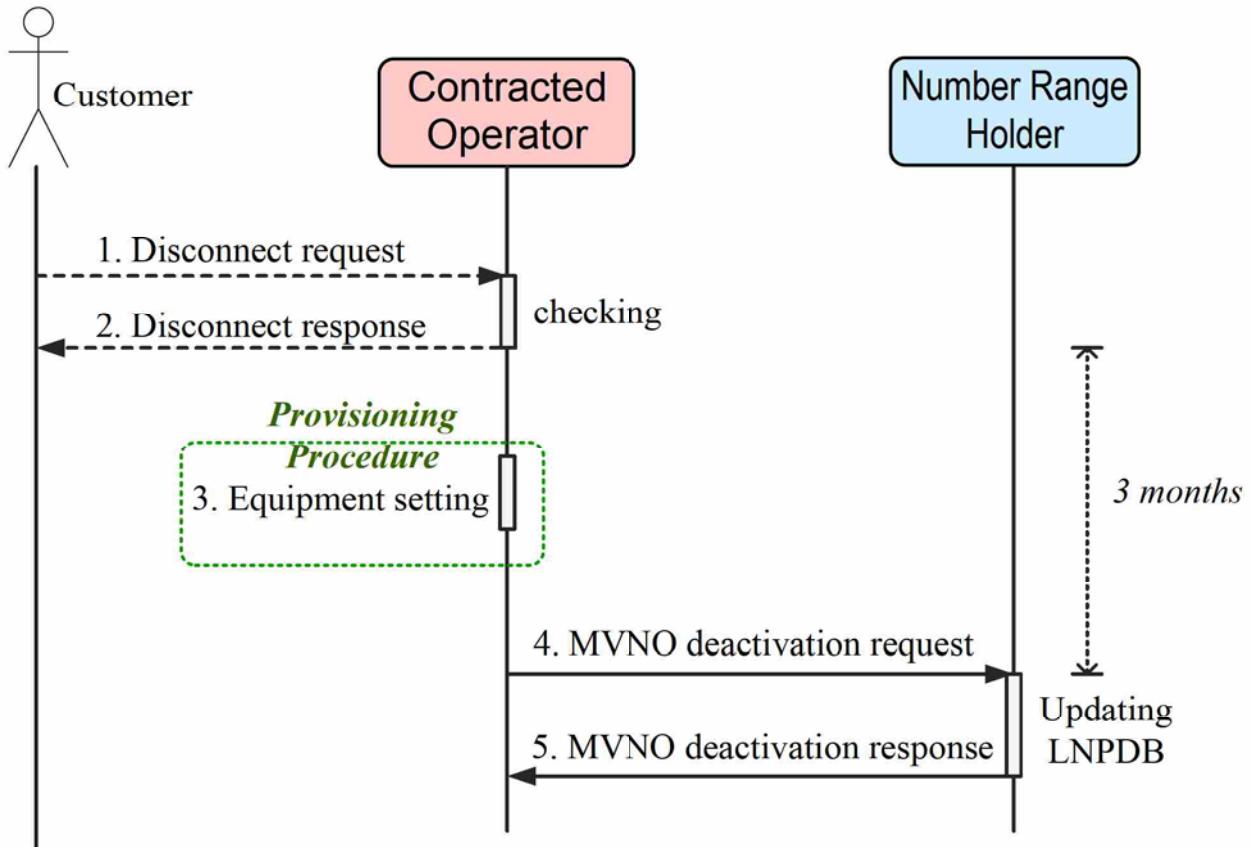
```
<?xml version="1.0" encoding="UTF-8"?>
```



```
<MVNOActRsp xmlns="CHTMNPMMsg">
  <V>01.03</V>
  <NOP>1</NOP>
  <PE>
    <TID>M-CHM-0000-CHM-TTTM-090909-A001</TID>
    <PN>0912345678</PN>
    <UR>0</UR>
  </PE>
</MVNOActRsp>
```

6.2.2 Disconnect Procedure

- MVNO partner is **Contracted Operator** that hold numbers ported-in from CHT.
- MVNO partner is **Number Range Holder** that has numbers ported-out to other operator.
- All of this two case is the same procedure



“Contracted Operator”: It is the operator that provides the mobile phone service to customers.

