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INDUSTRY GUIDELINE

G561:2025

MOBILE NUMBER PORTABILITY- NETWORK PLAN FOR VOICE SERVICES AND SMS

G561:2025 Mobile Number Portability – Network Plan for Voice Services and SMS Industry Guideline

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INTRODUCTORY STATEMENT

The ***Mobile Number Portability – Network Plan for Voice Services and SMS*** Industry Guideline (G561:2025) supersedes and replaces the following Industry Guidelines:

1. ***Mobile Number Portability Network Plan for Voice, Data and Fax Services*** Industry Guideline (G561:2009); and
2. ***Mobile Number Portability Network Plan for SMS*** Industry Guideline (G565:2018).

Reasons for replacing the two documents with one, merged document include:

- Technology evolution – SIP/IP based inter-working links between carriers have replaced legacy circuit switched networks;
- Service obsolescence – Mobile networks no longer support in-band data services and fax services; and
- Change of purpose – the original documents were created to support the (one-off) introduction of Mobile Number Portability (MNP). Now the document can inform network testing between existing Mobile Network Operators (MNOs) and a potential new entrant.

Refer to Appendix B for a list of historical documents.

The ***Mobile Number Portability – Network Plan for Voice Services and SMS*** Industry Guideline (G561:2025) describes:

- call handling between interconnected networks for voice calls; and
- industry agreed routing arrangements to enable correct delivery of inter-carrier SMS

The purpose of the changes is to:

- Align with the revised ***Mobile Number Portability*** Industry Code (C570:2024); and
- Reflect changes in the underlying mobile network technology e.g. closure of 3G networks, introduction and operation of 5G networks.

James Duck
Chair
MNP Network Testing ***Working Committee***

APRIL 2025

TABLE OF CONTENTS

1 GENERAL

1.1 Introduction

1.1.1 Section 112 of the *Telecommunications Act 1997* (the Act) sets out the intention of the Commonwealth Parliament that bodies and associations representing sections of the telecommunications industry develop industry codes relating to the telecommunications activities of participants in those sections of the industry.

1.1.2 The development of the Guideline has been facilitated by Communications Alliance through a Working Committee comprised of representatives from the telecommunications industry and Government regulatory agencies.

1.1.3 The Guideline should be read in the context of other relevant codes, guidelines and documents including the:

(a) Mobile Number Portability Industry Code (C570); and

(b) Session Initiation Protocol (SIP) Interconnection Industry Guideline (G672).

1.1.4 The Guideline should be read in conjunction with related legislation and regulation, including:

(a) the Act; and

(b) the *Telecommunications Numbering Plan 2025* (the Numbering Plan).

1.1.5 If there is a conflict between the requirements of the Guideline and any requirements imposed on a Carrier by statute, the Carrier will not be in breach of the Guideline by complying with the requirements of the statute.

1.1.6 Compliance with this Guideline does not guarantee compliance with any legislation. The Guideline is not a substitute for legal advice.

1.1.7 Statements in boxed text are a guide to interpretation only.

1.2 Scope

1.2.1 The Guideline applies to the Carriers section of the telecommunications industry under section 110 of the Act.

1.2.2 It deals with the following telecommunications activities as defined in section 109 of the Act:

(a) carrying on business as a Carrier.

1.2.3 This Network Plan:

(a) Describes call and Short Message (SM) handling between interconnected networks for voice calls and SMs to portable Mobile Service Numbers.

(b) Takes into account technology changes in recent years and applies to voice interconnection arrangements utilizing SIP Interconnection for signalling and handover of IP based calls – for more details refer to G672.

(c) Applies only to inter-carrier SMs which are communicated via SMPP between mobile digital networks that conform to SMPP Interface Specification version 3.4.

1.3 Objectives

1.3.1 The Network Plan consolidates and provides guidelines for both a mobile voice service and a Short Message Service (SMS).

1.3.2 The objectives of MNP industry testing are:

(a) to test the network conditioning implemented by the Originating Access Service Deliverer (OASD) for MNP prior to launching commercial service to ensure that calls are routed in accordance with this document; and

(b) to have no impact on end customers.

1.4 Guideline review

The Guideline will be reviewed 5 years after publication and every 5 years subsequently, or earlier in the event of significant developments that affect the Guideline or a chapter within the Guideline.

2 ACRONYMS, DEFINITIONS AND INTERPRETATIONS

2.1 Acronyms

For the purposes of the Guideline:

CC

means Country Code.