“Number Range Holder”: It’s the operator that owns the MSISDN assigned by NCC at Taiwan.

“NCC”: National Communication Commission.

[Descriptions]

Procedure 4 and Message (MVNO deactivation request) :

The MSISDN should be returned back to the operator of number range holder by sending the “MVNO deactivation request” message within **three months** after the service is disconnected by customer’s request from the contracted operator.

(Note: **Operator of number range holder** originally owns the number, and **Contracted Operator** is the one that provides the mobile phone service to the customer.)

合約業者在客戶退租後**三個月**內需送出退租要求至原獲配號業者。

Procedure 5 and Message (MVNO deactivation response) :

If the reply result on UR (Update Result) indicates “failure” or “data error”, both parties (MVNO & CHT) should go over the data manually .



若回覆的更新結果(UR, Update Result)為不成功，或資料有誤時，雙方需進行資料比對。

[Examples for Message Format]

The example message about “MVNO deactivation request”

```
<?xml version="1.0" encoding="UTF-8"?>
<MVNODEactReq xmlns="CHTMNPMMsg">
    <V>01.03</V>
    <NOP>1</NOP>
    <PE>
        <PN>0912345678</PN>
    </PE>
</MVNODEactReq>
```

The example message about “MVNO deactivation response”

```
<?xml version="1.0" encoding="UTF-8"?>
<MVNODEactRsp xmlns="CHTMNPMMsg">
    <V>01.03</V>
    <NOP>1</NOP>
    <PE>
        <PN>0912345678</PN>
        <UR>0</UR>
    </PE>
</MVNODEactRsp>
```



6.3 Interfaces of MVNO Homogeneous Special NP

6.3.1 Message Interfaces

Procedure		Interface ID	Message Name	Message Type in XML Schema	Role of MVNO partner	MVNO Availability
MNP Application Procedure	Negotiation	Undefined	MVNO porting request	MVNOPrtReq	Sender & Receiver	Yes
	Activation	Undefined	MVNO porting response	MVNOPrtRsp	Sender & Receiver	Yes
Disconnect Procedure	Activation	Undefined	MVNO activation request	MVNActReq	Sender & Receiver	No
	Procedure	Undefined	MVNO activation response	MVNActRsp	Sender & Receiver	Yes
Disconnect Procedure	NPAC number return request	Undefined	NPAC number return request	MVNODeactReq	Sender & Receiver	Yes
	NPAC number return response	Undefined	NPAC number return response	MVNODeactRsp	Sender & Receiver	Yes

6.3.2 XML Schema of Interface

See appendix file on Session 5.1.



6.4 Data Item Definition

6.4.1 Common Data Items

See Session 5.4.1.

6.4.2 Data Items in Each Interface

- MVNO porting request

XML Element	Presence	Sender	Receiver	Comment
V	Mandatory	Inoperative	Not Available	Fixed value.
NOP	Mandatory	Operative		
PE	Mandatory	Operative		XML node.
PE.TID	Mandatory	Operative		
PE.PN	Mandatory	Operative		
PE.CN	Mandatory	Operative		
PE.CID	Mandatory	Operative		
PE.AD	Mandatory	Operative		

- MVNO porting response

XML Element	Presence	Sender	Receiver	Comment
V	Mandatory	Inoperative	Not Available	Fixed value.
NOP	Mandatory	Operative		
PE	Mandatory	Operative		XML node.
PE.TID	Mandatory	Operative		
PE.PN	Mandatory	Operative		
PE.SR	Mandatory	Operative		
PE.VR	Mandatory	Operative		

- MVNO activation request

XML Element	Presence	Sender	Receiver	Comment
V	Mandatory	Inoperative	Not Available	Fixed value.
NOP	Mandatory	Operative		
PE	Mandatory	Operative		XML node.
PE.TID	Mandatory	Operative		
PE.PN	Mandatory	Operative		

- MVNO activation response



XML Element	Presence	Sender	Receiver	Comment
V	Mandatory	Inoperative	Not Available	Fixed value.
NOP	Mandatory	Operative		
PE	Mandatory	Operative		XML node.
PE.TID	Mandatory	Operative		
PE.PN	Mandatory	Operative		
PE.UR	Mandatory	Operative		

- MVNO deactivation request

XML Element	Presence	Sender	Receiver	Comment
V	Mandatory	Inoperative	Not Available	Fixed value.
NOP	Mandatory	Operative		
PE	Mandatory	Operative		XML node.
PE.PN	Mandatory	Operative		

- MVNO deactivation response

XML Element	Presence	Sender	Receiver	Comment
V	Mandatory	Inoperative	Not Available	Fixed value.
NOP	Mandatory	Operative		
PE	Mandatory	Operative		XML node.
PE.PN	Mandatory	Operative		
PE.UR	Mandatory	Operative		



6.5 Exception Handling Process for MVNO Homogeneous Special NP

6.5.1 Incorrect situations issues

1. If a request supposedly should be took care through the Special NP Process but it goes through the Normal NP Process. A message with failure result (SR=16) should be sent from the donor operator. An example message is as below :

若應進行 Special NP 程序而誤進行 Normal NP 程序，將會由接收端資訊系統回傳失敗訊息(Flow NPAC Specification)。訊息範例如下：

```
<?xml version="1.0" encoding="UTF-8"?>
<NPACPrtSbmRsp xmlns="CHTMNPMMsg">
    <V>01.03</V>
    <NOP>1</NOP>
    <PE>
        <TID>M-CHM-TTTM-CH3-0000-090909-A001</TID>
        <PN>0912345678</PN>
        <SR>16</SR>
        <DATE>090909-3</DATE>
        <TB>0</TB>
    </PE>
</NPACPrtSbmRsp>
```

2. If a request supposedly should be took care through the Normal NP Process but it goes through the Special NP Process then a message with failure result (SR=16) should be sent from the donor operator. An example message is as below :

若應進行 Normal NP 程序而誤進行 Special NP 程序，將會由接收端資訊系統回傳失敗訊息(Flow CHT MVNO Special NP Specification)。訊息範例如下：

```
<?xml version="1.0" encoding="UTF-8"?>
<MVNOPrtRsp xmlns="CHTMNPMMsg">
    <V>01.03</V>
    <NOP>1</NOP>
    <PE>
        <TID>M-CHM-0000-CHM-TTTM-090909-A001</TID>
        <PN>0912345678</PN>
        <SR>16</SR>
        <VR>0</VR>
    </PE>
</MVNOPrtRsp>
```



3. SR tag and VR tag are included in the “MVNO Porting Request” message because of avoiding to define another new tag and code list. (“SR!=0 and VR=99” means the request is not verified to ported-out. “VR!=0 (SR has to be 0)” means the request is disqualified for ported-out. “SR=0 and VR=0” means the request has been approved for ported-out and provision.

MVNO Porting Request 訊息中同時包含 SR 和 VR 欄位，是避免新訂資料欄位(Tag)和代碼意義。第一關：若不可申請則 SR!=0, VR=99。第二關：若審核不通過則 VR!=0 (SR 必然為 0)。SR 和 VR 兩個值都為零才表示同意移出和改接。