CSP

means Carriage Service Provider

CTrSD

means Contracted Transit Service Deliverer.

DCC

means Directly Connected Customer.

ESME

means External Short Message Entity

HLR

means Home Location Register

IMSI

means International Mobile Subscriber Identity

IN

means Intelligent Network

MAP

means Mobile Application Part

MNP

means Mobile Number Portability

MSC

means Mobile Switching Centre

MSISDN

means Mobile Station ISDN Number

OASD

means Originating Access Service Deliverer

POI

means Point of Interconnection

PLMN

means Public Land Mobile Network

PMTS

means Public Mobile Telephone Service

SM

means Short Message

SMPP

means Short Message Peer to Peer

SMS

means Short Message Service

SMSC

means Short Message Service Centre

TASD

means Terminating Access Service Deliverer

TCP/IP

means Transmission Control Protocol / Internet Protocol

TrSD

means Transit Service Deliverer

2.2 Definitions

For the purposes of the Guideline:

Act

means the *Telecommunications Act 1997 (Cth)*.

Carriage Service Provider

has the meaning given by section 87 of the Act.

Carrier

has the meaning given by section 7 of the Act.

Contracted Transit Service Deliverer

means a Carrier/CSP that connects with and passes call traffic from the OASD to another Transit Service Deliverer or the Terminating Access Service Deliverer.

Mobile Carrier

has the meaning given by C570.

Mobile Number Portability

has the meaning given by C570.

Mobile Service Number

has the meaning given by C570.

Originating Access Service Deliverer

means a Carrier/CSP that provides outgoing services to Customers that connect to other telecommunications services.

Port

has the meaning given by C570.

SMPP

means Short Message Peer to Peer (SMPP) Interface Specification, Version 3.4 (subset)

Terminating Access Service Deliverer

means a Carrier/CSP that provides outgoing and incoming services to Customers using Mobile Service Numbers that connect to other telecommunications services.

2.3 Interpretations

In the Guideline, unless the contrary appears:

(a) headings are for convenience only and do not affect interpretation;

(b) a reference to a statute, ordinance, code or other law includes regulations and other instruments under it and consolidations, amendments, re-enactments or replacements of any of them;

(c) words in the singular includes the plural and vice versa;

(d) words importing persons include a body whether corporate, politic or otherwise;

(e) where a word or phrase is defined, its other grammatical forms have a corresponding meaning;

(f) mentioning anything after include, includes or including does not limit what else might be included;

(g) words and expressions which are not defined have the meanings given to them in the Act; and

(h) a reference to a person includes a reference to the person's executors, administrators, successors, agents, assignees and novatees.

3 VOICE NETWORK MODEL – CALL HANDLING

3.1 Overview

3.1.1 A prime service deliverer should route the call directly to the TASD or via the prime service deliverer's subcontractor or transit service provider (the CTrSD).