4. The codes table about incorrect situations as flow :

Incorrect Situations	Message Name (Request)	Message Name (Response)	Response Result Value (Note *1)	備註
Should be Normal NP but do Special NP	MVNOPrtReq	MVNOPrtRsp	SR=16	Note *2
			VR=50	
	MVNOActReq	MVNOActRsp	UR=6	
	MVNODeactReq	MVNODeactRsp	UR=6	
Should be Special NP but do Normal NP	NPACPrtSbmReq	NPACPrtSbmRsp	SR=16	
	NPRecReq	NPRecRsp	STR=99	Note *3
	NPACPrtReq	NPACPrtRsp	VR=50	
	NPACCcancelReq	NPACCcancelRsp	SR=16	
	NPACNumRetReq	NPACNumRetRsp	SR=16	
	NPACDcnSbmReq	NPACDcnSbmRsp	SR=16	

Note *1 :

SR=16, VR=50 Telephone number does not belong to donor operator.(電話號碼非移出業者所有)

UR=6 Phone number does not belong to operator (only NPAC).(電話號碼非業者所有)

STR=99 In ncgotiation. (進入協商程序)

Note *2 : Both SR code "16" and VR code "50" mean that the targeted phone number is not belonging to porting-out operator, as a result, while porting-in process requires Normal Np negotiation but mistakes with Special NP negotiation, SR code "16" and VR code "50" should be replied, and VR code "99" reserved for other conditions should not be involved.

SR 代碼 16 和 VR 代碼 50 均表示電話號碼非移出業者所有，所以移入應走 Normal NP 協商但誤送成 Special NP 時，須應回 SR = 16, VR = 50。且不必使用保留代碼 VR = 99。

Note *3 : STR code "99" means the process is entering manually negotiation, and if MVNO partner's manually negotiation procedure is proxied by CHT, code "99" should be used. If MVNO partner could negotiate manually with port-out operator, and conditions that other operator replies code "99" and CHT replies code "99" for incorrect Special-NP procedure started by MVNO partner must be differentiated, using reserved codes from "1" to "98" is an option, but is not recommended.

STR 代碼 99 表進入人工協商，若 MVNO 夥伴業者人工協商需透過中華，則使用 99 即可。若 MVNO



夥伴業者會直接與移出業者協商，且有需要區分其它業者回 99 和 MVNO 夥伴業者送錯 Special NP 中華回 99 兩種不同情形時，可考慮使用保留代碼 1~98 (建議不要)。

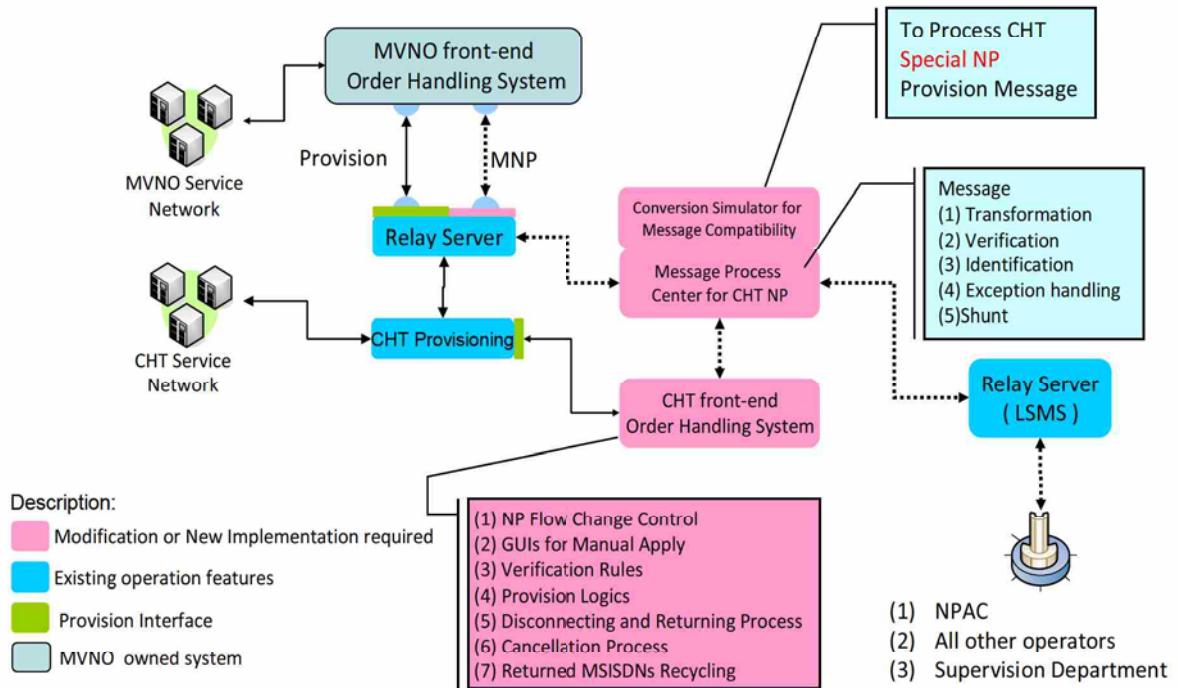
6.6.2 Procedure Exception Issues

1. If a customer with the same MSISDN applies for NP Ported-In twice at the same time, the system (either CHT's or MVNO's) should return a failed message on the "Identification/Verification Process" stage.
若用戶同時申請 Normal NP 和 Special NP，將會由雙方系統於”審核作業階段”，回傳審核失敗訊息。
2. The procedures, messages or data format in Normal NP should be followed as higher priority than Special NP if there is any conflict in between those two specifications in order to have the consistency in all formats with other operators' and NPAC's.
Note 1: The reason for conflict may be caused by system errors/bugs or by mistakes made by manual/artificial operations.
若 Special NP 程序或資訊與 Normal NP 作業有衝突，以 Normal NP 作業為準(因各業者和 NPAC 的資訊均要一致)。(以先申請為主)
註：衝突原因可能是資訊系統異常或人工作業有誤。
3. The same “MVNO Porting Request” message should be resent again with a new Transaction ID (TID) to the donor operator if the “MVNO Porting Response” message is not received within five minutes after the “MVNO Porting Request” message is already sent out.
發出 MVNO Porting Request 訊息後，若逾時（五分鐘）未接收到 MVNO Porting Response 則重新編 TID 流水號重新發送。
4. The procedure should be in manual/artificial process mode for trouble shooting if the “MVNO Activation Request” message is sent from the Recipient Operator but the “MVNO Activation Response” message is not received over two hours.
發出 MVNO Activation Request 訊息後(成功且收到正確 ACK Message)，若逾時（兩小時）未接收到 MVNO Activation Response 則進入人工障礙處理程序。
5. 因特殊中文碼造字編碼檔不同，申請移轉時審核會失敗，此類無法順利受理的情況請啟用 Normal NP 作業程序中的人工協商途徑處理。
6. 當移出方回覆 MVNO Posting Response 訊息後移入方未送 MVNO Activation Request 或此時該門號用戶擬不繼續進行受理動作，移出方該於何時和如何處理此一門號申請移出之資料？
解法一：設定一個有效期限(Time out)，但期限為多久？
解法二：新增一個通知取消申請的訊息。