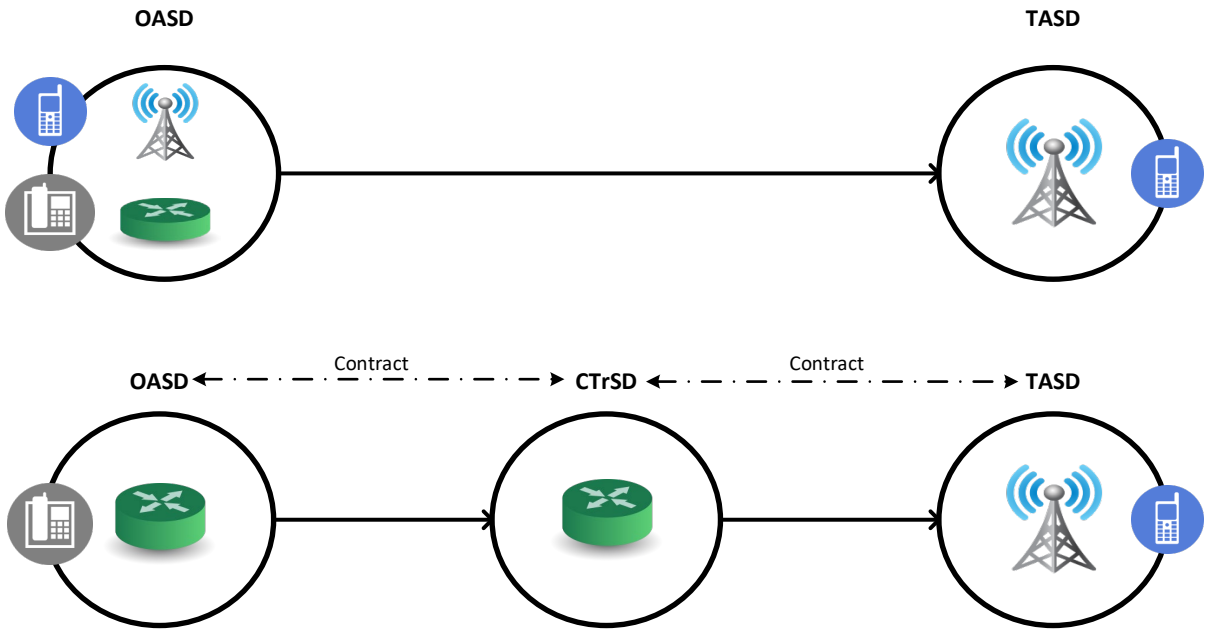

FIGURE 1
Call routing for MNP

3.1.2 Call handling; signalling and routing arrangements ensure that calls are delivered in accordance with agreed standards and are not mis-directed (refer to the industry guideline G672 for more details on SIP Interconnection).

3.2 Routing of Mobile Service Numbers

3.2.1 A Carrier originating (as OASD) or transiting (as CTrSD) a call to a shall check:

(a) the ported number status of the called number; or

(b) associated number block

prior to attempting to route the call across a Point of Interconnection (POI) towards a destination network where the associated voice service resides.

3.2.2 When a Carrier as TASD receives a call to a ported number where the number is identified at the POI as being ported to the TASD network, it must terminate the call on its network.

NOTES:

1. Clause 3.2.2 does not preclude call forwarding.

2. Clause 3.2.2 helps prevent circular routing.

3.2.3 Donor routing of Mobile Service Numbers is not supported.

3.3 Error Cases

3.3.1 Two error cases have been identified:

(a) Error Case 1: Incorrect TASD specified for a call to a ported number; and

(b) Error Case 2: Incorrect TASD specified for a call to a non-ported number.

3.3.2 Currently there is a range of treatments adopted by industry for the handling of error cases. Therefore, it is recommended that similar treatment for calls to unallocated numbers should be applied.

3.3.3 For error codes which apply in the context of SIP interworking see section 4 of the industry guideline G672 for tables setting out relevant SIP response codes.

3.4 Prevention of Circular Routing

3.4.1 As it is necessary to guard against the possibility that the porting data for a Mobile Service Number is inconsistent between databases used for routing in different networks mobile carriers should implement measures to ensure that any traffic delivered by the OASD or CTrSD to the TASD must terminate on the TASD network.

3.4.2 To prevent circular routing, when a call to a ported number is directed from a OASD or CTrSD to the TASD's mobile network identified as directly connecting the customer, the call must not be passed to another network with the same number for the called customer. The call should be terminated to the called customer.

3.4.3 A TASD receiving a call to a ported Mobile Service Number where the ported number is not connected to that network is an error condition. If there is an error condition and the call cannot be correctly terminated the parties will agree bilaterally on the appropriate error response including any SIP response codes that may apply (refer to the industry guideline G672 for more details on SIP Interconnection).

4 SHORT MESSAGE SERVICE

4.1 General

4.1.1 The point-to-point SMS provides a means of sending messages of limited size to a mobile customer. The provision of SMS makes use of a Short Message Service Centre (SMSC), which may function as a store and forward centre for short messages.

4.1.2 Mobile terminated SM denotes the capability of a SMSC to transfer a SM to a mobile customer and be provided with the information about the delivery status of the SM. This is achieved typically by a delivery report or a failure report with a specific mechanism for later delivery.

4.1.3 Unsuccessful message transfer from the SMSC to a mobile customer may be caused by a variety of different errors. Errors are either permanent or temporary in nature. For permanent errors no further attempts are made to deliver the message to the mobile customer. Temporary errors may result in subsequent delivery attempts.

4.2 SMS Delivery via SMPP

The general architecture for inter-carrier SMS SMPP is shown in Figure 2 below and can be used in any of the following cases:

(a) National mobile network to national mobile network; and

(b) International mobile network to national mobile network.

4.3 SMPP Flows

To use SMPP, an SMPP session is established between the ESME and the SMSC. The connection is usually initiated by the ESME.