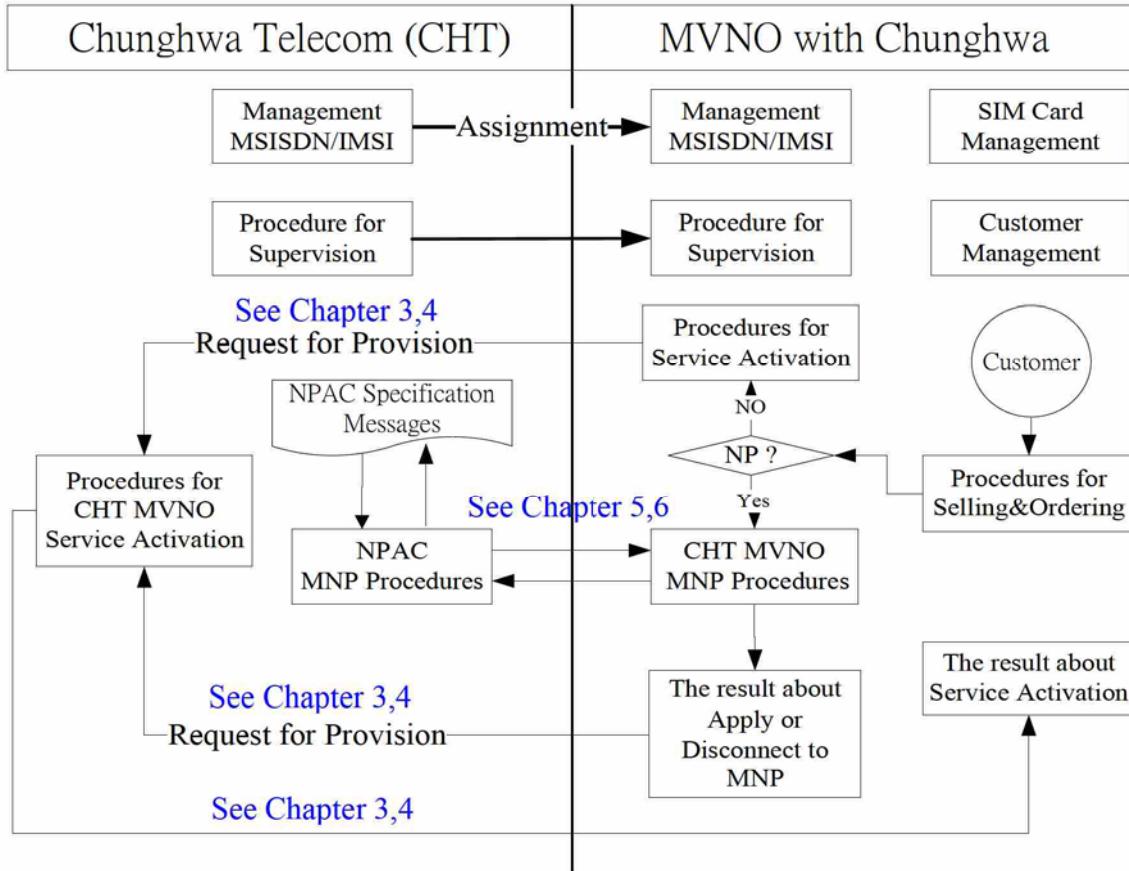
7 Operation Information Management

7.1 Interoperability Architecture of Operation Support System

Diagram of Operation Structure Suitable for both Normal NP and Special NP



7.2 Interoperability Diagram about Fulfillment





8 Glossary

This section contains definitions of terms used in this document.

Term	Definition
Actor	Some operators that must interact with a system by the use cases developed for the system.
API	Application Programmer Interface.
CHT	The abbreviation of “Chunghwa Telecom”.
Subscriber	
IMSI	International Mobile Subscriber Identity.
MVNO	The abbreviation of “Mobile Virtual Network Operator”.
T.B.D.	To Be Defined.
XML	Extensible Markup Language.
XML Schema	W3C XML Schema.
XSDL	W3C XML Schema Definition Language.
NPAC	Number Portability Administration Center.
MNP	Mobile Number Portability
MVNO ID	Three digits of MVNO partner ID assigned by CHT. e.g. “TTT”.

Term	Traditional Chinese
Other Operators	其它業者
Supervision	監察機關
Recipient Operator	移入業者
Donor Operator	移出業者
NPAC	號碼可攜集中式資料庫管理中心
CHT MNP	CHT 號碼可攜服務處理系統
MVNO Order	MVNO 訂單管理系統
Number Range Holder	原獲配號業者
Contracted Operator	合約業者
Term	Traditional Chinese
Ticket retrieval	取得 Ticket
Send the progenitor	正本送出
Examine the response	審查回覆
Negotiation result notification	協商結果通知
Term	Traditional Chinese
Request for provisioning &	供裝改接要求



porting	
Provisioning response	供裝完成通知
Porting response	改接結果通知
Term	Traditional Chinese
Request for disconnect	退租要求
Number returned	門號歸還
Term	Traditional Chinese
Porting request	移出要求
Receive the progenitor	正本接收
Reception response	接收回應
Porting response	移出回應
Porting cancelled	移出取消
Accept the porting	接受移出要求(可能牽涉到「人工協商」)
Negotiation result notification	協商結果通知



Appendix A.

A.1 Error Code and Status Code Definition for Provisioning

“AckCode” in provisioning acknowledgement and “resultCode” in provisioning response share the same code table for consistency, but not imply that all codes are applicable to both response and acknowledgement. We will give the detailed codes and corresponding descriptions in this section.

A.1.1 Code Ranges

Codes can be divided into classes as described below.

Class Catalog	Class Name	Code Range
1	Informational.	1000 ~ 1999
2	Provisioning success.	2000 ~ 2999
3	Provisioning failure.	3000 ~ 3999
4	Request error.	4000 ~ 4999
5	Service activation system error.	5000 ~ 5999

A.1.2 Code Values

This section lists all possible message codes and their meanings. The last column “A/R”(Acknowledgement/Response) of the table indicates which code is applicable to provisioning acknowledgement or provisioning response.

Code	Message	Description	A/R
1000	Message received.	Message is received successfully.	A
1101	Message incomplete.	Fail to receive message; message is incomplete.	A
1102	Message malformed.	Message is received but content is malformed.	A
1103	Message invalid.	Message is received but schema is invalid.	A
1201	Unknown user.	The name of login user is unknown.	A
1202	Wrong password.	User password is wrong.	A
1203	Account disabled.	The user account is disabled.	A
1204	Account expired.	The user account is expired.	A
1205	Account not available.	The user account is not available yet.	A
1206	IP/Port invalid.	Login IP or Port is invalid.	A
1301	Invalid OrderNO.	The order number is not valid against the rule in 3.4.1.	A



1302	Duplicated OrderNO.	The order number is duplicated.	A
2000	Provisioning success.	The request completes processing successfully.	R
3000	Provisioning failure.	Provisioning failure and manual work is needed.	R
4101	Invalid IMSI.	The IMSI number of this request is invalid.	R
4102	Invalid MSISDN.	The MSISDN number of this request is invalid.	R
4103	Invalid SIMCardNO.	The SIM card number of this request is invalid.	R
4104	Invalid NetworkType.	The network type of this subscriber is invalid.	R
4105	Invalid BillingType.	The billing type of this subscriber is invalid.	R
4201	Insufficient data.	Insufficient data items for provisioning.	R
4202	Invalid data.	The content of data item is invalid.	R
4301	Permission denied.	Login user can't perform this operation.	R
5001	System unready.	System is not ready for processing.	A
5002	System busy.	System is busy processing prior requests.	A
5003	System error.	System is not available due to unknown error.	A
5101	System pending.	System is busy processing.	A
5201	Connection limit.	The max number of concurrent connection is reached.	A

A.2 Error Code and Status Code Definition for MNP

Reference the specification of NPAC—“*NP Provision Procedure and Interface Specification, Version 1.2.2, April, 2007(Republic of China 96)*”



Appendix B.

B.1 MVNO partner ID assigned List

<MVNO ID>	Company Name	Type	Using Status
TTT	Assigned for this document Example	N/A	Keep and Hold
CTC	Carrefour Telecom (家樂福電信)	2G	Available
PRI	Prism SCSB Telecom (上銀全通電訊)	3G	Available
CT3	Carrefour Telecom for 3G(家樂福電信 3G)	3G	Not Available
PR2	Prism SCSB Telecom for 2G(上銀全通電訊 2G)	2G	Not Available