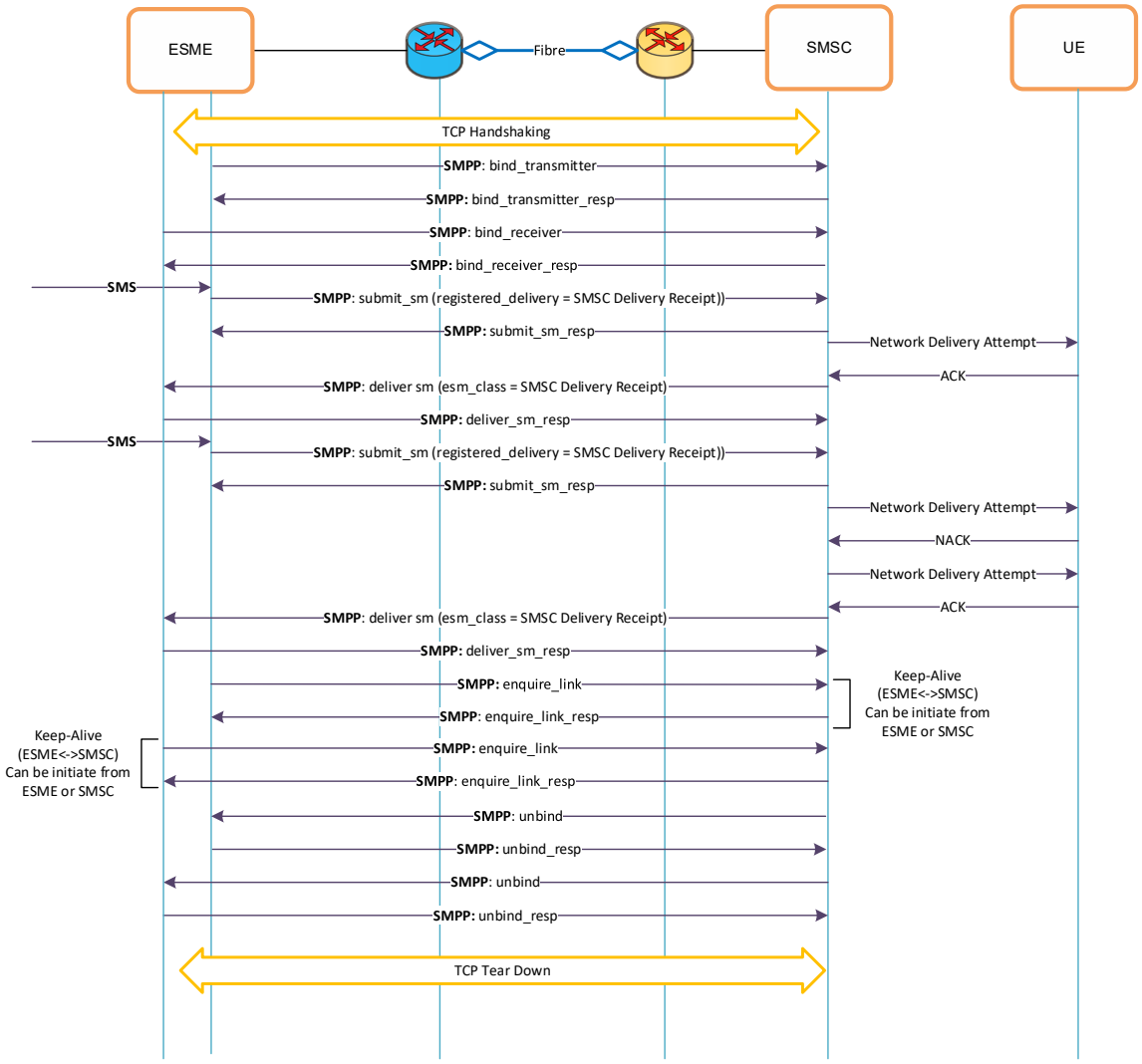

FIGURE 2

SMPP flows with "ESME Transmitter and Receiver" with Delivery Receipt

4.4 Routing principles

SMPP routing principles will ensure that under a MNP environment messages are routed directly to the correct recipient network.

4.5 International SMS

4.5.1 Where interconnect is delivered via a domestic SMPP link, there are certain international scenarios that can occur due to legacy international signalling arrangements where it is not possible to deliver the SMS to the correct current carrier of ported customers.

4.5.2 Each carrier should make arrangements to deliver/transit any SMs directly to the other carrier which are handed over by an international carrier that does not have domestic MNP data or who otherwise incorrectly sends an SM intended for delivery to a customer ported to the other carrier to the first carrier.

4.6 Addressing across point of interconnection

The number structure used for the addressing across the POI must be in the international format as defined in ITU-T Recommendation E.164.

4.7 Prevention of circular routing

As it is necessary to guard against the possibility that the porting data for a Mobile Service Number is inconsistent between databases used for routing in different networks mobile carriers should implement measures to ensure that any traffic delivered by the OASD to TASD must terminate on the TASD network and not be delivered back to the OASD.

4.8 Error codes

4.8.1 Unsuccessful SM delivery may be caused by a variety of different errors.

4.8.2 Error treatment in general will follow the pertinent specification in SMPP v3.4.

4.8.3 Error codes come in two types:

(a) Permanent – this means that the send message failure will continue, regardless of how many times the user tries the same operations (e.g. the destination phone number is incorrect); and

(b) Temporary – this means that the send message operation may succeed if circumstances change (e.g. system congestion clears up).

4.8.4 Two cases arise where unsuccessful delivery is due to the implementation of MNP. The error codes that apply to each case are as follows:

(a) SM delivery to a Mobile Service Number ported to a network where there is no inter-carrier SMS connectivity will be unsuccessful. The error code to be returned to the originating SMSC shall be any permanent error code from the pertinent specification.

(b) Due to the misalignment of data in routing databases, an SM may be delivered to the wrong network after the originating network has performed a lookup. The receiving network's response in these circumstances is subject bilateral agreement between the parties.

5 REFERENCES

Publication	Title
Industry Codes	
C570:2024	Mobile Number Portability https://commsalliance.com.au/Documents/all/codes/c570
Industry Guidelines	
G672:2023	Session Initiation Protocol (SIP) Interconnection https://commsalliance.com.au/Documents/all/guidelines/g672
ITU-T Recommendations	
E.164 (11/2010)	The international public telecommunication numbering plan https://www.itu.int/ITU-T/recommendations/rec.aspx?id=10688&lang=en
Other Guidelines	
Short Message Peer to Peer (SMPP) Interface Specification, Version 3.4 https://smpp.org/SMPP_v3_4_Issue1_2.pdf	
Legislation	
Telecommunications Act 1997 *https://www.legislation.gov.au/C2004A05145/latest/text*	
Telecommunications Numbering Plan 2025 https://www.legislation.gov.au/F2025L00409/latest/text	

APPENDIX

A NUMBER PORTABILITY FOR MOBILE SERVICE NUMBERS

A.1.1 Number Portability for Mobile Service Numbers

A.1.2 Mobile Number Portability (MNP) is the ability for a customer to change mobile Carriage Service Provider (CSP) and/or mobile Carrier while retaining their Mobile Service Number.

A.1.3 Under MNP only the Mobile Service Number is ported.

A.1.4 The basic and supplementary services provisioned in the recipient network are not dependent on those that were provisioned in the losing network.

A.1.5 As a consequence of MNP, the Terminating Access Service Deliverer (TASD) cannot be reliably determined from the number range allocated to a mobile CSP.

A.1.6 Routing methodologies and related network arrangements for voice and SMS interconnection in the MNP environment is specified in this Guideline (G561).

A.1.7 This plan defines the industry agreed call handling and technical interconnection arrangements based on G672.

A.1.8 Porting processes for MNP are defined in C570.

APPENDIX

B HISTORICAL DOCUMENT LIST

B.1.1 This document supersedes and replaces both:

(a) ***Mobile Number Portability Network Plan for Voice, Data and Fax Services*** Industry Guideline (G561:2009); and

(b) ***Mobile Number Portability Network Plan for SMS*** Industry Guideline (G565:2018).

B.1.2 G561 was previously published in September 2000, December 2000, March 2002 and December 2009.

B.1.3 G565 was previously published in February 2001, December 2009 and October 2018.

PARTICIPANTS

The Working Committee responsible for the revisions made to this Guideline consisted of the following organisations and their representatives:

Organisation	Membership	Representative
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Optus	Non-voting	Monica Liem
Optus	Non-voting	Nick Nicolaou
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This Working Committee was chaired by James Duck of Communications Alliance who also provided project management support.

Communications Alliance was formed in 1997 to provide a unified voice for the Australian communications industry and to lead it into the next generation of converging networks, technologies and services.

In pursuing its goals, Communications Alliance offers a forum for the industry to make coherent and constructive contributions to policy development and debate.

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